

1 FINISH PLAN, 3RD FLOOR
 A5.0 SCALE: 1/8" = 1'-0"

AREA OF WORK
 SPAN DIRECTION CONCRETE
 SLAB ON METAL DECK

A PARTIAL REPL. CEILING PLAN
 SHOWING FRAMING ABOVE +
 SUSPENDED UNITS

City of Portland
 REVIEWED FOR CODE
 COMPLIANCE
 JUN 01 2012
 Project Manager

12-127436-DESS-01-FA

N

GRIPPLE
GS12-10E4-S4
SPRAYED WIRE BRACING.
TYP. AT (4) CORNERS.

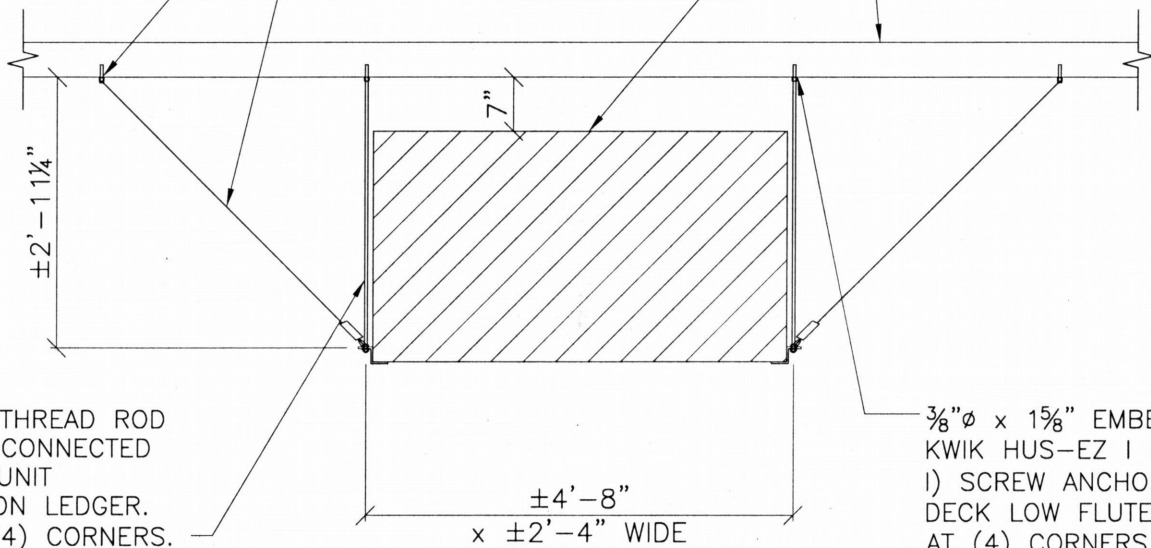
$\frac{3}{8}$ " ϕ x $1\frac{5}{8}$ " EMBED HILTI
KWIK HUS-EZ I (KH-EZ
I) SCREW ANCHORS IN
DECK LOW FLUTE.
SECURE WIRE TO
ANCHOR w/ $\frac{3}{8}$ " ϕ
HEX-HEAD BOLT. TYP.
@ (4) CORNERS.

SUSPENDED UNIT. MAX
WEIGHT = 225#

4TH FLOOR CONCRETE
SLAB ON METAL DECK.

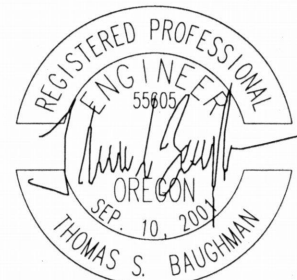
$\frac{3}{8}$ " ϕ ALL-THREAD ROD
HANGERS CONNECTED
AT HVAC UNIT
CONNECTION LEDGER.
TYP. OF (4) CORNERS.

$\frac{3}{8}$ " ϕ x $1\frac{5}{8}$ " EMBED HILTI
KWIK HUS-EZ I (KH-EZ
I) SCREW ANCHORS IN
DECK LOW FLUTE. TYP.
AT (4) CORNERS.



1 TYPICAL UNIT DETAIL

1/2" = 1'-0"



EXPIRES 12-31-13

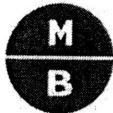


MADDEN & BAUGHMAN
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tel 503.236.7611 / fax 503.236.9411
info@maddenbaughman.com

3rd FLOOR HVAC INSTALLATION
200 MARKET, PORTLAND, OREGON

MAY 10, 2012

S1



MADDEN & BAUGHMAN
ENGINEERING, INC.

April 13, 2012

Mr. Kevin Butz
DeTemple Company Inc.
1951 NW Overton St.
Portland, OR 97209

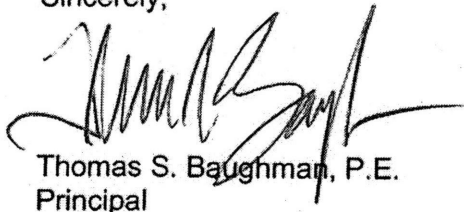
RE: 200 Market Building Mech Unit Support
Structural Engineering Calculations

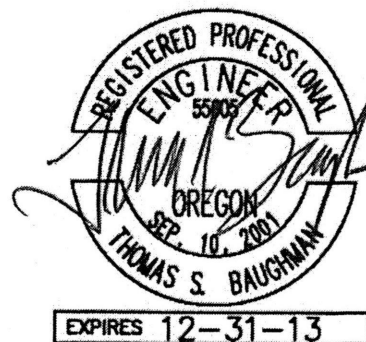
PERMIT NUMBER
12-127436-FA
Special Insp. not required -

Dear Kevin:

Please find attached calculation sheet 1 verifying the structural adequacy of vertical and lateral supports for new 3rd floor mechanical units supported from the 4th floor structure. Analysis is based on the requirements of the 2010 Oregon Structural Specialty Code.

Sincerely,


Thomas S. Baughman, P.E.
Principal





MADDEN & BAUGHMAN ENGINEERING, INC.

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Project 200 MARKET
Location PORTLAND, OR
Client DETEMPER

By TB
Date 4/13/12
Revised
Date

Sheet No. 1/1
Job No. 12055

SEISMIC FORCES ON EQUIPMENT:

$$F_p = \frac{0.4 a_p S_{D5} W_p}{(R_p / I_p)} \left(1 + 2 \frac{Z}{h}\right)$$

$a_p = 2.5, R_p = 6.0, I_p = 1.0, W_p (\text{MAX}) = 225\#$
 $W_p (\text{MIN}) = 175\#$
 $S_{D5} = 0.727$

$Z = \frac{4^{\text{TH}} \text{ FLOOR}}{19 \text{ FLOORS}}$

← LARGER UNIT
← SMALLER UNIT

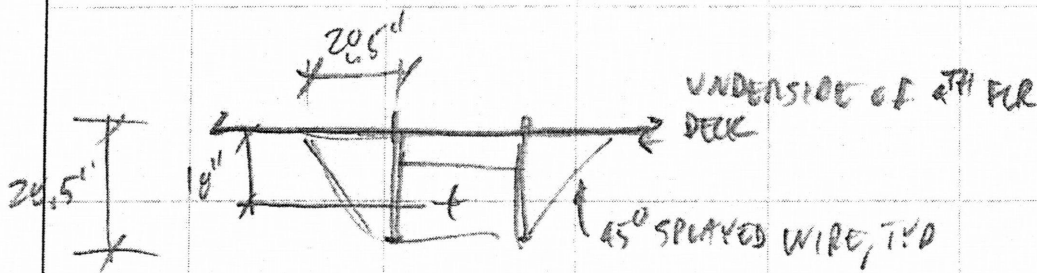
$$\Rightarrow F_p = \frac{0.4(2.5)(1 + 2(\frac{4}{19}))}{(6.0/1.0)} = 0.237 W_p$$

$$F_{p \text{ MAX}} = 0.237(225\#) = 53\#$$

$$F_{p \text{ MIN}} = \left(\frac{175\#}{225\#}\right)(53\#) = 42\#$$

UNIT BASE IS 28.5" BELOW DECK, TOP 7" BELOW DECK
CG = 18" BELOW DECK

Very small loads on a lightweight unit; tabulated anchor capacity more than 60x anchor load; special inspection not required



ANCHOR CAPACITY
= 3400# TENSION
+ 3160# SHEAR
OK BY INSP.

CHECK BRACING SYSTEM

$$\text{TENSION @ WIRE} = \sqrt{2} \left[\frac{18" (F_p)}{28.5"} \right] / 2 = 0.447 F_p$$

$$\text{VERT COMPONENT} = 0.447 F_p / \sqrt{2} = 0.316 F_p$$

LARGER UNIT: CHECK FOR NET COMP IN 3/8" ROD; $LC = 0.6D + 0.7E$

$$0.6D = 225\# / 4 (0.6) = 34\#$$

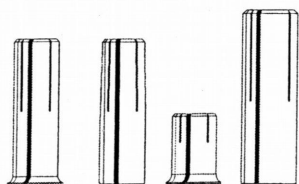
$$0.7E = 0.7 [0.316 (53\#)] = 11.7\# \text{ COMP.}$$

SPLAYED WIRE OK BY INSP.

TENSION FROM
0.6D EXCEEDS COMP. ON
ROD; NO NET COMPRESSION
IN ROD, STIFFENERS NOT
REQ'D

Anchors: 3/8"
diam. Red Head
Multi-Set II, type
RL

Multi-Set II®



SPECIFIED FOR ANCHORAGE INTO CONCRETE

Drop-In, shell-type anchors feature an internally threaded, all-steel shell with expansion cone insert and flush

embedment lip. "Anchors are manufactured from zinc-plated carbon steel, 18-8 stainless steel and 316 stainless steel.

Anchors should be installed with carbide tipped hammer drill bits made in accordance to ANSI B212.15-1994 specifications.

Anchors should be tested to ASTM E488 criteria and listed by ICC (formerly ICBO). Anchors should also be listed by the following agencies as required by the local building code: UL, FM, City of Los Angeles, California State Fire Marshal and Cal Trans.

APPROVALS/LISTINGS

Meets or exceeds U.S. Government G.S.A. Specification A-A-55614 Type 1
 (Formerly GSA: FF-S-325 Group VIII)

Underwriters Laboratories

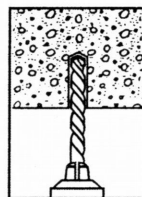
Factory Mutual

California State Fire Marshal

Caltrans

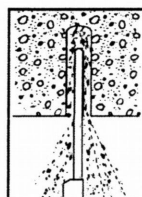
For the most current approvals/listings visit: www.itw-redhead.com

INSTALLATION STEPS

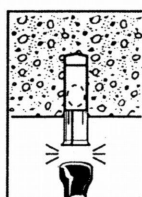


To set anchor flush with surface:

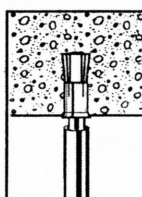
1. Drill hole to required embedment (see Table on page 73).



2. Clean hole with pressurized air.



3. Drive anchor flush with surface of concrete.



4. Expand anchor with setting tool provided (see chart). Anchor is properly expanded when shoulder of setting tool is flush with top of anchor.

To set anchor below surface:

Drill hole deeper than anchor length. Thread bolt into anchor. Hammer anchor into hole until bolt head is at desired depth. Remove bolt and set anchor with setting tool.

PERFORMANCE TABLE

Multi-Set II Drop-In Anchors

Ultimate Tension and Shear Values (Lbs/kN) in Concrete*

BOLT DIA. In. (mm)	ANCHOR DIA. In. (mm)	MIN. EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	TENSION Lbs. (kN)			SHEAR Lbs. (kN)
				$f'_c = 2000 \text{ PSI}$ (13.8 MPa)	$f'_c = 4000 \text{ PSI}$ (27.6 MPa)	$f'_c = 6000 \text{ PSI}$ (41.4 MPa)	$f'_c \geq 2000 \text{ PSI}$ (13.8 MPa)
1/4 (6.4)	3/8 (9.5)	1 (25.4)	RM, RL or CL-Carbon or SRM-18-8 S.S. or SSRM-316 S.S.	1,680 (7.5)	2,360 (10.5)	2,980 (13.3)	1,080 (4.8)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)		2,980 (13.3)	3,800 (16.9)	6,240 (27.8)	3,160 (14.1)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		3,300 (14.7)	5,840 (26.0)	8,300 (36.9)	4,580 (20.4)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		5,500 (24.5)	8,640 (38.4)	11,020 (49.0)	7,440 (33.1)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		8,280 (36.8)	9,480 (42.2)	12,260 (54.5)	10,480 (46.6)

*Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

*For continuous extreme low temperature applications, use stainless steel.

Combined Tension and Shear Loading—for Multi-Set Anchors

Allowable loads for anchors subjected to combined shear and tension forces are determined by the following equation:

$$(P_s/P_t)^{5/3} + (V_s/V_t)^{5/3} \leq 1$$

P_s = Applied tension load

V_s = Applied shear load

P_t = Allowable tension load

V_t = Allowable shear load

PERFORMANCE TABLES

Multi-Set II Drop-In Anchors Ultimate Tension and Shear Values (Lbs/kN) in Lightweight Concrete*

BOLT DIA. In. (mm)	ANCHOR DIA. In. (mm)	MINIMUM EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	LIGHTWEIGHT CONCRETE f'c = 3000 PSI (20.7 MPa)		LOWER FLUTE OF STEEL DECK WITH LIGHTWEIGHT CONCRETE FILL f'c = 3000 PSI (20.7 MPa)	
				TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1/2 (12.7)	1-5/8 (39.7)	RM, RL or CL-Carbon or SRM-18-8 S.S. or SSRM-316 S.S.	2,035 (9.1)	1,895 (8.4)	3,340 (14.9)	4,420 (19.6)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		2,740 (12.2)	2,750 (12.2)	3,200 (14.2)	4,940 (22.0)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		4,240 (18.9)	4,465 (19.9)	5,960 (26.5)	5,840 (26.0)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		5,330 (23.7)	6,290 (28.0)	8,180 (36.4)	9,120 (40.6)

*Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

Multi-Set II Drop-In Anchors Recommended Edge and Spacing Distance Requirements*

BOLT DIA. In. (mm)	DRILL BIT SIZE In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	EDGE DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. EDGE DISTANCE AT WHICH LOAD FACTOR APPLIED =.80 FOR TENSION =.70 FOR SHEAR In. (mm)	SPACING REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. ALLOWABLE SPACING BETWEEN ANCHORS LOAD FACTOR APPLIED =.80 FOR TENSION =.55 FOR SHEAR In. (mm)
1/4 (6.4)	3/8 (9.5)	1 (25.4)	RM, RL or CL-Carbon or SRM-18-8 S.S. or SSRM-316 S.S.	1-3/4 (44.5)	7/8 (22.2)	3-1/2 (88.9)	1-3/4 (44.5)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)		2-7/8 (73.0)	1-7/16 (36.5)	5-11/16 (144.5)	2-7/8 (73.0)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		3-1/2 (88.9)	1-3/4 (44.5)	7 (177.8)	3-1/2 (88.9)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		4-3/8 (111.1)	2-3/16 (55.6)	8-3/4 (222.3)	4-3/8 (111.1)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		5-5/8 (142.9)	2-13/16 (71.4)	11-3/16 (284.2)	5-5/8 (142.9)

*Spacing and edge distances shall be divided by 0.75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

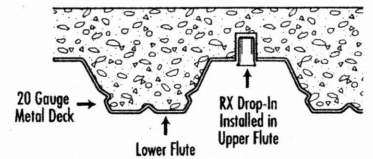
Multi-Set II Drop-In Anchors Ultimate Tension and Shear Values (Lbs/kN) for RX-series (3/4" and 1" Embedment)*

BOLT DIA. In. (mm)	DRILL BIT SIZE In. (mm)	EMBEDMENT In. (mm)	2500 PSI (17.2 MPa) CONCRETE		4000 PSI (27.6 MPa) CONCRETE		HOLLOW CORE	
			TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1/2 (12.7)	3/4 (19.1)	1,571 (7.0)	2,295 (10.2)	1,987 (8.8)	2,903 (12.9)	1,908 (8.5)	2,401 (10.7)
1/2 (12.7)	5/8 (15.9)	1 (25.4)	2,113 (9.4)	2,585 (11.5)	2,673 (11.9)	3,270 (14.5)	2,462 (11.0)	2,401 (10.7)

* The tabulated values are for RX anchors installed at a minimum of 12 diameters on center and minimum edge distance of 6 diameters for 100 percent anchor efficiency. Spacing and edge distance may be reduced to 6 diameters spacing and 3 diameter edge distance provided the values are reduced 50 percent. Linear Interpolation may be used for intermediate spacings and edge margins.

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

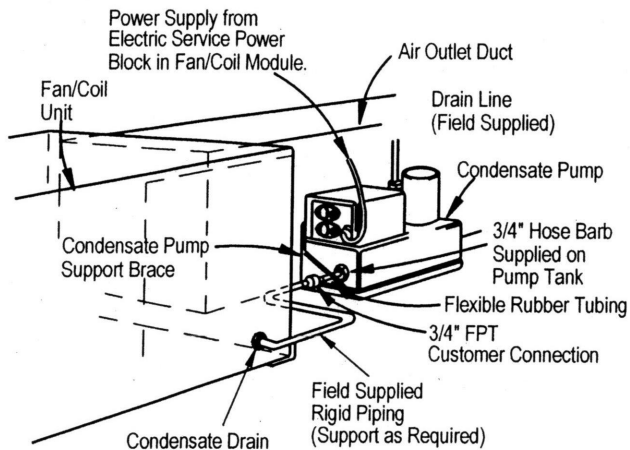
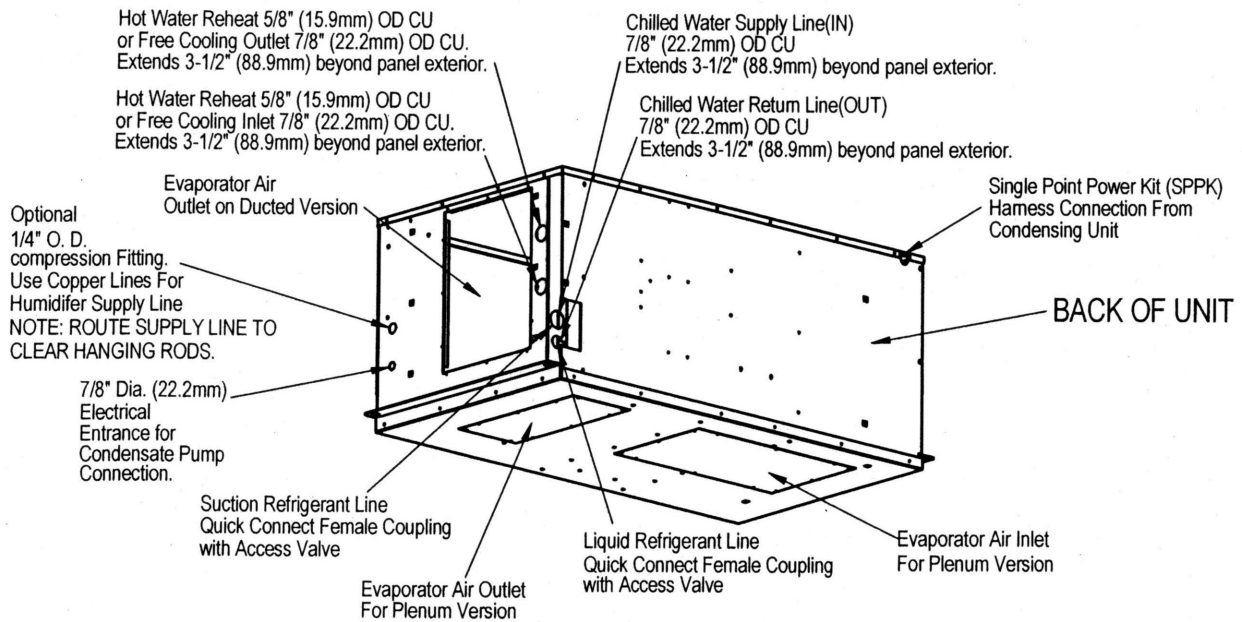
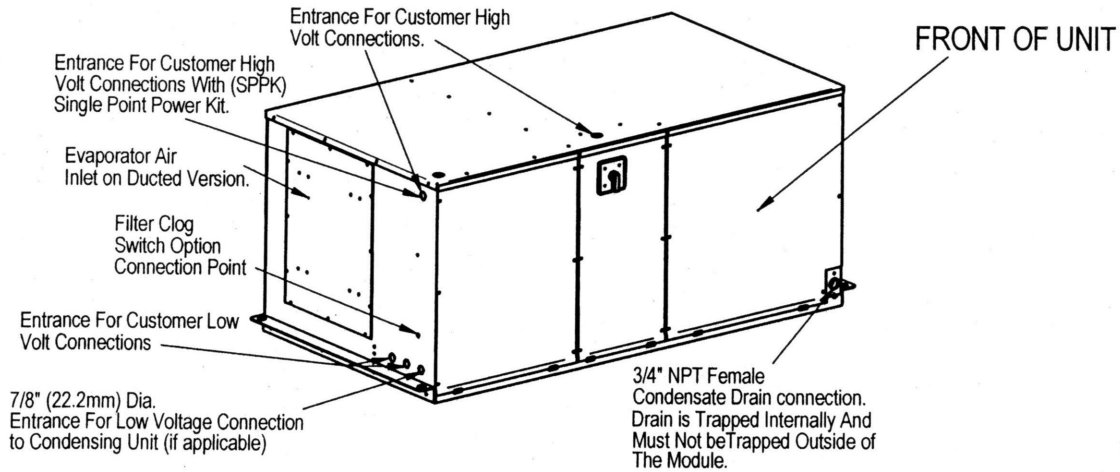
Multi-Set II Drop-In Anchors Anchoring Overhead in 3000 PSI Lightweight Concrete On Metal Deck



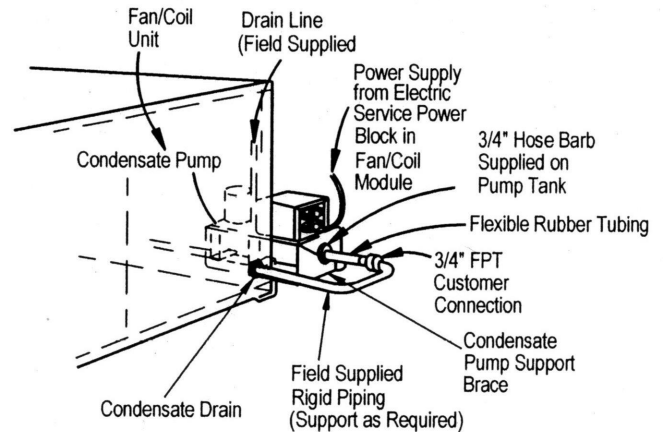
ANCHOR In. (mm)	DRILL HOLE DIAMETER In. (mm)	EMBEDMENT In. (mm)	3000PSI (20.7 MPa) CONCRETE		
			ULTIMATE TENSION LOAD Lbs. (kN)		ALLOWABLE WORKING LOAD Lbs. (kN)
RX-38 Drop-In	1/2 (12.7)	3/4 (19.1)	Upper Flute	1,410 (6.3)	353 (1.6)
			Lower Flute	1,206 (5.4)	301 (1.3)

*Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

SMALL SYSTEMS 2 & 3 TON MINI-MATE2 UNIT PIPING DATA AIR, WATER/GLYCOL & CHILLED WATER



CONDENSATE PUMP (FIELD INSTALLED)
ON UNIT WITH AIR OUTLET DUCTWORK



CONDENSATE PUMP (FIELD INSTALLED)
ON UNIT WITH AIR DISTRIBUTION PLENUM

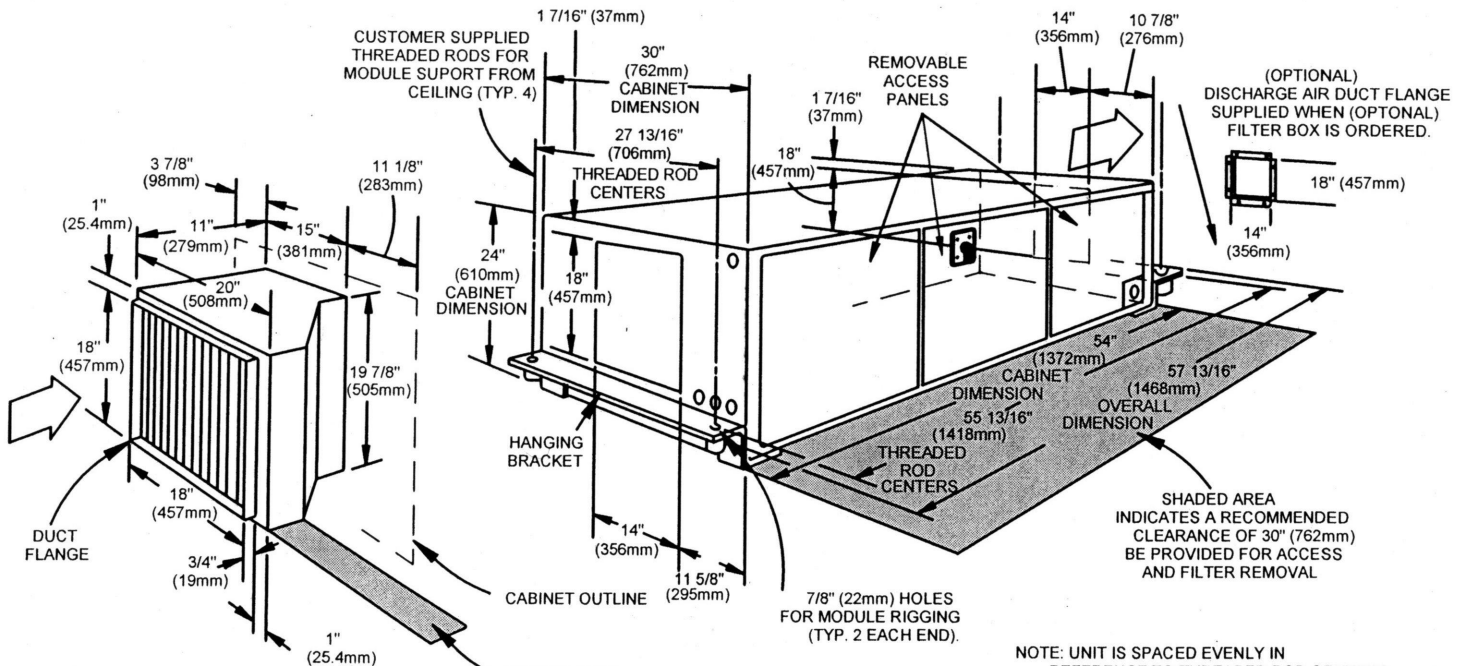
Note:
3/4" (19.1mm) Flexible Rubber Tubing Assembly (Supplied with Pump Kit) must be installed on pump end of rigid piping (Support as Required.)

SMALL SYSTEMS

2 & 3 TON MINI-MATE2

FAN/COIL MODULE DIMENSIONAL DATA

AIR, WATER/GLYCOL & CHILLED WATER WITH DIRECT DRIVE BLOWER



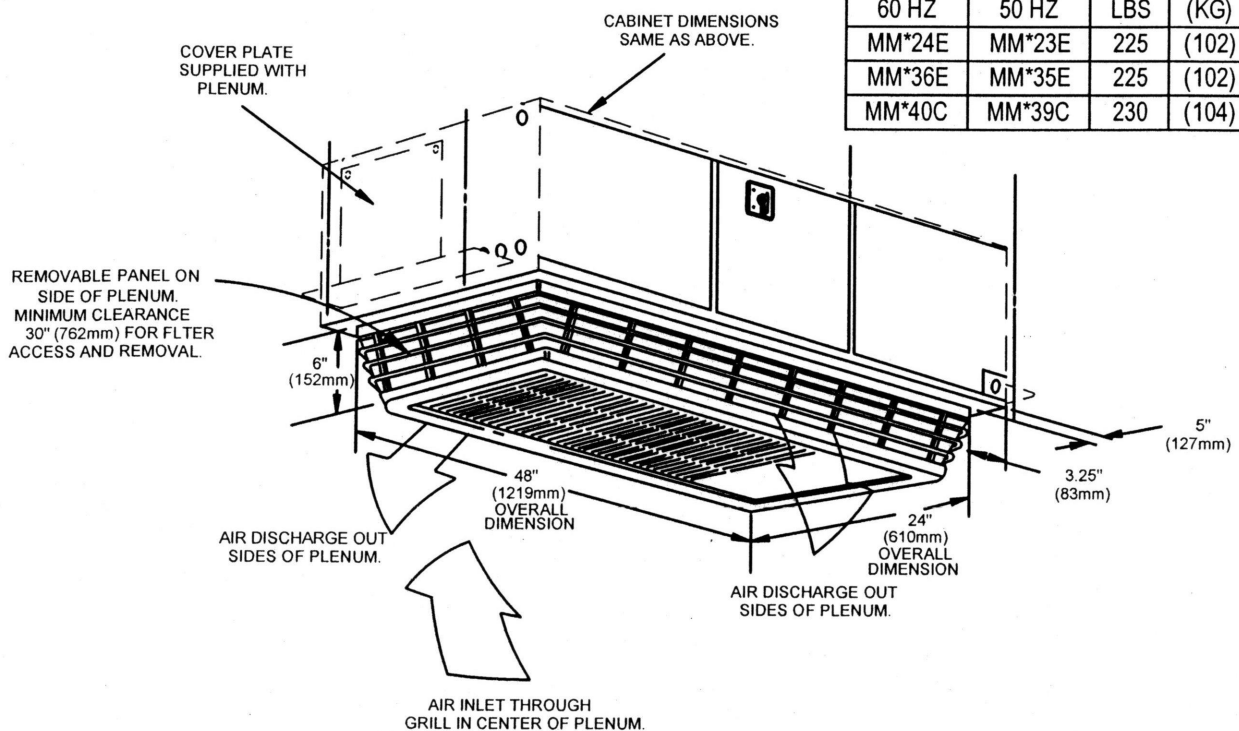
(OPTIONAL) FILTER BOX

SHADED AREA INDICATES A RECOMMENDED CLEARANCE OF 30" (762mm) BE PROVIDED FOR COMPONENT ACCESS AND REMOVAL

MODULE DIMENSIONAL DATA

NOTE: UNIT IS SPACED EVENLY IN REFERENCE TO THREADED ROD CENTERS

UNIT NET WEIGHT			
MODEL #		LBS	(KG)
60 HZ	50 HZ		
MM*24E	MM*23E	225	(102)
MM*36E	MM*35E	225	(102)
MM*40C	MM*39C	230	(104)



(OPTIONAL) AIR DISTRIBUTION PLENUM
ALL PIPING & ELECTRICAL FIELD CONNECTIONS ARE THE SAME

SMALL SYSTEMS 2 & 3 TON MINI-MATE2 ELECTRICAL FIELD CONNECTIONS

Site monitoring connection. Terminals TB4-1(+) TB4-2(-) are for connection of a 2 wire, twisted pair, communication cable (available from Liebert or others) to optional sitescan.

Customer remote alarm connection field supplied 24V, Class 2 wiring to conn TB1-1, TB1-2 & TB1-3.

Remote unit shutdown. Replace existing jumper between terminals TB1-4 & TB1-5 with normally closed switch having a minimum 75VA rating. use field supplied 24V class 1 wire.

(Optional) condensate pump aux float switch connection to term TB1-8 & TB1-9.

Remote Control Panel Connection to TB3-1,2,3,4 connected with field supplied Thermostat wire (22ga, shielded/ jacketed: available from Liebert or others). Unit Control Board terminals marked GND, +5V, T-, T+ must be connected to corresponding terminals on Remote Control Wall Box.

Common alarm connection. Field supplied 24V, Class 2 wiring to common alarm conn TB1-6 & TB1-7.

Heat rejection connection. Field supplied 24V NEC class 2 wiring. See note 2. For remote air cooled units from terminals TB2-1, 2, 3 & 4 in the Fan/Coil module to wires 1, 2, 3 & 4 in the condensing module:

1. 24V GND
2. 24V Supply
3. High Pressure Alarm (OPT)
4. Hot Gas Bypass Connection

Entrance for customer low volt connections.

Remote Humidifier Contact Field Supplied 24V class 2 wiring to terminals 11 & 12, located in field wire compartment.



Field supplied unit disconnect switch when factory unit disconnect switch is not supplied

Earth ground connection Connection terminal for field supplied earth grounding wire.

High Volt Power Connections. Electric service connection terminals.

Factory installed disconnect switch.

Electric service not by Liebert

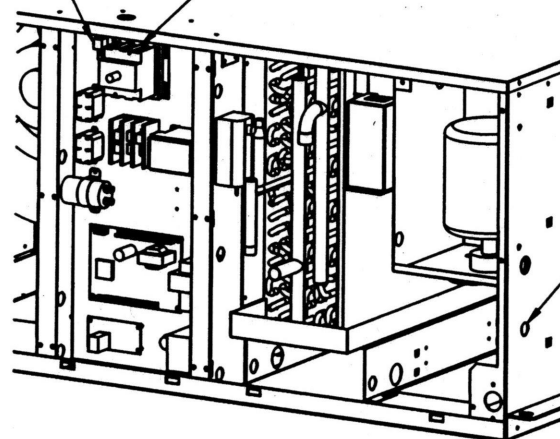
Entrance For Customer High Volt Connections.

Drycooler/Circulating pump control circuit TB70-71. Optional w/Econ-O-Cycle models. Use field supplied 24V class 2 wire.

Field supplied, field wired thermostat wire to remote wall box

Entrance For Customer Low Voltage Connections

Field supplied 24V (NEC class 2 wiring) to condensing module. (if applicable)

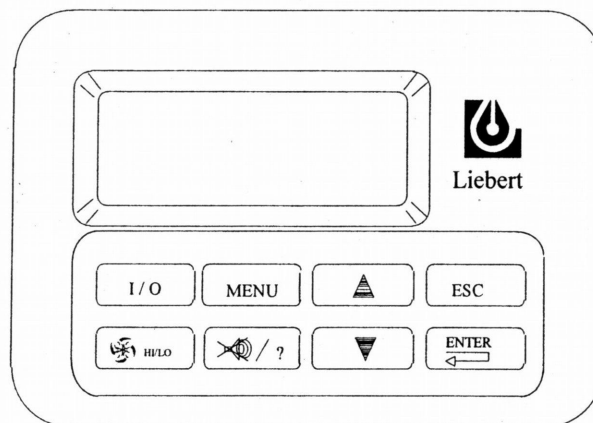


Electrical entrance for optional condensate pump

NOTES:

1. Refer to specification sheet for full load amp and wire size amp ratings.
2. Control voltage wiring must be a minimum of 16GA (1.3mm) for up to 75' (23m) or not to exceed 1 volt drop in control line.

SMALL SYSTEMS 1-3 TON MINI-MATE2 WALL MOUNTED MICROPROCESSOR CONTROL AND MONITOR



GENERAL

BUTTON CONTROL allows full function modification of all running parameters. The 8 key membrane keypad includes on/off, fan speed, menu, alarm silence, increase, decrease, escape & enter.

DISPLAY A 2 line x 16 character LCD which displays all monitoring, control, alarm, and diagnostic information.

ALARMS are displayed on the LCD display with audible alarm.

COMMON ALARM connections are provided at unit-mounted interface board for remote annunciation of unit alarms (compatible with SITE SCAN).

STANDARD ALARMS

TEMPERATURE high and low thresholds are programmable between 35 °F and 95 °F (1.6 °C and 32.2 °C). The alarm indicates excessive high or low room air temperature.

HUMIDITY high and low thresholds are programmable between 15% RH and 85% RH. The alarm indicates excessive high or low room air humidity.

HIGH HEAD Indicates a head pressure above factory preset point, and provides compressor cutout.

SHORT CYCLE ALARM Indicates the compressor has turned off-on-off at least 10 times in a one hour period.

LOSS OF POWER Indicates that a power interruption has occurred.

HIGH WATER ALARM Indicates high water level in condensate pan, and shuts down unit.

OPTIONAL ALARMS

The following alarms are available when the appropriate options are included with the unit. A maximum of two(2) alarms from the list below.

Change Filters Indicates that the pressure drop across the filters has exceeded the pre-set level.

Humidifier Problem Indicates excessive high water levels in the humidifier canister.

Water Detected Indicates that water has been detected at a customer specified location.

Smoke Detected Indicates that smoke has been detected, and unit shutdown. Alarm does not function as or replace any room smoke detection system that may be required by local or national codes.

FEATURES OF THE MONITOR

MONITOR Room conditions, operating status, alarms.

SET-UP Password protected programming of various time delays and unit configurations.

SETPOINT Password protected programming of operational setpoints/alarms.

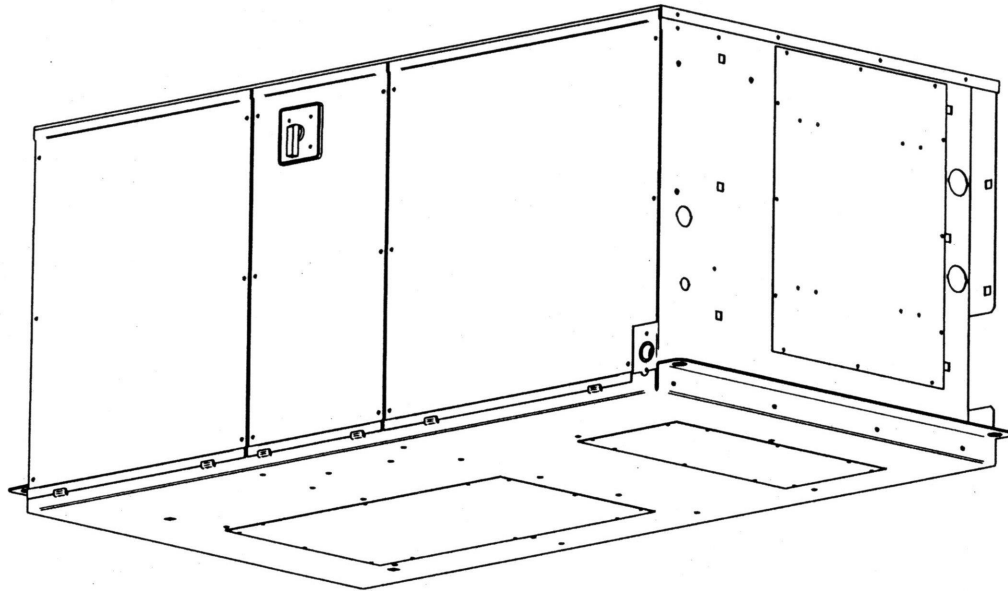
5 DAY/ 2 DAY PROGRAMMABILITY 2 changes per day for temperature and humidity control setpoints.

TEMPERATURE AND HUMIDITY SENSOR CALIBRATION can be adjusted from ± 5 °F/ $\pm 10\%$ RH to match local measuring device.

SMALL SYSTEMS

2-ton and 3-ton MINI-MATE2

DIRECT EXPANSION FAN/COIL MODULE



STANDARD FEATURES

- EVAPORATOR COIL** Constructed of copper tubes in a staggered tube pattern. Tubes are expanded into continuous high efficiency aluminum lance type fins. Coil is set in a stainless steel condensate drain pan, with float switch for unit shutdown.
- REFRIGERATION SYSTEM** Single refrigeration circuit, includes a liquid line filter drier, externally equalized expansion valve, and a quick-connect female coupling on both the suction and liquid lines. Each female coupling is provided with an access valve connection. The module is precharged with refrigerant and sealed.
- FAN ASSEMBLY** Centrifugal type, double width, double inlet, with a direct drive 2-speed fan motor mounted to the blower housing and includes lifetime lubricated bearings.
- CONTROLS** Microprocessor based design includes membrane key pad for setpoint and program control, unit on/off, and fan speed mounted in a decorative wall box for remote mounting.
- CABINET AND CHASSIS** Constructed of galvanized steel for strength and corrosion resistance with thermal/acoustical insulation to reduce sound levels and prevent condensation. Removable panels allow access to the electric panel or refrigeration components for service or maintenance. Vibration isolators are provided with the chassis for mounting.
- UNIT DISCONNECT SWITCH** consists of a "non-locking type", non-automatic molded case circuit interrupter mounted inside the unit, with handle accessible outside cabinet.

SMALL SYSTEMS

2-ton and 3-ton MINI-MATE2

DIRECT EXPANSION FAN/COIL MODULE

OPTIONAL FEATURES (Split DX Systems)

ELECTRIC REHEAT Electric low watt density 304 stainless steel fin tubular reheat element provides one stage of reheat to maintain room dry bulb temperature.

SCR ELECTRIC REHEAT includes integral controller and sensor to provide modulating electric reheat.

STEAM GENERATING CANISTER HUMIDIFIER is housed in a steel enclosure and includes a replaceable canister with integral fill cup, fill and drain valves, and high water indicator. System automatically fills and drains as well as maintains the required water level based on conductivity.

HIGH TEMPERATURE SENSOR is mounted in the unit with the sensing element in the return airflow. Upon activation, the high temperature stat will immediately shut down the entire unit.

SMOKE DETECTOR the smoke detector senses the return air, shuts down the unit upon detection, and sends visual and audible alarm. This smoke detector is not intended to function as or replace any room smoke detection system that may be required by local or national codes.

FILTER CLOG SWITCH activates the alarm system when the pressure drop has exceeded the customer-set level.

FREE COOLING is factory piped with a control valve, free cooling coil is constructed of copper tubes and aluminum fins. Coil is designed for closed-loop applications using properly treated and circulated fluid. Refer to installation manual for further guidelines. Not available with SCR reheat option.

SHIP LOOSE OPTIONS

PRECHARGED REFRIGERANT LINE SETS consist of one pre-charged liquid line and one pre-charged insulated suction line of soft copper tubing. Each line is pre-charged with R-407C refrigerant. Each line has one male quick-connect coupling and one female quick-connect coupling with an access valve connection. Line sets are available in 15 ft. (4.6 m) and 30 ft. (9.1 m) lengths for interconnection of remote condensing units. Maximum recommended line-set distance is 45 ft. (13.7 m).

FILTER BOX is constructed of galvanized steel, supplied with a nominal 16" (406mm) x 20" (508 mm) x 4" (102 mm) deep pleated MERV 7 filter (based on ASHRAE 52.2). The box is provided with a 3/4" (19 mm) duct flange. The filter is accessible via a hinged access door, without shutting the unit down. The filter box option also includes a 3/4" (19 mm) discharge air duct collar.

CONDENSATE PUMP has a capacity of 80 GPH (303 l/h) for 230 volt 60 Hz units and 74 GPH (279 l/h) for 208/277 volt 60 Hz units or 56 GPH (212 l/h) for 220 Volt 50 Hz units at 10 ft. (29 kPa) of head. Pump is complete with pump, motor assembly, reservoir, integral float switch, and auxiliary safety float switch to shut unit off in event of pump failure. Pump assembly is designed to mount on the right side of the evaporator (indoor) module, or other suitable means to allow condensate drainage into the reservoir.

REMOTE TEMPERATURE AND HUMIDITY SENSORS include sensors mounted in an attractive case with 30 ft. (9m) of cable.

SWEAT ADAPTER KIT Contains two suction and two liquid compatible fittings that allow field-supplied interconnecting refrigerant lines to be used. See installation, operation and maintenance manual for maximum recommended installed distances.

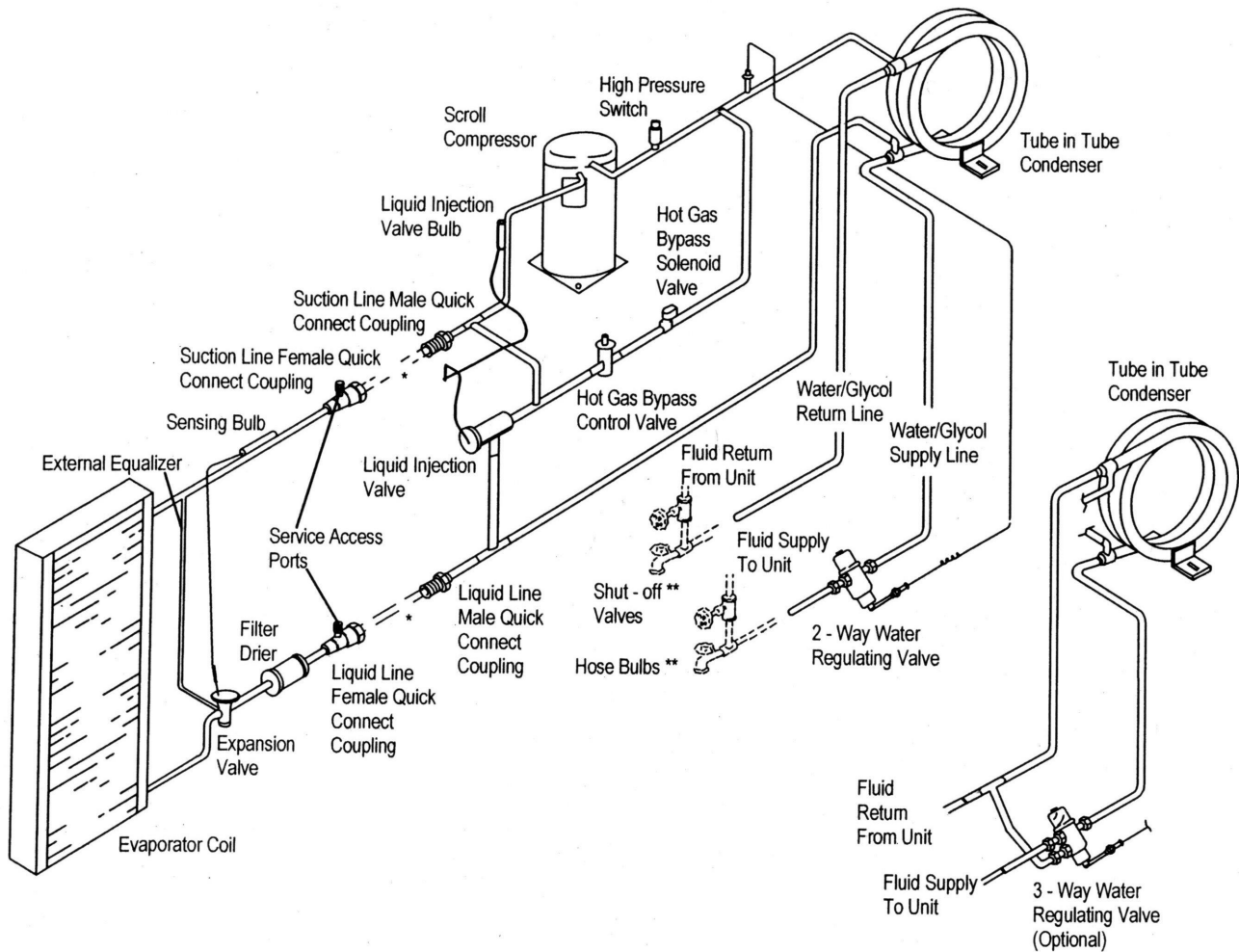
AIR DISTRIBUTION PLENUM Easily installed, self-contained air distribution plenum provides air discharge in three directions.

The plenum is supplied with a nominal 16" (406mm) x 25" (535mm) x 4" (102mm) deep pleated MERV 7 filter (based on ASHRAE standard 52.2).

SINGLE POINT POWER KIT Allows modules to be connected to a single power feed when the evaporator and condenser modules are closed coupled.

OPTIONAL HIGH STATIC BLOWER ASSEMBLY Centrifugal type, double inlet, with a belt drive 1 speed fan motor mounted to an adjustable motor base, and includes ball bearings on both motor and blower. Higher duct static pressures are attainable up to 2.0" (51 mm) ESP down stream from unit.

SMALL SYSTEMS 2 & 3 TON MINI-MATE2 GENERAL ARRANGEMENT DIAGRAM SPLIT SYSTEMS WATER/GLYCOL

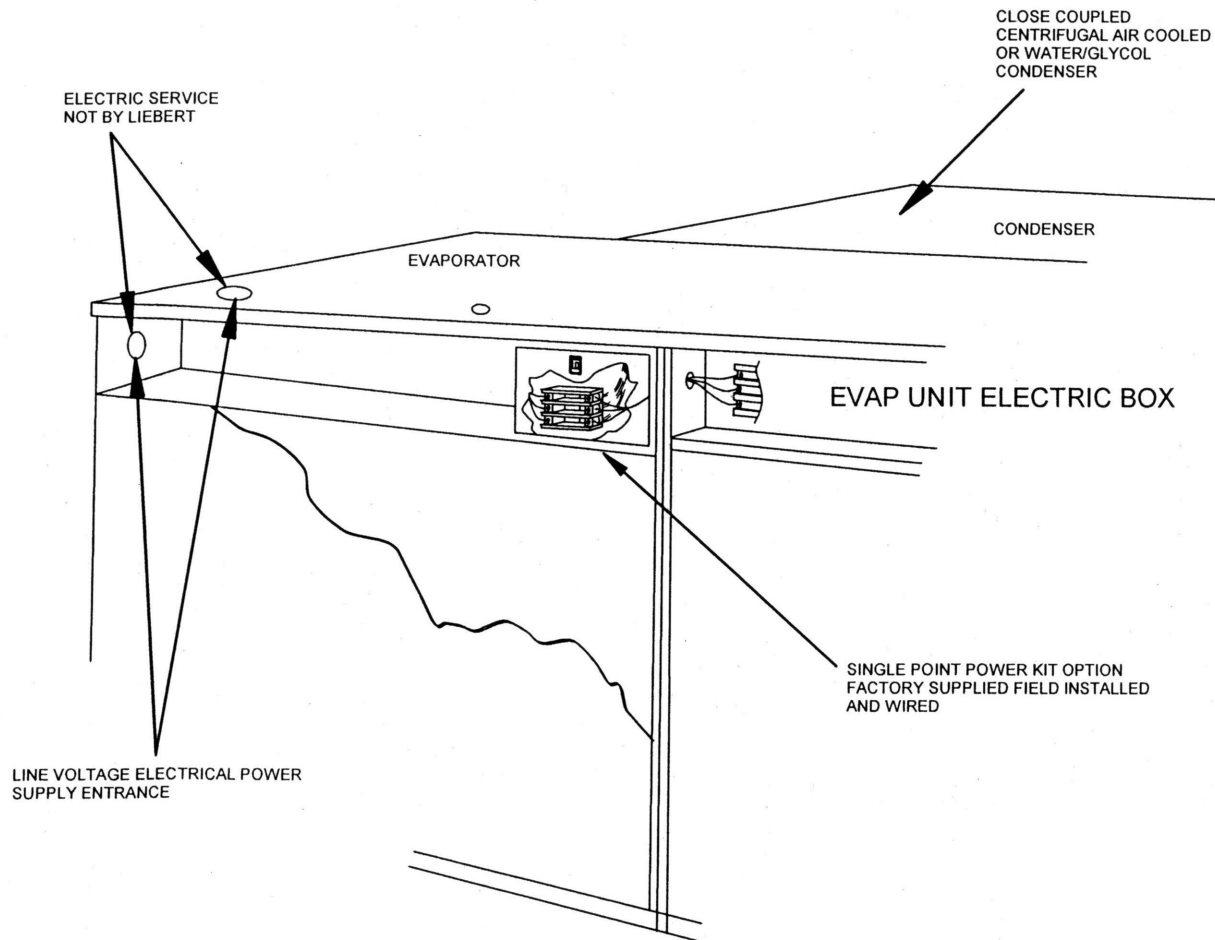


- - - - - FIELD PIPING
 _____ FACTORY PIPING

* Use Liebert sweat adapter kit with field hard piping or use Liebert pre-charged line set. Close-coupling option available with MCD.

** Components are not supplied by Liebert but are recommended for proper circuit operation and maintenance.

SMALL SYSTEMS MINI-MATE2 SINGLE POINT POWER KIT



(OPTIONAL FIELD INSTALLED)
SINGLE POINT POWER KIT

NOTE: Single Point Power Kit should be mounted inside the evaporator before installing the unit in the ceiling.

SMALL SYSTEMS CENTRIFUGAL INDOOR AIR COOLED CONDENSING MODULE 2 & 3 TON MINI-MATE2

STANDARD FEATURES

- COMPRESSOR** The condensing unit shall have a compliant scroll compressor with a suction gas cooled motor, vibration isolators, thermal overloads, internal centrifugal oil pump for forced feed lubrication, a maximum operating speed of 3500 RPM @ 60 HZ (2900 @ 50 HZ) and a minimum EER of 11.2.
- CONDENSER COIL** Constructed of copper tubes in a staggered tube pattern. Tubes are expanded into continuous, high efficiency aluminum plate type fins.
- REFRIGERATION SYSTEM** Single refrigeration circuit, includes a high pressure switch, and suction and liquid line quick connect male couplings. The module is precharged with refrigerant and sealed.
- HOT GAS BYPASS** Factory piped hot gas solenoid valve and pressure regulating valve work in conjunction with a thermostatic liquid injection valve. This system allows operation down to zero load on the evaporating (indoor) module.
- HEAD PRESSURE CONTROL** A Liebert Lee-Temp control system is furnished and consists of an insulated heated refrigerant receiver with sightglass, pressure relief valve, pressure balancing valve, check valve, and head pressure operated 3-way valve. This system allows operation at ambient conditions as low as -30° F (-34° C).
- FAN ASSEMBLY** Centrifugal type, double width, double inlet, with a direct drive fan motor mounted to the blower housing, and includes lifetime lubricated bearings.
- CABINET AND CHASSIS** Constructed of galvanized steel for strength and corrosion resistance with ½" (12.7mm) 1½ lb. (.68kg) thermal insulation to minimize heat loss and prevent condensation. Removable panels allow access to the electric panel, to the compressor, and to the condenser blower. Vibration isolators are provided with the chassis for mounting.
- UNIT DISCONNECT SWITCH** consist of a "non-locking type", non-automatic molded case circuit interrupter mounted inside the unit, with handle accessible from outside the cabinet.

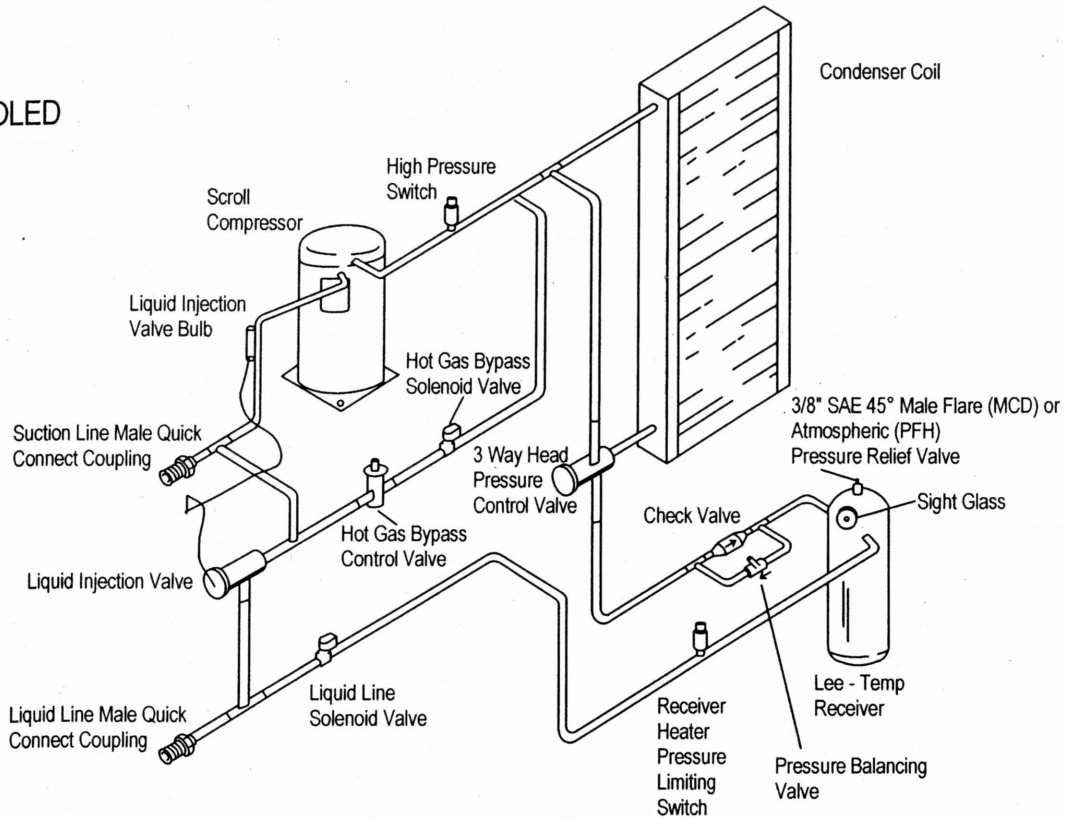
SMALL SYSTEMS WATER/GLYCOL COOLED CONDENSING MODULE 2 & 3 TON MINI-MATE2

STANDARD FEATURES

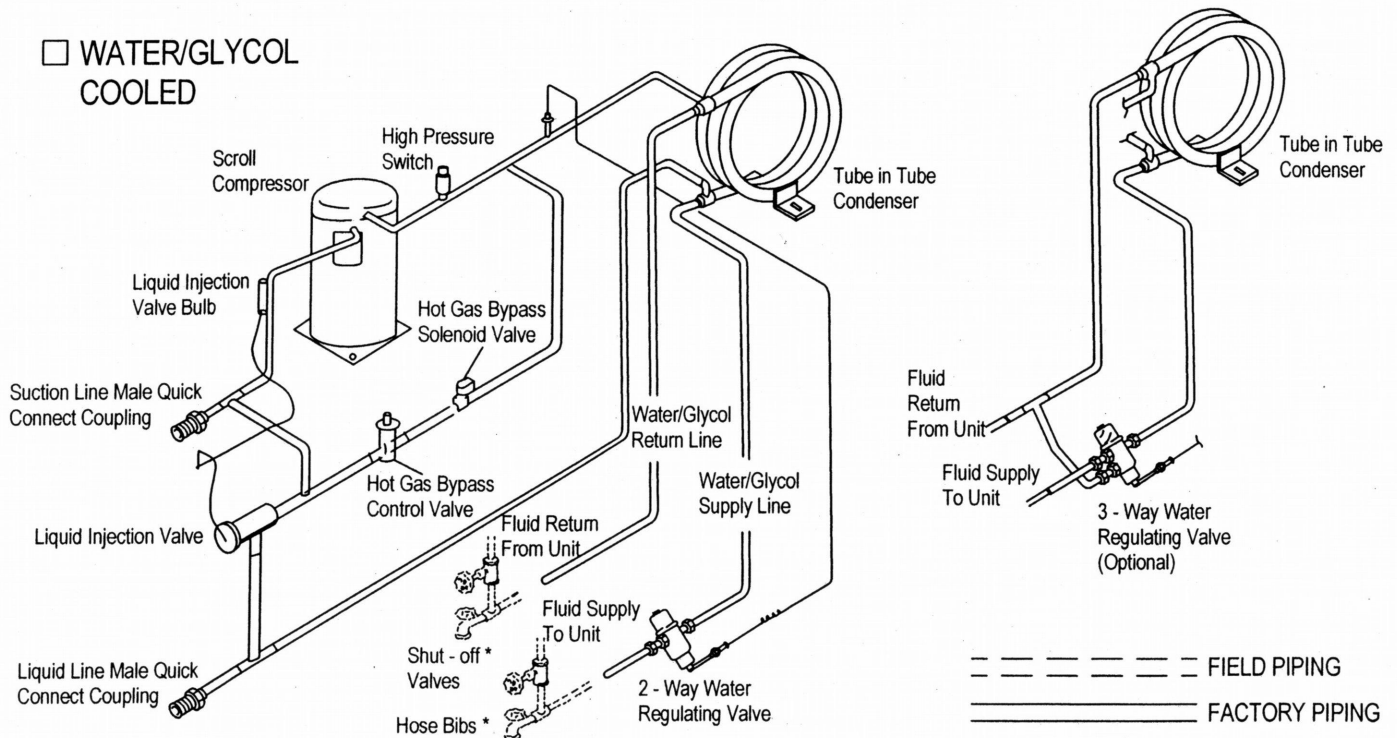
- COMPRESSOR** The condensing unit shall have a compliant scroll compressor with a suction gas cooled motor, vibration isolators, thermal overloads, internal centrifugal oil pump for forced feed lubrication, a maximum operating speed of 3500 RPM @ 60 HZ (2900 @ 50 HZ) and a minimum EER of 11.2.
- REFRIGERATION SYSTEM** Single refrigeration circuit, includes a high pressure switch, and suction and liquid line quick connect male couplings. The module is precharged with refrigerant and sealed.
- HOT GAS BYPASS** Factory piped hot gas solenoid valve and pressure regulating valve work in conjunction with a thermostatic liquid injection valve. This system allows operation down to zero load on the evaporating (indoor) module.
- CABINET AND CHASSIS** Constructed of galvanized steel for strength and corrosion resistance with ½" (12.7mm) 1½ lb. (.68kg) thermal/acoustical insulation to minimize heat loss and prevent condensation. Removable panels allow access to the electric panel, to the compressor, and to the water/glycol cooled condenser. Vibration isolators are provided with the chassis for mounting.
- WATER/GLYCOL MODELS** Water Cooled Condenser is a tube in tube coaxial counter-flow condenser, constructed of copper primary and secondary tubes and painted with black polyurethane paint. Accurate condensing temperatures for various entering water/glycol flow rates and temperatures is maintained by pressure operated 2-way (or optional 3-way) water regulating valve. The circuit is designed for a maximum system water/glycol pressure of 150 PSIG (1304 kPa), 350 PSIG (2413 kPa) optional.
- UNIT DISCONNECT SWITCH** consist of a "non-locking type", non-automatic molded case circuit interrupter mounted inside the unit, with handle accessible from outside the cabinet.

SMALL SYSTEMS 2 & 3 TON MINI-MATE2 GENERAL PIPING ARRANGEMENT SPLIT SYSTEMS CONDENSING MODULES

☐ AIR COOLED

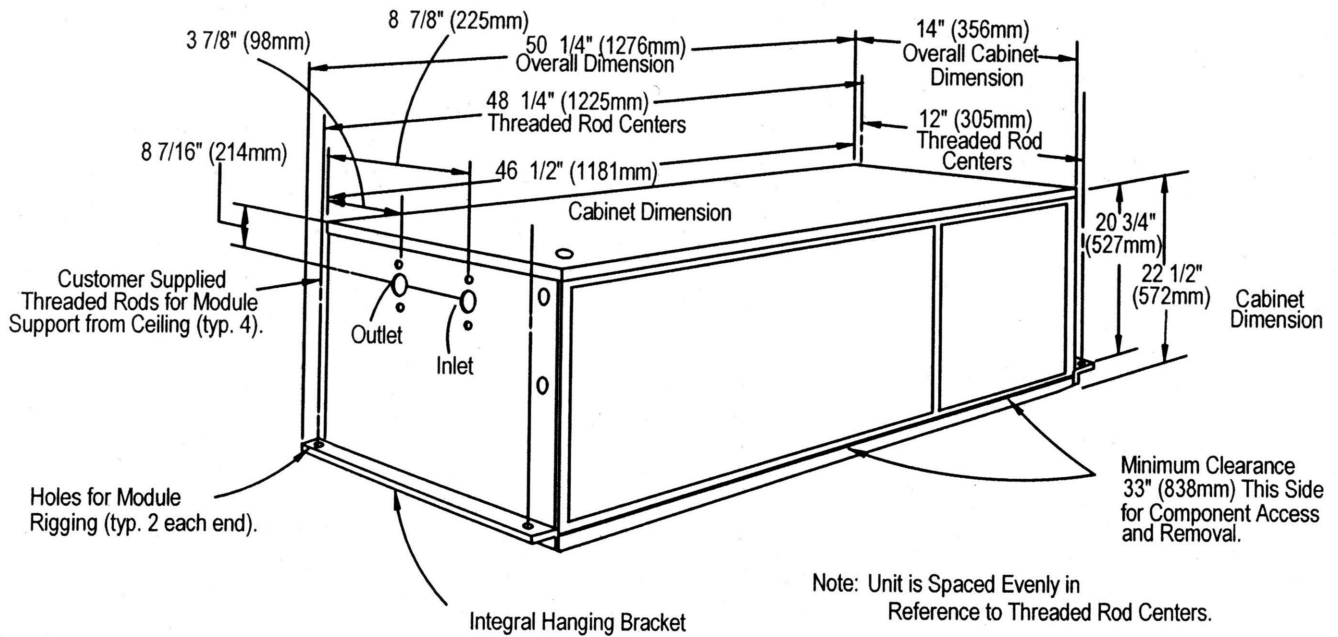


☐ WATER/GLYCOL
COOLED



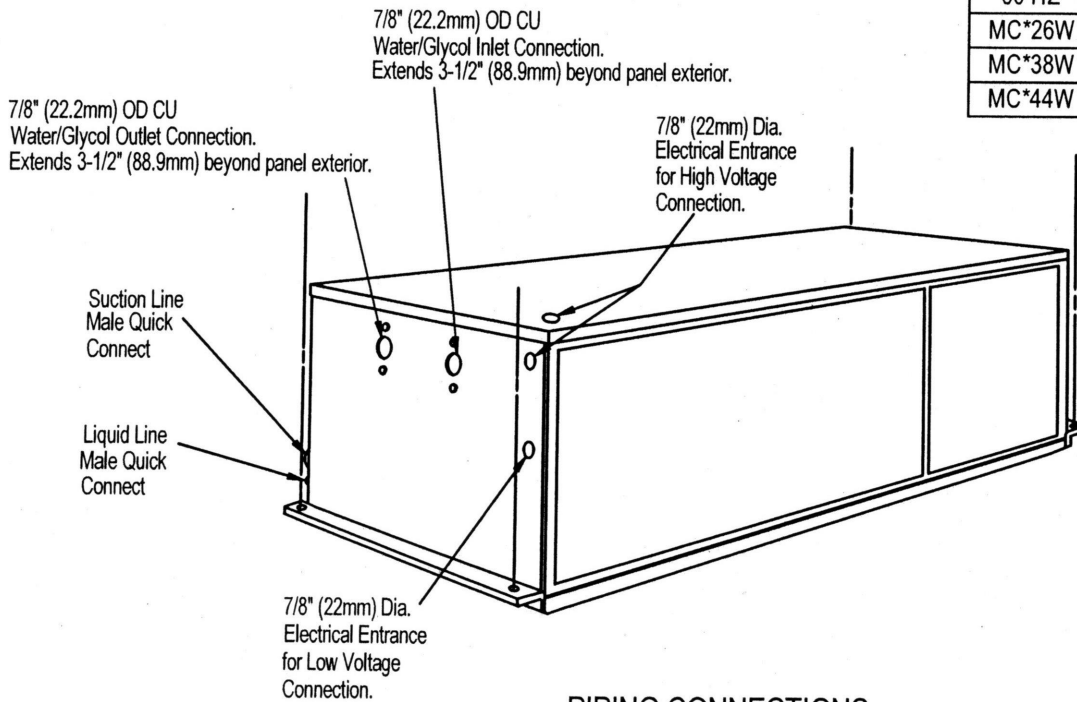
* Components are not supplied by Liebert
but are recommended for proper circuit
operation and maintenance.

SMALL SYSTEMS INDOOR CONDENSING MODULE CABINET & PIPING DATA 2 & 3 TON WATER/GLYCOL MINI-MATE2



DIMENSIONAL DATA

UNIT NET WEIGHT			
MODEL #		LBS	(KG)
60 HZ	50 HZ		
MC*26W	MC*25W	175	(79)
MC*38W	MC*37W	220	(100)
MC*44W	MC*43W	220	(100)



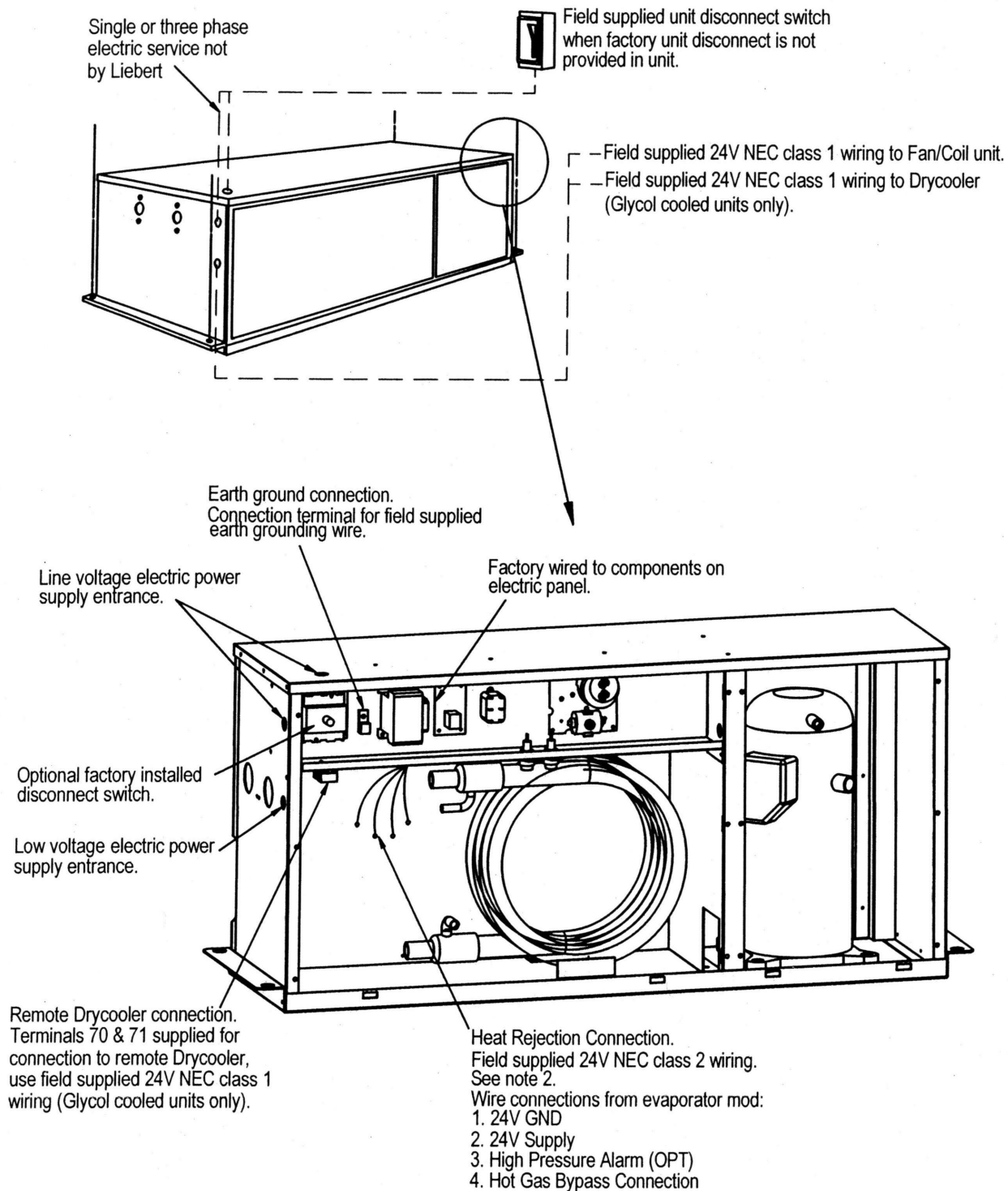
PIPING CONNECTIONS

SMALL SYSTEMS

INDOOR CONDENSING MODULE

ELECTRICAL FIELD CONNECTIONS

2 & 3 TON WATER/GLYCOL COOLED MINI-MATE2



NOTES:

1. Refer to specification sheet for full load amp and wire size amp ratings.
2. Control voltage wiring must be a minimum of 16GA (1.3mm) for up to 75' (23m) or not to exceed 1 volt drop in control line.



CITY OF PORTLAND, OREGON – BUREAU OF DEVELOPMENT SERVICES

1900 SW Fourth Avenue, Suite 5000 • Portland, Oregon 97201 • www.portlandonline.com/bds



FPP STRUCTURAL CHECKSHEET

Facility Permit

Application # : 12-127436-DFS-01-FA

Review Date : May 1, 2012

To:	APPLICANT	KEVIN BUTZ DETEMPLE CO 1951 NW OVERTON ST PORTLAND, OR 97210	Work:	503-227-2641
			Phone:	503-274-7686
			e-Mail:	k.butz@detemple.com
From:	STRUCTURAL ENGINEER	ERIC THOMAS	Phone:	503-823-7653
cc:	OWNER	TWO HUNDRED MARKET ASSOC & LIMITED PARTNERSHIP 200 SW MARKET ST #1720 PORTLAND, OR 97201	RECEIVED MAR 16 2012	

PROJECT INFORMATION

FACILITIES PERMIT

Street Address: 200 SW MARKET ST

Description of Work: B2/ F7/ 3RD FLOOR HAWKINS, DELAFIELD & WOOD DFS-01 FOR LATERAL SUPPORTS FOR 1 LIEBERT COOLING UNIT & DUCT MODIFICATIONS

Based on the plans and specifications submitted, the following items appear to be missing or not in conformance with the Oregon Structural Specialty Code and / or other city, state, or federal requirements.

Item #	Location on plans	Code Section	Clarification / Correction Required
1.			Provide a stamped detail that clearly identifies the supporting frame, bracing, and related details. MBE Response: Please see the attached partial plan A and detail S1 showing the installation.
2.			The anchors that are used to support and brace the equipment are required to have a current ICC evaluation report. Please incorporate this when responding to item #1. MBE Response: New ICC-listed anchors will be installed in place of unlisted anchors, and the units will be re-supported from these new anchors. Please refer to detail S1.

INSTRUCTIONS

To respond to this checksheet, come to Permitting Services (located at 1900 SW Fourth Ave., 2nd Floor, hours 8:00 a.m. - 3:00 p.m. Tuesday through Friday) and update all four sets of the originally submitted drawings. To update the drawings, you may either replace the original sheets with new sheets, or edit the originally submitted sheets. (Specific instructions for updating plans are posted in Document Services.)

Please complete the attached Checksheet Response Form and include it with your re-submittal.

If you have specific questions concerning this Checksheet, please call me at the phone number listed above. To check the status of your project, go to <http://www.portlandonline.com/bds/index.cfm?c=34194>. Or, you may request the status to be faxed to you by calling 503-823-7000 and selecting option 4.