

# STARTING AUTOTRANSFORMER

These apparatus allow the starting of motors under reduced voltage.

The starting current is divided by:  $\left(\frac{U_n}{U_r}\right)^2$   
Un: nominal voltage  
Ur: reduced voltage

## DIAGRAM OF STARTING

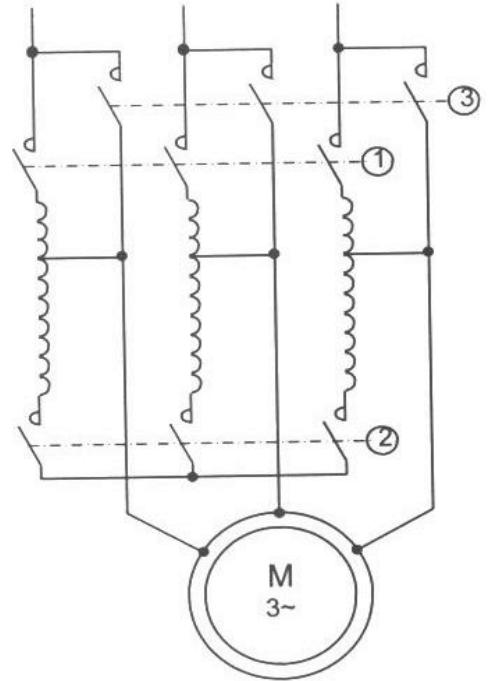
More usually used the starting in three times.

**1<sup>st</sup> time:** 1 and 2 are closed, 3 is open

feeding of the motor under reduced voltage.

**2<sup>nd</sup> time:** 1 is closed, 2 and 3 are open feeding of the motor in serie with the inductance due to the fraction of the winding of the autotransformer.

**3<sup>rd</sup> time:** 3 is closed, 1 and 2 are open the motor runs under its nominal voltage.



## Example of reference

Natural cooling oil immersed autotransformer for starting in three times of motor 7 800kVA, 11kV f=50Hz In= 442A Is/In= 4.2

Characteristics:

Primary: 11kV – secondary: 8,14kV ±5%

Off voltage tap changer 3 startings of 36 seconds each one separated by 6mn, then 2 startings per hours.

Weights: oil: 540kg - core and coils 1 785kg - total 2 695kg

Length: 1 800mm - Width: 960mm - Height: 1 800mm.



**celduc**<sup>®</sup>  
transfo

Rue Ampère – 42290 SORBIERS – FRANCE  
Tel: (+33) 04.77.53.90.11 Fax : (+33) 04.77.53.08.01