

## 5| Electrical connection

### 5 Electrical connection



#### DANGER

**Risk of electric shock! High voltage!**  
**Only carry out work when the electrical system is disconnected from the power supply!**



#### ATTENTION

**When attaching accessories with an electrical cable, a minimum bending radius of 3 x the cable diameter must be maintained for laying the cable.**



#### INFO

Connect the compressor motor in accordance with the circuit diagram (see inside of terminal box).

- Use suitable cable entry point of the correct protection type (see name plate) for routing cables into the terminal box. Insert the strain reliefs and prevent chafe marks on the cables.
- Compare the voltage and frequency values with the data for the mains power supply.

**Only connect the motor if these values are the same.**

### 5.1 Information for contactor and motor contactor selection

All protection equipment, switching and monitoring devices must comply with the local safety regulations and established specifications (e.g. VDE) and regulations as well as the manufacturer's specifications. **Motor protection switches are required!** Motor contactors, feed lines, fuses and motor protection switches must be rated according to the maximum operating current (see name plate). For motor protection, use a current-independent, time-delayed overload protection device for monitoring all three phases. Adjust the overload protection device so that it must be actuated within 2 hours at 1.2 times the maximum working current.

### 5.2 Standard motor, design for direct or part winding start

Designation on the name plate	Sticker on the terminal box
Y/YY	

Compressors with this marking are suitable for direct or partial winding start. The motor winding is subdivided into two parts: **Part winding 1 = 50% and part winding 2 = 50%**. This winding division reduces the start-up current needed for a part winding start to approx. 50% of that for a direct start.



#### INFO

**A mechanical unloaded start with bypass solenoid valve is not required.**

5.3 Basic circuit diagram for part winding start with standard motor

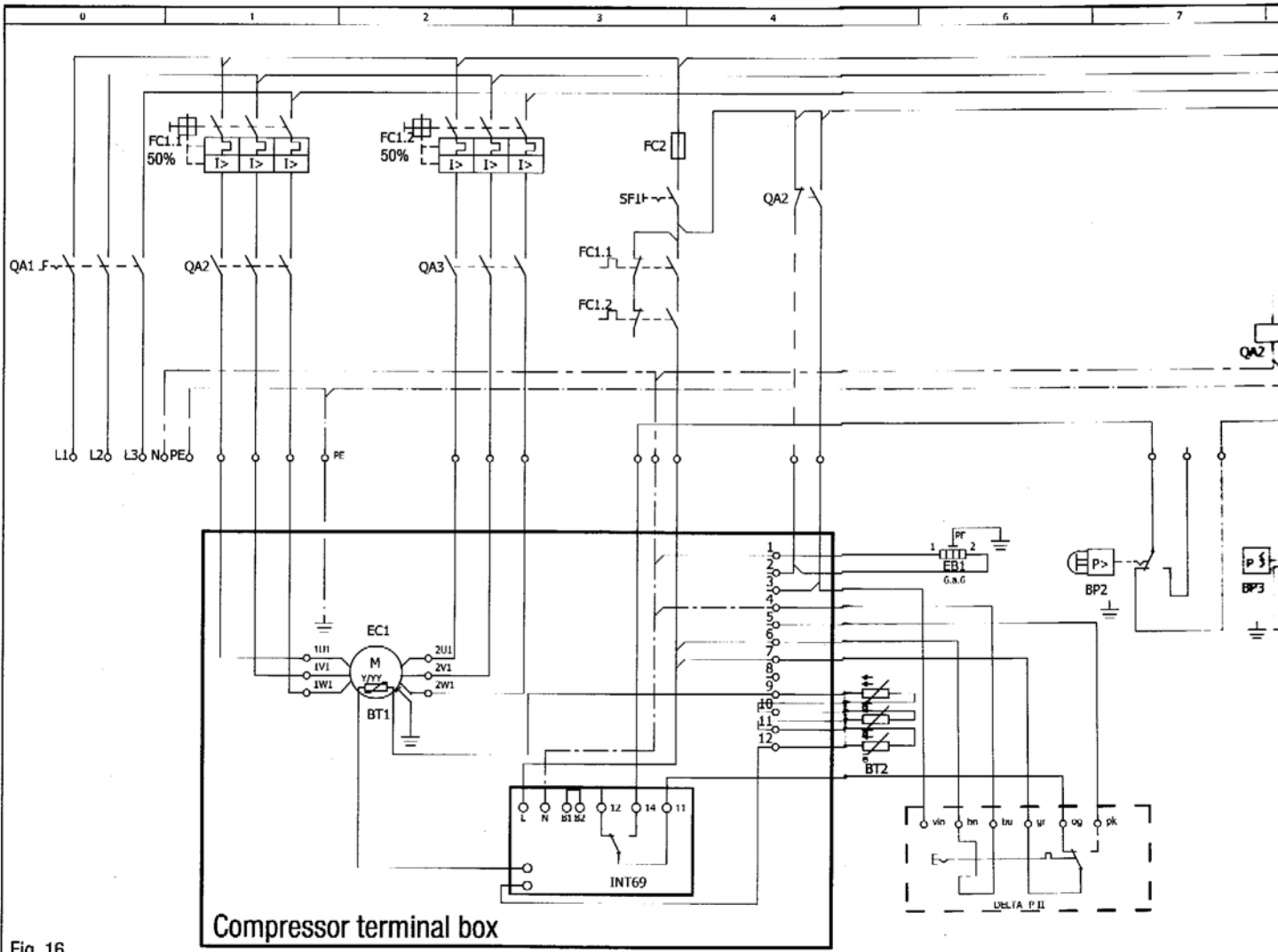
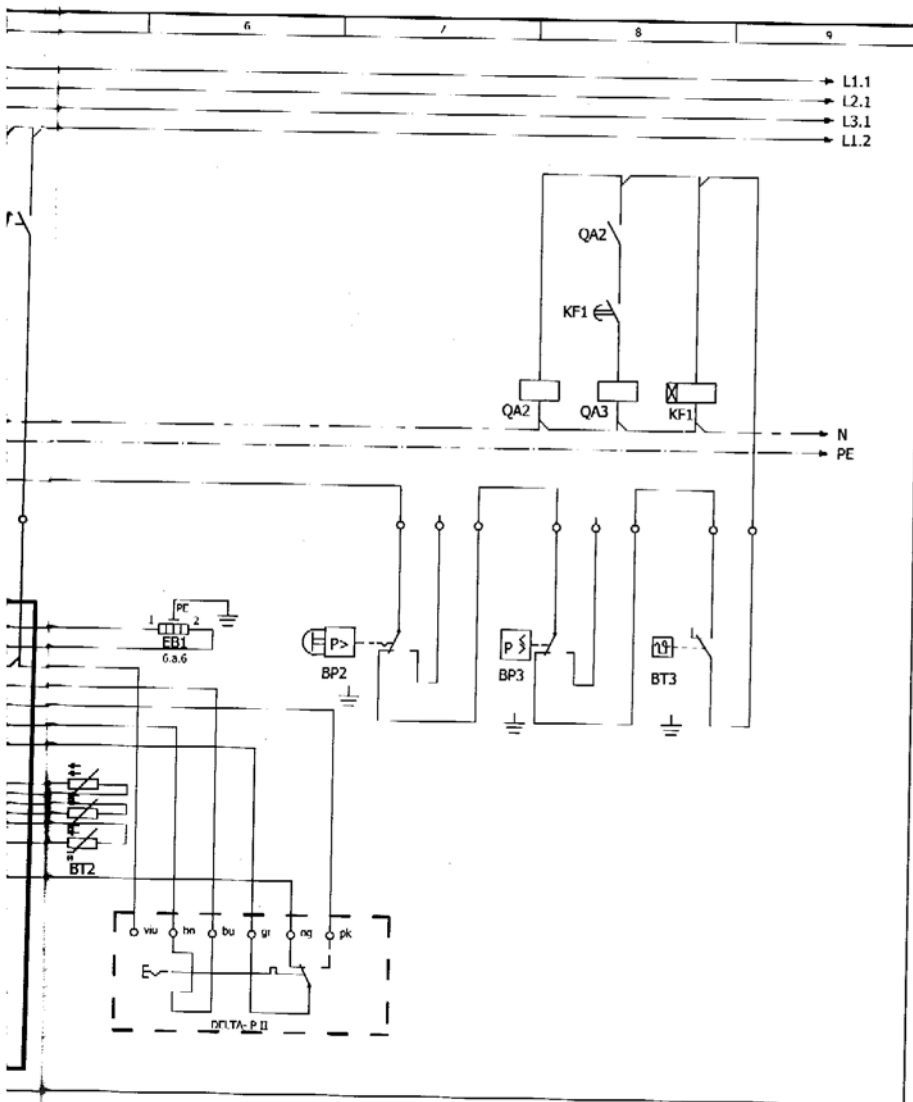


Fig. 16

BP2	High pressure safety monitor
BP3	Safety chain (high/low pressure monitoring)
BT1	Cold conductor (PTC sensor) motor winding
BT2	Thermal protection thermostat (PTC sensor)
BT3	Release switch (thermostat)
DELTA-P II	Oil differential pressure sensor DELTA-P II (accessorie)
EB1	Oil sump heater
EC1	Compressor motor

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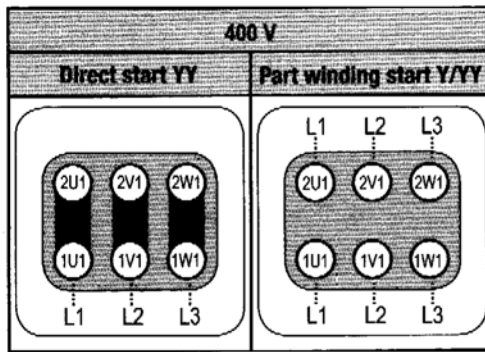
FC1.1/1.2	Motor protection switch
FC2	Control power circuit fuse
INT69 G	Electronic trigger unit INT69 G
KF1	Delay relay for contactor switch
QA1	Main switch
QA2	Mains contactor (part winding)
QA3	Mains contactor (part winding)
SF1	Control voltage switch



FC1.1/1.2	Motor protection switch
FC2	Control power circuit fuse
INT69 G	Electronic trigger unit INT69 G
KF1	Delay relay for contactor switchover
QA1	Main switch
QA2	Mains contactor (part winding 1)
QA3	Mains contactor (part winding 2)
SF1	Control voltage switch

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The motor is wired for direct start (YY) at the factory. For part winding start Y / YY, the bridges must be removed and the motor feed line connected according to the circuit diagram:




**ATTENTION** Failure to do this results in opposed rotary fields and results in damage to the motor. After the motor starts up via partial winding 1, partial winding 2 must be switched on after a maximum delay of one second. Failure to comply can adversely affect the service life of the motor.

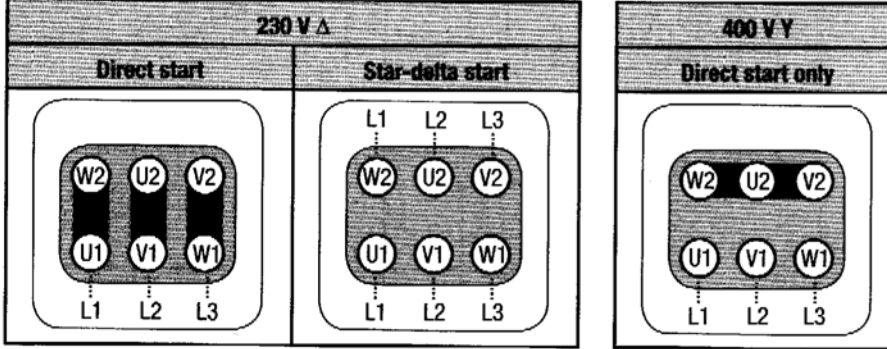
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## 5.4 Special motor: design for direct or star-delta start

A mechanical unloaded start with bypass solenoid valve (accessories) is required for the star-delta start.

Designation on the name plate	Sticker on the terminal box
$\Delta / Y$	

Star-delta start-up is only possible for 230 V power supply. Example:



5.5 Basic circuit diagram for star-delta start with special motor

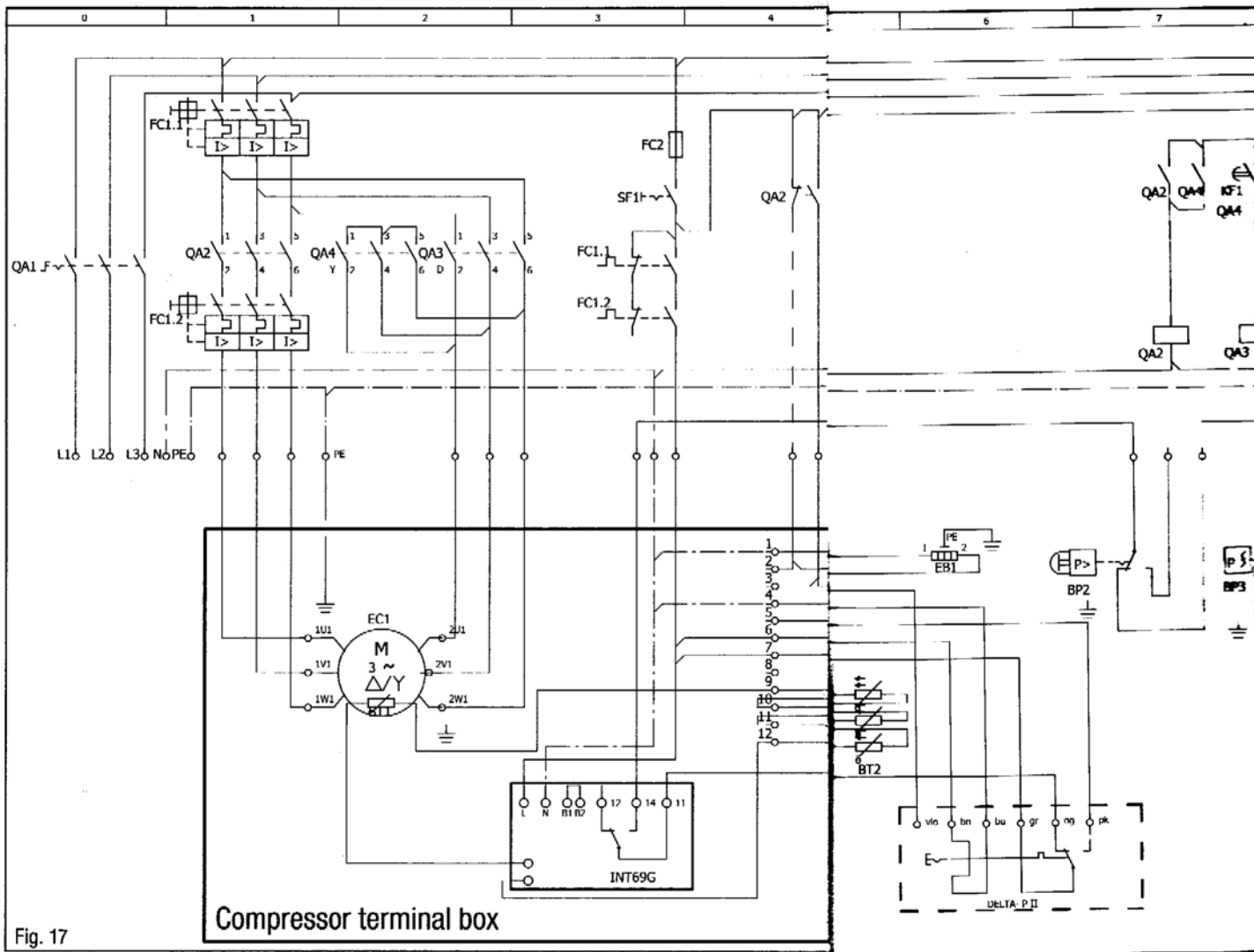
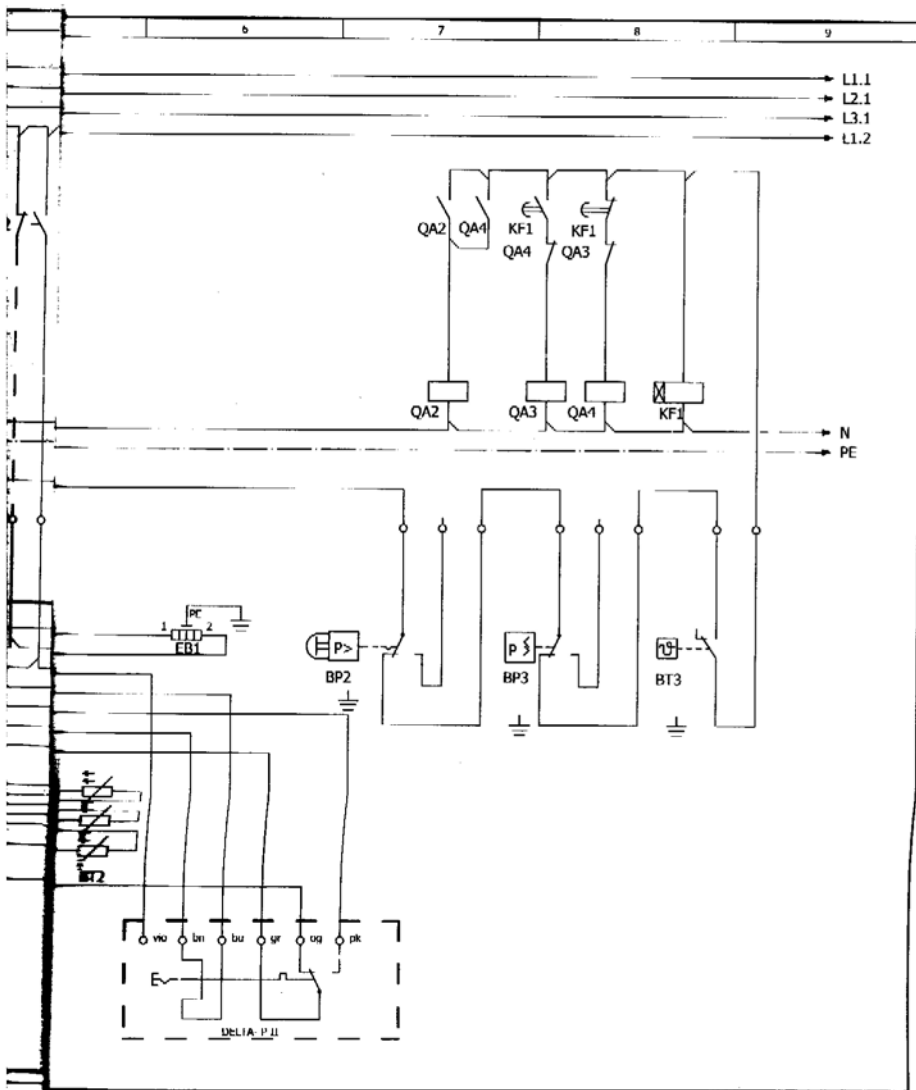


Fig. 17

BP2	High pressure safety monitor
BP3	Safety chain (high/low pressure monitoring)
BT1	Cold conductor (PTC sensor) motor winding
BT2	Thermal protection thermostat (PTC sensor)
BT3	Release switch (thermostat)
DELTA P II	Oil differential pressure sensor DELTA-P II (accessorie)
EB1	Oil sump heater
EC1	Compressor motor
FC1.1/1.2	Motor protection switch

FC2	Control power circuit fuse
INT69 G	Electronic trigger unit INT69 G
KF1	Delay relay for contactor switch
QA1	Main switch
QA2	Mains contactor
QA3	Δ-contactor
QA4	Y-contactor
SF1	Control voltage switch



FC2	Control power circuit fuse
INT69 G	Electronic trigger unit INT69 G
KF1	Delay relay for contactor switchover
QA1	Main switch
QA2	Mains contactor
QA3	$\Delta$ -contactor
QA4	Y-contactor
SF1	Control voltage switch