

# BEACON/MORRIS "BTC" SERIES TUBULAR GAS-FIRED BLOWER STYLE UNIT HEATER



BTCS-3

## DESCRIPTION

The Beacon/Morris "BTC" Series gas-fired unit heater offers a highly efficient, extremely durable alternative to traditional clam shell designs. These blower type units combine the latest tubular heat exchanger and in-shot burner technology with the quality and reliability you have come to know from Beacon/Morris. Units are available in sizes 100 to 400 MBH.

Standard energy saving features like the direct spark ignition and power venting reduce standby losses and offer improved seasonal efficiencies. The "BTC" is certified by ETL as providing 83% thermal (combustion) efficiency.

## TUBULAR HEAT EXCHANGER

The Beacon/Morris tubular heat exchanger has been designed to provide maximum and uniform heat transfer. The low pressure drop associated with this design enables heated air to be evenly distributed to the conditioned space. This curved, non-welded serpentine design experiences less thermally induced stress making it highly durable for significantly longer service life. All standard Beacon/Morris tubular heat exchangers are constructed of heavy duty 20-gauge aluminized steel with an optional 409 stainless steel heat exchanger available for applications in mildly corrosive environments.

## DIRECT SPARK IGNITION SYSTEM

Beacon/Morris "BTC" units utilize a direct spark pilotless ignition of the burner, providing fast heat delivery. This highly reliable and efficient ignition system incorporates an integrated electronic control board to regulate the system sequence of operation, including an externally mounted LED indicator for simple troubleshooting.

## VENTING

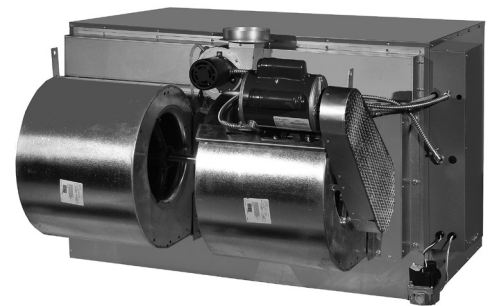
The Beacon/Morris "BTC" unit heater is ETL certified in accordance with categories I and III venting requirements. This certification allows units to be vented both vertically and horizontally using either single wall or double wall venting materials. This venting flexibility of the "BTC" unit heater makes installation easier and more cost effective by allowing the installer to utilize existing venting components.

## CONTROL ACCESSIBILITY

Designed with the service person in mind, every component of the Beacon/Morris "BTC" Series is easily accessible. Ignition and fan controls are located in one centrally located control panel. The access door provides control isolation as well as a pleasing exterior appearance.

## STANDARD FEATURES

- In-shot burner design
- 20-gauge steel jacket with baked enamel finish
- Main control panel
- 120/1/60 supply voltage
- Power vented
- 115/1/60 volt blower motor with internal overload protection
- 120/24 volt control transformer
- Direct spark ignition
- Individually adjustable and removable louvers
- Redundant single stage gas valve
- 10 year heat exchanger, flue collector and burner warranty



## OPTIONAL FEATURES

- Stainless steel heat exchanger, burners and/or flue collector
- Supply voltages: 208 & 230/1/60 and 230, 460, 575/3/60
- Premium efficiency blower motors in ODP and TE types
- Two stage and various electronic modulation gas controls
- Discharge nozzles (30°, 60° & 90°) or duct flange assembly



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PROJECT: \_\_\_\_\_

UNIT TAG: \_\_\_\_\_

# "BTC" TUBULAR DESIGN BLOWER UNIT HEATER

## PERFORMANCE AND DIMENSIONAL DATA



Intertek

Intertek

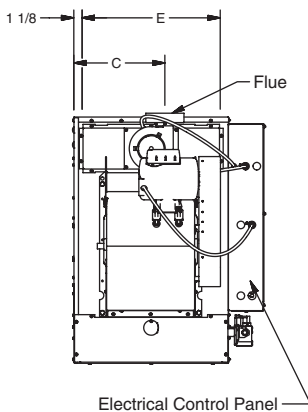
Unit Size	100	125	150	175	200	250	300	350	400
<b>PERFORMANCE DATA†</b>									
Input - BTU/Hr. (kW)	100,000 (29.3)	125,000 (36.6)	150,000 (44.0)	175,000 (51.3)	200,000 (58.6)	250,000 (73.3)	300,000 (87.9)	350,000 (102.6)	400,000 (117.2)
Output - BTU/Hr. (kW)	83,000 (24.3)	103,750 (30.4)	124,500 (36.5)	145,250 (42.6)	166,000 (48.6)	207,500 (60.8)	246,000 (72.1)	290,500 (85.1)	332,000 (97.3)
Thermal Efficiency - %	83	83	83	83	83	83	82	83	83
Free Air Delivery - CFM (cu. m/s)	1,181 (0.557)	1,476 (0.697)	1,771 (0.836)	2,067 (0.976)	2,362 (1.115)	2,953 (1.394)	3,501 (1.652)	4,134 (1.951)	4,724 (2.230)
Air Temperature Rise - °F (°C)	65 (36)	65 (36)	65 (36)	65 (36)	65 (36)	65 (36)	65 (36)	65 (36)	65 (36)
Outlet Velocity - FPM (m/s)	370 (1.879)	463 (2.351)	555 (2.819)	395.0 (2.006)	451.0 (2.291)	564.0 (2.864)	422 (2.143)	498 (2.529)	570 (2.895)
Full Load Amps at 115V	7.3	9.4	9.4	14.2	14.2	15.6	15.6	20.8	20.8
Maximum Circuit Ampacity	8.6	11.2	11.2	17.1	17.1	18.9	18.9	25.4	25.4
<b>MOTOR DATA</b>									
Motor HP	1/4	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2
Motor kW	0.19	0.37	0.37	0.56	0.56	0.75	0.75	1.11	1.11
Motor Type ODP**	SPH	SPH	SPH	SPH	SPH	Cap. Start	Cap. Start	Cap. Start	Cap. Start
RPM	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Amps @ 115V	5.1	7.2	7.2	11.6	11.6	13.0	13.0	18.2	18.2
<b>DIMENSIONAL DATA - inches (mm)</b>									
"A" Height to Top of Flue	33-3/4 (857)	33-3/4 (857)	33-3/4 (857)	33-3/4 (857)	33-3/4 (857)	33-3/4 (857)	34 (864)	34 (864)	34 (864)
"B" Jacket Width of Unit	20-3/4 (527)	20-3/4 (527)	20-3/4 (527)	32-3/4 (832)	32-3/4 (832)	32-3/4 (832)	50-3/4 (1289)	50-3/4 (1289)	50-3/4 (1289)
"C" Width to Centerline Flue	13-3/8 (340)	13-3/8 (340)	13-3/8 (340)	19-3/8 (492)	19-3/8 (492)	19-3/8 (492)	28-3/8 (721)	28-3/8 (721)	28-3/8 (721)
"D" Depth to Front Hanger	21 (533)	21 (533)	21 (533)	21 (533)	21 (533)	21 (533)	21 (533)	21 (533)	21 (533)
"E" Hanging Distance Width	18-5/8 (473)	18-5/8 (473)	18-5/8 (473)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	48-5/8 (1235)	48-5/8 (1235)	48-5/8 (1235)
"F" Hanging Distance Depth	19 (483)	19-1/2 (495)	19-1/2 (495)	32-3/4 (832)	32-3/4 (832)	32-3/4 (832)	23-1/2 (597)	32-3/4 (832)	32-3/4 (832)
"G" Discharge Opening Width	18-3/4 (476)	18-3/4 (476)	18-3/4 (476)	30-3/4 (781)	30-3/4 (781)	30-3/4 (781)	48-3/4 (1238)	48-3/4 (1238)	48-3/4 (1238)
"H" Depth to Centerline Flue	4-3/4 (121)	4-3/4 (121)	4-3/4 (121)	4-3/4 (121)	4-3/4 (121)	4-3/4 (121)	5-1/8 (130)	5-1/8 (130)	5-1/8 (130)
"L" Discharge Opening Height	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)
"M" Overall Unit Width	25-1/4 (641)	25-1/4 (641)	25-1/4 (641)	37-1/4 (946)	37-1/4 (946)	37-1/4 (946)	55-1/4 (1403)	55-1/4 (1403)	55-1/4 (1403)
"P" Overall Unit Depth	49-3/4 (1264)	49-3/8 (1254)	49-3/8 (1254)	56-1/8 (1426)	56-1/8 (1426)	56-1/8 (1426)	53-3/8 (1356)	56-1/8 (1426)	56-1/8 (1426)
*Flue Size Diameter - inch (mm)	5 (127)	5 (127)	5 (127)	5 (127)	5 (127)	5 (127)	6 (152)	6 (152)	6 (152)
Blower Size - inches (Qty)	9	10	10	12	12	12	10 (2)	12 (2)	12 (2)
Gas Inlet, Natural Gas - inch	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
Gas Inlet, LP Gas - inch	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
Approximate Unit Weight - lb (kg)	171 (78)	175 (79)	202 (92)	245 (111)	264 (120)	289 (131)	370 (168)	390 (177)	429 (195)
Approximate Ship Weight - lb (kg)	256 (116)	261 (118)	289 (131)	381 (173)	400 (181)	425 (193)	520 (236)	547 (248)	595 (270)

† Ratings shown are for unit installations at elevations between 0 and 2,000 feet (0 to 610m). For unit installations in U.S.A. above 2,000 feet (610m), the unit input must be field derated 4% for each 1,000 feet (305m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (NFPA No. 54).

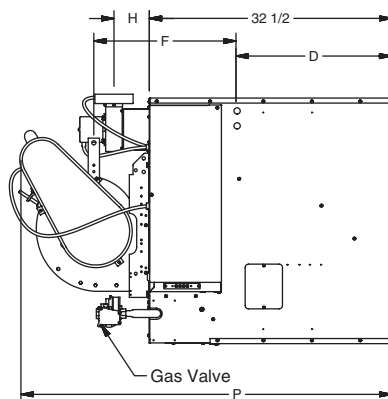
For installations in Canada, any reference to deration at altitudes in excess of 2,000 feet (610m) are to be ignored. At altitudes of 2,000 feet to 4,500 feet (610 to 1372m), the unit must be field derated and be so marked in accordance with the ETL certification. See unit installation manual for field deration information.

\* Flue collar is factory supplied with unit; to be field installed per included instructions.

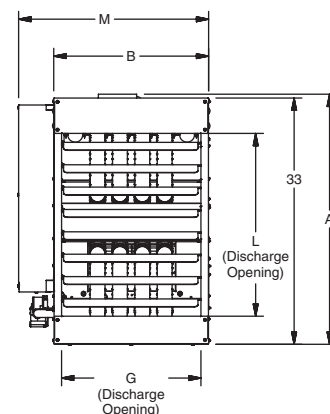
\*\* LEGEND: SPH = SPLIT PHASE CAP. START = CAPACITOR START ODP = OPEN DRIP PROOF



Rear View



Side View



Front View

D8931B

# "BTC" SERIES BLOWER PERFORMANCE DATA

Model	Temp. Rise °F (°C)	CFM (cu. m/s)	External Static Pressure in. W.C. (kPa)									
			0.1" (0.02)		0.2" (0.05)		0.3" (0.07)		0.4" (0.10)		0.5" (0.12)	
			RPM	HP (kW)	RPM	HP (kW)	RPM	HP (kW)	RPM	HP (kW)	RPM	HP (kW)
BTC100	50° (10)	1535 (0.724)	804	½ (0.37)	860	½ (0.37)	927	½ (0.37)	989	½ (0.37)	1045	½ (0.37)
	60° (15.5)	1279 (0.603)	649	¼ (0.19)	760	¼ (0.19)	821	¼ (0.19)	890	¼ (0.19)	963	¼ (0.19)
	70° (21.1)	1096 (0.517)	633	¼ (0.19)	700	¼ (0.19)	779	¼ (0.19)	858	¼ (0.19)	920	¼ (0.19)
	80° (26.6)	959 (0.452)	591	¼ (0.19)	665	¼ (0.19)	733	¼ (0.19)	801	¼ (0.19)	869	¼ (0.19)
BTC125	50° (10)	1919 (0.905)	703	½ (0.37)	758	½ (0.37)	810	½ (0.37)	863	½ (0.37)	918	½ (0.37)
	60° (15.5)	1599 (0.754)	608	½ (0.37)	685	½ (0.37)	741	½ (0.37)	790	½ (0.37)	843	½ (0.37)
	70° (21.1)	1371 (0.647)	558	½ (0.37)	626	½ (0.37)	694	½ (0.37)	755	½ (0.37)	798	½ (0.37)
	80° (26.6)	1199 (0.565)	580	½ (0.37)	597	½ (0.37)	649	½ (0.37)	720	½ (0.37)	779	½ (0.37)
BTC150	50° (10)	2303 (1.087)	853	½ (0.37)	927	½ (0.37)	962	½ (0.37)	988	½ (0.37)	1040	½ (0.37)
	60° (15.5)	1919 (0.905)	755	½ (0.37)	810	½ (0.37)	845	½ (0.37)	894	½ (0.37)	939	½ (0.37)
	70° (21.1)	1645 (0.776)	649	½ (0.37)	726	½ (0.37)	790	½ (0.37)	836	½ (0.37)	876	½ (0.37)
	80° (26.6)	1439 (0.679)	616	½ (0.37)	670	½ (0.37)	720	½ (0.37)	785	½ (0.37)	840	½ (0.37)
BTC175	50° (10)	2687 (1.26)	522	¾ (0.56)	566	¾ (0.56)	612	¾ (0.56)	652	¾ (0.56)	688	¾ (0.56)
	60° (15.5)	2239 (1.05)	468	¾ (0.56)	514	¾ (0.56)	564	¾ (0.56)	609	¾ (0.56)	654	¾ (0.56)
	70° (21.1)	1919 (0.905)	423	¾ (0.56)	471	¾ (0.56)	527	¾ (0.56)	582	¾ (0.56)	624	¾ (0.56)
	80° (26.6)	1697 (0.8)	402	¾ (0.56)	482	¾ (0.56)	515	¾ (0.56)	567	¾ (0.56)	609	¾ (0.56)
BTC200	50° (10)	3071 (1.44)	592	¾ (0.56)	627	¾ (0.56)	670	¾ (0.56)	702	¾ (0.56)	748	¾ (0.56)
	60° (15.5)	2559 (1.2)	526	¾ (0.56)	561	¾ (0.56)	597	¾ (0.56)	647	¾ (0.56)	688	¾ (0.56)
	70° (21.1)	2193 (1.03)	468	¾ (0.56)	519	¾ (0.56)	556	¾ (0.56)	612	¾ (0.56)	653	¾ (0.56)
	80° (26.6)	1919 (0.905)	432	¾ (0.56)	481	¾ (0.56)	537	¾ (0.56)	593	¾ (0.56)	638	¾ (0.56)
BTC250	50° (10)	3839 (1.81)	734	1 (0.75)	766	1 (0.75)	802	1 ½ (1.11)	836	1 ½ (1.11)	863	1 ½ (1.11)
	60° (15.5)	3199 (1.51)	626	1 (0.75)	668	1 (0.75)	700	1 (0.75)	749	1 (0.75)	780	1 (0.75)
	70° (21.1)	2742 (1.29)	545	1 (0.75)	593	1 (0.75)	633	1 (0.75)	680	1 (0.75)	718	1 (0.75)
	80° (26.6)	2399 (1.13)	494	1 (0.75)	555	1 (0.75)	590	1 (0.75)	642	1 (0.75)	680	1 (0.75)
BTC300	50° (10)	4551 (2.14)	734	1 (0.75)	766	1 (0.75)	802	1 ½ (1.11)	836	1 ½ (1.11)	863	1 ½ (1.11)
	60° (15.5)	3792 (1.79)	626	1 (0.75)	668	1 (0.75)	700	1 (0.75)	749	1 (0.75)	780	1 (0.75)
	70° (21.1)	3259 (1.53)	545	1 (0.75)	593	1 (0.75)	633	1 (0.75)	680	1 (0.75)	718	1 (0.75)
	80° (26.6)	2844 (1.34)	494	1 (0.75)	555	1 (0.75)	590	1 (0.75)	642	1 (0.75)	680	1 (0.75)
BTC350	50° (10)	5374 (2.54)	558	1 ½ (1.11)	598	1 ½ (1.11)	638	1 ½ (1.11)	676	1 ½ (1.11)	727	1 ½ (1.11)
	60° (15.5)	4478 (2.11)	484	1 ½ (1.11)	532	1 ½ (1.11)	588	1 ½ (1.11)	653	1 ½ (1.11)	680	1 ½ (1.11)
	70° (21.1)	3839 (1.81)	451	1 ½ (1.11)	503	1 ½ (1.11)	559	1 ½ (1.11)	609	1 ½ (1.11)	654	1 ½ (1.11)
	80° (26.6)	3359 (1.59)	408	1 ½ (1.11)	480	1 ½ (1.11)	536	1 ½ (1.11)	589	1 ½ (1.11)	621	1 ½ (1.11)
BTC400	50° (10)	6142 (2.9)	647	1 ½ (1.11)	659	1 ½ (1.11)	670	1 ½ (1.11)	713	1 ½ (1.11)	751	2 (1.49)
	60° (15.5)	5118 (2.41)	553	1 ½ (1.11)	570	1 ½ (1.11)	618	1 ½ (1.11)	653	1 ½ (1.11)	697	1 ½ (1.11)
	70° (21.1)	4387 (2.07)	483	1 ½ (1.11)	523	1 ½ (1.11)	568	1 ½ (1.11)	615	1 ½ (1.11)	660	1 ½ (1.11)
	80° (26.6)	3839 (1.81)	437	1 ½ (1.11)	490	1 ½ (1.11)	547	1 ½ (1.11)	589	1 ½ (1.11)	655	1 ½ (1.11)