General
Product Documentation

KAPPA VSD

Table of Content

1 Approvals

1.1 HKK VSD

Plant	VDE, (CE)
	Licence No.
ITML	40033252

2 Delivery Conditions

Max. Solid impurities	[mg]	30
Max. soluble impurities	[mg]	600
Max. Total compressor water content	[mg]	100

2.1 Reliability Tests passed

- **High Temperature CECOMAF GT4 – 002**
- **Wear CECOMAF GT4 – 003**
- **On – Off CECOMAF GT4 – 004**
- **Transport Test according ASTM D4728**

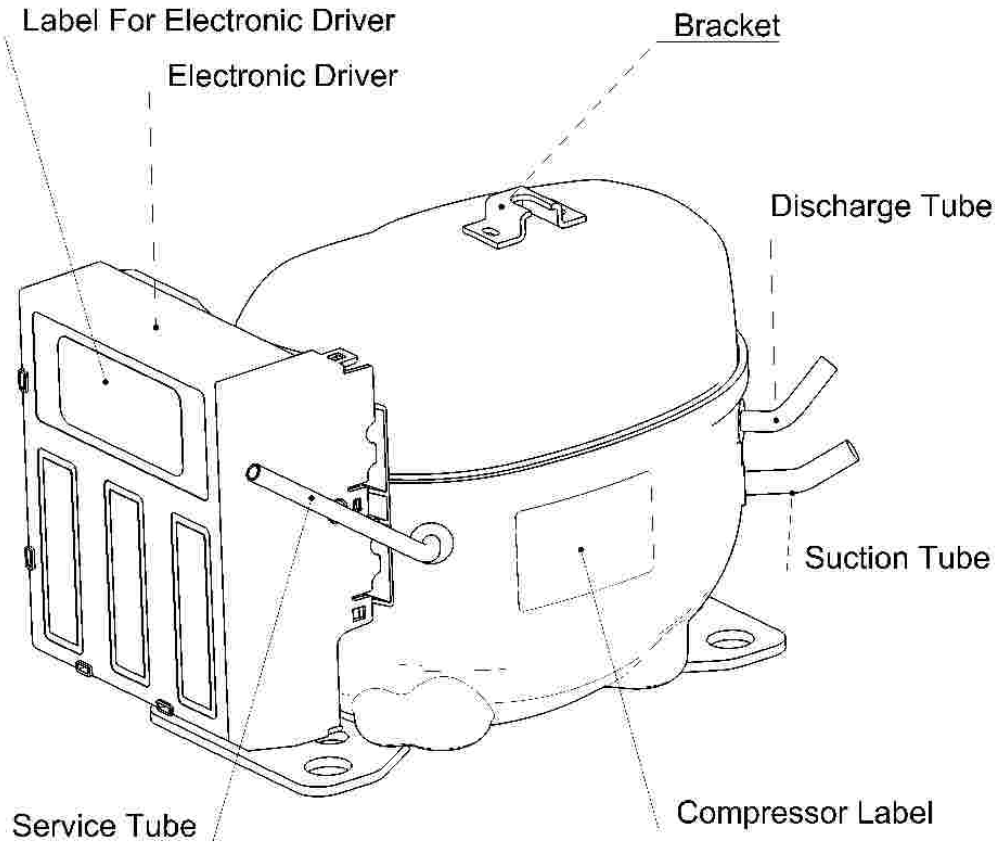
2.2 Oil transport of the compressor in the refrigeration circuit

Average value of the transported oil in the refrigeration circuit:
2,5 g oil/kg R600-a

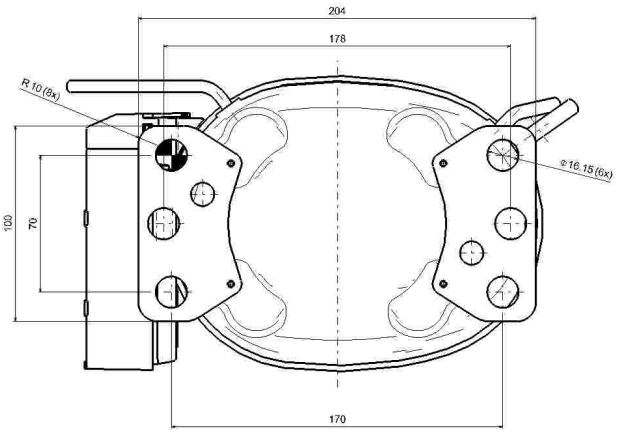
Tolerance:
±2,5 g oil/kg R600-a

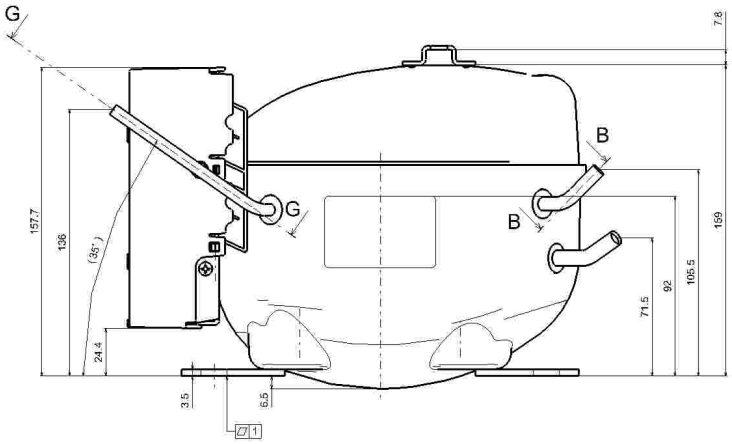
3 Drawings

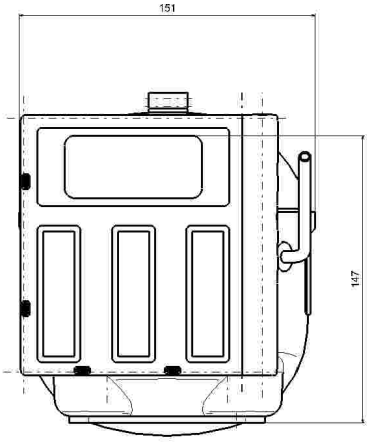
3.1 Isometric View

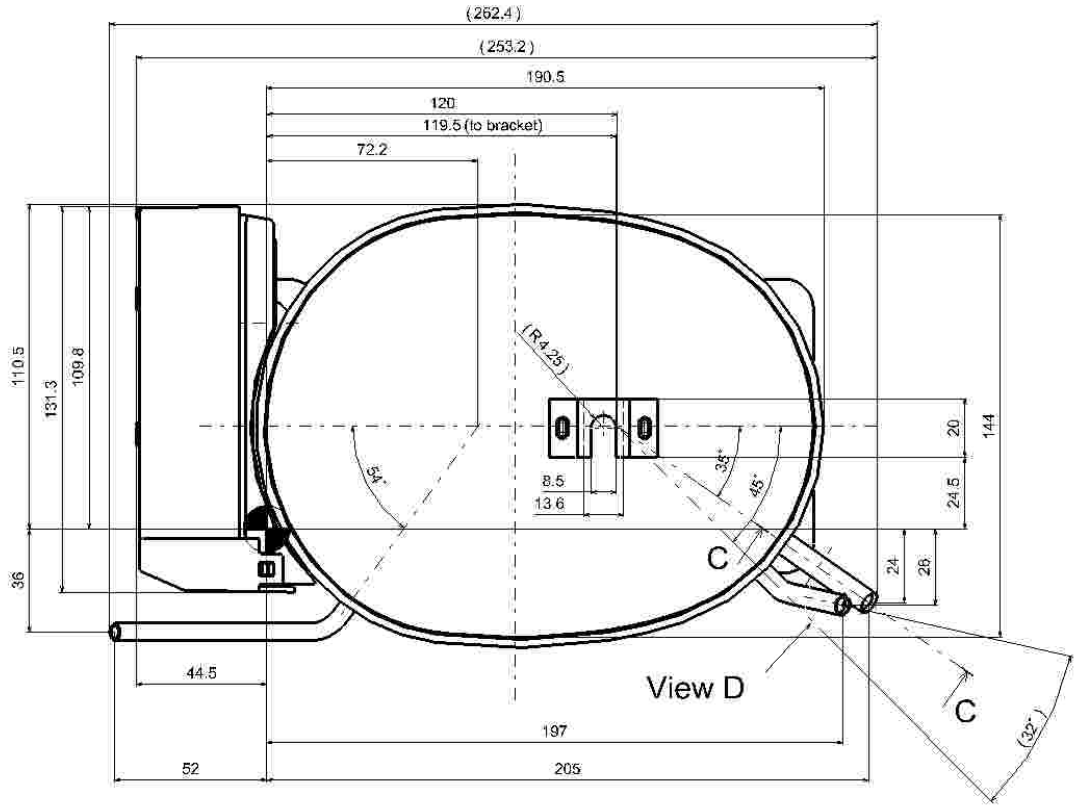


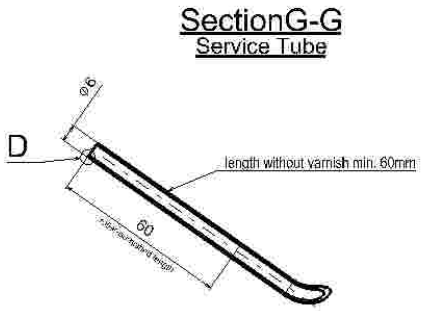
3.2 Outline Dimensions with Electronic Driver

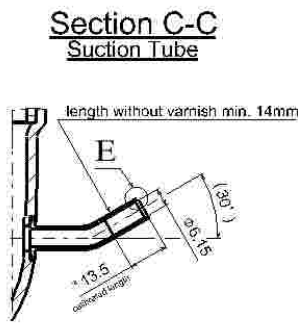


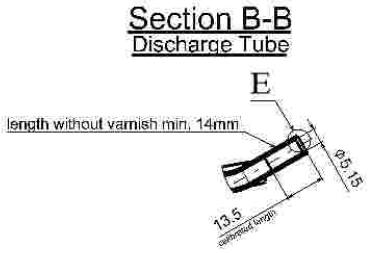


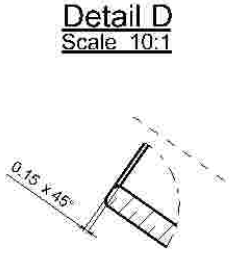


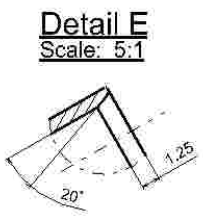

(262.4)
(253.2)
190.5
120
119.5 (to bracket)
72.2
110.5
131.3
109.8
36
(R4.25)
54°
35°
45°
8.5
13.6
20
24.5
144
24
28
C
44.5
View D
197
52
205
C
(32°)


SectionG-G
Service Tube
D
Ø6
length without varnish min. 60mm
60


Section C-C
Suction Tube
length without varnish min. 14mm
E
(30°)
Ø6.15
13.5

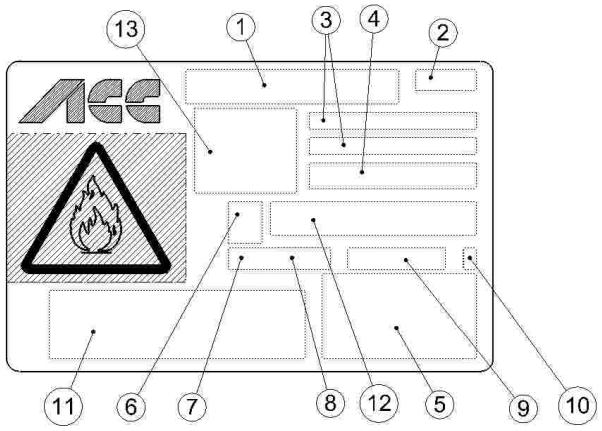

Section B-B
Discharge Tube
E
length without varnish min. 14mm
Ø5.15
13.5


Detail D
Scale 10:1
0.15 x 45°


Detail E
Scale: 5:1
1.25
20°

4 Labels

4.1 Compressor Label



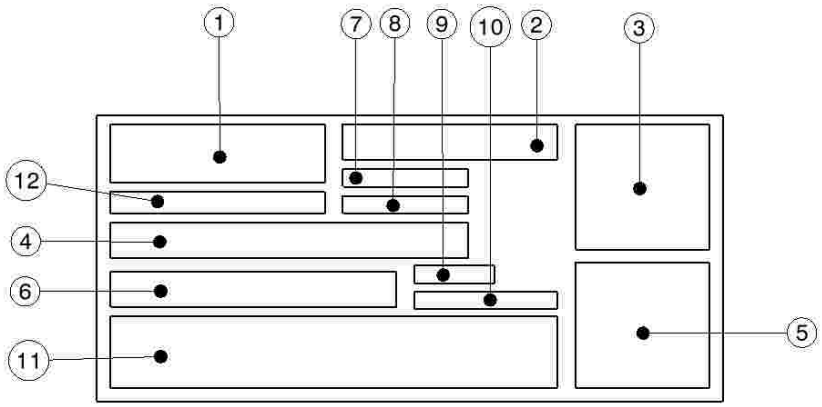
Legend	
1	Compressor model
2	Production date
3	Safety warning for ESD motor type models
4	Electronic board type see 4.2.2
5	Approval marks
6	Variant code
7	Manufacturer code (first digit)
8	Version code
9	Serial number
10	Check digit
11	Bar Code
12	Suction pipe indication
13	Warning specification (for ESD motor type)

Example:

4.2 Label for Electronic Driver

4.2.1 Label Description

The electronic driver is identified by specific label:

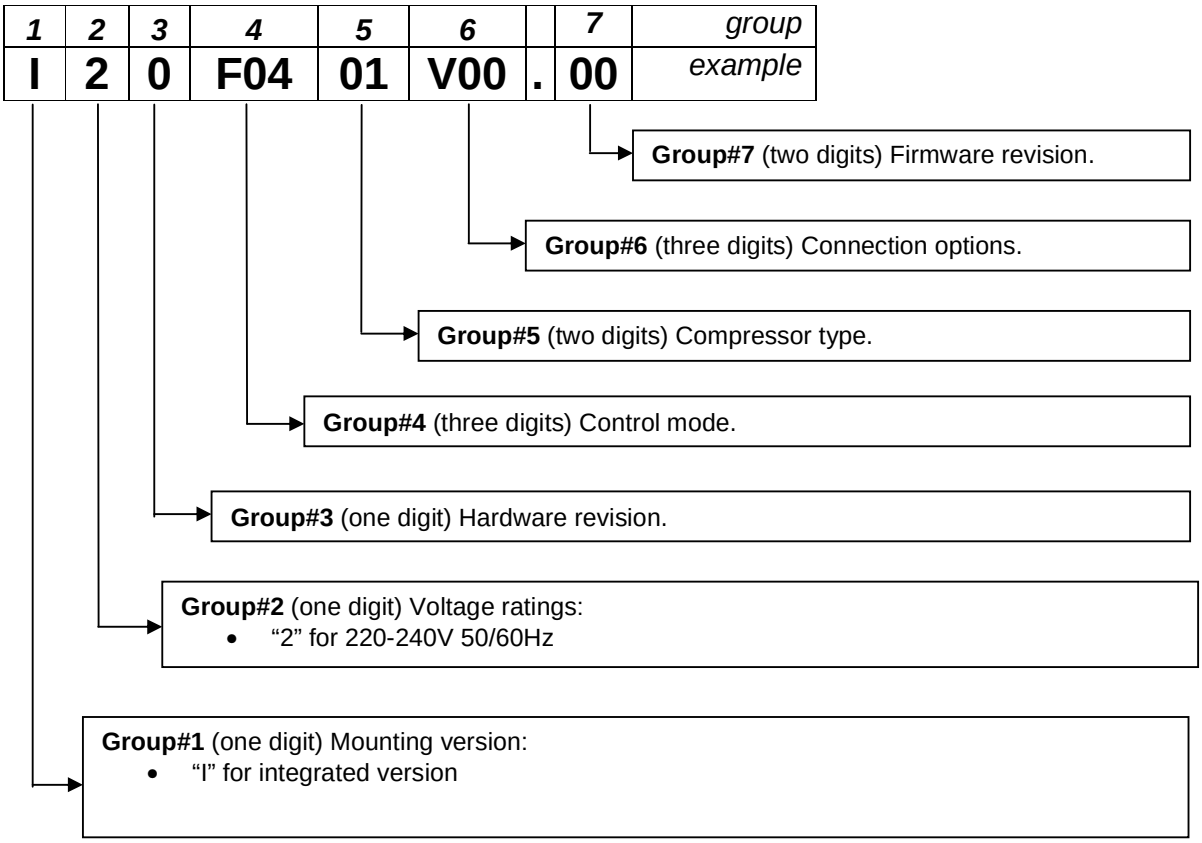


LEGEND	
1	ACC TRADE MARK
2	MANUFACTURER
3	APPROVAL MARKS
4	ELECTRICAL DATA AND TEMPERATURE CLASS
5	DATA MATRIX
6	ELECTRONIC BOARD TYPE (SEE CODING SPECIFICATION)
7	ACC ORACLE CODE
8	SUPPLIER CODE
9	DATE CODE [WW/YY]
10	SERIAL NUMBER [S/N_XXXXXXXX]
11	BAR CODE
12	CUSTOMER CODE

Example:

4.2.2 Electronic Driver Coding description

The code consists of 7 groups as below described:



5 Control Modes

The electronic driver may operate in two different modes:

5.1 Autologic Mode

The autologic algorithm determines the best working speed between 1400rpm to 4000rpm according to a logic based on the load cycle of the thermostat

5.2 Slave Mode (Frequency Control)

In Slave Mode (Frequency Control) the working speed between 1400rpm to 4000rpm is controlled by a custom electronic board driven by an analogical frequency input signal.

6 Protection Features

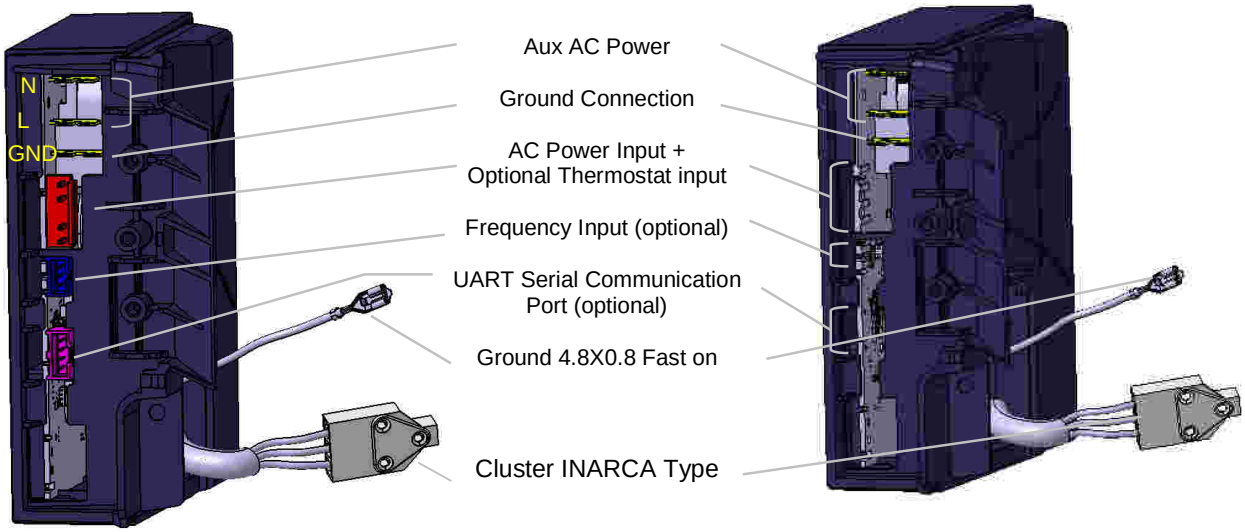
The following protection features are integrated in the driver.

- Overload and locked rotor protection
  - Restart after 5 minutes
- Motor speed protection:
  - If motor speed falls 200rpm below minimum speed, compressor stops
  - Restart after 5 minutes
- Voltage protection:
  - Shut down of compressor in case of voltage supply out of limits to avoid malfunction.
  - Restart after 5 minutes
- Power Limitation:
  - Protection when input power exceeds 250W within first 5 minutes after starting, and 175W afterwards
  - PWM when current exceeds 6.5A peak
  - Restart after 5 minutes

Some of the listed protection features are safety relevant for the compressor; in this case the compliance to IEC 60335-1 is based on PEC circuit supervised by class B software.

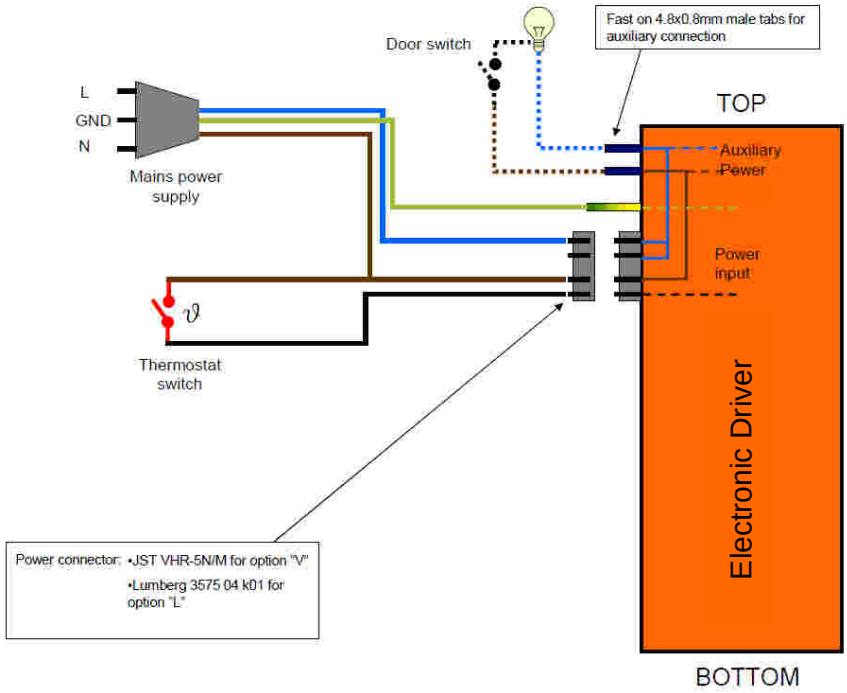
The safety of this system can only be guaranteed when the correct driver is used which is indicated on the compressor label.

7 External Connections

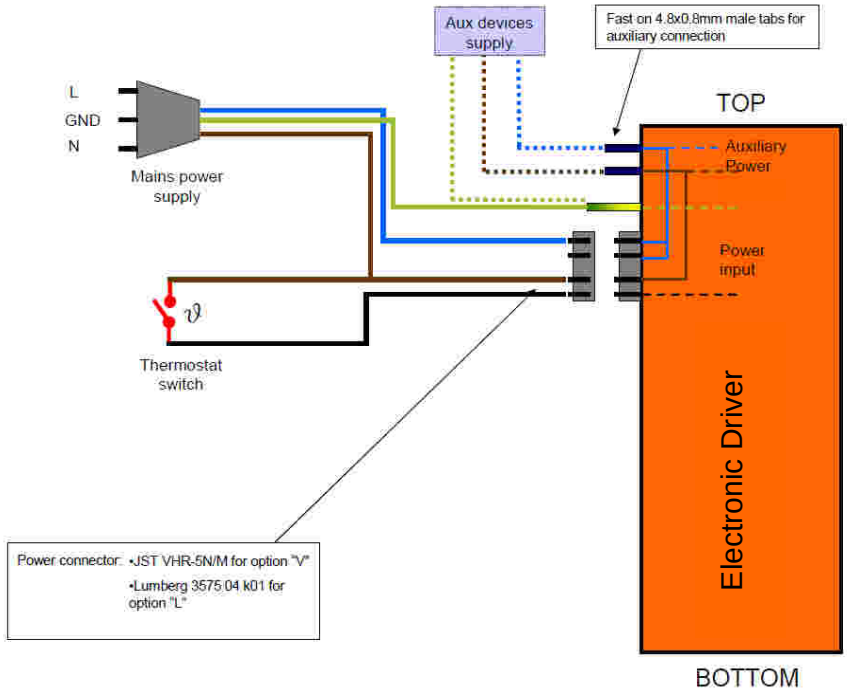


7.1 Autologic Connection

Basic connections for autologic are: Line, Neutral and Ground plus a signal coming from thermostat.
Dashed connections are intended to be optional.



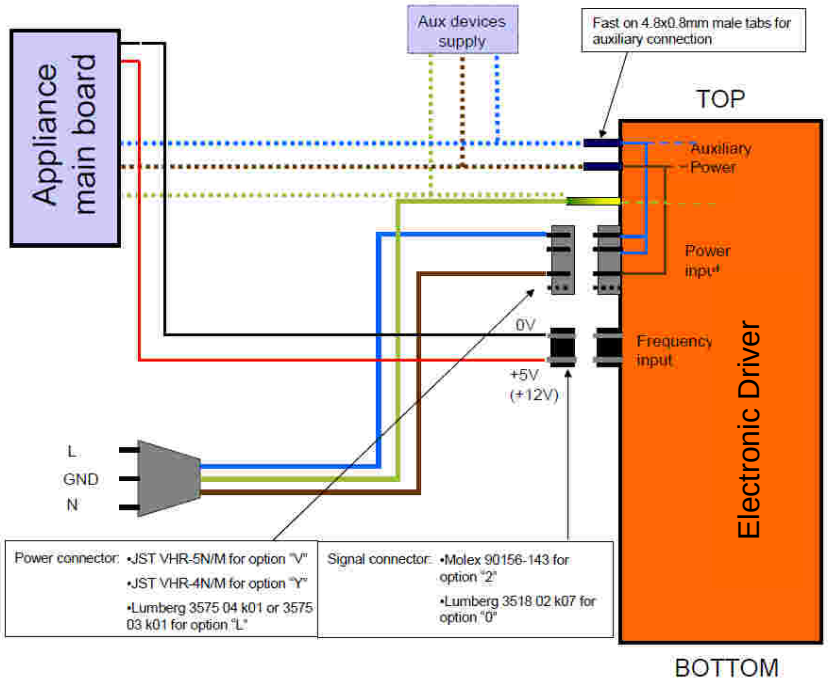
Autologic connection example #1



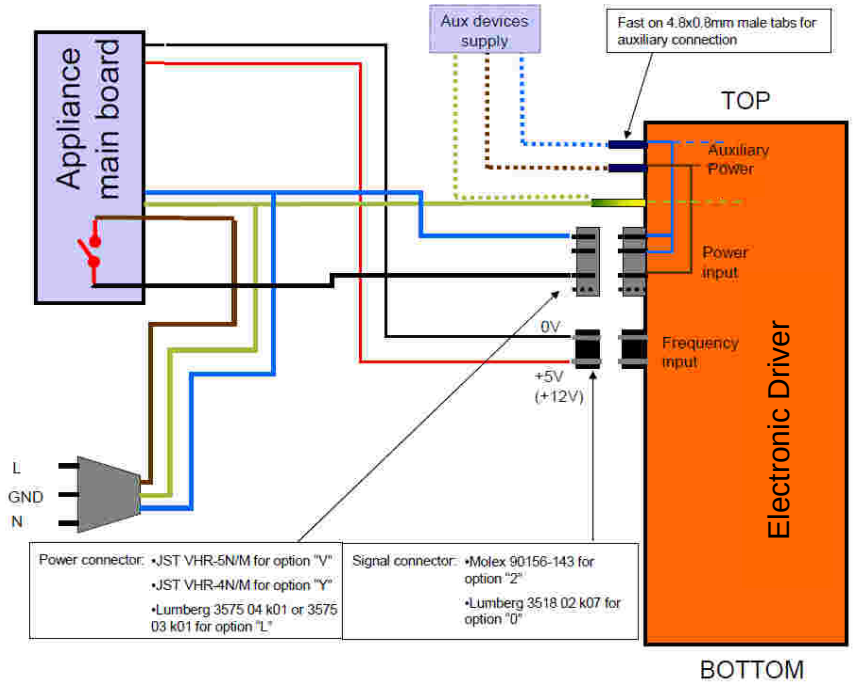
Autologic connection example #2

7.2 Frequency Control Connection

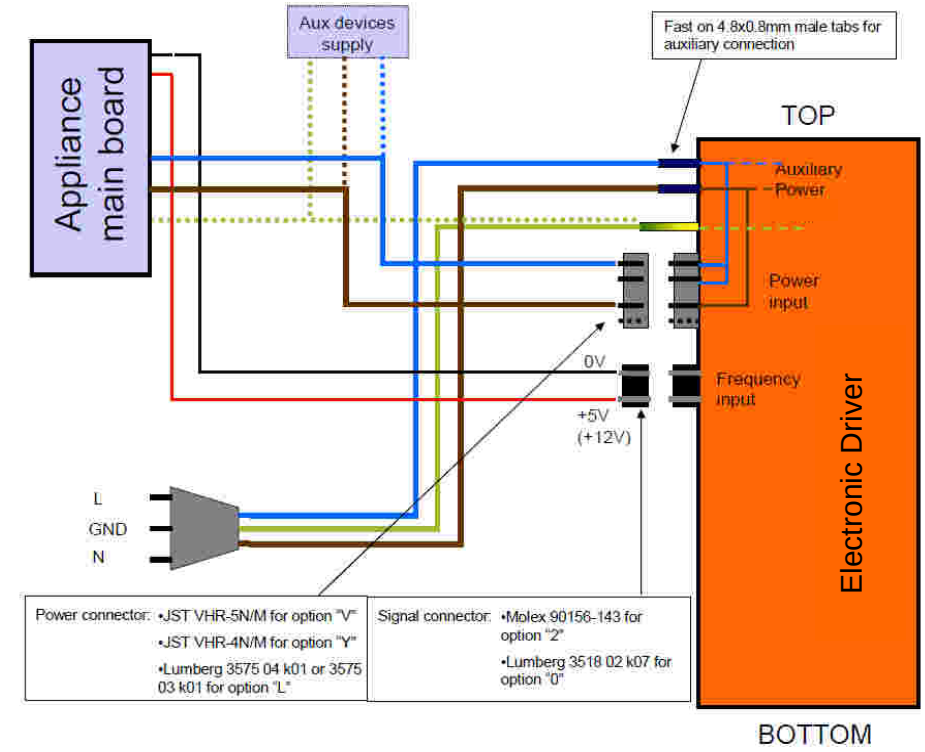
Dashed connections are intended to be optional.



Frequency control connection example #1



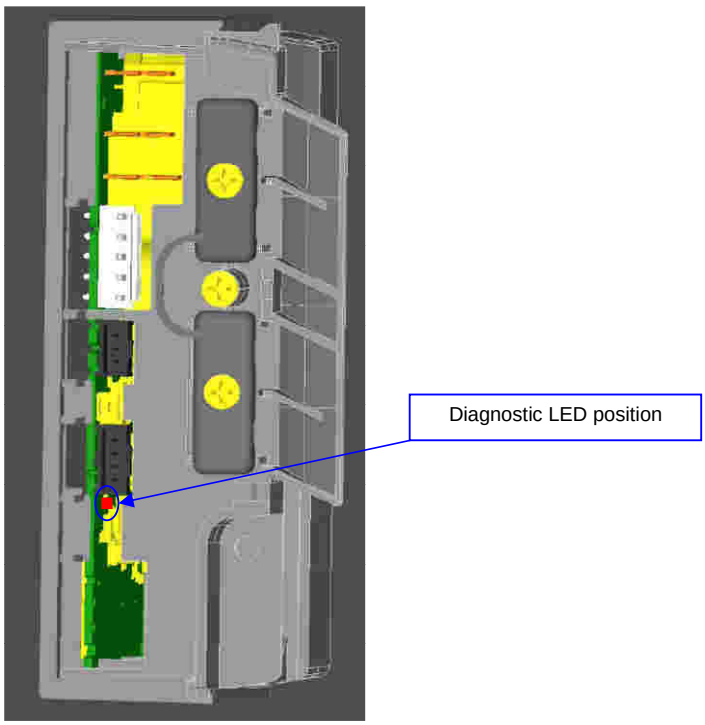
Frequency control connection example #2



Frequency control connection example #3

8 Diagnostic LED (Optional)

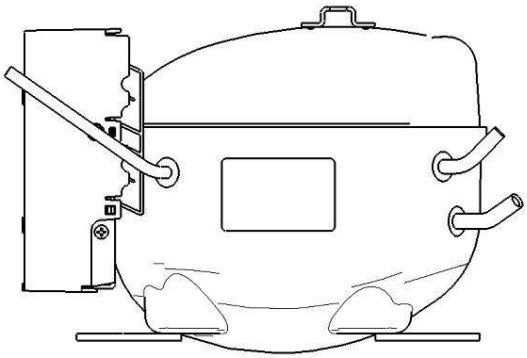
This diagnostic-LED indicates failure on system components. The red LED is positioned on the main PCB on connector side. It is directly visible when a transparent cover is used. Standard cover has to be removed to see the LED.



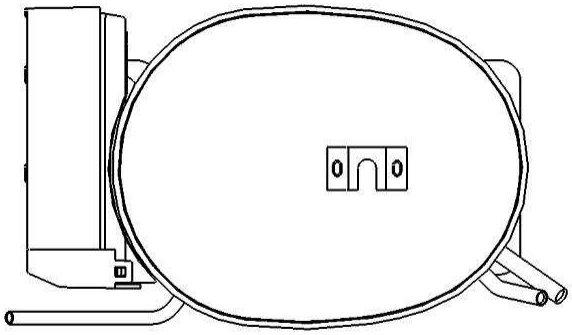
9 Transport, Packing, Palletization

9.1 Recommended Transport Positions when fitted into Appliances

Upright



Tubes Down



9.2 *Packaging and Palletization*

9.2.1 Packaging Type, Pallet Data

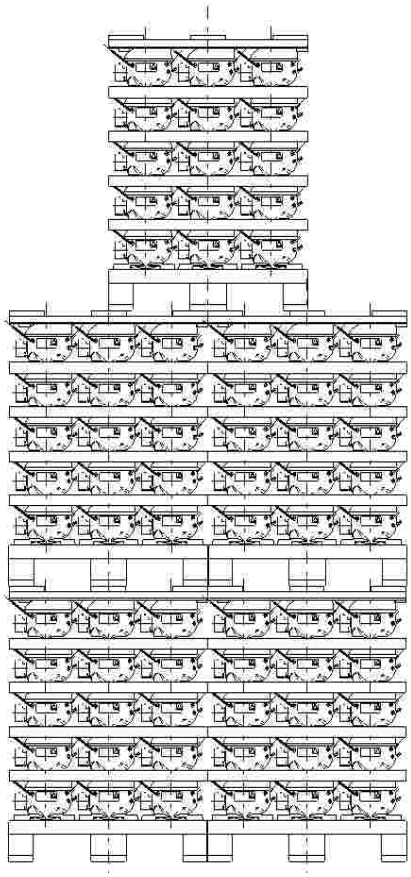
Packing-type		Layers	Quantity	Compressors per layer	Pallet Size L x W
				L x W	mm
One-Way Packaging	Wood-EPS + PE Top Foil	4	80	5 x 4 = 20	1120 x 820
		5	100	5 x 4 = 20	1120 x 820
	Wood-EPS + Cardboard-Box + PE Top Foil	4	80	5 x 4 = 20	1120 x 820
		5	100	5 x 4 = 20	1120 x 820

9.2.2 Transport

Packing-type		Layers	Stacking height Number of Pallets	
			Truck	Container
One-Way Packaging	Wood-EPS + PE Top Foil	4	1	-
		5	1	-
	Wood-EPS + Cardboard-Box + PE Top Foil	4	1	1
		5	1	1

9.2.3 Warehouse Storing

One Way Packaging
max. 3 Pallet layers
3rd layer with offset



9.2.4 Recycling of compressors

Oil, gas and electronic driver must be recycled separately. Afterwards the compressor must be removed from the refrigerator and has to be given to a scrap metal recycling unit.