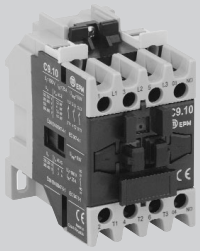
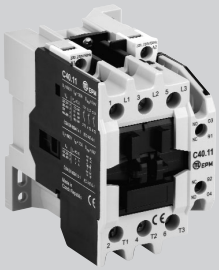
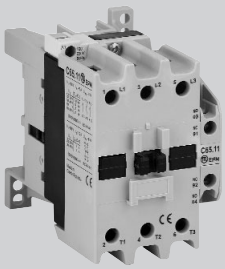
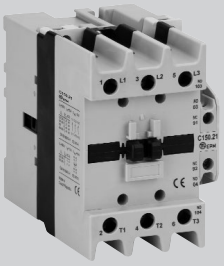
1.3 Contactors series “C”

1.3.1 Table-No. 8 Rating









Type	C9.■■**	C12.■■	C17.■■
Main poles			
Rated insulation voltage U_i [V]	690	690	690
Impulse withstand voltage U_{imp} [kV]	8	8	8
Conventional free air thermal current I_{th} [A]	25	25	25
Rated operational current $I_{e\ (AC-1)}$ at 400 V [A]	25	25	25
Rated operational current $I_{e\ (AC-3)}$ at 400 V [A]	9 (4,7)	12 (5,6)	16 (6,6)
Max. output power of controlled motor in AC-3			
at 220-230 V [kW]	**2,2**	**3**	**4**
at 380-400 V [kW]	**4 (2)**	**5,5 (2,5)**	**7,5 (3)**
at 500 V [kW]	**5,5 (2,5)**	**7,5 (3)**	**9 (3,7)**
at 660-690 V [kW]	**5,5**	**7,5**	**9**
Max. number of on-load op. cycles per hour in AC-1 AC-1 [sep/h]	**300**	**300**	**300**
AC-3	**1 200**	**1 200**	**1 200**
AC-4	**600**	**600**	**600**
Electrical durability in AC-1 at 380-400 V [op. cycles] for the rated op. current	$0,15x10^6$	$0,32x10^6$	$0,5x10^6$
Electrical durability in AC-3 at 380-400 V [op. cycles] for the rated op. current	$1,5x10^6$	$1,5x10^6$	$1,5x10^6$
Recommended fuse char. aM [A]	10	16	20
Type of co-ordination with SCPD	2	2	2
Mechanical durability – AC controlled [op. cycles]	$10x10^6$	$10x10^6$	$10x10^6$
Mechanical durability – DC controlled [op. cycles]	$10x10^6$	$10x10^6$	$10x10^6$
Auxiliary contacts (C9.0040, C9.0022 and C23.0022, C23.0040 – not available)			
Rated insulation voltage U_i [V]	690	690	690
Impulse withstand voltage U_{imp} [kV]	8	8	8
Conventional free air thermal current I_{th} [A]	25	25	25
Rated operational current $I_{e\ (AC-15)}$ at 230 V [A]	4	4	4
Rated operational current $I_{e\ (AC-15)}$ at 400 V [A]	2	2	2
Electrical durability in AC-15 at 220-230 V, 4 A [op. cycles]	$0,8x10^6$	$0,8x10^6$	$0,8x10^6$
Electrical durability in AC-15 at 380-400 V, 2 A [op. cycles]	10^6	10^6	10^6
Control circuit			
Range of AC coil control voltages at 50 Hz [V]	12..500	12..500	12..500
Range of AC coil control voltages at 60 Hz [V]	24..660	24..660	24..660
Pull-in input power of AC control coil, ±10 % [VA]	60	60	60
Hold-in input power of AC control coil, ±10 % [VA/W]	10,5/3,9	10,5/3,9	10,5/3,9
Range of DC „D“ coil control voltages [V]	12..220	12..220	12..220
Pull-in input power of DC control coil [W]	55..98	55..98	55..98
Hold-in input power of DC control coil [W]	1,98..3,30	1,98..3,30	1,98..3,30
Range of DC coil control voltages [V]	12..250	12..250	12..250
Pull-in input power of DC control coil, ±10 % [W]	90	90	90
Hold-in input power of DC control coil, ±15 % [W]	9,2	9,2	9,2
Main dimensions W × H × D [mm]	45x78,5x73	45x78,5x73	45x78,5x73
Mass [kg]	0,3	0,3	0,3
Degree of protection acc. to VDE 0106, part 100	IP20/IP10	IP20/IP10	IP20/IP10

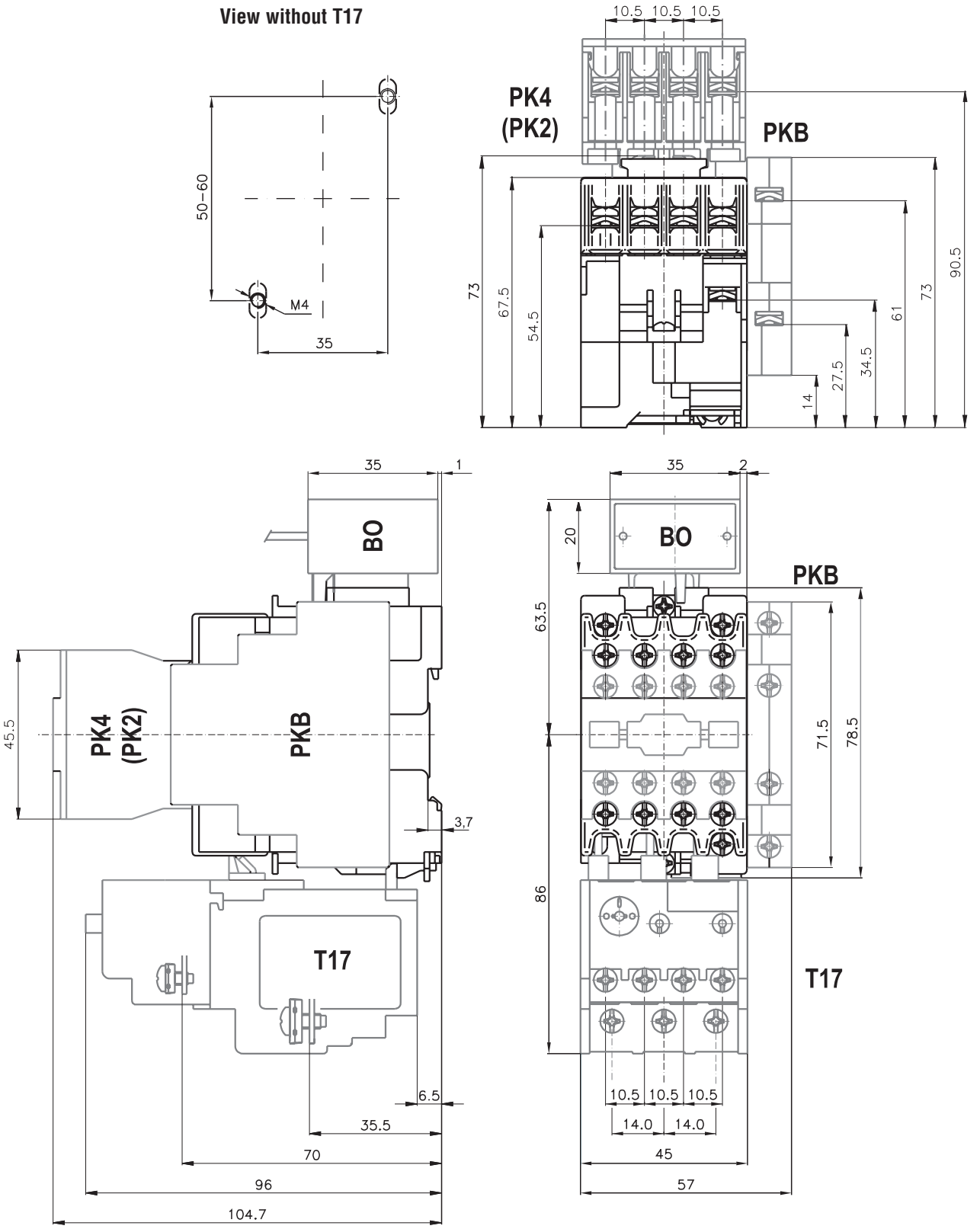
With the aid of accessories mounted on the appropriate locks of the contactor's body, contactors series "C" can be used to build a compact switching unit with extended functionality.

C23.■■**	C16.■■	C20.■■	C25.■■	C32.■■	C40.■■	C50.■■	C65.■■	C80.■■	C95.■■	C115.■■	C150.■■
690 8 25 25 23 (8)	690 8 50 25 16 (7)	690 8 50 25 20 (7)	690 8 50 32 25 (8)	690 8 50 44 32 (9,5)	690 8 50 50 40 (11,3)	690 8 85 60 50 (15,2)	690 8 85 75 65 (18)	690 8 85 (95)* 85 80 (20)	690 8 150 110 95	690 8 150 130 115	690 8 150 150 150
5,5 11 (3,7) 11 (3,7) 9 300 1 200 600	**5,5 7,5 (3) 9 (4) 11 300 1 200 600**	**5,5 10 (3) 10 (4) 11 300 1 200 600**	**7,5 11 (3,7) 11 (4,5) 11 300 1 200 600**	**11 15 (4,5) 18,5 (5,5) 18,5 300 1 200 600**	**12,5 20 (5,5) 25 (7,5) 18,5 300 1 200 600**	**15 25 (7,5) 30 (9) 30 300 1 200 600**	**18,5 30 (9) 37 (11) 37 300 1 200 600**	**22 37 (10) 45 (12,5) 45 300 1 200 600**	**25 45 (15) 55 (18,5) 55 300 1 200 600**	**30 55 (18,5) 75 (25) 55 300 1 200 600**	**45 75 (25) 83 (30) 55 300 1 200 600**
$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$	$0,5x10^6$
$1x10^6$	$1,5x10^6$	$1,2x10^6$	10^6	10^6	$0,9x10^6$	10^6	10^6	$0,9x10^6$	$0,9x10^6$	$0,7x10^6$	$0,5x10^6$
25 2	20 2	25 2	32 2	63 1	63 1	50 2	80 1	80 1	100 2	125 2	160 2
$10x10^6$ $10x10^6$	$10x10^6$ $10x10^6$	$10x10^6$ $10x10^6$	$10x10^6$ $10x10^6$	$10x10^6$ $10x10^6$	$10x10^6$ $10x10^6$	$10x10^6$ $5x10^6$	$10x10^6$ $5x10^6$	$10x10^6$ $5x10^6$	$5x10^6$ $5x10^6$	$5x10^6$ $5x10^6$	$5x10^6$ $5x10^6$
690 8 25 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6	690 8 12 4 2 $0,8x10^6$ 10^6
12..500 24..660 60 10,5/3,9	12..500 24..660 83 14,2/4	12..500 24..660 83 14,2/4	12..500 24..660 83 14,2/4	12..500 24..660 83 14,2/4	12..500 24..660 83 14,2/4	24..690 24..660 140 23/5,7	24..690 24..660 140 23/5,7	24..690 24..660 140 23/5,7	24..690 24..660 30/6,5	24..690 24..660 30/6,5	24..690 24..660 30/6,5
12..220 55..98 1,98..3,30 12..250 90 9,2	12..220 80..150 2,6..2,8 12..250 70 10	12.220 80..150 2,6..2,8 12..250 70 10	12..220 80..150 2,6..2,8 12..250 70 10	12..220 80..150 2,6..2,8 12..250 70 10	12..220 80..150 2,6..2,8 12..250 70 10	24..220 170..190 3,5..3,9 12..250 150 16,5	24..220 170..190 3,5..3,9 12..250 150 16,5	24..220 170..190 3,5..3,9 12..250 150 16,5	24..220 180..240 3,2..4,1	24..220 180..240 3,2..4,1	24..220 180..240 3,2..4,1
45x78,5x73 0,3 IP20/IP10	56x90x91 0,52 IP20/IP10	56x90x91 0,52 IP20/IP10	56x90x91 0,52 IP20/IP10	56x90x91 0,52 IP20/IP10	56x90x91 0,52 IP20/IP10	70x107x116 0,9 IP20/IP10	70x107x116 0,9 IP20/IP10	70x107x116 0,9 IP20/IP10	85x120x127 1,6 IP20/IP10	85x120x127 1,6 IP20/IP10	85x120x127 1,6 IP20/IP10

** A copper wire at least 25 mm² is to be used for I_{th} = 95 A; the 24-hour average ambient temperature must not exceed 35 °C*
*** Rating in categories AC-3 or AC-4 are not applicable for versions C9.0022 or C23.022*
**** Short circuit protection provided by the circuit breaker type BD250*

1.3.2 Outline drawings

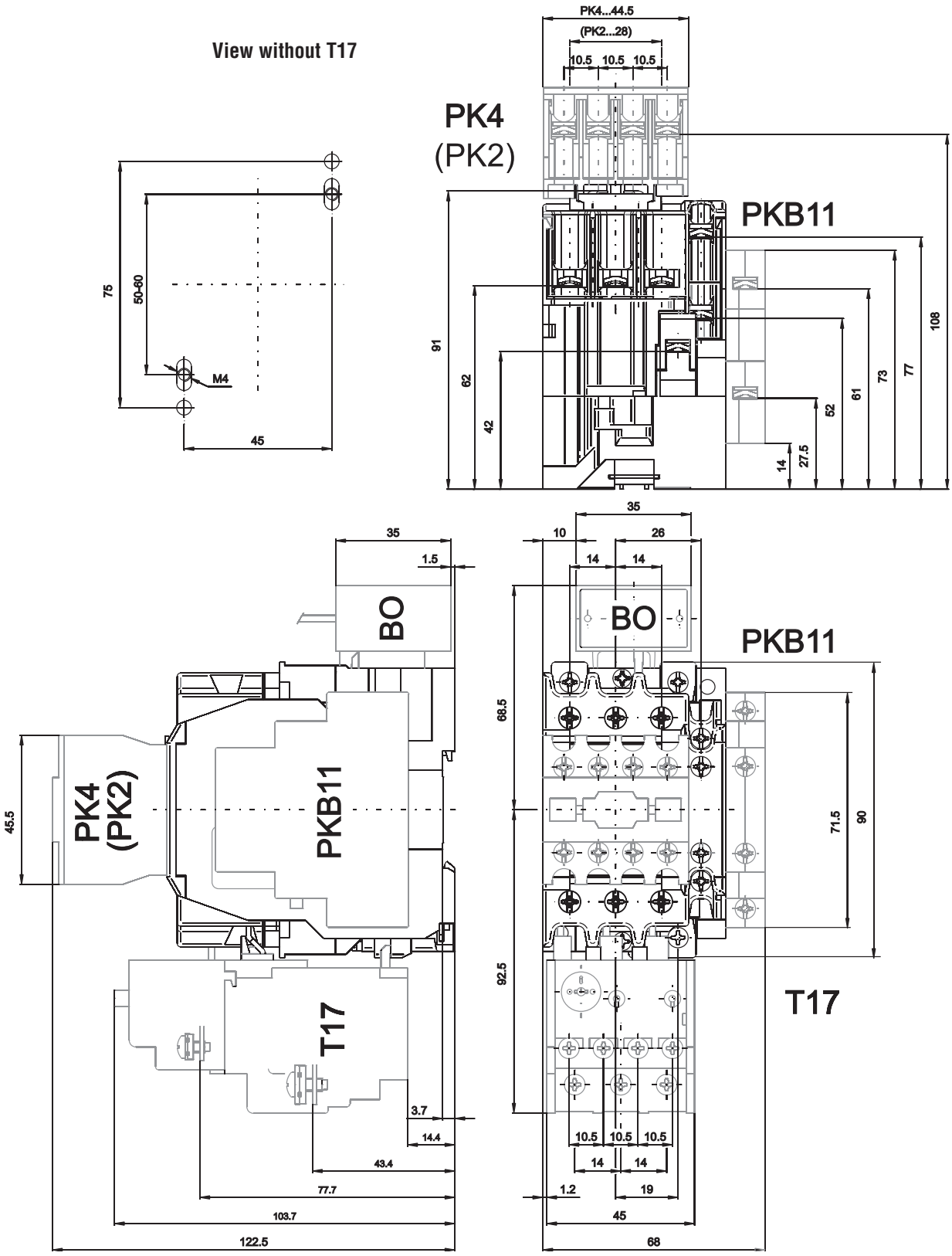
Outline drawing of [C9.■■, C12.■■, C17.■■, C23.■■] with the thermal overload relay T17 and accessories



Contactors can be fixed to either a 35 mm rail according to EN 50022, or onto a mounting panel by means of two M4 screws.

1.3.2 Outline drawings

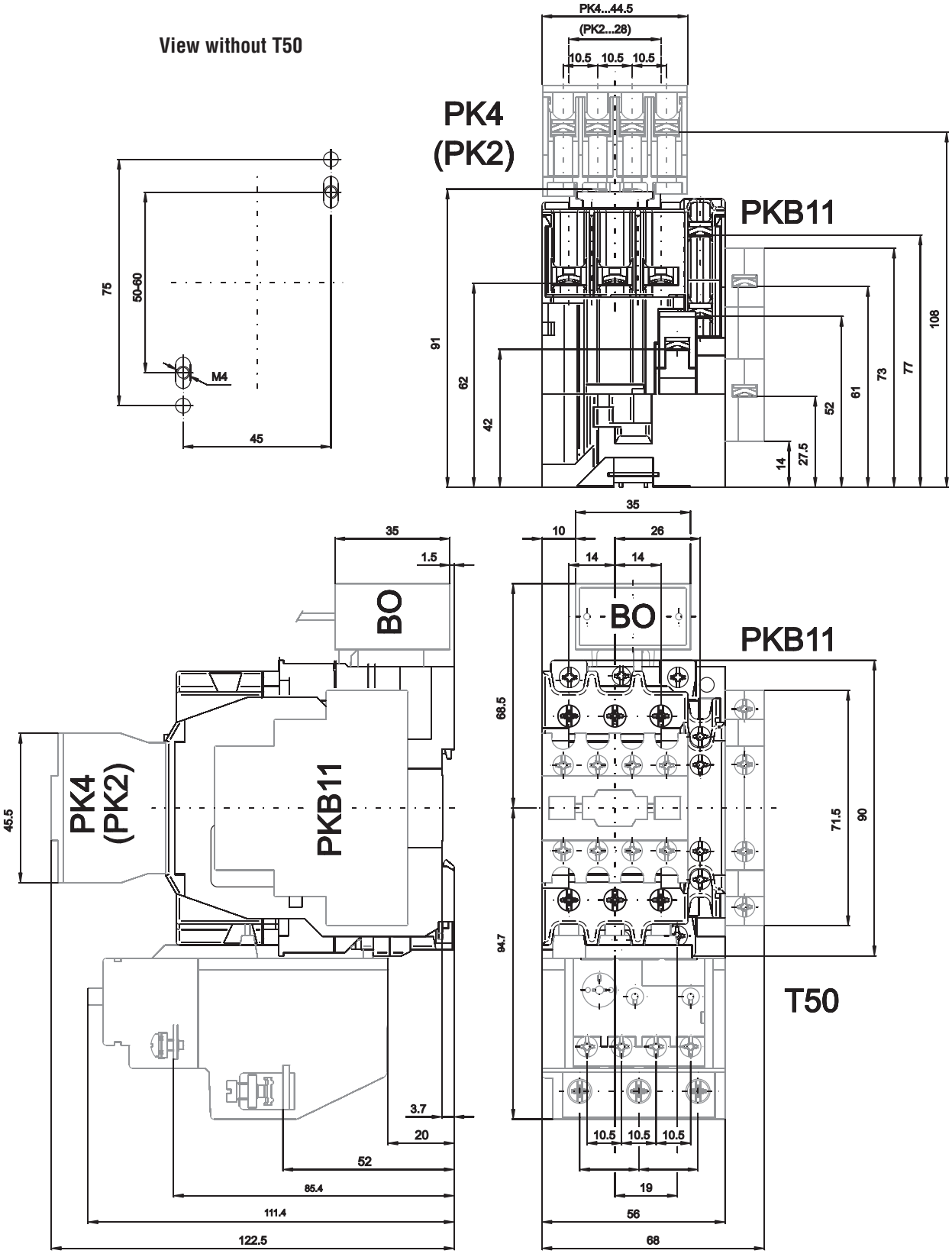
Outline drawing of [C16.■■, C20.■■, C25.■■, C32.■■, C40.■■] with the thermal overload relay T17 and accessories



Contactors can be fixed to either a 35 mm rail according to EN 50022, or onto a mounting panel by means of two M4 screws.

1.3.2 Outline drawings

Outline drawing of [C16.■■, C20.■■, C25.■■, C32.■■, C40.■■] with the thermal overload relay T50 and accessories

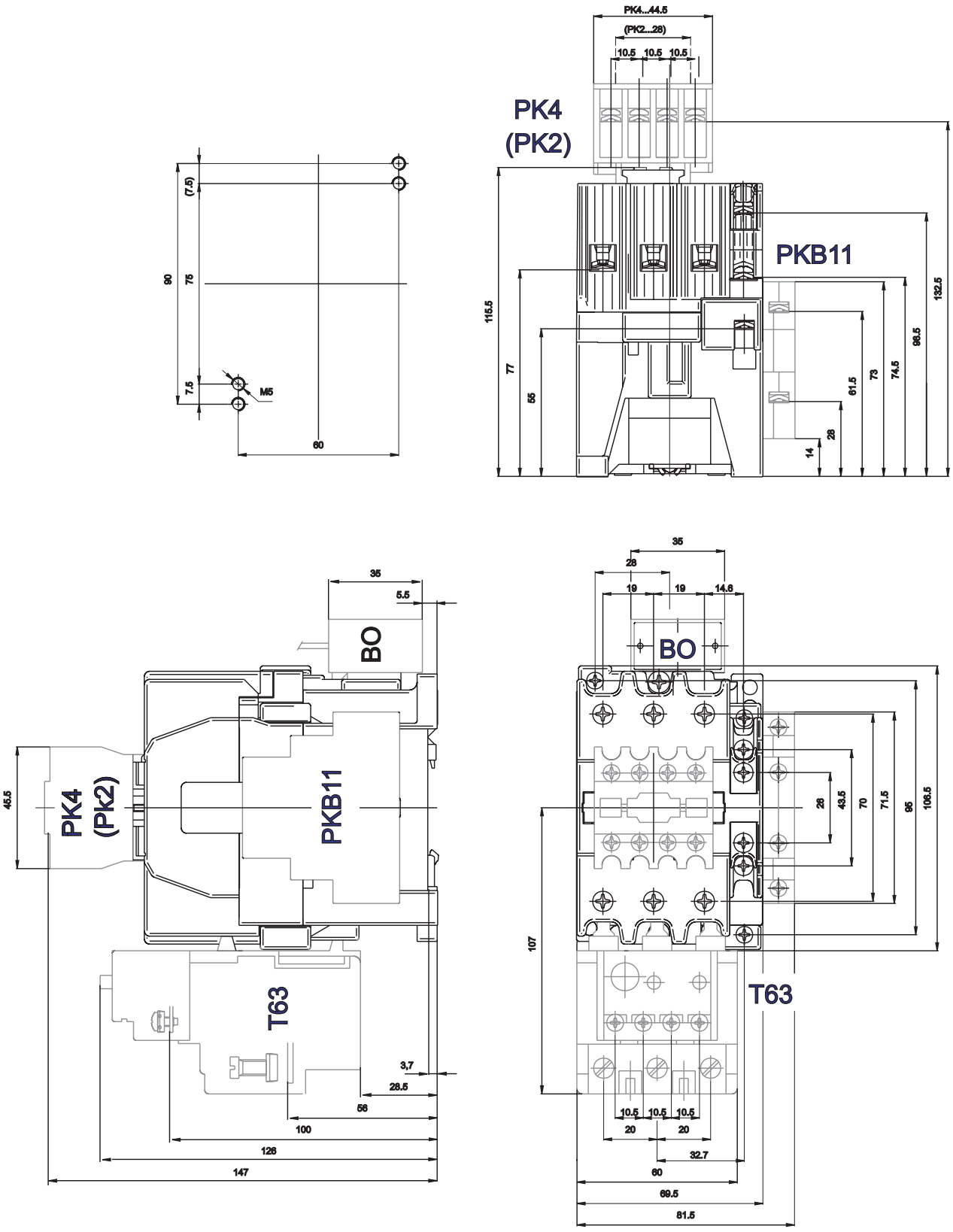


Contactors can be fixed to either a 35 mm rail according to EN 50022, or onto a mounting panel by means of two M4 screws.

1.3.2 Outline drawings

Outline drawing of [C50.■■, C65.■■, C80.■■] with the thermal overload relay T63 and accessories

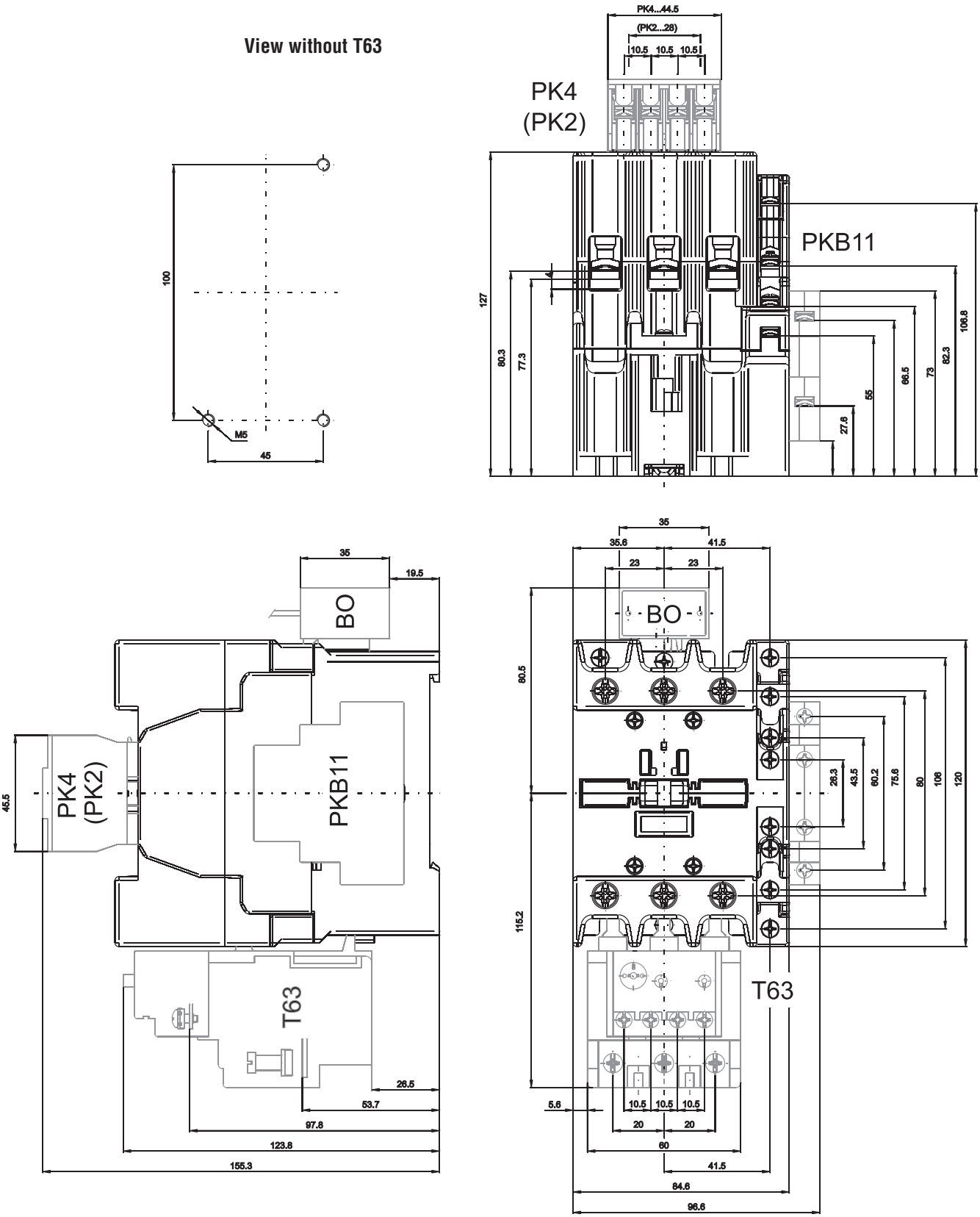
View without T63



Contactors can be fixed to either a 35 mm rail according to EN 50022, or onto a mounting panel by means of two M5 screws.

1.3.2 Outline drawings

Outline drawing of [C95.■■, C115.■■, C150.■■] with the thermal overload relay T63 and accessories



Contactors are to be fixed onto a mounting panel by means of three M5 screws.

1.3.3 Marking of terminals, configuration of contacts and conductor cross-sections

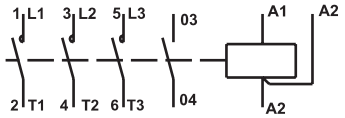
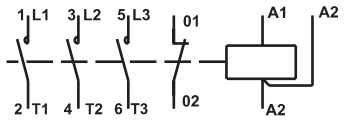
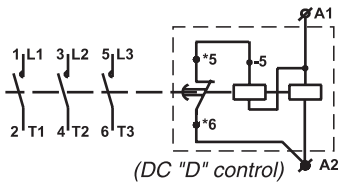
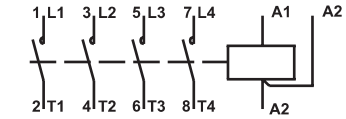
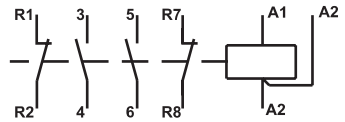
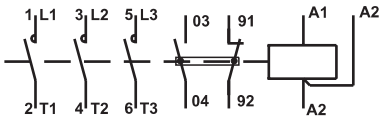
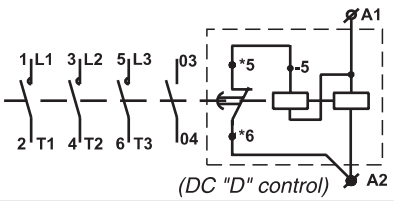
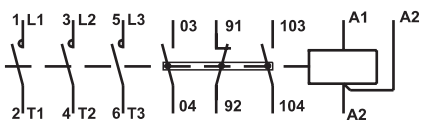
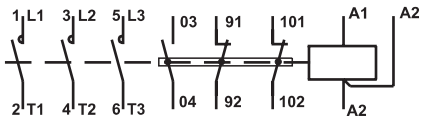
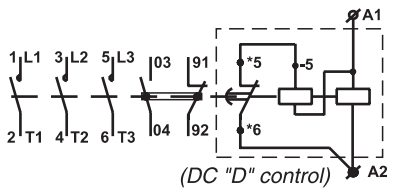
Contactor type	Configuration of contacts				Wiring diagram
	Main contacts		Auxiliary contacts		
	NO	NC	NO	NC	
C9.10, C12.10, C17.10, C23.10	3	0	1	0	
C9.01, C12.01 C17.01, C23.01	3	0	0	1	
C9.00, C12.00 C17.00, C23.00	3	0	0	0	 (DC "D" control)
C9.0040, C23.0040	4	0	0	0	
C9.0022, C23.0022	2	2	0	0	
C16.11, C20.11, C25.11, C32.11, C40.11, C50.11, C65.11, C80.11,	3	0	1	1	
C16.10, C20.10, C25.10, C32.10, C40.10, C50.10, C65.10, C80.10	3	0	1	0	 (DC "D" control)
C95.21, C115.21, C150.21	3	0	2	1	
C95.12, C115.12, C150.12	3	0	1	2	
C95.11, C115.11, C150.11	3	0	1	1	 (DC "D" control)

Table-No. 9 – Terminals and conductor cross-sections

Contactor type	Main poles				Auxiliary contacts, coil terminals and accesories			
	Terminal type	Screw size	Copper wire [mm²]		Terminal type	Screw size	Copper wire [mm²]	
			Rigid	Flexible			Rigid	Flexible
C9.■■, C12.■■, C17.■■, C23.■■	screw-type	M3,5	1..4	1..2,5	screw-type	M3,5	1..2,5	0,75..1,5
C16.■■, C20.■■, C25.■■ C32.■■, C40.■■	pillar-type	M5	1,5..10	1,5..10	screw-type	M3,5	1..2,5	0,75..1,5
C50.■■, C65.■■, C80.■■	pillar-type	M6	2,5..25	2,5..25	screw-type	M3,5	1..2,5	0,75..1,5
C95.■■, C115.■■, C150.■■	pillar-type, double entry	M8	6..50	6..50	screw-type	M3,5	1..2,5	0,75..1,5

Screw type terminals facilitate the connection of either a single conductor, or two of the same conductors resp. by cross-sections differing by one degree.
Pillars type terminals facilitate the connection of either a single conductor up to the maximum cross-section, or two of the same conductors resp. by cross- sections differing by one degree, with the exception of the maximum one.
In addition, the pillar type terminal of contactor types [C95.■■, C115.■■, C150.■■] facilitates the connection of conductors in a way similar to the other pillar type terminals, plus the connection of a flat bar with max. cross-section [4x12] mm.
All screws M3.5, M5, M6 have the combined slot [PH2 + simple].
Flexible conductors must not be compacted by brazig!

Table-No. 10 – Tightening torques

Screw size	Tightening torque [Nm]	
	Screwdriver	Spanner (wrench)
M3	0,6	
M3,5	0,8	
M4	1,2	
M5	2	
M6	2,5	3
M8	3,5	6
M10	4	10
M12		14
M16		25

1.3.4 Spare parts

Spare coils represent the spare parts for contactors series "C".

Instructions for replacing the series „C" contactor coil

0. It is not necessary to remove the contactor from the contactor from the mounting panel or rail.

1. If necessary, disconnect wires from the terminals of the main poles and auxiliary contacts.

2. Disconnect wires from the coil terminals

3a. For contactors typ C9.■■ through C40.■■ – loosen the two appropriate screws and remove the upper part of the contactor, then simultaneously remove the coil and the conical return spring; insert the spare coil into the bottom part of the contactor, then put the conical spring onto the middle column of the electromagnet armature and affix the upper part of the contactor to the bottom by tightening the two screws.

3b. For contactors type C50.■■ through C150.■■: loosen the two appropriate screws and remove the upper part of the contactor, (i.e. the extinguishing chamber) together with the black middle part, then simultaneously remove the coil and the conical return spring; insert the spare coil into the bottom part of the contactor, then put the conical spring onto the middle column of the electromagnet armature and affix the upper part of the contactor to the bottom by tightening the two screws.

Press the lock on the contact carrier and check whether that part of the contactor moves in the proper way.

4. Re-connect all conductors.

1.3.5 Maintenance

Contactors of the “C” series do not need any maintenance.

Inspection of the contactor’s insulation and contacts should be done after a short circuit or any other type of damage incurred by the device which the contactor is operating in. (see EN 60947-4-1, Art.-No. 8.3.4.2.3 L).

Inspection of the contacts can be done easily after the removal of the arc extinguishing chamber on the contactor types C50.■■ through C150.■■.

1.3.6 Overload and short-circuit protection

Thermal overload relay types T17, T50 and T63 are designed to provide overload protection when utilized together with contactors series “C”; fuses, circuit breakers, or another SCPD (short-circuit protective device) must be used.

1.3.7 Example of order

Type	Coil control voltage	No. of pcs
C9.01	220-230 V/50 Hz	100 pcs
C23.0022	24 V/50 Hz	50 pcs
C40.10	12 V DC	30 pcs
C9.0040 + PK21T	220 V DC	10 pcs
C65.11	48 V/50-60 Hz	5 pcs
Coil C9.10	127 V/50 Hz	10 pcs
Auxiliary contact block	PK22E	6 pcs