



ML180UHT
MERIT® SERIES
 Upflow / Horizontal 50 Hz

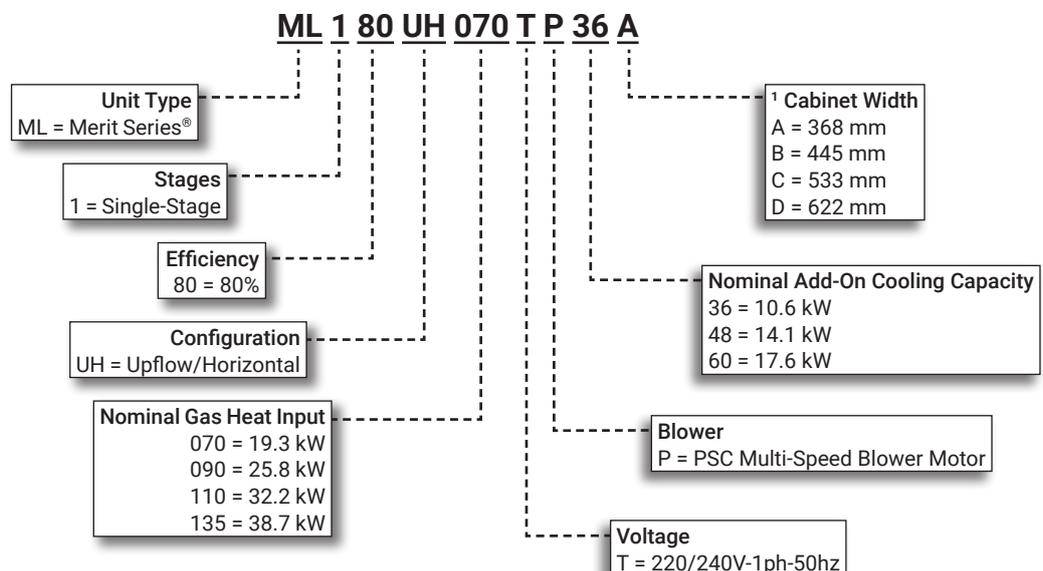
**RESIDENTIAL
 PRODUCT SPECIFICATIONS**

Bulletin Number 490155
 June 2013
 Supersedes August 2012



Input - 19.3 to 38.7 kW
Nominal Add-on Cooling - 10.6 to 17.6 kW

MODEL NUMBER IDENTIFICATION



¹ Indoor coils with the same letter designation will physically match the furnace.

FEATURE HIGHLIGHTS

1. Lennox Designed Heat Exchanger
2. Inshot Burners
3. Gas Control Valve
4. Hot Surface Mini-Nitride Ignitor
5. Combustion Air Inducer
6. Flame Rollout Switches
7. Integrated Single-Stage Furnace Control
8. Multi-Speed Direct Drive Blower Motor
9. Insulated Cabinet
10. Safety Interlock Switch
11. Gas Piping And Electrical Inlets



¹ Wobbe Number	Minimum	Normal	Maximum
	13.0 kW/m ³	13.9 kW/m ³	14.8 kW/m ³

NOTE - Gas Properties 101.3 kPa, 15° C Dry bulb.

¹ Wobbe number = The heating value divided by the square root of the specific gravity.

TABLE OF CONTENTS

Blower Data	11
Dimensions	8
- Upflow Position	8
- Horizontal Position	9
Features	3
Gas Heat Accessories	7
High Altitude Derate	7
Installation Clearances	7
Model Number Identification	1
Optional Accessories - Order Separately	6
Optional Accessory Dimensions	10
Specifications	6

FEATURES

APPROVALS

ISO 9001 Registered Manufacturing Quality System.

Blower data from unit tests conducted in Lennox Laboratory air test chamber.

APPLICATIONS

Gas Requirements

The acceptable Natural Gas Wobbe number values for use with Lennox gas-fired furnaces are shown in the table below.

To determine if a gas is acceptable, request the Wobbe number from your gas supplier and compare it to the table below. If the number is within the ranges listed for Natural Gas, the gas is acceptable to use. If the Wobbe number is outside of the acceptable ranges, the gas is not acceptable to use.

Because propane is a regulated/manufactured gas, a Wobbe number is not required to determine acceptability. For propane installations, the acceptable heating value range is 25.9 kW/m³ +/- 5%.

NOTE – Lennox does not recommend using unrefined or “well head” gas on Lennox gas-fired furnaces. The quality of gas is not controlled and may have contaminants which may lead to corrosion, premature heat exchanger failure and may void the equipment warranty. The information provided above is intended for evaluating fuel gases available commercially through gas utilities or propane suppliers.

¹ Wobbe Number	Minimum	Normal	Maximum
	13.0 kW/m ³	13.9 kW/m ³	14.8 kW/m ³

NOTE - Gas Properties 101.3 kPa, 15° C Dry bulb.

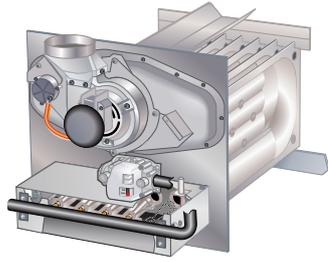
¹ Wobbe number = The heating value divided by the square root of the specific gravity.

- Input capacities of 19.3, 25.8, 32.2, and 38.7 kW.
- Compact cabinet for upflow, horizontal-left or horizontal-right applications
- Utility room, alcove, closet, crawl space, basement or attic installation
- Lennox add-on indoor coils, high-efficiency air cleaners and humidifiers can easily be added to furnace
- Shipped factory assembled with all controls installed and wired
- Ready for installation in upflow or horizontal right-hand position without any modifications. Horizontal left-hand position requires repositioning of pressure switch. Removable bottom seal panel shipped in place for side return air is easily removed for bottom/end return air applications
- Each unit factory test operated to ensure proper operation

HEATING SYSTEM

1 Lennox Designed Heat Exchanger Assembly

- Heavy gauge aluminized steel heat exchanger
- Crimped seam clamshell type design
- Designed for normal expansion and contraction
- Minimum resistance to air flow



- Heat exchanger has been laboratory life cycle tested in excess of industry standards
- Compact size of heat exchanger permits low overall design of furnace cabinet

2 Inshot Burners

- Aluminized steel inshot burners provide efficient, trouble-free operation
- Burner venturi mixes air and gas in correct proportion for proper combustion
- Burner assembly is removable from the unit as a single component for ease of service

3 Hot Surface Mini-Nitride Ignitor

- Unique, non-porous, high-strength proprietary ceramic material provides long life and trouble-free maintenance
- Low mass element provides fast heat-up and consistent ignitor temperature with low power usage
- Cemented to alumina block for positive mounting and protection against current leakage
- High temperature Teflon® insulated ignition lead wires for dependable operation

4 Gas Control Valve

- 24 volt redundant combination gas control valve combines manual shut off switch (On-Off), automatic electric valve (dual) and gas pressure regulation into a compact combination control

5 Combustion Air Inducer

- Shaded pole heavy duty blower prepurges heat exchanger and safely vents flue products
- Pressure switch proves blower operation before allowing gas valve to open
- Operates only during heating cycle
- Direct access allows inducer assembly to be rotated 90° clockwise or counterclockwise to facilitate easy vent attachment in horizontal applications

6 Flame Rollout Switches (2)

- Manual reset switches are factory installed inside burner box
- Switches provides protection from abnormal operating conditions

Limit Controls

- Manual reset primary and automatic reset secondary limits are accurately located
- Primary limit factory installed on vestibule panel on all units, secondary limit factory installed on blower housing

Optional Accessories

High Altitude Orifice Kit - Natural Gas Only

- Required for all natural gas models for proper unit operation at altitudes of 1525 to 1981 feet

High Altitude Pressure Switch Kit

- Required on most units for proper unit operation at altitudes from 611 to 1981 m

Natural Gas to Propane Kit

- Required for field changeover from natural gas to propane

Propane to Natural Gas Kit

- Required for field changeover from propane to natural gas

FEATURES

CONTROLS

- 7 Integrated Single-Stage Furnace Control**
- Contains all necessary controls and relays to operate furnace
 - Combustion air inducer is controlled by the furnace control. Prior to ignition, a pre-purge cycle for 15 seconds is initiated
 - After the main burners are turned off, a post-purge cycle for 5 seconds is run
 - Electronic flame sensor assures safe, reliable operation
 - Should flame fail to ignite, flame sensor will initiate 4 re-attempts at ignition before locking out unit operation for 60 minutes
 - Watchguard type circuit automatically resets ignition controls after one hour of continuous thermostat demand after unit lockout, eliminating nuisance calls for service
 - To aid in troubleshooting, the last three fault codes are stored for a maximum of six months
 - Displays the fault codes through indicator LEDs
 - Two accessory terminals furnished for additional power supply requirements for 240 volt (less than 1 amp) power humidifiers and powered air cleaners
 - Fan control consists of adjustable blower timed-off delay (60, 90, 120, 180 seconds - factory setting 60 seconds) and fixed blower timed-on delay (30 seconds)
 - For air-conditioning applications, blower is automatically energized on thermostat demand for cooling

IEC Receptacle

- IEC receptacle provided on right side of furnace cabinet for easy, plug-in electrical connection

24 Volt Transformer

- Furnished and factory installed on blower wrapper. 40VA transformer has fuse wired in series

Optional Accessories

Thermostat

- Thermostat (programmable/non-programmable) is not furnished with unit

BLOWER

- 8**
- Multi-speed direct drive blower
 - Statically and dynamically balanced
 - Resiliently mounted
 - Blower assembly easily removed for servicing
 - Blower speeds are easily changed on the integrated furnace control
 - See blower performance tables

CABINET

- Low-profile, narrow width cabinet allows easy installation
- Heavy-gauge, cold rolled steel construction
- Pre-painted cabinet finish
- Flue outlet on top of cabinet for upflow applications, can be relocated to either side of cabinet for horizontal applications
- Flanges provided on supply air opening for ease of plenum connection or alignment with indoor coil
- 9** • Insulated cabinet with foil faced insulation on sides and back of heating compartment
- Complete service access
- 10** • Safety interlock switch automatically shuts off power to unit when blower compartment access panel is removed
- 11** • Gas piping and electrical inlets are provided in both sides of cabinet

Return Air Entry:

- For bottom/end return-air entry for upflow/horizontal applications, remove furnished bottom seal panel from cabinet
- For side return-air entry (upflow applications only), corners are marked on either side of cabinet for return air cut-outs
- See dimension drawings

NOTE - 60C and 60D size units that require air volumes over 850 L/s must have one of the following:

1. Single side return air with transition, to accommodate 508 x 635 x 25 mm cleanable air filter. Required to maintain proper air velocity.
 2. Single side return air with Optional Return Air Base
 3. Bottom return air
 4. Return air from both sides
 5. Bottom and one side return air
- See Blower Performance Tables for additional information

Coil Match-up

- All furnaces exactly match Lennox cased upflow indoor coils and horizontal indoor coils with same letter designation (A, B, C, D) in model number
- No adaptor required
- Engaging holes furnished on cabinet for alignment.
- Lennox uncased coils match furnaces without any overhang but require an optional adaptor base or field fabricated transition to match furnace opening

FEATURES

CABINET (continued)

Optional Accessories

Horizontal Suspension Kit

- Provides suspension of unit and indoor coil in horizontal applications
- Allows complete service access
- Consists of corner mounted hanging brackets with vibration isolators, return air end support rail and hardware for assembly
- Metal hanging straps must be field provided

Return Air Base

NOTE - On furnaces with side return air and condensate trap on the same side of the cabinet, a field fabricated transition or Return Air Base is required when using an IAQ product higher than 360 mm installed next to the unit and serviced from the front. IAQ products higher than 20 inches require a field fabricated transition.

NOTE - Must be used for 60C and 60D size models with air volumes over 850 L/s in upflow applications when only one side return is required.

- Cabinet is shipped flat for easy field assembly
- Pre-painted steel to match the furnace
- See Dimension Drawing
-

FILTER (NOT FURNISHED)

- Filter and provisions for external mounting must be field provided

Optional Accessories

Air Filter and Rack Kit for Horizontal Return Air (End) Applications

- Washable or vacuum cleanable polyurethane frame type filter and external end return air rack available for field installation
- Rack has filter door for easy filter servicing
- Flanges on rack allow easy duct connection
- See Dimension Drawing

Air Filter and Rack Kit for Upflow Side Return Air

NOTE - Not for use with Return Air Base

- Washable or vacuum cleanable polyurethane frame type filter and external side return air rack available for field installation
- Available in single and ten pack kits
- Rack has filter door for easy filter servicing
- Flanges on rack allow easy duct connection
- Field installs on either side of unit cabinet
- See Dimension Drawing

SPECIFICATIONS

Gas Heating Performance		Model Number	ML180UH070TP36A	ML180UH090TP48B	ML180UH110TP36C
		Input - kW	19.3	25.8	32.2
		Output - kW	15.5	20.6	25.8
		Temperature rise range - °C	14 - 31	14 - 31	19 - 36
		Gas Manifold Pressure (kPa) Natural Gas / Propane	0.87 / 2.49	0.87 / 2.49	0.87 / 2.49
High Static - Pa			125	125	125
Connections	Flue connection - mm round		102	102	102
	Gas pipe size IPS		1/2 in.	1/2 in.	1/2 in.
Indoor Blower	Wheel nom. diameter x width - mm		254 x 203	254 x 254	254 x 254
	Motor output - W		248	373	373
	Add-on cooling - kW		7 - 10.6	7 - 14.1	7 - 14.1
	Air Volume Range - L/s		282 - 716	229 - 890	239 - 827
Electrical Data	Voltage	220/240 volts - 50 hertz - 1 phase (less than 10 amps)			
Shipping Data	kg - 1 package	54	63	70	

NOTE - Filters and provisions for mounting are not furnished and must be field provided.

SPECIFICATIONS

Gas Heating Performance		Model Number	ML180UH110TP60C	ML180UH135TP60D
		Input - kW	32.2	38.7
		Output - kW	25.8	31.0
		Temperature rise range - °C	17 - 33	17 - 33
		Gas Manifold Pressure (kPa) Natural Gas / Propane	0.87 / 2.49	0.87 / 2.49
High Static - Pa			125	125
Connections	Flue connection - mm round		102	102
	Gas pipe size IPS		1/2 in.	1/2 in.
Indoor Blower	Wheel nom. diameter x width - mm		292 x 254	279 x 279
	Motor output - W		746	746
	Add-on cooling - kW		14.1 - 17.6	14.1 - 17.6
	Air Volume Range - L/s		665 - 1165	627 - 1153
Electrical Data	Voltage	220/240 volts - 50 hertz - 1 phase (less than 10 amps)		
Shipping Data	kg - 1 package	71	79	

NOTE - Filters and provisions for mounting are not furnished and must be field provided.

OPTIONAL ACCESSORIES - ORDER SEPARATELY

		"A" Width Models	"B" Width Models	"C" Width Models	"D" Width Models	
CABINET ACCESSORIES						
Horizontal Suspension Kit - Horizontal only		51W10	51W10	51W10	51W10	
Return Air Base - Upflow only		65W75	50W98	50W99	51W00	
FILTERS						
¹ Air Filter and Rack Kit	Horizontal (end)	87L95	87L96	87L97	87L98	
	Size of filter - mm	356 x 635 x 25	457 x 635 x 25	508 x 635 x 25	635 x 635 x 25	
	Side Return	Single	44J22	44J22	44J22	44J22
		Ten Pack	66K63	66K63	66K63	66K63
	Size of filter - mm	406 x 635 x 25				

¹ Cleanable polyurethane, frame-type filter.

GAS HEAT ACCESSORIES

Input	High Altitude Pressure Switch Kit			Natural Gas to Propane Kit		Propane to Natural Gas Kit	High Altitude Natural Gas Burner Orifice Kit
	0 - 610 m	611 - 1219 m	1220 - 1981 m	0 - 1524 m	1525 - 1981 m	0 - 1524 m	1525 - 1981 m
070	No Change	80W51	80W56	96W94	97W04	96W95	73W37
090	No Change	80W51	80W56	96W94	97W04	96W95	73W37
110	No Change	80W51	80W56	96W94	97W04	96W95	73W37
135	No Change	80W52	80W51	96W94	97W04	96W95	73W37

HIGH ALTITUDE DERATE

NOTE - Units may be installed at altitudes up to 610 m above sea level without any modifications.

NOTE - This is the only permissible derate for these units.

Input	Gas Manifold Pressure (Outlet) kPa										Line Pressure - kPa		
	0 - 610 m		611 - 914 m		915 - 1219 m		1220 - 1524 m		1525 - 1981 m		Minimum	Minimum	Maximum
	Natural Gas	Propane	Natural Gas	Propane	Natural Gas	Propane	Natural Gas	Propane	¹ Natural Gas	Propane	Natural Gas	Propane	Natural Gas/Propane
070	.87	2.49	.72	2.27	.67	2.19	.62	2.12	.87	2.49	1.12	2.74	3.20
090	.87	2.49	.72	2.27	.67	2.19	.62	2.12	.87	2.49	1.12	2.74	3.20
110	.87	2.49	.72	2.27	.67	2.19	.62	2.12	.87	2.49	1.12	2.74	3.20
135	.87	2.49	.72	2.27	.67	2.19	.62	2.12	.87	2.49	1.12	2.74	3.20

¹ High Altitude Natural Gas Burner Orifice Kit required.

INSTALLATION CLEARANCES

UPFLOW POSITION

Vent Type	Type B1	Type C
Sides	0	¹ 0
Rear	0	0
Top	25	25
Front	57	57
Front (service/alcove)	610	610
Floor	Combustible	Combustible
Flue	25	152

NOTE - Air for combustion and supply air ventilation must conform to local codes.

¹ Left side requires 76 mm clearance if single wall vent is used on 368 mm height cabinets, 51 mm clearance on 445 mm height cabinets.

HORIZONTAL POSITION

Vent Type	Type B1	Type C
End	¹ 51	¹ 51
Rear	0	0
Top	¹ 0	¹ 0
Front	57	57
Front (service)	610	610
Floor	Combustible	Combustible
Flue	25	152

NOTE - Air for combustion and supply air ventilation must conform to local codes.

¹ Line contact installation permissible between jacket top or sides and building joists.

DIMENSIONS

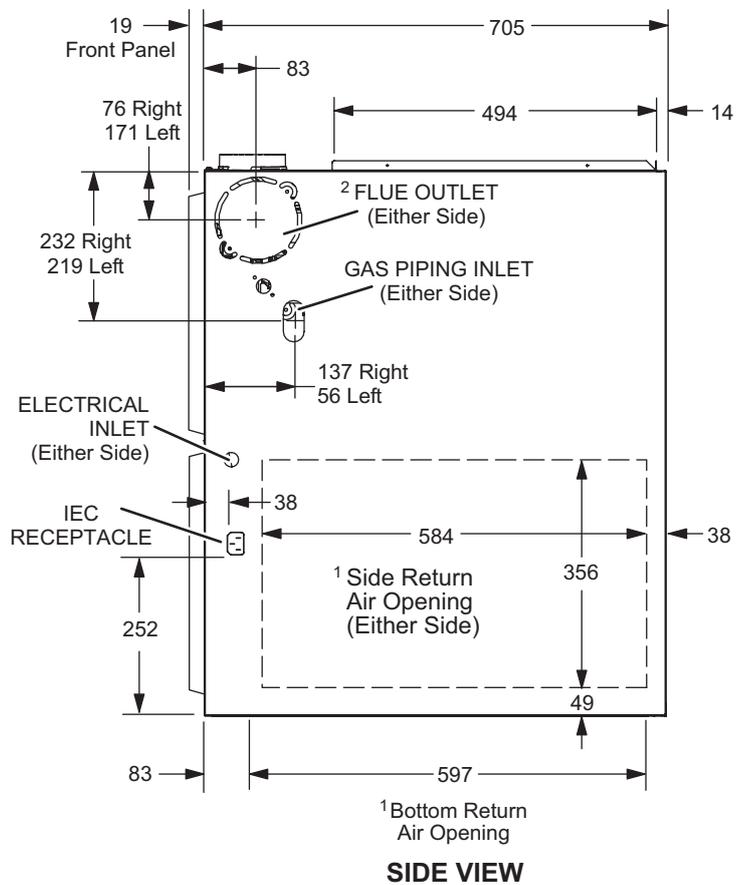
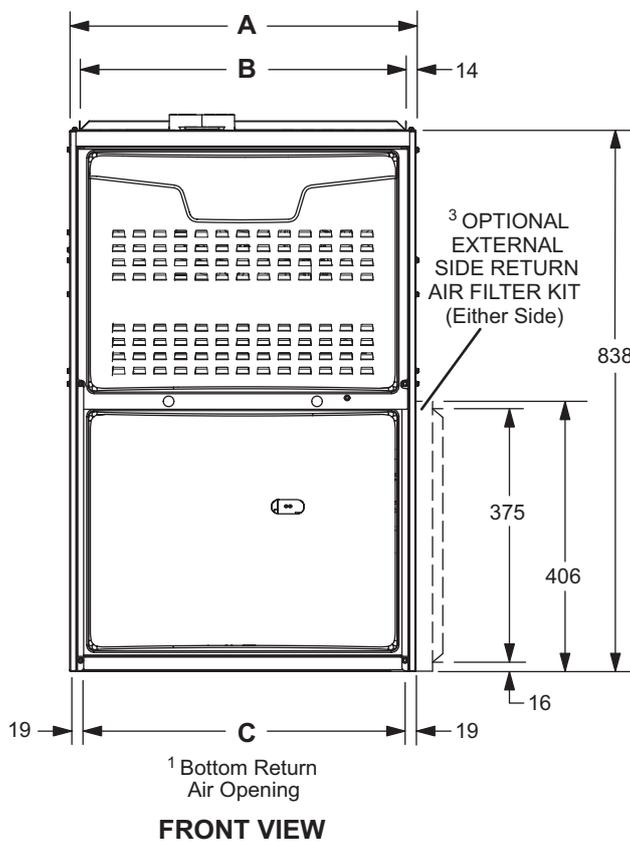
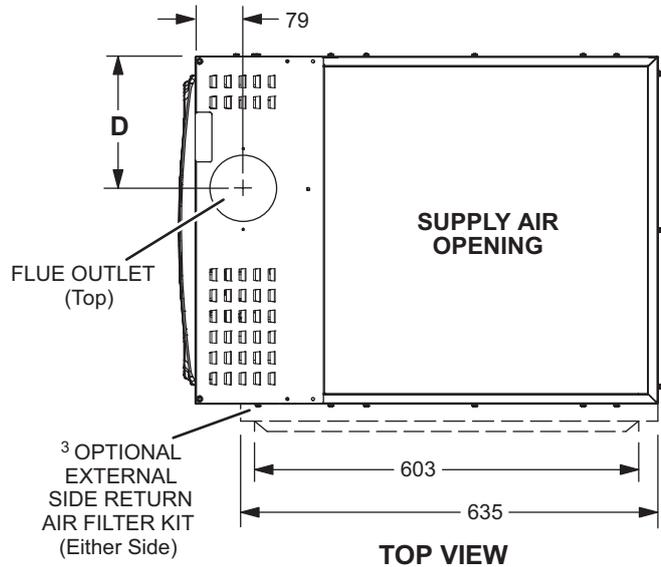
UPFLOW POSITION

¹ NOTE - 60C and 60D size units that require second stage air volumes over 850 L/s must have one of the following:

1. Single side return air with transition, to accommodate 508 x 635 x 25 mm cleanable air filter. Required to maintain proper air velocity.
 2. Single side return air with optional Return Air Base
 3. Bottom return air.
 4. Return air from both sides.
 5. Bottom and one side return air.
- See Blower Performance Tables for additional information.

² Flue outlet may be horizontal but furnace must be vented vertically

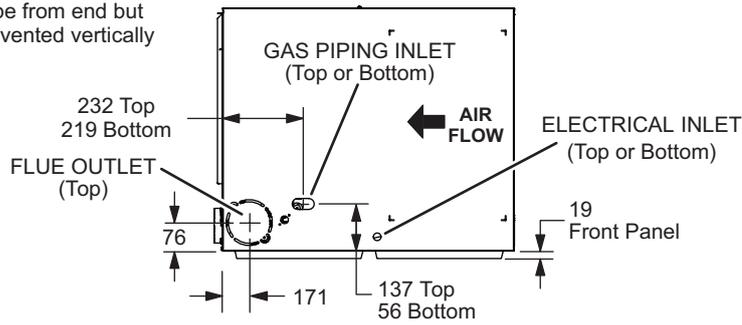
³ Optional External Side Return Air Filter Kit is not for use with the optional Return Air Base.



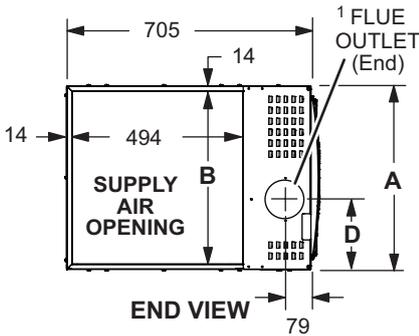
Model Number	A	B	C	D
ML180UH070TP36A	368	340	330	121
ML180UH090TP48B	445	416	406	159
ML180UH110TP36C	533	504	495	203
ML180UH110TP60C				
ML180UH135TP60D	622	594	584	248

LEFT-HAND AIR DISCHARGE

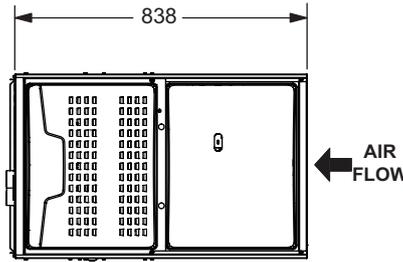
¹ Flue outlet may be from end but furnace must be vented vertically



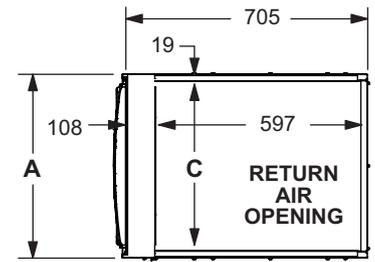
TOP VIEW



END VIEW



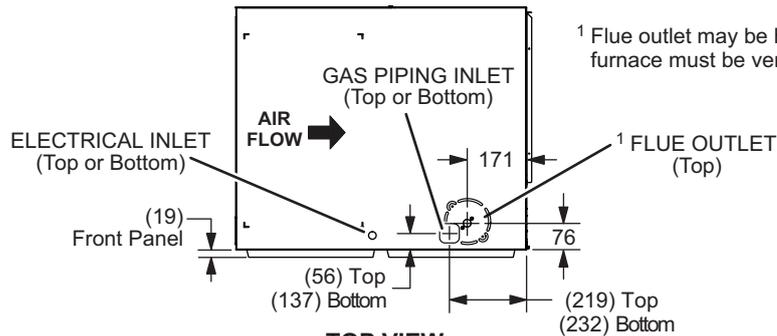
FRONT VIEW



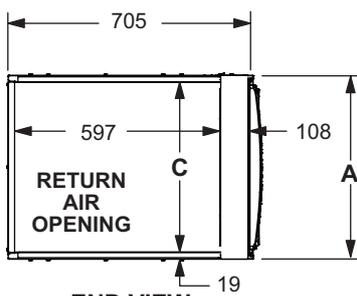
END VIEW

RIGHT-HAND AIR DISCHARGE

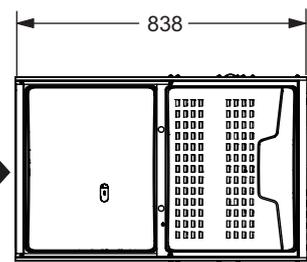
¹ Flue outlet may be horizontal but furnace must be vented vertically



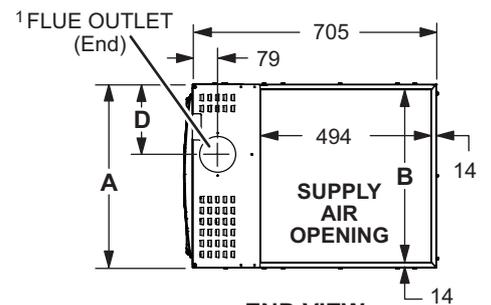
TOP VIEW



END VIEW



FRONT VIEW

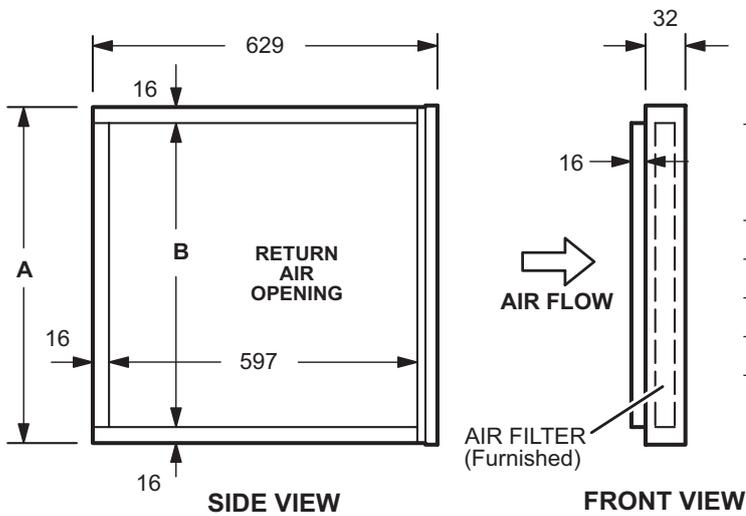


END VIEW

Model Number	A	B	C	D
ML180UH070TP36A	368	340	330	121
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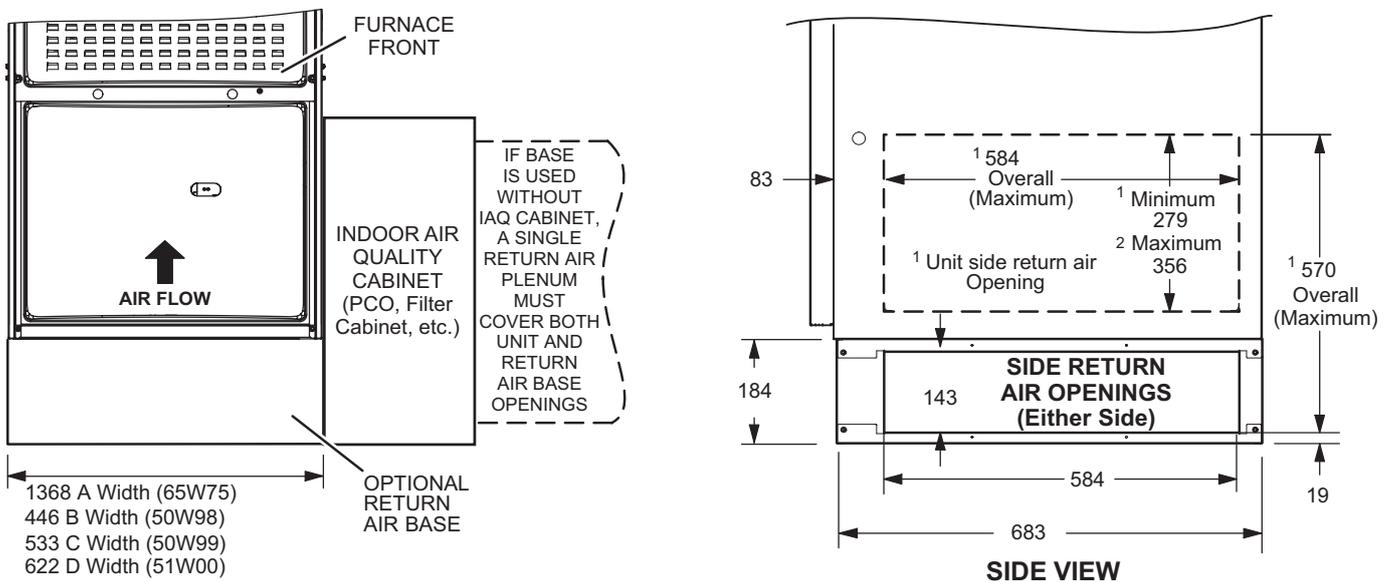
OPTIONAL ACCESSORY DIMENSIONS

HORIZONTAL (END) FILTER KIT



Furnace Cabinet Width	Catalog Number	A	B
A	87L95	356	324
B	87L96	457	425
C	87L97	533	476
D	87L98	635	603

Optional Return Air Base (Upflow Applications Only - For use with A, B, C and D cabinets)



NOTE- Optional Side Return Air Filter Kits are not for use with Optional Return Air Base.

¹ Both the unit return air opening and the base return air opening must be covered by a single plenum or IAQ cabinet. Minimum unit side return air opening dimensions for units requiring 850 L/s or more of air (W x H): 584 x 279 mm.

The opening can be cut as needed to accommodate plenum or IAQ cabinet while maintaining dimensions shown. Side return air openings must be cut in the field. There are cutting guides stenciled on the cabinet for the side return air opening. The size of the opening must not extend beyond the markings on the furnace cabinet.

² To minimize pressure drop, the largest opening height possible, up to 356 mm, is preferred.

BLOWER DATA

ML180UH070TP36A PERFORMANCE (Less Filter)

External Static Pressure Pa	Air Volume at Various Blower Speeds					
	High		Medium		Low	
	L/s	Watts	L/s	Watts	L/s	Watts
0	716	771	589	615	469	468
25	687	752	564	597	435	448
50	675	724	554	583	430	441
75	662	708	547	569	421	430
100	649	691	530	554	408	417
125	633	672	517	541	393	405
150	616	650	503	524	372	387
175	595	624	488	514	359	375
200	573	608	472	494	324	363
225	551	590	447	477	307	346
250	523	561	424	454	282	331

ML180UH090TP48B PERFORMANCE (Less Filter)

External Static Pressure Pa	Air Volume at Various Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts
0	890	1085	715	892	497	598	423	493
25	849	1050	679	855	463	577	386	481
50	849	1016	679	831	460	565	384	464
75	831	967	676	807	456	546	369	447
100	827	937	667	773	452	526	364	434
125	816	906	660	747	439	509	349	421
150	799	872	647	718	426	494	331	408
175	784	845	629	691	411	477	308	394
200	754	808	601	642	394	460	290	383
225	722	765	577	622	359	435	256	363
250	674	713	555	593	332	421	229	348

ML180UH110TP36C PERFORMANCE (Less Filter)

External Static Pressure Pa	Air Volume at Various Blower Speeds							
	High		Medium-High		Medium-Low		Low	
	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts
0	827	1106	660	884	460	574	404	478
25	800	1063	630	850	434	558	378	463
50	801	1043	631	819	432	541	369	451
75	779	984	631	807	434	527	359	438
100	773	962	624	777	422	512	352	422
125	773	938	620	758	408	490	335	411
150	761	907	609	725	382	472	331	396
175	741	854	593	695	383	460	319	386
200	722	832	580	659	366	441	299	372
225	699	777	554	638	351	432	263	354
250	677	741	527	600	331	411	239	340

BLOWER DATA

ML180UH110TP60C PERFORMANCE (Less Filter)

External Static Pressure Pa	Air Volume at Different Blower Speeds											
	Bottom Return Air, Side Return Air with Optional Return Air Base, Return Air from Both Sides or Return Air from Bottom and One Side.						Single Side Return Air – Air volumes in bold require field fabricated transition to accommodate 508 x 635 x 25 mm air filter in order to maintain proper air velocity.					
	High		Medium		Low		High		Medium		Low	
	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts
0	1165	1447	964	1173	826	987	1126	1452	934	1172	794	984
25	1144	1408	938	1149	803	966	1104	1427	910	1150	772	964
50	1115	1389	932	1121	797	943	1085	1391	902	1126	768	943
75	1104	1358	922	1104	787	926	1071	1356	896	1110	756	925
100	1084	1333	908	1082	773	902	1059	1340	881	1079	750	907
125	1063	1303	905	1079	756	877	1037	1310	869	1064	741	890
150	1043	1274	888	1050	748	865	1020	1282	860	1041	731	872
175	1027	1249	871	1024	738	845	1005	1248	839	1022	717	852
200	1005	1224	849	994	723	815	987	1224	821	997	699	831
225	980	1179	835	974	696	800	956	1192	801	966	678	808
250	947	1140	807	943	677	775	939	1158	789	955	665	786

ML180UH135TP60D PERFORMANCE (Less Filter)

External Static Pressure Pa	Air Volume at Different Blower Speeds											
	Bottom Return Air, Side Return Air with Optional Return Air Base, Return Air from Both Sides or Return Air from Bottom and One Side.						Single Side Return Air – Air volumes in bold require field fabricated transition to accommodate 508 x 635 x 25 mm air filter in order to maintain proper air velocity.					
	High		Medium		Low		High		Medium		Low	
	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts	L/s	Watts
0	1153	1460	958	1167	810	967	1114	1469	941	1219	786	992
25	1126	1425	931	1139	788	945	1091	1440	917	1196	759	967
50	1118	1411	923	1125	773	928	1079	1411	913	1173	751	950
75	1087	1374	915	1113	765	914	1064	1402	893	1149	743	933
100	1083	1344	891	1079	752	900	1048	1375	887	1130	734	920
125	1067	1325	890	1066	741	884	1032	1345	866	1101	720	899
150	1038	1284	862	1036	731	869	1012	1322	852	1072	708	881
175	1034	1269	844	1016	712	849	994	1291	834	1053	690	860
200	1005	1239	832	995	697	824	987	1271	820	1029	663	834
225	977	1204	804	975	677	813	956	1238	797	1010	650	815
250	952	1173	789	953	640	781	936	1220	783	988	627	795

REVISIONS

Section	Description
Specifications	Added Manifold Pressure for Propane.



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