

TROUGH HOLE (ANNULAR) LOAD CELL FOR HOISTING

TYPES 5190, 5195 and 5900



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APPENDIXES :
- Control + diagnostic data sheet

Rev.	Date	Raison
1	10/04/2018	Updating the declaration of conformity
2	27/11/2019	Modification of the declaration of conformity
3	10/11/2021	Added drawings and wiring diagrams - page 4 and 5
4	14/02/2022	Adding of paragraph "USE IN POTENTIALLY EXPLOSIVE ATMOSPHERE"
5	24/05/2023	Ex i ATEX/HAZLOC instructions moved in annex "LOAD CELLS USER'S GUIDE APPENDIX"

1. CONDITIONS OF UTILIZATION IN HOISTING OF A TROUGH HOLE (ANNULAR) LOAD CELL

1.1. Setting

1. The reference load cell has to be used in the defined conditions of its technical data and following described conditions.
2. The applied load has to be on the load cell following the preferential direction of * 3° mentioned by the arrow.
3. The trough hole (annular) load cell has to work only in compression. It should not normally be subject to parasitic constraints such as : torsion, flexion or in shearing.
4. The setting of the load cell can not be done using force or by giving violent knocks. Nevertheless, you can use a wooden mallet to insure the adjustment.
5. Only the length of cable delivered with the load cell can be used; although this cable can be shortened. It is the mounter's job only to connect the load cell to its electronic device according to the color codes defined on the form of the load cell and according to the specifications equivalent to the electronics used. The mounter will insure the integrity of the cable after setting on site. All injury of this cable or one of the conductors necessitates its replacement by SENSY.
6. The load is uniformly distributed on the couronne. A written agreement by the manufacturer is necessary for particular utilisation conditions.

1.2. Utilization

1. The trough hole (annular) load cell is designed to support an occasional static overload, without injury, up to 2 x the Nominal Load (case of the test load of a travelling crane).
In no case, a superior overload is (static or dynamic) acceptable.
2. Make sure that the deformation of the axle is not restrained.
3. The handled load has to be free and adapted to the nominal load of the system :
 - no anchorage to the ground or support;
 - no collision with an other load or structure;
 - no jamming;
 - no shock produced by the fall of an other load on the handled load
4. The load cell should not undergo shocks linked to the conditions of utilisation : case of a balancing swingle- tree crashing against the chassis of the winch in the swing of the pulley block.

1.3. Periodic inspections

1. Make sure by appropriate means that the axle has not been seizing. (Annually)
2. Make sure that the axle beam has not been knocked (markings) or chemically attacked (some corrosive greases). If points 1 and 2 are not accounted for, just take preventive measures. (Annually)

3. In case of doubt, reply to the diagnostic questionnaire provided with the individual form of the load cell joins and consult the constructor.
4. Verify the integrity of the cable.
5. After any serious functioning incident, repeat operations 1 to 3.

2. USE FEATURES

(The exact characteristics are systematically given in the control sheet delivered with every load cell and function of the output signal!)

Output signal	mV/V	4-20 mA 2 fils	4-20 mA 3 fils	1-10 V 3 fils
Compensated temp. range*	-10...+45°C			
Operating temperature range*	-30 ⁰ ... +70°C ¹			
Storage temperature range	-50...+85°C	-40...+85°C		
Power supply (VDC)	3...12 ²	7.5 – 30 ³	7.5 – 30	13 – 30
Load impedance (Ω)	NA	≤ 750	≤ 1.000	> 5k
Nominal sig. range	0 – 1...2 mV/V	4 - 20 mA	4 - 20 mA	0.1-10 V
Saturation	> 3 mV/V	> 24 mA	> 24 mA	> 11 V

(1) Max +60°C for EX-I T4, T6,C6,C7&C8 options

(3) 9-28VDC for EX-I C6 options

(2) 5 to 12VDC for EX-I T2 GD, EX-I T4 GD and EX-I T6 GD options

(4) 15 to 27VDC with a 1000 Ω bridge

* The compensated and operating temperature ranges may be extended with the right option for your environment.

See the control sheet delivered with your load cell for the exact temperature ranges and certificate for option chosen if applicable.

3. USE IN POTENTIALLY EXPLOSIVE ATMOSPHERE (OPTION)

Sensors 5190, 5195 and 5900 are also available with intrinsic safety protection in potentially explosive atmosphere if requested.

Refer to document "LOAD CELLS USER'S GUIDE APPENDIX" for specific conditions of use and refer to ATEX/HAZLOC certificate and conformity certificate of your product in accordance with label information mentioned on your product.

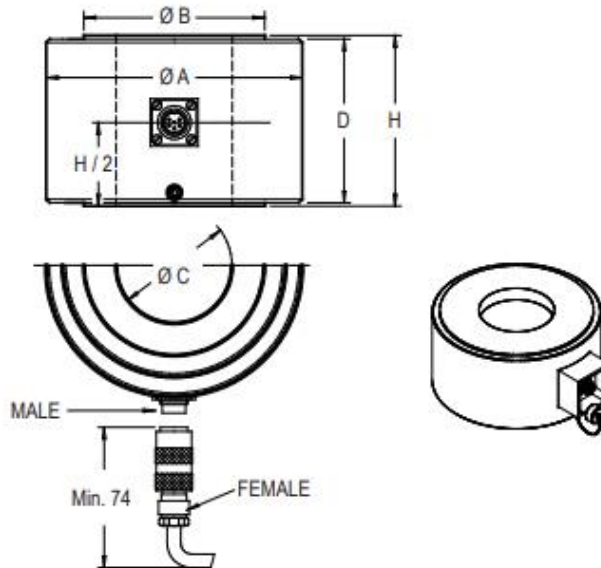
Standards used for certifications are mentioned on certificate. For further information, contact sales department.

4. GUARANTEE

The constructor guarantee is applicable if mounting recommendations and general use principles are respected. Any particular use not described in the present document should be subject to a prior written agreement from SENSY S.A., mandatory for preserving its conformity.

5. DRAWINGS AND WIRING DIAGRAMS

↳ 5190-5195 > STANDARD DIMENSIONS



Ref. Item*	Capacities	ØA	ØB	ØC	D	H	H1	Ø2	Max. Deflexion (mm)	CL (m)	Weight (kg)
519x-A	200 - 300 kN	60	49	20	66	70	22	57	0.08	3	1.4
519x-B	500 kN	80	59	30	66	90	28	66	0.1	6	3.2
519x-C	0.75 - 1 MN	110	89	50	81	100	40	97	0.12	6	5.5
519x-D	1.5 - 2 MN	148	120	64	96	140	50	129	0.15	12	17
519x-E	3 MN	180	155	80	124	160	65	172	0.17	12	26
519x-F	5 MN	230	200	105	150	190	75	225	0.2	12	50
5195-G	7.5 - 10 MN	290	290	150	/	260	60	387	0.3	20	100
5195-H	15 MN	340	340	165	/	290	80	480	0.34	20	175
5195-I	20 MN	390	390	200	/	330	110	545	0.38	20	260
-	30 MN	According to customer's design specifications									

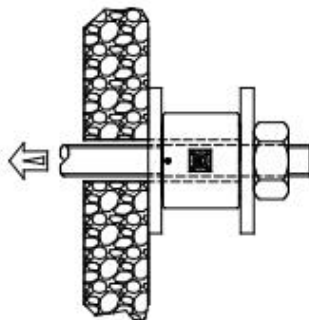
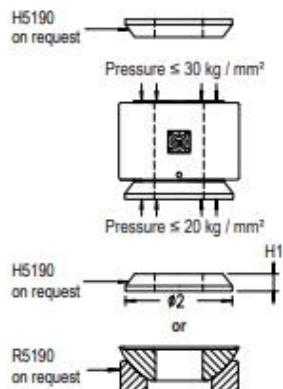
Other dimensions ØA, ØB, and H on request

*x=Material: 5190 - stainless steel; 5195 - nickel-plated steel

→ Other capacities and dimensions available on request

Dimensions in mm

Accessories

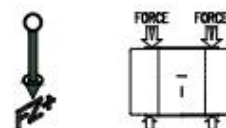


Wiring

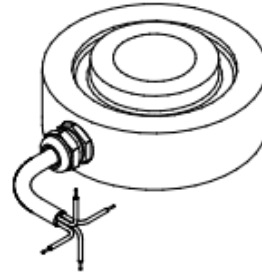
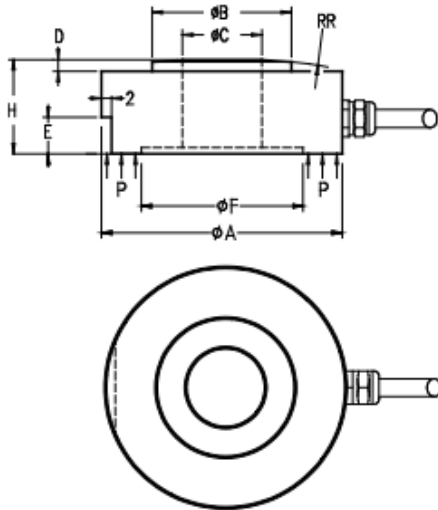


Standard : Cable screen not connected to transducer
Faradisation non connectée au capteur

Load direction



↳ 5900 > STANDARD DIMENSIONS



STANDARD													
Ref. Item	Capacities		ØA	ØB	ØC	D	E	ØF	H	P (N/mm ²)	RR	Max. Deflexion (mm)	Weight (kg)
	Force > 300 %*	Hoist > 500 %*											
5900-A	3 - 30 kN	0.2 - 2 t	59	30	16	4	13	49	25	4 - 24.5	300	0.05-0.15	0.5
5900-B	30 - 100 kN	3 - 7.5 t	79	50	30	5	14	70	31	30 - 74	500	0.20-0.35	1
5900-C	100 - 150 (200) kN	10 - 15 t	119	80	50	6	14.5	105	40	42 - 83	750	0.30-0.40	3.2

* Breaking load (% full scale)

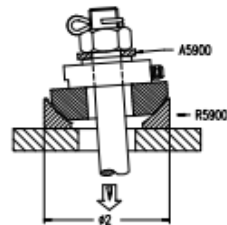
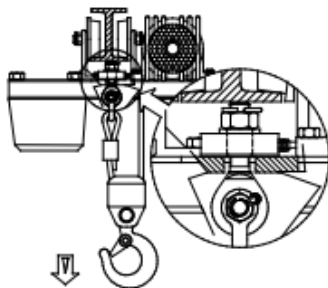
CUSTOM-MADE						
Capacities		ØC	ØB	ØA	H	
Force > 300 %*	Hoist > 500 %*					
3 - 30 kN	0.2 - 2 t	ØX	ØX+14	±ØX+43	23...25	
30 - 100 kN	3 - 7.5 t	ØX	ØX+20	±ØX+49	27...31	
100 - 150 (200) kN	10 - 15 t	ØX	ØX+30	±ØX+69	35...40	

* Breaking load (% full scale)

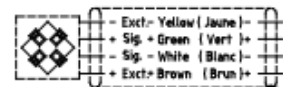
→ Other capacities and dimensions available on request

Dimensions in mm

Accessories

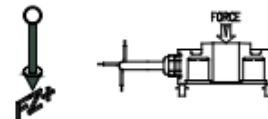


Wiring



Standard : Cable screen not connected to transducer
Forodisation non connectée au capteur

Load direction



6. EU DECLARATION OF CONFORMITY

SAFETY COMPONENTS PUT ON THE MARKET SEPARATELY

SENSY SA
Z.I. Jumet – Allée Centrale
B – 6040 JUMET
Manufactured by : Tél. : +32 71 25.82.00
Fax : +32 71 37.09.11
Site Internet : <http://www.sensy.com>

- Models 5190 5195 & 5900 (resistive load cell)
Electronics associated: CRANE-BOY, BRIDGE-BOY, INDI-BOY, SAFETY-BOY
- Models 5190, 5195 & 5900 (amplifier 4 – 20 mA integrated)
Electronics associated: CRANE-BOYP
- Models 5190, 5195 & 5900 (amplifier 1 – 10 V integrated)

These load cells have been designed for hoisting devices and may be used with other electronic load limiters. In this case, to be in accordance with the EU requirements the customer has to verify the right compatibility between the electronic (in accordance with referred directives in industrial environment) and SENSY load cells.

Load cells for hoisting have been proof-loaded at twice the nominal capacity in our factory (200 % nominal capacity) as mentioned in their dimensional control certificate. This information is written on the individual control certificates.

SENSY S.A. certify that the items described here above have been duly designed, manufactured and tested for use in accordance with the essential requirements defined in the European Directives listed here under.

2014/30/EU Electro-Magnetic Compatibility Directive

2006/42/CE Machinery directive

2011/65/EU Restriction of the use of certain hazardous substances in the electrical and electronic equipment (RoHS)
amended by
directive
2017/2102/EU

2014/35/EU Safety / low voltage directive

If designed, manufactured and tested safety ref. D-DP SIL3 READY (option):

see specific and separate document for calculation according to ISO 13849-1 and/or EN 62061.

If designed, manufactured and tested for use in potentially explosive atmospheres (option):

see specific and separate certificate in compliance with EN/IEC 60079-0 per 2014/34/EU directive of 26/02/2014.

Jumet
May – 24 - 2023



Ir Delcambe Sylvia
Technical manager



www.sensy.com

7. UK DECLARATION OF CONFORMITY

SAFETY COMPONENTS PUT ON THE MARKET SEPARATELY

Manufactured by: **SENSY SA**
Z.I. Jumet – Allée Centrale
B – 6040 JUMET
Phone: +32 71 25.82.00
Fax: +32 71 37.09.11
Website: <http://www.sensy.com>

- Models 5190 5195 & 5900 (resistive load cell)
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These load cells have been designed for hoisting devices and may be used with other electronic load limiters. In this case, to be in accordance with the EU requirements the customer has to verify the right compatibility between the electronic (in accordance with referred directives in industrial environment) and SENSY load cells.

Load cells for hoisting have been proof-loaded at twice the nominal capacity in our factory (200 % nominal capacity) as mentioned in their dimensional control certificate. This information is written on the individual control certificates.

SENSY S.A. certify that the items described here above have been duly designed, manufactured and tested for use in accordance with the essential requirements defined in the UK regulations listed here under.

UK SI 2016 No. 1091 and amendments	Electromagnetic Compatibility Regulations 2016
UK SI 2008 No. 1597 and amendments	Supply of Machinery (Safety) Regulations 2008
UK SI 2012 No. 3032 and amendments	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
UK SI 2016 No. 1101 and amendments	Electrical Equipment (Safety) Regulations 2016

If designed, manufactured and tested safety ref. D-DP SIL3 READY (option):
see specific and separate document for calculation according to ISO 13849-1 and/or EN 62061.

If designed, manufactured, and tested for use in potentially explosive atmospheres (option): see specific and separate certificate (EN/IEC 60079-0) in compliance with Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016, "SI 2016 No. 1107(as amended)"

Jumet
May – 24 - 2023

Ir Delcambe Sylvia
Technical manager

LOAD CELLS USER'S GUIDE APPENDIX ANNEXE AU MANUEL D'UTILISATION CAPTEURS

For option Ex (use in Hazardous areas)
Dans le cas d'une option Ex (utilisation en zone dangereuses)

CAUTION / AVERTISSEMENT

Intrinsically safe protection:








Use of sensors in hazardous zones can only be done with Ex marked sensors, delivered with one or more of the certificates hereunder:

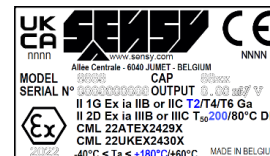
Seuls les capteurs marqués Ex peuvent être utilisés en zone de sécurité intrinsèque s'ils sont accompagnés d'un ou de plusieurs des certificats ci-dessous :

EU	UK	IECEX	North America
CML 22ATEX2429X CML 22ATEX2421X Sira 13ATEX2365X CSANe 23ATEX1012X	CML 22UKEX2430X CML 22UKEX2432X CSAE 22UKEX1396X CSAE 23UKEX1013X	IECEX SIR 13.0148X	Master contract 259620

All issued by accredited organizations. Sensors must be used with appropriate safety material (Zener barrier or galvanic isolator) corresponding to the requested requirements mentioned in the certificate.

Tous émanent d'un organisme agréé. Les capteurs doivent être utilisés dans les conditions adéquates et avec le matériel de sécurité (barrière Zener ou isolation galvanique) répondant aux exigences mentionnées sur le certificat.

CML 22ATEX2429X CML 22UKEX2430X CML 22ATEX2431X CML 22UKEX2432X	 II 1 G Ex ia IIC T2 Ga II 2 D Ex ia IIIC T ₅₀ 200°C Db  II 1 G Ex ia IIC T4 or T6 Ga II 2 D Ex ia IIIC T ₅₀ 80°C Db  II 1 G Ex ia IIB T6 Ga II 2 D Ex ia IIIB T ₅₀ 80°C Db  II 1 G Ex ia IIC T6 Ga II 2 D Ex ia IIIC T ₅₀ 80°C Db	-40°C ≤ Ta ≤ +180°C (0) -40°C ≤ Ta ≤ +180°C -40°C ≤ Ta ≤ +60°C (1) -40°C ≤ Ta ≤ +60°C -40°C ≤ Ta ≤ +60°C (2) -40°C ≤ Ta ≤ +60°C -20°C ≤ Ta ≤ +60°C (3)
Sira 13ATEX2365X IECEX SIR 13.0148X CSAE 22UKEX1396X Specific to models : 500Y, 505Y, 530Y, 260Y, 296Y, 510Y (Y= 0 or 5)	 II 1 G Ex ia IIC T6 Ga  for Volume ≥ 580cm ³ only: II 1 D Ex ia IIIC T ₂₀₀ 81°C Da	-40°C ≤ Ta ≤ +60°C -55°C ≤ Ta ≤ +60°C (4)
CSANe 23ATEX1012X CSAE 23UKEX1013X Specific to models : 500Y, 505Y, 530Y, 260Y, 296Y, 510Y (Y= 0 or 5)	 II 3GD Ex ia IIC T6 Gc Ex ia IIIC T80°C Dc	-40°C ≤ Ta ≤ +60°C
Master contract 259620 Specific to models : 500Y, 505Y, 530Y, 260Y, 296Y, 510Y (Y= 0 or 5)	Ex ia IIC T6 Ga Ex ia IIIC T80°C Dc (Vol < 580cm ³) Ex ia IIIC T81°C Da (Vol ≥ 580cm ³)	-40°C ≤ Ta ≤ +60°C



(0) If Ex I T2 option applies (1) If Ex I T4, T6, C6 & C8 option applies (2) If C7 option applies
(3) For 5560-SCHL model (4) If option CP-55°C option applies



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Vol <580cm³

Allee Centrale - 6040 JUMET - BELGIUM

MODEL 8888
SERIAL N° 8888888888
CAP 8800
OUTPUT 8.88 300300

Ex ia IIC T6 Ga -40°C ≤ Ta ≤ +60°C
Ex ia IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Class I, Zone 0, AEx ia IIC T6 Ga
Zone 22, AEx ia IIIC T80°C Dc
CL I, DV 1, GP A,B,C and D;
CL II DV 1, GP E,F,G; CL III

Ui/Vmax=28.0V; Ii/Imax=160mA; Pi=1W; Ci=0nF;
Li=0μH (I4/I6 option) or Li=15.92μH (C6 option)

Vol ≥ 580cm³

Allee Centrale - 6040 JUMET - BELGIUM

MODEL 8888
SERIAL N° 8888888888
CAP 8800
OUTPUT 8.88 300300

Ex ia IIC T6 Ga -40°C ≤ Ta ≤ +60°C
Ex ia IIIC T81°C Da -40°C ≤ Ta ≤ +60°C
Class I, Zone 0, AEx ia IIC T6 Ga
Zone 20, AEx ia IIIC T81°C Da
CL I, DV 1, GP A,B,C and D;
CL II DV 1, GP E,F,G; CL III

Vol <580cm³:

Allee Centrale - 6040 JUMET - BELGIUM

MODEL 8888 CAP 8800 OUTPUT 8.88 300300

S/N 8888888888

II 1G Ex ia IIC T6 Ga -40°C or -55°C (4) ≤ Ta ≤ +60°C
Sir13ATEX2365X / CSAE 22UKEX1396X
IECEX SIR 13.0148X

MADE IN BELGIUM

Allee Centrale - 6040 JUMET - BELGIUM

MODEL 8888 CAP 8800 OUTPUT 8.88 300300

S/N 8888888888

Ex ia IIC T6 Ga -40°C or ≤ Ta ≤ +60°C
Ex ia IIIC T80°C Dc -55°C (4)

IECEX SIR 13.0148X

MADE IN BELGIUM

Vol ≥ 580cm³:

Allee Centrale - 6040 JUMET - BELGIUM

MODEL 8888 CAP 8800 OUTPUT 8.88 300300

S/N 8888888888

II 1GD Ex ia IIC T6 Ga -40°C or -55°C (4) ≤ Ta ≤ +60°C
Sir13ATEX2365X / CSAE 22UKEX1396X
IECEX SIR 13.0148X

MADE IN BELGIUM

Allee Centrale - 6040 JUMET - BELGIUM

MODEL 8888 CAP 8800 OUTPUT 8.88 300300

S/N 8888888888

Ex ia IIC T6 Ga -40°C or ≤ Ta ≤ +60°C
Ex ia IIIC T200 81°C Da -55°C (4)

IECEX SIR 13.0148X

MADE IN BELGIUM

SENSY's load cells which are marked Ex i comply with the following standards:

Les capteurs SENSY marqués Ex i sont conformes aux normes suivantes :

ATEX	CSA	IECEX
EN 60079-0:2018 EN 60079-11:2012	CAN/CSA-C22.2 No. 0:20 CAN/CSA C22.2 NO. 61010-1-12 (R2022) CSA C22.2 No.94.2/UL50E CAN/CSA-C22.2 No. 60079-0:19 CAN/CSA-C22.2 No. 60079-11:11 ANSI/UL 508 Edition 18 ANSI/UL Standard 913 Edition 8 ANSI/UL 60079-0 Edition 7 ANSI/UL 60079-11 Edition 6	IEC 60079-0:2017 IEC 60079-11:2011

Specific conditions of use indicated in certificate for hazardous area

The use of junction boxes or additional cable lengths must be considered in the choice of protection. The electrical characteristics of the cable being limited (see certification), it is recommended to carefully chose the cable length and avoid any winding of the cable. After having defined all elements, it is mandatory to control if the sensor's output tension is still compatible with the electronic device in use and the requested accuracy.

When the apparatus is used in dust atmospheres, connectors, plugs and cable glands used shall have an ingress protection of at least IP6X.

The equipment is not capable of withstanding the 500V dielectric strength requirement in accordance with clause 6.3.13 of EN 60079-11.

Some enclosure for specific options might be manufactured from sparking material (see certificate).
In rare cases, ignition sources due to impact and friction sparks could occur.
This shall be considered during installation. See certificate for the special conditions for safe use.

L'utilisation de boîte de jonction ou de longueur de câble supplémentaire entre en ligne de compte pour le choix de la protection. Les caractéristiques électriques du câble étant limitées (voir le certificat), il est conseillé de bien choisir la longueur de câble et d'éviter tout bobinage de celui-ci. Ayant défini l'ensemble des éléments, il est nécessaire de contrôler si la tension de sortie du capteur est toujours compatible avec l'électronique utilisée et la précision demandée.

Lorsque l'appareil est utilisé dans des atmosphères poussiéreuses, les connecteurs, fiches et presse-étoupes utilisés doivent avoir un indice de protection d'au moins IP6X.

L'équipement n'est pas capable de résister à l'exigence de rigidité diélectrique de 500 V conformément à la clause 6.3.13 de la norme EN 60079-11.

Certains boîtiers pour des options spécifiques peuvent être fabriqués à partir de matériaux étincelants (voir certificat).
Dans de rares cas, des sources d'inflammation dues à des étincelles d'impact et de frottement peuvent se produire.
Cela doit être pris en compte lors de l'installation. Vous référer à votre certificat pour les conditions d'utilisations de sécurité.