

# BEACON/MORRIS "BSF" SERIES SEPARATED COMBUSTION TUBULAR PROPELLER UNIT HEATER



BSFS-2

Intertek

## SEPARATED COMBUSTION

The Beacon/Morris "BSF" Series Separated Combustion Tubular Propeller Gas-Fired Unit Heater offers a highly efficient, extremely durable alternative to the traditional clam shell design. Additionally, the "BSF" unit heater "separates" the combustion process from the environment where the unit is installed. A power venting system draws a controlled quantity of combustion air from outside the building. The same system exhausts flue products to the outside. The burners, pilot and flue system are enclosed within the unit; thus, the entire combustion process is unaffected by the atmosphere in the space where the heater is located. Separated combustion units are designed to be installed where dusty, dirty or mildly corrosive conditions exist or where high humidity or slightly negative pressures prevail.

Units are available in sizes 100 to 400 MBH. The "BSF" 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 Beacon/Morris tubular heat exchangers are constructed of heavy duty 20-gauge aluminized steel. Optional 409 stainless steel heat exchangers are also available.

## DIRECT SPARK IGNITION SYSTEM

Beacon/Morris "BSF" 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 onboard LED indicator for simple troubleshooting.

## VENTING

The Beacon/Morris "BSF" 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. Available as an accessory option, Beacon/Morris offers a Combustion Air Inlet Kit that allows for concentric venting of both combustion and exhaust air systems through one termination.

## CAUTIONS

Combustion air and vent systems must be installed in accordance with current National Fuel Gas Code or Installation Code, Installation Code for Natural Gas Burning Appliances and Equipment (Canada) and any local and state codes. Units should not be installed where negative pressures are significant, where vapor containing chlorine or fluorine may be present or in any areas classified as "hazardous."

## STANDARD FEATURES

- Enclosed combustion system
- 20-gauge aluminized steel tubular heat exchanger
- 83% thermal efficiency
- ODP propeller motor (with overload protection)
- Power venter
- Combustion air pressure switch
- 20-gauge steel cabinetry with baked enamel finish
- Direct spark ignition system
- 115/24 volt control transformer
- 115/1/60 supply voltage
- Redundant single stage gas valve
- Rear burner access
- Individually adjustable and removable horizontal louvers
- Complete fan guard
- Main control panel
- 10 year heat exchanger, flue collector and burner warranty

## OPTIONAL FEATURES

- Stainless steel heat exchanger, burners, and/or flue collector
- Two stage and various electronic modulation gas controls
- Discharge nozzles (30°, 60° & 90°)
- Combustion air inlet kits (allows concentric venting with horizontal or vertical termination)
- TE propeller motor
- Supply voltages: 208 & 230/1/60 and 208, 230, 460, 575/3/60



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

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

# “BSF” SEPARATED COMBUSTION PROPELLER PERFORMANCE AND DIMENSIONAL DATA



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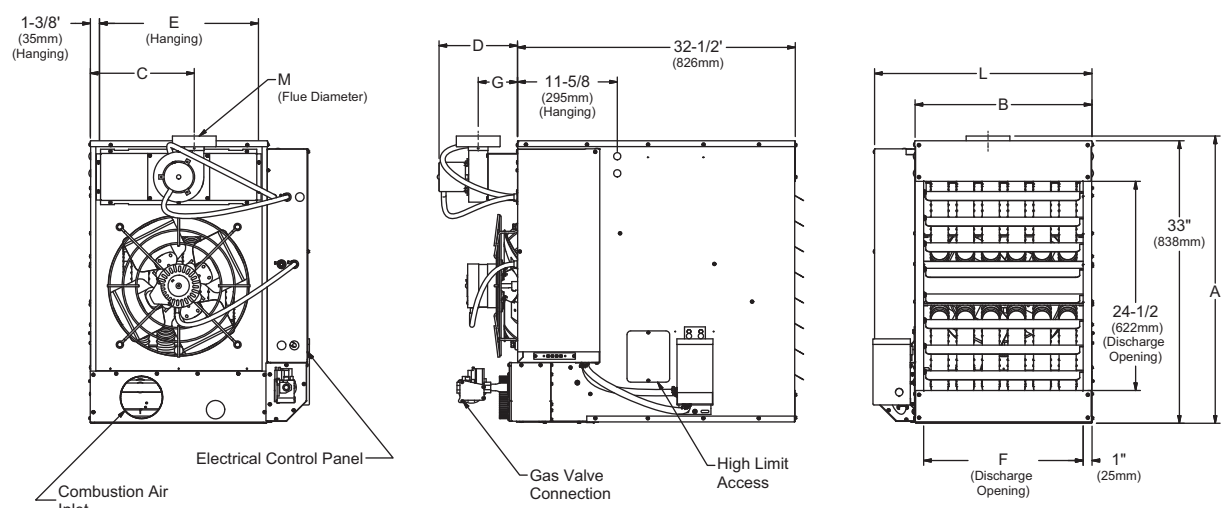
Unit Capacity (MBH)	100	125	150	175	200	250	300	350	400
<b>PERFORMANCE DATA†</b>									
Input - BTU/Hr.	100,000	125,000	150,000	175,000	200,000	250,000	300,000	350,000	400,000
(kW)	(29.3)	(36.6)	(43.9)	(51.2)	(58.6)	(73.2)	(87.8)	(102.5)	(117.1)
Output - BTU/Hr.	83,000	103,750	124,500	145,250	166,000	207,500	249,000	290,500	332,000
(kW)	(24.3)	(30.4)	(36.4)	(42.5)	(48.6)	(60.7)	(72.9)	(85.1)	(97.2)
Thermal Efficiency (%)	83	83	83	83	83	83	83	83	83
Free Air Delivery - CFM	1,600	2,200	2,400	2,850	3,200	3,450	5,000	5,600	5,800
(cu. m/s)	(0.756)	(1.039)	(1.133)	(1.346)	(1.511)	(1.629)	(2.361)	(2.644)	(2.738)
Air Temperature Rise - °F	47	42	47	46	47	54	45	47	51
(°C)	(26)	(23)	(26)	(26)	(26)	(30)	(24)	(26)	(28)
Full Load Amps at 120V	6.4	6.9	6.9	8.0	8.0	8.0	11.3	13.5	13.5
<b>MOTOR DATA:</b>									
Motor HP (Qty)	1/10	1/4	1/4	1/3	1/3	1/3	1/4 (2)	1/3 (2)	1/3 (2)
Motor kW	(0.080)	(0.19)	(0.19)	(0.25)	(0.25)	(0.25)	(0.19)	(0.25)	(0.25)
Motor Type ODP**	SP	PSC	PSC	PSC	PSC	PSC	PSC	PSC	PSC
RPM	1,050	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Amps @ 115V	4.2	4.7	4.7	5.8	5.8	5.8	9.4	11.6	11.6
<b>DIMENSIONAL DATA - inches (mm)</b>									
"A" Overall 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 (831)	32-3/4 (831)	32-3/4 (831)	50-3/4 (1289)	50-3/4 (1289)	50-3/4 (1289)
"C" Width to CL 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 Rear of Housing	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)	12-1/4 (311)	12-1/4 (311)	12-1/4 (311)
"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" 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)
"G" Depth to CL 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" 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)
"M" Flue Size Diameter* - inch	5	5	5	5	5	5	6	6	6
(mm)	(127)	(127)	(127)	(127)	(127)	(127)	(152)	(152)	(152)
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	135	147	157	194	204	214	311	325	339
(kg)	(61)	(67)	(71)	(88)	(93)	(97)	(141)	(147)	(154)
Approximate Ship Weight - lb	175	187	197	244	254	264	371	385	399
(kg)	(79)	(85)	(89)	(111)	(115)	(120)	(168)	(175)	(181)

† 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 instructions for field deration information.

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

\*\* LEGEND: SP = SHADED POLE PSC = PERMANENT SPLIT CAPACITOR ODP = OPEN DRIP PROOF



Rear View

Side View

Front View

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