



*AIR  
CONDITIONING*

*COMMERCIAL  
REFRIGERATION*

*HEAT PUMP*



***STANDARD***  
PRODUCT  
CATALOGUE

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**SANHUA** "Strive for perfection, Pursuit of excellence" ..... **02**

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**Note:** Sanhua accepts no responsibility for any errors that may occur in this catalogue. Sanhua accepts no responsibility for any product selection made from this material, it is the customers sole responsibility to ensure the correct selection of any components.



**STANDARD PRODUCTS**

CIE

RoHS

PED

UL

TÜV

VDE

CSA

 **SANHUA**

# SANHUA

*“Strive for perfection  
Pursuit of excellence”*

Sanhua is a leading HVAC&R manufacturer of controls and components with a global footprint and 30 years of experience. Our co-operation with the largest companies in the Automotive, Appliance and HVAC&R industry makes Sanhua a leading worldwide OEM supplier providing the highest quality components at the most competitive price.

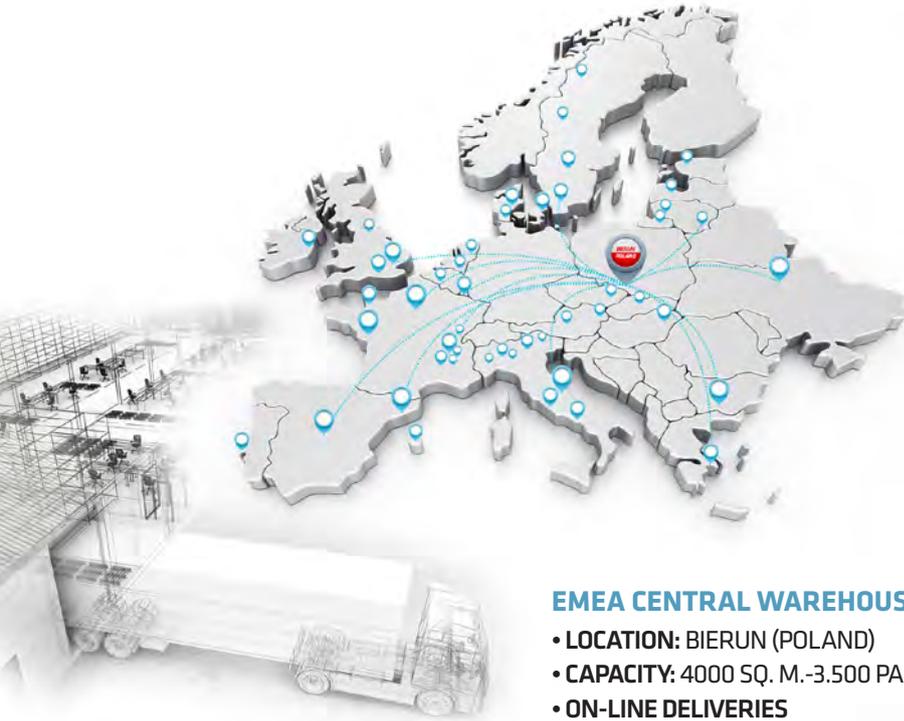
Furthermore, strategic acquisitions by Sanhua of leading HVAC brands such as Ranco and Aweco and joint venture projects transformed Sanhua into one of the largest manufacturers of Expansion, Solenoid and Reversing Valves with annual valve sales exceeding 100 Million pieces.

**SANHUA IS LISTED IN TOP 100 STRONGEST CHINESE INDUSTRIAL BRANDS.**

After sustainable growth over the last 3 decades, Sanhua have made significant progress to introduce a comprehensive range of controls and line components for the Commercial Air conditioning and Refrigeration Industries and to increase its service level coverage in the most important European markets.

**CHILLING  
IDEAS  
WORLDWIDE**

# GLOBAL FOOTPRINT & LOCAL SUPPORT



- Technical Service Hotline in 4 languages (English, Italian, German and Spanish)
- On site engineering support on request.
- Online Data Sheets and product catalogues.
- 72 hours delivery service for standard stocked items within the European Union.
- B2B Customer Platform, on line 24x7 order & stock management.

## EMEA CENTRAL WAREHOUSE

- LOCATION: BIERUN (POLAND)
- CAPACITY: 4000 SQ. M.-3.500 PALLETS
- ON-LINE DELIVERIES TRACKING SYSTEM
- OPENING HOURS FLEXIBILITY
- URGENCIES MANAGEMENT

## QUALITY AND R&D

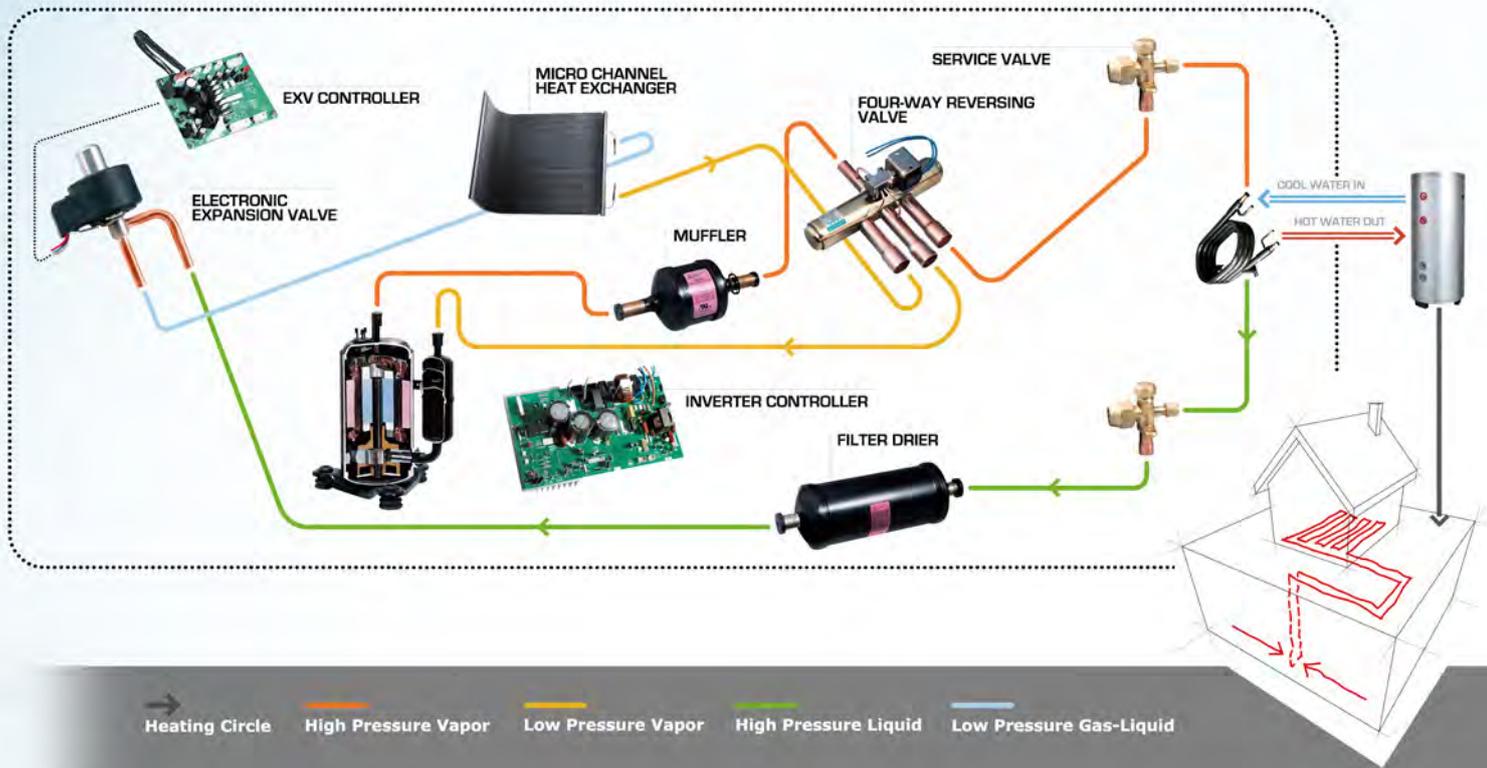
The company has a sufficient number of modern manufacturing equipment, advanced production engineering and effective control tools.

Products of Sanhua have passed many international and domestic safety certificates such as CQC, CE, TÜV, UL, VDE, and have gained trust and satisfaction from customers with reliable and continuous-improving quality.

ISO9001 Quality Management System  
ISO14001 Environment Manag.System  
QC080000 Hazardous Substance  
ISO10012 Measurement Manag System\*\*

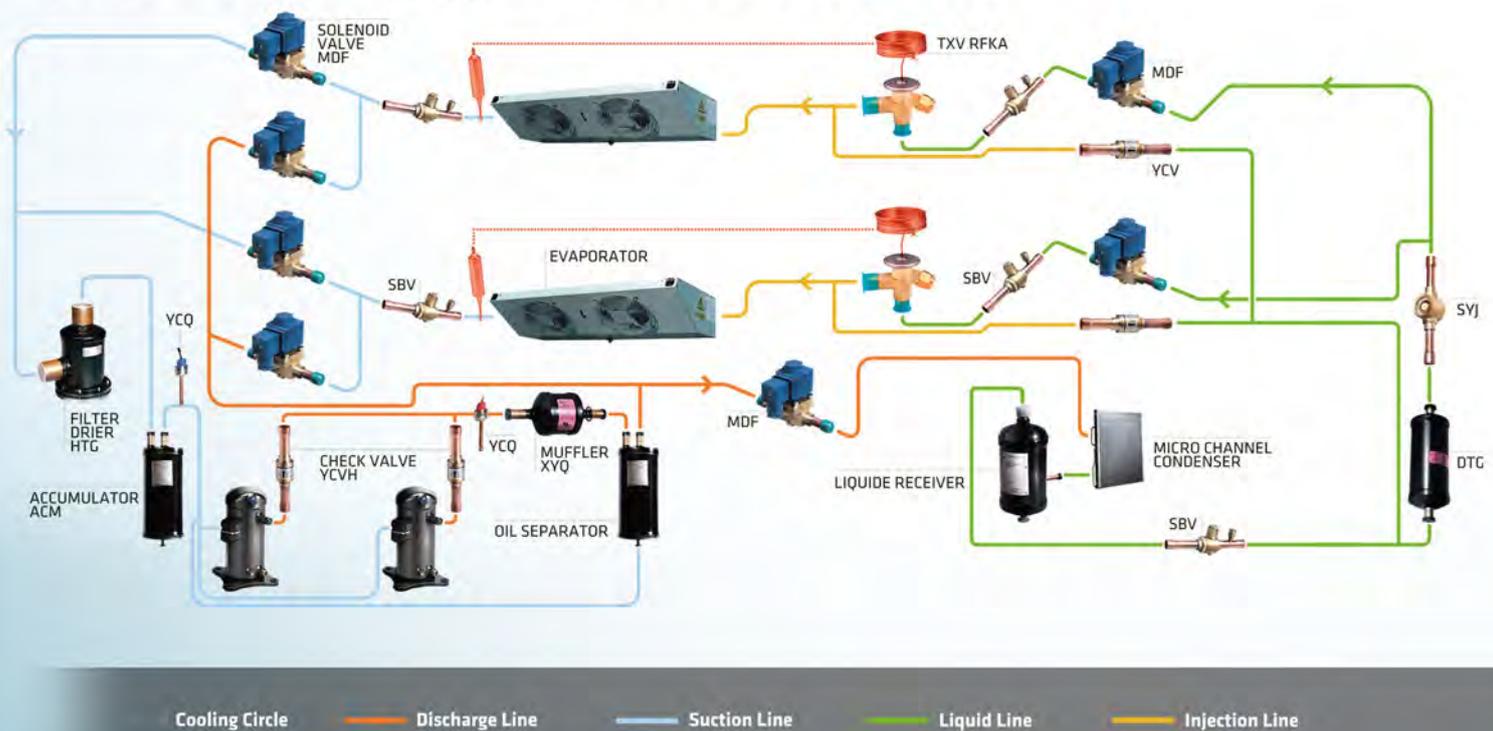


# HOT WATER HEAT PUMP



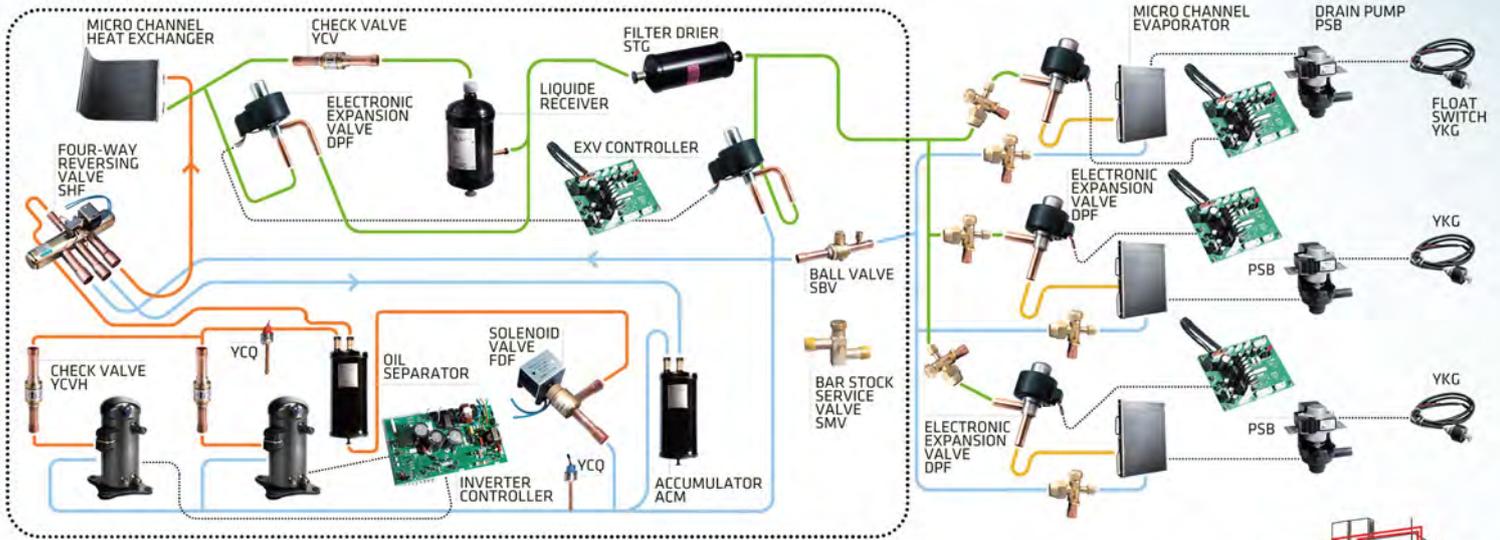
SANHUA IS YOUR PARTNER WITH COMPLETE RANGE AND TECHNOLOGY TO ADDRESS NEW EFFICIENCY CHALLENGES

# Food Retail Application Solutions



# COMMERCIAL AIR CONDITIONING

## VRF SYSTEM



→ Heating Circle    
 — Discharge Line    
 — Suction Line    
 — Liquid Line    
 — Injection Line



SANHUA IS YOUR PARTNER WITH COMPLETE RANGE AND TECHNOLOGY TO ADDRESS NEW EFFICIENCY CHALLENGES

chilling *ideas* worldwide



# SANHUA *YOUR ROAD MAP TO THE ECO-DESIGN DIRECTIVE\**

**KEEPS YOU ONE STEP AHEAD OF THE COMING EFFICIENCY AND ENVIRONMENTAL EUROPEAN CHALLENGES**



### EEV Technology + Electronic Controls

- Improves HVAC $\alpha$ -R system efficiency up to **20%**
- DPF $\alpha$ -VPF series from 2kW to 1400kW  
\*75kW and 1400kW available in Quarter 4
- Advanced MSS (Minimum Stable Superheat) control logic



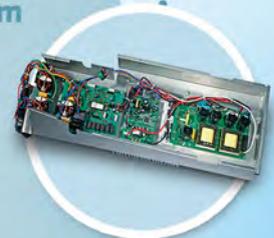
### 4 Way Reversing Valve

- Improves efficiency by **5%**
- SHF series 1kW to 420 kW
- Widest range in the market with Single Body Design



### Inverter Controller for Large System

- Improves system efficiency up to **30%**
- Active Frequency Conversion Technology**
- Wide Range of voltage application



### MCHE

- Improves efficiency by **30%**
- Refrigerant Charge Reduction by **30%** Environmental Friendly
- MCHE is lighter in weight, smaller in volume Compact Design



ADIRALES

\*DIRECTIVE 2012/27/EU

**ADVANCED**  
Technology & Solutions

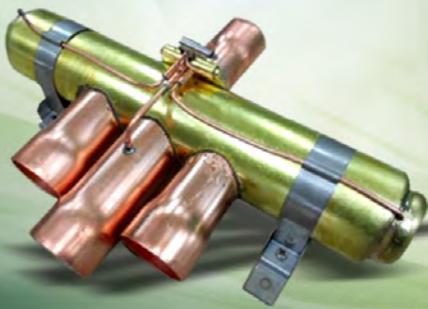


CHILLING IDEAS WORLDWIDE

SANHUA INTERNATIONAL EUROPE  
info@sanhuaeurope.com

2 out of 3 AC units are equipped  
with a **SANHUA**  
reversing valve

YEARLY SANHUA SUPPLIES OVER 50 MILLION  
FOUR WAY REVERSING VALVES TO THE  
COMMERCIAL AND RESIDENTIAL HVAC  
INDUSTRY WORLDWIDE

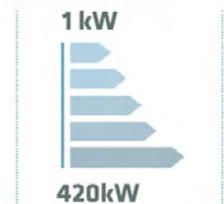


DISCOVER  
**WHY**

[www.sanhuaeurope.com](http://www.sanhuaeurope.com)

**ADVANCED**  
Technology & Solutions

- ✓ Improves efficiency by **5%**
- ✓ SHF series 1kW to 420 kW
- ✓ Widest range in the market  
with Single Body Design



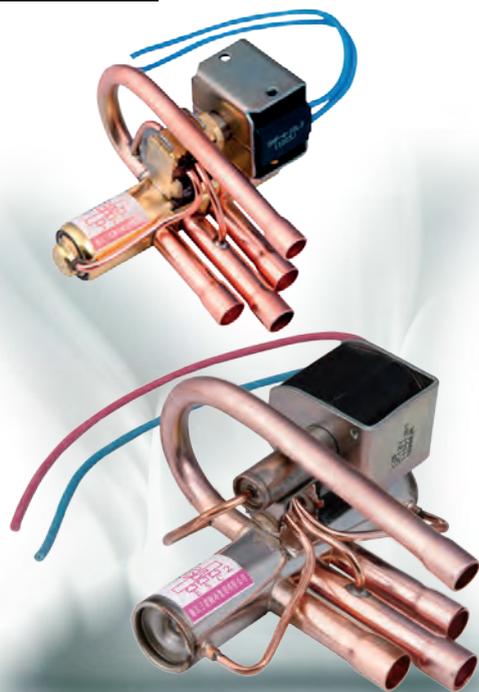
 **SANHUA**

CHILLING *IDEAS* WORLDWIDE

SANHUA INTERNATIONAL EUROPE  
[info@sanhuaeurope.com](mailto:info@sanhuaeurope.com)

# 4 Way Reversing Valve

SHF series four-way reversing valves are applicable for heat pump systems such as central, unitary and room air conditioners to realize switching between cooling mode and heating mode by changing the flow path of refrigerant.



## FEATURES

- WIDE APPLICATION RANGE
- SUITABLE FOR COOLING CAPACITIES FROM 3.6 TO 420KW (R410A, CONDITION 2)
- SEVERAL DESIGNS AVAILABLE

## GENERAL SPECIFICATION

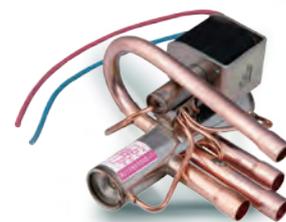
- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507
- Medium temperature TS min./max.: -30°C / +135°C \*
- Ambient temperature min./max.: -30°C / +50 or +70°C (Depending on used coil)
- Relative humidity: 0 to 95% RH
- Max. operating pressure PS: 4.5 MPa (45 bar)
- Installation position:
  - Coil upwards or with body axis in horizontal alignment
  - Flow direction according to installation instruction
- Certifications: UL/CSA\*\* and declaration according to LVD or PED

\* SHF-50-911-D2: TS min./max. : -30°C / +120°C

\*\* SHF(L)-4H to SHF-50 valves, coil selection on request

# SHF SERIES

## 4 Way Reversing Valve

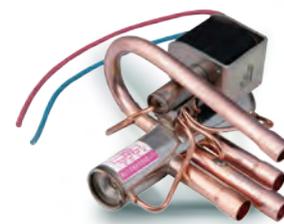


### GENERAL CHARACTERISTICS

| General Characteristics |                |        |        |                 |        |       |       |       |              |
|-------------------------|----------------|--------|--------|-----------------|--------|-------|-------|-------|--------------|
| Valve Model             | Product Number | Ø Port | Kv     | Connections ODF |        | MOP   | OPD   |       | PED Category |
|                         |                |        |        | ØD              | ØE/S/C |       | Max.  | Min.  |              |
|                         |                | [mm]   | [m³/h] | [inch]          | [inch] | [MPa] | [MPa] | [MPa] |              |
| SHF(L)-3H-12U-51        | SHF-19007      | 7,4    | 1,5    | 1/4             | 5/16   | 4,5   | 4     | 0,25  | 3.3          |
| SHF(L)-4H-23U-51        | SHF-19008      | 8      | 1,6    | 5/16            | 3/8    | 4,5   | 4     | 0,25  | 3.3          |
| SHF(G)-7C-34U           | SHF-19009      | 11,1   | 2,9    | 3/8             | 1/2    | 4,5   | 4     | 0,25  | 3.3          |
| SHF(G)-7C-34            | SHF-19010      | 11,1   | 2,9    | 3/8             | 1/2    | 4,5   | 4     | 0,25  | 3.3          |
| SHF(L)-7H-35-51         | SHF-19011      | 11,1   | 2,9    | 3/8             | 5/8    | 4,5   | 4     | 0,25  | 3.3          |
| SHF(G)-11C-34U          | SHF-19012      | 11,5   | 3,9    | 3/8             | 1/2    | 4,5   | 4     | 0,25  | 3.3          |
| SHF(L)-11H-35U-51       | SHF-19013      | 11,5   | 4,5    | 3/8             | 5/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-11H-45D1-51      | SHF-19014      | 11,5   | 4,5    | 1/2             | 5/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-11H-46D1-51      | SHF-19015      | 11,5   | 4,5    | 1/2             | 3/4    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-14A-46              | SHF-50033      | 13,5   | 6,6    | 1/2             | 3/4    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-20D-46-02           | SHF-50022      | 17,2   | 9,5    | 1/2             | 3/4    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-20D-47-02           | SHF-50041      | 17,2   | 9,9    | 1/2             | 7/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-20D-57-02           | SHF-50042      | 17,2   | 9,9    | 5/8             | 7/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-20D-67-02           | SHF-50043      | 17,2   | 9,9    | 3/4             | 7/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-35B-47-04           | SHF-50044      | 20     | 14,7   | 1/2             | 7/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-35B-57-04           | SHF-50045      | 20     | 14,7   | 5/8             | 7/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-35B-59-04           | SHF-50046      | 20     | 14,7   | 5/8             | 1 1/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF-35B-67-04           | SHF-50027      | 20     | 14,7   | 3/4             | 7/8    | 4,5   | 4     | 0,3   | 3.3          |
| SHF-35B-69-04           | SHF-50047      | 20,9   | 14,7   | 3/4             | 1 1/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF-35B-79-04           | SHF-50048      | 20,9   | 14,7   | 7/8             | 1 1/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF-50A-79              | SHF-50038      | 22,8   | 18,3   | 7/8             | 1 1/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF-50-911D2            | SHF-50016      | 25,6   | 18,5   | 1 1/8           | 1 3/8  | 4,5   | 3,1   | 0,3   | 3.3          |
| SHF(L)-70-810           | SHF-50017      | 28,6   | 28,5   | 1               | 1 1/4  | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-70-810-01        | SHF-50024      | 28,6   | 28,5   | 1               | 1 1/4  | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-70-911           | SHF-50049      | 28,6   | 28,5   | 1 1/8           | 1 3/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-70-911-01        | SHF-50050      | 28,6   | 28,5   | 1 1/8           | 1 3/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-70-913-05        | SHF-50052      | 28,6   | 28,5   | 1 1/8           | 1 5/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-70-913-03        | SHF-50051      | 28,6   | 28,5   | 1 1/8           | 1 5/8  | 4,5   | 4     | 0,3   | 3.3          |
| SHF(L)-100-911          | SHF-50053      | 34,8   | 40,5   | 1 1/8           | 1 3/8  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-911-01       | SHF-50054      | 34,8   | 40,5   | 1 1/8           | 1 3/8  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-913          | SHF-50055      | 34,8   | 40,5   | 1 1/8           | 1 5/8  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-913-01       | SHF-50056      | 34,8   | 40,5   | 1 1/8           | 1 5/8  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-1012         | SHF-50018      | 34,8   | 40,5   | 1 1/4           | 1 1/2  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-1012-01      | SHF-50025      | 34,8   | 40,5   | 1 1/4           | 1 1/2  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-1013         | SHF-50057      | 34,8   | 40,5   | 1 1/4           | 1 5/8  | 4,5   | 4     | 0,3   | I            |
| SHF(L)-100-1013-01      | SHF-50058      | 34,8   | 40,5   | 1 1/4           | 1 5/8  | 4,5   | 4     | 0,3   | I            |

# SHF SERIES

## 4 Way Reversing Valve

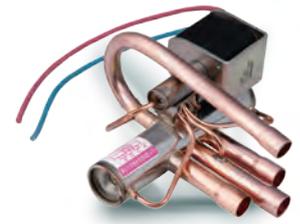


### GENERAL CHARACTERISTICS

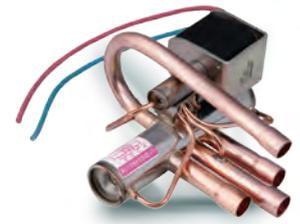
| General Characteristics |                |                |                           |                 |                  |              |               |               |              |
|-------------------------|----------------|----------------|---------------------------|-----------------|------------------|--------------|---------------|---------------|--------------|
| Valve Model             | Product Number | Ø Port<br>[mm] | Kv<br>[m <sup>3</sup> /h] | Connections ODF |                  | MOP<br>[MPa] | OPD           |               | PED Category |
|                         |                |                |                           | ØD<br>[inch]    | ØE/S/C<br>[inch] |              | Max.<br>[MPa] | Min.<br>[MPa] |              |
|                         |                |                |                           | SHF(L)-140-1113 | SHF-50059        |              | 41            | 58,4          |              |
| SHF(L)-140-1213         | SHF-50060      | 41             | 58,4                      | 1 1/2           | 1 5/8            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-140-1214         | SHF-50019      | 41             | 58,4                      | 1 1/2           | 1 3/4            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-140-1313         | SHF-50061      | 41             | 58,4                      | 1 5/8           | 1 5/8            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-175-1217         | SHF-50020      | 46,4           | 70,5                      | 1 1/2           | 2 1/8            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-175-1317         | SHF-50062      | 46,4           | 70,5                      | 1 5/8           | 2 1/8            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-210-1321         | SHF-50021      | 50             | 84,4                      | 1 5/8           | 2 5/8            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-350-1721         | SHF-50031      | 59             | 138,4                     | 2 1/8           | 2 5/8            | 4,5          | 4             | 0,3           | I            |
| SHF(L)-420-2125         | SHF-50032      | 69             | 177                       | 2 5/8           | 3 1/8            | 4,5          | 4             | 0,3           | I            |

| Nominal Operating Conditions           | Condition 1 | Condition 2 |
|--|-------------|-------------|
| Condensing Temperature t <sub>c</sub>  | 38°C        | 54,4°C      |
| Evaporating Temperature t <sub>o</sub> | 5°C         | 7,2°C       |
| Superheat Δt <sub>sc</sub>             | 5K          | 5K          |
| Subcooling Δt <sub>sr</sub>            | 0K          | 5K          |

**Notes for Capacity Selection Tables:** 1) Pressure drop is valid for flow from ØC to ØS or from ØE to ØS  
2) R407C data based on dew point conditions

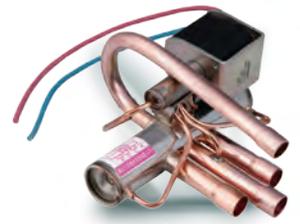


| Capacity Selection Table |                |  |                        |                        |                        |                        |                        |                        |                        |
|--------------------------|----------------|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Valve Model              | Product Number | Nominal Cooling Capacity (condition 1) |                        |                        |                        |                        |                        |                        |                        |
|                          |                | R407C <sup>2)</sup>                    |                        | R410A                  |                        | R134a                  |                        | R404A / R507           |                        |
|                          |                | $\Delta P:$<br>0,1 bar                 | $\Delta P:$<br>0,2 bar | $\Delta P:$<br>0,1 bar | $\Delta P:$<br>0,2 bar | $\Delta P:$<br>0,1 bar | $\Delta P:$<br>0,2 bar | $\Delta P:$<br>0,1 bar | $\Delta P:$<br>0,2 bar |
|                          |                | [kW]                                   | [kW]                   | [kW]                   | [kW]                   | [kW]                   | [kW]                   | [kW]                   | [kW]                   |
| SHF(L)-3H-12U-51         | SHF-19007      | 3,3                                    | 4,7                    | 4,0                    | 5,7                    | 2,6                    | 3,7                    | 2,9                    | 4,0                    |
| SHF(L)-4H-23U-51         | SHF-19008      | 3,6                                    | 5,0                    | 4,3                    | 6,1                    | 2,8                    | 4,0                    | 3,1                    | 4,3                    |
| SHF(G)-7C-34U            | SHF-19009      | 6,5                                    | 9,1                    | 7,8                    | 11,0                   | 5,1                    | 7,2                    | 5,5                    | 7,8                    |
| SHF(G)-7C-34             | SHF-19010      | 6,5                                    | 9,1                    | 7,8                    | 11,0                   | 5,1                    | 7,2                    | 5,5                    | 7,8                    |
| SHF(L)-7H-35-51          | SHF-19011      | 6,5                                    | 9,1                    | 7,8                    | 11,0                   | 5,1                    | 7,2                    | 5,5                    | 7,8                    |
| SHF(G)-11C-34U           | SHF-19012      | 8,7                                    | 12,3                   | 10,5                   | 14,8                   | 6,8                    | 9,6                    | 7,4                    | 10,5                   |
| SHF(L)-11H-35U-51        | SHF-19013      | 10,0                                   | 14,2                   | 12,1                   | 17,1                   | 7,9                    | 11,1                   | 8,6                    | 12,1                   |
| SHF(L)-11H-45D1-51       | SHF-19014      | 10,0                                   | 14,2                   | 12,1                   | 17,1                   | 7,9                    | 11,1                   | 8,6                    | 12,1                   |
| SHF(L)-11H-46D1-51       | SHF-19015      | 10,0                                   | 14,2                   | 12,1                   | 17,1                   | 7,9                    | 11,1                   | 8,6                    | 12,1                   |
| SHF-14A-46               | SHF-50033      | 14,7                                   | 20,8                   | 17,7                   | 25,1                   | 11,5                   | 16,3                   | 12,6                   | 17,8                   |
| SHF-20D-46-02            | SHF-50022      | 21,2                                   | 29,9                   | 25,5                   | 36,1                   | 16,6                   | 23,5                   | 18,1                   | 25,6                   |
| SHF-20D-47-02            | SHF-50041      | 22,1                                   | 31,2                   | 26,6                   | 37,7                   | 17,3                   | 24,5                   | 18,9                   | 26,7                   |
| SHF-20D-57-02            | SHF-50042      | 22,1                                   | 31,2                   | 26,6                   | 37,7                   | 17,3                   | 24,5                   | 18,9                   | 26,7                   |
| SHF-20D-67-02            | SHF-50043      | 22,1                                   | 31,2                   | 26,6                   | 37,7                   | 17,3                   | 24,5                   | 18,9                   | 26,7                   |
| SHF-35B-47-04            | SHF-50044      | 32,7                                   | 46,3                   | 39,5                   | 55,9                   | 25,7                   | 36,3                   | 28,1                   | 39,7                   |
| SHF-35B-57-04            | SHF-50045      | 32,7                                   | 46,3                   | 39,5                   | 55,9                   | 25,7                   | 36,3                   | 28,1                   | 39,7                   |
| SHF-35B-59-04            | SHF-50046      | 32,7                                   | 46,3                   | 39,5                   | 55,9                   | 25,7                   | 36,3                   | 28,1                   | 39,7                   |
| SHF-35B-67-04            | SHF-50027      | 32,7                                   | 46,3                   | 39,5                   | 55,9                   | 25,7                   | 36,3                   | 28,1                   | 39,7                   |
| SHF-35B-69-04            | SHF-50047      | 32,7                                   | 46,3                   | 39,5                   | 55,9                   | 25,7                   | 36,3                   | 28,1                   | 39,7                   |
| SHF-35B-79-04            | SHF-50048      | 32,7                                   | 46,3                   | 39,5                   | 55,9                   | 25,7                   | 36,3                   | 28,1                   | 39,7                   |
| SHF-50A-79               | SHF-50038      | 40,8                                   | 57,7                   | 49,2                   | 69,6                   | 32,0                   | 45,2                   | 34,9                   | 49,4                   |
| SHF-50-911D2             | SHF-50016      | 41,2                                   | 58,3                   | 49,8                   | 70,4                   | 32,3                   | 45,7                   | 35,3                   | 49,9                   |
| SHF(L)-70-810            | SHF-50017      | 63,5                                   | 89,8                   | 76,6                   | 108,4                  | 49,8                   | 70,4                   | 54,4                   | 76,9                   |
| SHF(L)-70-810-01         | SHF-50024      | 63,5                                   | 89,8                   | 76,6                   | 108,4                  | 49,8                   | 70,4                   | 54,4                   | 76,9                   |
| SHF(L)-70-911            | SHF-50049      | 63,5                                   | 89,8                   | 76,6                   | 108,4                  | 49,8                   | 70,4                   | 54,4                   | 76,9                   |
| SHF(L)-70-911-01         | SHF-50050      | 63,5                                   | 89,8                   | 76,6                   | 108,4                  | 49,8                   | 70,4                   | 54,4                   | 76,9                   |
| SHF(L)-70-913-05         | SHF-50052      | 63,5                                   | 89,8                   | 76,6                   | 108,4                  | 49,8                   | 70,4                   | 54,4                   | 76,9                   |
| SHF(L)-70-913-03         | SHF-50051      | 63,5                                   | 89,8                   | 76,6                   | 108,4                  | 49,8                   | 70,4                   | 54,4                   | 76,9                   |
| SHF(L)-100-911           | SHF-50053      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-911-01        | SHF-50054      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-913           | SHF-50055      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-913-01        | SHF-50056      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-1012          | SHF-50018      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-1012-01       | SHF-50025      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-1013          | SHF-50057      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-100-1013-01       | SHF-50058      | 90,2                                   | 127,6                  | 108,9                  | 154,0                  | 70,8                   | 100,1                  | 77,3                   | 109,3                  |
| SHF(L)-140-1113          | SHF-50059      | 130,1                                  | 184,0                  | 157,1                  | 222,1                  | 102,0                  | 144,3                  | 111,5                  | 157,6                  |
| SHF(L)-140-1213          | SHF-50060      | 130,1                                  | 184,0                  | 157,1                  | 222,1                  | 102,0                  | 144,3                  | 111,5                  | 157,6                  |
| SHF(L)-140-1214          | SHF-50019      | 130,1                                  | 184,0                  | 157,1                  | 222,1                  | 102,0                  | 144,3                  | 111,5                  | 157,6                  |
| SHF(L)-140-1313          | SHF-50061      | 130,1                                  | 184,0                  | 157,1                  | 222,1                  | 102,0                  | 144,3                  | 111,5                  | 157,6                  |
| SHF(L)-175-1217          | SHF-50020      | 157,0                                  | 222,1                  | 189,6                  | 268,1                  | 123,2                  | 174,2                  | 134,6                  | 190,3                  |
| SHF(L)-175-1317          | SHF-50062      | 157,0                                  | 222,1                  | 189,6                  | 268,1                  | 123,2                  | 174,2                  | 134,6                  | 190,3                  |
| SHF(L)-210-1321          | SHF-50021      | 188,0                                  | 265,9                  | 227,0                  | 321,0                  | 147,5                  | 208,6                  | 161,1                  | 227,8                  |
| SHF(L)-350-1721          | SHF-50031      | 308,3                                  | 436,0                  | 372,2                  | 526,4                  | 241,8                  | 342,0                  | 264,2                  | 373,6                  |
| SHF(L)-420-2125          | SHF-50032      | 394,3                                  | 557,6                  | 476,0                  | 673,2                  | 309,3                  | 437,4                  | 337,8                  | 477,8                  |

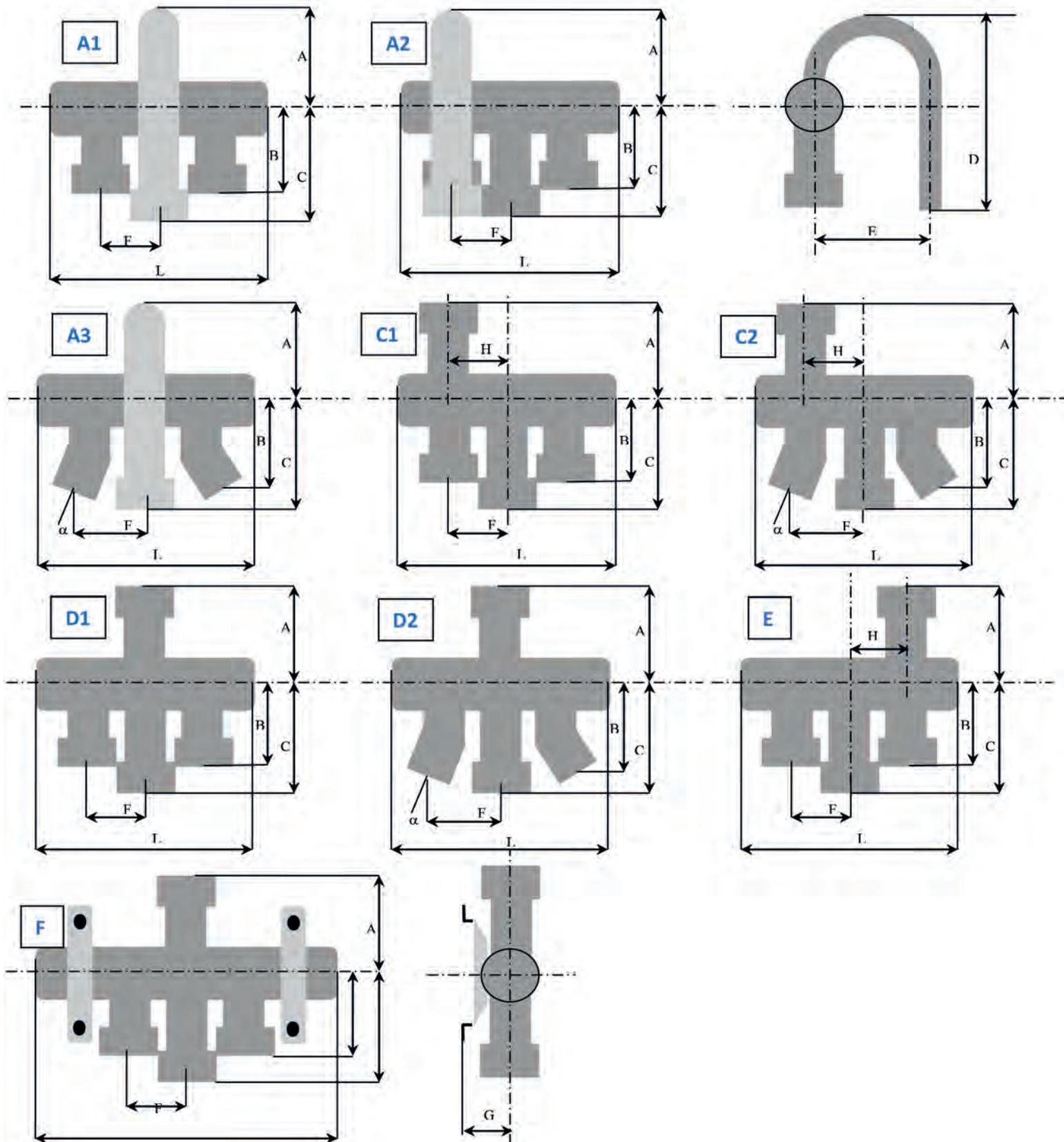


| Capacity Selection Table |                |  |                |                |                |                |                |                |                |
|--------------------------|----------------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Valve Model              | Product Number | Nominal Cooling Capacity (condition 2) |                |                |                |                |                |                |                |
|                          |                | R407C <sup>2)</sup>                    |                | R410A          |                | R134a          |                | R404A / R507   |                |
|                          |                | ΔP:<br>0,1 bar                         | ΔP:<br>0,2 bar | ΔP:<br>0,1 bar | ΔP:<br>0,2 bar | ΔP:<br>0,1 bar | ΔP:<br>0,2 bar | ΔP:<br>0,1 bar | ΔP:<br>0,2 bar |
|                          |                | [kW]                                   | [kW]           | [kW]           | [kW]           | [kW]           | [kW]           | [kW]           | [kW]           |
| SHF(L)-3H-12U-51         | SHF-19007      | 3,0                                    | 4,3            | 3,6            | 5,0            | 2,4            | 3,4            | 2,4            | 3,4            |
| SHF(L)-4H-23U-51         | SHF-19008      | 3,2                                    | 4,6            | 3,8            | 5,4            | 2,6            | 3,7            | 2,6            | 3,7            |
| SHF(G)-7C-34U            | SHF-19009      | 5,9                                    | 8,3            | 6,9            | 9,7            | 4,7            | 6,6            | 4,7            | 6,6            |
| SHF(G)-7C-34             | SHF-19010      | 5,9                                    | 8,3            | 6,9            | 9,7            | 4,7            | 6,6            | 4,7            | 6,6            |
| SHF(L)-7H-35-51          | SHF-19011      | 5,9                                    | 8,3            | 6,9            | 9,7            | 4,7            | 6,6            | 4,7            | 6,6            |
| SHF(G)-11C-34U           | SHF-19012      | 7,9                                    | 11,2           | 9,3            | 13,1           | 6,3            | 8,9            | 6,3            | 8,9            |
| SHF(L)-11H-35U-51        | SHF-19013      | 9,1                                    | 12,9           | 10,7           | 15,1           | 7,3            | 10,3           | 7,3            | 10,3           |
| SHF(L)-11H-45D1-51       | SHF-19014      | 9,1                                    | 12,9           | 10,7           | 15,1           | 7,3            | 10,3           | 7,3            | 10,3           |
| SHF(L)-11H-46D1-51       | SHF-19015      | 9,1                                    | 12,9           | 10,7           | 15,1           | 7,3            | 10,3           | 7,3            | 10,3           |
| SHF-14A-46               | SHF-50033      | 13,4                                   | 18,9           | 15,7           | 22,2           | 10,7           | 15,1           | 10,7           | 15,1           |
| SHF-20D-46-02            | SHF-50022      | 19,3                                   | 27,3           | 22,5           | 31,9           | 15,4           | 21,7           | 15,4           | 21,7           |
| SHF-20D-47-02            | SHF-50041      | 20,1                                   | 28,4           | 23,5           | 33,2           | 16,0           | 22,7           | 16,0           | 22,6           |
| SHF-20D-57-02            | SHF-50042      | 20,1                                   | 28,4           | 23,5           | 33,2           | 16,0           | 22,7           | 16,0           | 22,6           |
| SHF-20D-67-02            | SHF-50043      | 20,1                                   | 28,4           | 23,5           | 33,2           | 16,0           | 22,7           | 16,0           | 22,6           |
| SHF-35B-47-04            | SHF-50044      | 29,8                                   | 42,2           | 34,9           | 49,3           | 23,8           | 33,7           | 23,8           | 33,6           |
| SHF-35B-57-04            | SHF-50045      | 29,8                                   | 42,2           | 34,9           | 49,3           | 23,8           | 33,7           | 23,8           | 33,6           |
| SHF-35B-59-04            | SHF-50046      | 29,8                                   | 42,2           | 34,9           | 49,3           | 23,8           | 33,7           | 23,8           | 33,6           |
| SHF-35B-67-04            | SHF-50027      | 29,8                                   | 42,2           | 34,9           | 49,3           | 23,8           | 33,7           | 23,8           | 33,6           |
| SHF-35B-69-04            | SHF-50047      | 29,8                                   | 42,2           | 34,9           | 49,3           | 23,8           | 33,7           | 23,8           | 33,6           |
| SHF-35B-79-04            | SHF-50048      | 29,8                                   | 42,2           | 34,9           | 49,3           | 23,8           | 33,7           | 23,8           | 33,6           |
| SHF-50A-79               | SHF-50038      | 37,1                                   | 52,5           | 43,4           | 61,4           | 29,6           | 41,9           | 29,6           | 41,8           |
| SHF-50-911D2             | SHF-50016      | 37,5                                   | 53,1           | 43,9           | 62,1           | 29,9           | 42,4           | 29,9           | 42,3           |
| SHF(L)-70-810            | SHF-50017      | 57,8                                   | 81,8           | 67,6           | 95,7           | 46,1           | 65,2           | 46,1           | 65,2           |
| SHF(L)-70-810-01         | SHF-50024      | 57,8                                   | 81,8           | 67,6           | 95,7           | 46,1           | 65,2           | 46,1           | 65,2           |
| SHF(L)-70-911            | SHF-50049      | 57,8                                   | 81,8           | 67,6           | 95,7           | 46,1           | 65,2           | 46,1           | 65,2           |
| SHF(L)-70-911-01         | SHF-50050      | 57,8                                   | 81,8           | 67,6           | 95,7           | 46,1           | 65,2           | 46,1           | 65,2           |
| SHF(L)-70-913-05         | SHF-50052      | 57,8                                   | 81,8           | 67,6           | 95,7           | 46,1           | 65,2           | 46,1           | 65,2           |
| SHF(L)-70-913-03         | SHF-50051      | 57,8                                   | 81,8           | 67,6           | 95,7           | 46,1           | 65,2           | 46,1           | 65,2           |
| SHF(L)-100-911           | SHF-50053      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-911-01        | SHF-50054      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-913           | SHF-50055      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-913-01        | SHF-50056      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-1012          | SHF-50018      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-1012-01       | SHF-50025      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-1013          | SHF-50057      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-100-1013-01       | SHF-50058      | 82,2                                   | 116,2          | 96,1           | 136,0          | 65,6           | 92,7           | 65,5           | 92,6           |
| SHF(L)-140-1113          | SHF-50059      | 118,5                                  | 167,5          | 138,6          | 196,0          | 94,5           | 133,7          | 94,4           | 133,5          |
| SHF(L)-140-1213          | SHF-50060      | 118,5                                  | 167,5          | 138,6          | 196,0          | 94,5           | 133,7          | 94,4           | 133,5          |
| SHF(L)-140-1214          | SHF-50019      | 118,5                                  | 167,5          | 138,6          | 196,0          | 94,5           | 133,7          | 94,4           | 133,5          |
| SHF(L)-140-1313          | SHF-50061      | 118,5                                  | 167,5          | 138,6          | 196,0          | 94,5           | 133,7          | 94,4           | 133,5          |
| SHF(L)-175-1217          | SHF-50020      | 143,0                                  | 202,2          | 167,3          | 236,7          | 114,1          | 161,4          | 114,0          | 161,2          |
| SHF(L)-175-1317          | SHF-50062      | 143,0                                  | 202,2          | 167,3          | 236,7          | 114,1          | 161,4          | 114,0          | 161,2          |
| SHF(L)-210-1321          | SHF-50021      | 171,2                                  | 242,1          | 200,3          | 283,3          | 136,6          | 193,2          | 136,5          | 193,0          |
| SHF(L)-350-1721          | SHF-50031      | 280,7                                  | 397,0          | 328,5          | 464,6          | 224,1          | 316,9          | 223,8          | 316,4          |
| SHF(L)-420-2125          | SHF-50032      | 359,0                                  | 507,8          | 420,1          | 594,2          | 286,5          | 405,2          | 286,2          | 404,7          |

**SHF SERIES**  
**4 Way Reversing Valve**

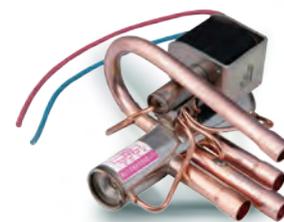


**DIMENSIONS - VALVES**



# SHF SERIES

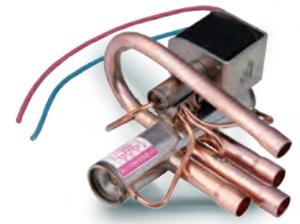
## 4 Way Reversing Valve



| Dimensions - Valves |                |             |       |       |       |       |      |      |      |      |      |         |        |
|---------------------|----------------|-------------|-------|-------|-------|-------|------|------|------|------|------|---------|--------|
| Valve Model         | Product Number | Valve Style | L     | A     | B     | C     | D    | E    | F    | G    | H    | Angle α | Weight |
|                     |                |             | [mm]  | [mm]  | [mm]  | [mm]  | [mm] | [mm] | [mm] | [mm] | [mm] | [mm]    |        |
| SHF(L)-3H-12U-51    | SHF-19007      | A1          | 88,2  | 38,5  | 38    | 50    | 88,5 | 43   | 11   | -    | -    | 0       | 0,2    |
| SHF(L)-4H-23U-51    | SHF-19008      | A1          | 94,4  | 43    | 50    | 62    | 105  | 43   | 12   | -    | -    | 0       | 0,2    |
| SHF(G)-7C-34U       | SHF-19009      | A2          | 113,6 | 48    | 59    | 71    | 119  | 52   | 16   | -    | -    | 0       | 0,28   |
| SHF(G)-7C-34        | SHF-19010      | C1          | 113,6 | 51    | 59    | 71    | -    | -    | 16   | -    | -    | 0       | 0,28   |
| SHF(L)-7H-35-51     | SHF-19011      | D2          | 113   | 52    | 57    | 72    | -    | -    | 23,5 | -    | 16   | 0       | 0,3    |
| SHF(G)-11C-34U      | SHF-19012      | A2          | 113,6 | 51    | 59    | 71    | 119  | 52   | 16   | -    | -    | 0       | 0,3    |
| SHF(L)-11H-35U-51   | SHF-19013      | A3          | 115,5 | 51    | 57    | 71    | 119  | 52   | 23,5 | -    | -    | 15      | 0,3    |
| SHF(L)-11H-45D1-51  | SHF-19014      | C2          | 117   | 52    | 62    | 87    | -    | -    | 25   | -    | 16   | 15      | 0,32   |
| SHF(L)-11H-46D1-51  | SHF-19015      | C2          | 117   | 52    | 82    | 87    | -    | -    | 32,5 | -    | 16   | 20      | 0,35   |
| SHF-14A-46          | SHF-50033      | D1          | 163   | 67    | 83    | 95    | -    | -    | 23,8 | -    | -    | 0       | 0,72   |
| SHF-20D-46-02       | SHF-50022      | D1          | 183,6 | 67    | 83    | 95    | -    | -    | 28,6 | -    | -    | 0       | 0,75   |
| SHF-20D-47-02       | SHF-50041      | D1          | 183,6 | 67    | 83    | 95    | -    | -    | 28,6 | -    | -    | 0       | 0,75   |
| SHF-20D-57-02       | SHF-50042      | D1          | 183,6 | 67    | 83    | 95    | -    | -    | 28,6 | -    | -    | 0       | 0,75   |
| SHF-20D-67-02       | SHF-50043      | D1          | 183,6 | 67    | 83    | 95    | -    | -    | 28,6 | -    | -    | 0       | 0,75   |
| SHF-35B-47-04       | SHF-50044      | D1          | 212,2 | 82    | 87    | 100   | -    | -    | 33   | -    | -    | 0       | 1,3    |
| SHF-35B-57-04       | SHF-50045      | D1          | 212,2 | 82    | 87    | 100   | -    | -    | 33   | -    | -    | 0       | 1,3    |
| SHF-35B-59-04       | SHF-50046      | D1          | 212,2 | 82    | 87    | 100   | -    | -    | 33   | -    | -    | 0       | 1,3    |
| SHF-35B-67-04       | SHF-50027      | D1          | 212,2 | 82    | 87    | 100   | -    | -    | 33   | -    | -    | 0       | 1,3    |
| SHF-35B-69-04       | SHF-50047      | D1          | 212,2 | 82    | 87    | 100   | -    | -    | 33   | -    | -    | 0       | 1,3    |
| SHF-35B-79-04       | SHF-50048      | D1          | 212,2 | 82    | 87    | 100   | -    | -    | 33   | -    | -    | 0       | 1,3    |
| SHF-50A-79          | SHF-50038      | D1          | 217   | 91    | 96    | 128   | -    | -    | 33   | -    | -    | 0       | 2,1    |
| SHF-50-911D2        | SHF-50016      | E           | 269   | 97    | 149   | 174   | -    | -    | 41,3 | -    | 41,3 | 0       | 2,1    |
| SHF(L)-70-810       | SHF-50017      | D1          | 303   | 111   | 117   | 131   | -    | -    | 46   | -    | -    | 0       | 3      |
| SHF(L)-70-810-01    | SHF-50024      | F           | 303   | 111   | 117   | 154   | -    | -    | 46   | 58   | -    | 0       | 3      |
| SHF(L)-70-911       | SHF-50049      | D1          | 303   | 111   | 117   | 154   | -    | -    | 46   | -    | -    | 0       | 3      |
| SHF(L)-70-911-01    | SHF-50050      | F           | 321   | 111   | 117   | 131   | -    | -    | 49   | 58   | -    | 0       | 3,5    |
| SHF(L)-70-913-05    | SHF-50052      | D1          | 321   | 111   | 117   | 131   | -    | -    | 49   | -    | -    | 0       | 3,5    |
| SHF(L)-70-913-03    | SHF-50051      | F           | 321   | 111   | 117   | 131   | -    | -    | 49   | 58   | -    | 0       | 3,5    |
| SHF(L)-100-911      | SHF-50053      | D1          | 321   | 111   | 117   | 131   | -    | -    | 49   | -    | -    | 0       | 3,5    |
| SHF(L)-100-911-01   | SHF-50054      | F           | 303   | 111   | 117   | 131   | -    | -    | 46   | 58   | -    | 0       | 3      |
| SHF(L)-100-913      | SHF-50055      | D1          | 303   | 111   | 117   | 154   | -    | -    | 46   | -    | -    | 0       | 3      |
| SHF(L)-100-913-01   | SHF-50056      | F           | 303   | 111   | 117   | 154   | -    | -    | 46   | 58   | -    | 0       | 3      |
| SHF(L)-100-1012     | SHF-50018      | D1          | 321   | 111   | 117   | 131   | -    | -    | 49   | -    | -    | 0       | 3,5    |
| SHF(L)-100-1012-01  | SHF-50025      | F           | 321   | 111   | 117   | 131   | -    | -    | 49   | 58   | -    | 0       | 3,5    |
| SHF(L)-100-1013     | SHF-50057      | D1          | 321   | 111   | 117   | 131   | -    | -    | 49   | -    | -    | 0       | 3,5    |
| SHF(L)-100-1013-01  | SHF-50058      | F           | 321   | 111   | 117   | 131   | -    | -    | 49   | 58   | -    | 0       | 3,5    |
| SHF(L)-140-1113     | SHF-50059      | F           | 390   | 135,6 | 148,7 | 168,7 | -    | -    | 58   | 63   | -    | 0       | 7,2    |
| SHF(L)-140-1213     | SHF-50060      | F           | 390   | 135,6 | 148,7 | 168,7 | -    | -    | 58   | 63   | -    | 0       | 7,2    |
| SHF(L)-140-1214     | SHF-50019      | F           | 390   | 135,6 | 148,7 | 168,7 | -    | -    | 58   | 63   | -    | 0       | 7,2    |
| SHF(L)-140-1313     | SHF-50061      | F           | 390   | 135,6 | 148,7 | 168,7 | -    | -    | 58   | 63   | -    | 0       | 7,2    |
| SHF(L)-175-1217     | SHF-50020      | F           | 390   | 135,6 | 148,7 | 198   | -    | -    | 58   | 63   | -    | 0       | 7,6    |
| SHF(L)-175-1317     | SHF-50062      | F           | 390   | 135,6 | 148,7 | 198   | -    | -    | 58   | 63   | -    | 0       | 7,6    |
| SHF(L)-210-1321     | SHF-50021      | F           | 452   | 135,6 | 148,7 | 198   | -    | -    | 71,5 | 63   | -    | 0       | 8,7    |
| SHF(L)-350-1721     | SHF-50031      | F           | 531   | 176,5 | 184   | 240   | -    | -    | 75   | 82,5 | -    | 0       | 22     |
| SHF(L)-420-2125     | SHF-50032      | F           | 611,7 | 176,5 | 184   | 240   | -    | -    | 93   | 82,5 | -    | 0       | 26     |

# SHF SERIES

## 4 Way Reversing Valve

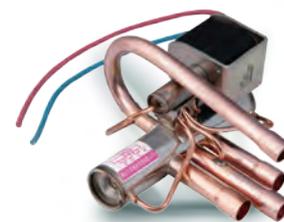


| Coil Characteristics     |              |                |   |      |     |         |                   |      |    |      |                 |      |
|--------------------------|--------------|----------------|---|------|-----|---------|-------------------|------|----|------|-----------------|------|
| Coil Model <sup>1)</sup> | Winding Code | Product Number | Electrical Function/<br>Connection Type | [mm] | [-] | [V]     | Power Consumption |      |    | [-]  | [-]             | [°C] |
|                          |              |                |   |      |     |         | AC                | AC   | DC |      |                 |      |
|                          |              |                |   |      |     |         | 50Hz              | 60Hz |    |      |                 |      |
| SQ-A25 22G-00 0001       | SHF-4-10L3   | SHF-56001      | Lead Wires                              | 500  | AC  | 220-240 | 4,5               | 3,5  | -  | IP54 | B <sup>2)</sup> | 130  |
| SQ-A25 200-00 0001       | SHF-4-10L2   | SHF-56002      | Lead Wires                              | 500  | AC  | 200     | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 100-00 0001       | SHF-4-10L1   | SHF-56003      | Lead Wires                              | 500  | AC  | 100     | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 11A-00 0001       | SHF-4-10L4   | SHF-56004      | Lead Wires                              | 500  | AC  | 110-120 | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 024-00 0001       | SHF-4-10L5   | SHF-56005      | Lead Wires                              | 500  | AC  | 24      | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 26H-00 0001       | SHF-4-10L6   | SHF-56006      | Lead Wires                              | 500  | AC  | 265-277 | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 22G-00 0870       | SHF-4-10L3   | SHF-56024      | Lead Wires                              | 1500 | AC  | 220-240 | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 11A-00 0840       | SHF-4-10L4   | SHF-56025      | Lead Wires                              | 1500 | AC  | 110-120 | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A25 024-00 0161       | SHF-4-10L5   | SHF-56009      | Lead Wires                              | 1500 | AC  | 24      | 4,5               | 3,5  | -  |      |                 |      |
| SQ-A44 22G-00 0771       | SHF-4-10FA5  | SHF-56012      | Spade (Faston) <sup>4)</sup>            | -    | AC  | 220-240 | 6                 | 5    | -  | IP00 | F <sup>3)</sup> | 155  |
| SQ-A44 220-00 0001       | SHF-4-10FA1  | SHF-56013      | Spade (Faston) <sup>4)</sup>            | -    | AC  | 220     | 6                 | 5    | -  |      |                 |      |
| SQ-A44 11B-00 0001       | SHF-4-10FA2  | SHF-56014      | Spade (Faston) <sup>4)</sup>            | -    | AC  | 120     | 6                 | 5    | -  |      |                 |      |
| SQ-A44 10A-00 0001       | SHF-4-10FA3  | SHF-56015      | Spade (Faston) <sup>4)</sup>            | -    | AC  | 100-110 | 6                 | 5    | -  |      |                 |      |
| SQ-A44 024-00 0771       | SHF-4-10FA4  | SHF-56016      | Spade (Faston) <sup>4)</sup>            | -    | AC  | 24      | 6                 | 5    | -  |      |                 |      |
| SQ-A44 26H-00 0831       | SHF-4-10FA6  | SHF-56017      | Spade (Faston) <sup>4)</sup>            | -    | AC  | 265-277 | 6                 | 5    | -  |      |                 |      |
| SQ-D44 012-00 0001       | SHF-4-10FA8  | SHF-56019      | Spade (Faston) <sup>4)</sup>            | -    | DC  | 12      | -                 | -    | 10 | IP54 | B <sup>2)</sup> | 130  |
| SQ-D44 024-00 0001       | SHF-4-10FA9  | SHF-56020      | Spade (Faston) <sup>4)</sup>            | -    | DC  | 24      | -                 | -    | 11 |      |                 |      |
| SQ-A27 100-00 0001       | -            | SHF-56021      | Bi-stable/Lead W.                       | 500  | AC  | 100     | 18                | 18   | -  |      |                 |      |
| SQ-A27 200-00 0001       | -            | SHF-56022      | Bi-stable/Lead W.                       | 500  | AC  | 200     | 18                | 18   | -  | IP54 | B <sup>2)</sup> | 130  |
| SQ-A27 20K-00 0001       | -            | SHF-56027      | Bi-stable/Lead W.                       | 500  | AC  | 220-240 | 18                | 18   | -  |      |                 |      |
| SQ-D27 012-00 0001       | -            | SHF-56023      | Bi-stable/Lead W.                       | 500  | DC  | 12      | -                 | -    | 20 |      |                 |      |

- Note:**
- 1) Every coil is applicable to all above specified valve models
  - 2) Max ambient temperature up to + 50°C
  - 3) Max ambient temperature up to + 70°C
  - 4) Wire Harness for coil with Faston connector: SQ-000000-090028 (Part Number: SHF-56026)
  - 5) Bi-stable coils (SQ-A27 series) cannot be selected with the following valves:
    - SHF(G)-7C-34U (P/N: SHF-19009)
    - SHF(G)-7C-34 (P/N: SHF-19010)
    - SHF(G)-11C-34U (P/N: SHF-19012)

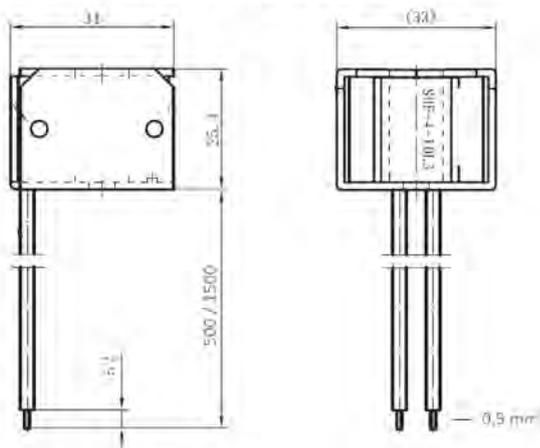
# SHF SERIES

## 4 Way Reversing Valve

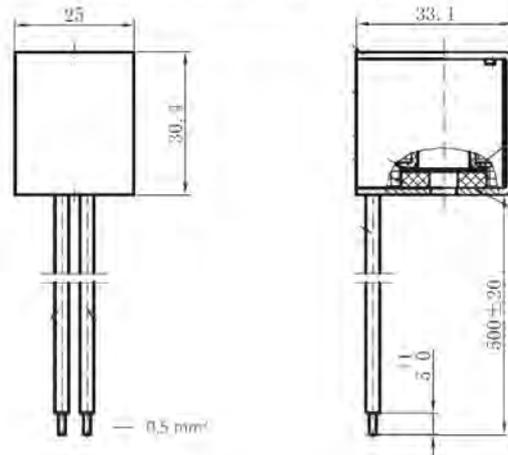


### DIMENSIONS - COILS

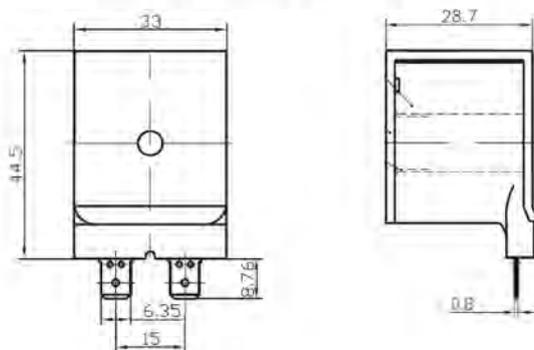
Coils with Lead Wires (SQ-A25 Series)



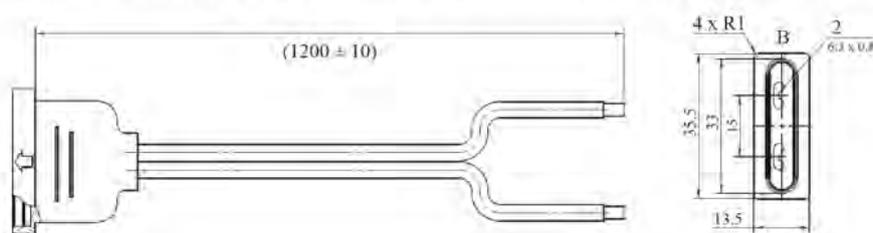
Bistable Coils (SQ-A/D27 Series)



Coils with Spade Connections (SQ-A/D44 Series)



Wire Harness (SQ-000000-090028)



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Solenoid Valve



Check Valve Piston Type



Thermostatic Expansion Valve



Uni-Flow Filter Driers



4 Way Reversing Valve



Ball Valve



Pressure Switch



Filter Driers with Replaceable Core



Sight Glass



Electronic Expansion Valve

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# Electronic Expansion Valve

T/S series electronic expansion valves are designed for use in air conditioning and refrigeration systems or in heat pumps. The valve controls the automatic adjustment of refrigerant flow rate and makes the system work under optimized conditions for the purpose of fast cooling or heating, precise temperature control and energy saving. The valve can also be used e.g. for suction line pressure controls. These valves provide bidirectional operation to control the refrigerant flow rate in heating or cooling mode.



## FEATURES

- APPLICABLE FOR OIL-FREE SYSTEM (T SERIES)
- SMALLER INSTALLATION SPACE: LOW HEIGHT, SMALL VOLUME, LIGHT WEIGHT
- OPTIMIZED FLOW PATH DESIGN FOR NOISE REDUCTION
- FAST OPERATION, ENERGY SAVING
- APPLICABLE FOR REVERSIBLE SYSTEMS LIKE HEAT PUMPS: BIDIRECTIONAL FLOW

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Cooling capacity: 3,5 to 105 kW (R22 nominal capacity)
- 500 steps (full stroke); 32 ± 20 opening steps
- Medium temperature TS min./max.: -30°C / +70°C (duty cycle rate below 50%)
- Ambient temperature min./max.: -30°C / +60°C (duty cycle rate below 50%)
- Relative humidity: : 0 to 95% RH
- Installation position: :
  - Coil installed in the upwards position, valve rotor central axis within ±15° versus vertical axis
  - Inlet connection preferably sideways, outlet preferably downwards
- Certifications: UL/CSA and declaration according to LVD or PED

# DPF-T/S SERIES

## Electronic Expansion Valve



### ELECTRICAL PARAMETERS

- Rated voltage: 12V DC(± 10%), rectangular wave
- Actuating mode: 4-phase 8-step permanent magnet stepping motor of direct-acting type
- Excitation mode: 1 ~ 2 phase excitation, monopole actuation
- Excitation rate:
  - Seat Ø 1,3 to 3,2 mm: 30 to 90pps
  - Seat Ø 4,0 to 6,5 mm: 30 to 40pps
- Activation of self-holding mechanism: Maintain excitation in stop position min. 0,1~1,0 sec.
- Min. motion time from completely open to completely closed:
  - Seat Ø 1,3 to 3,2 mm: 6s @ 90pps
  - Seat Ø 4,0 to 6,5 mm: 13s @ 40pps
- Coil current:
  - Seat Ø 1,3 to 3,2 mm: 260mA/phase (20°C)
  - Seat Ø 4,0 to 6,5 mm: 375mA/phase (20°C)
- Coil resistance:
  - Seat Ø 1,3 to 3,2 mm: 46 ± 3.7 Ω/phase (20°C)
  - Seat Ø 4,0 to 6,5 mm: 32 ± 3.2 Ω/phase (20°C)
- Insulation class of coil: E
- Protection class: IP 66

### GENERAL CHARACTERISTICS

| Valve Model      | Part Number <sup>1)</sup> | Seat Φ (mm) | Kv (m <sup>3</sup> /h) | Nominal Cooling Capacity <sup>2)</sup> [kW] |       |                     |             |       | MOP Max. Oper. Press. [MPa] | MOPD Direct [MPa] | MOPD Rev. (MPa) |
|------------------|---------------------------|-------------|------------------------|---|-------|---------------------|-------------|-------|-----------------------------|-------------------|-----------------|
|                  |                           |             |                        | R22   | R134a | R407C <sup>3)</sup> | R404A R507A | R410A |                             |                   |                 |
| DPF(T01)1.3C-07  | DPF-09001                 | 1,3         | 0,05                   | 3,5   | 2,7   | 3,5                 | 2,5         | 4,2   | 4,5                         | 3,5               | ≥2.1            |
| DPF(T01)1.65C-05 | DPF-09002                 | 1,65        | 0,08                   | 5,3   | 4,1   | 5,3                 | 3,7         | 6,36  |                             |                   |                 |
| DPF(T01)1.8C-08  | DPF-09003                 | 1,8         | 0,1                    | 7   | 5,4   | 7                   | 4,9         | 8,4   |                             |                   |                 |
| DPF(T01)2.0C-03  | DPF-09004                 | 2           | 0,16                   | 8,8   | 6,7   | 8,75                | 6,1         | 10,5  |                             |                   |                 |
| DPF(T01)2.2C-01  | DPF-09005                 | 2,2         | 0,2                    | 11  | 8,1   | 10,5                | 7,4         | 12,6  |                             |                   |                 |
| DPF(T01)2.4C-01  | DPF-09006                 | 2,4         | 0,23                   | 18  | 13,5  | 17,5                | 12,3        | 21    |                             |                   |                 |
| DPF(TS1)3.0C-01  | DPF-09007                 | 3           | 0,39                   | 21  | 16,2  | 21                  | 14,7        | 25,2  |                             |                   | ≥1.47           |
| DPF(TS1)3.2C-01  | DPF-09008                 | 3,2         | 0,43                   | 28  | 21,6  | 28                  | 19,6        | 33,6  |                             |                   |                 |
| DPF(S03)4.0C-01  | DPF-09010                 | 4           | 0,5                    | 42  | 32,3  | 42                  | 29,4        | 50,4  |                             |                   |                 |
| DPF(S03)4.5C-01  | DPF-09011                 | 4,5         | 0,7                    | 53  | 40,4  | 52,5                | 36,8        | 63    |                             |                   | ≥0.7            |
| DPF(S03)5.5C-01  | DPF-09012                 | 5,5         | 0,9                    | 70  | 53,9  | 70                  | 49,0        | 84    |                             |                   |                 |
| DPF(S03)6.5C-02  | DPF-09013                 | 6,5         | 1,1                    | 105   | 80,9  | 105                 | 73,5        | 126   |                             |                   |                 |

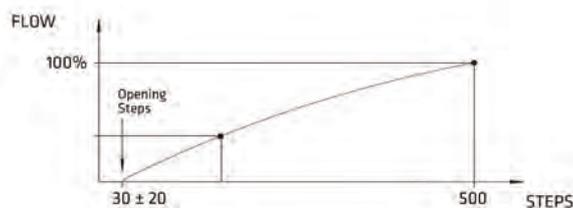
- Note:**
- 1) Extent of delivery without coil
  - 2) Nominal working conditions: Condensing Temperature 38°C; Evaporating Temperature 5°C; Sub-cooling OK; Superheat OK
  - 3) R407C data based on dew point conditions

# DPF-T/S SERIES

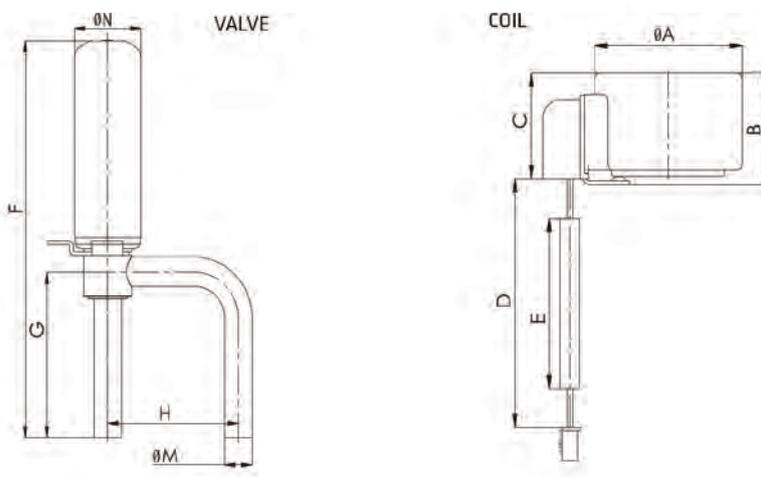
## Electronic Expansion Valve



### FLOW CHARACTERISTIC



### DIMENSIONS



| Valve Model                        | Coil Series | Valve Dimensions [mm] |      |      |                 |                 |
|------------------------------------|-------------|-----------------------|------|------|-----------------|-----------------|
|                                    |             | F                     | G    | H    | $\varnothing d$ | $\varnothing N$ |
| DPF(T01)1.3C-07 to DPF(T01)2.4C-01 | PQ-M10      | 78                    | 36   | 30   | 6,35            | 17,3            |
| DPF(TS1)3.0C-01 to DPF(TS1)3.2C-01 |             | 82                    | 40   | 30   | 7,94            | 17,3            |
| DPF(S03)4.0C-01 to DPF(S03)6.5C-02 | PQ-M03      | 148                   | 64,7 | 63,4 | 15,88           | 35,3            |

| Valve Model                        | Coil Model        | Coil Part Number | Coil Dimensions [mm] |      |      |     |     |
|------------------------------------|-------------------|------------------|----------------------|------|------|-----|-----|
|                                    |                   |                  | $\varnothing A$      | B    | C    | D   | E   |
| DPF(T01)1.3C-07 to DPF(TS1)3.2C-01 | PQ-M10 012-000001 | DPF-58001        | 38,5                 | 26,4 | 25,6 | 700 | 600 |
| DPF(S03)4.0C-01 to DPF(S03)6.5C-02 | PQ-M03 012-000001 | DPF-58002        | 67,5                 | 42,4 | 33   | 700 | 600 |

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# Electronic Expansion Valve

VPF series electronic expansion valves are designed for commercial and industrial applications. Typical VPF applications are air conditioning and refrigeration systems or heat pumps. The valve controls the automatic adjustment of refrigerant flow rate and makes the system work under optimized conditions for the purpose of fast cooling or heating, precise temperature control and energy saving. The valve can also be used e.g. for suction line pressure controls. These valves provide bidirectional operation to control the refrigerant flow rate in heating or cooling mode.



## FEATURES

- ENERGY SAVING THANKS TO VERY PRECISE CAPACITY CONTROL: UP TO 3800 STEPS
- INTERNAL TIGHTNESS LIKE A SOLENOID VALVE
- OPTIMIZED FLOW PATH DESIGN FOR NOISE REDUCTION
- APPLICABLE FOR REVERSIBLE SYSTEMS LIKE HEAT PUMPS: BIDIRECTIONAL FLOW
- CORROSION RESISTANT DESIGN, LONG LIFETIME, HIGH RELIABILITY
- COMPACT DESIGN
- MODELS WITH INTEGRATED SIGHT GLASS ARE AVAILABLE

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407A, R407C, R407F, R410A, R507A ...
- Cooling capacity: 112 to 892 kW (R134a nominal capacity)
- Up to 3800 steps (full stroke); Valve starts opening with 110 steps (VPF25) and 165 steps (VPF50...250)
- Medium temperature TS min./max.: -40°C / +70°C (duty cycle rate below 50%)
- Ambient temperature min./max.: -40°C / +60°C (duty cycle rate below 50%)
- Relative humidity: : 0 to 100% RH
- Installation position:
  - Major flow direction corresponds to the arrow
  - Installation in horizontal and vertical pipes possible
  - Installation position in horizontal lines with stepper motor preferably upwards
- Certifications: Declaration according to PED and EAC

**Electronic Expansion Valve**



**ELECTRICAL PARAMETERS**

- Rated voltage: 12V DC, rectangular wave
- Actuating mode: 2-phase 4-step permanent magnet stepping motor
- Excitation mode: 2 phase excitation, bi-pole actuation
- Excitation rate: 300 pps (current drive)
- Motion time from completely open to completely closed (current drive):
  - VPF25, VPF50: 8,7s
  - VPF100: 11,7s
  - VPF150, VPF250: 12,7s
- Nominal motor current: 100mA RMS per phase in control operation
- Peak motor current: 140mA per phase in reference run
- Coil resistance: 52 ± 5,2Ω/coil (20°C)
- Insulation class of coil: E
- Protection class: IP 67

**MODEL DESIGNATIONS**

| Position Number | Model Designation Legend |   |
|-----------------|--------------------------|---|
| 1               | Product Code             | Product Series  |
|                 | VPF                      | Electronic expansion valve with bi-pole stepper motor |
| 2               | Capacity Size            | Description   |
|                 | 25                       |   |
|                 | 50                       |   |
|                 | 100                      |   |
|                 | 150                      |   |
| 250             |                          |   |
| 3               | Connections Type         | Description   |
|                 | H                        | Solder  |
| 4               | Valve Body               | Description   |
|                 | 0...4                    | With sight glass                                      |
|                 | 5...9                    | Without sight glass                                   |
| 5               | Pipe Connection          | Description   |
|                 | 1...9                    | Digit for pipe connection diameter                    |

**MODEL DESIGNATION EXAMPLE**

| Position Number |            |          |          |          | According to Model Designation Legend |
|-----------------|------------|----------|----------|----------|---------------------------------------|
| 1               | 2          | 3        | 4        | 5        |                                       |
| <b>VPF</b>      | 100        | H        | 0        | 3        | Electronic expansion valve            |
| VPF             | <b>100</b> | H        | 0        | 3        | Digits for capacity size              |
| VPF             | 100        | <b>H</b> | 0        | 3        | Connection: Solder                    |
| VPF             | 100        | H        | <b>0</b> | 3        | Valve body: With sight glass          |
| VPF             | 100        | H        | 0        | <b>3</b> | Digit for pipe connection diameter    |



**TECHNICAL PARAMETER**

| Model      | Part Number <sup>1)</sup> | Valve Shape   | Sight Glass            | Connections<br>ød ODF<br>Inlet A x Outlet B |                        | Seat <sup>2)</sup><br>ø | Kv <sup>3)</sup><br>m <sup>3</sup> /h | MWP<br>PS<br>[MPa] | MOPD<br>Direct<br>A->B<br>[MPa] | MOPD<br>Rev.<br>B->A<br>[MPa] |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
|------------|---------------------------|---------------|------------------------|---|------------------------|-------------------------|---------------------------------------|--------------------|---------------------------------|-------------------------------|------------|---------------|---------------|------------------------|---------------|---------------|---------------|------------------------|-------------|------------|---------------|------------------------|------------------------|---------------|---------------|---------------|------------|---------------|------------------------|---------------|------------|---------------|---------------|---------------|------------------------|---------------|---------------|-----------|---------------|------------------------|---------------|---------------|------------------------|------------------------|------------------------|---------------|---------------|------------|---------------|---------------|---------------|------------|------------------------|------------------------|---------------|------------|---------------|-------------|---------------|------------|---------------|---------------|---------------|------------------------|------------------------|------------------------|---------------|------------------------|------------------------|---------------|------------|------------------------|------------------------|---------------|------------|------------|---------------|------------------------|---------------|------------|---------------|---------------|------------------------|------------------------|---------------|------------|------------|---------------|---------------|------------------------|------------------------|------------------------|---------------|------------------------|---------------|------------|---------------|---------------|------------|------------------------|---------------|---------------|------------|---------------|---------------|---------------|------------------------|---------------|---------------|------------|---------------|---------------|------------------------|---------------|---------------|---------------|------------------------|------------------------|---------------|------------------------|------------------------|---------------|------------------------|------------|------------|------------------------|---------------|------------------------|---------------|---------------|---------------|------------------------|---------------|------------|------------------------|---------------|---------------|------------|------------------------|---------------|------------|------------------------|---------------|------------|---------------|---------------|---------------|---------------|---------------|------------------------|---------------|---------------|---------------|------------|------------|------------------------|---------------|---------------|------------|------------|---------------|------------------------|------------------------|---------------|------------|---------------|---------------|------------------------|---------------|---------------|------------|------------------------|---------------|------------------------|---------------|---------------|---------------|------------------------|---------------|------------------------|---------------|---------------|----------|------------------------|---------------|---------------|---------------|------------------------|---------------|------------------------|------------------------|---------------|------------------------|------------|------------|------------------------|------------------------|------------------------|---------------|------------|---------------|------------------------|------------------------|---------------|------------|------------------------|---------------|------------------------|---------------|-----------|---------------|-----------|------------------------|---------------|---------------|---------------|---------------|------------|---------------|---------------|---------------|---------------|---------------|------------------------|---------------|---------------|------------------------|------------------------|---------------|------------|---------------|------------|------------|------------|------------|------------|------------------------|----------|------------------------|---------------|---------------|------|
|            |                           |               |                        | [inch]                                      | [mm]                   |                         |                                       |                    |                                 |                               |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 25-H52 | VPF-66014                 | straight      | -                      | 5/8 x 5/8                                   | 16 x 16                | 7,5                     | 1,3                                   |                    |                                 |                               |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 25-H53 | VPF-66015                 |               |                        | 7/8 x 7/8                                   | 22 x 22                |                         |                                       |                    |                                 |                               | VPF 25-H58 | VPF-66020     | L-shape       | -                      | 5/8 x 5/8     | 16 x 16       | 14,4          | 2,4                    | 5,0         | 3,9        | 3,9           | VPF 25-H59             | VPF-66021              | 7/8 x 7/8     | 22 x 22       | VPF 50-H51    | VPF-66025  | straight      | -                      | 7/8 x 7/8     | 22 x 22    | 14,4          | 2,4           | 5,0           | 3,9                    | 3,9           | VPF 50-H52    | VPF-66026 | 7/8 x 1 1/8   | -                      | VPF 50-H53    | VPF-66027     | 1 1/8 x 1 1/8          | -                      | VPF 50-H54             | VPF-66028     | 1 1/8 x 1 3/8 | -          | VPF 50-H56    | VPF-66030     | -             | 22 x 28    | VPF 50-H57             | VPF-66031              | -             | 28 x 28    | VPF 50-H58    | VPF-66032   | -             | 28 x 35    | VPF 50-H01    | VPF-66033     | straight      | with<br>sight<br>glass | 7/8 x 7/8              | 22 x 22                | VPF 50-H02    | VPF-66034              | 7/8 x 1 1/8            | -             | VPF 50-H03 | VPF-66035              | 1 1/8 x 1 1/8          | -             | VPF 50-H04 | VPF-66036  | 1 1/8 x 1 3/8 | -                      | VPF 50-H06    | VPF-66038  | -             | 22 x 28       | VPF 50-H07             | VPF-66039              | -             | 28 x 28    | VPF 50-H08 | VPF-66040     | -             | 28 x 35                | VPF100-H51             | VPF-66041              | straight      | -                      | 1 1/8 x 1 1/8 | -          | 14,4          | 4,0           | 5,0        | 3,9                    | 3,9           | VPF100-H52    | VPF-66042  | 1 1/8 x 1 3/8 | -             | VPF100-H53    | VPF-66043              | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H54 | VPF-66044     | -             | 28 x 28                | VPF100-H55    | VPF-66045     | -             | 28 x 35                | VPF100-H01             | VPF-66046     | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -                      | 14,4       | 4,0        | 5,0                    | 3,9           | 3,9                    | VPF100-H02    | VPF-66047     | 1 1/8 x 1 3/8 | -                      | VPF100-H03    | VPF-66048  | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H05    | VPF-66049  | -                      | 28 x 35       | VPF100-H06 | VPF-66050              | -             | 28 x 28    | VPF150-H51    | VPF-          | L-shape       | -             | 1 1/8 x 1 3/8 | -                      | 14,8          | 7,7           | 5,0           | 3,9        | 3,9        | VPF150-H52             | VPF-          | 1 5/8 x 1 5/8 | -          | VPF150-H01 | VPF-66061     | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -          | 14,8          | 7,7           | 5,0                    | 3,9           | 3,9           | VPF150-H02 | VPF-66062              | 1 5/8 x 1 5/8 | -                      | VPF250-H01    | VPF-66051     | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -                      | 23,9          | 12,0          | 4,5      | 3,5                    | 3,5           | VPF250-H02    | VPF-66052     | 1 3/8 x 1 3/8          | 35 x 35       | VPF250-H03             | VPF-66053              | 1 5/8 x 1 5/8 | -                      | VPF250-H04 | VPF-66054  | -                      | 28 x 28                | VPF250-H05             | VPF-66055     | -          | 42 x 42       |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 25-H58 | VPF-66020                 | L-shape       | -                      | 5/8 x 5/8                                   | 16 x 16                |                         |                                       |                    |                                 |                               | 14,4       | 2,4           |               |                        | 5,0           | 3,9           |               |                        |             |            |               | 3,9                    |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 25-H59 | VPF-66021                 |               |                        | 7/8 x 7/8                                   | 22 x 22                |                         |                                       |                    |                                 |                               |            |               | VPF 50-H51    | VPF-66025              |               |               |               |                        |             |            |               |                        | straight               | -             | 7/8 x 7/8     | 22 x 22       | 14,4       |               |                        | 2,4           | 5,0        |               |               |               |                        |               | 3,9           | 3,9       | VPF 50-H52    | VPF-66026              | 7/8 x 1 1/8   | -             | VPF 50-H53             | VPF-66027              | 1 1/8 x 1 1/8          | -             | VPF 50-H54    | VPF-66028  | 1 1/8 x 1 3/8 | -             | VPF 50-H56    | VPF-66030  | -                      | 22 x 28                | VPF 50-H57    | VPF-66031  | -             | 28 x 28     | VPF 50-H58    | VPF-66032  | -             | 28 x 35       |               |                        | VPF 50-H01             | VPF-66033              | straight      | with<br>sight<br>glass | 7/8 x 7/8              | 22 x 22       | VPF 50-H02 | VPF-66034              | 7/8 x 1 1/8            | -             | VPF 50-H03 | VPF-66035  | 1 1/8 x 1 1/8 | -                      | VPF 50-H04    | VPF-66036  | 1 1/8 x 1 3/8 | -             | VPF 50-H06             | VPF-66038              | -             | 22 x 28    | VPF 50-H07 | VPF-66039     | -             | 28 x 28                | VPF 50-H08             | VPF-66040              |               |                        | -             | 28 x 35    |               |               |            |                        |               | VPF100-H51    | VPF-66041  | straight      | -             | 1 1/8 x 1 1/8 | -                      | 14,4          | 4,0           | 5,0        | 3,9           | 3,9           | VPF100-H52             | VPF-66042     | 1 1/8 x 1 3/8 | -             | VPF100-H53             | VPF-66043              | 1 3/8 x 1 3/8 |                        |                        | 35 x 35       | VPF100-H54             |            |            |                        |               |                        | VPF-66044     | -             | 28 x 28       | VPF100-H55             | VPF-66045     | -          | 28 x 35                | VPF100-H01    | VPF-66046     | straight   | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 14,4                   | 4,0           | 5,0        | 3,9           | 3,9           | VPF100-H02    | VPF-66047     | 1 1/8 x 1 3/8 | -                      | VPF100-H03    | VPF-66048     | 1 3/8 x 1 3/8 | 35 x 35    | VPF100-H05 | VPF-66049              | -             | 28 x 35       | VPF100-H06 | VPF-66050  | -             | 28 x 28                | VPF150-H51             | VPF-          | L-shape    | -             | 1 1/8 x 1 3/8 | -                      | 14,8          | 7,7           | 5,0        | 3,9                    | 3,9           | VPF150-H52             | VPF-          | 1 5/8 x 1 5/8 |               |                        | -             | VPF150-H01             |               |               |          |                        |               | VPF-66061     | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -                      | 14,8                   | 7,7           | 5,0                    | 3,9        | 3,9        | VPF150-H02             | VPF-66062              | 1 5/8 x 1 5/8          | -             | VPF250-H01 | VPF-66051     | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9                   | 12,0          | 4,5                    | 3,5           | 3,5       | VPF250-H02    | VPF-66052 | 1 3/8 x 1 3/8          | 35 x 35       | VPF250-H03    | VPF-66053     | 1 5/8 x 1 5/8 | -          | VPF250-H04    | VPF-66054     | -             | 28 x 28       | VPF250-H05    | VPF-66055              | -             | 42 x 42       |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 50-H51 | VPF-66025                 | straight      | -                      | 7/8 x 7/8                                   | 22 x 22                | 14,4                    | 2,4                                   | 5,0                | 3,9                             | 3,9                           |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 50-H52 | VPF-66026                 |               |                        | 7/8 x 1 1/8                                 | -                      |                         |                                       |                    |                                 |                               |            |               | VPF 50-H53    | VPF-66027              |               |               | 1 1/8 x 1 1/8 | -                      | VPF 50-H54  | VPF-66028  | 1 1/8 x 1 3/8 |                        |                        |               | -             | VPF 50-H56    |            |               |                        |               |            |               |               |               |                        |               |               |           | VPF-66030     | -                      | 22 x 28       | VPF 50-H57    | VPF-66031              | -                      | 28 x 28                | VPF 50-H58    | VPF-66032     | -          | 28 x 35       | VPF 50-H01    | VPF-66033     | straight   | with<br>sight<br>glass | 7/8 x 7/8              | 22 x 22       | VPF 50-H02 | VPF-66034     | 7/8 x 1 1/8 | -             | VPF 50-H03 | VPF-66035     | 1 1/8 x 1 1/8 |               |                        | -                      | VPF 50-H04             |               |                        | VPF-66036              | 1 1/8 x 1 3/8 | -          | VPF 50-H06             | VPF-66038              | -             | 22 x 28    | VPF 50-H07 | VPF-66039     | -                      | 28 x 28       | VPF 50-H08 | VPF-66040     | -             | 28 x 35                | VPF100-H51             | VPF-66041     | straight   | -          | 1 1/8 x 1 1/8 | -             | 14,4                   | 4,0                    | 5,0                    |               |                        | 3,9           | 3,9        |               |               |            |                        |               | VPF100-H52    | VPF-66042  |               |               | 1 1/8 x 1 3/8 | -                      |               |               |            |               |               | VPF100-H53             | VPF-66043     | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H54             | VPF-66044              | -             |                        |                        | 28 x 28       | VPF100-H55             |            |            |                        |               |                        | VPF-66045     | -             | 28 x 35       | VPF100-H01             | VPF-66046     | straight   | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             |            |                        | 14,4          | 4,0        |                        |               |            |               |               | 5,0           | 3,9           | 3,9           | VPF100-H02             | VPF-66047     | 1 1/8 x 1 3/8 | -             | VPF100-H03 | VPF-66048  | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H05    | VPF-66049  | -          | 28 x 35       | VPF100-H06             | VPF-66050              | -             | 28 x 28    | VPF150-H51    | VPF-          | L-shape                | -             | 1 1/8 x 1 3/8 | -          | 14,8                   | 7,7           | 5,0                    | 3,9           | 3,9           |               |                        | VPF150-H52    | VPF-                   |               |               |          |                        |               | 1 5/8 x 1 5/8 | -             | VPF150-H01             | VPF-66061     | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -                      | 14,8       | 7,7        | 5,0                    | 3,9                    | 3,9                    | VPF150-H02    | VPF-66062  | 1 5/8 x 1 5/8 |                        |                        | -             | VPF250-H01 |                        |               |                        |               |           | VPF-66051     | straight  | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 23,9          | 12,0          | 4,5        | 3,5           | 3,5           | VPF250-H02    | VPF-66052     | 1 3/8 x 1 3/8 | 35 x 35                | VPF250-H03    | VPF-66053     | 1 5/8 x 1 5/8          | -                      | VPF250-H04    | VPF-66054  | -             | 28 x 28    | VPF250-H05 | VPF-66055  | -          | 42 x 42    |                        |          |                        |               |               |      |
| VPF 50-H53 | VPF-66027                 |               |                        | 1 1/8 x 1 1/8                               | -                      |                         |                                       |                    |                                 |                               | VPF 50-H54 | VPF-66028     | 1 1/8 x 1 3/8 | -                      | VPF 50-H56    | VPF-66030     | -             | 22 x 28                | VPF 50-H57  | VPF-66031  | -             | 28 x 28                |                        |               | VPF 50-H58    | VPF-66032     |            |               |                        |               |            |               |               |               |                        |               |               |           | -             | 28 x 35                | VPF 50-H01    | VPF-66033     | straight               | with<br>sight<br>glass | 7/8 x 7/8              | 22 x 22       | VPF 50-H02    | VPF-66034  | 7/8 x 1 1/8   | -             | VPF 50-H03    |            |                        | VPF-66035              | 1 1/8 x 1 1/8 | -          | VPF 50-H04    | VPF-66036   | 1 1/8 x 1 3/8 | -          | VPF 50-H06    | VPF-66038     |               |                        | -                      | 22 x 28                |               |                        | VPF 50-H07             | VPF-66039     | -          | 28 x 28                | VPF 50-H08             | VPF-66040     | -          | 28 x 35    | VPF100-H51    | VPF-66041              | straight      | -          | 1 1/8 x 1 1/8 | -             | 14,4                   | 4,0                    | 5,0           |            |            | 3,9           | 3,9           |                        |                        |                        | VPF100-H52    | VPF-66042              |               |            | 1 1/8 x 1 3/8 | -             | VPF100-H53 | VPF-66043              | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H54 |               |               | VPF-66044     | -                      |               |               |            |               |               | 28 x 28                | VPF100-H55    | VPF-66045     | -             | 28 x 35                | VPF100-H01             | VPF-66046     |                        |                        | straight      | with<br>sight<br>glass |            |            |                        |               |                        | 1 1/8 x 1 1/8 | -             | 14,4          | 4,0                    | 5,0           |            |                        | 3,9           | 3,9           |            |                        |               |            |                        |               |            |               |               |               |               |               | VPF100-H02             | VPF-66047     | 1 1/8 x 1 3/8 | -             | VPF100-H03 | VPF-66048  | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H05    | VPF-66049  | -          | 28 x 35       | VPF100-H06             | VPF-66050              | -             | 28 x 28    | VPF150-H51    | VPF-          |                        |               | L-shape       | -          |                        |               |                        |               |               | 1 1/8 x 1 3/8 | -                      | 14,8          | 7,7                    | 5,0           | 3,9           | 3,9      | VPF150-H52             | VPF-          | 1 5/8 x 1 5/8 | -             | VPF150-H01             | VPF-66061     |                        |                        | L-shape       | with<br>sight<br>glass |            |            |                        |                        |                        | 1 1/8 x 1 3/8 | -          | 14,8          |                        |                        | 7,7           | 5,0        |                        |               |                        |               |           | 3,9           |           |                        | 3,9           | VPF150-H02    |               |               |            |               |               | VPF-66062     | 1 5/8 x 1 5/8 | -             | VPF250-H01             | VPF-66051     | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             | 23,9       | 12,0          | 4,5        | 3,5        | 3,5        | VPF250-H02 | VPF-66052  | 1 3/8 x 1 3/8          | 35 x 35  | VPF250-H03             | VPF-66053     | 1 5/8 x 1 5/8 | -    |
| VPF 50-H54 | VPF-66028                 |               |                        | 1 1/8 x 1 3/8                               | -                      |                         |                                       |                    |                                 |                               | VPF 50-H56 | VPF-66030     | -             | 22 x 28                | VPF 50-H57    | VPF-66031     | -             | 28 x 28                | VPF 50-H58  | VPF-66032  | -             | 28 x 35                |                        |               | VPF 50-H01    | VPF-66033     |            |               |                        |               |            |               |               |               |                        |               |               |           | straight      | with<br>sight<br>glass | 7/8 x 7/8     | 22 x 22       |                        |                        | VPF 50-H02             | VPF-66034     | 7/8 x 1 1/8   | -          | VPF 50-H03    | VPF-66035     | 1 1/8 x 1 1/8 |            |                        | -                      | VPF 50-H04    | VPF-66036  | 1 1/8 x 1 3/8 | -           | VPF 50-H06    | VPF-66038  | -             | 22 x 28       |               |                        | VPF 50-H07             | VPF-66039              |               |                        | -                      | 28 x 28       | VPF 50-H08 | VPF-66040              | -                      | 28 x 35       | VPF100-H51 | VPF-66041  | straight      | -                      |               |            | 1 1/8 x 1 1/8 | -             |                        |                        |               |            |            |               |               |                        |                        |                        | 14,4          | 4,0                    |               |            | 5,0           | 3,9           | 3,9        | VPF100-H52             | VPF-66042     | 1 1/8 x 1 3/8 | -          |               |               | VPF100-H53    | VPF-66043              |               |               |            |               |               | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H54    | VPF-66044     | -                      | 28 x 28                | VPF100-H55    | VPF-66045              | -                      |               |                        | 28 x 35    | VPF100-H01 | VPF-66046              | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               | 14,4                   | 4,0           | 5,0           | 3,9           | 3,9        | VPF100-H02 | VPF-66047              | 1 1/8 x 1 3/8 | -             | VPF100-H03 | VPF-66048  | 1 3/8 x 1 3/8 | 35 x 35                | VPF100-H05             | VPF-66049     | -          | 28 x 35       | VPF100-H06    | VPF-66050              | -             |               |            | 28 x 28                | VPF150-H51    | VPF-                   | L-shape       | -             | 1 1/8 x 1 3/8 | -                      |               |                        |               |               |          | 14,8                   | 7,7           | 5,0           | 3,9           | 3,9                    | VPF150-H52    | VPF-                   | 1 5/8 x 1 5/8          |               |                        | -          | VPF150-H01 | VPF-66061              | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -          |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               | 14,8          |               |               |            |               |               | 7,7           | 5,0           | 3,9           | 3,9                    | VPF150-H02    |               |                        | VPF-66062              | 1 5/8 x 1 5/8 |            |               |            |            |            | -          | VPF250-H01 | VPF-66051              | straight | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 23,9 |
| VPF 50-H56 | VPF-66030                 |               |                        | -   | 22 x 28                |                         |                                       |                    |                                 |                               | VPF 50-H57 | VPF-66031     | -             | 28 x 28                | VPF 50-H58    | VPF-66032     | -             | 28 x 35                | VPF 50-H01  | VPF-66033  | straight      | with<br>sight<br>glass |                        |               | 7/8 x 7/8     | 22 x 22       |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        | VPF 50-H02    | VPF-66034     |                        |                        | 7/8 x 1 1/8            | -             | VPF 50-H03    | VPF-66035  | 1 1/8 x 1 1/8 | -             | VPF 50-H04    |            |                        | VPF-66036              | 1 1/8 x 1 3/8 | -          | VPF 50-H06    | VPF-66038   | -             | 22 x 28    | VPF 50-H07    | VPF-66039     |               |                        | -                      | 28 x 28                |               |                        | VPF 50-H08             | VPF-66040     | -          | 28 x 35                | VPF100-H51             | VPF-66041     | straight   | -          |               |                        |               |            | 1 1/8 x 1 1/8 | -             |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            | 14,4                   | 4,0           | 5,0           | 3,9        | 3,9           | VPF100-H52    | VPF-66042     | 1 1/8 x 1 3/8          | -             | VPF100-H53    | VPF-66043  | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H54             | VPF-66044     | -             | 28 x 28       | VPF100-H55             | VPF-66045              | -             | 28 x 35                | VPF100-H01             |               |                        | VPF-66046  | straight   | with<br>sight<br>glass |               |                        | 1 1/8 x 1 1/8 | -             |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            | 14,4       | 4,0                    | 5,0           | 3,9           | 3,9        | VPF100-H02 | VPF-66047     | 1 1/8 x 1 3/8          | -                      | VPF100-H03    | VPF-66048  | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H05             | VPF-66049     | -             | 28 x 35    | VPF100-H06             | VPF-66050     | -                      |               |               | 28 x 28       | VPF150-H51             | VPF-          | L-shape                | -             | 1 1/8 x 1 3/8 | -        |                        |               |               |               |                        | 14,8          | 7,7                    | 5,0                    | 3,9           | 3,9                    | VPF150-H52 | VPF-       | 1 5/8 x 1 5/8          |                        |                        | -             | VPF150-H01 | VPF-66061     | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -          | 14,8                   | 7,7           | 5,0                    | 3,9           | 3,9       | VPF150-H02    |           |                        | VPF-66062     |               |               |               |            |               |               |               |               |               |                        | 1 5/8 x 1 5/8 |               |                        | -                      | VPF250-H01    |            |               |            |            |            | VPF-66051  | straight   | with<br>sight<br>glass |          |                        | 1 1/8 x 1 1/8 | -             |      |
| VPF 50-H57 | VPF-66031                 |               |                        | -   | 28 x 28                |                         |                                       |                    |                                 |                               | VPF 50-H58 | VPF-66032     | -             | 28 x 35                | VPF 50-H01    | VPF-66033     | straight      | with<br>sight<br>glass | 7/8 x 7/8   | 22 x 22    |               |                        |                        |               | VPF 50-H02    | VPF-66034     |            | 7/8 x 1 1/8   | -                      |               |            | VPF 50-H03    | VPF-66035     | 1 1/8 x 1 1/8 | -                      | VPF 50-H04    |               |           |               |                        | VPF-66036     | 1 1/8 x 1 3/8 |                        |                        | -                      | VPF 50-H06    | VPF-66038     | -          | 22 x 28       | VPF 50-H07    | VPF-66039     |            |                        | -                      | 28 x 28       | VPF 50-H08 | VPF-66040     | -           | 28 x 35       | VPF100-H51 | VPF-66041     | straight      | -             | 1 1/8 x 1 1/8          | -                      | 14,4                   |               |                        | 4,0                    | 5,0           | 3,9        | 3,9                    | VPF100-H52             | VPF-66042     |            |            |               |                        |               |            | 1 1/8 x 1 3/8 | -             |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               | VPF100-H53    | VPF-66043     | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H54    | VPF-66044  | -             | 28 x 28       | VPF100-H55             | VPF-66045     | -             | 28 x 35       | VPF100-H01             | VPF-66046              | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8          |               |                        | -          |            |                        |               |                        | 14,4          | 4,0           |               |                        |               |            |                        |               |               | 5,0        | 3,9                    |               |            | 3,9                    | VPF100-H02    | VPF-66047  | 1 1/8 x 1 3/8 | -             |               |               |               |                        |               |               |               |            |            |                        |               |               |            | VPF100-H03 | VPF-66048     | 1 3/8 x 1 3/8          | 35 x 35                | VPF100-H05    | VPF-66049  | -             | 28 x 35       | VPF100-H06             | VPF-66050     | -             | 28 x 28    | VPF150-H51             | VPF-          | L-shape                | -             | 1 1/8 x 1 3/8 | -             | 14,8                   | 7,7           |                        |               | 5,0           | 3,9      | 3,9                    | VPF150-H52    | VPF-          | 1 5/8 x 1 5/8 | -                      |               |                        |                        |               |                        | VPF150-H01 | VPF-66061  | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8          | -             | 14,8       | 7,7           |                        |                        | 5,0           | 3,9        |                        |               |                        |               |           | 3,9           |           |                        | VPF150-H02    | VPF-66062     |               |               |            |               |               | 1 5/8 x 1 5/8 | -             | VPF250-H01    | VPF-66051              | straight      |               |                        | with<br>sight<br>glass | 1 1/8 x 1 1/8 |            |               |            |            |            | -          |            |                        |          |                        | 23,9          | 12,0          |      |
| VPF 50-H58 | VPF-66032                 |               |                        | -   | 28 x 35                |                         |                                       |                    |                                 |                               | VPF 50-H01 | VPF-66033     | straight      | with<br>sight<br>glass | 7/8 x 7/8     | 22 x 22       |               |                        | VPF 50-H02  | VPF-66034  |               |                        |                        |               | 7/8 x 1 1/8   | -             |            | VPF 50-H03    | VPF-66035              |               |            | 1 1/8 x 1 1/8 | -             | VPF 50-H04    | VPF-66036              | 1 1/8 x 1 3/8 |               |           |               |                        | -             | VPF 50-H06    |                        |                        | VPF-66038              | -             | 22 x 28       | VPF 50-H07 | VPF-66039     | -             | 28 x 28       |            |                        | VPF 50-H08             | VPF-66040     | -          | 28 x 35       | VPF100-H51  | VPF-66041     | straight   | -             |               |               | 1 1/8 x 1 1/8          | -                      |                        |               |                        |                        |               |            |                        | 14,4                   | 4,0           |            |            |               |                        |               |            | 5,0           | 3,9           |                        |                        |               | 3,9        | VPF100-H52 |               |               | VPF-66042              | 1 1/8 x 1 3/8          | -                      |               |                        | VPF100-H53    | VPF-66043  |               |               |            |                        |               |               |            |               | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H54             | VPF-66044     | -             | 28 x 28    | VPF100-H55    | VPF-66045     | -                      | 28 x 35       | VPF100-H01    | VPF-66046     | straight               | with<br>sight<br>glass |               |                        | 1 1/8 x 1 1/8          |               |                        | -          |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        | 14,4          | 4,0        | 5,0           | 3,9           |               |               |               |                        |               |               |               |            |            |                        |               |               |            | 3,9        | VPF100-H02    | VPF-66047              | 1 1/8 x 1 3/8          | -             | VPF100-H03 | VPF-66048     | 1 3/8 x 1 3/8 | 35 x 35                | VPF100-H05    | VPF-66049     | -          | 28 x 35                | VPF100-H06    |                        |               | VPF-66050     | -             |                        |               | 28 x 28                | VPF150-H51    |               |          |                        | VPF-          | L-shape       | -             | 1 1/8 x 1 3/8          | -             | 14,8                   | 7,7                    | 5,0           | 3,9                    | 3,9        | VPF150-H52 |                        |                        | VPF-                   | 1 5/8 x 1 5/8 |            |               | -                      | VPF150-H01             |               |            | VPF-66061              | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -         |               | 14,8      | 7,7                    | 5,0           | 3,9           | 3,9           | VPF150-H02    | VPF-66062  | 1 5/8 x 1 5/8 | -             | VPF250-H01    | VPF-66051     | straight      | with<br>sight<br>glass |               |               |                        |                        | 1 1/8 x 1 1/8 |            |               |            |            |            | -          |            |                        |          |                        |               |               |      |
| VPF 50-H01 | VPF-66033                 |               |                        | straight                                    | with<br>sight<br>glass |                         |                                       |                    |                                 |                               | 7/8 x 7/8  | 22 x 22       |               |                        | VPF 50-H02    | VPF-66034     |               |                        | 7/8 x 1 1/8 | -          |               |                        | VPF 50-H03             | VPF-66035     | 1 1/8 x 1 1/8 | -             | VPF 50-H04 | VPF-66036     | 1 1/8 x 1 3/8          | -             | VPF 50-H06 | VPF-66038     | -             | 22 x 28       | VPF 50-H07             | VPF-66039     | -             | 28 x 28   |               |                        | VPF 50-H08    | VPF-66040     |                        |                        | -                      | 28 x 35       | VPF100-H51    | VPF-66041  | straight      | -             | 1 1/8 x 1 1/8 |            |                        | -                      | 14,4          | 4,0        | 5,0           | 3,9         | 3,9           |            |               |               |               | VPF100-H52             | VPF-66042              |                        | 1 1/8 x 1 3/8 | -                      |                        |               |            |                        |                        |               |            |            |               |                        | VPF100-H53    | VPF-66043  |               |               | 1 3/8 x 1 3/8          | 35 x 35                | VPF100-H54    |            | VPF-66044  | -             | 28 x 28       | VPF100-H55             | VPF-66045              | -                      |               |                        | 28 x 35       | VPF100-H01 |               |               |            |                        |               |               |            |               | VPF-66046     | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 14,4       | 4,0           | 5,0           | 3,9                    | 3,9           | VPF100-H02    | VPF-66047     |                        |                        |               |                        | 1 1/8 x 1 3/8          |               |                        | -          |            |                        |               |                        |               |               |               |                        |               | VPF100-H03 | VPF-66048              |               |               |            |                        | 1 3/8 x 1 3/8 | 35 x 35    |                        |               |            |               |               | VPF100-H05    | VPF-66049     | -             |                        |               |               |               |            |            |                        |               |               |            |            | 28 x 35       | VPF100-H06             | VPF-66050              | -             | 28 x 28    | VPF150-H51    | VPF-          | L-shape                | -             | 1 1/8 x 1 3/8 | -          | 14,8                   | 7,7           | 5,0                    | 3,9           | 3,9           | VPF150-H52    | VPF-                   | 1 5/8 x 1 5/8 | -                      | VPF150-H01    | VPF-66061     | L-shape  | with<br>sight<br>glass | 1 1/8 x 1 3/8 |               |               | -                      | 14,8          |                        |                        |               |                        |            | 7,7        | 5,0                    | 3,9                    | 3,9                    | VPF150-H02    | VPF-66062  | 1 5/8 x 1 5/8 | -                      | VPF250-H01             | VPF-66051     | straight   | with<br>sight<br>glass |               |                        | 1 1/8 x 1 1/8 | -         | 23,9          |           |                        |               |               |               | 12,0          | 4,5        | 3,5           | 3,5           | VPF250-H02    | VPF-66052     |               |                        |               | 1 3/8 x 1 3/8 | 35 x 35                |                        | VPF250-H03    | VPF-66053  | 1 5/8 x 1 5/8 | -          | VPF250-H04 | VPF-66054  | -          |            |                        |          |                        |               |               |      |
| VPF 50-H02 | VPF-66034                 | 7/8 x 1 1/8   | -                      |   |                        | VPF 50-H03              | VPF-66035                             | 1 1/8 x 1 1/8      | -                               | VPF 50-H04                    | VPF-66036  | 1 1/8 x 1 3/8 |               |                        | -             | VPF 50-H06    |               |                        | VPF-66038   | -          |               |                        | 22 x 28                | VPF 50-H07    | VPF-66039     | -             | 28 x 28    | VPF 50-H08    | VPF-66040              | -             | 28 x 35    | VPF100-H51    | VPF-66041     | straight      | -                      | 1 1/8 x 1 1/8 | -             | 14,4      |               |                        | 4,0           | 5,0           |                        |                        | 3,9                    | 3,9           | VPF100-H52    | VPF-66042  |               |               | 1 1/8 x 1 3/8 |            |                        | -                      |               |            |               |             |               |            |               |               |               | VPF100-H53             | VPF-66043              |                        | 1 3/8 x 1 3/8 | 35 x 35                |                        |               |            |                        |                        |               |            |            | VPF100-H54    | VPF-66044              | -             | 28 x 28    |               |               | VPF100-H55             | VPF-66045              | -             |            | 28 x 35    | VPF100-H01    | VPF-66046     | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             | 14,4                   | 4,0           | 5,0        | 3,9           | 3,9           | VPF100-H02 |                        |               |               |            |               | VPF-66047     |               |                        | 1 1/8 x 1 3/8 | -             |            |               |               |                        |               | VPF100-H03    | VPF-66048     |                        |                        |               |                        | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H05             | VPF-66049  |            |                        |               |                        |               |               | -             | 28 x 35                | VPF100-H06    | VPF-66050  | -                      | 28 x 28       | VPF150-H51    |            |                        | VPF-          | L-shape    |                        |               |            |               |               | -             | 1 1/8 x 1 3/8 | -             |                        |               |               |               |            |            |                        |               |               |            |            | 14,8          | 7,7                    | 5,0                    | 3,9           | 3,9        | VPF150-H52    | VPF-          |                        |               | 1 5/8 x 1 5/8 | -          |                        |               |                        |               |               | VPF150-H01    | VPF-66061              | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             |          |                        | 14,8          | 7,7           | 5,0           | 3,9                    |               | 3,9                    | VPF150-H02             | VPF-66062     | 1 5/8 x 1 5/8          | -          |            |                        |                        |                        | VPF250-H01    | VPF-66051  | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             |            |                        | 23,9          | 12,0                   | 4,5           | 3,5       |               | 3,5       | VPF250-H02             | VPF-66052     | 1 3/8 x 1 3/8 | 35 x 35       |               |            |               |               | VPF250-H03    | VPF-66053     |               |                        |               | 1 5/8 x 1 5/8 | -                      |                        | VPF250-H04    | VPF-66054  | -             | 28 x 28    | VPF250-H05 | VPF-66055  | -          |            |                        | 42 x 42  |                        |               |               |      |
| VPF 50-H03 | VPF-66035                 | 1 1/8 x 1 1/8 | -                      |   |                        | VPF 50-H04              | VPF-66036                             | 1 1/8 x 1 3/8      | -                               | VPF 50-H06                    | VPF-66038  | -             |               |                        | 22 x 28       | VPF 50-H07    |               |                        | VPF-66039   | -          |               |                        | 28 x 28                | VPF 50-H08    | VPF-66040     | -             | 28 x 35    | VPF100-H51    | VPF-66041              | straight      | -          | 1 1/8 x 1 1/8 | -             |               |                        | 14,4          | 4,0           |           |               |                        |               |               |                        |                        |                        |               | 5,0           | 3,9        |               |               | 3,9           | VPF100-H52 | VPF-66042              | 1 1/8 x 1 3/8          |               |            |               |             |               |            |               |               |               | -                      | VPF100-H53             |                        | VPF-66043     | 1 3/8 x 1 3/8          |                        |               |            |                        |                        |               | 35 x 35    | VPF100-H54 | VPF-66044     | -                      | 28 x 28       | VPF100-H55 |               |               | VPF-66045              | -                      | 28 x 35       |            | VPF100-H01 | VPF-66046     | straight      |                        |                        | with<br>sight<br>glass | 1 1/8 x 1 1/8 |                        |               |            |               |               | -          | 14,4                   | 4,0           | 5,0           | 3,9        | 3,9           | VPF100-H02    |               |                        | VPF-66047     | 1 1/8 x 1 3/8 |            |               |               |                        |               | -             | VPF100-H03    |                        |                        |               |                        | VPF-66048              | 1 3/8 x 1 3/8 | 35 x 35                | VPF100-H05 |            |                        | VPF-66049     | -                      |               |               | 28 x 35       | VPF100-H06             | VPF-66050     | -          | 28 x 28                | VPF150-H51    | VPF-          |            |                        | L-shape       |            |                        |               |            |               |               |               | -             | 1 1/8 x 1 3/8 | -                      | 14,8          | 7,7           | 5,0           | 3,9        |            |                        |               |               |            |            |               |                        |                        |               |            | 3,9           | VPF150-H52    | VPF-                   | 1 5/8 x 1 5/8 | -             | VPF150-H01 | VPF-66061              | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             | 14,8          | 7,7                    |               |                        | 5,0           | 3,9           | 3,9      | VPF150-H02             |               |               |               |                        | VPF-66062     |                        | 1 5/8 x 1 5/8          | -             | VPF250-H01             | VPF-66051  | straight   | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -                      | 23,9          | 12,0       |               |                        | 4,5                    | 3,5           |            |                        |               |                        |               |           |               |           | 3,5                    | VPF250-H02    | VPF-66052     | 1 3/8 x 1 3/8 |               |            |               |               | 35 x 35       | VPF250-H03    |               |                        |               | VPF-66053     | 1 5/8 x 1 5/8          |                        | -             | VPF250-H04 | VPF-66054     | -          | 28 x 28    | VPF250-H05 | VPF-66055  | -          | 42 x 42                |          |                        |               |               |      |
| VPF 50-H04 | VPF-66036                 | 1 1/8 x 1 3/8 | -                      |   |                        | VPF 50-H06              | VPF-66038                             | -                  | 22 x 28                         | VPF 50-H07                    | VPF-66039  | -             |               |                        | 28 x 28       | VPF 50-H08    |               |                        | VPF-66040   | -          |               |                        | 28 x 35                | VPF100-H51    | VPF-66041     | straight      | -          | 1 1/8 x 1 1/8 | -                      |               |            | 14,4          | 4,0           |               |                        |               |               |           |               |                        |               |               | 5,0                    | 3,9                    |                        |               |               |            |               |               |               | 3,9        | VPF100-H52             | VPF-66042              |               |            |               |             |               |            |               | 1 1/8 x 1 3/8 | -             | VPF100-H53             | VPF-66043              | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H54             | VPF-66044              | -             | 28 x 28    | VPF100-H55             |                        |               | VPF-66045  | -          | 28 x 35       | VPF100-H01             | VPF-66046     | straight   |               |               | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             |            | 14,4       | 4,0           |               |                        |                        |                        | 5,0           |                        |               |            |               |               | 3,9        |                        |               |               |            |               | 3,9           |               |                        | VPF100-H02    | VPF-66047     |            |               |               |                        |               | 1 1/8 x 1 3/8 | -             |                        |                        |               |                        | VPF100-H03             | VPF-66048     | 1 3/8 x 1 3/8          | 35 x 35    | VPF100-H05 | VPF-66049              | -             | 28 x 35                |               |               | VPF100-H06    | VPF-66050              | -             | 28 x 28    | VPF150-H51             | VPF-          | L-shape       |            |                        |               | -          |                        |               |            |               |               | 1 1/8 x 1 3/8 |               | -             | 14,8                   |               |               |               |            | 7,7        | 5,0                    | 3,9           | 3,9           | VPF150-H52 |            | VPF-          | 1 5/8 x 1 5/8          | -                      | VPF150-H01    | VPF-66061  |               | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             | 14,8       | 7,7                    |               |                        | 5,0           | 3,9           |               |                        | 3,9           | VPF150-H02             |               |               |          | VPF-66062              | 1 5/8 x 1 5/8 | -             | VPF250-H01    | VPF-66051              | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             | 23,9                   | 12,0       |            |                        | 4,5                    | 3,5                    |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        | 3,5           | VPF250-H02    | VPF-66052     |               |            |               |               | 1 3/8 x 1 3/8 | 35 x 35       |               |                        | VPF250-H03    | VPF-66053     | 1 5/8 x 1 5/8          | -                      | VPF250-H04    | VPF-66054  | -             | 28 x 28    | VPF250-H05 | VPF-66055  | -          | 42 x 42    |                        |          |                        |               |               |      |
| VPF 50-H06 | VPF-66038                 | -             | 22 x 28                |   |                        | VPF 50-H07              | VPF-66039                             | -                  | 28 x 28                         | VPF 50-H08                    | VPF-66040  | -             |               |                        | 28 x 35       | VPF100-H51    |               |                        | VPF-66041   | straight   |               |                        | -                      | 1 1/8 x 1 1/8 | -             |               |            | 14,4          | 4,0                    |               |            |               |               |               |                        |               |               |           | 5,0           | 3,9                    |               |               |                        |                        |                        |               |               |            |               |               |               |            | 3,9                    | VPF100-H52             |               |            |               |             |               | VPF-66042  | 1 1/8 x 1 3/8 | -             | VPF100-H53    | VPF-66043              | 1 3/8 x 1 3/8          | 35 x 35                | VPF100-H54    | VPF-66044              | -                      | 28 x 28       | VPF100-H55 | VPF-66045              | -                      | 28 x 35       | VPF100-H01 | VPF-66046  | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 |            | -             | 14,4          |                        | 4,0                    | 5,0           | 3,9        |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        | 3,9           | VPF100-H02    |            |               |               |                        |               | VPF-66047     | 1 1/8 x 1 3/8 |                        |                        | -             | VPF100-H03             | VPF-66048              | 1 3/8 x 1 3/8 | 35 x 35                | VPF100-H05 | VPF-66049  | -                      | 28 x 35       | VPF100-H06             | VPF-66050     | -             | 28 x 28       | VPF150-H51             | VPF-          | L-shape    | -                      | 1 1/8 x 1 3/8 |               | -          | 14,8                   | 7,7           |            | 5,0                    |               |            |               |               | 3,9           | 3,9           | VPF150-H52    |                        | VPF-          | 1 5/8 x 1 5/8 | -             | VPF150-H01 |            |                        |               |               | VPF-66061  |            | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8          | -             | 14,8       | 7,7           |               |                        | 5,0           | 3,9           |            |                        | 3,9           | VPF150-H02             |               |               | VPF-66062     | 1 5/8 x 1 5/8          |               | -                      | VPF250-H01    | VPF-66051     | straight | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 23,9          | 12,0                   |               |                        | 4,5                    | 3,5           |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               | 3,5           | VPF250-H02    |               |            |               |               | VPF-66052     | 1 3/8 x 1 3/8 | 35 x 35       | VPF250-H03             | VPF-66053     | 1 5/8 x 1 5/8 | -                      | VPF250-H04             | VPF-66054     | -          | 28 x 28       | VPF250-H05 | VPF-66055  | -          | 42 x 42    |            |                        |          |                        |               |               |      |
| VPF 50-H07 | VPF-66039                 | -             | 28 x 28                |   |                        | VPF 50-H08              | VPF-66040                             | -                  | 28 x 35                         | VPF100-H51                    | VPF-66041  | straight      |               |                        | -             | 1 1/8 x 1 1/8 |               |                        | -           |            | 14,4          | 4,0                    |                        | 5,0           | 3,9           |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            | 3,9           | VPF100-H52    |               |            |                        | VPF-66042              | 1 1/8 x 1 3/8 | -          | VPF100-H53    | VPF-66043   | 1 3/8 x 1 3/8 | 35 x 35    | VPF100-H54    | VPF-66044     | -             | 28 x 28                | VPF100-H55             | VPF-66045              | -             | 28 x 35                | VPF100-H01             | VPF-66046     | straight   | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             | 14,4       | 4,0        |               |                        | 5,0           |            | 3,9           |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               | 3,9           |            |               |               |                        |               | VPF100-H02    | VPF-66047     | 1 1/8 x 1 3/8          | -                      | VPF100-H03    | VPF-66048              | 1 3/8 x 1 3/8          | 35 x 35       | VPF100-H05             | VPF-66049  | -          | 28 x 35                | VPF100-H06    | VPF-66050              | -             | 28 x 28       | VPF150-H51    | VPF-                   | L-shape       |            |                        | -             | 1 1/8 x 1 3/8 | -          |                        |               | 14,8       |                        | 7,7           | 5,0        | 3,9           | 3,9           |               |               | VPF150-H52    | VPF-                   | 1 5/8 x 1 5/8 | -             | VPF150-H01    | VPF-66061  | L-shape    | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             | 14,8       | 7,7        |               |                        | 5,0                    | 3,9           |            |               | 3,9           | VPF150-H02             |               |               | VPF-66062  | 1 5/8 x 1 5/8          |               | -                      | VPF250-H01    | VPF-66051     | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -                      | 23,9          | 12,0          |          |                        | 4,5           | 3,5           |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               | 3,5        | VPF250-H02             |               |                        |               |           | VPF-66052     |           |                        |               |               | 1 3/8 x 1 3/8 | 35 x 35       | VPF250-H03 | VPF-66053     | 1 5/8 x 1 5/8 | -             | VPF250-H04    | VPF-66054     | -                      | 28 x 28       | VPF250-H05    | VPF-66055              | -                      | 42 x 42       |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF 50-H08 | VPF-66040                 | -             | 28 x 35                |   |                        | VPF100-H51              | VPF-66041                             | straight           | -                               | 1 1/8 x 1 1/8                 | -          |               |               |                        |               | 14,4          | 4,0           | 5,0                    | 3,9         |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               | 3,9           | VPF100-H52             |               |               | VPF-66042 |               |                        | 1 1/8 x 1 3/8 | -             |                        |                        | VPF100-H53             | VPF-66043     |               |            |               | 1 3/8 x 1 3/8 |               |            |                        | 35 x 35                | VPF100-H54    | VPF-66044  | -             | 28 x 28     | VPF100-H55    | VPF-66045  | -             | 28 x 35       | VPF100-H01    | VPF-66046              | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -                      | 14,4                   | 4,0           |            |                        | 5,0                    | 3,9           |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               | 3,9           | VPF100-H02             |               |               | VPF-66047  | 1 1/8 x 1 3/8 | -             | VPF100-H03             | VPF-66048     | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H05             | VPF-66049              | -             | 28 x 35                | VPF100-H06             | VPF-66050     | -                      | 28 x 28    | VPF150-H51 | VPF-                   | L-shape       | -                      | 1 1/8 x 1 3/8 | -             | 14,8          | 7,7                    |               | 5,0        | 3,9                    |               | 3,9           | VPF150-H52 | VPF-                   | 1 5/8 x 1 5/8 |            | -                      |               |            |               |               | VPF150-H01    | VPF-66061     | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             | 14,8          | 7,7        |            |                        | 5,0           | 3,9           |            |            | 3,9           | VPF150-H02             |                        |               | VPF-66062  | 1 5/8 x 1 5/8 |               | -                      | VPF250-H01    | VPF-66051     | straight   | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -                      | 23,9          | 12,0          |               |                        | 4,5           | 3,5                    |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            | 3,5           | VPF250-H02             |                        |               |            | VPF-66052              | 1 3/8 x 1 3/8 | 35 x 35                | VPF250-H03    | VPF-66053 | 1 5/8 x 1 5/8 | -         |                        |               |               | VPF250-H04    | VPF-66054     | -          | 28 x 28       | VPF250-H05    | VPF-66055     | -             | 42 x 42       |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H51 | VPF-66041                 | straight      | -                      |   |                        | 1 1/8 x 1 1/8           | -                                     |                    |                                 | 14,4                          | 4,0        |               | 5,0           | 3,9                    |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        | 3,9           |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H52 | VPF-66042                 |               |                        | 1 1/8 x 1 3/8                               | -                      | VPF100-H53              | VPF-66043                             |                    |                                 |                               |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               | 1 3/8 x 1 3/8 | 35 x 35    |               |                        |               | VPF100-H54 | VPF-66044     | -             |               | 28 x 28                | VPF100-H55    | VPF-66045     | -         |               |                        | 28 x 35       | VPF100-H01    | VPF-66046              | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 14,4       |               | 4,0           | 5,0           | 3,9        |                        | 3,9                    | VPF100-H02    | VPF-66047  | 1 1/8 x 1 3/8 | -           | VPF100-H03    | VPF-66048  | 1 3/8 x 1 3/8 | 35 x 35       | VPF100-H05    | VPF-66049              |                        |                        | -             | 28 x 35                |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               | VPF100-H06    | VPF-66050              | -                      | 28 x 28                |               | VPF150-H51             | VPF-          | L-shape    | -             | 1 1/8 x 1 3/8 |            | -                      | 14,8          | 7,7           | 5,0        | 3,9           |               |               | 3,9                    |               |               | VPF150-H52 | VPF-          | 1 5/8 x 1 5/8 | -                      | VPF150-H01    | VPF-66061     | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8          | -             | 14,8                   | 7,7                    | 5,0           | 3,9                    | 3,9        | VPF150-H02 | VPF-66062              | 1 5/8 x 1 5/8 | -                      | VPF250-H01    | VPF-66051     | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9                   | 12,0          | 4,5           | 3,5        | 3,5                    | VPF250-H02    | VPF-66052  | 1 3/8 x 1 3/8          | 35 x 35       | VPF250-H03 | VPF-66053     | 1 5/8 x 1 5/8 | -             | VPF250-H04    | VPF-66054     | -                      | 28 x 28       | VPF250-H05    | VPF-66055     | -          | 42 x 42    |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H53 | VPF-66043                 |               |                        | 1 3/8 x 1 3/8                               | 35 x 35                | VPF100-H54              | VPF-66044                             |                    |                                 |                               |            |               |               |                        |               |               |               |                        |             | -          |               |                        | 28 x 28                |               |               | VPF100-H55    | VPF-66045  | -             | 28 x 35                |               | VPF100-H01 | VPF-66046     | straight      |               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 14,4      | 4,0           | 5,0                    | 3,9           | 3,9           | VPF100-H02             |                        |                        | VPF-66047     | 1 1/8 x 1 3/8 |            |               |               |               |            | -                      |                        | VPF100-H03    | VPF-66048  | 1 3/8 x 1 3/8 | 35 x 35     | VPF100-H05    | VPF-66049  | -             | 28 x 35       | VPF100-H06    | VPF-66050              |                        |                        | -             | 28 x 28                |                        |               |            |                        |                        |               |            |            |               |                        |               | VPF150-H51 |               |               | VPF-                   |                        |               |            | L-shape    | -             | 1 1/8 x 1 3/8 | -                      | 14,8                   | 7,7                    | 5,0           | 3,9                    | 3,9           |            |               | VPF150-H52    | VPF-       | 1 5/8 x 1 5/8          |               |               |            |               | -             |               |                        |               |               | VPF150-H01 | VPF-66061     | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             |               |                        | 14,8                   | 7,7           |                        |                        |               |                        |            | 5,0        | 3,9                    | 3,9           | VPF150-H02             | VPF-66062     | 1 5/8 x 1 5/8 |               |                        | -             | VPF250-H01 |                        |               |               |            |                        | VPF-66051     | straight   | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9          | 12,0          | 4,5           | 3,5           | 3,5           | VPF250-H02             | VPF-66052     | 1 3/8 x 1 3/8 | 35 x 35       | VPF250-H03 | VPF-66053  | 1 5/8 x 1 5/8          | -             | VPF250-H04    | VPF-66054  | -          | 28 x 28       | VPF250-H05             | VPF-66055              | -             | 42 x 42    |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H54 | VPF-66044                 |               |                        | -   | 28 x 28                | VPF100-H55              | VPF-66045                             |                    |                                 |                               |            | -             |               |                        | 28 x 35       |               |               |                        |             | VPF100-H01 | VPF-66046     | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 14,4          | 4,0        | 5,0           | 3,9                    |               | 3,9        | VPF100-H02    |               |               |                        | VPF-66047     | 1 1/8 x 1 3/8 |           |               |                        |               |               | -                      |                        |                        | VPF100-H03    | VPF-66048     |            | 1 3/8 x 1 3/8 |               |               |            | 35 x 35                |                        | VPF100-H05    | VPF-66049  | -             | 28 x 35     | VPF100-H06    | VPF-66050  | -             | 28 x 28       | VPF150-H51    | VPF-                   |                        |                        | L-shape       | -                      |                        |               |            |                        |                        |               |            |            | 1 1/8 x 1 3/8 | -                      |               | 14,8       |               | 7,7           | 5,0                    | 3,9                    | 3,9           | VPF150-H52 |            |               | VPF-          | 1 5/8 x 1 5/8          |                        |                        |               |                        |               | -          | VPF150-H01    | VPF-66061     | L-shape    | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -             | 14,8       | 7,7           | 5,0           |               | 3,9                    | 3,9           |               | VPF150-H02 | VPF-66062     |               |                        | 1 5/8 x 1 5/8 | -             | VPF250-H01    | VPF-66051              |                        |               | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -                      | 23,9       |            |                        |               | 12,0                   | 4,5           | 3,5           |               |                        | 3,5           | VPF250-H02 |                        |               |               |            |                        | VPF-66052     |            |                        | 1 3/8 x 1 3/8 | 35 x 35    |               |               |               |               |               | VPF250-H03             | VPF-66053     | 1 5/8 x 1 5/8 | -             | VPF250-H04 | VPF-66054  | -                      | 28 x 28       | VPF250-H05    | VPF-66055  | -          | 42 x 42       |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H55 | VPF-66045                 |               |                        | -   | 28 x 35                | VPF100-H01              | VPF-66046                             | straight           | with<br>sight<br>glass          |                               |            | 1 1/8 x 1 1/8 |               |                        | -             | 14,4          | 4,0           | 5,0                    | 3,9         | 3,9        | VPF100-H02    |                        |                        | VPF-66047     | 1 1/8 x 1 3/8 |               |            |               |                        |               |            | -             |               | VPF100-H03    |                        | VPF-66048     | 1 3/8 x 1 3/8 |           |               |                        |               |               | 35 x 35                |                        |                        | VPF100-H05    | VPF-66049     |            | -             |               |               |            | 28 x 35                |                        | VPF100-H06    | VPF-66050  | -             | 28 x 28     | VPF150-H51    | VPF-       | L-shape       | -             | 1 1/8 x 1 3/8 | -                      |                        |                        |               |                        |                        |               | 14,8       | 7,7                    |                        |               | 5,0        | 3,9        | 3,9           | VPF150-H52             | VPF-          |            | 1 5/8 x 1 5/8 |               |                        |                        |               | -          | VPF150-H01 | VPF-66061     | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8          | -                      | 14,8          | 7,7                    | 5,0           | 3,9        | 3,9           | VPF150-H02    |            |                        | VPF-66062     | 1 5/8 x 1 5/8 |            |               |               |               |                        |               | -             | VPF250-H01 | VPF-66051     | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 23,9          | 12,0                   | 4,5                    | 3,5           |                        |                        | 3,5           | VPF250-H02             |            | VPF-66052  | 1 3/8 x 1 3/8          | 35 x 35       |                        |               |               |               |                        |               | VPF250-H03 |                        |               |               |            |                        | VPF-66053     |            |                        | 1 5/8 x 1 5/8 | -          |               |               |               |               |               | VPF250-H04             | VPF-66054     | -             | 28 x 28       | VPF250-H05 | VPF-66055  | -                      | 42 x 42       |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H01 | VPF-66046                 | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8                               | -                      | 14,4                    | 4,0                                   |                    |                                 | 5,0                           | 3,9        | 3,9           |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H02 | VPF-66047                 |               |                        | 1 1/8 x 1 3/8                               | -                      |                         |                                       |                    |                                 |                               |            |               | VPF100-H03    | VPF-66048              | 1 3/8 x 1 3/8 |               |               |                        |             |            | 35 x 35       |                        |                        | VPF100-H05    | VPF-66049     |               |            |               |                        | -             |            | 28 x 35       |               | VPF100-H06    |                        | VPF-66050     | -             |           |               |                        |               |               | 28 x 28                |                        |                        | VPF150-H51    | VPF-          |            | L-shape       |               |               |            | -                      |                        | 1 1/8 x 1 3/8 | -          | 14,8          | 7,7         | 5,0           | 3,9        | 3,9           | VPF150-H52    | VPF-          | 1 5/8 x 1 5/8          | -                      | VPF150-H01             | VPF-66061     | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -          | 14,8                   | 7,7                    | 5,0           | 3,9        | 3,9        | VPF150-H02    | VPF-66062              | 1 5/8 x 1 5/8 | -          | VPF250-H01    | VPF-66051     | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9       | 12,0          | 4,5           | 3,5                    | 3,5                    | VPF250-H02             | VPF-66052     | 1 3/8 x 1 3/8          | 35 x 35       | VPF250-H03 | VPF-66053     | 1 5/8 x 1 5/8 | -          | VPF250-H04             | VPF-66054     | -             | 28 x 28    | VPF250-H05    | VPF-66055     | -             | 42 x 42                |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H03 | VPF-66048                 |               |                        | 1 3/8 x 1 3/8                               | 35 x 35                |                         |                                       |                    |                                 |                               |            |               | VPF100-H05    | VPF-66049              | -             |               |               |                        |             |            | 28 x 35       |                        |                        | VPF100-H06    | VPF-66050     |               |            |               |                        | -             |            | 28 x 28       |               | VPF150-H51    |                        | VPF-          | L-shape       |           |               |                        |               |               | -                      | 1 1/8 x 1 3/8          | -                      | 14,8          | 7,7           | 5,0        |               | 3,9           | 3,9           | VPF150-H52 |                        | VPF-                   | 1 5/8 x 1 5/8 | -          |               |             |               |            |               | VPF150-H01    | VPF-66061     | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8          | -             |                        |                        | 14,8          | 7,7        |                        |                        |               |            |            | 5,0           | 3,9                    | 3,9           | VPF150-H02 | VPF-66062     | 1 5/8 x 1 5/8 |                        |                        | -             | VPF250-H01 |            |               |               |                        |                        | VPF-66051              | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9          | 12,0          | 4,5        | 3,5                    | 3,5           | VPF250-H02    | VPF-66052  | 1 3/8 x 1 3/8 | 35 x 35       | VPF250-H03    | VPF-66053              | 1 5/8 x 1 5/8 | -             | VPF250-H04 | VPF-66054     |               |                        | -             | 28 x 28       |               |                        |                        |               |                        |                        |               | VPF250-H05             |            | VPF-66055  | -                      | 42 x 42       |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H05 | VPF-66049                 |               |                        | -   | 28 x 35                |                         |                                       |                    |                                 |                               |            |               | VPF100-H06    | VPF-66050              | -             |               |               |                        |             |            | 28 x 28       |                        |                        | VPF150-H51    | VPF-          |               |            |               |                        | L-shape       |            | -             | 1 1/8 x 1 3/8 | -             | 14,8                   | 7,7           |               | 5,0       | 3,9           | 3,9                    | VPF150-H52    | VPF-          |                        | 1 5/8 x 1 5/8          | -                      |               |               |            | VPF150-H01    |               |               | VPF-66061  | L-shape                | with<br>sight<br>glass | 1 1/8 x 1 3/8 | -          | 14,8          | 7,7         | 5,0           | 3,9        | 3,9           | VPF150-H02    | VPF-66062     |                        |                        | 1 5/8 x 1 5/8          | -             | VPF250-H01             | VPF-66051              |               |            | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9       |               |                        |               | 12,0       | 4,5           | 3,5           |                        |                        | 3,5           | VPF250-H02 |            |               |               |                        |                        | VPF-66052              |               |                        | 1 3/8 x 1 3/8 | 35 x 35    |               |               |            |                        |               | VPF250-H03    | VPF-66053  | 1 5/8 x 1 5/8 | -             | VPF250-H04    | VPF-66054              | -             | 28 x 28       | VPF250-H05 | VPF-66055     |               |                        | -             | 42 x 42       |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF100-H06 | VPF-66050                 |               |                        | -   | 28 x 28                |                         |                                       |                    |                                 |                               |            |               | VPF150-H51    | VPF-                   | L-shape       |               |               |                        |             |            | -             | 1 1/8 x 1 3/8          | -                      | 14,8          | 7,7           | 5,0           | 3,9        | 3,9           | VPF150-H52             |               | VPF-       |               | 1 5/8 x 1 5/8 | -             |                        |               | VPF150-H01    |           |               |                        | VPF-66061     | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8          | -                      | 14,8          | 7,7           | 5,0        | 3,9           | 3,9           | VPF150-H02    | VPF-66062  |                        |                        | 1 5/8 x 1 5/8 | -          |               |             |               |            |               | VPF250-H01    | VPF-66051     | straight               | with<br>sight<br>glass | 1 1/8 x 1 1/8          | -             | 23,9                   | 12,0                   | 4,5           | 3,5        |                        |                        | 3,5           | VPF250-H02 |            | VPF-66052     | 1 3/8 x 1 3/8          | 35 x 35       |            |               |               |                        |                        |               | VPF250-H03 |            |               |               |                        |                        | VPF-66053              |               |                        | 1 5/8 x 1 5/8 | -          |               |               |            |                        |               | VPF250-H04    | VPF-66054  | -             | 28 x 28       | VPF250-H05    | VPF-66055              | -             | 42 x 42       |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF150-H51 | VPF-                      |               |                        | L-shape                                     | -                      |                         |                                       | 1 1/8 x 1 3/8      | -                               |                               |            |               | 14,8          | 7,7                    |               | 5,0           | 3,9           | 3,9                    |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF150-H52 | VPF-                      | 1 5/8 x 1 5/8 | -                      |   |                        | VPF150-H01              | VPF-66061                             | L-shape            | with<br>sight<br>glass          | 1 1/8 x 1 3/8                 | -          | 14,8          |               |                        | 7,7           |               |               |                        | 5,0         | 3,9        | 3,9           | VPF150-H02             | VPF-66062              | 1 5/8 x 1 5/8 | -             | VPF250-H01    | VPF-66051  | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -          | 23,9          | 12,0          | 4,5           | 3,5                    | 3,5           | VPF250-H02    | VPF-66052 | 1 3/8 x 1 3/8 | 35 x 35                | VPF250-H03    | VPF-66053     | 1 5/8 x 1 5/8          | -                      | VPF250-H04             | VPF-66054     | -             | 28 x 28    | VPF250-H05    | VPF-66055     | -             | 42 x 42    |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF150-H01 | VPF-66061                 | L-shape       | with<br>sight<br>glass | 1 1/8 x 1 3/8                               | -                      | 14,8                    | 7,7                                   |                    |                                 | 5,0                           | 3,9        |               | 3,9           |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF150-H02 | VPF-66062                 |               |                        | 1 5/8 x 1 5/8                               | -                      |                         |                                       | VPF250-H01         | VPF-66051                       |                               |            | straight      |               | with<br>sight<br>glass | 1 1/8 x 1 1/8 | -             | 23,9          | 12,0                   | 4,5         | 3,5        | 3,5           | VPF250-H02             | VPF-66052              | 1 3/8 x 1 3/8 | 35 x 35       | VPF250-H03    | VPF-66053  |               |                        | 1 5/8 x 1 5/8 | -          |               |               |               |                        |               | VPF250-H04    | VPF-66054 | -             | 28 x 28                | VPF250-H05    | VPF-66055     | -                      | 42 x 42                |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF250-H01 | VPF-66051                 | straight      | with<br>sight<br>glass | 1 1/8 x 1 1/8                               | -                      | 23,9                    | 12,0                                  | 4,5                | 3,5                             | 3,5                           |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF250-H02 | VPF-66052                 |               |                        | 1 3/8 x 1 3/8                               | 35 x 35                |                         |                                       |                    |                                 |                               | VPF250-H03 |               | VPF-66053     |                        | 1 5/8 x 1 5/8 | -             |               |                        |             |            |               | VPF250-H04             | VPF-66054              | -             | 28 x 28       | VPF250-H05    | VPF-66055  |               |                        | -             | 42 x 42    |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF250-H03 | VPF-66053                 |               |                        | 1 5/8 x 1 5/8                               | -                      |                         |                                       |                    |                                 |                               | VPF250-H04 |               | VPF-66054     |                        | -             | 28 x 28       |               |                        |             |            |               | VPF250-H05             | VPF-66055              | -             | 42 x 42       |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF250-H04 | VPF-66054                 |               |                        | -   | 28 x 28                |                         |                                       |                    |                                 |                               | VPF250-H05 |               | VPF-66055     |                        | -             | 42 x 42       |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |
| VPF250-H05 | VPF-66055                 |               |                        | -   | 42 x 42                |                         |                                       |                    |                                 |                               |            |               |               |                        |               |               |               |                        |             |            |               |                        |                        |               |               |               |            |               |                        |               |            |               |               |               |                        |               |               |           |               |                        |               |               |                        |                        |                        |               |               |            |               |               |               |            |                        |                        |               |            |               |             |               |            |               |               |               |                        |                        |                        |               |                        |                        |               |            |                        |                        |               |            |            |               |                        |               |            |               |               |                        |                        |               |            |            |               |               |                        |                        |                        |               |                        |               |            |               |               |            |                        |               |               |            |               |               |               |                        |               |               |            |               |               |                        |               |               |               |                        |                        |               |                        |                        |               |                        |            |            |                        |               |                        |               |               |               |                        |               |            |                        |               |               |            |                        |               |            |                        |               |            |               |               |               |               |               |                        |               |               |               |            |            |                        |               |               |            |            |               |                        |                        |               |            |               |               |                        |               |               |            |                        |               |                        |               |               |               |                        |               |                        |               |               |          |                        |               |               |               |                        |               |                        |                        |               |                        |            |            |                        |                        |                        |               |            |               |                        |                        |               |            |                        |               |                        |               |           |               |           |                        |               |               |               |               |            |               |               |               |               |               |                        |               |               |                        |                        |               |            |               |            |            |            |            |            |                        |          |                        |               |               |      |

**Note:**

- 1) Extent of delivery: valve body (reference number for connection cable see in the following pages)
- 2) Specified diameters are hydraulic diameters. The seat cross-section isn't circularly.
- 3) Kv values valid for the flow direction inlet to outlet



**COOLING CAPACITIES**

| Model   | Steps Completely Open | Nominal Cooling Capacity <sup>1)</sup><br>[kW] |       |                     |                     |                     |                |       |
|---------|-----------------------|--|-------|---------------------|---------------------|---------------------|----------------|-------|
|         |                       | R22  | R134a | R407A <sup>2)</sup> | R407C <sup>2)</sup> | R407F <sup>2)</sup> | R404A<br>R507A | R410A |
| VPF 25  | 2600                  | 143  | 112   | 144                 | 153                 | 163                 | 105            | 171   |
| VPF 50  | 2600                  | 287  | 226   | 289                 | 307                 | 328                 | 210            | 343   |
| VPF 100 | 3500                  | 406  | 319   | 409                 | 435                 | 463                 | 298            | 485   |
| VPF 150 | 3800                  | 730  | 574   | 736                 | 782                 | 833                 | 535            | 872   |
| VPF 250 | 3800                  | 1133   | 892   | 1143                | 1215                | 1294                | 832            | 1354  |

| Model   | Steps Completely Open | Nominal Cooling Capacity <sup>1)</sup><br>[USRT] |       |                     |                     |                     |                |       |
|---------|-----------------------|--|-------|---------------------|---------------------|---------------------|----------------|-------|
|         |                       | R22  | R134a | R407A <sup>2)</sup> | R407C <sup>2)</sup> | R407F <sup>2)</sup> | R404A<br>R507A | R410A |
| VPF 25  | 2600                  | 41   | 32    | 41                  | 44                  | 46                  | 30             | 49    |
| VPF 50  | 2600                  | 82   | 64    | 82                  | 87                  | 93                  | 60             | 97    |
| VPF 100 | 3500                  | 115  | 91    | 116                 | 124                 | 132                 | 85             | 138   |
| VPF 150 | 3800                  | 207  | 163   | 209                 | 222                 | 237                 | 152            | 248   |
| VPF 250 | 3800                  | 322  | 254   | 325                 | 345                 | 368                 | 236            | 385   |

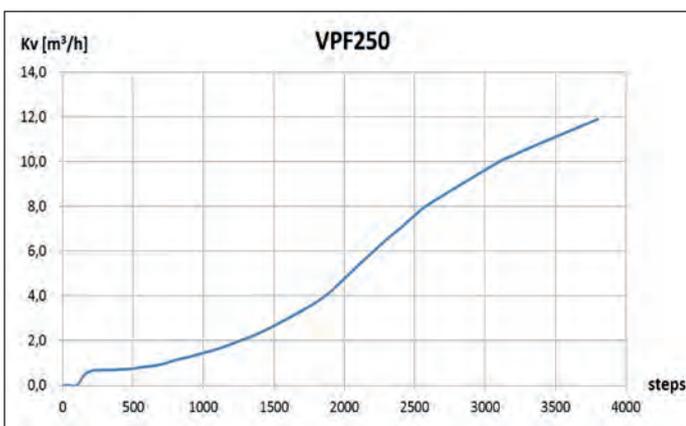
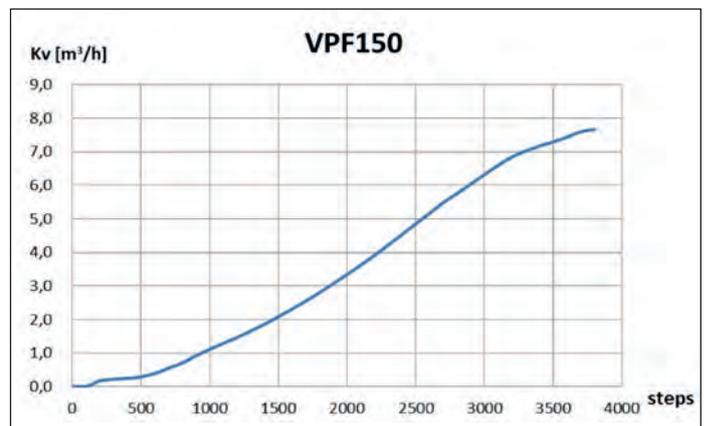
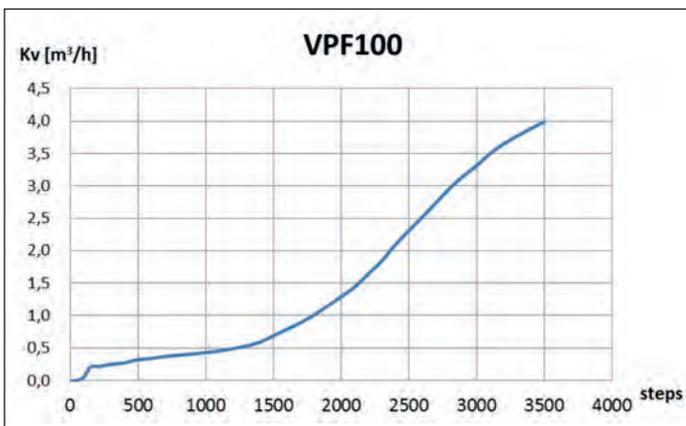
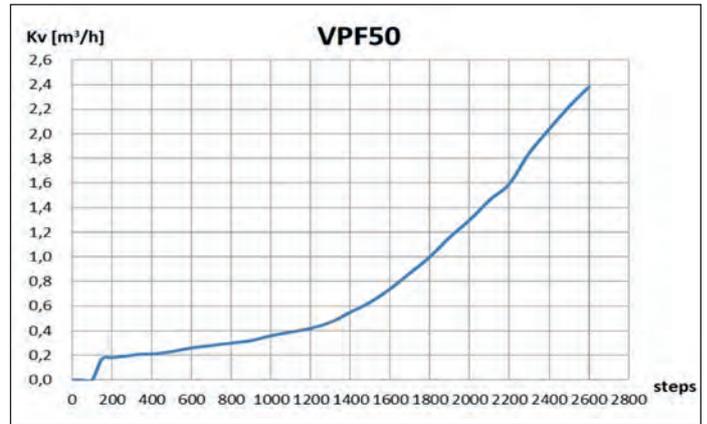
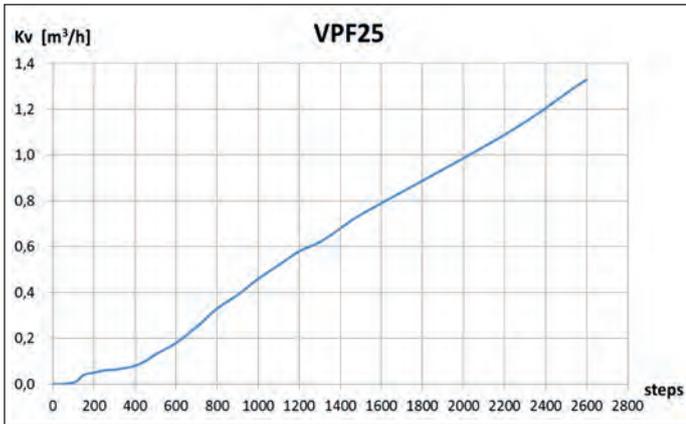
**Note:**

1) Nominal working conditions: Condensing temperature 38°C; evaporating temperature +4,4°C; liquid temperature 37°C

2) Data based on dew point conditions



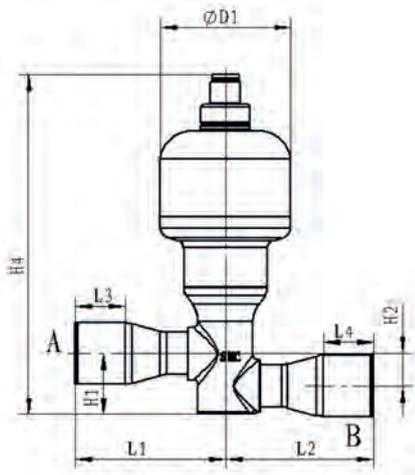
**FLOW CHARACTERISTIC**



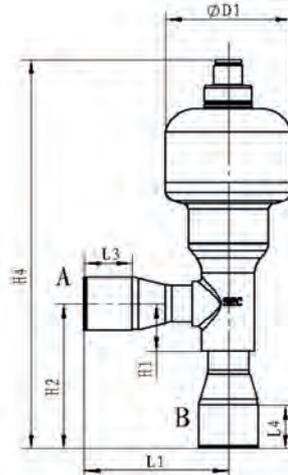
**VPF SERIES**  
**Electronic Expansion Valve**



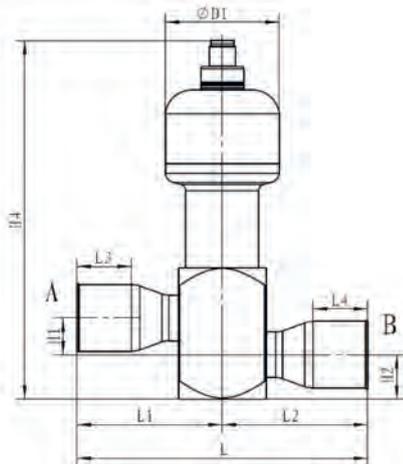
**DIMENSIONS**



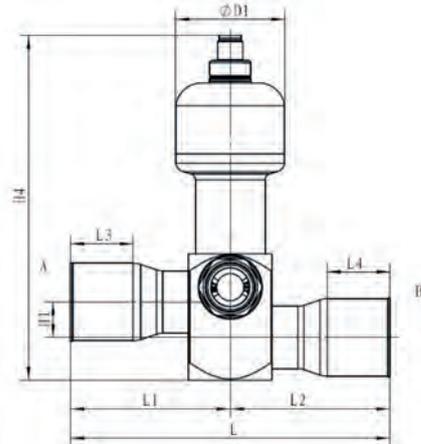
Valve Body - Straight: VPF25



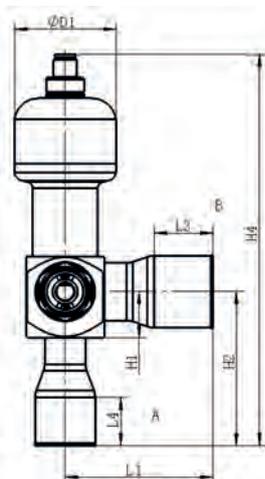
Valve Body - L-Shape: VPF25



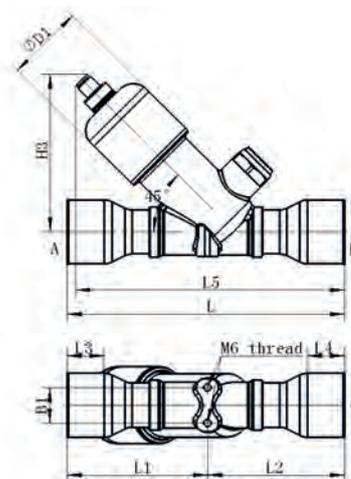
Valve Body - Without sight glass: VPF50, VPF100



Valve Body - With sight glass: VPF50, VPF100



Valve Body - With sight glass: VPF150



Valve Body - With sight glass: VPF250



| Model      | Part Number | Dimensions [mm] |    |    |    |    |     |      |      |     |     |    |     |
|------------|-------------|-----------------|----|----|----|----|-----|------|------|-----|-----|----|-----|
|            |             | L               | L1 | L2 | L3 | L4 | L5  | H1   | H2   | H3  | H4  | B1 | øD1 |
| VPF 25-H52 | VPF-66014   | 120             | 60 | 60 | 13 | 13 | -   | 25,6 | 13   | -   | 136 | -  | 52  |
| VPF 25-H53 | VPF-66015   | 120             | 60 | 60 | 20 | 20 | -   | 25,6 | 13   | -   | 136 | -  | 52  |
| VPF 25-H58 | VPF-66020   | -               | 60 | -  | 13 | 13 | -   | 22,5 | 66,5 | -   | 178 | -  | 52  |
| VPF 25-H59 | VPF-66021   | -               | 60 | -  | 20 | 20 | -   | 22,5 | 66,5 | -   | 178 | -  | 52  |
| VPF 50-H51 | VPF-66025   | 112             | 56 | 56 | 20 | 20 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H52 | VPF-66026   | 122             | 56 | 66 | 20 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H53 | VPF-66027   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H54 | VPF-66028   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H56 | VPF-66030   | 122             | 56 | 66 | 20 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H57 | VPF-66031   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H58 | VPF-66032   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H01 | VPF-66033   | 112             | 56 | 56 | 20 | 20 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H02 | VPF-66034   | 122             | 56 | 66 | 20 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H03 | VPF-66035   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H04 | VPF-66036   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H06 | VPF-66038   | 122             | 56 | 66 | 20 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H07 | VPF-66039   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF 50-H08 | VPF-66040   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H51 | VPF-66041   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H52 | VPF-66042   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H53 | VPF-66043   | 152             | 76 | 76 | 30 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H54 | VPF-66044   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H55 | VPF-66045   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H01 | VPF-66046   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H02 | VPF-66047   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H03 | VPF-66048   | 152             | 76 | 76 | 30 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H05 | VPF-66049   | 142             | 66 | 76 | 25 | 30 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF100-H06 | VPF-66050   | 132             | 66 | 66 | 25 | 25 | -   | 17   | 21   | -   | 166 | -  | 52  |
| VPF150-H01 | VPF-66061   | -               | 76 | -  | 30 | 25 | -   | 24   | 70   | -   | 195 | -  | 52  |
| VPF150-H02 | VPF-66062   | -               | 76 | -  | 25 | 25 | -   | 34   | 89   | -   | 212 | -  | 52  |
| VPF250-H01 | VPF-66051   | 166             | 84 | 82 | 25 | 25 | 170 | -    | -    | 107 | -   | 24 | 52  |
| VPF250-H02 | VPF-66052   | 186             | 94 | 92 | 25 | 25 | 180 | -    | -    | 107 | -   | 24 | 52  |
| VPF250-H03 | VPF-66053   | 186             | 94 | 92 | 25 | 25 | 180 | -    | -    | 107 | -   | 24 | 52  |
| VPF250-H04 | VPF-66054   | 166             | 84 | 82 | 25 | 25 | 170 | -    | -    | 107 | -   | 24 | 52  |
| VPF250-H05 | VPF-66055   | 186             | 94 | 92 | 25 | 25 | 180 | -    | -    | 107 | -   | 24 | 52  |

## VPF SERIES

### Electronic Expansion Valve



#### ACCESSORIES

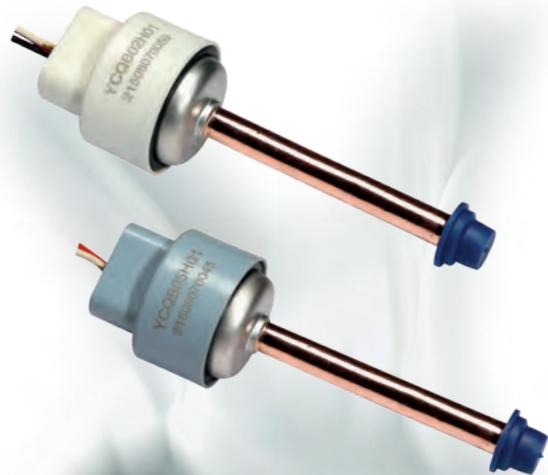
##### Connection Cable

| Model          | Part Number <sup>1)</sup> | Cable Length [m] |
|----------------|---------------------------|------------------|
| VPF100-006 005 | VPF-66044                 | 2                |
| VPF100-006 006 | VPF-66045                 | 8                |

**Note:** 1) Extent of delivery: cable, connecting valve plug and cable sleeves for each single wire  
2) Cable-VPF valve connection in IP67

# Pressure Sensor

Pressure sensors are widely used in Air Conditioning, Refrigeration and Heat Pump system. Using a 5V excitation input these sensors provide a 0.5-3.5 V or 0.5-4.5 V signal output proportional to the pressure of the medium. This device requires no end user amplification. Pressure sensors permit to control and guarantee the system working under safe and stability condition.



## FEATURES

- OVERALL FEATURES: APPLIED HIGH PERFORMANCE DIGITAL CIRCUIT WHICH HAS GOOD LINEAR, SMALL TEMPERATURE EXCURSION AND HIGH LEVEL OF ACCURACY OVER WIDE OPERATING RANGE
- SMALL SIZE AND SIMPLE INSTALLATION; MODELS WITH LEAD WIRE DIRECT CONNECTOR;
- STABILITY: APPLIED SUPERIOR PRESSURE CORE, GOOD STABILITY UNDER STRICT PROCESS CONTROL;
- DIVERSIFICATION: 2 DIFFERENT PRESSURE RANGE; 2 DIFFERENT LEVEL OF ACCURACY.

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Medium temperature TS min./max.: -30°C / +120°C (models with 2% accuracy)
- Medium temperature TS min./max.: -40°C / +120°C\* (models with 0,8% accuracy)
- Ambient temperature min./max.: -30°C / +80°C
- Relative humidity: 0 to 95% RH
- Installation position: preferably with vertical axis and sensor upwards
- Certifications: UL/CSA and declaration according to LVD or PED

\***Note:** 0.8% FS accuracy is guaranteed only in the temperature range -40°C / +40°C



**GENERAL CHARACTERISTICS**

| Models with 2% Accuracy                   |          |               |               |               |               |
|---|----------|---------------|---------------|---------------|---------------|
| <b>Model</b>                              |          | YCQB02H01     | YCQB05H01     | YCQB02L01     | YCQB05L01     |
| <b>Part Number</b>                        |          | YCQ-21001     | YCQ-21002     | YCQ-21003     | YCQ-21004     |
| <b>Connection Type</b>                    |          | Solder        | Solder        | Thread        | Thread        |
| <b>Connection Pipe Size</b>               | [ inch ] | 1/4"          | 1/4"          | SAE - 1/4"    | SAE - 1/4"    |
| <b>Thread Size</b>                        | [ inch ] | -             | -             | 7/16-20 UNF   | 7/16-20 UNF   |
| <b>Supply Voltage</b>                     | [ V ]    | 5 ± 0,25 DC   | 5 ± 0,25 DC   | 5 ± 0,25 DC   | 5 ± 0,25 DC   |
| <b>Pressure Range (0 to pr)</b>           | [ MPa ]  | 0 to 2        | 0 to 5        | 0 to 2        | 0 to 4,6      |
| <b>Output (VA0 to VApr)</b>               | [ V ]    | 0,5 to 3,5 DC | 0,5 to 3,5 DC | 0,5 to 4,5 DC | 0,5 to 4,5 DC |
| <b>Signal Span (VFS) <sup>1</sup></b>     | [ V ]    | 3,0           | 3,0           | 3,0           | 3,0           |
| <b>Accuracy <sup>2</sup></b>              | [ % ]    | ± 2,0 % F.S.  | ± 2,0 % F.S.  | ± 2,0 % F.S.  | ± 2,0 % F.S.  |
| <b>Response Time <sup>3</sup></b>         | [ ms ]   | 10            | 10            | 10            | 10            |
| <b>Current Consumption</b>                | [ mA ]   | Max. 10       | Max. 10       | Max. 10       | Max. 10       |
| <b>Load Resistance</b>                    | [ kΩ ]   | Min. 10       | Min. 10       | Min. 10       | Min. 10       |
| <b>Insulation Resistance <sup>4</sup></b> | [ MΩ ]   | Min. 100      | Min. 100      | Min. 100      | Min. 100      |
| <b>Maximum Operating Pressure (MOP)</b>   | [ MPa ]  | 3,50          | 5,00          | 3,50          | 4,60          |
| <b>Test Pressure</b>                      | [ MPa ]  | 5,25          | 7,50          | 5,25          | 7,50          |
| <b>Burst Pressure</b>                     | [ MPa ]  | 17,50         | 25,00         | 17,50         | 25,00         |
| <b>Protection Class</b>                   | [ - ]    | IP 67         | IP 67         | IP 67         | IP 67         |



## GENERAL CHARACTERISTICS

| Models with 0.8% Accuracy                         |          |               |               |
|---|----------|---------------|---------------|
| <b>Model</b>                                      |          | YCQB02H01-1   | YCQB02L01-1   |
| <b>Part Number</b>                                |          | YCQ-21005     | YCQ-21006     |
| <b>Connection Type</b>                            |          | Solder        | Thread        |
| <b>Connection Pipe Size</b>                       | [ inch ] | 1/4"          | SAE - 1/4"    |
| <b>Thread Size</b>                                | [ inch ] | -             | 7/16-20 UNF   |
| <b>Supply Voltage</b>                             | [ V ]    | 5 ± 0,25 DC   | 5 ± 0,25 DC   |
| <b>Pressure Range (0 to p<sub>r</sub>)</b>        | [ MPa ]  | 0 to 2        | 0 to 2        |
| <b>Output (V<sub>A0</sub> to V<sub>Apr</sub>)</b> | [ V ]    | 0,5 to 3,5 DC | 0,5 to 4,5 DC |
| <b>Signal Span (V<sub>FS</sub>)<sup>1</sup></b>   | [ V ]    | 3,0           | 3,0           |
| <b>Accuracy<sup>2</sup></b>                       | [ % ]    | ± 0,8 % F.S.  | ± 0,8 % F.S.  |
| <b>Response Time<sup>3</sup></b>                  | [ ms ]   | 10            | 10            |
| <b>Current Consumption</b>                        | [ mA ]   | Max. 10       | Max. 10       |
| <b>Load Resistance</b>                            | [ kΩ ]   | Min. 10       | Min. 10       |
| <b>Insulation Resistance<sup>4</sup></b>          | [ MΩ ]   | Min. 100      | Min. 100      |
| <b>Maximum Operating Pressure (MOP)</b>           | [ MPa ]  | 3,50          | 3,50          |
| <b>Test Pressure</b>                              | [ MPa ]  | 5,25          | 5,25          |
| <b>Burst Pressure</b>                             | [ MPa ]  | 17,50         | 17,50         |
| <b>Protection Class</b>                           | [ - ]    | IP 67         | IP 67         |

**Note:** 1) Signal span:  $V_{FS}=FS$  (Full Scale) =  $V_A(p_r) - V_{A0}$

2) Accuracy measured within the temperature ranges:

- YCQB02xxx: from -30°C to +85°C
- YCQB05xxx: from -30°C to +120°C
- YCQB02xxx-1: from -40°C to +40°C

Included Nonlinearity (L) and pressure hysteresis. The Nonlinearity is the deviation of the real sensor characteristic  $V_A = f(p)$  from the ideal straight line. It can be approximated by a polynomial of second order, with the maximum at  $p_x = p_r / 2$ .

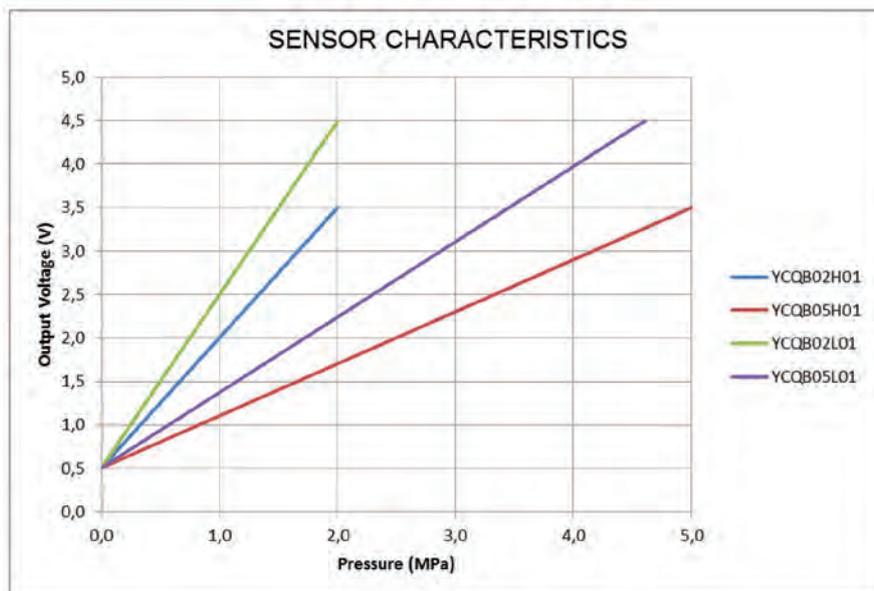
The equation to calculate the nonlinearity is:  $L = (V_A(p_x) - V_{A0}) / (V_A(p_r) - V_{A0}) - p_x / p_r$

3) Response Time: delay between a pressure change (10 to 90%  $p_r$ ) and the corresponding signal output change (10 to 90% FS)

4) Insulation Resistance measured with rated voltage: 500 V DC

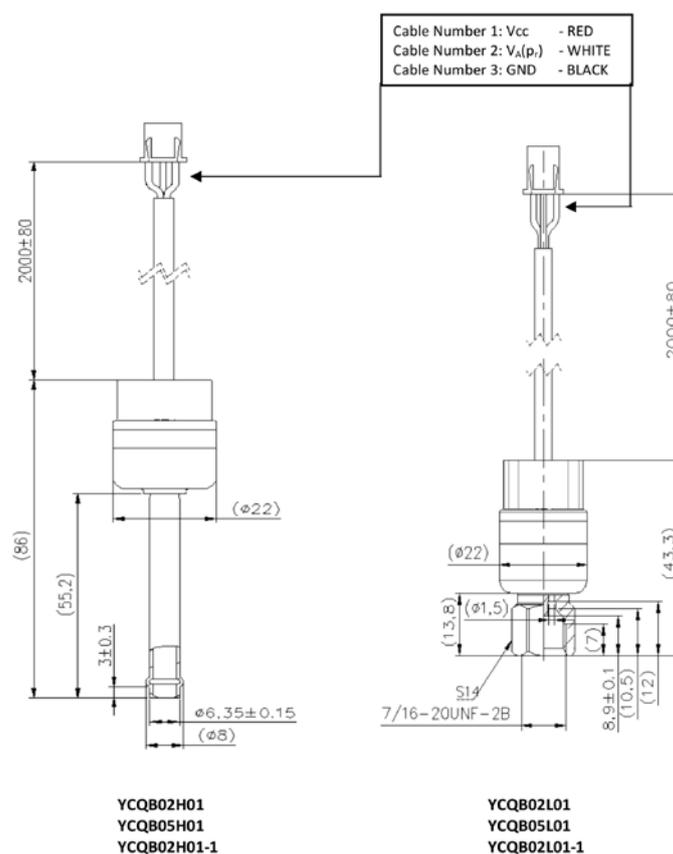


**PRESSURE / OUTPUT VOLTAGE CHARACTERISTICS <sup>1</sup>**



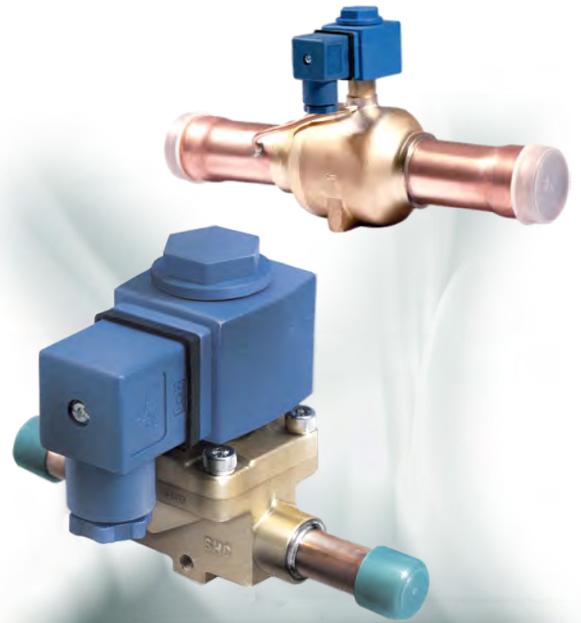
**Note:** 1) The YCQB02H01 characteristic is also valid for the model YCQB02H01-1  
2) The YCQB02L01 characteristic is also valid for the model YCQB02L01-1

**DIMENSIONS**



# Solenoid Valve

MDF series solenoid valves are direct operated or pilot operated solenoid valves, mainly used in refrigerant control of various devices such as refrigerating and freezing systems, air conditioners and heat pumps.



## FEATURES

- COILS: LOW ENERGY CONSUMPTION, RELIABLE
- GREAT VALVE OPENING PERFORMANCE, HIGH MOPD
- COILS ARE DOUBLE SEALED, WATER TIGHT AND SAFE

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R407C, R404A, R410A, R507A <sup>1)</sup>
- Medium temperature TS min./max.:
  - MDF 2H...22H and MDF 2L...15L: -30°C/105°C
  - MDF 25H...40H: -40°C/140°C
- Ambient temperature min./max.: -30°C / +55°C
- Relative humidity: 0 to 95% RH
- Installation position:
  - Liquid, suction and discharge line
  - Preferably coil upwards and flow direction corresponds to the arrow
- Certifications: UL/CSA<sup>2)</sup> and declaration according to LVD or PED

<sup>1)</sup> Other refrigerants on request

<sup>2)</sup> MDF-B03 solenoid valves on request

## TECHNICAL PARAMETERS

*Technical Parameters of Valve Body*

| Valve Body  |             | Normal position | Actuation           | Kv [m <sup>3</sup> /h] | MOP [Mpa] | Max. OPD [Mpa] | Min. OPD [Mpa] |
|-------------|-------------|-----------------|---------------------|------------------------|-----------|----------------|----------------|
| Solder      | Flare       |                 |                     |                        |           |                |                |
| MDF-A03-2H  | MDF-A03-2L  | NC              | Direct              | 0,16                   | 4,5       | 3,1            | 0,00           |
| MDF-A03-3H  | MDF-A03-3L  |                 |                     | 0,23                   |           |                |                |
| MDF-A03-6H  | MDF-A03-6L  |                 | Pilot <sup>1)</sup> | 0,8                    |           |                |                |
| MDF-A03-10H | MDF-A03-10L |                 |                     | 1,9                    |           |                |                |
| MDF-A03-15H | MDF-A03-15L |                 |                     | 2,3                    |           |                |                |

# MDF SERIES

## Solenoid Valve



### TECHNICAL PARAMETERS

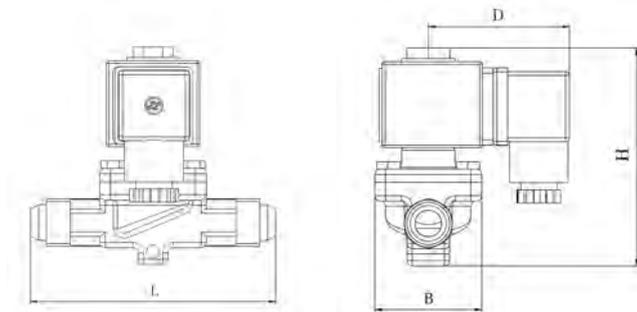
Technical Parameters of Valve Body

| Valve Body  |       | Normal position | Actuation               | Kv [m <sup>3</sup> /h] | MOP [Mpa] | Max. OPD [Mpa] | Min. OPD [Mpa] |
|-------------|-------|-----------------|-------------------------|------------------------|-----------|----------------|----------------|
| Solder      | Flare |                 |                         |                        |           |                |                |
| MDF-A03-20H | --    | NC              | Pilot <sup>1)</sup>     | 5,0                    | 4,5       | 3,1            | 0,02           |
| MDF-A03-22H | --    |                 |                         | 5,9                    |           |                |                |
| MDF-B03-25H | --    |                 | Pilot (P) <sup>2)</sup> | 10,0                   |           |                |                |
| MDF-B03-32H | --    |                 |                         | 15,0                   |           |                |                |
| MDF-B03-40H | --    |                 |                         | 25,0                   |           |                |                |

**Note:** 1) Membrane operated  
 2) Piston operated  
 3) Min. OPD: values referred to 60% of nominal flow

### DIMENSIONS

Valve Body Thread Connection



| Model Valve Body | Part Number <sup>1)</sup> | SAE Flare Connection [ inch ] | PED Category | Dimensions [mm] |    |    |     |
|------------------|---------------------------|-------------------------------|--------------|-----------------|----|----|-----|
|                  |                           |                               |              | L               | B  | D  | H   |
| MDF-A03-2L 001   | MDF-08039                 | 1/4                           | 3.3          | 59              | 30 | 53 | 82  |
| MDF-A03-3L 001   | MDF-08040                 | 1/4                           | 3.3          | 59              | 30 | 53 | 82  |
| MDF-A03-3L 003   | MDF-08041                 | 3/8                           | 3.3          | 59              | 30 | 53 | 82  |
| MDF-A03-6L 001   | MDF-08042                 | 3/8                           | 3.3          | 69              | 36 | 53 | 88  |
| MDF-A03-6L 003   | MDF-08043                 | 1/2                           | 3.3          | 69              | 36 | 53 | 88  |
| MDF-A03-10L 003  | MDF-08044                 | 1/2                           | 3.3          | 92              | 42 | 53 | 96  |
| MDF-A03-10L 001  | MDF-08045                 | 5/8                           | 3.3          | 92              | 42 | 53 | 96  |
| MDF-A03-15L 001  | MDF-08046                 | 5/8                           | 3.3          | 104             | 52 | 53 | 100 |
| MDF-A03-15L 003  | MDF-08047                 | 7/8                           | 3.3          | 104             | 52 | 53 | 100 |

**Note:** 1) Extent of delivery: valve body without coil

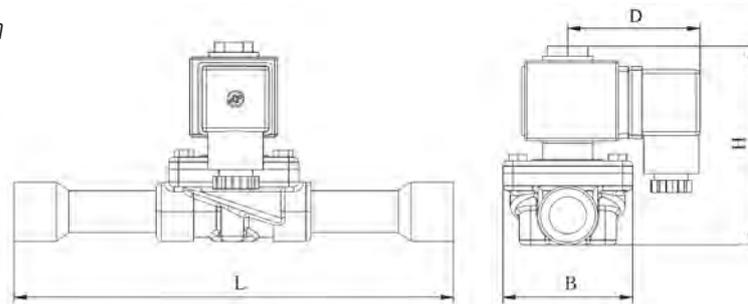
# MDF SERIES

## Solenoid Valve



### DIMENSIONS

Valve Body Solder Connection

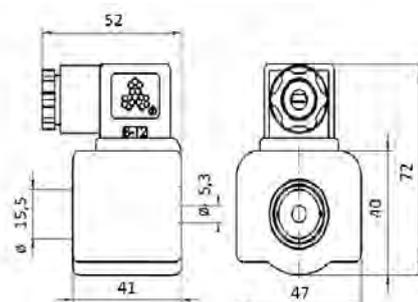


| Model Valve Body | Part Number <sup>1)</sup> | Solder Connection ODF |      | Kv<br>[m <sup>3</sup> /h] | PED Category | Dimensions [mm] |    |    |     |
|------------------|---------------------------|-----------------------|------|---------------------------|--------------|-----------------|----|----|-----|
|                  |                           | [inch]                | [mm] |                           |              | L               | B  | D  | H   |
| MDF-A03-2H 003   | MDF-08020                 | -                     | 6    | 0,16                      | 3.3          | 102             | 30 | 53 | 82  |
| MDF-A03-3H 005   | MDF-08021                 | -                     | 6    | 0,23                      | 3.3          | 102             | 30 | 53 | 82  |
| MDF-A03-2H 001   | MDF-08001                 | 1/4                   | -    | 0,16                      | 3.3          | 102             | 30 | 53 | 82  |
| MDF-A03-3H 001   | MDF-08002                 | 1/4                   | -    | 0,23                      | 3.3          | 102             | 30 | 53 | 82  |
| MDF-A03-3H 003   | MDF-08003                 | 3/8                   | -    | 0,23                      | 3.3          | 102             | 30 | 53 | 82  |
| MDF-A03-6H 001   | MDF-08004                 | 3/8                   | -    | 0,8                       | 3.3          | 111             | 36 | 53 | 88  |
| MDF-A03-3H 007   | MDF-08022                 | -                     | 10   | 0,23                      | 3.3          | 102             | 30 | 53 | 82  |
| MDF-A03-6H 005   | MDF-08023                 | -                     | 10   | 0,8                       | 3.3          | 111             | 36 | 53 | 88  |
| MDF-A03-6H 007   | MDF-08024                 | -                     | 12   | 0,8                       | 3.3          | 111             | 36 | 53 | 88  |
| MDF-A03-10H 005  | MDF-08025                 | -                     | 12   | 1,9                       | 3.3          | 127             | 42 | 53 | 95  |
| MDF-A03-6H 003   | MDF-08005                 | 1/2                   | -    | 0,8                       | 3.3          | 111             | 36 | 53 | 88  |
| MDF-A03-10H 001  | MDF-08006                 | 1/2                   | -    | 1,9                       | 3.3          | 127             | 42 | 53 | 95  |
| MDF-A03-10H 003  | MDF-08007                 | 5/8                   | 16   | 1,9                       | 3.3          | 127             | 42 | 53 | 95  |
| MDF-A03-15H 005  | MDF-08027                 | 5/8                   | 16   | 2,3                       | 3.3          | 176             | 52 | 53 | 100 |
| MDF-A03-15H 003  | MDF-08009                 | 7/8                   | 22   | 2,3                       | 3.3          | 176             | 52 | 53 | 100 |
| MDF-A03-20H 001  | MDF-08010                 | 7/8                   | 22   | 5,0                       | 3.3          | 191             | 52 | 53 | 117 |
| MDF-A03-22H 001  | MDF-08012                 | 7/8                   | 22   | 5,9                       | 3.3          | 191             | 60 | 53 | 117 |
| MDF-A03-20H 007  | MDF-08030                 | -                     | 28   | 5,0                       | 3.3          | 191             | 52 | 53 | 117 |
| MDF-A03-22H 011  | MDF-08031                 | -                     | 28   | 5,9                       | 3.3          | 191             | 60 | 53 | 117 |
| MDF-B03-25H 005  | MDF-08033                 | -                     | 28   | 10,0                      | 3.3          | 280             | 76 | 53 | 144 |
| MDF-A03-20H 003  | MDF-08011                 | 1-1/8                 | -    | 5,0                       | 3.3          | 191             | 52 | 53 | 117 |

**Note:** 1) Extent of delivery: valve body without coil

### DIMENSIONS - COILS

Coils with DIN Plug  
(MQ-A03 and MQ-D03 Series)



# MDF SERIES

## Solenoid Valve



### DIMENSIONS

Valve Body Solder Connection

| Model Valve Body | Part Number <sup>1)</sup> | Solder Connection ODF |      | Kv<br>[m <sup>3</sup> /h] | PED Category | Dimensions [mm] |    |    |     |
|------------------|---------------------------|-----------------------|------|---------------------------|--------------|-----------------|----|----|-----|
|                  |                           | [inch]                | [mm] |                           |              | L               | B  | D  | H   |
| MDF-A03-22H 009  | MDF-08082                 | 1-1/8                 | -    | 5,9                       | 3.3          | 191             | 60 | 53 | 117 |
| MDF-B03-25H 003  | MDF-08014                 | 1-1/8                 | -    | 10,0                      | 3.3          | 280             | 76 | 53 | 144 |
| MDF-A03-22H 003  | MDF-08013                 | 1-3/8                 | 35   | 5,9                       | I            | 191             | 60 | 53 | 117 |
| MDF-B03-25H 004  | MDF-08015                 | 1-3/8                 | 35   | 10,0                      | I            | 280             | 76 | 53 | 144 |
| MDF-B03-32H 001  | MDF-08016                 | 1-3/8                 | 35   | 15                        | I            | 281             | 76 | 53 | 144 |
| MDF-B03-32H 002  | MDF-08017                 | 1-5/8                 | -    | 15                        | I            | 281             | 76 | 53 | 144 |
| MDF-B03-40H 002  | MDF-08018                 | 1-5/8                 | -    | 25                        | I            | 281             | 84 | 53 | 152 |
| MDF-B03-32H 003  | MDF-08036                 | -                     | 42   | 15                        | I            | 281             | 76 | 53 | 144 |
| MDF-B03-40H 003  | MDF-08037                 | -                     | 42   | 25                        | I            | 281             | 84 | 53 | 152 |
| MDF-B03-40H 004  | MDF-08019                 | 2-1/8                 | 54   | 25                        | I            | 281             | 84 | 53 | 152 |

**Note:** 1) Extent of delivery: valve body without coil

### TECHNICAL PARAMETERS

Technical parameters of Coil

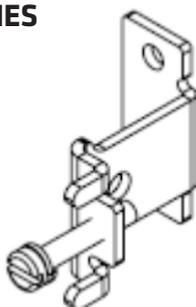
| Model Coil <sup>1)</sup> | Part Number <sup>2)</sup> | Rated Voltage | Supply | Power [W]                   | Frequ. [Hz] | Voltage Tolerance | Insulation Class | Protection Class (w/plug) | Wiring type |
|--------------------------|---------------------------|---------------|--------|-----------------------------|-------------|-------------------|------------------|---------------------------|-------------|
| MQ-A03024-000001         | MDF-60001                 | 24            | AC     | 10,5W (50Hz)<br>8,5W (60Hz) | 50/60       | -15%<br>+10%      | F                | IP65                      | DIN Plug    |
| MQ-A0311A-000001         | MDF-60002                 | 110 to 120    |        | 12W (50Hz)<br>10W (60Hz)    |             |                   |                  |                           |             |
| MQ-A0322G-000001         | MDF-60003                 | 220 to 240    |        | 12W (50Hz)<br>10W (60Hz)    |             |                   |                  |                           |             |
| MQ-D03024-000002         | MDF-60004                 | 24            | DC     | 15                          | -           | ±10%              |                  |                           |             |

**Note:** 1) Applicable to MDF-A03 and MDF-B03 valve bodies

2) Extent of delivery: coil body, fastening screw for the coil body, DIN plug for electrical connection incl. gaskets

### ACCESSORIES

Bracket



| Model <sup>1)</sup> | Part number | Applicable Valve Models |             |
|---------------------|-------------|-------------------------|-------------|
|                     |             | Solder                  | Flare       |
| MDF-A03-033001      | MDF-08085   | MDF-A03-2H              | MDF-A03-2L  |
|                     |             | MDF-A03-3H              | MDF-A03-3L  |
|                     |             | MDF-A03-6H              | MDF-A03-6L  |
|                     |             | MDF-A03-10H             | MDF-A03-10L |
|                     |             | MDF-A03-15H             | MDF-A03-15L |

**Note:** 1) Extent of delivery: bracket and screw

# Solenoid Valve

FDF series solenoid valves are direct operated or pilot operated solenoid valves, mainly used in refrigerant control of various devices such as refrigerating and freezing systems, air conditioners and heat pumps.



## FEATURES

- COILS: LOW ENERGY CONSUMPTION, RELIABLE
- GREAT VALVE OPENING PERFORMANCE, HIGH MOPD

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Medium temperature TS min./max.: -30°C / 120°C
- Ambient temperature min./max.: -30°C / +50°C
- Relative humidity: 0 to 95% RH
- Installation position: - Liquid, suction and discharge line  
- Coil upwards, coil axis  $\pm 15^\circ$  tolerance versus vertical axis  
- Flow direction corresponds to the arrow
- Certifications: UL/CSA\* and declaration according to LVD or PED

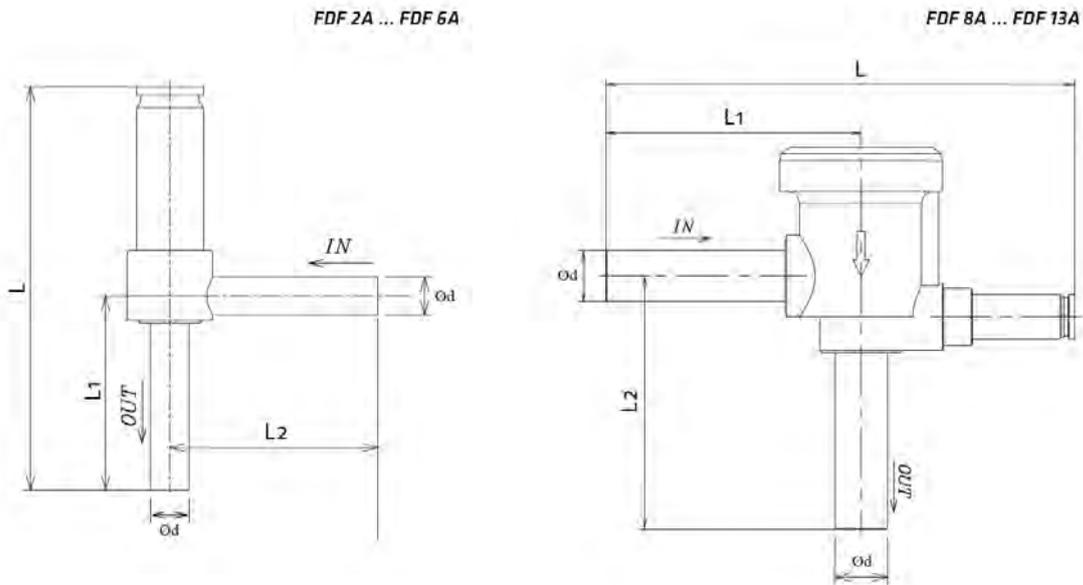
\*For FDF 3A 08 on request

## TECHNICAL PARAMETERS OF VALVE BODY

| Model Valve Body | Part Number | Normal Position | Actuation | Ø Seat | Kv                  | MOP   | Max. OPD | Min. OPD | Ød OD | Ød OD  | Measurement [mm] |    |    |
|------------------|-------------|-----------------|-----------|--------|---------------------|-------|----------|----------|-------|--------|------------------|----|----|
|                  |             |                 |           | [mm]   | [m <sup>3</sup> /h] | [MPa] | [MPa]    | [MPa]    | [mm]  | [inch] | L                | L1 | L2 |
| FDF 2A 94        | FDF-06001   | NC              | Direct    | 1,9    | 0,08                | 4,5   | 3,4      | 0        | 6,35  | 1/4    | 67               | 32 | 34 |
| FDF 2.5A 08      | FDF-06002   |                 |           | 2,5    | 0,20                |       | 2,1      | 0,01     | 6,35  | 1/4    | 85               | 38 | 38 |
| FDF 3A 08        | FDF-06003   |                 |           | 2,7    | 0,26                |       | 3,4      |          | 7,94  | 5/16   | 81               | 35 | 36 |
| FDF 4A 10        | FDF-06004   |                 | Pilot     | 4,0    | 0,26                |       | 3,4      | 0,02     | 6,35  | 1/4    | 81               | 35 | 38 |
| FDF 6A 58        | FDF-06005   |                 |           | 5,8    | 0,56                |       | 3,0      |          | 7,94  | 5/16   | 81               | 35 | 36 |
| FDF 8A 21        | FDF-06006   |                 |           | 8,0    | 0,95                |       | 12,7     |          | 1/2   | 114    | 62               | 62 |    |
| FDF 11A 16       | FDF-06007   |                 |           | 11     | 2,40                |       | 12,7     |          | 1/2   | 113    | 61               | 61 |    |
| FDF 13A 12       | FDF-06008   |                 |           | 13     | 3,44                |       | 15,88    |          | 5/8   | 114    | 62               | 62 |    |



**DIMENSIONS - VALVE BODY**

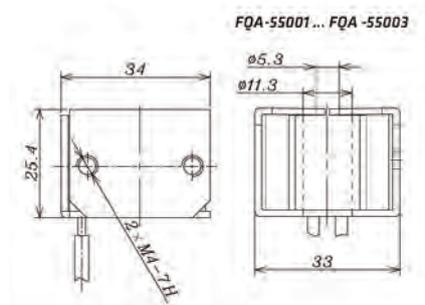


**TECNHICAL PARAMETERS OF COIL**

| Model Coil        | Part Number | Rated Voltage [V] | Supply | Power <sup>1)</sup> [W] | Freq. [Hz] | Voltage Tolerance | Insulation Class | Wiring type  |
|-------------------|-------------|-------------------|--------|-------------------------|------------|-------------------|------------------|--------------|
| FQ-A05 024-000709 | FQA-55001   | 24                | AC     | 5 (50Hz)<br>4,5 (60Hz)  | 50/60      | -15%<br>+10%      | B                | flying leads |
| FQ-A05 120-001098 | FQA-55002   | 110 to 120        |        | 5 (50Hz)<br>4,5 (60Hz)  |            |                   |                  |              |
| FQ-A05 22G-001022 | FQA-55003   | 220 to 240        |        | 5 (50Hz)<br>4,5 (60Hz)  |            |                   |                  |              |

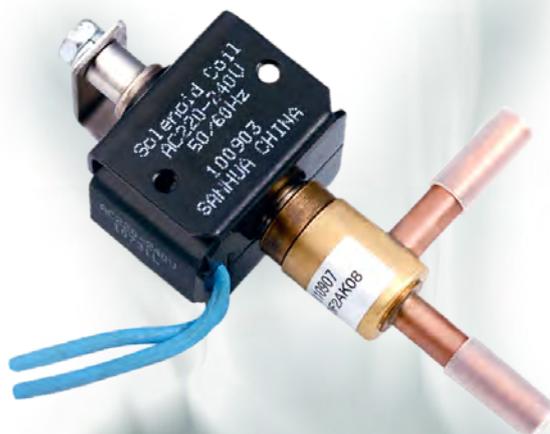
**Note:** 1) Power consumption based on 220V

**DIMENSIONS - COIL**



## Solenoid Valve

FDF2AK series solenoid valves are direct operated, normally open solenoid valves, mainly used in refrigerant control of various devices such as refrigerating and freezing systems, air conditioners and heat pumps.



### FEATURES

- COMPACT DESIGN
- LOW ENERGY CONSUMPTION
- EXCELLENT OPERATION PERFORMANCE

### GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Medium temperature TS min./max.: -30°C / 120°C
- Ambient temperature: -30°C / +50°C
- Relative humidity: 0 to 95% RH
- Installation position:
  - Liquid, suction and discharge line
  - Coil upwards, coil axis  $\pm 15^\circ$  tolerance versus vertical axis
  - Flow direction corresponds to the arrow
- Declaration according to LVD or PED

### TECHNICAL PARAMETERS OF VALVE BODY

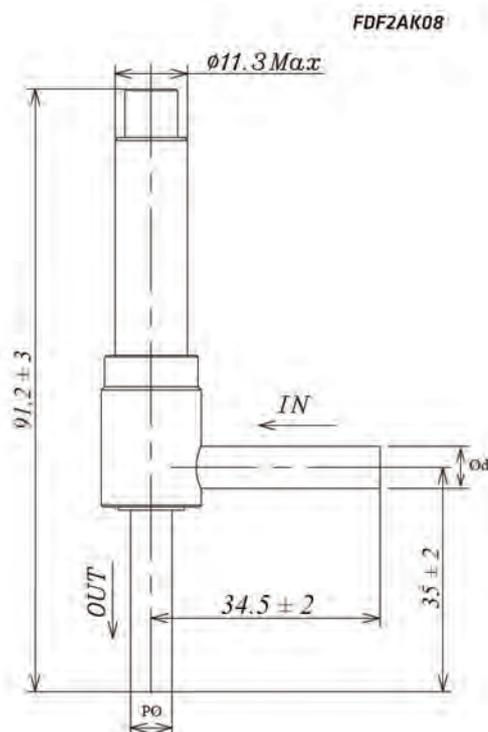
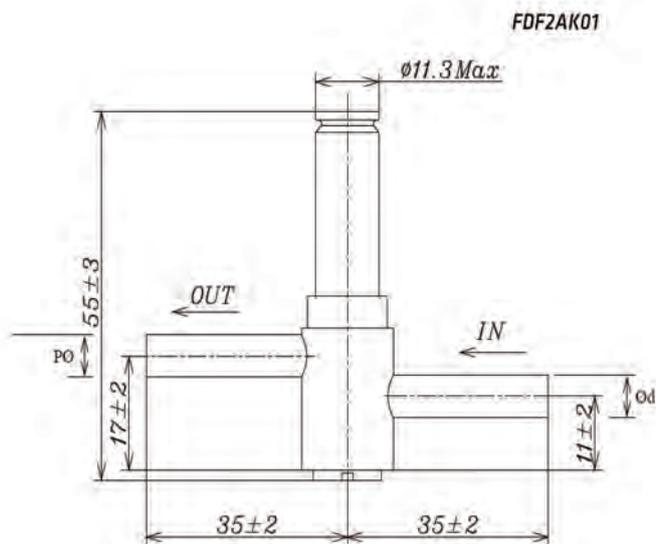
| Valve Body Model | Part Number | Normal Position | Actuation | Ø Seat [mm] | Kv [m <sup>3</sup> /h] | MOP [MPa] | Max. OPD [MPa] | Min. OPD [MPa] | Connection OD Ød |        |
|------------------|-------------|-----------------|-----------|-------------|------------------------|-----------|----------------|----------------|------------------|--------|
|                  |             |                 |           |             |                        |           |                |                | [mm]             | [inch] |
| FDF 2AK 01       | FDF-06009   | NO              | Direct    | 1,8         | 0,05                   | 4,5       | 1,5            | 0              | 6,35 ±0,1        | 1/4    |
| FDF 2AK 08       | FDF-06010   |                 |           | 1,9         | 0,08                   |           |                |                |                  |        |

# FDF2AK (NO) SERIES

## Solenoid Valve



### DIMENSIONS - VALVE BODY



### TECNHICAL PARAMETERS OF COIL

| Coil Model           | Part Number | Rated Voltage [V] | Supply | Power <sup>3)</sup> [W] | Used for                 | Freq. [Hz] | Voltage Tolerance | Insulation Class | Wiring type  |
|----------------------|-------------|-------------------|--------|-------------------------|--------------------------|------------|-------------------|------------------|--------------|
| FQ-A05024<br>-000709 | FQA-55001   | 24                | AC     | 5 (50Hz)<br>4,5 (60Hz)  | FDF 2AK 01 <sup>1)</sup> | 50/60      | -15%<br>+10%      | B                | flying leads |
| FQ-A05120<br>-001098 | FQA-55002   | 110 to 120        |        | 5 (50Hz)<br>4,5 (60Hz)  |                          |            |                   |                  |              |
| FQ-A0522G<br>-001022 | FQA-55003   | 220 to 240        |        | 5 (50Hz)<br>4,5 (60Hz)  |                          |            |                   |                  |              |
| FQA-0522G<br>-001066 | FQA-55007   | 220 to 240        |        | 6,5 (50Hz)<br>5 (60Hz)  | FDF 2AK 08 <sup>2)</sup> |            |                   |                  |              |

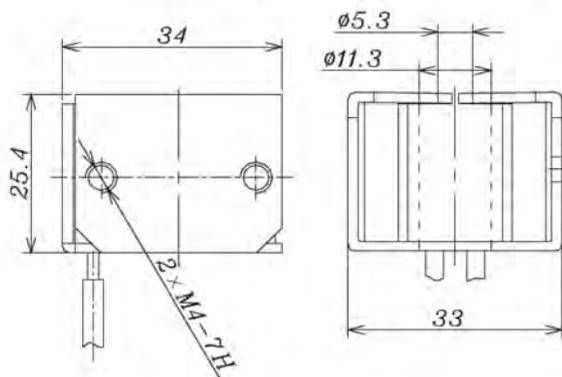
- Note:**
- 1) Dimensions: drawing 1
  - 2) Dimensions: drawing 2
  - 3) Power consumption based on 220V

# FDF2AK (NO) SERIES Solenoid Valve

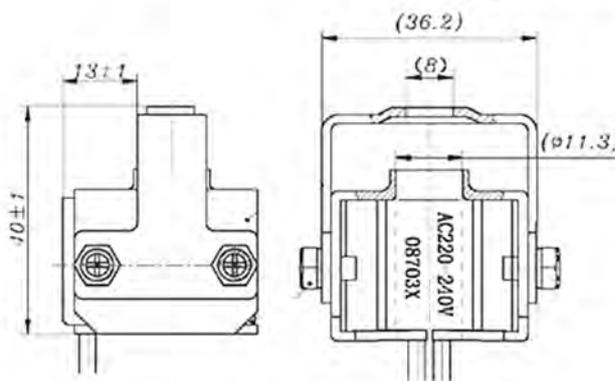


## DIMENSIONS - COIL

Drawing 1: FQA-55001, -55002, -55003



Drawing 2: FQA-55007





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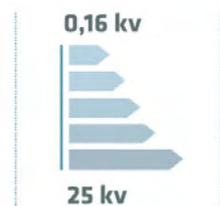
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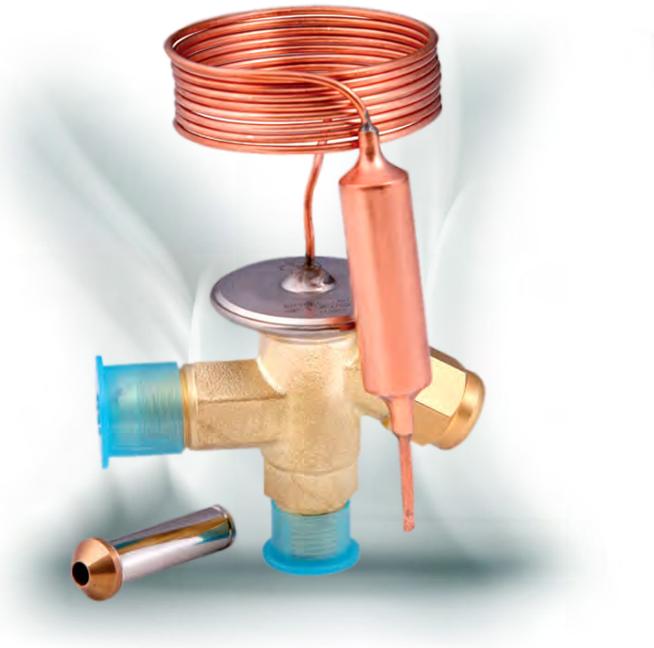
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# Thermostatic Expansion Valve

RFKA series thermostatic expansion valves are used to adjust mass flow of refrigerant into the evaporator while controlling the refrigerant's superheat at the outlet of the evaporator. They can be used for various refrigerants under all working conditions. Typical applications are refrigeration systems like freezers, ice makers, dehumidifiers as well as air conditioners and heat pumps at various evaporation temperature ranges.



## FEATURES

- EXCHANGEABLE VALVE ORIFICE, EASY TO STOCK HOLDING, CONVENIENT FOR CAPACITY MATCH AND REPAIR
- THERMAL BULB UTILIZES CROSS CHARGE TECHNOLOGY, PROVIDING CONSISTENT SUPERHEAT DEGREE OVER THE WHOLE EVAPORATION TEMPERATURE RANGE
- VALVES WITH MOP FUNCTION CAN BE PROVIDED TO ASSURE RELIABLE COMPRESSOR OPERATION
- APPLICABLE IN A WIDE EVAPORATION TEMPERATURE RANGE
- RELIABLE AND CONSISTENT PERFORMANCE OF SUPERHEAT CONTROL

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R507A ...
- Medium temperature TS min./max.: -40°C/+70°C
- Max. operating pressure PS: 2,1 ... 3,5 MPa (21 ... 35 bar)
- Installation position:
  - Preferably valve head upwards
  - Flow direction from inlet A to outlet B
- Certifications: UL/CSA and PED declaration

1) Max. operating pressure is related to the used refrigerant

## TECHNICAL PARAMETERS

- RFKA series angle shape valve
- Inlet 3/8" flare connection
- Capillary tube length 1,5m
- Equalization port:
  - RFKA flare/flare type with 1/4" flare connection;
  - RFKA flare/solder type with 6mm solder connection

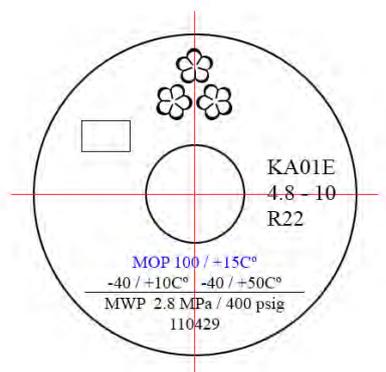


**MODEL DESIGNATION LEGEND**

| Position Number | Model Designation Legend     |                                   |
|-----------------|------------------------------|-----------------------------------|
| 1               | <b>Product Code</b>          | <b>Product Series</b>             |
|                 | RFKA                         | Thermostatic expansion valve      |
| 2               | <b>Refrigerant</b>           | <b>Description</b>                |
|                 | 01                           | R22                               |
|                 | 02                           | R407C                             |
|                 | 03                           | R404A / R507A                     |
|                 | 04                           | R134a                             |
| 3               | <b>Pressure Equalization</b> | <b>Description</b>                |
|                 | E                            | External pressure equalization    |
|                 | (Omitted)                    | Internal pressure equalization    |
| 4               | <b>Miscellaneous</b>         | <b>Description</b>                |
|                 | xxxx                         | Digits for additional information |

**MODEL DESIGNATION EXAMPLE**

| Position Number |           |          |             | According to Model Designation Legend         |
|-----------------|-----------|----------|-------------|---|
| 1               | 2         | 3        | 4           |   |
| <b>RFKA</b>     | 01        | E        | xxxx        | Thermostatic expansion valve                  |
| RFKA            | <b>01</b> | E        | xxxx        | Refrigerant R22                               |
| RFKA            | 01        | <b>E</b> | xxxx        | Connection for external pressure equalization |
| RFKA            | 01        | E        | <b>xxxx</b> | Digits for additional information             |





**TECHNICAL PARAMETERS**

| Ref. PS [MPa]        | Model Valve Body | Part Number <sup>1)</sup> | Connection type                 | Temp. Range <sup>2)</sup> | MOP <sup>3)</sup> | Inlet ØA | Outlet <sup>4)</sup> ØB |        |        |        | Ext. ØC |  |
|----------------------|------------------|---------------------------|---------------------------------|---------------------------|-------------------|----------|-------------------------|--------|--------|--------|---------|--|
|                      |                  |                           | In / Out / Ext. Pressure Equal. | [°C]                      | [°C]              | flare    | Flare                   | Solder |        | Flare  | Solder  |  |
|                      |                  |                           |                                 |                           |                   | [inch]   | [inch]                  | [mm]   | [inch] | [inch] |         |  |
| R22<br>2,8           | RFKA01-4.8-22    | RFK-24001                 | flare / flare                   | +10 to -40                | -                 | 3/8      | 1/2                     | -      | -      | -      | -       |  |
|                      | RFKA01E-4.8-13   | RFK-24002                 | flare / flare / flare           |                           |                   |          | 1/2                     | -      | -      | 1/4    | -       |  |
|                      | RFKA01-4.8-26    | RFK-24003                 | flare / solder                  |                           |                   |          | -                       | 12     | -      | -      | -       |  |
|                      | RFKA01E-4.8-06   | RFK-24004                 | flare / solder / solder         |                           |                   |          | -                       | 12     | -      | -      | 6       |  |
|                      | RFKA01-4.8-07    | RFK-24005                 | flare / solder                  |                           |                   |          | -                       | -      | 1/2    | -      | -       |  |
|                      | RFKA01E-4.8-08   | RFK-24006                 | flare / solder / solder         |                           |                   |          | -                       | -      | 1/2    | -      | 1/4     |  |
| R407C<br>2,8         | RFKA02-5.2-24    | RFK-24007                 | flare / flare                   | +10 to -40                | -                 | 3/8      | 1/2                     | -      | -      | -      | -       |  |
|                      | RFKA02E-5.2-20   | RFK-24008                 | flare / flare / flare           |                           |                   |          | 1/2                     | -      | -      | 1/4    | -       |  |
|                      | RFKA02-5.2-27    | RFK-24009                 | flare / solder                  |                           |                   |          | -                       | 12     | -      | -      | -       |  |
|                      | RFKA02E-5.2-28   | RFK-24010                 | flare / solder / solder         |                           |                   |          | -                       | 12     | -      | -      | 6       |  |
|                      | RFKA02-5.2-32    | RFK-24011                 | flare / solder                  |                           |                   |          | -                       | -      | 1/2    | -      | -       |  |
|                      | RFKA02E-5.2-18   | RFK-24012                 | flare / solder / solder         |                           |                   |          | -                       | -      | 1/2    | -      | 1/4     |  |
| R404A / R507A<br>3,5 | RFKA03-3.4-21    | RFK-24013                 | flare / flare                   | +10 to -40                | -                 | 3/8      | 1/2                     | -      | -      | -      | -       |  |
|                      | RFKA03E-3.4-15   | RFK-24014                 | flare / flare / flare           |                           |                   |          | 1/2                     | -      | -      | 1/4    | -       |  |
|                      | RFKA03-3.4-03    | RFK-24015                 | flare / solder                  |                           |                   |          | -                       | 12     | -      | -      | -       |  |
|                      | RFKA03E-3.4-02   | RFK-24016                 | flare / solder / solder         |                           |                   |          | -                       | 12     | -      | -      | 6       |  |
|                      | RFKA03-3.4--09   | RFK-24017                 | flare / solder                  |                           |                   |          | -                       | -      | 1/2    | -      | -       |  |
|                      | RFKA03E-3.4-10   | RFK-24018                 | flare / solder / solder         |                           |                   |          | -                       | -      | 1/2    | -      | 1/4     |  |
| R134a<br>2,1         | RFKA04-4.0-23    | RFK-24019                 | flare / flare                   | +10 to -40                | -                 | 3/8      | 1/2                     | -      | -      | -      | -       |  |
|                      | RFKA04E-4.0-19   | RFK-24020                 | flare / flare / flare           |                           |                   |          | 1/2                     | -      | -      | 1/4    | -       |  |
|                      | RFKA04-4.0-29    | RFK-24021                 | flare / solder                  |                           |                   |          | -                       | 12     | -      | -      | -       |  |
|                      | RFKA04E-4.0-17   | RFK-24022                 | flare / solder / solder         |                           |                   |          | -                       | 12     | -      | -      | 6       |  |
|                      | RFKA04-4.0-30    | RFK-24023                 | flare / solder                  |                           |                   |          | -                       | -      | 1/2    | -      | -       |  |
|                      | RFKA04E-4.0-31   | RFK-24024                 | flare / solder / solder         |                           |                   |          | -                       | -      | 1/2    | -      | 1/4     |  |

**Note:**

1) Extent of delivery: valve body and bulb strap

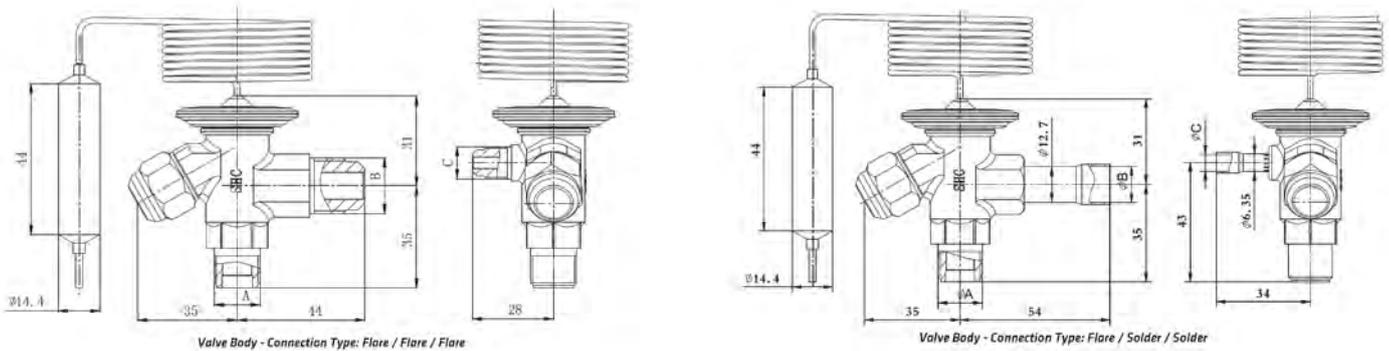
2) Different evaporation temperature range on request

3) MOP function on request

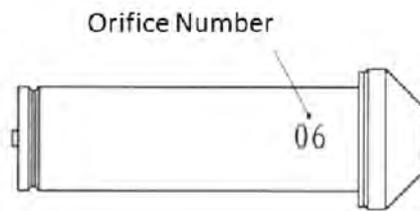
**Thermostatic Expansion Valve**



**DIMENSIONS**



**ACCESSORIES**

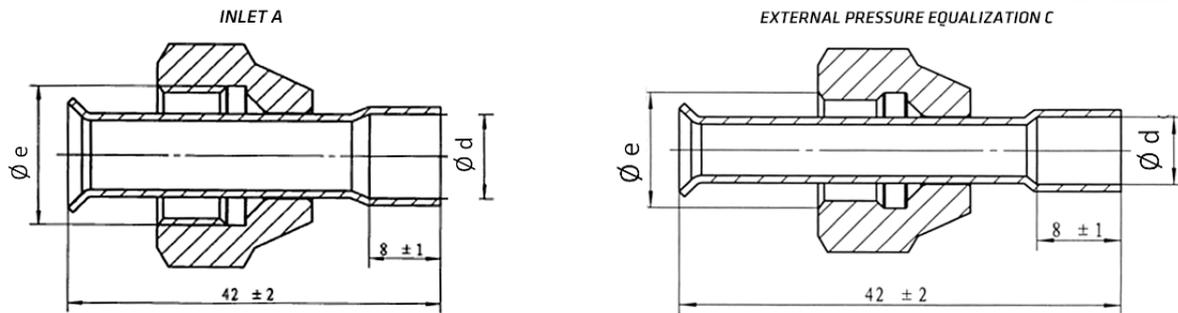


**ORIFICE**

| Orifice Number | Nominal Capacity <sup>1)</sup><br>[ kW ] |                     |               |       | Valve Orifice Model | Valve Orifice Part Number |
|----------------|--|---------------------|---------------|-------|---------------------|---------------------------|
|                | R22                                      | R407C <sup>2)</sup> | R404A / R507A | R134a |                     |                           |
| 0X             | 1,04                                     | 1,09                | 0,76          | 0,62  | RFKA-023-0X         | RFK-24036                 |
| 0              | 1,66                                     | 1,7                 | 1,34          | 1,1   | RFKA-023-00         | RFK-24037                 |
| 1              | 3,5                                      | 3,62                | 3,06          | 2,18  | RFKA-023-01         | RFK-24038                 |
| 2              | 4,87                                     | 5                   | 4,15          | 2,77  | RFKA-023-02         | RFK-24039                 |
| 3              | 6,82                                     | 7,02                | 6,01          | 4,07  | RFKA-023-03         | RFK-24040                 |
| 4              | 9,49                                     | 9,92                | 8,73          | 5,56  | RFKA-023-04         | RFK-24041                 |
| 5              | 14,9                                     | 14,8                | 12,5          | 8,35  | RFKA-023-05         | RFK-24042                 |
| 6              | 19,9                                     | 20,2                | 15,8          | 12,0  | RFKA-023-06         | RFK-24043                 |

**Note:**

- 1) Nominal working conditions: Condensing temperature 38°C; evaporating temperature +4.4°C; liquid temperature 37°C
- 2) R407C data based on dew point conditions



**SOLDER ADAPTERS FOR RFKA INLET A**

| Model       | Part Number <sup>1)</sup> | SAE Flare Ø e | Solder Connection Ø d |
|-------------|---------------------------|---------------|-----------------------|
| RFKA-038-01 | RFK-24044                 | 3/8"          | 3/8"                  |
| RFKA-038-02 | RFK-24045                 |               | 10mm                  |
| RFKA-038-05 | RFK-24048                 |               | 1/4"                  |
| RFKA-038-06 | RFK-24049                 |               | 6mm                   |

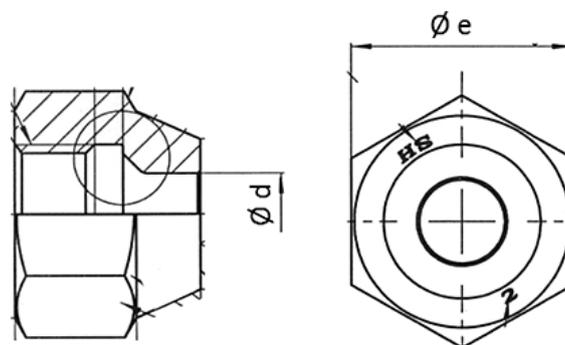
**Note:** 1) Copper pipe and flare nut are in the extent of delivery

**SOLDER ADAPTERS FOR RFKA EXTERNAL PRESSURE EQUALIZATION C**

| Model       | Part Number <sup>1)</sup> | SAE Flare Ø e | Solder Connection Ø d |
|-------------|---------------------------|---------------|-----------------------|
| RFKA-038-03 | RFK-24046                 | 1/4"          | 6mm                   |
| RFKA-038-04 | RFK-24047                 |               | 1/4"                  |

**Note:** 1) Copper pipe and flare nut are in the extent of delivery

**FLARE NUTS FOR RFKA**



| Model          | Part Number | SAE Flare | Pipe Diameter Ø d |        | Wrench Size Ø e |
|----------------|-------------|-----------|-------------------|--------|-----------------|
|                |             | [inch]    | [mm]              | [inch] | [mm]            |
| JZF-000-011072 | RFK-24050   | 1/4       | 6                 | 1/4    | 17              |
| JZF-000-011073 | RFK-24051   | 3/8       | -                 | 3/8    | 22              |
| JZF-000-011074 | RFK-24052   | 1/2       | 12                | 1/2    | 24              |

# SANHUA *YOUR ROAD MAP TO THE ECO-DESIGN DIRECTIVE\**

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\*75kW and 1400kW available in Quarter 4
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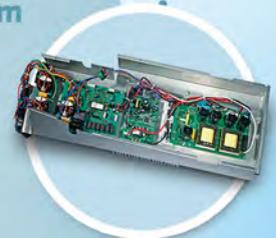
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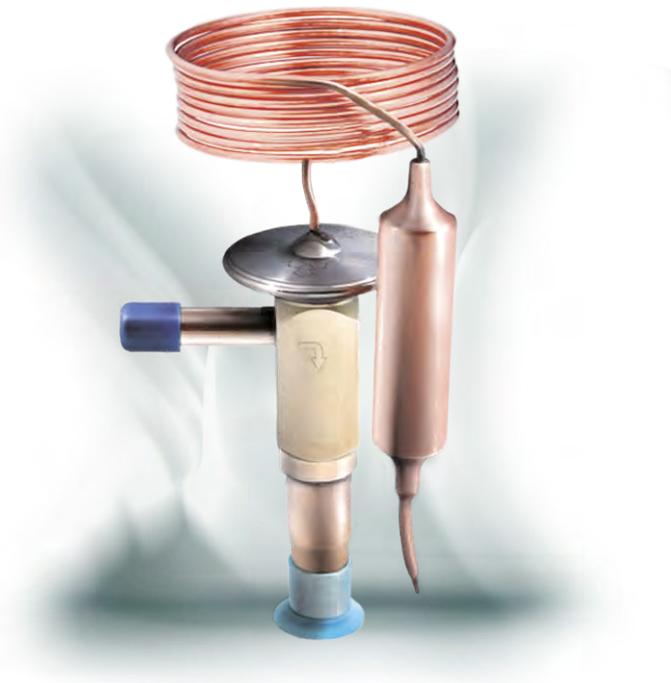


CHILLING IDEAS WORLDWIDE

SANHUA INTERNATIONAL EUROPE  
info@sanhuaeurope.com

# Thermostatic Expansion Valve

RFGB series thermostatic expansion valves are used to adjust mass flow of refrigerant into the evaporator while controlling the refrigerant's superheat at the outlet of the evaporator. They can be used for various refrigerants under all working conditions. Typical applications are refrigeration systems like commercial refrigerators and freezers, icemakers, dehumidifiers as well as air conditioners at various evaporation temperature.



## FEATURES

- COMPACT DESIGN WITH BUILT-IN ORIFICE
- WARM THERMO HEAD CONSTRUCTION
- ALL CONNECTIONS PIPES ARE COMPLETELY IN COPPER
- VALVES WITH MOP FUNCTION CAN BE PROVIDED TO ASSURE RELIABLE COMPRESSOR OPERATION
- APPLICABLE IN A WIDE EVAPORATION TEMPERATURE RANGE
- RELIABLE AND CONSISTENT PERFORMANCE OF SUPERHEAT CONTROL

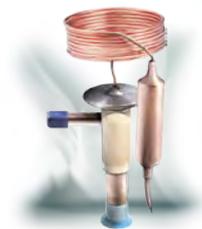
## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R507A ...
- Ambient temperature min./max.: -35/+55°C
- Medium temperature TS min./max.: -40°C / +70°C
- Max. operating pressure PS: 2,1 ... 3,5 MPa (21 ... 35 bar)<sup>1)</sup>
- Installation position: - Preferably valve head upwards  
- Flow direction from inlet A to outlet B
- Certifications: UL/CSA and PED declaration

<sup>1)</sup> Max. operating pressure is related to the used refrigerant

## TECHNICAL PARAMETERS

- RFGB valve available in straight shape with adjustable superheat on site
- RFGB valve available in angle shape with fixed factory super heat settings
- Both versions are available with the following solder connections
  - Metric: Inlet 6mm ODF/ Outlet 10mm ODF or Inlet 10mm ODF/ Outlet 12mm ODF
  - Imperial: Inlet 1/4" ODF/ Outlet 3/8" ODF or Inlet 3/8" ODF/ Outlet 1/2" ODF
- Equalization port available as option:
  - Metric: 6mm ODF (available for models with metric solder connections)
  - Imperial: 1/4" ODF (available for models with imperial solder connections)
- Capillary tube length 800mm



**MODEL DESIGNATION LEGEND**

| Position Number | Model Designation Legend |   |
|-----------------|--------------------------|---|
| 1               | Product Code             | Product Series  |
|                 | RFGB                     | Thermostatic expansion valve with build-in orifice                        |
| 2               | Refrigerant              | Description   |
|                 | 1                        | R22   |
|                 | 2                        | R407C   |
|                 | 3                        | R404A / R507A   |
| 3               | 4                        | R134a   |
|                 | Pressure Equalization    | Description   |
|                 | E                        | External pressure equalization  |
| 4               | (Omitted)                | Internal pressure equalization  |
|                 | Valve Size               | Internal Orifice Size   |
| 5               | From 1 to 5              | Valve size: proportional to the orifice size and to the nominal capacity  |
|                 | Valve Shape              | Description   |
|                 | S                        | Straight Version  |
| 6               | A                        | Angle Version   |
|                 | Connections Type         | Description   |
|                 | M6                       | Metric: inlet 6mm / outlet 10mm   |
|                 | M10                      | Metric: inlet 10mm / outlet 12mm  |
| 7               | 2                        | Imperial: inlet 1/4" / outlet 3/8"  |
|                 | 3                        | Imperial: inlet 3/8" / outlet 1/2"  |
|                 | Miscellaneous            | Description   |
|                 | xxx                      | Digits for additional information<br>e.g. static superheat, MOP, Bleed... |



**MODEL DESIGNATION EXAMPLE**

| Position Number |           |          |          |          |           |             | According to Model Designation Legend                |
|-----------------|-----------|----------|----------|----------|-----------|-------------|--|
| 1               | 2         | 3        | 4        | 5        | 6         | 7           |  |
| <b>RFGB</b>     | 04        | E        | 3        | S        | M6        | xxxx        | Thermostatic expansion valve with build-in orifice   |
| RFGB            | <b>04</b> | E        | 3        | S        | M6        | xxxx        | Refrigerant: R134a                                   |
| RFGB            | 04        | <b>E</b> | 3        | S        | M6        | xxxx        | With connection for external pressure equalization   |
| RFGB            | 04        | E        | <b>3</b> | S        | M6        | xxxx        | Capacity: Valve and orifice size 3                   |
| RFGB            | 04        | E        | 3        | <b>S</b> | M6        | xxxx        | Valve Shape: straight                                |
| RFGB            | 04        | E        | 3        | S        | <b>M6</b> | xxxx        | Valve pipe connections: metric inlet 6mm/outlet 10mm |
| RFGB            | 04        | E        | 3        | S        | M6        | <b>xxxx</b> | Digits for additional information                    |

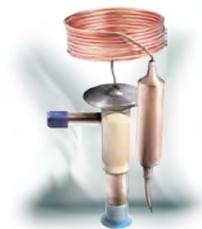
**TECHNICAL DATA**

| R22                      |          |      | R407C <sup>3)</sup>      |          |      | R404A / R507A            |          |      | R134a                    |          |      |
|--------------------------|----------|------|--------------------------|----------|------|--------------------------|----------|------|--------------------------|----------|------|
| PS: 2,8 MPa              |          |      | PS: 2,8 MPa              |          |      | PS: 3,5 MPa              |          |      | PS: 2,1 MPa              |          |      |
| Model Name <sup>4)</sup> | Capacity |      | Model Name <sup>4)</sup> | Capacity |      | Model Name <sup>4)</sup> | Capacity |      | Model Name <sup>4)</sup> | Capacity |      |
|                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |
| RFGB 01 -1<br>RFGB 01E-1 | 0,48     | 1,7  | RFGB 02 -1<br>RFGB 02E-1 | 0,48     | 1,7  | RFGB 03 -1<br>RFGB 03E-1 | 0,34     | 1,2  | RFGB 04 -1<br>RFGB 04E-1 | 0,31     | 1,1  |
| RFGB 01 -2<br>RFGB 01E-2 | 0,82     | 2,9  | RFGB 02 -2<br>RFGB 02E-2 | 0,85     | 3,0  | RFGB 03 -2<br>RFGB 03E-2 | 0,65     | 2,3  | RFGB 04 -2<br>RFGB 04E-2 | 0,43     | 1,5  |
| RFGB 01 -3<br>RFGB 01E-3 | 1,4      | 4,8  | RFGB 02 -3<br>RFGB 02E-3 | 1,4      | 5,0  | RFGB 03 -3<br>RFGB 03E-3 | 1,2      | 4,3  | RFGB 04 -3<br>RFGB 04E-3 | 0,77     | 2,7  |
| RFGB 01 -4<br>RFGB 01E-4 | 2,0      | 6,9  | RFGB 02 -4<br>RFGB 02E-4 | 2,0      | 7,2  | RFGB 03 -4<br>RFGB 03E-4 | 1,8      | 6,4  | RFGB 04 -4<br>RFGB 04E-4 | 1,1      | 4,0  |
| RFGB 01 -5<br>RFGB 01E-5 | 2,3      | 8,1  | RFGB 02 -5<br>RFGB 02E-5 | 2,4      | 8,4  | RFGB 03 -5<br>RFGB 03E-5 | 2,1      | 7,5  | RFGB 04 -5<br>RFGB 04E-5 | 1,3      | 4,6  |

**Note:**

- 1) Nominal capacity valid for: - Version "S" in straight shape and version "A" in angle shape  
- Versions with metrical and imperial connections
- 2) Nominal working conditions: Condensing temperature: 38°C; evaporating temperature +4.4°C; Liquid temperature 37°C
- 3) R407C data based on dew point conditions
- 4) Model Name in this table is referred to the first 4 positions of the model designation

**Thermostatic Expansion Valve**



**MODEL LIST**

Evaporation Temp. Range to = +10...-40°C<sup>1)</sup>

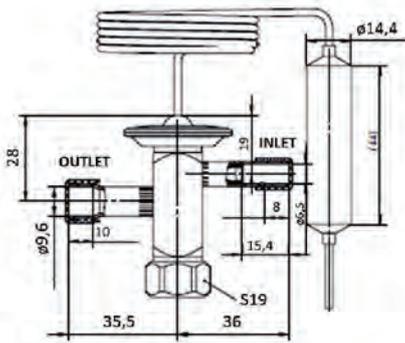
| Model Name <sup>2) 3) 4) 5)</sup>                    |                                 |   |                                       | Connections Size (Solder ODF) |        |        |        |                 |        |
|--|---------------------------------|---|---------------------------------------|-------------------------------|--------|--------|--------|-----------------|--------|
| Valve Body<br>All Refrigerants                       | Capacity Size<br>All Sizes      | Valve Shape <sup>6)</sup><br>Straight / Angle | Pipe connections<br>Metric / Imperial | Inlet                         |        | Outlet |        | Pressure Equal. |        |
|  |                                 |   |                                       | [mm]                          | [inch] | [mm]   | [inch] | [mm]            | [inch] |
| RFGB 01 -<br>RFGB 02 -<br>RFGB 03 -<br>RFGB 04 -     | 1 -<br>2 -<br>3 -<br>4 -<br>5 - | S -   | M6                                    | 6                             | -      | 10     | -      | -               | -      |
|  |                                 |   | M10                                   | 10                            | -      | 12     | -      | -               | -      |
|  |                                 |   | 2                                     | -                             | 1/4    | -      | 3/8    | -               | -      |
|  |                                 |   | 3                                     | -                             | 3/8    | -      | 1/2    | -               | -      |
|  | A -                             | M6  | 6                                     | -                             | 10     | -      | -      | -               |        |
|  |                                 | M10   | 10                                    | -                             | 12     | -      | -      | -               |        |
|  |                                 | 2   | -                                     | 1/4                           | -      | 3/8    | -      | -               |        |
|  |                                 | 3   | -                                     | 3/8                           | -      | 1/2    | -      | -               |        |
| RFGB 01E -<br>RFGB 02E -<br>RFGB 03E -<br>RFGB 04E - | 1 -<br>2 -<br>3 -<br>4 -<br>5 - | S -   | M6                                    | 6                             | -      | 10     | -      | 6               | -      |
|  |                                 |   | M10                                   | 10                            | -      | 12     | -      | 6               | -      |
|  |                                 |   | 2                                     | -                             | 1/4    | -      | 3/8    | -               | 1/4    |
|  |                                 |   | 3                                     | -                             | 3/8    | -      | 1/2    | -               | 1/4    |
|  | A -                             | M6  | 6                                     | -                             | 10     | -      | 6      | -               |        |
|  |                                 | M10   | 10                                    | -                             | 12     | -      | 6      | -               |        |
|  |                                 | 2   | -                                     | 1/4                           | -      | 3/8    | -      | 1/4             |        |
|  |                                 | 3   | -                                     | 3/8                           | -      | 1/2    | -      | 1/4             |        |

**Note:**

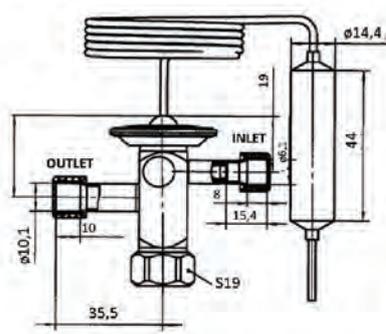
- 1) Different evaporation temperature range on request
- 2) Extent of delivery: valve body and bulb strap
- 3) MOP function on request
- 4) Delivery time on request
- 5) Model Name in this table is referred to the first 6 positions of the model designation
- 6) Superheat : - Straight version "S" with adjustable settings  
- Angle version "A" with fixed factory settings



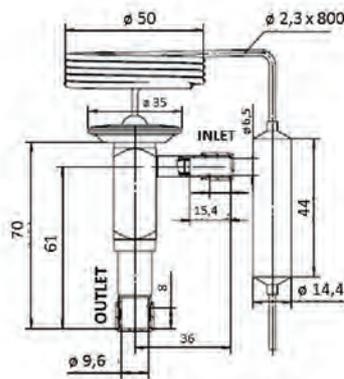
**DIMENSIONS**



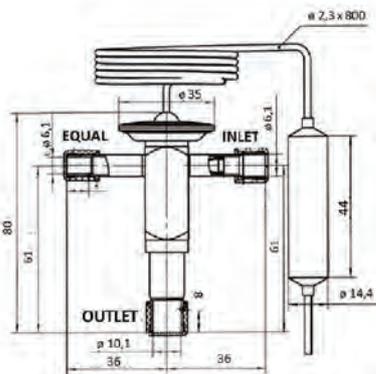
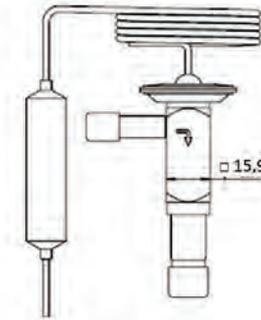
**Straight Shape with Internal Pressure Equalization**



**Straight Shape with External Pressure Equalization**



**Angle Shape with Internal Pressure Equalization**



**Angle Shape with External Pressure Equalization**



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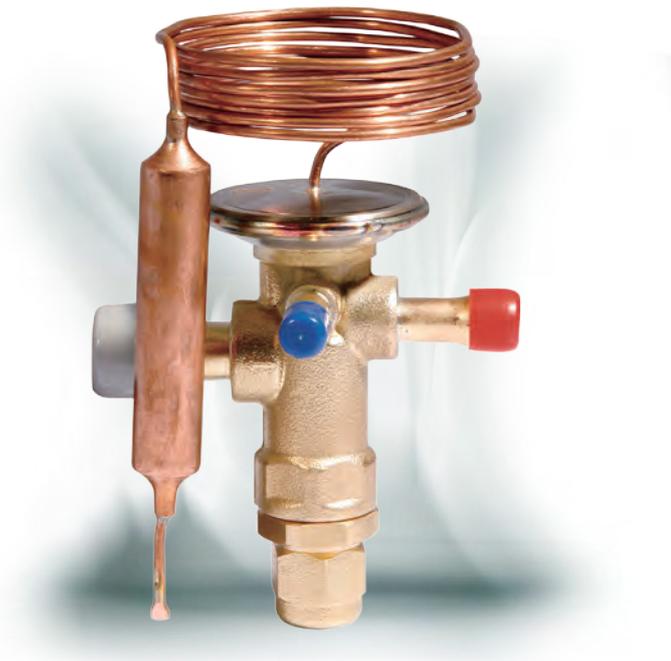
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# Thermostatic Expansion Valve

RFGD series thermostatic expansion valves are used to adjust mass flow of refrigerant into the evaporator while controlling the refrigerant's superheat at the outlet of the evaporator. They can be used for various refrigerants under all working conditions. Typical applications are refrigeration systems like commercial refrigerators and freezers, icemakers, dehumidifiers as well as air conditioners at various evaporation temperatures.



## FEATURES

- COMPACT DESIGN WITH BUILD-IN ORIFICE
- WARM THERMO HEAD CONSTRUCTION
- ALL CONNECTIONS PIPES ARE COMPLETELY IN COPPER
- VALVES WITH MOP FUNCTION CAN BE PROVIDED TO ASSURE RELIABLE COMPRESSOR OPERATION
- APPLICABLE IN A WIDE EVAPORATION TEMPERATURE RANGE
- RELIABLE AND CONSISTENT PERFORMANCE OF SUPERHEAT CONTROL
- BALANCED PORT - SUITABLE FOR REVERSIBLE CYCLES
- THERMAL BULB UTILIZES CROSS CHARGE TECHNOLOGY, PROVIDING CONSISTENT SUPERHEAT DEGREE OVER THE WHOLE EVAPORATION TEMPERATURE RANGE

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507
- Ambient temperature min./max.: -35/+55°C
- Medium temperature TS min./max.: -40°C / +70°C  
-60°C / +70°C
- Max. operating pressure PS: 2,1 ... 4,5 MPa (21 ... 45 bar)<sup>1)</sup>
- Installation position: - Preferably valve head upwards  
- Main flow direction from inlet A to outlet B
- Certifications: UL/CSA and PED declaration

<sup>1)</sup> Max. operating pressure is related to the used refrigerant

**Thermostatic Expansion Valve**

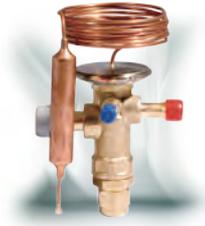


**TECHNICAL PARAMETERS**

- RFGD valves are available in straight shape with adjustable superheat on site
- RFGD valves are available with the following solder connections
  - Metric: Inlet 10mm ODF/ Outlet 16mm ODF or Inlet 12mm ODF/ Outlet 22mm ODF or Inlet 16mm ODF/ Outlet 22mm ODF
  - Imperial: Inlet 3/8" ODF/ Outlet 5/8" ODF or Inlet 1/2" ODF/ Outlet 7/8" ODF or Inlet 5/8" ODF/ Outlet 7/8" ODF
- RFGD valves are available with 3 different temperature ranges:
  - from -40°C to +10°C
  - from -40°C to -5°C
  - from -60°C to -25°C
- Equalization port available as option:
  - Metric: 6mm ODF (available for models with metric solder connections)
  - Imperial: 1/4" ODF (available for models with imperial solder connections)
- Capillary tube length 1500mm as standard. Different length customizable on request.
- Standard MOP values:
  - T. range -40°C to +10°C: MOP: +15°C or MOP not present
  - T. range -40°C to -5°C: MOP: 0°C
  - T. range -60°C to -25°C: MOP: -20°C

**MODEL DESIGNATION LEGEND**

| Position Number | Model Designation Legend     |  |
|-----------------|------------------------------|--|
| 1               | <b>Product Code</b>          | <b>Product Series</b>  |
|                 | RFGD                         | Thermostatic expansion valve with build-in orifice                       |
| 2               | <b>Refrigerant</b>           | <b>Description</b>   |
|                 | 1                            | R22  |
|                 | 2                            | R407C  |
|                 | 3                            | R404A / R507   |
|                 | 4                            | R134a  |
|                 | 5                            | R410A  |
| 3               | <b>Pressure Equalization</b> | <b>Description</b>   |
|                 | E                            | External pressure equalization   |
|                 | (Omitted)                    | Internal pressure equalization   |
| 4               | <b>Valve Size</b>            | <b>Internal Orifice Size</b>   |
|                 | From 1 to 6                  | Valve size: proportional to the orifice size and to the nominal capacity |
| 5               | <b>Connections Type</b>      | <b>Description</b>   |
|                 | M10                          | Metric: inlet 10mm / outlet 16mm   |
|                 | M12                          | Metric: inlet 12mm / outlet 22mm   |
|                 | M16                          | Metric: inlet 16mm / outlet 22mm   |
|                 | 3                            | Imperial: inlet 3/8" / outlet 5/8"                                       |
|                 | 4                            | Imperial: inlet 1/2" / outlet 7/8"                                       |
|                 | 5                            | Imperial: inlet 5/8" / outlet 7/8"                                       |
| 6               | <b>Miscellaneous</b>         | <b>Description</b>   |
|                 | xxx                          | Digits for additional information e.g. static superheat, MOP, Bleed...   |



**MODEL DESIGNATION EXAMPLE**

| Position Number |           |          |          |            |             | According to Model Designation Legend                 |
|-----------------|-----------|----------|----------|------------|-------------|---|
| 1               | 2         | 3        | 4        | 5          | 6           |   |
| <b>RFGD</b>     | 04        | E        | 3        | M16        | xxxx        | Thermostatic expansion valve with build-in orifice    |
| RFGD            | <b>04</b> | E        | 3        | M16        | xxxx        | Refrigerant: R134a                                    |
| RFGD            | 04        | <b>E</b> | 3        | M16        | xxxx        | With connection for external pressure equalization    |
| RFGD            | 04        | E        | <b>3</b> | M16        | xxxx        | Capacity: Valve and orifice size 3                    |
| RFGD            | 04        | E        | 3        | <b>M16</b> | xxxx        | Valve pipe connections: metric inlet 16mm/outlet 22mm |
| RFGD            | 04        | E        | 3        | M16        | <b>xxxx</b> | Digits for additional information                     |

**TECHNICAL DATA**

*Nominal Capacities<sup>1</sup>*

| R22                      |          |      | R407C <sup>2)</sup>      |          |      | R404A / R507A            |          |      | R134a                    |          |      | R410A                    |          |      |
|--------------------------|----------|------|--------------------------|----------|------|--------------------------|----------|------|--------------------------|----------|------|--------------------------|----------|------|
| PS: 2,8 MPa              |          |      | PS: 2,8 MPa              |          |      | PS: 3,5 MPa              |          |      | PS: 2,1 MPa              |          |      | PS: 4,5 MPa              |          |      |
| Model Name <sup>3)</sup> | Capacity |      | Model Name <sup>3)</sup> | Capacity |      | Model Name <sup>3)</sup> | Capacity |      | Model Name <sup>3)</sup> | Capacity |      | Model Name <sup>3)</sup> | Capacity |      |
|                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |                          | [USRT]   | [kW] |
| RFGD 01-1                | 3,0      | 10,6 | RFGD 02-1                | 3,1      | 10,9 | RFGD 03-1                | 2,0      | 7,0  | RFGD 04-1                | 1,8      | 6,3  | RFGD 05-1                | 3,5      | 12,3 |
| RFGD 01E-1               |          |      | RFGD 02E-1               |          |      | RFGD 03E-1               |          |      | RFGD 04E-1               |          |      | RFGD 05E-1               |          |      |
| RFGD 01-2                | 4,0      | 14,1 | RFGD 02-2                | 4,2      | 14,8 | RFGD 03-2                | 2,8      | 9,8  | RFGD 04-2                | 2,5      | 8,8  | RFGD 05-2                | 4,5      | 15,8 |
| RFGD 01E-2               |          |      | RFGD 02E-2               |          |      | RFGD 03E-2               |          |      | RFGD 04E-2               |          |      | RFGD 05E-2               |          |      |
| RFGD 01-3                | 6,0      | 21,1 | RFGD 02-3                | 6,3      | 22,2 | RFGD 03-3                | 4,2      | 14,8 | RFGD 04-3                | 3,6      | 12,7 | RFGD 05-3                | 7,0      | 24,6 |
| RFGD 01E-3               |          |      | RFGD 02E-3               |          |      | RFGD 03E-3               |          |      | RFGD 04E-3               |          |      | RFGD 05E-3               |          |      |
| RFGD 01-4                | 7,5      | 26,4 | RFGD 02-4                | 8,1      | 28,5 | RFGD 03-4                | 5,4      | 19,0 | RFGD 04-4                | 4,6      | 16,2 | RFGD 05-4                | 8,6      | 30,2 |
| RFGD 01E-4               |          |      | RFGD 02E-4               |          |      | RFGD 03E-4               |          |      | RFGD 04E-4               |          |      | RFGD 05E-4               |          |      |
| RFGD 01-5                | 9,0      | 31,7 | RFGD 02-5                | 9,4      | 33,1 | RFGD 03-5                | 6,4      | 22,5 | RFGD 04-5                | 5,5      | 19,3 | RFGD 05-5                | 10,6     | 37,3 |
| RFGD 01E-5               |          |      | RFGD 02E-5               |          |      | RFGD 03E-5               |          |      | RFGD 04E-5               |          |      | RFGD 05E-5               |          |      |
| RFGD 01-6                | 11,0     | 38,7 | RFGD 02-6                | 11,7     | 41,1 | RFGD 03-6                | 7,8      | 27,4 | RFGD 04-6                | 6,8      | 23,9 | RFGD 05-6                | 12,8     | 45,0 |
| RFGD 01E-6               |          |      | RFGD 02E-6               |          |      | RFGD 03E-6               |          |      | RFGD 04E-6               |          |      | RFGD 05E-6               |          |      |

**Note:**

- 1) Nominal capacities referred at the following working conditions:  
 Condensing temperature: 38°C; evaporating temperature +4,4°C; Liquid temperature 37°C  
 Static Super Heating: 3,5K
- 2) R407C data based on dew point conditions
- 3) Model Name in this table is referred to the first 4 positions of the model designation



**MODEL LIST (WITHOUT INTERNAL EQUALIZATION)**

| Model Name   |            |                         |                                    |       |        |        |        |                 |        | Temperature Range |            |               |                |
|--------------|------------|-------------------------|------------------------------------|-------|--------|--------|--------|-----------------|--------|-------------------|------------|---------------|----------------|
| Ref.         | Valve Body | Capacity Size All Sizes | Pipe connections Metric / Imperial | Inlet |        | Outlet |        | Pressure Equal. |        | -40°C to +10°C    |            | -40°C to -5°C | -60°C to -20°C |
|              |            |                         |                                    | [mm]  | [inch] | [mm]   | [inch] | [mm]            | [inch] | No MOP            | MOP: +15°C | MOP: 0°C      | MOP: -20°C     |
| R22          | RFGD 01    | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
| R407C        | RFGD 02    | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
| R404A / R507 | RFGD 03    | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
| R134a        | RFGD 04    | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
| R410A        | RFGD 05    | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | N.A.           |

**Note:** 1) Extent of delivery: valve body and bulb strap  
 2) O.R.: On Request  
 3) N.A.: Not Available



**MODEL LIST (WITH EXTERNAL EQUALIZATION)**

| Model Name   |            |                         |                                    |       |        |        |        |                 |        | Temperature Range |            |               |                |
|--------------|------------|-------------------------|------------------------------------|-------|--------|--------|--------|-----------------|--------|-------------------|------------|---------------|----------------|
| Ref.         | Valve Body | Capacity Size All Sizes | Pipe connections Metric / Imperial | Inlet |        | Outlet |        | Pressure Equal. |        | -40°C to +10°C    |            | -40°C to -5°C | -60°C to -20°C |
|              |            |                         |                                    | [mm]  | [inch] | [mm]   | [inch] | [mm]            | [inch] | No MOP            | MOP: +15°C | MOP: 0°C      | MOP: -20°C     |
| R22          | RFGD 01E   | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | O.R.              | O.R.       | O.R.          | O.R.           |
| R407C        | RFGD 02E   | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
| R404A / R507 | RFGD 03E   | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
| R134a        | RFGD 04E   | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | STD               | O.R.       | O.R.          | O.R.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
| R410A        | RFGD 05E   | 1                       | M10                                | 10    | -      | 16     | -      | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 2                       | M12                                | 12    | -      | 22     | -      | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 3                       | M16                                | 16    |        | 22     |        | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 4                       | 3                                  | -     | 3/8    | -      | 5/8    | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 5                       | 4                                  | -     | 1/2    | -      | 7/8    | -               | -      | STD               | O.R.       | O.R.          | N.A.           |
|              |            | 6                       | 5                                  |       | 5/8    |        | 7/8    | -               | -      | STD               | O.R.       | O.R.          | N.A.           |

**Note:** 1) Extent of delivery: valve body and bulb strap  
 2) O.R.: On Request  
 3) N.A.: Not Available  
 4) STD: Standard Models available on stock (see Standard Model Table for further details)

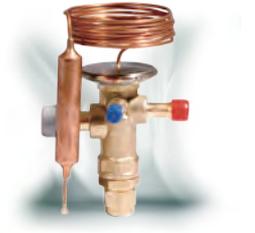

**RFGD STANDARD RANGE**

A) Models with Metric Connections

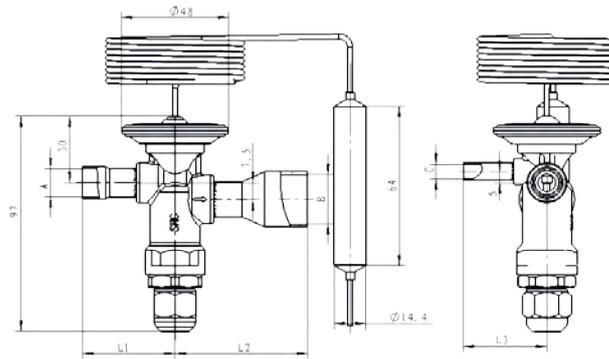
| Model Name         |                |            |                            |                         |         |                            |                  |                   |
|--------------------|----------------|------------|----------------------------|-------------------------|---------|----------------------------|------------------|-------------------|
| Ref.               | MWP<br>[ MPa ] | Valve Body | Capacity Size<br>All Sizes | Connections<br>IN x OUT |         | Pressure<br>Equal.<br>[mm] | Internal Code    | Product<br>Number |
|                    |                |            |                            | Metric                  | [mm]    |                            |                  |                   |
| R407C              | 2,8            | RFGD 02E   | 1 -                        | M10                     | 10 x 16 | 6                          | RFGD 02E-3.1-57  | RFG-25007         |
|                    |                |            | 2 -                        | M12                     | 12 x 22 | 6                          | RFGD 02E-4.2-58  | RFG-25008         |
|                    |                |            | 3 -                        | M12                     | 12 x 22 | 6                          | RFGD 02E-6.3-59  | RFG-25009         |
|                    |                |            | 4 -                        | M12                     | 12 x 22 | 6                          | RFGD 02E-8.1-60  | RFG-25010         |
|                    |                |            | 5 -                        | M16                     | 16 x 22 | 6                          | RFGD 02E-9.4-61  | RFG-25011         |
|                    |                |            | 6 -                        | M16                     | 16 x 22 | 6                          | RFGD 02E-11.7-62 | RFG-25012         |
| R404A<br>/<br>R507 | 3,5            | RFGD 03E   | 1 -                        | M10                     | 10 x 16 | 6                          | RFGD 03E-2.0-63  | RFG-25013         |
|                    |                |            | 2 -                        | M12                     | 12 x 22 | 6                          | RFGD 03E-2.8-64  | RFG-25014         |
|                    |                |            | 3 -                        | M12                     | 12 x 22 | 6                          | RFGD 03E-4.2-65  | RFG-25015         |
|                    |                |            | 4 -                        | M12                     | 12 x 22 | 6                          | RFGD 03E-5.4-66  | RFG-25016         |
|                    |                |            | 5 -                        | M16                     | 16 x 22 | 6                          | RFGD 03E-6.4-67  | RFG-25017         |
|                    |                |            | 6 -                        | M16                     | 16 x 22 | 6                          | RFGD 03E-7.8-68  | RFG-25018         |
| R134a              | 2,1            | RFGD 04E   | 1 -                        | M10                     | 10 x 16 | 6                          | RFGD 04E-1.8-69  | RFG-25019         |
|                    |                |            | 2 -                        | M12                     | 12 x 22 | 6                          | RFGD 04E-2.5-70  | RFG-25020         |
|                    |                |            | 3 -                        | M12                     | 12 x 22 | 6                          | RFGD 04E-3.6-71  | RFG-25021         |
|                    |                |            | 4 -                        | M12                     | 12 x 22 | 6                          | RFGD 04E-4.6-72  | RFG-25022         |
|                    |                |            | 5 -                        | M16                     | 16 x 22 | 6                          | RFGD 04E-5.5-73  | RFG-25023         |
|                    |                |            | 6 -                        | M16                     | 16 x 22 | 6                          | RFGD 04E-6.8-74  | RFG-25024         |
| R410A              | 4,5            | RFGD 05E   | 1 -                        | M10                     | 10 x 16 | 6                          | RFGD 05E-3.5-75  | RFG-25025         |
|                    |                |            | 2 -                        | M12                     | 12 x 22 | 6                          | RFGD 05E-4.5-76  | RFG-25026         |
|                    |                |            | 3 -                        | M12                     | 12 x 22 | 6                          | RFGD 05E-7.0-77  | RFG-25027         |
|                    |                |            | 4 -                        | M12                     | 12 x 22 | 6                          | RFGD 05E-8.6-78  | RFG-25028         |
|                    |                |            | 5 -                        | M16                     | 16 x 22 | 6                          | RFGD 05E-10.6-79 | RFG-25029         |
|                    |                |            | 6 -                        | M16                     | 16 x 22 | 6                          | RFGD 05E-12.8-80 | RFG-25030         |


**RFGD STANDARD RANGE**
*B) Models with Imperial Connections*

| Model Name         |                |            |                            |                         |           |                    |                  |                   |
|--------------------|----------------|------------|----------------------------|-------------------------|-----------|--------------------|------------------|-------------------|
| Ref.               | MWP<br>[ MPa ] | Valve Body | Capacity Size<br>All Sizes | Connections<br>IN x OUT |           | Pressure<br>Equal. | Product Number   | Product<br>Number |
|                    |                |            |                            | Imperial                | [inch]    | [inch]             |                  |                   |
| R407C              | 2,8            | RFGD 02E   | 1 -                        | 3                       | 3/8 x 5/8 | 1/4                | RFGD 02E-3.1-33  | RFG-25037         |
|                    |                |            | 2 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 02E-4.2-34  | RFG-25038         |
|                    |                |            | 3 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 02E-6.3-35  | RFG-25039         |
|                    |                |            | 4 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 02E-8.1-36  | RFG-25040         |
|                    |                |            | 5 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 02E-9.4-37  | RFG-25041         |
|                    |                |            | 6 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 02E-11.7-38 | RFG-25042         |
| R404A<br>/<br>R507 | 3,5            | RFGD 03E   | 1 -                        | 3                       | 3/8 x 5/8 | 1/4                | RFGD 03E-2.0-39  | RFG-25043         |
|                    |                |            | 2 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 03E-2.8-40  | RFG-25044         |
|                    |                |            | 3 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 03E-4.2-41  | RFG-25045         |
|                    |                |            | 4 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 03E-5.4-42  | RFG-25046         |
|                    |                |            | 5 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 03E-6.4-43  | RFG-25047         |
|                    |                |            | 6 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 03E-7.8-44  | RFG-25048         |
| R134a              | 2,1            | RFGD 04E   | 1 -                        | 3                       | 3/8 x 5/8 | 1/4                | RFGD 04E-1.8-01  | RFG-25049         |
|                    |                |            | 2 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 04E-2.5-02  | RFG-25050         |
|                    |                |            | 3 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 04E-3.6-03  | RFG-25051         |
|                    |                |            | 4 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 04E-4.6-04  | RFG-25052         |
|                    |                |            | 5 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 04E-5.5-49  | RFG-25053         |
|                    |                |            | 6 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 04E-6.8-32  | RFG-25054         |
| R410A              | 4,5            | RFGD 05E   | 1 -                        | 3                       | 3/8 x 5/8 | 1/4                | RFGD 05E-3.5-22  | RFG-25055         |
|                    |                |            | 2 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 05E-4.5-23  | RFG-25056         |
|                    |                |            | 3 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 05E-7.0-24  | RFG-25057         |
|                    |                |            | 4 -                        | 4                       | 1/2 x 7/8 | 1/4                | RFGD 05E-8.6-25  | RFG-25058         |
|                    |                |            | 5 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 05E-10.6-27 | RFG-25059         |
|                    |                |            | 6 -                        | 5                       | 5/8 x 7/8 | 1/4                | RFGD 05E-12.8-26 | RFG-25060         |



**DIMENSIONS**

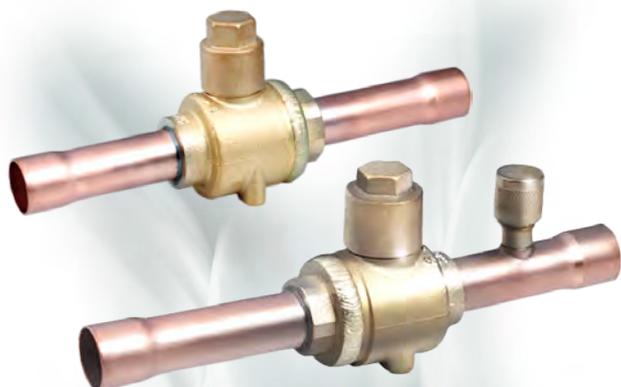


**Note:** The drawing represents a model with External Pressure Equalization

| Overall Dimensions |         |         |         |
|--------------------|---------|---------|---------|
| Orifice Size       | L1 (mm) | L2 (mm) | L3 (mm) |
| 1                  | 41.5    | 59.5    | 37.5    |
| 2                  | 41.5    | 59.5    | 37.5    |
| 3                  | 41.5    | 59.5    | 37.5    |
| 4                  | 41.5    | 59.5    | 37.5    |
| 5                  | 41.5    | 59.5    | 37.5    |
| 6                  | 41.5    | 59.5    | 37.5    |

# Ball Valve

The ball valve of series SBV is applicable for commercial air conditioner, freezing or deep-freezing equipment or other refrigeration circuits in order to open and to shut off inner flow path by operating the valve stem. It can also be used as service valve for vacuum pumping and refrigerant injection etc.



## FEATURES

- STRAIGHTWAY TYPE, FULL PORT, LOW PRESSURE DROP , COST-EFFECTIVE
- OPTIONAL WITH REINFORCED SPRING
- VALVE BODY AND VALVE SEAT WITH WELDED STRUCTURE, WITH HIGH PRODUCT RELIABILITY
- ROTATE 1/4 CIRCLES FROM FULL-OPEN TO FULL-CLOSE, EASY TO OPERATE
- BIDIRECTIONAL FLOW
- ROTATION STOP ON REQUEST FOR FULL-OPEN AND FULL-CLOSE OF THE VALVE
- SPECIAL SEALING MATERIALS TO PREVENT INTERNAL LEAKAGE

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Medium temperature TS min./max.: -40°C / +120°C
- Max. operating pressure PS: 4,5 MPa (45 bar)
- Installation position: liquid, suction and discharge line in all directions
- Certifications: UL/CSA and PED declaration



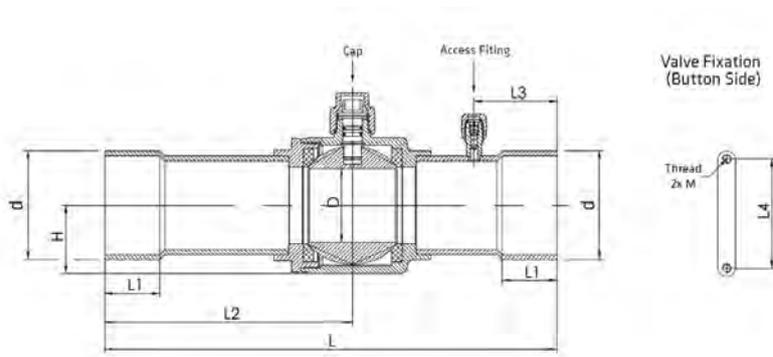
**GENERAL CHARACTERISTICS**

| Without Access Fitting |                | Connections<br>Ø d<br>ODF |      | Kv                  | Wrench<br>Size<br>Cap | PED<br>category | With Access Fitting |                |
|------------------------|----------------|---------------------------|------|---------------------|-----------------------|-----------------|---------------------|----------------|
| Model                  | Part<br>Number | [inch]                    | [mm] | [m <sup>3</sup> /h] | [mm]                  |                 | Model               | Part<br>Number |
| SBV(M)-A2YHSY-2-S      | SBV-13001      | -                         | 6    | 1,9                 | 14                    | 3.3             | SBV(M)-JA2YHSY-2-S  | SBV-13019      |
| SBV(M)-A2YHSY-1-S      | SBV-13002      | 1/4                       | -    | 1,9                 | 14                    | 3.3             | SBV(M)-JA2YHSY-1-S  | SBV-13020      |
| SBV(M)-A3YHSY-2-S      | SBV-13037      | 3/8                       | -    | 5,5                 | 14                    | 3.3             | SBV(M)-JA3YHSY-2-S  | SBV-13039      |
| SBV(M)-A3YHSY-1-S      | SBV-13003      | -                         | 10   | 5,5                 | 14                    | 3.3             | SBV(M)-JA3YHSY-1-S  | SBV-13021      |
| SBV(M)-A4YHSY-2-S      | SBV-13004      | -                         | 12   | 10,2                | 14                    | 3.3             | SBV(M)-JA4YHSY-2-S  | SBV-13022      |
| SBV(M)-A4YHSY-1-S      | SBV-13005      | 1/2                       | -    | 10,2                | 14                    | 3.3             | SBV(M)-JA4YHSY-1-S  | SBV-13023      |
| SBV(M)-A5YHSY-2-S      | SBV-13006      | -                         | 15   | 13,2                | 14                    | 3.3             | SBV(M)-JA5YHSY-2-S  | SBV-13024      |
| SBV(M)-A5YHSY-1-S      | SBV-13007      | 5/8                       | 16   | 13,8                | 14                    | 3.3             | SBV(M)-JA5YHSY-1-S  | SBV-13025      |
| SBV(M)-A6YHSY-2-S      | SBV-13008      | -                         | 18   | 19,5                | 17                    | 3.3             | SBV(M)-JA6YHSY-2-S  | SBV-13026      |
| SBV(M)-A6YHSY-1-S      | SBV-13009      | 3/4                       | -    | 19,5                | 17                    | 3.3             | SBV(M)-JA6YHSY-1-S  | SBV-13027      |
| SBV(M)-A7YHSY-1-S      | SBV-13010      | 7/8                       | 22   | 28,0                | 17                    | 3.3             | SBV(M)-JA7YHSY-1-S  | SBV-13028      |
| SBV(M)-A9YHSY-2-S      | SBV-13011      | -                         | 28   | 51,5                | 17                    | 3.3             | SBV(M)-JA9YHSY-2-S  | SBV-13029      |
| SBV(M)-A9YHSY-1-S      | SBV-13012      | 1 1/8                     | -    | 51,5                | 17                    | 3.3             | SBV(M)-JA9YHSY-1-S  | SBV-13030      |
| SBV(M)-A11YHSY-1-S     | SBV-13013      | 1 3/8                     | 35   | 80,0                | 17                    | I               | SBV(M)-JA11YHSY-1-S | SBV-13031      |
| SBV(M)-A13YHSY-2-S     | SBV-13038      | 1 5/8                     | -    | 119,8               | 17                    | I               | SBV(M)-JA13YHSY-2-S | SBV-13040      |
| SBV(M)-A13YHSY-1-S     | SBV-13014      | -                         | 42   | 119,8               | 17                    | I               | SBV(M)-JA13YHSY-1-S | SBV-13032      |
| SBV(M)-A17YHSY-1-S     | SBV-13015      | 2 1/8                     | 54   | 225                 | 19                    | I               | SBV(M)-JA17YHSY-1-S | SBV-13033      |
| SBV(M)-A19YHSY-1-S     | SBV-13016      | -                         | 64   | 225                 | 19                    | I               | SBV(M)-JA19YHSY-1-S | SBV-13034      |
| SBV(M)-A21YHSY-2-S     | SBV-13017      | 2 5/8                     | -    | 305                 | 19                    | I               | SBV(M)-JA21YHSY-2-S | SBV-13035      |
| SBV(M)-A25YHSY-2-S     | SBV-13018      | 3 1/8                     | 80   | 635                 | 24                    | I               | SBV(M)-JA25YHSY-2-S | SBV-13036      |
| SBV(M)-A29YHSY-1-S     | SBV-13041      | 3 5/8                     | 92   | 805                 | 26                    | I               | SBV(M)-JA29YHSY-1-S | SBV-13043      |
| SBV(M)-A33YHSY-2-S     | SBV-13046      | 4 1/8                     | 105  | 950                 | 32                    | I               | SBV(M)-JA33YHSY-2-S | SBV-13045      |
| SBV(M)-A34YHSY-1-S     | SBV-13042      | 4 1/4                     | 108  | 950                 | 32                    | I               | SBV(M)-JA34YHSY-1-S | SBV-13044      |

**Note:** SBV model with connection size 3-1/2" (89mm) available on request



**DIMENSIONS & WEIGHT**



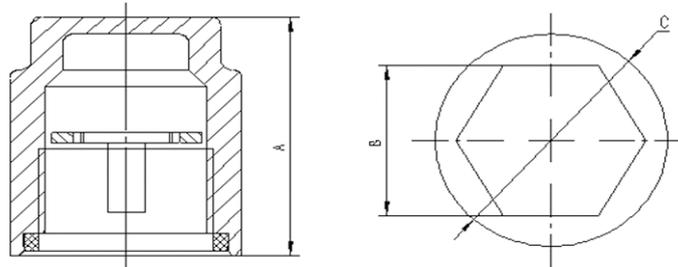
| Part Number            |                     | L     | L1   | L2    | L3 <sup>1)</sup> | L4   | D    | H    | M        | Weight |
|------------------------|---------------------|-------|------|-------|------------------|------|------|------|----------|--------|
| Without access fitting | With Access Fitting | [mm]  | [mm] | [mm]  | [mm]             | [mm] | [mm] | [mm] | [mm]     | [kg]   |
| SBV-13001              | SBV-13019           | 132   | 8    | 68    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,28   |
| SBV-13002              | SBV-13020           | 132   | 8    | 68    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,28   |
| SBV-13037              | SBV-13039           | 132   | 8    | 68    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,29   |
| SBV-13003              | SBV-13021           | 132   | 8    | 68    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,29   |
| SBV-13004              | SBV-13022           | 160   | 10   | 85    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,30   |
| SBV-13005              | SBV-13023           | 160   | 10   | 85    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,30   |
| SBV-13006              | SBV-13024           | 160   | 12   | 85    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,30   |
| SBV-13007              | SBV-13025           | 160   | 12   | 85    | 31               | 22   | 14   | 16   | M4 x 0,7 | 0,30   |
| SBV-13008              | SBV-13026           | 185   | 14   | 99    | 37               | 30   | 19   | 20   | M4 x 0,7 | 0,51   |
| SBV-13009              | SBV-13027           | 185   | 14   | 99    | 37               | 30   | 19   | 20   | M4 x 0,7 | 0,51   |
| SBV-13010              | SBV-13028           | 185   | 17   | 99    | 37               | 30   | 19   | 20   | M4 x 0,7 | 0,52   |
| SBV-13011              | SBV-13029           | 208   | 20   | 112   | 44               | 38   | 25   | 25   | M4 x 0,7 | 0,73   |
| SBV-13012              | SBV-13030           | 208   | 20   | 112   | 44               | 38   | 25   | 25   | M4 x 0,7 | 0,73   |
| SBV-13013              | SBV-13031           | 251   | 25   | 136   | 44               | 48   | 32   | 31   | M6 x 1,0 | 1,42   |
| SBV-13038              | SBV-13040           | 281   | 29   | 151   | 56               | 55   | 38   | 35   | M6 x 1,0 | 1,90   |
| SBV-13014              | SBV-13032           | 281   | 29   | 151   | 56               | 55   | 38   | 35   | M6 x 1,0 | 1,90   |
| SBV-13015              | SBV-13033           | 305   | 34   | 167   | 56               | 74   | 50   | 46   | M6 x 1,0 | 3,74   |
| SBV-13016              | SBV-13034           | 305   | 34   | 167   | 70               | 74   | 50   | 46   | M6 x 1,0 | 3,79   |
| SBV-13017              | SBV-13035           | 305   | 37   | 167   | 56               | 74   | 60   | 56   | M6 x 1,0 | 6,08   |
| SBV-13018              | SBV-13036           | 378   | 42   | 186,2 | 80               | 90   | 70   | 63   | M6 x 1,0 | 8,81   |
| SBV-13041              | SBV-13043           | 422,7 | 42   | 207,5 | 75               | 108  | 80   | 75   | M6 x 1,0 | 11,32  |
| SBV-13046              | SBV-13045           | 423   | 42   | 210,0 | 75               | 148  | 95   | 91   | M6 x 1,0 | 19,94  |
| SBV-13042              | SBV-13044           | 423   | 42   | 210,0 | 75               | 148  | 95   | 91   | M6 x 1,0 | 19,94  |

**Note:** 1) Applicable to versions with access fitting - SBV(M)-JA series

**SBV SERIES**  
**Ball Valve**



**ACCESSORIES**

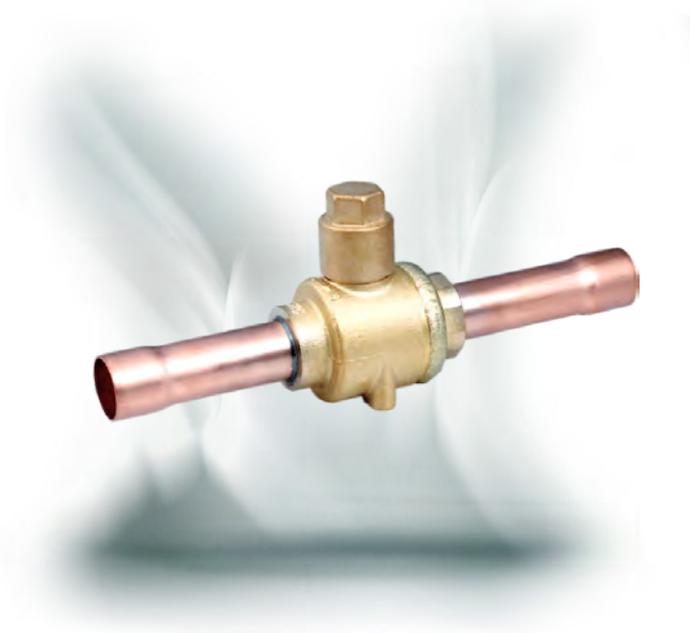


*Anti-Rotation Device*

| Model | Part Number | Applicable for SBV models with: |                     | Cap Nut  | Dimensions mm |     |      |
|-------|-------------|---------------------------------|---------------------|----------|---------------|-----|------|
|       |             | Inch connections:               | Metric connections: |          | A             | B   | C    |
| SK01  | SBV-13101   | 1" 1/8 - 1" 3/8                 | 28mm - 35mm         | M18X1-6H | 27,0          | H17 | Ø 24 |
| SK02  | SBV-13102   | 1" 5/8                          | 42mm                | M22X1-6H | 27,5          | H17 | Ø 26 |
| SK03  | SBV-13103   | 2" 1/8 - 2" 5/8                 | 54mm - 64mm         | M22X1-6H | 27,5          | H19 | Ø 28 |
| SK04  | SBV-13104   | 3" 1/8 - 3" 5/8                 | 80mm - 92mm         | M26X1-6H | 29,5          | H24 | Ø 32 |
| SK05  | SBV-13105   | 4" 1/8 - 4" 1/4                 | 105mm - 108mm       | M32X1-6H | 32,0          | H29 | Ø 38 |

# Ball Valve

CBV valves are typically used in commercial CO<sub>2</sub> refrigeration applications in order to open and to shut off inner flow path by operating the valve stem. The ball valve of series CBV is applicable for subcritical CO<sub>2</sub> refrigeration systems and is a perfect choice for all similar CO<sub>2</sub> systems.



## FEATURES

- STRAIGHTWAY TYPE, FULL PORT, LOW PRESSURE DROP, COST-EFFECTIVE
- VALVE BODY AND VALVE SEAT WITH WELDED STRUCTURE, WITH HIGH PRODUCT RELIABILITY
- ROTATE ¼ CIRCLES FROM FULL-OPEN TO FULL-CLOSE, EASY TO OPERATE
- BIDIRECTIONAL FLOW<sup>1)</sup>
- ROTATION STOP FOR FULL-OPEN AND FULL-CLOSE OF THE VALVE AVAILABLE
- SPECIAL SEALING MATERIALS TO PREVENT INTERNAL LEAKAGE

**Note:** 1) CBV valves fulfill internal tightness requirements of the standard EN12284, paragraph 9.6.3 in both flow directions. Installations with shut off function to the atmosphere (just temporarily for service purpose): Please install the solder connection "B" at the airside. Please see solder connection "A" and "B" at the dimensional drawing page 3.  
Remark: Welding body junction is always at solder connection "A"

## GENERAL SPECIFICATION

- Applicable for R744 (CO<sub>2</sub>)
- Medium temperature TS min./max.:  
-40°C/+150°C
- Max. operating pressure PS: 4,5 MPa (45 bar)
- Installation position: liquid, suction and discharge line in all directions
- Certification: PED declaration.



**GENERAL CHARACTERISTICS**

| Model     | Part Number <sup>1)</sup> | Connection<br>Ø d<br>ODF |      | Kv                  | Wrench<br>Size<br>Cap | PED<br>Category |
|-----------|---------------------------|--------------------------|------|---------------------|-----------------------|-----------------|
|           |                           | [inch]                   | [mm] | [m <sup>3</sup> /h] | [mm]                  |                 |
| CBV02-002 | CBV-67001                 | -                        | 6    | 1,9                 | H14                   | 3.3             |
| CBV02-001 | CBV-67002                 | 1/4                      | -    | 1,9                 | H14                   | 3.3             |
| CBV03-001 | CBV-67003                 | 3/8                      | -    | 5,5                 | H14                   | 3.3             |
| CBV03-002 | CBV-67004                 | -                        | 10   | 5,5                 | H14                   | 3.3             |
| CBV04-002 | CBV-67005                 | -                        | 12   | 10,2                | H14                   | 3.3             |
| CBV04-001 | CBV-67006                 | 1/2                      | -    | 10,2                | H14                   | 3.3             |
| CBV05-001 | CBV-67007                 | 5/8                      | 16   | 13,8                | H14                   | 3.3             |
| CBV06-002 | CBV-67008                 | -                        | 18   | 19,5                | H17                   | 3.3             |
| CBV06-001 | CBV-67009                 | 3/4                      | -    | 19,5                | H17                   | 3.3             |
| CBV07-001 | CBV-67010                 | 7/8                      | 22   | 28,0                | H17                   | 3.3             |
| CBV09-002 | CBV-67011                 | -                        | 28   | 51,5                | H17                   | 3.3             |
| CBV09-001 | CBV-67012                 | 1 1/8                    | -    | 51,5                | H17                   | 3.3             |
| CBV11-001 | CBV-67013                 | 1 3/8                    | 35   | 80,0                | H17                   | I               |
| CBV13-002 | CBV-67014                 | 1 5/8                    | -    | 119,8               | H17                   | I               |
| CBV13-003 | CBV-67015                 | -                        | 42   | 119,8               | H17                   | I               |
| CBV17-001 | CBV-67016                 | 2 1/8                    | 54   | 225,0               | H19                   | I               |

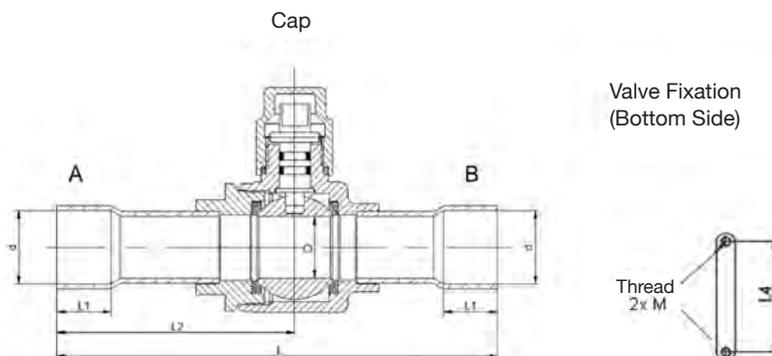
**Note:** 1) Extent of delivery: valve body and standard cap

# CBV SERIES

## Ball Valve



### DIMENSIONS & WEIGHT



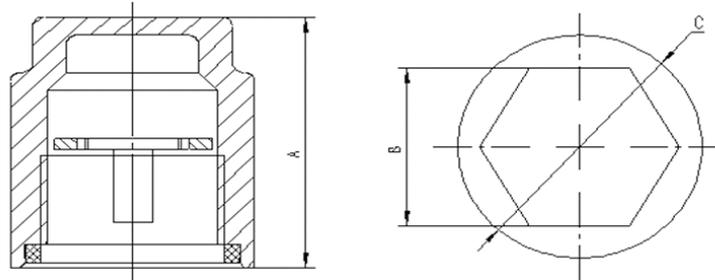
| Model     | Part Number | L   | L1 | L2  | L4 | D  | H  | M        | Weight |
|-----------|-------------|-----|----|-----|----|----|----|----------|--------|
| CBV02-002 | CBV-67001   | 132 | 8  | 68  | 22 | 14 | 16 | M4 x 0,7 | 0,28   |
| CBV02-001 | CBV-67002   | 132 | 8  | 68  | 22 | 14 | 16 | M4 x 0,7 | 0,28   |
| CBV03-001 | CBV-67003   | 132 | 8  | 68  | 22 | 14 | 16 | M4 x 0,7 | 0,29   |
| CBV03-002 | CBV-67004   | 132 | 8  | 68  | 22 | 14 | 16 | M4 x 0,7 | 0,29   |
| CBV04-002 | CBV-67005   | 160 | 10 | 85  | 22 | 14 | 16 | M4 x 0,7 | 0,30   |
| CBV04-001 | CBV-67006   | 160 | 10 | 85  | 22 | 14 | 16 | M4 x 0,7 | 0,30   |
| CBV05-001 | CBV-67007   | 160 | 12 | 85  | 22 | 14 | 16 | M4 x 0,7 | 0,30   |
| CBV06-002 | CBV-67008   | 185 | 14 | 99  | 30 | 19 | 20 | M4 x 0,7 | 0,51   |
| CBV06-001 | CBV-67009   | 185 | 14 | 99  | 30 | 19 | 20 | M4 x 0,7 | 0,51   |
| CBV07-001 | CBV-67010   | 185 | 17 | 99  | 30 | 19 | 20 | M4 x 0,7 | 0,52   |
| CBV09-002 | CBV-67011   | 208 | 20 | 112 | 38 | 25 | 25 | M4 x 0,7 | 0,73   |
| CBV09-001 | CBV-67012   | 208 | 20 | 112 | 38 | 25 | 25 | M4 x 0,7 | 0,73   |
| CBV11-001 | CBV-67013   | 251 | 25 | 136 | 48 | 32 | 31 | M6 x 1,0 | 1,42   |
| CBV13-002 | CBV-67014   | 281 | 29 | 151 | 55 | 38 | 35 | M6 x 1,0 | 1,90   |
| CBV13-003 | CBV-67015   | 281 | 29 | 151 | 55 | 38 | 35 | M6 x 1,0 | 1,90   |
| CBV17-001 | CBV-67016   | 305 | 34 | 167 | 74 | 50 | 46 | M6 x 1,0 | 3,74   |

# CBV SERIES

## Ball Valve



### ACCESSORIES



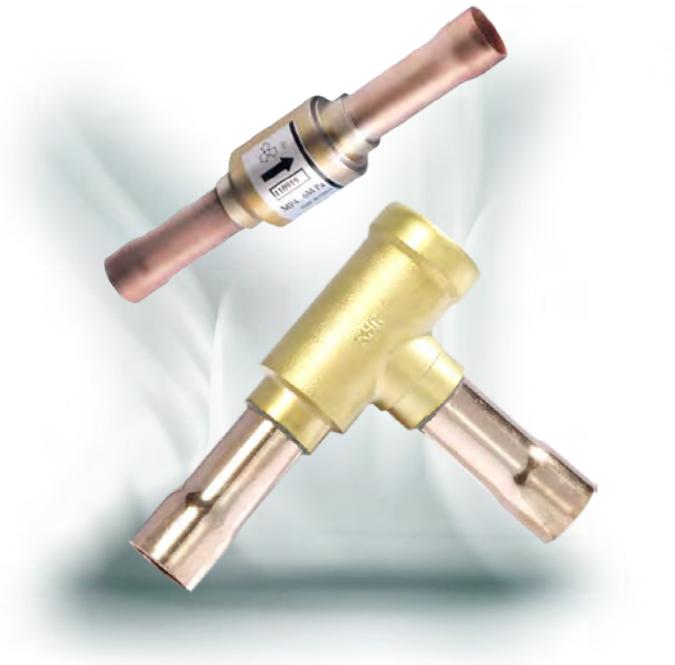
#### Anti-Rotation Device

| Model | Part Number<br><sup>1)</sup> | Applicable for CBV models with: |                    | Cap Nut  | Dimensions mm |     |      |
|-------|------------------------------|---------------------------------|--------------------|----------|---------------|-----|------|
|       |                              | Inch connections                | Metric connections |          | A             | B   | C    |
| SK01  | SBV-13101                    | 1" 1/8 - 1" 3/8                 | 28mm - 35mm        | M18X1-6H | 27,0          | H17 | Ø 24 |
| SK02  | SBV-13102                    | 1" 5/8                          | 42mm               | M22X1-6H | 27,5          | H17 | Ø 26 |
| SK03  | SBV-13103                    | 2" 1/8 - 2" 5/8                 | 54mm - 64mm        | M22X1-6H | 27,5          | H19 | Ø 28 |

**Note:** 1) Extent of delivery: cap with anti-rotation device

# Check Valve Piston Type

Piston type check valves are designed for installation in commercial refrigerating systems and in residential or industrial air conditioning plants. They are used to control the unidirectional flow of refrigerant so as to prevent backflow.



## FEATURES

- THIS VALVE CAN ENSURE THE ONLY CORRECT FLOW DIRECTION
- EQUIPPED WITH DAMPING SPRING TO FREELY INSTALL THE VALVE AT POSITIONS WITH PRESSURE PULSE
- AVAILABLE IN TWO TYPES OF MODEL: STRAIGHTWAY VALVE AND L-SHAPE VALVE, EASY TO CONNECT
- SPECIAL VERSION OF CHECK VALVE EQUIPPED WITH REINFORCED SPRING AVAILABLE, APPLICABLE TO COMPRESSOR DISCHARGE PIPES IN SINGLE OR MULTI COMPRESSOR SYSTEMS (YCVSH SERIES)
- LOW PRESSURE DROP DURING OPERATION

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Medium temperature TS min./max.: -50°C / +140°C
- Max. operating pressure PS: 4,6 MPa (46 bar)
- Installation position:
  - Flow direction corresponds to the arrow
  - Straight-way type: preferably installed with vertical axis and flow upwards, sloping axis up to horizontal is tolerable
  - L-shape type: flow direction from bottom to top
- Declaration according to PED



**GENERAL CHARACTERISTICS**

| Model             | Part Number | Type         | Connections ODF |      | Kv     | Min. OPD | Dimensions |      |      | PED category |
|-------------------|-------------|--------------|-----------------|------|--------|----------|------------|------|------|--------------|
|                   |             |              | Ø d             |      |        |          | ØD         | C    | E    |              |
|                   |             |              | [inch]          | [mm] | [m³/h] | [kPa]    | [mm]       | [mm] | [mm] |              |
| YCVS 5-11GSHC-1   | YCV-15001   | straight-way | -               | 6    | 0,56   | 5        | 5          | 90   | 18   | 3,3          |
| YCVS 5-22GSHC-1   | YCV-15002   | straight-way | 1/4             | -    | 0,56   | 5        | 5          | 90   | 18   | 3,3          |
| YCVS 8-33GSHC-1   | YCV-15007   | straight-way | 3/8             | -    | 1,43   | 5        | 8          | 110  | 18   | 3,3          |
| YCVSH 8-33GSHC-1  | YCV-15008   | straight-way | 3/8             | -    | 1,43   | 15       | 8          | 110  | 18   | 3,3          |
| YCVS 8-33GSHC-2   | YCV-15009   | straight-way | -               | 10   | 1,43   | 5        | 8          | 110  | 18   | 3,3          |
| YCVSH 8-33GSHC-2  | YCV-15010   | straight-way | -               | 10   | 1,43   | 15       | 8          | 110  | 18   | 3,3          |
| YCVS 10-33GSHC-1  | YCV-15015   | straight-way | -               | 12   | 2,1    | 5        | 10         | 130  | 22   | 3,3          |
| YCVSH 10-33GSHC-1 | YCV-15016   | straight-way | -               | 12   | 2,1    | 15       | 10         | 130  | 22   | 3,3          |
| YCVS 10-44GSHC-1  | YCV-15017   | straight-way | 1/2             | -    | 2,1    | 5        | 10         | 130  | 22   | 3,3          |
| YCVSH10-44GSHC-1  | YCV-15018   | straight-way | 1/2             | -    | 2,1    | 15       | 10         | 130  | 22   | 3,3          |
| YCVS 13-55GSHC-1  | YCV-15021   | straight-way | 5/8             | 16   | 3,9    | 5        | 13         | 140  | 28   | 3,3          |
| YCVSH 13-55GSHC-1 | YCV-15022   | straight-way | 5/8             | 16   | 3,9    | 15       | 13         | 140  | 28   | 3,3          |
| YCVS 17-55GSHC-1  | YCV-15027   | straight-way | -               | 18   | 5,52   | 5        | 17         | 165  | 34   | 3,3          |
| YCVSH 17-55GSHC-1 | YCV-15028   | straight-way | -               | 18   | 5,52   | 15       | 17         | 165  | 34   | 3,3          |
| YCVS 17-66GSHC-1  | YCV-15029   | straight-way | 3/4             | -    | 5,52   | 5        | 17         | 165  | 34   | 3,3          |
| YCVSH 17-66GSHC-1 | YCV-15030   | straight-way | 3/4             | -    | 5,52   | 15       | 17         | 165  | 34   | 3,3          |
| YCVS 17-77GSHC-1  | YCV-15051   | straight-way | 7/8             | 22   | 5,52   | 5        | 17         | 165  | 34   | 3,3          |
| YCVSH 17-77GSHC-1 | YCV-15052   | straight-way | 7/8             | 22   | 5,52   | 15       | 17         | 165  | 34   | 3,3          |
| YCVS 20-77GSHC-1  | YCV-15033   | L-shape      | 7/8             | 22   | 13,2   | 10       | 20         | 132  | 87   | 3,3          |
| YCVSH 20-77GSHC-1 | YCV-15034   | L-shape      | 7/8             | 22   | 13,2   | 30       | 20         | 132  | 87   | 3,3          |
| YCVS 26-88GSHC-1  | YCV-15039   | L-shape      | -               | 28   | 19,02  | 10       | 26         | 196  | 123  | 3,3          |
| YCVSH 26-88GSHC-1 | YCV-15040   | L-shape      | -               | 28   | 19,02  | 30       | 26         | 196  | 123  | 3,3          |
| YCVS 26-99GSHC-1  | YCV-15041   | L-shape      | 1 1/8           | -    | 19,02  | 10       | 26         | 196  | 123  | 3,3          |
| YCVSH 26-99GSHC-1 | YCV-15042   | L-shape      | 1 1/8           | -    | 19,02  | 30       | 26         | 196  | 123  | 3,3          |
| YCVS 31-BBGSHC-1  | YCV-15045   | L-shape      | 1 3/8           | 35   | 29,1   | 10       | 31         | 196  | 123  | I            |
| YCVSH 31-BBGSHC-1 | YCV-15046   | L-shape      | 1 3/8           | 35   | 29,1   | 30       | 31         | 196  | 123  | I            |
| YCVS 31-DDGSHC-1  | YCV-15047   | L-shape      | 1 5/8           | -    | 29,1   | 10       | 31         | 196  | 123  | I            |
| YCVSH 31-DDGSHC-1 | YCV-15048   | L-shape      | 1 5/8           | -    | 29,1   | 30       | 31         | 196  | 123  | I            |
| YCVS 31-DDGSHC-2  | YCV-15049   | L-shape      | -               | 42   | 29,1   | 10       | 31         | 196  | 123  | I            |
| YCVSH 31-DDGSHC-2 | YCV-15050   | L-shape      | -               | 42   | 29,1   | 30       | 31         | 196  | 123  | I            |

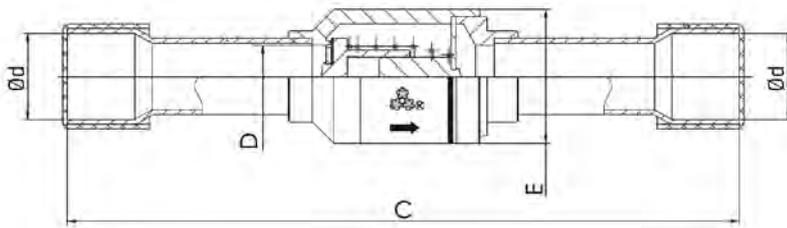
## YCV SERIES

### Check Valve Piston Type

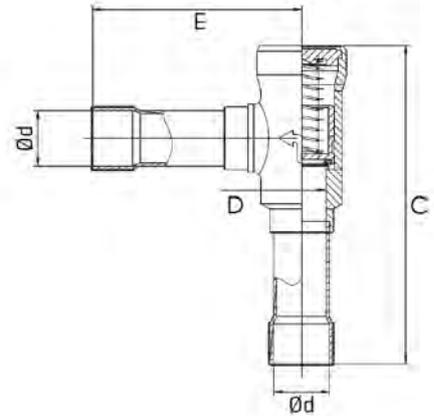


#### GENERAL CHARACTERISTICS

*Straight-way*



*L-shape*



Every 2<sup>nd</sup> home refrigerator  
in Europe is equipped

with a **SANHUA**  
solenoid valve



YEARLY SANHUA SUPPLIES OVER  
20 MILLION SOLENOID VALVES TO THE  
REFRIGERATION, HVAC AND HOME  
APPLIANCES INDUSTRIES WORLDWIDE

**ADVANCED**  
Technology & Solutions

0,16 kv  
25 kv



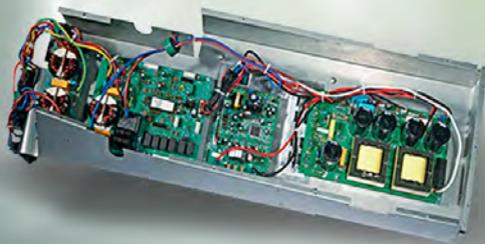
Every second A/C system  
in the world is equipped with  
**Inverter Technology**

**SANHUA IS PROVIDING INVERTER  
CONTROLLER SOLUTIONS TO  
ITS CUSTOMERS HELPING THEM TO  
IMPROVE SYSTEM EFFICIENCY  
BY UP TO 30%**

**DISCOVER  
WHY**

[www.sanhuaeurope.com](http://www.sanhuaeurope.com)

**ADVANCED**  
Technology & Solutions



- ✓ Improves system efficiency up to **30%**
- ✓ **Active Frequency Conversion Technology**
- ✓ Wide Range of voltage application

 **SANHUA**

CHILLING *IDEAS* WORLDWIDE

SANHUA INTERNATIONAL EUROPE  
[info@sanhuaeurope.com](mailto:info@sanhuaeurope.com)

# Sight Glass

Sight glasses are installed after the filter drier in liquid line of refrigerating systems, in order to observe property changes of the refrigerant (liquid/vapor) and to indicate the moisture level by colors.



## FEATURES

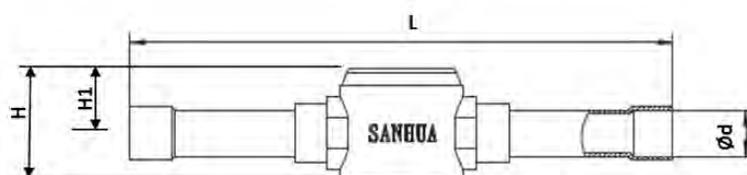
- HIGH PRECISION COLOR INDICATOR
- INDICATOR PASTED CLOSELY TO THE GLASS TO PREVENT SURFACE CONTAMINATION
- SOLID AND CORROSION RESISTANT BRASS MATERIAL
- GOOD READABILITY DUE TO HIGH CLEAR SIGHT GLASS OF WIDE ANGLE
- SEALING OF LOW CREEP PTFE TO ENSURE LEAKAGE FREE PERFORMANCE

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Ambient temperature min./max.: -50°C / +80°C
- Medium temperature TS min./max.: -50°C / +80°C
- Max. operating pressure PS: 4,6 MPa (46 bar)
- Installation position:
  - Liquid and suction line
  - Preferably in vertical lines, recommended position for horizontal lines is upwards without inclination in any direction
- Declaration according to PED

## CHARACTERISTICS

*Version with solder connections*



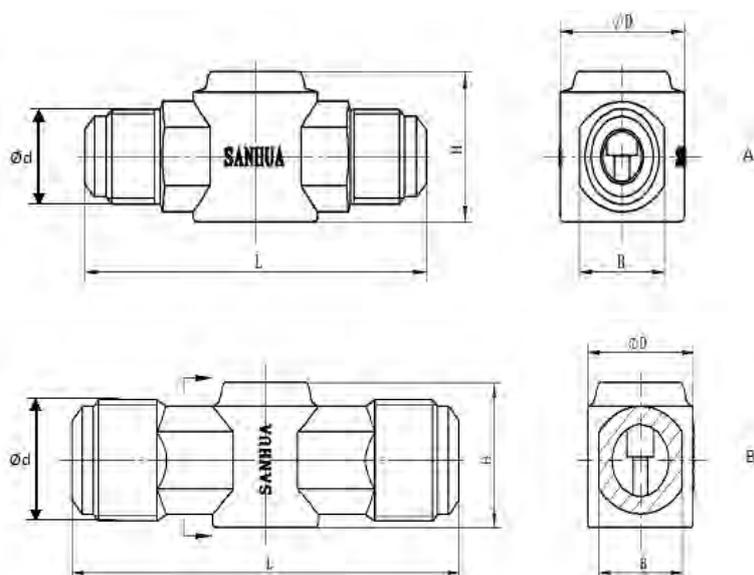


*Version with Solder Connections*

| Model ODF Solder | Part Number | Connection Type | Connections ODF |      | Dimensions & Weight |      |      |        | PED Category |
|------------------|-------------|-----------------|-----------------|------|---------------------|------|------|--------|--------------|
|                  |             |                 | Ød              |      | L                   | H    | H1   | Weight |              |
|                  |             |                 | [inch]          | [mm] | [mm]                | [mm] | [mm] | [g]    |              |
| SYJ-A00061-000   | SYJ-42001   | solder          | -               | 6    | 101                 | 24   | 14   | 100    | 3.3          |
| SYJ-A00040-000   | SYJ-42002   | solder          | 1/4             | -    | 101                 | 24   | 14   | 100    | 3.3          |
| SYJ-A00060-000   | SYJ-42003   | solder          | 3/8             | -    | 119                 | 24   | 14   | 100    | 3.3          |
| SYJ-A00101-000   | SYJ-42004   | solder          | -               | 10   | 119                 | 24   | 14   | 100    | 3.3          |
| SYJ-A00080-000   | SYJ-42005   | solder          | 1/2             | -    | 146                 | 30   | 17   | 200    | 3.3          |
| SYJ-A00121-000   | SYJ-42006   | solder          | -               | 12   | 146                 | 30   | 17   | 200    | 3.3          |
| SYJ-A00100-000   | SYJ-42007   | solder          | 5/8             | 16   | 146                 | 30   | 17   | 200    | 3.3          |
| SYJ-A00120-000   | SYJ-42008   | solder          | 3/4             | -    | 173                 | 37   | 21   | 300    | 3.3          |
| SYJ-A00140-000   | SYJ-42009   | solder          | 7/8             | 22   | 173                 | 37   | 21   | 300    | 3.3          |

*Version with male/male Flare Connections*

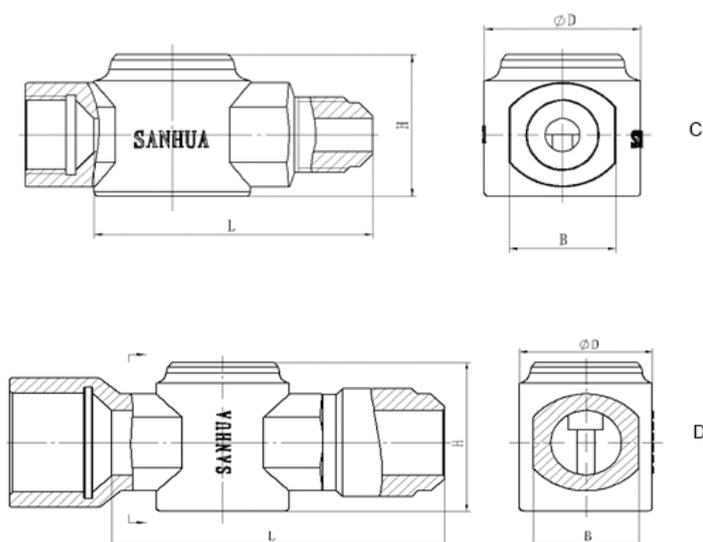
| Model Flare    | Part Number | Connection Type | SAE Flare | Dimensions & Weight |      |      |        | PED Category | Drawing |
|----------------|-------------|-----------------|-----------|---------------------|------|------|--------|--------------|---------|
|                |             |                 | Ød        | L                   | H    | ØD   | Weight |              |         |
|                |             |                 | [inch]    | [mm]                | [mm] | [mm] | [g]    |              |         |
| SYJ-A02040-000 | SYJ-42010   | flare           | 1/4       | 67                  | 24   | 14   | 110    | 3.3          | A       |
| SYJ-A02060-000 | SYJ-42011   | flare           | 3/8       | 82                  | 24   | 14   | 240    | 3.3          | A       |
| SYJ-A02080-000 | SYJ-42012   | flare           | 1/2       | 88                  | 30   | 17   | 240    | 3.3          | A       |
| SYJ-A02100-000 | SYJ-42013   | flare           | 5/8       | 104                 | 30   | 17   | 320    | 3.3          | A       |
| SYJ-A02120-000 | SYJ-42014   | flare           | 3/4       | 110                 | 32   | 15   | 340    | 3.3          | B       |



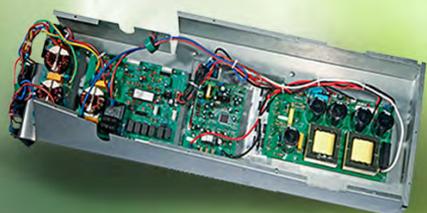


Version with male/female Flare connections

| Model<br>male/female<br>flare | Part<br>Number | Connection<br>Type | SAE Flare | Dimensions & Weight |      |      |      |        | PED<br>Category | Drawing |
|-------------------------------|----------------|--------------------|-----------|---------------------|------|------|------|--------|-----------------|---------|
|                               |                |                    | Ød        | L                   | H    | ØD   | B    | Weight |                 |         |
|                               |                |                    | [inch]    | [mm]                | [mm] | [mm] | [mm] | [g]    |                 |         |
| SYJ-A02040-100                | SYJ-42015      | flare              | 1/4       | 46                  | 30   | 32   | 22   | 200    | 3,3             | C       |
| SYJ-A02060-100                | SYJ-42016      | flare              | 3/8       | 57                  | 30   | 32   | 22   | 240    | 3,3             | C       |
| SYJ-A02080-100                | SYJ-42017      | flare              | 1/2       | 59                  | 32   | 30   | 24   | 250    | 3,3             | C       |
| SYJ-A02100-100                | SYJ-42018      | flare              | 5/8       | 71                  | 37   | 30   | 24   | 320    | 3,3             | D       |
| SYJ-A02120-100                | SYJ-42019      | flare              | 3/4       | 75                  | 37   | 30   | 24   | 330    | 3,3             | D       |



Every second A/C system  
in the world is equipped with  
**Inverter Technology**



**SANHUA IS PROVIDING INVERTER  
CONTROLLER SOLUTIONS TO ITS  
COSTUMERS HELPING THEM TO  
IMPROVE SYSTEM EFFICIENCY BY 30%**

**ADVANCED**  
Technology & Solutions

- ✓ Improves system efficiency up to **30%**
- ✓ **Active Frequency** Conversion Technology
- ✓ Wide Range of voltage application





Moisture Indication Limits

| Refrigerant | Moisture Content 25°C: PMM |              |            |
|-------------|----------------------------|--------------|------------|
|             | Green/Dry                  | Middle Color | Yellow/Wet |
| R22         | <30                        | 30~90        | >90        |
| R134a       | <50                        | 50~200       | >200       |
| R404A       | <15                        | 15~90        | >90        |
| R507        | <15                        | 15~90        | >90        |
| R407C       | <120                       | 120~280      | >280       |
| R410A       | <75                        | 75~150       | >150       |

| Refrigerant | Moisture Content 40°C: PMM |              |            |
|-------------|----------------------------|--------------|------------|
|             | Green/Dry                  | Middle Color | Yellow/Wet |
| R22         | <45                        | 45~130       | >130       |
| R134a       | <80                        | 80~225       | >225       |
| R404A       | <30                        | 30~140       | >140       |
| R507        | <30                        | 30~140       | >140       |

2 out of 3 AC units are equipped  
**with a SANHUA**  
reversing valve

**ADVANCED**  
Technology & Solutions

- ✓ Improves efficiency by **5%**
- ✓ SHF series 1kW to 420 kW
- ✓ Widest range in the market with Single Body Design



YEARLY SANHUA SUPPLIES OVER 50 MILLION  
FOUR WAY REVERSING VALVES TO THE  
COMMERCIAL AND RESIDENTIAL HVAC  
INDUSTRY WORLDWIDE



# Brass Service Valve

Brass service valves of series SSV are applicable for split air conditioners to connect indoor unit and outdoor unit. It can also be used in other cooling or refrigeration systems. The inner path of the valve can be closed by operating the valve stem. The 3way version (with charge port) can be used as service valve for vacuum pumping and refrigerant injection.



## FEATURES

- AVAILABLE WITHOUT AND WITH CHARGE PORT
- COST EFFICIENT SOLUTION
- RELIABLE AND ROBUST DESIGN

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R134a, R404A, R407C, R410A, R507A...
- Ambient temperature min./max.: -30°C / +55°C
- Medium temperature TS min./max.: -30 °C / +120°C
- Max. operating pressure PS: 4,5 MPa (45 bar)
- Installation position: Preferably liquid and suction line
- Certifications: UL/CSA and PED declaration

## GENERAL CHARACTERISTICS

| Model           | Part Number <sup>1)</sup> | Connections  |        |      |         |                         | Cooling capacity<br>[ kW ] | PED Category |
|-----------------|---------------------------|--------------|--------|------|---------|-------------------------|----------------------------|--------------|
|                 |                           | ØA Flare     | Ød ODF |      | ØI Pipe | Charge Port Flare (SAE) |                            |              |
|                 |                           | [ inch ]     | [inch] | [mm] | [mm]    | [ inch ]                |                            |              |
| SSV-A2GSHC-23   | SSV-14001                 | 7/16-20UNF   | 1/4    | 6,35 | 4,8     | -                       | 0,7 - 1,5                  | 3,3          |
| SSV-JA3GSHC-20  | SSV-14002                 | 5/8-18UNF    | 3/8    | 9,52 | 7,0     | 5/16                    | 0,7 - 3,7                  | 3,3          |
| SSV-JA4GSHC-19  | SSV-14003                 | 3/4-16UNF    | 1/2    | 12,7 | 10      | 5/16                    | 1,1 - 7,5                  | 3,3          |
| SSV-JA5GSHC-15  | SSV-14004                 | 7/8-14UNF    | 5/8    | 15,9 | 12,5    | 5/16                    | 1,5 - 8,8                  | 3,3          |
| SSV-JA6-GSHC-13 | SSV-14005                 | 1 1/16-14UNS | 3/4    | 19,1 | 16      | 5/16                    | 3,7 - 5,9                  | 3,3          |

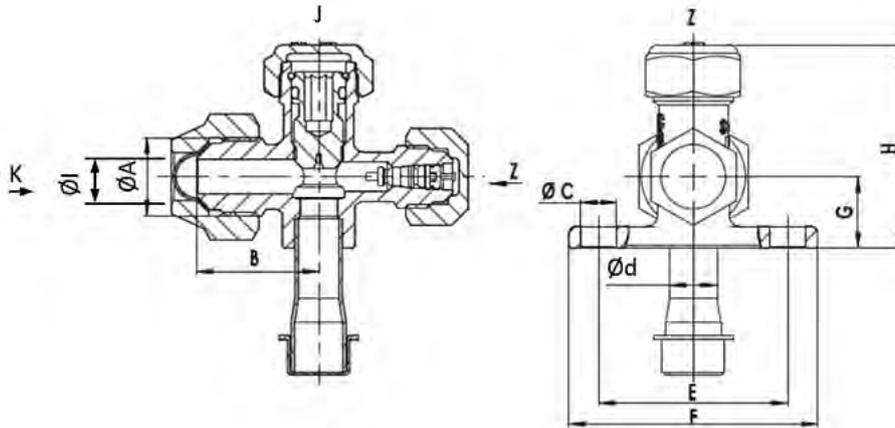
**Note:** 1) Extent of delivery:

- SSV-JA valve body with schrader valve, cap charge port, cap shut-off valve, nut pipe connection
- SSV-A valve body, cap shut-off valve, nut pipe connection, without charge port

**SSV SERIES**  
**Brass Service Valve**



**DIMENSIONS**



| Model           | Part Number | Dimensions [ mm ] |     |    |    |      |    | Wrench Size [ mm ]    |                      |                             |                   |
|-----------------|-------------|-------------------|-----|----|----|------|----|-----------------------|----------------------|-----------------------------|-------------------|
|                 |             | B                 | ØC  | E  | F  | G    | H  | Nut Pipe Connection K | Cap Shut-off Valve J | Valve <sup>1)</sup> Steam J | Cap Charge Port Z |
| SSV-A2GSHC-23   | SSV14001    | 23                | 7,2 | 38 | 50 | 14   | 36 | 19                    | 17                   | 5                           | -                 |
| SSV-JA3GSHC-20  | SSV14002    | 24,5              | 7,2 | 38 | 50 | 14,5 | 41 | 22                    | 19                   | 5                           | 17                |
| SSV-JA4GSHC-19  | SSV14003    | 28                | 7,2 | 38 | 50 | 16   | 44 | 24                    | 22                   | 5                           | 17                |
| SSV-JA5GSHC-15  | SSV14004    | 34                | 7,2 | 38 | 50 | 17   | 47 | 27                    | 26                   | 5                           | 17                |
| SSV-JA6-GSHC-13 | SSV14005    | 40                | 7,2 | 44 | 56 | 23   | 61 | 32                    | 30                   | 5                           | 17                |

**Note:** 1) Allen screw

Every 4<sup>th</sup> car is equipped  
**with a SANHUA**  
 expansion valve



**YEARLY SANHUA SUPPLIES OVER 40 MILLION THERMOSTATIC AND ELECTRONIC EXPANSION VALVES TO THE HVAC & AUTOMOTIVE INDUSTRIES WORLDWIDE**

**ADVANCED**  
 Technology & Solutions

- ✓ Improves HVAC&R system efficiency up to **20%**
- ✓ DPF&VPF series from 2kW to 1400 kW  
\*75kW and 1400kW available in Quarter 4
- ✓ Advanced MSS (Minimum Stable Superheat) control logic



2 kW



1400kW

# Charge Valve

Charge valves are mainly installed in air conditioning and refrigeration systems. They are used as service valve for circuit evacuation to vacuum and for refrigerant injection.



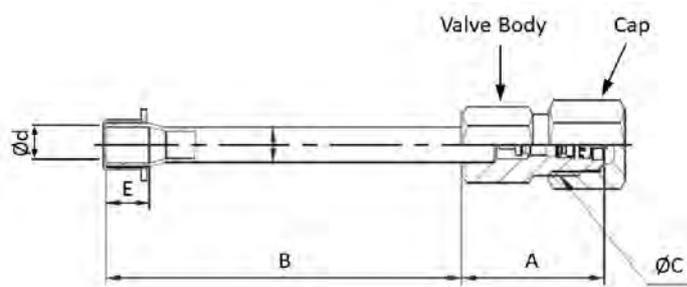
## FEATURES

- SIMPLE STRUCTURE, CONVENIENT TO USE
- PREVENT REFRIGERANT LOSS THROUGH INTEGRATED SHRADER VALVE

## GENERAL SPECIFICATION

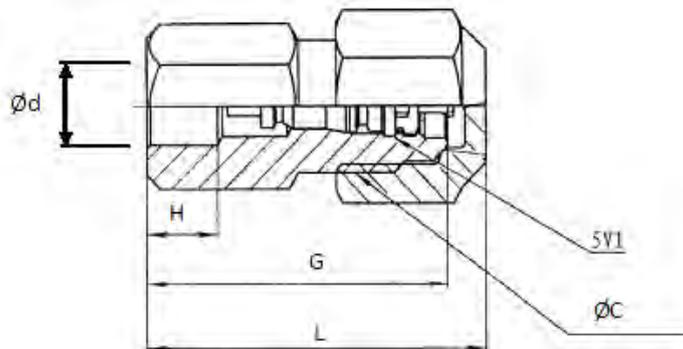
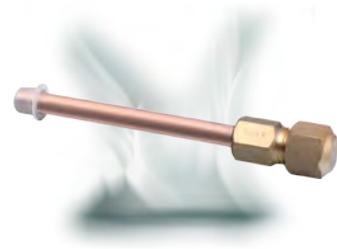
- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Ambient temperature min./max.: -30/+55°C
- Medium temperature TS min./max.: -30°C / +80°C
- Max. operating pressure PS: 4,5 MPa (45 bar)
- Installation position: liquid or suction line
- Declaration according to PED

## DIMENSIONS



| Model       | Part Number <sup>1)</sup> | Connections      |        |                 | Dimensions |    |   | Wrench Size |     | Refrigerant                     |
|-------------|---------------------------|------------------|--------|-----------------|------------|----|---|-------------|-----|---------------------------------|
|             |                           | Solder ODF<br>Ød |        | Flare UNF<br>ØC | A          | B  | E | Valve Body  | Cap |                                 |
|             |                           | [mm]             | [inch] | [inch]          | [mm]       |    |   | [mm]        |     |                                 |
| TCJ-2HMSZ-1 | TCJ-14001                 | 6,35             | 1/4    | 7/16-20         | 26         | 65 | 8 | 12          | 14  | R22                             |
| TCJ-2GMS-1  | TCJ-14002                 | 6,35             | 1/4    | 1/2-20          | 26         | 65 | 8 | 14          | 17  | R134a/R404A/R407C<br>R410A/R507 |

**Note:** 1) Extent of delivery: valve body, schrader valve and cap



| Model       | Part Number <sup>1)</sup> | Connections                   |        |                              | Dimensions |    |   | Wrench Size |     | Refrigerant                     |
|-------------|---------------------------|-------------------------------|--------|------------------------------|------------|----|---|-------------|-----|---------------------------------|
|             |                           | Solder ODF<br>$\varnothing d$ |        | Flare UNF<br>$\varnothing C$ | L          | G  | H | Valve Body  | Cap |                                 |
|             |                           | [mm]                          | [inch] | [inch]                       | [mm]       |    |   | [mm]        |     |                                 |
| TCJ-2HLEN-1 | TCJ-14003                 | 6,35                          | 1/4    | 7/16-20                      | 29         | 26 | 6 | 12          | 14  | R22                             |
| TCJ-2GLEN-2 | TCJ-14004                 | 6,35                          | 1/4    | 1/2-20                       | 29         | 26 | 6 | 14          | 17  | R134a/R404A/R407C<br>R410A/R507 |

**Note:** 1) Extent of delivery: valve body, schrader valve and cap

**SANHUA is the world's largest  
producer of  
Micro-Channel Heat Exchangers**  
for Stationary HVAC&R application



**SANHUA DELIVERS OVER 1,300,000 MCH  
CONDENSERS (CO & HP) AND  
EVAPORATORS HELPING TO IMPROVE  
SYSTEM EFFICIENCY BY UP TO 30%**

**ADVANCED**  
Technology & Solutions

- ✓ Improves efficiency by **30%**
- ✓ Refrigerant Charge Reduction by **30%** Environmental Friendly
- ✓ MCH is lighter in weight, smaller in volume Compact Design



# Uni-Flow Filter Driers

The filter driers of series DTG are used in refrigeration system with unidirectional flow to absorb moisture and acid in the system and to filter out the impurities.



## FEATURES

- HIGH EFFICIENT IN MOISTURE ABSORPTION, FILTERING IMPURITY, ACID, PAINT REMAINS AND MUD REMOVAL
- HYBRID DESICCANT
- DURABLE AND SOLID FILTER CORES
- FILTERING FINENESS: 20µm
- CORROSION RESISTANT PAINTING SURVIVES SALT SPRAY TEST OF 500 HOURS
- CONNECTION TYPE: FLARE OR SOLDER

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Ambient temperature min./max.: -30°C / +55°C
- Medium temperature TS min./max.: -30°C / +120°C
- Max. operating pressure PS max.: 4,83 MPa (48,3 bar) - 700 PSI
- Installation position:
  - Flow direction corresponds to the arrow
  - Preferably installed in liquid line
- Certifications: UL/CSA and PED declaration

## TECHNICAL PARAMETERS *Desiccant Selection Table*

|                          | Medium Type              | 80% 3Å desiccant and 20% active alumina | 100% 3Å desiccant |
|--------------------------|--------------------------|---|-------------------|
| Refrigerant <sup>1</sup> | HFC                      | Applicable                              | Applicable        |
|                          | HCFC                     | Applicable                              | Applicable        |
|                          | CFC                      | Applicable                              | Not Applicable    |
| Oil <sup>2</sup>         | Mineral oil or AB        | Applicable                              | Applicable        |
|                          | Pure POE or PAG          | Applicable                              | Applicable        |
|                          | POE or PAG with additive | Not Applicable                          | Applicable        |

**Note:** 1) For CFC system, usage of core with alumina is recommended as a strong capability to absorb acid may be needed  
2) When the systems use oil with additive, it is not recommended to use a core with alumina.

# DTG/L SERIES

## Uni-Flow Filter Driers



### Model Designation Legend

|          |   |  |   |
|----------|---|--|---|
| <b>1</b> | <b>Product Code</b>                                 | <b>Filter Drier Series</b>                           |   |
|          | DTG   | Indicates unidirectional filter drier                |   |
| <b>2</b> | <b>Filter Core</b>                                  | <b>Structure and Material</b>                        |   |
|          | A   | Loos core, 100%3Å desiccant                          |   |
|          | B   | Solid core, 100%3Å desiccant                         |   |
|          | E   | Loos core, 80% 3Å desiccant and 20% active alumina   |   |
|          | F   | Solid core, 80% 3Å desiccant and 20% active alumina  |   |
| <b>3</b> | <b>Internal Volume</b>                              | <b>Expressed in [ inch<sup>3</sup> ]</b>             | <b>Expressed in [ cm<sup>3</sup> ]</b>    |
|          | 03  | 3  | 49  |
|          | 05  | 5  | 82  |
|          | 08  | 8  | 131                                       |
|          | 16  | 16   | 262                                       |
|          | 30  | 30   | 492                                       |
|          | 41  | 41   | 672                                       |
|          | 75  | 75   | 1229                                      |
| <b>4</b> | <b>Connection Size</b>                              | <b>Pos. 5 shows "0": Solder [inch]</b>               | <b>Pos. 5 shows "4": SAE Flare [inch]</b> |
|          | 02  | 1/4  | 1/4                                       |
|          | 25  | 5/16   | -   |
|          | 03  | 3/8  | 3/8                                       |
|          | 04  | 1/2  | 1/2                                       |
|          | 05  | 5/8  | 5/8                                       |
|          | 06  | 3/4  | 3/4                                       |
|          | 07  | 7/8  | 7/8                                       |
|          | 09  | 1 1/8  | -   |
|          | <b>Connection Size</b>                              | <b>Pos. 5 shows "1": Solder [mm]</b>                 |   |
|          | 06  | 6  |   |
|          | (08) *  | (5/16" version can be used e.g. DTG-B03 <b>250</b> ) |   |
|          | 10  | 10   |   |
|          | 12  | 12   |   |
| 16       | 16  |  |   |
| (22) *   | (7/8" version can be used e.g. DTG-B16 <b>070</b> ) |  |   |
| 28       | 28  |  |   |
| <b>5</b> | <b>Pipe Connection</b>                              | <b>Type</b>  |   |
|          | 0   | Solder with inch connections                         |   |
|          | 1 *   | Solder with metric connections                       |   |
|          | 4   | SAE flare connections                                |   |
| <b>6</b> | <b>Version Number</b>                               | <b>Description</b>                                   |   |
|          | 901   | Standard product                                     |   |

**Note:** \* Solder connections which fit to metric and inch are marked with inch product codes e.g. 8 and 22mm



**MODEL DESIGNATION EXAMPLE**

| Position Number |          |           |           |          |            | According to Model Designation Legend    |
|-----------------|----------|-----------|-----------|----------|------------|--|
| 1               | 2        | 3         | 4         | 5        | 6          |  |
| <b>DTG</b>      | B        | 03        | 06        | 1        | 901        | Unidirectional filter drier              |
| DTG             | <b>B</b> | 03        | 06        | 1        | 901        | Solid filter core with 100% 3Å desiccant |
| DTG             | B        | <b>03</b> | 06        | 1        | 901        | 3 inch <sup>3</sup> internal volume      |
| DTG             | B        | 03        | <b>06</b> | 1        | 901        | When Pos. 5 is "1": connection size 6mm  |
| DTG             | B        | 03        | 06        | <b>1</b> | 901        | Solder connection metric                 |
| DTG             | B        | 03        | 06        | 1        | <b>901</b> | Standard product                         |

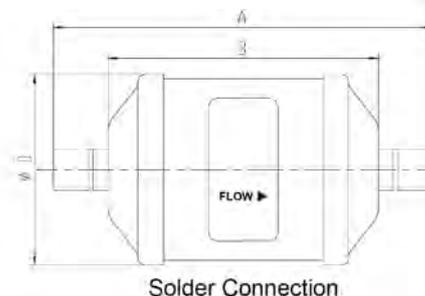
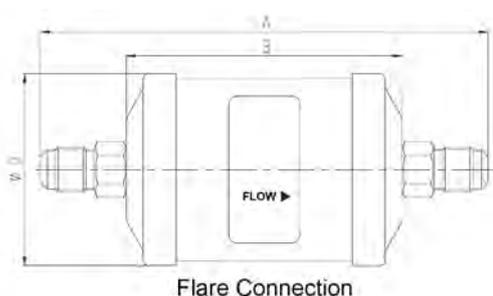
**GENERAL CHARACTERISTICS OF DTG-B FILTER - FLARE CONNECTION**

| Model           | Part Number | Type of Connection | Nominal Volume | Connection | Dimensions & Weight <sup>1)</sup> |      |       |        | PED Category |
|-----------------|-------------|--------------------|----------------|------------|-----------------------------------|------|-------|--------|--------------|
|                 |             |                    |                | SAE Flare  | ØD                                | B    | A     | Weight |              |
|                 |             |                    |                | [inch]     | [mm]                              | [mm] | [mm]  | [g]    |              |
| DTG-B03 024-901 | DTG-30001   | flare              | 49             | 1/4        | 45                                | 65   | 112,0 | 160    | 3,3          |
| DTG-B03 034-901 | DTG-30002   | flare              | 49             | 3/8        | 45                                | 65   | 125,2 | 160    | 3,3          |
| DTG-B03 044-901 | DTG-30153   | flare              | 49             | 1/2        | 45                                | 65   | 133,2 | 160    | 3,3          |
| DTG-B05 024-901 | DTG-30003   | flare              | 82             | 1/4        | 68                                | 76   | 123,0 | 450    | 3,3          |
| DTG-B05 034-901 | DTG-30004   | flare              | 82             | 3/8        | 68                                | 76   | 136,2 | 450    | 3,3          |
| DTG-B08 024-901 | DTG-30005   | flare              | 131            | 1/4        | 68                                | 98   | 145,0 | 550    | 3,3          |
| DTG-B08 034-901 | DTG-30006   | flare              | 131            | 3/8        | 68                                | 98   | 158,2 | 550    | 3,3          |
| DTG-B08 044-901 | DTG-30007   | flare              | 131            | 1/2        | 68                                | 98   | 166,2 | 550    | 3,3          |
| DTG-B16 024-901 | DTG-30008   | flare              | 262            | 1/4        | 68                                | 118  | 165,0 | 660    | 3,3          |
| DTG-B16 034-901 | DTG-30009   | flare              | 262            | 3/8        | 68                                | 118  | 178,2 | 660    | 3,3          |
| DTG-B16 044-901 | DTG-30010   | flare              | 262            | 1/2        | 68                                | 118  | 186,2 | 660    | 3,3          |
| DTG-B16 054-901 | DTG-30011   | flare              | 262            | 5/8        | 68                                | 118  | 195,4 | 660    | 3,3          |
| DTG-B16 064-901 | DTG-30012   | flare              | 262            | 3/4        | 68                                | 118  | 195,4 | 660    | 3,3          |
| DTG-B30 034-901 | DTG-30013   | flare              | 492            | 3/8        | 80                                | 193  | 253,2 | 1550   | 3,3          |
| DTG-B30 044-901 | DTG-30014   | flare              | 492            | 1/2        | 80                                | 193  | 261,2 | 1550   | 3,3          |
| DTG-B30 054-901 | DTG-30015   | flare              | 492            | 5/8        | 80                                | 193  | 270,4 | 1550   | 3,3          |
| DTG-B30 064-901 | DTG-30016   | flare              | 492            | 3/4        | 80                                | 193  | 270,4 | 1550   | 3,3          |
| DTG-B30 074-901 | DTG-30017   | flare              | 492            | 7/8        | 80                                | 193  | 283,0 | 1550   | 3,3          |
| DTG-B41 044-901 | DTG-30018   | flare              | 672            | 1/2        | 94                                | 194  | 262,2 | 2050   | 3,3          |
| DTG-B41 054-901 | DTG-30019   | flare              | 672            | 5/8        | 94                                | 194  | 271,4 | 2050   | 3,3          |

**Note:** 1) Dimensions are rounded up to integral mm

# DTG/L SERIES

## Uni-Flow Filter Driers



### GENERAL CHARACTERISTICS OF DTG-B FILTER - SOLDER CONNECTION

| Model<br>[inch] | Part Number<br>[inch] | Model<br>[mm]   | Part<br>Number<br>[mm] | Type of<br>connection | Nominal<br>Volumen<br>[cm <sup>3</sup> ] | Connection |      | Dimensions & Weight <sup>1)</sup> |           |           |               | PED<br>category |
|-----------------|-----------------------|-----------------|------------------------|-----------------------|--|------------|------|-----------------------------------|-----------|-----------|---------------|-----------------|
|                 |                       |                 |                        |                       |  | Solder     |      | ØD<br>[mm]                        | B<br>[mm] | A<br>[mm] | Weight<br>[g] |                 |
|                 |                       |                 |                        |                       |  | [inch]     | [mm] |                                   |           |           |               |                 |
| DTG-B03 020-901 | DTG-30020             | DTG-B03 061-901 | DTG-30053              | solder                | 49                                       | 1/4        | 6    | 45                                | 65        | 103       | 160           | 3,3             |
| DTG-B03 250-901 | DTG-30021             | DTG-B03 250-901 | DTG-30021              | solder                | 49                                       | 5/16       | 8    | 45                                | 65        | 103       | 160           | 3,3             |
| DTG-B03 030-901 | DTG-30022             | DTG-B03 101-901 | DTG-30055              | solder                | 49                                       | 3/8        | 10   | 45                                | 65        | 103       | 160           | 3,3             |
| DTG-B03 040-901 | DTG-30023             | DTG-B03 121-901 | DTG-30056              | solder                | 49                                       | 1/2        | 12   | 45                                | 65        | 113       | 160           | 3,3             |
| DTG-B05 020-901 | DTG-30024             | DTG-B05 061-901 | DTG-30057              | solder                | 82                                       | 1/4        | 6    | 69                                | 76        | 114       | 450           | 3,3             |
| DTG-B05 250-901 | DTG-30025             | DTG-B05 250-901 | DTG-30025              | solder                | 82                                       | 5/16       | 8    | 69                                | 76        | 114       | 450           | 3,3             |
| DTG-B05 030-901 | DTG-30026             | DTG-B05 101-901 | DTG-30059              | solder                | 82                                       | 3/8        | 10   | 69                                | 76        | 114       | 450           | 3,3             |
| DTG-B05 040-901 | DTG-30027             | DTG-B05 121-901 | DTG-30060              | solder                | 82                                       | 1/2        | 12   | 69                                | 76        | 124       | 450           | 3,3             |
| DTG-B05 050-901 | DTG-30028             | DTG-B05 161-901 | DTG-30054              | solder                | 82                                       | 5/8        | 16   | 69                                | 76        | 124       | 450           | 3,3             |
| DTG-B08 020-901 | DTG-30029             | DTG-B08 061-901 | DTG-30061              | solder                | 131                                      | 1/4        | 6    | 69                                | 98        | 136       | 550           | 3,3             |
| DTG-B08 250-901 | DTG-30030             | DTG-B08 250-901 | DTG-30030              | solder                | 131                                      | 5/16       | 8    | 69                                | 98        | 136       | 550           | 3,3             |
| DTG-B08 030-901 | DTG-30031             | DTG-B08 101-901 | DTG-30063              | solder                | 131                                      | 3/8        | 10   | 69                                | 98        | 136       | 550           | 3,3             |
| DTG-B08 040-901 | DTG-30032             | DTG-B08 121-901 | DTG-30064              | solder                | 131                                      | 1/2        | 12   | 69                                | 98        | 146       | 550           | 3,3             |
| DTG-B08 050-901 | DTG-30033             | DTG-B08 161-901 | DTG-30062              | solder                | 131                                      | 5/8        | 16   | 69                                | 98        | 146       | 550           | 3,3             |
| DTG-B16 020-901 | DTG-30034             | DTG-B16 061-901 | DTG-30065              | solder                | 262                                      | 1/4        | 6    | 69                                | 118       | 156       | 660           | 3,3             |
| DTG-B16 250-901 | DTG-30035             | DTG-B16 250-901 | DTG-30035              | solder                | 262                                      | 5/16       | 8    | 69                                | 118       | 156       | 660           | 3,3             |
| DTG-B16 030-901 | DTG-30036             | DTG-B16 101-901 | DTG-30067              | solder                | 262                                      | 3/8        | 10   | 69                                | 118       | 156       | 660           | 3,3             |
| DTG-B16 040-901 | DTG-30037             | DTG-B16 121-901 | DTG-30068              | solder                | 262                                      | 1/2        | 12   | 69                                | 118       | 166       | 660           | 3,3             |
| DTG-B16 050-901 | DTG-30038             | DTG-B16 161-901 | DTG-30066              | solder                | 262                                      | 5/8        | 16   | 69                                | 118       | 166       | 660           | 3,3             |
| DTG-B16 060-901 | DTG-30039             | -               | -                      | solder                | 262                                      | 3/4        | -    | 69                                | 118       | 178       | 660           | 3,3             |
| DTG-B16 070-901 | DTG-30040             | DTG-B16 070-901 | DTG-30040              | solder                | 262                                      | 7/8        | 22   | 69                                | 118       | 178       | 660           | 3,3             |
| DTG-B30 030-901 | DTG-30041             | DTG-B30 101-901 | DTG-30069              | solder                | 492                                      | 3/8        | 10   | 81                                | 193       | 231       | 1550          | 3,3             |
| DTG-B30 040-901 | DTG-30042             | DTG-B30 121-901 | DTG-30070              | solder                | 492                                      | 1/2        | 12   | 81                                | 193       | 241       | 1550          | 3,3             |
| DTG-B30 050-901 | DTG-30043             | DTG-B30 161-901 | DTG-30075              | solder                | 492                                      | 5/8        | 16   | 81                                | 193       | 241       | 1550          | 3,3             |
| DTG-B30 060-901 | DTG-30044             | -               | -                      | solder                | 492                                      | 3/4        | -    | 81                                | 193       | 253       | 1550          | 3,3             |



**GENERAL CHARACTERISTICS OF DTG-B FILTER - SOLDER CONNECTION**

| Model<br>[inch] | Part Number<br>[inch] | Model<br>[mm]   | Part Number<br>[mm] | Type of connection | Nominal Volume | Connection         |        | Dimensions & Weight <sup>1)</sup> |      |      |        | PED category |
|-----------------|-----------------------|-----------------|---------------------|--------------------|----------------|--------------------|--------|-----------------------------------|------|------|--------|--------------|
|                 |                       |                 |                     |                    |                | Solder             |        | ØD                                | B    | A    | Weight |              |
|                 |                       |                 |                     |                    |                | [cm <sup>3</sup> ] | [inch] | [mm]                              | [mm] | [mm] | [mm]   |              |
| DTG-B30 070-901 | DTG-30045             | DTG-B30 070-901 | DTG-30045           | solder             | 492            | 7/8                | 22     | 81                                | 193  | 253  | 1550   | 3,3          |
| DTG-B30 090-901 | DTG-30046             | DTG-B30 281-901 | DTG-30071           | solder             | 492            | 1 1/8              | 28     | 81                                | 193  | 263  | 1550   | 3,3          |
| DTG-B41 040-901 | DTG-30047             | DTG-B41 121-901 | DTG-30072           | solder             | 672            | 1/2                | 12     | 94                                | 194  | 242  | 2050   | 3,3          |
| DTG-B41 050-901 | DTG-30048             | DTG-B41 161-901 | DTG-30058           | solder             | 672            | 5/8                | 16     | 94                                | 194  | 242  | 2050   | 3,3          |
| DTG-B41 070-901 | DTG-30049             | DTG-B41 070-901 | DTG-30049           | solder             | 672            | 7/8                | 22     | 94                                | 194  | 254  | 2050   | 3,3          |
| DTG-B41 090-901 | DTG-30050             | DTG-B41 281-901 | DTG-30073           | solder             | 672            | 1 1/8              | 28     | 94                                | 194  | 264  | 2050   | 3,3          |
| DTG-B75 070-901 | DTG-30051             | DTG-B75 070-901 | DTG-30051           | solder             | 1229           | 7/8                | 22     | 94                                | 333  | 393  | 3400   | 3,3          |
| DTG-B75 090-901 | DTG-30052             | DTG-B75 281-901 | DTG-30074           | solder             | 1229           | 1 1/8              | 28     | 94                                | 333  | 403  | 3400   | 3,3          |

**Note:** 1) Dimensions are rounded up to integral mm

**GENERAL CHARACTERISTICS OF DTG-F FILTER - FLARE CONNECTION**

| Model <sup>1)</sup> | Part Number | Type of Connection | Nominal Volume | Connection         | Dimensions & Weight <sup>2)</sup> |      |       |        | PED Category |
|---------------------|-------------|--------------------|----------------|--------------------|-----------------------------------|------|-------|--------|--------------|
|                     |             |                    |                | SAE Flare          | ØD                                | B    | A     | Weight |              |
|                     |             |                    |                | [cm <sup>3</sup> ] | [inch]                            | [mm] | [mm]  | [mm]   |              |
| DTG-F03 024-901     | DTG-30078   | flare              | 49             | 1/4                | 45                                | 65   | 112,0 | 160    | 3,3          |
| DTG-F03 034-901     | DTG-30079   | flare              | 49             | 3/8                | 45                                | 65   | 125,2 | 160    | 3,3          |
| DTG-F03 044-901     | DTG-30154   | flare              | 49             | 1/2                | 45                                | 65   | 133,2 | 160    | 3,3          |
| DTG-F05 024-901     | DTG-30080   | flare              | 82             | 1/4                | 69                                | 76   | 123,0 | 450    | 3,3          |
| DTG-F05 034-901     | DTG-30081   | flare              | 82             | 3/8                | 69                                | 76   | 136,2 | 450    | 3,3          |
| DTG-F08 024-901     | DTG-30082   | flare              | 131            | 1/4                | 69                                | 98   | 145,0 | 550    | 3,3          |
| DTG-F08 034-901     | DTG-30083   | flare              | 131            | 3/8                | 69                                | 98   | 158,2 | 550    | 3,3          |
| DTG-F08 044-901     | DTG-30084   | flare              | 131            | 1/2                | 69                                | 98   | 166,2 | 550    | 3,3          |
| DTG-F16 024-901     | DTG-30085   | flare              | 262            | 1/4                | 69                                | 118  | 165,0 | 660    | 3,3          |
| DTG-F16 034-901     | DTG-30086   | flare              | 262            | 3/8                | 69                                | 118  | 178,2 | 660    | 3,3          |
| DTG-F16 044-901     | DTG-30087   | flare              | 262            | 1/2                | 69                                | 118  | 186,2 | 660    | 3,3          |
| DTG-F16 054-901     | DTG-30088   | flare              | 262            | 5/8                | 69                                | 118  | 195,4 | 660    | 3,3          |
| DTG-F16 064-901     | DTG-30089   | flare              | 262            | 3/4                | 69                                | 118  | 195,4 | 660    | 3,3          |
| DTG-F30 034-901     | DTG-30090   | flare              | 492            | 3/8                | 81                                | 193  | 253,2 | 1550   | 3,3          |

**Note:** 1) Delivery time on request  
2) Dimensions are rounded up to integral mm



**GENERAL CHARACTERISTICS OF DTG-F FILTER - FLARE CONNECTION**

| Model <sup>1)</sup> | Part Number | Type of Connection | Nominal Volume | Connection         |        | Dimensions & Weight <sup>2)</sup> |       |        |     | PED Category |
|---------------------|-------------|--------------------|----------------|--------------------|--------|-----------------------------------|-------|--------|-----|--------------|
|                     |             |                    |                | SAE Flare          | ØD     | B                                 | A     | Weight |     |              |
|                     |             |                    |                | [cm <sup>3</sup> ] | [inch] | [mm]                              | [mm]  | [mm]   | [g] |              |
| DTG-F30 044-901     | DTG-30091   | flare              | 492            | 1/2                | 81     | 193                               | 261,2 | 1550   | 3,3 |              |
| DTG-F30 054-901     | DTG-30092   | flare              | 492            | 5/8                | 81     | 193                               | 270,4 | 1550   | 3,3 |              |
| DTG-F30 064-901     | DTG-30093   | flare              | 492            | 3/4                | 81     | 193                               | 270,4 | 1550   | 3,3 |              |
| DTG-F30 074-901     | DTG-30094   | flare              | 492            | 7/8                | 81     | 193                               | 283,0 | 1550   | 3,3 |              |
| DTG-F41 044-901     | DTG-30095   | flare              | 672            | 1/2                | 94     | 194                               | 262,2 | 2050   | 3,3 |              |
| DTG-F41 054-901     | DTG-30096   | flare              | 672            | 5/8                | 94     | 194                               | 271,4 | 2050   | 3,3 |              |

**Note:** 1) Delivery time on request  
2) Dimensions are rounded up to integral mm

**GENERAL CHARACTERISTICS OF DTG-F FILTER - SOLDER CONNECTION**

| Model <sup>1)</sup><br>[inch] | Part Number<br>[inch] | Model <sup>1)</sup><br>[mm] | Part Number<br>[mm] | Type of connection | Nominal Volume | Connection         |        | Dimensions & Weight <sup>2)</sup> |      |      |        | PED category |
|-------------------------------|-----------------------|-----------------------------|---------------------|--------------------|----------------|--------------------|--------|-----------------------------------|------|------|--------|--------------|
|                               |                       |                             |                     |                    |                | Solder             |        | ØD                                | B    | A    | Weight |              |
|                               |                       |                             |                     |                    |                | [cm <sup>3</sup> ] | [inch] | [mm]                              | [mm] | [mm] | [mm]   |              |
| DTG-F03 020-901               | DTG-30097             | DTG-F03 061-901             | DTG-30130           | solder             | 49             | 1/4                | 6      | 45                                | 65   | 103  | 160    | 3,3          |
| DTG-F03 250-901               | DTG-30098             | DTG-F03 250-901             | DTG-30098           | solder             | 49             | 5/16               | 8      | 45                                | 65   | 103  | 160    | 3,3          |
| DTG-F03 030-901               | DTG-30099             | DTG-F03 101-901             | DTG-30131           | solder             | 49             | 3/8                | 10     | 45                                | 65   | 103  | 160    | 3,3          |
| DTG-F03 040-901               | DTG-30100             | DTG-F03 121-901             | DTG-30132           | solder             | 49             | 1/2                | 12     | 45                                | 65   | 113  | 160    | 3,3          |
| DTG-F05 020-901               | DTG-30101             | DTG-F05 061-901             | DTG-30133           | solder             | 82             | 1/4                | 6      | 69                                | 76   | 114  | 450    | 3,3          |
| DTG-F05 250-901               | DTG-30102             | DTG-F05 250-901             | DTG-30102           | solder             | 82             | 5/16               | 8      | 69                                | 76   | 114  | 450    | 3,3          |
| DTG-F05 030-901               | DTG-30103             | DTG-F05 101-901             | DTG-30134           | solder             | 82             | 3/8                | 10     | 69                                | 76   | 114  | 450    | 3,3          |
| DTG-F05 040-901               | DTG-30104             | DTG-F051 21-901             | DTG-30135           | solder             | 82             | 1/2                | 12     | 69                                | 76   | 124  | 450    | 3,3          |
| DTG-F05 050-901               | DTG-30105             | DTG-F05 1 61-901            | DTG-30136           | solder             | 82             | 5/8                | 16     | 69                                | 76   | 124  | 450    | 3,3          |
| DTG-F08 020-901               | DTG-30106             | DTG-F08 061-901             | DTG-30137           | solder             | 131            | 1/4                | 6      | 69                                | 98   | 136  | 550    | 3,3          |
| DTG-F08 250-901               | DTG-30107             | DTG-F08 250-901             | DTG-30107           | solder             | 131            | 5/16               | 8      | 69                                | 98   | 136  | 550    | 3,3          |
| DTG-F08 030-901               | DTG-30108             | DTG-F08 101-901             | DTG-30138           | solder             | 131            | 3/8                | 10     | 69                                | 98   | 136  | 550    | 3,3          |
| DTG-F08 040-901               | DTG-30109             | DTG-F08 121-901             | DTG-30139           | solder             | 131            | 1/2                | 12     | 69                                | 98   | 146  | 550    | 3,3          |
| DTG-F08 050-901               | DTG-30110             | DTG-F08 161-901             | DTG-30140           | solder             | 131            | 5/8                | 16     | 69                                | 98   | 146  | 550    | 3,3          |
| DTG-F16 020-901               | DTG-30111             | DTG-F16 061-901             | DTG-30141           | solder             | 262            | 1/4                | 6      | 69                                | 118  | 156  | 660    | 3,3          |



**GENERAL CHARACTERISTICS OF DTG-F FILTER - SOLDER CONNECTION**

| Model <sup>1)</sup><br>[inch] | Part Number<br>[inch] | Model <sup>1)</sup><br>[mm] | Part Number<br>[mm] | Type of connection | Nominal Volume<br>[cm <sup>3</sup> ] | Connection |      | Dimensions & Weight <sup>2)</sup> |      |      |        | PED category |
|-------------------------------|-----------------------|-----------------------------|---------------------|--------------------|--------------------------------------|------------|------|-----------------------------------|------|------|--------|--------------|
|                               |                       |                             |                     |                    |                                      | Solder     |      | ØD                                | B    | A    | Weight |              |
|                               |                       |                             |                     |                    |                                      | [inch]     | [mm] | [mm]                              | [mm] | [mm] | [g]    |              |
| DTG-F16 250-901               | DTG-30112             | DTG-F16 250-901             | DTG-30112           | solder             | 262                                  | 5/16       | 8    | 69                                | 118  | 156  | 660    | 3,3          |
| DTG-F16 030-901               | DTG-30113             | DTG-F16 101-901             | DTG-30142           | solder             | 262                                  | 3/8        | 10   | 69                                | 118  | 156  | 660    | 3,3          |
| DTG-F16 040-901               | DTG-30114             | DTG-F16 121-901             | DTG-30143           | solder             | 262                                  | 1/2        | 12   | 69                                | 118  | 166  | 660    | 3,3          |
| DTG-F16 050-901               | DTG-30115             | DTG-F16 161-901             | DTG-30144           | solder             | 262                                  | 5/8        | 16   | 69                                | 118  | 166  | 660    | 3,3          |
| DTG-F16 060-901               | DTG-30116             | -                           | -                   | solder             | 262                                  | 3/4        | -    | 69                                | 118  | 178  | 660    | 3,3          |
| DTG-F16 070-901               | DTG-30117             | DTG-F16 070-901             | DTG-30117           | solder             | 262                                  | 7/8        | 22   | 69                                | 118  | 178  | 660    | 3,3          |
| DTG-F30 030-901               | DTG-30118             | DTG-F30 101-901             | DTG-30145           | solder             | 492                                  | 3/8        | 10   | 81                                | 193  | 231  | 1550   | 3,3          |
| DTG-F30 040-901               | DTG-30119             | DTG-F30 121-901             | DTG-30146           | solder             | 492                                  | 1/2        | 12   | 81                                | 193  | 241  | 1550   | 3,3          |
| DTG-F30 050-901               | DTG-30120             | DTG-F30 161-901             | DTG-30147           | solder             | 492                                  | 5/8        | 16   | 81                                | 193  | 241  | 1550   | 3,3          |
| DTG-F30 060-901               | DTG-30121             | -                           | -                   | solder             | 492                                  | 3/4        | -    | 81                                | 193  | 253  | 1550   | 3,3          |
| DTG-F30 070-901               | DTG-30122             | DTG-F30 070-901             | DTG-30122           | solder             | 492                                  | 7/8        | 22   | 81                                | 193  | 253  | 1550   | 3,3          |
| DTG-F30 090-901               | DTG-30123             | DTG-F30 281-901             | DTG-30148           | solder             | 492                                  | 1 1/8      | 28   | 81                                | 193  | 263  | 1550   | 3,3          |
| DTG-F41 040-901               | DTG-30124             | DTG-F41 121-901             | DTG-30149           | solder             | 672                                  | 1/2        | 12   | 94                                | 194  | 242  | 2050   | 3,3          |
| DTG-F41 050-901               | DTG-30125             | DTG-F41 161-901             | DTG-30150           | solder             | 672                                  | 5/8        | 16   | 94                                | 194  | 242  | 2050   | 3,3          |
| DTG-F41 070-901               | DTG-30126             | DTG-F41 070-901             | DTG-30126           | solder             | 672                                  | 7/8        | 22   | 94                                | 194  | 254  | 2050   | 3,3          |
| DTG-F41 090-901               | DTG-30127             | DTG-F41 281-901             | DTG-30151           | solder             | 672                                  | 1 1/8      | 28   | 94                                | 194  | 264  | 2050   | 3,3          |
| DTG-F75 070-901               | DTG-30128             | DTG-F75 070-901             | DTG-30128           | solder             | 1229                                 | 7/8        | 22   | 94                                | 333  | 393  | 3400   | 3,3          |
| DTG-F75 090-901               | DTG-30129             | DTG-F75 281-901             | DTG-30152           | solder             | 1229                                 | 1 1/8      | 28   | 94                                | 333  | 403  | 3400   | 3,3          |

**Note:** 1) Delivery time on request  
2) Dimensions are rounded up to integral mm

**SELECTION TABLE**

| Model           | Capacity [ kW ] |       |      |       |       | Moisture Absorption (gram H <sub>2</sub> O) |        |        |        |        |        |      |       |
|-----------------|-----------------|-------|------|-------|-------|---|--------|--------|--------|--------|--------|------|-------|
|                 | R134a           | R404A | R22  | R407C | R410A | R134a                                       |        | R404A  |        | R407C  |        | R22  |       |
|                 |                 | R507A |      |       |       | 75°F  | 125°F  | R507A  |        | R410A  |        | 75°F | 125°F |
|                 |                 |       |      |       |       | 23,9°C                                      | 51,7°C | 23,9°C | 51,7°C | 23,9°C | 51,7°C |      |       |
| DTG-B03 020-901 | 7,7             | 6,7   | 8,1  | 8,1   | 8,1   | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7  | 3,4   |
| DTG-B03 024-901 | 7,7             | 6,7   | 8,1  | 8,1   | 8,1   | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7  | 3,4   |
| DTG-B03 250-901 | 9,5             | 6,7   | 9,5  | 9,5   | 9,8   | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7  | 3,4   |
| DTG-B03 030-901 | 14,4            | 10,6  | 14,8 | 14,8  | 14,8  | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7  | 3,4   |
| DTG-B03 034-901 | 14,4            | 10,6  | 14,8 | 14,8  | 14,8  | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7  | 3,4   |

# DTG/L SERIES

## Uni-Flow Filter Driers



### SELECTION TABLE

| Model           | Capacity [ kW ] |       |      |       |       | Moisture Absorption (gram H <sub>2</sub> O) |        |        |        |        |        |        |        |
|-----------------|-----------------|-------|------|-------|-------|---|--------|--------|--------|--------|--------|--------|--------|
|                 | R134a           | R404A | R22  | R407C | R410A | R134a                                       |        | R404A  |        | R407C  |        | R22    |        |
|                 |                 | R507A |      |       |       | 75°F  | 125°F  | 75°F   | 125°F  | 75°F   | 125°F  | 75°F   | 125°F  |
|                 |                 |       |      |       |       | 23,9°C                                      | 51,7°C | 23,9°C | 51,7°C | 23,9°C | 51,7°C | 23,9°C | 51,7°C |
| DTG-B03 040-901 | 24,6            | 17,2  | 25,0 | 24,6  | 25,0  | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7    | 3,4    |
| DTG-B03 044-901 | 24,6            | 17,2  | 25,0 | 24,6  | 25,0  | 4,2   | 3,8    | 5,7    | 3,4    | 3,4    | 3,1    | 3,7    | 3,4    |
| DTG-B05 020-901 | 8,4             | 6,0   | 8,4  | 8,4   | 8,4   | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B05 024-901 | 8,4             | 6,0   | 8,4  | 8,4   | 8,4   | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B05 250-901 | 10,9            | 7,4   | 10,9 | 10,9  | 11,3  | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B05 030-901 | 23,9            | 16,9  | 24,3 | 23,9  | 24,6  | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B05 034-901 | 23,9            | 16,9  | 24,3 | 23,9  | 24,6  | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B05 040-901 | 25,3            | 17,9  | 25,7 | 25,7  | 26,0  | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B05 050-901 | 34,8            | 24,6  | 35,5 | 35,2  | 35,9  | 11,6  | 10,9   | 17,7   | 10,2   | 10,9   | 9,5    | 11,4   | 9,7    |
| DTG-B08 020-901 | 8,4             | 6,0   | 8,4  | 8,4   | 8,4   | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 024-901 | 8,4             | 6,0   | 8,4  | 8,4   | 8,4   | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 250-901 | 11,6            | 8,1   | 12,0 | 11,6  | 12,0  | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 030-901 | 25,0            | 17,6  | 25,3 | 25,0  | 25,7  | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 034-901 | 25,0            | 17,6  | 25,3 | 25,0  | 25,7  | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 040-901 | 30,6            | 21,5  | 31,3 | 30,9  | 31,7  | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 044-901 | 30,6            | 21,5  | 31,3 | 30,9  | 31,7  | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B08 050-901 | 44,7            | 31,7  | 45,7 | 45,4  | 46,1  | 14,8  | 14,2   | 23,7   | 19,8   | 14,8   | 13,0   | 15,5   | 13,1   |
| DTG-B16 020-901 | 10,9            | 7,7   | 11,3 | 10,9  | 11,3  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 024-901 | 10,9            | 7,7   | 11,3 | 10,9  | 11,3  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 250-901 | 11,6            | 8,1   | 12,0 | 11,6  | 12,0  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 030-901 | 25,7            | 17,9  | 26,0 | 26,0  | 26,4  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 034-901 | 25,7            | 17,9  | 26,0 | 26,0  | 26,4  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 040-901 | 32,4            | 22,9  | 33,1 | 32,7  | 33,8  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 044-901 | 32,4            | 22,9  | 33,1 | 32,7  | 33,8  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 050-901 | 43,3            | 30,6  | 43,6 | 43,6  | 44,3  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 054-901 | 43,3            | 30,6  | 43,6 | 43,6  | 44,3  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 060-901 | 46,4            | 32,7  | 47,1 | 46,8  | 47,8  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 064-901 | 46,4            | 32,7  | 47,1 | 46,8  | 47,8  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B16 070-901 | 47,1            | 33,4  | 48,2 | 47,8  | 48,5  | 20,6  | 19,5   | 33,2   | 18,3   | 20,6   | 17,6   | 20,9   | 17,7   |
| DTG-B30 030-901 | 25,7            | 17,9  | 26,0 | 26,0  | 26,4  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 034-901 | 25,7            | 17,9  | 26,0 | 26,0  | 26,4  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 040-901 | 33,1            | 23,2  | 33,8 | 33,4  | 34,1  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 044-901 | 33,1            | 23,2  | 33,8 | 33,4  | 34,1  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 050-901 | 45,7            | 32,0  | 46,4 | 46,1  | 46,8  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 054-901 | 45,7            | 32,0  | 46,4 | 46,1  | 46,8  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 060-901 | 62,6            | 44,0  | 63,7 | 63,3  | 64,4  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 064-901 | 62,6            | 44,0  | 63,7 | 63,3  | 64,4  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 070-901 | 63,0            | 44,3  | 64,0 | 63,7  | 64,7  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |

# DTG/L SERIES

## Uni-Flow Filter Driers



### SELECTION TABLE

| Model           | Capacity [ kW ] |       |      |       |       | Moisture Absorption (gram H <sub>2</sub> O) |        |        |        |        |        |        |        |
|-----------------|-----------------|-------|------|-------|-------|---|--------|--------|--------|--------|--------|--------|--------|
|                 | R134a           | R404A | R22  | R407C | R410A | R134a                                       |        | R404A  |        | R407C  |        | R22    |        |
|                 |                 | R507A |      |       |       | 75°F  | 125°F  | 75°F   | 125°F  | 75°F   | 125°F  | 75°F   | 125°F  |
|                 |                 |       |      |       |       | 23,9°C                                      | 51,7°C | 23,9°C | 51,7°C | 23,9°C | 51,7°C | 23,9°C | 51,7°C |
| DTG-B30 074-901 | 63,0            | 44,3  | 64,0 | 63,7  | 64,7  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B30 090-901 | 70,7            | 52,1  | 75,3 | 74,6  | 76,0  | 51,4  | 48,7   | 83,4   | 51,4   | 51,3   | 43,7   | 52,1   | 44,1   |
| DTG-B41 040-901 | 35,2            | 24,6  | 35,9 | 35,5  | 36,2  | 63,7  | 59,7   | 103,5  | 55,7   | 63,7   | 58,9   | 70,2   | 59,4   |
| DTG-B41 044-901 | 35,2            | 24,6  | 35,9 | 35,5  | 36,2  | 63,7  | 59,7   | 103,5  | 55,7   | 63,7   | 58,9   | 70,2   | 59,4   |
| DTG-B41 050-901 | 60,8            | 42,9  | 61,9 | 61,5  | 62,6  | 63,7  | 59,7   | 103,5  | 55,7   | 63,7   | 58,9   | 70,2   | 59,4   |
| DTG-B41 054-901 | 60,8            | 42,9  | 61,9 | 61,5  | 62,6  | 63,7  | 59,7   | 103,5  | 55,7   | 63,7   | 58,9   | 70,2   | 59,4   |
| DTG-B41 070-901 | 90,4            | 63,7  | 91,8 | 91,4  | 92,8  | 63,7  | 59,7   | 103,5  | 55,7   | 63,7   | 58,9   | 70,2   | 59,4   |
| DTG-B41 090-901 | 92,1            | 64,7  | 93,6 | 92,8  | 94,6  | 63,7  | 59,7   | 103,5  | 55,7   | 63,7   | 58,9   | 70,2   | 59,4   |
| DTG-B75 070-901 | 91,4            | 64,0  | 92,8 | 91,8  | 93,9  | 123,3                                       | 115,6  | 200,3  | 107,9  | 123,3  | 114,0  | 135,8  | 114,9  |
| DTG-B75 090-901 | 95,3            | 67,2  | 97,1 | 96,4  | 98,1  | 123,3                                       | 115,6  | 200,3  | 107,9  | 123,3  | 114,0  | 135,8  | 114,9  |

**Note:** The above data is based on filter driers with inch connections and clean system at ideal conditions; with impurities accumulated in the filter, the capacity may decrease.

### SELECTION FORMULAS

Filter Driers for liquid line are manufactured in compliance with ARI Standard 710. Maximum flow rate of liquid refrigerant at a differential pressure of 0,07bar (1psi) is indicated by kW (ton) which is based on the temperature of liquid refrigerant 30°C (86°F), the evaporating temperature of -15°C (5°F) and the following mass flow:

- 0,40 kg/min/kW (3.1 lb/min/ton) R134a
- 0,53 kg/min/kW (4.1 lb/min/ton) R404A, R507A
- 0,39 kg/min/kW (3.0 lb/min/ton) R22, R407C
- 0,36 kg/min/kW (2.8 lb/min/ton) R410A

**Note:** Data on water absorption is based on the following EPD (method: ASHRAE Standard 63.1):

- 60ppm R22
- 50ppm R134a
- 50ppm R404A
- 50ppm R407C
- 50ppm R410A
- 50ppm R507A

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# Bi-Flow Filter Driers

The filter driers of series STG are used in refrigeration system with bidirectional flow to absorb moisture and acid in the system and to filter out the impurities.



## FEATURES

- HIGH EFFICIENT IN MOISTURE ABSORPTION, FILTERING IMPURITY, ACID, PAINT REMAINS AND MUD REMOVAL
- HYBRID DESICCANT
- DURABLE AND SOLID FILTER CORES
- FILTERING FINENESS: 20µm
- CORROSION RESISTANT PAINTING CAN SURVIVE SALT SPRAY TEST OF 500 HOURS
- CONNECTION TYPE: FLARE OR SOLDER

## GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Ambient temperature min./max.: -30°C / +55°C
- Medium temperature TS min./max.: -30°C / +120°C
- Max. operating pressure PS: 4,83 MPa (48,3 bar)
- Installation position: preferably installed in liquid line
- Certifications: UL/CSA and PED declaration

## TECHNICAL PARAMETERS *Desiccant Selection Table*

|                          | Medium Type              | 80% 3Å Desiccant and 20% Active Alumina | 100% 3Å Desiccant |
|--------------------------|--------------------------|---|-------------------|
| Refrigerant <sup>1</sup> | HFC                      | applicable                              | applicable        |
|                          | HCFC                     | applicable                              | applicable        |
|                          | CFC                      | applicable                              | not applicable    |
| Oil <sup>2</sup>         | Mineral oil or AB        | applicable                              | applicable        |
|                          | Pure POE or PAG          | applicable                              | applicable        |
|                          | POE or PAG with additive | not applicable                          | applicable        |

**Note:** 1) For CFC system, usage of core with alumina is recommended as a strong capability to absorb acid may be needed  
2) When the systems use oil with additive, it is not recommended to use a core with alumina.

# STG SERIES

## Bi-Flow Filter Driers



### Model Designation Legend

|        |   |  |   |
|--------|---|--|---|
| 1      | <b>Product Code</b>                                 | <b>Filter Drier Series</b>                           |   |
|        | STG   | Indicates bidirectional filter drier                 |   |
| 2      | <b>Filter Core</b>                                  | <b>Structure and Material</b>                        |   |
|        | A   | Loos core, 100%3Å desiccant                          |   |
|        | B   | Solid core, 100%3Å desiccant                         |   |
|        | E   | Loos core, 80% 3Å desiccant and 20% active alumina   |   |
|        | F   | Solid core, 80% 3Å desiccant and 20% active alumina  |   |
| 3      | <b>Internal Volume</b>                              | <b>Expressed in [ inch<sup>3</sup> ]</b>             | <b>Expressed in [ cm<sup>3</sup> ]</b>    |
|        | 03  | 3  | 49  |
|        | 05  | 5  | 82  |
|        | 08  | 8  | 131                                       |
|        | 16  | 16   | 262                                       |
|        | 30  | 30   | 492                                       |
| 4      | <b>Connection Size</b>                              | <b>Pos. 5 shows "0": Solder [inch]</b>               | <b>Pos. 5 shows "4": SAE Flare [inch]</b> |
|        | 02  | 1/4  | 1/4                                       |
|        | 25  | 5/16   | -   |
|        | 03  | 3/8  | 3/8                                       |
|        | 04  | 1/2  | 1/2                                       |
|        | 05  | 5/8  | 5/8                                       |
|        | 06  | 3/4  | 3/4                                       |
|        | 07  | 7/8  | 7/8                                       |
|        | 09  | 1 1/8  | -   |
|        | <b>Connection Size</b>                              | <b>Pos. 5 shows "1": Solder [mm]</b>                 |   |
|        | 06  | 6  |   |
|        | (08) *  | (5/16" version can be used e.g. STG-B08 <b>250</b> ) |   |
|        | 10  | 10   |   |
|        | 12  | 12   |   |
| 16     | 16  |  |   |
| (22) * | (7/8" version can be used e.g. STG-B16 <b>070</b> ) |  |   |
| 28     | 28  |  |   |
| 5      | <b>Pipe Connection</b>                              | <b>Type</b>  |   |
|        | 0   | Solder with inch connections                         |   |
|        | 1 *   | Solder with metric connections                       |   |
| 4      | SAE flare connections                               |  |   |
| 6      | <b>Version Number</b>                               | <b>Description</b>                                   |   |
|        | 901   | Standard product                                     |   |

**Note:** \* Solder connections which fit to metric and inch are marked with inch product codes e.g. 8 and 22mm



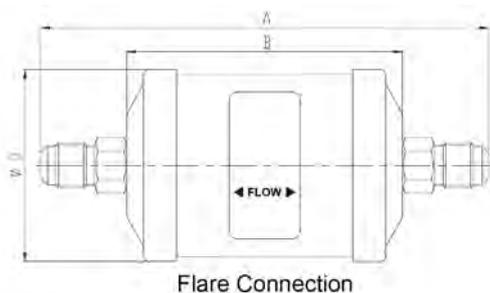
**MODEL DESIGNATION EXAMPLE**

| Position Number |          |           |           |          |            | According to Model Designation Legend    |
|-----------------|----------|-----------|-----------|----------|------------|--|
| 1               | 2        | 3         | 4         | 5        | 6          |  |
| <b>STG</b>      | B        | 05        | 06        | 1        | 901        | Bidirectional filter drier               |
| STG             | <b>B</b> | 05        | 06        | 1        | 901        | Solid filter core with 100% 3Å desiccant |
| STG             | B        | <b>05</b> | 06        | 1        | 901        | 5 inch <sup>3</sup> internal volume      |
| STG             | B        | 05        | <b>06</b> | 1        | 901        | When Pos. 5 is "1": connection size 6mm  |
| STG             | B        | 05        | 06        | <b>1</b> | 901        | Solder connection metric                 |
| STG             | B        | 05        | 06        | 1        | <b>901</b> | Standard product                         |

**GENERAL CHARACTERISTICS OF STG-B FILTER - FLARE CONNECTION**

| Model           | Part Number | Type of Connection | Nominal Volume<br>[cm <sup>3</sup> ] | Connection | Dimensions & Weight <sup>1)</sup> |      |      |        | PED Category |
|-----------------|-------------|--------------------|--------------------------------------|------------|-----------------------------------|------|------|--------|--------------|
|                 |             |                    |                                      | SAE Flare  | ØD                                | B    | A    | Weight |              |
|                 |             |                    |                                      | [inch]     | [mm]                              | [mm] | [mm] | [g]    |              |
| STG-B05 024-901 | STG-31001   | flare              | 82                                   | 1/4        | 69                                | 76   | 123  | 450    | 3,3          |
| STG-B05 034-901 | STG-31002   | flare              | 82                                   | 3/8        | 69                                | 76   | 137  | 450    | 3,3          |
| STG-B05 044-901 | STG-31003   | flare              | 82                                   | 1/2        | 69                                | 76   | 145  | 450    | 3,3          |
| STG-B08 024-901 | STG-31004   | flare              | 131                                  | 1/4        | 69                                | 98   | 145  | 580    | 3,3          |
| STG-B08 034-901 | STG-31005   | flare              | 131                                  | 3/8        | 69                                | 98   | 159  | 580    | 3,3          |
| STG-B08 044-901 | STG-31006   | flare              | 131                                  | 1/2        | 69                                | 98   | 167  | 580    | 3,3          |
| STG-B16 034-901 | STG-31007   | flare              | 262                                  | 3/8        | 81                                | 118  | 179  | 900    | 3,3          |
| STG-B16 044-901 | STG-31008   | flare              | 262                                  | 1/2        | 81                                | 118  | 187  | 900    | 3,3          |
| STG-B16 054-901 | STG-31009   | flare              | 262                                  | 5/8        | 81                                | 118  | 196  | 900    | 3,3          |
| STG-B30 034-901 | STG-31010   | flare              | 492                                  | 3/8        | 81                                | 193  | 254  | 1700   | 3,3          |
| STG-B30 044-901 | STG-31011   | flare              | 492                                  | 1/2        | 81                                | 193  | 262  | 1700   | 3,3          |
| STG-B30 054-901 | STG-31012   | flare              | 492                                  | 5/8        | 81                                | 193  | 271  | 1700   | 3,3          |
| STG-B30 064-901 | STG-31013   | flare              | 492                                  | 3/4        | 81                                | 193  | 271  | 1700   | 3,3          |

**Note:** 1) Dimensions are rounded up to integral mm

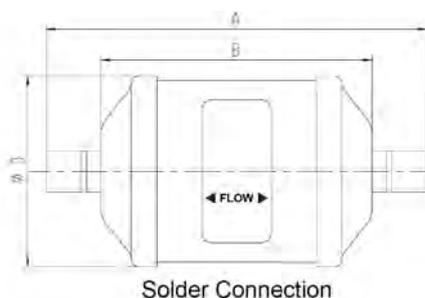




**GENERAL CHARACTERISTICS OF STG-B FILTER - SOLDER CONNECTION**

| Model<br>[inch] | Part<br>Number<br>[inch] | Model<br>[mm]   | Part<br>Number<br>[mm] | Type of<br>connection | Nominal<br>Volumen<br>[cm <sup>3</sup> ] | Connection |      | Dimensions & Weight <sup>1)</sup> |      |      |        | PED<br>category |
|-----------------|--------------------------|-----------------|------------------------|-----------------------|--|------------|------|-----------------------------------|------|------|--------|-----------------|
|                 |                          |                 |                        |                       |  | Solder     |      | ØD                                | B    | A    | Weight |                 |
|                 |                          |                 |                        |                       |  | [inch]     | [mm] | [mm]                              | [mm] | [mm] | [g]    |                 |
| STG-B05 020-901 | STG-31014                | STG-B05 061-901 | STG-31031              | solder                | 82                                       | 1/4        | 6    | 69                                | 76   | 114  | 450    | 3,3             |
| STG-B05 030-901 | STG-31015                | STG-B05 101-901 | STG-31032              | solder                | 82                                       | 3/8        | 10   | 69                                | 76   | 114  | 450    | 3,3             |
| STG-B05 040-901 | STG-31016                | STG-B05 121-901 | STG-31033              | solder                | 82                                       | 1/2        | 12   | 69                                | 76   | 124  | 450    | 3,3             |
| STG-B08 020-901 | STG-31017                | STG-B08 061-901 | STG-31034              | solder                | 131                                      | 1/4        | 6    | 69                                | 98   | 136  | 580    | 3,3             |
| STG-B08 250-901 | STG-31018                | STG-B08 250-901 | STG-31018              | solder                | 131                                      | 5/16       | 8    | 69                                | 98   | 136  | 580    | 3,3             |
| STG-B08 030-901 | STG-31019                | STG-B08 101-901 | STG-31035              | solder                | 131                                      | 3/8        | 10   | 69                                | 98   | 136  | 580    | 3,3             |
| STG-B08 040-901 | STG-31020                | STG-B08 121-901 | STG-31036              | solder                | 131                                      | 1/2        | 12   | 69                                | 98   | 146  | 580    | 3,3             |
| STG-B16 030-901 | STG-31021                | STG-B16 101-901 | STG-31037              | solder                | 262                                      | 3/8        | 10   | 81                                | 118  | 156  | 900    | 3,3             |
| STG-B16 040-901 | STG-31022                | STG-B16 121-901 | STG-31038              | solder                | 262                                      | 1/2        | 12   | 81                                | 118  | 166  | 900    | 3,3             |
| STG-B16 050-901 | STG-31023                | STG-B16 161-901 | STG-31087              | solder                | 262                                      | 5/8        | 16   | 81                                | 118  | 166  | 900    | 3,3             |
| STG-B16 070-901 | STG-31024                | STG-B16 070-901 | STG-31024              | solder                | 262                                      | 7/8        | 22   | 81                                | 118  | 178  | 900    | 3,3             |
| STG-B30 030-901 | STG-31025                | STG-B30 101-901 | STG-31039              | solder                | 492                                      | 3/8        | 10   | 81                                | 193  | 231  | 1700   | 3,3             |
| STG-B30 040-901 | STG-31026                | STG-B30 121-901 | STG-31040              | solder                | 492                                      | 1/2        | 12   | 81                                | 193  | 241  | 1700   | 3,3             |
| STG-B30 050-901 | STG-31027                | STG-B30 161-901 | STG-31088              | solder                | 492                                      | 5/8        | 16   | 81                                | 193  | 241  | 1700   | 3,3             |
| STG-B30 060-901 | STG-31028                | -               | -                      | solder                | 492                                      | 3/4        | -    | 81                                | 193  | 253  | 1700   | 3,3             |
| STG-B30 070-901 | STG-31029                | STG-B30 070-901 | STG-31029              | solder                | 492                                      | 7/8        | 22   | 81                                | 193  | 253  | 1700   | 3,3             |
| STG-B30 090-901 | STG-31030                | STG-B30 281-901 | STG-31043              | solder                | 492                                      | 1 1/8      | 28   | 81                                | 193  | 263  | 1700   | 3,3             |

**Note:** 1) Dimensions are rounded up to integral mm

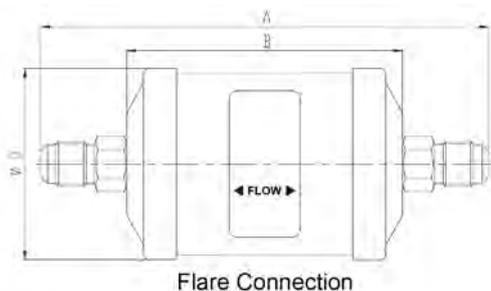




**GENERAL CHARACTERISTICS OF STG-F FILTER - FLARE CONNECTION**

| Model <sup>1)</sup> | Part Number | Type of Connection | Nominal Volume<br>[cm <sup>3</sup> ] | Connection | Dimensions & Weight <sup>2)</sup> |      |      |        | PED Category |
|---------------------|-------------|--------------------|--------------------------------------|------------|-----------------------------------|------|------|--------|--------------|
|                     |             |                    |                                      | SAE Flare  | ØD                                | B    | A    | Weight |              |
|                     |             |                    |                                      | [inch]     | [mm]                              | [mm] | [mm] | [g]    |              |
| STG-F05 024-901     | STG-31044   | flare              | 82                                   | 1/4        | 69                                | 76   | 123  | 450    | 3,3          |
| STG-F05 034-901     | STG-31045   | flare              | 82                                   | 3/8        | 69                                | 76   | 137  | 450    | 3,3          |
| STG-F05 044-901     | STG-31046   | flare              | 82                                   | 1/2        | 69                                | 76   | 145  | 450    | 3,3          |
| STG-F08 024-901     | STG-31047   | flare              | 131                                  | 1/4        | 69                                | 98   | 145  | 580    | 3,3          |
| STG-F08 034-901     | STG-31048   | flare              | 131                                  | 3/8        | 69                                | 98   | 159  | 580    | 3,3          |
| STG-F08 044-901     | STG-31049   | flare              | 131                                  | 1/2        | 69                                | 98   | 167  | 580    | 3,3          |
| STG-F16 034-901     | STG-31050   | flare              | 262                                  | 3/8        | 81                                | 118  | 179  | 900    | 3,3          |
| STG-F16 044-901     | STG-31051   | flare              | 262                                  | 1/2        | 81                                | 118  | 187  | 900    | 3,3          |
| STG-F16 054-901     | STG-31052   | flare              | 262                                  | 5/8        | 81                                | 118  | 196  | 900    | 3,3          |
| STG-F30 034-901     | STG-31053   | flare              | 492                                  | 3/8        | 81                                | 193  | 254  | 1700   | 3,3          |
| STG-F30 044-901     | STG-31054   | flare              | 492                                  | 1/2        | 81                                | 193  | 262  | 1700   | 3,3          |
| STG-F30 054-901     | STG-31055   | flare              | 492                                  | 5/8        | 81                                | 193  | 271  | 1700   | 3,3          |
| STG-F30 064-901     | STG-31056   | flare              | 492                                  | 3/4        | 81                                | 193  | 271  | 1700   | 3,3          |

**Note:** 1) Delivery time on request  
2) Dimensions are rounded up to integral mm

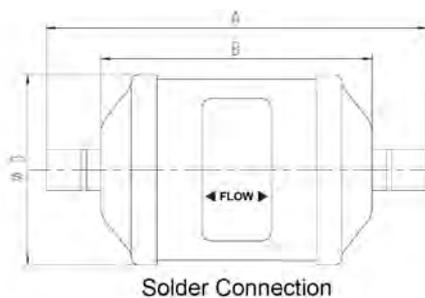




**GENERAL CHARACTERISTICS OF STG-F FILTER - SOLDER CONNECTION**

| Model <sup>1)</sup><br>[inch] | Part Number<br>[inch] | Model<br>[mm]   | Part Number<br>[mm] | Type of connection | Nominal Volumen<br>[cm <sup>3</sup> ] | Connection |      | Dimensions & Weight <sup>2)</sup> |      |      |        | PED category |
|-------------------------------|-----------------------|-----------------|---------------------|--------------------|---------------------------------------|------------|------|-----------------------------------|------|------|--------|--------------|
|                               |                       |                 |                     |                    |                                       | Solder     |      | ØD                                | B    | A    | Weight |              |
|                               |                       |                 |                     |                    |                                       | [inch]     | [mm] | [mm]                              | [mm] | [mm] | [g]    |              |
| STG-F05 020-901               | STG-31057             | STG-F05 061-901 | STG-31074           | solder             | 82                                    | 1/4        | 6    | 69                                | 76   | 114  | 450    | 3,3          |
| STG-F05 030-901               | STG-31058             | STG-F05 101-901 | STG-31075           | solder             | 82                                    | 3/8        | 10   | 69                                | 76   | 114  | 450    | 3,3          |
| STG-F05 040-901               | STG-31059             | STG-F05 121-901 | STG-31076           | solder             | 82                                    | 1/2        | 12   | 69                                | 76   | 124  | 450    | 3,3          |
| STG-F08 020-901               | STG-31060             | STG-F08 061-901 | STG-31077           | solder             | 131                                   | 1/4        | 6    | 69                                | 98   | 136  | 580    | 3,3          |
| STG-F08 250-901               | STG-31061             | STG-F08 250-901 | STG-31061           | solder             | 131                                   | 5/16       | 8    | 69                                | 98   | 136  | 580    | 3,3          |
| STG-F08 030-901               | STG-31062             | STG-F08 101-901 | STG-31078           | solder             | 131                                   | 3/8        | 10   | 69                                | 98   | 136  | 580    | 3,3          |
| STG-F08 040-901               | STG-31063             | STG-F08 121-901 | STG-31079           | solder             | 131                                   | 1/2        | 12   | 69                                | 98   | 146  | 580    | 3,3          |
| STG-F16 030-901               | STG-31064             | STG-F16 101-901 | STG-31080           | solder             | 262                                   | 3/8        | 10   | 81                                | 118  | 156  | 900    | 3,3          |
| STG-F16 040-901               | STG-31065             | STG-F16 121-901 | STG-31081           | solder             | 262                                   | 1/2        | 12   | 81                                | 118  | 166  | 900    | 3,3          |
| STG-F16 050-901               | STG-31066             | STG-F16 161-901 | STG-31082           | solder             | 262                                   | 5/8        | 16   | 81                                | 118  | 166  | 900    | 3,3          |
| STG-F16 070-901               | STG-31067             | STG-F16 070-901 | STG-31067           | solder             | 262                                   | 7/8        | 22   | 81                                | 118  | 178  | 900    | 3,3          |
| STG-F30 030-901               | STG-31068             | STG-F30 101-901 | STG-31083           | solder             | 492                                   | 3/8        | 10   | 81                                | 193  | 231  | 1700   | 3,3          |
| STG-F30 040-901               | STG-31069             | STG-F30 121-901 | STG-31084           | solder             | 492                                   | 1/2        | 12   | 81                                | 193  | 241  | 1700   | 3,3          |
| STG-F30 050-901               | STG-31070             | STG-F30 161-901 | STG-31085           | solder             | 492                                   | 5/8        | 16   | 81                                | 193  | 241  | 1700   | 3,3          |
| STG-F30 060-901               | STG-31071             | -               | -                   | solder             | 492                                   | 3/4        | -    | 81                                | 193  | 253  | 1700   | 3,3          |
| STG-F30 070-901               | STG-31072             | STG-F30 070-901 | STG-31072           | solder             | 492                                   | 7/8        | 22   | 81                                | 193  | 253  | 1700   | 3,3          |
| STG-F30 090-901               | STG-31073             | STG-F30 281-901 | STG-31086           | solder             | 492                                   | 1 1/8      | 28   | 81                                | 193  | 263  | 1700   | 3,3          |

**Note:** 1) Delivery time on request  
2) Dimensions are rounded up to integral mm





**SELECTION TABLE**

| Model           | Capacity [ kW ] <sup>1</sup> |        |        |                    |        | Moisture Absorption (gram H <sub>2</sub> O) |        |        |       |                    |       |      |       |
|-----------------|------------------------------|--------|--------|--------------------|--------|---|--------|--------|-------|--------------------|-------|------|-------|
|                 | R134a                        | R404A  | R22    | R407C <sup>2</sup> | R410A  | R134a                                       |        | R404A  |       | R407C <sup>2</sup> |       | R22  |       |
|                 |                              | R507A  |        |                    |        | R507A                                       |        | R410A  |       | R22                |       |      |       |
|                 |                              |        |        |                    |        | 75°F  | 125°F  | 75°F   | 125°F | 75°F               | 125°F | 75°F | 125°F |
|                 | 23,9°C                       | 51,7°C | 23,9°C | 51,7°C             | 23,9°C | 51,7°C                                      | 23,9°C | 51,7°C |       |                    |       |      |       |
| STG-B05 020-901 | 7,4                          | 5,3    | 7,7    | 7,7                | 7,7    | 4,3   | 4,0    | 4,1    | 3,8   | 3,7                | 3,4   | 4,1  | 3,7   |
| STG-B05 024-901 | 7,4                          | 5,3    | 7,7    | 7,7                | 7,7    | 4,3   | 4,0    | 4,1    | 3,8   | 3,7                | 3,4   | 4,1  | 3,7   |
| STG-B05 030-901 | 16,5                         | 11,6   | 16,9   | 16,5               | 16,9   | 4,3   | 4,0    | 4,1    | 3,8   | 3,7                | 3,4   | 4,1  | 3,7   |
| STG-B05 034-901 | 16,5                         | 11,6   | 16,9   | 16,5               | 16,9   | 4,3   | 4,0    | 4,1    | 3,8   | 3,7                | 3,4   | 4,1  | 3,7   |
| STG-B05 040-901 | 25,0                         | 17,6   | 25,3   | 25,0               | 25,3   | 4,3   | 4,0    | 4,1    | 3,8   | 3,7                | 3,4   | 4,1  | 3,7   |
| STG-B05 044-901 | 25,0                         | 17,6   | 25,3   | 25,0               | 25,3   | 4,3   | 4,0    | 4,1    | 3,8   | 3,7                | 3,4   | 4,1  | 3,7   |
| STG-B08 020-901 | 8,8                          | 6,0    | 8,8    | 8,8                | 8,8    | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B08 024-901 | 8,8                          | 6,0    | 8,8    | 8,8                | 8,8    | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B08 250-901 | 15,8                         | 10,9   | 16,2   | 15,8               | 16,2   | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B08 030-901 | 17,2                         | 12,0   | 17,6   | 17,2               | 17,6   | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B08 034-901 | 17,2                         | 12,0   | 17,6   | 17,2               | 17,6   | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B08 040-901 | 25,7                         | 17,9   | 26,4   | 26,0               | 26,4   | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B08 044-901 | 25,7                         | 17,9   | 26,4   | 26,0               | 26,4   | 9,8   | 9,0    | 9,2    | 8,6   | 8,5                | 7,8   | 9,2  | 8,5   |
| STG-B16 030-901 | 19,7                         | 13,7   | 20,0   | 19,7               | 20,0   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B16 034-901 | 19,7                         | 13,7   | 20,0   | 19,7               | 20,0   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B16 040-901 | 30,2                         | 21,5   | 30,9   | 30,6               | 30,9   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B16 044-901 | 30,2                         | 21,5   | 30,9   | 30,6               | 30,9   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B16 050-901 | 34,1                         | 23,9   | 34,8   | 34,5               | 35,2   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B16 054-901 | 34,1                         | 23,9   | 34,8   | 34,5               | 35,2   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B16 070-901 | 42,2                         | 29,9   | 42,9   | 42,6               | 43,3   | 17,6  | 16,3   | 16,6   | 15,5  | 15,2               | 14,0  | 16,6 | 14,2  |
| STG-B30 030-901 | 25,0                         | 17,6   | 25,3   | 25,0               | 25,7   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 034-901 | 25,0                         | 17,6   | 25,3   | 25,0               | 25,7   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 040-901 | 30,9                         | 21,8   | 31,7   | 31,7               | 32,0   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 044-901 | 30,9                         | 21,8   | 31,7   | 31,7               | 32,0   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 050-901 | 35,5                         | 25,0   | 36,2   | 35,9               | 36,6   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 054-901 | 35,5                         | 25,0   | 36,2   | 35,9               | 36,6   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 060-901 | 39,6                         | 28,1   | 40,1   | 39,7               | 40,4   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 064-901 | 39,6                         | 28,1   | 40,1   | 39,7               | 40,4   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 070-901 | 46,4                         | 32,4   | 47,1   | 46,8               | 47,5   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |
| STG-B30 090-901 | 54,2                         | 38,0   | 55,2   | 54,5               | 55,6   | 41,3  | 38,4   | 38,9   | 36,5  | 35,9               | 32,9  | 39,1 | 33,1  |

**Note:** 1) The above data is based on filter driers with inch connections and clean system at ideal conditions; with impurities accumulated in the filter, the capacity may decrease.  
2) R407C data based on dew point conditions

# STG SERIES

## Bi-Flow Filter Driers



### SELECTION FORMULAS

Filter driers for liquid line are manufactured in compliance with ARI Standard 710. Maximum flow rate of liquid refrigerant at a differential pressure of 0,07bar (1psi) is indicated by kW (ton) which is based on the temperature of liquid refrigerant 30°C (86°F), the evaporating temperature of -15°C (5°F) and the following mass flow:

- 0,40 kg/min/kW (3.1 lb/min/ton) R134a
- 0,53 kg/min/kW (4.1 lb/min/ton) R404A, R507A
- 0,39 kg/min/kW (3.0 lb/min/ton) R22, R407C
- 0,36 kg/min/kW (2.8 lb/min/ton) R410A

**Note:** Data on water absorption is based on the following EPD (method: ASHRAE Standard 63.1):

- 60ppm R22
- 50ppm R134a
- 50ppm R404A
- 50ppm R407C
- 50ppm R410A
- 50ppm R507A



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 0938446095 5058223172 5339406128

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# Filter Driers with Replaceable Core

The filter driers with replaceable core (HTG series) are used in liquid line and suction line of refrigerating, freezing and air conditioning system. The filter housing allows to choose different kinds of cores. It's sealed by bottom cover for an easy removal and replacement of core from the bottom. The core holder requires minimum free space to remove the core for replacement.



## FEATURES

- HIGH EFFICIENT IN MOISTURE ABSORPTION, FILTERING IMPURITY, ACID, PAINT REMAINS AND MUD REMOVAL
- HYBRID DESICCANT
- DURABLE AND SOLID FILTER CORES
- FILTERING FINENESS: 20µm
- CORROSION RESISTANT PAINTING CAN SURVIVE SALT SPRAY TEST OF 500 HOURS
- CONNECTION TYPE: FLARE OR SOLDER

## FEATURES OF FILTER ELEMENT

### • SH48-A80 FILTER ELEMENT:

80% 3A DESICCANT AND 20% ACTIVATED ALUMINA, It provides a good desiccation ability and an acid absorption capability in a wide temperature range. The core resistance is guaranteed with high level of vibration thanks to an anti-shock design. Suggested installation position on liquid line

### • SH48-A00 FILTER ELEMENT:

100% 3A DESICCANT  
It provides the maximum level of desiccation ability in a wide temperature range. The core resistance is guaranteed with high level of vibration thanks to an anti-shock design. Suggested installation position on liquid line

### • SH48-A30 FILTER ELEMENT:

30% 3A DESICCANT , 70% ACTIVATED ALUMINA  
This solid filter element provides an excellent acid absorption together with a standard desiccation ability in a wide temperature range. The suggested installation position is on the suction line; it is suitable after compressor burnout because it removes acid, impurities and other harmful substance avoiding the damage of the new compressor.

SH48-A30 filter core is compatible with HCFC / HFC refrigerants and its design optimizes the flow passage generating low internal pressure drop. The core resistance is guaranteed with high level of vibration thanks to an anti-shock design.



### GENERAL SPECIFICATION

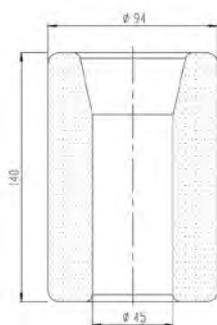
- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507A ...
- Ambient temperature min./max.: -30°C / +55°
- Medium temperature TS min./max.: -40°C / +70°C
- Max. operating pressure PS: from 4,5 MPa (45 bar) (see table 1)
- Installation position: HTG with SH48-A80 or SH48-A00 in liquid line, HTG with SH48-A30 in suction line
- Certifications: UL/CSA and PED declaration

### TECHNICAL PARAMETERS

#### Desiccant Selection Table

|                                 | Medium Type              | 30% 3A desiccant<br>70% active alumina | 80% 3A desiccant<br>20% active alumina | 100% 3A desiccant |
|---------------------------------|--------------------------|--|--|-------------------|
| Core Model                      | -                        | SH48-A30                               | SH48-A80                               | SH48-A00          |
| Core Part Number                | -                        | HTG-29101                              | HTG-29102                              | HTG-29103         |
| Suggested Installation position | -                        | Suction Line                           | Liquid Line                            | Liquid Line       |
| Refrigerant                     | HFC                      | Applicable                             | Applicable                             | Suggested         |
|                                 | HCFC                     | Suggested                              | Suggested                              | Applicable        |
|                                 | CFC                      | Applicable                             | Applicable                             | Not Applicable    |
|                                 | HC                       | Applicable                             | Applicable                             | Applicable        |
| Oil                             | Mineral oil or AB        | Suggested                              | Suggested                              | Applicable        |
|                                 | Pure POE or PAG          | Applicable                             | Applicable                             | Suggested         |
|                                 | POE or PAG with additive | Not applicable                         | Not applicable                         | Applicable        |

- Note:** 1) For CFC system, usage of core with alumina is recommended as a strong capability to absorb acid may be needed  
 2) When the systems use oil with additive, it is not recommended to use a core with alumina.



Filter core dimensions



### MODEL DESIGNATION EXAMPLE

| Position Number |            |           |          |            |   | According to Model Designation Legend    |
|-----------------|------------|-----------|----------|------------|---|--|
| 1               | 2          | 3         | 4        | 5          | 6 |  |
| <b>HTG</b>      | A96        | 28        | 1        | 901        |   | Replaceable core filter drier            |
| HTG             | <b>A96</b> | 28        | 1        | 901        |   | 96 inch <sup>3</sup> internal volume     |
| HTG             | A96        | <b>28</b> | 1        | 901        |   | When Pos. 4 is "1": connection size 28mm |
| HTG             | A96        | 28        | <b>1</b> | 901        |   | Solder connection metric                 |
| HTG             | A96        | 28        | 1        | <b>901</b> |   | Standard product                         |

### Model Designation Legend

|          |  |  |                                    |
|----------|--|--|------------------------------------|
| <b>1</b> | <b>Product Code</b>                                | <b>Filter Drier Series</b>                         |                                    |
|          | HTG  | Indicates replaceable core filter drier            |                                    |
| <b>2</b> | <b>Internal volume</b>                             | <b>Expressed in inch<sup>3</sup></b>               | <b>Expressed in cm<sup>3</sup></b> |
|          | A48  | 48   | 787                                |
|          | A96  | 96   | 1573                               |
|          | B44  | 144  | 2360                               |
|          | B92  | 192  | 3146                               |
| <b>3</b> | <b>Connection size</b>                             | <b>Pos. 4 shows "0": Solder [inch]</b>             |                                    |
|          | 05   | 5/8  |                                    |
|          | 07   | 7/8  |                                    |
|          | 09   | 1 1/8  |                                    |
|          | 11   | 1 3/8  |                                    |
|          | 13   | 1 5/8  |                                    |
|          | 17   | 2 1/8  |                                    |
|          | 21   | 2 5/8  |                                    |
|          | <b>Connection size</b>                             | <b>Pos. 4 shows "1": Solder [mm]</b>               |                                    |
|          | 05   | 16 - (5/8" version can be used e.g. HTG-A48 050)   |                                    |
|          | 07   | 22 - (7/8" version can be used e.g. HTG-A48 070)   |                                    |
|          | 28   | 28   |                                    |
|          | 11   | 35 - (1 3/8" version can be used e.g. HTG-A48 110) |                                    |
|          | 42   | 42   |                                    |
| 17       | 54 - (2 1/8" version can be used e.g. HTG-A48 170) |  |                                    |
| <b>4</b> | <b>Pipe Connection</b>                             | <b>Type</b>  |                                    |
|          | 0  | Solder with inch connections                       |                                    |
|          | 1 *  | Solder with metric connections                     |                                    |
| <b>5</b> | <b>Version Number</b>                              | <b>Description</b>                                 |                                    |
|          | 901  | Standard product                                   |                                    |

**Note:** \* Solder connections which fit to metric and inch are marked with inch product codes e.g. 16, 22, 35 and 54mm



**GENERAL CHARACTERISTICS OF FILTER** Table 1

| Series   | Model          | Part Number | Solder Connections ODF |      | Number of cores | Dimensions & Weight |      |      |      |                      | Design Pressure (MPa) | PED category |
|----------|----------------|-------------|------------------------|------|-----------------|---------------------|------|------|------|----------------------|-----------------------|--------------|
|          |                |             | [inch]                 | [mm] |                 | A                   | B    | L    | G    | Weight <sup>1)</sup> |                       |              |
|          |                |             |                        |      |                 | [mm]                | [mm] | [mm] | [mm] | [kg]                 |                       |              |
| HTG A48s | HTG-A48050-901 | HTG-29001   | 5/8                    | 16   | 1               | 250                 | 164  | 170  | 116  | 5,1                  | 4,5                   | Cat. I       |
|          | HTG-A48070-901 | HTG-29002   | 7/8                    | 22   |                 | 249                 | 163  | 170  | 116  | 5,1                  | 4,5                   |              |
|          | HTG-A48090-901 | HTG-29003   | 1 1/8                  | -    |                 | 254                 | 168  | 170  | 121  | 5,1                  | 4,5                   |              |
|          | HTG-A48281-901 | HTG-29004   | -                      | 28   |                 | 254                 | 168  | 170  | 121  | 5,1                  | 4,5                   |              |
|          | HTG-A48110-901 | HTG-29005   | 1 3/8                  | 35   |                 | 253                 | 167  | 170  | 121  | 5,1                  | 4,5                   |              |
|          | HTG-A48130-901 | HTG-29006   | 1 5/8                  | -    |                 | 272                 | 186  | 170  | 141  | 5,1                  | 4,5                   |              |
|          | HTG-A48421-901 | HTG-29007   | -                      | 42   |                 | 272                 | 186  | 170  | 141  | 5,1                  | 4,5                   |              |
|          | HTG-A48170-901 | HTG-29008   | 2 1/8                  | 54   |                 | 275                 | 182  | 170  | 145  | 5,1                  | 4,5                   |              |
|          | HTG-A48210-901 | HTG-29009   | 2 5/8                  | -    |                 | 277                 | 177  | 170  | 149  | 5,1                  | 4,5                   |              |
| HTG A96s | HTG-A96050-901 | HTG-29010   | 5/8                    | 16   | 2               | 391                 | 305  | 310  | 116  | 6,2                  | 4,5                   |              |
|          | HTG-A96070-901 | HTG-29011   | 7/8                    | 22   |                 | 390                 | 304  | 310  | 116  | 6,2                  | 4,5                   |              |
|          | HTG-A96090-901 | HTG-29012   | 1 1/8                  | -    |                 | 395                 | 309  | 310  | 121  | 6,2                  | 4,5                   |              |
|          | HTG-A96281-901 | HTG-29013   | -                      | 28   |                 | 395                 | 309  | 310  | 121  | 6,2                  | 4,5                   |              |
|          | HTG-A96110-901 | HTG-29014   | 1 3/8                  | 35   |                 | 394                 | 308  | 310  | 121  | 6,2                  | 4,5                   |              |
|          | HTG-A96130-901 | HTG-29015   | 1 5/8                  | -    |                 | 413                 | 327  | 310  | 141  | 6,2                  | 4,5                   |              |
|          | HTG-A96421-901 | HTG-29016   | -                      | 42   |                 | 413                 | 327  | 310  | 141  | 6,2                  | 4,5                   |              |
|          | HTG-A96170-901 | HTG-29017   | 2 1/8                  | 54   |                 | 416                 | 323  | 310  | 145  | 6,2                  | 4,5                   |              |
|          | HTG-A96210-901 | HTG-29018   | 2 5/8                  | -    |                 | 418                 | 318  | 310  | 149  | 6,2                  | 4,5                   |              |
| HTG B44s | HTG-B44050-901 | HTG-29019   | 5/8                    | 16   | 3               | 532                 | 446  | 310  | 116  | 7,6                  | 4,5                   |              |
|          | HTG-B44070-901 | HTG-29020   | 7/8                    | 22   |                 | 531                 | 445  | 310  | 116  | 7,6                  | 4,5                   |              |
|          | HTG-B44090-901 | HTG-29021   | 1 1/8                  | -    |                 | 536                 | 450  | 310  | 121  | 7,6                  | 4,5                   |              |
|          | HTG-B44281-901 | HTG-29022   | -                      | 28   |                 | 536                 | 450  | 310  | 121  | 7,6                  | 4,5                   |              |
|          | HTG-B44110-901 | HTG-29023   | 1 3/8                  | 35   |                 | 535                 | 449  | 310  | 121  | 7,6                  | 4,5                   |              |
|          | HTG-B44130-901 | HTG-29024   | 1 5/8                  | -    |                 | 554                 | 468  | 310  | 141  | 7,6                  | 4,5                   |              |
|          | HTG-B44421-901 | HTG-29025   | -                      | 42   |                 | 554                 | 468  | 310  | 141  | 7,6                  | 4,5                   |              |
|          | HTG-B44170-901 | HTG-29026   | 2 1/8                  | 54   |                 | 557                 | 464  | 310  | 145  | 7,6                  | 4,5                   |              |
|          | HTG-B44210-901 | HTG-29027   | 2 5/8                  | -    |                 | 559                 | 459  | 310  | 149  | 7,6                  | 4,5                   |              |
| HTG B92s | HTG-B92050-901 | HTG-29028   | 5/8                    | 16   | 4               | 677                 | 591  | 310  | 116  | 9,1                  | 4,5                   |              |
|          | HTG-B92070-901 | HTG-29029   | 7/8                    | 22   |                 | 676                 | 590  | 310  | 116  | 9,1                  | 4,5                   |              |
|          | HTG-B92090-901 | HTG-29030   | 1 1/8                  | -    |                 | 681                 | 595  | 310  | 121  | 9,1                  | 4,5                   |              |
|          | HTG-B92281-901 | HTG-29031   | -                      | 28   |                 | 681                 | 595  | 310  | 121  | 9,1                  | 4,5                   |              |
|          | HTG-B92110-901 | HTG-29032   | 1 3/8                  | 35   |                 | 680                 | 594  | 310  | 121  | 9,1                  | 4,5                   |              |
|          | HTG-B92130-901 | HTG-29033   | 1 5/8                  | -    |                 | 699                 | 613  | 310  | 141  | 9,1                  | 4,5                   |              |
|          | HTG-B92421-901 | HTG-29034   | -                      | 42   |                 | 699                 | 613  | 310  | 141  | 9,1                  | 4,5                   |              |
|          | HTG-B92170-901 | HTG-29035   | 2 1/8                  | 54   |                 | 702                 | 609  | 310  | 145  | 9,1                  | 4,5                   |              |
|          | HTG-B92210-901 | HTG-29036   | 2 5/8                  | -    |                 | 704                 | 604  | 310  | 149  | 9,1                  | 4,5                   |              |

**Note:** 1) Weight of filter shell (must be added the filter core weight: 0.6 kg)



**SELECTION TABLE - WITH CORE SH48-A00** Table 2

| Model          | Acid Absorption capacity (g) | Capacity [kW] <sup>1</sup> |       |       |                    |       | Moisture Absorption [gram H <sub>2</sub> O] |       |       |       |                    |       |       |       |
|----------------|------------------------------|----------------------------|-------|-------|--------------------|-------|---|-------|-------|-------|--------------------|-------|-------|-------|
|                |                              | R134a                      | R404A | R22   | R407C <sup>2</sup> | R410A | R134a                                       |       | R404A |       | R407C <sup>2</sup> |       | R22   |       |
|                |                              |                            | R507A |       |                    |       | 75°F  | 125°F | 75°F  | 125°F | 75°F               | 125°F | 75°F  | 125°F |
|                |                              |                            |       |       |                    |       |   |       |       |       |                    |       |       |       |
| HTG-A48050-901 |                              | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48070-901 |                              | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48090-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48281-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48110-901 | -                            | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48130-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48421-901 |                              | 59,9                       | 174,7 | 256,6 | 256,6              | 256,6 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48170-901 |                              | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A48210-901 |                              | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 67,4  | 58,1  | 72,6  | 59,6  | 57,0               | 51,8  | 62,2  | 57,0  |
| HTG-A96050-901 |                              | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96070-901 |                              | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96090-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96281-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96110-901 | -                            | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96130-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96421-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96170-901 |                              | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-A96210-901 |                              | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 134,8                                       | 116,1 | 145,2 | 119,2 | 114,0              | 103,7 | 124,4 | 114,0 |
| HTG-B44050-901 |                              | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44070-901 |                              | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44090-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44281-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44110-901 | -                            | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44130-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44421-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44170-901 |                              | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B44210-901 |                              | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 202,2                                       | 174,3 | 217,8 | 178,8 | 171,0              | 155,4 | 186,6 | 171,0 |
| HTG-B92050-901 |                              | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92070-901 |                              | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92090-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92281-901 |                              | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92110-901 | -                            | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92130-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92421-901 |                              | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92170-901 |                              | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |
| HTG-B92210-901 |                              | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 269,6                                       | 232,4 | 290,4 | 238,4 | 228,0              | 207,2 | 248,8 | 228,0 |



**SELECTION TABLE - WITH CORE SH48-A80** Table 3

| Model          | Acid Absorption capacity (g) <sup>3</sup> | Capacity [kW] <sup>1</sup> |       |       |                    |       | Moisture Absorption [gram H <sub>2</sub> O] |       |       |       |                    |       |       |       |
|----------------|---|----------------------------|-------|-------|--------------------|-------|---|-------|-------|-------|--------------------|-------|-------|-------|
|                |   | R134a                      | R404A | R22   | R407C <sup>2</sup> | R410A | R134a                                       |       | R404A |       | R407C <sup>2</sup> |       | R22   |       |
|                |   |                            | R507A |       |                    |       | 75°F  | 125°F | 75°F  | 125°F | 75°F               | 125°F | 75°F  | 125°F |
|                |   |                            |       |       |                    |       |   |       |       |       |                    |       |       |       |
| HTG-A48050-901 | 10  | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48070-901 |   | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48090-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48281-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48110-901 |   | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48130-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48421-901 |   | 59,9                       | 174,7 | 256,6 | 256,6              | 256,6 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48170-901 |   | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A48210-901 |   | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 58,0  | 50,0  | 61,7  | 50,7  | 47,9               | 43,5  | 52,9  | 48,5  |
| HTG-A96050-901 | 20  | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96070-901 |   | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96090-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96281-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96110-901 |   | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96130-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96421-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96170-901 |   | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-A96210-901 |   | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 115,9                                       | 99,8  | 123,4 | 101,3 | 95,8               | 87,1  | 105,7 | 96,9  |
| HTG-B44050-901 | 30  | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44070-901 |   | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44090-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44281-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44110-901 |   | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44130-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44421-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44170-901 |   | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B44210-901 |   | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 173,9                                       | 149,9 | 185,1 | 152,0 | 143,6              | 130,5 | 158,6 | 145,4 |
| HTG-B92050-901 | 40  | 65,5                       | 45,9  | 67,6  | 67,6               | 67,6  | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92070-901 |   | 104,7                      | 73,5  | 108,2 | 108,2              | 108,2 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92090-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92281-901 |   | 150,5                      | 105,7 | 155,4 | 155,4              | 155,4 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92110-901 |   | 202,7                      | 142,5 | 209,3 | 209,3              | 209,3 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92130-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92421-901 |   | 248,9                      | 174,7 | 256,6 | 256,6              | 256,6 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92170-901 |   | 353,5                      | 248,2 | 364,7 | 364,7              | 364,7 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |
| HTG-B92210-901 |   | 392,7                      | 276,2 | 405,7 | 405,7              | 405,7 | 231,9                                       | 199,9 | 246,8 | 202,6 | 191,5              | 174,0 | 211,5 | 193,8 |

**Note:** 1. The data reported in the Table 2 and 3 is based on filter driers in a clean system at ideal conditions; with impurities accumulated in the filter, the capacity may decrease.  
 2. R407C data based on dew point conditions



**SELECTION FORMULAS**

Filter driers for liquid line are manufactured in compliance with ARI Standard 710. Maximum flow rate of liquid refrigerant at a differential pressure of 0,07bar (1psi) is indicated by kW (ton) which is based on the temperature of liquid refrigerant 30°C (86°F), the evaporating temperature of -15°C (5°F) and the following mass flow:

- 0,40 kg/min/kW (3.1 lb/min/ton) R134a
- 0,53 kg/min/kW (4.1 lb/min/ton) R404A, R507A
- 0,39 kg/min/kW (3.0 lb/min/ton) R22, R407C
- 0,36 kg/min/kW (2.8 lb/min/ton) R410A

**Note:** Data on water absorption is based on the following EPD (method: ASHRAE Standard 63.1):

- 60ppm R22
- 50ppm R134a
- 50ppm R404A
- 50ppm R407C
- 50ppm R410A
- 50ppm R507A

**SUCTION LINE FILTER-DRIERS:**

Any pressure loss in the suction line also reduces system capacity significantly. Obtaining a low pressure drop is particularly important for energy savings on all the air conditioning and refrigeration systems. Therefore, suction line filter-driers should be sized generously on these systems. Sanhua suggests that the pressure drop across it should not exceed the values given in the table below (table 4: DP limits in metric units; table 5: DP limits in imperial units)

| Suction Line Filter Drier Maximum Recommended Pressure Drop (bar) |   |                                |       |                                |       |
|---|---|--------------------------------|-------|--------------------------------|-------|
| System  | Evaporator Saturated Suction Temperature <sup>4)</sup> (°C) | Permanent Installation         |       | Temporary Installation         |       |
|   |   | Refrigerant                    |       |                                |       |
|   |   | R22; R404A; R407C; R410A, R507 | R134a | R22; R404A; R407C; R410A, R507 | R134a |
| Air conditioning  | 4   | 0,21                           | 0,14  | 0,56                           | 0,42  |
| Commercial  | -7  | 0,14                           | 0,105 | 0,28                           | 0,21  |
| Low temperature   | -29   | 0,07                           | 0,035 | 0,14                           | 0,07  |

| Suction Line Filter Drier Maximum Recommended Pressure Drop (psi) |   |                                |       |                                |       |
|---|---|--------------------------------|-------|--------------------------------|-------|
| System  | Evaporator Saturated Suction Temperature <sup>5)</sup> (°F) | Permanent Installation         |       | Temporary Installation         |       |
|   |   | Refrigerant                    |       |                                |       |
|   |   | R22; R404A; R407C; R410A, R507 | R134a | R22; R404A; R407C; R410A, R507 | R134a |
| Air conditioning  | 40  | 3                              | 2     | 8                              | 6     |
| Commercial  | 20  | 2                              | 1,5   | 4                              | 3     |
| Low temperature   | -20   | 1                              | 0,5   | 2                              | 1     |



**SUCTION LINE FLOW CAPACITY WITH CORE SH48-A30 (KW)<sup>1</sup>**

| Model          | Capacity (kW)                |      |       |      |      |            |      |      |       |      |      |       |
|----------------|------------------------------|------|-------|------|------|------------|------|------|-------|------|------|-------|
|                | Evaporation temperature (°C) |      |       |      |      |            |      |      |       |      |      |       |
|                | -40                          | -20  | 4,4   | -30  | -20  | 4,4        | -40  | -20  | 4,4   | -40  | -20  | 4,4   |
|                | Pressure drop (bar)          |      |       |      |      |            |      |      |       |      |      |       |
|                | 0,04                         | 0,10 | 0,21  | 0,04 | 0,07 | 0,14       | 0,04 | 0,10 | 0,21  | 0,04 | 0,10 | 0,21  |
| R22/R407C      |                              |      | R134a |      |      | R404A/R507 |      |      | R410A |      |      |       |
| HTG-A48050-901 | 3,0                          | 8,5  | 20,0  | 2,9  | 5,1  | 12,4       | 2,3  | 6,7  | 16,6  | 3,0  | 8,5  | 20,0  |
| HTG-A48070-901 | 5,5                          | 15,5 | 36,0  | 5,3  | 9,4  | 22,2       | 4,3  | 12,3 | 29,6  | 5,5  | 15,3 | 36,0  |
| HTG-A48090-901 | 7,4                          | 20,5 | 48,5  | 7,1  | 12,6 | 30,0       | 5,7  | 16,3 | 40,0  | 7,4  | 20,5 | 48,5  |
| HTG-A48281-901 | 7,4                          | 20,5 | 48,5  | 7,1  | 12,6 | 30,0       | 5,7  | 16,3 | 40,0  | 7,4  | 20,5 | 48,5  |
| HTG-A48110-901 | 9,5                          | 26,0 | 61,0  | 9,1  | 16,0 | 37,5       | 7,3  | 20,7 | 50,0  | 9,5  | 26,0 | 61,0  |
| HTG-A48130-901 | 9,5                          | 26,0 | 61,0  | 9,1  | 16,0 | 37,5       | 7,3  | 20,7 | 50,0  | 9,5  | 26,0 | 61,0  |
| HTG-A48421-901 | 9,5                          | 26,0 | 61,0  | 9,1  | 16,0 | 37,5       | 7,3  | 20,7 | 50,0  | 9,5  | 26,0 | 61,0  |
| HTG-A48170-901 | 9,5                          | 26,0 | 61,0  | 9,1  | 16,0 | 37,5       | 7,3  | 20,7 | 50,0  | 9,5  | 26,0 | 61,0  |
| HTG-A48210-901 | 9,5                          | 26,0 | 61,0  | 9,1  | 16,0 | 37,5       | 7,3  | 20,7 | 50,0  | 9,5  | 26,0 | 61,0  |
| HTG-A96050-901 | 3,1                          | 8,6  | 20,3  | 3,0  | 5,4  | 12,7       | 2,4  | 7,0  | 17,1  | 3,1  | 8,7  | 20,5  |
| HTG-A96070-901 | 5,5                          | 15,4 | 36,2  | 5,3  | 9,4  | 22,4       | 4,3  | 12,3 | 29,8  | 5,5  | 15,4 | 36,2  |
| HTG-A96090-901 | 8,3                          | 23,4 | 55,4  | 8,0  | 14,3 | 34,1       | 6,5  | 18,7 | 46,0  | 8,3  | 23,4 | 56,0  |
| HTG-A96281-901 | 8,3                          | 23,4 | 55,4  | 8,0  | 14,3 | 34,1       | 6,5  | 18,7 | 46,0  | 8,3  | 23,4 | 56,0  |
| HTG-A96110-901 | 11,3                         | 32,0 | 76,0  | 10,8 | 19,4 | 46,5       | 8,8  | 25,5 | 63,0  | 11,3 | 32,0 | 76,0  |
| HTG-A96130-901 | 13,5                         | 38,0 | 91,0  | 13,0 | 23,1 | 55,6       | 10,5 | 30,4 | 75,0  | 13,4 | 38,0 | 91,0  |
| HTG-A96421-901 | 13,5                         | 38,0 | 91,0  | 13,0 | 23,1 | 55,6       | 10,5 | 30,4 | 75,0  | 13,4 | 38,0 | 91,0  |
| HTG-A96170-901 | 13,5                         | 38,0 | 91,0  | 13,0 | 23,1 | 55,6       | 10,5 | 30,4 | 75,0  | 13,4 | 38,0 | 91,0  |
| HTG-A96210-901 | 13,5                         | 38,0 | 91,0  | 13,0 | 23,1 | 55,6       | 10,5 | 30,4 | 75,0  | 13,4 | 38,0 | 91,0  |
| HTG-B44050-901 | 3,3                          | 9,5  | 21,7  | 3,2  | 5,7  | 13,3       | 2,6  | 7,3  | 16,5  | 3,3  | 9,5  | 21,7  |
| HTG-B44070-901 | 6,3                          | 18,0 | 41,0  | 6,0  | 10,6 | 25,1       | 4,8  | 13,8 | 34,0  | 6,3  | 18,0 | 41,0  |
| HTG-B44090-901 | 8,4                          | 24,0 | 55,0  | 8,0  | 14,3 | 34,0       | 6,5  | 18,5 | 46,0  | 8,4  | 24,0 | 55,0  |
| HTG-B44281-901 | 8,4                          | 24,0 | 55,0  | 8,0  | 14,3 | 34,0       | 6,5  | 18,5 | 46,0  | 8,4  | 24,0 | 55,0  |
| HTG-B44110-901 | 12,5                         | 36,5 | 89,0  | 12,1 | 22,0 | 54,0       | 9,8  | 29,2 | 73,0  | 12,5 | 36,5 | 89,0  |
| HTG-B44130-901 | 12,5                         | 36,5 | 89,0  | 12,1 | 22,0 | 54,0       | 9,8  | 29,2 | 73,0  | 12,5 | 36,5 | 89,0  |
| HTG-B44421-901 | 12,5                         | 36,5 | 89,0  | 12,1 | 22,0 | 54,0       | 9,8  | 29,2 | 73,0  | 12,5 | 36,5 | 89,0  |
| HTG-B44170-901 | 12,5                         | 36,5 | 89,0  | 12,1 | 22,0 | 54,0       | 9,8  | 29,2 | 73,0  | 12,5 | 36,5 | 89,0  |
| HTG-B44210-901 | 12,5                         | 36,5 | 89,0  | 12,1 | 22,0 | 54,0       | 9,8  | 29,2 | 73,0  | 12,5 | 36,5 | 89,0  |
| HTG-B92050-901 | 4,0                          | 10,9 | 25,9  | 3,8  | 6,7  | 16,0       | 3,0  | 8,7  | 21,6  | 4,0  | 10,9 | 25,9  |
| HTG-B92070-901 | 7,5                          | 20,5 | 48,8  | 7,2  | 12,7 | 30,0       | 5,8  | 16,5 | 40,6  | 7,5  | 20,5 | 48,8  |
| HTG-B92090-901 | 10,1                         | 27,5 | 66,0  | 9,7  | 17,1 | 40,0       | 7,8  | 22,1 | 54,3  | 10,1 | 27,5 | 66,0  |
| HTG-B92281-901 | 10,1                         | 27,5 | 66,0  | 9,7  | 17,1 | 40,0       | 7,8  | 22,1 | 54,3  | 10,1 | 27,5 | 66,0  |
| HTG-B92110-901 | 14,1                         | 39,7 | 95,0  | 13,6 | 24,2 | 58,1       | 11,0 | 31,9 | 78,1  | 14,1 | 39,7 | 95,0  |
| HTG-B92130-901 | 17,1                         | 49,0 | 118,0 | 16,5 | 30,0 | 72,0       | 13,4 | 39,0 | 97,0  | 17,1 | 49,0 | 118,0 |
| HTG-B92421-901 | 17,1                         | 49,0 | 118,0 | 16,5 | 30,0 | 72,0       | 13,4 | 39,0 | 97,0  | 17,1 | 49,0 | 118,0 |
| HTG-B92170-901 | 17,1                         | 49,0 | 118,0 | 16,5 | 30,0 | 72,0       | 13,4 | 39,0 | 97,0  | 17,1 | 49,0 | 118,0 |
| HTG-B92210-901 | 17,1                         | 49,0 | 118,0 | 16,5 | 30,0 | 72,0       | 13,4 | 39,0 | 97,0  | 17,1 | 49,0 | 118,0 |



The capacities listed in the table 6 are rated at the maximum recommended pressure drop for permanent installation. Only for R407C and R410A is present a second column identify by a (\*) with the capacities rated at the maximum recommended pressure drop for temporary installation.

Suction line Filter-Driers guarantees an acid removal and a drying capacity described in table 7:

| Drying capacity: SH48-A30 <sup>1)</sup>    |                                      |                                |         |         |         |
|--|--------------------------------------|--------------------------------|---------|---------|---------|
| Filter Type                                |                                      | HTG-A48                        | HTG-A96 | HTG-B44 | HTG-B92 |
| Number of cores                            |                                      | 1                              | 2       | 3       | 4       |
| Acid Adsorption capacity (g) <sup>3)</sup> |                                      | 28,0                           | 56,0    | 84,0    | 112,0   |
| Refrigerant                                | Evaporating Temp. (°C) <sup>4)</sup> | Moisture Absorption [gram H2O] |         |         |         |
| R22/ R407C <sup>2)</sup>                   | -40,0                                | 26,0                           | 52,0    | 78,0    | 104,0   |
|  | -20,0                                | 18,0                           | 36,3    | 54,0    | 72,0    |
|  | 4,4                                  | 11,0                           | 22,0    | 32,0    | 43,0    |
| R134a                                      | -30,0                                | 43,0                           | 86,0    | 129,0   | 172,0   |
|  | -20,0                                | 36,0                           | 72,0    | 108,0   | 144,0   |
|  | 4,4                                  | 25,0                           | 50,0    | 75,0    | 100,0   |
| R404A / R507                               | -40,0                                | 45,0                           | 90,0    | 135,0   | 180,0   |
|  | -20,0                                | 28,0                           | 56,0    | 84,0    | 112,0   |
|  | 4,4                                  | 18,0                           | 36,0    | 54,0    | 72,0    |
| R410A                                      | -40,0                                | 40,0                           | 80,0    | 120,0   | 160,0   |
|  | -20,0                                | 33,0                           | 66,0    | 99,0    | 132,0   |
|  | 4,4                                  | 24,0                           | 48,0    | 72,0    | 96,0    |

Drying capacity is expressed during drying in:

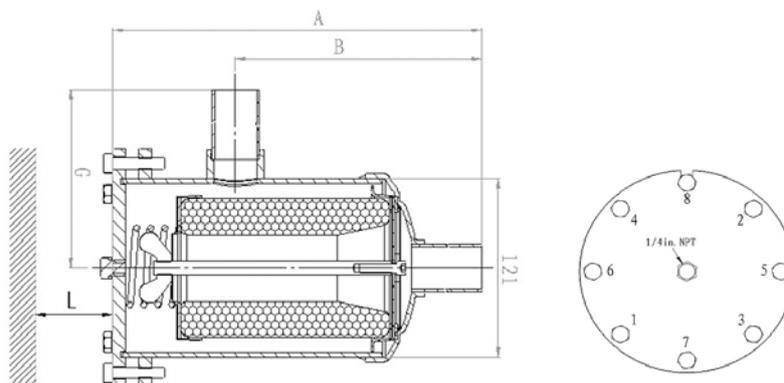
R22: EPD = 10 ppm W, corresponding dew point temperature is -50°C

R134a: EPD = 50 ppm W, corresponding dew point temperature is -37°C

R404A: EPD = 10 ppm W, corresponding dew point temperature is -40°C

R407C: EPD = 10 ppm W, corresponding dew point temperature is -40°C

- Note:**
1. The data reported in the Table 2, 3, 6 and 7 are based on filter driers in a clean system at ideal conditions; with impurities accumulated in the filter, the capacity may decrease.
  2. R407C data based on dew point conditions
  3. Adsorption capacity of oleic acid at 0.05 TAN (Total Acid Number)
  4. Standard Evaporating Temperature defined by ANSI.AHRI Standard 731 (SI)-2013
  5. Standard Evaporating Temperature defined by ANSI.AHRI Standard 730 (I-P)-2013





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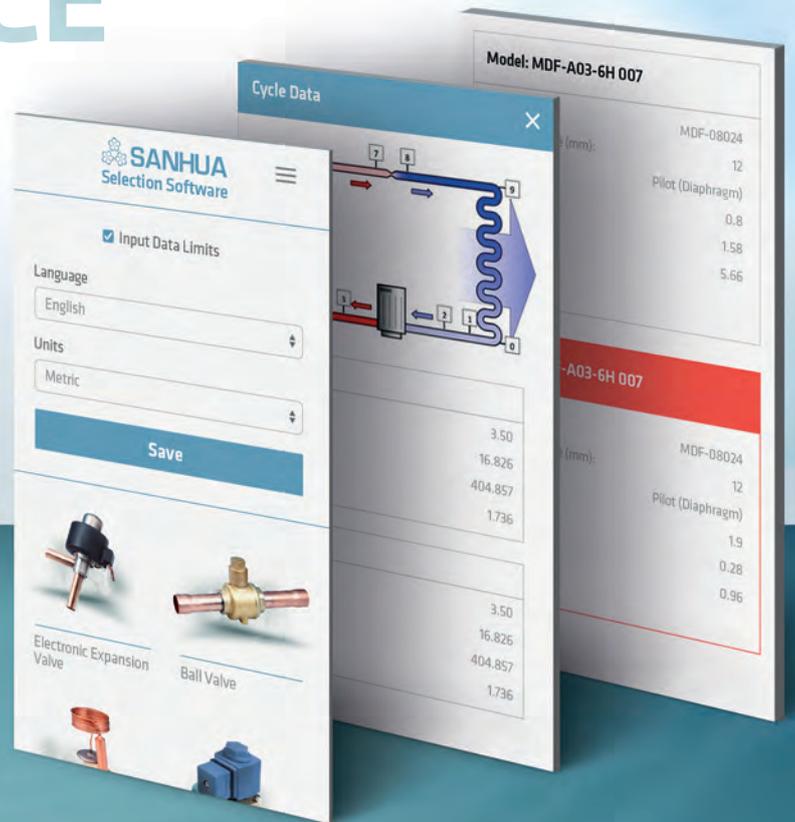


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