

ACDU03 Communicating Service Tool

Operation Manual

97B0106N01

Rev.: 11/3/17



Caution:

These instructions are intended to be used by the installer or service personnel. End users are NOT advised to change or modify any of these settings. Doing so may cause the equipment to stop working properly and/or may void the warranty on both the thermostat and the equipment.

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1.0 Connection

ClimateMaster's Communicating Service Tool (ACDU03) allows install and service technicians to configure and diagnose ClimateMaster Digital Communicating Units without installing a digital communicating thermostat.

Using the Service Tool, a technician can ELECTRONICALLY:

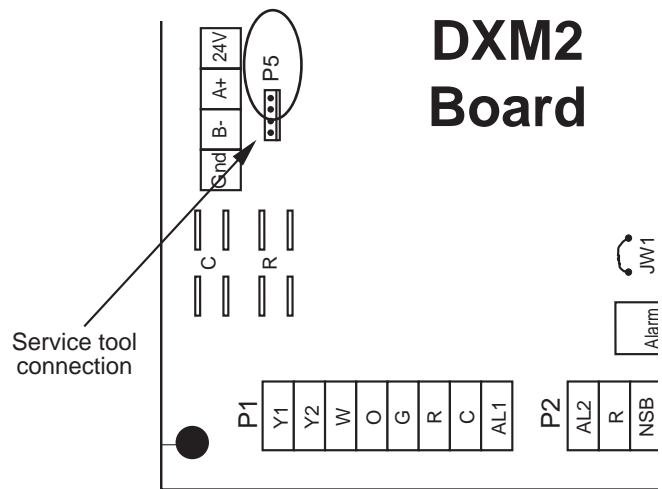
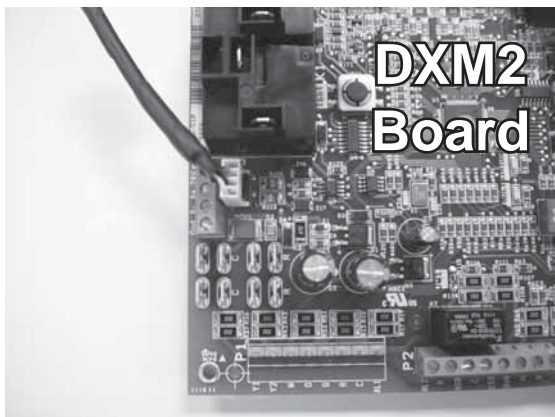
1. Configure items like: airflow, heat pump options and configuration, pump or modulating valve operation, unit family, unit size, etc.

AND

2. Diagnose the unit by operating it manually, performing control diagnostics, viewing dip switch configurations, or by viewing fault history and operating conditions when a fault occurred.

The Service Tool connects to the DXM2 board with a 4-Wire Connector as shown below:

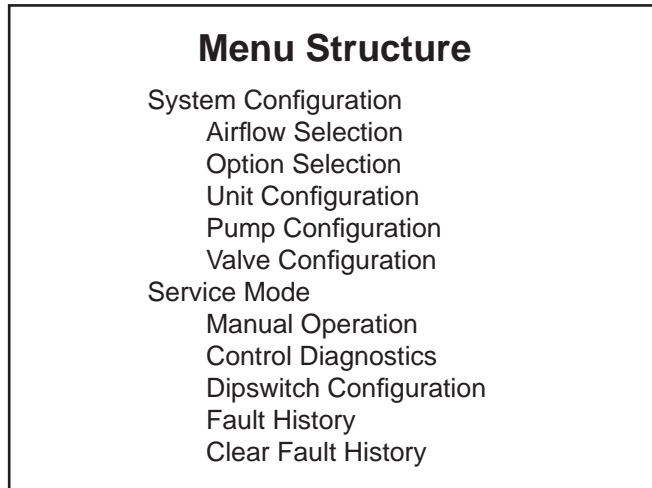
Note: For Vertical Stack models (TSM, TSL) must order 11B0100N26 Harness for connection to service port outside chassis. DXM2 to service port is factory wired.



⚠ WARNING! ⚠

WARNING! Connecting wire harness while unit is powered on or connecting backward may damage service tool.

2.0 Menu Structure



3.0 System Configuration

Use the System Configuration option on the start-up screen to adjust critical equipment settings.

The System Configuration information will be automatically obtained from each communicating control in the system.

Note 1: The Airflow Selection menu (section 3.1) will not be present if the connected communicating control system has no blower.

Note 2: The Pump Configuration menu (section 3.4) will not be present if the connected communicating control is configured for No Loop Configuration (OTHER).

Note 3: The Valve Configuration menu (section 3.5) will not be present if the connected communicating control is configured for No Loop Configuration (OTHER).

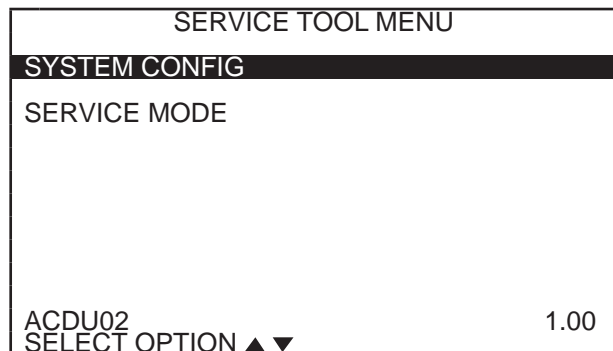
3.1 AIRFLOW SELECTION

Adjust the airflow settings for each system operating mode using the up/down arrow buttons. Press the center button to select each item.

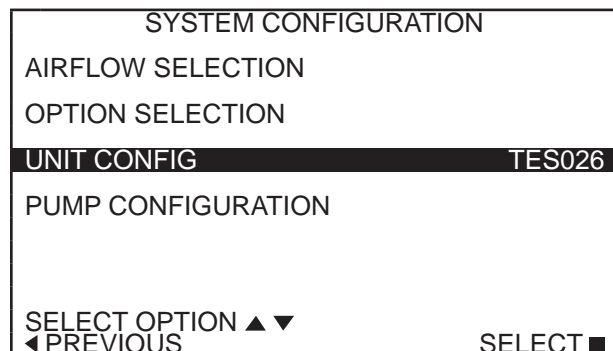
- Airflow Settings (defaults stored in control) - valid range: obtained from control (in 25 CFM increments)
- Blower Off Delay (default 60 seconds) – valid range: 0 to 255 seconds (in 5 second increments)

NOTE 1: The Airflow Settings will only be present if the connected communicating control is configured for ECM blower.

NOTE 2: If multiple units are connected to one thermostat, refer to section 3.6 for unit selection.



Start-up Screen



System Configuration Menu

3.2 OPTION SELECTION

This option allows the configuration of heat pump options to be modified.

Adjust the Option settings using the up/down arrow buttons. Press the center button to select each item.

- Motorized Valve (defaults stored in control) – valid range: Off, On “On” delays compressor start until the valve is fully open.
- Compressor ASCD (Anti-Short Cycle Delay (default stored in control) – valid range: 5 to 8 (in 1 minute increments)

NOTE 1: The Compressor Anti-Short Cycle Delay setting provides equipment protection by forcing the compressor to wait a few minutes before restarting.

NOTE 2: If multiple units are connected to one thermostat, refer to section 3.6 for unit selection.

NOTE: “Motorized Valve” used here refers to a two-position motorized water valve, not to be confused with the modulating motorized water valve found in the LOOP CONFIG.

| OPTION SELECTION | |
|-------------------|----------|
| MOTORIZED VALVE | OFF |
| COMPRESSOR ASCD | 0 |
| SELECT OPTION ▲ ▼ | |
| ◀ PREVIOUS | SELECT ■ |

Option Selection Menu

3.3 UNIT CONFIGURATION

Adjust the Unit Configuration settings including Heat Pump Family, Heat Pump Size, Blower Type, and Loop Configuration using the up/down arrow buttons. Press the center button to select each item.

- Heat Pump Family (default stored in control) – valid range: TE, TY, TES, TEP, TRT, TSM, TSL
- Heat Pump Size (default stored in control) – valid range: depends on Heat Pump Family setting
- Blower Type (default stored in control) – valid range: NO BLOWER, 2-SPD PSC, COM ECM-V, 1-SPD PSC, 2-SPD CTM, PWM ECM, VFD
- Loop Config (default stored in control) – valid range: Other, VS PUMP, MOD VALVE

Airflow, pump and valves can be configured from ‘System Configuration’ screen.

Select ‘VS PUMP PARALLEL’ when applying an internal variable speed flow controller with other flow controllers on a single loop in parallel.

NOTE: Refer to section 3.6.3 for multi-unit configuration instructions.

| UNIT CONFIGURATION | |
|--------------------|---------|
| CURRENT CONFIG | TE026 |
| HEAT PUMP FAMILY | TE |
| HEAT PUMP SIZE | 026 |
| BLOWER TYPE | ECM |
| LOOP CONFIG | VS PUMP |
| SELECT OPTION ▲ ▼ | |
| ◀ PREVIOUS | SAVE ■ |

Unit Configuration Menu

3.4 PUMP CONFIGURATION

vFlow™ vs internal flow control pump can be controlled either through temperature differential (Delta T) or can be set to specific speed (fixed; % of full speed for each heat and cool stage).

Can be configured for either single pumping or parallel pumping.

Configure temperature differentials at the thermostat for vFlow™ units with an internal flow control pump.

Adjust the Pump Configuration settings using the up/down arrow buttons. Press the center button to select each item.

- Heating Delta T (default stored in control) – valid range: 4 to 12°F (in 1°F increments)
- Cooling Delta T (default stored in control) – valid range: 9 to 20°F (in 1°F increments)

Maximum Heat LWT (valid range based on specific model; refer to model IOM). Minimum Cool LWT (valid range based on specific model; refer to model IOM).

NOTE: Refer to section 3.6.3 for multi-unit configuration instructions.

To control vs pump by fixed speed, select 'Pump Control', press **■**, use down arrow to select 'Fixed', and press **■** to save.

Default stored in control. Valid range: 15% - 90% (in 1% increments)

| | |
|-----------------|-----------------|
| Heating Stage 1 | Cooling Stage 1 |
| Heating Stage 2 | Cooling Stage 2 |

If Pump Configuration is set to 'VS PUMP PARALLEL', valid range changes to 50-90% (in 1% increments).

3.5 VALVE CONFIGURATION

Configure temperature differentials at the thermostat for vFlow™ units with a motorized modulating valve.

Adjust the Valve Configuration settings using the up/down arrow buttons. Press the center button to select each item.

- Heating Delta T (default stored in control) – valid range: 4 to 12°F (in 1°F increments)
- Cooling Delta T (default stored in control) – valid range: 9 to 20°F (in 1°F increments)

NOTE 1: Minimum and Maximum degree values are shown only when the control is configured with the appropriate values.

NOTE 2: Refer to section 3.6.3 for multi-unit configuration instructions.

3.5.1 MODULATING VALVE OFF POSITION

For certain commercial multi-unit applications, the modulating valve can be kept slightly open by choosing values 3.3-4.0.

| VARIABLE SPD INTERNAL PUMP CONFIGURATION | |
|--|----------|
| LOOP OPTION | PARALLEL |
| PUMP CONTROL | DELTA T |
| HEATING DELTA T | 7 F |
| COOLING DELTA T | 10 F |
| MAXIMUM HEAT LWT | 80 F |
| MINIMUM COOL LWT | 40 F |
| ◀ PREVIOUS | SELECT ■ |

| VARIABLE SPD INTERNAL PUMP CONFIGURATION | |
|--|----------|
| LOOP OPTION | SINGLE |
| PUMP CONTROL | FIXED |
| HEATING STAGE 1 | 60% |
| COOLING STAGE 2 | 75% |
| COOLING STAGE 1 | 50% |
| COOLING STAGE 2 | 70% |
| ◀ PREVIOUS | SELECT ■ |

| MODULATING VALVE CONFIGURATION | |
|--------------------------------|----------|
| OFF POSITION | 0.0 |
| VALVE CONTROL DELTA T | |
| HEATING DELTA T | 7 F |
| COOLING DELTA T | 10 F |
| MAXIMUM HEAT LWT | 80 F |
| MINIMUM COOL LWT | 40 F |
| ◀ PREVIOUS | SELECT ■ |

3.6 MULTI-UNIT CONFIGURATION

If multiple units are connected to one ATC thermostat upon unit start-up, the thermostat will automatically register the serial numbers of all units connected to it.

NOTE: Multiple units may be connected directly to the ATC thermostat or connected to one another in series, as shown by the figure below.



Or



3.6.1 MULTI-UNIT AIRFLOW SELECTION

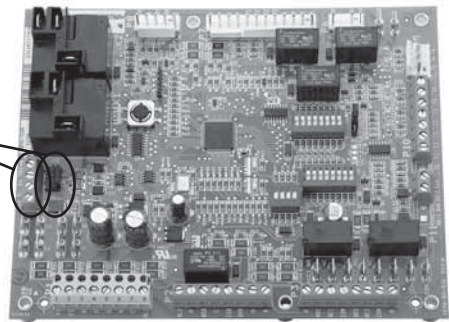
In section 3.1, when an installer selects “Airflow Selection” from the System Configuration menu, the installer may choose the unit to configure by the last 4 digits of its serial number from the following screen.

3.6.2 MULTI-UNIT OPTION SELECTION

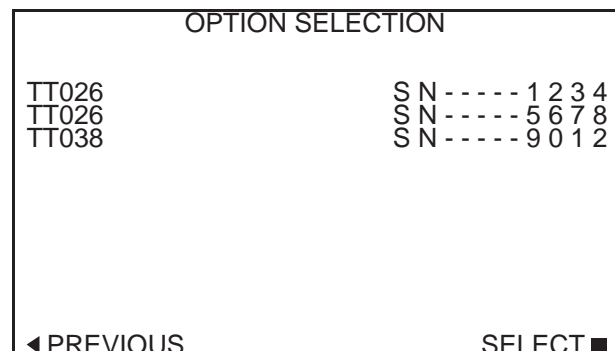
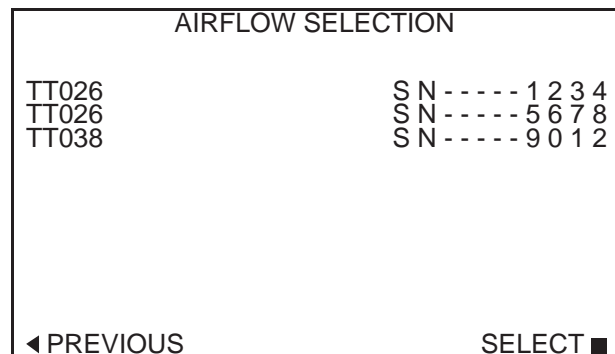
In section 3.2, when an installer selects “Option Selection” from the System Configuration menu, the installer may choose the unit to configure by the last 4 digits of its serial number from the following screen.

3.6.3 Multi-Unit, Unit, Pump, & Valve Configuration

To configure Unit, Pump, and Valve options in sections 3.3-3.5, the thermostat must be connected to only one unit at a time.



Two connections on DXM2 board to allow for multi-unit installation



4.0 Service Mode

4.1 MANUAL OPERATION

Manual Operation mode allows service personnel to manually command operation for any of the thermostat outputs, blower speed, as well as pump speed or valve position to help troubleshoot specific components.

NOTE 1: The ECM Airflow adjustment will not be present if the connected communicating control (DXM2) is not configured for ECM (section 3.1).

NOTE 2: The Pump Speed adjustment will not be present if the connected communicating control (DXM2) is not configured for Pump (section 3.4).

NOTE 3: The Valve Position adjustment will not be present if the connected communicating control (DXM2) is configured for Valve (section 3.5).

4.2 CONTROL DIAGNOSTICS

Control Diagnostics mode allows service personnel to view the status of all physical inputs, switches and temperature sensor readings, as well as the operational status of the heat pump at the thermostat.

Navigate between diagnostic screens using the left/right arrow buttons.

NOTE: The Pump Status will not be present if the connected communicating control (DXM2) is not configured for Pump (section 3.4).

| SERVICE MODE | |
|---------------------|----------|
| MANUAL OPERATION | |
| CONTROL DIAGNOSTICS | |
| DIPSWITCH CONFIG | |
| FAULT HISTORY | |
| CLEAR FAULT HISTORY | |
| SELECT OPTION ▲ ▼ | |
| ◀ PREVIOUS | SELECT ▶ |

| MANUAL OPERATING MODE | | | |
|-----------------------|---------|--------|----------|
| Y1 | COMM | OUTPUT | OFF |
| Y2 | COMM | OUTPUT | OFF |
| W | COMM | OUTPUT | OFF |
| O | COMM | OUTPUT | OFF |
| G | COMM | OUTPUT | OFF |
| H | COMM | OUTPUT | OFF |
| DH | COMM | OUTPUT | OFF |
| ECM | AIRFLOW | | 0 |
| PUMP | SPEED | | 0% |
| TEST | MODE | | OFF |
| SELECT OPTION ▲ ▼ | | | |
| ◀ PREVIOUS | | | SELECT ▶ |

| CONTROL DIAGNOSTICS | |
|---------------------|--------|
| HP SWITCH | CL |
| LOC SWITCH | CL |
| Y1 PHYSICAL INPUT | ON |
| Y2 PHYSICAL INPUT | OFF |
| W PHYSICAL INPUT | OFF |
| O PHYSICAL INPUT | ON |
| G PHYSICAL INPUT | ON |
| H PHYSICAL INPUT | OFF |
| EMERG SHUTDOWN | OFF |
| NIGHT SETBACK | OFF |
| OVR INPUT | OFF |
| ◀ PREVIOUS | NEXT ▶ |

| CONTROL STATUS TEMPERATURES | |
|-----------------------------|--------|
| LT1 TEMP | 38.1 |
| LT2 TEMP | 79.9 |
| COMP DISCHARGE | 157.7 |
| HOT WATER EWT | 121.5 |
| LEAVING AIR | 75.1 |
| LEAVING WATER | 73.3 |
| ENTERING WATER | 78.5 |
| CONTROL VOLTAGE | 26.4 |
| ECM BLOWER RPM | 550 |
| ECM TARGET CFM | 800 |
| ECM BLWR STATIC | N/A |
| ◀ PREVIOUS | NEXT ▶ |

| CONTROL DIAGNOSTICS PUMP OPERATION | |
|------------------------------------|-----|
| PUMP SPEED | 60% |
| PUMP WATTS | 140 |
| FLOW RATE GPM | 7.4 |
| ◀ PREVIOUS | |

4.3 DIPSWITCH CONFIGURATION

Dipswitch Configuration mode allows the service personnel to view the status of all dipswitch settings for the connected communicating control (DXM2/AXM) at the thermostat.

Navigate between configuration screens using the left/right arrow buttons.

NOTE: The unit control dipswitch settings cannot be changed from the thermostat or configuration/diagnostics tool.

```

CONTROL CONFIGURATION
DIPSWITCH S1
1 ON UPS ENABLED
2 ON DUAL COMP STG 1
3 ON HEAT PUMP TSTAT
4 ON RV O THERMOSTAT
5 ON DEHUMID OFF
6 ON EH2 AUX HEAT
7 ON BOILERLESS
8 ON SEE DXM2 AOM
    
```

◀ PREVIOUS NEXT ▶

S1 Dipswitch Status

```

CONTROL CONFIGURATION
DIPSWITCH S2
1 ON \ ACCESSORY 1
2 ON ACCESSORY 2
3 ON/

4 ON \ ACCESSORY 2
5 ON ACTIVE W/ COMP
6 ON /

7 ON H DEHUM INPUT
8 ON FACTORY SETTING
    
```

◀ PREVIOUS NEXT ▶

S2 Dipswitch Status

```

CONTROL CONFIGURATION
DIPSWITCH S3
1 ON FACTORY SETTING
2 OFF HWG TEST OFF
3 OFF HWG SP 125
4 OFF HWG DISABLED

JW3 LT1 SETTING WELL
    
```

◀ PREVIOUS

S3 Dipswitch Status

4.4 FAULT HISTORY

Fault History mode displays the five most recent stored fault codes for the connected communicating control (DXM2).

Navigate between control fault codes using the up/down arrow buttons. Press the center button to view more information about the highlighted fault code.

```

TT038 SN -----0123
LAST 5 FAULTS
LT1 LOW WATER TEMP
NO FAULT
NO FAULT
NO FAULT
NO FAULT
    
```

◀ PREVIOUS NEXT ▶
SELECT ■

Fault History

4.4.0 Fault Conditions Menu

| FAULT CONDITION MENU | |
|---|----------|
| LT1 LOW WATER TEMP HEAT 1 11:11 AM 11/14 | |
| FAULT TEMP CONDITIONS | |
| FAULT FLOW CONDITIONS | |
| FAULT I/O CONDITIONS | |
| FAULT CONFIG COND | |
| FAULT POSSIBLE CAUSES | |
| ◀ PREVIOUS | SELECT ■ |

4.4.1 Temperature Conditions

Displays detailed temperature readings that were recorded at the time the fault occurred

| FAULT TEMPERATURE CONDITIONS | |
|---|-------|
| LT1 LOW WATER TEMP HEAT 1 11:11 AM 11/14 | |
| LT1 TEMP | 28.1 |
| LT2 TEMP | 97.3 |
| HOT WATER EWT | 121.5 |
| COMP DISCHARGE | 157.7 |
| LEAVING AIR | 92.7 |
| LEAVING WATER | 34.9 |
| ENTERING WATER | 42.1 |
| CONTROL VOLTAGE | 26.4 |
| ◀ PREVIOUS | |

4.4.2 Flow Conditions

Displays detailed blower and pump speed / valve position readings that were recorded at the time the fault occurred.

| FAULT FLOW CONDITIONS | |
|---|---------|
| LT1 LOW WATER TEMP HEAT 1 11:11 AM 11/14 | |
| ECM TARGET CFM | 800 |
| ECM BLOWER RPM | 550 |
| FLOW RATE GPM | 6.5 |
| PUMP SPEED | 60% |
| PUMP WATTS | 140 |
| LOOP CONFIG | VS PUMP |
| ◀ PREVIOUS | SINGLE |

| FAULT FLOW CONDITIONS | |
|---|-----------|
| LT1 LOW WATER TEMP HEAT 1 11:11 AM 11/14 | |
| ECM TARGET CFM | 800 |
| ECM BLOWER RPM | 550 |
| VALVE POSITION | 10.0V |
| LOOP CONFIG | MOD VALVE |
| ◀ PREVIOUS | MIN POS |

4.4.3 Input/Output Conditions

Displays the status of all physical and communicated inputs, switches, and control outputs that were recorded at the time the fault occurred.

| FAULT I/O CONDITIONS | | |
|---|--------|-------|
| LT1 LOW WATER TEMP HEAT 1 11:11 AM 11/14 | | |
| TSTAT | SAFETY | OUTPT |
| CONV | COMM | HPS |
| Y1 | Y1 | LOC |
| Y2 | Y2 | CO |
| W | W | |
| O | O | OUTPT |
| G | G | FAN |
| H | H | HWG |
| OVR | DH | PUMP |
| | | CC |
| | | RV |
| | | ACC1 |
| | | ACC2 |
| | | AL1 |
| | | EH1 |
| | | EH2 |
| ◀ PREVIOUS | | |

4.4.3 Configuration Conditions

Displays the status of all dipswitch settings that were recorded at the time the fault occurred.

| FAULT CONFG CONDITIONS | | | | | |
|------------------------|-----|----------|----------|--|--|
| LT1 | LOW | WATER | TEMP | | |
| HEAT | 1 | 11:11 AM | 11/14 | | |
| | S1 | S2 | S3 | | |
| 1 | ON | 1 ON | 1 ON | | |
| 2 | ON | 2 ON | 2 OFF | | |
| 3 | ON | 3 ON | 3 OFF | | |
| 4 | ON | 4 ON | 4 OFF | | |
| 5 | ON | 5 ON | | | |
| 6 | ON | 6 ON | LT1 WELL | | |
| 7 | ON | 7 ON | LT2 WELL | | |
| 8 | ON | 8 ON | | | |
| ◀ PREVIOUS | | | | | |

4.4.4 Possible Causes

Displays possible causes as to why the fault occurred

| POSSIBLE FAULT CAUSES | |
|-------------------------|--|
| LOW WATER COIL TEMP | |
| LOW WATER TEMP - HTG | |
| LOW WATER FLOW - HTG | |
| LOW REFRIG CHARGE - HTG | |
| INCORRECT LT1 SETTING | |
| BAD LT1 THERMISTOR | |
| ◀ PREVIOUS | |

4.5 CLEAR FAULT HISTORY

Clear Fault History will clear all fault codes stored in the thermostat as well as the fault history in any connected communicating controls (DXM2/AXM).

5.0 Revision History

| Date | Page # | Description |
|------------------|--------|--|
| 3 Nov., 17 | All | Updated tstat Part number to ATC32U03 |
| 16 October, 2017 | 5 | Update blower types |
| 25 Jan., 2016 | 12 | Updated Certification Logos |
| 17 Apr., 14 | 3,5 | Text Updated |
| 11 Feb., 14 | All | ACDU01 Updated to ACDU02 |
| 23 Oct. 12 | 4-7 | Unit Config, Pump Config and Valve Config Sections Updated |
| 8 May, 12 | All | First Published |



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