



# BRASCH

11880 DORSETT ROAD - MARYLAND HEIGHTS - MO - 63043 - (314) 291-0440

## Express Duct Heaters

# 14 day shipment

## specification guide and how to order

1. Specify W and H dimensions
2. Specify kilowatt capacity up to the maximum shown in the selection tables. For practical design, the minimum KW per step is 0.5 KW for 208V or 240V, 1.0 KW for 277V or 480V single phase and 3 KW for 480V three phase.
3. Specify control voltage, line voltage and phase.
4. Specify number of steps (see chart for limits).
5. Specify optional components and accessories.

## standard features

- Express Heaters are available in frame sizes from 8"x6" to 72"x30" with wattages up to 204 KW and up to six equal steps.
- All Express Heaters have double safety protection, with heat limiters in the power lines and an automatic reset thermal cutout in the control circuit .
- Open coil elements are the highest grade, consisting of 80% nickel and 20% chromium. Element terminals and nuts are stainless steel and insulators are high temperature ceramic.
- Heavy gauge galvanized steel frame. Heaters are UL listed for zero clearance under
- File No. E39836.

## optional components and accessories

- **MAGNETIC CONTACTORS** switch the load of individual steps (operating) or the entire heater (back-up or safety). Specify disconnecting or de-energizing.
- **MERCURY CONTACTORS** for applications where quiet, extra long life is desired.
- **CONTROL TRANSFORMER** supplies control circuit voltage.
- **TRANSFORMER PRIMARY FUSES** required for a built in general purpose transformer. Not required for Class II (24V secondary)
- **FUSES** The NEC and UL require heaters exceeding 48 amperes be divided into subcircuits not exceeding 48 amperes each. Subcircuits must have individual overcurrent protection built into the heater or furnished by the heater manufacturer in a remote panel.

## optional components and accessories (cont.)

- **AIRFLOW SWITCH** is recommended to guard against fan failure. Meets UL requirements for a fan interlock device.
- **FAN INTERLOCK RELAY** is energized by fan supply voltage to keep heater from operating unless the fan is on. Meets UL requirement for a fan interlock device.
- **DISCONNECT SWITCH**, mechanically interlocked with terminal box door, prevents internal access unless power has been interrupted.
- **MANUAL RESET THERMAL CUTOUT** provides additional protection against overheating. Wired in the control circuit to operate back-up contactors or in power circuit to deenergize the load. With or without external reset button(s).
- **TOGGLE SWITCH** wired in control circuit to deenergize individual steps or entire heater, as specified.
- **P.E. SWITCHES** convert pneumatic control signal to sequentially operate contactor holding coils.
- **REDUCED WATT DENSITY** for applications where uniform airflow cannot be guaranteed or where velocity may be variable or restricted.
- **INSULATED TERMINAL BOX** prevents condensation in terminal boxes of heaters installed in ducts with air at a lower temperature than ambient air dewpoint.
- **SCRs** quietly modulate the heater output from zero to 100% according to setpoint deviation. Requires safety contactor.
- **PILOT LIGHTS** are available for power on, step indication, control voltage, etc.
- **DOOR INTERLOCK SWITCH** is used to break separate fan or remote control voltage when an interlocking disconnect is provided.
- **STEP CONTROLLERS** are solid state with power interruption feature and input for remote thermistor-type room or return duct thermostat.
- **REMOTE THERMOSTATS** are available in either modulating or on-off varieties to match control configuration.

For custom electric duct heaters, see Bulletin A-102; for Remote Control Panels see Bulletin A-105.

maximum total KW ratings\*

Duct W	Voltage	Steps	
		1	2
8	208	5	5
8	240	5	5
8	480	5	5
10	208	6	6
10	240	6	6
10	480	6	6
12	208	8	7
12	240	7	7
12	480	7	7
14	208	9	8
14	240	9	8
14	480	9	8
16	208	11	8
16	240	11	8
16	480	8	8
18	208	13	8
18	240	13	8
18	480	13	8
20	208	15	8
20	240	15	8
20	480	15	8
22	208	15	10
22	240	17	10
22	480	16	10
24	208	15	10
24	240	17	10
24	480	19	10

Duct W	Voltage	Steps	
		1	2
8	208	7	5
8	240	7	5
8	480	5	5
10	208	10	10
10	240	11	11
10	480	11	7
12	208	14	14
12	240	14	13
12	480	13	10
14	208	16	16
14	240	16	16
14	480	16	15
16	208	18	18
16	240	18	18
16	480	18	18
18	208	21	21
18	240	21	21
18	480	21	20
20	208	23	23
20	240	23	23
20	480	23	21
22	208	26	26
22	240	26	26
22	480	26	26
24	208	28	28
24	240	28	28
24	480	28	28
26	208	29	29
26	240	30	30
26	480	30	30
28	208	29	29
28	240	33	33
28	480	33	33
30	208	29	29
30	240	34	34
30	480	35	35

Duct W	Voltage	Steps		
		1	2	3
10	208	14	14	14
10	240	14	14	14
10	480	14	10	10
12	208	17	17	17
12	240	17	17	16
12	480	17	16	15
14	208	20	20	20
14	240	20	20	20
14	480	20	20	18
16	208	23	23	23
16	240	23	23	23
16	480	23	23	22
18	208	26	26	26
18	240	26	26	26
18	480	26	26	26
20	208	29	29	29
20	240	29	29	29
20	480	29	29	27
22	208	32	32	32
22	240	32	32	32
22	480	32	32	32
24	208	35	32	35
24	240	35	35	35
24	480	35	35	35
26	208	38	32	38
26	240	38	37	38
26	480	38	38	38
28	208	52	52	45
28	240	52	52	51
28	480	52	52	52
30	208	56	56	50
30	240	56	56	51
30	480	56	56	56
32	208	59	59	50
32	240	60	60	51
32	480	60	60	60
34	208	59	59	50
34	240	63	63	51
34	480	63	63	63
36	208	59	59	50
36	240	67	67	51
36	480	67	67	67
42	208	59	59	50
42	240	68	68	51
42	480	79	79	79
48	208	59	59	50
48	240	68	68	51
48	480	90	90	90

Duct W	Voltage	Steps		
		1	2	3
12	208	21	21	21
12	240	21	21	20
12	480	21	21	15
14	208	25	25	24
14	240	25	25	25
14	480	25	25	25
16	208	29	29	29
16	240	29	29	29
16	480	29	29	27
18	208	33	33	33
18	240	33	33	33
18	480	33	33	32
20	208	37	37	37
20	240	37	37	37
20	480	37	37	37
22	208	41	41	41
22	240	41	41	41
22	480	41	41	41
24	208	35	32	35
24	240	35	35	35
24	480	35	35	35
26	208	38	32	38
26	240	38	37	38
26	480	38	38	38
28	208	41	40	41
28	240	41	40	41
28	480	41	41	41
30	208	44	40	44
30	240	44	40	44
30	480	44	44	44
32	208	44	40	44
32	240	47	40	47
32	480	47	47	47
34	208	44	40	44
34	240	50	40	50
34	480	50	50	50
36	208	44	40	44
36	240	51	40	51
36	480	53	53	53
42	208	44	40	44
42	240	51	40	51
42	480	62	62	62
48	208	44	40	44
48	240	51	40	51
48	480	71	71	71

\* Single phase heaters may have slightly lower limits.

maximum total KW ratings\*

Table 5: 14" Duct Height							
Duct W	Voltage	Number of Steps					
		1	2	3	4	5	6
14	208	28	28	28	28	28	28
14	240	28	28	28	28	28	28
14	480	28	28	28	28	28	28
16	208	32	32	32	32	32	32
16	240	32	32	32	32	32	32
16	480	32	32	32	32	32	32
18	208	36	36	36	36	36	36
18	240	36	36	36	36	36	36
18	480	36	36	36	36	36	36
20	208	41	41	41	41	41	41
20	240	41	41	41	41	41	41
20	480	41	41	41	41	41	41
22	208	45	45	45	45	45	45
22	240	45	45	45	45	45	45
22	480	45	45	45	45	45	45
24	208	49	49	49	49	49	49
24	240	49	49	49	49	49	49
24	480	49	49	49	49	49	49
26	208	53	53	53	53	53	53
26	240	53	53	53	53	53	53
26	480	53	53	53	53	53	53
28	208	57	57	57	57	57	57
28	240	57	57	57	57	57	57
28	480	57	57	57	57	57	57
30	208	62	62	62	62	62	62
30	240	62	62	62	62	62	62
30	480	62	62	62	62	62	62
32	208	66	66	66	64	66	66
32	240	66	66	66	66	66	66
32	480	66	66	66	66	66	66
34	208	70	70	70	64	70	70
34	240	70	70	70	70	70	70
34	480	70	70	70	70	70	70
36	208	74	74	74	64	74	74
36	240	74	74	74	74	74	74
36	480	74	74	74	74	74	74
42	208	87	87	87	64	74	87
42	240	87	87	87	74	85	87
42	480	87	87	87	87	87	87
48	208	55	55	55	64	74	55
48	240	100	100	100	74	85	100
48	480	100	100	100	100	100	100
54	208	88	88	88	64	74	88
54	240	102	102	102	74	85	102
54	480	112	112	112	112	112	112

Table 6: 16" Duct Height							
Duct W	Voltage	Number of Steps					
		1	2	3	4	5	6
16	208	41	41	41	41	41	41
16	240	41	41	41	41	41	41
16	480	41	41	41	41	41	41
18	208	47	47	47	47	47	47
18	240	47	47	47	47	47	47
18	480	47	47	47	47	47	47
20	208	52	52	52	52	52	52
20	240	52	52	52	52	52	52
20	480	52	52	52	52	52	51
22	208	58	58	58	58	58	58
22	240	58	58	58	58	58	58
22	480	58	58	58	58	58	58
24	208	63	63	63	63	63	63
24	240	63	63	63	63	63	63
24	480	63	63	63	63	63	63
26	208	68	68	68	64	68	68
26	240	68	68	68	68	68	68
26	480	68	68	68	68	68	68
28	208	74	74	74	64	74	74
28	240	74	74	74	74	74	74
28	480	74	74	74	74	74	74
30	208	79	79	79	64	74	79
30	240	79	79	79	74	79	79
30	480	79	79	79	79	79	79
32	208	85	85	85	64	74	85
32	240	85	85	85	74	85	85
32	480	85	85	85	85	85	85
34	208	88	88	88	64	74	88
34	240	90	90	90	74	85	90
34	480	90	90	90	90	90	90
36	208	88	88	88	64	74	88
36	240	96	96	96	74	85	96
36	480	96	96	96	96	96	96
42	208	88	88	88	64	74	88
42	240	102	102	102	74	85	102
42	480	112	112	112	112	112	112
48	208	88	88	88	64	74	88
48	240	102	102	102	74	85	102
48	480	128	128	128	128	128	128
54	208	88	88	88	64	74	88
54	240	102	102	102	74	85	102
54	480	144	144	144	144	144	144
60	208	88	88	88	64	74	88
60	240	102	102	102	74	85	102
60	480	161	161	161	148	161	161

\* Single phase heaters may have slightly lower limits.

maximum total KW ratings\*

Table 7: 18" Duct Height							
Duct W	Volt- age	Number of Steps					
		1	2	3	4	5	6
18	208	47	47	47	47	47	47
18	240	47	47	47	47	47	47
18	480	47	47	47	47	45	47
20	208	52	52	52	52	52	51
20	240	52	52	52	52	52	52
20	480	52	52	52	52	52	52
22	208	58	58	58	58	58	58
22	240	58	58	58	58	58	58
22	480	58	58	58	58	58	58
24	208	63	63	63	63	63	63
24	240	63	63	63	63	63	63
24	480	63	63	63	63	63	63
26	208	68	68	68	64	68	68
26	240	68	68	68	68	68	68
26	480	68	68	68	68	68	68
28	208	74	74	74	74	74	74
28	240	74	74	74	74	74	74
28	480	74	74	74	74	74	74
30	208	79	79	79	74	74	79
30	240	79	79	79	79	79	79
30	480	79	79	79	79	79	79
32	208	85	85	85	74	74	85
32	240	85	85	85	85	85	85
32	480	85	85	85	85	85	85
34	208	88	88	88	74	74	88
34	240	90	90	90	85	85	90
34	480	90	90	90	90	90	90
36	208	88	88	88	74	74	88
36	240	96	96	96	85	85	96
36	480	96	96	96	96	96	96
42	208	88	88	88	74	74	88
42	240	102	102	102	85	85	102
42	480	112	112	112	112	112	112
48	208	88	88	88	74	74	88
48	240	102	102	102	85	85	102
48	480	128	128	128	128	128	128
54	208	88	88	88	74	74	88
54	240	102	102	102	85	85	102
54	480	144	144	144	144	144	144
60	208	88	88	88	74	74	88
60	240	102	102	102	85	85	102
60	480	161	161	161	161	161	161

Table 8: 20" Duct Height							
Duct W	Volt- age	Number of Steps					
		1	2	3	4	5	6
20	208	52	52	52	52	52	52
20	240	52	52	52	52	52	52
20	480	52	52	52	52	52	51
22	208	58	58	58	58	58	58
22	240	58	58	58	58	58	58
22	480	58	58	58	58	58	58
24	208	63	63	63	63	63	63
24	240	63	63	63	63	63	63
24	480	63	63	63	63	63	63
26	208	68	68	68	64	68	68
26	240	68	68	68	68	68	68
26	480	68	68	68	68	68	68
28	208	74	74	74	64	74	74
28	240	74	74	74	74	74	74
28	480	74	74	74	74	74	74
30	208	79	79	79	64	74	79
30	240	79	79	79	74	79	79
30	480	79	79	79	79	79	79
32	208	85	85	85	64	74	85
32	240	85	85	85	74	85	85
32	480	85	85	85	85	85	85
34	208	88	88	88	64	74	88
34	240	90	90	90	74	85	90
34	480	90	90	90	90	90	90
36	208	88	88	88	64	74	88
36	240	96	96	96	74	85	96
36	480	96	96	96	96	96	96
42	208	88	88	88	64	74	88
42	240	102	102	102	74	85	102
42	480	112	112	112	112	112	112
48	208	88	88	88	64	74	88
48	240	102	102	102	74	85	102
48	480	128	128	128	128	128	128
54	208	88	88	88	64	74	88
54	240	102	102	102	74	85	102
54	480	144	144	144	144	144	144
60	208	88	88	88	64	74	88
60	240	102	102	102	74	85	102
60	480	161	161	161	148	161	161

\* Single phase heaters may have slightly lower limits.

maximum total KW ratings\*

Table 9: 24" Duct Height							
Duct W	Volt- age	Number of Steps					
		1	2	3	4	5	6
24	208	88	88	88	64	74	88
24	240	91	91	91	74	85	91
24	480	91	91	91	91	91	91
26	208	88	88	88	64	74	88
26	240	99	99	99	74	85	99
26	480	99	99	99	99	98	99
28	208	88	88	88	64	74	88
28	240	102	102	102	74	85	102
28	480	107	107	107	107	103	107
30	208	88	88	88	64	74	88
30	240	102	102	102	74	85	102
30	480	114	114	114	114	113	114
32	208	88	88	88	64	74	88
32	240	102	102	102	74	85	102
32	480	122	122	122	122	122	122
34	208	88	88	88	64	74	88
34	240	102	102	102	74	85	102
34	480	130	130	130	130	126	130
36	208	88	88	88	64	74	88
36	240	102	102	102	74	85	102
36	480	138	138	138	136	138	138
42	208	88	88	88	64	74	88
42	240	102	102	102	74	85	102
42	480	161	161	161	148	161	161
48	208	88	88	88	64	74	88
48	240	102	102	102	74	85	102
48	480	185	185	185	148	170	185
54	208	88	88	88	64	74	88
54	240	102	102	102	74	85	102
54	480	204	204	204	148	170	204
60	208	88	88	88	64	74	88
60	240	102	102	102	74	85	102
60	480	204	204	204	148	170	204
66	208	88	88	88	64	74	88
66	240	102	102	102	74	85	102
66	480	204	204	204	148	170	204
72	208	88	88	88	64	74	88
72	240	102	102	102	74	85	102
72	480	204	204	204	148	170	204

Table 10: 30" Duct Height							
Duct W	Volt- age	Number of Steps					
		1	2	3	4	5	6
30	208	88	88	88	64	74	88
30	240	102	102	102	74	85	102
30	480	136	136	135	136	113	135
32	208	88	88	88	64	74	88
32	240	102	102	102	74	85	102
32	480	152	152	152	136	126	152
34	208	88	88	88	64	74	88
34	240	102	102	102	74	85	102
34	480	168	168	168	136	140	168
36	208	88	88	88	64	74	88
36	240	102	102	102	74	85	102
36	480	180	180	180	136	155	180
42	208	88	88	88	64	74	88
42	240	102	102	102	74	85	102
42	480	204	204	204	148	170	204
48	208	88	88	88	64	74	88
48	240	102	102	102	74	85	102
48	480	204	204	204	148	170	204
54	208	88	88	88	64	74	88
54	240	102	102	102	74	85	102
54	480	204	204	204	148	170	204
60	208	88	88	88	64	74	88
60	240	102	102	102	74	85	102
60	480	204	204	204	148	170	204
66	208	88	88	88	64	74	88
66	240	102	102	102	74	85	102
66	480	204	204	204	148	170	204
72	208	88	88	88	64	74	88
72	240	102	102	102	74	85	102
72	480	204	204	204	148	170	204

**limited warranty**

Brasch Manufacturing Company, Inc. warrants heater resistance coils against defects in material and workmanship for a period of two years from date of shipment. Other components and accessories are guaranteed for a period of one year from date of shipment against defects in material or workmanship. Should evidence of covered defect occur during the warranty period, Brasch Manufacturing Company, Inc. will repair or replace the heater at its own discretion without charge. Brasch Manufacturing Company, Inc. shall not be held responsible for any charges in connection with the removal or replacement of allegedly defective equipment, nor for incidental or consequential damage.

\* Single phase heaters may have slightly lower limits.