



**SENSORS (MAGNETIC
PROXIMITY SWITCHES)**

• GENERAL FEATURES:

The magnetic sensor is a device that change its status with the magnetic field.

Basically it's used as proximity end-stroke on the pneumatic cylinders which have the piston holding a magnet.

Therefore, fastening the sensor, on its seat on the external part of the cylinder housing, it is possible to get the information relative to the position of the piston, by an electrical contact or a voltage output, depending on the kind sensor which can be REED switch or static (GMR magneto resistive chip) respectively.

The sensor cabled or quick connect are available.

Our custom service is accessible round-the-clock to meet specific requirements for which standard products are not satisfactory.

• PROTECTION CIRCUIT FOR SWITCHES:

The switching of inductive loads made by REED produces an high voltage peak during the drop-out. In order to prevent dielectric discharges or voltaic arcs, you have to introduce a protection circuit.

It can be:

- a RC circuit in parallel to the switch in case of

V dc supply - (Picture n.1) -

- a diode in parallel to the load in case of V dc

supply - (Picture n.2) -

- n.2 Zener diodes in parallel to the load with

V ac / dc supply - (Picture n.3) -

- a varistor (VDR) in parallel to the load with

V ac / dc supply - (Picture n.4) -

The switching of capacitive loads or the use of cables longer than 10 meters produces current peaks during the connection. For this reason you have to introduce a protection resistance near the switch on the brown wire. Please, pay attention in granting the minimum necessary current to the switch. (10 ÷ 20 mA)

• SENSOR CHOICING:

Sensor choicing The sensor is a switch indeed, connect in series with a load, it must be used respecting its own electrical limit.

The functioning principles are two.

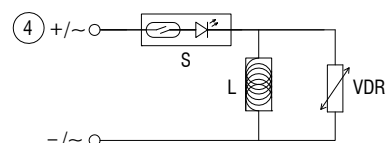
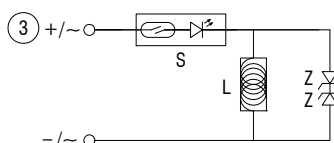
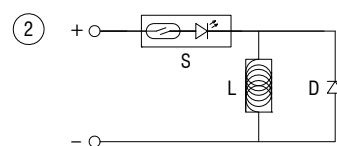
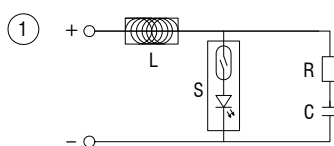
REED SWITCH: an electrical contact is switched by a magnetic field.

It can be supplied with both Vac and Vdc voltage.

In presence of vibration it can give troubles. If several sensors must be connected in series, it is recommended to utilize the version "D" to avoid the voltage drop due to the led indicators.

ELECTRONIC: a chip magneto resistor (GMR) is a solid-state device, therefore static (long life) with a voltage output NPN (sink) or PNP (source).

It must be supplied only with a 30Vdc max voltage. No problem in case of vibrations.



HSL 1 C 2 25 - G15

SERIES

HCB ; HSA ; HSL ; HSM ; HSS

CONNECTION

- 1 : 2 WIRES CABLE.
- 2 : 2 WIRES M8 SNAP CONNECTOR.
- 3 : 3 WIRES M8 SNAP CONNECTOR.
- 4 : 3 WIRES CABLE.
- 5 : 2 WIRES M12 SNAP CONNECTOR.
- 6 : 3 WIRES M12 SNAP CONNECTOR.
- 7 : 3 WIRES CABLE.
- 8 : 3 WIRES M8 AU SNAP CONNECTOR.
- 9 : 3 WIRES M12 AU SNAP CONNECTOR.

CIRCUIT TYPE

- A : NO LED 2 WIRES - REED.
- B : NO LED + VDR 2 WIRES - REED.
- C : 2 WIRES - REED.
- D : 3 WIRES - REED PNP.
- F : NO LED 2 WIRES - NC REED.
- G : NO LED + VDR 2 WIRES - NC REED.
- H : 2 WIRES - NC REED.
- M : MAGNETO-RESISTIVE NPN.
- N : MAGNETO-RESISTIVE PNP.
- P : NC MAGNETO-RESISTIVE PNP.
- L : NC MAGNETO-RESISTIVE NPN.

VOLTAGE

- 2 : 24 V AC/DC.
- 3 : 110 V AC.
- 5 : 250 V AC.

CABLE LENGTH

- NO DIGIT : WITHOUT CABLE.
- 03 : EXTENSION WITH SENSOR + M8 L=0.3m.
- 25 : SENSOR + M8/M12 CONNECTOR WITH CABLE L=2.5m.

SENSORS (MAGNETIC PROXIMITY SWITCHES)

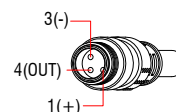
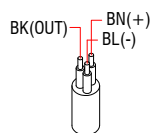
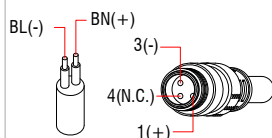
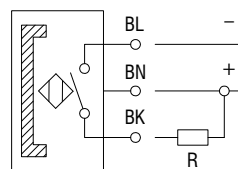
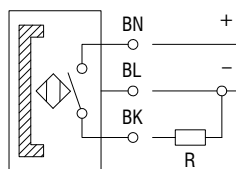
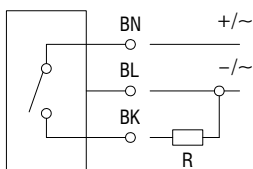
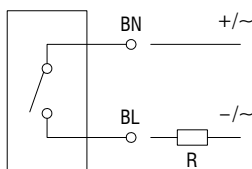
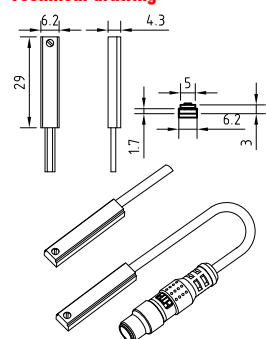
HSA Series



Technical drawing				
Product description				
Sensor type	2 wires REED NORMALLY OPEN	3 wires REED NORMALLY OPEN	Magneto-resistive PNP NORMALLY OPEN	Magneto-resistive NPN NORMALLY OPEN
Sensor Part Number:				
2.5m moulded cable	HSA1C225-G15	HSA4D225-G15	HSA4N225-G15	HSA4M225-G15
Extension Sensor+M8 conn. 0.3m	HSA2C203-G15	HSA3D203-G15	HSA3N203-G15	HSA3M203-G15
Technical data				
Power Supply Rated voltage	3 ÷ 30 V AC/DC	3 ÷ 30 V AC/DC	6 ÷ 30 V AC/DC	6 ÷ 30 V AC/DC
Switching current	0.2 A	0.2 A	0.2 A	0.2 A
Power Rating	6 W	6 W	6 W	6 W
On voltage drop	< 3 V	//	< 1 V	< 1 V
Nominal operate point	20 ÷ 25 AT	20 ÷ 25 AT	40Gauss (34 ÷ 46 Gauss)	40Gauss (34 ÷ 46 Gauss)
ON-OFF differential	5 ÷ 10 AT	5 ÷ 10 AT	5 ÷ 15 Gauss	5 ÷ 15 Gauss
"ON" response time	0.5 ms	0.5 ms	0.8 µs	0.8 µs
"OFF" response time	0.1 ms	0.1 ms	0.3 µs	0.3 µs
Operating temperature	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C
Operating frequency	500 Hz	500 Hz	200 KHz	200 KHz
Life Time	10 ⁷ imp	10 ⁷ imp	10 ⁹ imp	10 ⁹ imp
Speed piston	10 m/s	10 m/s	10 m/s	10 m/s
Polarity - reversal protection	Yes	Yes	Yes	Yes
Protection class	IP 67	IP 67	IP 67	IP 67
Sensor material	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63
M8 connector material	PUR gold plated brass	PUR gold plated brass	PUR gold plated brass	PUR gold plated brass
Cable type	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.
Cable jacket colour	Grey	Grey	Grey	Grey
No.Conductors / Section	2x0.14mm ²	3x0.14mm ²	3x0.14mm ²	3x0.14mm ²
Conductor colours	Brown(+); Blue(-);	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)
Cable length	2.5m or 0.3m+M8 conn.	2.5m or 0.3m+M8 conn.	2.5m or 0.3m+M8 conn.	2.5m or 0.3m+M8 conn.
Packaging				
Qty/Box	1pc / Bag	1pc / Bag	1pc / Bag	1pc / Bag
Other accessories options				
-				
Notes:				



Technical drawing



Product description

Sensor type	2 wires REED NORMALLY OPEN	3 wires REED NORMALLY OPEN	Magneto-resistive PNP NORMALLY OPEN	Magneto-resistive NPN NORMALLY OPEN
Sensor Part Number:				
2.5m moulded cable	HSL1C225-G15	HSL4D225-G15	HSL4N225-G15	HSL4M225-G15
Extension Sensor + M8 conn. 0.3m	HSL2C203-G15	HSL3D203-G15	HSL3N203-G15	HSL3M203-G15

Technical data

Power Supply Rated voltage	3 ÷ 30 V AC/DC	3 ÷ 30 V AC/DC	6 ÷ 30 V AC/DC	6 ÷ 30 V AC/DC
Switching current	0.2 A	0.2 A	0.2 A	0.2 A
Power Rating	6 W	6 W	6 W	6 W
On voltage drop	< 3 V	//	< 1 V	< 1 V
Nominal operate point	20 ÷ 25 AT	20 ÷ 25 AT	40Gauss (34 ÷ 46 Gauss)	40Gauss (34 ÷ 46 Gauss)
ON-OFF differential	5 ÷ 10 AT	5 ÷ 10 AT	5 ÷ 15 Gauss	5 ÷ 15 Gauss
"ON" response time	0.5 ms	0.5 ms	0.8 µs	0.8 µs
"OFF" response time	0.1 ms	0.1 ms	0.3 µs	0.3 µs
Operating temperature	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C
Operating frequency	500 Hz	500 Hz	200 KHz	200 KHz
Life Time	10 ⁷ imp	10 ⁷ imp	10 ⁹ imp	10 ⁹ imp
Speed piston	10 m/s	10 m/s	10 m/s	10 m/s
Polarity - reversal protection	Yes	Yes	Yes	Yes
Protection class	IP 67	IP 67	IP 67	IP 67
Sensor material	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63
M8 connector material	PUR gold plated brass	PUR gold plated brass	PUR gold plated brass	PUR gold plated brass
Cable type	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.
Cable jacket colour	Grey	Grey	Grey	Grey
No. Conductors / Section	2x0.14mm ²	3x0.14mm ²	3x0.14mm ²	3x0.14mm ²
Conductor colours	Brown(+); Blue(-)	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)
Cable length	2.5m or 0.3m+M8 conn.	2.5m or 0.3m+M8 conn.	2.5m or 0.3m+M8 conn.	2.5m or 0.3m+M8 conn.

Packaging

Qty/Box	1pc / Bag	1pc / Bag	1pc / Bag	1pc / Bag
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Other accessories options

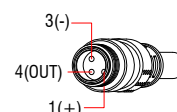
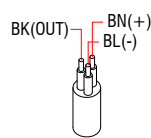
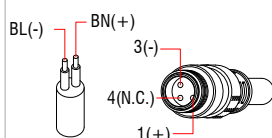
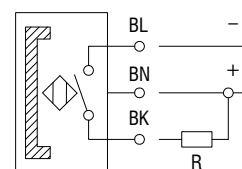
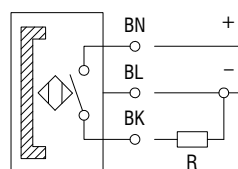
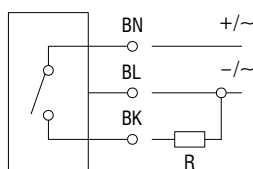
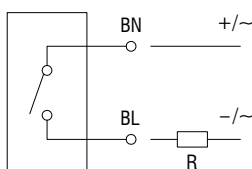
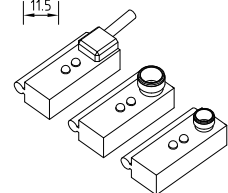
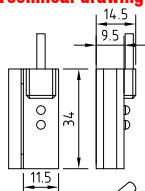
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Notes:

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Technical drawing



Product description

Sensor type	2 wires REED NORMALLY OPEN	3 wires REED NORMALLY OPEN	Magneto-resistive PNP NORMALLY OPEN	Magneto-resistive NPN NORMALLY OPEN
Sensor Part Number:				
2.5m moulded cable	HSM1C525-G15	HSM4D225-G15	HSM4N225-G15	HSM4M225-G15
With M8 plug	HSM2C5-G15	HSM3D2-G15	HSM3N2-G15	HSM3M2-G15
With M12 plug	HSM5C5-G15	HSM6D2-G15	HSM6N2-G15	HSM6M2-G15

Technical data

Power Supply Rated voltage	3 ÷ 250 V AC/DC	0 ÷ 24 V AC/DC	6 ÷ 30 V DC	6 ÷ 30 V DC
Switching current	1.5 A	2 A	0.25 A	0.25 A
Power Rating	10 W	10 W	6 W	6 W
On voltage drop	< 3 V	//	< 1 V	< 1 V
Nominal operate point	20 ÷ 25 AT	20 ÷ 25 AT	15Gauss (11 ÷ 22 Gauss)	15Gauss (11 ÷ 22 Gauss)
ON-OFF differential	5 ÷ 10 AT	5 ÷ 10 AT	4 ÷ 7 Gauss	4 ÷ 7 Gauss
"ON" response time	0.5 ms	0.5 ms	0.8 µs	0.8 µs
"OFF" response time	0.1 ms	0.1 ms	0.3 µs	0.3 µs
Operating temperature	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C
Operating frequency	500 Hz	500 Hz	200 Hz	
Life Time	10 ⁷ imp	10 ⁷ imp	10 ⁹ imp	10 ⁹ imp
Speed piston	10 m/s	10 m/s	10 m/s	10 m/s
Polarity - reversal protection	Yes	Yes	Yes	Yes
Protection class	IP 67	IP 67	IP 67	IP 67
Sensor material	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63	PA ; AISI 303 ; OT 63
M8-M12 plug material	Brass	Brass	Brass	Brass
Cable type	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.
Cable jacket colour	Grey	Grey	Grey	Grey
No.Conductors / Section	2x0.14mm ²	3x0.14mm ²	3x0.14mm ²	3x0.14mm ²
Conductor colours	Brown(+); Blue(-);	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)
Cable length	2.5m	2.5m	2.5m	2.5m

Packaging

Qty/Box	1pc / Bag	1pc / Bag	1pc / Bag	1pc / Bag
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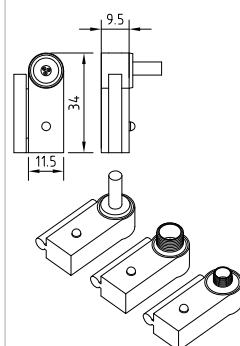
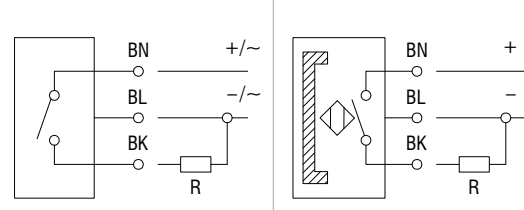
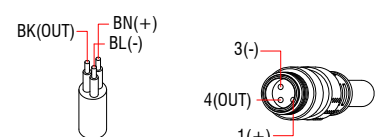
Other accessories options

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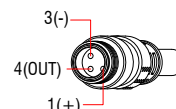
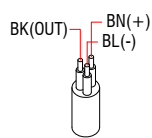
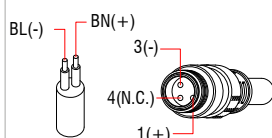
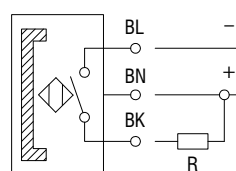
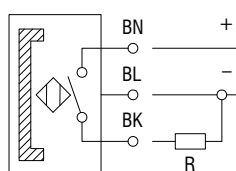
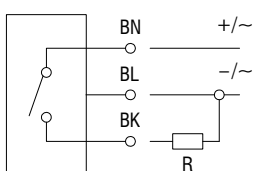
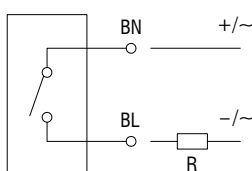
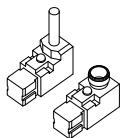
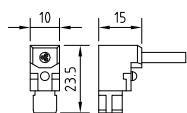
SENSORS (MAGNETIC PROXIMITY SWITCHES)
HSM Series



Technical drawing			
			
			
Product description			
Sensor type	3 wires REED NORMALLY OPEN	Magneto-resistive PNP NORMALLY OPEN	
Sensor Part Number:			
2.5m moulded cable	HSM7D225-G15	HSM7N225-G15	
With M8 plug	HSM8D2-G15	HSM8N203-G15	
With M12 plug	HSM9D2-G15	HSM9N203-G15	
Technical data			
Power Supply Rated voltage	3 ÷ 30 V AC/DC	6 ÷ 30 V AC/DC	
Switching current	0.2 A	0.2 A	
Power Rating	6 W	6 W	
On voltage drop	//	< 1 V	
Nominal operate point	20 ÷ 25 AT	40Gauss (34 ÷ 46 Gauss)	
ON-OFF differential	5 ÷ 10 Gauss	5 ÷ 15 Gauss	
"ON" response time	- 10 ° ÷ 70°C	- 10 ° ÷ 70°C	
"OFF" response time	0.5 ms	0.8 µs	
Operating temperature	0.1 ms	0.3 µs	
Operating frequency	- 10°C ÷ 70°C	- 10°C ÷ 70°C	
Life Time	10 ⁷ imp	10 ⁹ imp	
Speed piston	10 m/s	10 m/s	
Polarity - reversal protection	Yes	Yes	
Protection class	IP 68	IP 68	
Sensor material	PA	PA	
M8-M12 plug material	Brass	Brass	
Cable type	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	
Cable jacket colour	Grey	Grey	
No.Conductors / Section	3x0.14mm²	3x0.14mm²	
Conductor colours	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)	
Cable length	2.5m	2.5m	
Packaging			
Qty/Box			
Other accessories options			
-			
Notes:			



Technical drawing



Product description

Sensor type	2 wires REED NORMALLY OPEN	3 wires REED NORMALLY OPEN	Magneto-resistive PNP NORMALLY OPEN	Magneto-resistive NPN NORMALLY OPEN
Sensor Part Number:				
2.5m moulded cable	HCB1C425-G15	HCB4D225-G15	HCB4N225-G15	HCB4M225-G15
With M8 plug	HCB2C4-G15	HCB3D2-G15	HCB3N2-G15	HCB3M2-G15

Technical data

Power Supply Rated voltage	3 ÷ 110 V AC/DC	0 ÷ 24 V AC/DC	6 ÷ 30 V AC/DC	6 ÷ 30 V AC/DC
Switching current	0.3 A	1 A	0.25 A	0.25 A
Power Rating	10 W	10 W	6 W	6 W
On voltage drop	< 3 V	//	< 1 V	< 1 V
Nominal operate point	20 ÷ 25 AT	20 ÷ 25 AT	20Gauss (11 ÷ 22 Gauss)	20Gauss (11 ÷ 22 Gauss)
ON-OFF differential	5 ÷ 10 AT	5 ÷ 10 AT	4 ÷ 7 Gauss	4 ÷ 7 Gauss
"ON" response time	0.5 ms	0.5 ms	0.8 µs	0.8 µs
"OFF" response time	0.1 ms	0.1 ms	0.3 µs	0.3 µs
Operating temperature	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C	- 10°C ÷ 70°C
Operating frequency	500 Hz	500 Hz	200 KHz	200 KHz
Life Time	10 ⁷ imp	10 ⁷ imp	10 ⁹ imp	10 ⁹ imp
Speed piston	10 m/s	10 m/s	10 m/s	10 m/s
Polarity - reversal protection	Yes	Yes	Yes	Yes
Protection class	IP 67	IP 67	IP 67	IP 67
Sensor material	PA ; AISI 303	PA ; AISI 303	PA ; AISI 303	PA ; AISI 303
M8 plug material	PA6 gold plated brass	PA6 gold plated brass	PA6 gold plated brass	PA6 gold plated brass
Cable type	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.	PVC/PVC CEI2022 II O.R.
Cable jacket colour	Grey	Grey	Grey	Grey
No. Conductors / Section	2x0.14mm ²	3x0.14mm ²	3x0.14mm ²	3x0.14mm ²
Conductor colours	Brown(+); Blue(-)	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)	Brown(+); Blue(-); Black(OUT)
Cable length	2.5m	2.5m	2.5m	2.5m

Packaging

Qty/Box	1pc / Bag	1pc / Bag	1pc / Bag	1pc / Bag
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Other accessories options

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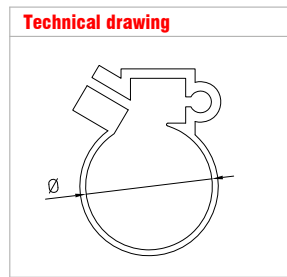
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SENSORS (MAGNETIC PROXIMITY SWITCHES)

Cylinder mounting clamps

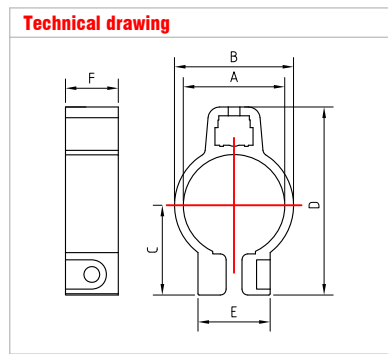
- CYLINDER MOUNTING CLAMPS:**

- HXF-G15:**



Microcylinder mounting clamps	HXF-09	HXF-11	HXF-12	HXF-13	HXF-14	HXF-16	HXF-17	HXF-18	HXF-20	HXF-21	HXF-22	HXF-24	HXF-26	HXF-27	HXF-29	HXF-30	HXF-33	HXF-36	HXF-41	HXF-45	HXF-52	HXF-65
Ø mm	Ø 9.3	Ø 11.3	Ø 12	Ø 13.3	Ø 14	Ø 16	Ø 17.3	Ø 18	Ø 20	Ø 21.3	Ø 22	Ø 24	Ø 26.3	Ø 27	Ø 29	Ø 30	Ø 33.6	Ø 36	Ø 41.6	Ø 45	Ø 52.4	Ø 65.4
Body materials	PA ; AISI 303																					

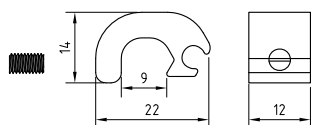
- HSW-G15:**



Microcylinder mounting clamps	HSW-08	HSW-10	HSW-12	HSW-16	HSW-20	HSW-25
For cylinder	ø 8	ø 10	ø 12	ø 16	ø 20	ø 25
A mm	ø 9.3	ø 11.3	ø 13.3	ø 17.3	ø 21.3	ø 26.5
B mm	12.3	14.3	16.3	20.3	24.3	29.5
C mm	11.1	12.2	13.2	15.3	17.4	20
D mm	23.9	25.9	28	32.1	36.2	41.4
E mm	12.3				14	
F mm	9					
Body materials	PA ; AISI 303					

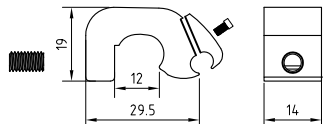
• MOUNTING BRACKETS FOR CYLINDER:

Technical drawing



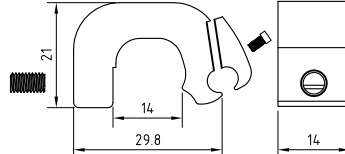
For cylinder	$\varnothing 5 \div 9\text{mm}$
Part Number	HST-10-G15
Body materials	

Technical drawing



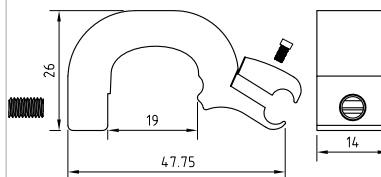
For cylinder	$\varnothing 32 \div 40\text{mm}$
Part Number	HST-80-G15

Technical drawing



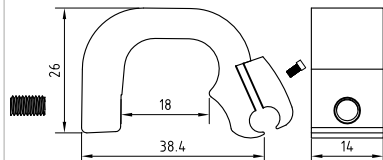
For cylinder	$\varnothing 50 \div 63\text{mm}$
Part Number	HST-81-G15

Technical drawing



For cylinder	$\varnothing 82 \div 100\text{mm}$
Part Number	HST-82-G15

Technical drawing

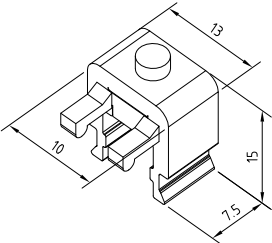
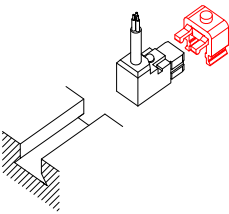


For cylinder	$\varnothing 125\text{mm}$
Part Number	HST-83-G15

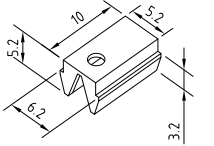
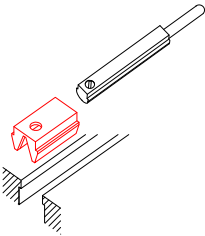
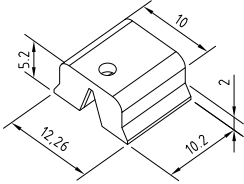
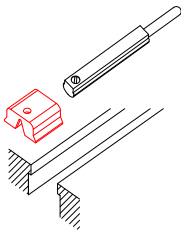
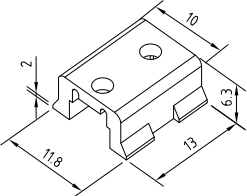
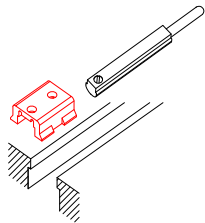
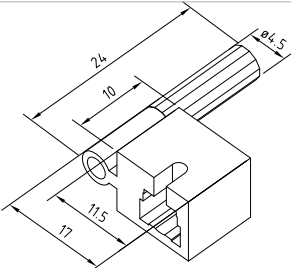
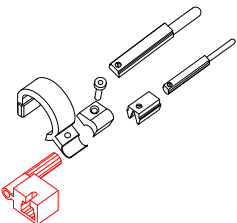
SENSORS (MAGNETIC PROXIMITY SWITCHES)

Slot adapters

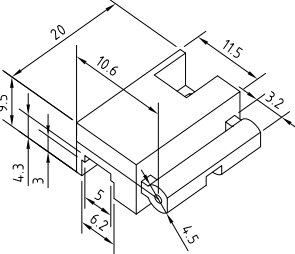
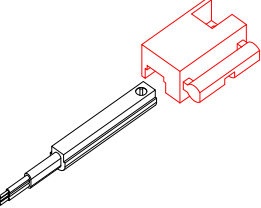
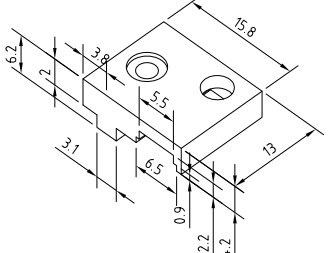
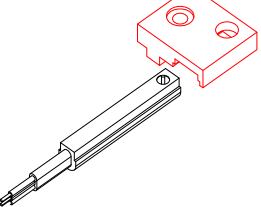
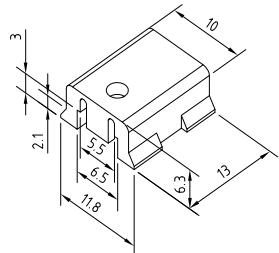
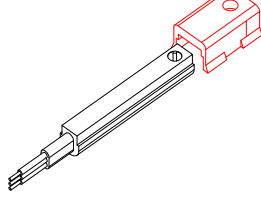
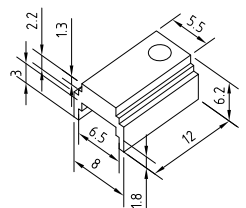
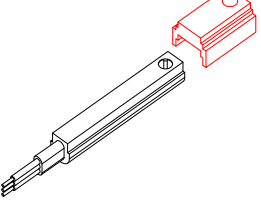
• **HK-CB-G15**

Technical drawing	Slot adapters material	Application	Packaging	Suitable sensors
	PA / 6005 A / AISI 303		1PC/bag	HCB

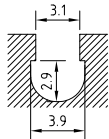
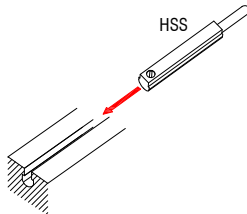
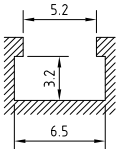
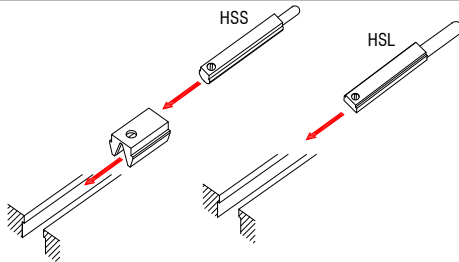
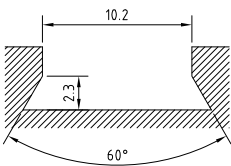
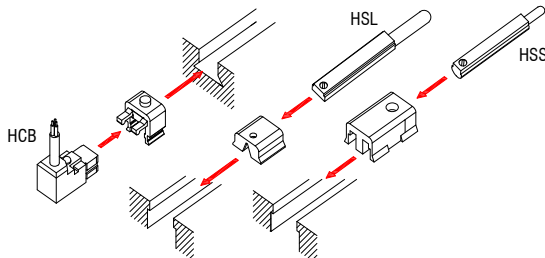
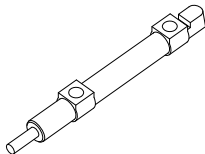
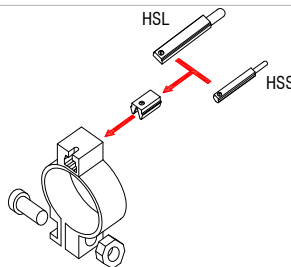
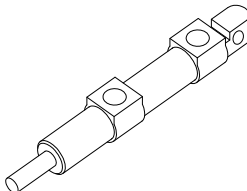
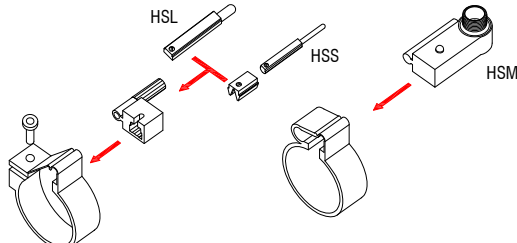
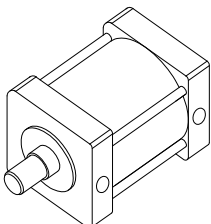
• **HK-SENS-G15**

Technical drawing	Slot adapters material	Application	Packaging	Suitable sensors
	PA		1PC/bag	HSN HSS
	PA		1PC/bag	HSN HSS
	PA		1PC/bag	HSC HSL HSN HSS
	PA		1PC/bag	HSC HSL HSN HSS

• **HK-SL-G15**

Technical drawing	Slot adapters material	Application	Packaging	Suitable sensors
	PA		1PC/bag	HSL
	PA		1PC/bag	HSL
	PA		1PC/bag	HSL
	PA		1PC/bag	HSL

SENSORS (MAGNETIC PROXIMITY SWITCHES)

Slots type		Sensors type					Applications type
		HSS	HSL	HSA	HSM	HCB	
C slot		HSS	-	-	-	-	
T slot		HSS + HK-SENS	HSL	HSA	-	-	
Dovetail slot		HSS + HK-SENS	HSL + HK-SENS	HSA + HK-SENS	-	HCB	
SW mounting clamps		HSS + HK-SENS + HSW	HSL + HK-SENS + HSW	HSA + HK-SENS + HSW	-	-	
XF mounting clamps		HSS + HK-SENS + HXF	HSL + HK-SENS + HXF	HSA + HK-SENS + HXF	HSM + HXF	HCB	
ST mounting brackets		HSS + HK-SENS + HST	HSL + HK-SENS + HST	HSA + HK-SENS + HST	HSM + HST	HCB	