

Operating and Installation Instructions

Air Conditioning

Cool Top 110 | 140 | 190 | 220 | 250 | 300 | 360 RT-C



English

Deutsch

Français

Italiano

Español

Bedienungsanweisung

Notice d'utilisation

Istruzioni per l'uso

Instrucciones de uso

Table of Contents

1	About this document	3	4	User menu settings	5
1.1	Purpose of the document	3	4.1	Set temperature unit (°C / °F)	5
1.2	Using this document	3	4.2	Adjust display back-light	5
1.3	Use of symbols and highlighting	3	5	Error codes	5
1.4	Warranty and liability	3	6	Configuration menu	6
2	Safety	3	7	Installation	7
2.1	General safety	3	7.1	Display dimensions	7
2.2	Intended use	3	7.2	Display connector	7
3	Operation	4	7.3	Complementary connecting harness	7
3.1	Control element	4	8	Technical data	7
3.2	Buttons	4	9	Technical support and customer service	7
3.3	Display symbols	4	9.1	CE-Declaration of Conformity	7
3.4	Switch system ON	4	10	Disposal	7
3.5	Switch system OFF	4	11	Maintenance	8
3.6	Temperature set during operation	4			
3.7	Ventilation speed regulation	4			
3.8	Recirculated or fresh air mode	5			

1 About this document





1.1 Purpose of the document

The operating instructions are part of the product and provides the user with information on the safe operation of the unit.

1.2 Using this document

- ▶ Read these operating instructions before operating the unit.
- ▶ Keep these operating instructions ready to hand.
- ▶ Hand these operating instructions on to the following owner or user of the unit.

1.3 Use of symbols and highlighting

	Explanation
▶	Action to be taken
✓	Requirements for the following necessary action
	Note on a special technical feature
	Separate information is available
	Possibility on property damage
	Possibility on a severe or mortal injury

1.4 Warranty and liability

Webasto shall not assume liability for defects or damage that are the result that the installation and operating instructions as well as the instructions contained therein being disregarded.

This liability exclusion particularly applies for:

- improper use
- repairs not carried out by a Webasto service workshop
- use of non-genuine parts
- conversion of the unit without permission from Webasto
- mechanical damage to the equipment
- failure to comply with inspection and maintenance instructions

2 Safety

2.1 General safety

Please note that the configuration of the insulation/cooling affects the storage capacity of the vehicle. When making use of the maximum storage capacity and the seats, also comply with the permissible axle load.

2.2 Intended use

The control element is designed to control Webasto Cool Top air conditioning systems for:

- mini-bus
- midi-bus
- bus



ATTENTION

Misuse as a result of failure to comply with the operating instructions

Result: damage to the A/C system

- ▶ Follow the operating instructions.



The performance values of your application are closely related to ambient conditions, vehicle insulation, etc. The actual temperature may therefore deviate from the set value.



The A/C system only operates with the vehicle engine running.



In the case of vehicles fitted with automatic start-stop control, the function must be switched off while operating the A/C system. For information on the control and function of the automatic start-stop control, please read the operating instructions for your vehicle.

3 Operation

3.1 Control element



Fig. 01: Display

3.2 Buttons

	A/C	Manual cooling ON or OFF
		Start A/C in Auto mode
		Recirculated air mode ON / OFF
	Up	<ul style="list-style-type: none"> ■ Increase values
	Down	<ul style="list-style-type: none"> ■ Decrease values
	On/Off	<ul style="list-style-type: none"> ■ Switches the A/C system ON / OFF

3.3 Display symbols

Symbol	Description
	Cooling ON and compressor OFF
	Cooling and compressor ON
	A/C running in automatic mode
	Ventilation runs in automatic speed control
	Ventilation runs in manual speed control
	Fresh air closed
	Fresh air opened
°C / °F	Celsius / Fahrenheit
SP	Set-point
	Warning

3.4 Switch system ON

✓ Screen in OFF mode



Press "On/Off" button

- The compressor and the fan will start up.



3.5 Switch system OFF

The system automatically shuts down when you switch off the vehicle but retains the saved settings. To manually restart the system, press the ON/OFF button.

✓ Screen in ON mode



Press "On/Off" button



3.6 Temperature set during operation

✓ System is switched ON



- ▶ Press button "Auto mode" to switch between temperature setting and Fan speed regulation.



- ▶ Press button "Up" to increase the temperature value



- ▶ Press button "Down" to decrease the temperature value



The temperature value is stored in the control element.

The temperature range is limited between 18°C and 28°C

The display shows:

- "Lo" when temperature is set lower than 18°C
 - The A/C system runs at maximum cooling capacity
- "Hi" when temperature is set higher than 28°C
 - The A/C runs at maximum heating capacity (Only if heating kit is installed)

3.7 Ventilation speed regulation



- ▶ Press button "Auto mode" to switch between temperature setting and ventilation speed regulation.*



- ▶ Press button "Up" to increase the ventilation speed



- ▶ Press button "Down" to decrease the ventilation speed



* Ventilation in manual mode: The ventilation speed is fixed.

* Ventilation in auto mode: The ventilation speed depends on the difference between temperature setting and the actual measured temperature.

3.8 Recirculated or fresh air mode



Function is only available on systems with fresh air kit installed.

Fresh air mode is optional. Contact Webasto.

Air is drawn in from the outside (fresh air mode) or recirculated inside (recirculated air mode).



▶ Press button "Recirculated air mode" to switch between fresh air and recirculated air.

– Fresh air mode selected



– Recirculated air mode selected



4 User menu settings

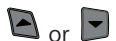
The user can adjust the following settings

- Temperature unit (°C / °F)
- Display backlight

4.1 Set temperature unit (°C / °F)



▶ Press both for 3 sec



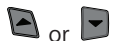
or



▶ Press until display shows "Tum"



▶ Press "Auto mode" to enter "Tum"



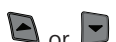
or



▶ Press to switch between Celsius and Fahrenheit



▶ Press "Auto mode" to save selection



or



▶ Press until display shows "out"

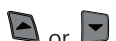


▶ Press "Auto mode" to leave the user menu

4.2 Adjust display back-light



▶ Press both for 3 sec



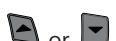
or



▶ Press until display shows "Dim"



▶ Press to enter "Dim"



or



▶ Press to increase or decrease the display back-light (0 - 10)



▶ Press "Auto mode" to save selection



or



▶ Press until display shows "out"



▶ Press "Auto mode" to leave the user menu



5 Error codes

If an error occurs then a warning code is visible in the screen.

The warning symbol flashes for 3 seconds during 30 seconds



Error code	Description	Troubleshooting
033	Empty refrigerant circuit	Check refrigerant charge. Check refrigerant leakage. Refill.
118	Short circuit on one of the digital outputs	Check digital output and relays.
120	Water valve feedback	Check water valve and its connections
125	Short circuit with sensor	Check NTC 2 Supply air temperature sensor
127	Short circuit with sensor	Check NTC 1 Internal temperature sensor
129	Short circuit with sensor	Check NTC 3 External temperature sensor
130	Short circuit with sensor	Check NTC 4 Internal auxiliary temperature sensor
132	Short circuit with transducer	Check low pressure transducer connection
133	Short circuit with transducer	Check high pressure transducer connection
143	Broken connection with sensor	Check NTC 2 Supply air temperature sensor
145	Broken connection with sensor	Check NTC 1 Internal temperature sensor
147	Broken connection with sensor	Check NTC 3 External temperature sensor
148	Broken connection with sensor	Check NTC 4 Internal auxiliary temperature sensor
150	Broken connection with transducer	Check low pressure transducer connection
151	Broken connection with transducer	Check high pressure transducer connection
162	Battery overvoltage	Check battery. Power supply voltage above 16 V (12 V) or 32 V (24 V).
163	Battery undervoltage	Check battery. Power supply voltage below 9 V (12 V) or 18 V (24 V).
164	Transducers supply (5 V) undervoltage	Check transducers supply line. Power supply voltage below 4,95 V.
167	Overcurrent fresh air motor	Check motor and its connections. Current over 1.5 A
168	Overcurrent water valve	Check water valve and its connections. Current over 1.5 A

Tbl. 01: Error codes

6 Configuration menu

There are several options for the Cool Top. The installer supplies a working system with the control element configured according the installed options.

If the system changes or a new control element need to be installed then the configuration need to be changed.



ATTENTION

If you are unfamiliar with the system then do not change settings. Only a Webasto service workshop can use this menu.

Result: Change of settings could lead to system malfunction.

► Contact Webasto in case you have doubts about the configuration settings.



► Press and hold for 3 seconds to enter the configuration menu



► Press to switch between the parameters



► Press to show the current parameter setting



► Press to change the parameter setting



► Press to save the parameter setting.

Parameter	Code Parameter Name	Default Value for Cool Top								Range	R/W*	Description	
		RTC 110/140 12V	RTC 110/140 24V	RTC 110/140 12V + FA	RTC 110/140 24V + FA	RTC 190/220 12V	RTC 190/220 24V	RTC 190/220 24V + HEAT	250/300/360 24V				250/300/360 24V + HEAT
Ext	External temperature sensor (NTC 3)	---	---	---	---	---	---	---	---	---	R	Measures the external air temperature	
In1	Internal temperature sensor (NTC 1)	---	---	---	---	---	---	---	---	---	R	Measures the internal air temperature	
In2	Internal auxiliary temperature sensor (NTC 4)	---	---	---	---	---	---	---	---	---	R	Measures the Internal air temperature	
Mix	Supply air temperature sensor (NTC 2)	---	---	---	---	---	---	---	---	---	R	Measured the supplied air temperature	
Vb	Vehicle battery voltage	---	---	---	---	---	---	---	---	---	R	Measures the battery voltage	
Vs	Sensor supply voltage (5 V)	---	---	---	---	---	---	---	---	---	R	Current value measured of the sensors voltage	
Rel	Release Software	---	---	---	---	---	---	---	---	---	R	Display 102 is version 1.02	
Cnf	Configuration of the operating mode	0	0	0	0	0	0	1	0	1	0-1	R/W	0 = A/C (without heating kit) 1 = HVAC (with heating kit)
Act	Activation of fresh air	0	0	1	1	1	1	1	1	1	0-1	R/W	0 = Fresh air kit not present 1 = Fresh air kit present
Ntc	Activation of internal auxiliary temperature sensor (NTC 4)	0	0	0	0	0	0	1	0	1	0-1	R/W	0 = only internal air sensor present 1 = both internal and auxiliary air sensors present
Bat	Configuration of vehicle battery	0	1	0	1	0	1	1	1	1	0-1	R/W	0 = 12 V / 1 = 24 V
Blw	Configuration of the blowers mode (ONLY for Cool Top RT-CW)	---	---	---	---	0	0	0	---	---	0-1	R/W	0 = 3 speeds (S1, S2 and S3) 1 = linear speed for Cool Top RT-CW (S1, S2, S3, S4, S5 and S6)
Cmp	Configuration of the compressor type	---	---	---	---	0	0	0	1	1	0-1	R/W	0 = Short time delay compressor (Sanden, Valeo) 1 = Long time delay compressor (Bock)
Out	Exit from menu	---	---	---	---	---	---	---	---	---	---	--	Exit from configuration menu

* R = Read only / W = Write

Tbl. 02: Control element parameters

7 Installation

Find the right place in the drivers cabin where the display will fit.



ATTENTION

Wrong chosen location for cut-out

Result: Damage of wiring and or components behind the panel.

- ▶ Check space behind panel before making the cut-out.

7.1 Display dimensions

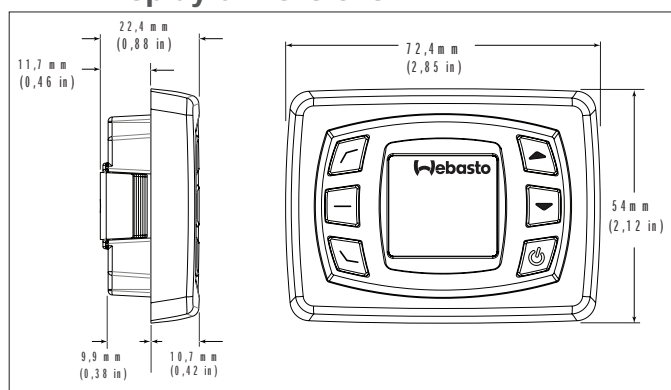


Fig. 02: Display dimension

- ✓ Location for control panel has been checked

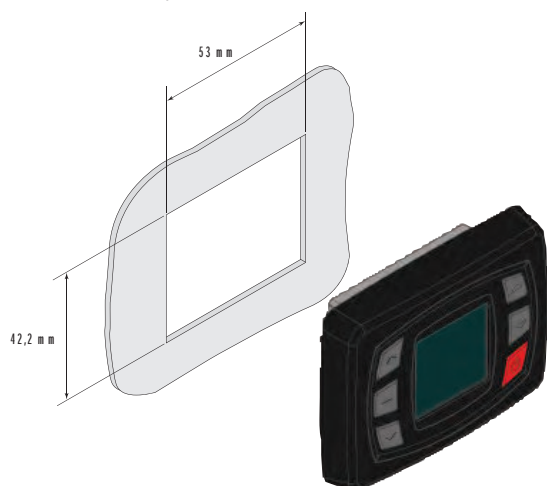


Fig. 03: Panel cut-out

- ▶ Make a cut-out of 53 mm wide and 42,2 mm high.

7.2 Display connector

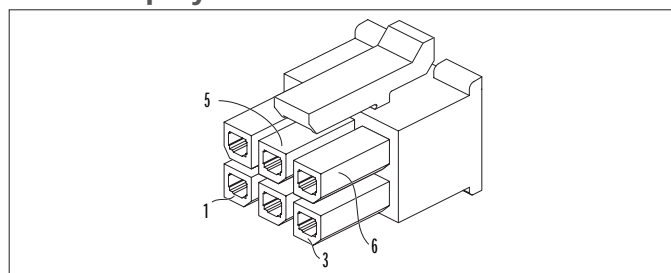


Fig. 04: 6 pin connector

Pin	Remark	Wire number	Wire colour
1	CAN H	13	Yellow
2	--		
3	CAN L	12	Green
4	--		
5	GND	B-17	Black
6	+12 VDC / +24 VDC	027	Red

Tbl. 03: 6 pin connector, pin assignment

7.3 Complementary connecting harness

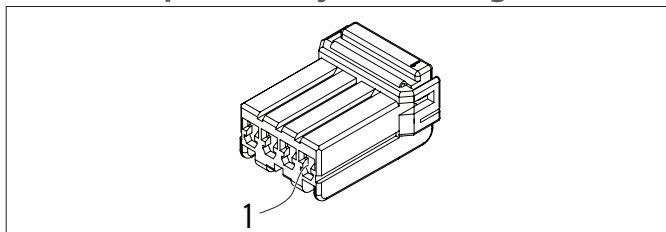


Fig. 05: 4 pin connector

Pin	Remark	Wire number	Wire colour
1	CAN H	13	Yellow
2	CAN L	12	Green
3	GND	B-17	Black
4	+12 VDC / +24 VDC	027	Red

Tbl. 04: 4 pin connector, pin assignment

8 Technical data

Description	Value
Operating voltage range [V]	12-24
Current consumption [mA]	50
Output short circuit protection	Protected
Polarity reverse protection	Protected
Operating temperature range [°C]	-40 to +80
Temperature sensor	NTC 10 kΩ @ 25 °C
Protection IEC-60529 (front panel)	IP54

9 Technical support and customer service

Do you have any technical questions or problem with the device?

National phone numbers of our representatives are provided on the following website: www.webasto.com.

9.1 CE-Declaration of Conformity

Webasto hereby declares that the control element conforms UNECE Regulation No. 10

The complete text of the CE-declaration of conformity is available on the download area of <https://dealers.webasto.com>

10 Disposal

When you eventually decommission the system, please dispose of the individual components properly at a recycling centre

11 Maintenance

Component	Item	Possible reason	Period		
			5,000 km	35,000 km	Annual or 100,000 km
Compressor	Compressor belt	Wear			Change
	Belt tension (it is important that the belt is allowed to cool before re-tensioning)	Loose tension	Check/Repair	Check/Repair	
	Idle pulley	Noise/Blocked		Change	
	Automatic belt tightener (if present)	Noise/Blocked		Change	
	Tightening bolts	Loose fastening			Check/Repair
	Compressor	Noise/Blocked			Check/Repair
	Compressor pulley	Clutch engagement			Check/Repair
Evaporator and Condenser	Drier filter	Poor efficiency			Change
	Condenser fin	Dirty/Leakage			Check/Repair
	Evaporator fin	Dirty/Leakage			Check/Repair
	Condensation drain water	Water inside vehicle			Check/Repair
	Centrifugal blower or axial fan	Noise/Blocked			Check/Repair
Others	Internal temperature	Poor A/C efficiency			Check/Repair
	A/C system pressure test	Poor A/C efficiency			Check/Repair
	Integrity of wiring connections	No work or intermittent operation			Check/Repair
	Status of refrigerant pipes and fittings	A/C systems empty Poor A/C efficiency			Check/Repair
	Refrigerant R134a charge	A/C systems empty Poor A/C efficiency			Refill
	Oil compressor	Oil removed during charging of the refrigerant			Refill
	Tightening control	Blocked			Check/Repair

Tbl. 05: Maintenance

In multilingual versions the English language is binding. You can request your language if it is missing.

The telephone number of the respective country can be obtained from the Webasto service point flyer or the homepage of your respective Webasto country representative.

Bei mehrsprachiger Ausführung ist Englisch verbindlich. Sollten Sprachen fehlen können diese angefordert werden.

Die Telefonnummer des jeweiligen Landes entnehmen Sie bitte dem Webasto Servicestellen-Faltblatt oder der Webseite Ihrer jeweiligen Webasto Landesvertretung.

Dans le cas d'une version rédigée en plusieurs langues, l'anglais est alors la langue qui fait foi. Si des langues devaient manquer, il est possible de les demander.

Pour trouver le numéro de téléphone du pays concerné, veuillez consulter le dépliant des points-service Webasto ou la page web de la représentation Webasto de votre pays.

In caso di versione multilingue, fare riferimento alla lingua inglese. Nel caso in cui mancassero alcune lingue, è possibile richiederle.

Il numero di telefono relativo al paese specifico è indicato sull'opuscolo del centro servizi Webasto ed è disponibile sul sito web della propria filiale Webasto.

Este manual esta traducido en varios idiomas, le informamos que sólo la versión en inglés será vinculante. Se pueden solicitar otros idiomas, en caso de que falte alguno.

Consulte el número de teléfono del país correspondiente en el folleto de los servicios autorizados Webasto, o en la página web de su representante Webasto.

Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany

Company Address:
Friedrichshafener Str. 9
82205 Gilching
Germany

Internet: www.webasto.com

www.webasto.com