

B-838 IM Twin Parallel Flow Internal Monitor Service Regulators

- One Valve Body
- Twin Parallel orifice flow — dual regulation
- Internal dual monitor — dual monitor of main seat failure; single monitor of mechanical failure due to outside forces
- Dual Internal Relief — back-up safety of monitor seat failure (IMR & IMRV)
- Signal relief gas (IMRV model only)

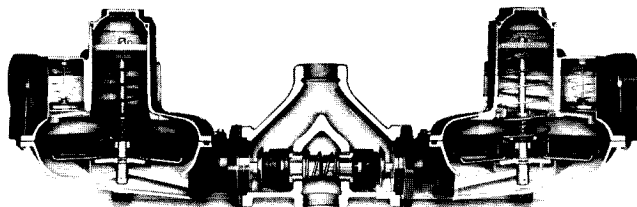
The "IM" Internal Monitor is a newly designed, single valve body regulator with built-in monitor capability. It provides for complete monitor operation, including lock-up and control of overpressure under many types of failure, internal or external. Parallel orifice with single valve body increases the safety of dual regulation.

The single valve body design with inverted "Y" header gives improved capacity and performance over welded or piped header.

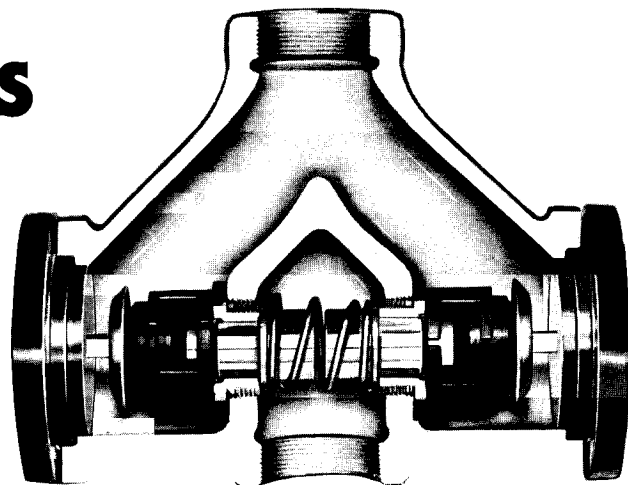
Internal monitor regulators offer the added safety advantage of a second gas tight lockup seat if the normal orifice face and valve seat fail to produce the adjusted outlet pressure. The monitor also controls gas flow between the failed open flow and no flow, thereby providing complete secondary regulation and monitor regulation function without relieving gas to the atmosphere or shutting off the gas flow to the customer.

The B-838-IM performs four functions:

1. Normal, dual regulation through primary orifices.
2. Dual monitor diaphragm take-over if one or both valves fail to control the normal outlet pressure.
3. Single monitor diaphragm take-over if one diaphragm assembly or lever fails.
4. Single monitor diaphragm take-over if valve seat of one regulator fails and the diaphragm or lever fails on the other.



B-838 IM cut-away illustration.



B-838 IM Single Valve body with dual internal monitor orifices.

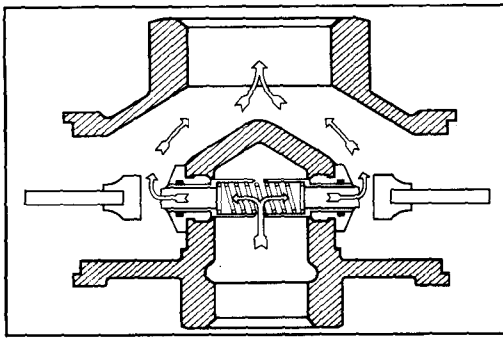
In addition to these operations, the B-838-IMR adds full dual relief back-up if the monitor seat fails at the same time as any other failures occur — singly or together. It assures dual safety, single safety and full back-up safety on a single valve body, *all internally controlled*.

IM regulators are designed specifically to comply with a DOT OPS 192.197 Paragraph B which states, "or if the gas contain materials that seriously interfere with the operation of a service regulator, there must be suitable protective devices to prevent unsafe overpressuring of the customer's appliance if the service regulator fails." The code lists the devices, one of which is regulator and monitor. The code further states these devices may be installed as an internal part of the service regulator or as a separate unit.

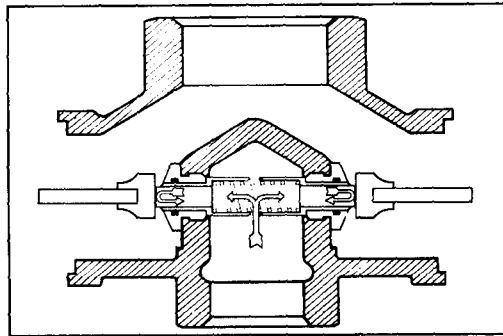
IM regulators are equipped with an orifice assembly consisting of a two piece sliding brass orifice, a monitor spring, "O" ring static seals, and a Buna N vulcanized rubber monitor valve seat. All orifices are replaceable in the field by removing the diaphragm case assembly (2 valve body screws) and the orifice cartridge (2 1/4" socket wrench). The inner orifice size can be changed or the damaged orifice replaced (consult parts list).

The IMRV models are the same as the IMR except that at no flow position of the monitor orifice a small volume of gas is vented through the relief valve to serve as a signal that the regulator is on monitor operation and the primary seat has failed. No gas is vented until the gas load is less than the volume going through the orifice vent hole and the regulator is on monitor operation.

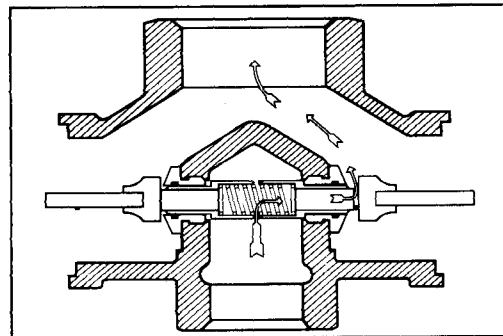
B-838 IM SCHEMATIC SEQUENCE OF INTERNAL MONITOR OPERATION



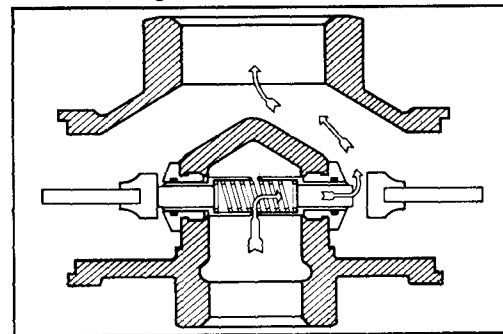
(A) Normal Regulation



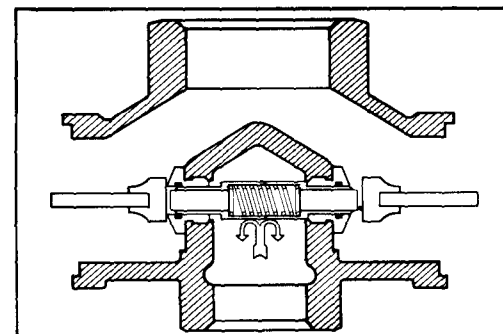
(B) Normal Lock-Up



(C₁) Dual Monitor Operation — Internal Foreign Material Failure



(C₂) Single Monitor Operation — One full internal diaphragm case failure



(D) Total Lock-Up

Principle of Operation:

A. The Internal Monitor Orifice operates like a standard one-piece orifice, performing normal regulation.

B. Regulator is free to lock up in the usual manner. O-ring seal prevents gas from leaking past outer part of orifice into downstream or low pressure side of valve body.

C. If regulator fails to lock up for any reason, the internal monitor orifice automatically goes into operation. Outlet pressure increases slightly, causing valve seat to push against the inner or sliding part of the orifice, gradually compressing the monitor spring and closing the secondary or monitor orifice on the inlet side of the sliding orifices. At this point the B-838-IM functions as a monitor regulator.

EXAMPLE (C¹) — Assume a weld bead is caught between the orifice and the valve seat while in high flow operation. If the flow is reduced, the valve tries to close, but cannot because of the foreign matter. The outlet pressure increases approximately 2" WC above original set point which starts to close the secondary monitor orifice. If the gas demand is decreased, the monitor orifice will be partially closed and becomes the new operating orifice.

It will function as a monitor regulator keeping the outlet pressure approximately 3" above the set pressure on inches water column, or .8 PSIG when set for PSIG outlet. If the flow is further reduced to no-flow, then the sliding orifice orifices close against the secondary rubber seat providing complete no flow of gas, with a total outlet pressure build up of only 6" WC (above the original set point).

EXAMPLE (C²) — If the diaphragm case on one side of the piping is damaged by traffic accident so that the lever and valve seat cannot move to close against its orifice face, the outlet pressure builds (as above) on the good regulator and its sliding orifice moves to contact the nonmovable failed orifice monitor seat. Restriction: Closing or lock-up according to flow demand. However, since only one diaphragm is in operation, the outlet overpressure will be about 4" WC higher on single monitor operation than normal regulation set.

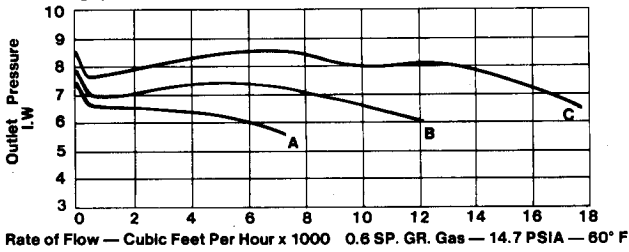
D. If demand for gas downstream of regulator is zero, the sliding orifices or orifice will close against the secondary rubber monitor seat and lock-up the gas flow completely.

B-838 IMRV FLOW CHART

	Inlet Pressure PSIG	Flow SCFH
Vented Gas Flow, regulator seat failed, monitor seat closed	20	60
	40	90
	60	120
	75	150
	100	190
	125	230

B-838 IMR TYPICAL PERFORMANCE CURVES

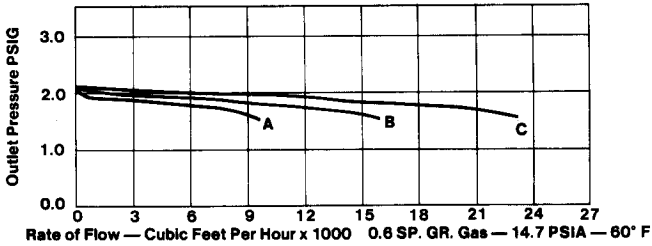
Set Point 7" w.c.



INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 3/4"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE GREEN/WHITE
 POSITION NO. HORIZONTAL
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG-W.O.R. 5.8" w.c. @ 7300
 B 20 PSIG-SET 6.0" w.c. @ 12200
 C 40 PSIG-W.O.R. 6.65" w.c. @ 17800
 LOADING RING SET @ 29"

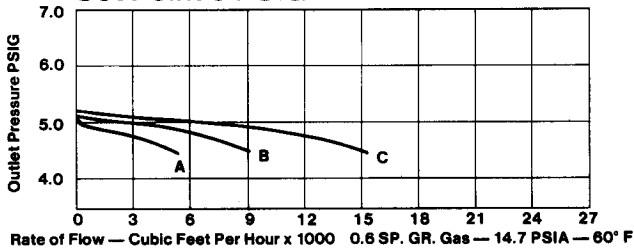
Set Point 2 PSIG



INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 3/4"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE SILVER
 POSITION NO. HORIZONTAL
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG, W.O.R.
 B 20 PSIG, SET
 C 40 PSIG, W.O.R.
 LOADING RING SET @ 0"

Set Point 5 PSIG



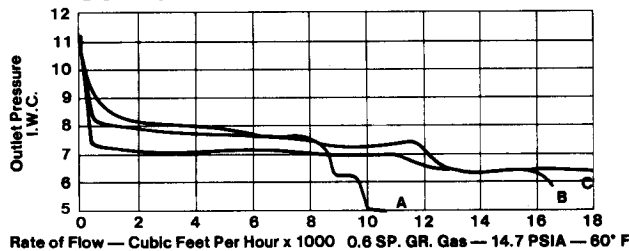
INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 3/4"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE RED
 POSITION NO. HORIZONTAL
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG-W.O.R.
 B 20 PSIG-SET
 C 40 PSIG-W.O.R.
 LOADING RING SET @ 0"

MONITOR CURVES

One Regulator Blocked Wide Open

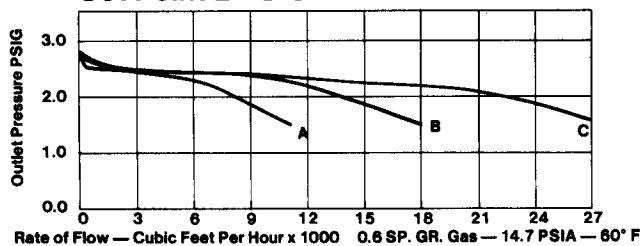
Set Point 7" w.c.



INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 3/4"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE GREEN/WHITE
 POSITION NO. HORIZONTAL
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG
 B 20 PSIG
 C 40 PSIG
 LOADING RING SET @ 29"

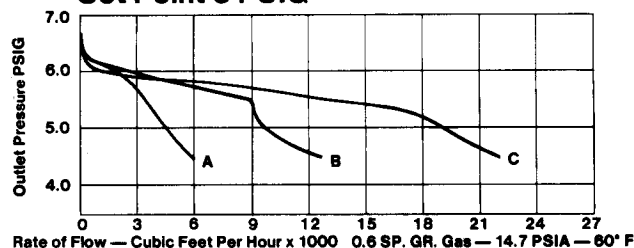
Set Point 2 PSIG



INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 3/4"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE SILVER
 POSITION NO. HORIZONTAL
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG
 B 20 PSIG
 C 40 PSIG
 LOADING RING SET @ 0"

Set Point 5 PSIG

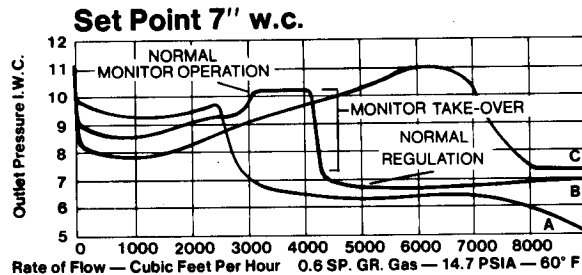


INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 3/4"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE RED
 POSITION NO. HORIZONTAL
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG
 B 20 PSIG
 C 40 PSIG
 LOADING RING SET @ 0"

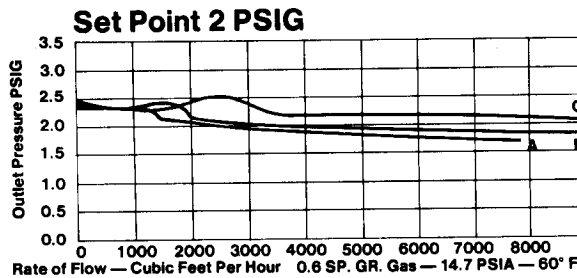
B-838 IMR MONITOR CURVES

.125 Dia. Rod Glued to One Valve Seat



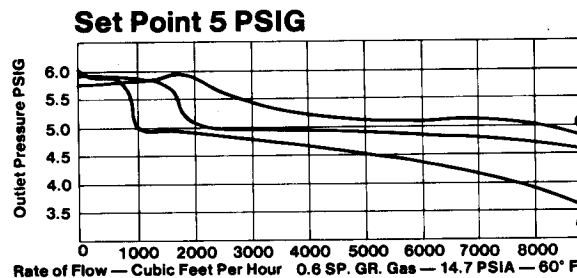
INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 5/8"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE GREEN/WHITE
 POSITION NO. A
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG-W.O.R.
 B 20 PSIG-SET
 C 40 PSIG-W.O.R.
 LOADING RING SET @ 27°



INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 5/8"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE SILVER
 POSITION NO. A
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG-W.O.R.
 B 20 PSIG-SET
 C 40 PSIG-W.O.R.
 LOADING RING SET @ 0°



INLET CONN. 2" NPT
 OUTLET CONN. 2" NPT
 INLET PRESSURE 20 PSIG @ SET
 ORIFICE SIZE 5/8"
 FLOW RATE AT SET 500 SCFH
 SPRING RANGE RED
 POSITION NO. A
 BOLT CIRCLE DIA. 12 1/16"

CURVES
 A 10 PSIG-W.O.R.
 B 20 PSIG-SET
 C 40 PSIG-W.O.R.
 LOADING RING SET @ 0°

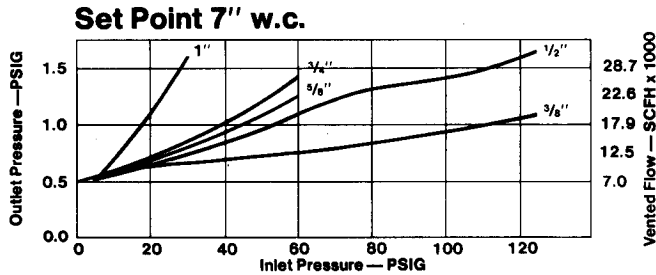
MONITOR CHARACTERISTICS			
Main Spring Color	Outlet Pressure Set	Maximum Downstream Pressure Buildup	
		B-838 IMR & IMN	B-838 IMV
BROWN	5.5" W.C.	11.5" W.C.	15.0" W.C.
GRN./WHT.-R BROWN-N	7.0" W.C.	12.5" W.C.	17.0" W.C.
BLACK	11.0" W.C.	17.0" W.C.	21.5" W.C.
BLUE-R BLACK-N	14.0" W.C.	20.0" W.C.	27.0" W.C.
BLUE	1 PSIG	1.6 PSIG	2.0 PSIG
SILVER	2 PSIG	3.0 PSIG	3.5 PSIG
YELLOW	3 PSIG	3.8 PSIG	4.8 PSIG
RED	5 PSIG	6.0 PSIG	8.4 PSIG

B-838 IM SPECIFICATIONS

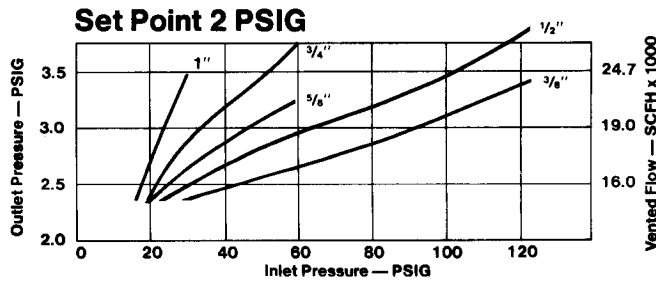
Max. Inlet Pressure: 125 PSIG
 Outlet Pressure Ranges: Approx. 5" W.C. to 5 PSIG
 Relief: See Monitor Characteristics
 Inlet Connection Sizes: 2" NPT or Flanged
 Outlet Connection Sizes: 2" NPT; 2", 3" or 4" Flanged
 Do Not Mix NPT & Flange Connections
 Basic Orifice Sizes: 3/8", 1/2", 5/8", 3/4" & 1" Diameter
 Max. Inlet Pressure per orifice size:
 125 PSIG for 3/8" orifice
 125 PSIG for 1/2" orifice
 60 PSIG for 5/8" orifice
 60 PSIG for 3/4" orifice
 30 PSIG for 1" orifice
 Vent Sizes: 1" NPT (without internal relief)
 2 1/2" NPT (with internal relief)
 Shipping
 Weight: 2" x 2" NPT 57 lbs. 2" x 3" Fig. 70 lbs.
 2" x 2" Fig. 59 lbs. 2" x 4" Fig. 80 lbs.
 Packing: One per Box
 Loading Ring Settings: See Capacity Tables

B-838 IMR RELIEF VALVE CHARACTERISTICS

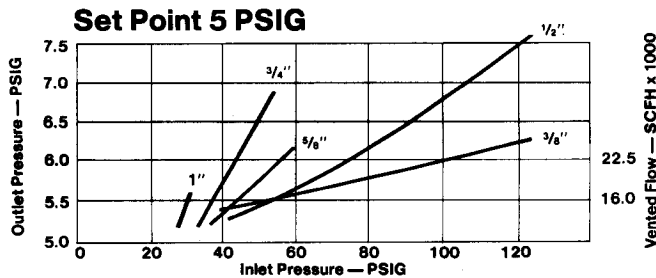
Simultaneous Failure of One Regulator and Monitor Seat



One Valve Seat Blocked Wide Open Per Orifice Size and Foreign Particle Wedged Between Monitor Sealing Surfaces



One Valve Seat Blocked Wide Open Per Orifice Size And Foreign Particle Wedged Between Monitor Sealing Surfaces



One Valve Seat Blocked Wide Open Per Orifice Size and Foreign Particle Wedged Between Monitor Sealing Surfaces

B-838 IM TYPICAL PROBLEM

Operating Requirements:

Inlet Pressure Range: 10 to 25 PSIG

Outlet Pressure: 7" W.C.

Max. Flow Rate: 10,000 scfh

Max. Outlet Pressure: Not to exceed 1/2 PSIG with one orifice failed wide open.

Set Point: 10 PSIG inlet pressure, 7" W.C. outlet pressure, 500 scfh.

Regulator Sizing & Analysis:

1. Body size: 2" x 4" flanged connections
2. Orifice size: 3/4" (at 10 PSIG inlet, 7" W.C. outlet, a 3/4" orifice will flow 11,400 scfh with a 1" W.C. drop and loading ring set at 25° off center).
3. Adjustment Spring: For a B-838-IM-R a GREEN/WHITE spring will have a range of 5.55 to 8.45" W.C.

Step 1. B-838-IM-R GREEN/WHITE spring range for a 3/4" orifice at 25 PSIG inlet is 6.3 to 9.2" W.C.

Step 2. See Spring Data A GREEN/WHITE spring with a 3/4" orifice will have .50" W.C. outlet pressure change with a 10 PSIG inlet pressure change.

Step 3. For the set point at 10 PSIG, the reduced values are:

$$\frac{15}{(25 - 10) \text{ or } 10 \times .50 = .75" \text{ W.C. Therefore at set point, the GREEN/WHITE spring has a range of}$$

$$6.3 - .75 = 5.55" \text{ W.C. Min.}$$

$$9.2 - .75 = 8.45" \text{ W.C. Max.}$$

Step 4. From the set point and without readjustment (W.O.R.) the actual outlet pressure with the GREEN/WHITE spring and a 3/4" orifice will change from 7.0" to 7.75" W.C. when the inlet pressure increases from 10 PSIG to 25 PSIG.

$$7" \text{ W.C.} + \left(\frac{15}{10 \times .50} \right) = 7.75" \text{ W.C.}$$

4. Failure: Under failed conditions with the GREEN/WHITE spring, the regulator will build to 12.5" W.C. outlet pressure (See Monitor Characteristics).

B-838 IMN SPRING RANGES

ADJUSTED OUTLET PRESSURE RANGE SPRING ADJUSTMENT FERRULE AT MIN. & MAX. DEPTHS				
ORIFICE SIZE	INLET PRESSURE	SPRING COLOR	OUTLET PRESSURE	
			MINIMUM	MAXIMUM
3/8"	25 PSIG	Orange	2.6" W.C.	4.5" W.C.
		Brown	3.6" W.C.	7.2" W.C.
		Grn./Wht.	4.7" W.C.	8.9" W.C.
		Black	4.9" W.C.	14.3" W.C.
		Blue	0.33 PSIG	1.04 PSIG
		Silver	0.78 PSIG	2.39 PSIG
		Yellow	1.53 PSIG	4.72 PSIG
		Red	1.59 PSIG	5.97 PSIG*
1/2"	25 PSIG	Orange	2.7" W.C.	4.9" W.C.
		Brown	4.2" W.C.	7.4" W.C.
		Grn./Wht.	4.6" W.C.	9.2" W.C.
		Black	4.7" W.C.	14.5" W.C.
		Blue	0.31 PSIG	1.07 PSIG
		Silver	0.79 PSIG	2.40 PSIG
		Yellow	0.54 PSIG	4.80 PSIG
		Red	1.57 PSIG	5.99 PSIG*
5/8"	25 PSIG	Orange	2.8" W.C.	5.2" W.C.
		Brown	4.6" W.C.	7.7" W.C.
		Grn./Wht.	4.9" W.C.	9.6" W.C.
		Black	5.1" W.C.	14.9" W.C.
		Blue	0.33 PSIG	1.10 PSIG
		Silver	0.80 PSIG	2.42 PSIG
		Yellow	1.62 PSIG	4.89 PSIG
		Red	1.64 PSIG	6.10 PSIG*
3/4"	25 PSIG	Orange	3.2" W.C.	5.5" W.C.
		Brown	4.6" W.C.	7.9" W.C.
		Grn./Wht.	5.1" W.C.	9.9" W.C.
		Black	5.2" W.C.	15.1" W.C.
		Blue	0.32 PSIG	1.13 PSIG
		Silver	0.83 PSIG	2.47 PSIG
		Yellow	1.71 PSIG	4.90 PSIG
		Red	1.68 PSIG	6.12 PSIG*
1"	10 PSIG	Orange	3.3" W.C.	6.0" W.C.
		Brown	3.4" W.C.	7.6" W.C.
		Grn./Wht.	4.7" W.C.	9.5" W.C.
		Black	4.9" W.C.	14.7" W.C.
		Blue	0.30 PSIG	1.09 PSIG
		Silver	0.80 PSIG	2.43 PSIG
		Yellow	1.60 PSIG	4.79 PSIG
		Red	1.71 PSIG	6.01 PSIG*

B-838 IMR SPRING RANGES

ADJUSTED OUTLET PRESSURE RANGE SPRING ADJUSTMENT FERRULE AT MIN. & MAX. DEPTHS				
ORIFICE SIZE	INLET PRESSURE	SPRING COLOR	OUTLET PRESSURE	
			MINIMUM	MAXIMUM
3/8"	25 PSIG	Orange	2.7" W.C.	4.2" W.C.
		Brown	4.0" W.C.	6.9" W.C.
		Grn./Wht.	5.3" W.C.	8.1" W.C.
		Black	6.65" W.C.	12.9" W.C.
		Blue	0.46 PSIG	1.01 PSIG
		Silver	1.14 PSIG	2.13 PSIG
		Yellow	2.29 PSIG	4.3 PSIG
		Red	2.21 PSIG	5.02 PSIG*
1/2"	25 PSIG	Orange	2.8" W.C.	4.3" W.C.
		Brown	4.2" W.C.	7.0" W.C.
		Grn./Wht.	5.3" W.C.	8.2" W.C.
		Black	6.8" W.C.	13.1" W.C.
		Blue	0.49 PSIG	1.02 PSIG
		Silver	1.18 PSIG	2.15 PSIG
		Yellow	2.37 PSIG	4.32 PSIG
		Red	2.40 PSIG	5.03 PSIG*
5/8"	25 PSIG	Orange	2.9" W.C.	4.6" W.C.
		Brown	4.5" W.C.	7.0" W.C.
		Grn./Wht.	6.0" W.C.	8.7" W.C.
		Black	7.3" W.C.	13.4" W.C.
		Blue	0.51 PSIG	1.00 PSIG
		Silver	1.20 PSIG	2.20 PSIG
		Yellow	2.40 PSIG	4.35 PSIG
		Red	2.59 PSIG	5.07 PSIG*
3/4"	25 PSIG	Orange	3.6" W.C.	4.8" W.C.
		Brown	5.0" W.C.	7.4" W.C.
		Grn./Wht.	6.3" W.C.	9.2" W.C.
		Black	7.5" W.C.	13.6" W.C.
		Blue	0.52 PSIG	1.01 PSIG
		Silver	1.22 PSIG	2.24 PSIG
		Yellow	2.38 PSIG	4.40 PSIG
		Red	2.49 PSIG	5.40 PSIG*
1"	10 PSIG	Orange	3.3" W.C.	4.6" W.C.
		Brown	4.6" W.C.	7.2" W.C.
		Grn./Wht.	5.9" W.C.	8.8" W.C.
		Black	7.0" W.C.	13.3" W.C.
		Blue	0.49 PSIG	1.01 PSIG
		Silver	1.14 PSIG	2.20 PSIG
		Yellow	2.15 PSIG	4.18 PSIG
		Red	2.31 PSIG	5.27 PSIG*

*Maximum Outlet Pressure 5.0 PSIG

B-838 IM SPRING DATA

OUTLET PRESSURE CHANGE AS A RESULT OF A 10 PSIG INLET PRESSURE CHANGE					
SPRING COLOR	ORIFICE SIZE — INCHES				
	3/8	1/2	5/8	3/4	1
ORANGE	0.22" W.C.	0.23" W.C.	0.33" W.C.	0.47" W.C.	0.98" W.C.
BROWN	0.22" W.C.	0.23" W.C.	0.40" W.C.	0.50" W.C.	1.00" W.C.
GRN./WHT.	0.22" W.C.	0.23" W.C.	0.40" W.C.	0.50" W.C.	1.00" W.C.
BLACK	0.27" W.C.	0.29" W.C.	0.42" W.C.	0.55" W.C.	1.00" W.C.
BLUE	0.01 PSIG	0.01 PSIG	0.01 PSIG	0.02 PSIG	0.03 PSIG
SILVER	0.01 PSIG	0.01 PSIG	0.02 PSIG	0.02 PSIG	0.04 PSIG
YELLOW	0.01 PSIG	0.02 PSIG	0.02 PSIG	0.03 PSIG	0.05 PSIG
RED	0.01 PSIG	0.02 PSIG	0.02 PSIG	0.03 PSIG	0.06 PSIG

CAPACITY TABLE B-838 IM 2" x 2"

Outlet Pressure		7" W.C.	7" W.C.	11" W.C.	11" W.C.	1 PSIG	2 PSIG	2 PSIG	2 PSIG	5 PSIG	5 PSIG	5 PSIG
Pressure Droop		1" W.C.	1" W.C.	2" W.C.	2" W.C.	0.2 PSIG	1% ABS	2% ABS	WO	1% ABS	2% ABS	WO
Loading Ring Setting		0°	20°	0°		0°	0°	0°	0°	0°	0°	0°
Orifice Size	Inlet Press. PSIG	Flow Rate, scfh of .60 Sp. Gr. Gas @ 14.7 psia & 60°F										
1" K = 1830 BOTH ORIFICES WIDE OPEN	1	2600	2250	2750								
	2	3650	3400	4400		3900						
	3	5000	4850	5650		5200	2700	4200	7480			
	5	6200	6000	7500	N.C.	7450	4100	6500	12950			
	10	9450	9100	10300		10600	6200	10600	21140	3700	5600	18150
	15	11300	11000	13450		12700	8200	13600	26960	5000	7600	25670
	25	19000	17800	20000		19300	14750	17800	36330	7100	11000	36330
	30	—	20000	20000		20000	18100	20000	40900	9800	14200	40900
Loading Ring Setting		0°	29°	0°	29°	0°	0°	0°	0°	0°	0°	0°
3/4" K = 1400 BOTH ORIFICES WIDE OPEN	1	2150	1900	2300	2000							
	2	3400	3050	3650	3400	3300						
	3	4000	3750	4600	4250	4300	2300	3500	5720			
	5	5700	5100	6250	6000	5800	3400	5400	9910			
	10	8000	7250	9600	9450	8950	5500	8600	16170	3600	5400	13890
	15	10200	9000	11500	11000	11400	6600	10600	20620	4700	7200	19640
	25	16850	15700	17700	16900	17600	10400	15600	27800	6900	9600	27800
	60	—	20000	—	20000	20000	20000	20000	52290	13100	18700	52290
Loading Ring Setting		0°	27°	22°	0°	0°	0°	0°	0°	0°	0°	0°
5/8" K = 1095 BOTH ORIFICES WIDE OPEN	1	1750	1700	2000	1950							
	2	2600	2500	3200	3150	2750						
	3	3400	3200	4200	4050	3800	1800	2650	4480			
	5	5200	4800	5900	5650	5300	2750	4150	7750			
	10	7500	6900	9400	8750	8250	4500	7200	12650	3100	4500	10860
	15	9900	8800	11000	10050	10550	6200	9600	16130	4000	5900	15360
	25	15600	15200	16000	14900	15100	10300	14200	21570	6100	9200	21570
	60	—	20000	—	20000	20000	17800	20000	40900	12500	17800	40900
Loading Ring Setting		0°	32°	0°	25°	0°	0°	0°	0°	0°	0°	0°
1/2" K = 790 BOTH ORIFICES WIDE OPEN	1	1600	1550	1500	1450							
	2	2300	2250	2300	2250	2350						
	3	2900	2850	2900	2800	3050	1650	2300	3230			
	5	3800	3700	4050	3900	4150	2650	3500	5590			
	10	6600	5250	6500	5900	6600	4000	6300	9130	2600	3200	7840
	15	8100	6650	8500	7300	8500	5900	8000	11640	3600	4900	11080
	25	10900	8650	11900	10000	12000	9600	12600	15680	5300	7400	15680
	60	—	15900	—	19100	19500	16800	20000	29510	9400	14400	29510
90	—	20000	—	20000	20000	20000	20000	41360	13700	18350	41360	
125	—	20000	—	20000	20000	20000	20000	55180	19000	20000	55180	
Loading Ring Setting		0°	27°	0°	25°	0°	0°	0°	0°	0°	0°	0°
3/8" K = 600 BOTH ORIFICES WIDE OPEN	1	1000	950	1200	1050							
	2	1700	1650	1950	1800	1700						
	3	2200	2150	2400	2300	2200	1300	1800	2800			
	5	3100	2900	3200	3100	3000	2000	2750	4250			
	10	4800	4400	5000	4600	4500	3200	4350	6930	2050	2650	5950
	15	6600	5600	6600	5800	5700	4000	6050	8840	2700	3550	8420
	25	10000	7800	10000	8200	8400	5050	8600	11910	3400	4800	11910
	60	17000	14000	17500	14400	17000	12000	17000	22410	6200	10200	22410
90	—	18100	—	18400	20000	16300	20000	31410	7200	12400	31410	
125	—	20000	—	20000	20000	20000	20000	41910	11300	18800	41910	

N.C. — No Change in loading ring position required

CAPACITY TABLE B-838 IM 2" x 3"

Outlet Pressure		7" W.C.	7" W.C.	11" W.C.	11" W.C.	1 PSIG	2 PSIG	2 PSIG	2 PSIG	5 PSIG	5 PSIG	5 PSIG
Pressure Droop		1" W.C.	1" W.C.	2" W.C.	2" W.C.	0.2 PSIG	1% ABS	2% ABS	WO	1% ABS	2% ABS	WO
Loading Ring Setting		0°		0°		0°	0°	0°	0°	0°	0°	0°
Orifice Size	Inlet Press. PSIG	Flow Rate, scfh of .60 Sp. Gr. Gas @ 14.7 psia & 60°F										
1" K = 1900 BOTH ORIFICES WIDE OPEN	1	2700		2900								
	2	4300		4500		4000						
	3	5650		6450		5700	3200	4900	7765			
	5	7400	N.C.	8750	N.C.	8100	5400	7800	13450			
	10	15300		14900		13100	8800	12700	21945	4500	6700	18850
	15	19600		19500		16800	11800	17000	27985	6160	9400	26655
	25	27000		27100		26400	16800	25000	37715	9400	14200	37715
	30	32000		32000		31700	22000	30000	42465	10100	16200	42465
Loading Ring Setting		0°	40°		36°	0°	0°	0°	0°	0°	0°	0°
3/4" K = 1440 BOTH ORIFICES WIDE OPEN	1	2500	2300		2550							
	2	3700	3100		4100	3300						
	3	4900	3850		5100	4400	2750	4100	5885			
	5	7000	5700	N.C.	7050	6250	3700	5800	10190			
	10	10650	8700		10600	10400	6600	9900	16630	3700	5600	14285
	15	13800	11800		14200	13500	8200	12700	21210	5000	7600	20205
	25	—	18000		21000	20900	15000	20900	28585	7100	10500	28585
	60	—	36000		36300	36300	34000	40000	53785	15500	24800	53785
Loading Ring Setting		0°	38°	0°	34°	0°	0°	0°	0°	0°	0°	
5/8" K = 1140 BOTH ORIFICES WIDE OPEN	1	1850	1800	2250	2100							
	2	3100	2600	3400	3300	2750						
	3	4000	3550	4400	4300	3800		2300	3500	4660		
	5	5700	4900	6000	5800	5300	3300	4800	8070			
	10	9400	7450	9450	9100	8250	4900	7800	13165	3200	4600	11310
	15	12500	9300	12500	11650	19550	6800	10600	16790	4100	6000	15995
	25	20000	17500	19700	19200	16100	10500	16300	22630	6200	9300	22630
	60	—	35200	—	36100	35400	28700	34000	42850	13500	19600	42580
Loading Ring Setting		0°	34°	0°	34°	0°	0°	0°	0°	0°	0°	0°
1/2" K = 800 BOTH ORIFICES WIDE OPEN	1	1600	1550	1500	1450							
	2	2300	2250	2300	2250	2350						
	3	2900	2850	3000	2800	3050	1650	2300	3470			
	5	4000	3700	4400	3900	4150	2650	3500	5660			
	10	6800	5850	6950	6350	6600	4000	6300	9240	2600	3200	7935
	15	8500	6750	9000	7900	8500	5900	8000	11785	3700	4900	11225
	25	14100	11400	13400	11600	12000	9600	12600	15880	5300	7400	15880
	60	—	25700	—	25700	25700	20600	24000	29880	9400	14400	29880
	90	—	34800	—	34800	34800	28000	33300	41880	13700	21300	41880
	125	—	40000	—	40000	40000	35800	40000	55880	20200	29100	55880
Loading Ring Setting		0°	32°	0°		0°	0°	0°	0°	0°	0°	0°
3/8" K = 600 BOTH ORIFICES WIDE OPEN	1	1000	950	1200								
	2	1700	1650	1950		1700						
	3	2200	2150	2400		2200	1450	1850	2800			
	5	3100	2900	3200		3000	2150	2850	4250			
	10	4950	4400	5000	N.C.	4550	3500	4400	6930	2050	2650	5950
	15	6600	5600	6600		5850	4200	6100	8840	2700	3550	8420
	25	10400	8900	10300		8850	6400	8800	11910	3450	4900	11910
	60	20150	19200	21000		18800	14300	18200	22410	6800	10600	22410
	90	—	27000	28200		26800	23200	26400	31410	10900	16800	31410
	125	—	34000	35000		33000	29100	33200	41910	14200	22500	41910

N.C. — No Change in loading ring position required

CAPACITY TABLE B-838 IM 2" x 4"

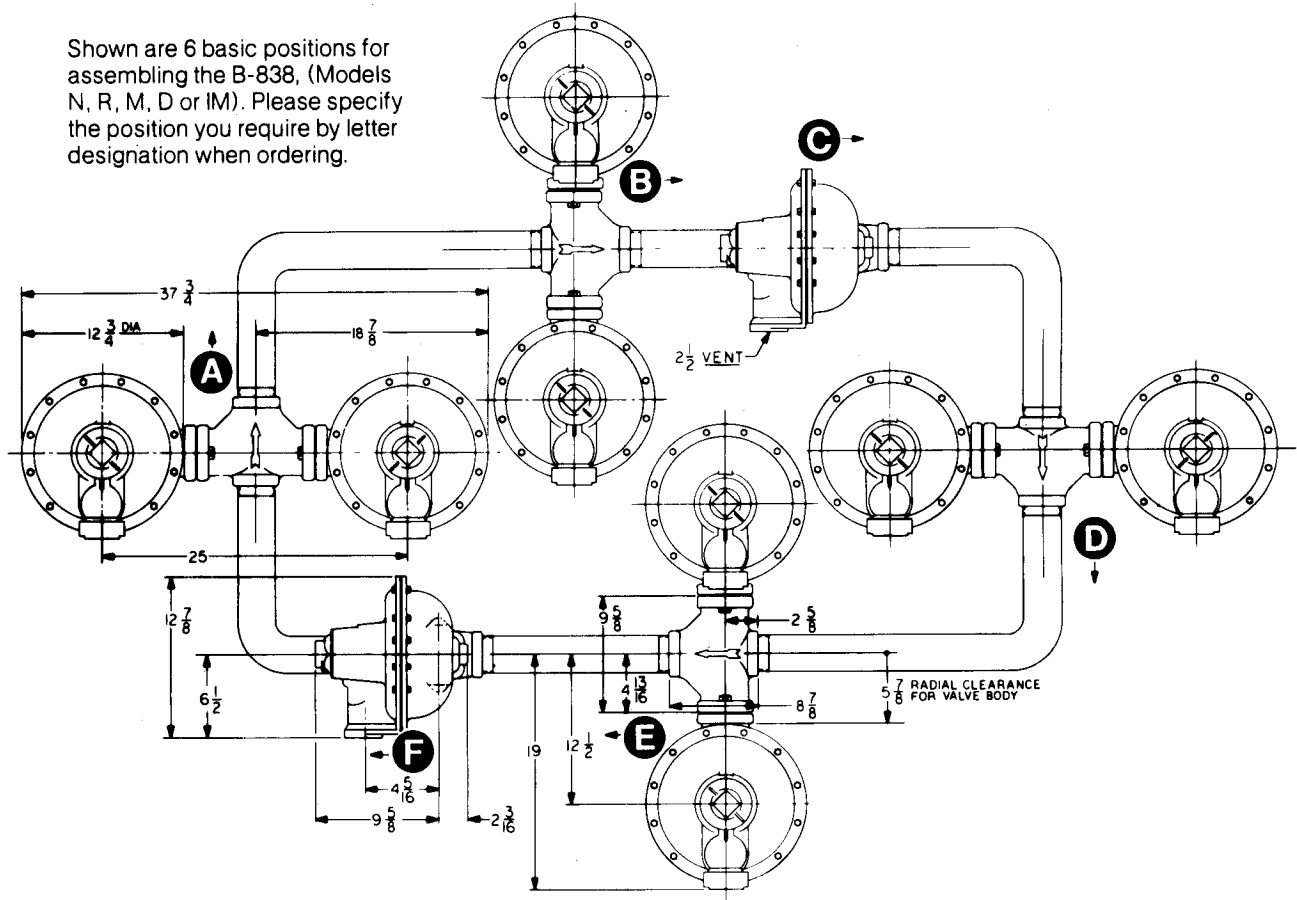
Outlet Pressure		7" W.C.	7" W.C.	11" W.C.	11" W.C.	1 PSIG	2 PSIG	2 PSIG	2 PSIG	5 PSIG	5 PSIG	5 PSIG	
Pressure Droop		1" W.C.	1" W.C.	2" W.C.	2" W.C.	0.2 PSIG	1% ABS	2% ABS	WO	1% ABS	2% ABS	WO	
Loading Ring Setting		0°	25°	0°		0°	0°	0°	0°	0°	0°	0°	
Orifice Size	Inlet Press. PSIG	Flow Rate, scfh of .60 Sp. Gr. Gas @ 14.7 psia & 60°F											
1" K = 1950 BOTH ORIFICES WIDE OPEN	1	2900	2800	2900	N.C.	4500							
	2	4600	4400	4550		5900	3300	5000	7970.				
	3	6500	6250	6700		8550	5450	7900	13800				
	5	9700	9000	9100		13800	8950	12900	22525	4650	6900	19345	
	10	16700	16100	16250		18000	12400	17700	28725	6300	9700	27360	
	15	22000	21000	21600		30300	20000	27300	38710	9700	14650	38710	
	25	31000	29800	31000		36100	24400	33000	43585	10400	16700	43585	
	30	—	36000	37000									
Loading Ring Setting		0°	25°	0°	27°	0°	0°	0°	0°	0°	0°	0°	
3/4" K = 1480 BOTH ORIFICES WIDE OPEN	1	2700	2450		2850								
	2	4350	4250		4500	3450							
	3	5500	4950		6100	4600	2850	4200	6200				
	5	8200	7500	N.C.	8300	6500	3800	6100	10475				
	10	13900	11400		13950	10650	6900	10500	17095	3800	5800	14680	
	15	—	16900		18100	14500	8500	13700	21800	5150	7850	20765	
	25	—	26200		28000	23200	15200	21200	29380	7350	10800	29380	
	60	—	48000		50000	46100	39700	47500	55280	16000	27800	55280	
Loading Ring Setting		0°			0°		0°	0°	0°	0°	0°	0°	0°
5/8" K = 1175 BOTH ORIFICES WIDE OPEN	1	2200			2300	N.C.							
	2	3300			3500		3000						
	3	4200		4450	3900		2500	3400	4800				
	5	6100	N.C.	6300	5450		3900	5400	8315				
	10	10100		10500	8600		5200	8000	13570	3300	4750	11655	
	15	13850		13500	11200		6900	10800	17310	4250	6200	16485	
	25	21500		21500	17400		11500	17200	23325	6400	9600	23325	
	60	40000		40000	39200		30000	36200	43885	13900	21000	43885	
Loading Ring Setting		0°		40°	0°		0°	0°	0°	0°	0°	0°	0°
1/2" K = 810 BOTH ORIFICES WIDE OPEN	1	1850		1600	1800	N.C.							
	2	2600		2450	2850		2400						
	3	3350	3100	3500	3200		1750	2550	3700				
	5	4500	4150	5000	4250		3000	3900	5735				
	10	7450	6750	7400	6700		4500	6400	9355	2650	3300	8035	
	15	9600	8550	9950	8600		6000	8200	11930	3800	5050	11365	
	25	14700	14400	14500	12450		9800	13000	16080	5450	7600	16080	
	60	—	32600	33000	29400		22200	27800	30255	9700	14850	30255	
	90	—	39800	40100	37900		35000	37000	42405	14100	21950	42405	
125	—	51200	52300	51500	45500	51000	56580	21000	30100	56580			
Loading Ring Setting		0°		0°		0°	0°	0°	0°	0°	0°	0°	
3/8" K = 600 BOTH ORIFICES WIDE OPEN	1	1100		1200	N.C.								
	2	1750		2150		2000							
	3	2300		2750		2400	1650	2150	2800				
	5	3150		3200		3250	2300	3400	4250				
	10	5050	N.C.	5100		4850	3600	4500	6930	2050	2650	5950	
	15	6700		6700		6400	4300	6250	8840	2700	3550	8420	
	25	10600		10300		9050	6550	9000	11910	3450	4900	11910	
	60	22200		22000		20700	14500	18400	22410	6800	10600	22410	
	90	30500		30400		29300	25600	28300	31400	10900	16800	31400	
	125	35100		34900		35200	30000	34000	41910	14200	22500	41910	

N.C. — No Change in loading ring position required

ASSEMBLY POSITIONS & DIMENSIONS

B-838 SERIES SPRING LOADED REGULATORS

Shown are 6 basic positions for assembling the B-838, (Models N, R, M, D or IM). Please specify the position you require by letter designation when ordering.



WARRANTY

Schlumberger Gas, 970 Highway 127 North, Owenton, Kentucky 40359-9302, warrants this gas product against defects in materials and workmanship for a period of one year from the date the product is installed by Schlumberger at the original purchaser's site. 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 OF 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 Gas, 970 Highway 127 North, Owenton, Kentucky 40359-9302.

Schlumberger Gas

Gas Division, 970 Highway 127 North, Owenton, Kentucky 40359-9302
Phone: (502) 484-5747, FAX: (502) 484-6222, Customer Service: (800) 490-0657

Measurement Division, 7275 West Credit Avenue, Mississauga, Ontario L5N 5M9
Phone: (905) 858-4211, FAX: (905) 858-0428, Customer Service: (800) 363-7886