

# PORTABLE CHILLERS

## CF-D SERIES AIR-COOLED & WATER-COOLED

- 5 - 15 Ton Models
- Digital Scroll Compressor Technology
- 20°F - 80°F Fluid Temperatures
- R410A Non Ozone Depleting Refrigerant
- Steel Frame & Lift-Off Cabinetry
- Stainless Steel Brazed Plate Evaporator

The CF-D Series portable chiller with new Copeland Scroll Digital™ technology provides precision temperature control from an economically affordable and reliable unit. Perfect for applications such as plastic injection molding, blow molding, extrusion and other industrial applications. Product features include:

#### TEMPERATURE RANGE

- 20° - 80°F

#### REFRIGERANT CIRCUIT

- Copeland Scroll Digital™
- Air-cool condenser
- Fan induced air flow
- Filter-drier
- Liquid line solenoid valve
- Refrigerant sight glass with moisture indicator
- Thermostatic expansion valve
- Hot gas by-pass capacity control
- Stainless steel braze plate evaporator
- Full component insulation

#### COOLANT CIRCUIT

- Stainless steel process pump on 5-20 ton models
- Cast iron process pump on 25 - 40 ton models
- Insulated non-ferrous reservoir
- All non-ferrous construction

#### LIMIT DEVICES

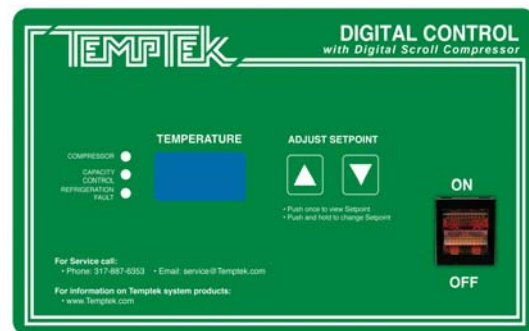
- Compressor motor overload protection
- Refrigerant high pressure switch
- Refrigerant low pressure switch
- Instrument control circuit fuse
- Refrigerant Pressure Relief

#### ELECTRICAL

- Nema rated electrical cabinet
- Process pump motor starter
- Compressor motor starter
- Fused transformer
- Power entry terminal block

#### FRAME

- Female NPT process connections
- Powder coated steel frame
- 4" bearing casters



#### CHILLER CONTROL INSTRUMENT

- Microprocessor based controller
- Large temperature display window
- To process temperature display in °F and °C
- Illuminated Power On switch
- Indicator lights for *Compressor* and *Hot Gas Bypass*
- Diagnostic light for *Refrigerant Fault*
- Soft key setpoint selectors

#### WARRANTY & SERVICE

- 1 year on parts & labor
- Nationwide network of service contractors

**PRICE & PERFORMANCE... for the LONG TERM**

**Southgate Process Equipment / sales@southgateprocess.com / (770) 345-0010**

# TEMPTEK

since 1989

# SPECIFICATIONS

MODEL	CAPACITY <sup>1</sup> TONS	STYLE	PUMP			TANK CAPACITY	DIMENSIONS (H x W x D)	FLA <sup>2</sup>	AVAILABLE VOLTAGES
			HP	FLOW	PRESSURE				
CFD-5A	5	Air-Cooled	2	12 gpm	52 psi	25 gallons	60" x 34" x 45"	17.5	230 / 460
CFD-5W	5	Water-Cooled	2	12 gpm	52 psi	25 gallons	40" x 34" x 45"	15	230 / 460
CFD-10A	9.8	Air-Cooled	2	24 gpm	48 psi	25 gallons	60" x 34" x 56"	30	230 / 460 / 575
CFD-10W	10	Water-Cooled	2	24 gpm	48 psi	25 gallons	40" x 34" x 56"	25	230 / 460 / 575
CFD-15A	14.5	Air-Cooled	3	36 gpm	55 psi	65 gallons	65" x 58" x 64"	43.8	230 / 460 / 575
CFD-15W	15	Water-Cooled	3	36 gpm	55 psi	65 gallons	57" x 34" x 80"	38.5	230 / 460 / 575

**Notes:**

1. Tons capacity at 50°F LWT and 95°F ambient (air-cooled models), 85°F condensing water (water-cooled models).  
 2. 5A & 5W available 230/460/3/60 only. 10A & 10W available 230/460/575/3/60. 460/3/60 amps shown.

## HOW IT WORKS...

The Copeland Scroll Digital™ compressor controlled by the advanced microprocessor control instrument uses a simple and effective method to modulate chiller capacity from 20 - 100 %, giving unparalleled energy efficient performance in the modulation field.

The scroll compressor uses a simple concept first patented in 1905 and has been deployed in industrial process chillers and air conditioning systems for many years. Scroll compressors provide a very smooth compression process and have fewer moving parts compared with traditional reciprocating compressors.

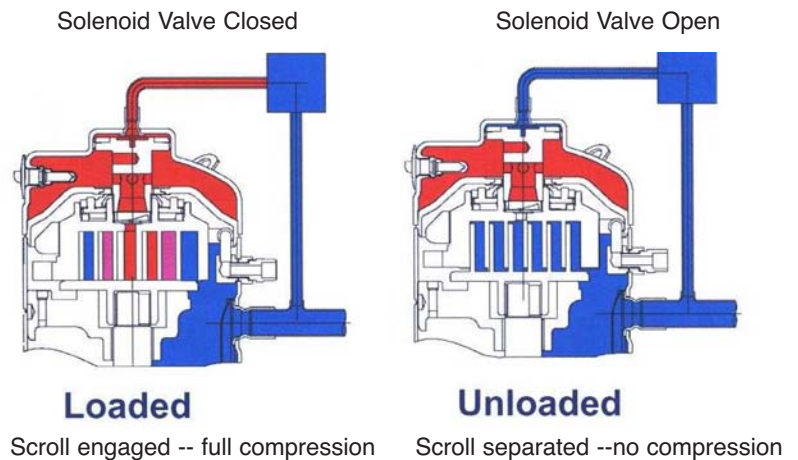
The Copeland Scroll Digital™ compressor improves on the basic scroll design by having axial and radial compliance, which allows the fixed scroll to move in both the axial and radial directions by very small amounts. This ensures that the fixed and orbiting scrolls are always loaded together with the optimal force, thereby maximizing efficiency.

Compliance helps to protect the compressor from damage by debris or liquid. A compressor is designed to only compress gas. Having debris and/or liquid in the compression cycle will damage the compressor. Compliance (the ability of the scrolls to separate axially and radially) allows unexpected debris or liquid to be safely discharged.

The Copeland Scroll Digital™ compressor uses axial compliance as its basic principle, but takes it further by controlling the separation of the scrolls.

The microprocessor control instrument controls the axial separation of the scrolls by using a solenoid valve and a bypass connection between the discharge chamber and the intake gas. The scrolls are designed so that the upper scroll can separate from the bottom scroll by 1 mm vertically.

### Copeland Scroll Digital™ Technology



The Copeland Scroll Digital™ operates in two stages - the loaded state, when the solenoid valve is normally closed and unloaded state, when the solenoid valve is open. During the loaded state, the compressor operates like a standard Scroll and delivers full capacity and mass flow. During the unloaded state, there is no capacity and no mass flow through the compressor.

By controlling the amount of time that the compressor is in the loaded and unloaded state, the control instrument can effectively and efficiently modulate the chiller capacity from 20 to 100% while maintaining temperature stability.

Since there is no compression when the compressor is in the 'unloaded state' far less energy is consumed. Testing shows that compressor energy is reduced by approximately 8% when running at 75% capacity, 12% when running at 50% capacity and 18% when running at 25% capacity as compared to traditional portable chillers that use hot gas bypass for capacity modulation.

Additionally, compressor starts and stops are reduced providing longer compressor life while providing stable cooling fluid temperatures.



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