



DATA TEMP
Operation and Maintenance Manual
Chilled Water 2-5 ton



Chilled Water Cooled

CONGRATULATIONS ON THE SELECTION OF A DATA AIRE PRECISION ENVIRONMENTAL CONTROL SYSTEM. PROPER INSTALLATION, OPERATION AND MAINTENANCE OF THIS EQUIPMENT WILL ENSURE YEARS OF OPTIMAL PERFORMANCE.



This manual is intended to assist trained service personnel by providing necessary guidelines for this particular equipment. Service to Data Aire units should be done by qualified individuals with an adequate background in areas such as HVAC, electrical, plumbing and electronics, as applicable.



Service performed by unauthorized or unqualified technicians may void manufacturers' warranties and could result in property damage and/or personal injury.



Special care should be given to those area where these symbols appear.

Data Aire, Inc. reserves the right to make design changes for the purposes of product improvement, or to withdraw any design without notice.

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1.0 INSTALLATION



There is no intent on the part of Data Aire, Inc. to define local codes or statutes which may supercede common trade practices. The manufacturer assumes no responsibility for their interpretation. Consult local building codes and the National Electrical Code for special installation requirements.

1.1 Room Considerations

Precision air conditioning equipment is designed to control spaces within close tolerances of temperature and humidity. However, the room must be built with a proper vapor barrier. A film of polyethylene is often used on walls and ceilings. Walls and floors must also be painted with a vapor-seal paint. Failure to provide a vapor barrier can compromise space conditions.

Introduction of outside air into the space should be minimized. Outside air in excess of 5% of the total circulated air volume can have a significant effect on the overall space conditions and result in poor space control.

1.2 Inspection

This Data Aire unit has been factory run-tested and has gone through a comprehensive inspection prior to its packaging and shipment to ensure that it arrives in excellent condition. However, shipping damage can occur and a visual inspection of the outer crating immediately upon delivery should be performed.

Note any external damage or other transportation damage on the freight carrier's forms. Inspect the unit itself for internal damage. A claim should be filed with the shipping company if the equipment is damaged or incomplete.

Loose items such as remote control panels, disconnect switch handles, spare belts and spare filters are packed inside the unit. Refer to the yellow shipping tag located on the unit door for details.



Freight damage claims are the responsibility of the purchaser. Action to recover losses should be filed immediately. Please notify factory personnel of any claims.

1.3 Rigging

Move the unit in its upright position to the installation site. It is recommended that the unit be protected from damage to the decorative doors during any storage or moving. Removal of the decorative doors is easily accomplished and may be done when moving equipment.

The shipping skid should be left in place if the unit is being moved with a forklift. If the unit is being lifted, use spreader bars to prevent damage to the doors and panels.

The unit has 3/4" holes in the shipping skid to which casters with 3/4" stems can be attached. This allows easy movement down halls, into elevators and through doorways. If clearance is a

problem the casters may be inserted directly into the bottom of the 1" tubular steel corner posts at the bottom of the unit.



Warning: Improper lifting or moving of equipment may result in damage to decorative doors, panels or frame members.

1.4 Locating the Unit

When installing the unit, sufficient space must be allowed for airflow clearance, wiring, plumbing, and service access. It is recommended that each side and front have a clearance of at least 30" to allow the doors to swing open and for servicing the unit.

The doors on some sides may not require as much service clearance. Refer to the particular unit component breakdown drawings for assistance. Rear clearance is not required, but 1" to 2" of clearance is suggested.

For the best air distribution, the unit should be centered against the longest wall, distributing the cold air as close to the heat load as possible, unless the unit is ducted. The unit should not be placed near any corner of the room or at the end of a long, narrow room. Multiple units should be evenly spaced, as far apart as possible.



Note to Installing Contractor: Condensation formation and frequent humidifier flushing are normal functions of this equipment. Proper drain connections must be made to ensure proper removal. Unit will require water connections for condensate removal and possibly for humidifier makeup water, chilled water and/or hot water. Installation of units above equipment that could sustain water damage should be avoided.

1.4.1 Downflow Units

Downflow units will typically sit on an elevated flooring system known as a raised floor. The unit discharges air downward which pressurizes the raised floor and channels upward through perforated floor tiles. Location and quantity of perforated tiles will dictate proper air distribution. If the raised floor is strong enough to support the unit and local codes permit, the unit can be placed directly on top with cutouts made for the discharge openings.

There may be additional support required in the form of adjustable jackstands. These are adjustable, threaded leveling rods which support the unit in each of the corners and in the center on longer length units. Tighten the locknuts provided with each jackstand. The baseplate can rest on the floor or on vibration isolation pads.

Floorstands are also a way of supporting the unit. These are ordered to the height of the floor with leveling rods to allow adjustment. The floorstand has lips in each corner to align with the unit which is placed on top. It is recommended that the unit frame be bolted or screwed to the floorstand from below. Local building codes may dictate this procedure. After installation, the raised floor is typically built around the unit.



The raised floor serves as the distribution plenum for air on downflow units. Cables, piping, wiring raceways, inadequate floor height and any other restrictions can inhibit proper airflow. Care should be taken to avoid restrictions.

1.4.2 Upflow Units

Upflow units will typically be supported by vibration isolation pads and/or floorstands which and may also include leveling screws. An air discharge plenum may be factory provided which ships loose and must be attached at the top of the unit frame.

Alternately, an air distribution plenum must be field fabricated with supply grilles to distribute the air. Units are shipped with a drive package to overcome external static pressure. Adjustments to the blower speed may be required to adjust to actual conditions.

1.5 Paperwork

Each Data Aire unit ships with a start-up sheet that should be completed during installation. Also included in the paperwork is a warranty/information packet that provides important wiring diagrams, specific component literature, warranty registrations cards and other valuable paperwork, including a copy of this Installation/Operation and Maintenance manual.

A yellow tag is attached to the outside decorative door to indicate articles that may have been packaged and shipped loose within the unit cabinet. Typically this would be jackstands, condensate pumps and other loose components that are not factory mounted.

1.6 Storage

Your Data Aire equipment comes ready for immediate installation. In some instances it may be necessary to store the equipment for a period of time. If you must store the equipment it should be done in a dry area, out of the weather, protected from damage by other equipment in storage or transportation equipment, never stacked, and avoid frequent relocation.

If equipment is stored for longer than 30 days special precautions must be taken to avoid coil damage. All coils should be charged and sealed with a low pressure (1-25 psig) inert gas, such as nitrogen. This prevents contaminants from entering the coils; then when the seal is broken at installation, the rush of escaping gas verifies the coil is still leak free. If coils are not charged and sealed condensation mixes with air pollutants forming a weak acid and over time can cause pin hole leaks to develop in the coil tubes.

When equipment is installed after storage caution should be taken to inspect and replace, if required, rubber hoses and belts. All moving parts, such as blowers and motors, should be hand tested to ensure that they are free and clear prior to start-up. Finally, verify that all lubrication is fresh and full.



It is the responsibility of the installing contractor to return the start-up sheet and warranty registration card to Data Aire for proper activation of the unit warranty. Failure to do so may cause delays and in some cases void the warranty.

2.0 PIPING

2.1 Chilled Water Unit Piping

The required field installed water pipe sizes may or may not be the same as the connection sizes at the unit. This will depend on the length of pipe and the calculated pressure drop of peripheral components.

Shutoff valves should be installed within a few feet of the inlet and outlet connections of the unit to allow the unit to be isolated for service. A fill valve with a hose bib connection should also be used on the supply line or return line at the unit to allow the unit to be drained.

Water temperature and worst-case room temperature and humidity conditions should be used to determine whether external piping should be insulated. Typical water temperature is 45° F which is usually cold enough to cause pipes to sweat.

Field pipe connections are typically made at the bottom of the unit. Drilling holes in the back panel and making a 90° turn out the back of the unit is also acceptable. In some cases provisions have been made to route the pipes out the right or left side or out the top of the unit. Openings should not be made in the hinged decorative doors as this could prevent the door from swinging open.

Standard chilled water units have a 3-way chilled water valve. An option for a 2-way valve is also available. In either case the water connections to the unit should be made so there is a counterflow between the water and air. Field water pipe connections are labelled but the counterflow should also be verified before making field connections.

One of the most common problems in a Chilled Water system is the presence of air in the chilled water loop. Air vents must be installed in various locations in the piping system to purge any air.

2.1.1 Connection sizes, Chilled Water units

The chilled water supply and return connections for all Data Temp models DTC chilled water units are 1 1/8" OD copper stubs.

2.2 Chilled Water Valve Ratings

All chilled water valves used on Data Temp models 2 to 5 tons use chilled water valves that are rated at 400 psi operating pressure. The information on the next page gives the valve size and Cv rating on 3-way valves for all unit models. The same information plus maximum close off pressure for optional 2-way valves is also indicated

2.2.1 3-Way Chilled Water Valves

All Data Temp chilled water units use a 1", 3-way chilled water valve as standard. The Cv of this valve is 14.0.

2.2.2 2-Way Chilled Water Valves

All Data Temp chilled water units have 1", 2-way chilled water valve available as an option. The Cv of this valve is 14.0. The maximum closeoff pressure rating is 50 PSI.

2.3 Condensate Drain Piping

Every indoor unit has a 3/4" copper stub provided for condensate removal. A union is recommended at the field connection which will permit easy disconnection from the unit for cleaning.

A trap should be built into the drain line to prevent air from backing up into the unit. Drain lines should be pitched downward not less than 1/4" for each ten feet of horizontal run. Do not reduce the size of the drain line.

Some applications have no convenient means of allowing a gravity drain. In this case, a condensate pump can be used. These come either factory mounted or shipped loose. Factory mounted condensate pumps do not require a separate power source.

Condensate pumps shipped loose (or field provided) typically require a dedicated 110 volt power source. Field pipe connections must be made to the pump discharge connection. A check valve must be installed to prevent short cycling. See also condensate pump electrical requirements in Section 3.8.

2.4 Humidifier Piping

2.4.1 Steam Generator Humidifier

The standard humidifier on Data Aire systems is a steam generator type with a disposable cylinder. The humidifier makeup water should be brought to the humidifier through the field connection opening using 1/4" copper tubing. A compression fitting is provided at the humidifier.

A shutoff valve should be provided outside the air conditioner to allow disconnection for service. An in-line water pressure regulator and strainer should be installed. Water pressure should be set between 20 and 50 PSI.

The humidifier has a drain at the bottom which is factory piped to the main condensate drain line. The dispersion tube also has a drain line. No additional field piping is required.

2.4.2 Dry Steam Humidifier

The optional dry steam type humidifier requires a strainer on the inlet steam line. An outlet connection with a field-provided steam trap is also required. Steam pressure is typically 10-15 psi.

2.5 Leak Testing

No installation is complete until the entire system has been thoroughly checked for leaks. This includes water lines, flare fittings, pressure controls, and Shrader fittings.

Check all humidifier makeup lines, condensate lines, condensate pumps, chilled water lines.

Tightening of fittings and valves is the responsibility of the installing contractor.

3.0 ELECTRICAL CONNECTIONS



Before proceeding with the electrical connections, make certain that the volts, hertz, and phase correspond to that specified on the unit electrical nameplate. Use copper conductors only.

3.1 Electrical Service

Check to be sure the service provided by the utility is sufficient to handle the additional load imposed by this equipment.

3.2 Nameplate Ratings

Refer to the unit electrical nameplate for equipment electrical requirements. Minimum circuit ampacity, (MCA) also known as wire sizing amps, will dictate the minimum required wire gauge. Maximum overcurrent protection device amps will dictate the maximum circuit breaker or fuse size.

3.3 Grounding

The unit cabinet must have an uninterrupted true earth ground. An electrical ground wire of adequate size must be connected to the ground lug provided inside the main electrical box.

3.4 Voltage Tolerance

The supply voltage to the unit must be within 10% (under by 5% when voltage is 208V) of the voltage indicated on the unit electrical nameplate. Phase to phase imbalance must not exceed 3%. The local utility company should be contacted for correction of improper line voltage. Deviation from voltage ratings can cause premature failures and possibly void unit warranties.



Check the wiring connections in the unit control panel to ensure they are tight. Screw terminals may become loose in transit. Tightening of wiring connections is the responsibility of the installing contractor.

3.5 Remote Shutdown

Every Data Aire evaporator has remote shutdown contacts. These are intended for a field supplied dry contact or switch to be wired across two terminals. When the contact or switch opens, the control circuit power is interrupted and the unit shuts down, including the control panel. The control circuit is 24 VAC and the field provided contact or switch should have a minimum rating of 10 amps.

The remote shutdown contacts are always terminals #1 and #2 on the terminal block designated TB1. The unit will ship with a factory wired jumper that connects terminal #1 to terminal #2. Remove this clip prior to installing the field wires.

3.6 Remote Alarm Contacts

The *DAP II*, microprocessor control panel provides a remote alarm output contact that can be field accessed on terminals #11 and #12 of terminal block TB1. This is a Normally Open, Close on Alarm, dry contact, intended to be used in a control circuit not exceeding 5 amps at 24 VAC.

This programmable output contact will close on a failure and remain closed until the alarm is no longer present. Two additional alarm output contacts come with the optional expansion module. The terminal designations for these alarm output contact pairs are #44 and #45, and #46 and #47.

3.7 Remote Sensors

Remote sensors are optional. Although existing unit mounted sensors can be removed for remote mounting, the remote sensor option provides a more convenient means of field installation. This is because the sensors are already connected to a predetermined length of cable and come mounted in a remote sensor enclosure. The temperature and humidity sensors require a total of six wires, these should be a twisted, shielded cable.

3.8 Condensate Pumps

Condensate pumps which ship loose normally require a separate source of 110 volt power. Always check the pump power requirements before connecting power. Condensate pumps are available in other voltages.

Condensate pumps may also come unit mounted and powered. While no outside power source is required, field piping is still a requirement.

Condensate pumps are wired to display a “High Condensate Water Level” alarm. The wiring for this must be done in the field on pumps that ship loose. Factory mounted pumps come pre-wired.

3.9 Condensate Probe

A condensate probe for sensing underfloor water is included with this unit. This comes in a plastic bag, with about 15 feet of coiled-up wire. The probe is a flat plate that is typically placed below the unit in a location where water is likely to accumulate.

Place the probe flat on the floor on top of a thin layer of nonconductive silicone. Secure the attached wires where necessary. A longer length of wire may be used if required.



Note: Failure to uncoil the length of wire attached to the condensate probe can result in a nuisance water-detected alarm. If the probe is not going to be used it should be disconnected.

3.10 Water Sensing Cable

Another option for water sensing is the Water Detection Cable. This is a long cable that can sense moisture anywhere along its length. It is typically placed below the unit in a rectangular pattern that matches the perimeter of the unit.

4.0 CONTROLS

4.1 DAP II Microprocessor Control Panel

The standard controls on all *Data Temp* equipment is the *DAP II* microprocessor control panel. This state-of-the-art control panel has a separate manual that goes into extensive detail regarding functions, features, programming, and troubleshooting.



The *DAP II* microprocessor control panel has an entire manual dedicated to its use and operation. This manual must be referenced to complete a thorough unit installation. Start-up is not complete until the *DAP II* control panel settings are established.

4.2 Wiring Diagrams

Every Data Aire unit comes with a wiring diagram. These diagrams are 'ladder'-type schematics intended for service personnel. The intent is to allow the technician to understand the wiring details associated with the electrical components and how they interface with the *DAP II* control panel as well as peripheral equipment.

Data Aire's chilled water unit wiring diagrams will have a drawing number which starts out with the three letter designation, "DTC". An example of a typical diagram is DTC-S-603 N.

5.0 REGULAR MAINTENANCE ITEMS

5.1 Air Filters

Air filters should be checked on a regular basis and changed when they become dirty. This will ensure efficient operation of the unit. Although the unit has a dirty filter alarm, this should not be relied on as the only determinant for replacing filters. A maladjusted filter differential pressure switch may not give a proper indication of a clogged filter.

To check the filter differential pressure switch for proper adjustment, temporarily cover about 75% of the return air opening using heavy cardboard or similar material. The alarm should energize when 75% of the air is blocked, simulating dirty filters. If the alarm energizes prematurely or does not energize at all, the pressure switch should be adjusted. Doors must remain closed when determining if an adjustment is necessary.

Spare filters should be kept in stock as these tend to be a frequently replaced maintenance item. Filters may require changing as often as monthly. Note also that construction dust on new installations will quickly clog new filters.



Filters that require changing can restrict airflow and create problems such as poor air distribution.

5.2 Belts

Belt tension should be checked regularly (monthly) to ensure proper tension. If tightening is required, loosen the four motor mounting bolts. Turn the adjustment screw on the end of the motor mounting channel until the proper belt tension is attained. (The amount of play in a typical drive set should be 1/2 inch.) Retighten the four mounting bolts. Damage can also occur to belts that are overtightened.

5.3 Bearings

Pillow block bearings used on many models have zirk type grease fittings. These will only require grease once annually. Care should be taken to avoid over-greasing. Only one or two pumps from a manual gun are required. All other blower bearings are permanently lubricated and do not require maintenance.

Most blower motors have sealed bearings and are maintenance free. Some motors have zirk type grease fittings on the bearings. If so the motor should be greased once annually. Use NLGI grade lithium or lithium complex grease. Care should be taken to avoid over-greasing. Only one or two pumps from a manual gun are required.

5.4 Humidifier Canisters

Steam generator type humidifier is standard on *Data Temp* units. There is no maintenance required other than to replace the canister as required. This frequency will depend on usage and water type. A set of manufacturer's instructions for the humidifier is sent as part of the paperwork placed inside the unit when it ships.

5.5 Fuses

Fuses may occasionally require changing especially with installations where the voltage is not consistent. Drops in voltage can create brief periods of high amp draw, causing fuses to blow. Always replace fuses with those of the equivalent rating with regard to: 1) amperage, 2) voltage, and 3) speed. For instance motors are inductive loads which require time delay fuses. Electric reheat and humidifiers are resistive loads requiring fast acting fuses.

5.6 Heating Elements

Heating elements do not normally require maintenance. However sometimes they may accumulate a film of dust or dirt when unused for extended periods of time. When energized, the burning debris can create smoke or unpleasant odor. To help avoid this, periodic cleaning is recommended.

6.0 Warranty Policy

Seller warrants its equipment to Buyer to be free from defects in material and workmanship for a period of thirty-six (36) months from date of shipment, as long as equipment is utilized under normal conditions and service and is properly installed; however, the warranty shall not be applicable to any of the following items: refrigerant, belts, filters, humidifier, heaters not regularly cleaned, light bulbs, and any other items either consumed or worn out by normal wear and tear, or by conditions beyond Seller's control, including (without limitation as to generally) polluted or contaminated air or water.

The Seller's obligation under this warranty is limited solely to the repair or replacement, at Seller's options, of any part or parts thereof which shall, within thirty-six (36) months from date of shipment of the equipment to the original purchaser be returned to the factory, transportation charges prepaid, which upon examination shall disclose to the Seller's satisfaction to have been defective under normal use and service. This agreement to repair or replace defective parts is expressly in lieu of all other warranties, expressed or implied and all other obligations or liabilities on the part of Seller and Seller neither assumes nor authorizes any other person to assume for it any liability or obligation in connection with the sales or service of its equipment, except said repair or replacement of defective parts set forth above.

This warranty does not include any labor charges for work done outside of the factory for replacement of parts, adjustments, repairs, or any other work. Seller's liability does not include any resulting damage to persons, property, equipment, goods or merchandise arising out of any defect in or failure of any equipment of its manufacture and Buyer hereby waives any claim against Seller arising out of such claim. This warranty shall not cover the repair or replacement of any equipment which has been repaired or altered outside of the factory in any way or which has been subject to negligence, misuse, or abuse, or to pressures in excess of stated limits.

This warranty applies only to the original purchaser of the equipment and does not extend, expressly or by implication, to the third parties or others without the specific written approval and acknowledgment of Seller. Buyer's exclusive remedy and Seller's maximum liability for any and all loss, injury, damage, costs, or expense arising from any defect covered by this warranty shall be limited to the repair or replacement, but not the installation of any defective material, F.O.B., Seller's plant; provided however, that Seller shall not be required to replace any part or component (a) which can be repaired, or (b) unless Buyer has given Seller immediate written notice that replacement or repair. In addition, Seller shall not be liable for any cost or expense of replacement or repair contracted for by Buyer with any third person, unless, and then only to the extent that Seller authorizes in writing, such costs or expense.

Seller shall not be liable for any direct, indirect incidental, consequential, or other form of loss, injury, damage, cost, or expense, whether caused by delay, failure, or performance, breach of warranty, or by any cause whatsoever.

Seller's obligation under this warranty shall be void if Buyer fails: (a) without legal justification to pay Seller, when due, the full purchase price for the equipment sold hereunder; or (b) to have the equipment sold hereunder installed, maintained, and serviced by competent personnel and in accordance with Seller's instructions.

7.0 Contact Data Aire

Address:

Data Aire Inc.
230 W. BlueRidge Avenue
Orange, CA 92865

Phone

714-921-6000
800-347-AIRE (2473) Toll Free

Fax:

714-921-6010 Main
714-921-6011 Engineering
714-921-6022 Part Sales

E-mail:

tech_support@dataaire.com Technical Support
engineering@dataaire.com Engineering
sales@dataaire.com Sales

Web site:

www.dataaire.com

Job information:

Model Number: DTC ___ - ____ - ____

Serial Number: ____ - ____ - ____

Job number: _____

Date installed: ___ / ___ / 200___

Installing Contractor: _____



Monthly Maintenance Inspection Checklist

Model No. _____
Prepared by: _____

Serial No. _____
Date: ___ / ___ / 200__

Air Filters

___ Check for restricted air flow

Infrared Humidifier (if applicable)

___ Check humidifier lamps
___ Check pan for mineral deposits

Blower Section

___ Blower wheel free of debris moves freely
___ Check belt tension and condition
___ Bearings in good condition
___ Check pulleys and motor mounts

Electrical Panel

___ Check contactor operation
___ DAPII control panel operations

Air Distribution Section

___ Check for restriction in grille(s)

Equipment Runtimes

Blower _____ hrs
Reheat _____ hrs
Humidifier _____ hrs
Dehumidification _____ hrs
Chilled water cooling _____ hrs

Condensate Drain and Pump (if applicable)

___ Check for water leaks
___ Check for restricted air flow
___ Pump operation

___ Reset all to read zero runtimes

Steam Generating Humidifier

___ Check canister for deposits and water level
___ Check condition of steam hose and clamps

Temperature/Humidity set at: ___° ___% RH

Notes: _____

Data Aire, Inc.

Quarterly Maintenance Inspection Checklist



Model No. _____
Prepared by: _____

Serial No. _____
Date: ____ / ____ / 200__

Air Filters

- ___ Check for restricted air flow
- ___ Check filter differential switch
- ___ Wipe filter rack section clean

Blower Section

- ___ Blower wheel free of debris and moves freely
- ___ Check belt tension and condition
- ___ Bearings in good condition
- ___ Check air flow safety switch operation
- ___ Check pulleys and motor mounts

Air Distribution Section

- ___ Check for restriction in grille(s)

Condensate Drain and Pump (if applicable)

- ___ Check for water leaks and restricted flow
- ___ Pump operation

Steam Generating Humidifier

- ___ Check canister for deposits and water level
- ___ Check condition of steam hose and clamps
- ___ Check drain and fill valve for deposits

Infrared Humidifier (if applicable)

- ___ Check humidifier lamps
- ___ Check pan for mineral deposits
- ___ Check high limit switch operation
- ___ Check drain timer operation
- ___ Check drain valve operation

Reheat

- ___ Check reheat element(s) for dust
- ___ Check high limit switch operation

Electrical Panel

- ___ Check fuses
- ___ Check contactor operation
- ___ Check all electrical connections
- ___ Check operation sequence
- ___ Check calibration of change over thermostat (Energy Saver System Only)

DAPII control panel operations

- ___ Check calibration of temperature sensor (47*)
- ___ Check calibration of humidity sensor (48*)

Equipment Runtimes

Blower	_____	hrs
Reheat	_____	hrs
Humidifier	_____	hrs
Dehumidification	_____	hrs
Chilled Water Cooling	_____	hrs

___ Reset all to read zero runtimes

Temperature/Humidity set at: _____° _____% RH

Notes: _____

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