

KD

(Diaphragm Valve)

Straight Type / Branch Type

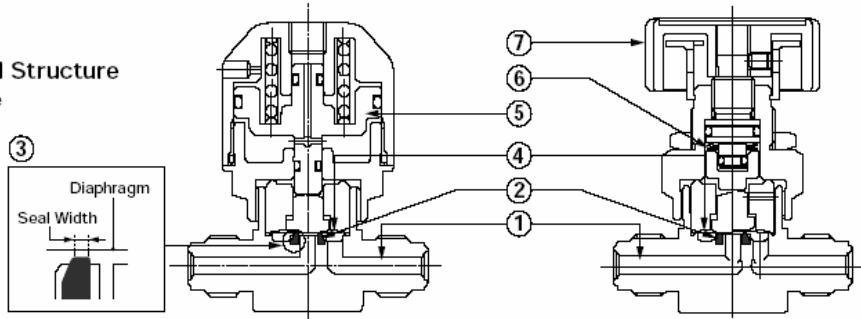
2-Valve 3-Way Block Type / 2-Step Type

High Temp.(250°C)-Compatible Type

KD Series is a product line of compactly designed diaphragm valves. Due to the very high Cv value, ultimately reduced inner capacity of the chamber in contact with gas, combined with newly introduced aluminum piston and actuator structure of new design, a reliable valve with accelerated open/close speed is made possible.

Internal Structure

(1/4" Size)



Features

①Reduced inner capacity:

Minimizing the vertical hole to achieve 1.2cm³ of inner capacity(KD1/4"male CVC type under valve open) adds excellent displacement features to this valve.

②Minimal seat volume (0.066cm³):

Reduction of seat surface(0.3cm²) that is in contact with gas enhances the degas features, which in consequence prevents the expansion of plastic caused by the material gases.

③Increased seal surface (3.5 times more, compared with previous type of our own):

Increased seal surface prevent internal leakage caused by mixing-in of foreign particles.

④Diaphragm:

Using cobalt alloy of 500 series that is highly resistant to corrosion, and strict control of rolling process ensures a high durability of the product.

⑤Increased operation speed:Using aluminum as a material for piston increases the valve operation speed.

⑥Spring washer structure:Repulsion of spring washer ensures the shut off of the fluid when the valve is closed.

⑦Handle:4 different types, i.e., 90° open/close, 90° open/close with lock function, 180°/270° revolving shut off types are available.

Major Specifications

| Type (Size) | KD2 (1/8") | KD4 (1/4") | KD8 (1/2") | KD12 (3/4") |
|----------------------------|--|--------------------|--|---------------------|
| Cv Value | 0.05 | 0.27 | 0.7 | 2.4 |
| Internal Volume | 0.22cm ³ | 1.2cm ³ | 6.6cm ³ | 34.6cm ³ |
| Max. Working Pressure | 0.98MPa (G.) (142psig) | | | |
| Max. Working Temp | PCTFE:-10~42°C (14~108F) | | | |
| | PFA: Manual Valve-10~150°C, Pneumatic Valve-10~120°C(500,000 repeats at 150°C, actual test) | | | |
| | PI:-10~150°C Metal:-10~200°C | | | |
| Operating Pressure | 0.4~0.7MPa (G.) (60~100psig) | | | |
| Internal Leakage Allowance | ≤3×10 ⁻⁹ Pa·m ³ /sec (≤3×10 ⁻⁹ atm cc/sec) | | 5×10 ⁻⁹ Pa·m ³ /sec | |
| External Leakage Allowance | ≤3×10 ⁻¹² Pa·m ³ /sec (≤3×10 ⁻¹¹ atm cc/sec) | | 5×10 ⁻¹² Pa·m ³ /sec | |
| Cycle Life | Pneumatic Valve 2 mil. repeats (N2 charged, own test) | | 30,000 repeats (N2 charged, own test) | |
| | Manual 100,000 repeats (N2 charged, own test) | | | |

Product Grade

| Grade | STD | EP | SEP |
|-------------------------|---|---|------------------------------------|
| Material | SUS316L | | SUS316LE (Double-Melt Material) |
| Inner Surface Roughness | Ry3.2μm or less | Ry0.7μm or less | |
| Polishing | Machining finish | Electropolishing finish | |
| Cleaning | 3-bath degrease + 6-bath precision washing | 3-bath degrease + 6-bath precision + 8-bath super precision washing | |
| | | class10 | |
| After Cleaning | Ordinary air-conditioned room | Clean circumstances | |
| Packing | Single | Double packing with clean pack, N2 charged | |

Product Specifications

| | | |
|----------|-----------|---------------------|
| Material | Body | SUS316L,SUS316LE |
| | Seat | PCTFE,PI,PFA,Metal |
| | Diaphragm | Nickel/Cobalt Alloy |

Flow Characteristics (Air·Water / 21°C)

| ΔP (MPa) | KD4:Cv0.27 | | KD8:Cv0.7 | |
|----------|-------------|---------------|-------------|---------------|
| | Air (ℓ/min) | Water (ℓ/min) | Air (ℓ/min) | Water (ℓ/min) |
| 0.1 | 130 | 3.9 | 300 | 10.0 |
| 0.5 | 400 | 8.4 | 850 | 22.0 |
| 0.98 | 700 | 13.5 | 1,500 | 31.5 |

Handles

Open



Close



270° open/close KD Standard



90° open/close



Optional 90° open/close with lock function

※ Handles with lock function are advantageous to prevent operational failures.

KD Series Straight Type



Product Code List

| Model | Size | Operational Method | Valve Shape | Connection | Seat Material | Option | Grade |
|----------------------------|--------------------------------------|--------------------|--|---|---|--|--|
| KD | 4 | M | S | VF | C | | EP |
| KD:KD type Diaphragm Valve | 2:1/8" 4:1/4" 6:3/8" 8:1/2" | M:Manual | S: Straight A: Angle L: L-Shaped | V :CVC Male VF:CVC Female W :Tube-End | C: PCTFE A: PFA P: PI M: Metal | Handle Color RD : Red GR : Green SL : Silver BK : Black YE : Yellow BR : Brown | STD EP SEP (only vacuum double-melt material) |

Non Mark : Blue(Standard)

Manual Type : 270° Open/Close Valve Dimensions

unit: inch(mm)

| Model | Type | Fitting Connector | L | H | A | B | C | D | E | M | M ₁ |
|-------|------------|-------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------------------|
| | KD2MS-VC | 1/8"CVC Male | 1.61 (41.0) | 2.24 (57.0) | 0.94 (24.0) | 0.75 (19.0) | 0.85 (21.5) | 0.28 (7.0) | 0.43 (11.0) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4MS-VC | 1/4"CVC Male | 2.24 (57.0) | 2.68 (68.0) | 1.65 (42.0) | 1.02 (26.0) | 1.06 (27.0) | 0.43 (11.0) | 0.62 (15.5) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8MS-VC | 1/2"CVC Male | 3.03 (77.0) | 3.19 (81.0) | 1.65 (42.0) | 1.42 (36.0) | 1.42 (36.0) | 0.63 (16.0) | 0.81 (20.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD12MS-VC | 3/4"CVC Male | 6.30 (160.0) | 4.06 (103.0) | 2.28 (58.0) | 1.81 (46.0) | 1.54 (39.0) | 0.91 (23.0) | 2.24 (57.0) | 1.38 (35.0) | 2-M5 Depth0.31 (2-M5 Depth8) |
| | KD2MS-VFC | 1/8"CVC Female | 2.20 (56.0) | 2.24 (57.0) | 0.94 (24.0) | 0.75 (19.0) | 0.85 (21.5) | 0.28 (7.0) | 0.73 (18.5) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4MS-VFC | 1/4"CVC Female | 2.78 (70.6) | 2.68 (68.0) | 1.65 (42.0) | 1.02 (26.0) | 1.06 (27.0) | 0.43 (11.0) | 0.88 (22.3) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8MS-VFC | 1/2"CVC Female | 3.27 (83.0) | 3.19 (81.0) | 1.65 (42.0) | 1.42 (36.0) | 1.42 (36.0) | 0.63 (16.0) | 0.93 (23.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD12MS-VFC | 3/4"CVC Female | 7.06 (179.2) | 4.06 (103.0) | 2.28 (58.0) | 1.81 (46.0) | 1.54 (39.0) | 0.91 (23.0) | 2.62 (66.6) | 1.38 (35.0) | 2-M5 Depth0.31 (2-M5 Depth8) |
| | KD2MS-WC | 1/8"Tube-End | 1.65 (42.0) | 2.24 (57.0) | 0.94 (24.0) | 0.75 (19.0) | 0.85 (21.5) | 0.28 (7.0) | 0.45 (11.5) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4MS-WC | 1/4"Tube-End | 2.13 (54.0) | 2.68 (68.0) | 1.65 (42.0) | 1.02 (26.0) | 1.06 (27.0) | 0.43 (11.0) | 0.55 (14.0) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD6MS-WC | 3/8"Tube-End | 2.72 (69.0) | 3.19 (81.0) | 1.65 (42.0) | 1.42 (36.0) | 1.42 (36.0) | 0.63 (16.0) | 0.65 (16.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8MS-WC | 1/2"Tube-End | 2.72 (69.0) | 3.19 (81.0) | 1.65 (42.0) | 1.42 (36.0) | 1.42 (36.0) | 0.63 (16.0) | 0.65 (16.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD12MS-WC | 3/4"Tube-End | 6.14 (156.0) | 4.06 (103.0) | 2.28 (58.0) | 1.81 (46.0) | 1.54 (39.0) | 0.91 (23.0) | 2.17 (55.0) | 1.38 (35.0) | 2-M5 Depth0.31 (2-M5 Depth8) |



Product Code List

| Model | Size | Operational Method | Valve Shape | Connection | Seat Material | Option | Grade |
|----------------------------|--------------------------------------|--------------------|--|---|---|--|--|
| KD | 4 | Q | S | VF | C | | EP |
| KD:KD type Diaphragm Valve | 2:1/8" 4:1/4" 6:3/8" 8:1/2" | Q:90°Manual | S: Straight A: Angle L: L-Shaped | V :CVC Male VF:CVC Female W :Tube-End | C: PCTFE A: PFA P: PI M: Metal | POC: 90° Lock Type * Handle Color RD : Red GR : Green SL : Silver WH : White BK : Black YE : Yellow | STD EP SEP (only vacuum double-melt material) |

※ Refer to P.2 for handles.
Non Mark : Blue(Standard)

Manual Type : 90° Open/Close Valve Dimensions

unit: inch(mm)

| Model | Type | Fitting Connector | L | H | A | B | C | D | E | M | M ₁ |
|-------|-----------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------------------|
| | KD2QS-VC | 1/8"CVC Male | 1.61 (41.0) | 2.28 (58.0) | 1.46 (37.0) | 0.75 (19.0) | 0.85 (21.5) | 0.28 (7.0) | 0.43 (11.0) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4QS-VC | 1/4"CVC Male | 2.24 (57.0) | 2.87 (73.0) | 1.93 (49.0) | 1.02 (26.0) | 1.06 (27.0) | 0.43 (11.0) | 0.62 (15.5) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8QS-VC | 1/2"CVC Male | 3.03 (77.0) | 3.39 (86.0) | 1.93 (49.0) | 1.42 (36.0) | 1.32 (33.5) | 0.63 (16.0) | 0.81 (20.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD2QS-VFC | 1/8"CVC Female | 2.20 (56.0) | 2.28 (58.0) | 1.46 (37.0) | 0.75 (19.0) | 0.85 (21.5) | 0.28 (7.0) | 0.73 (18.5) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4QS-VFC | 1/4"CVC Female | 2.78 (70.6) | 2.87 (73.0) | 1.93 (49.0) | 1.02 (26.0) | 1.06 (27.0) | 0.43 (11.0) | 0.88 (22.3) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8QS-VFC | 1/2"CVC Female | 3.27 (83.0) | 3.39 (86.0) | 1.93 (49.0) | 1.42 (36.0) | 1.32 (33.5) | 0.63 (16.0) | 0.93 (23.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD2QS-WC | 1/8"Tube-End | 1.65 (42.0) | 2.28 (58.0) | 1.46 (37.0) | 0.75 (19.0) | 0.85 (21.5) | 0.28 (7.0) | 0.45 (11.5) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4QS-WC | 1/4"Tube-End | 2.13 (54.0) | 2.87 (73.0) | 1.93 (49.0) | 1.02 (26.0) | 1.06 (27.0) | 0.43 (11.0) | 0.55 (14.0) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD6QS-WC | 3/8"Tube-End | 2.72 (69.0) | 3.39 (86.0) | 1.93 (49.0) | 1.42 (36.0) | 1.32 (33.5) | 0.63 (16.0) | 0.65 (16.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8QS-WC | 1/2"Tube-End | 2.72 (69.0) | 3.39 (86.0) | 1.93 (49.0) | 1.42 (36.0) | 1.32 (33.5) | 0.63 (16.0) | 0.65 (16.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |

KD4□S-VFC



Product Code List

| Model | Size | Operational Method | Valve Shape | Connection | Seat Material | Option | Grade |
|----------------------------|--------------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|---------------------------|--|
| KD | 4 | C | S | VF | C | □ | EP |
| KD:KD type Diaphragm Valve | 2:1/8" 4:1/4" 6:3/8" 8:1/2" | C:Normally Close O:Normally Open | S:Straight A:Angle L:L-Shaped | V :CVC Male VF:CVC Female W :Tube-End | C:PCTFE A:PFA P:PI M:Metal | S:with Sensor (option) | STD EP SEP (only vacuum double-melt material) |

※The option is available only for pneumatic valves.

Automatic Type : Normally Close/Normally Open Valve Dimensions

unit: inch(mm)

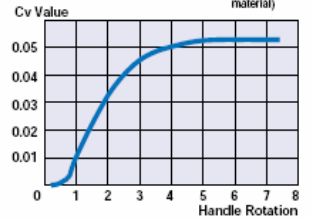
| Model | Type | Fitting Connector | L | H | A | B | D | E | M | M ₁ |
|-------|------------|-------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|---------------------------------|
| | KD2□S-VC | 1/8"CVC Male | 1.61 (41.0) | 2.09 (53.0) | 1.10 (28.0) | 0.75 (19.0) | 0.28 (7.0) | 0.43 (11.0) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4□S-VC | 1/4"CVC Male | 2.24 (57.0) | 2.64 (67.0) | 1.56 (39.7) | 1.02 (26.0) | 0.43 (11.0) | 0.62 (15.5) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8□S-VC | 1/2"CVC Male | 3.03 (77.0) | 3.31 (84.0) | 2.17 (55.0) | 1.42 (36.0) | 0.63 (16.0) | 0.81 (20.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD12□S-VC | 3/4"CVC Male | 6.30 (160.0) | 5.83 (148.0) | 3.35 (85.0) | 1.81 (46.0) | 0.91 (23.0) | 2.24 (57.0) | 1.38 (35.0) | 2-M5 Depth0.31 (2-M5 Depth8) |
| | KD2□S-VFC | 1/8"CVC Female | 2.20 (56.0) | 2.09 (53.0) | 1.10 (28.0) | 0.75 (19.0) | 0.28 (7.0) | 0.73 (18.5) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4□S-VFC | 1/4"CVC Female | 2.78 (70.6) | 2.64 (67.0) | 1.56 (39.7) | 1.02 (26.0) | 0.43 (11.0) | 0.88 (22.3) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8□S-VFC | 1/2"CVC Female | 3.27 (83.0) | 3.31 (84.0) | 2.17 (55.0) | 1.42 (36.0) | 0.63 (16.0) | 0.93 (23.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD12□S-VFC | 3/4"CVC Female | 7.06 (179.2) | 5.83 (148.0) | 3.35 (85.0) | 1.81 (46.0) | 0.91 (23.0) | 2.62 (66.6) | 1.38 (35.0) | 2-M5 Depth0.31 (2-M5 Depth8) |
| | KD2□S-WC | 1/8"Tube-End | 1.65 (42.0) | 2.09 (53.0) | 1.10 (28.0) | 0.75 (19.0) | 0.28 (7.0) | 0.45 (11.5) | 0.67 (17.0) | 2-M4 Depth0.20 (2-M4 Depth5) |
| | KD4□S-WC | 1/4"Tube-End | 2.13 (54.0) | 2.64 (67.0) | 1.56 (39.7) | 1.02 (26.0) | 0.43 (11.0) | 0.55 (14.0) | 1.00 (25.4) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD6□S-WC | 3/8"Tube-End | 2.72 (69.0) | 3.31 (84.0) | 2.17 (55.0) | 1.42 (36.0) | 0.63 (16.0) | 0.65 (16.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD8□S-WC | 1/2"Tube-End | 2.72 (69.0) | 3.31 (84.0) | 2.17 (55.0) | 1.42 (36.0) | 0.63 (16.0) | 0.65 (16.5) | 1.10 (28.0) | 2-M5 Depth0.20 (2-M5 Depth5) |
| | KD12□S-WC | 3/4"Tube-End | 6.14 (156.0) | 5.83 (148.0) | 3.35 (85.0) | 1.81 (46.0) | 0.91 (23.0) | 2.17 (55.0) | 1.38 (35.0) | 2-M5 Depth0.31 (2-M5 Depth8) |

KD2FS-V4M



Product Code List

| Model | Size | Operational Method | Valve Shape | Connection | Seat Material | Grade |
|----------------------------|--------|--------------------|-------------|--------------------------------------|---------------|--|
| KD | 2 | F | S | V4 | M | EP |
| KD:KD type Diaphragm Valve | 2:1/8" | F:Flow Control | S:Straight | V4 :CVC1/4"Male VF4:CVC1/4"Female | M:Metal | STD EP SEP (only vacuum double-melt material) |



Manual Type : Flow Control Valve Dimensions

unit: inch(mm)

| Model | Type | Fitting Connector | L | H | A | B | D | E | M |
|-------|------------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | KD2FS-V4M | CVC1/4"Male | 1.97 (50.0) | 3.78 (96.0) | 0.87 (22.0) | 0.75 (19.0) | 0.43 (11.0) | 0.61 (15.5) | 0.67 (17.0) |
| | | | 2.46 (62.6) | 3.78 (96.0) | 0.87 (22.0) | 0.75 (19.0) | 0.43 (11.0) | 0.86 (21.8) | 0.67 (17.0) |
| | KD2FS-VF4M | CVC1/4"Female | 1.97 (50.0) | 3.78 (96.0) | 0.87 (22.0) | 0.75 (19.0) | 0.43 (11.0) | 0.61 (15.5) | 0.67 (17.0) |
| | | | 2.46 (62.6) | 3.78 (96.0) | 0.87 (22.0) | 0.75 (19.0) | 0.43 (11.0) | 0.86 (21.8) | 0.67 (17.0) |

