

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) 77 - 158 (25 - 70)	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)		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.

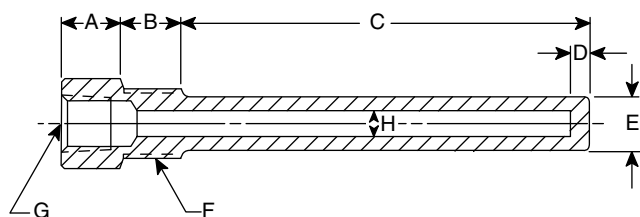
OB-30/31 Dimensions and Weights

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

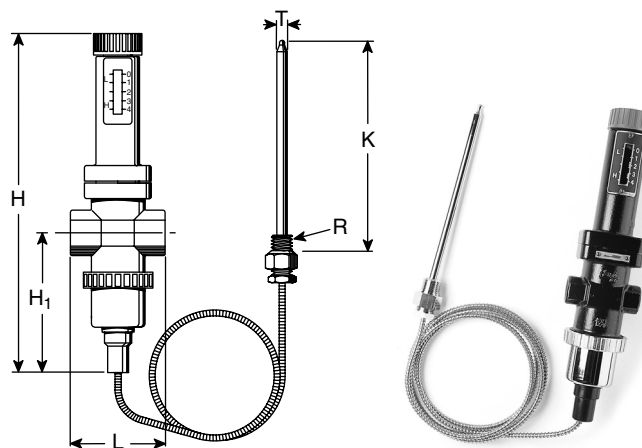
Model	A		B		C		D		E		F		G		H	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
OB-30/31	3/4	20	1	25	7-1/2	204	1/4	7	.765	20	3/4	20	1/2	15	.380	10
OB-2000/2000PT	1	25	3/4	20	7-3/4	197	1/4	7	.89	23	1	25	3/4	20	.630	16
OBK-2000	1	25	3/4	20	12-1/2	318	1/4	7	.765	20	3/4	20	1/2	15	.515	13

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			C _v Factors
		Connection Size in			
psig		1/2	3/4	1	
		3.7	4.6	5.8	
5	3	67	83	105	
	2	81	100	127	
	0	101	126	159	
10	8	75	94	118	
	6	104	130	164	
	4	125	155	196	
	0	154	191	241	
15	12	101	125	158	
	9	139	172	218	
	6	165	205	259	
	0-5	200	249	314	
20	15	139	173	218	
	10	181	235	296	
	5	221	275	347	
	0-2	234	290	367	
25	20	149	186	234	
	15	204	254	320	
	10	241	300	378	
	0-5	268	333	420	
30	25	159	198	250	
	15	258	322	406	
	0-7	302	375	473	
40	30	244	304	384	
	20	328	408	515	
	0-12	369	459	579	
50	40	268	333	420	
	30	383	451	569	
	0-17	437	543	685	
60	50	290	360	454	
	40	395	491	619	
	0-22	504	627	791	
70	60	310	385	486	
	50	328	424	665	
	40	502	624	787	
	0-27	572	711	897	
80	70	329	409	616	
	60	452	562	708	
	50	537	668	842	
	0-32	640	795	1,003	
90	80	346	431	543	
	70	478	694	749	
	60	570	708	893	
	50	639	795	1,002	
	0-37	707	879	1,109	
100	90	363	452	570	
	80	502	625	788	
	70	600	747	942	
	60	676	840	1,060	
	0-42	776	963	1,215	
125	110	489	608	767	
	100	619	770	971	
	80	798	992	1,250	
	70	863	1,073	1,353	
	0-55	944	1,174	1,480	
150	130	611	759	958	
	120	736	915	1,154	
	100	918	1,141	1,439	
	0-63	1,113	1,384	1,745	

OB-30 Capacities—Steam					
Inlet	Outlet	kg/hr			C _v Factors
		Connection Size mm			
bar		15	20	25	
		3.7	4.6	5.8	
.35	.20	30	38	48	
	.14	37	45	58	
	0	46	57	72	
.7	.55	34	43	54	
	.41	47	59	75	
	.28	57	70	89	
	0	70	87	110	
1.0	.83	46	57	72	
	.62	63	78	99	
	.41	75	93	118	
	0-.35	91	113	143	
1.38	1.0	63	79	99	
	.7	82	107	135	
	.35	100	125	158	
	0-.14	106	132	167	
1.72	1.38	68	85	106	
	1.0	93	115	145	
	.7	110	136	172	
	0-.35	122	151	191	
2.0	1.72	72	90	114	
	1.0	117	146	185	
	0-.48	137	170	215	
2.76	2.0	111	138	175	
	1.38	149	185	234	
	0-.83	168	209	263	
3.45	2.76	122	151	191	
	2.0	174	205	259	
	0-1.2	199	247	311	
4.0	3.45	132	164	206	
	2.76	180	223	281	
	0-1.5	229	285	360	
4.83	4.0	141	175	221	
	3.45	149	193	302	
	2.76	228	284	358	
	0-1.9	260	323	408	
5.52	4.83	150	186	280	
	4.0	205	255	322	
	3.45	244	304	383	
	0-2.2	291	361	456	
6.0	5.52	157	196	247	
	4.83	217	315	340	
	4.0	259	322	406	
	3.45	290	361	455	
	0-2.6	321	400	504	
6.9	6.0	165	205	259	
	5.52	228	284	358	
	4.83	273	340	428	
	4.0	307	382	482	
	0-2.9	353	438	552	
8.62	7.59	222	276	349	
	6.9	281	350	441	
	5.52	363	451	568	
	4.83	392	488	615	
	0-3.8	429	534	673	
10.0	8.97	278	345	435	
	8.28	335	416	525	
	6.9	417	519	654	
	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.

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			
	1/2	3/4	1	mm			
psig				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