



**HS18 SERIES CONDENSING UNITS**  
**EXPANSION VALVE AIR CONDITIONING SYSTEM**  
**3.6 to 16.0 kW (12 200 to 54 700 Btuh) Cooling Capacity**

**HS18**

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Supersedes June 1991

**Application** — HS18 series condensing units are applicable to expansion valve systems and may be installed at ground level or on a roof. Units match up to a variety of blower powered or add-on evaporators for a wide selection of cooling capacities for selective sizing and application versatility. For evaporator unit data, see tab section Coils — Blower Coil Units. Units are shipped completely assembled, piped and wired. Each unit is test operated at the factory to insure proper operation. Installer has only to set unit in desired location, connect refrigerant lines and make electrical connections to complete a low cost installation.

**Completely Tested** — Condensing units have been tested in the Lennox Research Laboratory Environmental Test Rooms which meet American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Standard 37 requirements. The rating test conditions are those included in Air-Conditioning and Refrigeration Institute (ARI) Standard 210/240-89 while operating at rated voltages and air volumes. In addition, units have been sound rated in the Lennox reverberant sound test room in accordance with test conditions for Air-Conditioning and Refrigeration Institute (ARI) Standard 270-84. Condensing units and components within are bonded for grounding to meet safety standards for servicing required by Underwriter's Laboratories (U.L.) and the International Electrotechnical Commission (IEC). Blower data is from unit tests conducted in the Lennox air test chamber.

**Weather Resistant Cabinet and Base Section** — Heavy gauge galvanized steel cabinet and base section are subjected to a five station metal wash process prior to a finish coat application of baked-on outdoor enamel. Attractive enamel finish provides the cabinet and base section with long lasting protection from rust and corrosion. Drainage holes are provided in the base section for moisture removal. Heavy duty channels under the the base raise the unit off of the mounting surface away from damaging moisture.

(Continued)

**Typical Applications**

Unit on slab at ground level

Multiple units on rooftop

## FEATURES

**Control Box** — Conveniently located for easy access. All controls are pre-wired at the factory. Terminal blocks are provided for both low and high voltage field connections.

**Copper Tube/Enhanced Fin Outdoor Coil** — Lennox designed and fabricated coil is constructed of precisely spaced ripple-edged aluminum fins machine fitted to seamless copper tubes. Four-sided wrap-around coil configuration provides extra large surface area with low air resistance. Lanced fins provide maximum exposure of the fin surface to air stream resulting in excellent heat transfer. Fins are equipped with collars that grip the tubing for maximum contact area. Precise circuiting provides uniform refrigerant distribution for high efficiency. Flared shoulder tubing connections and silver soldering result in tight, leakproof joints. Long-life copper tubing is corrosion-resistant and easy to field service. Coil is factory tested under high pressure to insure leakproof construction. Entire coil is accessible for cleaning. Corrosion-resistant polyvinyl chloride (PVC) coated steel wire condenser coil guard is furnished as standard.

**Compressor** — Compressor is hermetically sealed and provides trouble-free operation and long service life. Built-in protection devices assure protection from excessive current and temperatures. Refrigeration cooled and overload protected. HS18-141, HS18-513 and HS18-653 models are furnished with a crankcase heater as standard equipment to ensure proper compressor lubrication at all times. Heater is temperature actuated to operate only when required. The compressor components are spring mounted within the sealed housing. In addition, the compressor is installed in the unit on resilient rubber mounts for quiet and vibration free operation.

**Condenser Fan** — Efficient direct drive fan moves large air volumes uniformly through the entire condenser coil resulting in high refrigerant cooling capacity. Vertical discharge of air minimizes operating sounds and eliminates hot air damage to lawn and shrubs. Fan motor has permanently lubricated ball bearings and is inherently protected and totally enclosed for maximum protection from weather, dust and corrosion. Rain shield on motor provides additional protection from moisture. Fan service access is provided by removal of fan guard. Corrosion-resistant polyvinyl chloride (PVC) coated steel wire fan guard is furnished as standard.

**High Capacity Drier** — Furnished for field installation. Drier traps any moisture or dirt that could contaminate the refrigerant system.

**High Pressure Switch** — Shuts off unit if abnormal operating conditions cause the discharge pressure to rise above setting. Switch protects compressor from excessive condensing pressure. Manual reset.

**Refrigerant Line Connections, Electrical Inlets and Service Valves** — Suction and liquid line connections are located outside of the unit cabinet and are made with sweat connections. Fully serviceable brass service valves prevent corrosion and provide easy access to refrigerant system. Suction valve can be fully shut off, while the liquid valve may be backseated to manage refrigerant charge while servicing the system. Field installed thermometer well is furnished for installation in the liquid line. Valves and gauge ports are accessible outside of the unit cabinet. See dimension drawing.

**Thermostat** — Deluxe wall mounted combination heating/cooling Celsius thermostat is furnished as standard with HS18-411, -413, -513 and -653 models. Thermostat features temperature setting dial, system selector switch (Cool-Off-Heat) and fan control switch (Auto-On) for intermittent or continuous blower operation.

Thermostat is not furnished with HS18-141, -211, -261 and -311 models and must be ordered extra.

### OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**Crankcase Heater (Optional)** — Available for HS18-211 thru HS18-410 models. Crankcase heaters P-8-8852 (**68887**) are not furnished and must be ordered extra. Heater prevents migration of liquid refrigerant into the compressor and ensures proper compressor lubrication. HS18-141, -510 and -650 model compressors are equipped with crankcase heaters furnished as standard.

**Refrigerant Line Kits (Optional)** — Lines are available in several lengths. See Refrigerant Line Kit table. Lines (suction and liquid) are shipped refrigeration clean. Lines are cleaned, dried and pressurized and sealed at the factory. Suction line is fully insulated. Lines are furnished with a flare fitting (evaporator unit connection) at one end and stubbed (no fitting) at the opposite end for connection to condensing unit.

**Expansion Valve Kits (Optional)** — Must be ordered extra for field installation on certain evaporator units. See Ratings table for kit requirement.

**Mounting Base (Optional)** — Mounting base provides a permanent foundation for condensing units. High density polyethylene structural material is lightweight, sturdy, sound absorbing and will withstand the effects of sun, heat, cold, moisture, oil and refrigerant. Will not mildew or decompose. Can be shipped singly or in packages of six to a carton. HS18-141, 211, 261, 311, and -410 models use MB1-22 (**99C78**) 565 mm x 565 mm x 76 mm (22-1/4 in. x 22-1/4 in. x 3 in.) shipping weight 5 kg (10 lbs.). HS18-513 and HS18-653 models use MB1-24 (**78H50**) 813 mm x 864 mm x 76 mm (32 in. x 34 in. x 3 in.) (813 mm x 864 mm x 76 mm), shipping weight 7 kg (15 lbs.) each.

**Low Ambient Kit (Optional)** — Condensing units will operate satisfactorily down to 45°F (7°C) outdoor air temperature without any additional controls. For cases where operation of the unit is required at low ambients, a Low Ambient Control Kit LB-57113BC (**24H77**) can be added in the field, enabling unit to operate properly down to 30°F (-1°C).

## RATINGS

Condensing Unit Model Number (*Sound Rating Number-bels)	●Cooling Ratings					Evaporator Unit			***Expansion Valve Kit Required
	Total Cooling Capacity		Total Power Input kW	Coefficient of Performance (Output/Input)	Energy Efficiency Ratio (Btuh/Watt)	Up-Flow	Down-Flow	Horizontal	
	kW	Btuh							
HS18-141 (8.0)	3.6	12 200	1.4	2.6	8.7	C22-21(FC)	CR22-21	CH22-21	★Factory Installed
	3.8	12 900	1.4	2.7	9.2	C22-26(FC) C22-26W(FC)	----	----	
HS18-211 (7.8)	5.1	17 300	2.2	2.3	7.9	C24-21(FC)	CR24-21	CH24-21	LB-85663F (49J24)
	5.3	18 100	2.2	2.4	8.2	C24-26(FC) C24-26W(FC)	----	----	
	5.4	18 500	2.2	2.5	8.4	C22-21(FC)	CR22-21	CH22-21	★Factory Installed
	5.5	18 900	2.2	2.5	8.6	C22-26(FC) C22-26W(FC)	----	----	
	5.5	18 900	2.3	2.4	8.2	**CB18-26	----	**CBS18-26	LB-25778CG (57C98)
HS18-261 (8.0)	6.1	21 000	2.6	2.3	8.1	C22-21(FC)	CR22-21	CH22-21	★Factory Installed
	6.2	21 300	2.6	2.4	8.2	C24-26(FC) C24-26W(FC)	----	----	LB-85663F (49J24)
	6.5	22 200	2.7	2.4	8.2	C22-26(FC) C22-26W(FC)	----	----	★Factory Installed
	6.5	22 200	2.7	2.5	8.2	**CB18-26	----	**CBS18-26	LB-25778CG (57C98)
HS18-311 (8.0)	6.9	23 500	3.0	2.3	7.8	C24-26(FC) C24-26W(FC)	----	----	LB-85663H (49J26)
	7.2	24 500	3.0	2.4	8.2	C22-26(FC) C22-26W(FC)	----	----	★Factory Installed
	7.4	25 300	3.1	2.4	8.2	C24-31(FC) C24-31W(FC)	CR24-31 CR24-31W	CH24-31	LB-85663H (49J26)
	7.5	25 600	3.1	2.4	8.3	C24-41(FC) C24-41W(FC)	CR24-41	CH24-41	
	7.6	25 800	3.2	2.4	8.1	**CB18-26	----	**CBS18-26	LB-25778CE (83A67)
	7.7	26 400	3.2	2.4	8.3	C22-31(FC) C22-31W(FC)	CR22-31 CR22-31W	CH22-31	★Factory Installed
	8.1	27 500	3.2	2.5	8.6	C22-41(FC)	CR22-41	CH22-41	
	8.5	29 000	3.3	2.6	8.7	**CB18-41	----	**CBS18-41	LB-25778CE (83A67)
HS18-411 HS18-413 (8.0)	9.5	32 600	3.9	2.4	8.4	C24-31(FC) C24-31W(FC)	CR24-31 CR24-31W	CH24-31	LB-85663H (49J26)
	10.0	34 000	3.9	2.6	8.7	C22-31(FC) C22-31W(FC)	CR22-31 CR22-31W	CH22-31	★Factory Installed
	10.0	34 300	3.9	2.6	8.8	C24-41(FC) C24-41W(FC)	CR24-41	CH24-41	LB-85663H (49J26)
	10.3	35 200	4.1	2.5	8.6	**CB18-41	----	**CBS18-41	LB-25778CF (83A68)
	10.4	35 500	4.0	2.6	8.9	C24-51(FC)	CR24-51	CH24-51	LB-85663H (49J26)
	10.5	35 700	4.0	2.6	8.9	C22-41(FC)	CR22-41	CH22-41	★Factory Installed
	10.6	36 200	4.0	2.7	9.1	C22-51(FC)	CR22-51	CH22-51	
	10.6	36 200	4.2	2.5	8.7	**CB18-51	----	**CBS18-51	LB-25778CF (83A68)

\*Sound rating number rated at test conditions for Air-Conditioning and Refrigeration Institute (ARI) Standard 270.

●The rating test conditions are those included in Air-Conditioning and Refrigeration Institute (ARI) Standard 210/240-89 while operating at rated voltage and air volumes.  
**Cooling Ratings** —35°C (95°F) outdoor air temperature, 26.7°C (80°F) dry bulb and 19.4°C (67°F) wet bulb entering evaporator air with 6.0 m (20 feet) of connecting refrigerant lines.

★Furnished as standard with coil.

\*\*Blower powered evaporator unit.

\*\*\*Expansion valve kit is optional and must be ordered extra, unless shown as factory installed.

## RATINGS

Condensing Unit Model Number (*Sound Rating Number-bels)	●Cooling Ratings					Evaporator Unit			***Expansion Valve Kit Required
	Total Cooling Capacity		Total Power Input kW	Coefficient of Performance (Output/Input)	Energy Efficiency Ratio (Btuh/Watt)	Up-Flow	Down-Flow	Horizontal	
	kW	Btuh							
HS18-513 (8.0)	12.6	43 100	5.2	2.4	8.4	**CB18-51	----	**CBS18-51	LB-25778CC (38919)
	12.9	44 000	5.3	2.5	8.4	**CB18-65	----	**CBS18-65	
	13.1	44 800	4.7	2.8	9.5	C24-51(FC)	CR24-51	CH24-51	LB-85663D (43J76)
	13.1	44 900	4.7	2.8	9.6	C24-65(FC)	CR24-65	CH24-65	
	13.4	45 700	4.7	2.9	9.7	C22-51(FC)	CR22-51	CH22-51	★Factory Installed
	13.4	45 800	4.8	2.8	9.5	C22-65(FC)	CR22-65	CH22-65	
HS18-653 (8.0)	14.9	51 000	5.5	2.7	9.3	C24-65(FC)	CR24-65	CH24-65	LB-85663E (43J77)
	15.4	52 600	6.0	2.6	8.8	**CB18-65	----	**CBS18-65	LB-25778CD (38920)
	16.0	54 700	5.3	3.0	10.3	C22-65(FC)	CR22-65	CH22-65	★Factory Installed

\*Sound rating number rated at test conditions for Air-Conditioning and Refrigeration Institute (ARI) Standard 270.

●The rating test conditions are those included in Air-Conditioning and Refrigeration Institute (ARI) Standard 210/240-89 while operating at rated voltage and air volumes.  
**Cooling Ratings** — 35°C (95°F) outdoor air temperature, 26.7°C (80°F) dry bulb and 19.4°C (67°F) wet bulb entering evaporator air with 6.0 m (20 feet) of connecting refrigerant lines.

★Furnished as standard with coil.

\*\*Blower powered evaporator unit.

\*\*\*Expansion valve kit is optional and must be ordered extra, unless shown as factory installed.

## SPECIFICATIONS

Model Number		HS18-141	HS18-211	HS18-261	HS18-311	HS18-411 HS18-413	HS18-513	HS18-653	
Condenser Coil	Net face area — m <sup>2</sup> (ft. <sup>2</sup> )	Outer coil	0.78 (8.4)	0.78 (8.4)	0.78 (8.4)	0.86 (9.2)	0.86 (9.2)	1.69 (18.2)	1.69 (18.2)
		Inner coil	----	----	----	----	0.32 (3.4)	----	0.59 (6.4)
	Tube outside diameter — mm (in.)		9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)
	Number of rows		1	1	1	1	1.4	1	1.4
	Fins per m (inch)		630 (16)	630 (16)	630 (16)	787 (20)	709 (18)	787 (20)	787 (20)
Condenser Fan	Diameter — mm (in.)		457 (18)	457 (18)	457 (18)	457 (18)	457 (18)	559 (22)	559 (22)
	Number of blades		4	4	4	4	4	4	4
	Motor output — W (hp)		149 (1/5)	149 (1/5)	149 (1/5)	149 (1/5)	149 (1/5)	249 (1/3)	249 (1/3)
	Air volume — L/s (cfm)		1025 (2170)	1025 (2170)	1025 (2170)	980 (2080)	980 (2080)	1530 (3250)	1500(3170)
	Rev/Min		900	900	900	900	900	900	900
	Motor input — W		200	200	200	200	200	400	400
*Refrigerant charge furnished (HCFC-22)		0.99 (35)	1.84 (47)	1.19 (42)	1.50 (53)	1.93 (68)	3.23 (114)	3.94 (139)	
Liquid line connection — outside diameter — mm (in.) sweat		9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	9.5 (3/8)	
Suction line connection — outside diameter — mm (in.) sweat		16 (5/8)	16 (5/8)	16 (5/8)	19 (3/4)	19 (3/4)	22.2 (7/8)	28.6 (1-1/8)	
Shipping weight — kg (lbs.) 1 package		51 (113)	64 (141)	63 (138)	66 (146)	76 (168)	98 (215)	11 (245)	

\*Refrigerant charge sufficient for 6.0 m (25 feet) of connecting refrigerant lines.

## ELECTRICAL DATA — HS18-141-211-261-311

Model Number		HS18-141	HS18-211	HS18-261	HS18-311
Line voltage and phase (50hz)		220/240V 1 phase	220/240V 1 phase	220/240V 1 phase	220/240V 1 phase
Voltage range (minimum — maximum)		198 — 264V	198 — 264V	198 — 264V	198 — 264V
Compressor	Rated load amps	5.7	9.4	10.2	13.6
	Locked rotor amps	31	43	52	78
Condenser Coil Fan Motor (1 phase)	Full load amps	1.2	1.2	1.2	1.2
	Locked rotor amps	2.8	2.8	2.8	2.8

NOTE — Refer to local electrical codes to determine wire, fuse and disconnect size requirements.

## ELECTRICAL DATA — HS18-411-413-513-653

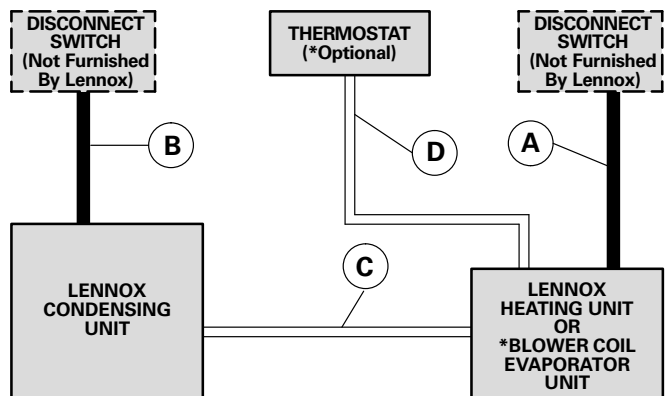
Model Number		HS18-411	HS18-413	HS18-513	HS18-653
Line voltage and phase (50hz)		220/240V 1 phase	380/420V 3 phase with neutral	†380/420V 3 phase	†380/420V 3 phase
Voltage range (minimum — maximum)		198 — 264V	342 — 462V	342 — 462V	342 — 462V
Compressor	Rated load amps	14.6	5.0	6.6	9.2
	Locked rotor amps	84.9	37.7	46	65
Condenser Coil Fan Motor (1 phase)	Full load amps	1.2	*1.2	1.1	1.1
	Locked rotor amps	2.8	*2.8	2.3	2.3

NOTE — Refer to local electrical codes to determine wire, fuse and disconnect size requirements.

†Neutral required with optional Transformer Kit (16F34).

\*Motor is 220/240 volt and is connected from phase to neutral.

## FIELD WIRING



- A — Single Phase
- B — Single Phase, Three Phase with neutral or Three Phase — See Electrical Data
- C — Two wire 24V  
Three wire 24V with optional Transformer Kit (16F34)
- D — Four Wire 24V

NOTE — Field wiring not furnished by Lennox.

All wiring must conform to local electrical codes.

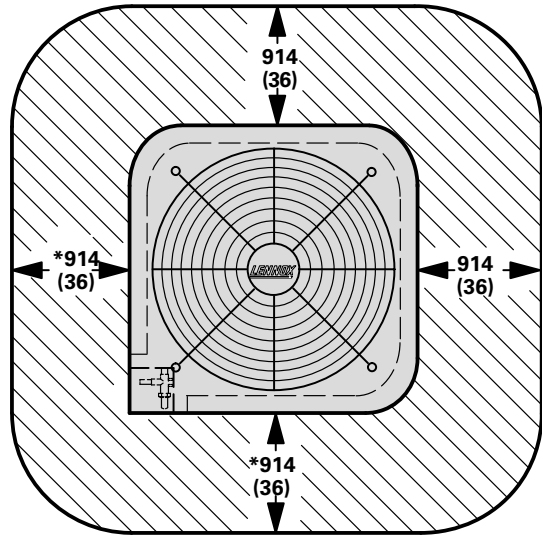
\*Thermostat is furnished with HS18-411-413-513-653 models.  
Not furnished with HS18-141-211-261-311 models.

**REFRIGERANT LINE KITS**

Condensing Unit Model Number	Line Set Model Number	Suction and Liquid Line Length		Liquid Line Outside Diameter		Suction Line Outside Diameter	
		m	ft.	mm	in.	mm	in.
HS18-141 HS18-211 HS18-261	L10-26-20	6.1	20	9.5	3/8	16	5/8
	L10-26-25	7.6	25				
	L10-26-35	10.7	35				
	L10-26-50	15.2	50				
HS18-311 HS18-411 HS18-413	L10-41-20	6.1	20	9.5	3/8	19	3/4
	L10-41-30	9.1	30				
	L10-41-40	12.2	40				
	L10-41-50	15.2	50				
HS18-513 *HS18-653	L10-65-30	9.1	30	9.5	3/8	22.2	7/8
	L10-65-40	12.2	40				
	L10-65-50	15.2	50				

\*22 mm (7/8 inch) sweat x 28.5 mm (1-1/8 inch) sweat reducer adaptor required for suction line connection to condensing unit.

**INSTALLATION CLEARANCES – mm (inches)**



NOTE-1219 mm (48 inches) clearance required top of unit.  
 \*NOTE-One side must be 914 mm (36 inches) for service.  
 Two of remaining three sides may be 305 mm (12 inches).

**DIMENSIONS – mm (inches)**

**DIMENSION DRAWING HERE  
 (maximum 30 picas height)**

Model Number		A	B	C	D	E	F
HS18-141, HS18-211, HS18-261	mm	679	565	92	175	92	381
	in.	26-3/4	22-1/4	3-5/8	6-7/8	3-5/8	15
HS18-311, HS18-411, HS18-413	mm	730	565	152	241	92	381
	in.	28-3/4	22-1/4	6	9-1/2	3-5/8	15
HS18-513, HS18-653	mm	852	732	122	237	121	491
	in.	33-9/16	28-13/16	4-13/16	9-5/16	4-3/4	19-5/16













RATINGS — 50hz

NOTE — For Temperatures and Capacities not shown in tables, see bulletin — Cooling Unit Rating Table Correction Factor Data in Miscellaneous Engineering Data Section.

HS18-411-413 WITH C22-31(FC), C22-31W(FC), CR22-31 OR CH22-31 EVAPORATOR UNIT

Table with 20 columns: Entering Wet Bulb Temperature, Total Air Volume, Total Cooling Capacity, Compressor Motor Watts, Sensible To Total Ratio (S/T) Dry Bulb, and four columns for Outdoor Temperature (29°C, 35°C, 41°C, 46°C) each containing sub-columns for Total Cooling Capacity, Compressor Motor Watts, and Sensible To Total Ratio (S/T) Dry Bulb.

HS18-411-413 WITH C24-41(FC), C24-41W(FC), CR24-41 OR CH24-41 EVAPORATOR UNIT

Table with 20 columns: Entering Wet Bulb Temperature, Total Air Volume, Total Cooling Capacity, Compressor Motor Watts, Sensible To Total Ratio (S/T) Dry Bulb, and four columns for Outdoor Temperature (29°C, 35°C, 41°C, 46°C) each containing sub-columns for Total Cooling Capacity, Compressor Motor Watts, and Sensible To Total Ratio (S/T) Dry Bulb.

HS18-411-413 WITH CB18-41 OR CBS18-41 EVAPORATOR UNIT

Table with 20 columns: Entering Wet Bulb Temperature, Total Air Volume, Total Cooling Capacity, Compressor Motor Watts, Sensible To Total Ratio (S/T) Dry Bulb, and four columns for Outdoor Temperature (29°C, 35°C, 41°C, 46°C) each containing sub-columns for Total Cooling Capacity, Compressor Motor Watts, and Sensible To Total Ratio (S/T) Dry Bulb.

HS18-411-413 WITH C24-51(FC), CR24-51 OR CH24-51 EVAPORATOR UNIT

Table with 20 columns: Entering Wet Bulb Temperature, Total Air Volume, Total Cooling Capacity, Compressor Motor Watts, Sensible To Total Ratio (S/T) Dry Bulb, and four columns for Outdoor Temperature (29°C, 35°C, 41°C, 46°C) each containing sub-columns for Total Cooling Capacity, Compressor Motor Watts, and Sensible To Total Ratio (S/T) Dry Bulb.





