

# Solenoid operated valve



## Features

- Realized high pressure and large flow rate such as 35MPa {350kgf/cm<sup>2</sup>}, 100L/min. (G02), 160L/min. (G03).
- Mostly suits for the structure not only with dust-proof and water-proof complying with IEC Pub529 IP65, but also coping with Europe safety standards (CE).

## Nomenclature

\* - **KSO** - **G** \*\* - \*\* \* \* - \*\* - \*\*\* - \*\*\*

1 2 3 4 5 6 7 8 9 10

### (1) Nomenclature of applied fluid

No mark : Working oil with petroleum contents  
 H : Working oil with water / glycol contents  
 F : Working oil with phosphoric acid ester

### (2) Model No.

KSO : K series solenoid operated valve

### (3) Connections

G : Gasket attached type

### (4) Nominal diameter

02 : 1/4  
 03 : 3/8

### (5) Spool method (refer to model list)

### (6) Spool operating systems

C : Spring center type  
 A : Spring off-set type (with SOLa)  
 B : Spring off-set type (with SOLb)  
 N : No spring type (without detente)  
 D : No spring type (with detente)

### (7) Voltage mark (refer to solenoid specifications table)

### (8) Design number (design number is subject to change)

20 : Nominal diameter 03 (3/8)  
 30 : Nominal diameter 02 (1/4)

### (9) Option mark (refer to the option mark list)

### (10) Auxiliary spool symbol (refer to the model list)

## Specifications

Model No.	Nom. Dia.	Max. operating pressure MPa {kgf/cm <sup>2</sup> }	Max. flow rate L/min	Permissible back pressure MPa {kgf/cm <sup>2</sup> }	Max. switching frequency			Insulation skin
					AC, DC	With rectifier	Surge killer built-in DIN connector with lump	
KSO-G02	1/4	35 {350}	100	17.5 {175}	240	120	100	IEC Pub529 IP65
KSO-G03	3/8	(25 {250}) ★1	160 (DC), 130 (AC)	16 {160}			60	

Note) ★1 Max. operating pressure: Spool symbol/operating method 5C, 66C or 51C is 25MPa {250kgf/cm<sup>2</sup>}.

## (7) : Solenoid specifications

### ● KSO-G02

Voltage mark	Supply voltage	Starting amperes A	Holding current A	Holding power W	Permissible volts variation %	Voltage mark	Supply voltage	Starting amperes A	Holding current A	Holding power W	Permissible volts variation %
A	AC100V (50Hz)	2.42	0.51	21.5	80~110	M	AC230V (50Hz)	1.05	0.22	21.5	80~110
	AC100V (60Hz)	2.14	0.37	18	90~121		AC230V (60Hz)	0.93	0.16	18	90~120
	AC110V (60Hz)	2.35	0.44	22.5	82~110						
B	AC200V (50Hz)	1.21	0.26	21.5	80~110	N	DC12V	—	2.35	28.2	90~110
	AC200V (60Hz)	1.07	0.19	18	90~121	P	DC24V	—	1.22	29.2	90~110
	AC220V (60Hz)	1.18	0.22	22.5	82~110	Q	DC48V	—	0.61	29.3	90~110
C	AC110V (50Hz)	2.2	0.46	21.5	80~110	R	DC100V	—	0.35	34.8	90~110
D	AC220V (50Hz)	1.1	0.23	21.5	80~110	S	DC110V	—	0.32	35	90~110
J	AC240V (50Hz)	1.01	0.21	21.5	80~110	T	DC200V	—	0.18	35.4	90~110
	AC240V (60Hz)	0.89	0.15	18	90~120	U	DC220V	—	0.15	33.6	90~110
K	AC120V (50Hz)	2.02	0.43	21.5	80~110	E	AC100V with rectifier	—	0.38	33.5	90~110
	AC120V (60Hz)	1.78	0.31	18	90~120	F	AC110V with rectifier	—	0.34	32.8	90~110
L	AC115V (50Hz)	2.1	0.44	21.5	80~110	G	AC200V with rectifier	—	0.2	36.8	90~110
	AC115V (60Hz)	1.86	0.32	18	90~120	H	AC220V with rectifier	—	0.17	34	90~110

**(7) : Solenoid specification table**

● **KSO-G03**

Voltage mark	Supply voltage	Starting amperes A	Holding current A	Holding power W	Permissible volts variation %	Voltage mark	Supply voltage	Starting amperes A	Holding current A	Holding power W	Permissible volts variation %
A	AC100V (50Hz)	5.7	0.88	37	80~110	M	AC230V (50Hz)	2.5	0.35	37	80~110
	AC100V (60Hz)	4.9	0.64	33	90~121		AC230V (60Hz)	2.1	0.26	33	90~120
	AC110V (60Hz)	5.4	0.77	41	82~110						
B	AC200V (50Hz)	2.9	0.44	37	80~110	N	DC 12V	—	3.08	37	90~110
	AC200V (60Hz)	2.4	0.32	33	90~121	P	DC 24V	—	1.6	38	90~110
	AC220V (60Hz)	2.7	0.39	41	82~110	Q	DC 48V	—	0.77	37	90~110
C	AC110V (50Hz)	5.2	0.74	37	80~110	R	DC 100V	—	0.37	37	90~110
D	AC220V (50Hz)	2.6	0.37	37	80~110	S	DC 110V	—	0.34	37	90~110
J	AC240V (50Hz)	2.4	0.34	37	80~110	T	DC 200V	—	0.19	38	90~110
	AC240V (60Hz)	2	0.25	33	90~120	U	DC 220V	—	0.17	38	90~110
K	AC120V (50Hz)	4.8	0.68	37	80~110	E	AC100V with rectifier	—	0.42	37	90~110
	AC120V (60Hz)	4.1	0.5	33	90~120	F	AC110V with rectifier	—	0.39	38	90~110
L	AC115V (50Hz)	5	0.7	37	80~110	G	AC200V with rectifier	—	0.2	36	90~110
	AC115V (60Hz)	4.3	0.52	33	90~120	H	AC220V with rectifier	—	0.19	37	90~110

Note) ○Current and power are at 20°C.

○The starting current is the value when the moving iron core is at farthest place.

Time rating	Dielectric resistance	Dielectric characteristics	Insulation class	
			KSO-G02	KSO-G03
Continuous	50 MΩ	AC1500V one min	B class (Coils: AC: H class, DC: F class)	B class (Coils: H class)

**(9) : Option mark table**

Option mark	Option' contents				KSO-G02	KSO-G03	Note		
No mark	Terminal box type	With lump	Without earth terminal		Without surge killer	○	○		
N					With surge killer	○	○		
NR					Surge killer with resistance	○	○	★2	
E			With earth terminal	Coping with CE standards		Without surge killer	○	○	★3
EN						With surge killer	○	○	★3
ENR						Surge killer with resistance	○	○	★2, 3
QR			With quick return circuit built-in rectifier				—	○	★4
C	DIN connector type	Without lump	With earth terminal		Without surge killer	○	○		
CE						Coping with CE standards	○	○	★3
CL		With lump				Coping with CE standards	○	○	★3
CLE						Coping with CE standards	○	—	
N-CL							With surge killer	○	—
N-CLE									
CI	DIN connector type	With quick return circuit built-in rectifier				○	○		
L	Lead wire type	Without lump	Without earth terminal		Without surge killer	○	○		
8		Set bolts: M8				—	○		

Note) ★2 Applies only when the voltage mark is P.

★3 Products coping with CE standards are applied only when the voltage mark is A or P.

★4 Applies when the voltage mark is E, F, G, or H. Exclusive use driver is attached for this option. (One driver is attached to one solenoid).

Model : SSQ-101 (Voltage mark : E, F)

Model : SSQ-201 (Voltage mark : G, H)

○If the options are doubled more than two, line up them in the alphabetical order.

**Weight (kg)**

Application		KSO-G02		KSO-G03	
		AC	DC, with rectifier	AC	DC, with rectifier
Terminal box type	Double solenoid	1.8	2.2	4.4	5.8
	Single solenoid	1.5	1.7	3.7	4.4
DIN connector type	Double solenoid	1.8	2.1	4.3	5.7
	Single solenoid	1.4	1.6	3.6	4.3
Lead wire type	Double solenoid	1.7	2	4.3	5.7
	Single solenoid	1.4	1.5	3.6	4.3

**(5)(10) : Model list**

● **KSO-G02**

Model code		
JIS hydraulic symbols		
Spool operating method		
C, N, D type	A type	B type
KSO-G02-2C 	KSO-G02-2A-H2 	KSO-G02-2B-2T 
KSO-G02-3C 	KSO-G02-3A-H3 	KSO-G02-3B-3T 
KSO-G02-4C 	KSO-G02-81A-H4 	KSO-G02-8B-4T 
KSO-G02-44C 	KSO-G02-81A-H44 	KSO-G02-8B-44T 
KSO-G02-5C 	KSO-G02-3A-T5 	KSO-G02-3B-5H 
KSO-G02-66C 	KSO-G02-3A-T66 	KSO-G02-3B-66H 
KSO-G02-7C 	KSO-G02-9A-H7 	KSO-G02-91B-7T 
KSO-G02-8C 	KSO-G02-2A-H8 	KSO-G02-8B-8T 
KSO-G02-9C 	KSO-G02-9A-H9 	KSO-G02-2B-9T 
KSO-G02-2N 	—	KSO-G02-2B 
KSO-G02-20N 	—	KSO-G02-3B 
KSO-G02-2D 	—	KSO-G02-20B 
KSO-G02-20D 	—	—

● **KSO-G03**

Model code		
JIS hydraulic symbols		
Spool operating method		
C, D type	A type	B type
KSO-G03-2C 	KSO-G03-2A-H2 	KSO-G03-2B-2T 
KSO-G03-3C 	KSO-G03-3A-H3 	KSO-G03-3B-3T 
KSO-G03-4C 	KSO-G03-81A-H4 	KSO-G03-8B-4T 
KSO-G03-44C 	KSO-G03-81A-H44 	KSO-G03-8B-44T 
KSO-G03-5C 	KSO-G03-3A-T5 	KSO-G03-3B-5H 
KSO-G03-66C 	KSO-G03-3A-T66 	KSO-G03-3B-66H 
KSO-G03-7C 	KSO-G03-9A-H7 	KSO-G03-91B-7T 
KSO-G03-8C 	KSO-G03-2A-H8 	KSO-G03-8B-8T 
KSO-G03-9C 	KSO-G03-9A-H9 	KSO-G03-2B-9T 
KSO-G03-2D 	—	KSO-G03-2B 
KSO-G03-20D 	—	KSO-G03-3B 
—	—	KSO-G03-20B 