

WEBSITE PONTNOIR (Creuse)

Re: 3 Phase Cooker

By [RobertArthur](#) • Sun 30 Oct 2011 22:47

Noticing elsewhere that cookers are still a hot topic, especially for those having a three-phase installation, some thoughts about connecting these cookers.

Let's take a run-of-the-mill diagram, [this one is a Dutch Siemens](#) cooker. Equipment side of the wiring in these pictures: left. Exactly the same diagram you'll see in multi language NEFF documentation for the international market. Wire colours, equipment side: 1. brown; 2. black; 3. blue; 4. white; 5. yellow/green. Installation side: one and two for phase L1 and L2. Or L1 + L3, or L2 + L3. You should find L3 in grey there, but please don't trust anything in a three-phase installation. You never know who did what in the past.

In the Netherlands - picture at the right - this type of equipment has to be connected in a three-phase installation, using the special Perilex power plug. But with only two of the three phase wires and two separate neutral wires as illustrated in the diagram. With 16 amps as the maximum for a fuse or MCB - Dutch electrical code NEN 1010 - there are two of them in this almost three-phase connection. For practical purposes to be considered as two times single-phase, not as a "real" three-phase Y or Delta configuration (US voltages of 120 volts in this educational effort). With two times 16 amps the Dutch have the same amount of power as the French for their *plaque de cuisson* in single-phase: 32 amps.

Let's go to France, *triphase*, picture in the middle. This is also a "two-phase" model, and you need a *disjoncteur tétrapolaire* in your consumer unit of 20 amps (each phase). And a RCD (*interrupteur différentiel tétrapolaire*) of course. Have a look at [this diagram](#) how to do it. Where they show a cooker that needs all the three phases, and neutral of course.

The first picture is a *monophasé* connection. To conclude: one MCB of 32 amps and 6mm² wiring in single phase, and one *disjoncteur tétrapolaire* of 20 amps and 2,5 mm² wiring in three-phase. And of course 30 mA RCD's for your personal safety.

And to repeat a familiar message: only if you were to have special three-phase equipment, electric motors, airco equipment etc., you need it. If not: better change to single-phase. Crucial question: your abonnement in kVA. With for instance 12 kVA in three-phase you have three times 20 amps coming in. Not very difficult to overload one of them with such a power-hungry piece of kitchen equipment. [Balancing](#) the phases, since the start of this website and forum discussed more than once.

And don't forget that since the revision last year of the electrical code by the name of NFC 14-100 the maximum power you'll get from ERDF in single-phase is 12 kVA. More power: three-phase. And sometimes your local powergrid is a bit underpowered, and ERDF will say after a feasibility study: sorry, conversion from *tri* to *mono* not possible, too much voltage drop due to the higher currents in *monophasé*. Buying an electric cooker is one thing, but the *raccordement* in your French *installation électrique* is something else.

To make life easier for those with only a low-power *abonnement* (6 kVA *mono*), some producers are marketing **cooktops** you can connect in single-phase, *puissance de raccordement 4600 W* (MCB 20 amps and 2,5mm² wiring).

But be careful, before doing anything take a multimeter to be 100% sure that the colours used conform to the regulations. Phase 1, 2, and 3 should be brown, black and grey, and blue for neutral. But sometimes electricians use what ever they've got available to finish the job. Leaving you with dangerous voltages in colours you thought were safe.

Remember: it's 400 Volts between the three phase wires L1, L2 and L3, deadly. If you have no prior experience with *l'installation électrique*: please don't do it. Ask somebody else, don't take any risk. In most manuals of manufacturers for this equipment in France you'll find instructions for connection in single-phase or three-phase, sometimes also on the back of the cooker or hob.

Going to the French electrical code, NFC 15-100. They like the so called *circuits spécialisés* here: nothing else to be connected except appliance x, y, or z. A cooker, a *plaque de cuisson* is such a *circuit spécialisé*. A separate *four indépendant* is also such a *circuit spécialisé*: MCB of max 20 amps and 2,5mm² wiring (*monophasé*).

Robert