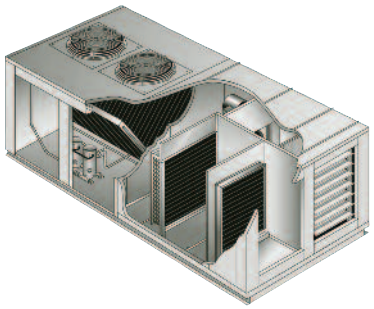
MOACS Products

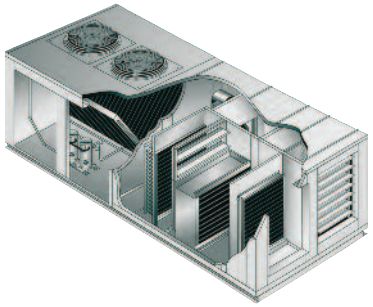
MODULAR OUTSIDE AIR CONDITIONING SYSTEMS

A Complete Family of Standard Models for Heat Recovery & Humidity Control

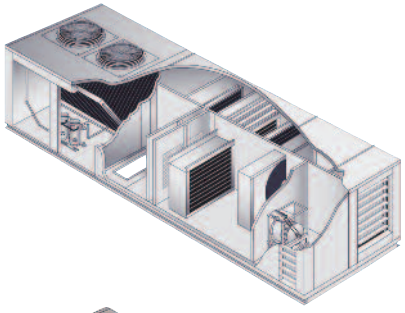
MOACS Models 1,000 – 10,000 SCFM



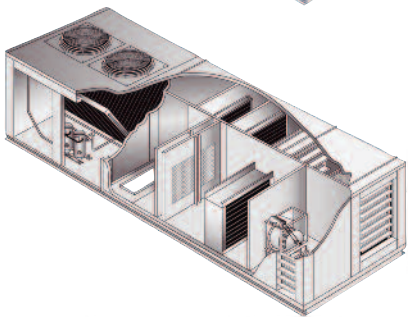
MODEL MBB
MODULAR OUTSIDE AIR CONDITIONER



MODEL MWB
MODULAR WRINGER®



MODELS MBS/MBT
MODULAR HEAT RECOVERY



MODELS MWS/MWT
MODULAR WRINGER® PLUS

Munters

INTRODUCTION

The Modular Outside Air Conditioning System (MOACS) is a family of six pre-engineered models for heat recovery and humidity control. These modular-type packaged units range from 1,000 through 10,000 SCFM, and are suited for all climates, applications, and budgets. Each of the six models offers the flexibility of several module configurations with options. Modules and options include: fans; heat pipe heat exchangers; rotary heat exchangers (wheels); DX or chilled water coil sections; anti-microbial filters with 30% or 90% efficiency rating; integral or remote condensing units; gas, electric, hot gas, or hydronic heating modules; and utility modules for field-installed components. The condensing section, which can be ordered integral to the units, features an 11.0 EER and mix-matched multiple compressors to ensure optimum capacity control without the need for energy-wasting hot-gas bypass. All units are equipped with a programmable microprocessor-based digital controller.

HUMIDITY CONTROL

MODULAR OUTSIDE AIR CONDITIONER

Basic air conditioning

Model MBB consists of dehumidifying cooling coils, along with heating, cooling, refrigeration, and filtration options.

MODULAR WRINGER

Humidity control with free precool and reheat

Model MWB utilizes a heat pipe heat exchanger for free precooling and reheat, along with heating, cooling, refrigeration, and filtration options.

HEAT RECOVERY

MODULAR SENSIBLE HEAT RECOVERY

Sensible heat recovery

Model MBS utilizes a heat pipe heat exchanger for sensible heat recovery, along with heating, cooling, refrigeration, and filtration options.

MODULAR TOTAL HEAT RECOVERY

Sensible and latent heat recovery

Model MBT utilizes a rotary heat exchanger for total (sensible and latent) heat recovery, along with heating, cooling, refrigeration, and filtration options.

HUMIDITY CONTROL PLUS HEAT RECOVERY

MODULAR SENSIBLE WRINGER PLUS

Humidity control plus sensible heat recovery

Model MWS consists of two heat pipe heat exchangers, along with heating, cooling, refrigeration, and filtration options. In summer, one heat pipe heat exchanger provides free sensible precooling, and the other heat pipe provides reheat by recovering energy from the exhaust air. In winter, both heat pipes provide sensible heat recovery.

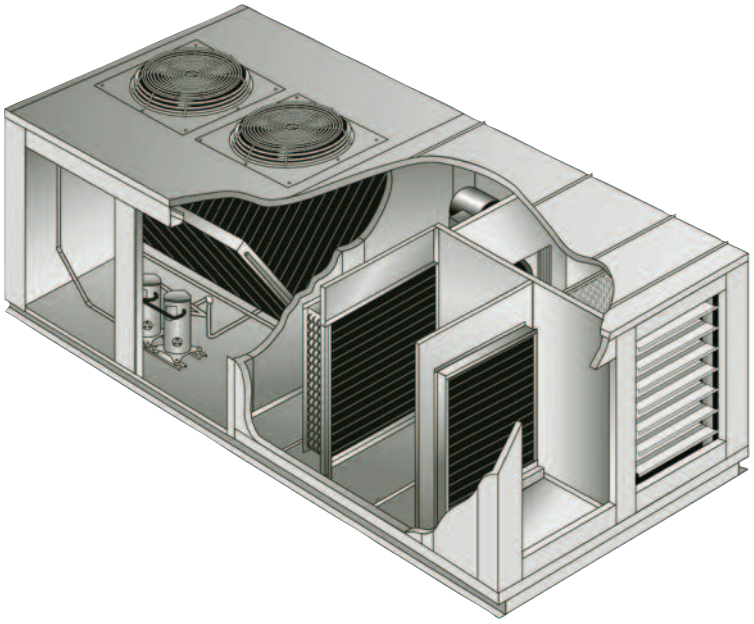
MODULAR TOTAL WRINGER PLUS

Humidity control plus sensible and latent heat recovery

Model MWT consists of a heat pipe heat exchanger and a rotary heat exchanger, along with heating, cooling, refrigeration, and filtration options. In summer, the rotary heat exchanger provides free total (sensible and latent) precooling, and the heat pipe heat exchanger provides reheat by recovering energy from the exhaust air. In winter, the rotary heat exchanger provides total heat recovery and the heat pipe provides additional sensible heat recovery.

MODULAR OUTSIDE AIR CONDITIONER

MODEL MBB



The Modular Outside Air Conditioner is a packaged ventilation air system that provides basic mechanical cooling. It controls space humidity at full and part-load conditions with the addition of optional reheat.

FEATURES

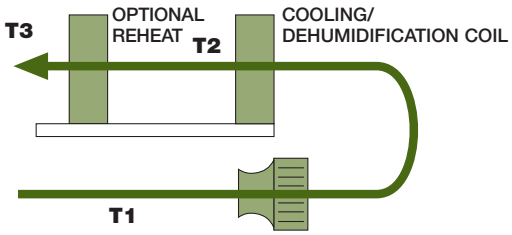
Supplies 100% outside air
Efficient low-cost cooling
Low ambient conditions
11.0 EER condensing unit
1,000 –10,000 SCFM
ETL listed

STANDARD OPTIONS

Cooling coil (DX or chilled water)
Reheat coil (hot water, steam, indirect gas, or hot-gas)
Preheat coil (hot water or steam)
Integral or remote air-cooled condensing section
Single-point electrical connection
Roof curb
Down discharge
Dampers

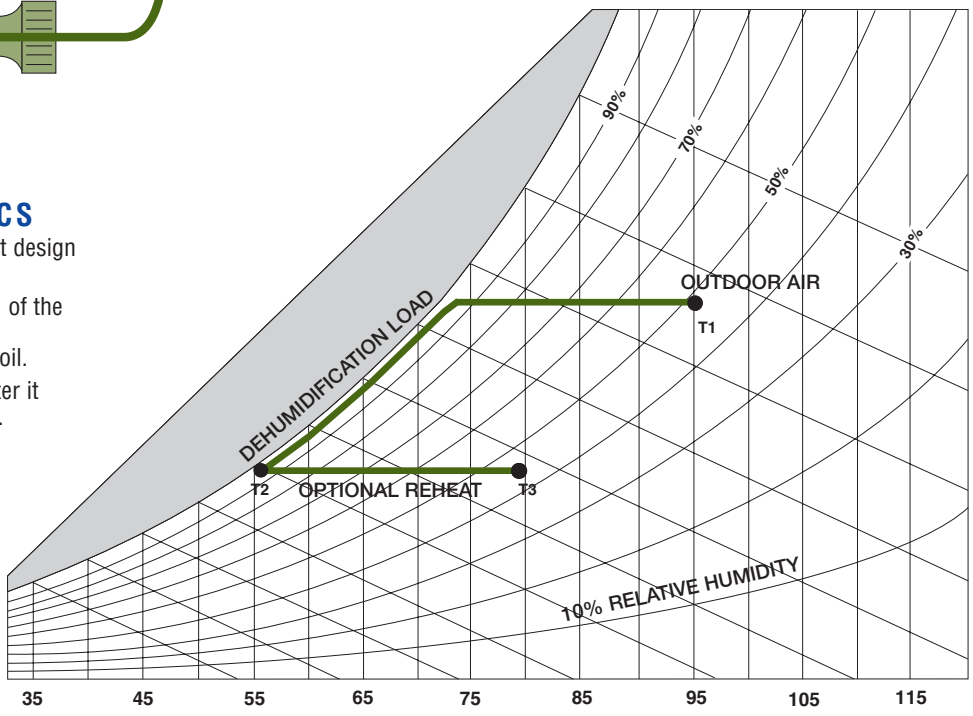
OPERATION

SCHEMATIC OF AIRFLOW



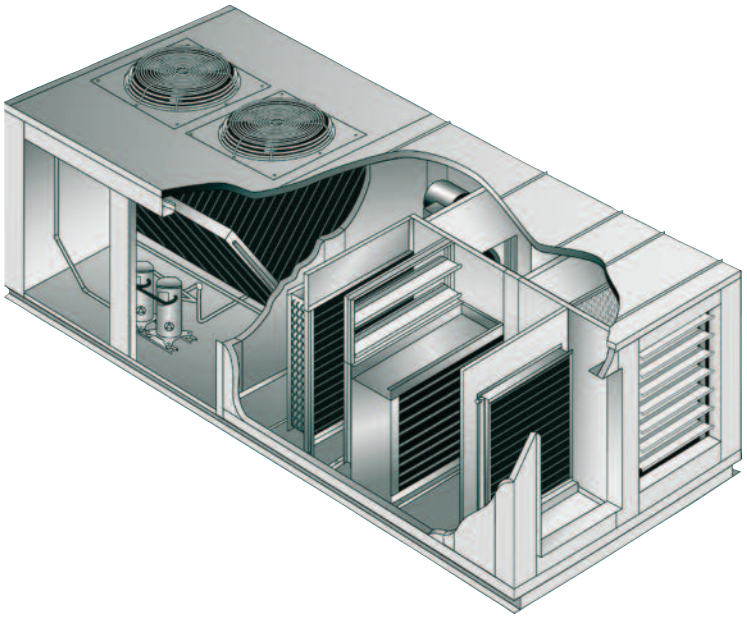
PSYCHROMETRICS

- T1 is outdoor air at design conditions.
- T2 is the condition of the supply air off the dehumidification coil.
- T3 is supply air after it has been reheated.



MODULAR WRINGER®

MODEL MWB



The Modular Wringer is a packaged humidity control system with free precool and reheat, supplied with an integral heat pipe heat exchanger. It efficiently controls space humidity at full and part-load conditions.

FEATURES

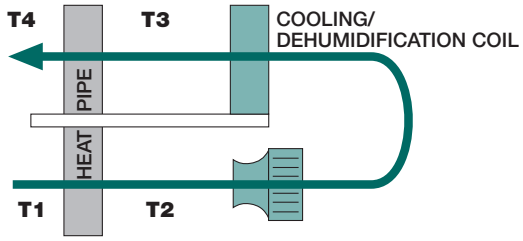
- Supplies 100% outside air
- Efficient humidity control
- Energy saving heat pipe Wringer® loop
- Improves indoor air quality (IAQ)
- Meets ASHRAE 62-1989 requirements
- 11.0 EER condensing unit
- 1,000 –10,000 SCFM
- ETL listed

STANDARD OPTIONS

- Dehumidification coil (DX or chilled water)
- Reheat coil (hot water, steam, and indirect gas)
- Preheat coil (hot water or steam)
- Integral or remote air-cooled condensing section
- Single-point electrical connection
- Summer drybulb temperature control
- Roof curb
- Down discharge
- Dampers

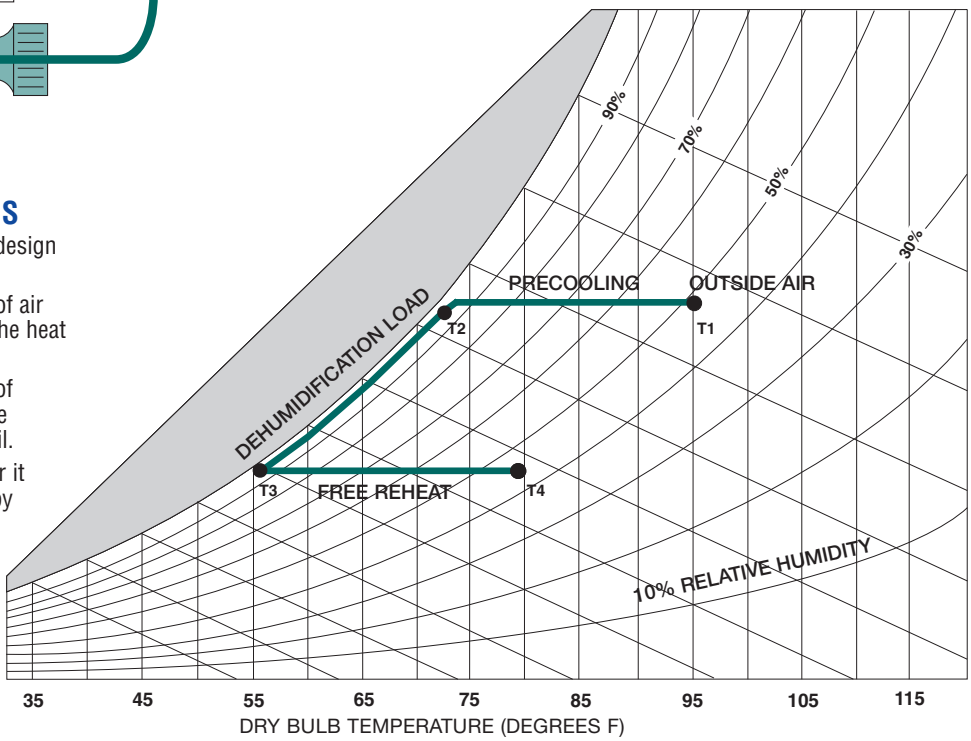
OPERATION

SCHEMATIC OF AIRFLOW



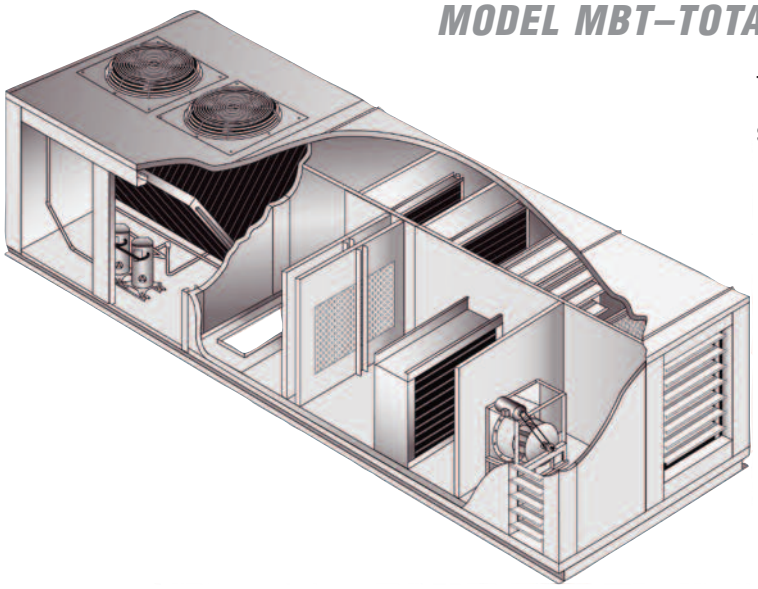
PSYCHROMETRICS

- T1 is outside air at design conditions.
- T2 is the condition of air after precooling in the heat exchanger.
- T3 is the condition of the supply air off the dehumidification coil.
- T4 is supply air after it has been reheated by the heat exchanger.



MODULAR HEAT RECOVERY SYSTEMS

MODEL MBS–SENSIBLE HEAT RECOVERY
MODEL MBT–TOTAL HEAT RECOVERY



The Modular Heat Recovery packaged systems provide sensible and total heat recovery.

FEATURES

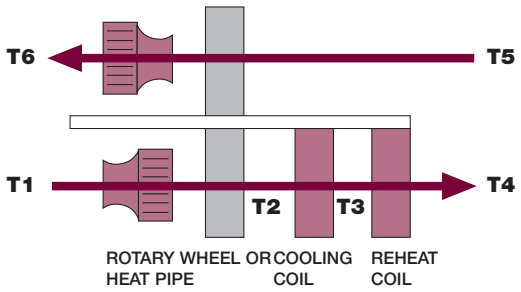
- Supplies 100% outside air
- Efficient humidity control
- Sensible or total heat recovery
- *MBS*: Efficient heat recovery in winter-dominant climates
- *MBT*: Sensible and latent heat transfer in summer-dominant climates
- Meets ASHRAE 62-1989 requirements
- 11.0 EER condensing unit
- 1,000–10,000 SCFM
- ETL listed

STANDARD OPTIONS

- Auxiliary cooling (DX or chilled water)
- Auxiliary heating (hot water, steam, and indirect gas)
- Preheat coil (hot water or steam)
- Integral or remote air-cooled condensing section
- Single-point electrical connection
- Roof curb
- Down discharge
- Dampers

OPERATION

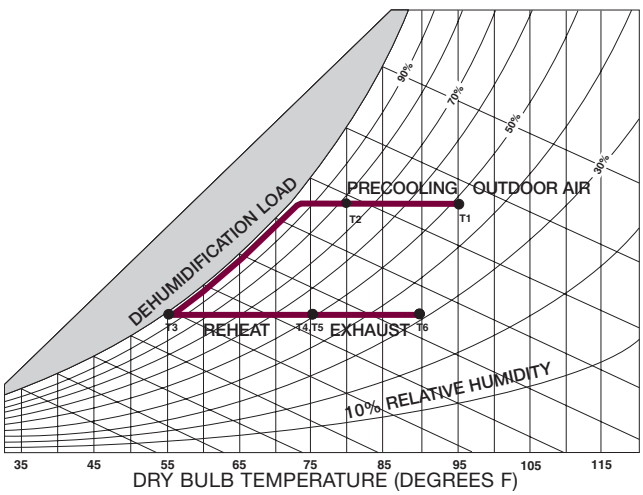
SCHEMATIC OF AIRFLOW



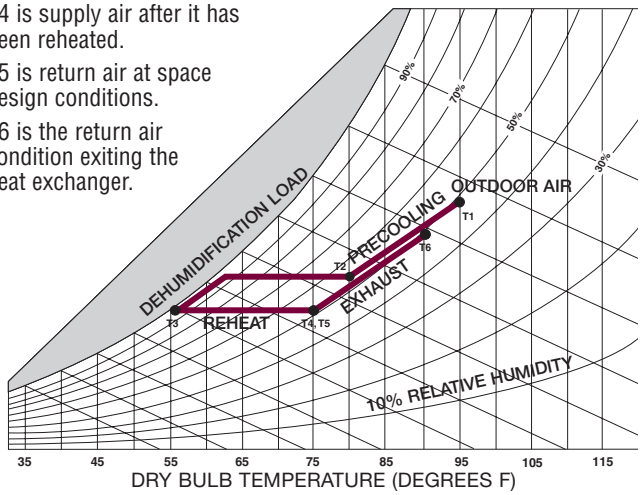
PSYCHROMETRICS

- T1 is outdoor air at design conditions.
- T2 is the condition of the supply air after precooling in the heat exchanger.
- T3 is the condition of the supply air off the cooling coil.
- T4 is supply air after it has been reheated.
- T5 is return air at space design conditions.
- T6 is the return air condition exiting the heat exchanger.

MODEL MBS

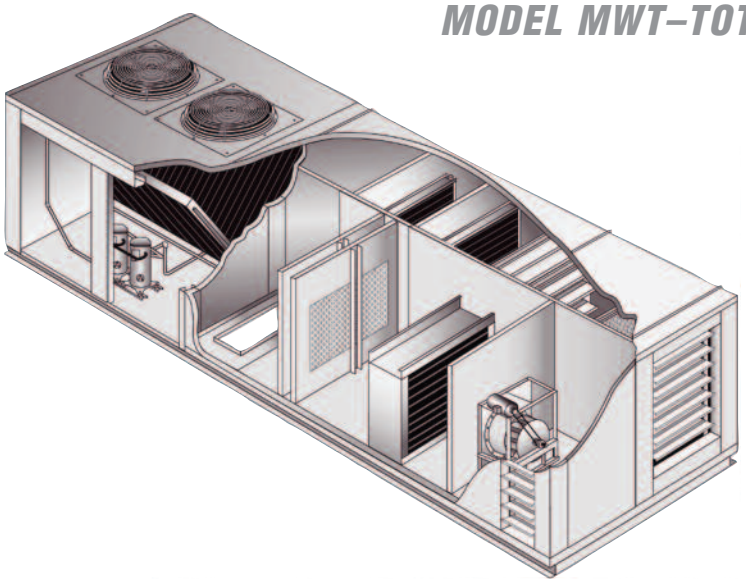


MODEL MBT



MODULAR WRINGER PLUS

MODEL MWS–SENSIBLE WRINGER PLUS
MODEL MWT–TOTAL WRINGER PLUS



The Modular Wringer Plus systems are packaged humidity control systems with sensible or total heat recovery. These systems efficiently control space humidity at full and part-load conditions.

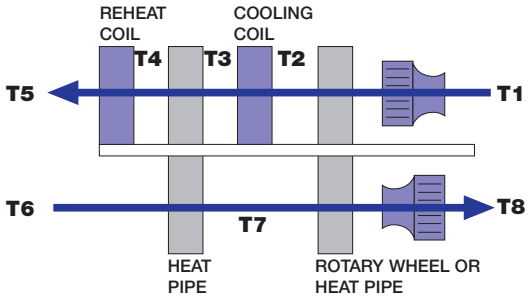
FEATURES

Supplies 100% outside air
Efficient humidity control
Sensible and total heat recovery
85% efficient winter heat recovery
Building pressurization control
Improves indoor air quality (IAQ)
Meets ASHRAE 62-1989 requirements
11.0 EER condensing unit
1,000–10,000 SCFM
ETL listed

STANDARD OPTIONS

Auxiliary cooling (DX or chilled water)
Auxiliary heating (hot water, steam, and indirect gas)
Preheat coil (hot water or steam)
Integral or remote air-cooled condensing section
Single-point electrical connection
Summer drybulb temperature control
Roof curb
Down discharge
Dampers

SCHEMATIC OF AIRFLOW

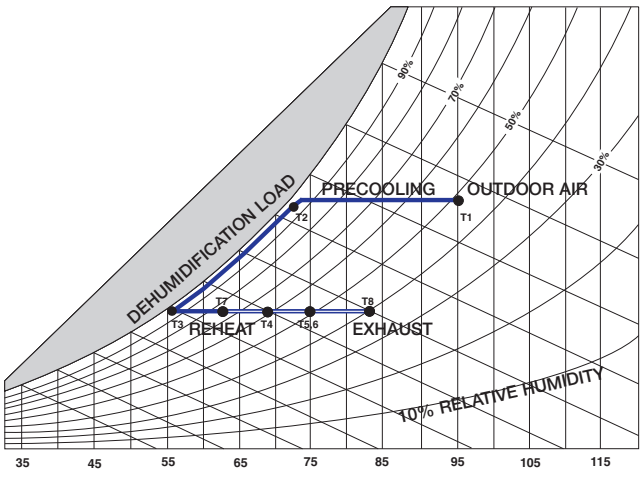


OPERATION

PSYCHROMETRICS

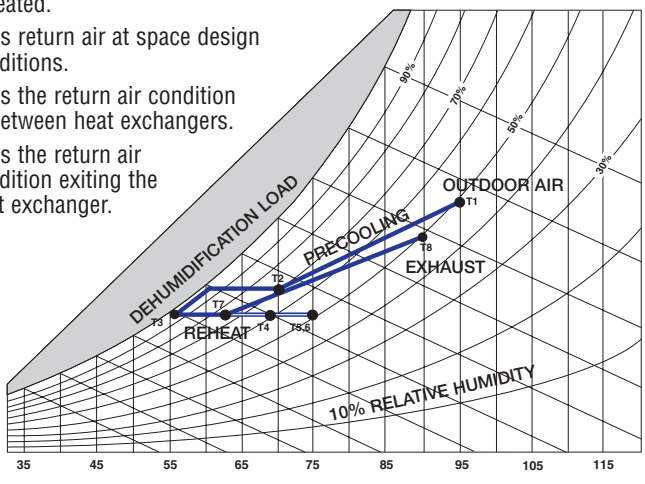
- T1 is outdoor air at design conditions.
- T2 is the condition of the supply air after precooling in the heat recovery heat exchanger.
- T3 is the condition of the supply air off the cooling coil.
- T4 is the condition after it has been reheated through the heat pipe heat exchanger.
- T5 is the supply air after it has been reheated.
- T6 is return air at space design conditions.
- T7 is the return air condition in between heat exchangers.
- T8 is the return air condition exiting the heat exchanger.

MODEL MWS



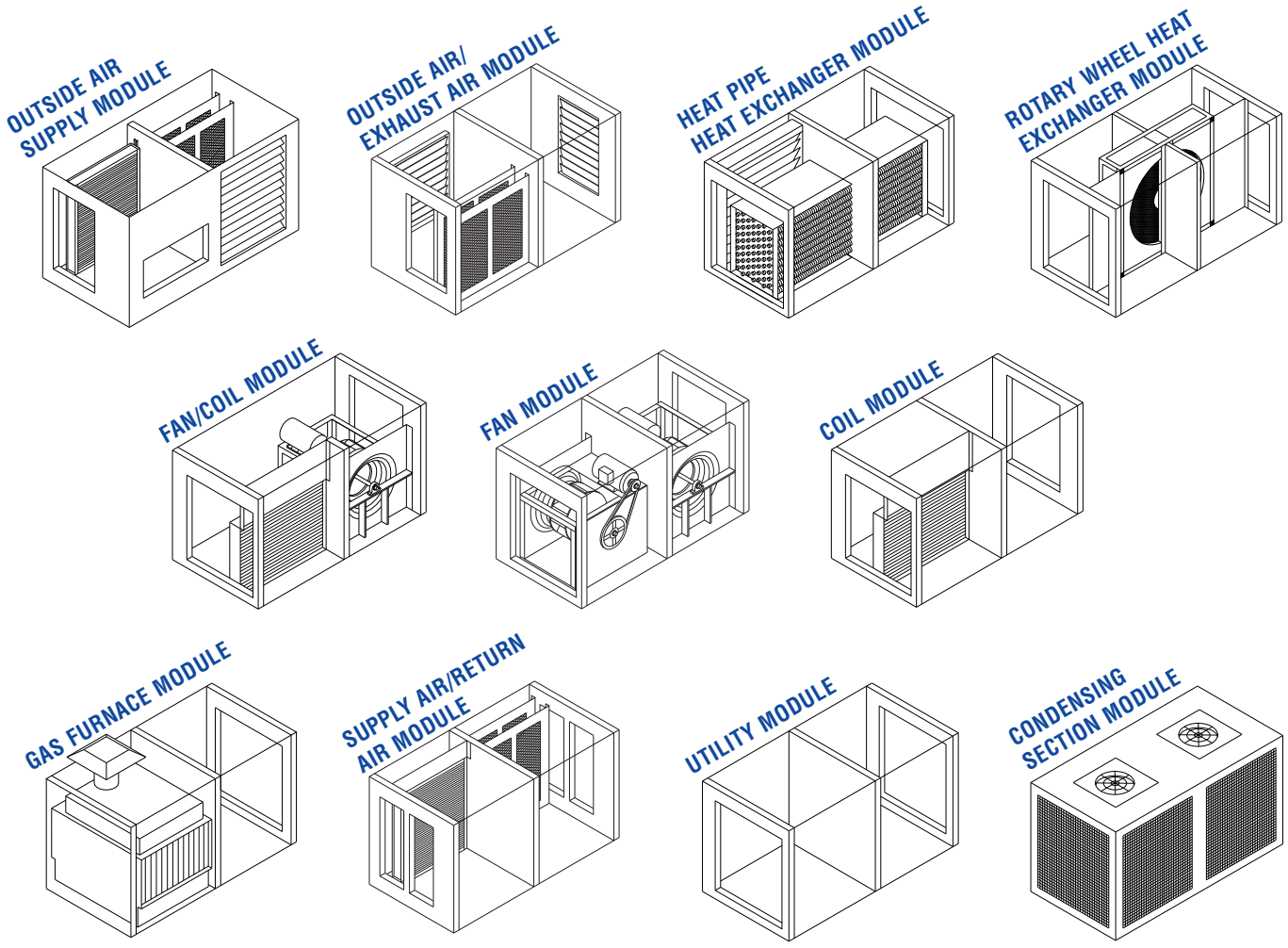
DRY BULB TEMPERATURE (DEGREES F)

MODEL MWT



DRY BULB TEMPERATURE (DEGREES F)

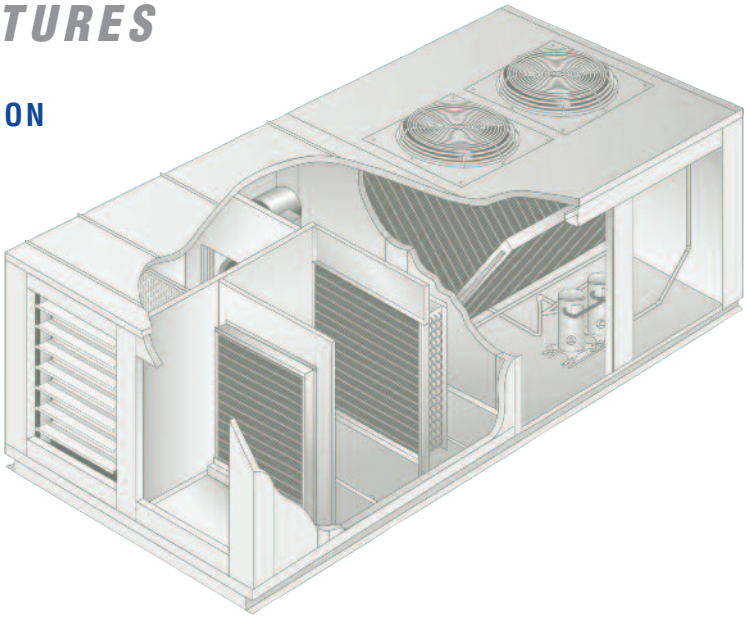
MOACS MODULES & MODULE OPTIONS



AVAILABLE MODULES BY UNIT

	MBB	MWB	MBS	MBT	MWS	MWT
MODULE						
Outside Air Supply	•	•				
Outside Air/ Exhaust Air			•	•	•	•
Heat Pipe Heat Exchanger		•	•		•(2)	•
Rotary Wheel Heat Exchanger				•		•
Fan/Coil	•	•				
Fan			•	•	•	•
Coil			•	•	•	•
Gas Furnace	•	•	•	•	•	•
Supply Air/ Return Air			•	•	•	•
Utility	•	•	•	•	•	•
Condensing Section	•	•	•	•	•	•

CONSTRUCTION FEATURES



DESIGNED FOR EASY INSTALLATION

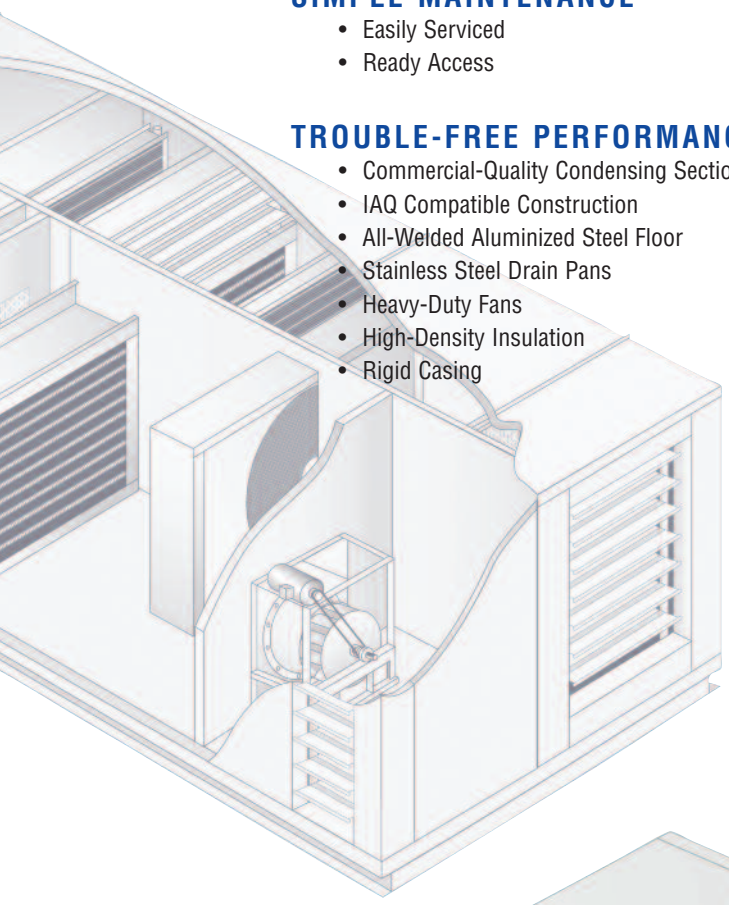
- Steel Base
- Single-Point Electrical Connection
- Simplified Rigging

SIMPLE MAINTENANCE

- Easily Serviced
- Ready Access

TROUBLE-FREE PERFORMANCE

- Commercial-Quality Condensing Section
- IAQ Compatible Construction
- All-Welded Aluminized Steel Floor
- Stainless Steel Drain Pans
- Heavy-Duty Fans
- High-Density Insulation
- Rigid Casing



APPLICATION FEATURES

SOLVES DESIGN PROBLEMS

- Meets Codes
- Solves Existing Indoor Air Quality Problems
- Solves Part-Load Performance Problems

EASY TO SELECT AND APPLY

- Modular Design
- Simple Selection
- Compact

FAST TURNAROUND

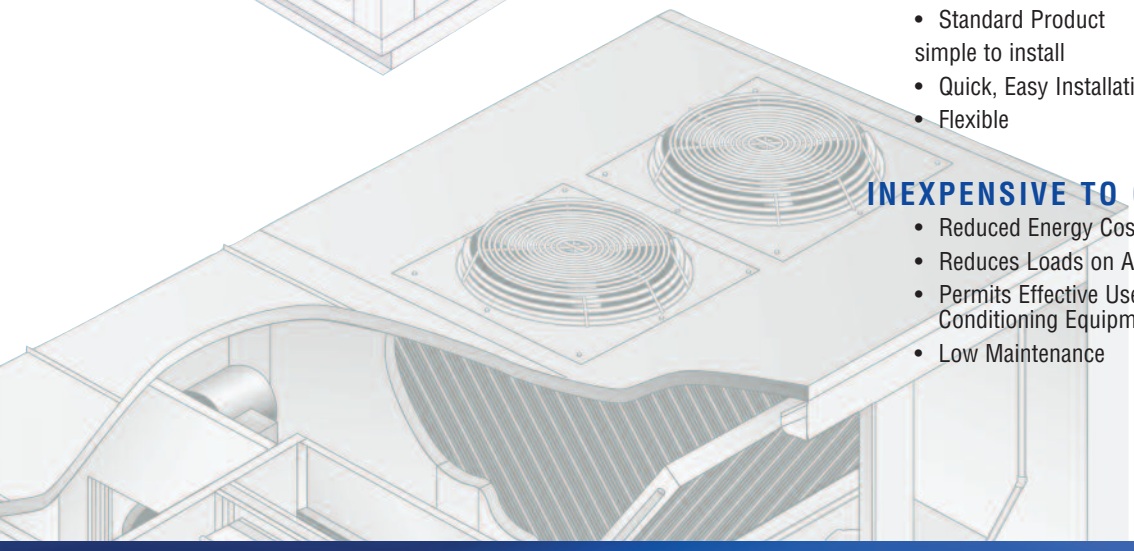
- Standard Product

simple to install

- Quick, Easy Installation
- Flexible

INEXPENSIVE TO OWN

- Reduced Energy Cost
- Reduces Loads on Air Conditioning Equipment
- Permits Effective Use of High-Efficiency Air Conditioning Equipment
- Low Maintenance



DES CHAMPS PRODUCTS

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Munters