

PRODUCT DESCRIPTION

CASING

- All LMHS unit casing panels are constructed of 22 gauge galvanized steel with a 20 gauge option.

INLET COLLARS

- All round 20 gauge inlet collars accommodate standard spiral and flex duct sizes.
- Left or right hand is determined by looking in the direction of airflow with the unit in the installed position.

OUTLET CONNECTION

- All standard outlet connections are rectangular and require a slip and drive duct connection.
- Round and multi-outlet discharge options are available.

DAMPER ASSEMBLY

- Unit sizes 4-16 utilize a round control damper. Unit sizes 20 and 22 have rectangular inlets. Size 20 utilizes a single blade damper design and size 22 has an opposed blade control damper. All damper assemblies utilize a solid 1/2" shaft that rotates in self-lubricating Delrin® bearings.
- Damper blade incorporates a flexible gasket for tight airflow shutoff and operates over a full 90° rotation.
- The damper position is marked by an arrow embossment on the end of the damper shaft, except size 22.

CASING LINERS

All liners are attached to the unit casing with both adhesive and weld pins to ensure long term durability (excludes Sterilwall and Perforated Doublewall). The standard liner option is 1/2" thick, 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A.

- **(Optional) 1" Thick Insulation:** 1" thick, 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A.
- **(Optional) Cellular Insulation:** 1/2" or 1" thick, 1 1/2 lb. density, smooth surface, polyolefin, closed-cell foam insulation for fiber free application. Cellular insulation meets UL 181 and NFPA 90A and does not support mold or bacteria growth.
- **(Optional) Steriliner Insulation:** 13/16" thick, 4 lb. density, rigid board insulation with nylon reinforced foil covering insulation fibers that meets UL 181 and NFPA 90A. Liner shall be attached to unit casing by adhesive and weld pins with

full-seam-length Z-strips to enclose and seal the insulation cut edges.

- **(Optional) Sterilwall Insulation:** 1/2" or 1" thick, 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A, enclosed between the unit casing and a non-perforated internal sheet metal cover extending over the fiberglass insulation, as well as covering the liner cut edges.
- **(Optional) Perforated Doublewall Insulation:** 1/2" or 1", 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A, enclosed between the unit casing and a perforated internal sheet metal cover extending over the fiberglass insulation and covering the liner cut edges.
- **(Optional) No Liner:** No internal insulation liner.
- See Krueger's selection program for acoustical impact of different liners.

AIRFLOW SENSOR

- All units are equipped with a factory installed airflow measuring sensor.
- The standard sensor is a K4 LineaCross four quadrant, multipoint center averaging sensor.
- **(Optional) Linear, multi-point, velocity averaging sensor** with an amplified signal is also available.
- Balancing taps are provided to allow for easy airflow verification.
- Both the linear and K4 LineaCross sensors use the same flow constant.

CONTROLS

- Pneumatic, analog or direct digital control types are available. Digital controls can be provided by others or Krueger for factory mounting. A "no control" unit is also available for field mounting of direct digital controls where a sheet metal enclosure will be provided by Krueger.

ACCESS PANEL

- **(Optional) Gasketed access panel** in the terminal unit casing is available for viewing damper components and for upstream cleaning of the hot water coil fins. Available only on size 22 when ordered with integral attenuator. The access panel is insulated with the same liner as the unit.

HOT WATER HEAT

- Hot water coils are constructed of ten aluminum fins per inch with sweat type, left or right hand, tubing connections. The 1/2" diameter coil tubing is water

leakage tested to 400 PSIG and has a wall thickness of 0.016".

- **(Optional) High capacity and steam coils** are available by special request
- **(Optional) Vent and drain on coil headers.**

ELECTRIC HEAT

- Heaters are ETL listed in accordance with UL standards and are constructed of 20 gauge galvanized steel.
- Available Combinations: [120, 208/240, 277 Volt, Single-Phase] [208/240 Volt, Three-Phase, Three-Wire] [480 Volt, Three-Phase, Four-Wire]. Other voltage options available as a special. Contact your Krueger Representative for more information.
- Standard heaters are equipped with primary automatic and secondary manual reset thermal cutout, de-energizing magnetic contactors, airflow proving switch and 80/20 Ni-Cr elements.
- Electric heater options include fused or non-fused door interlocking disconnect switch, AC solid state relay, fuse block and dust tight control enclosure.
- LineaHeat solid state electronic controlled heaters are available with or without leaving air temperature control. Contact your Krueger representative or the Krueger web site for additional information.

CONTROL TRANSFORMERS

- Electric heat units include a factory supplied, mounted and wired 24-volt control transformer inside the electric heat enclosure for electronic control applications.
- Non-electric heat units, with electronic proportional controls are available with an optional factory supplied and wired control transformer mounted inside the control enclosure.

LABELS

- Label information is adhered to each unit and includes model name, unit size, configuration code, airflow (CFM), balancing chart and tagging data.

PACKAGING

- LMHS base units with and without hot water coils are individually packaged in a carton and stacked on a pallet. Attenuated units and electric heat units are stacked directly on the pallet. All pallets are banded and stretch wrapped with cellophane.

TYPICAL APPLICATION

Krueger LMHS single duct terminal units are designed to be easily incorporated in the overall building HVAC design. Control packages allow the LMHS to be used in constant volume and variable volume applications. Although designed for compatibility with low pressure (<0.10"Ps), the LMHS unit performs reliably in high pressure systems as well (up to 6.0" Ps). See the Engineering section for more information.

In variable volume pressure independent applications, the LMHS unit compensates for system pressure, while adjusting the airflow in response to room thermostat demand. When used in a constant volume application, the LMHS can maintain a set flow requirement, compensating for fluctuations in system pressure.

Interior zones are typically controlled by an LMHS with a cooling-only control package; exterior zones are often controlled by an LMHS with electric or hot water reheat coils and a reheat control package.

Depending on the layout of the duct work, it is sometimes more practical to specify the LMHS with a single, factory-installed round discharge or with multiple round outlets.

NOTE: Reference the Design Guidelines in the Engineering section of this catalog for more details on Oversizing Terminal Units, Capacity Concentrated in Too Few Terminal Units, Insufficient Space, and Improper Discharge Conditions.

DAMPER AND CASING LEAKAGE

INLET SIZE	DAMPER LEAKAGE			CASING LEAKAGE			
	1.5" WG	3.0" WG	6.0" WG	0.5" WG	1.0" WG	1.5" WG	3.0" WG
	CFM	CFM	CFM	CFM	CFM	CFM	CFM
4	4	5	7	2	3	4	5
5	4	5	7	2	3	4	5
6	4	5	7	2	3	4	5
7	4	5	7	4	5	6	9
8	4	5	7	4	5	6	9
9	4	5	7	4	6	7	10
10	4	5	7	4	6	7	10
12	4	5	7	5	7	9	12
14	4	6	8	6	9	11	16
16	5	7	9	7	10	13	17

NOTES: Damper leakage is measured with the damper fully closed using an actuator. A precision low flow orifice is used upstream of the unit to measure the leakage rate as a function of the measured upstream static pressure. Casing leakage is determined with the damper fully open and the discharge of the unit sealed. A precision low flow orifice is used upstream of the unit to measure the leakage rate as a function of the supplied static pressure. Leakage testing conducted in accordance with ASHRAE 130-2008.