

# Solenoid Valves for Secondary Coolant Glycol

## Description

A new line of solenoid valves to control secondary coolants has been developed for supermarket systems. These fluids include propylene glycol, ethylene glycol, Pecosol 50, Dynalene HC-40, and others. Parker's valve is the only valve designed to meet the requirements of both medium and low temperature applications encountered in supermarket applications.

## What is Secondary Cooling?

In a secondary coolant, or secondary loop system, a chilled solution, such as propylene glycol, is circulated throughout the system rather than liquid refrigerant. Secondary coolant systems are advantageous because they can eliminate liquid refrigerant and suction gas lines running through a store. This reduces installation costs and labor, and eliminates costly refrigerant leaks. Also, PVC tubing can be used, rather than the heavier, more expensive copper tubing normally used in traditional systems. Another benefit is more efficient defrost cycles with less potential product damage.

## Minimum Pressure Drop

In order to achieve good heat transfer through a coil surface, minimizing pressure drops throughout the system is critical. Parker secondary coolant valves do not require a minimum pressure to operate.\* This is because of the valve's unique "hung diaphragm" design. Other pilot operated valves require some minimum pressure drop to open the diaphragm or piston. This minimum pressure drop is a pressure loss, and means less pressure available at the coil. When using Parker's secondary coolant valves, valve size can be maximized, minimizing the pressure drop.

*\*The 34E24C2-R1021E is pilot operated and requires a minimum of 5 psi. It uses the AF-4 series coil.*

## Specifications - Valve Description

2 way hung diaphragm normally closed valve with brass forged body and EPDM (Ethylene Propylene) trim material.

Maximum Fluid Temperature: -40°F to +180°F

Valve Body: Forged brass

Connections: ODF Copper

Plunger and Pole Piece: Stainless Steel

Enclosing Tube: Stainless Steel

Springs: Stainless Steel

Diaphragm: EPDM

Seals: EPDM

Safe Working Pressure: 10-26 Series = 250 PSIG

34 Series = 225 PSIG

## Specifications - Coil

Type: NEMA 4, 4X (3 wire leads) Power: CF5 is 11 watts; AF4 is 6 watts

Power Consumption: Inrush - 53 va holding - 20 va

## Capacities - For Liquid

$$Q_{\text{gpm}} = C_v \sqrt{\frac{\Delta P}{SG}} \quad \text{SG} = \text{Specific gravity}$$

Capacity table based on SG of water @ 1



**For Supermarket Refrigeration**

## Sizing Valves

| Valve PIN                        | Connection Size | Cv   | Pressure Drop | GPM  |
|----------------------------------|-----------------|------|---------------|------|
| 10E23C2-R1021E<br>10E2302-R1021E | 5/8"            | 4    | 0.5           | 2.8  |
|                                  |                 |      | 1             | 4.0  |
|                                  |                 |      | 2             | 5.7  |
|                                  |                 |      | 3             | 6.9  |
| 14E23C2-R1021E<br>14E2302-R1021E | 7/8"            | 5    | 0.5           | 3.5  |
|                                  |                 |      | 1             | 5.0  |
|                                  |                 |      | 2             | 7.1  |
|                                  |                 |      | 3             | 8.7  |
| 18E23C2-R1021E<br>18E2302-R1021E | 1-1/8"          | 5    | 0.5           | 3.5  |
|                                  |                 |      | 1             | 5.0  |
|                                  |                 |      | 2             | 7.1  |
|                                  |                 |      | 3             | 8.7  |
| 22EH5C2-R1021E<br>22E2502-R1021E | 1-3/8"          | 12.2 | 0.5           | 8.6  |
|                                  |                 |      | 1             | 12.2 |
|                                  |                 |      | 2             | 17.3 |
|                                  |                 |      | 3             | 21.1 |
| 26EH5C2-R1021E<br>26E2502-R1021E | 1-5/8"          | 12.2 | 0.5           | 8.6  |
|                                  |                 |      | 1             | 12.2 |
|                                  |                 |      | 2             | 17.3 |
|                                  |                 |      | 3             | 21.1 |
| 34E24C2-R1021E<br>34E2402-R1021E | 2-1/8"          | 22.5 | 0.5           | 15.9 |
|                                  |                 |      | 1             | 22.5 |
|                                  |                 |      | 2             | 31.8 |
|                                  |                 |      | 3             | 39.0 |

## Coil Voltages - 10E, 14E, 18E, 22E, 26E Normally Open or Normally Closed and 34E Normally Open Series Valves

| Voltage | Wire Length | Coil Part Number |
|---------|-------------|------------------|
| 24 VAC  | 18"         | CF5C01-R1021     |
| 120 VAC |             | CF5C05-R1021     |
| 208 VAC |             | CF5C10-R1021     |
| 240 VAC |             | CF5C15-R1021     |

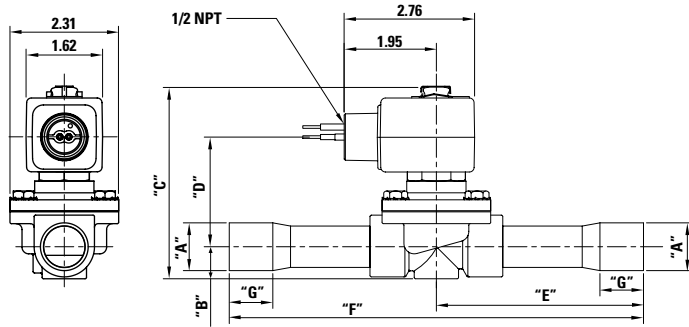
## Coil Voltages - 34E Normally Closed Valve Only

| Voltage  | Wire Length | Coil Part Number |
|----------|-------------|------------------|
| 24 VAC*  | 18"         | AF4C01-R1021     |
| 120 VAC  |             | AF4C05-R1021     |
| 208 VAC  |             | AF4C10-R1021     |
| 240 VAC* |             | AF4C15-R1021*    |

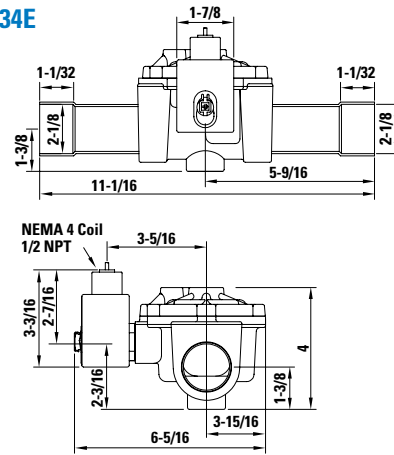
\*Minimum order quantity may be required.

| Feature                                 | Advantage                                                           | Benefit                                               |
|-----------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------|
| Ethylene propylene diaphragm and seals. | Compatible with secondary fluids.                                   | Suitable for both medium and low temperature systems. |
| NEMA 4 coils.                           | Protects against water, icing and vibration.                        | Less maintenance, more dependability.                 |
| Unique hung diaphragm construction      | No minimum pressure differential required.                          | Pressure drop (loss) is minimized.                    |
| Available in sizes 5/8" to 2-1/8" ODF.  | A valve for every common line size.                                 | Easily matches up to system piping.                   |
| Copper ODF extended connections.        | Eliminates need for pipe threaded connections and associated leaks. | Allows easy brazing and faster installation.          |

## Models 10E to 26E



## Models 34E



Models 22E2502-R1021E and 26E2502-R1021E look slightly different. UL File MH5567

## Normally Closed Valves

| Part Number     | Cv   | MOPD    | Orifice | A      | B      | C       | D       | E        | F        | G      |
|-----------------|------|---------|---------|--------|--------|---------|---------|----------|----------|--------|
| 10E23C2-R1021E  | 4    | 150 psi | 5/8"    | 5/8"   | 11/16" | 4-1/16" | 2-5/16" | 3-1/4"   | 6-1/2"   | 1/2"   |
| 14E23C2-R1021E  | 5    | 150 psi | 3/4"    | 7/8"   | 11/16" | 4-1/16" | 2-5/16" | 4-3/8"   | 8-3/4"   | 3/4"   |
| 18E23C2-R1021E  | 5    | 150 psi | 3/4"    | 1-1/8" | 11/16" | 4-1/16" | 2-5/16" | 5-5/32"  | 10-5/16" | 15/16" |
| 22EH5C2-R1021E  | 12.2 | 50 psi  | 1"      | 1-3/8" | 13/16" | 4-1/2"  | 3-1/8"  | 4-11/16" | 9-3/8"   | 15/16" |
| 26EH5C2-R1021E  | 12.2 | 50 psi  | 1"      | 1-5/8" | 13/16" | 4-1/2"  | 3-1/8"  | 4-11/16" | 9-3/8"   | 15/16" |
| 34E24C2-R1021E* | 22.5 | 125 psi | 1-1/2"  | 2-1/8" | 1-3/8" | 4"      | 2-3/16" | 5-9/16"  | 11-1/16" | 11/32" |

\*34E24C2-R1021E requires a minimum of 5 PSI to operate.

## Normally Open Valves

| Part Number     | Cv   | MOPD    | Orifice | A      | B      | C       | D       | E        | F        | G      |
|-----------------|------|---------|---------|--------|--------|---------|---------|----------|----------|--------|
| 10E23O2-R1021E  | 4    | 150 psi | 5/8"    | 5/8"   | 11/16" | 4-1/16" | 2-5/16" | 3-1/4"   | 6-1/2"   | 1/2"   |
| 14E23O2-R1021E  | 5    | 150 psi | 3/4"    | 7/8"   | 11/16" | 4-1/16" | 2-5/16" | 4-3/8"   | 8-3/4"   | 3/4"   |
| 18E23O2-R1021E  | 5    | 150 psi | 3/4"    | 1-1/8" | 11/16" | 4-1/16" | 2-5/16" | 5-5/32"  | 10-5/16" | 15/16" |
| 22E25O2-R1021E  | 12.2 | 50 psi  | 1"      | 1-3/8" | 13/16" | 4-1/2"  | 3-1/8"  | 4-11/16" | 9-3/8"   | 15/16" |
| 26E25O2-R1021E  | 12.2 | 50 psi  | 1"      | 1-5/8" | 13/16" | 4-1/2"  | 3-1/8"  | 4-11/16" | 9-3/8"   | 15/16" |
| 34E24O2-R1021E* | 22.5 | 125 psi | 1-1/2"  | 2-1/8" | 1-3/8" | 4"      | 2-3/16" | 5-9/16"  | 11-1/16" | 11/32" |

\*34E24O2-R1021E requires a minimum of 5 PSI to operate.

## Valve Nomenclature

| 10                                      | E                               | 2                               | 3                                                                              | C                                        | 2                  | R1021E                  |
|-----------------------------------------|---------------------------------|---------------------------------|--------------------------------------------------------------------------------|------------------------------------------|--------------------|-------------------------|
| Connection Size and Type in 16th Inches |                                 | Series                          |                                                                                | Normally Open/Closed                     | Body Material Type | Used for Glycol Service |
| 16th Inches Connections                 | Extended ODF Copper Connections | 2 = 2-Way<br>H = Diaphragm Hung | 3 = Diaphragm Hung<br>4 = Diaphragm Offset Pilot<br>5 = Diaphragm Pivoted Edge | C = Normally Closed<br>O = Normally Open | 2 = Brass          | Series Designation      |

## Coil Nomenclature

Ordering Examples: (CF5C10-R1021 for 10E, 14E, 18E, 22E, 26E Normally Closed or Normally Open and 34E Normally Open Series Valves)

| C            | F                    | 5                                                            | C     | 01                         | R1021                   |
|--------------|----------------------|--------------------------------------------------------------|-------|----------------------------|-------------------------|
| Wattage      | Coil Class           | Coil Enclosure                                               | Leads | Voltage                    | Used for Glycol Service |
| C = 11 Watts | F = Standard (155°F) | 5 = Special (Molded Coil with External Conduit Boss Housing) | 18"   | 01 = 24/60<br>05 = 120/60* | Series Designation      |

Ordering Examples: (AF4C10-R1021 for 34E Normally Closed Valve Only)

| A            | F                    | 4                                                            | C     | 05                           | R1021                   |
|--------------|----------------------|--------------------------------------------------------------|-------|------------------------------|-------------------------|
| Wattage      | Coil Class           | Coil Enclosure                                               | Leads | Voltage                      | Used for Glycol Service |
| A = 6 Watts* | F = Standard (155°F) | 4 = Completely Encapsulated Coil (With Conduit Boss Housing) | 18"   | 05 = 120/60*<br>10 = 208/60* | Series Designation      |

AF4 series coil used on 34E24C2-R1021E.

\*AF4 available in 120/60, 208/60, or 240/60 ONLY. 240/60 may require minimum order quantity.



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