

# QUICK ESTIMATES FOR WATTAGE REQUIREMENTS

## 42T: To Heat Steel

Weight in lbs.	Temperature Rise (°F)						
	50°	100°	200°	300°	400°	500°	600°
25	.06	.12	.25	.37	.50	.65	.75
50	.12	.25	.50	.75	1.00	1.25	1.50
100	.25	.50	1.00	1.50	2.00	2.50	3.00
150	.37	.75	1.50	2.25	3.00	3.75	4.50
200	.50	1.00	2.00	3.00	4.00	5.00	6.00
250	.65	1.25	2.50	3.75	5.00	6.25	7.50
300	.75	1.50	3.00	4.50	6.00	7.50	9.00
400	1.00	2.00	4.00	6.00	8.00	10.00	12.00
500	1.25	2.50	5.00	7.50	10.00	12.50	15.00
600	1.50	3.00	6.00	9.00	12.00	15.00	18.00
700	1.75	3.50	7.00	10.50	14.00	17.50	21.00
800	2.00	4.00	8.00	12.00	16.00	20.00	24.00
900	2.25	4.50	9.00	13.50	18.00	22.50	27.00
1000	2.50	5.00	10.00	15.00	20.00	25.00	30.00

kw to heat in 1 hour

## 43T: To Heat Air

Cu.ft./minute (scfm)	Temperature Rise (°F)										
	50°	100°	150°	200°	250°	300°	350°	400°	450°	500°	600°
100	1.7	3.3	5	6.7	8.3	10.0	11.7	13.3	15.0	16.7	20.0
200	3.3	6.7	10.0	13.3	16.7	20.0	23.3	26.7	30.0	33.3	40.0
300	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	60.0
400	6.7	13.3	20.0	26.7	33.3	40.0	46.7	53.3	60.0	66.7	80.0
500	8.3	16.7	25.0	33.3	41.7	50.0	58.3	66.7	75.0	83.3	100.0
600	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	120.0
700	11.7	23.3	35	46.7	58.3	70.0	81.7	93.3	105.0	116.7	140.0
800	13.3	26.7	40	53.3	66.7	80.0	93.3	106.7	120.0	133.3	160.0
900	15.0	30.0	45.0	60.0	75.0	90.0	105.0	120.0	135.0	150.0	180.0
1,000	16.7	33.3	50	66.7	83.3	100.0	116.7	133.3	150.0	166.7	200.0
1,100	18.3	36.7	55	73.3	91.7	110.0	128.3	146.7	165.0	183.3	220.0
1,200	20	40	60	80.0	100.0	120.0	140.0	160.0	180.0	200.0	240.0

kw

Use the maximum anticipated airflow. Chart 35T and below equations assume insulated duct (negligible heat loss), 70°F inlet air and 14 psia.

### Quick estimates for other volumes

For Air:

$$kw = \frac{\text{scfm} \times \text{Temperature Rise (°F)}}{3000}$$

\*Measured at normal temperature and pressure.

For Compressed Air:

$$kw = \frac{\text{scfm}^{**} \times \text{Density}^{**} \times \text{Temperature Rise (°F)}}{228}$$

\*\*Measured at heater system inlet temperature and pressure.

## 44T: To Heat Water

Cubic feet	Gallons	Temperature Rise (°F)						
		20°	40°	60°	80°	100°	120°	140°
.66	5	0.3	0.5	0.8	1.1	1.3	1.6	1.9
1.3	10	0.5	1.1	1.6	2.1	2.7	3.2	3.7
2.0	13	0.8	1.6	2.4	3.2	4	4.8	5.6
2.7	20	1.1	2.2	3.2	4.3	5.3	6.4	7.5
3.3	25	1.3	2.7	4	5.3	6.7	8	9.3
4.0	30	1.6	3.2	4.8	6.4	8	9.6	12
5.3	40	2.1	4	6.4	8.5	11	13	15
6.7	50	2.7	5.4	8	10.7	13	16	19
8.0	60	3.3	6.4	9.6	12.8	16	19	22
9.4	70	3.7	7.5	11.2	15	19	22	26
10.7	80	4.3	8.5	13	17	21	26	30
12.0	90	5	10	14.5	19	24	29	34
13.4	100	5.5	11	16	21	27	32	37
16.7	125	7	13	20	27	33	40	47
20.0	150	8	16	24	32	40	48	56

kw to heat in 1 hour

### Quick estimates for other volumes

$$kw = \frac{\text{gal./hr.} \times 8.34 \times \text{Temperature Rise (°F)}}{3412}$$

$$\text{gal./hr.} = \frac{kw \times 3412}{8.34 \times \text{Temperature Rise (°F)}}$$

## 45T: To Heat Oil

Cubic feet	Gallons	Temperature Rise (°F)					
		50°	100°	200°	300°	400°	500°
.5	3.74	.3	.5	1	2	2	3
1	7.48	.5	1	2	3	4	6
2	14.96	1	1	2	4	6	11
3	22.25	2	3	6	9	12	16
4	29.9	2	4	8	12	16	22
5	37.4	3	4	9	15	20	25
10	74.8	5	9	18	29	40	52
15	112.5	7	14	28	44	60	77
20	149.6	9	18	37	58	80	102
25	187	11	22	46	72	100	127
30	222.5	13	27	56	86	120	151
35	252	16	31	65	100	139	176
40	299	18	36	74	115	158	201
45	336.5	20	40	84	129	178	226
50	374	22	45	93	144	197	252

kw to heat in 1 hour

Add 5% for uninsulated tanks.

### Quick estimates for other volumes

$$kw = \frac{\text{Gallons} \times \text{Temperature Rise (°F)}}{800 \times \text{Process Start-up Time (hrs.)}}$$