

“BMEF” HIGH EFFICIENCY PROPELLER TYPE GAS-FIRED UNIT HEATERS

OUR MOST ENERGY EFFICIENT INDOOR POWER VENTED GAS-FIRED UNIT HEATER

The Beacon/Morris High Efficiency Propeller Type Unit Heaters achieve 80% thermal efficiency and annual fuel savings of 20 to 25% over conventional gravity vented heaters. The units feature a factory installed power venter and sealed flue collector that controls combustion and excess air during the on-cycle.

Heated air no longer escapes through a draft diverter opening during the off-cycle. Energy saving spark ignition reduces gas losses; the pilot only operates when required.

Horizontal power venting allows side wall venting, smaller openings and single walled vent pipe, reducing heat loss. Higher efficiencies can reduce equipment and material costs as well as installation time. Certified by ETL and approved for installation in Canada.

10-YEAR WARRANTY

The complete heat exchanger, flue collector and burners are warranted by Beacon/Morris to be free from defects in materials and workmanship for a period of ten (10) years from the date of manufacture.

QUIET OPERATION

Beacon/Morris Unit Heaters incorporate exceptionally balanced fan blades to insure **quiet operation** and added heat throw.

HEAT EXCHANGERS

All Beacon/Morris 20-gauge heat exchangers are available in three types of:

- Aluminized Steel (Standard)
- 409 Grade Stainless Steel (Optional)
- 321 Grade Stainless Steel (Optional)

BURNERS

All sizes 100,000 thru 400,000 BTU/HR (8.8 thru 117.1 kW) input are equipped with a proven design pressed steel burner having a unique “burner shade” protective device to maximize combustion efficiencies by preventing scale or foreign matter from plugging the burner ports.

LP/NATURAL OPERATION

All units are available for operation on either natural or LP gas from our factory.

YEAR ROUND COMFORT

Controls are factory wired permitting continuous air circulation for summer comfort.

24 VOLT SYSTEM

All units are equipped with a 24 volt control system which is powered by a 115/24 volt transformer as standard equipment.

FAN TIME DELAY

The fan time delay is mounted at the factory as standard equipment. This feature eliminates an initial blast of cold air by allowing the unit to fire for a short period of time before actuating the fan motor. After the thermostat is satisfied (with burners off), the fan continues to operate for approximately one minute, removing residual heat from the heat exchanger.

ENERGY SAVING IGNITION CONTROL (Standard)

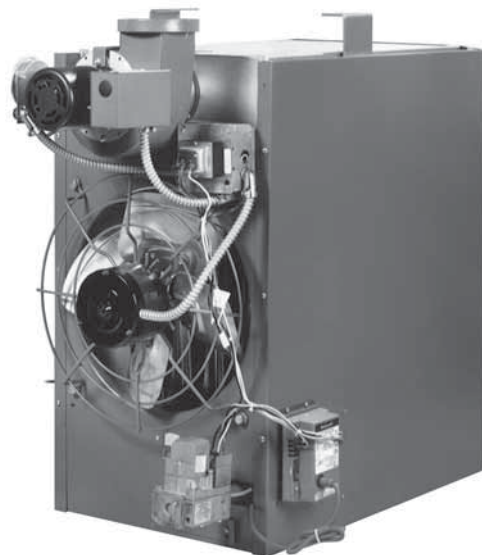
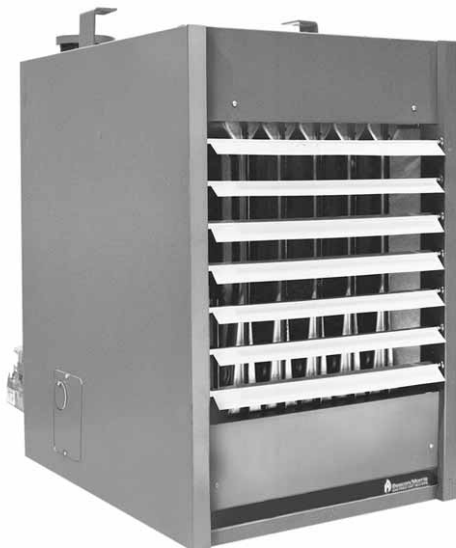
The pilot burner is ignited only during each cycle of operation, thereby **conserving energy** during the off-cycle.

EASY ACCESS FOR MAINTENANCE

All Beacon/Morris Unit Heaters are so designed that the burner access panel is removed with just two screws. Burners are individually removable for inspection and servicing. Pilot is also accessible through side panel access door, on 100 thru 400 models.

TEST FIRE

All Beacon/Morris Unit Heaters are test fired to insure proper operation.



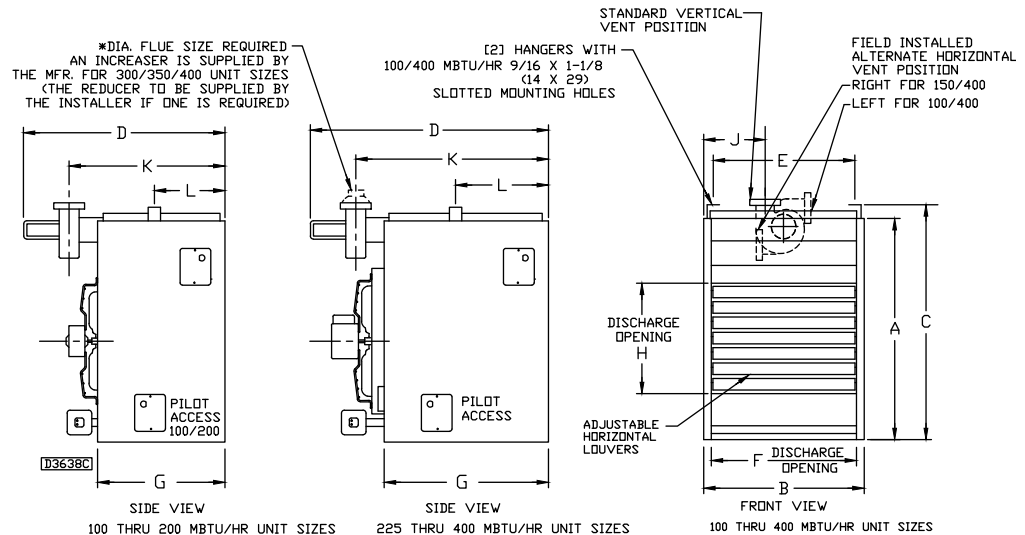
BMEF – PERFORMANCE AND DIMENSIONAL DATA



Capacity (MBH)	100	125	150	175	200	225	250	300	350	400
PERFORMANCE DATA †										
Input BTU/Hr	100,000	125,000	150,000	175,000	200,000	225,000	250,000	300,000	350,000	400,000
(kW)	(29.3)	(36.6)	(43.9)	(51.2)	(58.6)	(65.9)	(73.2)	(87.8)	(102.5)	(117.1)
Output BTU/Hr	80,000	100,000	120,000	140,000	160,000	180,000	200,000	240,000	280,000	320,000
(kW)	(23.4)	(29.3)	(35.1)	(41.0)	(46.9)	(52.7)	(58.6)	(70.3)	(82.0)	(93.7)
Thermal Efficiency (%)	80	80	80	80	80	80	80	80	80	80
Free Air Delivery CFM	1,480	1,650	2,200	2,530	2,640	2,700	3,100	4,400	5,000	5,300
(cu. m/s)	(0.699)	(0.779)	(1.038)	(1.194)	(1.246)	(1.274)	(1.463)	(2.077)	(2.360)	(2.502)
Air Temperature Rise °F	50	56	50	51	56	61	60	50	52	56
(°C)	(28)	(31)	(28)	(28)	(31)	(34)	(33)	(28)	(29)	(31)
Outlet Velocity FPM	775	910	1,045	1,070	1,010	950	980	1,100	1,150	1,050
(m/s)	(3.94)	(4.62)	(5.31)	(5.44)	(5.13)	(4.83)	(4.98)	(5.59)	(5.84)	(5.33)
Sound Ratings (See Page 18)	II	II	II	III	III	III	IV	IV	IV	IV
Full Load Amps at 115V (O.D.P.)	4.5	6.1	6.6	7.7	7.7	7.7	7.7	11.3	13.5	13.5
MOTOR DATA :										
Motor HP	1/20	1/10	1/4	1/3	1/3	1/3	1/3	(2) 1/4	(2) 1/3	(2) 1/3
Motor (kW)	(0.037)	(0.075)	(0.186)	(0.249)	(0.249)	(0.249)	(0.249)	(0.186)	(0.249)	(0.249)
Motor Type (O.D.P.)	SP	SP	PSC	PSC	PSC	PSC	PSC	PSC	PSC	PSC
RPM	1,050	1,050	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Amps @ 115V (O.D.P.)	2.6	4.2	4.7	5.8	5.8	5.8	5.8	9.4	11.6	11.6
DIMENSIONAL DATA in. (mm)										
"A" Height to Top of Unit	31-1/4 (794)	31-1/4 (794)	36-1/4 (921)	36-1/4 (921)	36-1/4 (921)	36-1/4 (921)	36-1/4 (921)	36-1/4 (921)	36-1/4 (921)	36-1/4 (921)
"B" Width of Unit	17-7/8 (454)	20-5/8 (524)	20-5/8 (524)	23-3/8 (594)	26-1/8 (664)	28-7/8 (733)	31-5/8 (803)	37-1/8 (943)	42-5/8 (1083)	48-1/8 (1222)
"C" Height to Top of Hanger	34-1/8 (867)	34-1/8 (867)	39-1/8 (994)	39-1/8 (994)	39-1/8 (994)	39-1/8 (994)	39-1/8 (994)	39-1/8 (994)	39-1/8 (994)	39-1/8 (994)
"D" Depth to Rear of Housing	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)	37-1/2 (952)
"E" Hanging Distance Width	14-1/2 (368)	17-1/4 (438)	17-1/4 (438)	20 (508)	22-3/4 (578)	25-1/2 (648)	28-1/4 (718)	33-3/4 (857)	39-1/4 (997)	44-3/4 (1137)
"F" Discharge Opening Width	15-3/8 (391)	18-1/8 (460)	18-1/8 (460)	20-7/8 (530)	23-5/8 (600)	26-3/8 (670)	29-1/8 (740)	34-5/8 (879)	40-1/8 (1019)	45-5/8 (1159)
"G" Depth to Unit Side Jacket	26-3/4 (492)	26-3/4 (492)	26-3/4 (679)	26-3/4 (679)	26-3/4 (679)	26-3/4 (679)	26-3/4 (679)	26-3/4 (679)	26-3/4 (679)	26-3/4 (679)
"H" Discharge Opening Height	18 (457)	18 (457)	18 (457)	18 (457)	18 (457)	18 (457)	18 (457)	18 (457)	18 (457)	18 (457)
"J" to Centerline of Flue	5-7/8 (149)	7-1/4 (184)	7-1/4 (184)	8-5/8 (219)	10 (254)	11-1/4 (286)	12-3/4 (324)	15-1/2 (394)	18-1/4 (464)	21 (533)
"K" Depth to Centerline of Flue	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)	30-5/8 (778)
"L" Hanger Location	16-1/4 (413)	16-3/4 (425)	16-3/8 (416)	16-3/8 (416)	16-3/8 (416)	16-3/4 (425)	16-3/4 (425)	16-3/4 (425)	16-3/4 (425)	16-3/4 (425)
Flue Size Dia.-in.* (Dia.-mm)	4 (102)	4 (102)	4 (102)	4 (102)	5 (127)	5 (127)	5 (127)	6 (152)	6 (152)	6 (152)
Fan Diameter-in.	14	16	16	18	18	18	18	(2) 16	(2) 18	(2) 18
Gas Inlet-Natural Gas-in.	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4
Gas Inlet-LP Gas-in.	1/2	1/2	1/2	1/2	1/2	← 1/2 OR 3/4 →				
Approx. Shipping Wt lb. (kg)	174 (79)	197 (89)	219 (99)	238 (108)	249 (113)	275 (125)	305 (138)	350 (159)	414 (188)	461 (209)

† Ratings shown are for unit installations at elevations between 0 and 2000 ft. (610m). For unit installations in USA above 2000 ft. (610m), the unit input must be derated 4% for each 1000 ft. (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 (N.F.P.A. No. 54). For installations in Canada, any references to deration at altitudes in excess of 2000 ft. (610m) are to be ignored. At altitudes of 2000 to 4500 ft. (610 to 1372m), the unit must be derated to 90% of the normal altitude rating, and be so marked in accordance with the ETL certification.

LEGEND: SP = SHADED POLE
PSC = PERMANENT SPLIT CAPACITOR
O.D.P. = OPEN DRIP PROOF



DIMENSIONS .XXX STANDARD UNITS
DIMENSIONS IN PARENTHESIS (XXX) MILLIMETERS

“BM” SERIES INDOOR GAS-FIRED UNIT NUMBER DESCRIPTION

Digit	X	X	X	X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	†
Item	Prefix				UT	CA			FT	FM	GT	IC	AL	GC	SV	MT	MS	AS		

(Internal Use Only)

Digit #1, 2 - Unit Type [UT]

- BMEF (P2)** - High Efficiency Propeller
- BMSF (P3)** - Separated Combustion Propeller
- BMEB (B2)** - High Efficiency Blower
- BMSB (B3)** - Separated Combustion Blower
- BMED (D2)** - High Efficiency Duct Furnace
- BMSD (D3)** - Separated Combustion Duct Furnace
- BMES (D6)** - Side Service High Efficiency Duct Furnace

Digit #3, 4, 5 - Capacity [CA]

Propeller Only

- 100** 100 - 100,000 BTU/HR
- 125** 125 - 125,000 BTU/HR
- 150** 150 - 150,000 BTU/HR
- 175** 175 - 175,000 BTU/HR
- 200** 200 - 200,000 BTU/HR
- 225** 225 - 225,000 BTU/HR
- 250** 250 - 250,000 BTU/HR
- 300** 300 - 300,000 BTU/HR
- 350** 350 - 350,000 BTU/HR
- 400** 400 - 400,000 BTU/HR

Digit #6 - Furnace Type [FT] ††

A - Right Side Gas Connection (Standard on all models)
(Not available on BMSB & BMSD. Optional on BMSD).

B - Left Side Gas Connection

(Optional on Model BMES; Standard on Models BMSB, BMSD & BMSF)

††Note: [FT] Digit #6:

*A" = Right side access to burners is available as standard on model BMES.

*B" = Left side access to burners is optional on model BMES.

All other models have only bottom access to service the burners.

Digit #7 - Heat Exchanger Construction Material [FM]

- 1** - Aluminized Steel
- 2** - 409 Stainless Steel
- 3** - 321 Stainless Steel

Digit #8 - Gas Type [GT]

- N** - Natural Gas
- P** - Propane Gas (LP)
- K** - Natural Gas w/100% Shutoff

Digit #9 - Ignition Control [IC]

- 2** - Spark Ignition

Digit #10 - Altitude [AL]

- A** - 0-1,999 ft.
- B** - 2,000-2,999 ft.
- C** - 3,000-3,999 ft.
- D** - 4,000-4,999 ft.
- F** - 5,000-5,999 ft.
- G** - 6,000-6,999 ft.
- H** - 7,000-7,999 ft.
- J** - 8,000-8,999 ft.
- K** - 9,000-9,999 ft.
- L** - 10,000-10,999 ft.
- M** - 11,000-11,999 ft.
- N** - Local Derate
- P** - Canadian High Altitude 2,000-4,500 ft.

Digit #11 - Gas Control [GC]

- A** - Single Stage Gas (Standard)
- B** - Two Stage Gas
- H** - Electronic Modulation w/Room Sensing
- J** - Electronic Modulation w/Duct Sensing (Duct Furnaces & Blowers Only)
- K** - Electronic Modulation w/Duct Sensing & Room Ovrdr. Stat (Duct Furnaces & Blowers Only)
- L** - Electronic Modulation w/External 4-20 mA Input (Duct Furnaces & Blowers Only)
- N** - Electronic Modulation w/External 0-10 VDC Input (Duct Furnaces & Blowers Only)

Digit #12 - Supply Voltage [SV]*

- 1** - 115/1/60
- 2** - 208/1/60
- 3** - 230/1/60
- 4** - 208/3/60
- 5** - 230/3/60
- 6** - 460/3/60
- 7** - 575/3/60
- Z** - Special

*Note: Supply voltages [SV] 2-7 include field mounted step down transformer (propeller units only).

Digit #13 - Motor Type [MT]

- 1** - Open Drip Proof (Standard)
- 2** - Totally Enclosed
- 3** - Premium Efficiency, Open Drip Proof (Blowers Only)
- 4** - Premium Efficiency, Totally Enclosed (Blowers Only)
- 0** - None

Digit #14 - Blower Motor Sizes [MS]

- A** - 1/4 HP w/Contactor
- B** - 1/3 HP w/Contactor
- C** - 1/2 HP w/Contactor
- D** - 3/4 HP w/Contactor
- F** - 1 HP w/Contactor
- G** - 1-1/2 HP w/Contactor
- H** - 2 HP w/Contactor
- J** - 1/4 HP
- K** - 1/3 HP
- L** - 1/2 HP
- M** - 3/4 HP
- N** - 1 HP
- P** - 1/2 HP w/Magnetic Starter
- R** - 3/4 HP w/Magnetic Starter
- S** - 1 HP w/Magnetic Starter
- T** - 1-1/2 HP w/Magnetic Starter
- U** - 2 HP w/Magnetic Starter
- W** - 1/4 HP w/Magnetic Starter
- Y** - 1/3 HP w/Magnetic Starter

Notes: 1. All 3-phase units [SV = 4, 5, 6, 7] include a contactor as standard.

2. All single phase units [SV = 1, 2, 3] include a contactor for units equipped with 1-1/2 HP motor or higher [MS = G, H]

3. [MS] options J, K, L, M, N only available with single phase supply voltage [SV = 1, 2, 3].

Digit #15 - Accessories [AS]

† All Field Installed Accessories are to be entered as a separate line item using new catalog number which utilizes "AS" as a prefix. i.e. A7 becomes AS-A7.

*These accessories will be ordered by new catalog number as illustrated above plus with the unit capacity (i.e. Q1 for a 100 capacity becomes AS-Q1-100).

FACTORY INSTALLED

A8 - Input Derate

K4 - Fan Time Delay (Duct Furnaces)

K5 - Air Flow Prove Switch (Duct Furnaces)

M6 - OSHA Fan Guard

M8 - Discharge Duct Flange Assembly

P4 - Terminal Block Wiring
(Duct Furnaces & Blowers)

P6 - Summer/Winter Switch

S1 - 409 Stainless Burners

S3 - 409 Stainless Flue Collector

†FIELD INSTALLED (AS-____)

A7 - Pressure Regulator 1/2-2 psi

F1 - 1-Stage T675A Ductstat

F2 - 2-Stage T678A Ductstat

G1 - 1-Stage T87K Mercury Free Thermostat
w/Subbase Kit

G2 - 1-Stage T87K Mercury Free Thermostat
w/TG511A Guard Kit

G3 - 1-Stage T834N Mercury Free
Thermostat/Fan Switch
(not available on seperated combustion)

G5 - 2-Stage TH5220D Mercury Free
Thermostat w/Subbase

G6 - Locking Thermostat Cover (TG511A)

G8 - 1-Stage T6169C Line Voltage Stat

G9 - 1-Stage T822K Mercury Free Thermostat

H5 - Low Ambient Control

M2-1 - Vent Cap (4 in.)
(Unit Capacity 100-175)

M2-2 - Vent Cap (5 in.)
(Unit Capacity 200-250)

M2-3 - Vent Cap (6 in.)
(Unit Capacity 300-400)

M3-1 - Adaptors (5 in. and 4 in.)
(Unit Capacity 100-175)

M4 - Vertical Concentric Flue Kit

M5 - Horizontal Concentric Flue Kit

M7 - Two to Four Point Suspension Kit

P2 - Adjustable High Limit Switch
(Duct Furnaces)

P3 - Adjustable Fan Switch
(Duct Furnaces)

P5 - 24V SPST Relay-Specify Purpose

Q1* - "Y" Splitter Nozzle

Q2* - 30° Nozzle

Q3* - 60° Nozzle

Q4* - 90° Nozzle

Q5* - Poly Tube Adaptor

Q6 - Vertical Louvers (Propellers & Blowers)

Q7 - Horizontal/Vertical Louvers
(Duct Furnaces)

S4 - 409 Stainless Drip Pan
(BMED & BMES Only)