



Technical Bulletin

Hydronic Unit Performance

Date: January 24, 2013

TB13.001

Enertech recommends the aquastat setting not be set above 110°F for the storage tank temperature. Excessive vibration and part failure can occur at higher than recommended temperature settings. The higher operating temperatures cause substantial efficiency and capacity reductions.

The performance is negatively affected as the unit operates at the higher water temperatures and it benefits the unit and the homeowner to operate at or below the 110°F recommended entering load water temperature. The chart below references the drop in capacity and efficiency for a GWT060B. When looking solely at COP, the efficiency drops 21.6% from the entering load temperature (ELT) of 90°F versus an ELT of 110°F. The efficiency drops an additional 11% from the ELT of 110°F to 120°F. The overall efficiency drop from 90°F ELT to 120°F is 32.6%. With the lower efficiency created by higher water temperatures, the output capacity of the unit is decreasing along with the efficiency.

WPD Source	WPD Load	ELT deg F	HC Mbtuh	Input kW	COP	HE Mbtuh	Load In °F	Load Out °F	PSIG In	PSIG Out	Source In °F	Source Out °F
10.0	5.5	85	54.0	4.25	3.72	39.50	84.9	90.9	21.5	11.5	30.0	25.5
2.6	1.3	85	64.8	4.62	4.11	49.04	84.9	99.3	6.8	4.2	50.1	38.8
4.3	2.8	85	66.0	4.48	4.32	50.71	84.9	95.9	10.3	6.0	49.8	41.0
6.1	4.8	85	66.8	4.39	4.46	51.77	84.8	93.7	14.4	8.3	49.9	42.9
11.2	7.4	85	69.3	4.36	4.66	54.42	84.9	91.5	25.1	13.9	50.2	44.8
8.6	5.8	80	67.5	4.09	4.84	53.54	80.0	87.5	19.5	10.9	50.0	43.8
8.7	5.4	85	68.4	4.39	4.57	53.42	85.2	92.8	19.6	10.9	50.1	44.1
8.7	5.7	90	66.6	4.63	4.21	50.80	89.9	97.3	19.2	10.5	50.0	44.0
8.7	5.4	100	67.5	5.27	3.75	49.51	99.9	107.4	19.4	10.7	50.1	44.5
8.9	5.5	110	67.5	5.99	3.30	47.05	110.0	117.5	19.4	10.5	50.0	44.7
9.0	5.5	120	66.6	6.86	2.84	43.19	119.9	127.3	19.5	10.5	50.0	45.0
8.1	5.6	85	82.8	4.48	5.42	67.51	84.9	94.1	18.3	10.2	70.0	62.3
7.6	5.5	85	94.5	4.62	5.99	78.73	85.0	95.5	17.5	9.9	90.0	81.1

The illustration below shows the parameters which are safe for compressor operation. Based on the leaving load water of 120°F, the loop would have to maintain 35°F to operate within the acceptable operating conditions for the compressor. Once your loop temperatures drop below 35°F, the acceptable leaving load temperature drops below 120°F. If you are designing loops for 30°F, the recommended leaving load temperature is 110°F.

SCROLL COMPRESSOR OPERATING CONDITIONS (WATER TO WATER)
HEATING MODE OPERATION

