

Sentry LST

Convactor heating



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Engineering Data Sheet 811/1

January 2010

General information

Manufacture

Clyde Sentry Low Surface Temperature heat emitters combine a steel and aluminium finned convactor with a one piece flat steel cover and top grill finished in RAL 9010 white. Pipework connection size is R½ Flow and Return. A wide range of pipework connection options are available to suit any application (see page 7), and there is a choice of thermostatic controls for the combination valve (see below). The Sentry is designed for use with LTHW with a maximum flow temperature of 90°C and a maximum allowable pressure of 6 bar. The convactor heat exchanger itself is suitable for MTHW with a maximum flow temperature of 130°C and 10 bar pressure rating is available to special order.

A convactor is especially suitable for this type of emitter, where heat exchange by convection is more desirable than radiation. Typically, covering a radiator and so restricting radiant heat transfer will reduce heat emissions by up to 60% (NHS Estates Health Guidance Note 'Safe' hot water and surface temperatures, 1998).

The one-piece cover is manufactured from 1mm electrolytically galvanised steel to EN 101052 and polyester/epoxy powder coated for a high quality finish. It is easy to clean and a poor harbour for dust and micro-organisms.

Application

These heat emitters provide protection against physical contact with hot surfaces and consequential burning. They will assist an employer to meet his legal duty of care in respect of the risk of scalding and burning from hot water and hot surfaces.

Testing

Clyde Sentry LSTs are tested in accordance with BS EN 442-1:1995. As required by this standard, emission rates are quoted for the standard thermal output of dT50 (Flow temperature 75°C / Return temperature 65°C / Room temperature 20°C) with the relevant exponent of excess temperature (1.42).

Guarantee

Subject to correct handling, installation and operation in accordance with manufacturer's instructions, Clyde Sentry heat emitters are guaranteed for a period of five years from the date of delivery.



Thermostatic radiator valves and controls

The Herz combination valve, shown below, is the standard configuration valve offered by Clyde (see pages 2 and 7). The standard valve from Clyde is for 2-pipe systems. A 1-pipe system valve is available to special order. The Herz valve is exceptionally versatile with connections for copper, steel or plastic pipe. Pipe connections are nominal 15mm.

A choice of four alternative valve heads are available for the combination valve and are shown below;

- Herz standard TRV valve head
- Herzcules anti-tamper TRV valve head
- Herz TRV valve with a remote sensing bulb
- Herz T5 manual wheelhead if thermostatic control is not required



Standard Herz valve for 2-pipe system, shown with T5 manual wheelhead



Standard TRV valve



Anti-tamper TRV valve



Remote TRV valve

Dimensions & Technical Data

Sentry LST Heat Emitter Dimensions

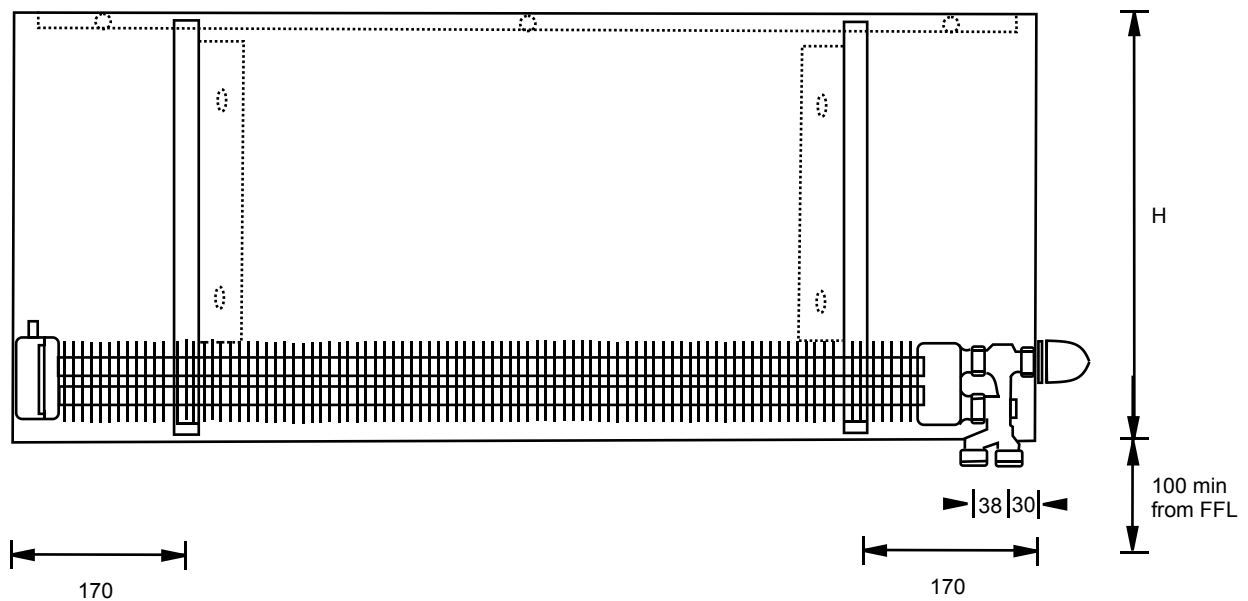


Fig 1 Sentry dimensions in mm, including pipe centres for Herz 2-pipe system valve. For height 'H' refer to data tables on pages 3 to 6

Sentry depth	Dimension A (mm)
80	42.5
125	65
175	90
225	115
275	140

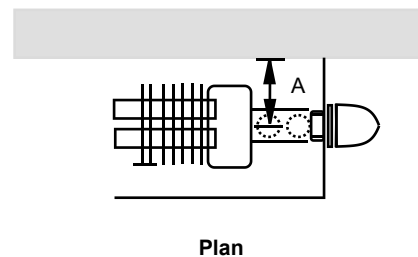


Fig 2 Distance of pipe centre from wall (dimension 'A') for each Sentry model

Heat emission rates

For convenience, the emission rates are quoted for typical United Kingdom applications of $dT_{55.5}$ (82/71/21°C) and dT_{60} (90/70/20°C) in addition to the BS EN 442-1 conditions of dT_{50} . Different water or room temperatures will change the emission rate of a radiator. The method of calculation and correction factors for various temperatures are given in the Clyde radiator emission guide EDS 732, available on request. The emission rates and exponent of excess temperature are specific to a convection-only heat exchanger.

Radiator selection

The Sentry is available in an extensive range of sizes and outputs that make it suitable for almost any application;

- 6 heights from 200mm to 800mm
- 5 depths from 80mm to 275mm.
- 16 standard lengths from 400mm to 2600mm. Other lengths up to a maximum of 2600 are available to special order.
- The standard connection configuration is TBSE (Top Bottom Same End) is illustrated in fig 1, which permits the use of the Herz radiator valve with the choice of thermostatic controls shown on page 1. If one of the other connection configurations shown on page 7 is selected, Clyde can offer a suitable choice of valve. A special 'change-fix' spanner is available from Clyde for Herz valves.
- A cut-out in the casing for the valve head is provided bottom right as standard. Alternative positions are bottom left, top right or top left (for the remote sensing valve) or no cut-out (for bottom entry connections)

Further information on radiator selection and model designation is given on page 3.

Dimensions & Technical Data

Radiator models and codes

The following tables give outputs for each model height and at 3 popular dTs in each shaded column for easy reference. The first column gives the model reference (see below) and the second column gives the standard length and depth. Bespoke lengths are available to special order to perfectly match any application.

The model designation in the left hand column is an amalgamation of the model name, length, depth and height, and 'H' should be suffixed with the required height. To illustrate;

SENT4027H3

SENT = Sentry

40 = 400 Long

27 = 275 Deep

H3 = 300 High

To select your Sentry LST;

- ✓ Select model, height, length, depth and output as above
- ✓ Select the valve connection configuration from page 7. If no preference is stated, standard configuration B (TBSE) will be supplied.
- ✓ Select the optionally available valve and TRV valve head from page 1.
- ✓ Select the casing cut-out as page 2. If no preference is stated, a standard bottom right cut-out will be supplied.

Model	Length mm	Depth mm	Height and Output (w)								
			Height = 200mm			Height = 300mm			Height = 400mm		
			dT50	dT55.5	dT60	dT50	dT55.5	dT60	dT50	dT55.5	dT60
SENT4008H	400	80	165	191	216	187	217	240	212	246	274
SENT4012H	400	125	283	328	372	341	396	437	393	456	506
SENT4017H	400	175	396	459	520	489	567	640	565	655	734
SENT4022H	400	225	536	622	703	655	760	861	747	867	976
SENT4027H	400	275	651	755	852	810	940	1064	930	1079	1213
SENT5008H	500	80	207	240	271	234	271	300	266	309	342
SENT5012H	500	125	354	411	465	426	494	547	491	570	633
SENT5017H	500	175	495	574	651	612	710	801	706	819	918
SENT5022H	500	225	671	778	879	819	950	1076	934	1083	1220
SENT5027H	500	275	814	944	1066	1012	1174	1330	1162	1348	1517
SENT6008H	600	80	248	288	325	280	325	359	319	370	410
SENT6012H	600	125	424	492	557	511	593	656	589	683	760
SENT6017H	600	175	594	689	781	734	851	961	847	983	1102
SENT6022H	600	225	805	934	1055	982	1139	1291	1121	1300	1463
SENT6027H	600	275	976	1132	1279	1214	1408	1596	1394	1617	1820
SENT7008H	700	80	289	335	379	327	379	419	372	432	479
SENT7012H	700	125	495	574	650	596	691	765	687	797	886
SENT7017H	700	175	693	804	911	856	993	1121	988	1146	1285
SENT7022H	700	225	939	1089	1231	1146	1329	1506	1308	1517	1707
SENT7027H	700	275	1139	1321	1492	1417	1644	1862	1627	1887	2123
SENT8008H	800	80	330	383	433	374	434	479	425	493	547
SENT8012H	800	125	566	657	743	682	791	874	786	912	1013
SENT8017H	800	175	792	919	1041	978	1134	1281	1130	1311	1469
SENT8022H	800	225	1073	1245	1406	1310	1520	1722	1494	1733	1951
SENT8027H	800	275	1302	1510	1705	1619	1878	2128	1859	2156	2426
SENT9008H	900	80	372	432	487	420	487	539	478	554	616
SENT9012H	900	125	636	738	836	767	890	984	884	1025	1139
SENT9017H	900	175	891	1034	1171	1101	1277	1441	1271	1474	1652
SENT9022H	900	225	1207	1400	1582	1473	1709	1937	1681	1950	2195
SENT9027H	900	275	1464	1698	1918	1822	2114	2394	2092	2427	2730
SENT1008H	1000	80	413	479	541	467	542	599	531	616	684
SENT1012H	1000	125	707	820	929	852	988	1093	982	1139	1266
SENT1017H	1000	175	990	1148	1301	1223	1419	1601	1412	1638	1836
SENT1022H	1000	225	1341	1556	1758	1637	1899	2152	1868	2167	2439
SENT1027H	1000	275	1627	1887	2131	2024	2348	2660	2324	2696	3033
SENT1108H	1100	80	454	527	595	514	596	659	584	677	752
SENT1112H	1100	125	778	902	1022	937	1087	1202	1080	1253	1393
SENT1117H	1100	175	1089	1263	1431	1345	1560	1761	1553	1801	2020
SENT1122H	1100	225	1475	1711	1934	1801	2089	2367	2055	2384	2683
SENT1127H	1100	275	1790	2076	2344	2226	2582	2926	2294	2661	3014

Dimensions & Technical Data

Model	Length mm	Depth mm	Height and Output (w)								
			Height = 500mm			Height = 600mm			Height = 800mm		
			dT50	dT55.5	dT60	dT50	dT55.5	dT60	dT50	dT55.5	dT60
SENT4008H	400	80	238	276	308	246	285	317	271	314	344
SENT4012H	400	125	445	516	576	466	541	600	510	592	646
SENT4017H	400	175	628	728	811	682	791	878	770	893	984
SENT4022H	400	225	821	952	1064	881	1022	1137	971	1126	1240
SENT4027H	400	275	1035	1201	1342	1091	1266	1407	1188	1378	1516
SENT5008H	500	80	298	346	386	308	357	396	339	393	430
SENT5012H	500	125	556	645	720	583	676	750	637	739	808
SENT5017H	500	175	785	911	1014	853	989	1098	962	1116	1230
SENT5022H	500	225	1027	1191	1331	1102	1278	1421	1214	1408	1550
SENT5027H	500	275	1294	1501	1677	1364	1582	1759	1486	1724	1896
SENT6008H	600	80	358	415	463	370	429	475	407	472	516
SENT6012H	600	125	667	774	864	700	812	900	764	886	970
SENT6017H	600	175	942	1093	1217	1023	1187	1317	1154	1339	1475
SENT6022H	600	225	1232	1429	1597	1322	1534	1705	1456	1689	1859
SENT6027H	600	275	1553	1801	2012	1636	1898	2111	1783	2068	2275
SENT7008H	700	80	417	484	540	431	500	554	475	551	602
SENT7012H	700	125	778	902	1008	816	947	1050	892	1035	1131
SENT7017H	700	175	1099	1275	1420	1194	1385	1537	1347	1563	1721
SENT7022H	700	225	1437	1667	1863	1542	1789	1989	1699	1971	2169
SENT7027H	700	275	1812	2102	2348	1909	2214	2463	2080	2413	2654
SENT8008H	800	80	477	553	617	493	572	634	542	629	688
SENT8012H	800	125	890	1032	1152	933	1082	1200	1019	1182	1293
SENT8017H	800	175	1256	1457	1622	1364	1582	1756	1539	1785	1967
SENT8022H	800	225	1642	1905	2129	1762	2044	2274	1942	2253	2479
SENT8027H	800	275	2070	2401	2683	2182	2531	2814	2377	2757	3033
SENT9008H	900	80	536	622	694	554	643	713	610	708	774
SENT9012H	900	125	1001	1161	1296	1049	1217	1350	1147	1331	1454
SENT9017H	900	175	1413	1639	1825	1535	1781	1976	1732	2009	2213
SENT9022H	900	225	1848	2144	2395	1983	2300	2558	2184	2533	2789
SENT9027H	900	275	2329	2702	3019	2454	2847	3166	2674	3102	3412
SENT1008H	1000	80	596	691	771	616	715	792	678	786	860
SENT1012H	1000	125	1112	1290	1440	1166	1353	1500	1274	1478	1616
SENT1017H	1000	175	1570	1821	2028	1705	1978	2195	1924	2232	2459
SENT1022H	1000	225	2053	2381	2661	2203	2555	2842	2427	2815	3099
SENT1027H	1000	275	2588	3002	3354	2727	3163	3518	2971	3446	3791
SENT1108H	1100	80	656	761	848	678	786	871	746	865	946
SENT1112H	1100	125	1223	1419	1584	1283	1488	1650	1401	1625	1778
SENT1117H	1100	175	1727	2003	2231	1876	2176	2415	2116	2455	2705
SENT1122H	1100	225	2258	2619	2927	2423	2811	3126	2670	3097	3409
SENT1127H	1100	275	2847	3303	3689	3000	3480	3870	3268	3791	4170

Dimensions & Technical Data

Radiator models and codes

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The model designation in the left hand column is an amalgamation of the model name, length, depth and height, and 'H' should be suffixed with the required height. To illustrate;

SENT4027H3

SENT = Sentry

40 = 400 Long

27 = 275 Deep

H3 = 300 High

To select your Sentry LST;

- ✓ Select model, height, length, depth and output as above
- ✓ Select the valve connection configuration from page 7. If no preference is stated, standard configuration B (TBSE) will be supplied.
- ✓ Select the optionally available valve and TRV valve head from page 1.
- ✓ Select the casing cut-out as page 2. If no preference is stated, a standard bottom right cut-out will be supplied.

Model	Length mm	Depth mm	Height and Output (w)								
			Height = 200mm			Height = 300mm			Height = 400mm		
			dT50	dT55.5	dT60	dT50	dT55.5	dT60	dT50	dT55.5	dT60
SENT1208H	1200	80	496	575	649	560	650	719	637	739	821
SENT1212H	1200	125	848	984	1115	1022	1186	1312	1178	1366	1519
SENT1217H	1200	175	1188	1378	1561	1468	1703	1921	1694	1965	2203
SENT1222H	1200	225	1609	1866	2110	1964	2278	2582	2242	2601	2927
SENT1227H	1200	275	1952	2264	2557	2429	2818	3193	2789	3235	3640
SENT1408H	1400	80	578	670	757	654	759	839	743	862	958
SENT1412H	1400	125	990	1148	1301	1193	1384	1530	1375	1595	1772
SENT1417H	1400	175	1386	1608	1821	1712	1986	2241	1977	2293	2570
SENT1422H	1400	225	1877	2177	2461	2292	2659	3013	2615	3033	3415
SENT1427H	1400	275	2278	2642	2983	2834	3287	3724	3254	3775	4246
SENT1608H	1600	80	661	767	866	747	867	958	850	986	1094
SENT1612H	1600	125	1131	1312	1486	1363	1581	1749	1571	1822	2026
SENT1617H	1600	175	1584	1837	2082	1957	2270	2562	2259	2620	2938
SENT1622H	1600	225	2146	2489	2813	2619	3038	3443	2989	3467	3902
SENT1627H	1600	275	2603	3019	3410	3238	3756	4256	3718	4313	4853
SENT1808H	1800	80	743	862	974	841	976	1078	956	1109	1231
SENT1812H	1800	125	1273	1477	1672	1534	1779	1967	1768	2051	2279
SENT1817H	1800	175	1782	2067	2342	2201	2553	2882	2542	2949	3305
SENT1822H	1800	225	2414	2800	3164	2947	3419	3874	3362	3900	4390
SENT1827H	1800	275	2929	3398	3836	3643	4226	4788	4183	4852	5459
SENT2008H	2000	80	826	958	1082	934	1083	1198	1062	1232	1368
SENT2012H	2000	125	1414	1640	1858	1704	1977	2186	1964	2278	2532
SENT2017H	2000	175	1980	2297	2602	2446	2837	3202	2824	3276	3672
SENT2022H	2000	225	2682	3111	3516	3274	3798	4304	3736	4334	4878
SENT2027H	2000	275	3254	3775	4262	4048	4696	5320	4648	5392	6066
SENT2208H	2200	80	909	1054	1190	1027	1191	1318	1168	1355	1505
SENT2212H	2200	125	1555	1804	2044	1874	2174	2405	2160	2506	2785
SENT2217H	2200	175	2178	2526	2862	2691	3122	3522	3106	3603	4039
SENT2222H	2200	225	2950	3422	3868	3601	4177	4734	4110	4768	5366
SENT2227H	2200	275	3579	4152	4688	4453	5165	5852	5113	5931	6673
SENT2408H	2400	80	991	1150	1298	1121	1300	1438	1274	1478	1642
SENT2412H	2400	125	1697	1969	2230	2045	2372	2623	2357	2734	3038
SENT2417H	2400	175	2376	2756	3122	2935	3405	3842	3389	3931	4406
SENT2422H	2400	225	3218	3733	4219	3929	4558	5165	4483	5200	5854
SENT2427H	2400	275	3905	4530	5114	4858	5635	6384	5578	6470	7279
SENT2608H	2600	80	1074	1246	1407	1214	1408	1557	1381	1602	1778
SENT2612H	2600	125	1838	2132	2415	2215	2569	2842	2553	2961	3292
SENT2617H	2600	175	2574	2986	3383	3180	3689	4163	3671	4258	4774

Dimensions & Technical Data

Model	Length mm	Depth mm	Height and Output (w)								
			Height =500mm			Height = 600mm			Height = 800mm		
			dT50	dT55.5	dT60	dT50	dT55.5	dT60	dT50	dT55.5	dT60
SENT1208H	1200	80	715	829	925	739	829	950	814	829	1032
SENT1212H	1200	125	1334	1547	1728	1399	1547	1800	1529	1547	1939
SENT1217H	1200	175	1884	2185	2434	2046	2185	2634	2309	2185	2951
SENT1222H	1200	225	2464	2858	3193	2644	2858	3410	2912	2858	3719
SENT1227H	1200	275	3106	3603	4025	3272	3603	4222	3565	3603	4549
SENT1408H	1400	80	834	967	1079	862	967	1109	949	967	1204
SENT1412H	1400	125	1557	1806	2016	1632	1806	2100	1784	1806	2262
SENT1417H	1400	175	2198	2550	2839	2387	2550	3073	2694	2550	3443
SENT1422H	1400	225	2874	3334	3725	3084	3334	3979	3398	3334	4339
SENT1427H	1400	275	3623	4203	4696	3818	4203	4925	4159	4203	5307
SENT1608H	1600	80	954	1107	1234	986	1107	1267	1085	1107	1376
SENT1612H	1600	125	1779	2064	2304	1866	2064	2400	2038	2064	2586
SENT1617H	1600	175	2512	2914	3245	2728	2914	3512	3078	2914	3934
SENT1622H	1600	225	3285	3811	4258	3525	3811	4547	3883	3811	4958
SENT1627H	1600	275	4141	4804	5366	4363	4804	5629	4754	4804	6066
SENT1808H	1800	80	1073	1245	1388	1109	1245	1426	1220	1245	1548
SENT1812H	1800	125	2002	2322	2592	2099	2322	2700	2293	2322	2909
SENT1817H	1800	175	2826	3278	3650	3069	3278	3951	3463	3278	4426
SENT1822H	1800	225	3695	4286	4790	3965	4286	5116	4369	4286	5578
SENT1827H	1800	275	4658	5403	6037	4909	5403	6332	5348	5403	6824
SENT2008H	2000	80	1192	1383	1542	1232	1383	1584	1356	1383	1720
SENT2012H	2000	125	2224	2580	2880	2332	2580	3000	2548	2580	3232
SENT2017H	2000	175	3140	3642	4056	3410	3642	4390	3848	3642	4918
SENT2022H	2000	225	4106	4763	5322	4406	4763	5684	4854	4763	6198
SENT2027H	2000	275	5176	6004	6708	5454	6004	7036	5942	6004	7582
SENT2208H	2200	80	1311	1521	1696	1355	1521	1742	1492	1521	1892
SENT2212H	2200	125	2446	2837	3168	2565	2837	3300	2803	2837	3555
SENT2217H	2200	175	3454	4007	4462	3751	4007	4829	4233	4007	5410
SENT2222H	2200	225	4517	5240	5854	4847	5240	6252	5339	5240	6818
SENT2227H	2200	275	5694	6605	7379	5999	6605	7740	6536	6605	8340
SENT2408H	2400	80	1430	1659	1850	1478	1659	1901	1627	1659	2064
SENT2412H	2400	125	2669	3096	3456	2798	3096	3600	3058	3096	3878
SENT2417H	2400	175	3768	4371	4867	4092	4371	5268	4618	4371	5902
SENT2422H	2400	225	4927	5715	6386	5287	5715	6821	5825	5715	7438
SENT2427H	2400	275	6211	7205	8050	6545	7205	8443	7130	7205	9098
SENT2608H	2600	80	1550	1798	2005	1602	1798	2059	1763	1798	2236
SENT2612H	2600	125	2891	3354	3744	3032	3354	3900	3312	3354	4202
SENT2617H	2600	175	4082	4735	5273	4433	4735	5707	5002	4735	6393

Connection configurations

Pipework and valve connection

The available connection configurations are shown below. All connections are R $\frac{1}{2}$.

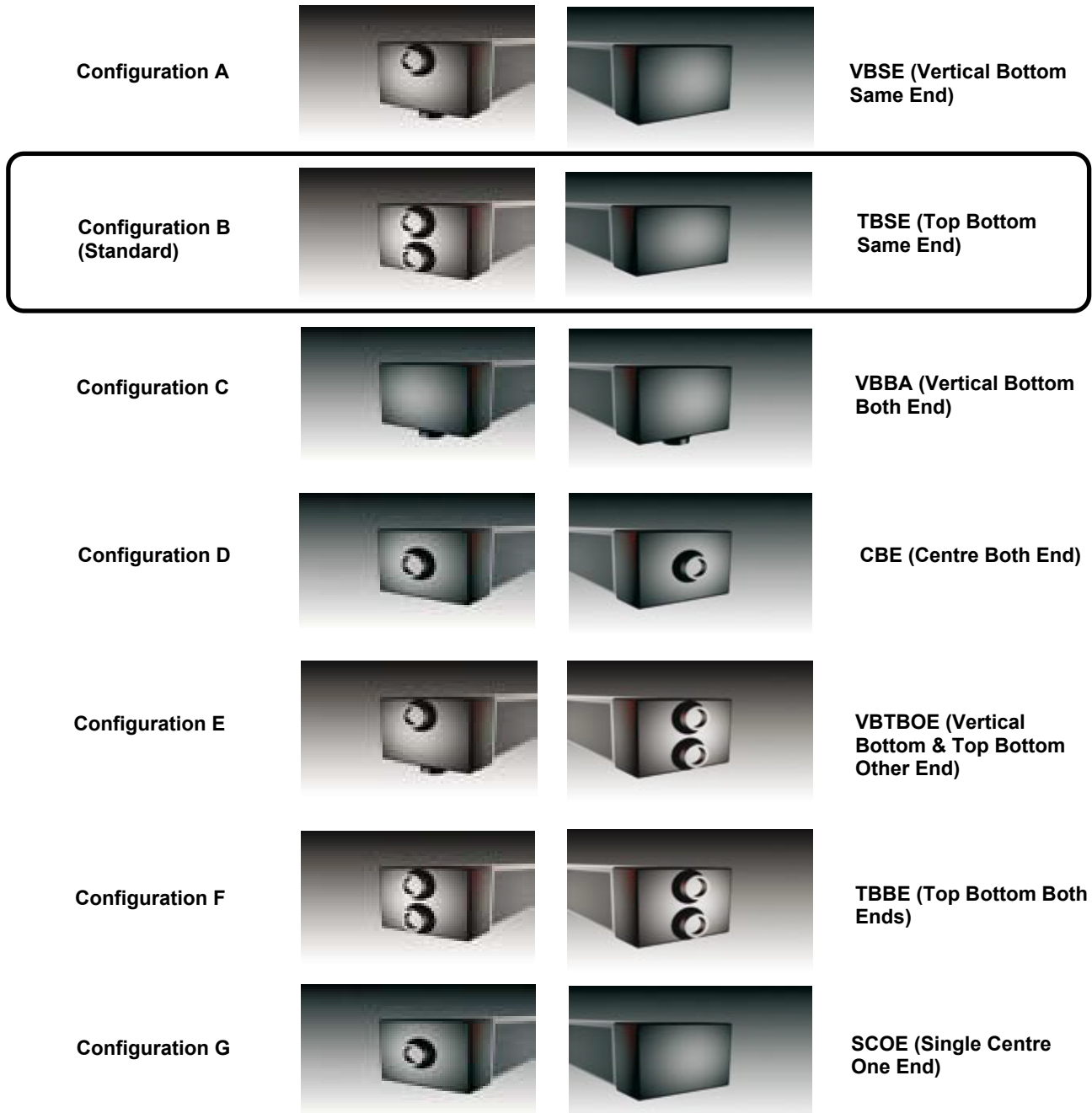


Fig 3 Connection configurations

Please note that standard configuration B, highlighted in Fig 3, would be used with the Herz valves supplied by Clyde.

Installation

Preliminary

Before unpacking, please ensure that the delivered sizes and quantity are correct. Any shortages or damages must be notified to Clyde in writing within 7 days.

Unpack carefully and inspect the convector, cover and fittings. The following items should be identified;

- Convector
- Casing with selected valve head cut-outs and grille
- Brackets and hanging straps. The number of these is dependent upon the convector dimensions.
- Air vent
- Herz valve, TRV thermostatic valve head and changefix spanner if ordered

Fig 4 below is a diagram of the Sentry. Refer to figs 1 and 2 on page 2 for bracket fixing dimensions and pipe centres.

Installation

The Sentry LST is quick and easy to install, as shown in the six steps on page 9. The convector can be installed and connected to the system during first fix, and the cover and TRV thermostatic control head fitted during second fix.

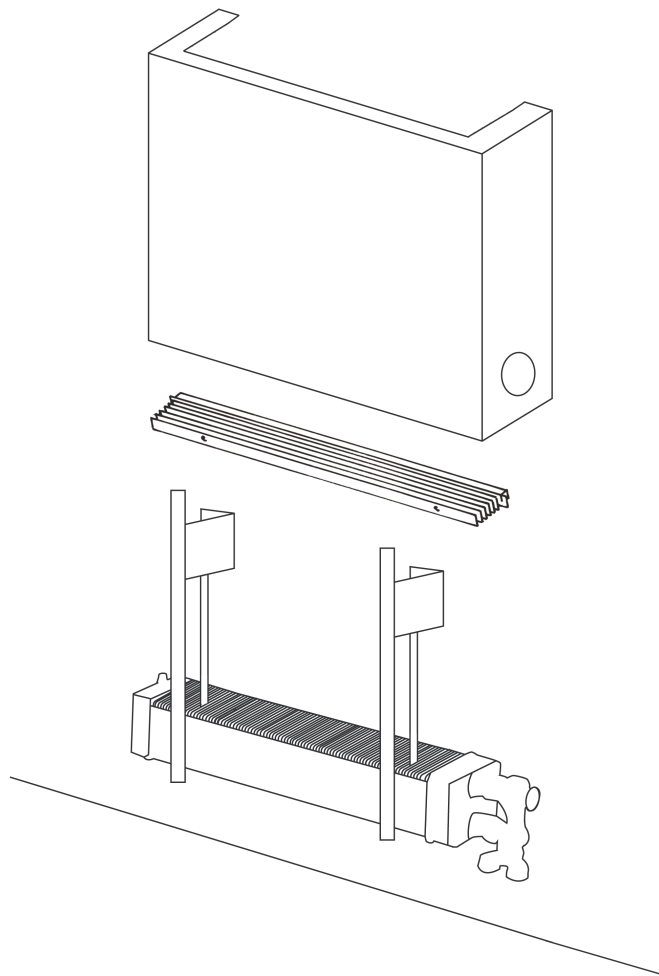


Fig 4 Sentry diagram

Installation



STEP 1

Measure and fit wall brackets using suitable fixings (not supplied).

Refer to figs 1 and 2 on page 2 for Fixing dimensions, minimum clearance above FFL and pipe centres



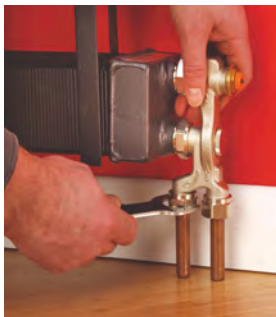
STEP 2

Locate convector hanging brackets and valve body



STEP 3

Hang convector onto wall brackets



STEP 4

Connect pipework to valves



STEP 5

Locate the top grille on the top of the wall brackets. Lift casing onto brackets and over the grille



STEP 6

Fit selected valve head
The optionally Available changefix spanner ensures ease of access

LST performance

NHS Estates Health Guidance Note 'Safe' hot water and surface temperatures, 1998, states that 'wherever patients, residents and visitors have access, the maximum surface temperature of space heating devices should not exceed 43°C when the system is running at the maximum design output'. However, certain system design and operating parameters (eg a water flow temperature greater than 82°C) may increase the surface temperature of the LST. Contact Clyde's Technical Department for more specific advice regarding any project.

For an even higher level of protection, the Clyde *Centurion* range of LST has a cover that extends to floor level.

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EDS 811/1
January 2010