

# KITZ SCT

## TDF Series

High-Speed High-Cycle Life Valves



The TDF series are high-purity gas-compatible diaphragm valves that combine high-speed opening/closing operation, high durability, heat resistance, and Cv stability required for atomic layer deposition (ALD) and atomic layer etch (ALE) processes.

## Features

### High-speed opening/closing, and high response stability

Realizes valve total response time 18ms\* and response stability ±2ms\* after durability cycles.

\* Performance values according to our testing methods

### Compatible with high-temperature fluids

Adoption of a structure that reduces heat transfer to the actuator enables usage with high-temperature fluids up to 220°C\*.

\* Body Temperature up to 200°C with solenoid valve and sensor installed.

### Stable Cv value

Adoption of a structure and seat material in consideration of thermal influence ensures Cv 0.5\* at 220°C. Cv values are 100% factory-adjusted. With little variation in Cv value during use, stable gas flow rates can be obtained.

\* Initial Cv value error and variation during use within ±5%

### High cycle life

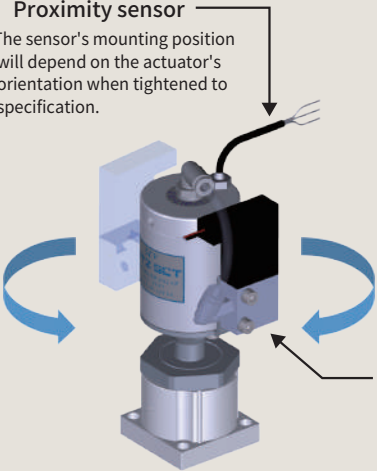
With a 220°C high-temperature body temperature rating, and durability test performance value of one hundred million cycles or more\* achieved as a result our unique technology.

\*Our test performance (test conditions): fluid N2, charged pressure 0.25MPa(G), wetted area temperature 220°C

### Options

**Proximity sensor**

\* The sensor's mounting position will depend on the actuator's orientation when tightened to specification.



**Solenoid valve**

Enables high-speed motion, and shortens valve opening/closing time. Fixed with a dedicated bracket.

Solenoid products manufactured by MAC Valves, Inc., are recommended.

Type	Wiring length	Wiring
34C-ABA-GDFC-1GF	914 mm	Duplex

**Proximity sensor**

Transmits the valve's actuator open/closed state as an electrical signal. Shipped after adjusting to optimum performance during factory assembly.

Products manufactured by OMRON Corporation are recommended.

Type	Operation mode	Output form
E2E-S05S12-WC-B1 2M	NO	PNP
E2E-S05S12-WC-B2 2M	NC	PNP
E2E-S05S12-WC-C1 2M	NO	NPN
E2E-S05S12-WC-C2 2M	NC	NPN

**Solenoid valve**

The orientation can be freely changed without removing the mounting screw.

\* In addition, special face-to-face dimensions and valve shapes, manifolds, mounting holes for cartridge heaters, corrosion-resistant material bodies, etc., are available  
Contact our sales representative.

## Specifications

Size	1/2"
Cv at 220°C *1	0.5
Maximum Operating Pressure	101.5psig (0.7 MPa(G))
Wetted Area Volume	0.1172in <sup>3</sup> (1.92 cm <sup>3</sup> (C-seal, 2-port)) 0.1532in <sup>3</sup> (2.51 cm <sup>3</sup> (C-seal, 3-port))
Fluid Temperature	80°C~220°C *2
Atmospheric Temperature	20°C~130°C 20~70°C (with sensor and solenoid valve installed)
Response Speed *3	18±2 ms
Leak Rates (Room temperature when shipped)	Across the Seat He Leak Rates ≤ 1 × 10 <sup>-9</sup> sccs (≤ 1 × 10 <sup>-10</sup> Pa·m <sup>3</sup> /sec) Inboard He Leak Rates ≤ 1 × 10 <sup>-9</sup> sccs (≤ 1 × 10 <sup>-10</sup> Pa·m <sup>3</sup> /sec)
Actuation pressure	65.3~87.0psig (0.45~0.6 MPa(G))

Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤ Rz 3.2 μ m	≤ Rz 0.7 μ m	
Polish	Mechanical polished	Electro polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	
Seat	PFA		
Diaphragm	Cobalt alloy		

\*1 The minimum value is stated by Cv value measurement (220°C) based on SEMASPEC-90120394B-STD.

\*2 Room temperature - 220°C if not used continuously, and up to 200°C with sensor and solenoid valve installed.

\*3 Motion of the valve from a closed state to opening; Time between the instant when the solenoid valve signal is turned ON and the instant when the valve is fully opened under the following conditions:  
(Operating pressure: 0.48MPa, tube: length between the solenoid valve and the valve 76.2mm, inside diameter 2mm)

### Precautions

- 1) The valves are designed to be used under atmospheric pressure. Usage such as under vacuum vessels are not guaranteed.
- 2) For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

## Type

Model	Size	Operation	Valve Shape	Connection	Fitting Size	Seat Material	Open/Close Sensor	Option	Grade
TDF	8	C	S	G		A	S	****	EP-316L

TDF : TDF-type  
Diaphragm valve  
(High-speed  
high-durability spec)

8 : 1.5" HF C :  
Pneumatic valve  
Normally closed

S : Straight  
B : Branch

G : C-seal  
Surface Mount  
V : CVC male  
VF : CVC female

Not shown: 1/2"  
4 : 1/4"  
(CVC only)

A: PFA

Not shown:  
Without sensor  
S:  
With open/  
close sensor

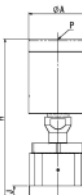
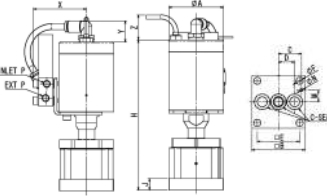
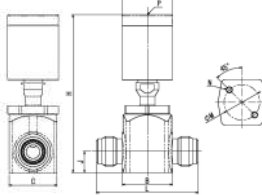
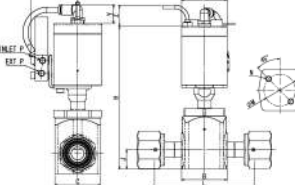
Serial no.:  
Sensor spec with  
solenoid valve  
Other special spec

STD-316L :  
Mechanical polished + SUS316L  
EP-316L :  
Electro polished + SUS316L  
SEP-316LE:  
Electro polished + Double melt material

\* For normally open type, contact our sales representative.

## Dimensions

Unit: inch(mm)

Model	Type	Connection	L	H	J	A	B	C	D	E	F	M	N	P	X	Y	Z
	TDF8CS-GA	C-1.5" HF Surface Mount		4.13 (105)	0.315 (8)		1.490 (37.85)	0.645 (16.38)	0.455 (11.56)	1.188 (30.18)	0.203 (5.16)	0.330 (8.38)	0.079 (2)	Rc 1/8			
	TDF8CB-GA- S-****	C-1.5" HF Surface Mount												M5	1.457 (37)	0.551 (14)	0.669 (17)
	TDF8CS-VA	CVC 1/2" male	3.03 (77)			1.496 (38)								Rc 1/8			
	TDF8CS- VFA- S-****	CVC 1/2" female	3.27 (83)	4.69 (119)	0.630 (16)		1.496 (38)	1.417 (36)				1.102 (28)	M5	M5			

\* The position of the solenoid valve can be turned in the desired direction.

\* The sensor's mounting position will depend on the actuator's orientation when tightened to specification.

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**Caution**

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