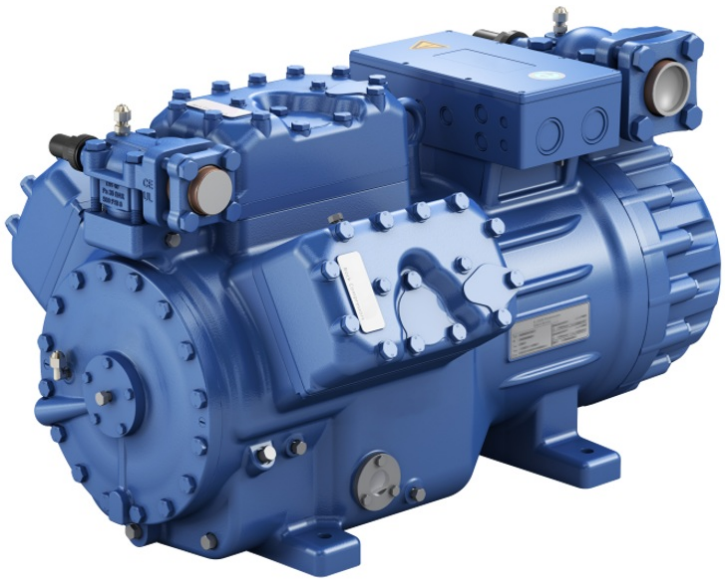
Danfoss HG(HA)12 Refrigerating Compressors Instruction Manual

Contents

Danfoss HG(HA)12 Refrigerating Compressors



Product Information

Specifications:

- **Product Name:** Terminal board for refrigerating compressors
- **Compatible Models:** HG(HA)12 / 22 / 34 / 4 / 5 / 6, HG44e / 56e/66e, HG7, HG8, 88e, HR40
- **Manufacturer:** Not specified

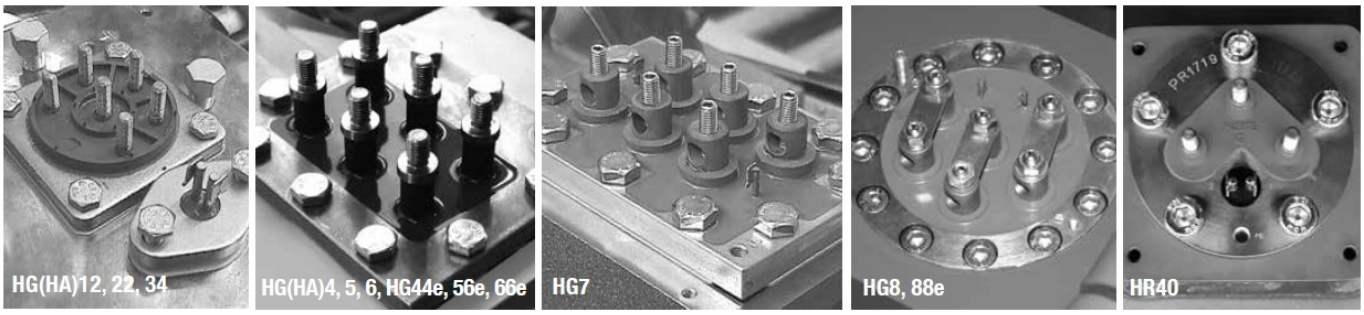
Product Usage Instructions

1. **Safety Instructions**
   Always follow safety guidelines when working on the electric motor and compressor.
2. **Scope of Supply**
   Check the kit number or ensemble to ensure you have all the necessary components for installation.
3. **Dismantling the Terminal Board**
    1. Switch off the compressor and disconnect it from the mains.
    2. Relieve pressure in the motor and compressor housing.
    3. Open the terminal board cover and disconnect the power lead and fan cable.
    4. Unscrew the terminal board screws and lift it up to access the cable harness side.
    5. Disconnect and remove the motor cable from the terminal board, replacing the seal as needed.

FAQ:

Q: What should I do if I encounter difficulties during the dismantling process?
A: If you face any challenges during dismantling, refer to the manual for troubleshooting steps or contact customer support for assistance.

Overview



SAFETY INSTRUCTIONS

Caution!
Refrigerating compressors are pressurized machines and therefore require particularly careful handling.

- Only qualified staff are allowed to handle refrigerating compressors.
- Local safety regulations, accident prevention regulations, technical rules, and other valid specifications must be observed.
- The compressor may only be operated in refrigerating systems, and only with the coolants approved by Bock.
- The maximum tolerable operating over-pressure may not be exceeded (not even for test purposes).
- Before starting the compressor, the pressure shut-off valve and suction shut-off valve are to be opened.
- Before starting up, check that all compo-nents mounted by the user have been properly mounted and are connec-ted pressure-tight with the compressor (e.g. pipelines, bungs, union nuts, replaced parts, etc.)
- When starting up, do not start the compressor in a vacuum. Only operate the compressor when the whole system has been filled.
- Surface temperatures of more than 100 °C are possible on the pressure side respec-tively under 0°C on the suction side, depending on the operating conditions.

General

Sometimes, repairs to the electric motor, e.g. replace-ment of the stator, make it necessary to dismantle and then remount the terminal board on the compressor. These instructions describe the procedure for dismantling and remounting the terminal board to the refrigerating compressors series HA and HG.

Scope of supply

No.	Quantity and description		kit no* Kit Number					
Pos.			097B80579	097B08949	097B80098	097B80206	097B81244	097B820806
1	1	Terminal board	097B06727	097B06747	097B06864	097B06977	097B70160	097B518665
2	1	Terminal board seal	097B06724	097B06559	097B06876	097B06978	097B06724	097B518666

3	4	Hexagonal screw M6x20	097B05404	–	–	–	–	
3	4	Hexagonal screw M6x25	–	–	–	–	097B05405	–
3	10	Hexagonal screws M8x25	–	097B05421	–	–	–	–
3	10	Hexagonal screws M10x35	–	–	097B05447	–	–	–
3	1	Cylinder screw M5x6	–	–	–	–	–	097B051895
3	5	Cylinder screw M8x20	–	–	–	–	–	097B06330
3	10	Cylinder screw M10x20	–	–	–	097B05507	–	–
4	1	Insulation foil NPN 5	–	097B05073	097B05074	–	–	–
4	1	Insulation cover	–	–	–	097B05066	–	–
5	3	Bridge electrical connection	097B06258	097B05741	097B05916	097B06980	097B06258	–
6	6	Lock washers S M8	–	097B05654	097B05654	–	–	
6	12	Disc B5,3	097B05652	–	–	–	097B05652	097B056522
6	12	Disc B10,5	–	–	–	097B50010	–	–
7	12	Spring washer B10	–	–	–	097B50002	–	–
8	6	Hexagonal nuts M8	–	097B05629	097B05629	–	–	–
8	12	Hexagonal nuts M5	097B05627	–	–	–	097B05627	097B056267
8	12	Hexagonal nuts M10	–	–	–	097B50006	–	–
9	1	Terminal box gasket	–	–	–	097B06979	–	–
10	1	Operating instructions	097B09977	097B09977	097B09977	097B09977	097B09977	097B099977

11	1	Important information	097B0 9939	097B0 9939	097B0 9939	097B0 9939	097B0 9939	097B 0993 9

*Please note that the legacy BOCK code numbers are without 097B

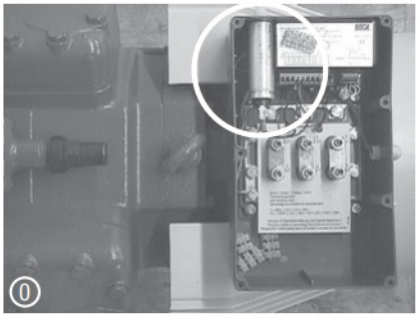
Dismantling the terminal board

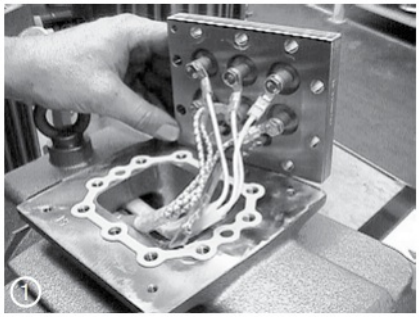
1. Switch the compressor off and secure it to prevent it from being switched on again. Disconnect the machine from the mains. Relieve the pressure in the motor and compressor housing.
2. Open the terminal board cover. Disconnect the power lead. In HA compressors, also dismantle the electric capacitor (fig. 0). Disconnect the fan cable.
3. Unscrew the terminal board screws. Lift the terminal board and turn it to the side with the cable harness (to give you room to work).
4. Unscrew the fastening screw of the terminal board. Tip the terminal board over (fig. 1).
   Note: Before continuing, check that the connection designations, cable lug markings, and color markings of the motor cables on the bottom of the terminal board are easily visible. Otherwise, clean these before disconnecting and mark them indelibly.
5. Disconnect and remove the motor cable from the bottom of the terminal board. Replace the seal.

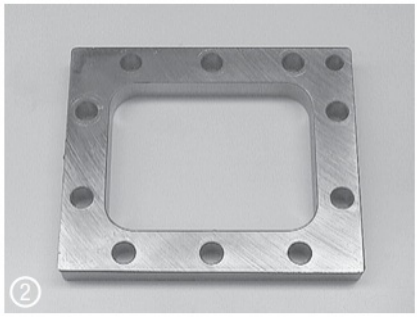
Note:
In the larger Y/Δ-motor types (HG(HA) 6), there is an additional spacer (fig. 2) fitted under the terminal board to make it easier to connect up the rigid cable harnesses. When replacing the seal, ensure that both seals are replaced, i.e. both on and under the spacer.

Mounting the terminal board

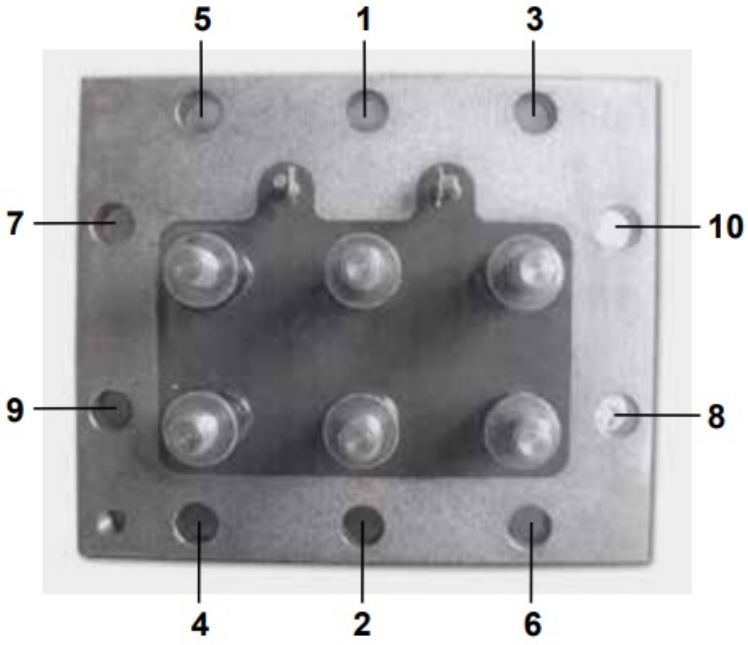
The terminal board is mounted in reverse order.







- **Note:** When you tip the terminal board over, the connection screws for the motor wires now appear „upside down“.
- It is therefore vital to ensure that the connection terminals are positioned and connected correctly!
- **Caution!** Comply with the instructions in the terminal box cover!
- **Important!** Order for mounting of the screws for HH4-6 must be observed, see numbering:

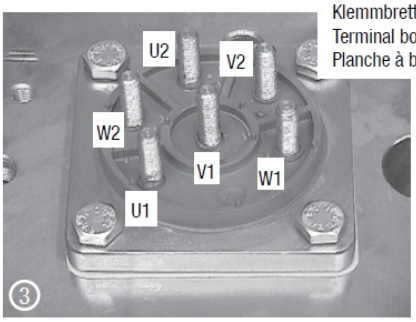


Torques for Screwed Connections

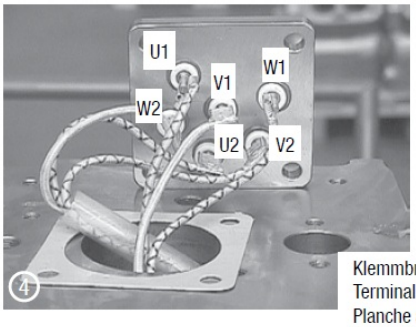
- Live connections
- Brass screw connection
- M 3,5 0,8 Nm
- M 4 1,2 Nm
- M 4,5 1,8 Nm
- M 5 2 Nm
- M 6 3 Nm

Connections on the terminal board

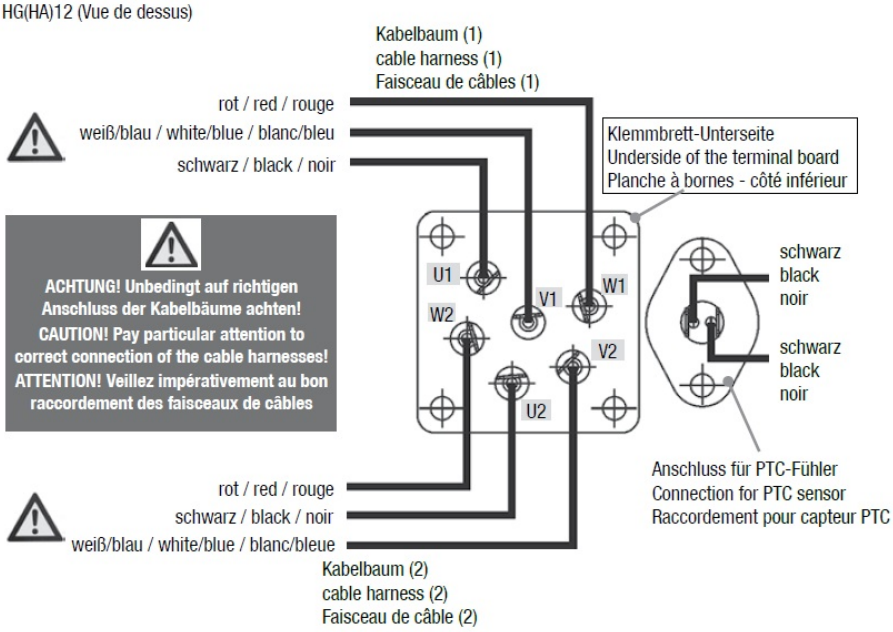
Connections on the terminal board for HG(HA) 12 with star delta circuit (Y/Δ)



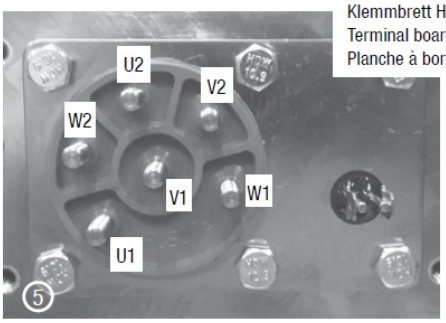
Klemmbrett HG(HA)12 (Oberseite)
Terminal board HG(HA)12 (top view)
Planche à bornes HG(HA)12 (Vue de dessus)



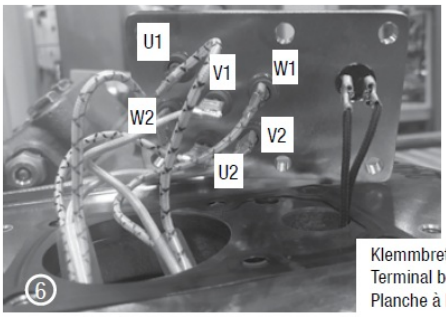
Klemmbrett HG(HA)12 (Unterseite)
Terminal board HG(HA)12 (underside)
Planche à bornes HG(HA)12 (côté inférieur)



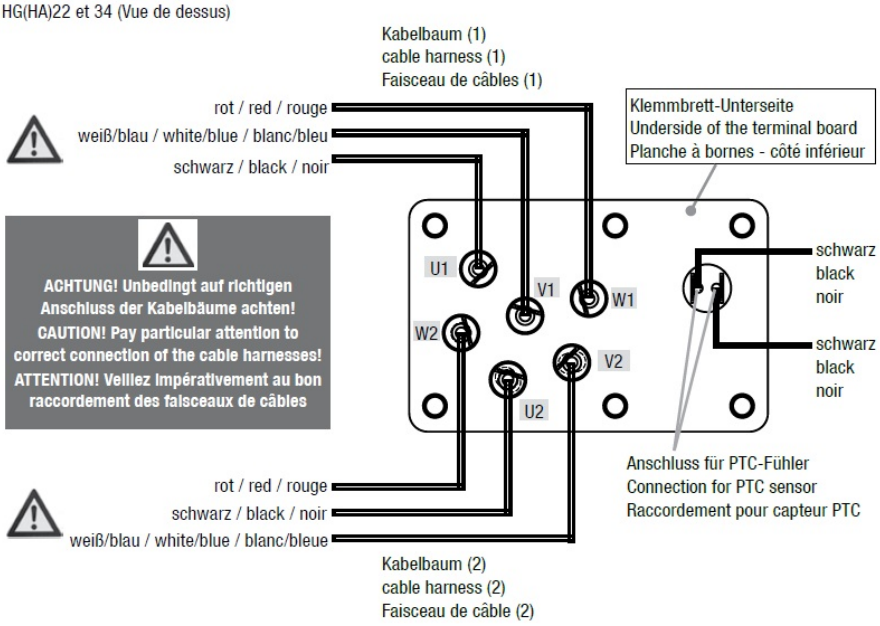
Connections on the terminal board for HG(HA) 22 and 34 with star delta circuit (Y / Δ)



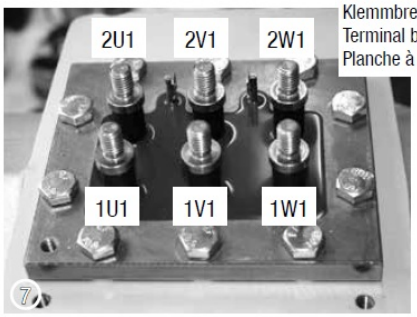
Klemmbrett HG(HA)22 und 34 (Oberseite)
Terminal board HG(HA)22 and 34 (top view)
Planche à bornes HG(HA)22 et 34 (Vue de dessus)



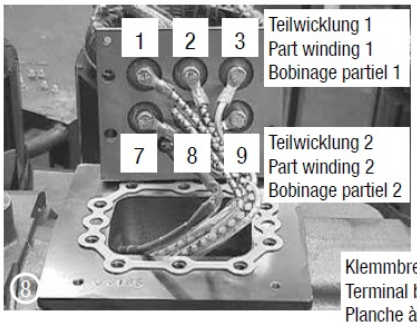
Klemmbrett HG(HA)22 und 34 (Unterseite)
Terminal board HG(HA)22 and 34 (underside)
Planche à bornes HG(HA)22 et 34 (côté inférieur)



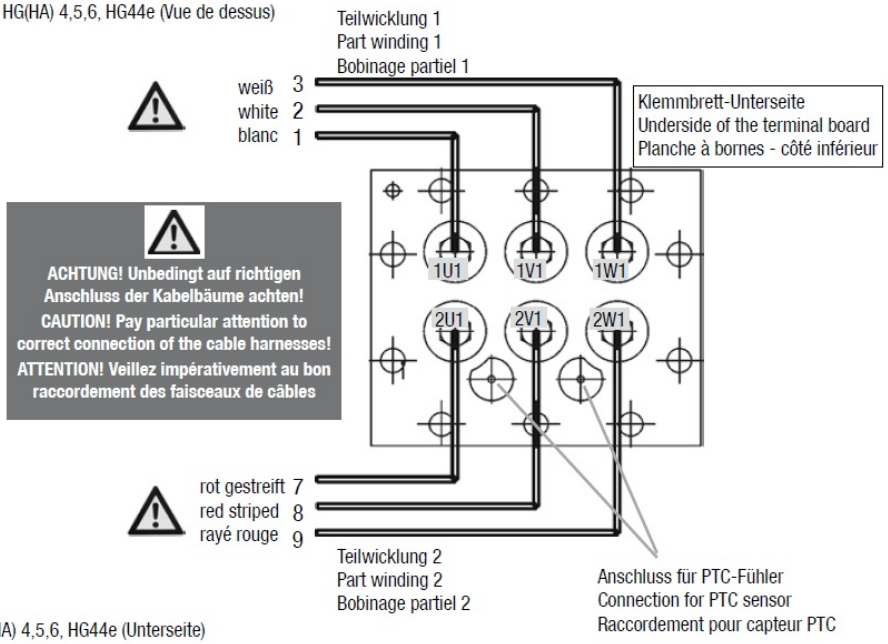
Connections on terminal board for series HG(HA) 4, 5, 6 and HG44e, 56e, 66e with part winding circuit (PW Y / YY)



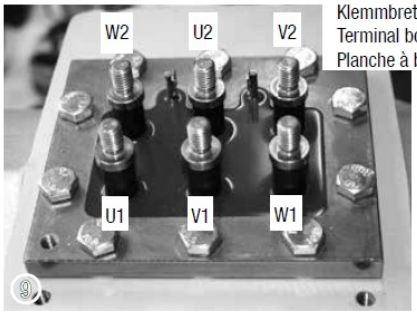
Klemmbrett HG(HA) 4,5,6, HG44e (Oberseite)
Terminal board HG(HA) 4,5,6, HG44e (top view)
Planche à bornes HG(HA) 4,5,6, HG44e (Vue de dessus)



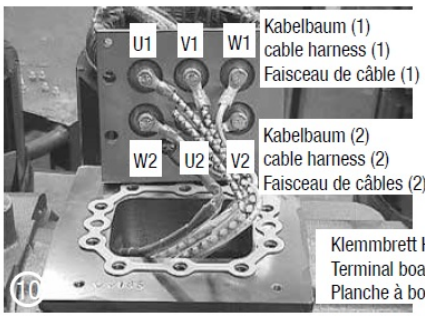
Klemmbrett HG(HA) 4,5,6, HG44e (Unterseite)
Terminal board HG(HA) 4,5,6, HG44e (underside)
Planche à bornes HG(HA) 4,5,6, HG44e (côté inférieur)



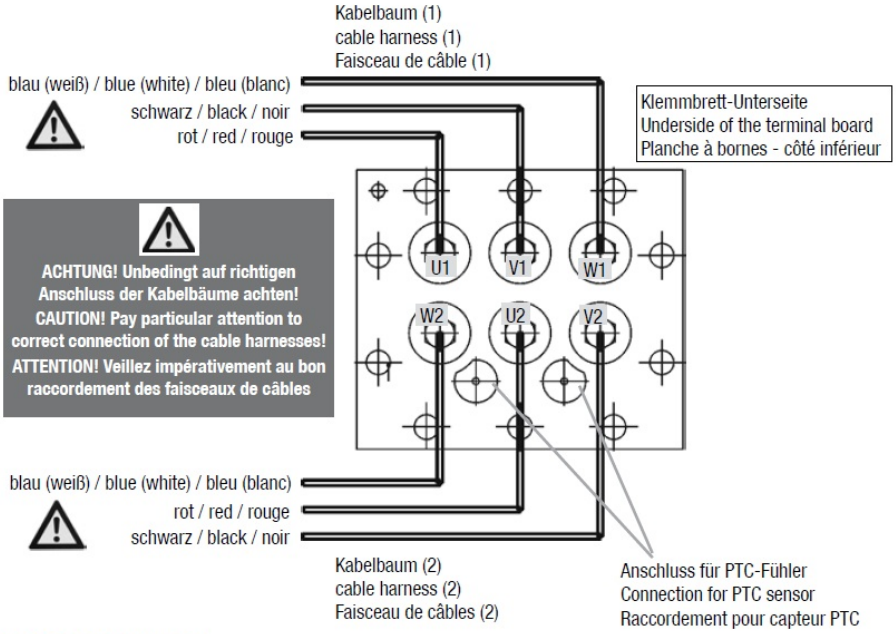
Connections on the terminal board for HG(HA) 4, 5, 6 and HG44e, 56e, 66e with star delta circuit (Y / Δ)



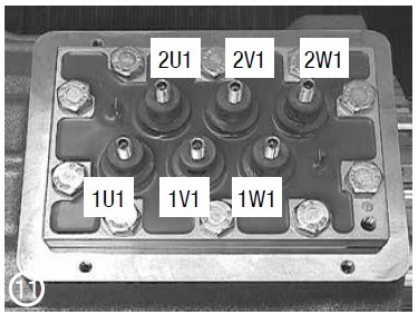
Klemmbrett HG(HA) 4,5,6, HG44e (Oberseite)
Terminal board HG(HA) 4,5,6, HG44e (top view)
Planche à bornes HG(HA) 4,5,6, HG44e (Vue de dessus)



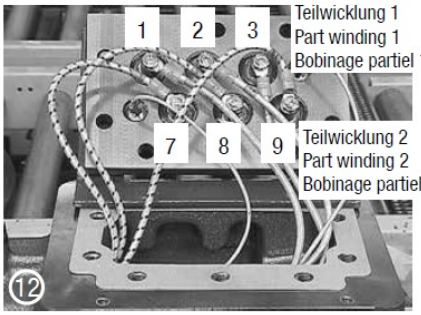
Klemmbrett HG(HA) 4,5,6, HG44e (Unterseite)
Terminal board HG(HA) 4,5,6, HG44e (underside)
Planche à bornes HG(HA) 4,5,6, HG44e (côté inférieur)



Connections on terminal board HG7 standard part winding (PW Y / YY)



Klemmbrett HG7 (Oberseite)
Terminal board HG7 (top view)
Planche à bornes HG7 (vue de dessus)

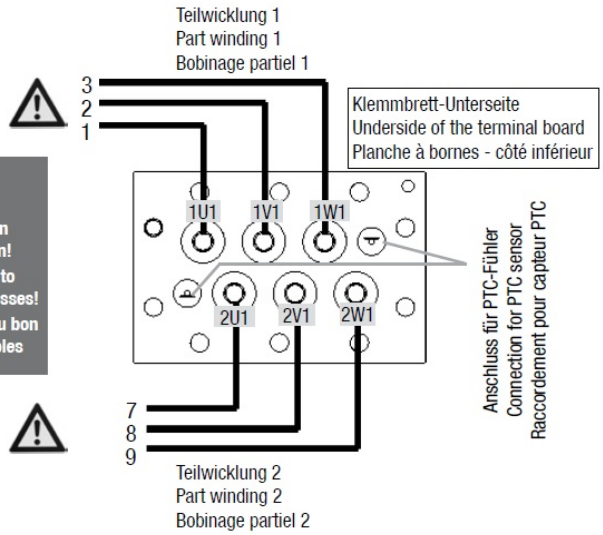


Teilwicklung 1
Part winding 1
Bobinage partiel 1

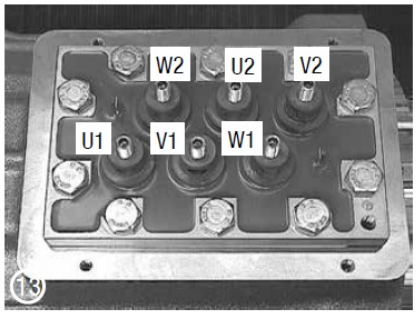
Teilwicklung 2
Part winding 2
Bobinage partiel 2

Klemmbrett HG7 (Unterseite)
Terminal board HG7 (underside)
Planche à bornes- côté inférieur

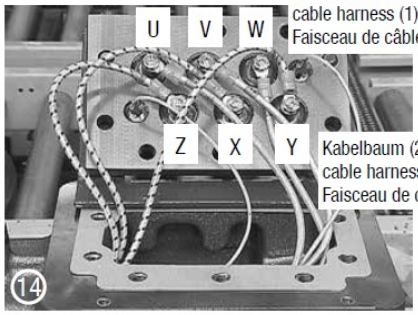
ACHTUNG! Unbedingt auf richtigen Anschluss der Kabelbäume achten!
CAUTION! Pay particular attention to correct connection of the cable harnesses!
ATTENTION! Veillez impérativement au bon raccordement des faisceaux de câbles



Connections on terminal board HG7 Star delta (Y / Δ)



Klemmbrett HG7 (Oberseite)
Terminal board HG7 (top view)
Planche à bornes HG7 (vue de dessus)

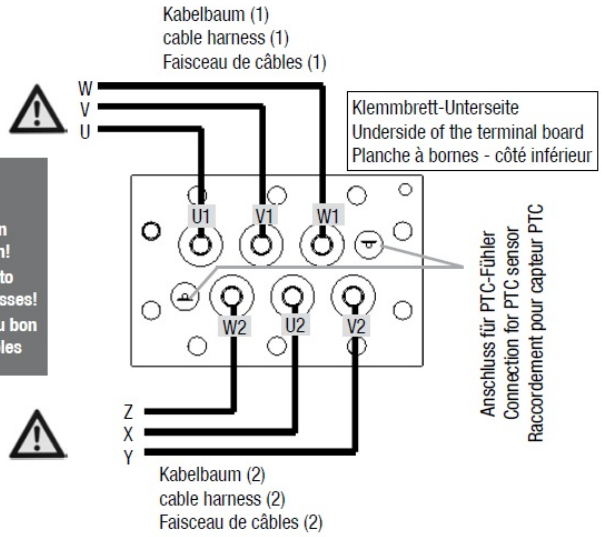


Kabelbaum (1)
cable harness (1)
Faisceau de câble (1)

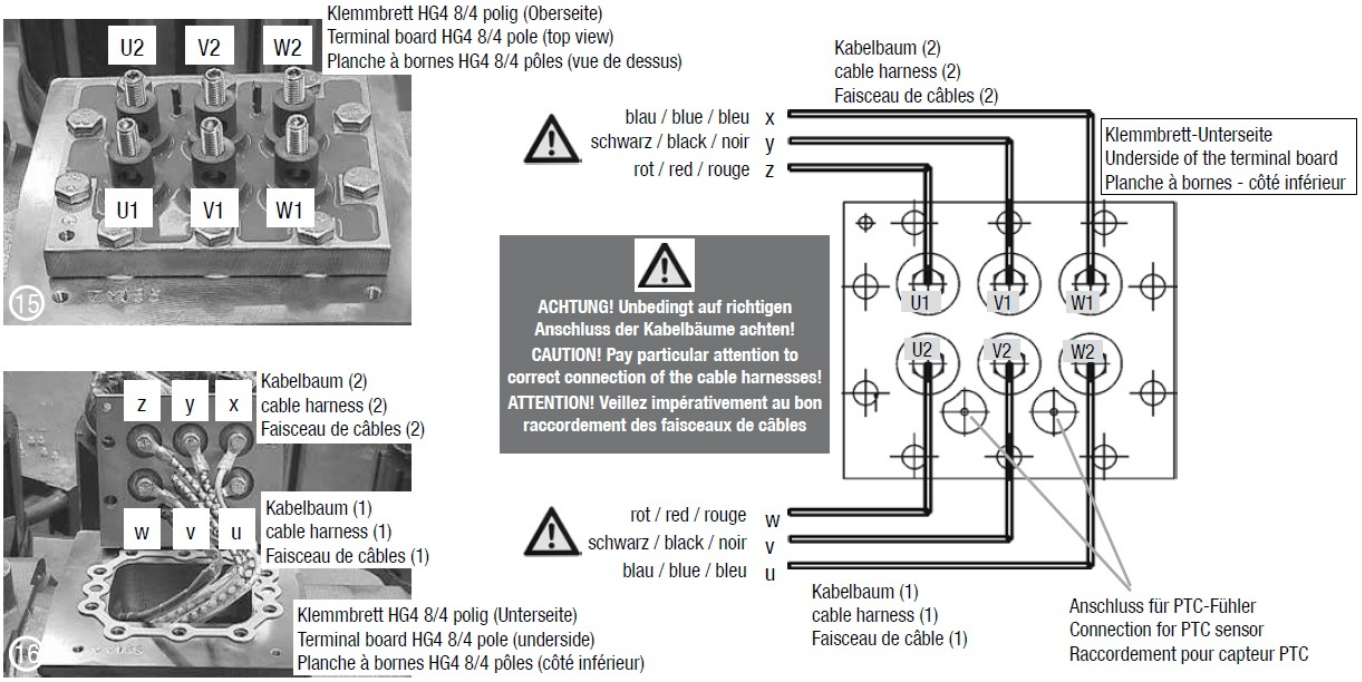
Kabelbaum (2)
cable harness (2)
Faisceau de câbles (2)

Klemmbrett HG7 (Unterseite)
Terminal board HG7 (underside)
Planche à bornes HG7 - côté inférieur

ACHTUNG! Unbedingt auf richtigen Anschluss der Kabelbäume achten!
CAUTION! Pay particular attention to correct connection of the cable harnesses!
ATTENTION! Veillez impérativement au bon raccordement des faisceaux de câbles

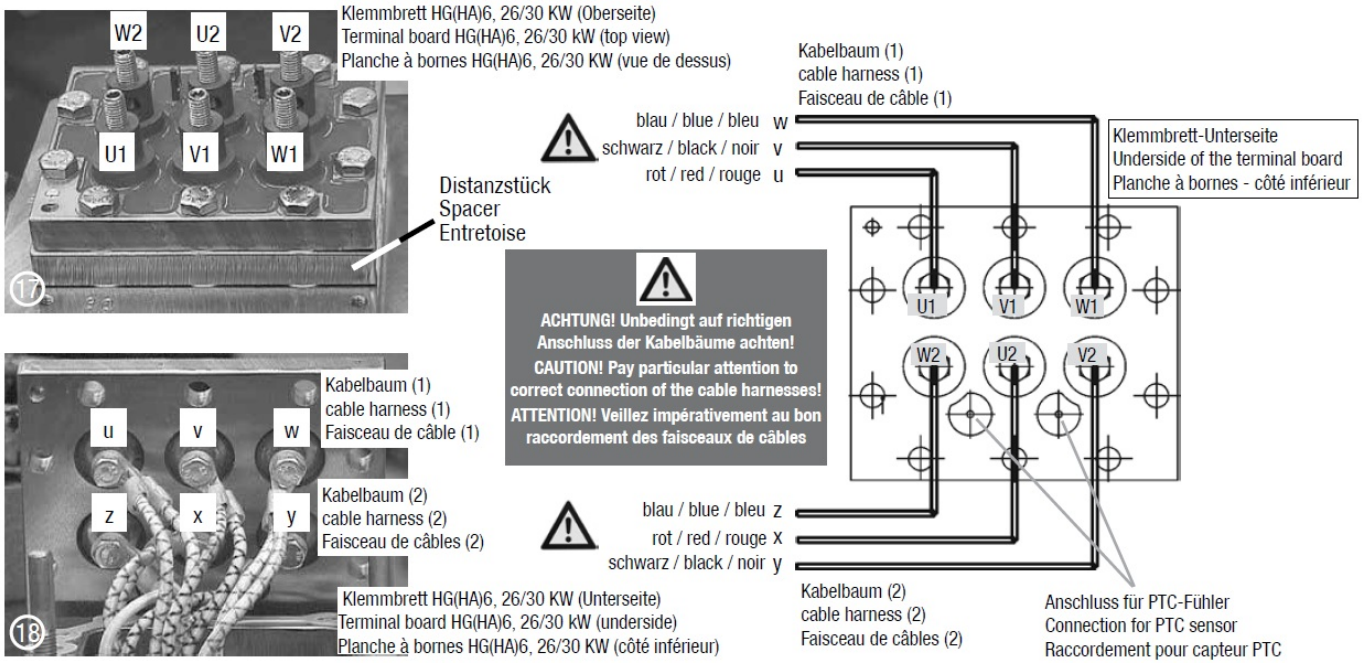


Connections on terminal board HG4 8/4 pole (Δ/YY)

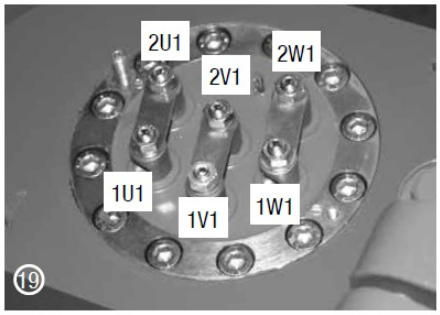


Connections on terminal board HG(HA)6 (26/30 kW) with star delta circuit (Y / Δ)

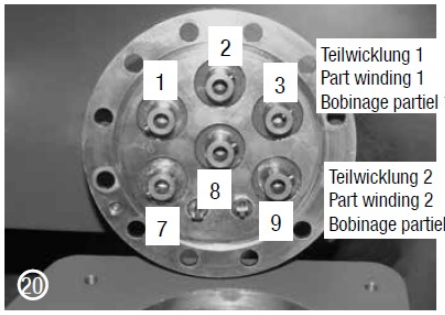
In series HG(HA)6 for 26 kW or 30 kW, the power supply from the terminal board to the motor consists of 2 cables for each connection lead because of the power involved. When mounting the terminal board, the two corresponding cables with the same designation are to be set at the same terminal. In addition, a spacer is to be inserted between the terminal board and com-pressor housing with corresponding seals.



Connections on terminal board HG8 and HG88e standard part winding (PW Y / YY)



Klemmbrett HG8 (Oberseite)
Terminal board HG8 (top view)
Planche à bornes HG8 (vue de dessus)

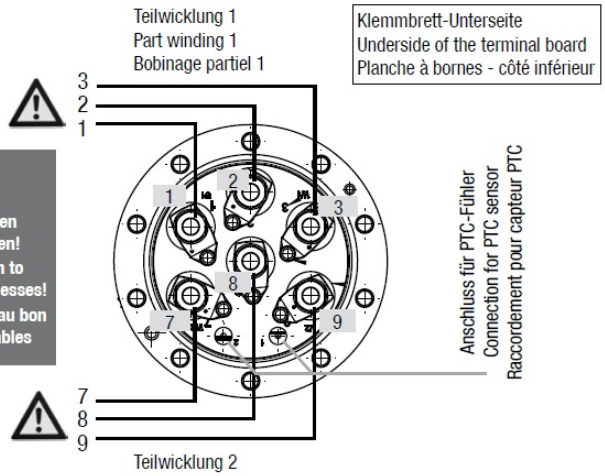


Teilwicklung 1
Part winding 1
Bobinage partiel 1

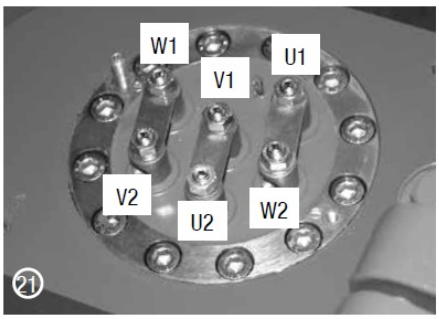
Teilwicklung 2
Part winding 2
Bobinage partiel 2

Klemmbrett HG8 (Unterseite)
Terminal board HG8 (underside)
Planche à bornes- côté inférieur

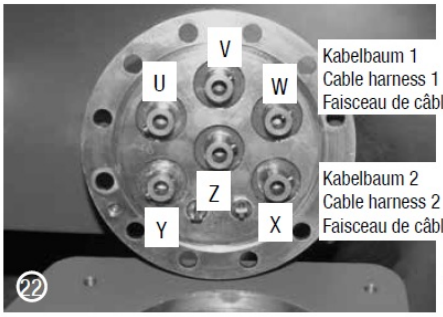
ACHTUNG! Unbedingt auf richtigen Anschluss der Kabelbäume achten!
CAUTION! Pay particular attention to correct connection of the cable harnesses!
ATTENTION! Veillez impérativement au bon raccordement des faisceaux de câbles



Connections on terminal board HG8 and HG88e star delta circuit Y/Δ



Klemmbrett HG8 (Oberseite)
Terminal board HG8 (top view)
Planche à bornes HG8 (vue de dessus)

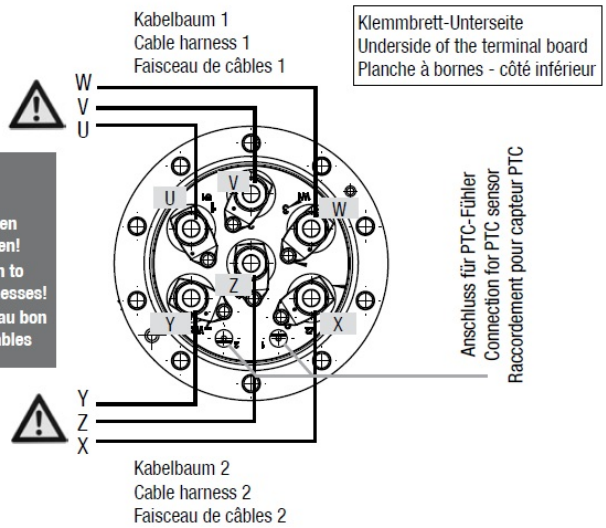


Kabelbaum 1
Cable harness 1
Faisceau de câbles 1

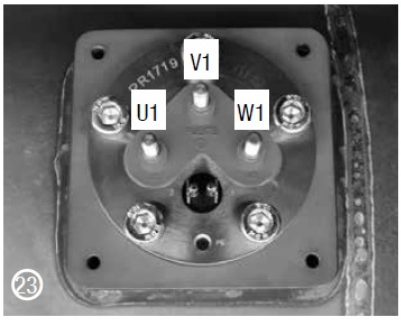
Kabelbaum 2
Cable harness 2
Faisceau de câbles 2

Klemmbrett HG8 (Unterseite)
Terminal board HG8 (underside)
Planche à bornes- côté inférieur

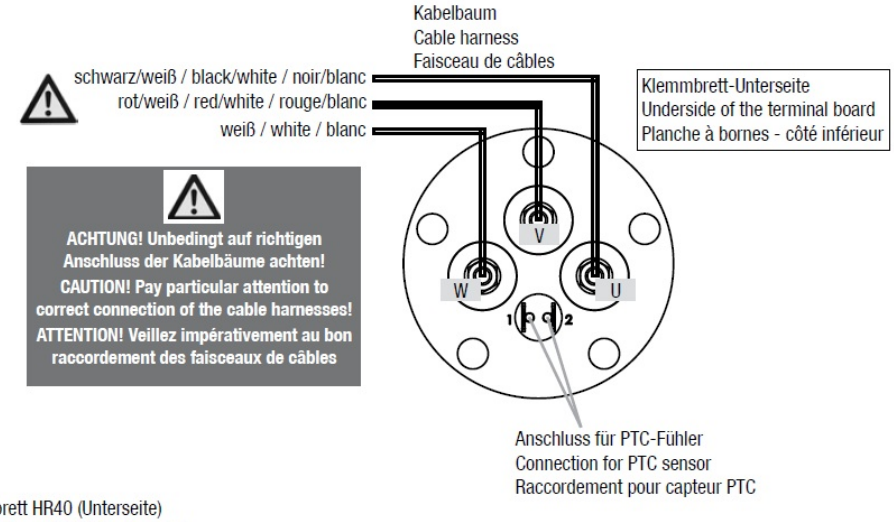
ACHTUNG! Unbedingt auf richtigen Anschluss der Kabelbäume achten!
CAUTION! Pay particular attention to correct connection of the cable harnesses!
ATTENTION! Veillez impérativement au bon raccordement des faisceaux de câbles

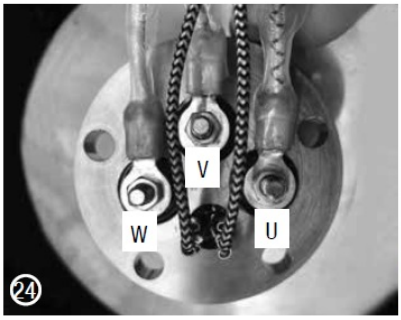


Connections on terminal board HR40 star delta circuit Y/Δ



Klemmbrett HR40 (Oberseite)
Terminal board HR40 (top view)
Planche à bornes HR40 (vue de dessus)





Klemmbrett HR40 (Unterseite)
Terminal board HR40 (underside)
Planche à bornes HR40 (côté inférieur)

Danfoss A/S
Climate Solutions • danfoss.com • +45 7488 2222.

Documents / Resources

	Danfoss HG(HA)12 Refrigerating Compressors [pdf] Instruction Manual HG HA 12, 22, 34, HG44e, 56e, 66e, 88e, HR40, HG HA 12 Refrigerating Compressors, HG HA 12, Refrigerating Compressors, Compressors

References

- User Manual