

# Temperature Regulators

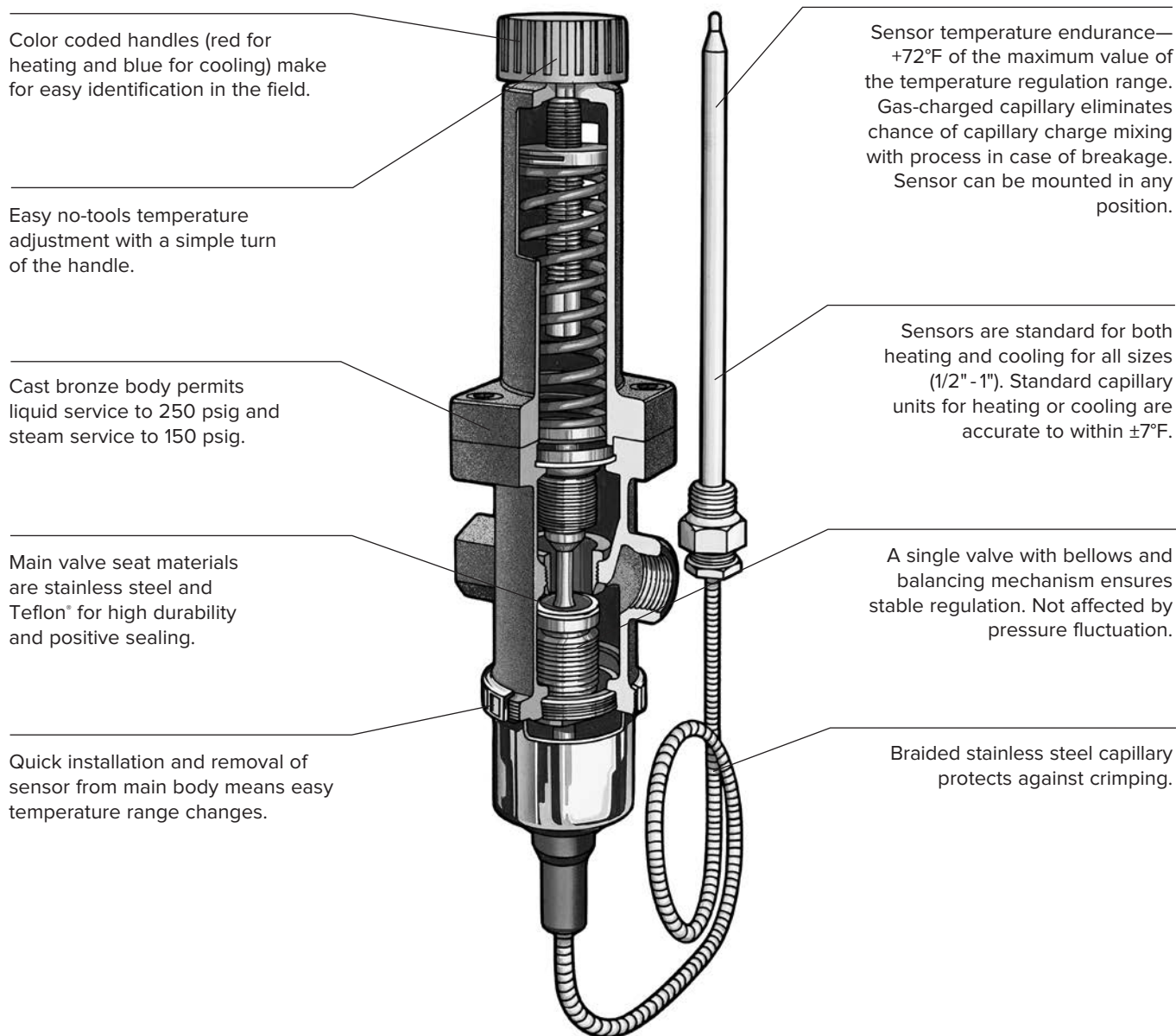


CHRYSSAFIDIS

## For Steam, Water and Non-Corrosive Liquid Service

Armstrong self-actuated temperature regulators are compact, high performance units that are simple in design and operation—and suitable for a wide variety of applications.

Features including flexible mounting positions of the sensor, interchangeable capillaries and varied temperature ranges make installation, adjustment and maintenance quick and easy.



Temperature Regulator Valve Selection

If the Service Is	If Inlet Pressure is psig (barg)	Type of Control	Temperature Ratings °F (°C)	Temperature Accuracy °F (°C)	If Maximum Capacity Is Less Than	Look for Model	Find on Page
Heating	5 to 150 (.34 to 10)	Self Contained Direct Acting	From 32 to 302 (0 to 150) 5 Ranges	±7 (±3) From set point	1 745 (792)	OB-30	304
	5 to 15 (.34 to 1)	Self Contained Pilot Operated	From 18 to 361 (-7 to 183) 6 Ranges	±2 (±1) From set point	5 643 (2 565)	OB-2000L	308
	10 to 300 (.69 to 20)				58 032 (26 323)	OB-2000 OB-2000PT	306 310
Cooling	5 to 250 (.34 to 17)	Self Contained Reverse Acting	From 32 to 302 (0 to 150) 5 Ranges	±7 (±3) From set point	70 gpm (308 m <sup>3</sup> /hr)	OB-31	304

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit [armstronginternational.com](http://armstronginternational.com) for up-to-date information.

## 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 (barg)	Maximum Diff. psig (barg)	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.

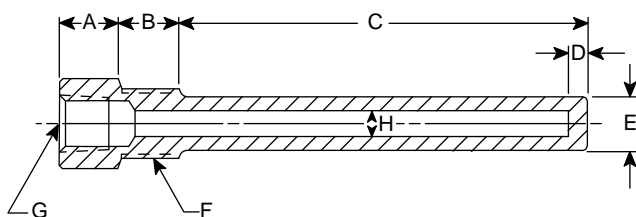
### OB-30/31 Dimensions and Weights

Size	L		H <sub>1</sub>		H		T		K		R		Weight		C <sub>v</sub>	
	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

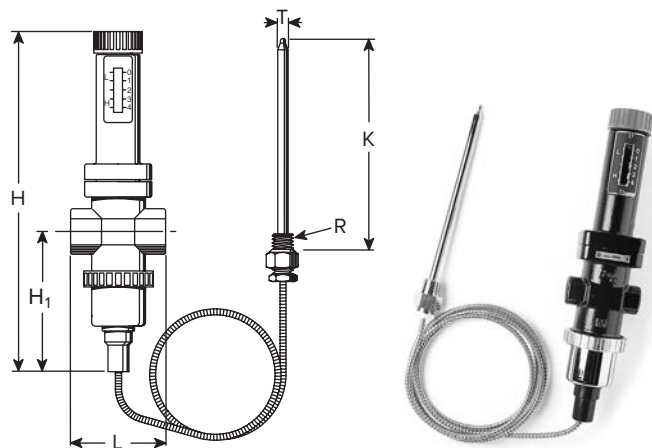
Model	A		B		C		D		E		F		G		H	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
OB-30/31	3/4	20	1	25	7-1/2	204	1/4	7	.765	20	3/4	20	1/2	15	.380	10
OB-2000/2000PT	1	25	3/4	20	7-3/4	197	1/4	7	.89	23	1	25	3/4	20	.630	16
OBK-2000	1	25	3/4	20	12-1/2	318	1/4	7	.765	20	3/4	20	1/2	15	.515	13

### 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.



Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit [armstronginternational.com](http://armstronginternational.com) for up-to-date information.



# OB-30/31

CHRYSsafidis

OB-30 Capacities—Steam									
		lb/hr					kg/hr		
Inlet	Outlet	Connection Size			Inlet	Outlet	Connection Size		
		in					mm		
psig		1/2	3/4	1	barg		15	20	25
C <sub>v</sub> Factors		3.7	4.6	5.8	C <sub>v</sub> 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
15	0	154	191	241	1.0	0	70	87	110
	12	101	125	158		.83	46	57	72
	9	139	172	218		.62	63	78	99
20	6	165	205	259	1.38	.41	75	93	118
	0-5	200	249	314		0-.35	91	113	143
	15	139	173	218		1.0	63	79	99
25	10	181	235	296	1.72	.7	82	107	135
	5	221	275	347		.35	100	125	158
	0-2	234	290	367		0-.14	106	132	167
30	20	149	186	234	2.0	1.38	68	85	106
	15	204	254	320		1.0	93	115	145
	10	241	300	378		.7	110	136	172
40	0-5	268	333	420	2.76	0-.35	122	151	191
	25	159	198	250		1.72	72	90	114
	15	258	322	406		1.0	117	146	185
50	0-7	302	375	473	3.45	0-48	137	170	215
	30	244	304	384		2.0	111	138	175
	20	328	408	515		1.38	149	185	234
60	0-12	369	459	579	4.0	0-.83	168	209	263
	40	268	333	420		2.76	122	151	191
	30	383	451	569		2.0	174	205	259
70	0-17	437	543	685	4.83	0-1.2	199	247	311
	50	290	360	454		3.45	132	164	206
	40	395	491	619		2.76	180	223	281
80	0-22	504	627	791	5.52	0-1.5	229	285	360
	60	310	385	486		4.0	141	175	221
	50	328	424	665		3.45	149	193	302
90	40	502	624	787	6.0	2.76	228	284	358
	0-27	572	711	897		0-1.9	260	323	408
	70	329	409	616		4.83	150	186	280
100	60	452	562	708	6.9	4.0	205	255	322
	50	537	668	842		3.45	244	304	383
	0-32	640	795	1003		0-2.2	291	361	456
125	80	346	431	543	8.62	5.52	157	196	247
	70	478	694	749		4.83	217	315	340
	60	570	708	893		4.0	259	322	406
150	50	639	795	1002	10.0	3.45	290	361	455
	0-37	707	879	1109		0-2.6	321	400	504
	90	363	452	570		6.0	165	205	259
100	80	502	625	788	10.0	5.52	228	284	358
	70	600	747	942		4.83	273	340	428
	60	676	840	1060		4.0	307	382	482
125	0-42	776	963	1215	10.0	0-2.9	353	438	552
	110	489	608	767		7.59	222	276	349
	100	619	770	971		6.9	281	350	441
150	80	798	992	1250	10.0	5.52	363	451	568
	70	863	1073	1353		4.83	392	488	615
	0-55	944	1174	1480		0-3.8	429	534	673
150	130	611	759	958	10.0	8.97	278	345	435
	120	736	915	1154		8.28	335	416	525
	100	918	1141	1439		6.9	417	519	654
0-63	1113	1384	1745	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 psig  
 Outlet pressure.....90 psig  
 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 psig  
 Move to outlet pressure of.....90 psig  
 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							
		gpm			l/min		
Δ P	Connection Size			Δ P	Connection Size		
	in				mm		
psig	1/2	3/4	1	barg	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