# Levitor II

## AIR-COOLED CONDENSER WITH ELECTRONICALLY COMMUTATED AXITOP MOTORS (Available for Fluid Cooler Applications)

Datasheet: LEVE_004_060222

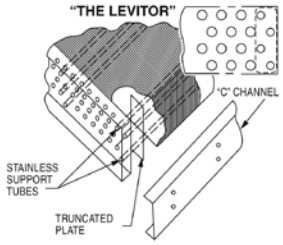

Products that provide lasting solutions.

# Levitor II Air-Cooled Condenser

## *Table of Contents*

# Levitor II Air-Cooled Condenser

## *Benefits and Features*




Rooftop condensers have to operate in some of the toughest conditions imaginable. Temperature extremes result in constant expansion and contraction of refrigerant tubes as fans cycle and loads vary.

The consequences are costly: rapid tube wear results in leaks, system breakdown and loss of costly refrigerant.

**The LEVITOR system addresses refrigerant coil wear and leaks due to vibration and thermal stress.**

**LEVITOR Coil Design Eliminates Refrigerant Tube Wear**

Environmental concerns and spiraling cost of refrigerants have led to the development of direct drive remote air-cooled condensers with the LEVITOR coil support system. This innovative design uses dedicated stainless steel tubes and a unique coil support system to isolate refrigerant tubes from the unit. Coil support is transferred from the fins to the stainless tubes and truncated tube plates which ride freely in "C" channels. Tubes expand and contract without interference. The result, contact and friction wear are eliminated.

**Quiet by Design**

LEVITOR coil design does more than just eliminate tube wear. Sound reduction is an added benefit. Unlike traditional air-cooled condensers, fan and coil vibration are isolated from the cabinet, so it is not transmitted to the unit frame and building supports.

### Fan Assemblies

- Fan assemblies include the EC motor, fan with advanced design and guard with a square mounting plate.
- Advanced fan design integrated with the motor and fan guard greatly reduce sound levels compared to standard fans.
- Increased air flow provides more capacity than standard fans.

### Electronically Commutated Motors

- Electronically commutated (EC) fan assemblies with variable speed operation results in significant energy savings.
- 0-10 V control signal operates fans from full speed 1020 rpm with 0 V or no control signal to full stop with 10 V control signal.
- EC motors include integrated phase loss, locked rotor and overload protection.
- Two assemblies work with either 208/3/60 or 380/3/50 and 460/3/60 power.
- Standard AIC rating of 10,000 amps (10 kA) with ratings up to 100 kA available with standard fuses and addition of fused disconnect.
- Electronic control boards tested to provide 0-10 V signal for variable speed fan control to work with most control systems or provide standalone control.

### High Efficiency Coil

- Copper tubes are mechanically expanded into aluminum full collar enhanced fins with 8, 10 or 12 fins per inch.
- Coils are helium leak tested, pressure tested with 400 psig dry air, and shipped pressurized with dry nitrogen.
- Our computerized coil circuiting program is designed to minimize the condenser refrigerant charge and maximize sub-cooling. Every condenser will be custom circuited to meet the specific application requirements.

### Modular Design

- Arranged for vertical or horizontal air discharge, multi-fan sections are compartmented to allow individual fan cycling while preventing off-fan "windmilling".
- Large clean out access panels per fan section are standard.

### Weather Resistant

- All models employ mill galvanized steel fans sections and coil side baffles.
- Legs are heavy gauge mill galvanized steel.

### Options

- Copper or polyester coated aluminum fin materials.
- Electrofin and Heresite coil coatings are available options for corrosion protection.
- Multi-circuiting available at no additional cost.
- Mounted receivers.
- Extended legs.
- California Energy Commission Title 24 Regulation.



*Specifications subject to change without notice.*

# Levitor II Air-Cooled Condenser

## *System Selection*

### THR Total Heat of Rejection

- Condenser total heat of rejection (BTU/h) is the sum of the evaporator refrigeration effect and the heat of compression which varies with compressor type and operating conditions.

### THR Calculation Method

- THR = Open Reciprocating Compressor Capacity (BTU/h) + (2545 x BHP)
- THR = Suction Gas Cooled Hermetic Reciprocating Compressor Capacity (BTU/h) + (3413 x kW)

### THR Estimated Method

- THR may be estimated by multiplying the rated compressor BTU/h capacity by the compressor operating condition factor shown in Table 1 or 2. Multiply result by altitude factor when applicable.

**TABLE 2**

| EVAPORATOR TEMP (˚F) | OPEN COMPRESSOR CONDENSING TEMPERATURE (˚F) 90 | 100 | 110 | 120 | 130 | 140 |
|---|---|---|---|---|---|---|
| -30 | 1.37 | 1.42 | 1.47 | * | * | * |
| -20 | 1.33 | 1.37 | 1.42 | 1.47 | * | * |
| -10 | 1.28 | 1.32 | 1.37 | 1.42 | 1.47 | * |
| 0 | 1.24 | 1.28 | 1.32 | 1.37 | 1.41 | 1.47 |
| 10 | 1.21 | 1.24 | 1.28 | 1.32 | 1.36 | 1.42 |
| 20 | 1.17 | 1.20 | 1.24 | 1.28 | 1.32 | 1.37 |
| 30 | 1.14 | 1.17 | 1.20 | 1.24 | 1.27 | 1.32 |
| 40 | 1.12 | 1.15 | 1.17 | 1.20 | 1.23 | 1.28 |
| 50 | 1.09 | 1.12 | 1.14 | 1.17 | 1.20 | 1.24 |

* Beyond the normal limits for single-stage compressor application.

**TABLE 1**

| EVAPORATOR TEMP (˚F) | HERMETIC COMPRESSOR CONDENSING TEMPERATURE (˚F) 90 | 100 | 110 | 120 | 130 | 140 |
|---|---|---|---|---|---|---|
| -40 | 1.66 | 1.73 | 1.80 | 2.00 | * | * |
| -30 | 1.57 | 1.62 | 1.68 | 1.80 | * | * |
| -20 | 1.49 | 1.53 | 1.58 | 1.65 | * | * |
| -10 | 1.42 | 1.46 | 1.50 | 1.57 | 1.64 | * |
| 0 | 1.36 | 1.40 | 1.44 | 1.50 | 1.56 | 1.62 |
| 5 | 1.33 | 1.37 | 1.41 | 1.46 | 1.52 | 1.59 |
| 10 | 1.31 | 1.34 | 1.38 | 1.43 | 1.49 | 1.55 |
| 15 | 1.28 | 1.32 | 1.35 | 1.40 | 1.46 | 1.52 |
| 20 | 1.26 | 1.29 | 1.33 | 1.37 | 1.43 | 1.49 |
| 25 | 1.24 | 1.27 | 1.31 | 1.35 | 1.40 | 1.45 |
| 30 | 1.22 | 1.25 | 1.28 | 1.32 | 1.37 | 1.42 |
| 40 | 1.18 | 1.21 | 1.24 | 1.27 | 1.31 | 1.35 |
| 50 | 1.14 | 1.17 | 1.20 | 1.23 | 1.26 | 1.29 |

* Beyond the normal limits for single-stage compressor application.

**TABLE 3**

| ALTITUDE FEET | FACTOR | FEET | FACTOR |
|---|---|---|---|
| 1,000 | 1.02 | 5,000 | 1.12 |
| 2,000 | 1.05 | 6,000 | 1.15 |
| 3,000 | 1.07 | 7,000 | 1.17 |
| 4,000 | 1.10 | 8,000 | 1.24 |

### Multi-Circuit Selection

- Condenser coils may be divided into several individual refrigeration circuits or systems; each sized for a specific refrigerant, THR capacity and TD. Systems are tagged for identification from left to right; facing the connection end. Avoid multi-circuiting with 3-row condensers. Add excess circuits to low TD sections next to high TD sections. Add excess circuits to outboard sections.

**SAMPLE CALCULATION: 95°F AMBIENT-SUCTION COOLED SEMI-HERMETIC RECIPROCATING COMPRESSORS**

| COMP NOM HP | REF | DESIGN TD °F | SAT SUCT °F | SAT COND °F | COMPRESSOR RATING NET BTU/h | MOTOR kW | MOTOR BTU/h | TOTAL BTU/h | BASED ON R-404A AT 15°FTD REF FACTOR | | TD FACTOR | | SELECT THR | CAP PER CIRCUIT | CIRCUIT REQ'D | # CIR | SYSTEM NUMBER L TO R | ACTUAL TD °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 134a | 15 | +20 | 110 | 40090 | 4.3 | 14676 | 54,766 | ÷ 0.97 | x | 1.0 | = | 56460 | 12668 | 4.5 | 4 | 1 | 16.9 |
| 9 | 404A | 10 | -20 | 105 | 45900 | 8.1 | 27645 | 73,545 | ÷ 1.00 | x | 1.5 | = | 110318 | 12668 | 8.7 | 10 | 2 | 8.7 |
| 10 | 404A | 10 | -20 | 105 | 50640 | 9.6 | 32765 | 83,405 | ÷ 1.00 | x | 1.5 | = | 125108 | 12668 | 9.9 | 10 | 3 | 9.9 |
| 12 | 22 | 15 | +20 | 110 | 104000 | 9.7 | 33106 | 137,106 | ÷ 1.02 | x | 1.0 | = | 134418 | 12668 | 10.6 | 10 | 4 | 15.9 |
| | | | | | | | | | | | | | **UNIT THR REQ'D** | 426304 | | 34 | | |

### Selection

- LAVH-13410 Rated at THR of 430.7 MBH with R-404A at 15° F TD. LAVH-13410 Unit lists 34 Circuits.
- Sample Calculation: THR Req'd./Circuit = 426304 ÷ 34 = 12538. LAVH-13410 = 430700 ÷ 34 = 12668 (Available THR/Circuit).
- Circuits Req'd. = Select THR ÷ THR/Circuit. Example: 56460 ÷ 12668 = 4.5 Circuits.
- Assign Number of Circuits System and System Number Left to Right. Actual TD = (Circuits Req'd ÷ Assign Circuits) x Design TD. Example: 4.5 ÷ 4 x 15 = 16.9.

| REF FACTOR R-404A Baseline | |
|---|---|
| R-404A | 1.00 |
| R-22 | 1.02 |
| R-134a | 0.97 |
| R-410A | 1.02 |

| REF FACTOR R-407A Baseline | |
|---|---|
| R-407A | 1.00 |
| R-407C | 0.98 |
| R-448A / R-449A | 1.00 |

| TD FACTOR |
|---|
| 10°F - 1.50 |
| 15°F - 1.00 |
| 20°F - 0.75 |
| 25°F - 0.60 |

## *Levitor Application*

**Locate Condensers** no closer than their width from walls or other condensers. Avoid locations near exhaust fans, plumbing vents, flues, or chimneys.

**Parallel Condensers** should be the same models resulting in the same refrigerant side pressure drops. Compressor discharge lines should have equal pressure drops to each condenser.

**Summer Charge** based on 25% of condenser volume with 90˚ F liquid. Multiply by 1.1 for R-407A.

**Winter Charge** based on 90% of condenser volume with -20˚ F liquid. Multiply by 1.08 for R-407A.

**Receiver Capacity** should be sized to store condenser summer charge, plus the condenser low ambient allowance, plus the evaporator charge, plus an allowance for piping and heat reclaim coil charges.

**Compressor Discharge** lines should be sized to minimize pressure drops and maintain oil return gas velocities. Each connection should be looped to the top of the condenser.

**Gravity Liquid Drain Lines** should drop from each outlet as low as possible before headering or running horizontally. Pitch downhill to receiver.

**Off-Line Coil Sections** will have refrigerant pressures corresponding to the ambient. Check valves or isolating valves should be installed in the liquid line drains to prevent refrigerant migration and receiver pressure loss.

See Installation and Operating instructions for piping, holdback, and speed control details.

**CORRECTION FACTORS TABLE**

| REFRIGERANTS | MULTIPLY R-404A BY CAPACITY FACTOR | CHARGE CORRECTION FACTOR | |
|---|---|---|---|
| | | SUMMER | WINTER |
| R-404A | 1.00 | 1.00 | 1.00 |
| R-134a | 0.97 | 1.17 | 1.11 |
| R-410A | 1.02 | 1.02 | 1.03 |
| R-22 | 1.02 | 1.14 | 1.09 |
| R-407A | See R-407A Chart | 1.10 | 1.08 |
| R-407C | 0.98 x R-407A | 1.09 | 1.07 |
| R-448A / R-449A | See R-448A / R-449A Chart | 1.06 | 1.04 |

# Levitor II Air-Cooled Condenser

## *Model Key*


**UNIT TYPE:**
L - Levitor Condenser

**TUBE DIAMETER:**
A - 3/8 O.D.
E - 1/2 O.D.

**FAN DISCHARGE DIRECTIONS:**
H - Horizontal
V - Vertical

**FAN / MOTOR COMBINATION:**
H - 1020 RPM 3 HP ECM

**FANS WIDE:** 1, 2

**VOLTAGE:**
K - 208-230/3/60
M - 460/3/60

**FIN SPACING:**
08 - 8 FPI
10 - 10 FPI
12 - 12 FPI

**ROWS DEEP:**
2
3
4

**FANS IN LINE:**
1
2
3
4
5
6


*Specifications subject to change without notice.*

## *LAVH/LEVH Performance Data*

**ONE FAN WIDE**

| MODEL | TOTAL HEAT OF REJECTION (MBH) | | | | | | | | AIR FLOW (CFM) | CONDENSER CHARGE R-404A (LBS) | | EST SOUND 10 FT (dBA) | SHIP WEIGHT (LBS) | AVAIL CIRCUITS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R-404A, R-507A | | | | R-407A, R-448A / R-449A | | | | | | | | | |
| | TEMPERATURE DIFFERENCE | | | | TEMPERATURE DIFFERENCE | | | | | | | | | |
| | 10° F | 15° F | 20° F | 25° F | 10° F | 15° F | 20° F | 25° F | | SUMMER | WINTER | | | |
| LAVH11208 | 48.7 | 73.1 | 97.4 | 121.8 | 46.9 | 70.4 | 93.8 | 117.3 | 13681 | 4 | 17 | 69 | 494 | 34 |
| LAVH11210 | 56.8 | 85.2 | 113.6 | 142.0 | 55.0 | 82.5 | 110.0 | 137.5 | 13554 | 4 | 17 | 69 | 496 | 34 |
| LAVH11212 | 63.5 | 95.3 | 127.0 | 158.8 | 62.1 | 93.2 | 124.2 | 155.3 | 13424 | 4 | 17 | 69 | 501 | 34 |
| LAVH11308 | 69.5 | 104.3 | 139.0 | 173.8 | 67.9 | 101.9 | 135.8 | 169.8 | 13298 | 6 | 25 | 69 | 523 | 34 |
| LAVH11310 | 79.8 | 119.7 | 159.6 | 199.5 | 78.6 | 117.9 | 157.2 | 196.5 | 13092 | 6 | 25 | 69 | 526 | 34 |
| LAVH11312 | 88.4 | 132.6 | 176.8 | 221.0 | 87.6 | 131.4 | 175.2 | 219.0 | 12883 | 6 | 25 | 69 | 535 | 34 |
| LAVH11408 | 84.9 | 127.4 | 169.8 | 212.3 | 84.3 | 126.5 | 168.6 | 210.8 | 12889 | 8 | 33 | 69 | 552 | 34 |
| LAVH11410 | 95.7 | 143.6 | 191.4 | 239.3 | 95.6 | 143.4 | 191.2 | 239.0 | 12602 | 8 | 33 | 69 | 556 | 34 |
| LAVH11412 | 103.6 | 155.4 | 207.2 | 259.0 | 105.0 | 157.5 | 210.0 | 262.5 | 12315 | 8 | 33 | 69 | 565 | 34 |
| LAVH12208 | 97.4 | 146.1 | 194.8 | 243.5 | 93.8 | 140.7 | 187.6 | 234.5 | 27362 | 9 | 32 | 72 | 832 | 34 |
| LAVH12210 | 113.6 | 170.4 | 227.2 | 284.0 | 110.0 | 165.0 | 220.0 | 275.0 | 27108 | 9 | 32 | 72 | 835 | 34 |
| LAVH12212 | 127.0 | 190.5 | 254.0 | 317.5 | 124.2 | 186.3 | 248.4 | 310.5 | 26848 | 9 | 32 | 72 | 843 | 34 |
| LAVH12308 | 139.0 | 208.5 | 278.0 | 347.5 | 135.8 | 203.7 | 271.6 | 339.5 | 26596 | 13 | 48 | 72 | 887 | 34 |
| LAVH12310 | 159.6 | 239.4 | 319.2 | 399.0 | 157.2 | 235.8 | 314.4 | 393.0 | 26184 | 13 | 48 | 72 | 893 | 34 |
| LAVH12312 | 176.8 | 265.2 | 353.6 | 442.0 | 175.2 | 262.8 | 350.4 | 438.0 | 25766 | 13 | 48 | 72 | 906 | 34 |
| LAVH12408 | 169.8 | 254.7 | 339.6 | 424.5 | 168.6 | 252.9 | 337.2 | 421.5 | 25778 | 17 | 64 | 72 | 944 | 34 |
| LAVH12410 | 191.4 | 287.1 | 382.8 | 478.5 | 191.2 | 286.8 | 382.4 | 478.0 | 25204 | 17 | 64 | 72 | 952 | 34 |
| LAVH12412 | 207.2 | 310.8 | 414.4 | 518.0 | 210.0 | 315.0 | 420.0 | 525.0 | 24630 | 17 | 64 | 72 | 969 | 34 |
| LAVH13210 | 170.4 | 255.6 | 340.8 | 426.0 | 165.0 | 247.5 | 330.0 | 412.5 | 40662 | 13 | 48 | 74 | 1212 | 34 |
| LAVH13212 | 190.5 | 285.8 | 381.0 | 476.3 | 186.3 | 279.5 | 372.6 | 465.8 | 40272 | 13 | 48 | 74 | 1231 | 34 |
| LAVH13308 | 208.5 | 312.8 | 417.0 | 521.3 | 203.7 | 305.6 | 407.4 | 509.3 | 39894 | 18 | 72 | 74 | 1297 | 34 |
| LAVH13310 | 239.4 | 359.1 | 478.8 | 598.5 | 235.8 | 353.7 | 471.6 | 589.5 | 39276 | 18 | 72 | 74 | 1306 | 34 |
| LAVH13312 | 265.2 | 397.8 | 530.4 | 663.0 | 262.8 | 394.2 | 525.6 | 657.0 | 38649 | 18 | 72 | 74 | 1324 | 34 |
| LAVH13408 | 254.7 | 382.1 | 509.4 | 636.8 | 252.9 | 379.4 | 505.8 | 632.3 | 38667 | 24 | 96 | 74 | 1381 | 34 |
| LAVH13410 | 287.1 | 430.7 | 574.2 | 717.8 | 286.8 | 430.2 | 573.6 | 717.0 | 37806 | 24 | 96 | 74 | 1394 | 34 |
| LAVH13412 | 310.8 | 466.2 | 621.6 | 777.0 | 315.0 | 472.5 | 630.0 | 787.5 | 36945 | 24 | 96 | 74 | 1418 | 34 |
| LAVH14308 | 278.0 | 417.0 | 556.0 | 695.0 | 271.6 | 407.4 | 543.2 | 679.0 | 53192 | 24 | 96 | 75 | 1665 | 34 |
| LAVH14310 | 319.2 | 478.8 | 638.4 | 798.0 | 314.4 | 471.6 | 628.8 | 786.0 | 52368 | 24 | 96 | 75 | 1677 | 34 |
| LAVH14312 | 353.6 | 530.4 | 707.2 | 884.0 | 350.4 | 525.6 | 700.8 | 876.0 | 51532 | 24 | 96 | 75 | 1702 | 34 |
| LAVH14408 | 339.6 | 509.4 | 679.2 | 849.0 | 337.2 | 505.8 | 674.4 | 843.0 | 51556 | 32 | 127 | 75 | 1778 | 34 |
| LAVH14410 | 382.8 | 574.2 | 765.6 | 957.0 | 382.4 | 573.6 | 764.8 | 956.0 | 50408 | 32 | 127 | 75 | 1794 | 34 |
| LAVH14412 | 414.4 | 621.6 | 828.8 | 1036.0 | 420.0 | 630.0 | 840.0 | 1050.0 | 49260 | 32 | 127 | 75 | 1827 | 34 |
| LAVH15308 | 347.5 | 521.3 | 695.0 | 868.8 | 339.5 | 509.3 | 679.0 | 848.8 | 66490 | 32 | 119 | 76 | 2305 | 34 |
| LAVH15310 | 399.0 | 598.5 | 798.0 | 997.5 | 393.0 | 589.5 | 786.0 | 982.5 | 65460 | 32 | 119 | 76 | 2320 | 34 |
| LAVH15312 | 442.0 | 663.0 | 884.0 | 1105.0 | 438.0 | 657.0 | 876.0 | 1095.0 | 64415 | 32 | 119 | 76 | 2351 | 34 |
| LAVH15408 | 424.5 | 636.8 | 849.0 | 1061.3 | 421.5 | 632.3 | 843.0 | 1053.8 | 64445 | 41 | 159 | 76 | 2445 | 34 |
| LAVH15410 | 478.5 | 717.8 | 957.0 | 1196.3 | 478.0 | 717.0 | 956.0 | 1195.0 | 63010 | 41 | 159 | 76 | 2466 | 34 |
| LAVH15412 | 518.0 | 777.0 | 1036.0 | 1295.0 | 525.0 | 787.5 | 1050.0 | 1312.5 | 61575 | 41 | 159 | 76 | 2507 | 34 |
| LEVH16308 | 417.0 | 625.5 | 834.0 | 1042.5 | 407.4 | 611.1 | 814.8 | 1018.5 | 79788 | 65 | 266 | 77 | 2896 | 34 |
| LEVH16310 | 478.8 | 718.2 | 957.6 | 1197.0 | 471.6 | 707.4 | 943.2 | 1179.0 | 78552 | 65 | 266 | 77 | 2915 | 34 |
| LEVH16312 | 530.4 | 795.6 | 1060.8 | 1326.0 | 525.6 | 788.4 | 1051.2 | 1314.0 | 77298 | 65 | 266 | 77 | 2952 | 34 |
| LEVH16408 | 509.4 | 764.1 | 1018.8 | 1273.5 | 505.8 | 758.7 | 1011.6 | 1264.5 | 77334 | 84 | 354 | 77 | 3126 | 34 |
| LEVH16410 | 574.2 | 861.3 | 1148.4 | 1435.5 | 573.6 | 860.4 | 1147.2 | 1434.0 | 75612 | 84 | 354 | 77 | 3150 | 34 |
| LEVH16412 | 621.6 | 932.4 | 1243.2 | 1554.0 | 630.0 | 945.0 | 1260.0 | 1575.0 | 73890 | 84 | 354 | 77 | 3200 | 34 |

Capacity ratings are based on midpoint condensing temperature, 95˚F entering air temperature and 0˚F sub-cooling.
The temperature difference is between the midpoint condensing temp. and the entering air temp. to the condenser.

See Corrections Factor Table on page 3. See Electrical Motor AMP Data Table on page 6.



*Specifications subject to change without notice.*

# Levitor II Air-Cooled Condenser

## *LAVH/LEVH Performance Data*

**TWO FANS WIDE**

| MODEL | TOTAL HEAT OF REJECTION (MBH) R-404A, R-507A TEMPERATURE DIFFERENCE 10°F | 15°F | 20°F | 25°F | R-407A, R-448A / R-449A TEMPERATURE DIFFERENCE 10°F | 15°F | 20°F | 25°F | AIR FLOW (CFM) | CONDENSER CHARGE R-404A (LBS) SUMMER | WINTER | EST SOUND 10 FT (dBA) | SHIP WEIGHT (LBS) | AVAIL CIRCUITS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAVH22208 | 194.8 | 292.2 | 389.6 | 487.0 | 187.6 | 281.4 | 375.2 | 469.0 | 54724 | 18 | 64 | 75 | 1539 | 68 |
| LAVH22210 | 227.2 | 340.8 | 454.4 | 568.0 | 220.0 | 330.0 | 440.0 | 550.0 | 54216 | 18 | 64 | 75 | 1548 | 68 |
| LAVH22212 | 254.0 | 381.0 | 508.0 | 635.0 | 248.4 | 372.6 | 496.8 | 621.0 | 53696 | 18 | 64 | 75 | 1564 | 68 |
| LAVH22308 | 278.0 | 417.0 | 556.0 | 695.0 | 271.6 | 407.4 | 543.2 | 679.0 | 53192 | 26 | 96 | 75 | 1665 | 68 |
| LAVH22310 | 319.2 | 478.8 | 638.4 | 798.0 | 314.4 | 471.6 | 628.8 | 786.0 | 52368 | 26 | 96 | 75 | 1653 | 68 |
| LAVH22312 | 353.6 | 530.4 | 707.2 | 884.0 | 350.4 | 525.6 | 700.8 | 876.0 | 51532 | 26 | 96 | 75 | 1690 | 68 |
| LAVH22408 | 339.6 | 509.4 | 679.2 | 849.0 | 337.2 | 505.8 | 674.4 | 843.0 | 51556 | 34 | 128 | 75 | 1767 | 68 |
| LAVH22410 | 382.8 | 574.2 | 765.6 | 957.0 | 382.4 | 573.6 | 764.8 | 956.0 | 50408 | 34 | 128 | 75 | 1783 | 68 |
| LAVH22412 | 414.4 | 621.6 | 828.8 | 1036.0 | 420.0 | 630.0 | 840.0 | 1050.0 | 49260 | 34 | 128 | 75 | 1816 | 68 |
| LAVH23210 | 340.8 | 511.2 | 681.6 | 852.0 | 330.0 | 495.0 | 660.0 | 825.0 | 81324 | 26 | 96 | 77 | 2217 | 68 |
| LAVH23212 | 381.0 | 571.5 | 762.0 | 952.5 | 372.6 | 558.9 | 745.2 | 931.5 | 80544 | 26 | 96 | 77 | 2254 | 68 |
| LAVH23308 | 417.0 | 625.5 | 834.0 | 1042.5 | 407.4 | 611.1 | 814.8 | 1018.5 | 79788 | 36 | 144 | 77 | 2386 | 68 |
| LAVH23310 | 478.8 | 718.2 | 957.6 | 1197.0 | 471.6 | 707.4 | 943.2 | 1179.0 | 78552 | 36 | 144 | 77 | 2405 | 68 |
| LAVH23312 | 530.4 | 795.6 | 1060.8 | 1326.0 | 525.6 | 788.4 | 1051.2 | 1314.0 | 77298 | 36 | 144 | 77 | 2442 | 68 |
| LAVH23408 | 509.4 | 764.1 | 1018.8 | 1273.5 | 505.8 | 758.7 | 1011.6 | 1264.5 | 77334 | 48 | 192 | 77 | 2556 | 68 |
| LAVH23410 | 574.2 | 861.3 | 1148.4 | 1435.5 | 573.6 | 860.4 | 1147.2 | 1434.0 | 75612 | 48 | 192 | 77 | 2580 | 68 |
| LAVH23412 | 621.6 | 932.4 | 1243.2 | 1554.0 | 630.0 | 945.0 | 1260.0 | 1575.0 | 73890 | 48 | 192 | 77 | 2629 | 68 |
| LAVH24308 | 556.0 | 834.0 | 1112.0 | 1390.0 | 543.2 | 814.8 | 1086.4 | 1358.0 | 106384 | 48 | 192 | 78 | 2982 | 68 |
| LAVH24310 | 638.4 | 957.6 | 1276.8 | 1596.0 | 628.8 | 943.2 | 1257.6 | 1572.0 | 104736 | 48 | 192 | 78 | 3107 | 68 |
| LAVH24312 | 707.2 | 1060.8 | 1414.4 | 1768.0 | 700.8 | 1051.2 | 1401.6 | 1752.0 | 103064 | 48 | 192 | 78 | 3156 | 68 |
| LAVH24408 | 679.2 | 1018.8 | 1358.4 | 1698.0 | 674.4 | 1011.6 | 1348.8 | 1686.0 | 103112 | 64 | 254 | 78 | 3307 | 68 |
| LAVH24410 | 765.6 | 1148.4 | 1531.2 | 1914.0 | 764.8 | 1147.2 | 1529.6 | 1912.0 | 100816 | 64 | 254 | 78 | 3340 | 68 |
| LAVH24412 | 828.8 | 1243.2 | 1657.6 | 2072.0 | 840.0 | 1260.0 | 1680.0 | 2100.0 | 98520 | 64 | 254 | 78 | 3406 | 68 |
| LAVH25308 | 695.0 | 1042.5 | 1390.0 | 1737.5 | 679.0 | 1018.5 | 1358.0 | 1697.5 | 132980 | 64 | 238 | 79 | 4295 | 68 |
| LAVH25310 | 798.0 | 1197.0 | 1596.0 | 1995.0 | 786.0 | 1179.0 | 1572.0 | 1965.0 | 130920 | 64 | 238 | 79 | 4325 | 68 |
| LAVH25312 | 884.0 | 1326.0 | 1768.0 | 2210.0 | 876.0 | 1314.0 | 1752.0 | 2190.0 | 128830 | 64 | 238 | 79 | 4387 | 68 |
| LAVH25408 | 849.0 | 1273.5 | 1698.0 | 2122.5 | 843.0 | 1264.5 | 1686.0 | 2107.5 | 128890 | 82 | 318 | 79 | 4575 | 68 |
| LAVH25410 | 957.0 | 1435.5 | 1914.0 | 2392.5 | 956.0 | 1434.0 | 1912.0 | 2390.0 | 126020 | 82 | 318 | 79 | 4616 | 68 |
| LAVH25412 | 1036.0 | 1554.0 | 2072.0 | 2590.0 | 1050.0 | 1575.0 | 2100.0 | 2625.0 | 123150 | 82 | 318 | 79 | 4699 | 68 |
| LEVH26308 | 834.0 | 1251.0 | 1668.0 | 2085.0 | 814.8 | 1222.2 | 1629.6 | 2037.0 | 159576 | 130 | 532 | 80 | 5443 | 68 |
| LEVH26310 | 957.6 | 1436.4 | 1915.2 | 2394.0 | 943.2 | 1414.8 | 1886.4 | 2358.0 | 157104 | 130 | 532 | 80 | 5480 | 68 |
| LEVH26312 | 1060.8 | 1591.2 | 2121.6 | 2652.0 | 1051.2 | 1576.8 | 2102.4 | 2628.0 | 154596 | 130 | 532 | 80 | 5554 | 68 |
| LEVH26408 | 1018.8 | 1528.2 | 2037.6 | 2547.0 | 1011.6 | 1517.4 | 2023.2 | 2529.0 | 154668 | 168 | 708 | 80 | 5902 | 68 |
| LEVH26410 | 1148.4 | 1722.6 | 2296.8 | 2871.0 | 1147.2 | 1720.8 | 2294.4 | 2868.0 | 151224 | 168 | 708 | 80 | 5952 | 68 |
| LEVH26412 | 1243.2 | 1864.8 | 2486.4 | 3108.0 | 1260.0 | 1890.0 | 2520.0 | 3150.0 | 147780 | 168 | 708 | 80 | 6050 | 68 |

Capacity ratings are based on midpoint condensing temperature, 95˚F entering air temperature and 0˚F sub-cooling. The temperature difference is between the midpoint condensing temp. and the entering air temp. to the condenser. See Correction Factor Table on page 3.

**MOTOR TYPE H - 2.5 HP 850 RPM *(FLA, MCA MOP)***

| MODEL | K - 230/3/60 FAN FLA | UNIT FLA | MCA | MOP | U - 380/3/50 FAN FLA | UNIT FLA | MCA | MOP | M - 460/3/60 FAN FLA | UNIT FLA | MCA | MOP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1X1 | 9.8 | 12.8 | 15.3 | 25.0 | 6.6 | 8.6 | 10.3 | 15.0 | 4.9 | 6.4 | 7.6 | 15.0 |
| 1X2 | 19.6 | 22.6 | 25.1 | 30.0 | 13.2 | 15.2 | 16.9 | 20.0 | 9.8 | 11.3 | 12.5 | 15.0 |
| 1X3 | 29.4 | 32.4 | 34.9 | 45.0 | 19.8 | 21.8 | 23.5 | 30.0 | 14.7 | 16.2 | 17.4 | 25.0 |
| 1X4 | 39.2 | 42.2 | 44.7 | 60.0 | 26.4 | 28.4 | 30.1 | 40.0 | 19.6 | 21.1 | 22.3 | 30.0 |
| 1X5 | 49.0 | 52.0 | 54.5 | 70.0 | 33.0 | 35.0 | 36.7 | 45.0 | 24.5 | 26.0 | 27.2 | 35.0 |
| 1X6 | 58.8 | 61.8 | 64.3 | 80.0 | 39.6 | 41.6 | 43.3 | 60.0 | 29.4 | 30.9 | 32.1 | 40.0 |
| 2X2 | 39.2 | 42.2 | 44.7 | 60.0 | 26.4 | 28.4 | 30.1 | 40.0 | 19.6 | 21.1 | 22.3 | 30.0 |
| 2X3 | 58.8 | 61.8 | 64.3 | 80.0 | 39.6 | 41.6 | 43.3 | 60.0 | 29.4 | 30.9 | 32.1 | 40.0 |
| 2X4 | 78.4 | 81.4 | 83.9 | 110.0 | 52.8 | 54.8 | 56.5 | 70.0 | 39.2 | 40.7 | 41.9 | 60.0 |
| 2X5 | 98.0 | 101.0 | 103.5 | 150.0 | 66.0 | 68.0 | 69.7 | 90.0 | 49.0 | 50.5 | 51.7 | 70.0 |
| 2X6 | 117.6 | 120.6 | 123.1 | 175.0 | 79.2 | 81.2 | 82.9 | 110.0 | 58.8 | 60.3 | 61.5 | 80.0 |

Notes:
- Condenser Fan FLA for VFD Sizing
- Unit FLA - Number of Fans X FLA of Fan Motors + Control Circuit Amps*
- Minimum Unit Circuit Amps - 1.25 x FLA of One Motor + FLA of All Remaining Motors + (voltage-specific) Control Circuit Amps*
- Maximum Unit Overland Protection - 2.25 x FLA of One Motor + FLA of All Remaining Motors + (voltage-specific) Control Circuit Amps* (Round Down to Next Standard Breaker)

* Control Circuit amps are:
- 208-230/3/60 – 3.0 Amps
- 460/3/60 – 1.5 Amps
- 575/3/60 – 1.2 Amps
- 380/3/50 and 60 – 2.0 Amps

## *California Energy Commission (CEC) Title 24 Regulations*

- Title 24 regulations require a specific energy efficiency and variable speed fan operation for condensers for commercial refrigeration and refrigerated warehouses.
- To meet the specific efficiency (65 btuh/watt) for full speed operation, the maximum speed is reduced with capacity and sound data shown in the table below.
- Controls to vary the speed of all fans in relation to the ambient dry bulb temperature are required.

## *LAVH/LEVH Performance Data - Title 24*

| | TOTAL HEAT OF REJECTION (MBH) | | | | | | | | AIR FLOW | CONDENSER CHARGE R-404A (LBS) | | EST SOUND 10' | SHIP WEIGHT | AVAIL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R-404A, R-507A | | | | R-407A, R-448A / R-449A | | | | | | | | | |
| | TEMPERATURE DIFFERENCE | | | | TEMPERATURE DIFFERENCE | | | | | | | | | |
| MODEL | 10° F | 15° F | 20° F | 25° F | 10° F | 15° F | 20° F | 25° F | (CFM) | SUMMER | WINTER | (dBA) | (LBS) | CIRCUITS |
| LAVH11410 | 90.3 | 135.5 | 180.6 | 225.8 | 90.2 | 135.3 | 180.4 | 225.5 | 11279 | 8 | 33 | 69 | 556 | 34 |
| LAVH12410 | 180.6 | 270.9 | 361.2 | 451.5 | 180.4 | 270.6 | 360.8 | 451.0 | 22558 | 17 | 64 | 72 | 952 | 34 |
| LAVH13410 | 270.9 | 406.4 | 541.8 | 677.3 | 270.6 | 405.9 | 541.2 | 676.5 | 33837 | 24 | 96 | 74 | 1394 | 34 |
| LAVH14410 | 361.2 | 541.8 | 722.4 | 903.0 | 360.8 | 541.2 | 721.6 | 902.0 | 45116 | 32 | 127 | 75 | 1794 | 34 |
| LAVH15410 | 451.5 | 677.3 | 903.0 | 1128.8 | 451.0 | 676.5 | 902.0 | 1127.5 | 56395 | 41 | 159 | 76 | 2466 | 34 |
| LEVH16410 | 541.8 | 812.7 | 1083.6 | 1354.5 | 541.2 | 811.8 | 1082.4 | 1353.0 | 67674 | 84 | 354 | 77 | 3150 | 34 |
| LAVH22410 | 361.2 | 541.8 | 722.4 | 903.0 | 360.8 | 541.2 | 721.6 | 902.0 | 45116 | 34 | 128 | 75 | 1783 | 68 |
| LAVH23410 | 541.8 | 812.7 | 1083.6 | 1354.5 | 541.2 | 811.8 | 1082.4 | 1353.0 | 67674 | 48 | 192 | 77 | 2580 | 68 |
| LAVH24410 | 722.4 | 1083.6 | 1444.8 | 1806.0 | 721.6 | 1082.4 | 1443.2 | 1804.0 | 90232 | 64 | 254 | 78 | 3340 | 68 |
| LAVH25410 | 903.0 | 1354.5 | 1806.0 | 2257.5 | 902.0 | 1353.0 | 1804.0 | 2255.0 | 112790 | 82 | 318 | 79 | 4616 | 68 |
| LEVH26410 | 1083.6 | 1625.4 | 2167.2 | 2709.0 | 1082.4 | 1623.6 | 2164.8 | 2706.0 | 135348 | 168 | 708 | 80 | 5952 | 68 |

Capacity ratings are based on midpoint condensing temperature, 95˚F entering air temperature and 0˚F sub-cooling.
The temperature difference is between the midpoint condensing temp. and the entering air temp. to the condenser.

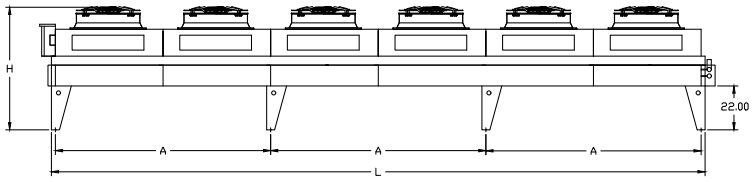
Units compliant with Title 24 are programmed to run their motors at a lessened top speed, significantly reducing their energy usage with a minimal impact on capacity.
At full speed, each motor consumes 1383 watts. However, as these motors are continuously variable speed they will use significantly less energy during standard operation.

See Corrections Factor Table on page 3. See Electrical Motor Amp Data Table on page 6.

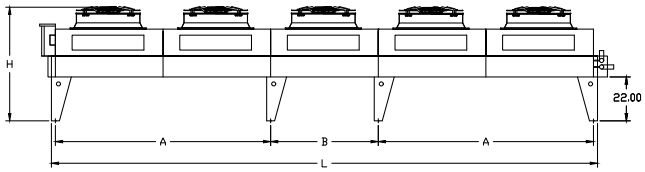
# Levitor II Air-Cooled Condenser

## *Dimensional Drawings*

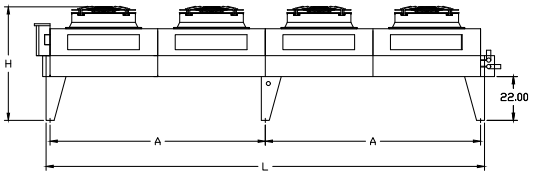
LEVH-16 and LEVH-26



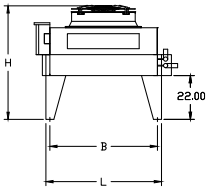

LEVH-15 and LEVH-25



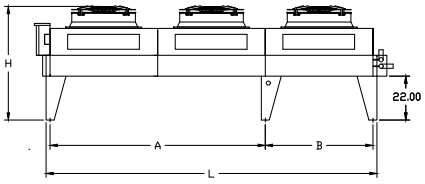

LEVH-14 and LEVH-24



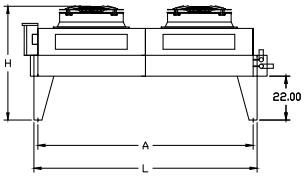

LEVH-11



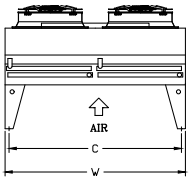

LEVH-13 and LEVH-23



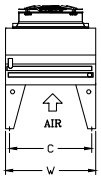

LEVH-12 and LEVH-22




End View - Two Fan Wide




End View - One Fan Wide




**ONE FAN WIDE**

| | | | | | | | CONNECTIONS OD IN(1) | |
|---|---|---|---|---|---|---|---|---|
| | L | W | H ** | A | B | C | INLET | OUTLET |
| LAVH11*** | 58 | 45-1/4 | 57.0 | - | 54 | 41-1/4 | 1-3/8 | 1-3/8 |
| LAVH12*** | 112 | 45-1/4 | 57.0 | 108 | - | 41-1/4 | 1-5/8 | 1-5/8 |
| LAVH13*** | 166 | 45-1/4 | 57.0 | 108 | 54 | 41-1/4 | 2-1/8 | 2-1/8 |
| LAVH14*** | 220 | 45-1/4 | 57.0 | 108 | - | 41-1/4 | 2-1/8 | 2-1/8 |
| LAVH15*** | 274 | 45-1/4 | 57.0 | 108 | 54 | 41-1/4 | 2-1/8 | 2-1/8 |
| LEVH16*** | 328 | 45-1/4 | 61.5 | 108 | - | 41-1/4 | 2-5/8 | 2-5/8 |

**TWO FANS WIDE**

| | | | | | | | CONNECTIONS OD IN(1) | |
|---|---|---|---|---|---|---|---|---|
| | L | W | H ** | A | B | C | INLET | OUTLET |
| LAVH22*** | 112 | 90-1/2 | 57.0 | 108 | - | 86-1/2 | (2)1-5/8 | (2)1-5/8 |
| LAVH23*** | 166 | 90-1/2 | 57.0 | 108 | 54 | 86-1/2 | (2)2-1/8 | (2)2-1/8 |
| LAVH24*** | 220 | 90-1/2 | 57.0 | 108 | - | 86-1/2 | (2)2-1/8 | (2)2-1/8 |
| LAVH25*** | 274 | 90-1/2 | 57.0 | 108 | 54 | 86-1/2 | (2)2-1/8 | (2)2-1/8 |
| LEVH26*** | 328 | 90-1/2 | 61.5 | 108 | - | 86-1/2 | (2)2-5/8 | (2)2-5/8 |

** Includes standard 22" legs. *** Indicates rows and fins.
(1) Connections are approximate. Exact size is determined by computerized circuiting program.

## *Mounted Receivers*

Levitor is available with a mounted receiver for applications where a remote receiver is desired. Included in the option are a heavy-duty base, extended legs, receiver, a 3-way valve, relief valve(s), rotalocks, ball valves, and ORI/ORD valves. Optional heated, insulated, and/or oversized receivers available.

### RECEIVER CAPACITIES @ 80% FULL

| SIZE | R-404A / R-507A (LBS) | R-407A (LBS) | R-448A / R-449A (LBS) |
|---|---|---|---|
| 10-3/4" x 48" | 114 | 126 | 121 |
| 10-3/4" x 60" | 144 | 159 | 153 |
| 12-3/4" x 72" | 245 | 270 | 260 |
| 14-3/4" x 96" | 395 | 435 | 419 |

Receiver models are 12" taller than standard models. Add the following to weights.

### ADDITIONAL UNIT WEIGHTS

| | # OF RECEIVERS | |
|---|---|---|
| # OF FANS | 1 | 2 |
| 1 x 1 | 350 | 550 |
| 1 x 2 | 440 | 640 |
| 1 x 3 | 530 | 730 |
| 1 x 4 | 620 | 820 |
| 1 x 5 | 820 | 1120 |
| 1 x 6 | 910 | 1210 |
| 2 x 2 | 520 | 700 |
| 2 x 3 | 620 | 800 |
| 2 x 4 | 720 | 910 |
| 2 x 5 | 910 | 1210 |
| 2 x 6 | 1020 | 1320 |

Includes ORI /ORD flooding valve, isolation ball valves, gauge-type liquid level indicator and dual relief valve. Optional heat tape and insulation.

### FACTORY MOUNTED RECEIVERS

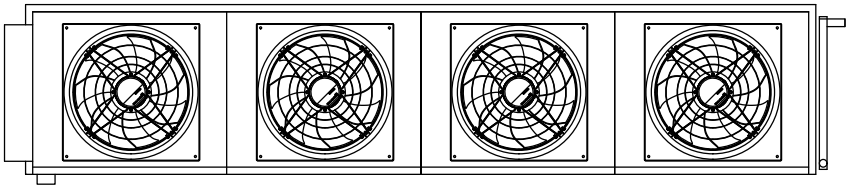
| LEVITOR II MODEL | SIZE | RECEIVER SIZE |
|---|---|---|
| LAV-LEV EC FAN MODEL 1 Receiver | LAVH-11 | 10.75" x 60" |
| | LAVH-12 | 10.75" x 60" |
| | LAVH-13 | 10.75" x 60" |
| | LAVH-14 | 10.75" x 60" |
| | LAVH-15 | 12.75" x 72" |
| | LEVH-16 | 12.75" x 72" |
| LAV-LEV EC FAN MODEL 1 Receiver | LAVH-22 | (1) 10.75" x 60" |
| | LAVH-23 | (1) 12.75" x 72" |
| | LAVH-24 | (1) 12.75" x 72" |
| | LAVH-25 | (1) 12.75" x 72" |
| | LEVH-26 | (1) 12.75" x 72" |
| LAV-LEV EC FAN MODEL 2 Receivers for Independent Slab Operation | LAVH-22 | (2) 10.75" x 60" |
| | LAVH-23 | (2) 10.75" x 60" |
| | LAVH-24 | (2) 10.75" x 60" |
| | LAVH-25 | (2) 12.75" x 72" |
| | LEVH-26 | (2) 12.75" x 72" |

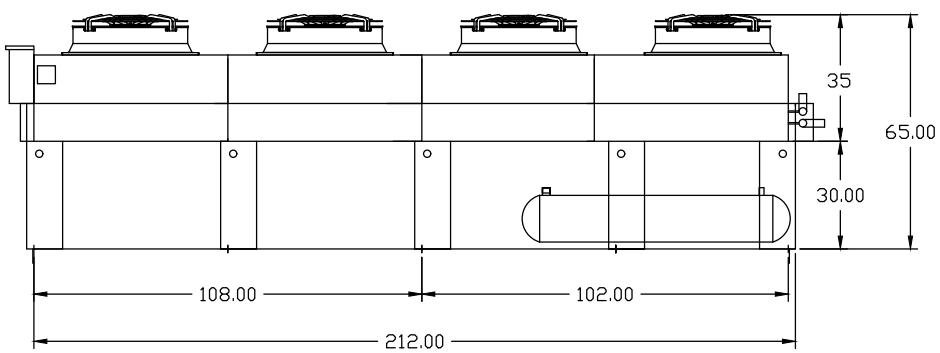


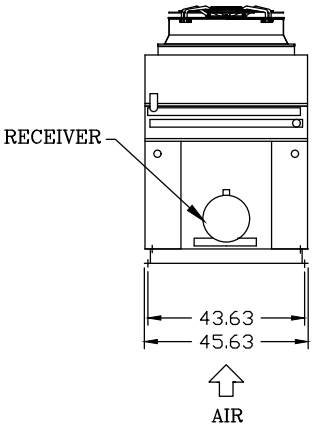
*Specifications subject to change without notice.*

# Levitor II Air-Cooled Condenser

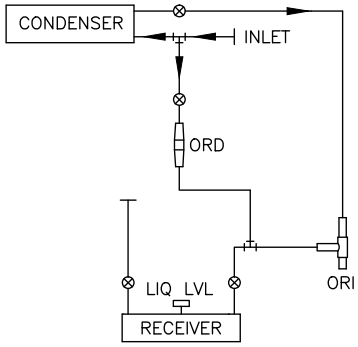
## *Mounted Receiver Diagram (One Receivers)*



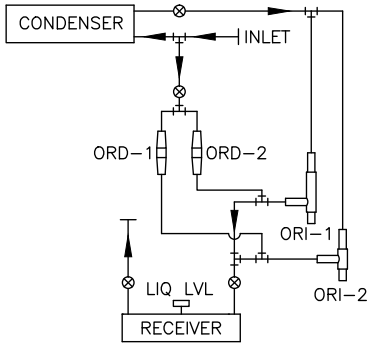


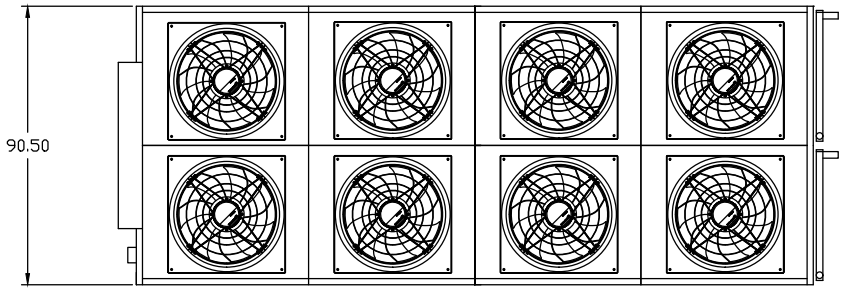

RECEIVER PIPING

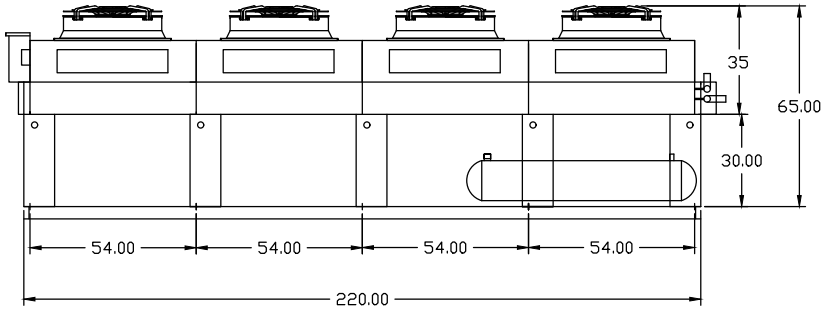


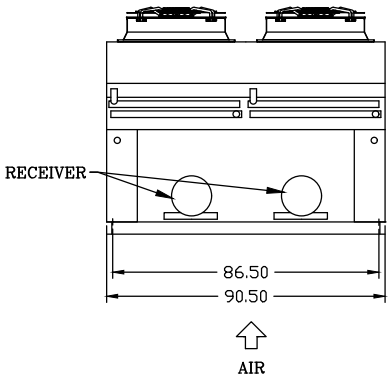

RECEIVER PIPING
DUAL ORI/ORD VALVES
REQUIRED FOR HIGHER CAPACITY MODELS



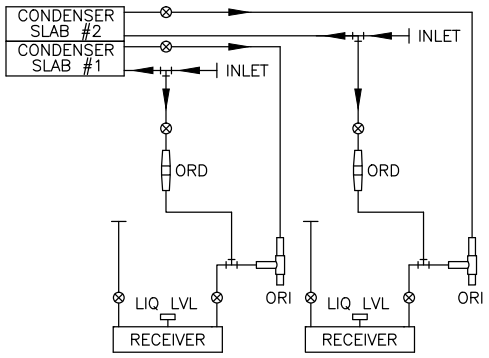
## *Mounted Receiver Diagram (Two Receivers)*



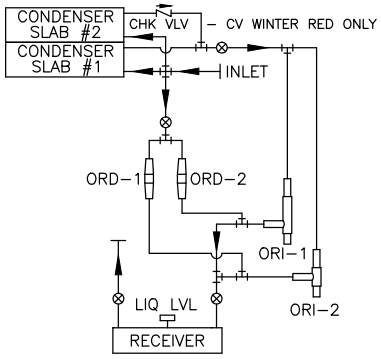




RECEIVER PIPING
– TWO RECEIVERS –

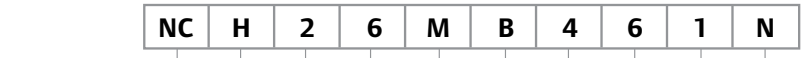



RECEIVER PIPING
– ONE RECEIVER –
DUAL ORI/ORD VALVES



# Levitor II Air-Cooled Condenser

## *Control Panel Nomenclature*




**Actual Part Number (NCH26MB461N)**

**RELAY BOARD CONTROLS:**
- NC - No Controls
- CPC2 - Multiflex 88AO
- DAN - Danfoss MX06D
- HSM - Hussmann Controller

**FAN/MOTOR COMBINATION:**
- H - 2.5 HP 1020 RPM EC

**FANS WIDE:**
- 1 or 2

**FANS IN LINE:**
- 1 to 6

**POWER VOLTAGE:**
- K - 208/230/3/60
- L - 380/3/60
- M - 460/3/60
- U - 380/3/50

**CONTROL VOLTAGE:**
- A - 208/230 V
- B - 115 V
- C - No Control Voltage
- D - 24 V
- E - 208/230 V Without Transformer
- F - 115 V Without Transformer
- G - No Control Voltage Without Transformer
- H - 24 V Without Transformer

**CONTROL MANUFACTURER:**
- 3 - Johnson Electronic
- 4 - No Controls

**FUSES and BREAKERS:**
- 4 - Terminal Blocks Only
- 6 - Individual Fuses

**TYPE OF APPLICATON:**
- 2 - 50% Winter Reduction (Split Condenser)
- 3 - 50/50 Split Dual Panel (for Two Indep. Slabs)
- 4 - No Control Operation (Terminal Blocks Only)

**AMBIENT AIR SENSOR:**
- T - Ambient Air Sensor Provided
- N - Sensor Not Required

## *Standard Fan Control Arrangements*

**Standard Features**

- Relay boards with analog outputs are offered to allow speed control of these motors.
- For full customer control, a no controls option provides individual control connections for each motor.

**Control Panel**

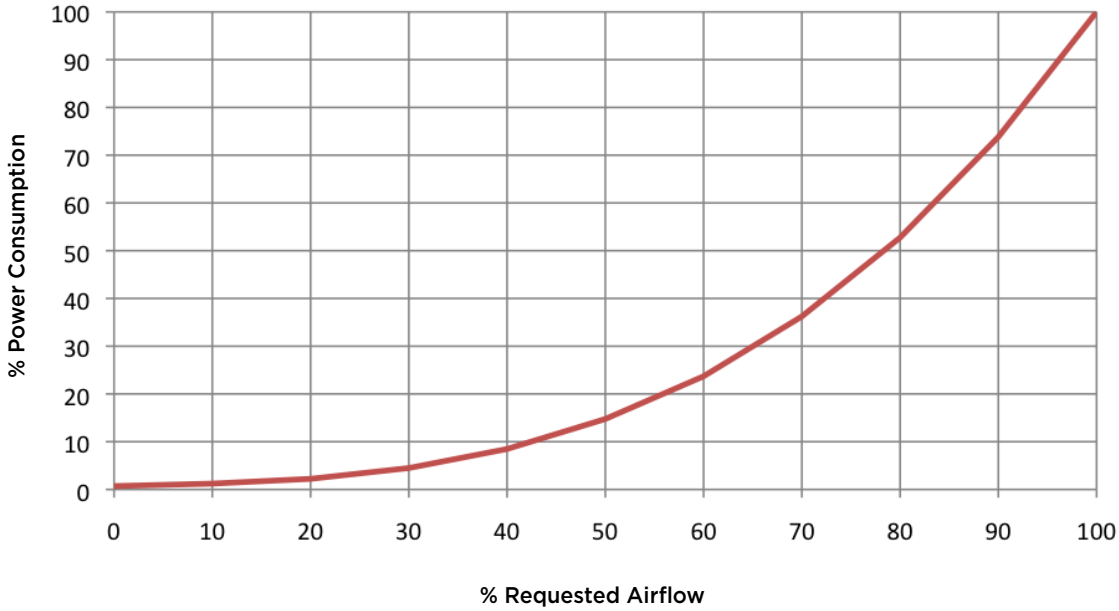
- Standard weather resistant enclosure is mounted on the opposite end of the unit when looking at the headers.
- Control power is 24, 115 or 230 volts. A transformer is factory installed when required.
- Each motor protected by fuses.
- Optional disconnect may be required to meet local codes.

**Optional Arrangements**

- 50/50 split with two fan wide models. Each side is controlled separately with individual control panels on each side.

## *Fan Speed Modulation (2 x 3 Fan Unit)*

**Power Consumption Compared to Requested Unit Airflow**





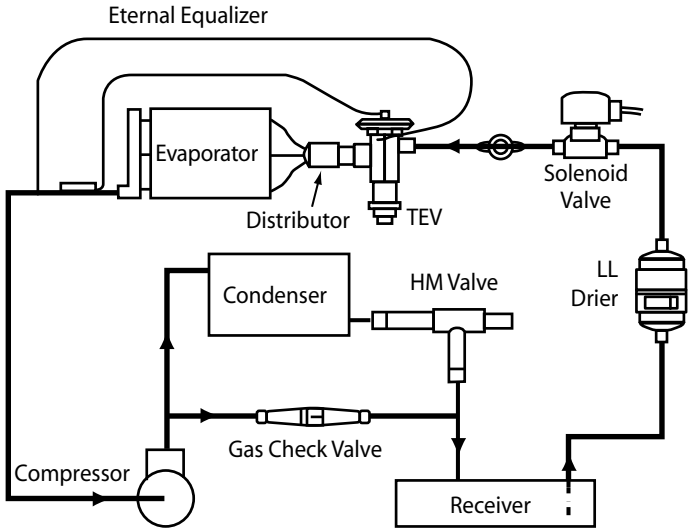

*Specifications subject to change without notice.*

# Levitor II Air-Cooled Condenser

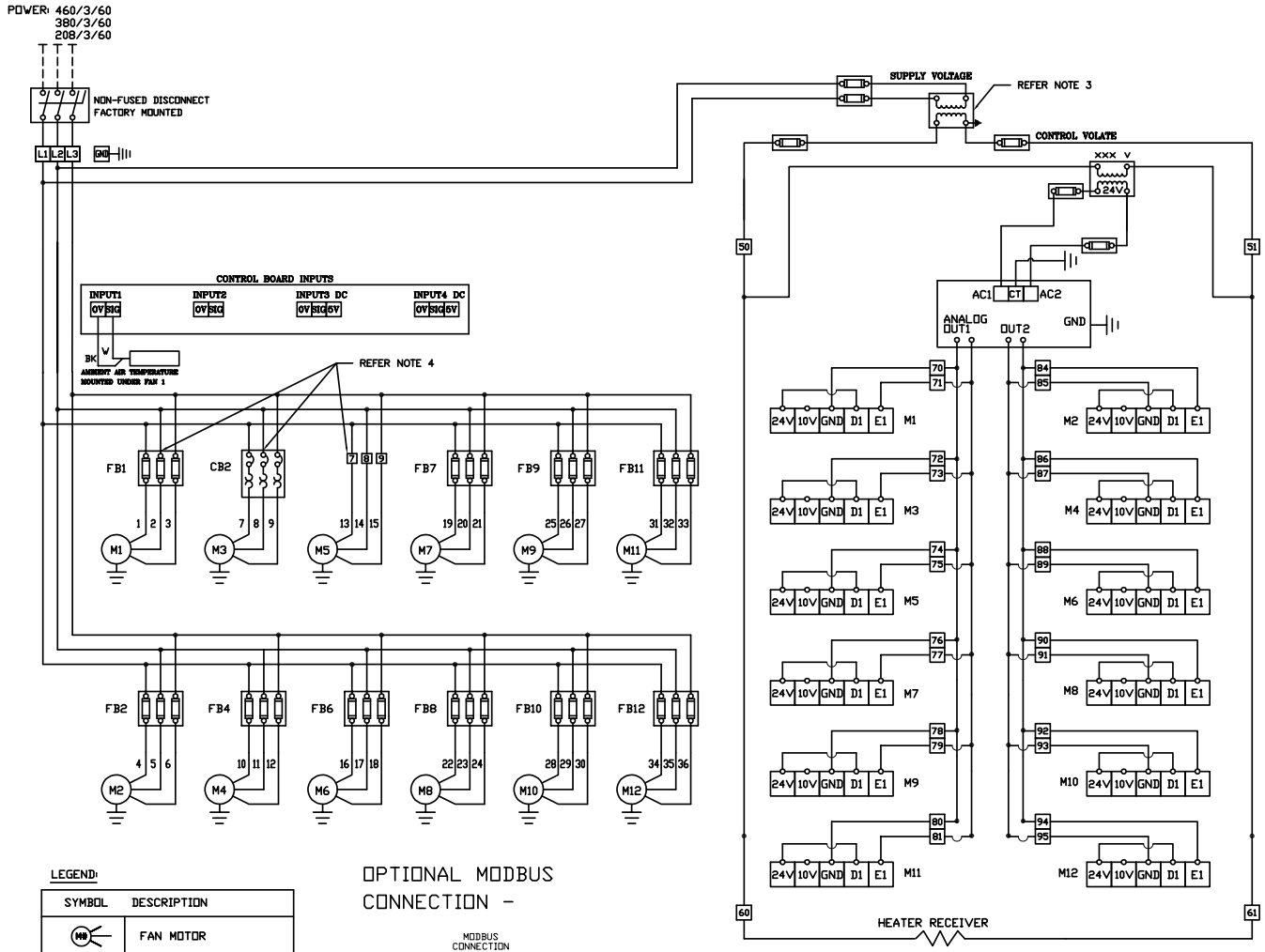
## *Low Ambient Controls (Head Pressure Control System)*

**Piping Schematic for Winter Control**

Head Pressure Control for systems with air-cooled condenser is accomplished with two pressure regulating valves designed specifically for this type of application. When low ambient conditions are encountered during winter operation on air-cooled systems with a resultant drop in condensing pressure, the Head Pressure Control's purpose is to hold back enough of the condenser liquid refrigerant so that some of the condenser surface is rendered inactive. This reduction of active condensing surface results in a rise in the condensing pressure and sufficient liquid line pressure for normal system operation.



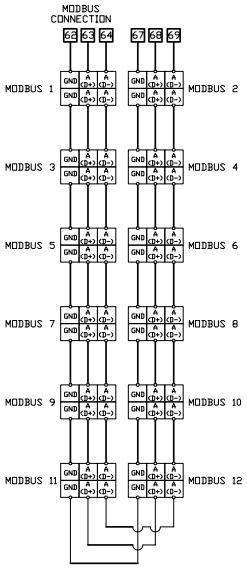
## *Condenser Control Panel - Standard Wiring Drawing*




LEGEND:

| SYMBOL | DESCRIPTION |
|---|---|
| M# | FAN MOTOR |
| | CIRCUIT BREAKER |
| | TERMINAL BLOCK |
| MC# | MOTOR CONTACTOR |
| MC# | MOTOR CONTACTOR COIL |
| FB# | FUSE BLOCK |
| | TRANSFORMER |
| | HEATER RECEIVER |

OPTIONAL MODBUS CONNECTION -




NOTE:

1. WINTER REDUCTION ENABLED VIA FLEXIBLE COMBINER ON CONTROLLER. (10V OUTPUT SIGNAL ON AO2).
2. EACH MOTOR'S SPEED IS LINEARLY CONTROLLED WITH 0–10V ANALOG SIGNAL.
   0V IS SEEN AS A COMMAND TO GO TO FULL SPEED
   10V IS SEEN AS A COMMAND TO GO TO ZERO SPEED.
3. CONTROL VOLTAGE CAN BE 208V & 230V/120V/24V, TRANSFORMER SIZED BASED ON PRIMARY, SECONDARY VOLTAGE AND AMPS REQUIRED. 208V & 230V/120V/24V WITHOUT TRANSFORMER OPTION IS ALSO AVAILABLE.
4. PRIMARY PROTECTION TO INDIVIDUAL CAN BE FUSE OR CIRCUIT BREAKER. TERMINAL PIN ONLY OPTION IS ALSO AVAILABLE.

# Levitor II Air-Cooled Condenser

*Notes*

Use your QR reader to
reference current document
version on www.krack.com.

**Krack, a Hussmann Corporation brand**
1049 Lily Cache Lane, Suite A
Bolingbrook, Illinois 60440
Ph: 630.629.7500

www.krack.com
www.hussmann.com