

USING THE QUICK GUIDE

- Provides information on handling, assembly and installation.
- Remains for later use at the product.
- Does **not** replace the electronically provided instructions for use.

This manual is intended exclusively for persons who are familiar with the logistics and installation. The person must have the following qualifications:

- Knowledge and understanding of the safety instructions.
- Skills for installation and assembly.
- Knowledge of EMC-conform wiring.
- Detection of hazards and risks of the electrical drive technology.
- Knowledge of *DIN IEC 60364-5-54*.
- Knowledge of national safety regulations.

SAFETY INSTRUCTIONS

⚠ DANGER Interventions by unauthorized personnel !

Danger to life through electric shock and malfunctions !



- Modification or repair is only permitted by KEB authorized personnel.

NOTICE

Getting more documentation

Hazards and risks through ignorance

- Open the KEB homepage at www.keb.de.
- By entering the material number in the search field, you will get the corresponding parts of the instructions for use.
- Read the instructions for use carefully !
- Observe the safety and warning instructions !
- If you have any questions, please contact service@keb.de !

TRANSPORT

The transport must be carried out by instructed persons, observing the following instructions.

⚠ CAUTION Maximum design edges and high weight !



Contusions and bruises!

- Never stand under suspended loads.
- Wear safety shoes.
- Secure devices accordingly when using lifting gear.

NOTICE

Behaviour in case of transport damage

- When receiving goods, check the device for transport damage such as deformations or loose parts.
- In case of damage, contact the carrier immediately.
- Do not operate the device in case of transport damage!

STORAGE

Do not store the devices

- in the environment of aggressive and/or conductive liquids or gases.
- at places with direct sunlight.
- outside the specified environmental conditions.

UNPACKING AND CHECKING

- Make sure that no components are bent and/or isolation distances are changed.
- The device must not be put into operation in case of mechanical defects. There is no compliance with applicable safety standards any more.

INSTALLATION

- If available, use the lifting eyebolts provided for installation.
- Do not stand under suspended equipment during installation.
- Mount the product according to the required degree of protection.
- Make sure that no small parts fall into the device during assembly and wiring (drilling chips, screws etc.). This also applies to mechanical components, which can lose small parts during operation.
- The devices are intended for the use in a pollution degree 2 environment.
- Maximum ambient temperature 45°C.
- UL/CSA: Ensure UL-compliant connection of all power connections according to the requirements given in the data sheet.

START-UP AND OPERATION

⚠ WARNING Triggering of overcurrent protection devices

Risk of fire or electric shock!

- Triggering of an overcurrent protection device will be a hint for an overload or short circuit. Triggering a RCD may be caused by a leakage current.
- In order to reduce the risk of fire or electric shock, live parts and other components of the device should be checked and replaced in case of damage.

⚠ CAUTION

High temperatures on the device



Burning of the skin!

- Cover hot surfaces so that they are safe to touch.
- If necessary, attach warning signs to the system.
- Check surface before touching.
- Let the device cool down before any work is carried out.

INSTALLATION / ELECTRICAL CONNECTION

⚠ DANGER Voltage at the terminals and the device !



Danger to life by electric shock !

- Never work under voltage on the device or touch exposed parts.
- For any work on the unit switch off the supply voltage and secure it against switching on.
- Wait until the drive has stopped in order that no regenerative energy can be generated.
- Never bridge upstream protective devices (also not for test purposes).
- Connect the protective earth conductor properly.
- Install all required covers and protective devices for operation.

For a trouble-free and safe operation, please pay attention to the following note:

- Check for reliable fit of the device connections in order to avoid contact resistance and sparking.

MAINTENANCE

The following maintenance work has to be carried out when required, but at least once a year by authorized and trained personnel.

- Clean the product from dirt and dust deposits.
- In case of malfunction, unusual noises or smells inform a person in charge!
- In case of failure, please contact the machine manufacturer.

DISPOSAL

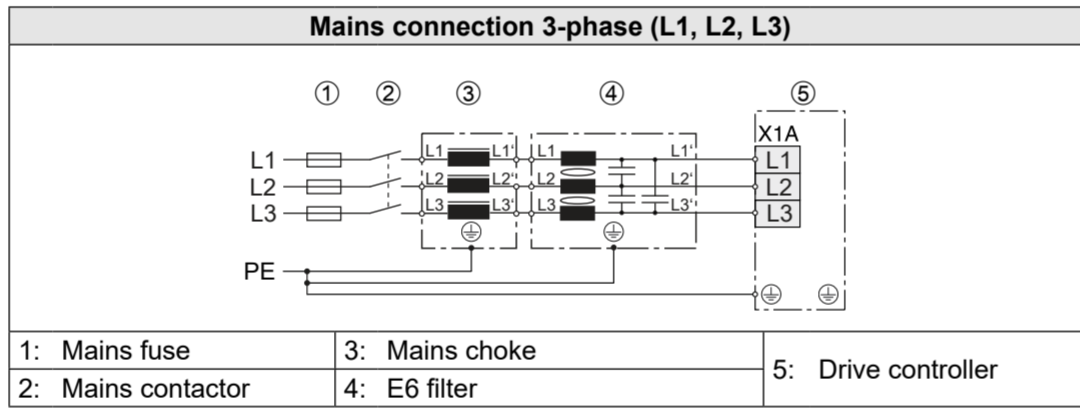
- For professional disposal, follow the instructions in the instructions for use.

INSTALLATION DISTANCES

Installation distances	Dimension	Dimension in mm	Distance in inches
	A	150	6
	B	100	4
	C	30	1.2
	D	0	0
	E	0	0
	F 1)	50	2

1) Distance to front operating elements in the control cabinet door.

WIRING



NOTICE Interference due to line extension !

- The cables between the filter and the drive converter must not be extended.

CONNECTION

Filter	Connection			Cross-sectional area in mm² / AWG			Tightening torque in Nm / lb inch
	L1, L2, L3	PE	Output	L1, L2, L3	PE	Output	
14E6T60-1050	3	3	2	0.2...6 / 24...10		6 / 10	-
16E6T60-1050				0.75...25 / 18...4		10 / 8	
18E6T60-1050				4...35 / 14...2		16 / 6	
20E6T60-1050						35 / 2	
22E6T60-1050				10...50 / 8...1/0		50 / 1/0	
22E6T60-5150	5	6	5	50 / 1/0		35 / 2	13.5 / 120
23E6T60-5150				70 / 2/0			
24E6T60-5150				95 / 3/0		50 / 1/0	
27E6T60-1150						120 / 4/0	
28E6T60-1150	7	8	7	2 x 70 / 2 x 2/0	70 / 2/0	2 x 70 / 2 x 2/0	35 / 310
30E6T60-1150				2 x 95 / 2 x 3/0	95 / 3/0	2 x 95 / 2 x 3/0	

No.	Connection type	No.	Connection type
1	Stranded wires (stripped)	6	M8 bolt for cable lug
2	Stranded wires with ferrules	7	M10 Ring cable lug
3	Spring-loaded terminal	8	M10 Screw for cable lug
4	M6 bolt for	9	M12 Ring cable lug
5	M8 Ring cable lug	10	M12 Screw for cable lug

FUSE PROTECTION

Fuse protection for IEC			
Filter	Input voltage / V	Max. fuse size / A 1)	
		Class gG	
		SCCR 30 kA	SCCR 100 kA
14E6T60-1050	400	25	-
16E6T60-1050		50	-
18E6T60-1050		80	-
20E6T60-1050		100	-
22E6T60-1050		160	-
22E6T60-5150		160	-
23E6T60-5150		200	-
24E6T60-5150		250	-
27E6T60-1150		355	-
28E6T60-1150		400	500
30E6T60-1150		-	630

Fuse protection for UL							
Filter	Input voltage / V	Max. fuse size / A 1)				Type	
		Class „J“ ²⁾			Class gR / aR		
		5 kA	10 kA	18 kA	30 kA		100 kA
14E6T60-1050	480	25	-	-	25	-	2)
16E6T60-1050		50	-	-	50	-	
18E6T60-1050		60	-	-	63	-	
20E6T60-1050		90	-	-	100	-	
22E6T60-1050		-	125	-	125	-	
22E6T60-5150		-	150	-	175	-	
23E6T60-5150		-	175	-	200	-	
24E6T60-5150		-	200	-	200	-	
27E6T60-1150		-	-	350	-	400	
28E6T60-1150		-	-	400	-	500	
30E6T60-1150		-	-	-	-	630	

1) The specified fuse values are maximum values. In case of a smaller dimensioning, observe the values in the installation manual of the corresponding COMBIVERT F6.

2) See installation manual COMBIVERT F6.

The fuse values of the filters correspond to the fuse values of the corresponding drive controllers.

Cable cross-sections and fuses must be dimensioned according to the design of the machine manufacturer. Specified minimum / maximum values may not be fallen below /exceeded.

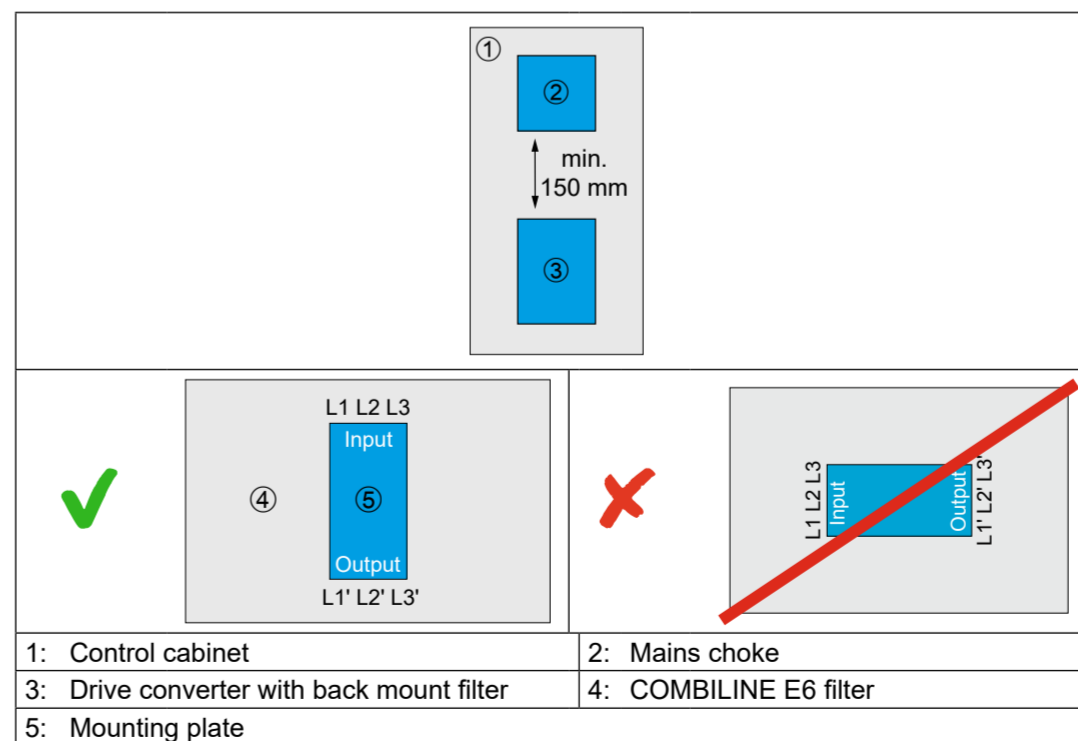
USE ON THE DRIVE CONTROLLER

The mechanical housing sizes of the COMBILINE E6 back mount filters correspond to those of the COMBIVERT F6 drive controllers.

COMBILINE E6	COMBIVERT F6		Required mains choke
	Housing	Device size	
14...16E6T60-1050	2	-	-
18...20E6T60-1050	3	-	-
22E6T60-1050	4	-	22Z1B04-1000 1)
22...24E6T60-5150	4, 6	-	-
27E6T60-1150	7	25/26/27	25/26/27Z1B04-1007
28E6T60-1150	7, 8	27/28	27/28Z1B04-1007
30E6T60-1150	8	29/30	29/30Z1B04-1007

1) From a power of 55 kW.

INSTALLATION POSITION OF THE FILTERS / INSTALLATION POSITION OF THE MAINS CHOKES FROM SIZE 25

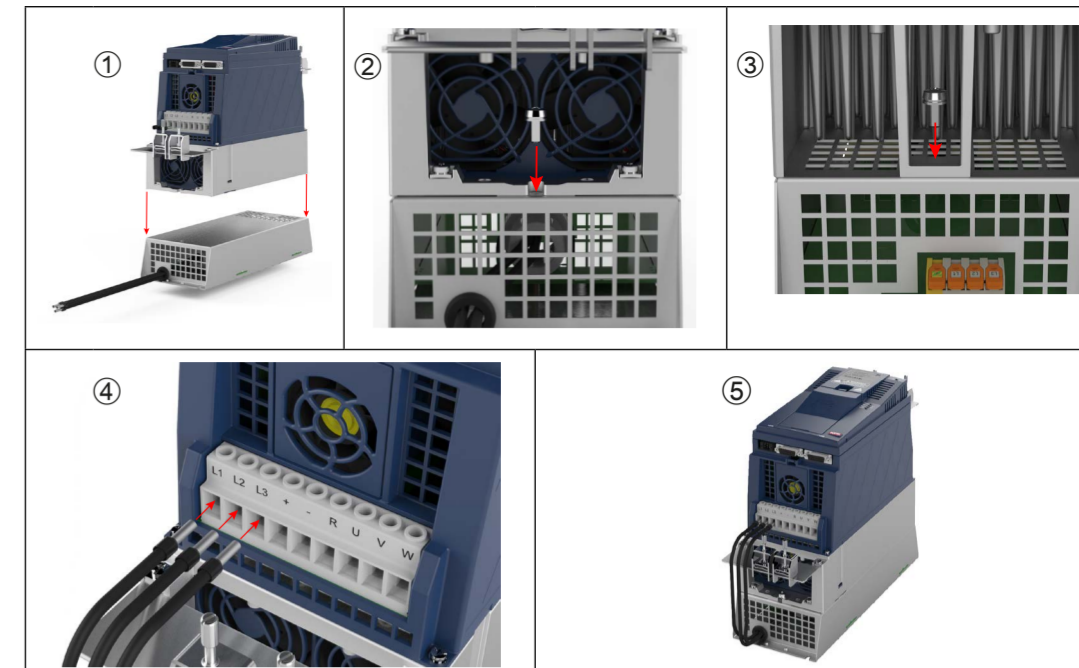


NOTICE Damage due to heat accumulation !

Do not operate the filter horizontally!

- The filters may only be operated vertically in the installation position described.

MOUNTING ON THE DRIVE CONTROLLER



- Place the drive converter flush on the back mount filter.
- Attach the drive converter to the filter. To do this, screw the screws supplied into the thread provided. The tightening torques can be found in the following table.
- Screw the filter wires into the input terminals (L1, L2, L3) of the drive converter.
- Back mount filter with attached drive converter.

For mounting the drive converters, the following fastening materials were tested with the corresponding quality by KEB.

NOTICE Use of other fastening material

- The alternative fastening material selected must comply with the material characteristics (quality) and tightening torques specified below !
- The use of other fastening materials is beyond of KEB's control and therefore exclusively the responsibility of the customer.

COMBIVERT F6 housing	COMBILINE E6	Fastening material	Tightening torque Nm / lb inch
2	14...16E6T60-1050	Screw-and-washer assembly - M6 x 12 - 8.8	6.5 / 58
3	18...20E6T60-1050		
4	22E6T60-1050		
4	22...24E6T60-5150	Hexagonal locking tooth screw M6 x 12 - 8.8	9 / 80
6		Hexagonal locking tooth screw M8 x 16 - 8.8	22 / 195
7	27E6T60-1150	Hexagonal screw M10 x 20 - 8.8 washer ISO 7090 - 10 - 200 HV	50 / 440
7	28...30E6T60-1150	Hexagonal screw M12 x 25 - 8.8 washer ISO 7090 - 12 - 200 HV	80 / 700
8			

NOTICE Overheating of the back mount filters !

- The use of back mount filters on drive converters with material number xxF6xx-xxx9 (fluid cooler water, built-in version, sub-mounted braking resistors) leads to overheating and is not permitted.

FIXING ON THE MOUNTING PLATE

For mounting the drive converters, the following fastening materials were tested with the corresponding quality by KEB.

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COMBILINE E6	Fastening material		Tightening torque Nm / lb inch
14E6T60-1050	Screw-and-washer assembly ISO 4017 - M5 - 8.8	Flat washer ISO 7092 - 5 - 200 HV	4.5 / 40
16E6T60-1050	Screw-and-washer assembly ISO 4017 - M6 - 8.8	Flat washer ISO 7092 - 6 - 200 HV	8 / 70
18E6T60-1050			
20E6T60-1050			
22E6T60-1050	Hexagonal screw ISO 4017 - M8 - 8.8	Washer ISO 7090 - 8 - 200 HV	22 / 195
23E6T60-5150			
24E6T60-5150	Hexagonal screw ISO 4017 - M10 - 8.8	Washer ISO 7090 - 10 - 200 HV	50 / 440
27E6T60-1150			
28E6T60-1150			
30E6T60-1150	Hexagonal screw ISO 4017 - M12 - 8.8	Washer ISO 7090 - 12 - 200 HV	80 / 700

