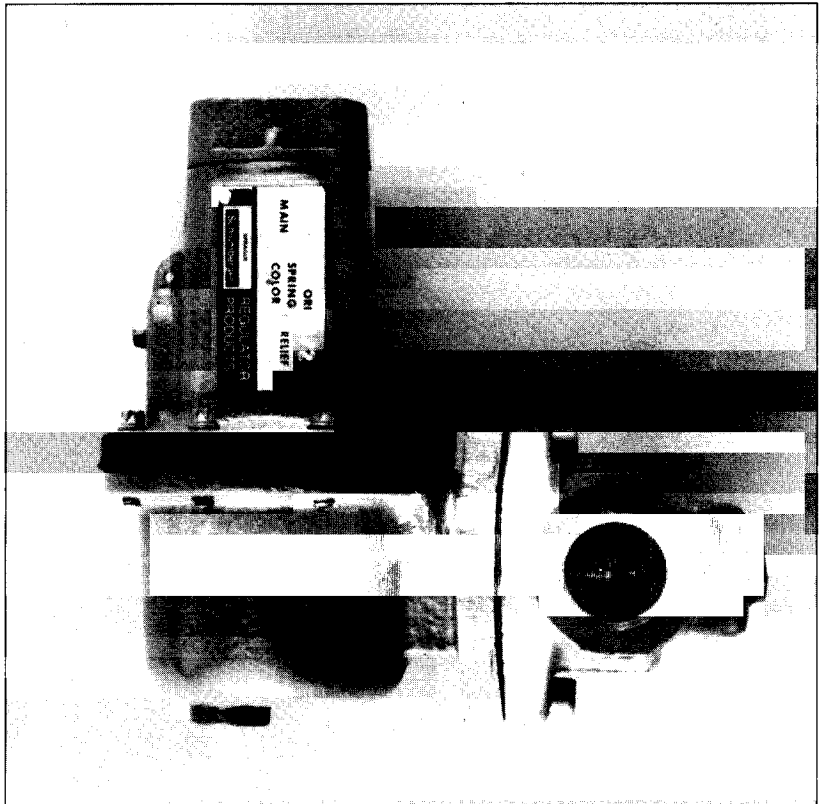


B-35

FIELD SERVICE REGULATORS



GENERAL DESCRIPTION

The Schlumberger B-35 is specially designed for safe accurate first stage reduction on high pressure gas systems. It is a versatile pounds-to-pounds unit which is ideal for industrial applications, farm and suburban taps.

With a malleable iron body, the B-35 will handle inlet pressures up to 1000 PSIG. Outlet pressures range from 10 to 150 PSIG. Seven different orifices are available from 1/16" through 1/2" in either brass or stainless steel. They are interchangeable in all valve body sizes.

FEATURES

An exclusive feature is the *internal relief valve* which is *built into the diaphragm plate*. This unique design provides an extra safety factor previously not available in regulators of this type and *it does not add to the overall size of the regulator*. The malleable iron retainer plate and "O" ring gasket permits the valve body and diaphragm case to be installed in any 360° position. Fast field disassembly for inspection or maintenance is easily accomplished without disconnecting piping.

CONSTRUCTION

Valve body is high tensile strength malleable iron. The upper and lower diaphragm cases are high grade gray iron tested to withstand several times maximum recommended operating pressures. "O" ring gaskets are used throughout and assure a tight gas and water seal.

Corrosion resistant. Internal parts and external nuts, bolts and screws are plated.

The Urethane Valve Seat is resistant to abrasion and cold-flowing. It is installed over the valve guide to assure proper alignment with the orifice. The plated, square valve guide assures proper guide with a minimum of friction and dirt accumulation. The seat is held in a positive position without the need for pins, set screws or clips. Being one piece eliminates the possibility of the valve seat becoming disengaged due to higher pressure, high volume flow or improper assembly. The valve orifice and seat disc can be installed or replaced in the field without removing the valve body from the line and without special tools.

RELIEF VALVE CHARACTERISTICS

Integral internal relief is an exclusive feature in this type of regulator. The lever assembly is cadmium plated steel with built in safety stops for proper operation of the relief valve in event of mechanical failure of other parts.

The relief valve is separated from the diaphragm clamping and maintains a guided, position alignment with the "O" ring seat. Combines large throat opening, relief valve and vent area which provides quick passage of gas to relief area and large relief flow.

MODEL DESCRIPTION

B-35R — When properly sized, the B-35R can be used for multi-regulator cuts with complete safety on installa-

tions up to 1000 PSIG inlet with reductions up to 150 PSIG and ultimately to 7" W.C. outlet* without an external relief valve and will conform to the ANSI B-31.8 code.

B-35N — Standard field service regulator. Used primarily where internal relief is not required. Has Breather Vent in upper diaphragm case — 1/4" N.P.T. with stainless steel screen and complete water drain position

B-35M — Special B-35 unit with sealed throat and downstream control tap. Used in series monitoring installations as an operating safety device that assumes control over the operating regulator when a failure is sensed by the downstream control line.

* Combined with Schlumberger B-31R Service Type Regulator.

CAPACITY TABLE B-35*

Inlet Pressure PSIG.	Outlet Pressure PSIG.	Capacity: SCFH, 0.6 Sp. Gr. Gas. 14.7 PSIA — 60°F 1" Valve Body — 20% Max. Offset PSIG.						
		Orifice Size — Inches						
		1/16" x 3/32"	3/32"	1/8"	3/16"	1/4"	3/8"	1/2"
15	10	95	190	330	780	1350	3500	3400
20	10	140	270	470	1100	1900	3400	4800
	15	105	210	360	850	1450	2700	3700
30	11 or Less	200	390	670	1550	2700	4900	6900
	15	185	360	630	1450	2500	4600	6600
	20	165	320	550	1300	2200	4100	5700
50	22 or Less	285	565	970	2300	3900	7000	10,000
	25	275	550	930	2220	3700	6900	9700
	40	205	410	700	1650	2800	5100	7100
75	37 or Less	395	780	1300	3100	5300	9800	14,000
	50	360	710	1200	2800	4800	9000	12,500
	60	295	580	1000	2300	4000	7600	10,200
100	50 or Less	500	1000	1700	4000	6900	12,700	17,800
	60	485	950	1600	3800	6500	12,000	17,000
	75	420	820	1400	3300	5700	10,500	14,500
150	68 or Less	730	1400	2400	5800	10,000	18,300	25,000
	75	700	1400	2400	5700	9800	18,000	24,500
	100	670	1300	2200	5300	9100	20,000	23,000
200	90 or Less	950	1850	3200	7500	13,000	23,000	33,000
	100	900	1800	3100	7400	12,000	22,000	32,000
	150	800	1550	2700	6400	11,000	20,000	28,000
300	140 or Less	1350	2700	4700	11,200	19,000	35,000	
	150	1300	2600	4600	11,000	18,500	34,000	
400	150 or Less	1800	3600	6200	14,500	25,000		
500	150 or Less	2250	4300	7700	18,200	31,000		
600	150 or Less	2700	5300	9200	21,800	37,000		
700	150 or Less	3150	6200	10,500	25,000			
800	150 or Less	3600	7200	12,000	28,600			
1000	150 or Less	4500	8800	15,000	36,000			

* Regulator set at indicated inlet and outlet pressure when flowing 100 SCFH of 0.6 Sp.Gr. Gas

SPRING RANGES*

Use spring data table to obtain actual spring ranges for inlet pressures not listed.

Adjusted Outlet Pressure Range Spring Adjustment Ferrule at Minimum and Maximum Depths				
Spring Color	Orifice Size	Inlet Pressure	Outlet Pressure	
			Minimum	Maximum
Green	$\frac{3}{32}$	200 PSI	1	6
	$\frac{1}{8}$	200 PSI	1	7
	$\frac{3}{16}$	200 PSI	2	8
	$\frac{1}{4}$	200 PSI	3	9
	$\frac{5}{8}$	200 PSI	5	11
Orange	$\frac{7}{8}$	200 PSI	10	17
	$\frac{3}{32}$	200 PSI	7	14
	$\frac{1}{8}$	200 PSI	7	14
	$\frac{3}{16}$	200 PSI	8	16
	$\frac{1}{4}$	200 PSI	9	16
Green and White	$\frac{3}{8}$	200 PSI	12	20
	$\frac{1}{2}$	200 PSI	18	24
	$\frac{3}{32}$	200 PSI	12	23
	$\frac{1}{8}$	200 PSI	12	23
	$\frac{3}{16}$	200 PSI	13	24
Blue and White	$\frac{1}{4}$	200 PSI	14	24
	$\frac{3}{8}$	200 PSI	16	27
	$\frac{1}{2}$	200 PSI	22	31
	$\frac{3}{32}$	500 PSI	22	42
	$\frac{1}{8}$	500 PSI	23	44
Silver	$\frac{3}{16}$	500 PSI	25	46
	$\frac{1}{4}$	500 PSI	28	48
	$\frac{3}{8}$	300 PSI	28	48
	$\frac{1}{2}$	200 PSI	29	49
	$\frac{3}{32}$	500 PSI	15	74
Yellow	$\frac{1}{8}$	500 PSI	16	76
	$\frac{3}{16}$	500 PSI	18	78
	$\frac{1}{4}$	500 PSI	20	80
	$\frac{3}{8}$	300 PSI	21	79
	$\frac{1}{2}$	200 PSI	23	79
Red	$\frac{3}{32}$	500 PSI	13	99
	$\frac{1}{8}$	500 PSI	14	100
	$\frac{3}{16}$	500 PSI	17	103
	$\frac{1}{4}$	500 PSI	19	104
	$\frac{3}{8}$	300 PSI	19	102
Red	$\frac{1}{2}$	200 PSI	20	102
	$\frac{3}{32}$	500 PSI	5	153
	$\frac{1}{8}$	500 PSI	7	155
	$\frac{3}{16}$	500 PSI	9	158
	$\frac{1}{4}$	500 PSI	12	158
Red	$\frac{3}{8}$	300 PSI	12	154
	$\frac{1}{2}$	200 PSI	13	152

* Minimum ferrule depth = 0.350
Maximum ferrule depth = 1.065

RELIEF PRESSURE DATA

Spring Color	Outlet Pres. Set Point	Max. Outlet Pres.	Maximum Inlet Pressure					
			Orifice Size — Inches					
			$\frac{1}{16} \times \frac{3}{32}$	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$
Green	5-10	60	1000	770	435	190	100	63
	5-10	125	1000	1000	1000	490	285	175
Orange	15	60	1000	690	400	180	100	63
	15	125	1000	1000	1000	490	280	175
Green & White	20	60	1000	590	345	150	95	62
	20	125	1000	1000	1000	490	280	175
Blue & White	30	60	1000	570	310	130	90	62
	40	75	1000	610	360	160	110	90
	40	125	1000	1000	890	420	270	160
Silver	30	60	1000	550	300	120	75	62
	40	60	770	385	215	90	70	62
	40	75	1000	610	360	140	95	80
	50	90	1000	800	460	195	115	105
	60	100	1000	840	485	200	120	110
	75	125	1000	1000	580	225	145	132
	30-60	125	1000	1000	820	340	180	133
	Yellow	50	100	1000	840	485	197	115
50		150	1000	1000	970	400	231	166
60		100	1000	830	475	193	115	110
60		150	1000	1000	920	380	220	160
75		125	1000	1000	580	225	145	132
75		185	1000	1000	1000	490	285	200
100		150	1000	1000	650	270	185	157
100		225	1000	1000	1000	500	320	240
Red	75	175	1000	1000	800	300	220	184
	100	200	1000	1000	900	350	250	210
	125	250	1000	1000	1000	480	315	263
	150	285	1000	1000	1000	500	350	300

SPRING DATA

Main Spring Color	Change in Inlet Pressure to Change Outlet Pressure 1 PSIG					
	Orifice Size					
	$\frac{3}{32}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Green	400	220	140	70	50	20
Orange	380	220	130	70	40	20
Green & White	380	220	130	70	40	20
Blue & White	340	170	100	60	30	20
Silver	250	160	100	60	30	20
Yellow	220	140	90	60	30	20
Red	140	100	70	40	30	20

SEAL CAPS — 3 TYPES

1. Cast Iron — Internal Relief Valve Type (used on B-35R) — No vent pipe attachment. Contains stainless steel spiral vent screen, plated steel guide — vent down for complete water drain. In this model, a red indicator ball stays out after Relief Valve has functioned. Indicator ball is reset manually.
2. Cast Iron — Internal Relief Valve Type (used on B-35R) — For $\frac{3}{4}$ " vent pipe attachment. Similar to Cap 1, above, with $\frac{3}{4}$ " N.P.T. vent tap and without spiral vent or indicator ball.
3. No Relief Type (For B-35N) — Solid cap.

POINT OF RELIEF DIFFERENTIAL PRESSURE DATA

Orifice Diff. Press. PSIG	Outlet Pressure PSIG. — w/o Spring					
	Orifice Size — Inches					
	3/32 ⁽¹⁾	1/8	3/16	1/4	3/8	1/2
50	.5	1.0	1.5	1.5	2.0	4.0
100	.5	1.0	1.5	2.0	2.5	7.5
200	1.0	1.5	2.5	3.5	5.0	12.5
300	2.0	2.5	4.0	5.5	8.0	20.0
400	3.0	3.5	5.5	7.5	11.5	
500	3.5	4.5	7.5	9.5	15.0	
600	4.0	5.5	9.5	12.0	19.0	
700	4.5	6.5	11.5	14.5		
800	5.0	7.5	14.0	17.0		
900	5.5	8.0	16.0	19.5		
1000	6.0	9.0	18.0			

POINT OF RELIEF — B-35R

Relief Valve Spring = 14 PSIG less outlet pressure without adjusting spring. Add the remaining relief valve spring power to the adjusted outlet pressure. (Example: 400 PSI Inlet to 100 PSI Outlet, 1/4" orifice. 400-100 = 300 PSI differential pressure from above chart— 300 PSI 1/4" orifice gives 5.5 PSI Outlet. 14 — 5.5 = 8.5 PSI when added to 100 PSI Outlet Pressure, point of relief is 108.5 PSIG.)

(1) Use the 3/32" orifice data for the 1/16 x 3/32" orifice and 3/32" orifice.

B-35R Recommended maximum differential pressure above heavy line.

B-35N Recommended maximum differential pressure, as listed.

Malleable Iron Valve Body — ASTM A197 — 1000 PSI.

TYPICAL PROBLEM #1

Operating Requirements:

Inlet Pressure: Design, 1000 PSIG, Actual, 300 to 600 PSIG

Outlet Pressure: Actual, 75 PSIG

For safety, 125 PSIG max. under failed conditions with 1000 PSIG inlet pressure.

Maximum flow rate: 1500 SCFH

Regulator Sizing:

Model: B-35R

Body Size: 3/4" or 1"

Orifice: 3/32" for 300 PSIG inlet, 75 PSIG outlet and 1500 SCFH.

Spring Color: Yellow (50-100 PSIG range)

Relief and Safety Data: 3/32" orifice-regulator failed wide open — maximum outlet pressure 125 PSIG* with 1000 PSIG inlet pressure.

* B-31R PSIG to Inches W.C. with 1/8" orifice failed wide open with 125 PSIG inlet, maximum pressure build up 0.8 PSI.

TYPICAL PROBLEM #2

Operating requirements:

Inlet Pressure: Actual range, 100 to 300 PSIG

Outlet Pressure: Actual, 30 PSIG

For Safety, 60 PSIG max. under failed conditions with 300 PSIG inlet pressure.

Maximum flow rate: 1700 SCFH

Regulator Sizing:

Model: B-35R

Body Size: 3/4" or 1"

Orifice: 1/8" for 100 PSIG inlet, 30 PSIG outlet and 1700 SCFH.

Spring Color: Blue/White (25-45 PSIG range)

Relief and Safety Data: 1/8" orifice regulator failed wide open — maximum outlet pressure 60 PSIG* with 300 PSIG inlet pressure.

* B-31R PSIG to Inches W.C. with 1/8" orifice failed wide open with 125 PSIG inlet, maximum pressure build up 0.8 PSI.

TYPICAL PROBLEMS #3

Operating Requirements:

Inlet Pressure: 600 to 800 PSIG

1st Stage Outlet Pressure: 150 PSIG

2nd Stage Outlet Pressure: 50 PSIG

3rd Stage Outlet Pressure: 7" W.C.

Flow: 5000 SCFH

Size three stage regulation with 7" W.C.

final outlet pressure and with all three regulators failed, the final outlet pressure will build to 2 PSIG maximum.

Regulator Sizing:

First Stage

Model: B-35R

Body Size: 3/4" or 1"

Orifice: 3/32" for 600 PSIG in, 150 PSIG out, 5000 SCFH.

Spring Color: Red

Relief & Safety Data: If regulator fails, outlet pressure will build to 285 PSIG with 1000 PSIG inlet. With only 800 PSIG maximum inlet available, the outlet will never reach 285 PSIG and is safe for the 2nd stage.

Second Stage

Model: B-35R

Body Size: 3/4" or 1"

Orifice: 3/16" for 150 PSIG in, 50 PSIG out, 5000 SCFH

Spring Color: Silver

Relief & Safety Data: If 1st and 2nd stage regulators fail, the outlet pressure will build to 125 PSI with 340 PSIG inlet. With

less than 285 PSIG inlet pressure available, the outlet will never reach 125 PSIG and is safe for the 3rd stage.

Third stage

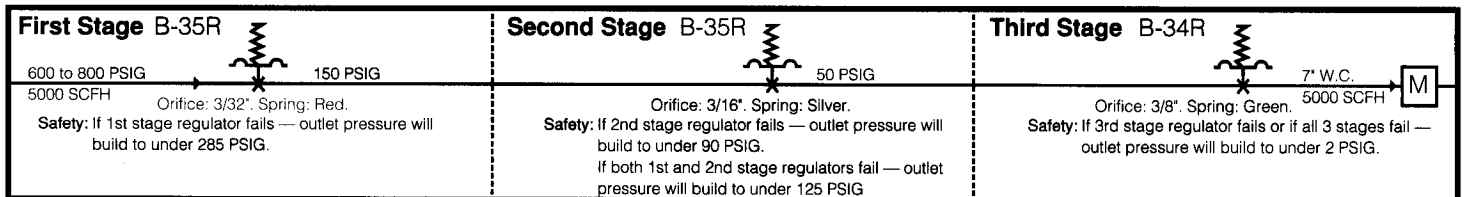
Model: B-34R

Body Size: 1 1/2" x 1 1/2"

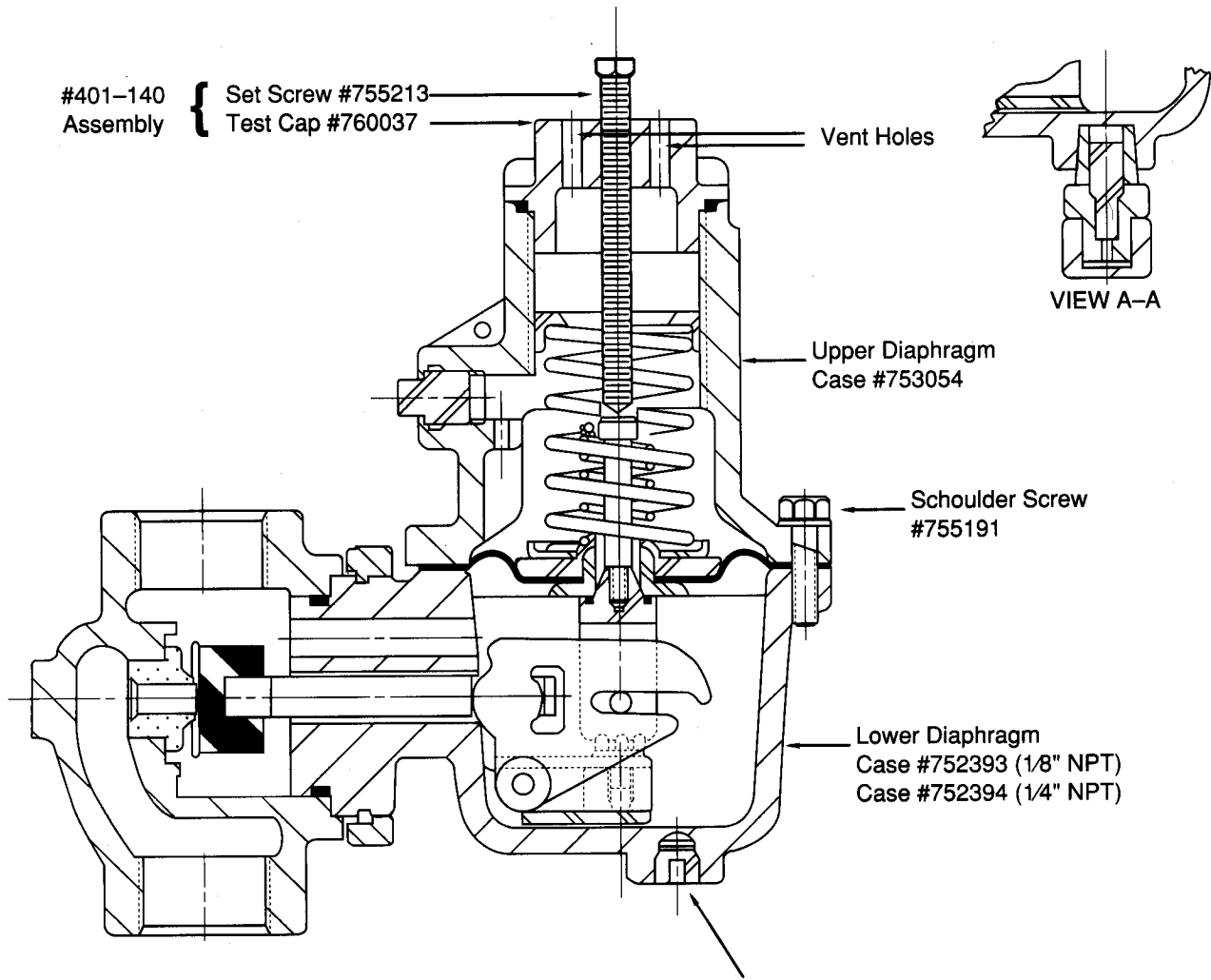
Orifice: 3/8" for 50 PSIG in 7" W.C. out, 5000 SCFH

Spring Color: Green

Relief and Safety Data: If all 3 stages fail, the outlet pressure will build to approximately 1.96 PSIG (by interpolation of the B-34R relief capacity data.)



B-35R REGULATOR FIELD RELIEF VALVE TEST—CAP ASSEMBLY

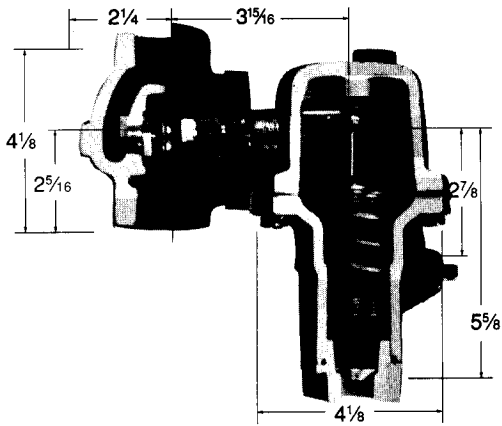


Optional
 1/8" NPT and a No. 60 (.040) dia. limit hole thru with Pipe Plug #768433 (as shown)
 1/4" NPT and a 7/16" dia. hole thru with Test Plug (Schlumberger #768411) See View A-A

INSTRUCTIONS

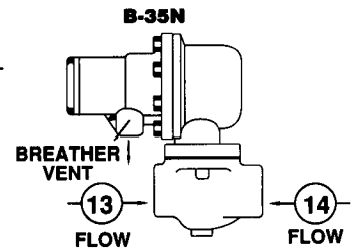
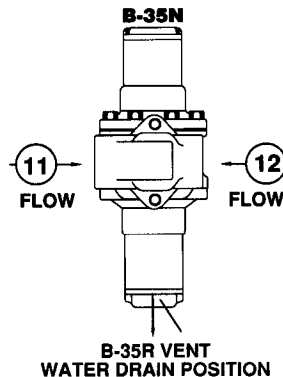
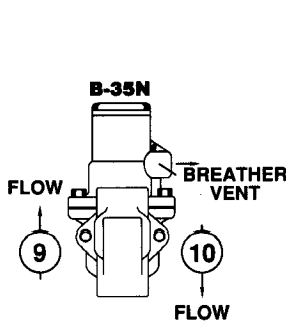
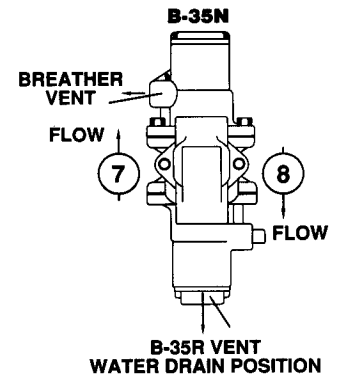
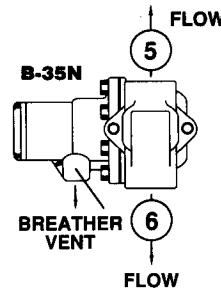
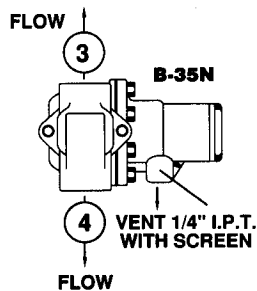
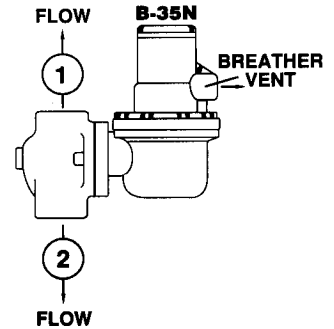
1. Lower Diaphragm Case
 - a) Supplied with a 1/8" Pipe Plug — Remove Pipe Plug, fasten Pressure Gauge to Boss.
 - b) Supplied with a 1/4" Universal Seal Test Plug — Remove Closing Cap on Plug, insert Gauge with Needle exposed, fasten Pressure Gauge to Plug.
2. Remove Vent cap from Upper Diaphragm Case and insert Special Test Cap. (Assembly #799073)
3. Screw Adjustment Set Screw clockwise until contact is made with Relief Valve Shoulder Screw.
4. Turn clockwise until small volume of gas relieves from vent holes.
5. Read Pressure Gauge for point of relief.
6. Turn Screw counter-clockwise until re-sealed.
7. Check vent holes with soap water.

DIMENSIONS



ASSEMBLY POSITIONS

Shown are 14 basic positions for assembling models of the B-35 series regulators. Please indicate the assembly position by number when ordering.



B-35 SPECIFICATIONS

Maximum inlet pressure per orifice size:

1000 PSIG $1/16$ "- $3/16$ "; 600 PSIG $1/4$ "; 300 PSIG $3/8$ "; 200 PSIG $1/2$ "

Outlet pressure range: 10 to 150 PSIG

Connection Sizes: Malleable iron straight valve body, $3/4$ " and 1".

Vent sizes: **B-35R** — $3/4$ " screened with ball indicator and $3/4$ " N.P.T. for vent pipe.

B-35N — $1/4$ " with stainless steel screen.

Standard Packing: 6/Box Wt. 80 lbs./Box.

ORDERING INFORMATION

- Inlet and outlet connection size.
- Model number.
- Outlet pressure desired.
- Inlet pressure range
- Type of gas to be controlled, specific gravity and temperature.
- Maximum capacity required in SCFH.
- Assembly position number.
- All special items such as tagging, sealing wire, etc.
- Type of Vent Cap for R Models.

WARRANTY

Schlumberger Industries, Highway 127 North, Owenton, Kentucky 40359, warrants this gas product against defects in materials and workmanship for a period of one year from the date that the product was shipped by Schlumberger to the original purchaser. During such one-year period, provided that the original purchaser continues to own the product, Schlumberger will, at its sole option, repair any defects, replace the product or repay the purchase price.

This warranty will be void if the purchaser fails to observe the procedures for installation, operation or service of the product as set forth in the Operating Manual and Specifications for the product or if the defect is caused by tampering, physical abuse or misuse of the product.

SCHLUMBERGER SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES WILL SCHLUMBERGER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER.

In the event of a malfunction of the product, consult your Schlumberger Service Representative or Schlumberger Industries, Highway 127 North, Owenton, Kentucky 40359.

Gas Division
Highway 127 North
Owenton, Kentucky 40359-9805
Phone: (502) 484-5747
FAX: (502) 484-5840
Customer Service: (502) 484-5741.

Measurement Division
7275 West Credit Avenue
Mississauga, Ontario L5N 5M9
Phone (416) 858-4211
FAX: (416) 858-0428.

© Copyright 1991 Schlumberger Industries, Inc.