Reed, Electronic

MOVEMENT



Series CST - CSV and CSH

magnetic proximity switches

Series CST-CSV-CSH magnetic proximity switches define the position of the cylinder piston. When the internal contact is actuated by a magnetic field, the sensors complete an electrical circuit and provide an output signal to actuate directly a solenoid valve or a PLC. A yellow LED diode shows when the internal magnetic contact is closed.

GENERAL DATA

Models	CST
	CSV
	CSH
Operation	Reed contact
	Electronic
Type of output	Static or electronic PNP
Type of contact	Normally Open (NO) or Normally Closed (NC) contacts
Voltage	See model characteristics
Max current	See model characteristics
Max load	Reed switches 8 W DC and 10 VA AC Electronic switches 6 W DC
Protection	IP 67
Materials	Plastic body encapsulating epoxy resin cable in PVC connector PVR connector body in PU
Mounting	Directly into the grooves, or by means of adapters.
Signalling	By means of yellow diode Led
Protections	See model characteristics
Switching time	Reed switches <1,8 ms Electronic switches <1 ms
Operating temperature	-10 °C + 80 °C
Electrical duration	Reed switches 10.000.000 cycles Electronic switches 1.000.000 cycles
Electrical connection	cable 2x0,14 (2m) high flexibility cable 3x0,14 (2m) high flexibility connector M8 and cable 0,3 m

- » Designed to fit into the grooves provided in the profile barrel of the cylinder
- » The three Series CST -CSV - CSH are suitable for the whole Camozzi range of cylinders
- » With or without M8 connector

These switches are available in two different versions: Reed with mechanical switching and electronic with electronic switching. The electronic versions are suggested for heavy duty with frequent operations and strong vibrations. LENGTH OF THE CABLE (for CSH only):

COD	ING EXAMPLE							
CS	Т	-	2	2	0	N	-	5
CS	SERIES							
Т	SLOT TYPE T = T-slot V = V-slot H = frontal inserting s	lot						
2	OPERATION 2 = reed NO 3 = electronic 4 = reed NC							
2	CONNECTIONS 2 = 2 wires (Reed onl 3 = 3 wires 5 = 2 wires with M8 c 6 = 3 wires with M8 c	ly) onnector (Reed only) onnector						
0	POWER SUPPLY VC 0 = 10-110V DC; 10-2 1 = 30-110V DC; 30-2 2 = 3 wires cst (PNP) 3 = 10-30V AC/DC (P 4 = 10-27V DC (PNP)	DLTAGE 230V AC (PNP) 230V AC (PNP) PNP))						
Ν	NOTE N = ACCORDING TO	NORM (CST/CSV-2	50N only)					



BK = black

5

2 = 2 m 5 = 5 m

1



The Reed version with 3 wires allows the connection of several sensors in series, as there is no voltage drop between the supply and the load (see connecting scheme). The voltage drop is 2,8V for the Reed sensors with 2 wires and 1V for Hall effect sensors with 3 wires.

BN = brown BU = blue BK = black L = load



Useful information for correct use of the magnetic sensors

The magnetic sensors consist of a reed switch which is enclosed in a glass bulb containing a rarified gas. The contacts, which are made of magnetic material (nickel-iron), are flexible and are coated, at the contact points with a high quality non-arcing material.

Switching is effected by means of a suitable magnetic field and actuation is achieved by means of the permanent magnet inside the piston. The two sensors are of the normally open type and, therefore, when they are subject to the effect of the magnetic field, they close the circuit.

The operating field of the sensors with respect to the magnetic piston is shown in this picture. The dimension b indicates the amplitude of the magnetic field or switching field during which the circuit is closed. The value H represents the operational hysteresis of the sensor with respect to the form and amplitude of the magnetic field. The operating field, as a result of hysteresis, is displaced by the dimension H in the opposite direction to movement of the piston.

The values b and H are shown in the table and are classified according to bore.

The maximum speed permitted for each cylinder is a function of the value b and the response time of the various components connected after the sensor.

The maximum speed for a cylinder guided by magnetic sensors is calculated as follows: b / t = Speed

where: b = contact stroke in mm (see table)

t = total reaction time in milli seconds of electric control components connected after the sensor

Speed = maximum speed in m/second



1

MOVEMENT

CONTACT STROKE AND HYSTERESIS

Useful information for correct use of the magnetic sensors:

H = operational hysteresis of the sensor with respect to the form and amplitude of the magnetic field b = contact stroke in mm



Series	Ø	b (mm)	H(mm)	Series	Ø	b (mm)	H (mm)	Series	Ø	b (mm)	H (mm)
24-25	16	9,2	1,2	60	32	9,9	1	62	32	10	1
24-25	20	12	1	60	40	8,9	1,2	62	40	11	1
24-25	25	11,7	1,1	60	50	10,7	1	62	50	12	1,2
27	20	10,5	1,6	60	63	12,9	1,2	62	63	13	1
27	25	10,9	1,6	60	80	11,5	1,4	62	80	13	1
27	32	10,7	1,1	60	100	14,9	1,4	62	100	16	1
27	40	12,1	1,7	60	125	22	1				
27	50	12,1	1,2	61	32	9	1				
27	63	14,1	1,3	61	40	9,3	1,3				
QP	12	10	1,3	61	50	11	1,6				
QP	16	11,8	1,5	61	63	13,4	1,3				
QP	20	11,1	1,6	61	80	13,2	1,6				
QP	25	10,6	1,6	61	100	15,2	1,7				
QP	32	12,7	1,2	61	125	22,1	1,3				
QP	40	12,5	1,1	42	32	10,8	1,5	_			
QP	50	15,4	1,6	42	40	11,2	1,6				
QP	63	16,7	1,5	42	50	12,6	1,7				
QP	80	13,2	1,7	42	63	14,1	1,7	_			
QP	100	16,8	1,8	QCT	20	10	1,7				
31	12	9,2	1,4	QCT	25	11,4	1,8	_			
31	16	7,9	1,3	QCT	32	12,1	1,8				
31	20	9,1	1,5	QCT	40	12,4	1,8	_			
31	25	10,6	1,5	QCT	50	13,7	1,9				
31	32	11,9	1,7	QCT	63	13,5	1,8	_			
31	40	12,9	2,2	69	32	34,5	3,8				
31	50	14,7	1,2	69	40	29,6	4,1	_			
31	63	15,2	1,4	69	50	31,5	4,6				
31	80	16,6	1,8	69	63	32,3	3,1	_			
31	100	16,8	1,7	69	80	24	2,9				
40	160	24	2	69	100	25,6	2,9	_			
40	200	26	2	69	125	30,1	1,7				
								_			

Load curves











Electric circuit with protection against voltage spikes



1



DC applications: there is no protection on the Reed sensors on the inductive load, therefore it is advisable to use an electric ciruit with protection against the voltage spikes. See picture above for a typical example. Legend:

1 = Sensor

2 = Load

3 = Protection diode

Electric circuit with protection against voltage spikes



DC and AC applications: there is no protection on the Reed sensors on the inductive load, therefore it is advisable to use an electric ciruit with protection against the voltage spikes. See picture above for a typical example.

Legend: 1 = Sensor

2 = Load

3 = Protection varistor



AC applications: there is no protection on the Reed sensors on the inductive load, therefore it is advisable to use an electric circuit with protection against the voltage spikes. See picture above for a typical example.

	ey	enu.
1	=	Sensor

2 = Load

C + R = Series of resistor and protection capacitor



Mod.	Operation	Connections	Voltage (V)	Output	Max. current	Max Load	Protection
CST-220	Reed	2 wires	10 ÷ 110 AC/DC *	-	250 mA	10VA/8W	None
CSV-220	Reed	2 wires	10 ÷ 110 AC/DC *	-	250 mA	10VA/8W	None
CST-220-5	Reed	2 wires	10 ÷ 110 AC/DC *	-	250 mA	10VA/8W	None
CST-232	Reed	3 wires	5 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CSV-232	Reed	3 wires	5 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CST-332	Electronic	3 wires	10 ÷ 27 DC	PNP	100 mA	6W	Against polarity reversing and overvoltage
CSV-332	Electronic	3 wires	10 ÷ 27 DC	PNP	100 mA	6W	Against polarity reversing and overvoltage

Series CST-CSV magnetic proximity switches with male connector M8



In case of polarity reversing the sensor will still be operating, but the LED diode won't turn on.



M8

Length cable 0,3 mt.

NC

ΒU



Mod.	Operation	Connections	Voltage (V)	Output	Max. current	Max Load	Protection
CST-250N	Reed	2 wires with M8 connector	10 ÷ 110 AC/DC	-	250 mA	10VA/8W	None
CSV-250N	Reed	2 wires with M8 connector	10 ÷ 110 AC/DC	-	250 mA	10VA/8W	None
CST-262	Reed	3 wires with M8 connector	5 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CSV-262	Reed	3 wires with M8 connector	5 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CST-362	Electronic	3 wires with M8 connector	10 ÷ 27 DC	PNP	100 mA	6W	Against polarity reversing and overvoltage
CSV-362	Electronic	3 wires with M8 connector	10 ÷ 27 DC	PNP	100 mA	6W	Against polarity reversing and overvoltage

CSV

Series CSH magnetic proximity switches with 2/3-wire cable

For max. operating current see load curves diagrams.



In case of polarity reversing the sensor will still be operating, but the LED diode won't turn on.



C SH



Mod.	Operation	Connections	Voltage (V)	Output	Max current	Max Load	Protection
CSH-223-2	Reed	2 wires	10 ÷ 30 AC/DC	-	250 mA	10VA/8W	Against polarity reversing
CSH-223-5	Reed	2 wires	10 ÷ 30 AC/DC	-	250 mA	10VA/8W	Against polarity reversing
CSH-221-2	Reed	2 wires	30 ÷ 230 AC - 30 ÷ 110 DC	-	250 mA	10VA/8W	Against polarity reversing
CSH-221-5	Reed	2 wires	30 ÷ 230 AC - 30 ÷ 110 DC	-	250 mA	10VA/8W	Against polarity reversing
CSH-233-2	Reed	3 wires	10 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CSH-233-5	Reed	3 wires	10 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CSH-334-2	Electronic	3 wires	10 ÷ 27 DC	PNP	250 mA	6W	Against polarity reversing and overvoltage
CSH-334-5	Electronic	3 wires	10 ÷ 27 DC	PNP	250 mA	6W	Against polarity reversing and overvoltage

Series CSH magnetic proximity switches with male connector M8



For max. operating current see load curves diagrams.



ΒK

ΒU

ΒN





Mod.	Operation	Connections	Voltage (V)	Output	Max current	Max Load	Protection
CSH-253	Reed NO	2 wires with M8 connector	10 ÷ 30 AC/DC	-	250 mA	10VA/8W	Against polarity reversing
CSH-263	Reed NO	3 wires with M8 connector	10 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing
CSH-364	Electronic	3 wires with M8 connector	10 ÷ 27 DC	PNP	250 mA	6W	Against polarity reversing and overvoltage
CSH-463	Reed NC	3 wires with M8 connector	10 ÷ 30 AC/DC	PNP	250 mA	10VA/8W	Against polarity reversing

MOVEMENT



10 m

CS-10

MOVEMENT



	Mounting brackets for sens	ors Series CST-CSH		
Mod. (Cylinders series	Ø	\leq	
S-CST-01	QP-QPR	20 ÷ 100		
S-CST-01	50	32 ÷ 80		



- Materials:
- from S-CST-05÷12 stainless steel
 from S-CST-02÷04 and S-CST-18÷21
- technopolymer.





	37.5	
10		ł

5.6	
\bigvee	

Mod.	Cylinders series	Ø
S-CST-02	24-25-27	16
S-CST-03	24-25-27	20
S-CST-04	24-25-27	25
S-CST-05	94, 95	16-20-25 (94), 16-20 (95)
S-CST-06	90-92-97, 95	32 (90-92-97), 25 (95)
S-CST-07	90-92-97	40
S-CST-08	90-92-97	50
S-CST-09	90-92-97	63
S-CST-10	90	80
S-CST-11	90	100
S-CST-12	90	125
S-CST-18	27-42	32
S-CST-19	27-42	40
S-CST-20	27-42	50
S-CST-21	27-42	63

MOVEMENT

Mounting brackets for sensors Series CST and CSH 0 32 -63 80 - 200 Mod. Cylinders series Ø S-CST-25 60 32 ÷ 63 S-CST-26 60 80-100 S-CST-27 60 125 S-CST-28 40 160-200 Mounting brackets for sensors Series CST and CSH For cylinders series 60 mounted with guides series 45NHT or 45NHB. ---· (i)= 齫 80 - 100 Ø £ M8 1 32 - 63 f---Mod. Cylinders series ø S-CST-45N1 60 32 ÷ 63 S-CST-45N2 80-100 60 Slot cover profile Mod. S-CST-500 Supplied with 500 mm tube 11 Slot cover profile for cylinders Series: 31 -31 tandem and multi-position - QCT - QCB - QCBT-QCBF - 61 - 69 - 32 - 32 tandem and multi-position.

Mod. S-CST-500



MOVEMENT

Series CSN proximity switches

Reed switch



It is designed so that it can be fixed directly on the tie-rod by means of two screws which assure the position longitudinal to the cylinder axle; and with a third screw for the anti-rotation positioning. The three terminals are indicated by the numbers 1, 2 and 3 and enable the following connections to be made (see the scheme).

The electrical proximity switch Mod. CSN 2032-0 consists of a Reed switch complete with an electronic protection circuit and a red LED indicator. The resin inside the casing ensures high protection and insulation.

GENERAL DATA

Mod.	CSN 2032-0
Voltage	from 12 to 220V AC and DC
Protection	IP54 / IP65 with connector DIN 43650
Material	glass-reinforced PA
Mounting	bracket for tie rod ø 6 ÷ ø 10
Signalling	integrated red LED
Electrical connection	DIN 43650 connector, Mod. 122-800
Max. current	1.5 A
Max. load	20 W DC - 30 VA AC
Actuating time	≤ 2 ms
Actuating tolerance	± 1mm
Operating temperature	- 25°C ÷ + 75°C
Type of contact	NO (normally open)

MOVEMENT

TECHNICAL DATA

CONNECTION

- For inductive loads = solenoid valves, electrical magnets, relay.

To connectors = terminals 1 - 2

- For capacitive loads = circuit with remaining tension (see PLC controls)

To connectors = 1 - 3

Note: For connections with wires of approximately 10m, the connection shall be made as for a capacitive load.

MAXIMUM LOADS

For maximum loads see relative diagram, those loads are valid only for inductive loads. For capacitive loads, using clamp 3 (or black wire) load must not exceed 80 mA and load must be given by PLC or, for electrical circuits, by microrelay or micro solenoid valves with 2W maximum consumption.

Note: When operating with direct current, clamp 1 must always be connected to the positive outlet (+). In cases where commands are given from the PLC and logic NPN, clamp 1 must be connected to the inlet. In cases where commands are given from the PLC and logic PNP, clamps 2 or 3 must be connected to the inlet.

LEGEND: C1 = capacitive load C2 = inductive load



Maximum contact load

The maximum load (W) which the contacts are able to tolerate is that indicated in the section "General data", i.e.

- 20 W for direct current (DC)
- 30 VA for alternating current (AC)

The effective load allowed depends on the operating voltage (minimum 12 V, maximum 220 V) as shown in the following graph.

Note: this graph was obtained from practical tests performed using a load consisting of our Series A and 6 solenoid valves, at an operating speed of one stroke per second. For higher operating speeds, your are advised to contact our technical department.



Switches Series CSN

			39.5	<u>10.6</u> → ↓ ØM20
Mod.	for cylinders Series 40 - ø 160 ÷ 200	for cylinders Series 40 - ø 250) ÷ 320	for cylinders Series 41 - ø 160 ÷ 200
CSN 2032-0	mounting band to be ordered separatel	y direct mounting		mounting band to be ordered separately
	Mounting bracket for	sensor		



Mod.	
S21	for cylinders Series 40 ø 160 and 200
S53	for cylinders Series 41 ø 160 and 200

Reed switches

Series CSB and CSC

magnetic proximity switches



Series CSB/CSC magnetic proximity switches define the position of the magnetic piston. When the internal contact is actuated by a magnetic field, the sensors complete an electrical circuit and provide an output signal to actuate directly a solenoid valve or a PLC.

A red Led shows when the internal magnetic contact is closed.

GENERAL DATA

Model	CSB-220 CSC-220
Operation	Reed contact
Voltage	3 ÷ 110 V AC/DC
Protection	IP66
Material	Plastic body encapsulating epoxy resin
Mounting	directly into the groove
Signalling	by means of LED (red)
Electrical connections	2 x 0,14 cable (2 m)
Switching current	3 ÷ 50 mA
Max. load	8 W, 10 VA
Switching time	<1 ms (1/1000 sec)
Operating temperature	-10°C ÷ 60°C
Type of contact	NO
Weight	18 g
Protection circuit	None
Output	-

The reed switch that has a mechanical switching element, is suitable for voltages, AC and DC up to 110 V. Proximity switches mod. CSC are suitable for gripper mod. CGL. The proximity switches are impregnated in a sealed isolating cover. These sensors are designed to fit into the grooves provided in the profile barrel of the grippers.

For electrical connections see schemes.

CODING EXAMPLE

CS	В	-	D	-	2	20
CS	SERIES					
В	SLOT SHAPE: B = Square C = Round					
D	CABLE TYPE: D = straight H = 90°					
2	OPERATION: 2 = reed					
20	CONNECTION: 20 = 2 wires (Reed only)					

ELECTRICAL CONNECTORS



BN = brown BU = blue



There is no protection on the Reed sensors on the inductive load, therefore it is advisable to use electric circuits with protection against the voltage spikes.

BN = Brown

BU = Blue

C = Load

When the wire length of sensor connection load is more than 10m, inductors shall be installed in series near the sensor to avoid ripple. BN = Brown

е C = Load

When L is more than 10mt. the cable has to be considered as an inductive load.

MOVEMENT

Connectors Mod. CSB-D-220







Mod. CSB-D-220

 Mod.

CSB-H-220

Connectors Mod. CSC-D-220



В

- \$

22

6

Ø

F

Mod. CSC-D-220

Connectors Mod. CSC-H-220



CSC-H-220

Ø2.6

ε

9,5

TABLE SHOWING THE USE OF CAMOZZI MAGNETIC PROXIMITY SWITCHES

Table of sense	sors bracke	ts				
Series	Ø	CST - CSH	CSV	CSB-D-220 / CSB-H-220	CSC-D-220 / CSB-H-220	CSN
24 - 25	16	S-CST-02				
	20	S-CST-03				
	25	S-CST-04				
27	20	S-CST-03				
	25	S-CS1-04				
	32	S-CST-18				
	40	S-CST-19				
	50	S-CST-20				
94	12	5-651-21				
31	16	Direct mounting				
	20	Direct mounting				
	25	Direct mounting				
	32	Direct mounting				
	40	Direct mounting				
	50	Direct mounting				
	63	Direct mounting				
	80	Direct mounting				
	100	Direct mounting				
32	20	Direct mounting				
	25	Direct mounting				
	32	Direct mounting				
	40	Direct mounting				
	50	Direct mounting				
	63	Direct mounting				
	80	Direct mounting				
	100	Direct mounting				
40	160	S-CST-28				S21
	200	S-CST-28				S21
	250					Direct mounting
	320					Direct mounting
41	160					\$53
40	200	0.007.40				\$53
42	32	S-CST-10				
	50	S-CST-20				
	63	S-CST-20				
50	16	0 001 21	Direct mounting			
	25		Direct mounting			
	32	S-CST-01				
	40	S-CST-01				
	50	S-CST-01				
	63	S-CST-01				
	80	S-CST-01				
52	25	Direct mounting				
	32	Direct mounting				
	40	Direct mounting				
	50	Direct mounting				
	63	Direct mounting				
60	32	S-CST-25				
	40	S-CST-25				
	50	S-CST-25				
	63	S-US1-25				
	80	S-US1-26				
	100	S-US1-26				
60 ± 45N	125	5-631-2/				
00 T 40N	32	5-051-45N1				
	50	S-CST-45N1				
	63	S-CST-45N1				
	80	S-CST-45N2				
	100	S-CST-45N2				



TABLE SHOWING THE USE OF CAMOZZI MAGNETIC PROXIMITY SWITCHES

Table of ser	nsor brackets				
Series	Ø	CST - CSH	CSV	CSB-D-220 / CSB-H-220	CSC-D-220 / CSC-H-220
61	32	Direct mounting			
	40	Direct mounting			
	50	Direct mounting			
	63	Direct mounting			
	80	Direct mounting			
	100	Direct mounting			
	125	Direct mounting			
62	32	Direct mounting (CSH only)			
	40	Direct mounting (CSH only)			
	50	Direct mounting (CSH only)			
	63	Direct mounting (CSH only)			
	80	Direct mounting (CSH only)			
	100	Direct mounting (CSH only)			
69	32	Direct mounting			
	40	Direct mounting			
	50	Direct mounting			
	63	Direct mounting			
	80	Direct mounting			
	100	Direct mounting			
00 07	125				
90-97	32	S-CST-00			
	50	S-CST-08			
	63	S-CST-09			
90	80	S-CST-10			
	100	S-CST-11			
	125	S-CST-12			
94 - 95	16	S-CST-05			
	20	S-CST-05			
94	25	S-CST-05			
95	25	S-CST-06			
CGA	10			Direct mounting	
	16			Direct mounting	
	20			Direct mounting	
	25			Direct mounting	
	32			Direct mounting	
CGB	16			Direct mounting	
	20			Direct mounting	
	25			Direct mounting	
000	32			Direct mounting	
CGC	64			Direct mounting	
	80			Direct mounting	
	100			Direct mounting	
	125			Direct mounting	
CGLN	10				Direct mounting
	16				Direct mounting
	20				Direct mounting
	25				Direct mounting
	32				Direct mounting
CGP	10			Direct mounting	
	16			Direct mounting	
	20			Direct mounting	
	25			Direct mounting	
	32			Direct mounting	
CGSN	16				Direct mounting
	20				Direct mounting
	25				Direct mounting
	32				Direct mounting

Table of senso	r brackets				
Series	Ø	CST - CSH	CSV	CSB-D-220 CSB-H-220	CSC-D-220 CSC-H-220
QC	20	Direct mounting			
	25	Direct mounting			
	32	Direct mounting			
	40	Direct mounting			
	50	Direct mounting			
	63	Direct mounting			
QP - QPR	12		Direct mounting		
	16		Direct mounting		
	20	S-CST-01			
	25	S-CST-01			
	32	S-CST-01			
	40	S-CST-01			
	50	S-CST-01			
	63	S-CST-01			
	80	S-CST-01			
	100	S-CST-01			
QCBF	20	Direct mounting			
	25	Direct mounting			
	32	Direct mounting			
	40	Direct mounting			
QCTF	20	Direct mounting			
	25	Direct mounting			
	32	Direct mounting			
	40	Direct mounting			
QX	10				Direct mounting
	16				Direct mounting
	20				Direct mounting
	25				Direct mounting
	32				Direct mounting

TABLE SHOWING THE USE OF CAMOZZI MAGNETIC PROXIMITY SWITCHES