



CEMB S.p.a.
Costruzioni Elettro Meccaniche ing. Buzzi & C. S.p.a.
Sede legale: Via Risorgimento, 9
23826 MANDELLO DEL LARIO - (Lecco) ITALY



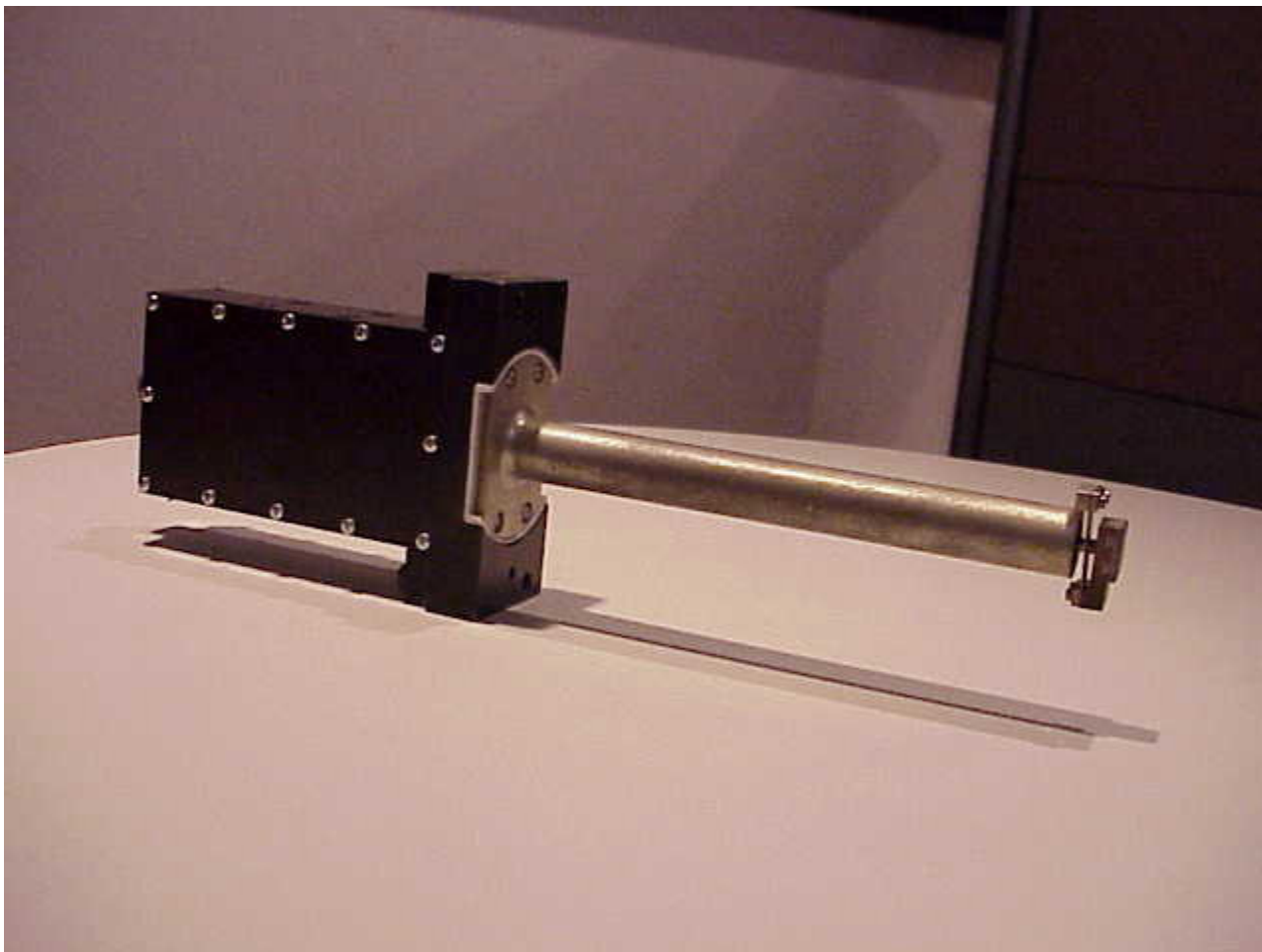
Cap. Società ? 1.500.000 i.v.
Reg. Impr. Lecco 00221870132
C.C.I.A.A. Lecco REA 75997
Meccanografico LC 000078
C.F. 00221870132 -P.IVA IT 00221870132

Telefono +39 – 0341.706.111
Industry Div. Fax +39 – 0341.735.678
Garage Div. Fax +39 – 0341.700.725
Vibration Analysis Div. Fax +39 – 0341.706.299
www.cemb.com
e-mail: stm@cemb.com



CEMB
BALANCING MACHINES

Transducer mod. T1-50



FUNCTION

Tranducer T1-50 is employed for the monitoring of:

Absolute Vibrations, by correct installing of the probe device (probe lenght, pre-charge, rotation direction) of the transducer on the machine case (see annex "R1"); the monitored signal must be supplied to a "T" of a CEMB equipment in order to be processed.

ENCLOSED

R1 document :technical charatteristh and fixing instructions
Dis. 12667 :Layout and dimenctions
Dis. 58832 :Connecting diagram (replace 12668)

MULTI-VIBRATION TRANSDUCER " T1-50 "



MAIN FEATURES

- Measure type : seismic (absolute vibrations) or by feeling probe (relative or absolute shaft vibrations) according to manufactured versions.
- Dynamic range : vibration amplitude from 0 to 5000/u p.p. frequencies from 10 to 150Hz if version by feeling probe
- Vibration direction : any direction
- Conditions for use : transducer tested by CEM3 Labs under various room and natural climate conditions; test condition limits are :
 temperature -25°C +70°C
 humidity 30°C + 100%
- Protection from outside : Grade IP55 - CEI Standards

GENERAL INFORMATION

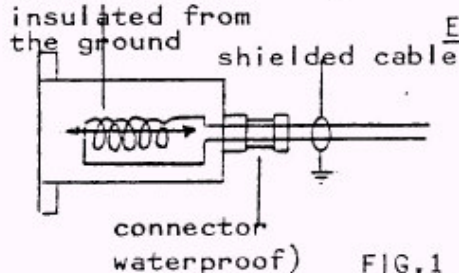
The detector CEMB T1-50 is called multi-detector in a sense that it allows various measure types according to the manufactured versions, namely the measure of absolute vibrations (seismic version) the measure of relative vibrations (version with feeling probe) and the measure of absolute vibrations with version with feeling probe and seismic mass.

This detector, used in proper versions can be applied to any type of machinery for any type of servicing under the hardest working conditions.

The signal generated by this detector must be analyzed and measured by a suitable unit (i.e. CEMB T1 Rack T1E).

detector coil

insulated from
the ground



ELECTRIC CONNECTION

Electric connection by means of a waterproof connector able to fit $\varnothing 8$ to $\varnothing 14$ mm. cables. Cable type: shielded, bipolar with min. section 2 mm.

FIG.1

MAINTENANCE

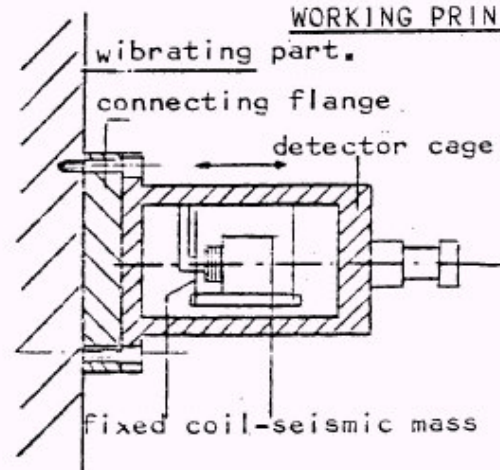
This detector does not need any maintenance.

OPTIONALS

(M) Magnetic shield consisting of a casing made of iron and Mumetal.

(PS) Special probe with max. $\varnothing 38$ mm. contacting device

WORKING PRINCIPLES



(S) Seismic version-Absolute vibration

One tension, proportional to the vibration velocity is generated by a coil which is united to the detector cage and fully set in the magnetic field of a seismic mass. The detector cage must be strictly fixed to the vibrating body (see Fig. 2)

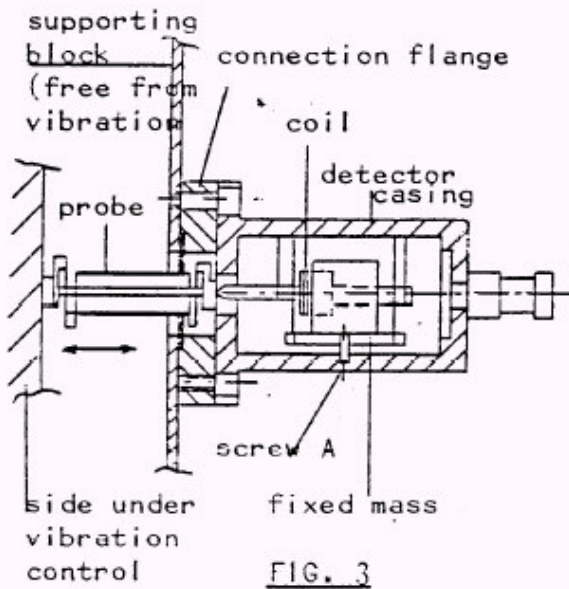
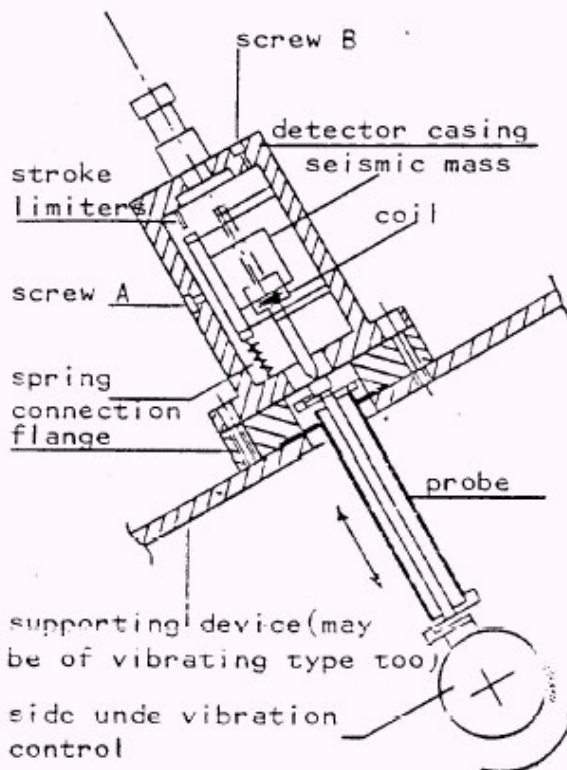


FIG. 3

(P) Version with feeling probe
Relative Vibration

One tension proportional to the vibration velocity, is generated by a coil which is joined to a suitable probe in strict contact to the vibrating point. Such a coil is fully set in the magnetic field of a mass joined to the detector casing which must be strictly connected to a part free from vibrations (see Fig.3). The measure of vibrations is relative to such a fix point. The probe mainly consists of a contacting device made of synthetic fibre which is set in good contact with the vibrating point and delivers the same vibration amplitude to the coil. (see Fig.3 and Fig.4)



(S+P) Version with probe and seismic mass. Absolute vibration

One tension proportional to the vibration velocity, is generated by a coil which is joined to a suitable probe in strict contact to the vibrating point. Such a coil is fully set in the magnetic field of a mass which is seismically suspended to the detector casing. The detector casing must be strictly fixed to another body which may be of vibrating type too. The probe is of the same type of the one previously described. This version (S+P) gives the typical use of detector T1-50. In fact, it allows the absolute measure of the shaft vibration relating to the inertia reference made by the seismic mass. (see Fig. 4).

PECULIARITIES

(S) and (S+P) versions, when fitted with not-horizontal vibration axle, have been equipped with proper calibration springs able to balance the weight of the seismic mass. Stroke limiters prevent suspended bodies from casual extreme displacements (Fig.4).

FITTING AND PUTTING INTO SERVICE

All versions require a proper flange to be fitted between detector and fitting surface. Such adapter is manufactured in four models, following the use of detector.

The fitting of such a device allows an easy removal of the detector without taking off those parts (i.e. the feeling probes) requiring experts for their re-fitting adjustments.

In addition to that it also allows, after removing the detector, to check absolute vibrations of the part under control by connecting the feeling probe with a proper vibrometer (i.e. CEMB M18 - N20 - N33).

Fitting of the detector takes place in two steps:

- 1) First fit the connection flanges onto fixing surfaces by means of screws and pins; in case of detectors with probe, the flange incorporates the probe, too.
- 2) Then fix the detector to the flange by means of two screws M8x30 and two removable cone pins \emptyset 5x30.

So the detector box is fully independent from its control device.

Flange types:

- for detectors with probe : standard flange PN
large flange PG
- for seismic detector : standard flange SN
fixing plate SS

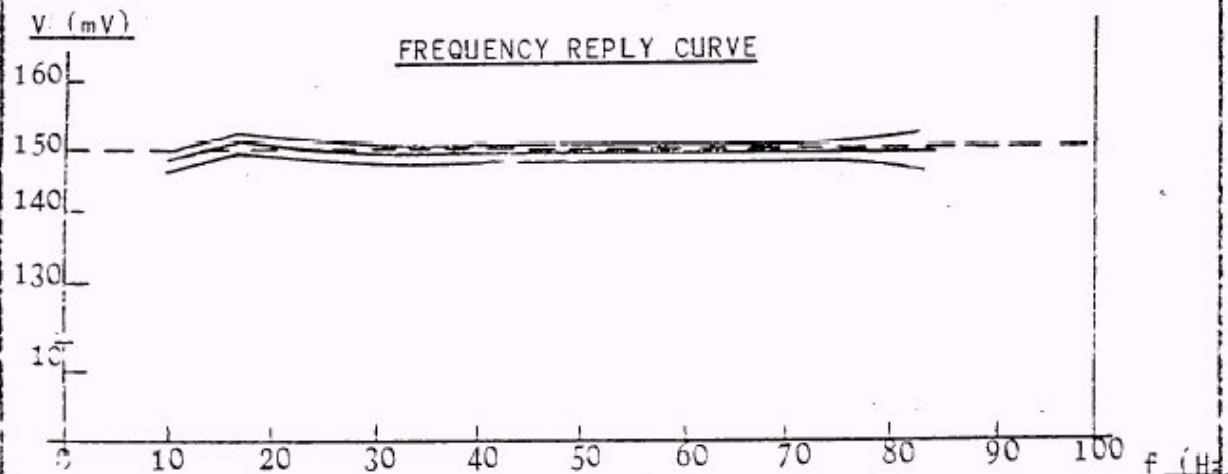
The oscillating mass of detector types (S) and (S+P) is blocked during transportation. To free it, change screws A and B (see Fig. 4) between them. The screw head is painted in red.

When making this change, take care to re-fit waterproof rings too. In case a detector with not-vertical axle is fitted, make it sure that screw A (Fig. 4) is in the lower side of the detector. This assures the proper working of the seismic mass.

Overall dimensions and boring are shown in the attached dwgs 12667P and 12668P.

TECHNICAL FEATURES

- Dynamic field : Frequency 10 + 150 Hz
Amplitude 5 mm p.p.
- Sensitivity : 15 mv/mm/sec - 25° on 10 Kohm
- Frequency reply : Probe 10 + 50 Hz 2%
8 + 100 Hz 7%
: Seismic 15 + 100 Hz 6%
20 + 50 Hz 3%
15 + 150 Hz 10%
- Seismic rejection to the vibration of the supporting block : 95%
- Temperature range : -25°C +70°C
- Own frequency : 7 Hz
- Power supply : none
- Coil resistance : 100 ohm at 24°C
- Material : Alluminium
- Detector weight : Kg 2,05
- Average weight of probe and fixing flange : Kg. 3,1
- Weight of shielding : Kg. 2,45
- Protection from outside : Grade IP55 - CEI Standards
- Connection : connector Veam type 3106-165-8P+3102A-165-8P+ AN3057-8 fit for flexible sheath from \varnothing 8 to \varnothing 14 mm.
(MS/NIL-C-5015, 3102/16, ANNEXED)



N.B. Detector features subject to change without prior notice.

CONSTRUCTION CHARACTERISTICS

When the version (S+P) is assembled with vibration axle no placed horizontally, it is supplied with proper calibrated springs, suitable for balancing the weight of the seismic mass.

Some stroke limit switches protect the suspended elements from too high accidental traverses (Fig. 4).

All construction versions foresee the insertion of a proper flange between the transducer and the fastening surface.

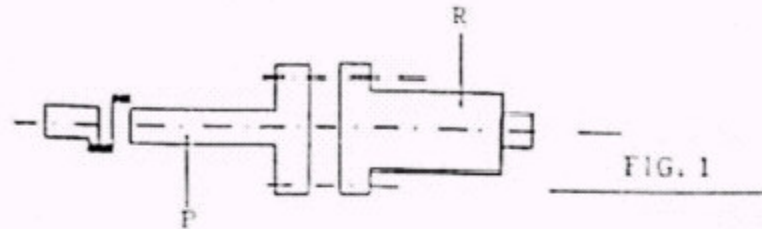
The insertion of this flange allows to easily disassemble the transducer without removing parts (e.g. the probe prods), whose disassembly and adjustment require the intervention of skilled personnel. Further it allows the possibility, after having disassembled the transducer, to make the absolute vibration controls in the element under control, using the connection of pushbutton-probe with a proper vibrometer.

The oscillating mass is locked during the transport and assembly. Its releasing is obtained exchanging the screws A and B with one another (see Fig 4) having red-coloured heads, taking care to assemble again also the sealing rings.

When the transducer is assembled with no vertical axle, control that the screw A (Fig 4) is located in the lower part of transducer. This guarantees that the seismic mass works in the right manner.

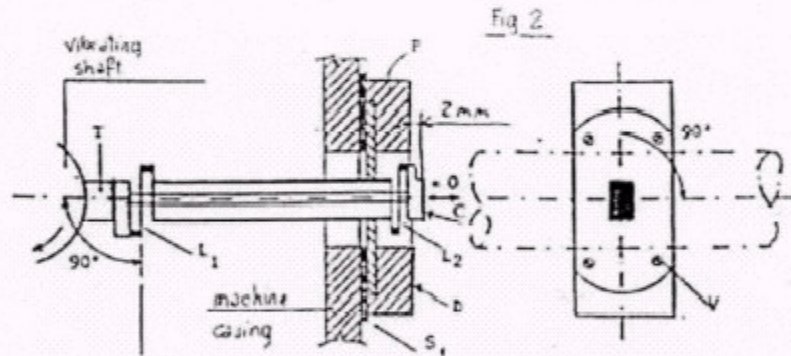
The overall dimensions, drillings and the electric connection are indicated in the annexed drawings.

POSITIONING OF TRANSDUCERS T1-50



Refer to draw. 24530-P.

The transducer, usually foreseen for measuring by prod is made up of two independent parts (Fig. 1): the real transducer R and the prod unit P.

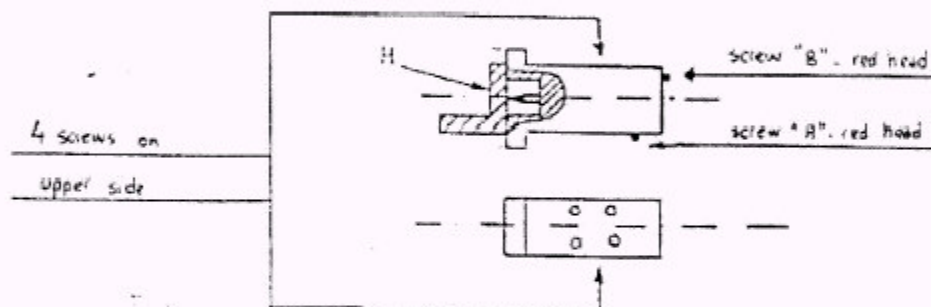


The transducer is normally supplied with these parts assembled as in normal service position, therefore it is necessary to make the following operations:

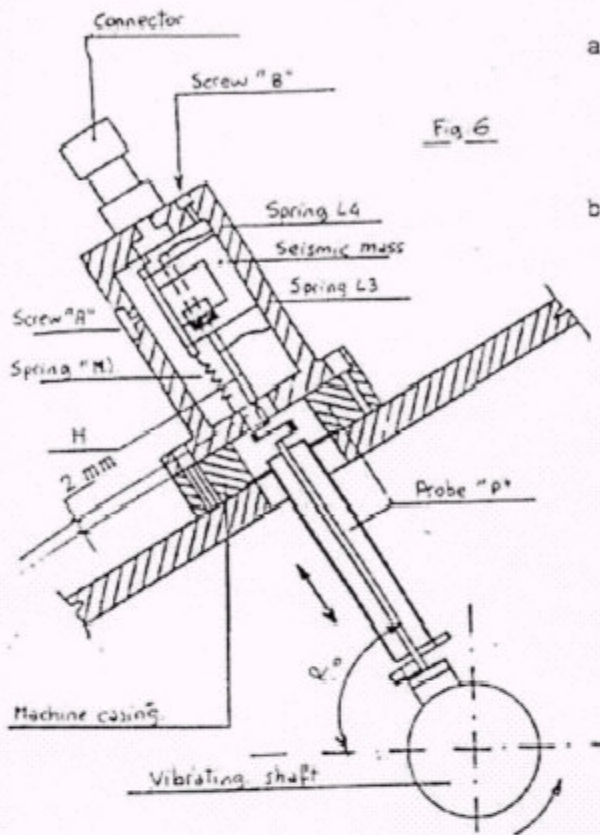
- 1) Extract the transducer R from the prod unit P removing the two fastening screws
- 2) Assemble the prod unit P in work position making these operations and observing the Fig. 2.

- a) Orient the unit P so that the sheet L1 supporting the slide T is submitted to tensile strength in the shaft rotation direction.
In the case the sheet L1 does not work correctly and it is necessary to turn it by 180° (flange of "long" unit P), loosen the four screws V supporting the probe pushbutton part (Fig. 2) and make the inversion.
 - b) Introduce proper thicknesses S between the fastening surface of machine casing and the flange of unit P so that the two sheets L1 and L2 are not bended and contemporaneously it is obtained the contact between the ends of slide T and the surface of shaft to be controlled. Pressing by hand the surface C it can be controlled the contact of slide.
After this position is achieved, control that a level difference of about 2 mm is present between the surface C and surface D (Fig. 2).
 - c) Join by pins and thighten the screws assuring the perpendicularity of moving slide T with the shaft rotation axle.
- 3) Assemble the real transducer R following these phases and the Fig. 5.

FIG. 5



- a) Control by a square that the pressure prod H that controls internally the transducer is flush with the base plane of transducer. In contrary case the transducer is damaged.
 - b) Assemble the transducer on the prod unit by screws and pins orienting it so that the four screws that are located on a side are adjusted in the top part of transducer (in the case the position is not vertical); in this manner the sheets supporting internally the seismic mass are submitted to tensile strength.
- 4) Start up following these phases and figures 5-6.



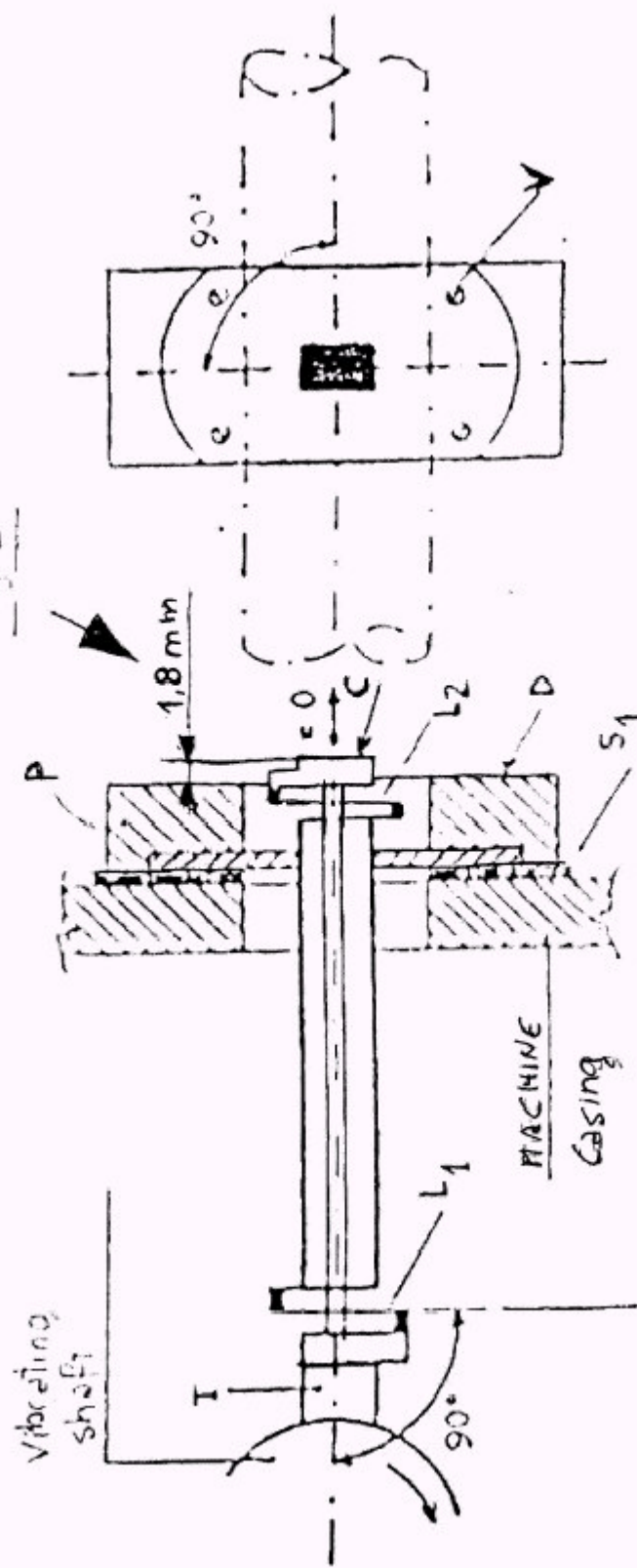
- a) Unlock the seismic mass inverting with one another the positions of the two screws A and B with red-colour painted heads for allowing the survey of absolute vibrations.
- b) Normally the transducers have a device M with weight balancing springs for the seismic mass; this device is calibrated by CEMB according to the value of angle α supplied by the Customer order and shown in draw. 24530-P. If this angle must vary or it is necessary to control this balancing, it is necessary to remove one of the lateral walls and operate the mechanism M until it is got the rectilinear position of sheets L3. When the wall is dismantled it is advisable to control also that the prod H is preloaded by ~ 2 mm (the bending of two sheets L4 that supports it appear clearly). Assembling again the lateral wall, take care to the good sealing).

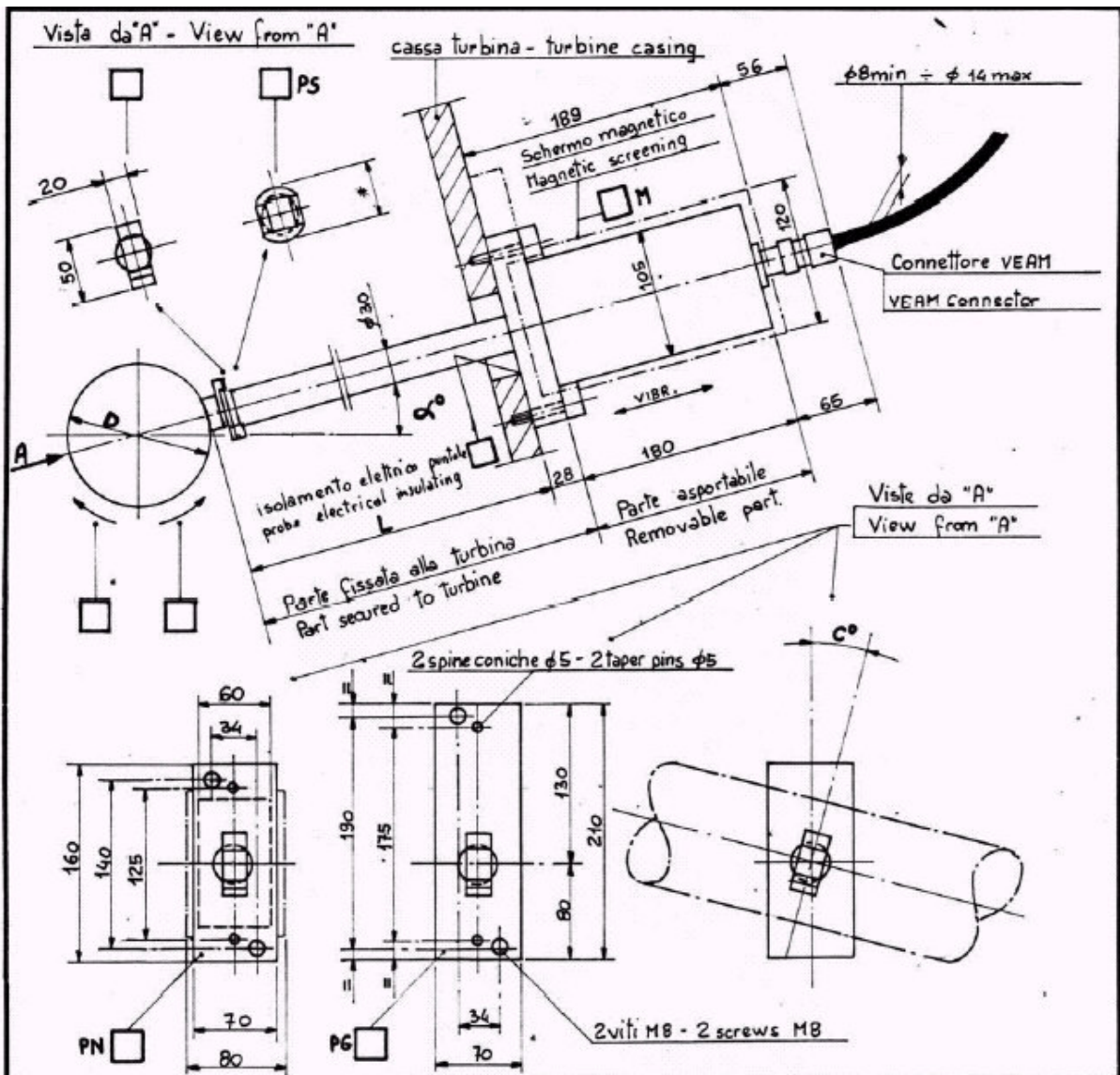
- 5) Verify by tester the electric insulation between rotor and transducer casing.
- 6) The electric connection is made by the connector as indicated in draw. 24530-P.

NOTES

- a) If you wish to make the sole relative vibration measure, you must not exchange the screws A and B with one another, keeping so the seismic mass locked in its position.
- b) The fastening drillings are made following the draw.

Fig 2





AB. Indicare i dati richiesti per il tipo di applicazione con: e completare la tabella in basso.
 AB. Sign with: required technical data and fill in below table

					PS
CUSCINETTO - BEARING	L	R = 1,1 D / 2	α°	C°	$\phi 38 * \phi 24$

modifiche:

T1-50

Grado protezione: IP55 norme CEI

Disegna di: Ingombro - installazione - definizione d'ordine

data 7-3-1978

12667-P



C E M B
 Costruzioni Elettromeccaniche
 Ing. Buzzzi & C. - S.p.A.

dis. Z. Assani

Dichiarazione CE di Conformità
 Declaration of Conformity
 EG-Konformitäts-Erklärung
 Déclaration de Conformité
 Declaración de Conformidad CE
 Declaração CE de Conformidade



EC-Verklaring van Overeenstemming
 Försäkran om CE-överensstämmelse
 CE-overensstemmelses-erklæring
 CE-overensstemmelses-erklæring
 CE-vaatimusmukaisuus-vakuutus
 Δήλωση Συμμόρφωσης CE

La Ditta
 The Company
 Die Firma
 La Maison
 La Compañia
 A Empresa



Het bedrijf
 Företaget
 Virksomheden
 Virksomheten
 Yhtiö
 Η εταιρία

dichiara con la presente la conformità del Prodotto
 herewith declares conformity of the Products
 erklärt hiermit die Konformität des Produkts
 déclare par la présente la conformité du Produit
 Declare la conformidad del Producto
 com a presente declara a conformidade do Produto

verklaart bij deze de overeenstemming van het product
 försäkrar härmed att produkten
 erklærer herved, at produktet
 bekrefter herved at produktet
 vakuuttaa että tuote
 Δηλώνει με την παρούσα τη συμβατότητα του Προϊόντος

Strumento Instrument Instrument Instrument Instrumento Instrumento	Instrument Instrument Instrument Instrument Instrument Όργανο
---	--

Tipo
Type
Typ
Type
Tipo
Tipo

T1-50

Type
Typ
Type
Type
Τύπποι
Τύπος

Nr. di serie
Serial Number
Fabriknummer, usw
Numero de serie
Numero de fabricacion
Número de série

Serienummer
Serienr
Serienr
Serienr
Sarjanro
Αρ. Σειράς

Numero Distinta Base
Manufacturing List Number
Erstellungsliste nummer
Número de lista de construction
Numero lista de base
Número de Lista de Base

980851150

Nummer basislijst
Produktionslistans nr.
Produktionslistans nr.
Produktionslistans nr.
Valmistusluettelon nro.
Αριθμός Καταλόγου Παραγωγής

alle norme sottostanti / with applicable regulations below / mit folgenden einschlägigen Bestimmungen / selon les normes ci-dessous / con directivas subaplicables / com as normas indicadas em baixo / met de onderstaande normen / överensstämmer med följande föreskrifter / stemmer överens med følgende forskrifter / on yhdenmukainen seuraavissa laeissa olevien ehtojen kanssa / στους παρακάτω κανονισμούς

D.P.R. Nr. 459, allegato 1 del 24 Luglio 1996

Directive CEE / EC Directive / EG Richtlinie / Directive CEE / Directivas CE / Directivas CEE / EEG-richtlijnen
 EU-direktiv / EØF-direktiver / EU-direktiver / EU-direktiv / Οδηγίες CEE

73/23/CEE - 89/336/CEE

Norme Armonizzate Adottate / Applied Armonized Standards / Angewendete Harmonisierte Normen / Normes Harmonisées Appliquées / Normas Aplicadas en Conformidad / Normas Harmonizadas Aplicadas / Toegepaste geharmoniseerde richtlijnen / Standarder / Standardit / Εναρμονισμένοι Εφαρμοζόμενοι Κανονισμοί

EN 292-1	<input type="checkbox"/>	EN 292-2	<input type="checkbox"/>	EN 294	<input type="checkbox"/>	EN 349	<input type="checkbox"/>
EN 418	<input type="checkbox"/>	EN 457	X	EN 60204-1	X	EN 60439-1	X
EN 50081-1	X	EN 50082-1	X	EN 50081-2	X	EN 50082-2	X

Data / Date / Datum / Date / Fecha / Data
 Datum / Datum / Date / Pvm / Ημερομηνία

Firma /Signature / Unterschrift / Signature / Firma / Assinatura
 Handtekening / Underskrift / Allekirjoitus / Υπογραφή

17.03.03	CEMB Spa Ing. Carlo Buzzi	
----------	------------------------------	--

M06PRG01