SYSTEMS WITH STRAIN LINKS SERIES 900

LIFTSENTRY 901 and STRAINSENTRY 903

1) OVERALL DIMENSIONS

1.1) OVERALL SIZES OF THE LINK AND OF THE CONDITIONER (Figs. 1-2)



1.2) OVERALL SIZES OF THE BASE FOR THE CONDITIONER (Fig. 3)



This is a unit of the system "Liftsentry 901" but also supplied alone.

It allows the installation of the superimposed units of the system: link + conditioner.

It allows the minimum overall volume and a good protection of the link.

2) INSTALLATION OF THE LINK

2.1) The strain link measures flexion strains; therefore the area of installation of the link is where the flexion of the structure is the most significant.

The axes of the link and of the flexion have to be coincident.

It is advisable that the area of the structure connected by the link is flat and smooth.

The sliding, each other, of the elements of the structure connected together by screws away cause instability of the measure, non-repeatability and non-linearity.

For the overwritten, if necessary, a reinforcement of the junctions of the elements becomes important.

2.2) DRILLING PLANE FOR THE STRUCTURE (Fig. 5)

- **2.2.1)** Axes of the link and of the conditioner. at 90° each other (Fig. 6): Use the holes: A for the link and holes: **B**₁ for the base.
 - $A = B_1 = B_2 = 6,5$ mm diameter.
- **2.2.2)** Axes of the link and of the conditioner: at zero degrees each other (Fig. 7): Use the holes: A for the link and holes: **B**₁ for the base.

2.3) VIEWING OF LINK INSTALLATION ON THE STRUCTURE (Fig. 4)



2.3.1) Settle one after the other: the socket head screw, the link, the structure, the tab washer, the flat washer, the nut as included in 4 pieces in the mounting set of the "Liftsentry 901".

High strength screws must be used. (Class: 33 H; 10-9 or 12-9).

2.3.2) *Totally tighten* the screws so to avoid slidings between the link and the surface of the structure.

In the tightening, avoid torsions and residual strains on the link.



3) ELECTRICAL CONNECTIONS

3.1) PANELS OF THE SIGNAL CONDITIONER MOD. 694 A (Figs. 8-9)



3.2) MAIN SPECIFICATIONS OF THE CONDITIONER 694 A

- **3.2.1)** Minimum value of the zero regulation = +100 mV (0,1 Volt).
- **3.2.2)** Maximum value of the signal output of measure (= maximum gain of the amplifier: 6 Volts (= 6000 mV).
- 3.2.3) Calibrator "MAGNET": approaching the magnet (supplied with the unit) to the square "MAGNET" a reed contact inside is activated and an input voltage of 4 mV (0,004 V) (accuracy: ± 5%) is injected to the input of the amplifier.

3.3) SUPPLY CONNECTION TO "POWER" (Fig. 9)

Panel: rear. Frame: "POV	VER". Pins: 1 – 2.	
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3.3.1) Direct current supply (= dc):

Range of operating voltages (one polarity): from $12 V_{dc}$ to $50 V_{dc}$. Suggested voltage: + 24 V_{dc} (possibly stabilized).

Polarity: it is the same to connect the polarity + of the supply (e.g. + 24 V_{dc}) to the pin 1 or 2.

3.3.2) Alternate current supply (=ac) (50÷60 Hz):

Range of operating voltages: from $8 V_{ac}$ to $35 V_{ac}$. RMS. Suggested voltage: $15 V_{ac}$.

3.4) ELECTRICAL CONNECTION OF THE LINK (Fig. 8)

Panel: front.	Frame: "LOAD CELL".	Pins: from 1 to 5.

The link is supplied with a cable with 4 leads of different colors and with a braiding shield.

Connect them as follows:

Pin 1	=	braiding shield.	Pin 2 =	black.
Pin 3	=	red.	Pin 4 =	green.
Pin 5	=	white.		

3.5) CONNECTION FOR THE ANALOG OUTPUT AND FOR THE CALIBRATION (Fig. 8)

Panel: front.	Frame: "LOAD CELL".	Pins: 6 – 7.	
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From the "analog output" comes out the amplified signal of the link proportional to the mechanical strain applied to the link.

This output is used also for the calibration of the system.

Calibration: connect a digital voltmeter (10 Volts full scale) to the pins 6-7.

Take out the voltmeter when the calibration is done.

Pin 6	=	ground (common).	Pin 7 =	signal.
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3.6) CONNECTION OF THE CONTACTS OF THE RELAYS (Fig. 9)

Panel: rear. Frame: relays: 1-2-3-4. Pins: from 3 to	10.	
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3.6.1) Number of relays: 2 or 4 if requested on the order (with supplement of price):

3.6.2) The power of each contact is 30 W max at 240 V_{ac} max. Suggestion: to increase the life of the relay the operating values have to be lower than the max values.

3.6.3) Connect the leads to the terminals of the mating block.

C) <u>Regulations and Calibrations at the installation</u>

11) GENERAL INSTRUCTIONS

- **11-1)** Connect the digital voltmeter (10 V_{dc} full scale) to the front pins 6-7, as listed on paragraph 9.
- **11-2)** The regulations are done by internal multiturn potentiometers through the corresponding panel holes.
- 11-3) IMPORTANT: Invert between them the leads of the link: green (4) with white (5) (see par. 8) in the case that the regulations (zero, gain, level) are not possible.This simply means that the signal polarity from the link is inverted.
- **11-4)** For the regulation use a screw-driver with diameter: \leq 1,5 mm as supplied with the "Liftsentry 901".

12) ZERO REGULATION OF THE AMPLIFIER (Fig. 8)

Panel: front.	Frame: vertical: ZERO.	
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Note: the zero regulation has to be done without load. Regulate the zero so to read 100 mV (\pm 20%) on the voltmeter.

13) GAIN REGULATION OF THE AMPLIFIER (Fig. 9)

al: GAIN

- **Note:** The gain regulation has to be done without load.
- **13-1)** Settle the magnet on (or near) the frame "MAGNET" (Fig. 9)
- 13-2) Regulate the "GAIN" so to read 6 Volts (±20 %) on the voltmeter.
- **13-3)** Take out the magnet (and keep it).
- **Note:** now the calibration of ZERO and of GAIN are done.

14) REGULATIONS OF THE THRESHOLD LEVELS OF THE RELAYS (Fig. 9)

Panel: rear.

- **14-1)** Then the threshold level of the relay is overcome the LED is lighting and the contact is closed.
- 14-2) At the beginning (without load) the threshold level can be overcome and the LED lamps lighting.For an easy calibration it is advisable to turn the regulations until switching-off of all the LEDS.
- **14-3)** Apply the requested load for each relay (level) and turn the regulation until the corresponding LED lights.
- 14-4) Sometime it is convenient to invert the direction of the hysteresis (always necessary). (The hysteresis is the difference of the values of the threshold in increase of in decrease of the signal).In this case return below the threshold turning the regulation on ¼ of turn.

Note: Now the system is ready for the use..

EC CONFORMITY DECLARATION

Applied Directives: 89/336/CEE modified by Directives 92/31/CEE and 93/68/CEE

Standard to which is declared the conformity:

EMC: EN 50081-2: 1994 - Generic emission standard EN 55011 EN 50082-2: 1995 - Generic immunity standard ENV 50140 ENV 50141 EN 61000-4-4 EN 61000-4-2 EN 61000-4-8 ENV 50204

Series 694

Manufacturer:	DS Europe srl
Address:	via F. Russoli, 6 Milano (Italy)
Type of product:	Strain gauge conditioner

Models:

Year of mark's apposition: 2000

The product has been tested in a typical configuration, as prescribed in product's instruction manual.

DS Europe srl declares that the overlisted product complies with the requirements of the EMC Directive over mentioned.

Milano, 20/09/00

DS Europe srl Technical Direction

SALE CONDITIONS (for all the products DS Europe)

A) WARRANTY:

From raw material through in-process operations to the final test and to finished piece, DS Europe product is subject to rigorous inspections and to continuous quality controls to assure a production free from defects in parts, in materials and workmanship.

When the product is submitted to warranty claims and it results defective from normal use within 6 months from the date of shipment, it will be repaired or substituted free of charge in our factory; the transport, insurance expenses, custom's duties are to be prepaid and borne by the Customer.

The material delivered has to be controlled within 10 days from the receipt; after this period the material is considered as accepted.

The responsibility is strictly restricted to the above provision and DS Europe declines any liability for damages to Persons and things, for damages of stopping of plants, of machineries due to the applications and due to the use of its products.

B) RESPONSABILITY FOR DAMAGES:

DS Europe products are only parts of more complex machineries and of plants sold in thousands of pieces/year, for thousands of different applications with different local standards and specifications unknown to the Supplier.

For installations and for uses which directly or indirectly may involve risks of damage to Persons and things, of damage for stopping of machineries, of plants is precise obligation for the end User, for the Distributor, or for the Retailer to inform immediately and before the installation DS Europe which will stop the negotiation and which will cancel the delivery of the product.

Nevertheless DS Europe is at disposal to suggest, without any responsibility, protection accessories, test certificates, Consulting Companies or research and test Laboratories so to reduce or to zero the risks of damages.

It is underlined to read the "instructions of installation and of use" of the products that may be sent, under request, even during the negotiations.

C) REMARKS:

These "sale conditions" are integral part of the bulletins, of the invoices, of the instruction manual, also if not written on them.

DS EUROPE S.R.L.

Sale conditions N°221194 E dated November 22, 1994.