Direct acting 2 port solenoid valve for hot water
(special purpose valve)

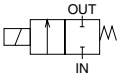
# FHB Series

- NC (normally closed) type
- Port size: Rc1/8, Rc1/2

RoHS CAD

## JIS symbol

- NC (normally closed) type




## Common specifications

| Item | FHB |
|---|---|
| Working fluid | Hot water (90˚C or less) |
| Working pressure differential range MPa | 0 to 1.5 (refer to max. working pressure differential in individual specifications. ) |
| Withstanding pressure (water) MPa | 5.0 (3.0 for orifice ø7/ø10 ) |
| Fluid temperature ˚C | 1 to 90 (no freezing ) |
| Ambient temperature ˚C | -20 to 60 |
| Heat proof class | H or equivalent |
| Atmosphere | Place free of corrosive gas and explosive gas |
| Valve structure | Direct acting poppet structure |
| Valve seat leakage cm³/min. | 0 (water pressure) |
| Mounting attitude | Free |
| Protective structure | IP65 or equivalent |

## Individual specifications

| Item / Model no. | Port size | Orifice (mm) | Cv flow factor | Max. working pressure diff. MPa (AC) | Max. working pressure MPa | Rated voltage | Rated power (VA) Holding 50 Hz | Rated power (VA) Holding 60 Hz | Rated power (VA) Starting 50 Hz | Rated power (VA) Starting 60 Hz | Power consumption (W) AC 50 Hz | Power consumption (W) AC 60 Hz | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NC (normally closed) type | | | | | | | | | | | | | |
| **FHB21- 6 -Z** | Rc1/8 | 1 | 0.035 | 1.5 | 1.5 | 100 VAC 50/60 Hz<br>110 VAC 60 Hz<br>200 VAC 50/60 Hz<br>220 VAC 60 Hz | 5.5 | 4 | 9 | 8 | 2.8 | 2 | 0.16 |
| **-2** | | 2 | 0.15 | 0.7 | | | | | | | | | |
| **FHB31- 6/8 -3** | Rc1/8 / Rc1/4 | 3 | 0.31 | 0.7 | | | 10 | 7 | 23 | 20 | 4.2 | 3.2 | 0.31 |
| **-5** | | 4 | 0.54 | 0.4 | | | | | | | | | |
| **-6** | | 5 | 0.75 | 0.25 | | | | | | | | | |
| **FHB41- 8/10 -5** | Rc1/4 / Rc3/8 | 4 | 0.54 | 0.8 | | | 16 | 13 | 40 | 35 | 7.5 | 6.3 | 0.51 |
| **-6** | | 5 | 0.80 | 0.5 | | | | | | | | | |
| **-7** | | 7 | 1.10 | 0.2 | 0.3 | | | | | | | | |
| **FHB41- 10/15 -8** | Rc3/8 Rc1/2 | 10 | 1.88 | 0.1 | | | | | | | | | 0.60 |
| **FHB51- 8/10 -5** | Rc1/4 / Rc3/8 | 4 | 0.54 | 1.1 | 1.5 | | 23 | 19 | 60 | 50 | 11.5 | 10 | 0.69 |
| **-6** | | 5 | 0.80 | 0.7 | | | | | | | | | |
| **-7** | | 7 | 1.10 | 0.3 | 0.3 | | | | | | | | |
| **FHB51- 10/15 -8** | Rc3/8 Rc1/2 | 10 | 1.88 | 0.12 | | | | | | | | | 0.79 |

*1: The voltage fluctuation must be within ±10% of the rated voltage.
*2: The leakage current must be less than the values shown below.

| Leakage current: Voltage / Model no. | 100 VAC | 200 VAC |
|---|---|---|
| **FHB2** | 3 mA or less | 1.5 mA or less |
| **FHB3/4/5** | 6 mA or less | 3 mA or less |

## How to order

F H B 2 1 - 6 - Z - B 4A B - 1

- F H: Working fluid (hot water)
- B: No. of port (2 port valve)
- 2: Ⓐ Size variation
- 1: Ⓑ Actuation
- 6: Ⓒ Port size
- Z: Ⓓ Orifice *1 *2
- B: Ⓔ Body/sealant combination
- 4A: Ⓕ Coil option
- B: Ⓖ Other options
- 1: Ⓗ Voltage *3

| Symbol | Descriptions | FHB21 | FHB31 | FHB41 | FHB51 |
|---|---|---|---|---|---|
| Ⓐ | **Size variation** | | | | |
| **2** | 22 mm | ● | | | |
| **3** | 28 mm | | ● | | |
| **4** | 34 mm | | | ● | |
| **5** | 40 mm | | | | ● |
| Ⓑ | **Actuation** | | | | |
| **1** | NC (normally closed) type | ● | ● | ● | ● |
| Ⓒ | **Port size** | | | | |
| **6** | Rc1/8 | ● | ● | | |
| **8** | Rc1/4 | | ● | ● | ● |
| **10** | Rc3/8 | | | ● | ● |
| **15** | Rc1/2 | | | ● | ● |
| Ⓓ | **Orifice** | | | | |
| **Z** | ø1 | ● | | | |
| **2** | ø2 | ● | | | |
| **3** | ø3 | | ● | | |
| **5** | ø4 | | ● | ● | ● |
| **6** | ø5 | | ● | ● | ● |
| **7** | ø7 | | | ● | ● |
| **8** | ø10 | | | ● | ● |
| Ⓔ | **Body/sealant combination** | | | | |
| | Body / Sealant | | | | |
| **B** | Bronze casting / FKM | ● | ● | ● | ● |
| Ⓕ | **Coil option** | | | | |
| **4A** | Std. Grommet lead wire | ● | ● | ● | ● |
| Ⓖ | **Other options** | | | | |
| **Blank** | Std. None | ● | ● | ● | ● |
| **B** | Option Mounting plate | ● | ● | ● | ● |
| Ⓗ | **Voltage** | | | | |
| **1** | 100 VAC 50/60 Hz, 110 VAC 60 Hz | ● | ● | ● | ● |
| **2** | 200 VAC 50/60 Hz, 220 VAC 60 Hz | ● | ● | ● | ● |
| **For voltages other than above, directly write in the voltage. (AC only)** | | | | | |

Select from the combinations indicated with ● above.

<Example of model number>

**FHB21-6-Z-B4AB-1**
Model no.: FHB

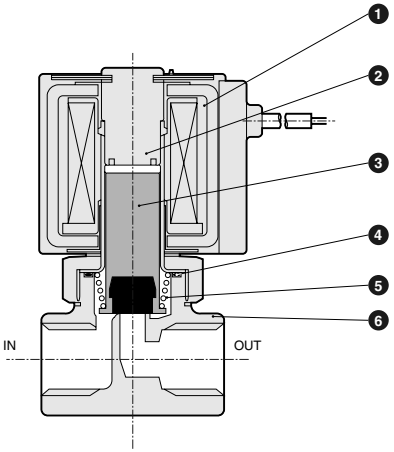
- Ⓐ Size variation: 22 mm
- Ⓑ Acutuation: NC (normally closed) type
- Ⓒ Port size: Rc1/8
- Ⓓ Orifice: ø1
- Ⓔ Body/sealant combination: Body - bronze casting, sealant - FKM
- Ⓕ Coil option: Grommet lead wire (heat proof class H)
- Ⓖ Other options: Mounting plate
- Ⓗ Voltage: 100 VAC 50/60Hz, 110 VAC 60Hz

### ⚠ Note on model no. selection

*1: For FHB41/51 orifice ø4 mm (Ⓓ 5) and ø5 mm (Ⓓ 6), only bore sizes Rc1/4 (Ⓒ 8) and Rc3/8 (Ⓒ 10) are available.
*2: For orifice ø10 mm (Ⓓ 8), port sizes Rc3/8 (Ⓒ 10) and Rc1/2 (Ⓒ 15) are available.
*3: Some voltages are not available. Contact CKD for details.

## Internal structure and parts list

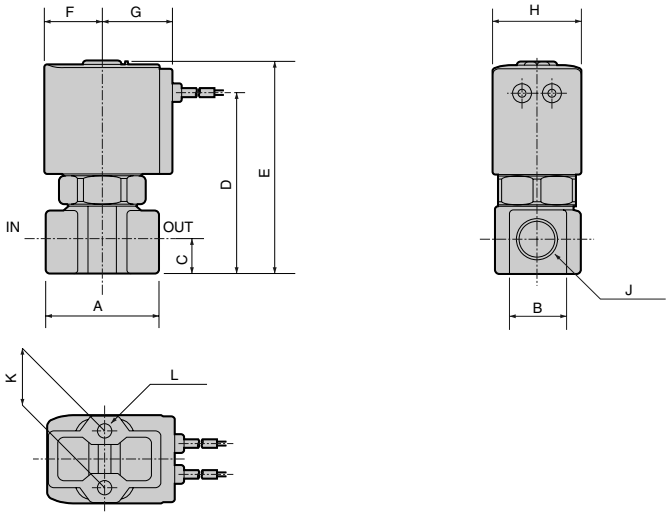
● FHB*1 Series




| No. | Parts name | Material | |
|---|---|---|---|
| 1 | Coil assembly | – | – |
| 2 | Core assembly | SUS, Cu | Stainless steel, copper |
| 3 | Plunger assembly | SUS, FKM | Stainless steel, fluoro rubber |
| 4 | O ring | EPDM | Ethylene propylene diene rubber |
| 5 | Spring | SUS | Stainless steel |
| 6 | Body | CAC407 | Bronze casting |

## Dimensions CAD (Page 116)

● Grommet lead wire (heat proof class H) type
FHB*1-*-*-B4A

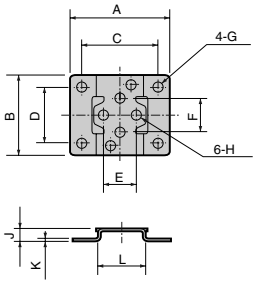



* Lead wire length 300 mm

| Model no. | A | B | C | D | E | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FHB21** | 32 | 14 | 8 | 45.5 | 56 | 15.5 | 19.5 | 22 | Rc1/8 | 15 | M4 depth 6 |
| **FHB31** | 36 | 18 | 11 | 57.5 | 68.5 | 18.5 | 22.5 | 28 | Rc1/8, Rc1/4 | 18 | M5 depth 6 |
| **FHB41** | 40 | 23 | 12 | 67 | 81 | 22.5 | 26 | 34 | Rc1/4, Rc3/8 | 18 | M5 depth 8 |
| FHB41-10/15-8 (orifice ø10) | 50 | 29 | 15 | 76 | 90 | | | | Rc3/8, Rc1/2 | | |
| **FHB51** | 40 | 23 | 12 | 73.5 | 89 | 26 | 29.5 | 40 | Rc1/4, RC3/8 | 18 | M5 depth 8 |
| FHB51-10/15-8 (orifice ø10) | 50 | 29 | 15 | 82.5 | 98 | | | | Rc3/8, Rc1/2 | | |

## Optional dimensions CAD (Page 116)

● Mounting plate
FHB*1-*-*-B*B




| Model no. | A | B | C | D | E | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FHB21** | 40 | 34 | 30 | 25 | 15 | 15 | ø5 | ø4.5 | 6 | 1.2 | 20 |
| **FHB31** | 52 | 42 | 40 | 30 | 18 | 18 | ø6 | ø5.5 | 7 | 1.6 | 25 |
| **FHB41/51** | 56 | 48 | 44 | 36 | 18 | 18 | ø6 | ø5.5 | 7 | 1.6 | 30 |

# FA$^{B}_{G}$/FG$^{B}_{G}$/FVB
# FW$^{B}_{G}$/FHB/FLB

(Special purpose valve)

## Special purpose direct acting 2, 3 port solenoid valve

**■ For compressed air, dry air, medium vacuum, water, hot water, oil**

### Overview

This is a direct acting poppet type solenoid valve. Six series for compressed air, dry air, medium vacuum, water, hot water and oil applications are available to suit the control fluid. Dedicated fluid design is suited for all types of fluids. Select the optimum series based on the fluid.

### Features

**Dedicated fluid design**
Special purpose design to fit the required fluid.

**Double life (CKD comparison)**
Long life even for dry air and inert gas applications.

**26% reduced footprint (CKD comparison)**

**56% reduced weight (CKD comparison for compressed air)**

**Surge suppressor integrated coil (with surge suppressor)**

**Low wattage design**

**Flame resistant UL94V-0 conformed coil**

**Easy disassembly and assembly**

### CONTENTS



⚠ Always read the precautions in the Introduction and page 24 before starting use.

# Series variation

## Special purpose direct acting 2, 3 port solenoid valve (special purpose valve)

| Working fluid | No. of port | Model | Structure | Actuation |
|---|---|---|---|---|
| Compressed air | 2 port  | FAB | Discrete | NC (normally closed) type |
| | | | | NO (normally open) type |
| | | GFAB | Manifold | Common supply type |
| | | | | Individual supply type |
| | 3 port  | FAG | Discrete | Universal type |
| | | | | NC pressurization type |
| | | GFAG | Manifold | Common air supply/ exhaust type |
| Dry air | 2 port  | FGB | Discrete | NC (normally closed) type |
| | | GFGB | Manifold | Common supply type |
| | | | | Individual supply type |
| | 3 port  | FGG | Discrete | Universal type |
| | | | | NC pressurization type |
| | | GFGG | Manifold | Common air supply/ exhaust type |
| Medium vacuum | 2 port  | FVB | Discrete | NC (normally closed) type |
| | | GFVB | Manifold | Individual supply type |
| Water | 2 port  | FWB | Discrete | NC (normally closed) type |
| | | | | NO (normally open) type |
| | | GFWB | Manifold | Common water supply type |
| | 3 port  | FWG | Discrete | Universal type |
| | | GFWG | Manifold | Common water supply/ individual drain type |
| Hot water | 2 port  | FHB | Discrete | NC (normally closed) type |
| Oil | 2 port  | FLB | Discrete | NC (normally closed) type |
| | | GFLB | Manifold | Central lubrication type |

| | Port size | | | | | Page |
|---|---|---|---|---|---|---|
| | M5 | Rc1/8 | Rc1/4 | Rc3/8 | Rc1/2 | |
| | ● | ● | ● | ● | ● | 26 |
| | | ● | ● | ● | | |
| | | ● | | ● | | 32 |
| | ● | ● | ● | | | |
| | ● | ● | ● | ● | | 38 |
| | | ● | ● | ● | | |
| | ● | ● | ● | | | 42 |
| | | ● | ● | ● | ● | 48 |
| | | ● | | ● | | 52 |
| | | ● | ● | | | |
| | | ● | ● | ● | | 58 |
| | | ● | ● | ● | | |
| | | ● | ● | | | 62 |
| | | ● | ● | ● | | 68 |
| | | ● | ● | | | 72 |
| | | ● | ● | ● | ● | 78 |
| | | ● | ● | ● | | |
| | | ● | ● | ● | | 84 |
| | | ● | ● | ● | | 90 |
| | | ● | ● | ● | | 94 |
| | | ● | ● | ● | ● | 100 |
| | | ● | ● | ● | ● | 104 |
| | | ● | ● | ● | | 108 |

* Note: Port size of manifold indicates pressure port.

# Safety precautions

Always read this section before starting use.

## Special purpose direct acting 2, 3 port solenoid valve (special purpose valve)

### Design & Selection

#### WARNING

**1 Working fluid**

(1) Active gases cannot be used with the compressed air and dry air types, so consult with CKD when these applications are required.

(2) Dedicated solenoid valve for each fluid. Select the solenoid valve based on the fluid. When using with other fluids, for example, in an air flow in water, specifications may differ, so consult with CKD.

**2 Protective structure**

The protective structure of the special purpose valve has passed IEC standard compliance tests, but performance greatly differs based on weather resistance and time, so these values are not guaranteed.

Provide means to ensure that water, dust, etc., do not come in direct contact.

#### CAUTION

**1 Continuous energizing**

Consult with CKD when the 3 port valve for water (FWG) is to be continuously energized with the NO port pressurized.

**2 Fluid viscosity**

The fluid viscosity must be 50 $mm^2/s$ or less.

Malfunctions could occur if the viscosity is higher than 50 $mm^2/s$.

### Installation, Piping & Wiring

#### CAUTION

**1 Piping**

Always hold the socket with a spanner, etc., when tightening the piping to the FWG Series NO port.

**2 Wiring**

Refer to the connection methods in Introduction 53 when wring to the small terminal box, DIN terminal box or T type terminal box.

### Maintenance

#### CAUTION

**1 For compressed air, dry air, medium vacuum**

(1) When disassembling or assembling the FAB/G or FGB/G Series, tighten the coil assembly set screws with the following tightening torques.

| Model no. | Coil assembly set screw |
|---|---|
| FAB/G1 | 0.3 to 0.7 N·m |
| FAB/G2/FGB/G2 | 0.7 to 1.1 N·m |
| FAB/G3/FGB/G3 | 1.1 to 1.8 N·m |
| FAB/G4/FGB/G4 | 1.1 to 1.8 N·m |
| FAB/G5/FGB/G5 | 2.0 to 3.0 N·m |

(2) When disassembling or assembling the FAB32/42/52 or FVB Series, tightening the core assembly and body with the following tightening torques.

| Model no. | Core assembly set screw |
|---|---|
| FVB2 | 12 to 18 N·m |
| FAB32/FVB3 | 16 to 24 N·m |
| FAB42/FVB4 | 21 to 31 N·m |
| FAB52/FVB5 | 21 to 31 N·m |

**2 For water, hot water, oil**

When disassembling or assembling the FWB/G, FHB or FLB Series and tightening the core assembly and body, and core assembly and socket, first temporarily tighten until the core assembly contacts the O ring to prevent entanglement of the spring (outer spring). Then tighten with the following torques.

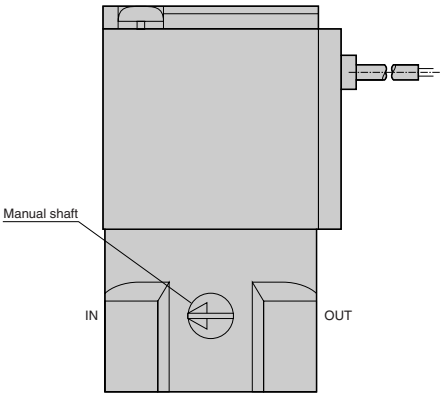
| Model no. | Core assembly tightening torque | Socket tightening torque |
|---|---|---|
| FWB2/FHB2/FLB2 | 12 to 18 N·m | ——— |
| FWG2 | | 3 to 5 N·m |
| FWB3/FHB3/FLB3 | 16 to 24 N·m | ——— |
| FWG3 | | 6 to 10 N·m |
| FWB4/FHB4/FLB4 | 21 to 31 N·m | ——— |
| FWG4 | | 10 to 14 N·m |
| FWB5/FHB5/FLB5 | 21 to 31 N·m | ——— |
| FWG5 | | 10 to 14 N·m |

## ⚠ How to operate manual override (optional) (FAB/FAG/FGB/FGG/GFAB/GFAG/GFGB/GFGG Series)

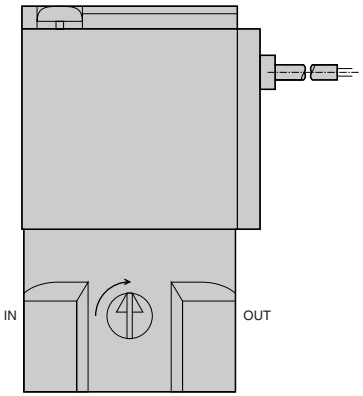
### 1 Manual locking type (available for FAB/FAG/FGB/FGG Series)

Opening: Insert a flat-tip screwdriver into the slit on the manual shaft, and turn it approx. 90˚ to the right. The plunger will rise up and the valve will open. (For the 3 port valve, the NC side valve seat will open and the NO side valve seat will close.) This opened state will be maintained even if the screwdriver is removed.

Closing: Turn the manual shaft to the left from the open position to the close position. The plunger will lower and the valve will close. (For the 3 port valve, the NC side valve seat will close and the NO side valve seat will open.)




Valve closed
(Slit at horizontal position)

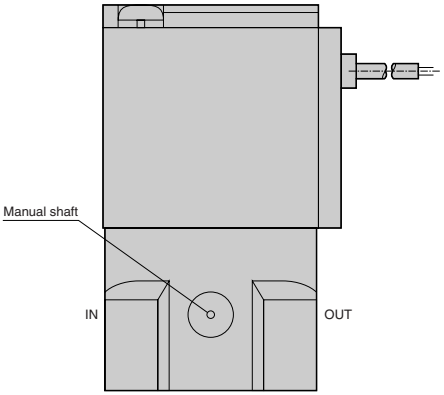



Valve opened
(Slit at vertical position)

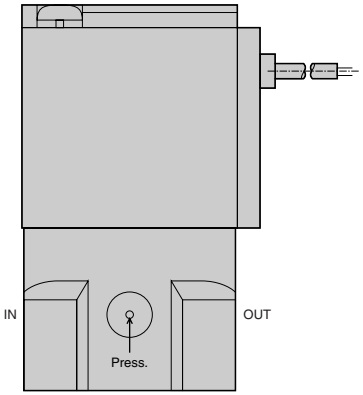
### 2 Manual non-locking type

Opening: When the concave section at the center of the manual shaft is pressed in with the fine tip of a Phillips screwdriver, the plunger assembly will rise up and the valve will open. (For the 3 port valve, the NC side valve seat will open and the NO side valve seat will close.)

Closing: When the screwdriver is removed from the manual shaft, the manual shaft will return to the front by the force of the inner spring, and the plunger assembly will lower and the valve will close. (For the 3 port valve, the NC side valve seat will close and the NO side valve seat will open.)




Valve closed




Valve opened

## Electronic Catalog file list

### Special purpose direct acting 2, 3 port solenoid valve (special purpose valve)

Compressed air

Electronic Catalog file list is applied to "CAD DATA 2006".

| Model no. | DXF | | MICRO CADAM |
|---|---|---|---|
| | Folder name | Filename | Filename (GROUP: CAD, USER: STDLIB) |
| ● Discrete 2 port solenoid valve: Pages 28, 30 | | | |
| FAB11 | FAB | fab11 | CKD-FAB11 |
| FAB21 | | fab21 | CKD-FAB21 |
| FAB31 | | fab31 | CKD-FAB31 |
| FAB41 | | fab41 | CKD-FAB41 |
| FAB51 | | fab51 | CKD-FAB51 |
| FAB32 | | fab32 | CKD-FAB32 |
| FAB42 | | fab42 | CKD-FAB42 |
| FAB52 | | fab52 | CKD-FAB52 |
| ● 2 port solenoid valve, manifold: Page 35 | | | |
| GFAB11(5) | FAB | gfab11_5_ | CKD-GFAB11(5) |
| GFAB21(5) | | gfab21_5_ | CKD-GFAB21(5) |
| GFAB31(5) | | gfab31_5_ | CKD-GFAB31(5) |
| GFAB41(5) | | gfab41_5_ | CKD-GFAB41(5) |
| GFAB51(5) | | gfab51_5_ | CKD-GFAB51(5) |
| ● Option | | | |
| FAB1 option depth 18 mm | FAB | fab1_opt | CKD-FAB1-OPT |
| FAB2 option depth 22 mm | | fab2_opt | CKD-FAB2-OPT |
| FAB3 option depth 28 mm | | fab3_opt | CKD-FAB3-OPT |
| FAB4 option depth 34 mm | | fab4_opt | CKD-FAB4-OPT |
| FAB5 option depth 40 mm | | fab5_opt | CKD-FAB5-OPT |
| ● Discrete 3 port solenoid valve: Page 40 | | | |
| FAG11 | FAG | fag11 | CKD-FAG11 |
| FAG21 | | fag21 | CKD-FAG21 |
| FAG31(3) | | fag31_3_ | CKD-FAG31(3) |
| FAG41(3) | | fag41_3_ | CKD-FAG41(3) |
| FAG51 | | fag51 | CKD-FAG51 |
| ● 3 port solenoid valve, manifold: Page 45 | | | |
| GFAG11 | FAG | gfag11 | CKD-GFAG11 |
| GFAG21 | | gfag21 | CKD-GFAG21 |
| GFAG31 | | gfag31 | CKD-GFAG31 |
| GFAG41 | | gfag41 | CKD-GFAG41 |
| GFAG51 | | gfag51 | CKD-GFAG51 |
| ● Option | | | |
| FAG1 option depth 18 mm | FAG | fag1_opt | CKD-FAG1-OPT |
| FAG2 option depth 22 mm | | fag2_opt | CKD-FAG2-OPT |
| FAG3 option depth 28 mm | | fag3_opt | CKD-FAG3-OPT |
| FAG4 option depth 34 mm | | fag4_opt | CKD-FAG4-OPT |
| FAG5 option depth 40 mm | | fag5_opt | CKD-FAG5-OPT |

## Dry air

Electronic Catalog file list is applied to "CAD DATA 2006".

| Model no. | DXF | | MICRO CADAM |
|---|---|---|---|
| | Folder name | Filename | Filename (GROUP: CAD, USER: STDLIB) |
| ● Discrete 2 port solenoid valve: Page 50 | | | |
| FGB21 | FGB | fgb21 | CKD-FGB21 |
| FGB31 | | fgb31 | CKD-FGB31 |
| FGB41 | | fgb41 | CKD-FGB41 |
| FGB51 | | fgb51 | CKD-FGB51 |
| ● 2 port solenoid valve, manifold: Page 55 | | | |
| GFGB21(5) | FGB | gfgb21_5_ | CKD-GFGB21(5) |
| GFGB31(5) | | gfgb31_5_ | CKD-GFGB31(5) |
| GFGB41(5) | | gfgb41_5_ | CKD-GFGB41(5) |
| GFGB51(5) | | gfgb51_5_ | CKD-GFGB51(5) |
| ● Option | | | |
| FGB2 option depth 22 mm | FGB | fgb2_opt | CKD-FGB2-OPT |
| FGB3 option depth 28 mm | | fgb3_opt | CKD-FGB3-OPT |
| FGB4 option depth 34 mm | | fgb4_opt | CKD-FGB4-OPT |
| FGB5 option depth 40 mm | | fgb5_opt | CKD-FGB5-OPT |
| ● Discrete 3 port solenoid valve: Page 60 | | | |
| FGG21 | FGG | fgg21 | CKD-FGG21 |
| FGG31(3) | | fgg31_3_ | CKD-FGG31(3) |
| FGG41(3) | | fgg41_3_ | CKD-FGG41(3) |
| FGG51 | | fgg51 | CKD-FGG51 |
| ● 3 port solenoid valve, manifold: Page 65 | | | |
| GFGG21 | FGG | gfgg21 | CKD-GFGG21 |
| GFGG31 | | gfgg31 | CKD-GFGG31 |
| GFGG41 | | gfgg41 | CKD-GFGG41 |
| GFGG51 | | gfgg51 | CKD-GFGG51 |
| ● Option | | | |
| FGG2 option depth 22 mm | FGG | fgg2_opt | CKD-FGG2-OPT |
| FGG3 option depth 28 mm | | fgg3_opt | CKD-FGG3-OPT |
| FGG4 option depth 34 mm | | fgg4_opt | CKD-FGG4-OPT |
| FGG5 option depth 40 mm | | fgg5_opt | CKD-FGG5-OPT |

## Medium vacuum

| Model no. | DXF | | MICRO CADAM |
|---|---|---|---|
| | Folder name | Filename | Filename (GROUP: CAD, USER: STDLIB) |
| ● Discrete 2 port solenoid valve: Page 70 | | | |
| FVB21 | FVB | fvb21 | CKD-FVB21 |
| FVB31 | | fvb31 | CKD-FVB31 |
| FVB41 | | fvb41 | CKD-FVB41 |
| FVB51 | | fvb51 | CKD-FVB51 |
| ● 2 port solenoid valve, manifold: Page 75 | | | |
| GFVB25 | FVB | gfvb25 | CKD-GFVB25 |
| GFVB35 | | gfvb35 | CKD-GFVB35 |
| GFVB45 | | gfvb45 | CKD-GFVB45 |
| GFVB55 | | gfvb55 | CKD-GFVB55 |
| ● Option | | | |
| FVB2 option depth 22 mm | FVB | fvb2_opt | CKD-FVB2-OPT |
| FVB3 option depth 28 mm | | fvb3_opt | CKD-FVB3-OPT |
| FVB4 option depth 34 mm | | fvb4_opt | CKD-FVB4-OPT |
| FVB5 option depth 40 mm | | fvb5_opt | CKD-FVB5-OPT |

## Electronic Catalog file list

### Water

Electronic Catalog file list is applied to "CAD DATA 2006".

| Model no. | DXF | | MICRO CADAM |
|---|---|---|---|
| | Folder name | Filename | Filename (GROUP: CAD, USER: STDLIB) |
| ● Discrete 2 port solenoid valve: Pages 80, 82 | | | |
| FWB21 | FWB | fw_l_b21 | CKD-FW(L)B21 |
| FWB31 | | fw_l_b31 | CKD-FW(L)B31 |
| FWB41 | | fw_l_b41 | CKD-FW(L)B41 |
| FWB41-*-8 | | fw_l_b41___8 | CKD-FW(L)B41-*-8 |
| FWB51 | | fw_l_b51 | CKD-FW(L)B51 |
| FWB51-*-8 | | fw_l_b51___8 | CKD-FW(L)B51-*-8 |
| FWB32 | | fwb32 | CKD-FWB32 |
| FWB42 | | fwb42 | CKD-FWB42 |
| FWB52 | | fwb52 | CKD-FWB52 |
| ● 2 port solenoid valve, manifold: Page 87 | | | |
| GFWB21 | FWB | gfw_l_b21 | CKD-GFW(L)B21 |
| GFWB31 | | gfw_l_b31 | CKD-GFW(L)B31 |
| GFWB41 | | gfw_l_b41 | CKD-GFW(L)B41 |
| GFWB51 | | gfw_l_b51 | CKD-GFW(L)B51 |
| ● Option | | | |
| FWB2 option depth 22 mm | FWB | fw_l_b2_opt | CKD-FW(L)B2-OPT |
| FWB3 option depth 28 mm | | fw_l_b3_opt | CKD-FW(L)B3-OPT |
| FWB4 option depth 34 mm | | fw_l_b4_opt | CKD-FW(L)B4-OPT |
| FWB5 option depth 40 mm | | fw_l_b5_opt | CKD-FW(L)B5-OPT |
| ● Discrete 3 port solenoid valve: Page 92 | | | |
| FWG21 | FWG | fwg21 | CKD-FWG21 |
| FWG31 | | fwg31 | CKD-FWG31 |
| FWG41 | | fwg41 | CKD-FWG41 |
| FWG51 | | fwg51 | CKD-FWG51 |
| ● 3 port solenoid valve, manifold: Pages 97 to 98 | | | |
| GFWG21 | FWG | gfwg21 | CKD-GFWG21 |
| GFWG31 | | gfwg31 | CKD-GFWG31 |
| GFWG41 | | gfwg41 | CKD-GFWG41 |
| GFWG51 | | gfwg51 | CKD-GFWG51 |
| ● Option | | | |
| FWG2 option depth 22 mm | FWG | fwg2_opt | CKD-FWG2-OPT |
| FWG3 option depth 28 mm | | fwg3_opt | CKD-FWG3-OPT |
| FWG4 option depth 34 mm | | fwg4_opt | CKD-FWG4-OPT |
| FWG5 option depth 40 mm | | fwg5_opt | CKD-FWG5-OPT |

### Hot water

| Model no. | DXF | | MICRO CADAM |
|---|---|---|---|
| | Folder name | Filename | Filename (GROUP: CAD, USER: STDLIB) |
| ● Discrete 2 port solenoid valve: Page 103 | | | |
| FHB21 | FHB | fhb21 | CKD-FHB21 |
| FHB31 | | fhb31 | CKD-FHB31 |
| FHB41 | | fhb41 | CKD-FHB41 |
| FHB41-*-8 | | fhb41___8 | CKD-FHB41-*-8 |
| FHB51 | | fhb51 | CKD-FHB51 |
| FHB41-*-8 | | fhb41___8 | CKD-FHB41-*-8 |

### For oil

| Model no. | DXF | | MICRO CADAM |
|---|---|---|---|
| | Folder name | Filename | Filename (GROUP: CAD, USER: STDLIB) |
| ● Discrete 2 port solenoid valve: Page 106 | | | |
| FLB21 | FLB | fw_l_b21 | CKD-FW(L)B21 |
| FLB31 | | fw_l_b31 | CKD-FW(L)B31 |
| FLB41 | | fw_l_b41 | CKD-FW(L)B41 |
| FLB41-*-8 | | fw_l_b41___8 | CKD-FW(L)B41-*-8 |
| FLB51 | | fw_l_b51 | CKD-FW(L)B51 |
| FLB51-*-8 | | fw_l_b51___8 | CKD-FW(L)B51-*-8 |
| ● 2 port solenoid valve, manifold: Page 111 | | | |
| GFLB21 | FLB | gfw_l_b21 | CKD-GFW(L)B21 |
| GFLB31 | | gfw_l_b31 | CKD-GFW(L)B31 |
| GFLB41 | | gfw_l_b41 | CKD-GFW(L)B41 |
| GFLB51 | | gfw_l_b51 | CKD-GFW(L)B51 |
| ● Option | | | |
| FLB2 option depth 22 mm | FLB | fw_l_b2_opt | CKD-FW(L)B2-OPT |
| FLB3 option depth 28 mm | | fw_l_b3_opt | CKD-FW(L)B3-OPT |
| FLB4 option depth 34 mm | | fw_l_b4_opt | CKD-FW(L)B4-OPT |
| FLB5 option depth 40 mm | | fw_l_b5_opt | CKD-FW(L)B5-OPT |