



Catalogue and Performance Literature for J48

Gas Pressure Regulators
1/2" – 2" Sizes

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G4802B

1/2" – 2"

The J48 is a highly versatile proven range of Industrial Low Pressure Regulators, suitable for a wide range of pressure reduction applications. The latest version of the regulator includes a new quick release spring adjustment mechanism unit. This enhancement provides easy access for spring adjustment and routine maintenance. The J48 is available in sizes from 1/2" to 6", the larger sized units from 2 1/2" being described in a separate leaflet. Also available and described on separate leaflets are the zero, H (high inlet), and HL (high inlet, low outlet) versions.

APPLICATION

The J48 is a service and appliance regulator suitable for a wide range of domestic, commercial and industrial applications. All units are designed for natural, liquid petroleum and manufactured gases.

The J48 can be installed in both horizontal and vertical pipelines, with certain sizes available with angled connections for meter services applications. The J48 has positive lock up, and has been designed for high efficiency and sensitivity with maximum flow and minimum pressure loss.

PRESSURE

Maximum Inlet Pressure: 350mb (5 psig)
Maximum Outlet Pressure: 160mb (64" wg)

CONTROL

A comprehensive range of springs is available, as described overleaf. The outlet pressure can be easily and accurately adjusted by turning the spring adjustment unit located under the top cap. The design of this mechanism provides virtually frictionless adjustment and eliminates "spring wind up".

The complete spring adjustment mechanism can be removed easily for maintenance and spring changes. If required the units can be supplied factory set with a security seal at extra cost.

TEMPERATURE

The J48 range is suitable for operation in a wide range of temperatures from -20° C to +70° C.



SIZE

1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
(2 1/2" - 6", see separate leaflet)

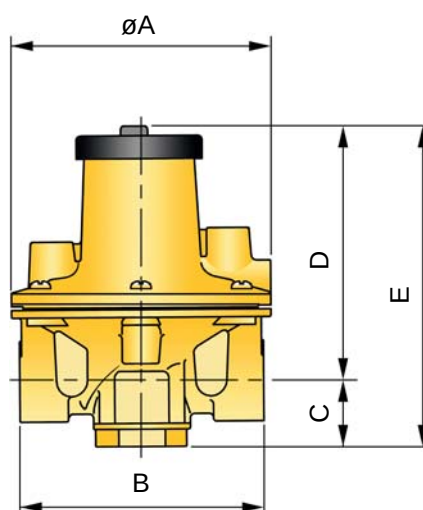
CONNECTIONS

The J48 is supplied as standard with a tapered screwed thread to BS21 (ISO7) or NPT. Other threads may be available upon request.

SERVICING

The J48 has been designed for ease of access, inspection and servicing of all internal components. A standard soft spares kit is available for all sizes.

1/2" - 1"	reference number SK4806-01
1 1/4" - 1 1/2"	reference number SK4808-01
2"	reference number SK4809-01



DIMENSIONS & WEIGHTS

SIZE	A	B	C	D	E	Weight (Kg)
½", ¾" & 1"	134	125	34	132	166	1.0
1¼" & 1½"	185	155	45	149	194	1.9
2"	234	200	52	167	219	3.1

MATERIAL SPECIFICATION

A summary of the material specification for the J48 is given for reference. All material has been selected to provide maximum durability and reliability in service.

Components	Specification
Body, cover, spring adjusting bush, spring adjusting screw and bottom plug.	Aluminium Alloy
Top cap, locking lever, spring holder, diaphragm spacer, valve spacer and valve disc holder.	Acetal Resin (Top cap and locking lever UV stabilised)
Diaphragm plate.	Mild steel
Main diaphragm, secondary diaphragm, valve disc and "O"rings.	Nitrile (Buna)
Springs	Carbon Steel
Impulse tube	Brass

PERFORMANCE

Detailed performance data is provided on separate technical datasheets.

QUALITY

Elster Jeavons is committed to a programme of continuous quality enhancement. All equipment designed and manufactured by Elster Jeavons benefits from the company's quality assurance standards which are approved to BS EN ISO9001.

SPRINGS

All springs are colour coded for ease of identification.

Spring Range mbar	½", ¾" & 1"	1¼" & 1½"	2"
5 - 15	J4806-007 Yellow	J4808-004 Red / Yellow	J4809-007 Dark Blue / Yellow
12.5 - 25	J4806-004 Black	J4808-007 Red / Black	J4809-004 Dark Blue / Black
22.5 - 35	J4806-005 Orange	J4808-008 Red / Orange	J4809-005 Dark Blue / Orange
25 - 75	J4806-101 Yellow / Black	J4808-077 Yellow / Orange	J4809-066 Yellow / Dark Green
70 - 100	J4806-079 Pink / Gold	J4808-075 Pink / Silver	J4809-065 Grey / Gold
90 - 160	J4808-077 Yellow / Orange	J4809-065 Grey / Gold	

REGULATING CAPACITIES

All capacities in SCMH 0.64 s.g.

REGULATOR SIZE: $\frac{3}{4}$ "

Setting Flow Rate: 2.8 SCMH

OUTLET PRESSURE SETTING (mbar) / DROOP (%)

	10		17.5		20		27.5		50	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
Pin mbar										
15	6.1	6.3	-	-	-	-	-	-	-	-
20	7.0	12.5	7.1	13.1	-	-	-	-	-	-
25	7.9	13.4	8.4	15.9	9.0	16.6	-	-	-	-
35	9.8	15.0	10.4	22.3	11.5	25.0	13.5	25.0	-	-
53	10.6	16.3	12.3	24.4	15.6	27.5	20.6	31.3	12.5	26.3
70	9.0	17.5	13.5	26.3	21.3	28.1	25.0	33.8	22.5	36.3
105	10.3	17.5	14.9	26.9	26.9	33.1	30.0	36.3	28.8	43.1
140	10.5	18.8	15.8	26.3	30.0	36.3	32.5	37.5	33.8	46.3
210	8.3	15.6	16.8	26.3	36.3	41.3	38.8	43.8	45.0	51.3
350	7.3	14.3	15.1	28.1	42.5	43.8	38.8	42.5	60.0	65.0

REGULATOR SIZE: 1"

Setting Flow Rate: 2.8 SCMH

OUTLET PRESSURE SETTING (mbar) / DROOP (%)

	10		17.5		20		27.5		50	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
Pin mbar										
15	8.9	13.0	-	-	-	-	-	-	-	-
20	11.3	15.6	10.0	22.5	-	-	-	-	-	-
25	12.5	22.4	12.9	25.0	12.5	25.0	-	-	-	-
35	18.8	26.3	18.8	27.5	17.5	30.0	16.3	37.5	-	-
53	18.8	26.3	27.5	32.5	26.3	35.0	24.4	46.3	21.3	45.0
70	23.8	28.8	31.3	36.3	33.1	37.5	30.0	50.0	28.8	52.5
105	40.0	41.3	31.3	37.5	32.5	41.3	37.5	53.8	38.8	55.0
140	35.0	38.8	33.8	41.3	35.0	45.0	42.5	57.5	41.3	56.3
210	38.8	42.5	38.8	45.0	38.8	47.5	41.3	60.0	43.8	62.5
350	42.5	51.3	42.5	56.3	43.8	62.5	47.5	62.5	50.0	68.8

REGULATOR SIZE: 1 $\frac{1}{4}$ "

Setting Flow Rate: 2.8 SCMH

OUTLET PRESSURE SETTING (mbar) / DROOP (%)

	10		17.5		20		27.5		50	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
Pin mbar										
15	18.1	37.5	-	-	-	-	-	-	-	-
20	22.5	43.8	20.0	37.5	-	-	-	-	-	-
25	23.1	47.5	25.0	45.0	22.5	45.0	-	-	-	-
35	25.0	54.4	28.8	56.3	32.5	57.5	36.3	60.0	-	-
53	25.0	51.3	35.0	67.5	40.0	73.8	52.5	82.5	36.3	61.3
70	26.3	48.8	41.3	71.3	48.8	85.0	62.5	96.3	52.5	86.3
105	27.5	48.8	55.0	73.8	65.0	100.0	80.0	115.0	75.0	116.3
140	27.5	51.3	66.3	85.0	80.0	108.8	70.0	131.3	88.8	135.0
210	26.3	61.3	82.5	101.3	106.3	130.0	115.0	156.3	112.5	168.8
350	20.0	40.0	120.0	137.5	143.8	175.0	85.0	198.8	150.0	212.5

REGULATING CAPACITIES

All capacities in SCMH 0.64 s.g.

REGULATOR SIZE: 1½"

Setting Flow Rate: 4.2 SCMH

OUTLET PRESSURE SETTING (mbar) / DROOP (%)

	10		17.5		20		27.5		50	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
Pin mbar										
15	21.3	43.8	-	-	-	-	-	-	-	-
20	26.3	51.3	21.3	42.5	-	-	-	-	-	-
25	31.3	56.3	26.3	53.8	27.5	53.8	-	-	-	-
35	42.5	68.8	33.8	70.0	36.3	71.3	42.5	71.3	-	-
53	60.0	83.8	47.5	88.8	46.3	91.3	66.3	103.8	42.5	71.3
70	73.8	98.8	53.8	105.0	57.5	107.5	81.3	127.5	60.0	105.0
105	98.8	128.8	77.5	130.0	80.0	133.8	111.3	158.8	83.3	150.0
140	116.3	145.0	115.0	152.5	100.0	157.5	135.0	183.8	96.3	180.0
210	165.0	190.0	173.8	192.5	162.5	190.0	177.5	218.8	137.5	220.0
350	231.3	241.3	212.5	223.8	225.0	250.0	237.5	287.5	200.0	295.0

REGULATOR SIZE: 2"

Setting Flow Rate: 4.2 SCMH

OUTLET PRESSURE SETTING (mbar) / DROOP (%)

	10		17.5		20		27.5		50	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
Pin mbar										
15	32.5	65.0	-	-	-	-	-	-	-	-
20	41.3	92.5	40.0	75.0	-	-	-	-	-	-
25	52.5	120.0	51.3	97.5	50.0	96.3	-	-	-	-
35	85.0	150.0	87.5	140.0	85.0	137.5	72.5	132.5	-	-
53	161.3	243.8	150.0	206.3	151.3	190.0	112.5	205.0	87.5	150.0
70	175.0	300.0	212.5	287.5	216.3	271.3	193.8	275.0	150.0	225.0
105	162.5	362.5	337.5	375.0	337.5	387.5	337.5	368.8	275.0	312.5
140	168.8	337.5	375.0	400.0	450.0	462.5	443.8	452.5	337.5	412.5
210	125.0	337.5	312.5	500.0	325.0	512.5	325.0	560.0	350.0	475.0
350	125.0	325.0	125.0	325.0	331.3	412.5	337.5	425.0	462.5	525.0

The above tests are performed with the regulator set at a constant inlet pressure, a predetermined flow rate and the required outlet pressure. The flow rate is then increased whilst keeping the inlet pressure constant. The capacities are recorded when the outlet pressure has fallen by 10% and 20% from the set point.

FULL OPEN CAPACITY

All capacities in SCMH 0.64 s.g.

REGULATOR SIZE: $\frac{3}{4}$ "

"K" Factor = 0.174

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	18	-	-	-	-
20	25	13	-	-	-
25	31	22	18	-	-
35	40	33	31	22	-
53	52	48	46	40	14
70	62	58	57	52	36
105	79	76	74	71	60
140	93	90	89	87	78
210	117	115	114	112	105
350	157	155	155	153	149

REGULATOR SIZE: 1"

"K" Factor = 0.235

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	24	-	-	-	-
20	34	17	-	-	-
25	41	29	24	-	-
35	53	45	42	29	-
53	70	64	62	54	19
70	84	78	76	71	49
105	106	102	100	96	81
140	125	122	120	117	105
210	157	155	154	151	142
350	212	210	209	207	200

REGULATOR SIZE: $1\frac{1}{4}$ "

"K" Factor = 0.437

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	44	-	-	-	-
20	63	31	-	-	-
25	77	54	45	-	-
35	100	83	77	5	-
53	131	119	115	101	35
70	156	146	142	131	91
105	197	190	187	179	152
140	233	226	224	217	195
210	293	288	286	281	265
350	394	390	389	385	373

REGULATOR SIZE: $1\frac{1}{2}$ "

"K" Factor = 0.477

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	48	-	-	-	-
20	68	34	-	-	-
25	84	59	49	-	-
35	109	91	84	60	-
53	143	130	126	111	38
70	170	159	155	143	99
105	215	207	204	195	165
140	254	247	244	237	213
210	320	314	313	307	289
350	430	426	424	420	407

REGULATOR SIZE: 2"

"K" Factor = 0.856

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	87	-	-	-	-
20	123	61	-	-	-
25	151	107	87	-	-
35	195	163	151	107	-
53	257	234	225	198	68
70	304	285	278	257	17
105	386	371	366	350	297
140	455	443	438	425	382
210	574	564	560	550	518
350	771	764	761	754	730

REGULATOR SIZE: $2\frac{1}{2}$ "

"K" Factor = 1.894

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	192	-	-	-	-
20	272	136	-	-	-
25	333	236	193	-	-
35	431	361	335	237	-
53	568	517	499	439	151
70	673	631	616	569	392
105	854	821	810	775	656
140	1007	980	970	941	846
210	1270	1248	1240	1217	1146
350	1706	1684	1684	1668	1616

All capacities in SCMH 0.64 s.g.

REGULATOR SIZE: 3"

"K" Factor = 2.083

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	211	-	-	-	-
20	299	150	-	-	-
25	366	260	212	-	-
35	474	397	368	261	-
53	624	568	548	483	167
70	741	694	678	626	432
105	940	903	891	852	722
140	1108	1078	1067	1035	930
210	1396	1372	1364	1339	1260
350	1877	1859	1853	1834	1777

REGULATOR SIZE: 4"

"K" Factor = 3.333

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	338	-	-	-	-
20	478	239	-	-	-
25	586	415	339	-	-
35	759	636	589	417	-
53	999	909	877	773	266
70	1185	1110	1084	1001	691
105	1503	1445	1425	1363	1155
140	1773	1724	1707	1656	1489
210	2234	2196	2183	2143	2016
350	3003	2974	2964	2935	2844

REGULATOR SIZE: 6"

"K" Factor = 7.575

OUTLET PRESSURE (mbar)					
	10	17.5	20	28	50
Pin mbar					
15	767	-	-	-	-
20	1086	544	-	-	-
25	1332	944	771	-	-
35	1724	1445	1339	948	-
53	2271	2067	1994	1756	605
70	2693	2524	2464	2276	1570
105	3417	3285	3240	3099	2624
140	4030	3918	3880	3764	3384
210	5078	4990	4960	4869	4582
350	6824	6759	6737	6670	6463

GAS	SG
Air	1.00
Towns Gas	0.50
Propane	1.53
Propane / Air	1.20

The above capacities are for natural gas (0.64 SG).
For other gases multiply the capacity by:

$$\sqrt{\frac{0.64}{\text{gas sg}}}$$

The tables above were produced by physically holding the regulator fully open, setting the inlet and outlet pressures to the values stated in the tables and then recording the flow rate.

If the tables above do not provide sufficient information a formula is provided to calculate the fully open capacity for all sizes of regulator at any pressure drop. It is not possible to provide formula for calculating the regulating capacity as this data relates to a dynamic condition which can only be provided by actual test. Regulating capacity tables are available on another data sheet.

The full open formula is: $Q = K \sqrt{(P_i^2 - P_o^2)}$

Where:

- Q = Flow rate corrected to standard pressure and temperature conditions (SCMH).
- P_i = Inlet Pressure (mbar absolute units)
- P_o = Outlet Pressure (mbar absolute units)
- K = Flow constant for each size of regulator (see table).

FULL OPEN CAPACITY

All capacities in SCMH 0.64 sg

FLOW RATE VERSUS PRESSURE DROP

For the data below the regulator was physically held open. With the outlet pressure at atmospheric the listed full open capacities were set through and the pressure drop recorded.

PRESSURE DROP (mbar)

Size FLOWRATE (SCMH) "K" Factor	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"
	0.174	0.235	0.437	0.477	0.856	1.894	2.083	3.333	7.575
5	0.41	0.22	0.06	0.05	0.02	-	-	-	-
10	1.63	0.89	0.26	0.22	0.07	0.01	0.01	-	-
20	6.49	3.57	1.03	0.87	0.27	0.06	0.05	0.02	-
30	14.54	8.01	2.32	1.95	0.61	0.12	0.10	0.04	-
40	25.70	14.20	4.12	3.46	1.08	0.22	0.18	0.07	0.01
60	-	31.69	9.24	7.77	2.42	0.50	0.41	0.16	0.03
80	-	-	16.37	13.77	4.30	0.88	0.73	0.28	0.06
100	-	-	25.47	21.43	6.71	1.37	1.14	0.44	0.09
120	-	-	-	30.73	9.65	1.98	1.64	0.64	0.12
140	-	-	-	-	13.11	2.69	2.23	0.87	0.17
160	-	-	-	-	17.10	3.52	2.91	1.14	0.22
180	-	-	-	-	21.59	4.45	3.68	1.44	0.28
200	-	-	-	-	26.59	5.49	4.54	1.77	0.34
250	-	-	-	-	-	8.56	7.08	2.77	0.54
300	-	-	-	-	-	12.31	10.18	3.99	0.77
350	-	-	-	-	-	16.71	13.83	5.43	1.05
400	-	-	-	-	-	21.78	18.03	7.08	1.37
450	-	-	-	-	-	27.48	22.77	8.95	1.74
500	-	-	-	-	-	-	28.03	11.04	2.15
550	-	-	-	-	-	-	-	13.35	2.60
600	-	-	-	-	-	-	-	15.86	3.09
700	-	-	-	-	-	-	-	21.53	4.20
800	-	-	-	-	-	-	-	28.04	5.49

PRESSURE DROP VERSUS FLOW RATE

For the data below the regulator was physically held open. With the outlet pressure at atmospheric the listed pressure drops were set through and the full open capacities recorded.

CAPACITY (SCMH)

Size PRESSURE DROP (mbar) "K" Factor	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"
1.0	7.8	10.6	19.7	21.5	38.5	85.3	93.8	150.1	341.1
3.0	13.6	18.3	34.1	37.5	66.8	147.8	162.6	260.1	591.1
5.0	17.6	23.7	44.1	48.1	86.3	190.9	210.0	335.9	763.5
8.0	22.2	30.0	55.8	60.9	109.2	241.6	265.8	425.3	966.5
10.0	24.9	33.5	62.4	68.1	122.2	270.3	297.3	475.7	1081.1
15.0	30.5	41.1	76.6	83.5	149.8	331.4	364.6	583.3	1325.7
20.0	35.2	47.5	88.5	96.6	173.2	383.2	421.5	674.4	1532.6
30.0	43.3	58.4	108.7	118.6	212.6	470.4	517.5	827.9	1881.7
40.0	50.1	67.6	125.8	137.2	246.1	544.5	599.0	958.3	2178.0

The above capacities are for natural gas (0.64 SG).
For other gases multiply the capacity by:

$$\sqrt{\frac{0.64}{\text{gas sg}}}$$

GAS	SG
Air	1.00
Towns Gas	0.50
Propane	1.53
Propane / Air	1.20

If the tables above do not provide sufficient information a formula is provided to calculate the fully open capacity for all sizes of regulator at any pressure drop. It is not possible to provide formula for calculating the regulating capacity as this data relates to a dynamic condition which can only be provided by actual test. Regulating capacity tables are available on another data sheet.

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Where: Q = Flow rate corrected to standard pressure and temperature conditions (SCMH).
 P_i = Inlet Pressure (mbar absolute units)
 P_o = Outlet Pressure (mbar absolute units)
 K = Flow constant for each size of regulator (see table).

PRESSURE DROP

The natural loss of pressure from the inlet to the outlet of a regulator due to friction in the full open condition.

PRESSURE DIFFERENTIAL

The difference between the working inlet pressure to a regulator and the working outlet pressure from a regulator.

J48 Low Pressure Regulator Full Open Capacity

