

*Test and certify the electrical safety of machines, in accordance with the European standard*

**EN 60204-1**

**C.A 6121**

**Machine  
tester**



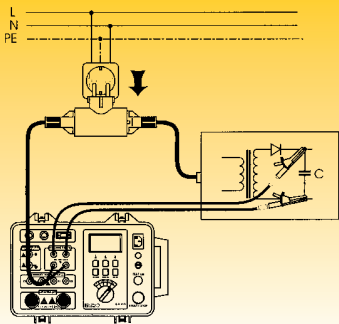
Photo D.R. CETIM

- A single instrument, user friendly and easy to use, for all the tests!
- Worksite "all terrain" sturdy and portable case
- LCD dot matrix screen, with back lighting (adjustable contrast)
- Memory for 999 measurements
- PC software runs under Windows
- Complete range of accessories

CE

 **CHAUVIN  
ARNOUX**

## TEST OF DISCHARGE TIME



**Voltage range : 600 V AC/DC**  
**Max measurement time : 10 s**  
**Discharge threshold : 60 V**

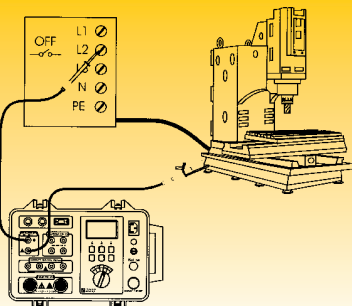
- Measurement of the discharge time at the supply terminals of the machine (2 point system)
- Measurement of the discharge time of the internal components (4 point system: 2 for the detection of the mains cut-out and 2 for the measurement on internal components)

## The C.A 6121

**S**turdy and portable, the C.A 6121 is the tool of the machine directive. Mandatory since 1995, this directive, whose aim is to guarantee the safety of users, imposes four types of electrical tests. To facilitate bringing into conformity new or installed machines, Chauvin Arnoux has grouped together all the necessary measurements, in a unique "all terrain" instrument.

Equipped with a particularly clear display, the C.A 6121 surprises by its ease of use. Besides its measurement capacities and the variety of its accessories, the instrument also has a comfortable memory and an RS232 output for a paper printout, or for exploitation on PC.

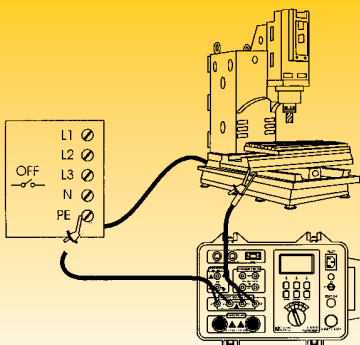
## INSULATION TEST



**500 V or 1000 V DC**  
**Range: 0...500 MΩ**

- Possible programming of a minimum resistance threshold, below which, an audible and visible alarm is set off.
- Test with or without timer (2 s to 10 min)

## CONTINUITY TEST

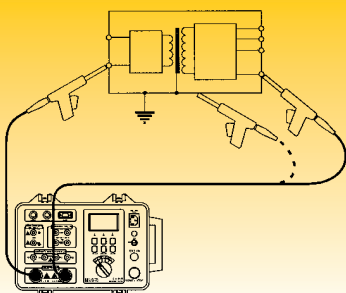


**Range : 0...1.99 Ω**  
**Test voltage < 12 V AC**  
**Test current (0...500 mA) > 10 A AC**

- 4-wire measurement
- Display of the result, either in V (voltage drop  $\Delta U$  defined in accordance with EN 60204-1), or in  $\Omega$
- Possible programming of a maximum threshold of voltage drop (pre-set values in accordance with standard), or of resistance, with triggering of an audible and visible alarm in case of overshoot



## DIELECTRIC TEST



**1000 V, 1250 V ou 1500 V AC**  
**Power : 500 VA**

- Adjustment of the maximum current threshold from 1 to 500 mA
- Test with or without timer (1 s to 5 min)
- Display of real voltages and currents
- Floating HT outputs for improved safety

## Measurement

**T**he very complete delivery package of the C.A 6121, allows all the electrical measurements of standard EN 60204-1 to be performed.

It can be completed by other accessories, to satisfy specific needs or special standards (e.g. VDE 104).

In its original shoulder bag, there is also room for all the additional accessories





# Standardisation reminders : machine directive EN 60204-1

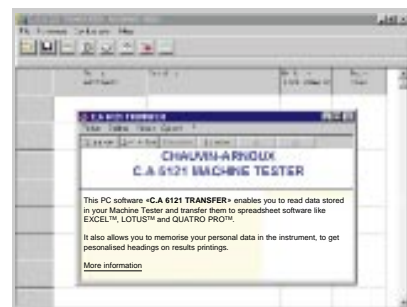
- DISCHARGE TIME  
1 s max at 60 V on the power supply (2 point measurement) and 5 s max on any other accessible part (4 point measurement)
- INSULATION  
1 MΩ min at 500 V DC
- CONTINUITY  
ΔU max at I > 10 A AC for 10 s (depending on the cross section of the PE cable):  
1.0 V max / ≥ 6.0 mm<sup>2</sup>  
1.4 V max / 4.0 mm<sup>2</sup>  
1.9 V max / 2.5 mm<sup>2</sup>  
2.6 V max / 1.5 mm<sup>2</sup>  
3.3 V max / 1.0 mm<sup>2</sup>
- DIELECTRIC  
2 x rated U (min 1 kV) at 500 VA for 1 s



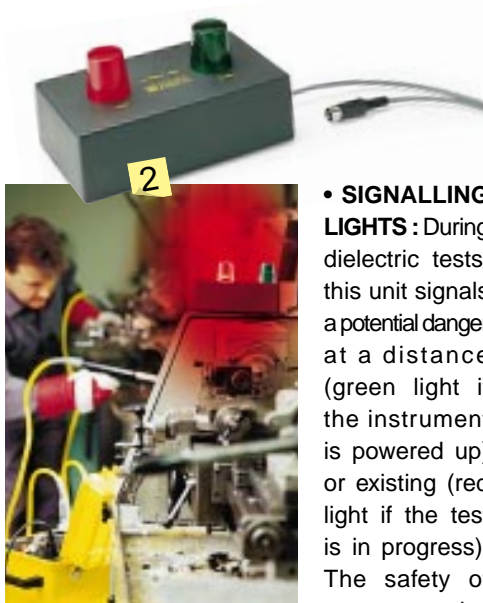
As standard, the delivery package allows all the tests to be done.

## RS 232 output 3

Operating under WINDOWS PC, the "C.A TRANSFER" software reads the data memorised in the instrument and exports it in a text file for an EXCEL™ spreadsheet. In total, the internal memory of the instrument can contain up to 999 measurements classed according to machines. The software allows the date/time of the machine to be set (time and date of the measurements) and to include the name and address of the operator which will appear on printouts.



The user of the software can choose the language to use from French, English, German, Italian or Spanish. The instrument has different printout modes, automatic or manual. The serial printer is available as an accessory (see end of document "To order").



2

- **SIGNALLING LIGHTS** : During dielectric tests, this unit signals a potential danger at a distance (green light if the instrument is powered up) or existing (red light if the test is in progress). The safety of persons who are close to the place where the test is being conducted is thus increased.

- **HIGH VOLTAGE GUNS** : Two dielectric test guns equipped with a cable 6 m long, are also available.



They allow tests to be done at a greater distance than with standard guns (2 m).

## accessories



1

- **REMOTE CONTROL PEDAL** : it frees the hands of the user and provides the On/ Off functions for the test and memorisation of the result (double pedal).

# Specifications

## DIELECTRIC

| Nominal test voltage (50 Hz)* | 1000 V  | 1250 V  | 1500 V   |
|-------------------------------|---|---|--|
| Triggering current            | 1, 3, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 350, 400, 450, 500 mA | 1, 3, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 350, 400 mA | 1, 3, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 333 mA |

\* Test voltage greater than 1000, 1250 or 1500 V / 50 Hz at a voltage  $U_{\text{mains}} = 230 \text{ V}$  and a power  $P_{\text{load}} = 500 \text{ VA}$

| Display    | Test voltage                | Test current (sinusoidal)       |
|------------|-----------------------------|---------------------------------|
| Range      | 0...2.00 kV                 | 0...199.9 mA      200...500 mA  |
| Resolution | 10 V                        | 0.1 mA      1 mA                |
| Accuracy   | $\pm(2\% L + 20 \text{ V})$ | $\pm(2\% L + 0.3 \text{ mA})$ * |

\*  $\pm(2\% \text{ rdg} + 0.5 \text{ mA})$  if triggering current set to 30, 40, 50, 60, 70, 80, 90 or 100 mA and  $\pm(2\% \text{ rdg} + 2 \text{ mA})$  on 150, 200, 250, 300, 330, 350, 400, 450 or 500 mA

- Display of the character of the test current : resistive, capacitive or absolute value
- Timer : without or adjustable from 1 s to 5 min

## INSULATION RESISTANCE

| Display    | Insulation resistance       |                         |                         |                      | Test voltage                |
|------------|-----------------------------|-------------------------|-------------------------|----------------------|-----------------------------|
| Range *    | 0...1.999 M $\Omega$        | 2.00...19.99 M $\Omega$ | 20.0...199.9 M $\Omega$ | 200...500 M $\Omega$ | 0...1200 V                  |
| Resolution | 1 k $\Omega$                | 10 k $\Omega$           | 100 k $\Omega$          | 1 M $\Omega$         | 1 V                         |
| Accuracy   | $\pm(2\% L + 2 \text{ pt})$ |                         |                         |                      | $\pm(2\% L + 2 \text{ pt})$ |

\* automatic ranges

- Rated voltage : 500 or 1000 V ...
- Measurement current : 1 mA min
- Measurement with or without adjustable threshold value (0.2...500 M $\Omega$ )
- Timer : without or adjustable from 2 s to 10 min

## CONTINUITY

| Display    | Voltage drop ( $\Delta U$ )   | Resistance ( $R_{10A}$ ) *       |                      | Test voltage                  | Test current                |               |
|------------|-------------------------------|----------------------------------|----------------------|-------------------------------|-----------------------------|---------------|
| Range      | 0...10 V                      | 0...999 m $\Omega$               | 1.00...1.99 $\Omega$ | 0...12 V                      | 0...9.99 A                  | 10.0...25.0 A |
| Resolution | 0.01 V                        | 1 m $\Omega$                     | 10 m $\Omega$        | 0.01 V                        | 0.01 A                      | 0.1 A         |
| Accuracy   | $\pm(2\% L + 0.02 \text{ V})$ | $\pm(2\% L + 2 \text{ m}\Omega)$ | $\pm 5\% L$          | $\pm(2\% L + 0.02 \text{ V})$ | $\pm(5\% L + 2 \text{ pt})$ | $\pm 3\% L$   |

\* automatic ranges

- Voltage drops ( $\Delta U$ ) max pre-set, depending on the cross section of the cable :

| Cross-section of the cable tested | 0,5 mm <sup>2</sup> | 0,75 mm <sup>2</sup> | 1 mm <sup>2</sup> | 1,5 mm <sup>2</sup> | 2,5 mm <sup>2</sup> | 4 mm <sup>2</sup> | 6 mm <sup>2</sup> |
|-----------------------------------|---------------------|----------------------|-------------------|---------------------|---------------------|-------------------|-------------------|
| Max voltage drop                  | 5 V                 | 5 V                  | 3.3 V             | 2.6 V               | 1.9 V               | 1.4 V             | 1.0 V             |

- Measurement of low resistance ( $R_{10A}$ ) with or without adjustable threshold value (10...2000 m $\Omega$ )
- Max output voltage : 12 V
- Timer : without or adjustable from 1 to 15 s
- Measurement current (0...0.5 A) : > 10 A ~
- Connection system : 4-wire

## DISCHARGE TIME

| Display    | Discharge time               |
|------------|------------------------------|
| Range      | 0...10 s                     |
| Resolution | 0.1 s                        |
| Accuracy   | $\pm(2\% L + 0.2 \text{ s})$ |

- Level of safety voltage : 60 V
- Automatic threshold of discharge time :  
1 s at the power supply terminals (2 point measurement)  
5 s at the internal components (4 point measurement)
- Max service voltage: 600 V AC/DC

## GENERAL SPECIFICATIONS

- Mains voltage : 230 V / 50 Hz
- Max power absorbed : 600 VA
- LCD screen : dot matrix 128 x 64 with permanent backlighting and adjustable contrast
- Interface : RS232
- Memories : 999 values
- Remote control signals : On / Off and Record
- Working temperature : 0...50°C

- Working humidity : 85% RH max (0...+40°C)
- Dimensions (W x D x H) : 400 x 260 x 250 mm
- Weight : 11 kg
- Protection index : IP 40 (open) IP 54 (closed)
- Protection of measurement circuits : by HBC fuses
- Electrical safety : IEC 1010-1 Cat III 600 V

### Applicable standards :

- EN 60204-1 " Test of electric machines "
- VDE 104 " Installation and operation of electric test equipment "
- EN 61180-1 and -2 " High voltage test techniques for low voltage equipment "

## To Order

- **C.A 6121**  
(Great Britain model) .....P01.1456.02
- **C.A 6121**  
(Continental Europe model).....P01.1456.01

Instruments supplied with :

- 1 mains lead, 3-core,
- 1 set of 2 keys to lock the instrument,
- 2 high voltage guns (2 m cable),
- 1 discharge cable,
- 2 continuity leads 2.5 m, with double contact crocodile clips,
- 2 safety leads 3 m (red/ black),
- 2 crocodile clips (red/ black),
- 1 test prod (red), 1 carrying bag for the accessories and the user manual

### Additional accessories :

- PC software  
« C.A 6121 TRANSFER » ....P01.1019.15  
supplied with cable RS232 DB9M/DB25F + adapter DB25M/ DB9F
- Serial printer .....P01.1029.01  
supplied with cable RS232 DB9M/ DB9M
- Remote control pedal .....P01.1019.16
- Signalling lights .....P01.1019.17
- 2 high voltage guns  
(fitted with cable 6 m) .....P01.1019.18

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7 S U B S I D I A R I E S W O R L D - W I D E

 **CHAUVIN  
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