HYDAC INTERNATIONAL

Oil/Air Cooler Units

Standard series - Accessories

With the present selection of Accessories it is possible to increase control, efficiency & security of the cooler itself and the complete hydraulic system.

The accessories can be mounted on the cooler models mentioned in this catalogue, and available in the commonly required sizes and range of settings.

Each cooler can be ordered with the presented accessories already integrated; most of them are also available separately and can be added later to the cooler, generally with a mounting kit.

The catalogue is divided in three sections:

- A general description of each accessory and its function
- A more detailed part describing the technical features and how they are mounted to the coolers availabilities
- A table indicating on which coolers each accessory is possible to mount.

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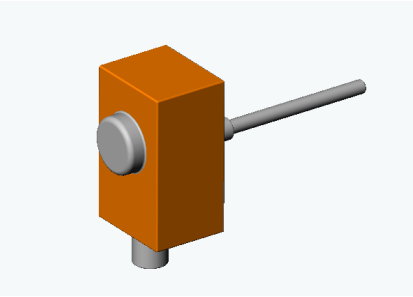
1. PRODUCT DESCRIPTIONS

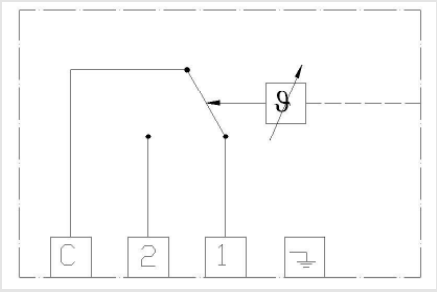
AITR - THERMOSTAT ADJUSTABLE

This unit is an electrical switch, opening or closing the circuit at the selected temperature.
It can be mounted in one of the cooling element free ports, depending on the model or mounted in the oil tank of the hydraulic circuit.
TR is the pure thermostat; AITR is the full kit

AITR



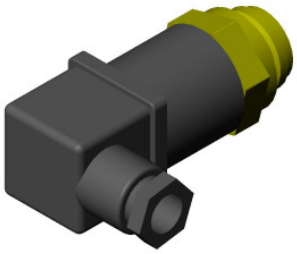
AITR



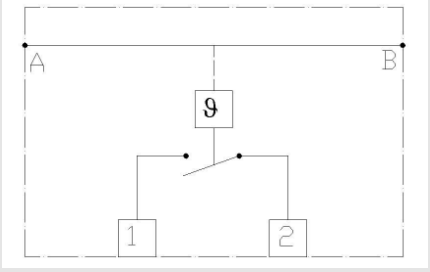
AITF – THERMOSTAT FIXED

This unit is an electrical switch, closing the circuit at a certain fixed temperature (normally open).
It can be mounted in one of the cooling element free ports, depending on the model.
TF is the pure thermostat; AITF is the full kit including the adaptors, depending on the model of cooler. **Now also available with integrated O-ring to ensure appropriate sealing**.

AITF



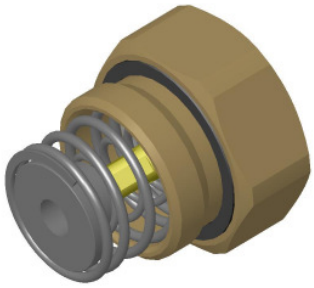
AITF



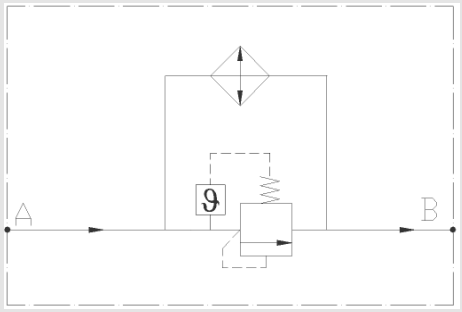
IBT – INTEGRATED BYPASS THERMO

It lets the oil pass through the cooling element only above a certain temperature.
Warning:
This valve is added to a cooling element in conjunction with a flow channel that is braised into the original construction.
(It needs one special cooling element)

IBT



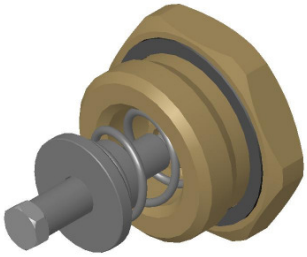
IBT



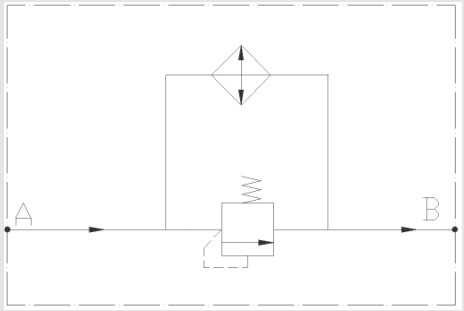
IBP - INTEGRATED BYPASS PRESSURE

Allows the oil to bypass the cooling element when the pressure exceeds a certain value.
Warning:
This valve is added to a cooling element in conjunction with a flow channel that is braised into the original construction.
(It needs one special cooling element)

IBP



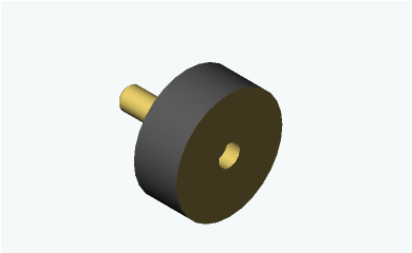
IBP



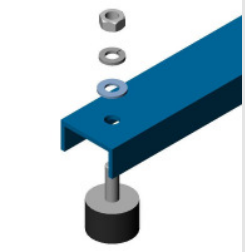
GP – VIBRATION ABSORBERS

These are rubber elements, that are mounted between the cooler and the base; they absorb the vibrations.

GP



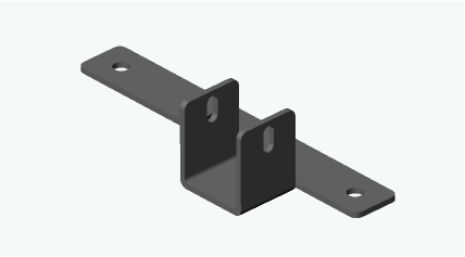
GP - MOUNTING KIT



FEET

Some OK-ELD & OK-ELH models do not have feets fitted as standard. Specific feets are available as an option. All other cooler types are equipped with standard feets.

FEET

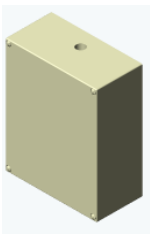


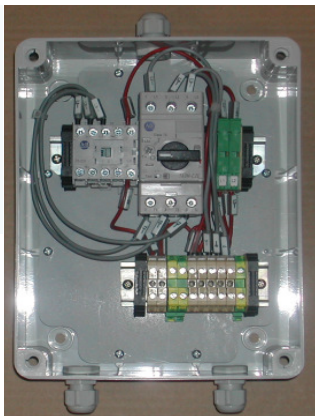
FEET - MOUNTING KIT

ELECTRICAL BOX

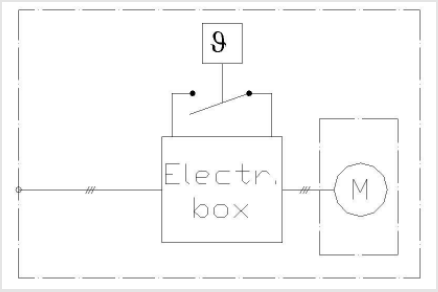
It controls the cooler, switching on/off the three-phase motor depending on the oil temperature (the signal has to come from an external thermostat applied to the oil circuit) and mainly prevents the motor from the overload: a thermal switch interrupts the circuit when the electrical current exceeds the selected value.

ELECTRICAL BOX





ELECTRICAL BOX - MOUNTING KIT



EXTERNAL ELECTRIC INVERTER

It controls the cooler, by acting on the engine with the results of modulating the fan-speed, therefore changing air speed and modulating cooling power. The advantage is to have low noise when not full power is required, and
to have a constant oil temperature at the outlet.
The Full Kit contains:
a) Inverter Box, b) Temperature Sensors+ cable
c) Remote Control.
At 50 Hz it is possible to over boost the engine to 60 Hz only for short working time.

EXTERNAL INVERTER BOX

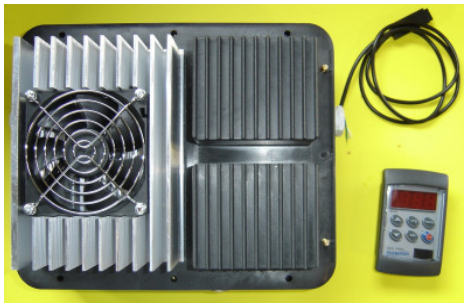
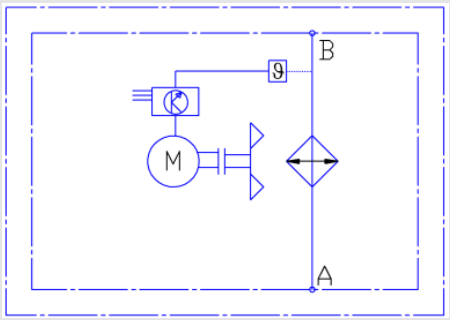


DIAGRAM COOLER + EXT INVERTER



ELECTRONIC SPEED CONTROL

This electronic unit for DC drive coolers (OK-ELD series) allows a variable speed control using standard fans. It controls the cooler by modulating the fan-speed, therefore mastering cooling power.

Main Advantages:

1) Have the minimum required level of : noise, current absorption and cooling power.
2) Save electric consumption
3) Have a constant temperature at the outlet
4) Useful for multi-fan coolers
5) Reverse function for heat exchanger cleaning.

ELECTRONIC SPEED CONTROL

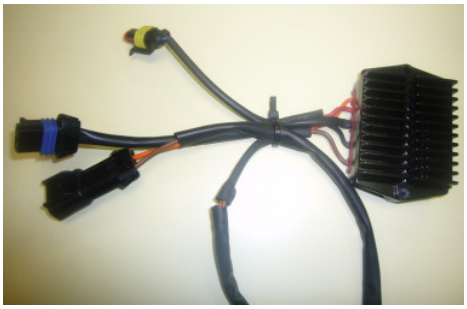
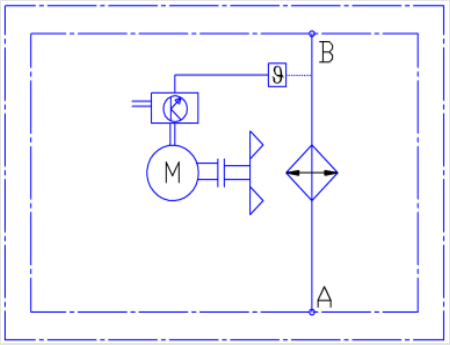


DIAGRAM COOLER + ESC



2. AVAILABILITY ON DIFFERENT COOLER TYPES

	AITR	AITF	IBT	IBP	GP	FEET	ELECT. BOX	EXT. INVERTER	EL. SPEED CTR
OK-ELC/ ELD 0					X				
OK-EL/ ELC 1	X	X			X				
OK-ELD 1	X	X			X	X			
OK-ELD 1.5 - 6	X	X	X	X	X **	X			X
OK-ELC 2 - 7	X	X	X	X	X				
OK-EL2 - 14	X	X	X	X	X		X	X ***	
OKA EL 2,4 –11	X	X	X	X	X		X	X ***	
OKAF EL 2,4-11	X	X	X	X	X		X	X ***	
SC 1-4	X	X	X	X	X		X		
SCA 1-4	X	X	X	X	X		X		
SCAF 1-4	X	X	X	X	X		X		
OK-ELH 2 - 5	X	X	X	X	X **	X			
OK-ELH 6 - 11	X *	X	X	X	X				
OK-P 8 - 12	X	X	X	X	X				

* **:** not valid for ELH 8

** **:** only in combination with FEET

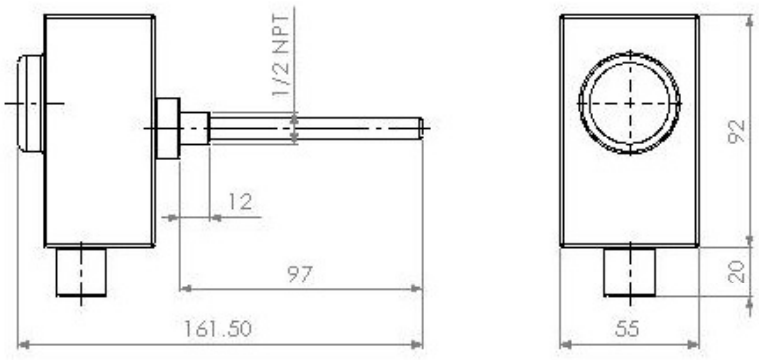
*** **:** only from EL-7 to EL-11

3. TECHNICAL DETAILS

1.1 AITR

Temperature range	0-90 +/-3°C
Switching differential	4-8°C
Storage Temperature	-15°C / +55°C
Contacts	Ag 1000/1000
Contacts capacity C1/C2	10(2.5)A 250 V / 6(2.5)A 250 V
Hydraulic connection thread	½ NPT or M 22 x 1.5
Max. head temperature	80°C
Max. bulb temperature	125 °C
Rate of T° change	1 K/min
Degree of protection	IP 40
Tracking resistance	PTI 250(KB250)
Max. hydr. pressure	10 bar

AITR

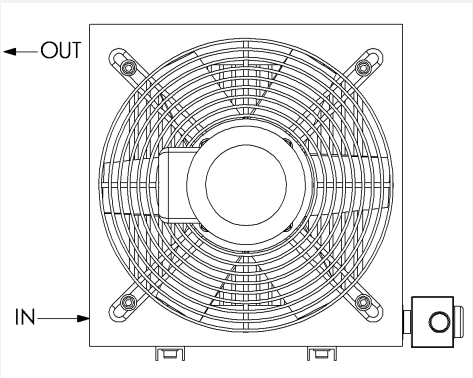


MODEL TYPE (also order example) / **AITR** /

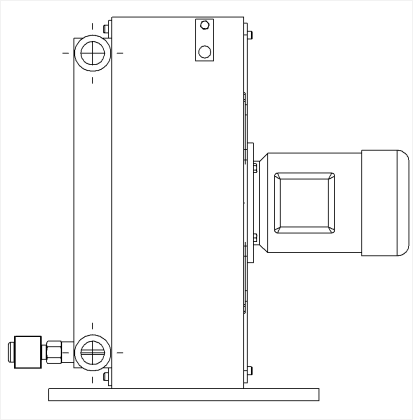
Connection block with thermostat: | **AITR: full kit** | **TR 1: only thermostat**

Note:
please check
compatibility in table § 2.0

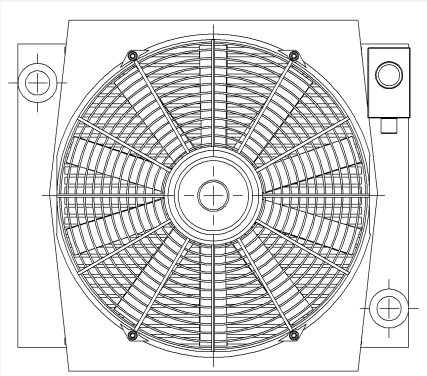
OK-EL1-5 / SC1-4



OK-EL6-11



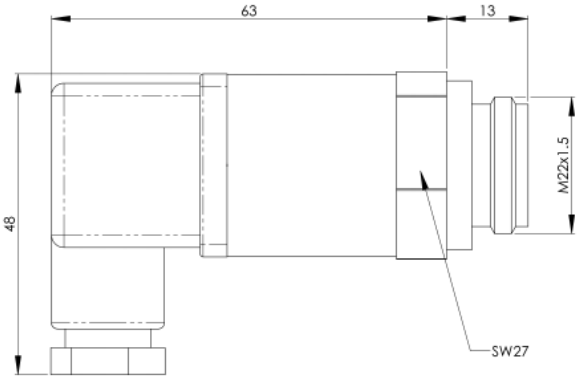
OK-ELC1-7



1.2 AITF

Operating Temperature	-20°C / +120°C
Case:	brass
Contacts:	N.O. (Normally Open)
Switching differential	10°C at temperature change rate of 0.5°C/min
Tolerance	+/-3.5°C at temperature change rate of 1°C/min
Operating voltage/current	220VAC / 10A – 125 VAC / 15A – 12-24 VDC / 10A
Minimum operating current	70mA
Electrical connections	according to EN 175301-803 Type A
Hydraulic connection thread	M22X1.5 standard
Seal material	NBR
Life time	100.000 cycles
Protection degree	IP65 standard
Max. pressure	200 bar
Weight	70 g
(Option):	12 - 24VDC integrated relè max 30A

AITF



MODEL TYPE (also order example) / **AITF 50 (RE 12V)** /

Relè's Voltage
Integrated Relè
Switching ON temperature
Connection block with thermostat: | **AITF: full kit** | **TF: only thermostat**

Note:
please check
compatibility with cooler model
in table § 2.0

MOUNTING POSITIONS:

SAME OF AITR (SEE ABOVE)

AVAILABLE RANGES

Switching ON T (°C)	Switching OFF T (°C)
100	90
90	80
80	70
70	60
60	50
50	40
40	30

1.3 **IBT**

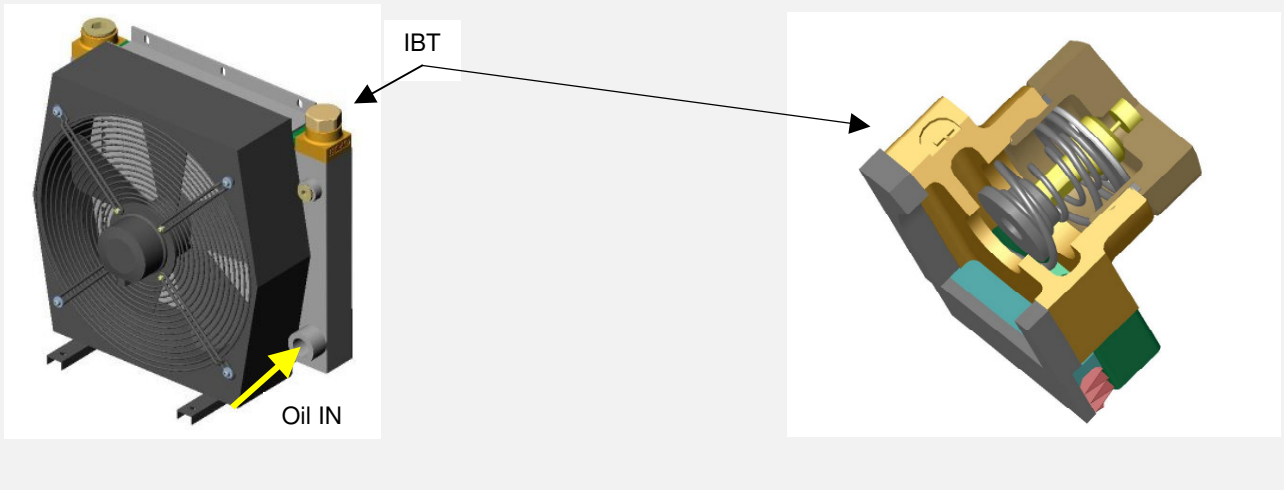
Warning:
Only suitable for coolers equipped with special IBT channel

- Fixed setting temperature value
- precise temperature control
- low pressure drop
- shock resistant
- can function in any position
- max. permitted pressure: 16 bar
- maintenance-free

Technical Data
Available with closing temperatures of :
25 °C >> IBT25-2 (3)
45 °C >> IBT45-2 (3) (4) (6)
50 °C >> IBT50-2 (3)
55 °C >> IBT55-2
60°C >> IBT60-2 (3)
65°C >> IBT65-2

MODEL TYPE (also order example): / **IBT 45 / 2 (3) (4) (6)**
- **Opening pressure drop:** 2, 3, 4, 6 bar
- **Starting Closing temperature**
- **IBT: thermostatic bypass valve**

Note: please check compatibility with cooler model in table § 2.0



1.4 **IBP**

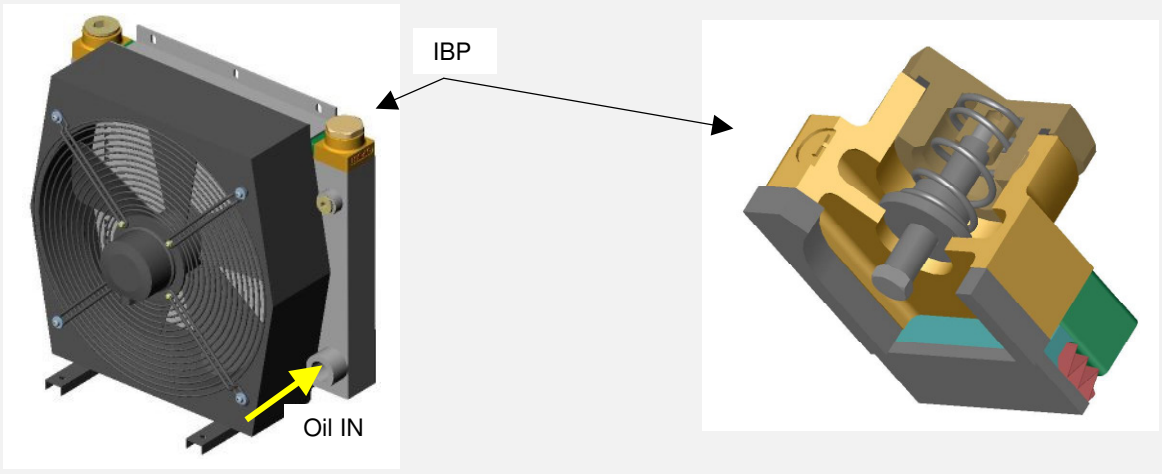
Warning:
Only suitable for coolers equipped with special IBP channel

Technical Data
Available with opening pressure of :

2 bar >> IBP2
3 bar >> IBP3
4 bar >> IBP4
6 bar >> IBP6

MODEL TYPE (also order example): / **IBP 2 (3) (4) (6)**
- Opening pressure
- **Integrated bypass valve**

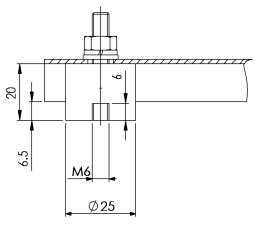
Note: please check compatibility with cooler model in table § 2.0



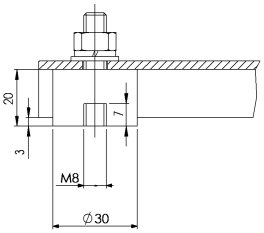
1.5 **GP**

GP:
- Material: NR
- Hardness: 57+/-5 Sh

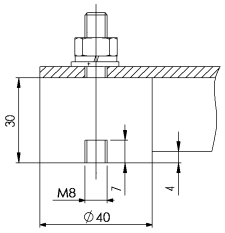
OK-EL 2,3; SC1
OK-ELH6; OK-ELC1-7



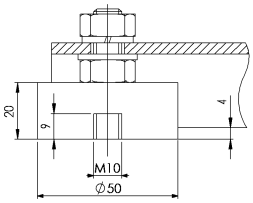
OK/OKA/OKAF EL4,5,6;
SC-0,1,2,3,4



OK-EL8
OK-ELH8



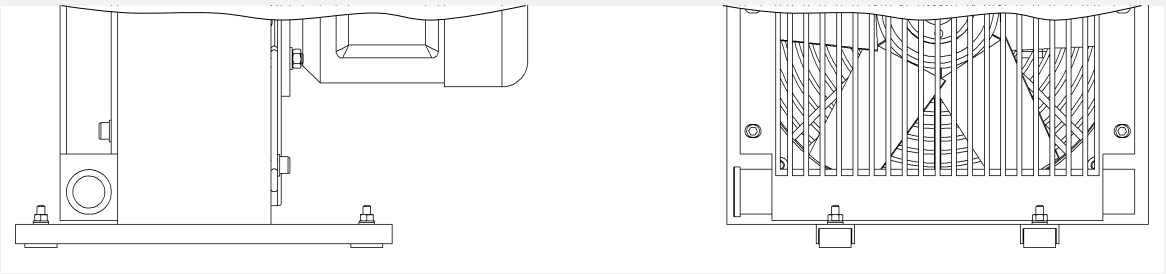
OK-EL9,10,11
OK-ELH9,10,11



MODEL TYPE (also order example): / **GP** /

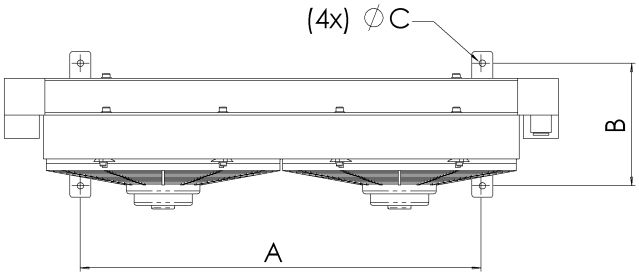
vibration absorbers

Note: please check compatibility with cooler model in table § 2.0



1.6 **FEET**

FOOT:
- The foot has to be mounted using a screw already existing in the cooler (fixing the element to the housing) plus an additional screw supplied together with the foot

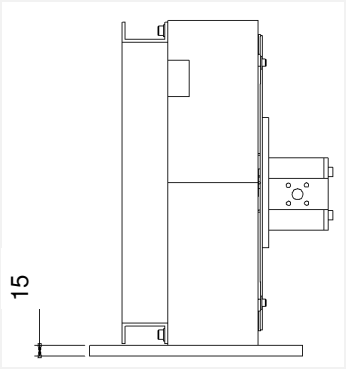


MODEL TYPE (also order example): / **FU** /

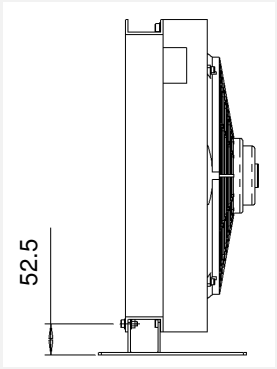
pair of feet

Note: please check compatibility with cooler model in table § 2.0

OK-ELH2-5



OK-ELD2-6

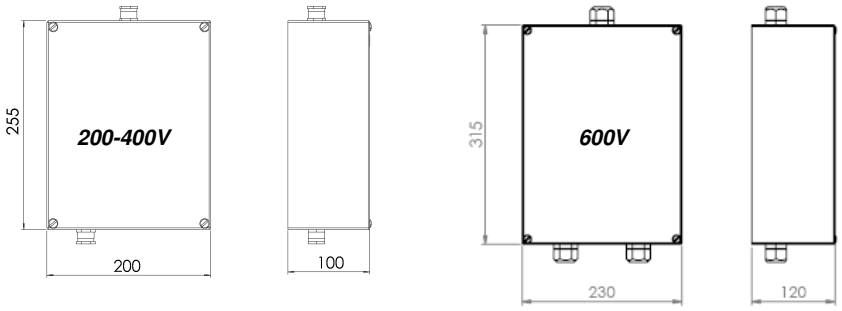


	Dim. A mm	Dim. B mm	Dim. C mm
OK-ELD1	265	210	11
OK-ELD2	249	210	11
OK-ELD3	289	210	11
OK-ELD4	389	210	11
OK-ELD4.5	342	210	9
OK-ELD5	599	210	11
OK-ELD6	689	210	11
OK-ELH2	160	255	9
OK-ELH3	240	255	9
OK-ELH4	255	255	9
OK-ELH5	255	255	9

1.7 ELECTRICAL BOX

ELECTRICAL BOX:

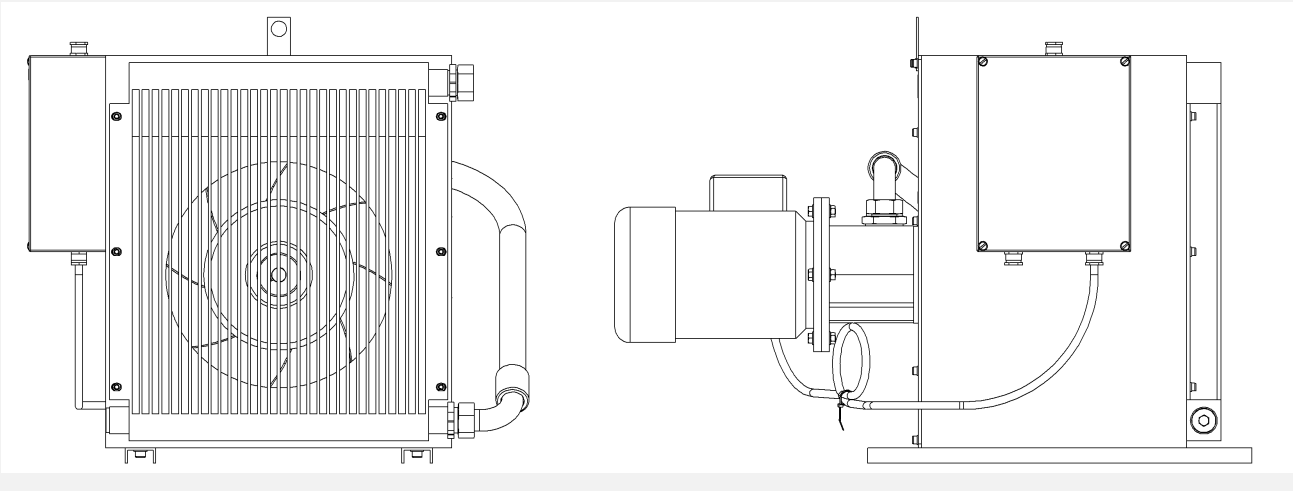
- Solenoid starter voltages: from 200V to 600V
- Thermal switch size: from 1.0A to 10A
- With and without external Cable
- Protection degree: IP 56

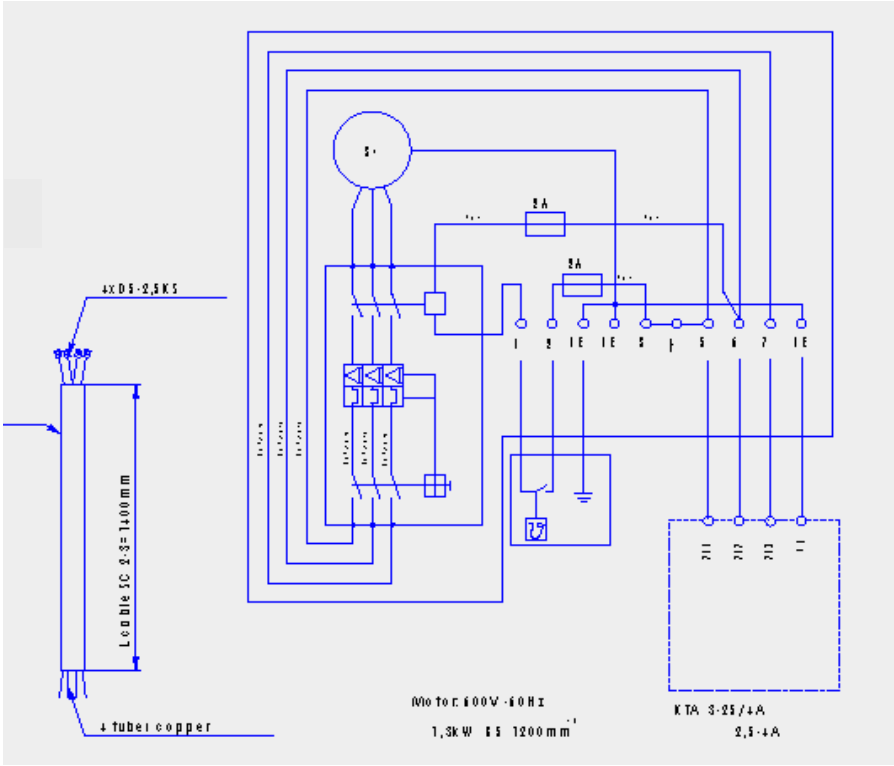


MODEL TYPE (also order example): / **EL.BOX** /

Electrical box

Note: please check compatibility with cooler model in table § 2.0





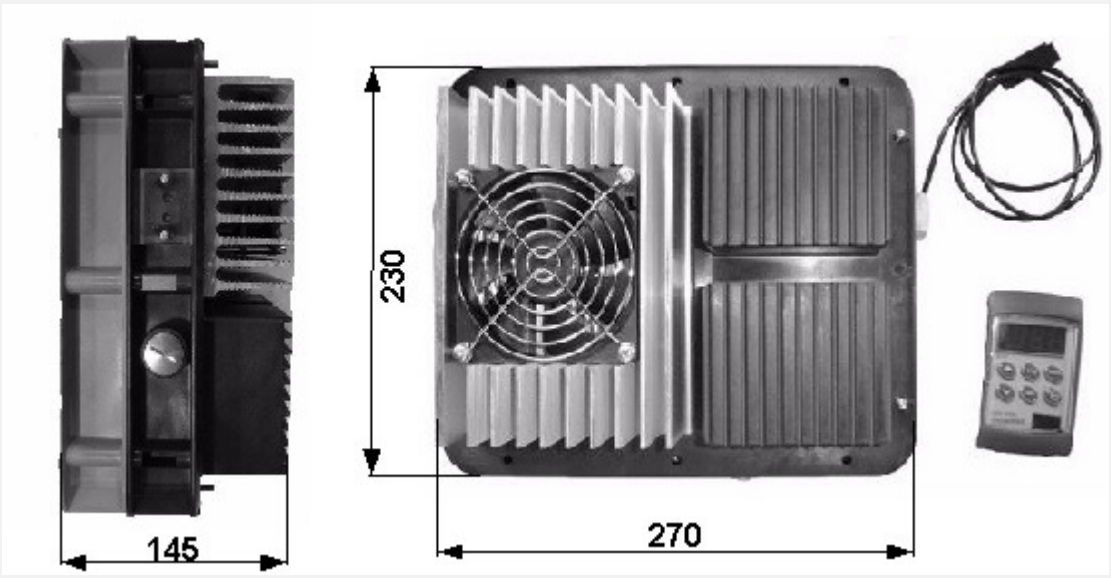
1.8 EXTERNAL ELECTRIC INVERTER

Max. Power	4 kW (possibility to add a second slave module of 4kW)
Max. Tension	440V
Cooling	independent fan mounted on the air fins
Protection degree	IP66
Control method	sine waves PWM
Frequency range	10 to 60 Hz
Protection features	current overload / short-circuit / phase loss / thermal protection
Operating temperature	-20 to 45 °C
Remote display	possibility of monitoring mains parameters on display

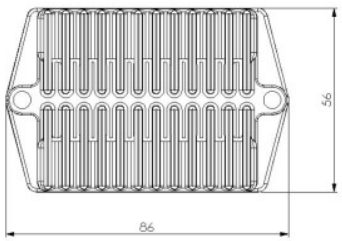
MODEL TYPE (also order example): **OK-EL**/ INV.EXT /**

Inverter External

Note: : please check compatibility in table § 2.0



1.9 ELECTRONIC SPEED CONTROL (only for DC fan-drives)



Temperature range	-20°C / +85°C
Working tensions	12 VDC or 24 VDC (with 25 A)
Life time	200.000 cycles
Protection level	IP 67
Electromagnetic compat.	EN 50082-2 / EN 50081-1/ DIN 40839 (note that the fan must have the EMC filter on the motor)
Protection features	low damp / polarity inversion / fan block (for that a fuse is necessary)
Fan controls	1) Thermostat ON-OFF 2) NTC and PTC [thermal sensors] 3) 0-5V signal
Additional functions	"Soft Start" with Max. current draw peaks +10% of the nominal current
Control method	sine waves PWM
Optional	Reverse rotational speed / diagnostic
Control Option	Up to 4 fan in parallel (MAX 25 A Total)

Operating Temperatures Range

MODEL TYPE (also order example):**OK-ELD ** / ESC 40-60 /**

Electronic Speed Control

Note:
please advise the Operating Temperature Range required