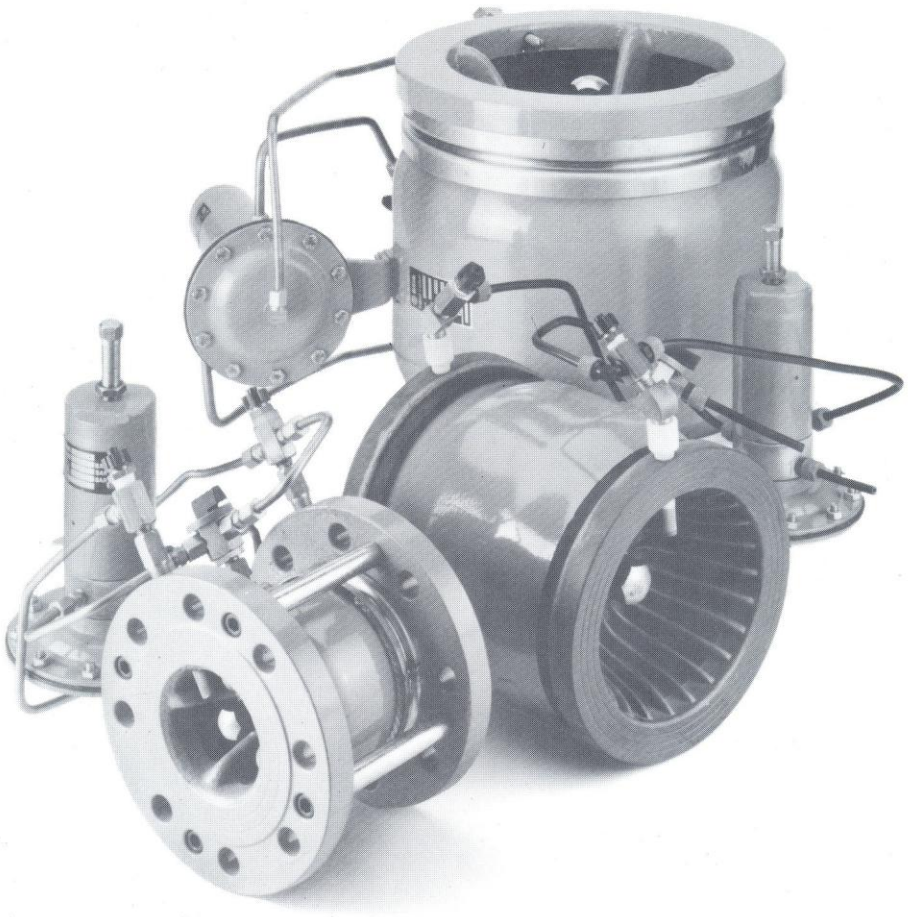
PRESSURE REDUCING INBAL VALVE SERIES 500-R, 600-R, 700-R.

511-R		533-R		599-R	
611-R	Threaded		Flanged	699-R	Wafer
711-R		733-R		799-R	



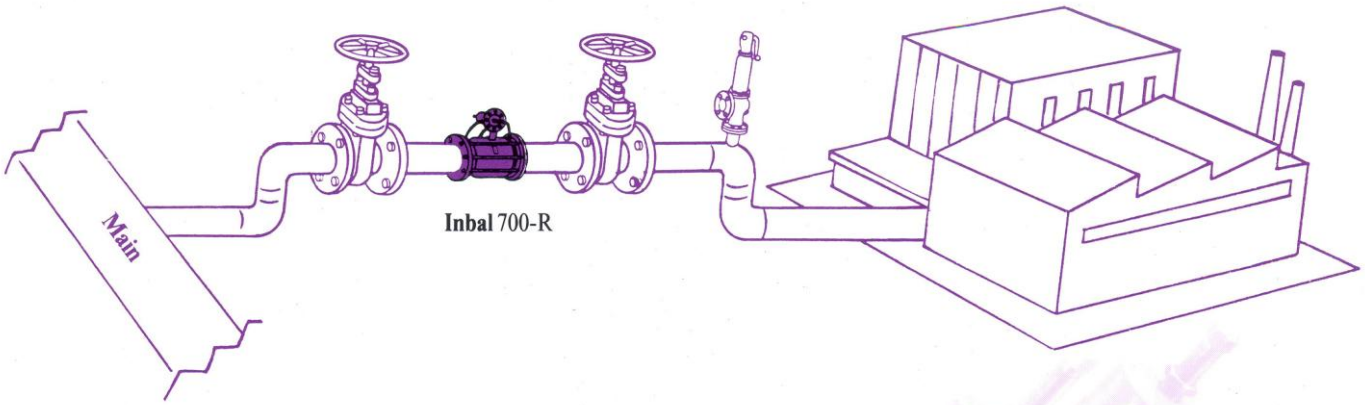
The **Inbal** Pressure Reducing Valve Model XXX-R automatically reduces an upstream pressure to a predetermined downstream pressure, which remains steady and unaffected by either fluctuating inlet pressure and / or changing flow rate. The Pressure Reducing Valve consists of **Inbal** Valve series 500, 600 or 700 and Pilot control system.

The **Inbal** is a line pressure operated, in-line, sleeve type, axial valve. The control system consists of a spring loaded, pressure operated, diaphragm-actuated, 3-way pilot valve and auxiliary accessories.

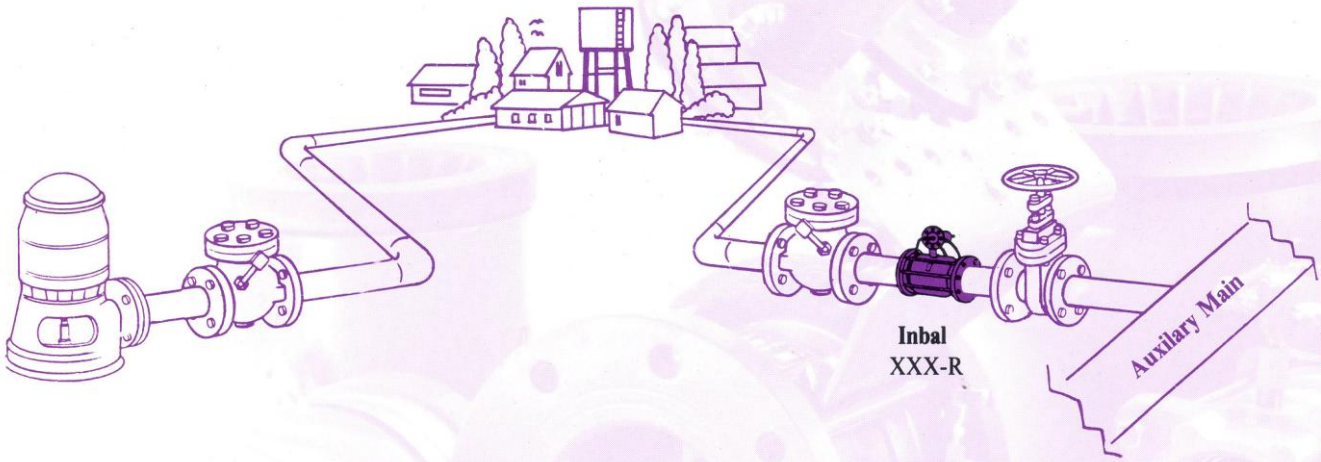
The **Inbal** XXX-R maintains a constant downstream pressure within a narrow pressure range. If the downstream pressure changes slightly, the control system responds immediately by operating the **Inbal** Valve in order to modulate the flow. Downstream pressure is therefore accurately maintained.

Pressure adjustment is made simple with a single adjusting screw on the pilot control.

Typical Application



In the system above the city's water pressure varies between 4 bar (60 psi) and 9 bar (125 psi). The 150 mm (6") **Inbal** 700-R accurately reduces this varying pressure to a constant 3.5 bar (50 psi). The downstream pressure remains constant even with changing demand from the manufacturing plant, which requires flow between 15 m^3/h (70 gpm) and 160 m^3/h (700 gpm).

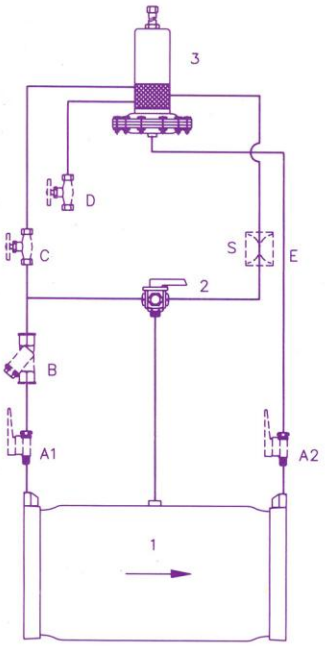


There are two sources of supply for this water distribution system. The auxiliary system source is used to back up the net distributing system once the demand exceeds the deep well pump capacity. The **Inbal** XXX-R senses the decreasing pressure and opens to bring the system back to its original pressure setting. Should the demand decrease and the pressure start to rise the XXX-R starts to close maintaining the constant line pressure in the distributing system.

Product Features

* The **Inbal** Valve contains no mechanical moving parts. It is epoxy coated as standard, compact and lightweight. The Valve can be installed at any angle, without affecting performance.
* The **Inbal** Valve is of excellent regulating performance, capable to handle comparatively low flow rates.
* A wide range of pressure reducing pilot valves are available to ensure speeds of operation and pressure set point accuracy to exactly meet the customer requirements.
* The "floating stem" design of the pilot valves ensures a dependable trouble free service.
* The advanced "no-flow" design of the pilot system reduces maintenance and the need for needle valves and large area strainers.
* The valve will close drop-tight when the downstream pressure exceeds the preset level, due to demand ending. The valve will open fully when upstream pressure drops to, or below, downstream setting.
* A manual control override valve is fitted as standard, allowing the **Inbal** XXX-R to be operated as a manual control valve at any time.
* The valve comes complete with self- cleaning 100 mesh strainer as a standard fitting.

Schematic Control Diagram



Item	Description	Model
1	**Inbal** Valve & Self Cleaning strainers	500; 600 or 700
2	Manual Control Valve	341 or 345*
3	Pressure Reducing Pilot Valve	LA3 or LB3*

Optional Features:

A	Shut-off cocks - isolates pilot system	351
B	Y Pattern Strainer	31
C	Flow Control - closing speed control	361
O	Flow Control - opening speed control	361
S	Flow stabilizer - reduces low flow fluctuations	362

* 341 & LA3 are recommended to **Inbal** valve up to size 150 mm (6"). 345 & LB3 for sizes 200 thru 300 mm (8"-12")

Purchase Specifications

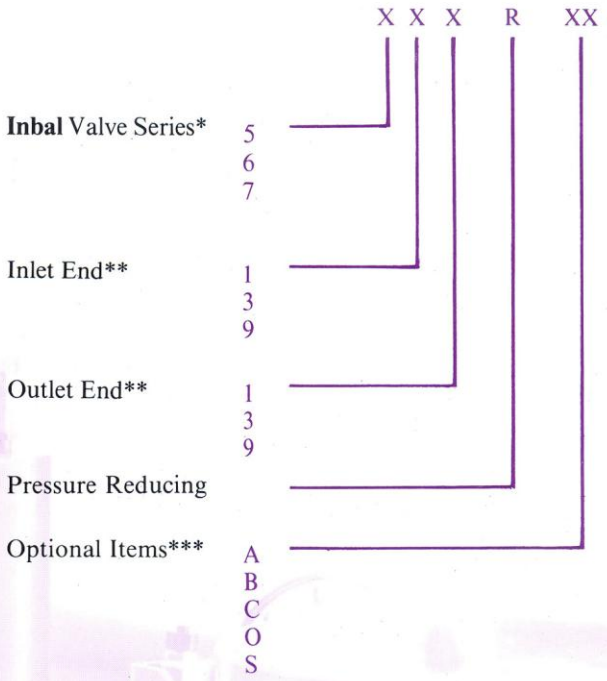
The Pressure Reducing Valve shall maintain a constant downstream pressure regardless of changes in the flow rate and/or variations in the inlet pressure. It shall be a hydraulically operated, pilot controlled, sleeve type, in-line, axial valve.

The main in-line valve shall have only one moving part, which is the resilient sleeve. No stems, diaphragm assembly or springs are permitted at the main valve. There are to be no other sealing facilities apart from the sleeve itself.

The pilot control shall be a direct acting, diaphragm actuated, adjustable spring loaded, 3-way valve. When the delivery pressure is precisely at the pre-adjusted level, flow through the pilot control system be stopped. Adjustment of the downstream pressure shall be easily accomplished using a threaded bolt located in the top of the pilot. Self cleaning strainers shall be used to protect the control system.

This valve shall be similar in all respects to a Pressure Reducing **Inbal** Valve Model 500-R, 600-R or 700-R as manufactured by Mil Limited or approved equal.

Designation Data



* Request catalog on each series

** Ends: 1-threaded
3-flanged
9-wafer

*** See optional features in the left hand column.

Example: **Inbal** 799-R-AC is a Pressure Reducing, 700 series, wafer type valve with shut-off cocks and closing speed control.

Capacity Chart

Inbal Valve Size		Minimum Flow Rate*						Maximum Normal Flow Rate** X00-R		Maximum Intermittent Flow Rate*** X00-R	
		500-R		600-R		700-R					
mm	inch	m³/h	gpm	m³/h	gpm	m³/h	gpm	m³/h	gpm	m³/h	gpm
40	1½	1	4.4	0.6	2.7	0.5	2.2	40	175	50	220
50	2	1	4.4	0.6	2.7	0.5	2.2	45	200	60	265
80	3	5	22	3	13	1.5	6.6	105	460	130	570
100	4	10	44	5	22	3	13	180	790	230	1010
150	6	25	110	15	66	10	44	400	1760	560	2460
200	8	40	175	20	88	15	66	700	3080	880	3870
250	10	50	220	-	-	20	88	1100	4840	1350	5940
300	12	80	350	-	-	25	110	1600	7040	1950	8580

* Minimum flow rates are averages which may vary ± 30% from tabulated values depending on system characteristics.

** Normal maximum flow rate based on pipe line velocity of 6 m/sec (20 ft/sec).

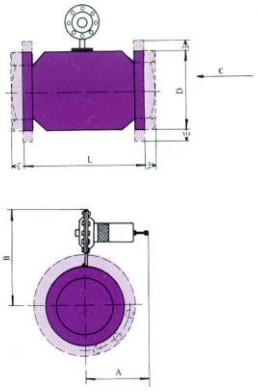
*** Maximum intermittent flow rate based on pipe line velocity of 8 m/sec (25 ft/sec).

In a wide range of flow rates service it is often essential to install a smaller Pressure Reducing **Inbal** Valve in a by-pass around the main Pressure Reducing **Inbal** Valve. The smaller by-passing reducing valve takes care of normal minimum service demands and allows main valve only to cut into service on maximum requirements.

Dimensions & Weights

	Valve model	VALVE SIZE 40	1½"	50	2"	80	3"	100	4"	150	6"	200	8"	250	10"	300	12"
L mm/inch	5-6-711-R	190	7 1/2	190	7 1/2	200	7 7/8										
	5-733-R					158	6 1/4	190	7 1/2	245	9 5/8	308	12 1/8	363	14 9/32	451	17 3/4
	5-6-799-R					155	6 1/8	187	7 3/8	235	9 1/4	302	11 7/8	350	13 3/4	445	17 1/2
D mm/inch	5-6-711-R	162	6 3/8	162	6 3/8	181	7 1/8										
	5-733-R*					200	7 7/8	220	8 11/16	285	11 1/4	340	13 3/8	405	15 15/16	460	18 1/8
	5-6-799-R					130	5 1/8	160	6 5/16	218	8 9/16	272	10 11/16	324	12 3/4	385	15 3/16
A mm/inch	5-6-711-R	190	7 1/2	190	7 1/2	190	7 1/2										
	5-733-R					190	7 1/2	190	7 1/2	190	7 1/2	270	10 5/8	270	10 5/8		
	5-6-799-R					190	7 1/2	190	7 1/2	190	7 1/2	270	10 5/8	270	10 5/8	270	10 5/8
B mm/inch	5-6-711-R	242	9 1/2	242	9 1/2	250	9 13/16										
	5-733-R					250	9 13/16	265	10 7/16	294	11 9/16	326	12 13/16	338	13 5/16	368	14 1/2
	5-6-799-R					250	9 13/16	265	10 7/16	294	11 9/16	326	12 13/16	338	13 5/16	368	14 1/2
Weight Kg/lb	711-R	11	24	12	26	13	29										
	733-R					15	33	19	42	37	82	57	126	90	198	106	234
	799-R					11	24	14	31	26	57	43	95	54	119	80	176
	599-R			7 1/2	17	9	20	11	24	21	46	34	75	47	104	60	132
	699-R					7	15	8 1/2	19	15	33	24	53				

* Comply with flange standard dimension. Figures demostrated comply with DIN PN16 standard. Figures are varied according to the flange standard diameter.



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Specifications:

Sizes:
40 thru 80 mm (1½"-3") screwed.
50 thru 300 mm (2"-12") flanged.
50 thru 300 mm. (2"-12") wafer
(2" — 500 series only)

End details:
Threading: B.S.P; N.P.T standards.
Flanged: ANSI B16.1 Class 125 and 250.
DIN PN 10, 16 & 25 (BS 4504).
BS 10 Table D & E.
JIS B 2212, 2213 & 2214.

Wafer:
Mounts between all standard flanges as listed above.

Pressure Ratings:
Grade A Sleeve:
21 Bar (300 psi) max (700 series).
16 Bar (235 psi) max (500, 600 series).
1.5 Bar (20 psi) min.
Grade F Sleeve: (500 & 600 series)
5 bar (75 psi) max.
0.8 bar (12 psi) min.

Temperature Range:
Water to +65°C (150°F).

Materials:

Inbal Valve:
Threaded ends: cast Iron ASTM A48-40B (DIN 1691 GG-25) Epoxy coated.
Flanges and Ribs: Cast Iron ASTM A48-40B (DIN 1691 GG-25) Epoxy coated.
Housing: Carbon Steel ASTM G 10200 (DIN C22) Epoxy coated.
Sealing disc: PP, PVC.
Sleeve: SMR 5; EDPM.
Control ports: Stainless Steel 303.
Self cleaning strainers and pressure ports: Brass ASTM B21 (DIN CUZN40).
Self cleaning screen: Stainless Steel 316.

Pilot Valve:
Body: Brass ASTM B21 (DIN CUZN 40)
Stem: Stainless Steel 303.
Chambers: Carbon Steel ASTM G 10200 (DIN C22) Epoxy coated.
Diaphragm: Neoprene, nylon fabric reinforced.
Seals: Buna N or Neoprene.
Bracket: Steel, Epoxy coated.

Optional Materials:

Inbal Valve:
Threaded ends: Cast Stainless Steel 303 or 316L.
Flanges and Ribs: Carbon Steel ASTM A-216 WCB (DIN GS-45), Epoxy coated;
Stainless Steel 303 or 316L;
Cast Bronze ASTM B62;
Cast Aluminium QQ-A-601 (A356-T6);
Al-Mg ASTM C 86300 (DIN 1725-2);
Bronze Aluminum ASTM B148 (CA 955);
Cast Iron Rubber lined.
Housing: Cast Iron ASTM A48-40B (DIN 1691 GG-25), Epoxy coated.
Cast aluminium QQ-A-601 (A356-T6);
Al-Mg ASTM C 86300 (DIN 1725-2);
Stainless steel 303 or 316.

Pilot valve:
Wetted parts: Stainless Steel 316L;
Al-Mg ASTM C 86300 (DIN 1725-2);
Bronze Aluminium ASTM B148 (CA 955).

Adjustment Ranges:
1 to 3.5 bar (15 to 50 psi)
3 to 8 bar (45 to 115 psi)
7 to 11 bar (100 to 160 psi)
9 to 16 bar (130 to 230 psi)
13 to 21 bar (190 to 300 psi)

Installation & Storage

- Always flush the pipelines to clean before installation of the Valve.
- Arrow on the valve housing must match the actual flow direction.
- Tighten bolts to the recommended torque values for the specific size and model of valve. Do not over torque.
- Tighten bolts alternately 180° apart.
- Exhaust tube must be free of any back pressure, provide an air gap between the exhaust tube and to drain facility.
- If the valve is for use in ambient or fluid temperatures below freezing, consult your nearest **Inbal** distributor. If shut down during cold weather, the valve control space and the control system must be drained.

When ordering please specify:

1) **Inbal** Control Valve Model No.
2) **Inbal** Valve Size.
3) Working Pressures (Inlet; Outlet; Adjustment range).
4) Flow rates (min; normal; max),
5) Fluid specifications.
6) Options desired.

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