Generalitat de Catalunya
Departament d'Indústria, Comerç i Turisme
Direcció General de Consum i Seguretat Industrial
Servei d'Automòbils i Metrologia
Secció de Metrologia

TEST CERTIFICATE

Number E-01.02.C05

LOAD CELL TYPE CMK

Issued by: Direcció General de Consum i Seguretat Industrial de la Generalitat de Catalunya (notified body number 0315)
Avinguda de la Diagonal, 405 bis
E-08008 BARCELONA SPAIN

In accordance with: Paragraph 8.1 of the European Standard "Metrological aspects of non-automatic weighing instruments" EN 45501:1992(+AC:1993). The applied error fraction p_i with reference to paragraphs 3.5.4 and 4.12 of this standard is 0,7. Following paragraph 4.12 of this standard, the tests have been performed according to the OIML International Recommendation, OIML R 60 (1991).

Issued to: MASTER K
38, Avenue des Frères Montgolfier
F-69686 CHASSIEU CEDEX FRANCE

In respect of: the model of a **load cell**, tested as part of a non-automatic weighing instrument.
Manufacturer: MASTER K.
Type: CMK.

Characteristics:

Classification		C3 ↓↑			C4 ↓↑			
Maximum number of LC verification intervals	n_{LC}	3000			4000			
Maximum capacity	E_{max}	15000	20000	25000	30000	40000	60000	kg
Ratio of minimum LC verification interval $Y = E_{max}/v_{min}$		10000						

additional marking	temperature limits	rated output	impedance input	minimum dead load	safe overload
(-)	(-10°C/+40°C)	C=(2 mV/V)	R_{LC}=(800Ω)	E_{min}=(0 kg)	E_{lim}/E_{max}=(150%)

The main characteristics are shown in the descriptive annex, which is an integral part of the test certificate and consists of 9 pages.
The type is described in the submitted technical documentation, identified with number 8/01.
The summary of tests involved can be found in the descriptive annex.

By delegation of the Director General of Consumption
and Industrial Safety in accordance with the resolution
of 7th October 1996 (DOGC 13.11.1996)
THE HEAD OF THE SERVICE OF AUTOMOBILES
AND METROLOGY

Joan Pau Clar i Guevara

Barcelona, 8 March 2001

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Descriptive annex to test certificate number E-01.02.C05.

0.- Index.

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1.- Name and type of the instrument.

Load cell type CMK, manufactured by MASTER K, 38, Avenue des Frères Montgolfier, 69686 Chassieu Cedex (France), not using any mark

2.- Functional description.

Load cell type CMK is a compression load cell, based on a free column with pendulous structure. The principle of measurement is that of strain gauges, as a full bridge, in an elastic element.

Load cell type CMK has only one version.

Reference is made to Figure 1 (general view), Figure 2 (drawing CAT-1640) and Figure 3 (drawing MO-1641) of this descriptive annex.

3.- Technical characteristics.

3.1.- Metrological characteristics.

Load cell type CMK has the following metrological characteristics and information for compatibility of modules:

Classification		C3 ↕			C4 ↕			--
Additional marking		---						--
Maximum number of LC verification intervals	n_{LC}	3000			4000			--
Maximum capacity	E_{max}	15	20	25	30	40	60	t
Minimum dead load, relative	E_{min}/E_{max}	0						%
Rated output	C	2						mV/V
Ratio to minimum LC verification interval	$Y = E_{max}/v_{min}$	10000						--
Retorn sortida a càrrega mínima	$Z = E_{max}/2DR$	3000			4000			--
Input impedance	R_{LC}	800						Ω
Minimum limit temperature rating	T_{min}	-10						°C
Maximum limit temperature rating	T_{max}	+40						°C
Safe overload	E_{lim}/E_{max}	150						%
Fraction maximum permissible error	p_{LC}	0,7						--
Note: It is possible to have got every combinations of $n_{LC} \leq 4000$ and $15000 \text{ kg} \leq E_{max} \leq 60000 \text{ kg}$.								

Another characteristics are:

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Constructive material	Stainless steel	--
Tolerance of nominal sensitivity	± 0,4	mV/V
Tolerance of input impedance	± 100	Ω

3.2.- Additional characteristics.

Load cell type CMK has the following additional characteristics:

Output impedance	700 ± 10	Ω
Reference excitation voltage	10	V
Maximum excitation voltage	15	V

4.- Connections.

The connection is a six-wire system of nominal section 0,25 mm^2 and a nominal length of 20 m. The cable is shielded, with the shielding not connected to the load cell, and with remote sense. The connection is indicated in the connections label.

The connection code is the following:

Positive excitation	Green
Negative excitation	Black
Positive output	Red
Negative output	White
Positive sense	Blue
Negative sense	Yellow

Reference is made to Figure 4 (drawing EE-1016) of this descriptive annex.

5.- Location of the indicacions.

The indications required according to point 4.6 of OIML R 60 (1991) are in the Figure 5 (drawing SC-1642) of this descriptive annex, in a label named *identified label*, where is the serial number of the load cell.

6.- Conditions for use.

No property of this instrument, whether described or not, may be in conflict with the standard and international recommendation mentioned in the test certificate.

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7.- Tests performed.

Tests have been performed with a load cell with the following identification and characteristics:

Types	Serial number	Maximum capacity E_{max}	$Y = E_{max}/v_{min}$	$Z = E_{max}/2DR$	n_{LC}
CMK	357368(00)	15000 kg	10000	3000	3000
	356347(00)	15000 kg	10000	4000	4000

Tests performed with load cell:

Tests	R60/R60A No.	approved
Temperature test and repeatability (at 20, -10, 40 and 20°C)	15.1&5.1&9.0/A1,A2,A3	+
Temperature effect on minimum dead load output (at 20, -10, 40 and 20°C)	15.1&10.1.3/A1,A4	+
Creep test (at 20, -10 and 40°C)	15.2&7.1/A5	+
Minimum dead load output return (at 20, -10 and 40°C)	15.3&7.3/A5	+
Barometric pressure effects at room temperature	15.4&10.2/A6	+
Humidity test, cyclic: CH*-marked (or without marked)	15.5&7.3/A7	-
Humidity test, static: SH*-marked	15.6 (2on Comittee Draft*)	+
* = EN45501 Nº B.2.2		

8.- Drawings.

Dimensions indicate in this drawings are given in mm.

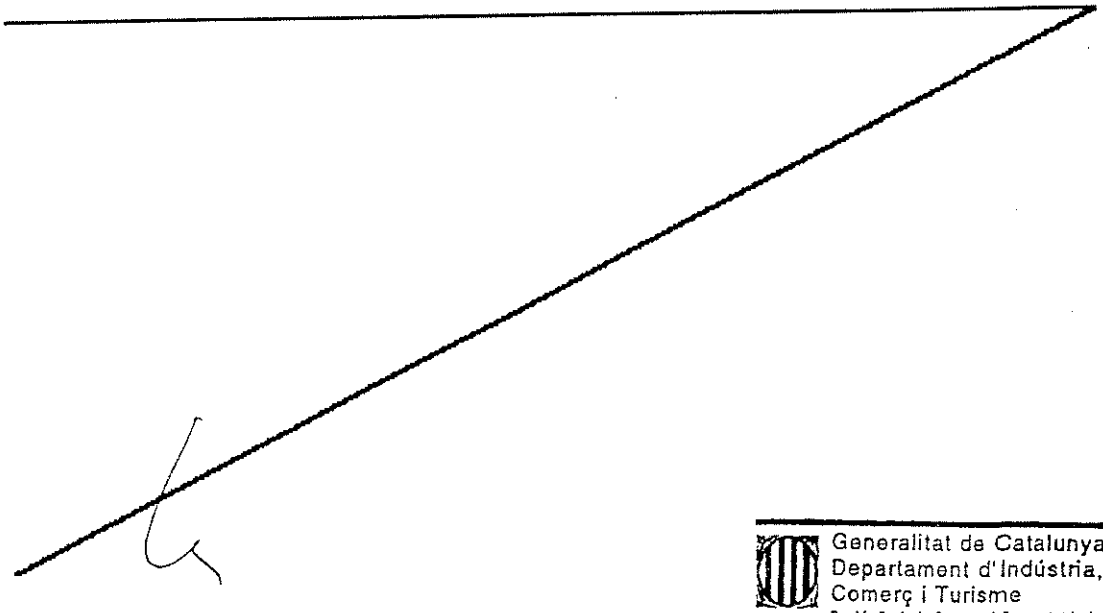

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Figure 1.- General view.

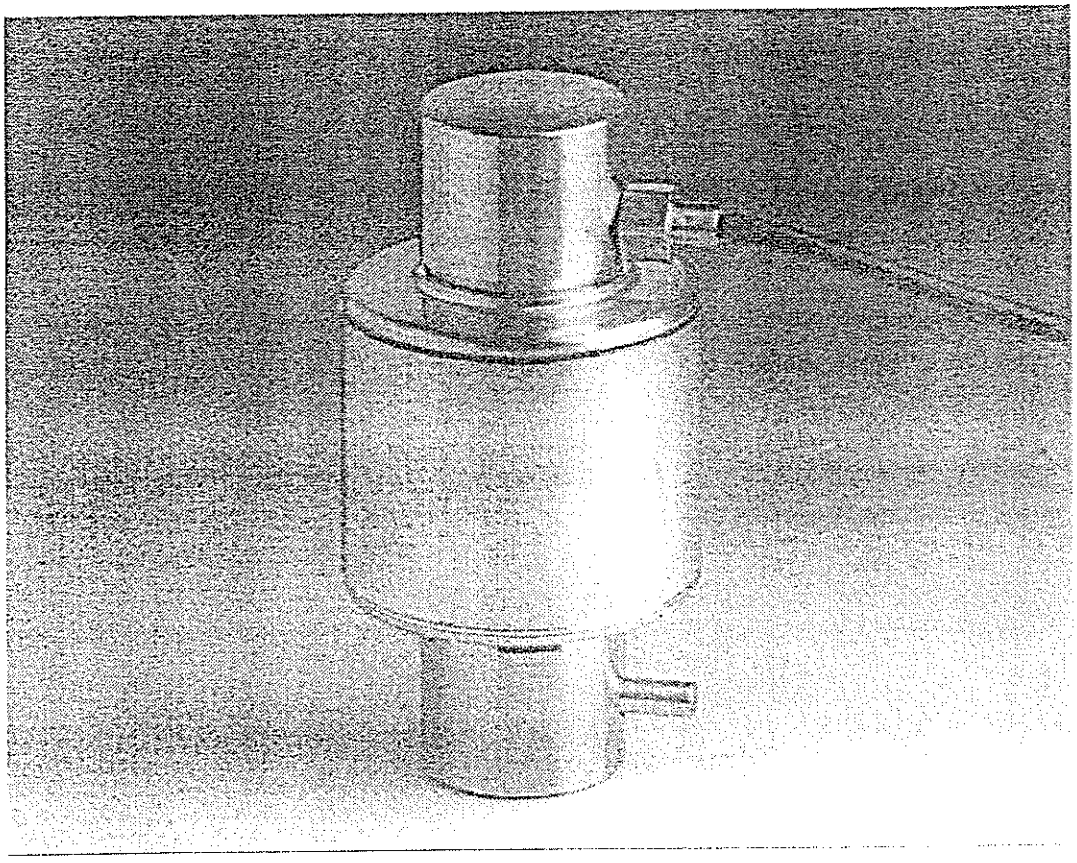

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Figure 2.- Drawing CAT-1640.

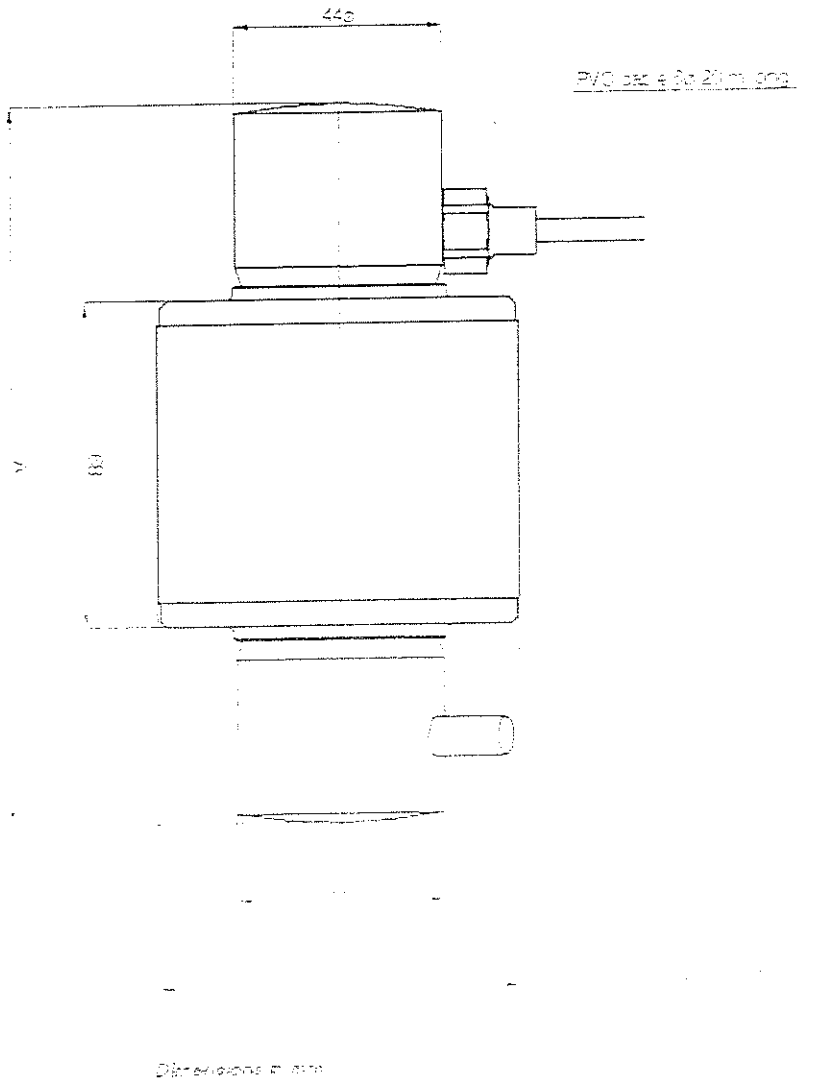

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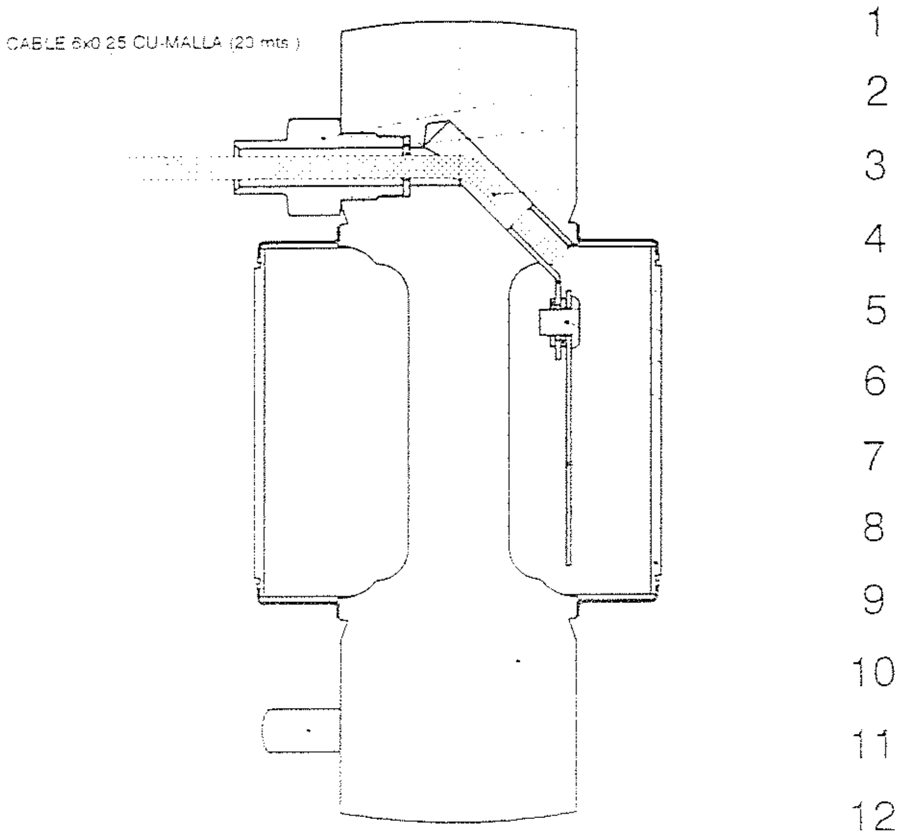
Figure 3.- Drawing MO-1641.



12	EJ-1009	134009	1	ACERO	EJE ø6x30 DIN 6325
11	NU-1144	S/CAPACIDAD	1	Ac INOX	NUCLEO
10	CA-1044	103044	1	TUBO INOX	CARCASA
9	CI-1020	104020	1	FIBRA VIDRIO	CIRCUITO IMPRESO
8	AR-1034	101034	1	ACERO	ARANDELA
7	RE-1006	115006	1	ALUMINIO	REMACHE ALUMINIO
6	AR-1037	101037	1	Ac ALEADO	ARANDELA PLANA M5 DIN 125
5	[illegible]	[illegible]	1		SOPORTE CIRCUITO
4	[illegible]	[illegible]	2	Chapa Ac INOX	CARCASA
3	CB-1002	112002	20 m		Cable 6x0.25 CU-MALLA
2	[illegible]	[illegible]	1	NITRILO	JUNTA PLANA
1	[illegible]	[illegible]	1	Ac INOX	RACORD ENTRADA CABLE
Nº ORDEN	Nº PLANO	CODIGO	CANTIDAD	MATERIAL	DENOMINACION

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Figure 4.- Drawing EE-1016.

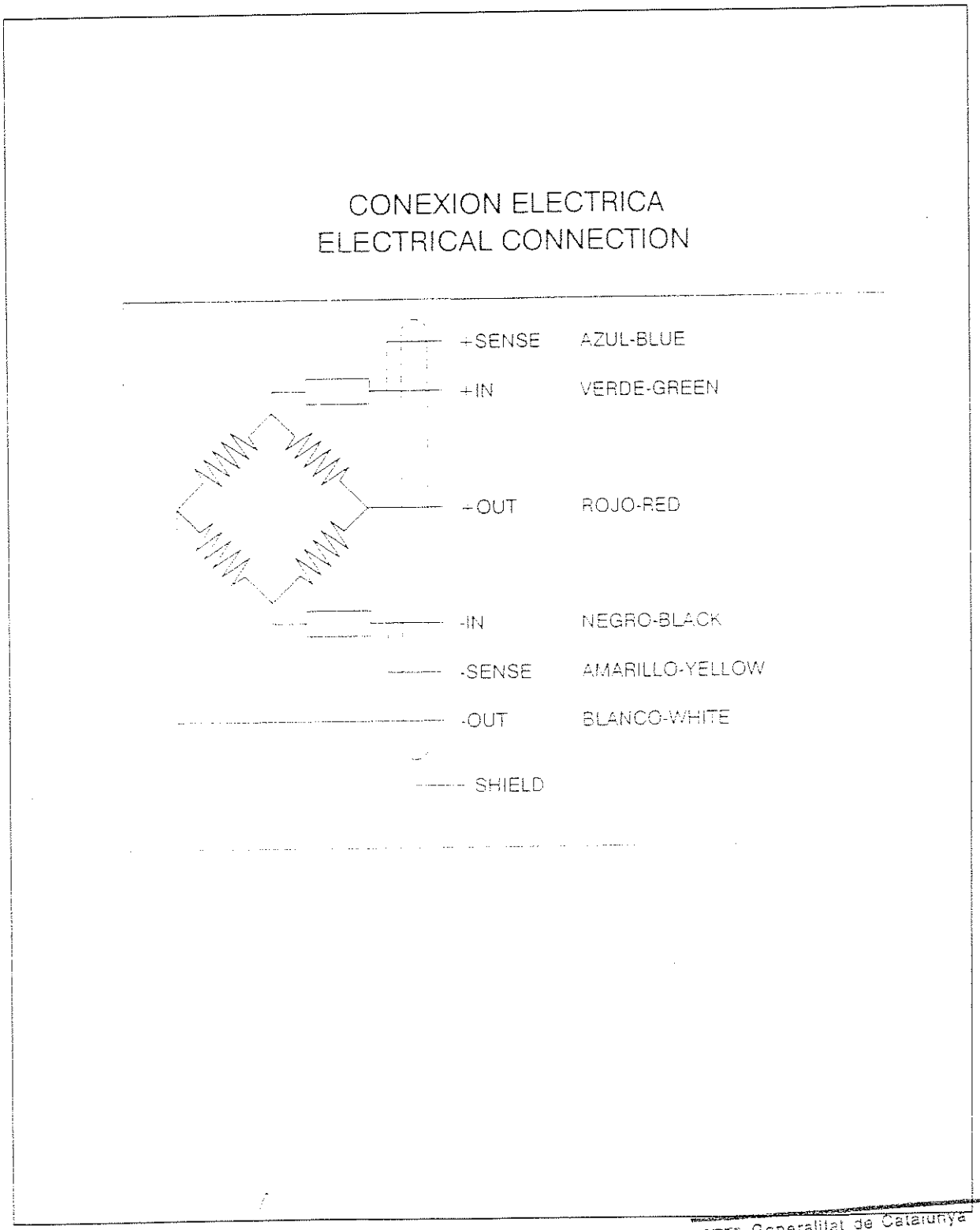

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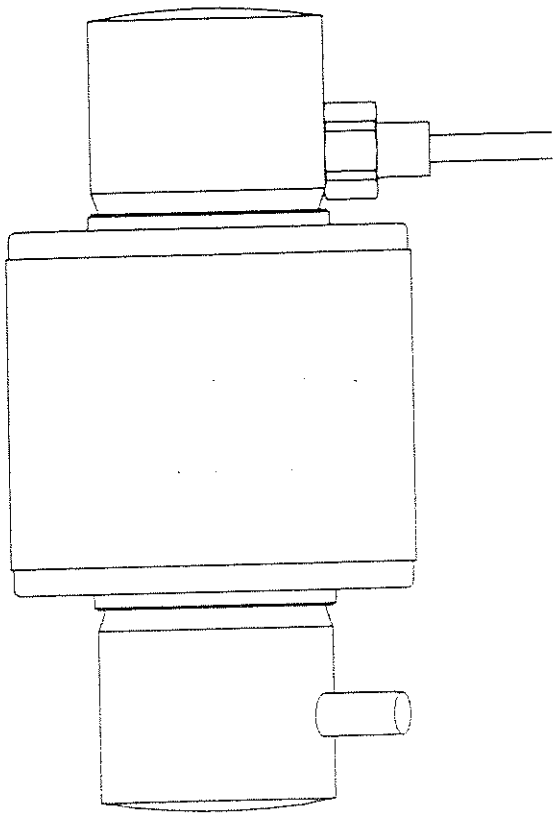
Figure 5.- Drawing SC-1642.

SITUACIÓN DE LA ETIQUETA IDENTIFICATIVA



MASTER-K

Mod: SNo:
Emax: C
Mfact reg No
n: TC E-01.02.C05
Vmin
Emin

CE

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