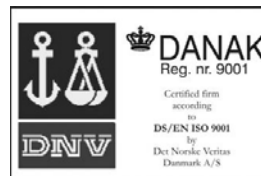


Technical Datasheet



Multi-Heat

High quality wood pellet and corn fired boiler with variable heat output from 30-100%. Designed for hydronic heating systems. Heat output ranging between 51-146 MBH.

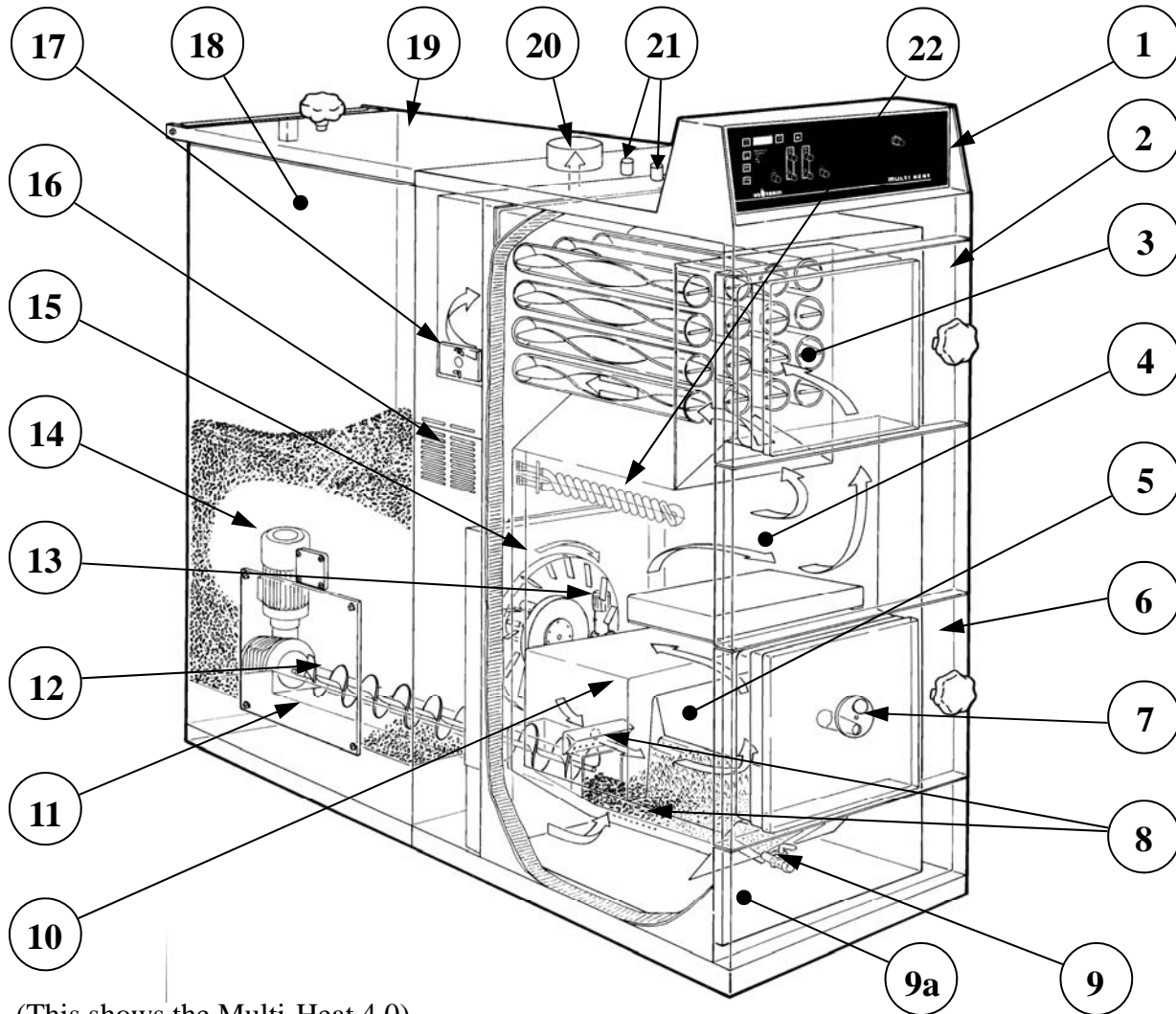


Benefits at a Glance:

- Burns wood pellets and corn which are economical, environmentally friendly and domestic fuel sources.
- Multi-Heat boilers can be very easily incorporated into existing heating systems.
- Combustion efficiency of up to 91%. Constant heating gives optimum building comfort.
- Simple operation via a multifunctional digital control on the front panel.
- No storage tank required.
- Automatic shut-off to prevent hopper burn back.
- Delivered fully assembled.
- Easy to position: Top flue exit and reversible doors provide maximum flexibility.
- Sturdy construction features include acid-proof stainless steel (AISI 316L) in the combustion chamber and 6mm (1/4") water cooled steel plates in the boiler interior.
- Automatic hopper refilling available.

Boiler Information

Boiler Cut-Away Section



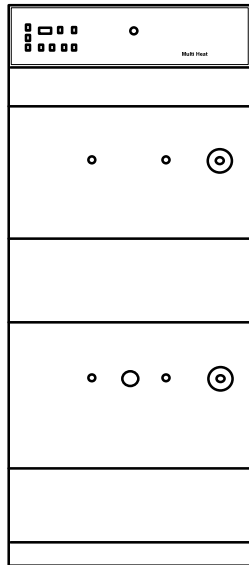
(This shows the Multi-Heat 4.0)

- | | |
|---|---|
| 1. Boiler control panel | 10. Combustion chamber refractory |
| 2. Upper cleaning door (reversible) | 11. Cleaning opening (for hopper 2.5 and 4.0 only) |
| 3. Heat exchange tubes and turbulators | 12. Fuel auger (transport the fuel to the combustion area) |
| 4. Combustion area | 13. Burn back safety flood valve |
| 5. Hot combustion area | 14. Auger motor and gearbox |
| 6. Ash door (reversible) | 15. Blower fan |
| 7. Observation flap | 16. Air intake louvers |
| 8. Air apertures for the combustion | 17. Ash cleanout cover (one on each side) |
| 9. Fill/drain connection with valve (on type 2.5 this is placed between the fire box and the hopper) | 18. Fuel storage hopper |
| 9a. Drain plug for air ducts (on type 2.5 this is placed directly over the bottom frame on the right-hand side) | 19. Cover for hopper |
| | 20. Flue gas exhaust collar |
| | 21. Supply and return water connections |
| | 22. Overheat coil |

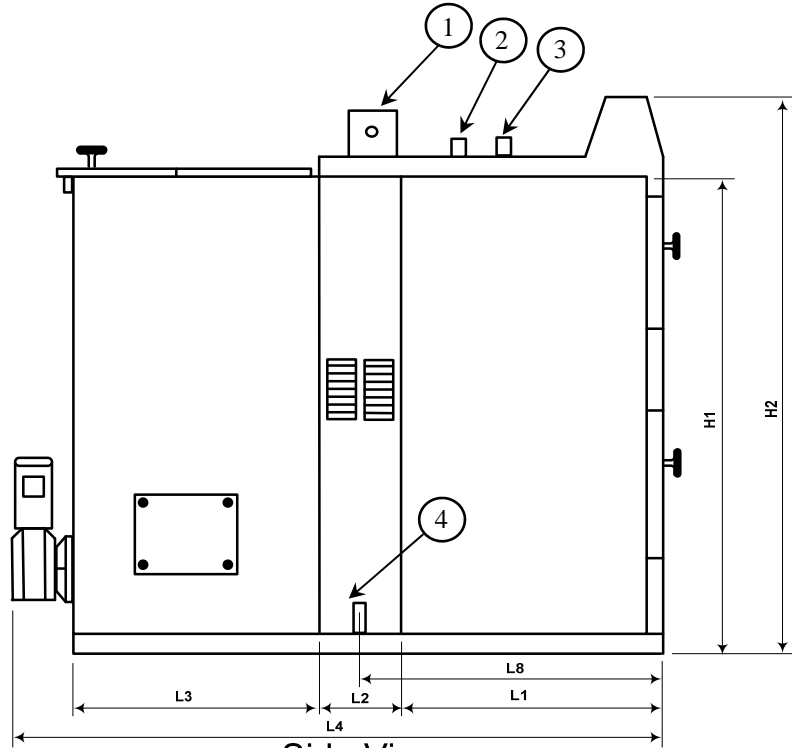
Specification Data

Technical Data	Units	MH 1.5	MH 2.5	MH 4.0
MEASUREMENTS				
Depth- Boiler & Fuel Hopper- Total	inches	56.5	62.2	66.7
Width- Boiler or Fuel Hopper	inches	19.9	23.6	23.6
Height including smoke pipe stub	inches	45.9	58.1	58.1
Fuel Hopper capacity	Cu ft	7	12.7	12.7
Hopper Hatch dimensions (length x width)	inches	15.8 X 15.8	20.5 X 20.5	20.5 X 20.5
Smoke Pipe Stub outside diameter	inches	5.2	5.9	5.9
Weight- Empty	lbs	750	1168	1279
Water Contents	gallons	13.2	33	39.6
Distance behind Boiler for replacing worm conveyor	inches	31.5	39.4	39.4
Distance in front of Boiler to fully open doors	inches	19.7	23.7	23.7
Space around Hopper for service access	inches	4	4	4
OPERATING DATA				
Operating Temperature-Water	F°	140-185	140-185	140 - 185
Nominal Output-Wood Pellets or Corn	Btu/hr	51,200 (pellets only)	85,300	146,700
Output at 30% (minimum)-Wood Pellets or Corn	Btu/hr	15,700 (pellets only)	25,600	40,950
Approximate Output in Standby	Btu/hr	1,700 (pellets only)	2,700	3,300
Smoke Temperature at Nominal Output-Wood Pellets	F°	302	356	356
-Corn	F°	-	392	392
Smoke Temperature at 30% Output-Wood Pellets	F°	212	230	230
- Corn	F°	-	239	239
Smoke Gas Volume at Nominal Output-Wood Pellets	Cu meters/hr	36	58	93
-Corn	Cu meters/hr	-	60	97
Fuel Consumption at Nominal Output-Wood Pellets	lbs/hr	7.5	12.6	22
-Corn	lbs/hr	-	13.2	24.3
Required Draft	inch WC	.04"- .1"	.04"- .1"	.04"- .1"
Safety Listings	-	UL 391-1995, CAN/CSA B366.1 -M91,UL726, ANSI Z21.13-200, CSA 4.9-M2000	UL 391-1995, CAN/CSA B366.1 -M91,UL726, ANSI Z21.13-200, CSA 4.9-M2000	UL 391-1995, CAN/CSA B366.1-M91,UL726, ANSI Z21.13-200, CSA 4.9-M2000
Noise Level	Db(A)	<70	<70	<70
ELECTRICAL DATA				
Boiler Power Requirement		240V-60Hz/15A	240V-60Hz/15A	240V-60Hz/15A
Electricity Consumption	KW	.3	.46	.46
Auger Motor	KW	.12	.37	.37
Blower	W	90	90	90
Auger Motor Protection Setting	Amps	1.1	2.3	2.3
PIPING DATA				
Boiler Test Pressure	psi	58	58	58
Cooling Coil Test Pressure	psi	362	362	362
Boiler Relief Valve Setting	psi	30	30	30
Supply & Return pipe stub size (male npt)	inch	1	1	1
Minimum Boiler Loop size	inch	1	1.25	1.25
Cooling coil & fire suppression connection size	inch	.5	.5	.5
Fill/ drain valve size	inch	.5	.5	.5
Pressure Drop for 10 degrees C temperature difference	psi	.067	.178	.435
Mixing Valve Opening Setting	F°	162	162	162
Internal Overheat Aquastat Setting	F°	212	212	212

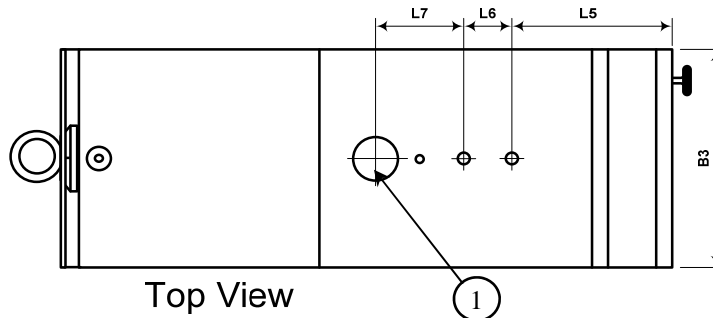
Specification Data



Front View



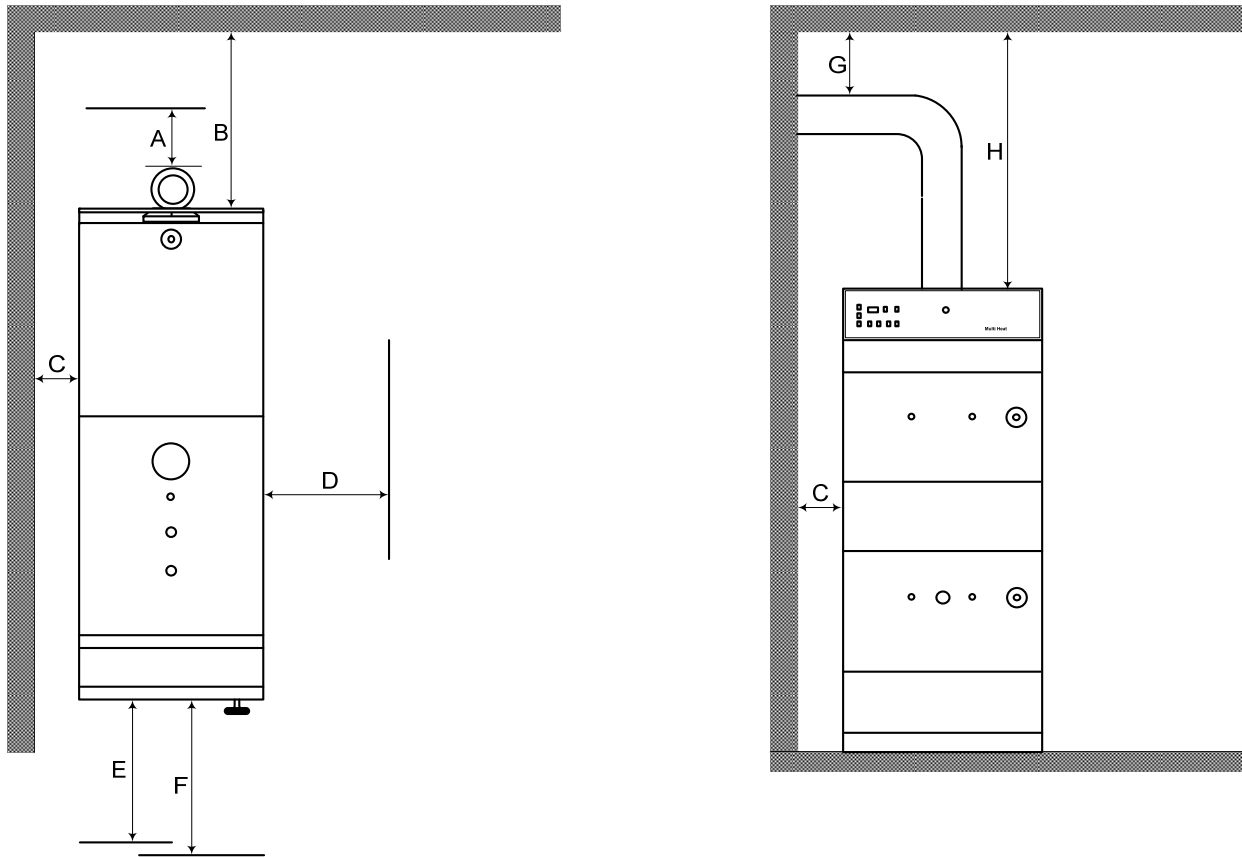
Side View



Top View

Description	Units	MH 1.5	MH 2.5	MH 4.0
1. Flue Pipe, External Diameter	inches	5.125	5.875	5.875
2. Return Connection	inches	1	1	1
3. Supply Connection	inches	1	1	1
4. Burn-back Protection Connection	inches	.5	.5	.5
L1. Measurement	inches	23	23	27.5
L2. Measurement	inches	7.750	8.5	8.5
L3. Measurement	inches	19.5	24.250	24.250
L4. Measurement	inches	56.5	62.5	66.67
L5. Measurement	inches	14.2	11.5	15.875
L6. Measurement	inches	5	5	5
L7. Measurement	inches	6.5	9.750	9.67
H1. Measurement	inches	39.750	50.375	50.375
H2. Measurement	inches	45.875	50.375	50.375
B3. Measurement	inches	19.750	23.625	23.625

Boiler Clearances



Clearances to Combustibles		
Measurement	Minimum Distance	Notes
A-Backwall to Appliance	18"	Minimum Distance
B-Backwall to Appliance	40"	Minimum distance for removal of feed auger from the rear of the MH 2.5 and MH 4.0
C-Sidewall to Appliance	6"	Minimum Distance on left or right side
D-Sidewall to Appliance	21"	Minimum Distance on left or right side to allow clearance for cleaning and maintenance tasks.
E-Front of Appliance	36"	Required distance for cleaning the boiler.
F-Front of Appliance	40"	Minimum distance for removal of feed auger from the front of the MH 2.5 and MH 4.0
G-Combustibles to Pipe	18"	Minimum Distance
H-Ceiling to Appliance	18"	Minimum Distance

System Design Considerations

Sizing

The boiler is designed to operate continuously at its rated output. If it will be the only heat source in the building, the boiler should be capable of supplying the building's total heating load. When plumbed in parallel with a fossil fuel boiler capable of supplying the building's total heating load it is recommended that the Multi-Heat boiler not be < 85% of the total heating load of the boiler. It is necessary to have a minimum constant load on the boiler when it is operating to prevent it from going into stand-by mode for long periods of time. A constant circulating loop is recommended.

Chimney

The boiler must be connected to a tile-lined chimney or to a Factory-Built Type UL 103 HT (ULC S629 in Canada) approved chimney. The chimney must be in good condition. No other appliance should be connected to this flue unless allowed by local code authority. Consult your local inspector for chimney requirements and install the boiler in accordance with all applicable codes. If corn burning is contemplated, use of higher grade stainless steel (a grade of 316 or higher is recommended). Flue gas exhaust temperatures can be low enough to cause condensation in chimneys. Condensation will, over time, damage a masonry chimney. Accordingly, installation of a stainless steel chimney liner (such as 316 or AL-294C) inside the chimney flue is strongly recommended. The boiler has a built-in combustion blower fan. Therefore only small demands are made on the chimney draft. A 5" diameter flue is required for the model 1.5. A 6" diameter flue is required for the model 2.5 and 4.0.

At the connection to a factory-built chimney, a dripless adaptor must be used. The chimney draft must be stable and between -0.025" and -0.05" water column.

Outside Combustion Air

Provision for outside combustion air may be necessary to ensure that fuel-burning appliances do not discharge products of combustion into the house. Guidelines to determine the need for additional combustion air may not be adequate for every situation. If in doubt, it is advisable to provide additional air.

The Multi-Heat boiler is not suitable for direct connection to outside air. Outside air should be ducted to no closer than 12" from the boiler.

The boiler must not be installed in an area or room where there are flammable liquids or combustibles. Examples include, refrigerants, paint, thinner, bleach, etc.

Boiler Location

The boiler is not suitable for outdoor installation. It must be located in a weather-tight, protected space. The boiler must be placed on a level and stable foundation. The floor on which the boiler sits must be made from a non-combustible material. Consider the logistics of delivering fuel to the boiler when choosing a boiler location.

Electrical

240 VAC, 60 hertz, 4-wire power supply is required. If building power is lower (208 VAC, for example), a boosting transformer should be installed to correct the voltage. This electrical connection should be from a dedicated 15 amp, double-pole circuit breaker.

Water Quality

If water quality is poor, water treatment should be considered. Boiler system pH should be 8.0-8.6.

An anti-freeze can be utilized in areas where freezing could occur. Automotive or silicate-based anti-freeze cannot be used. Use only anti-freeze approved for heating systems. Using anti-freeze can cause a loss in heating efficiency and some heating components within the system could be negatively impacted.

System Plumbing

For the heating system piping, it is possible to use either copper or iron piping materials. The supply and return pipe should be insulated to avoid heat loss.

In systems where plastic tubing is used, it must have an oxygen diffuser barrier. If non-oxygen barrier tubing is used, the boiler must be separated from the tubing by a heat exchanger.

A thermostatic mixing valve, set to open at 140 °F (60 °C), is required to temper return water to prevent cold return water from reaching the boiler. This valve helps prevent boiler corrosion.

Boiler Accessories

- **Ash Hoe**
- **Ash Pan**
- **Barometric Damper**
- **Termovar Mixing Valve**
- **Automatic Feed Device**