



## PILOT OPERATED PRESSURE REDUCING VALVES

### SPECIFICATIONS

PILOT OPERATED - R TYPE PRESSURE REDUCING VALVES, RENEWABLE SEATS, FLANGED ENDS.

### CERTIFICATE

ITEM CAN BE SUPPLIED WITH DIRECTOR OF BOILER (PUNJAB) TEST CERTIFICATE IN FORM III-C AS PER INDIAN BOILER REGULATIONS.

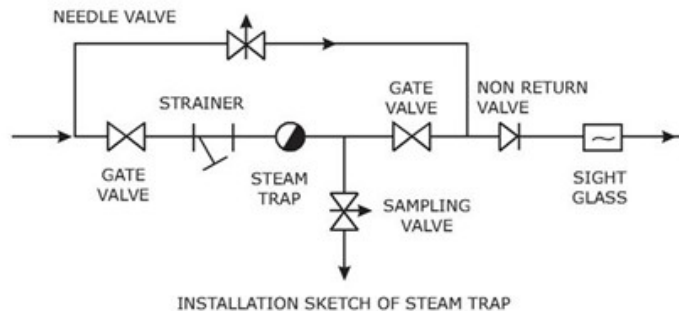


### WORKING :

"LEADER" Pilot-operated pressure reducing valves is of simple design incorporating unit pilot valve. The main valve is opened by high pressure acting on the large piston directly above it. The pilot valve, working in conjunction with the diaphragm, actuated by any unbalanced effect of the adjusting spring and low pressure beneath it, controls necessary pressure to the piston. Thus, the pilot valve extremely sensitive to the secondary pressure opens and closed the main valve in a proportionate degree to maintain the desired constant low pressure.

### INSTRUCTION FOR FIXING :

- The valves should be installed in horizontal pipe line.
- Stop valves, preferably, parallel slide type, should be installed both at inlet of the reducing valve.
- A strainer and steam trap must be installed on high pressure side just before the reducing valve.
- A safety valve able to discharge full capacity of the reducing valve and a pressure gauge should be installed on the low pressure side.
- Avoid subjecting the reducing valve to excessive strain due to expansion and contraction of the pipe line.
- Blow out all scale and jointing material from the pipeline before fixing the reducing valve.
- By-pass connection with a manual throttling valve must be installed.
- The inlet and outlet piping should be properly sized ; the outlet pipe is generally bigger than the inlet pipe, the reason being that steam at low pressure occupies more volume.
- The installation should be done as per sketch shown.



NOTE: The above data is subject to change without notice due to our continuing product improvement program.

(01)



**PILOT OPERATED PRESSURE REDUCING VALVES**

**STANDARD MATERIAL COMBINATION**

P.No.	QTY.	DESCRIPTION	CAST STEEL
1	1	Body	C.S. To ASTM A 216 Gr. WCB
2	1	Main Valve Guide	S.S to ASTM A 182 Gr. F6a
3	1	Main Valve	ASTM A 276 type 410 + HARD FACING
4	1	Body Seat Ring	ASTM A 276 type 410 + HARD FACING
5	1	Piston	Bronze to IBR Clause 282 (a) (iv)Gr.B
6	1	Cylinder Liner	ASTM A 276 type 410 + HARD FACING
7	1	Piston Ring	Mn. Bronze
8	1	Gasket	C.A.F to IS 2712 Gr. W/1
9	1	Plug	Bronze to IBR Clause 282 (a) (iv)Gr.B
10	1	Gasket	C.A.F. To IS 2712
11	1	Strainer	S.S Type 304
12	1	Realy valve Chamber	S.S to ASTM A 182 Gr. F6a (HB 250 Min)
13	1	Relay Valve	S.S to ASTM A 182 Gr. F6a (HB 300 Min)
14	1	Bonnet	Bronze to IBR Clause 282 (a) (iv)Gr.B
15	1	Diaphragm Cover	Bronze to IBR Clause 282 (a) (iv)Gr.B
16	1	Diaphragm top Ring	Bronze to IBR Clause 282 (a) (iv)Gr.B
17	1	Lower Spring Disc	Bronze to IBR Clause 282 (a) (iv)Gr.B
18	1	Spring	Carbon Steel to IBR Clause 307
19	1	Adjusting Screw	Bronze to IBR Clause 282 (a) (iv)Gr.B
20	1	Adjusting Cap	Aluminium
21	1	Diaphragm	S.S type 304
22	1	Pilot Valve Spring	S.S to BS 2056 EN 58A
23	1	Spring Holder	S.S to ASTM A 182 Gr. F6a
24	To suit	Studs & Nuts	Carbon Steel to BS 916
25	1	Port Nipple	S.S. To ASTM A 182 Gr. F6a
26	1	Main Valve Spring	S.S to BS 2056-53 en 58
27	1	Gasket	C.A.F to IS 2712
28	1	Bottom Cover	Bronze to IBR Clause 282 (a) (iv)Gr.B
29	1	Gasket	C.A.F to IS 2712 Gr. W/1
30	1	Drain Plug	Bronze to IBR Clause 282 (a) (iv)Gr.B
31	1	Tommy Bar	Carbon Steel (chrome Plated)
32	1	Pipe	Copper

**TEST PRESSURE**

PRODUCT	PRODUCT CODE NO	SHELL TEST (HYDORSTATIC)	MAX.INLET PRESSURE	REDUCED/OUTLET PRESSURE RANGE	CODE
Cast Steel Pressure Reducing Valve	BM030	500 psig (34.5 bar)	250 psig (17.24 bar)	As per Spring Range	INDIAN BOILER REGULATIONS
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(02)



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**PILOT OPERATED PRESSURE REDUCING VALVES**

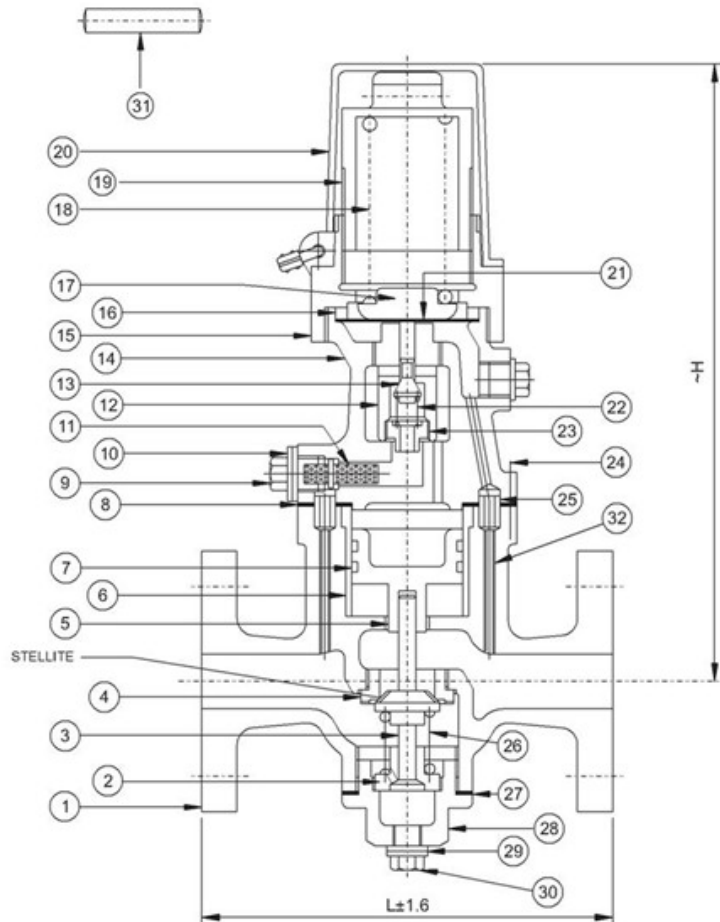


FIG NO. BM030

PRODUCT CODE NO.												
ITEM	CODE NO.							END DETAILS				
<b>Cast Steel Pressure Reducing Valve</b>	BM030							Flanged ends as per BS 10 table-J				
a) Outlet Pressure Range 5/60 psig (STEAM)												
b) Outlet Pressure Range 20/80 psig (STEAM)												
c) Outlet Pressure Range 40/125 psig (STEAM)												
DIMENSIONAL DATA												
NPS	15	20	25	32	40	50	65	80	100	125	150	200
L2	-	-	197	-	229	254	254	330	338	-	445	575
H2	-	-	285	-	312	340	423	486	510	-	965	965
Aprox. Wt. <sup>a</sup>	--	18.335	--	31.06	44.145	67.13	120.9	161.88	222.5	240.5	519.7	--
Product Code No	BM030 D	BM030 F	BM030 G	BM030 H	BM030 I	BM030 J	BM030 K	BM030 L	BM030 N	BM030 O	BM030 P	BM030 R

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(03)



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**PILOT OPERATED PRESSURE REDUCING VALVES**

SATURATED STEAM CAPACITIES OF PRESSURE REDUCING VALVES - POUND PER HOUR												
Inlet Pressure Psig	Outlet Pressure Psig	VALVE SIZE										
		1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
30	2-10	130	232	432	596	1160	2030	3000	4400	7700	17600	3400
50	5-20	184	344	616	872	1600	2900	4200	6200	10810	26200	48000
	30	178	320	568	768	1500	2600	4000	5700	10000	38500	44000
60	5-25	215	392	704	960	1850	3300	4800	7000	12000	29000	60000
	40	195	352	624	880	1650	2900	4400	6300	11000	24000	52000
75	5-30	260	480	840	1160	2200	4000	5900	8500	15000	33600	70000
	50	236	424	760	1040	2000	3600	5300	7700	13000	24000	63000
100	5-50	330	600	1080	1440	2800	5000	7400	11000	18500	42000	87000
	60	320	576	1040	1400	2700	4800	7200	10500	18000	40000	85000
	80	260	624	840	1120	2000	3900	5700	8300	14000	31000	67000
125	5-60	400	736	1320	1800	3500	6200	9100	13500	23000	49400	99000
	80	380	688	1240	1680	3300	5800	8500	12500	21500	48000	97000
	100	310	560	1024	1360	2700	4800	7000	10500	17500	39700	80000
150	5-70	486	880	1584	2080	4000	7200	11000	15500	27000	60000	122000
	100	450	800	1440	1690	3800	6700	10000	14500	25000	52000	115000
	125	350	608	1120	1520	2900	5200	7700	11000	19000	43000	91000
175	5-90	560	1000	1840	2480	4800	8500	12500	18000	31000	65000	140000
	100	540	984	1760	2400	4700	8200	12500	17500	30000	64000	135000
	125	480	880	1560	2080	4200	7400	11000	15800	27000	58000	123000
	150	370	680	1200	1680	3200	5700	8400	12000	21000	44000	95000
200	100	600	1120	2000	2800	5200	9500	14000	21000	35000	75500	162000
	125	590	1080	1920	2640	5000	9000	13000	19000	33000	75000	150000
	150	540	984	1760	2400	4700	8200	12000	17500	30000	64000	135000
	175	410	720	1280	1760	3400	6000	9000	13000	23000	49100	110000
225	5-120	680	1200	2200	3040	5800	10500	15000	22000	38000	82000	170000
	150	660	1160	2080	2880	5500	9800	14500	21000	37000	76000	160000
	175	570	1040	1840	2480	4800	8600	13000	18500	32000	66000	140000
	200	430	760	1360	1880	3600	6400	9500	14000	24000	52000	112000
250	5-130	770	1440	2480	3360	6700	11800	17000	25000	43000	92000	200000
	150	764	1360	2400	3280	6400	11500	16500	24000	42000	90000	190000
	175	410	1280	2240	3040	6000	10500	15700	23000	39000	83000	180000
	200	610	1100	1960	2720	5100	9200	13500	20000	34000	77800	160000
	225	450	800	1440	1960	3800	6700	10000	14500	25000	59800	110000

For Superheated steam correct figures in tables as follows :

With 500°F superheated multiply by 0.92

100°F	"	"	0.85
150°F	"	"	0.80
200°F	"	"	0.75
300°F	"	"	0.65

Capacities for pressure regulators at pressure higher than 250 psig available on request.

**INFORMATION REQUIRED WHILE ENQUIRING/ORDERING**

- fluid to be handled.
- Inlet pressure and temperature. Give variations (if any).
- Reduced pressure required-range (if any)
- Quantity of fluid to pass; maximum, normal and minimum.
- Whether demand constant or variable.
- Size of pipes installed or proposed to be installed at inlet and outlet.

DRY SATURATED STEAM CAPACITIES OF PIPES - POUNDS PER HOUR																				
Bore Of pipe	Area Sq. In.	Pressure in Pounds per square inch Gauge																		
		5	10	15	20	30	40	50	60	70	80	90	100	120	140	160	180	200	255	250
3/8"	0.11	13	17	20	23	30	35	42	47	54	60	65	71	83	95	105	117	129	143	157
1/2"	0.20	24	31	36	42	54	60	75	86	97	108	118	129	150	171	192	212	234	259	285
3/4"	0.44	53	68	80	93	118	141	166	189	214	238	266	294	330	376	423	468	515	582	627
1"	0.78	94	121	143	165	210	250	293	336	378	420	462	505	585	666	750	830	915	1014	1113
1 1/4"	1.23	148	190	224	260	328	394	463	550	600	665	730	795	925	1050	1180	1300	1440	1588	1736
1"	1.77	212	273	322	375	473	568	665	760	860	955	1047	1140	1330	1510	1700	1880	2070	2297	2525
2"	3.14	378	485	570	665	840	1000	1180	1350	1525	1700	1890	2080	2360	2680	3000	3220	3680	4078	4477
2 1/2"	5.00	600	770	910	1060	1335	1600	1880	2150	2420	2700	2960	3220	3750	4300	4800	5300	5850	6487	7125
3"	7.00	840	1008	1274	1480	1870	2240	2640	3000	3400	3780	4140	4500	5250	6000	6700	7425	8200	9087	9975
4"	12.50	1500	1925	2280	2650	3340	4000	4700	5375	6050	6750	7425	8100	9400	10700	12000	13250	14650	16237	17825
5"	19.60	2350	3018	3560	4150	5230	6275	7380	8430	9500	10600	11675	12750	14700	16750	18800	20400	23000	25500	28000
6"	28.00	3360	4300	5100	5950	7500	9000	10500	12000	13600	15100	16550	18000	21000	24000	26800	29750	32800	36350	39000
7"	38.00	4560	5850	6900	8060	10100	12200	14300	16400	18500	20300	22400	24500	28500	32500	36500	40500	44500	49375	54250
8"	50.00	6000	7700	9100	10600	13350	16000	18800	21500	24200	27000	29600	32200	37500	42800	48000	53000	58500	64875	71250
9"	63.00	7560	9700	11500	13400	16800	20100	23700	27000	30600	34000	37250	40500	47250	54000	60500	67000	74000	82000	90000
10"	78.00	9400	12100	14300	16600	20800	25000	29300	33600	37800	42000	46000	50000	58500	66600	75000	82750	91500	101375	111250
12"	113.00	13550	17400	20600	24000	30000	36200	42500	48500	55000	61000	67000	73000	85000	97000	108500	120000	132500	146875	161250
14"	153.00	18360	23600	27800	33600	41000	49000	57500	66000	74250	83000	91500	100000	115000	-	-	-	-	-	-
16"	201.00	24120	31000	36500	44500	53570	65000	75500	86500	97500	10900	119500	130000	153000	-	-	-	-	-	-

The table gives us a guide quantity of dry saturated steam in lb.p.r hour that the pipe will pass at different pressure (guage) based on a steam speed of 100 feet per second.

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