

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.

DAMPER ASSEMBLY

- Unit sizes 04-16 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". Provided with vent and drain ports for servicing.
- (Optional)** Twelve fins per inch for higher capacity.

VALVE PACKAGE

- Valve package uses 1/2" nominal copper tubing. Factory pressure tested to 100 psi. Supplied with PT test port, union connections, 2 or 3-way valve, on/off normally closed actuator, and isolation manual ball valves.
- (Optional)** 3-Point floating, fail in place actuator.
 - (Optional)** Automatic flow control.
 - (Optional)** Y-strainer with blowdown connection.

CONTROL TRANSFORMERS

- (Optional)** Factory supplied and wired 50 VA transformer mounted inside the control enclosure. Multiple voltage options are available.

LABELS

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

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 or an LMHS-VP with 1-row hot water coil with a cooling-only or minimum heating control package; exterior zones are often controlled by an LMHS-VP with multi-rowed hot water reheat coils and a reheat control package.

Each LMHS-VP is supplied with either a 2 or 3-way valve package to control water flow through the hot water reheat coil. 2-way valve packages control water flow by fully opening and closing the valve or by 3-point floating water flow that is based on heating demand. 3-way valve packages are similar to 2-way valve packages, except water flow doesn't fully stop. Instead, water flow is either directed through the water coil or bypasses the water coil based on heating demand. 3-way valve packages ensure that a minimum amount of water is flowing through the hot water system, which helps return water temperature to the boiler.

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
04	4	5	7	2	3	4	5
05	4	5	7	2	3	4	5
06	4	5	7	2	3	4	5
07	4	5	7	4	5	6	9
08	4	5	7	4	5	6	9
09	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.