

For Steam

Armstrong's OB-2000 is a high performance externally piloted temperature regulator for large capacity applications such as heat exchangers, steam coils, steam dryers, plating tanks and parts washers. It is self-actuated and requires no external energy source. Capillary units mount in any position and can be easily disconnected and interchanged,

offering easy installation and maximum application flexibility. Available in sizes 1/2" through 6" with six temperature ranges and three capillary lengths.

For a fully detailed certified drawing, refer to CDY #1013.

OB-2000L Specifications					
Application	Inlet Pressure psig (bar)	Reduced Pressure psig (bar)	Temperature Ranges °F (°C)	Temperature Accuracy °F (°C)	Capillary Lengths feet (meters)
Steam	NPT 10 - 300 (.69 - 20) 150 lb Flanged 10 - 185 (.69 - 13) 300 lb Flanged 10 - 300 (.69 - 20)	7 (.48)	18 - 59 (-8 - 15) 50 - 97 (10 - 36) 86 - 144 (30 - 62) 131 - 201 (55 - 94) 176 - 260 (80 - 127) 239 - 361 (115 - 183)	±2 (±1) From Set Point	*6-1/2 (2) 9-1/2 (3) 16-1/2 (5)

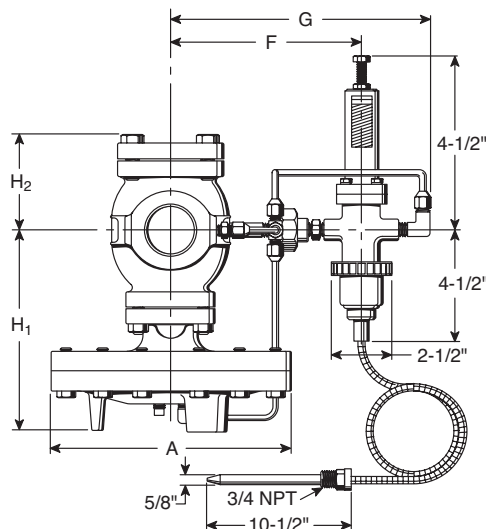
*Standard length.

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

OB-2000 Dimensions and Weights																									
Size		Face-to-Face						H ₁		H ₂		A		F		G		Weight						C _v	
		NPT		150#		300#												NPT		150#		300#			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg	lb	kg	lb	kg
1/2	15	5-15/16	150	5-9/16	141	5-3/4	147	6-3/4	170	2-15/16	74	7-15/16	200	6-5/8	169	8-3/4	222	31	15	33	15	39	18	5.0	
3/4	20	5-15/16	150	5-1/2	140	5-3/4	147	6-3/4	170	2-15/16	74	7-15/16	200	6-5/8	169	8-3/4	222	31	15	33	15	39	18	7.2	
1	25	6-15/16	160	5-3/4	147	6-1/4	159	6-15/16	175	3-1/16	76	8-15/16	226	6-7/8	174	8-7/8	226	39	19	41	20	47	21	10.9	
1-1/4	32	7-1/8	180	6-1/2	166	7-1/16	179	7-5/8	192	3-9/16	90	8-5/16	226	7-1/8	182	9-1/4	235	47	22	49	23	54	24	14.3	
1-1/2	40	7-1/8	180	7-7/16	189	7-15/16	202	7-5/8	192	3-9/16	90	8-15/16	226	7-1/8	182	9-1/4	235	47	22	49	23	54	24	18.8	
2	50	9-1/8	230	8-9/16	217	9-1/8	232	8-1/2	216	4-1/16	103	10-15/16	276	7-7/16	189	9-1/2	242	71	33	77	36	78	36	32	
2-1/2	65	-	-	10-15/16	278	11-1/2	292	9-13/16	251	4-7/8	122	13-13/16	352	8-1/8	206	10-1/8	259	-	-	138	63	140	64	60	
3	80	-	-	11-3/4	298	12-7/16	315	10-7/16	264	5-3/8	135	13-13/16	352	8-9/16	217	10-5/8	270	-	-	149	69	155	71	78	
4	100	-	-	13-1/2	343	14-1/8	359	12-5/8	321	6-9/16	167	15-13/16	401	9-1/4	234	11-1/4	287	-	-	234	107	243	110	120	

NOTE: For 6" (150 mm) consult factory.

*50% reduced port available for sizes 1/2" - 4". The C_v value should be divided by 2 to get reduced port C_v.



For Steam

OB-2000 Sensor and Accessory Specifications					
Capillary Material	Capillary Temperature Ranges °F (°C)	Bulb Material	Bulb Connection	Thermal Well Material	Thermal Well Connection
Copper Capillary Tube With 304 Stainless Steel Armor Shield	18 - 59 (-8 - 15) 50 - 97 (10 - 36) 86 - 144 (30 - 62) 131 - 201 (55 - 94) 176 - 260 (80 - 127) 239 - 361 (115 - 183)	Nickel Plated Copper Bulb	3/4" (20 mm) NPT	Brass* 304 Stainless Steel*	1" (25 mm) NPT

*Standard. Other material available upon request. See page 304 for dimensions of well.

NOTE: Capillary can withstand a maximum of 36°F (20°C) above rated range.

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

OB-2000 Materials					
OB-2000	Body Material	Seat Type & Material	Valve Material	Connection	Maximum Temperature °F (°C)
Main Valve	Ductile Iron ASTM A536	Single Seat Stainless Steel AISI 420	Stainless Steel AISI 420	NPT 150 lb Flanged 300 lb Flanged	450 (232)
Temperature Pilot Valve	Bronze ASTM B584			1/4" (6 mm) NPT	

Valve Sizing
Proper valve selection requires the following information
• Steam capacity required for application
• Supply pressure of steam
• Allowable pressure drop across valve*

*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 75 psi
 Maximum flow rate 1,500 lbs/hr
 Temperature required 180°F
 Distance from regulator to sensing point 5'

To Locate Proper Model (refer to chart on page 311):

Enter inlet column at 100 psi
 Move to outlet pressure of 75 psi
 Locate capacity of
 1,500 lbs/hr under 1" connection size
 Find capillary temp. range 131-201°F
 Select capillary length 6-1/2'

Application Will Require:
**OB-2000, 1" with 131-201°F Temp. Range,
 Capillary Length 6-1/2'**

Pressure and Temperature Controls

For Steam

Armstrong's OB-2000L is a high performance externally piloted temperature regulator for large capacity and low pressure applications. It is self-actuated and requires no external energy source. Capillary units mount in any position and can be easily disconnected and interchanged, offering easy installation and maximum application flexibility.

Available in sizes 1/2" through 4" with six temperature ranges and three capillary lengths.

For a fully detailed certified drawing, refer to CDY #2232.

OB-2000L Specifications

Application	Inlet Pressure psig (bar)	Reduced Pressure psig (bar)	Temperature Ranges °F (°C)	Temperature Accuracy °F (°C)	Capillary Lengths feet (meters)
Steam	5 - 15 (.3 - 1)	3 (.21)	18 - 59 (-8 - 15) 50 - 97 (10 - 36) 86 - 144 (30 - 62) 131 - 201 (55 - 94) 176 - 260 (80 - 127) 239 - 361 (115 - 183)	±2 (±1) From Set Point	*6-1/2 (2) 9-1/2 (3) 16-1/2 (5)

*Standard length.

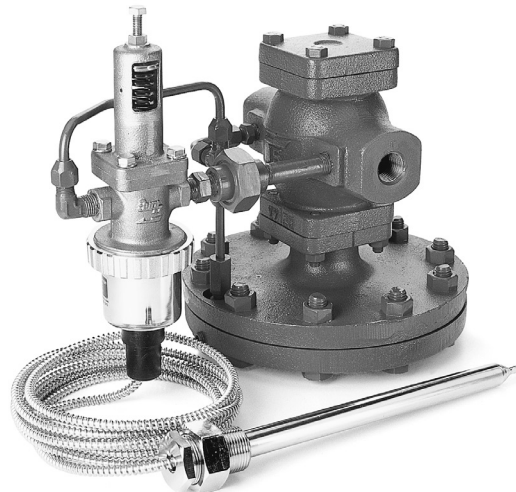
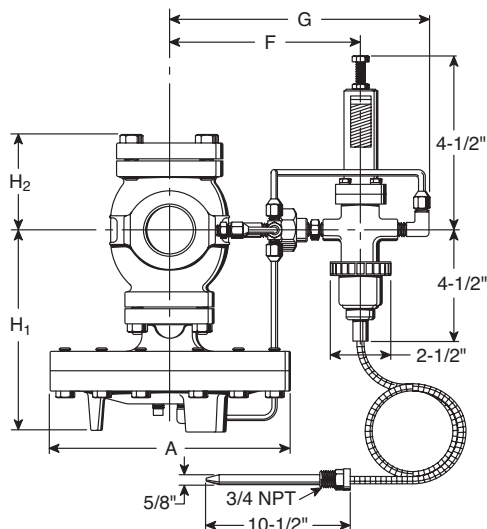
Note: If desired set temperature is in temperature range overlap, select lower range.

OB-2000L Dimensions and Weights

Size	Face-to-Face "L"				H ₁	H ₂	A	F	G	Weight				C _v						
	NPT		150#							NPT		150#								
	in	mm	in	mm						in	kg	lb	kg							
1/2	15	5-15/16	150	5-9/16	141	6-3/4	170	2-15/16	74	7-15/16	200	6-5/8	169	8-3/4	222	31	15	33	15	6.5
3/4	20	5-15/16	150	5-1/2	140	6-3/4	170	2-15/16	74	7-15/16	200	6-5/8	169	8-3/4	222	31	15	33	15	9
1	25	6-5/16	160	5-3/4	147	6-15/16	175	3-1/16	76	8-15/16	226	6-7/8	174	8-7/8	226	39	19	41	20	12
1-1/4	32	7-1/8	180	6-1/2	166	7-5/8	192	3-9/16	90	8-15/16	226	7-1/8	182	9-1/4	235	47	22	49	23	19
1-1/2	40	7-1/8	180	7-7/16	189	7-5/8	192	3-9/16	90	8-15/16	226	7-1/8	182	9-1/4	235	47	22	49	23	22
2	50	9-1/8	230	8-9/16	217	8-1/2	216	4-1/16	103	10-15/16	276	7-7/16	189	9-1/2	242	71	33	77	36	38
2-1/2	65	—	—	10-15/16	278	9-13/16	251	4-7/8	122	13-13/16	352	8-1/8	206	10-1/8	259	—	—	138	63	66
3	80	—	—	11-3/4	298	10-7/16	264	5-3/8	135	13-13/16	352	8-9/16	217	10-5/8	270	—	—	149	69	78
4	100	—	—	13-1/2	343	12-5/8	321	6-9/16	167	15-13/16	401	9-1/4	234	11-1/4	287	—	—	234	107	116

*50% reduced port available for sizes 1/2" - 4". The C_v value should be divided by 2 to get reduced port C_v.

For capacities see page 48.



OB-2000L



For Steam

OB-2000L Sensor and Accessory Specifications					
Capillary Material	Capillary Temperature Ranges °F (°C)	Bulb Material	Bulb Connection	Thermal Well Material	Thermal Well Connection
Copper Capillary Tube With 304 Stainless Steel Armor Shield	18 - 59 (-8 - 15) 50 - 97 (10 - 36) 86 - 144 (30 - 62) 131 - 201 (55 - 94) 176 - 260 (80 - 127) 239 - 361 (115 - 183)	Nickel Plated Copper Bulb	3/4" (20 mm) NPT	Brass* 304 Stainless Steel*	1" (25 mm) NPT

*Standard. Other material available upon request. See page 304 for dimensions of well.

NOTE: Capillary can withstand a maximum of 36°F (20°C) above rated range.

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

OB-2000L Materials					
OB-2000	Body Material	Seat Type & Material	Valve Material	Connection	Maximum Temperature °F (°C)
Main Valve	Ductile Iron ASTM A536	Single Seat Stainless Steel AISI 420	Stainless Steel AISI 420	NPT 150 lb Flanged 300 lb Flanged	450 (232)
Temperature Pilot Valve	Bronze ASTM B584			1/4" (6 mm) NPT	

Pressure and Temperature Controls

GP-2000L, OB-2000L

Capacities for Steam Service

GP-2000L and OB-2000L Steam Capacities																						
		lb/hr										kg/hr										
Inlet	Outlet	Connection Size										Inlet	Outlet	Connection Size								
		in												mm								
psig		1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	bar		15	20	25	32	40	50	65	80	100	
5	2	218	277	316	495	594	1,100	1,782	1,881	3,135	0.34	0.14	99	126	143	225	269	499	808	853	1,422	
10	7	161	223	297	471	545	942	1,635	1,933	2,874	0.69	0.48	73	101	135	214	247	427	742	877	1,304	
	3	356	435	475	812	920	1,518	2,574	2,772	4,598		0.21	161	197	215	368	417	689	1,168	1,257	2,086	
15	12	178	246	328	519	601	1,038	1,803	2,131	3,169	1.03	0.83	81	112	149	235	273	471	818	966	1,437	
	8	261	362	483	764	885	1,528	2,654	3,137	4,665		0.55	119	164	219	347	401	693	1,204	1,423	2,116	
	3	416	482	594	970	1,168	1,694	3,069	3,366	5,643		0.21	189	219	269	440	530	768	1,392	1,527	2,560	

Note: For reduced port capacity, please divide capacity by 2.

For Steam Service

The OB-2000PT is a diaphragm-operated externally piloted pressure/temperature combination regulator. It is used in applications where maximum pressure should be limited and the temperature of the heated medium is controlled using a single seated main valve. Temperature pilot and capillary unit disconnect, making repairs or temperature range

changes quick and easy. Available in sizes 1/2" through 6" and with a choice of four spring ranges, six temperature ranges and three capillary lengths.

For a fully detailed certified drawing, refer to CDY #1006.

OB-2000PT Specifications

Application	Inlet Pressure psig (bar)	Minimum Differ. Pressure psig (bar)	Reduced Pressure & Spring Color psig (bar)	Temperature Ranges °F (°C)	Temperature Accuracy °F (°C)	Capillary Lengths feet (meters)
Steam	NPT 15 - 300 (1 - 20)	7 (.48)	1.5 - 3 (.10 - .21) Yellow 3 - 21 (.21 - 1.4) Yellow 15 - 200 (1.0 - 13.8) Green	18 - 59 (-8 - 15) 50 - 97 (10 - 36) 86 - 144 (30 - 62) 131 - 201 (55 - 94) 176 - 260 (80 - 127) 239 - 361 (115 - 183)	±2 (±1) From Set Point	6-1/2 (2)* 9-1/2 (3) 16-1/2 (5)
	150 lb Flanged 15 - 185 (1 - 13)					
	300 lb Flanged 15 - 300 (1 - 20)					

*Standard length.

OB-2000PT Sensor and Accessory Specifications

Capillary Material	Capillary Temperature Ranges °F (°C)	Bulb Material	Bulb Connection	Thermal Well Material	Thermal Well Connection
Copper Capillary Tube With 304 Stainless Steel Armor Shield	18 - 59 (-8 - 15) 50 - 97 (10 - 36) 86 - 144 (30 - 62) 131 - 201 (55 - 94) 176 - 260 (80 - 127) 239 - 361 (115 - 183)	Nickel Plated Copper Bulb	3/4" (20 mm) NPT	Brass* 304 Stainless Steel*	1" (25 mm) NPT

*Standard. Other material available upon request. See page 304 for dimensions of well.

NOTES: Capillary can withstand a maximum of 36°F (20°C) above rated range. If desired set temperature is in temperature range overlap, select lower range.

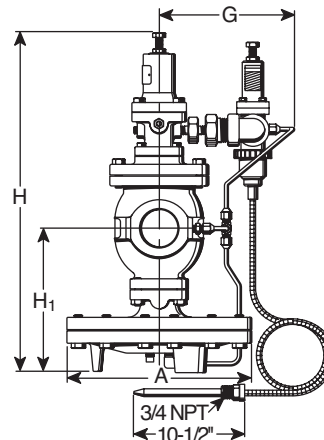
OB-2000PT Dimensions and Weights

Size		Face-to-Face						H		H ₁		A		G		Weights						C _v	
		NPT		150#		300#										NPT		150#		300#			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg	lb	kg	lb	kg	lb	kg
1/2	15	5-15/16	150	5-9/16	141	5-3/4	147	15-3/4	398	6-3/4	170	7-15/16	200	6-1/2	166	47	22	49	23	55	25	5.0	
3/4	20	5-15/16	150	5-1/2	140	5-3/4	147	15-3/4	398	6-3/4	170	7-15/16	200	6-1/2	166	47	22	49	23	55	25	7.2	
1	25	6-15/16	160	5-3/4	147	6-1/4	159	15-15/16	404	6-15/16	175	8-15/16	226	7	178	57	26	59	28	64	29	10.9	
1-1/4	32	7-1/8	180	6-1/2	166	7-1/16	179	17-1/8	434	7-5/8	192	8-15/16	226	7-1/4	185	67	31	69	31	74	34	14.3	
1-1/2	40	7-1/8	180	7-7/16	189	7-15/16	202	17-1/8	434	7-5/8	192	8-15/16	226	7-1/4	185	67	31	69	31	75	34	18.8	
2	50	9-1/8	230	8-9/16	217	9-1/8	232	19-5/8	498	8-1/2	216	10-15/16	276	6-1/2	166	89	41	94	43	100	46	32	
2-1/2	65	-	-	10-15/16	278	11-1/2	292	21-3/4	552	9-13/16	251	13-13/16	352	6-1/2	166	-	-	158	72	167	76	60	
3	80	-	-	11-3/4	298	12-7/16	315	22-5/8	575	10-7/16	264	13-13/16	352	6-1/2	166	-	-	171	78	183	83	78	
4	100	-	-	13-1/2	343	14-1/8	359	25-15/16	658	12-5/8	321	15-13/16	401	6-1/2	166	-	-	263	120	281	128	120	

Note: For 6" (150 mm) consult factory.

OB-2000PT Materials

OB-2000PT	Body Material	Valve & Seat Material	Maximum Temperature °F (°C)
Main Valve	Ductile Iron ASTM A536	Stainless Steel AISI 420	450 (232)
Temperature Pilot Valve	Bronze ASTM B584		
Pressure Pilot	Ductile Iron ASTM A536		





OB-2000, OB-2000PT

Capacities for Steam Service

OB-2000, OB-2000PT Capacities—Steam											
Inlet	Outlet	lb/hr									
		Connection Size									
		in									
psig		1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	6
C _v Factor		5	7.2	10.9	14.3	18.8	32	60	78	120	250
10*	0 - 3	211	304	460	604	794	1,352	2,534	3,294	5,068	10,559
	8	201	290	438	575	756	1,287	2,413	3,137	4,826	10,055
15	0 - 3	250	361	546	716	942	1,603	3,005	3,907	6,010	12,521
	13	219	316	478	628	825	1,404	2,633	3,423	5,267	10,972
20	0 - 3	313	451	683	896	1,178	2,006	3,761	4,889	7,521	15,669
	18	236	340	515	676	889	1,513	2,837	3,688	5,673	11,819
25	0 - 5	339	489	740	971	1,276	2,172	4,073	5,295	8,146	16,972
	23	252	363	550	721	948	1,614	3,026	3,934	6,052	12,609
30	0 - 7	382	550	833	1,093	1,437	2,446	4,586	5,962	9,172	19,109
	33	281	405	613	804	1,057	1,799	3,373	4,385	6,747	14,056
40	25	395	569	861	1,130	1,486	2,529	4,741	6,164	9,483	19,756
	0 - 12	468	673	1,020	1,338	1,758	2,993	5,612	7,296	11,224	23,384
50	42	327	471	713	936	1,230	2,094	3,927	5,105	7,853	16,361
	30	491	707	1,071	1,405	1,847	3,143	5,894	7,662	11,788	24,557
60	0 - 17	553	797	1,206	1,582	2,080	3,540	6,638	8,630	13,276	27,659
	51	373	537	814	1,067	1,403	2,389	4,479	5,823	8,958	18,662
75	45	471	679	1,028	1,348	1,773	3,017	5,657	7,355	11,315	23,572
	35	586	843	1,277	1,675	2,202	3,748	7,027	9,135	14,053	29,278
100	0 - 22	639	920	1,392	1,827	2,401	4,088	7,664	9,963	15,328	31,934
	63	471	678	1,026	1,346	1,769	3,012	5,647	7,341	11,295	23,530
125	55	593	854	1,292	1,696	2,229	3,794	7,114	9,249	14,229	29,643
	45	703	1,012	1,532	2,010	2,643	4,499	8,435	10,966	16,871	35,148
150	0 - 30	767	1,104	1,672	2,193	2,884	4,908	9,203	11,964	18,406	38,347
	85	595	857	1,298	1,703	2,239	3,811	7,145	9,289	14,291	29,773
175	75	751	1,081	1,636	2,147	2,822	4,804	9,007	11,709	18,014	37,529
	60	914	1,316	1,992	2,614	3,436	5,849	10,967	14,257	21,934	45,696
200	0 - 42	981	1,412	2,138	2,805	3,687	6,276	11,768	15,299	23,536	49,034
	106	739	1,064	1,610	2,112	2,777	4,727	8,863	11,522	17,725	36,928
225	100	837	1,206	1,825	2,395	3,149	5,359	10,048	13,063	20,097	41,869
	75	1,125	1,619	2,451	3,216	4,228	7,197	13,494	17,543	26,989	56,226
250	0 - 55	1,194	1,720	2,604	3,416	4,491	7,644	14,333	18,633	28,666	59,722
	127	881	1,269	1,922	2,521	3,314	5,641	10,577	13,751	21,155	44,072
275	100	1,241	1,787	2,705	3,549	4,666	7,943	14,893	19,360	29,785	62,052
	0 - 67	1,408	2,028	3,070	4,027	5,295	9,012	16,898	21,968	33,796	70,409
300	148	1,024	1,475	2,233	2,929	3,851	6,555	12,291	15,978	24,581	51,211
	125	1,348	1,940	2,938	3,854	5,067	8,624	16,170	21,021	32,341	67,376
350	100	1,587	2,285	3,459	4,537	5,965	10,154	19,038	24,750	38,076	79,325
	0 - 80	1,622	2,336	3,536	4,639	6,098	10,380	19,463	25,302	38,926	81,097
400	170	1,149	1,655	2,506	3,287	4,322	7,356	13,792	17,930	27,585	57,468
	150	1,446	2,083	3,153	4,136	5,438	9,256	17,354	22,560	34,708	72,309
450	125	1,712	2,465	3,732	4,896	6,437	10,956	20,542	26,705	41,085	85,593
	0 - 92	1,836	2,643	4,002	5,250	6,902	11,748	22,028	28,637	44,056	91,784
500	191	1,292	1,861	2,817	3,695	4,858	8,270	15,505	20,157	31,011	64,606
	175	1,539	2,215	3,354	4,400	5,785	9,847	18,462	24,001	36,925	76,926
550	150	1,829	2,633	3,986	5,230	6,876	11,703	21,944	28,527	43,887	91,431
	0 - 105	2,049	2,951	4,468	5,861	7,706	13,116	24,593	31,971	49,186	102,472
600	200	1,626	2,341	3,544	4,649	6,112	10,404	19,508	25,360	39,015	81,282
	175	1,938	2,791	4,226	5,544	7,288	12,406	23,261	30,239	46,521	96,919
650	150	2,176	3,133	4,743	6,223	8,181	13,925	26,110	33,943	52,219	108,790
	0 - 117	2,263	3,259	4,934	6,473	8,510	14,484	27,158	35,306	54,316	113,159
700	200	2,042	2,941	4,452	5,841	7,679	13,070	24,507	31,859	49,014	102,112
	175	2,299	3,311	5,012	6,575	8,644	14,714	27,588	35,864	55,176	114,950
750	0 - 130	2,477	3,567	5,400	7,084	9,313	15,852	29,723	38,640	59,446	123,847
	200	2,416	3,479	5,267	6,910	9,084	15,462	28,991	37,688	57,982	120,796
800	175	2,637	3,797	5,748	7,540	9,913	16,874	31,638	41,130	63,277	131,826
	0 - 142	2,691	3,875	5,866	7,695	10,117	17,220	32,288	41,975	64,576	134,534

Pressure and Temperature Controls

* Minimum inlet pressure for OB-2000PT is 15 psi (1 bar) because of the pressure pilot.



OB-2000, OB-2000PT

Capacities for Steam Service

OB-2000, OB-2000PT Capacities—Steam											
		kg/hr									
Inlet	Outlet	Connection Size									
		mm									
bar		15	20	25	32	40	50	65	80	100	150
C _v Factor		5	7.2	10.9	14.3	18.8	32	60	78	120	250
0.69*	0 - .21	96	138	209	274	360	613	1,150	1,494	2,299	4,790
1.03	0.55	91	131	199	261	343	584	1,095	1,423	2,189	4,561
	0 - .21	114	164	248	325	427	727	1,363	1,772	2,726	5,679
1.38	0.90	100	143	217	285	374	637	1,194	1,553	2,389	4,977
	0 - .21	142	205	310	407	534	910	1,706	2,218	3,412	7,108
1.72	1.24	107	154	234	307	403	686	1,287	1,673	2,573	5,361
	0 - .34	154	222	336	440	579	985	1,848	2,402	3,695	7,698
2.07	1.59	114	165	249	327	430	732	1,373	1,784	2,745	5,719
	0 - .48	173	250	378	496	652	1,109	2,080	2,704	4,161	8,668
2.76	2.28	128	184	278	365	479	816	1,530	1,989	3,060	6,376
	1.72	114	165	249	327	430	732	1,373	1,784	2,745	5,719
3.45	0 - .83	173	250	378	496	652	1,109	2,080	2,704	4,161	8,668
	2.90	128	184	278	365	479	816	1,530	1,989	3,060	6,376
4.14	2.07	179	258	391	513	674	1,147	2,151	2,796	4,301	8,961
	0 - 1.17	212	305	462	607	798	1,358	2,546	3,309	5,091	10,607
5.17	3.52	148	214	324	425	558	950	1,781	2,315	3,562	7,421
	3.10	148	214	324	425	558	950	1,781	2,315	3,562	7,421
6.89	2.41	223	321	486	637	838	1,426	2,673	3,475	5,347	11,139
	0 - 1.5	251	361	547	718	943	1,606	3,011	3,914	6,022	12,546
8.62	4.34	213	307	465	611	803	1,366	2,562	3,330	5,123	10,673
	3.79	269	387	586	769	1,011	1,721	3,227	4,195	6,454	13,446
10.34	3.10	319	459	695	912	1,199	2,041	3,826	4,974	7,653	15,943
	0 - 2.1	348	501	758	995	1,308	2,226	4,175	5,427	8,349	17,394
12.07	5.86	270	389	589	772	1,016	1,729	3,241	4,213	6,482	13,505
	5.17	340	490	742	974	1,280	2,179	4,086	5,311	8,171	17,023
13.79	4.14	415	597	904	1,186	1,559	2,653	4,975	6,467	9,949	20,728
	0 - 2.9	445	641	970	1,272	1,673	2,847	5,338	6,939	10,676	22,242
15.51	7.31	335	482	730	958	1,260	2,144	4,020	5,226	8,040	16,750
	6.89	380	547	828	1,086	1,428	2,431	4,558	5,925	9,116	18,991
17.24	5.17	510	735	1,112	1,459	1,918	3,265	6,121	7,957	12,242	25,504
	0 - 3.7	542	780	1,181	1,550	2,037	3,467	6,502	8,452	13,003	27,090
18.96	8.76	400	576	872	1,143	1,503	2,559	4,798	6,237	9,596	19,991
	6.89	563	811	1,227	1,610	2,117	3,603	6,755	8,782	13,510	28,147
20.00	0 - 4.6	639	920	1,392	1,827	2,402	4,088	7,665	9,964	15,330	31,937
	10.20	465	669	1,013	1,329	1,747	2,973	5,575	7,247	11,150	23,229
21.00	8.62	611	880	1,332	1,748	2,298	3,912	7,335	9,535	14,670	30,562
	6.89	720	1,036	1,569	2,058	2,706	4,606	8,636	11,226	17,271	35,982
22.00	0 - 5.5	736	1,059	1,604	2,104	2,766	4,709	8,828	11,477	17,657	36,785
	11.72	521	751	1,137	1,491	1,960	3,337	6,256	8,133	12,512	26,067
23.00	10.34	656	945	1,430	1,876	2,466	4,198	7,872	10,233	15,744	32,799
	8.62	776	1,118	1,693	2,221	2,920	4,970	9,318	12,113	18,636	38,825
24.00	0 - 6.3	833	1,199	1,815	2,381	3,131	5,329	9,992	12,990	19,984	41,633
	13.17	586	844	1,278	1,676	2,204	3,751	7,033	9,143	14,066	29,305
25.00	12.07	698	1,005	1,521	1,996	2,624	4,466	8,374	10,887	16,749	34,894
	10.34	829	1,194	1,808	2,372	3,119	5,309	9,954	12,940	19,907	41,473
26.00	0 - 7.24	930	1,339	2,027	2,659	3,495	5,950	11,155	14,502	22,311	46,481
	13.79	737	1,062	1,607	2,109	2,773	4,719	8,849	11,503	17,697	36,869
27.00	12.07	879	1,266	1,917	2,515	3,306	5,627	10,551	13,716	21,102	43,962
	10.34	987	1,421	2,152	2,823	3,711	6,316	11,843	15,396	23,687	49,347
28.00	0 - 8.06	1,027	1,478	2,238	2,936	3,860	6,570	12,319	16,015	24,638	51,329
	13.79	926	1,334	2,019	2,649	3,483	5,929	11,116	14,451	22,233	46,318
29.00	12.07	1,043	1,502	2,273	2,982	3,921	6,674	12,514	16,268	25,028	52,141
	0 - 8.96	1,124	1,618	2,449	3,213	4,224	7,191	13,482	17,527	26,965	56,177
30.00	13.79	1,096	1,578	2,389	3,134	4,120	7,013	13,150	17,095	26,300	54,793
	12.07	1,196	1,722	2,607	3,420	4,497	7,654	14,351	18,656	28,702	59,796
31.00	0 - 9.79	1,220	1,758	2,661	3,491	4,589	7,811	14,646	19,040	29,292	61,024

*Minimum inlet pressure for OB-2000PT is 15 psi (1 bar) because of the pressure pilot.

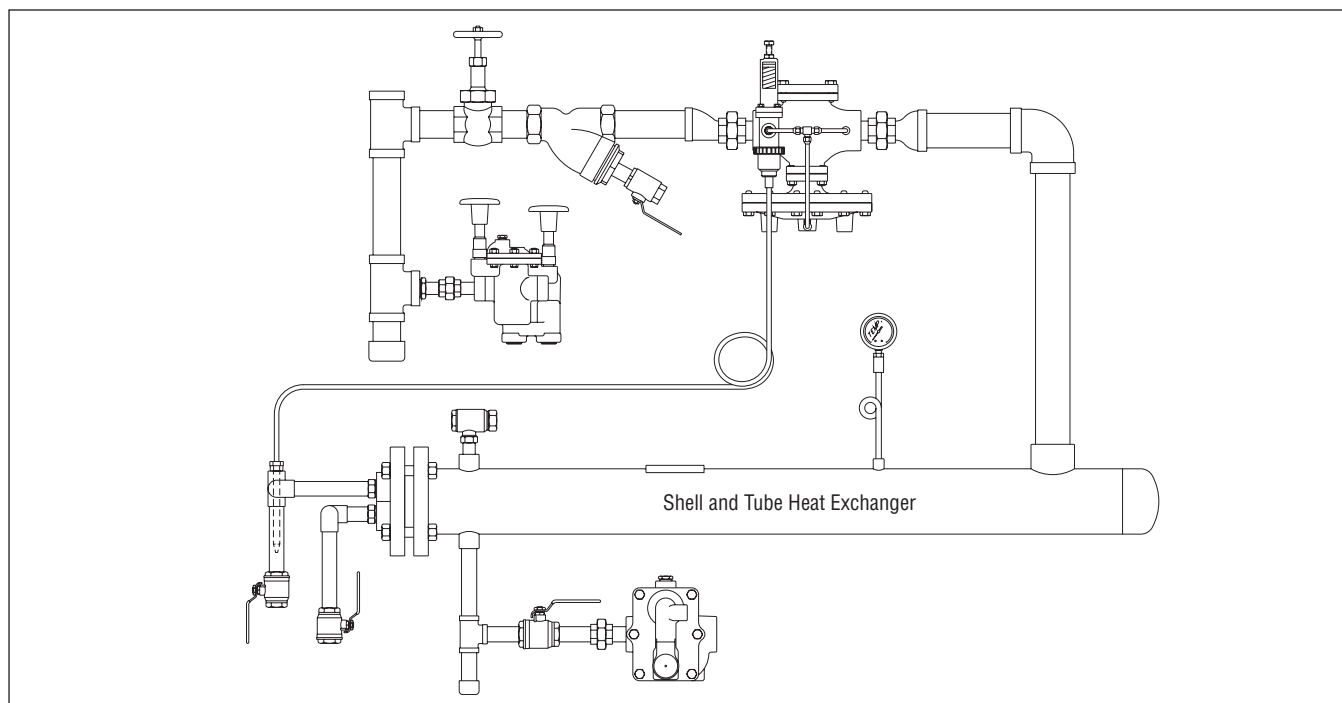
Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit www.armstronginternational.com for up-to-date information.

For Steam Service

Points to Remember When Installing

- Drain condensate at inlet of pressure/temperature regulator with inverted bucket steam trap.
- Protect temperature regulating valve from dirt and scale by installing strainer with 100 mesh screen at inlet of valve.
- Install shutoff valves on either side of the regulating valve along with a by-pass line for maintenance purposes.
- Install vacuum breaker after the outlet of equipment and before the steam trap.
- Install sensor so it is fully immersed in the fluid being heated.
- If temperature well is used, apply heat transfer medium to sensor before insertion into well.
- Place thermometer into system in close proximity to temperature sensor for accurate valve adjustment.
- If possible, do not elevate condensate after steam trap.
- Determine pressure setting before temperature setting (OB-2000PT only).

Typical Installation—OB-30, OB-2000



Load Calculations

Heating oil with steam

$$\text{lb/hr steam} = \frac{\text{GPM} \times \Delta T \times 1.1}{4}$$

Heating water with steam

$$\text{lb/hr steam} = \frac{\text{GPM} \times \Delta T \times 1.1}{2}$$

Heating air with steam

$$\text{lb/hr steam} = \frac{\text{CFM} \times \Delta T \times 1.1}{900}$$

Jacketed kettles or tanks

$$\text{lb/hr steam} = \frac{\text{Gal} \times \text{SG} \times \text{Cp} \times \Delta T \times 8.3}{\text{Lat} \times T}$$

Where:

- GPM = Gallons per minute
- ΔT = Temperature rise (°F)
- CFM = Cubic feet per minute
- Cp = Specific heat of liquids (Btu/lb-°F)
- T = Time (hours)
- Lat = Latent heat of steam (Btu/lb)
- Gal = Gallons of liquid to be heated
- SG = Specific gravity
- 1.1 = Safety factor