

For Steam, Air and Non-Corrosive Liquids

The Armstrong OB-30/31 is a direct acting temperature regulator that requires no external source for operation. Simple and compact, the unit is suitable for a wide variety of heating/cooling applications. Installing, adjusting or maintaining the OB-30/31 is quick and easy because interchangeable capillaries mount in any position and disconnect by simply loosening the union nut. No stem

packing so there's no leakage. Single composition seat for tight shutoff. The OB-30/31 comes in 1/2", 3/4" or 1" sizes and is available with a choice of five temperature ranges and three capillary lengths.

For a fully detailed certified drawing, refer to CDY #1036.

OB-30/31 Specifications

Model	Application	Service	Max. Inlet Pressure psig (bar)	Maximum Diff. psig (bar)	Temperature Ranges °F (°C)	Max. Temp. °F (°C)	Temperature Accuracy °F (°C)	Capillary Lengths feet (meters)
OB-30	Heating	Steam, Water	Steam 150 (10)	140 (9.6)	32 - 95 (0 - 35)	366 (185)	±7 (±3) From Set Point	*6-1/2 (2) 9-1/2 (3) 16-1/2 (5)
OB-31	Cooling	Water, Non-Corrosive Liquids	Liquid 250 (17)		77 - 158 (25 - 70)			
				104 - 212 (40 - 100)				
					140 - 266 (60 - 130)			
					158 - 302 (70 - 150)			

*Standard length.

NOTES: Capillary can withstand a maximum of 72°F (40°C) above rated range. If desired set temperature is in temperature range overlap, select lower range.

OB-30/31 Materials

Body Material	Seat Type & Material	Valve Material	Capillary Material	Bulb Material	Thermal Well Material
Bronze ASTM B584	Single Seat 304 Stainless Steel	Teflon	304 Stainless Steel Armor Shielded Capillary	Copper-Nickel Plated	*304 Stainless Steel or Brass

*Other materials available upon request.

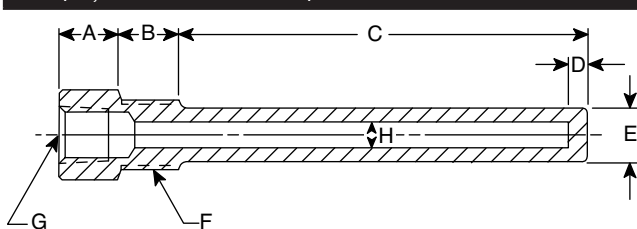
OB-30/31 Dimensions and Weights

Size		L		H ₁		H		T		K		R		Weight		C _v
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	
1/2	15	3	80	5-1/8	130	12-1/2	315	3/8	10	8	200	1/2	15	6	2.8	3.7
3/4	20	3-1/8	85	5-1/8	130	12-1/2	315	3/8	10	8	200	1/2	15	6	2.8	4.6
1	25	3-1/2	95	5-1/8	130	12-1/2	315	3/8	10	8	200	1/2	15	6-1/2	3.0	5.8

Thermal Well Dimensions

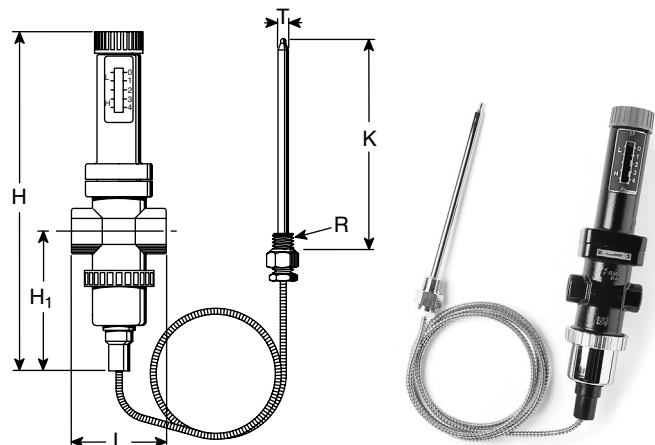
Model	A		B		C		D		E		F		G		H	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
OB-30/31	3/4	20	1	25	7-1/2	204	1/4	7	.765	20	3/4	20	1/2	15	.380	10
OB-2000/2000PT	1	25	3/4	20	7-3/4	197	1/4	7	.89	23	1	25	3/4	20	.630	16
OBK-2000	1	25	3/4	20	12-1/2	318	1/4	7	.765	20	3/4	20	1/2	15	.515	13

OB-30/31, OBK-2000 and OB-2000/2000PT Thermal Well



Standard Material: 304 stainless steel or brass. Other materials available upon request.

NOTE: When inserting sensor into thermal well, for best results, it is recommended that heat transfer medium be applied to sensor before installation.



OB-30 Capacities—Steam									
Inlet	Outlet	lb/hr			Inlet	Outlet	kg/hr		
		Connection Size					Connection Size		
psig		1/2	3/4	1	bar		15	20	25
C _v Factors		3.7	4.6	5.8	C _v Factors		3.7	4.6	5.8
5	3	67	83	105	.35	.20	30	38	48
	2	81	100	127		.14	37	45	58
	0	101	126	159		0	46	57	72
10	8	75	94	118	.7	.55	34	43	54
	6	104	130	164		.41	47	59	75
	4	125	155	196		.28	57	70	89
	0	154	191	241		0	70	87	110
15	12	101	125	158	1.0	.83	46	57	72
	9	139	172	218		.62	63	78	99
	6	165	205	259		.41	75	93	118
	0-5	200	249	314		0-.35	91	113	143
20	15	139	173	218	1.38	1.0	63	79	99
	10	181	235	296		.7	82	107	135
	5	221	275	347		.35	100	125	158
	0-2	234	290	367		0-.14	106	132	167
25	20	149	186	234	1.72	1.38	68	85	106
	15	204	254	320		1.0	93	115	145
	10	241	300	378		.7	110	136	172
	0-5	268	333	420		0-.35	122	151	191
30	25	159	198	250	2.0	1.72	72	90	114
	15	258	322	406		1.0	117	146	185
	0-7	302	375	473		0-.48	137	170	215
40	30	244	304	384	2.76	2.0	111	138	175
	20	328	408	515		1.38	149	185	234
	0-12	369	459	579		0-.83	168	209	263
50	40	268	333	420	3.45	2.76	122	151	191
	30	383	451	569		2.0	174	205	259
	0-17	437	543	685		0-1.2	199	247	311
60	50	290	360	454	4.0	3.45	132	164	206
	40	395	491	619		2.76	180	223	281
	0-22	504	627	791		0-1.5	229	285	360
70	60	310	385	486	4.83	4.0	141	175	221
	50	328	424	665		3.45	149	193	302
	40	502	624	787		2.76	228	284	358
	0-27	572	711	897		0-1.9	260	323	408
80	70	329	409	616	5.52	4.83	150	186	280
	60	452	562	708		4.0	205	255	322
	50	537	668	842		3.45	244	304	383
	0-32	640	795	1,003		0-2.2	291	361	456
90	80	346	431	543	6.0	5.52	157	196	247
	70	478	694	749		4.83	217	315	340
	60	570	708	893		4.0	259	322	406
	50	639	795	1,002		3.45	290	361	455
	0-37	707	879	1,109		0-2.6	321	400	504
100	90	363	452	570	6.9	6.0	165	205	259
	80	502	625	788		5.52	228	284	358
	70	600	747	942		4.83	273	340	428
	60	676	840	1,060		4.0	307	382	482
125	0-42	776	963	1,215	8.62	0-2.9	353	438	552
	110	489	608	767		7.59	222	276	349
	100	619	770	971		6.9	281	350	441
	80	798	992	1,250		5.52	363	451	568
	70	863	1,073	1,353		4.83	392	488	615
150	0-55	944	1,174	1,480	10.0	0-3.8	429	534	673
	130	611	759	958		8.97	278	345	435
	120	736	915	1,154		8.28	335	416	525
	100	918	1,141	1,439		6.9	417	519	654
0-63	1,113	1,384	1,745	0-4.3	506	629	793		

NOTE: Where it is not possible to calculate pressure drop, 35% - 40% of gauge supply pressure can be used as a reasonable approximation.

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit www.armstronginternational.com for up-to-date information.

Temperature Regulator Selection Example

Parameters:

Fluid Steam
 Maximum inlet pressure 100 psi
 Outlet pressure 90 psi
 Maximum flow rate 500 lbs/hr
 Temperature required 150°F
 Distance from regulator to sensing point 5'

To Locate Proper Model:

Enter inlet column at 100 psi
 Move to outlet pressure of 90 psi
 Locate capacity of 570 lbs/hr under connection size 1"
 Find capillary temperature range 77 - 158°F
 Select capillary length 6-1/2'

Application Will Require:

OB-30, 1" with 77 - 158°F Temp. Range, Capillary Length 6-1/2'

OB-30/31 Capacities—Water							
Δ P	gpm			l/min			
	Connection Size			Connection Size			
	in			mm			
psig	1/2	3/4	1	bar	15	20	25
5	8.1	10.1	12.3	.35	30	38	47
10	11.9	14.3	18.5	.70	45	55	70
15	14.3	17.6	22.0	1.00	55	67	83
20	16.7	20.7	26.4	1.40	63	78	100
25	18.5	22.0	28.2	1.80	70	83	107
30	20.3	25.6	31.7	2.00	77	97	120
50	26.4	33.5	41.4	3.50	100	127	157
75	32.6	39.6	49.3	5.20	123	150	187
100	37.9	46.2	57.2	7.00	143	175	217
125	42.2	52.0	65.6	8.70	160	197	248
150	46.3	57.25	70.5	10.00	175	217	267

Capillary Temperature Ranges

Temperature Ranges °F (°C)
32 - 95 (0 - 35)
77 - 158 (25 - 70)
104 - 212 (40 - 100)
140 - 266 (60 - 130)
158 - 302 (70 - 150)

NOTE: If desired set temperature is in temperature range overlap, select lower range.

Pressure and Temperature Controls