Plant Growth Room
MCG Walk In Room

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MCG Walk In Room

Product Overview/Applications

The MCG series of walk-in chambers provides an outstanding growth area-to-footprint ratio. Upward airflow is delivered using Meditech's Uni-floor system allowing plants to be distributed throughout the entire floor area. These chambers are typically used for both short and tall plant applications requiring moderate to high level light intensities. Multiple lamp canopies enable researchers to vary the distance from the light sources to research specimens. Temperature uniformity is assured via an upward airflow pattern.

Lighting

The standard lighting package for the MCG series is a moderate level light intensity which incorporates both fluorescent and incandescent lamps. This helps to ensure a broad based light spectrum that is ideally suited for plant growth. Multiple lighting levels are provided with the ability to program lamp groups separately. Manually adjustable Light right canopies enable the researcher to easily raise and lower the lamps to the desired height. Higher light intensities area available on this model.

Airflow

Uniform airflow is introduced to the growth area through Meditech's patented Uni-floor which produces a precise volume of air, directed upward through the plant material. Filtered and adjustable fresh air intake and exhaust openings enable researchers to exchange air to the chamber in a controlled manner.

Refrigeration

Cooling for the MCG series is provided by a self contained water-cooled condensing unit with hot gas bypass for continuous compressor operation. An electronic modulating valve provides tight temperature control while ensuring quiet operation. Pressure transducers are included for monitoring the status of the refrigeration system. Alternative refrigeration methods are available depending on site-specific and/or user defined requirements. Consult the factory for heat rejection information and other refrigeration options.

Experiment Protection

User programmable "set and forget" alarms track the chamber's operation versus user-defined set points. This allows for exceptionally accurate monitoring without the need for adjustment every time the set point is redefined. Backup "high/ low" alarms provide a further level of protection while visual and audible notification is provided when any alarm is activated. Contacts for connection to a building management system are also included.

Key Product Attributes

- Multiple lamp canopies for varying plant maturity levels
- Efficient growth area-to-footprint ratio
- Light right for enhanced flexibility of light intensity
- Product certifications/markings; CE

Performance Data

	Temperature Range (°C)	Interior Capacity	Growth Area	Growth Height	Exterior Dimensions (WxDxH)	Light Intensities (6in. from lamp)	Electrical Service	Weight
MCG72	5°C to +40°C Lights Off	480 ft³	72 ft²	80"	9'8" x 12'6.5" x 9'6.25"	755 µmoles/m2/s	120-1Ø-60Hz	4860lb.
	10°C to +45°C Lights On	13600 L	6.7 m²	2030 mm	2950 x 3825 x 2900 (mm)	@ 25ºC	220-1Ø-50Hz	(2205kg)
MCG108	5°C to +40°C Lights Off	720 ft³	108ft2	95"	9'8" x 17'4" x 9'6.25"	755 µmoles/m2/s	120-1Ø-60Hz	5640lb
	10°C to +45°C Lights On	(20300l)	(10m2)	2415 mm	2950 x 5285 x 2900 (mm)	@ 25ºC	220-1Ø-50Hz	(2558kg)

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1.0 Control System: 7” Meditech touch screen controller

MCG72

2.0 Construction:(Note: All dimensions are nominal.)

2.1 Exterior Dimensions:	9’8”W x 12’6.5”D x 9’6.25”H (2950mmW x 3825mmD x 2900mmH) (Note: Allow a minimum 36” (915mm) above cabinet for condensing unit) 2.1.1 In new buildings a concrete pit can be poured thereby reducing the exterior height of the room by 12” (300mm). 2.1.2 In existing buildings the growth room will be 12” (300mm) above the existing floor.
2.2 Interior Dimensions:	Conditioned area: 8’10.5”W x 9’1”D x 6’8”H (2705mmW x 2770mmD x 2030mmH). Machine compartment at back of room: 9’0”W x 2’8”D (2745mmW x 815mmD)
2.3 Floor:	Perforated aluminum channel floor for uniform upward air flow – Uni-floor.
2.4 Subfloor:	Stainless steel panel construction with floor drain.
2.5 Growth Area:	72 ft² (6.7m²).
2.6 Growth Capacity:	480ft³ (13,600 liters).
2.7 Growth Height:	80” (2030mm) from Uni-floor to Light right in the UP position.
2.8 Exterior Finish:	White enamel baked on stucco 26ga. galvanized steel.
2.9 Interior Finish:	White enamel baked on smooth 24ga. galvanized steel .
2.10 Control Panel:	Left hand (right hand model optional).
2.11 Cabinet Construction:	Wall panels of bonded paneling construction with 4” (100mm) of foamed-in-place CFC free polyurethane insulation.
2.12 Assembly:	All panels assembled from interior with cam lock fasteners.
2.13 Door:	One (1) in-fitting 34” x 78” (865mm x 1980mm) door with inside safety release latch and cam-type self-closing hinges provides access to growth area. Door has positive closer device, thermal plastic gasket with magnetic core, and door stop.
2.14 Observation Window:	Dual pane with light tight cover 14”x 14” (355mm x 355mm).
2.15 Machine Compartment:	Separated from conditioned area by an insulated aluminum partition wall complete with two access doors located on interior partition wall for equipment maintenance.
2.16 Convenience Receptacle:	Two receptacles located in each lamp canopy.

3.0 Lighting:

3.1 Intensity1:	Approximately 755 micromoles/m²/s using two (2) 52” x 96” (1320mm x 2440mm) fluorescent / incandescent lamp banks. Each lamp bank is independently counterbalanced and adjustable Light right from 18” (460mm) to 80” (2030mm) from the floor. (Higher light intensities are optional)
3.2 Programming and Control:	Independent, 4 level programming of each lamp type.
3.3 Lamps:	Balanced spectrum for plant growth using T8 fluorescent (T5 - Export) and tungsten incandescent lamps.
3.4 Lamp Heat:	Removed by the refrigeration system.
3.5 Ballasts:	High efficiency electronic and easily accessible.
3.6 Light Meter:	Quantum light meter for display and recording of light output.

4.0 Temperature Control: (Maximum design ambient temperature is +35°C)

4.1 Range: +10°C to +40°C with lights ON; +4°C to +40°C lights OFF.

4.2 Control2: ±0.5°C, at control point.

1 Average light measurement at 39” (1000mm) from lamp barrier on a 6-inch grid, ambient temperature of 25°C. Light intensities are nominal values measured at the rated chamber supply voltage.

2 Measured by Precision Thermistors, measured without test materials or optional accessories.

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4.3 Temperature Safety Limits:

Primary: A programmable min and max temperature limit alarm or a limit tracking alarm that automatically follows the programmed set point.

Secondary: An independent factory-set high and low temperature limit is also provided for increased assurance.

An audible alarm is standard for both limits. Activation of temperature safety limit set points turns off power to the chamber.

4.4 All components utilized for temperature control such as heaters and proportional valve are energized and de-energized by solid state devices. No electro-mechanical relays or contactors.

4.5 Air Sensor: This vertically adjustable sensing device located in the growth area directs a continuous sample of chamber air over the remote sensors for accurate control and recording, unaffected by lamp radiation.

5.0 Refrigeration:

5.1 Condensing Unit: Cabinet is supplied with a water-cooled hermetically sealed condensing unit with hot gas bypass system for continuous compressor operation, extended compressor life and close temperature control. Condensing unit is located in the machine compartment, and includes a 3-way water modulating valve and hand operated shut off bypass valve. Maximum pressure drop across the condenser and water valve not to exceed 10pis (0.7 bar).

5.2 Valve: Electronic modulating valve that smoothly regulates the heating and cooling functions of the chamber.

5.3 Heat Exchanger Coil(s): Copper-tubed construction/aluminum fin.

5.4 Refrigerant: Refrigeration system is charged with CFC-free refrigerant.

5.5 Monitoring: a) Refrigeration system operation is monitored by the control system, including visual and audible alarm.

b) Pressure transducers allow for real-time diagnostics for preventative maintenance & repair.

6.0 Interior Conditioning Compartment:

6.1 A conditioning compartment is located at the back of room. This compartment contains the motors, fans, valves and the evaporator coil. Air is discharged from this compartment below the floor level, rises up through the Uni-floor, past the plant material and through the lights and is returned to the conditioning compartment.

6.2 Fresh Air: Manually adjustable fresh air supply up to 100ft³/min (2.83m³/min) is filtered and conditioned prior to entering the growth area.

7.0 Humidity Control:(Optional)

7.1 Range: No control on basic unit. (Refer to Humidity under Optional Accessories)

8.0 Carbon Dioxide Additive Control: (Optional)

8.1 Range: No control on basic unit. (Refer to Carbon Dioxide Additive Control under Optional Accessories)

9.0 Utility Requirements3: (Rating increases with some options.)

9.1 Electrical Service: : 60Hz: 50Hz

(Alternative services available, consult factory)

1. Control Panel: 120/208-3Ø-60Hz-4 wire, plus ground
2. Condensing Unit: 208-230-3Ø-60Hz-3 wire, plus ground separate service
1. Control Panel: & Condensing Unit: 220/380-3Ø-50Hz-4 wire, plus ground

9.2 Drain: Floor drain must be provided within footprint of room.

10.0 Installation: (Optional)

10.1 Not Included, to be performed by customer. Installation is available upon request, please consult factory.

10.2 Should installation or technical support be required thorough Meditech Technical Service group, additional charges may apply.

PROGRAMMING	Can be modified according to customers requirements	
UPS	Uninterrupted Power Supply	Surge protection and uninterrupted power supply, on controller only, for continuous operation of the controller during power interruptions, duration of the UPS is approx. 15 minutes. (Consult factory for increased duration, if required.)
LIGHTING		
HID4	High Intensity Discharge Lighting	High intensity discharge lighting using metal halide and high pressure sodium lamps in two independent canopies with a light intensity of 1200 micromoles/m²/s at a distance of 1 meter from the barrier. System utilizes our Light right counterbalanced lamp canopy with lamps separated from growth area by a barrier with openings to allow chamber air to cool the lamps. Upon start-up, lamps experience a 5 to 10 minute warm-up period before full light intensity is achieved. Note: HID canopy reduces growth height by 9.5" (240mm). Amp draw changes, please consult factory. Please contact the factory for other lighting options.
HUMIDITY (Based on +21°C and 50% RH ambient condition)		
DHS	Dry Humidity Sensor	Dry Electronic Sensor that directly measures and displays relative humidity in %RH by means of constant display on the Screen. (Not required if ordering additive humidity control option.)
SNH	Spray Nozzle Humidification	**Range**: Up to 90% RH lights OFF and 85% RH lights ON, limited by a +25°C maximum dew point. Additive humidity through use of spray nozzles. Range given in an empty chamber. Chamber may achieve higher levels with plant loading. **Programming**: See Control System documentation. Control: ±3% RH. System uses a dry humidity sensor to directly measure humidity in %RH (no wet sock). Spray nozzles require a 60 psi (4.2 bar) pressure and must be supplied with clean water to the following specification; pH = 7.0 ± 0.5, filtration <2 microns (0.00008 in) and resistivity between 0.5 and 1.0 Meg Ohms. Maximum water usage to maintain specified levels is 8 liters/hr. If the above water pressure is not available the CPSNH option is required to supply necessary pressure. **Note**: When ordered with units requiring temperatures below 4°C, humidity system is provided with a low pressure air clean out system. Low pressure air must be supplied to cabinet (35 psi).
CPSNH	Compact Pump Spray Nozzle Humidification	Compact pump and reservoir for spray nozzles. Order this option with SNH if the minimum 60 psi (4.2 bar) water pressure is not available. Supplies pressurized water for up to 12 nozzles

RES	Reservoir	Pressure reservoir at downstream chambers. Must be ordered for all downstream chambers fed from CPSNH.
DEH	Dehumidification by Refrigeration	Please contact factory with requirements.
CARBON DIOXIDE ADDITIVE CONTROL		
CO2	Carbon Dioxide Additive Control	Package includes gas analyzer, CO2 regulator, control valve, and injection system. CO2 tank included.
CONSTRUCTION		
GH92	Growth Height Extension	Extends growth height by an additional 12" (300mm). Exterior height becomes 10'6.25" (3210mm), not including condensing unit.
RHC	Right-Hand Control Panel	Right-hand control compartment gives you the convenience and flexibility to arrange your chambers in a compact orderly fashion, back to back and end to end, or to facilitate its location in any appropriate space.
EMCA	Exterior Machine Compartment Access	If space is available, access to the machine compartment can be gained by an exterior door located outside the growth area.
CBS	Bench Shelving	Free-standing, adjustable corrosion resistant wire benching.
GA	Additional Cabinet Sealing	Construction for gas injection experiments. Consists of silicone sealed joints, laboratory type inlet, exhaust valve, and oil-filled manometer. (Does not provide a "gas tight" environment.)
HB	Hose Bib	Interior hose connection for watering within growth area.
RECP	Receptacle	Wall mounted 2 amp convenience electrical receptacle within growth area (consult factory for additional amperage, if required).
ER	Entrance Ramp	Entrance ramp to ease access to growth area.
MAN	Manual	Additional Operator's Manual. (One supplied with basic unit.)

Carbon Dioxide Additive Control

RAC	Remote Outdoor Air-Cooled Condenser	Remote outdoor air-cooled condenser complete with all weather housing, low ambient operation controls and low noise level operation. Remote location (up to 50' [15m] combined horizontal and vertical distance) of condenser only - compressor, receiver and other refrigeration components remain in cabinet machine compartment. Order "RACH" for climates with ambient temperatures from +35°C to +45°C for extended periods. Electrical: 60Hz - 208-230-1Ø-60Hz-3 wire plus ground, 50Hz - 220-1Ø-50Hz-2 wire plus ground. Consult factory for either amperages or other voltages available. Notes: 1. Inter-connecting refrigeration and electrical lines are not included and must be provided by others. 2. RAC and RACH require a separate electrical service. 3. For remote location distances over 50' (15m) please consult factory.
OACU	Outdoor Air-Cooled Condensing Unit	Outdoor air-cooled condensing unit containing condenser, compressor, receiver, suction accumulator, control and pressure regulating valves and electrical disconnect. The OACU comes complete with weatherized hood and crankcase heater for low ambient conditions. Inter-connecting refrigeration and electrical lines are not included and must be provided by others. OACU requires a separate electrical service. Electrical: 60Hz - 208-3Ø 60Hz-3wire plus ground, 50Hz - 400-3Ø-50Hz-3wire plus ground. Consult factory for either amperages or other voltages available.
GLY	Glycol	Glycol heating/cooling designed to work with a central chiller refrigeration system. Includes proportional valve control.
FMU	Floor Mounted	Where ceiling space above cabinet does not allow roof top location, unit is placed on floor adjacent to cabinet. All refrigeration and electrical interconnecting piping and wiring is supplied, providing condensing unit is no more than 5'(1525mm) from cabinet.
ESSENTIAL SPARE PARTS		
ESP	Essential Spare Parts	Consult factory.
SLS	Spare Lighting Set	Consult factory.

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FOLLOWING ARE THE DIFFERENCES BETWEEN THE "MCG SERIES" CHAMBERS

MCG108

2.1 Exterior Dimensions:	9'8"W x 17'4"D x 9'6.25"H (2950mmW x 5285mmD x 2900mmH)
2.2 Interior Dimensions	Conditioned area: 8'10.5"W x 13'6.5"D x 6'8H (2705mmW x 4130mmD x 2030mmH). Machine compartment at back of room: 9'0"W x 3'0"D (2745mmW x 915mmD).
2.5 Growth Area:	108 ft^2 (10.0m^2).
2.6 Growth Volume:	720ft^3 (20,300 liters).
3.1 Intensity:	Approximately 755 micromoles/m^2/s using three (3) 52" x 96" (1320mm x 2440mm) fluorescent/incandescent 'Light right' lamp banks. Each lamp bank is independently counterbalanced and adjustable from 18" (460mm) to 80" (2030mm) from the floor.

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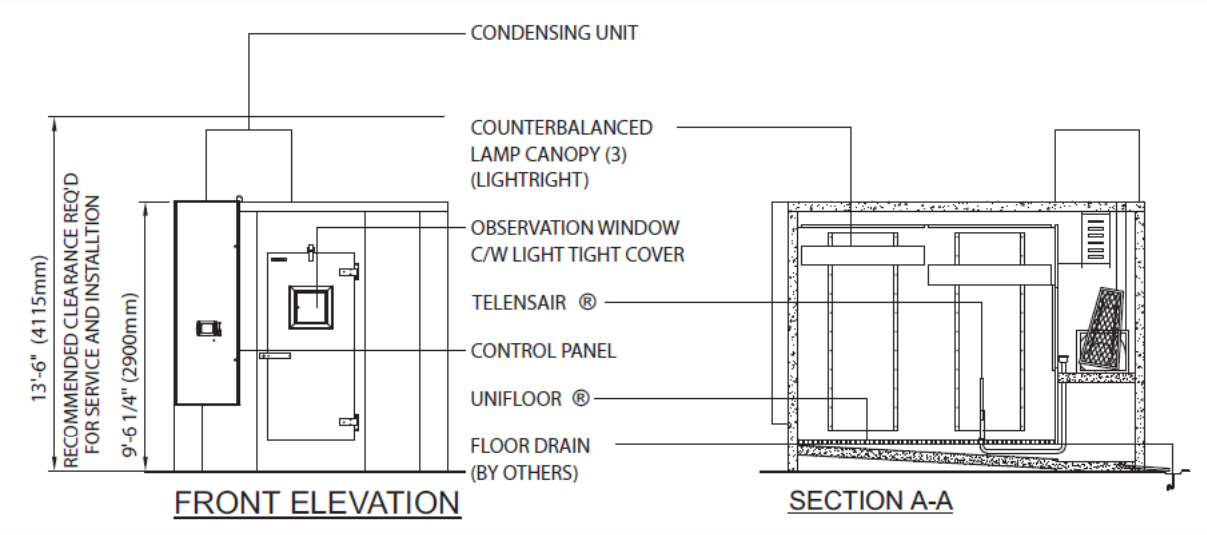
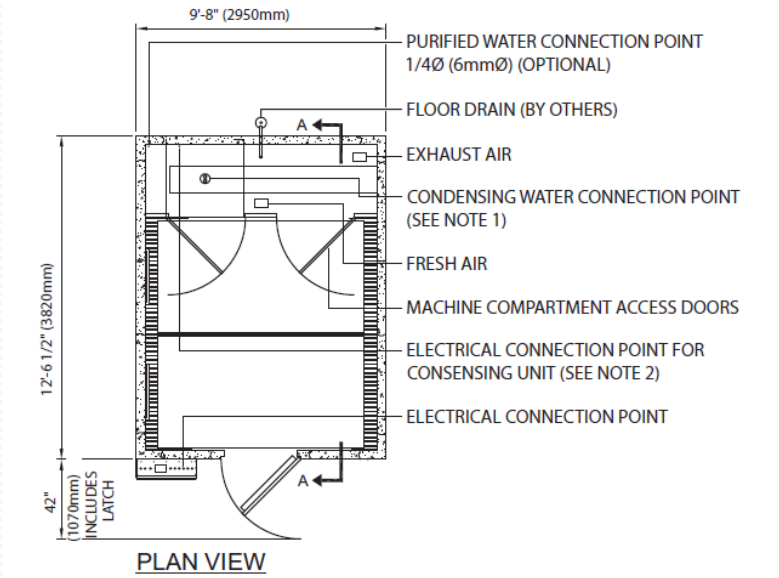
CG72 PLANT GROWTH CHAMBER

NOTES:

1. STANDARD REFRIGERATION SYSTEM IS WATER COOLED (1"Ø (25mmØ) CONNECTION).
2. CONDENSING UNIT REQUIRES SEPERATE ELECTRICAL SERVICE (60HZ APPLICATION ONLY).
3. DEPTH DIMENSION IS CHAMBER SIZE ONLY. DIMENSION DOES NOT INCLUDE DOOR LATCH.
4. LENGTH AND WIDTH DIMENSIONS ±1/4 (6mm). HEIGHT DIMENSION ±1" (25mm).





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CG108 PLANT GROWTH CHAMBER

NOTES:
1. STANDARD REFRIGERATION SYSTEM IS WATER COOLED (1"Ø (25mmØ) CONNECTION).
2. CONDENSING UNIT REQUIRES SEPERATE ELECTRICAL SERVICE (60HZ APPLICATION ONLY).
3. DEPTH DIMENSION IS CHAMBER SIZE ONLY. DIMENSION DOES NOT INCLUDE DOOR LATCH.
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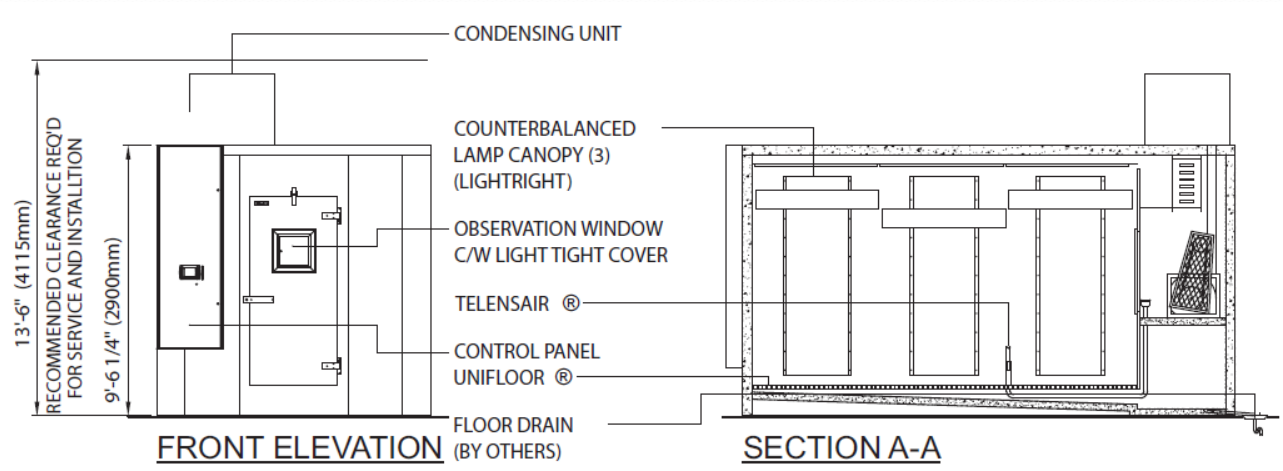

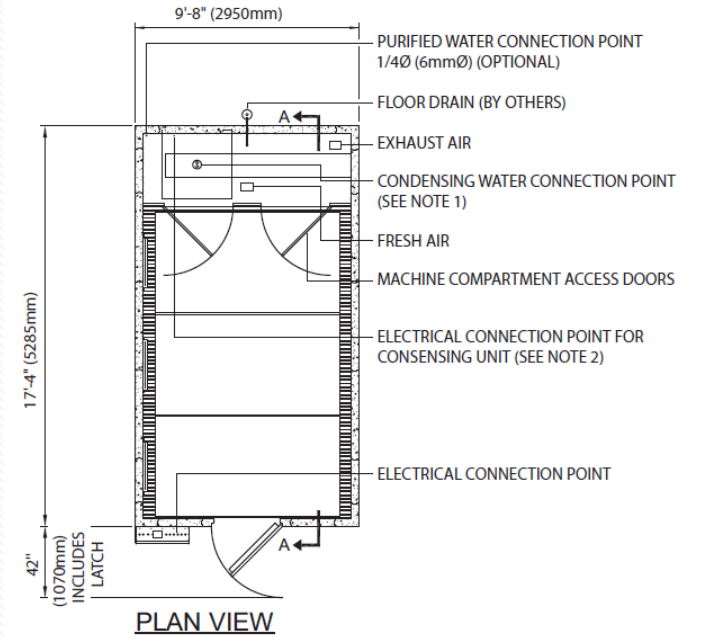

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