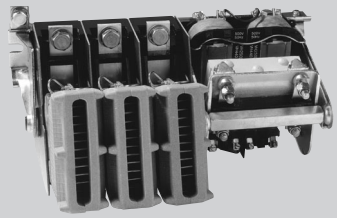
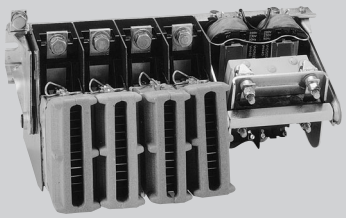
## 1.6 Contactors for heavy duty

### 1.6.1 Table-No. 18 – rating



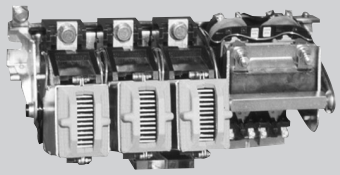
**VH250DO**



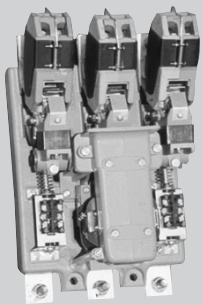
**VH250DO.4**
**VH440.4**

| Type | | |
|---|---|---|
| **Main poles** | | |
| Rated insulation voltage $U_i$ [V] | | |
| Impulse withstand voltage $U_{imp}$ [kV] | | |
| Conventional free air thermal current $I_{th}$ [A] | | |
| Rated operational current $I_{e\ (AC-1)}$ at 400 V [A] | | |
| Rated operational current $I_{e\ (AC-3)}$ at 400 V [A] | | |
| Rated operational current $I_{e\ (AC-4)}$ at 400 V, 500 V, 660-690 V [A] | | |
| **Maximum load in AC-1** | | |
| | at 380-400 V | [kW] |
| | at 500 V | [kW] |
| | at 660-690 V | [kW] |
| Electrical durability in AC-1 [op. cycles] | | |
| Max. number of on-load op. cycles per hour in AC-1 | | |
| **Max. output power of controlled motor in AC-3 (AC-4)** | | |
| | **at 380-400 V** | **[kW]** |
| | **at 500 V** | **[kW]** |
| | **at 660 V** | **[kW]** |
| | **at 690 V** | **[kW]** |
| Electrical durability in AC-4 [op. cycles] | | |
| Max. number of on-load op. cycles per hour in AC-3 | | |
| Max. number of on-load op. cycles per hour in AC-4 | | |
| Recommended fuse char. aM at 500 V [A] | | |
| Short-circuit protection by the circuit breaker | | |
| Type of co-ordination with SCPD acc. to EN 60 947-4-1 | | |
| Type of short circuit protection acc. to ČSN 35 4150 App. C | | |
| Mechanical durability – AC controlled [op. cycles] | | |
| **Auxiliary contacts** | | |
| Rated insulation voltage $U_i$ [V] | | |
| Impulse withstand voltage $U_{imp}$ [kV] | | |
| Conventional free air thermal current $I_{th}$ [A] | | |
| Rated operational current $I_{e\ (AC-15)}$ at 230 V [A] | | |
| Rated operational current $I_{e\ (AC-15)}$ at 400 V [A] | | |
| Electrical durability in AC-15 at 220-230 V, 4 A [op. cycles] | | |
| Electrical durability in AC-15 at 380-400 V, 2 A [op. cycles] | | |
| **Control circuit** | | |
| Range of AC coil control voltages at 50 Hz [V] | | |
| Range of AC coil control voltages at 60 Hz [V] | | |
| Pull-in input power of AC control coil, ±15 % [VA] | | |
| Hold-in input power of AC control coil, ±15 % [VA/W] | | |
| Range of DC "D" coil control voltages [V] | | |
| Pull-in input power of DC „D" coil [W] | | |
| Hold-in input power of DC „D" coil [W] | | |
| Range of DC coil control voltages [V] (series rezistor) | | |
| Pull-in input power of DC control coil, ±15 % [W] (series rezistor) | | |
| Hold-in input power of DC control coil, ±15 % [W] (series rezistor) | | |
| Main dimensions W × H × D [mm] | three-pole version | |
| | four-pole version | |
| Mass [kg] | three-pole version | |
| | four-pole version | |
| Degree of protection | | |

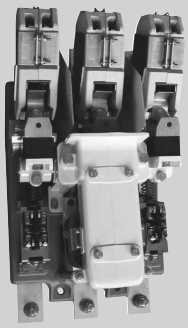
| VH250DO<br>VH250DO.4 | VH440<br>VH440.4 | VH400 | V53D | VD630 | VD1000 |
|---|---|---|---|---|---|
| 690<br>8<br>450<br>400<br>300<br>108, 108, 82 | 690<br>8<br>520<br>520<br>500<br>140, 129, 98 | 690<br>8<br>450<br>450<br>400<br>108, 108, 92 | 690<br>8<br>740<br>740<br>630<br>250, 225, 170 | 1 000<br>8<br>1 000<br>1 000<br>630<br>250, 225, 170 | 1 000<br>8<br>1 000<br>1 000<br>1 000<br>300, 250, 200 |
| 250<br>315<br>400<br>$0,1x10^6$ $0,05x10^6$<br>120 | 335<br>400<br>560<br>$0,1x10^6$ $0,05x10^6$<br>120 | 285<br>355<br>500<br>$0,1x10^6$ $0,05x10^6$<br>120 | 515<br>640<br>885<br>$0,035x10^6$<br>120 | 515<br>640<br>885<br>$0,035x10^6$<br>120 | 630<br>800<br>1 100<br>$0,035x10^6$<br>120 |
| **160 (55)**<br>**200 (75)**<br>**200 (75)**<br>**200 (75)**<br>200 000<br>600<br>600 | **280 (75)**<br>**315 (90)**<br>**250 (90)**<br>**250 (90)**<br>200 000<br>600<br>600 | **200 (55)**<br>**250 (75)**<br>**250 (75)**<br>200 000<br>600<br>600 | **315 (132)**<br>**400 (160)**<br>**500 (160)**<br>200 000<br>600<br>600 | **315 (132)**<br>**400 (160)**<br>**500 (160)**<br>**500 (160)**<br>200 000<br>600<br>600 | **560 (160)**<br>**630**<br>**630**<br>**630**<br>100 000<br>300<br>300 |
| 500<br>–<br>2 | 630<br>–<br>2 | 400<br>–<br>c | 630<br>–<br>c | 630<br>BL 1600<br>2 | –<br>BL 1600<br>2 |
| $5x10^6$ | $5x10^6$ | $3x10^6$ | $10^6$ | $10^6$ | $10^6$ |
| 690<br>8<br>20<br>4<br>2<br>$0,8x10^6$<br>$10^6$ | 690<br>8<br>20<br>4<br>2<br>$0,8x10^6$<br>$10^6$ | 500<br>8<br>20<br>4<br>2<br>$0,8x10^6$<br>$10^6$ | 500<br>8<br>20<br>4<br>2<br>$0,8x10^6$<br>$10^6$ | 690<br>8<br>20<br>4<br>2<br>$0,8x10^6$<br>$10^6$ | 690<br>8<br>20<br>4<br>2<br>$0,8x10^6$<br>$10^6$ |
| 110..690<br>110..660<br>1 430<br>97/31<br>24..220<br>350..450<br>9..10 | 110..690<br>110..660<br>1 430<br>97/31<br>24..220<br>350..450<br>9..10 | 110..500<br>110..400<br>1 230<br>80/28,5<br>24..220<br>350..450<br>9..10 | 110..500<br>110..400<br>3 410<br>450/113 | 110..500<br>110..400<br>3 410<br>350/192 | 110..500<br>110..400<br>3 410<br>350/192 |
| 48..220<br>530<br>13 | 48..220<br>530<br>13 | 48..220<br>–<br>– | 48..220<br>300<br>55 | 24..220<br>300..375<br>55..65 | 24..220<br>300..375<br>55..65 |
| 340x180x245<br>397x180x245<br>13,1<br>14,9<br>IP00 | | 397x180x270<br>15,8<br>IP00 | 300x522x335<br>38,4<br>IP00 | 300x522x335<br>41<br>IP00 | 300x522x335<br>41,3<br>IP00 |



**VH400**



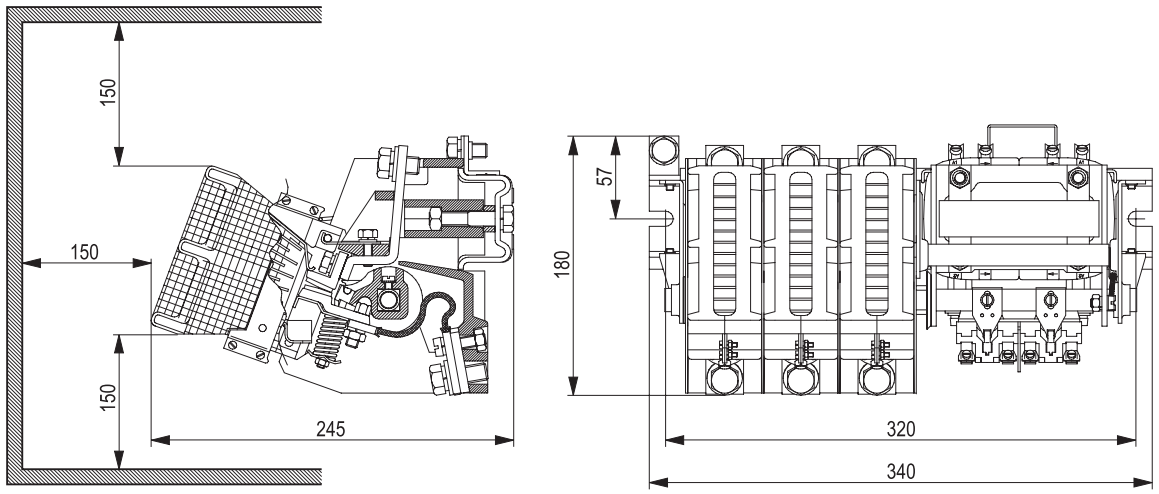
**V53D, VD630**



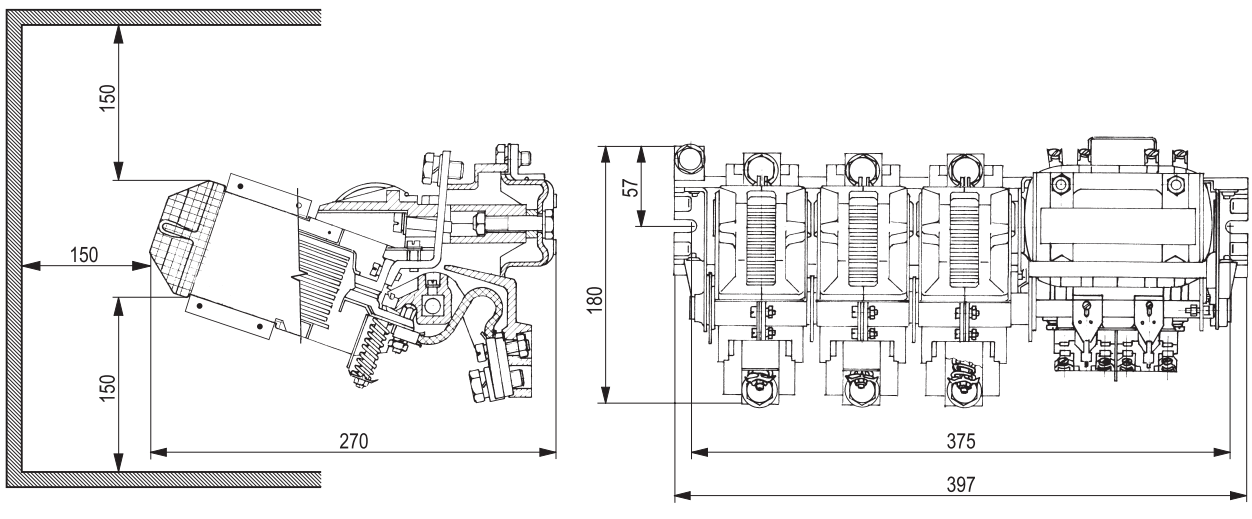
**VD1000**

## 1.6.2 Outline drawings

**Outline drawing of contactor type VH250DO, VH440**

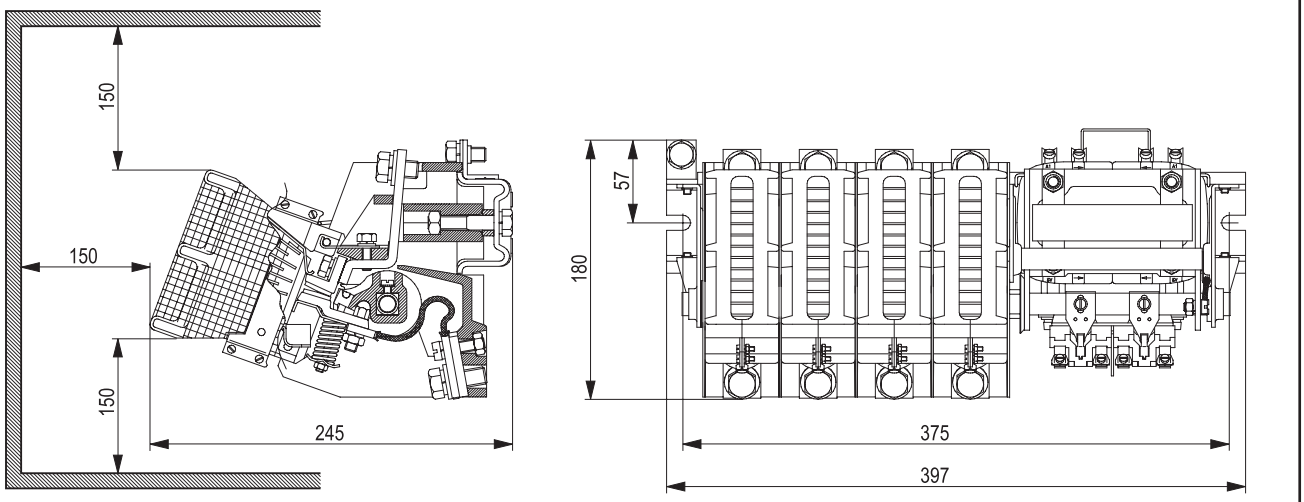



**Outline drawing of contactor type VH400**

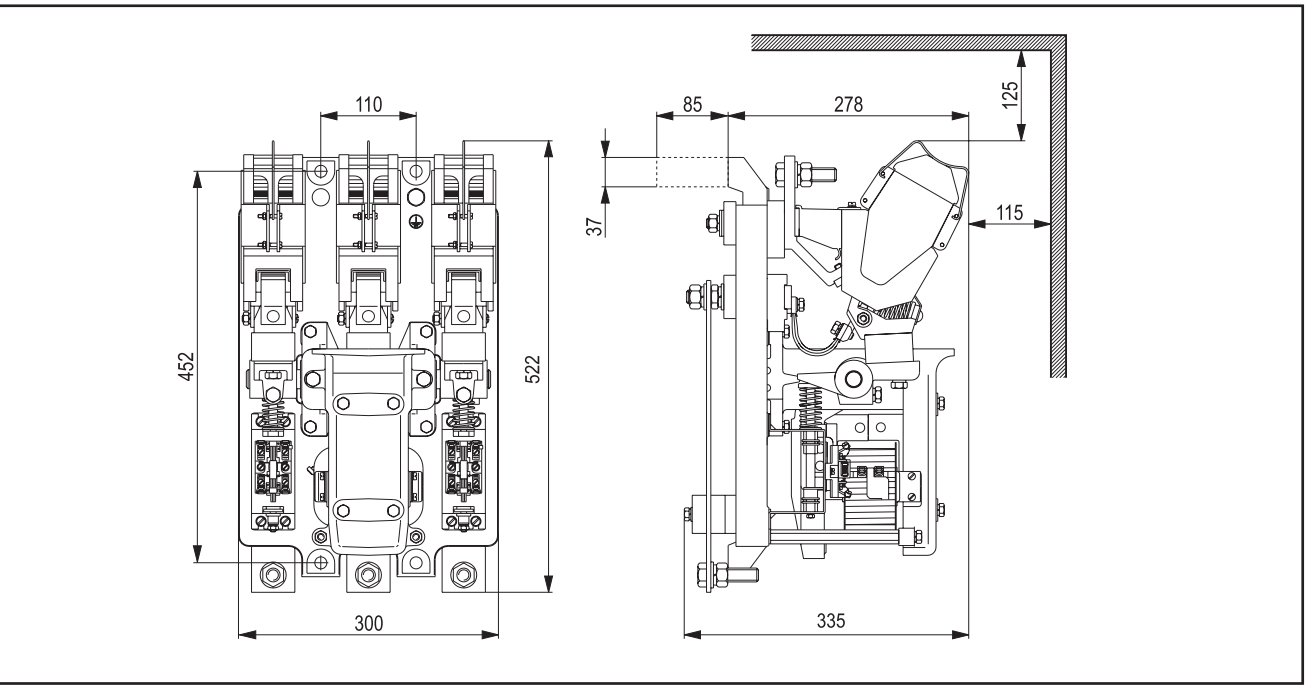


## 1.6.2 Outline drawings

**Outline drawing of contactor type VH250DO.4, VH440.4**




**Outline drawing of contactor type V53D, VD630, VD1000**



**Mounting position**

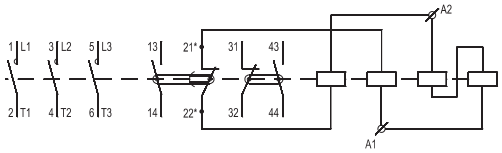
Contactors must be mounted vertically on the panel or rail so that the markings are legible in an ordinary horizontal position. The maximum allowed deviation from the vertical position is 5°. Panels or rails must be strong enough so that they do not to transfer vibrations and/or shocks from extraneous sources to the mounted contactors.

**Fixing screws**

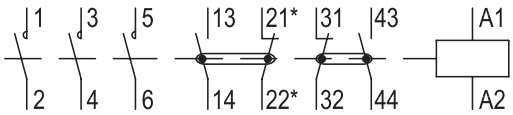
| | |
|---|---|
| VH250D/VH250DO<br>VH440<br>VH400 | 2 pcs of screws M10, spacing of fixing holes 320 mm |
| VH250DO.4/VH440.4 | 2 pcs of screws M10, spacing of fixing holes 375 mm |
| V53D, VD630, VD1000 | 4 pcs of screws M12, spacing of fixing holes 110 × 452 mm, distance tubes 85 mm long |

## 1.6.3 Terminals – marking, conductor cross-sections

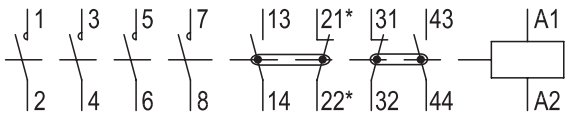
**Marking of terminals of main circuit, auxiliary contacts and DC „D“ coil of contactors series VH**




**Marking of terminals of main circuit, auxiliary contacts and coil of contactors types VH250D, VH250DO, VH400, VH440, V53D, VD630 and VD1000**

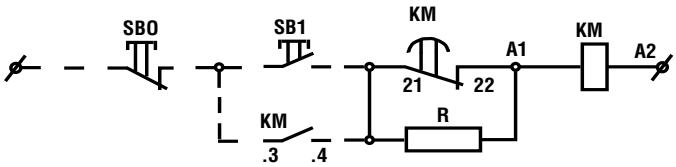



**Marking of terminals of main circuit, auxiliary contacts and coil of contactors types VH250DO.4 and VH440.4**




** 21• – 22• is marking of the time-delayed auxiliary NC-contact, which is inherent in DC controlled contactors*

**Wiring diagram of a DC controlled contactor**




Series rezistor R is fixed to the contactor body.

**V53D, VD630, VD1000**

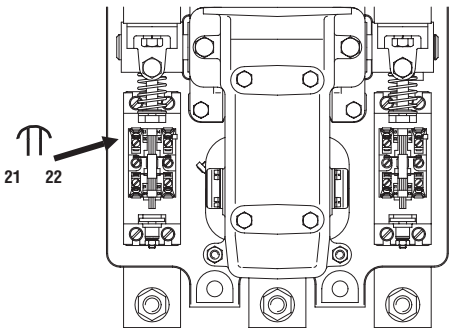



**Table-No. 19**

| Contactor type | Main poles | | | | Auxiliary contacts and coil | | | |
|---|---|---|---|---|---|---|---|---|
| | Terminal width [mm] | Terminal type | Screw size | Conductor cross-section [mm²] | Terminal type | Screw size | Conductor cross-section [mm²] | |
| | | | | | | | Rigid | Flexible |
| VH250DO | 25 | lug terminal | M12 | 120..300 | screw-type | M4 | 1..2,5 | 0,75..1,5 |
| VH400, VH440 | 25 | lug terminal | M12 | 120..300 | screw-type | M4 | 1..2,5 | 0,75..1,5 |
| VH250DO.4 | 25 | lug terminal | M12 | 120..300 | screw-type | M4 | 1..2,5 | 0,75..1,5 |
| VH440.4 | 25 | lug terminal | M12 | 120..300 | screw-type | M4 | 1..2,5 | 0,75..1,5 |
| V53D, VD630 | 50 | lug terminal | M16 | 240..300 | screw-type | M4 | 1..2,5 | 0,75..1,5 |
| | | | | 2 bars 40×5 | | | | |
| VD1000 | 50 | lug terminal | M16 | 240..300 | screw-type | M4 | 1..2,5 | 0,75..1,5 |
| | | | | 2 bars 40×5 | | | | |

*Screw type terminals of coils and auxiliary contacts facilitate the connection of either a single conductor, or two of the same conductors resp. by cross-sections differing by one degree.*
*Flexible conductors must not be compacted by brazing!*