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DIGITAL POWER ENGINEERING

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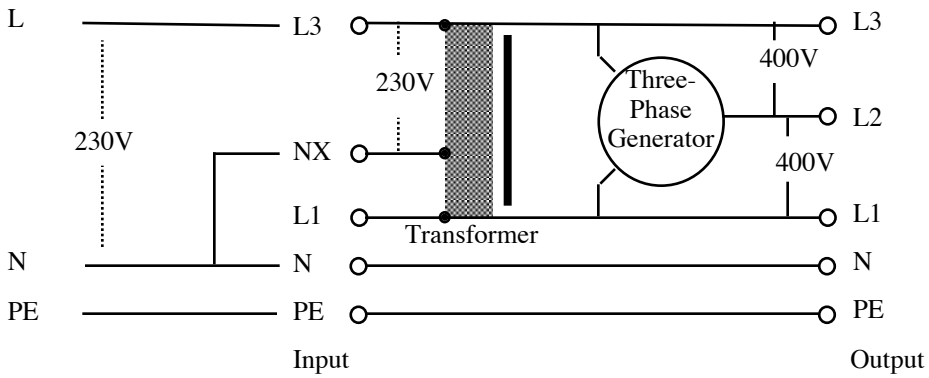
Install a Booster™ converter

In some countries 230V can be referred to as 220V or 240V.
400V can be called 380V or 415V. 460V can be called 440V or 480V.

There are two Booster versions for different supply voltages: For 230V and 460V supply.
Both versions can be wired for 400V supply (two of the three phases).

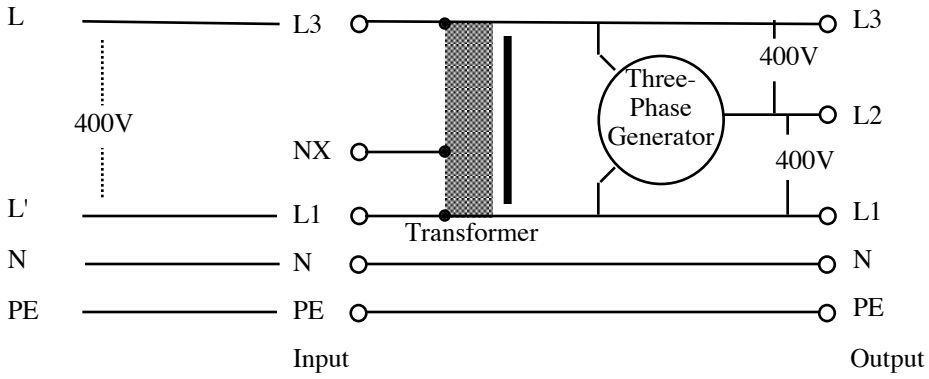
Supply 230V to the 230V Booster version:

Bridge N and NX. Do not connect L1



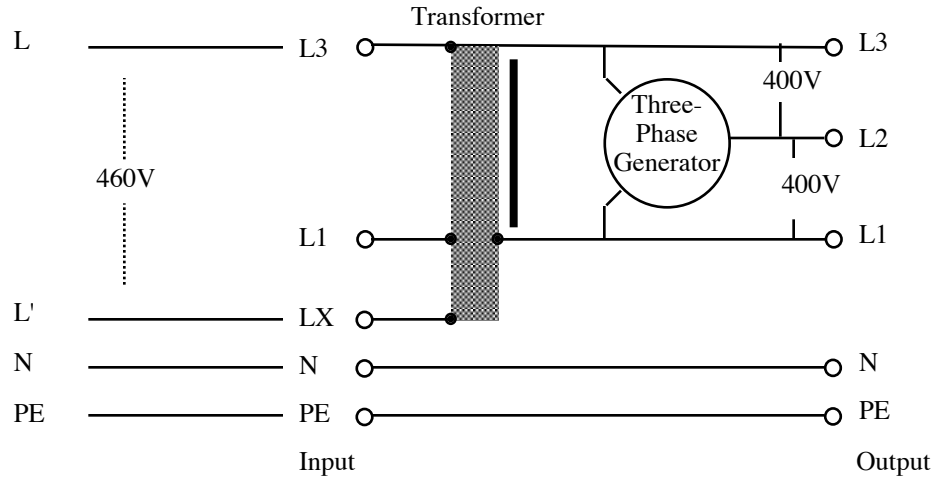
Supply 400V to the 230V Booster version:

Do not connect NX



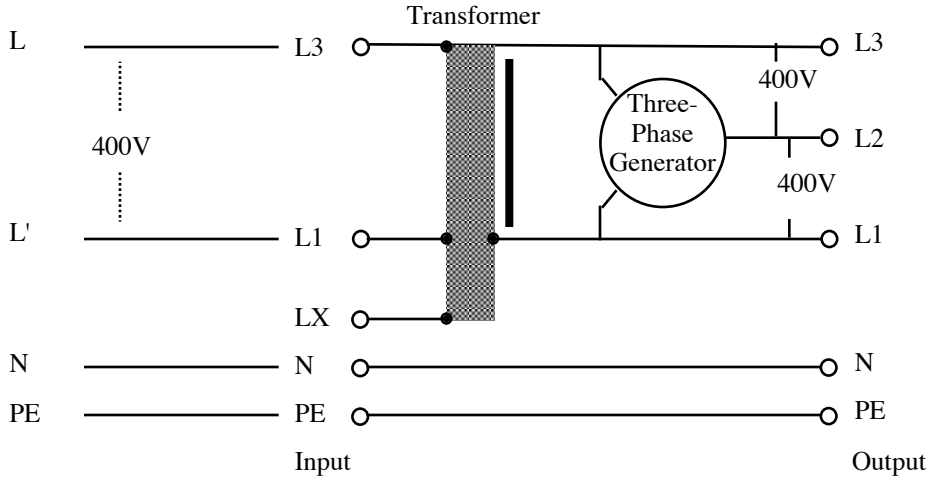
Supply 460V to the 460V Booster version:

Do not connect L1



Supply 400V to the 460V Booster version:

Do not connect LX

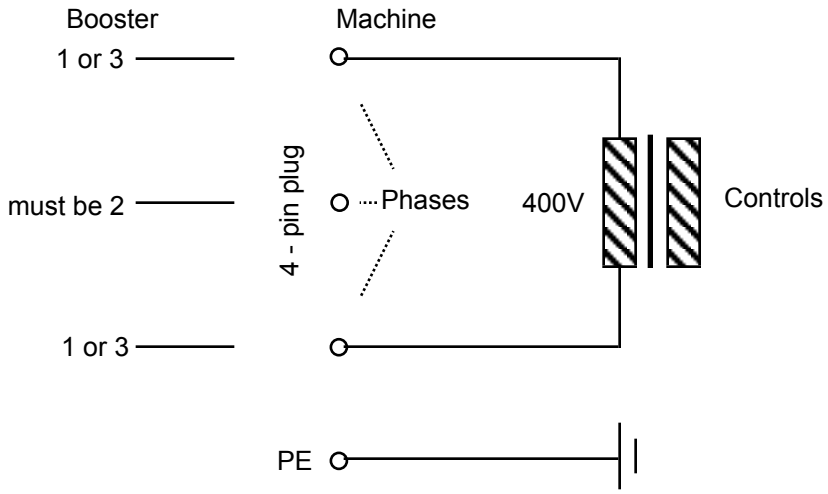


Control transformers in machines:

Machines with five-pin plugs have an internal 230V control transformer or contactor coils, in machines with a four-pin plug these control elements are made for 400V.
The phases transformers are connected to can be found by measuring the transformer's coil resistance on a machine's plug.

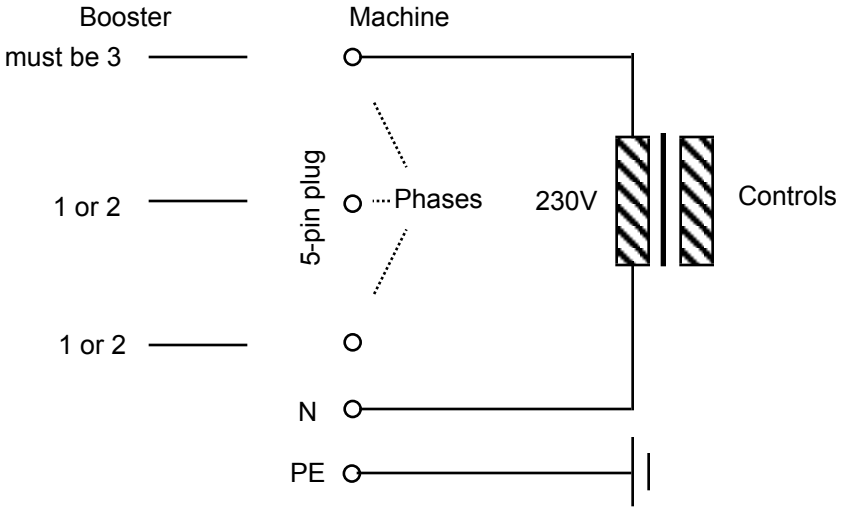
Machines with 400V transformers (4 pin plug):

Use only Booster output L1 and L3 to supply power to 400V control transformers:
The Booster output voltages between output L1 and L3 are stable 400V.
The voltage on L2 may fluctuate somewhat with load changes.



Machines with 230V transformers (5 pin plug):

A Booster produces ~ 400V between the three phases.
Due to the input autotransformer used inside, voltages L1 and L2 are not 230V to Neutral.
Only L3 to Neutral is 230V. Use only Booster output L3 for 230V control elements.



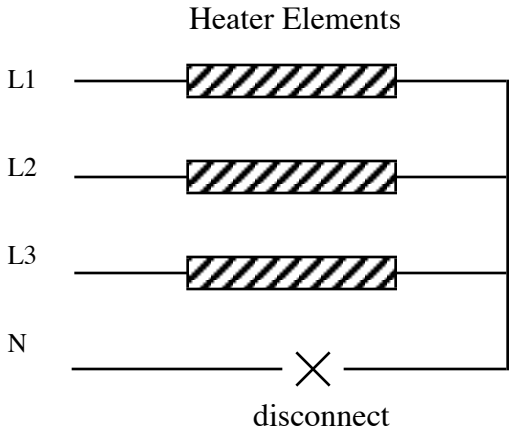
Motor rotation:

If a motor rotates in the wrong direction, swap phases 1 and 2 in the machine's supply cable. After this, check if control transformers are connected corectly as shown above. Rotate the three phases in a machine's plug if necessary.

Heaters:

Some machines have built-in electrical single phase heaters, example: edge bander. Connect a small single phase load to the converter's output phase 3 and Neutral. Connect a powerful heater directly to a single phase supply, bypassing the Booster.

If a machine has three heater elements 3x 230V star-connected to all three phases, the common heater center inside a machine must be seperated from Neutral.



Supply line and fuses for a Booster converter:

Motor inrush currents are 3 times the maximum run currents or more.
Avoid voltage drops by positioning a Booster™ close to the power source.
The voltage drop on a longer three-phase cable is smaller because of the higher voltage and because of the higher number of phases.

Install a motor-rated (slow, d-curved) protective circuit breaker in the customer's fuse box.
Install an industrial single-phase wall switch or switch-socket combination.

For two- phase supply use dual circuit breakers and switches disconnecting both phases.

Max. input current:	230V	Circuit breaker	460/400V	2-phase circuit breaker
Booster 2kW	11A	16A	2x 6A	10A
Booster 3kW	14A	16A	2x 8A	10A
Booster 4kW	19A	20A	2x 12A	16A
Booster 8kW	38A	40A	2x 22A	25A
Booster 12kW	58A	63A	2x 33A	40A
Booster 16kW	76A	80A	2x 44A	50A
Booster 24kW	115A	125A	2x 66A	80A
Booster 32kW	-		2x 88A	100A
Booster 36kW	-		2x 100A	125A
Booster 48kW	-		2x 120A	125A

Label the phases in all three-phase sockets as the L1 - L2 - L3 output of the converter.

Light flicker:

The Booster's internal motor-generator accelerates to full speed within 0.3 sec.
A low impedance single phase-supply line avoids light flicker when machines start.

Service:

A converter should only be opened by an electrician:

Wait for at least ten minutes after you disconnected from power.
Resistors on capacitors will first have to discharge to zero volts.
Measure the DC voltage on capacitors before doing any work.

Do not run a Booster without a cover.
Voltages inside are 600VDC and up to 1200V peak.

Measure first all voltages on capacitors before doing any work.