

MECHANICAL GUIDE FOR DS/DC/DT SERIES COMMERCIAL PACKAGED UNITS

GENERAL

- All 3 - 12½ ton units are designed for convertible airflow orientation to serve downflow or horizontal applications.
- All units are charged with R-410A refrigerant and run-tested at the factory to check modes of operation and proper fan rotation.
- All units are rated in accordance with AHRI Standards 210/240 or 340/360.
- Units are ETL listed and certified under US and Canadian standards of safety requirements.

VOLTAGES

All units are available in 208/240V 3-phase 60 Hz, 460V 3-phase 60 Hz, and 575 3-phase 60 Hz. Additionally, 3 - 5 ton sizes are available in 208/240 1-phase 60 Hz.

WARRANTY

Units feature a 5-year parts and compressor warranty. Gas heat exchangers in gas/electric units include a 20-year warranty. Complete warranty information is available from your local dealer or at www.daikincomfort.com.

CABINET

Unit cabinets are made with galvanized steel with a powder-paint finish. Service panels provide access to refrigeration, heating, blower, controls and filter sections. Interior surfaces in the indoor air section is insulated with ½" thick foil-faced insulation. Units have a condensate drain pan with both vertical and horizontal drain connections. Base rails are a minimum 3½" tall and include holes to allow for overhead rigging and lifting with forklifts.

CONTROLS

- Units are factory-wired with color-coded wires with all necessary 24-volt electro-mechanical controls.
- Units have single-point power entry either with the unit or with the electrical heat kits.
- Units come with a grounding lug as standard.

COMPRESSORS

Compressors are scroll compressors with internal overload protection. On units with two refrigeration circuits (7½ - 25 tons), one scroll compressor is used on each circuit.

REFRIGERATION

All units have hermetically sealed scroll compressors with internal overload protection. Compressors are factory-mounted on rubber grommets.

Coils, except for evaporator coil in 25 tons, are made of internally finned copper tube mechanically bonded to aluminum plate fins. 25 ton uses microchannel all aluminum evaporator coils. Coils are pressure tested at the factory to ensure pressure and leak integrity. The evaporator coil and condenser coil are leak-tested to 575 psig and pressure-tested to 450 psig. For 25 tons, microchannel evaporator coils are tested to 700 psig.

On 3 - 12½ ton units, each refrigerant circuit has a fixed orifice-metering device. On 15 - 25 ton models, each refrigerant circuit uses a TXV metering device. 7½ - 25 ton units have two refrigerant circuits. 3 - 6 ton units have a single refrigerant circuit. Evaporator and condenser coils are qualified to UL 1995 burst test to 2,200 psi. Units include high- and low-pressure switches, service ports, and factory-installed filter driers. All heat pump units (DSH/DCH/DTH units) use a refrigerant accumulator.

HEATING SECTION

Gas/Electric units (DSG/DCG/DTG units) include a corrosion-resistant, aluminized tubular steel heat exchanger with formed wrinkle bends at the inner diameter of each radius. Type 409 stainless steel heat exchangers are available as a factory-installed option. The gas heating section uses an induced draft combustion blower and a direct spark ignition system. Units are suitable for use with natural gas or propane with a field-installed kit.

FANS

Fans in 3-phase equipment in 3 - 5 ton units are available with direct-drive, multi-speed motors or belt-drive motors with an adjustable-pitch motor pulley. All units 6 tons and larger come standard with belt-drive motors and adjustable-pitch motor pulleys. Fans in 1-phase equipment in 3 - 5 ton units are available with direct-drive motors. All motors are thermally protected. All evaporator blowers consist of double-inlet type, dynamically balanced forward curved fan wheels. All belted blower motors incorporate an adjustable belt tension mechanism that requires only a single wrench. Outdoor condenser fans are direct-drive, permanently lubricated, and contain overload protection.

FILTRATION

Two-inch filters are standard on all units; 15 - 25 ton units have filter racks to accommodate 2 or 4 inch filters.

COOLING OPERATION RANGE OF OUTDOOR AMBIENT TEMPERATURE

The cooling operating range is between 115°F and 35°F outdoor ambient temperature for 7½ - 20 ton units and between 115°F and 60°F outdoor ambient temperature for 3- to 6-ton units as standard from the factory.

ACCESSORIES AND OPTIONS — Not all accessories and options are available for all units.

FACTORY-INSTALLED OPTIONS

- *Non-Powered Convenience Outlet:* A 120V, 15A, GFCI outlet can be installed in the unit making it easier for technicians to service other units once an electrician runs power to the outlet.
- *Powered Convenience Outlet:* A 120V, 15A, GFCI outlet can be powered with a step-transformer built into the unit. For use when the unit is not running. When a factory-installed powered convenience outlet is installed in the equipment, the unit MCA (Min. Circuit Ampacity) will increase by 7.5A for 208/230V units; increase by 3.75A for 460V units; and by 3A for 575V units. The MOP (Max. Overcurrent Protection) device must be sized accordingly.
- *Stainless-Steel Heat Exchanger (DSG/DCG/DTG units only):* A tubular heat exchanger made of 409-type stainless steel can be installed in the unit.
- *Return Air and/or Supply Air Smoke Detectors:* Return air and/or supply air smoke detectors can be installed in the unit.
- *Disconnect Switch (non-fused):* A disconnect switch can be installed in the unit with factory wiring complete from the switch to the unit. Please note that for air conditioners (DSC/DCC/DTC units) and heat pumps (DSH/DCH/DTH units), the appropriate electric heat kit must be ordered along with the disconnect switch (non-fused) to be factory-installed. For models with a powered convenience outlet option and a disconnect switch (non-fused) option, the power to the powered convenience outlet will be shut off when the disconnect switch (non-fused) is in the off position.
- *Two-speed indoor fan blower:* Two-speed indoor fan blower models are available on 6 - 25 ton units. Section 6.4.3.10.b of ASHRAE Standard 90.1-2010 and Section 6.5.3.2.1.a of ASHRAE Standard 90.1-2013 require a minimum of two fan speeds. Section 140.4(m)1 of California Energy Commission Title 24-2013 contains a similar provision. When the units with the two-speed indoor fan blowers operate on a call for the first stage of cooling, the fan operates at low speed, which is 66% of full speed. When the units operate on a call for the second stage of cooling, the fan operates at full speed. In heating operation, the fan operates at full speed.
- *Phase Monitor:* Phase monitor (3 phase only), available for 3 - 25 ton DS, DC and DT series models. Phase monitor shall provide protection for motors and compressors against problems caused by phase loss, phase reversal and phase unbalance. Phase monitor is equipped with an LED that provides an ON or FAULT indicator.
- *DDC Controller:* DDC communicating controller, available for 3 - 20 ton DS, DC and DT series models with on-board BACnet® communication interface.
- *Hinged Access Panels:* Allows access to unit's major components. Combined with latches for easy access to control box, compressor, filters and blower motor. Available on 3-25 Tons units.

FIELD-INSTALLED OPTIONS

- *Manual Fresh Air Damper:* Provides 25% outside air.
- *Motorized Fresh Air Damper:* A two-position damper with rain hood and screen provides 25% outside air when the indoor fan starts and closes when the indoor fan shuts down.
- *Horizontal Economizer:* Fully modulating between 0 and 100%. Includes motor and dampers, minimum position settings, preset linkage, wiring harness with plug, mixed air temperature sensor, and enthalpy control. An optional duct-mounted barometric relief damper is available. An optional return enthalpy sensor is available to provide comparative or differential enthalpy control.

- *High Altitude Kit (DSG/DCG/DTG units)*: Can be used in gas/electric units operating at higher altitudes.
- *High-Static Kit*: Allows for operation in higher static applications.
- *LP Conversion Kit (DSH/DCG/DTG units)*: Allows DSG/DCG/DTG gas/electric package units to use propane fuel.
- *Power Exhaust*: This accessory exhausts return air and may be used in either downflow or horizontal (duct-mounted) applications.
- *Condenser Hail Guards*: Louvered metal guards help protect the condenser coil from hail and debris; available as a field-installed options on 3 - 12½ ton units. Hail guards are standard on 15 - 25 ton units.

FACTORY- OR FIELD-INSTALLED OPTIONS

- *Downflow Economizer*: Fully modulating between 0 and 100%. Includes motor and dampers, minimum position settings, a preset linkage, a wiring harness with plug, a mixed air temperature sensor, enthalpy control, and a barometric relief damper. An optional return enthalpy sensor is available to provide comparative or differential enthalpy control.
- *Low Ambient Control*: Allows cooling operation to 0°F outdoor ambient temperature for 7½ - 20 ton units and to 35°F outdoor ambient temperature for 3 - 6 ton units. For 25 ton units, cooling operation is extended from 24°F ambient temperature to 0°F outside air temperature.
- *Electric Heat Kits (DSC/DCC/DTC and DSH/DCH/DTH units)*: Heater elements are constructed of rust-resistant nickel chromium and are available in 240V-1-phase-60Hz, 240V-3-phase-60Hz, 480V-3-phase-60Hz and 575V-3-phase-60Hz. All heaters have overcurrent protection and high-temperature limit control. A single point wiring connection is provided through a terminal block.