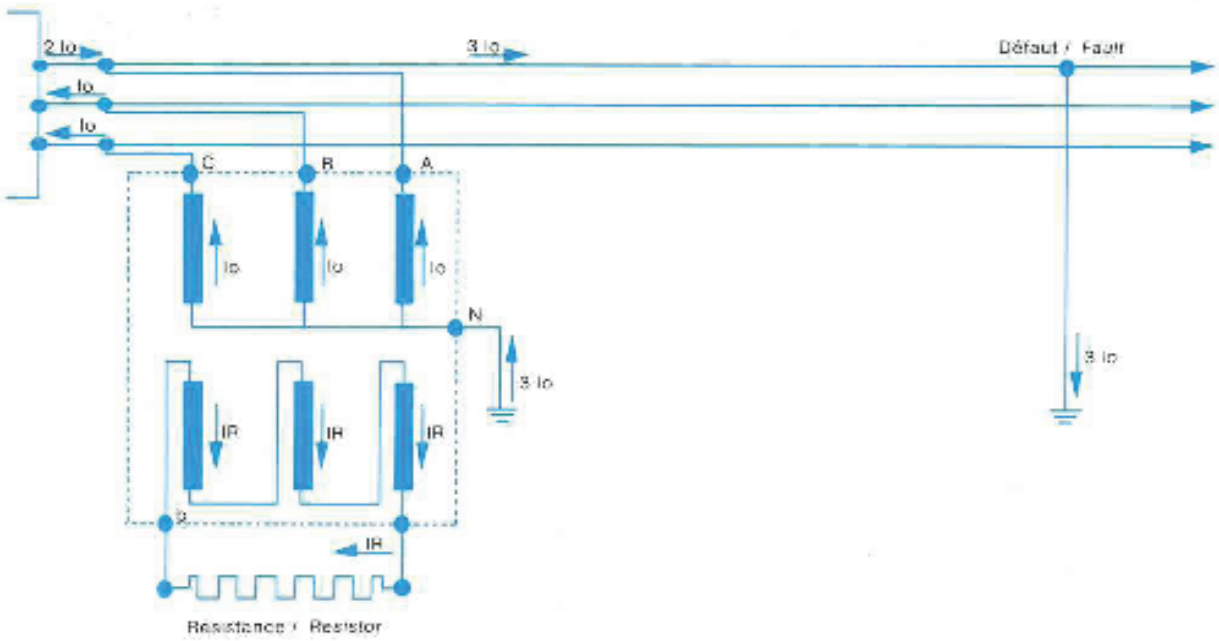
# HOMOPOLAR GENERATORS WITH RESISTOR

**THREE-PHASE SOURCE WITHOUT NEUTRAL**

**ELECTRIC NETWORK TO PROTECT**





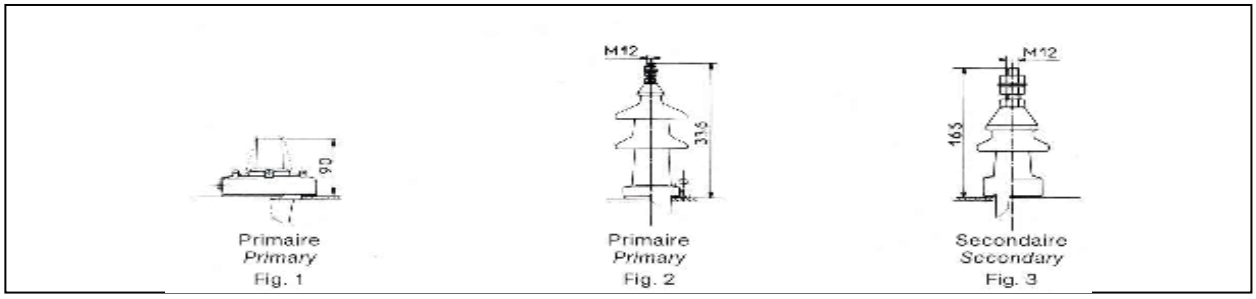
# HOMOPOLAR GENERATORS WITH RESISTOR

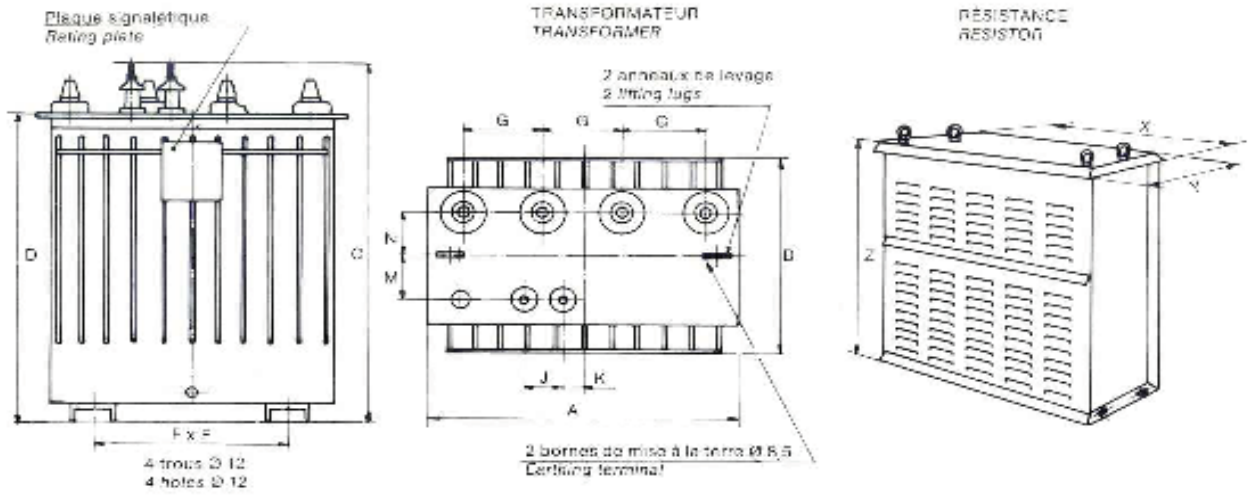
**5,5 kV to 20kV 50Hz**

| To standard… | NF C 52 300<br>ICE 289 |
|---|---|

| | Voltage networks (50Hz) | | | |
|---|---|---|---|---|
| | 5,5 kV | 10 kV | 15 kV | 20 kV |
| Insulation level | 22 kV | 28 kV | 38 kV | 50 kV |
| Shock level | 60 kV | 75 kV | 95 kV | 125 kV |
| Secondary voltage | 410 V at no load on dead fault | | | |

| Production characteristics | Standard accessories | Additional accessories |
|---|---|---|
| Oil, silicone oil immersed transformer with total filling of tank.<br><br>**Primary coupling:** Star with neutral<br><br>**Secondary coupling:** open delta<br><br>Copper winding.<br><br>Corrugated oil tank.<br><br>Natural air cooled stainless steel wire resister.<br>With casing IP12 made in galvanized sheet metal unpainted. | 4 Fixed spittable terminals 250A (HN 52 S 61) –fig.1.<br><br>2 porcelain terminals 250A (C52.052) – Fig.3.<br><br>2 earthing terminals.<br><br>Lifting lugs<br><br>Filling and drain plugs.<br><br>Name and rating plate. | 4 porcelain terminals – Fig.2.<br><br>LV cover (H=230)<br><br>Safety device DGPT2.<br><br>Locking device for spittable terminals (lock not included). |






## GENERAL CHARACTERISTICS

Permanent fault current : 5A (3 io).

Straight fault current limited at : 20 A, 30 A or 50 A
during 5 seconds (3 io).

| Primary voltage | A | B | C | D | F | G | J | K | M | N | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5500 V | 710 | 590 | 840 | 675 | 380 | 170 | 80 | 60 | 90 | 85 | 630 | 360 | 380 |
| 10000 V | 805 | 630 | 910 | 745 | 380 | 200 | 80 | 60 | 100 | 92 | 630 | 370 | 520 |
| 15000V | 815 | 650 | 1015 | 850 | 520 | 200 | 80 | 27 | 108 | 102 | 790 | 460 | 560 |
| 20000V | 815 | 650 | 1015 | 850 | 520 | 200 | 80 | 27 | 108 | 102 | 790 | 460 | 560 |

( Sizes : millimeters )

| | TRANSFORMER | | | | | | RESISTANCE |
|---|---|---|---|---|---|---|---|
| **Dielectric** | **Oil** | | **Oil Silicone** | | | | **Air** |
| **Primary voltage** | **dielec** | **total** | **dielec** | **total** | | | |
| **5500 V** | 80 | 280 | 90 | 290 | | | 23 |
| **10000 V** | 90 | 350 | 100 | 360 | | | 31 |
| **15000 V** | 115 | 520 | 130 | 535 | | | 55 |
| **20000V** | 1156 | 520 | 130 | 535 | | | 55 |

( mass : kg )

For other voltages, or other currents, pls, consult with us.

Dry type transformer at the demand.

celduc® transfo

# OPERATION

The earthing of a medium voltage network neutral or the protection of alternator masses can be carried out using a homopolar generator associated to a resistor connected on the low voltage end.

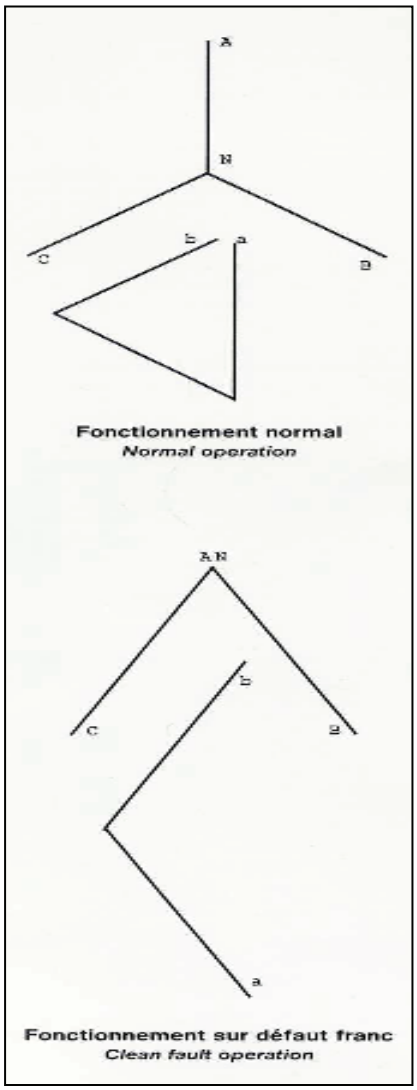
This generator is like a three phase transformer with two windings and free flux (generally). This transformer has a primary winding (medium voltage) which is star connected with its neutral connected to the earth. The secondary is delta connected on a resistor.

During normal operation, the voltage across the terminals of the secondary is zero and no current flows through the resistor.

When a fault arises on a phase, neutral point 's displacement on the primary makes appear an homopolar voltage on the terminals of the secondary (see diagrams ) : the current flows through the resistor.

The value chosen for this resistor, and characteristics of the transformer (inductive & resistive drops), determines the clean fault current at the medium voltage.

In the event of a less severe fault, the neutral displacements is less and the fault current the low and medium voltage end proportional to the neutral displacement.

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