W220 S-Class Automatic Climate Control (ACC) Hidden Service Menus

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1. Revisions

2012-01-10 Version 1: Original Document
2012-02-14 Version 2: Incorporated comments by BenzWorld Poster Jerry at post #24 http://www.benzworld.org/forums/w220-s-class/1624008-help-diagnosing-auto-climate-control-issue-3.html
2012-02-17 Version 3: Incorporated more translation suggestions by BenzWorld Poster Jerry at post #36 http://www.benzworld.org/forums/w220-s-class/1624008-help-diagnosing-auto-climate-control-issue-4.html
2012-05-26 Version 3: Incorporated additional information gleaned from the Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA.
2012-11-09 Version 3: Incorporated more information re Parameters NR.09: and NR.19: re “Unterkühlung” and data for several unknown parameters by BenzWorld Poster Jerry at posts #39 and #41 http://www.benzworld.org/forums/w220-s-class/1624008-help-diagnosing-auto-climate-control-issue-4.html
2013-10-23 Version 3: Incorporated more information re Parameter NR.99: re “Inner Regler {Internal Controls}” and Parameter NR.96: “A/C Compressor Torque (Nm) Value: 0 Nm – TBD Nm” supplied by BenzWorld Poster Bullethead_D at post #48 http://www.benzworld.org/forums/w220-s-class/1624008-help-diagnosing-auto-climate-control-issue-5.html

2. Introduction

Now that I know I can edit an uploaded post I would like to share my research to date on the Automatic Climate Control (ACC) Hidden Menus.

It is very much a draft and I do not wish to seem presumptuous, but as a retired scientist/engineer and a newbie to this Forum, I found a lot of the information on the ACC on the various Forums confusing, and often conflicting. My way of unravelling the information was to list each piece as it was discovered, often by chance, in an orderly fashion, and to then condense it down to as many basic facts as possible.

Hence this document was formed.

I then performed many tests in an attempt to reverse engineer, ie discover by testing and analysis, what the information really meant and the range of parameter values.

I know that the information is incomplete and there are bound to be many errors so please post any changes, additions and corrections etc and I will edit and repost. That way the document will hopefully evolve into a definitive one for the W220 2003 Update S-Class Automatic Climate Control (ACC).

Note extra information is needed wherever there is:

TBD means 'To Be Determined'.
TBC means 'To Be Confirmed'.
?? means 'Don't Know'.

3. Acknowledgement

My main reference was: http://www.benzworld.org/forums/w220-s-class/1438619-w220-hidden-menu-maybe-electronic-choke.html

I would like to acknowledge the excellent contributions of Benzworld Contributors; Skylaw, thepcpro, eric242340, mvmiller, Benz915, Magnified, alberto_robles, SirHumphrey, benzboyz, Jerry, Bullethead_D et alia. My apologies if I have forgotten any other significant contributors on this subject.

Note some words are in German with the English translation, where known, shown in braces eg. Deutsch {German}.

4. Description

There are three hidden menus available in the W220 Auto Climate Control (ACC). These are used to:

- **Access/Review/Read Auto Climate Control (ACC) Actual Parameter Values Menu**,
- **ACC Flap/Vent, Engine Fan and A/C Compressor Test Menu**, and
- access/review/read and clear/reset **ACC Fault/Error Diagnostic Trouble Codes (DTC).**

5. Automatic Climate Control (ACC) Vents and Outlets Legend

The following diagram defines the names of the various ACC flaps, vents and outlets.

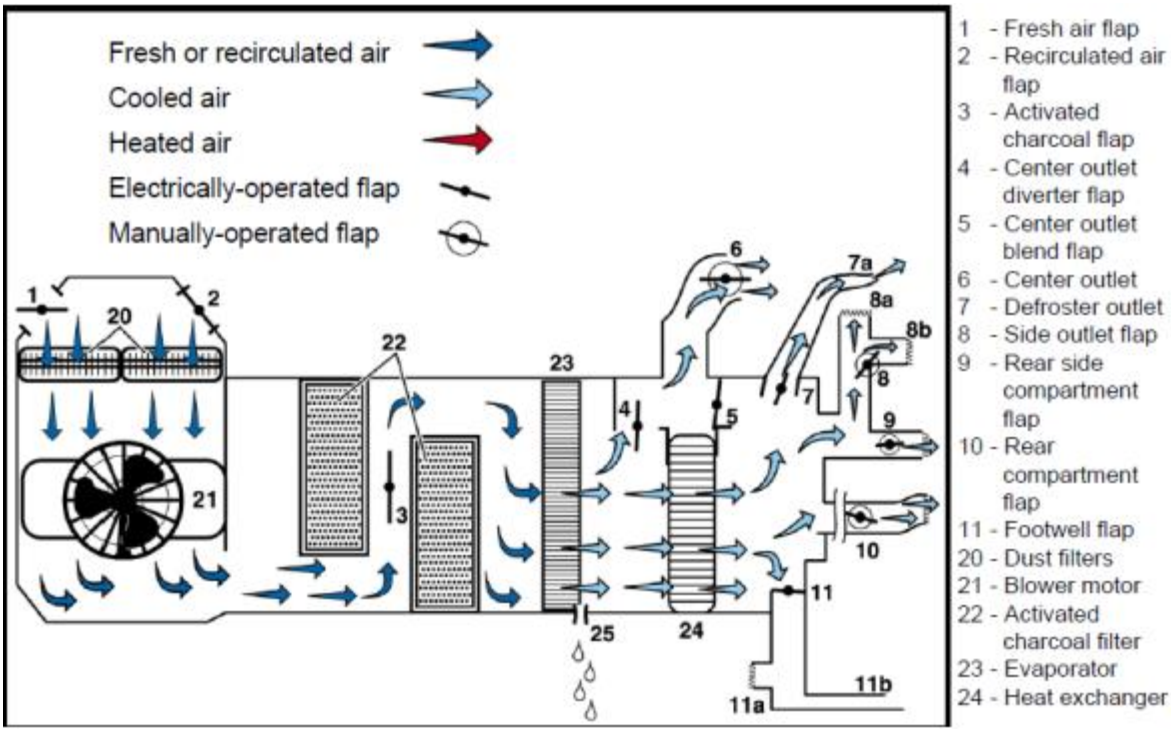


Figure 1 Definition of W220 Automatic Climate Control (ACC) Flaps/Vents/Outlets

#1 Fresh Air Electrically-operated Flap
#2 Recirculated Air Electrically-operated Flap
#3 Activated Charcoal Filter (ACF) Electrically-operated Flap
#4 Centre Outlet Diverter Electrically-operated Flap Front Compartment
#5 Centre Outlet Temperature Regulating/Blend Electrically-operated Flap Front Compartment
#6 Centre Outlet Left and Right Manually-operated Flap Front Compartment
#7 Defroster Outlet Electrically-operated Flap Front Compartment
#8 Side Outlet Left and Right Manually-operated Flap Front Compartment
#8a Side Window Fixed Outlet Left and Right Front Compartment
#8b Side Door Fixed Outlet Left and Right Front Compartment
#9 Side Outlet (B Pillar) Left and Right Manually-operated Flap Rear Compartment
#10 Centre Outlet Manually-operated Flap Rear Compartment
#11 Footwell Left and Right Electrically-operated Flap Front and Rear Compartment
#11a Footwell Outlet Left and Right Front Compartment
#11b Footwell Outlet Left and Right Rear Compartment
#20 Cabin Ventilation Dust Filters
#21 Automatic Climate Control (ACC) Blower
#22 Aktivkohle Filters (AKF) {Activated Charcoal Filters (ACF)}
#23 A/C Evaporator Front Compartment
#24 Heat Exchanger/Heater Core Front Compartment

These numbers are referred to throughout this document.

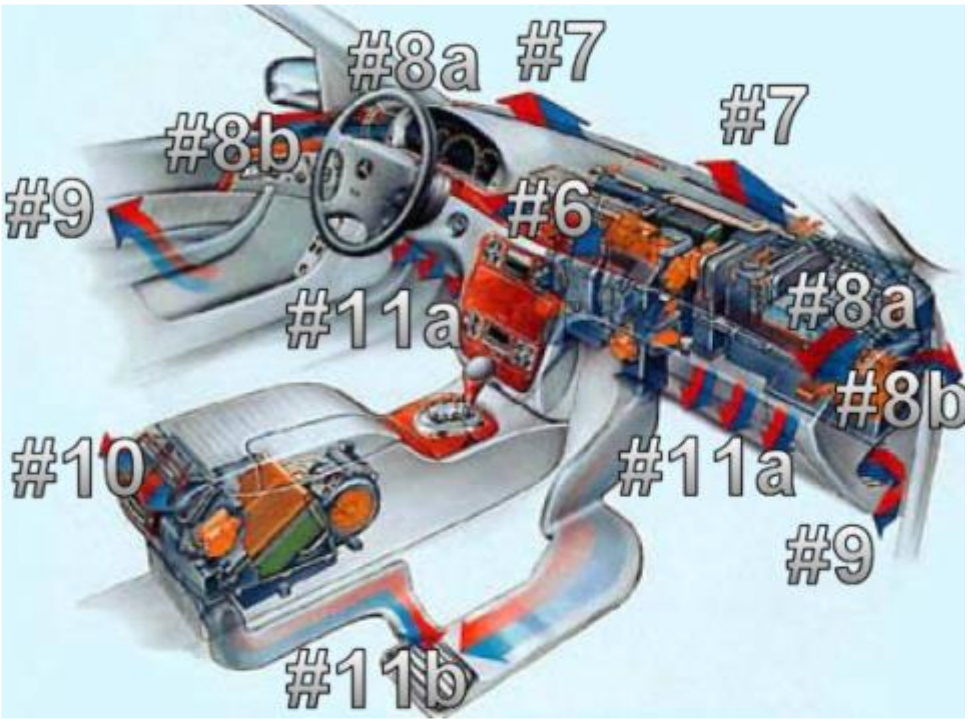
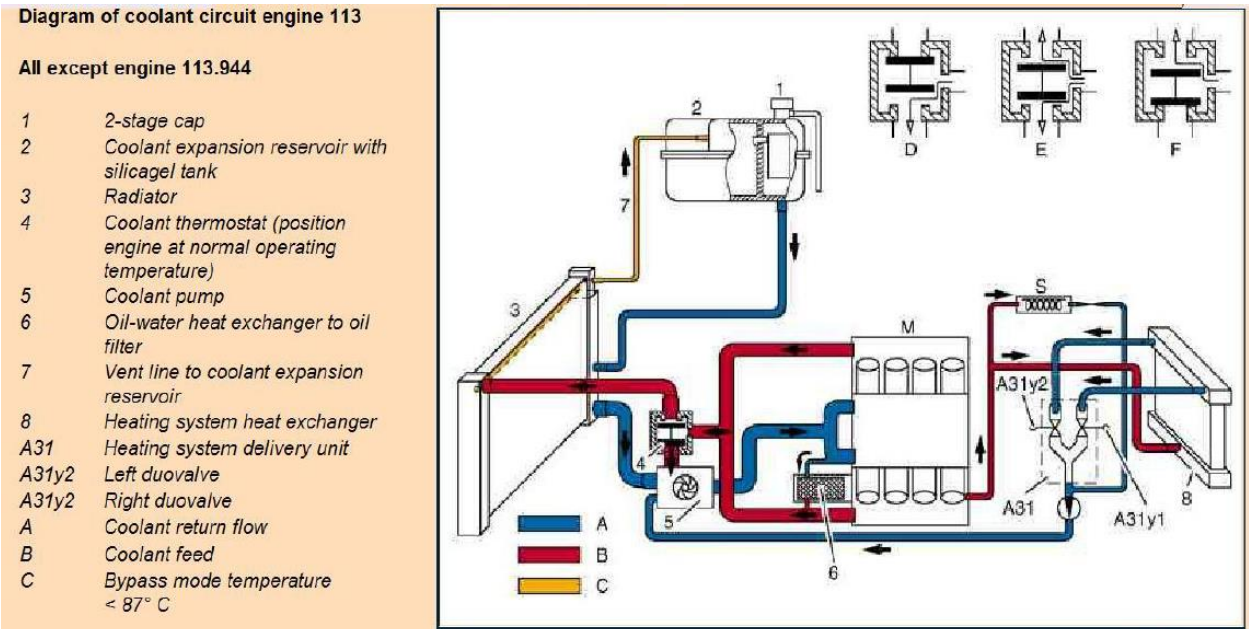


Figure 2 Location of W220 Automatic Climate Control (ACC) Flaps/Vents/Outlets

6. M113 Engine Coolant Circuit Diagram



7. Access/Review/Read Auto Climate Control (ACC) Actual Parameter Values Menu

7.1. Aim

This Menu allows an access/review/read of the Auto Climate Control (ACC) actual parameter values during normal operation.

7.2. Example

For example the actual temperature sensed by various sensors can be reviewed and the amount of opening of various flaps as determined by the Auto Climate Control (ACC) Module can be monitored.
Some controls may be varied in real time and the result monitored via this Menu, eg moving the Centre Vent (N18/4) Centre Potentiometer results in Parameter NR.28: changing value from 0% – 100%.

7.3. Method

Press Residual Heat and Ventilation (REST) button alone for greater than five seconds with ignition on (position 2) or with engine running.

Figure 3 Residual Heat and Ventilation (REST) Button

Diagnostic returns Parameters NR.00: – NR.99: one at a time without a legend.
Use the Left Increase or Decrease Temperature Button to scroll between Parameters.

Figure 4 Left Increase or Decrease Temperature Button

Press Residual Heat and Ventilation (REST) button to exit Diagnostic Menu.

7.4. Legend and Typical Values

Parameter	Legend	Value Engine Off and Cold[1]	Value Maximum Cooling Engine at Idle[2]	Value Vehicle at Speed[3]
NR.00:	In Car Temperature Sensor (N22/b1), ACC Pushbutton Control Module (N22) Front Compartment	+25,0ºC	+22,4ºC	+23,2ºC
NR.01:	In Car Temperature Sensor (N70b1), Overhead Control Panel (OCP) (N70)	+26,2ºC	+21,7ºC	+27,7ºC
NR.02:	Outside/Ambient Temperature Sensor (B14)	+22,5ºC	+42,5ºC	+35,5ºC
NR.03:	Heater Core Temperature Sensor Left (B10/2) Front Compartment	+22,3ºC	+18,9ºC	+2,4ºC
NR.04:	Heater Core Temperature Sensor Right (B10/3) Front Compartment	+22,2ºC	+11,9ºC	+2,2ºC
NR.05:	Evaporator Core Temperature Sensor (B10/6) Front Compartment	+22,6ºC	+2,8ºC	+2,1ºC
NR.06:	Engine Coolant Temperature Sensor (B11/4)	+20ºC	+93ºC	+82ºC
NR.07:	Refrigerant (R134A) Pressure Sensor (B12) Value: 7,5 bar (Stand-by) – about 16 bar (A/C on) TBC	5,4b	14,3b	12,8b
NR.08:	Refrigerant (R134A) Temperature Sensor	+20,7ºC	+48,1ºC	+37,8ºC

[1] ACC Settings Engine Off: Centre Vent: AUTO, Left Temp: 22ºC, Right Temp: 21ºC, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: Off, Recirculate: Off
[2] ACC Settings Maximum Cooling: Centre Vent: AUTO, Left Temp: LO, Right Temp: LO, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: Off, Recirculate: Off
[3] ACC Settings at 105Km/h: Centre Vent: MANUAL, Left Temp: 22ºC, Right Temp: 21ºC, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: On, Recirculate: Off

Parameter	Legend	Value Engine Off and Cold[1]	Value Maximum Cooling Engine at Idle[2]	Value Vehicle at Speed[3]
	(B12/1)			
NR.09:	L Unter {Under} ~~Kümlung {??}~~ Kühlung {Cooling} and possibly L Unterkühlung {Cooling Lower} also L Unterkuehlung {degrees the refrigerant is cooled before it exits the condenser}[4]	+4,9K	+9,1K	+9,4K
NR.10:	Blower Control Voltage, Front Compartment Value: 1.5, 1.8, 2.1, 2.4, 3.0, 3.8, 6.0 Volts Value: 1, 2, 3, 4, 5, 6, 7 ACC Display Bars	1.5 V	1.8V	2.1V
NR.11:	4 Quadrant Sun Sensor (B32/2) Front Left Value: 0% – 125%	8%	14%	22%
NR.12:	4 Quadrant Sun Sensor (B32/2) Front Right Value: 0% – 125%	6%	52%	61%
NR.13:	4 Quadrant Sun Sensor (B32/2) Rear Right Value: 0% – 125%	5%	121%	125%
NR.14:	4 Quadrant Sun Sensor (B32/2) Rear Left Value: 0% – 125%	6%	58%	78%
NR.15:	Average Insolation Value: 0% – 125%	6%	61%	74%
NR.16:	Multi-function Sensor, Carbon Monoxide (CO) (B31/1) Value: 0 – 1023	788	813	75
NR.17:	Multi-function Sensor, Nitrous Oxide (NOx) (B31/1) Value: 0 – 1023	15	19	26
NR.18:	Multi-function Sensor, Dew Point Temperature (B31/1)	+15,5ºC	+17ºC	+19,5ºC
NR.19:	Max Unter {Under} ~~Kümlung {??}~~ Kühlung {Cooling} and possibly Max Unterkühlung {Cooling Lower} } also Max Unterkuehlung {degrees the refrigerant is cooled before it exits the condenser}[5]	+4,8K	+9,7K	+13,8K
NR.20:	Engine Coolant Electric Suction Fan (M4/3) Rotation. Value: 0% – 100%	25%	33%	0%
NR.21:	Engine Speed	0/min	539/min	1620/min
NR.22:	Ground Speed	0km/h	0km/h	105km/h
NR.23:	Bel. Most likely an abbrev. for Beleuchtung {Illumination, Lighting} Dimmung {Dimming}	0%	0%	0%
NR.24:	Battery Voltage	11,7 V[6]	12,9 V	13,9 V
NR.25:	Not Used			
NR.26:	Not Used			
NR.27:	Centre Vent (N18/4) Left Potentiometer Front Compartment Value: 0% – 100%	100%	100%	100%

[4] Refer to Section Unterkühlung at end of document.
[5] Refer to Section Unterkühlung at end of document.
[6] Later note: This was taken with the original German battery (9 year old). The battery voltage should not go below 12.4V for reliable ECU behaviour.

Parameter	Legend	Value Engine Off and Cold[1]	Value Maximum Cooling Engine at Idle[2]	Value Vehicle at Speed[3]
NR.28:	Centre Vent (N18/4) Centre Potentiometer Front Compartment Value: 0% – 100%	0%	0%	14%
NR.29:	Centre Vent (N18/4) Right Potentiometer Front Compartment Value: 0% – 100%	100%	100%	100%
NR.30:	Heat Exchanger Air Temperature Left, Rear Passenger Compartment (B10/9)	41C		
NR.31:	Heat Exchanger Air Temperature Right, Rear Passenger Compartment (B10/10)	78C		
NR.32:	Evaporator Core Temperature Sensor, Rear Passenger Compartment (B10/11)	8C		
NR.33:	Blower Control Voltage, Rear Passenger Compartment	2V		
NR.34:	Specified Temperature Left, Rear Passenger Compartment (N22/4)	25C		
NR.35:	Specified Temperature Right, Rear Passenger Compartment (N22/4)	23C		
NR.36:	TBD	63%		
NR.37:	TBD	AUF		
NR.38:	Built NR KLA	310	310	310
NR.39:	Not Used			
NR.40:	Defroster Outlet Flap Left (M16/13) (#7) Value: ZU (closed), 0% – 100%, AUF (open)	ZU	AUF	ZU
NR.41:	Defroster Outlet Flap Right (M16/14) (#7) Value: ZU (closed), 0% – 100%, AUF (open)	ZU	AUF	ZU
NR.42:	Footwell Flap Left (M16/15) (#11) Front Compartment Value ZU (closed), 0% – 100%, AUF (open)	AUF	AUF	ZU
NR.43:	Footwell Flap Right (M16/16) (#11) Front Compartment Value: ZU (closed), 0% – 100%, AUF (open)	AUF	AUF	ZU
NR.44:	Centre Outlet Temperature Regulating Blend Flap Left (M16/19) (#5) Value: ZU (closed), 0% – 100%, AUF (open)	ZU	AUF	AUF
NR.45:	Centre Outlet Temperature Regulating Blend Flap Right (M16/20) (#5) Value: ZU (closed), 0% – 100%, AUF (open)	ZU	AUF	AUF
NR.46:	Centre Outlet Diverter Flap Left (M16/17) (#4) Value: ZU (closed), 0% – 100%, AUF (open)	ZU	AUF	8%
NR.47:	Centre Outlet Diverter Flap Right (M16/18) (#4) Value: ZU (closed), 0% – 100%, AUF (open)	ZU	AUF	8%
NR.48:	Fresh Air (#1) and Recirculated Air (#2) Flaps (M16/21) NB: These Flaps operate as a pair. Value: Frischl. {Fresh Air}, 70%, Umluft {Recirculate}	Frischl.	Umluft	70%
NR.49:	Aktivkohle Filter (AKF) {Activated Charcoal Filter (ACF)} (A32m2) (#3) LED Value: AUS {OFF}, EIN {ON}	AUS	AUS	EIN

Parameter	Legend	Value Engine Off and Cold[1]	Value Maximum Cooling Engine at Idle[2]	Value Vehicle at Speed[3]
	Bypass Flap Value: AUS {Open}, EIN {Closed}			
NR.50:	ACC Software Version	11	11	11
NR.51:	ACC Hardware Version	0902	0902	0902
NR.52:	Optional Rear A/C Control Panel (N22/4) Software Version			
NR.53:	Optional Rear A/C Control Panel (N22/4) Hardware Version			
NR.54:	Stepper Motor Unit (N22/5) Software Version	37	37	37
NR.55:	Stepper Motor Unit (N22/5) Hardware Version	10	10	10
NR.56:	Centre Vent Control Module (N18/4) Software Version	28	28	28
NR.57:	Centre Vent Control Module (N18/4) Hardware Version	43	43	42
NR.58:	Multi-function Sensor (B31/1) Software Version	1B	1B	1B
NR.59:	Multi-function Sensor (B31/1) Hardware Version	01	01	01
NR.60:	4 Quadrant Sun Sensor (B32/2) Software Version	32	32	32
NR.61:	4 Quadrant Sun Sensor (B32/2) Hardware Version	16	16	16
NR.62:	Regel {Rule} or possibly Regler {Control} Offset {Offset}	2K	2K	2K
NR.63:	Gebl {Fan} Offset {Offset}	0,8 V	0,8 V	0,8 V
NR.64:	Not Used			
NR.65:	Not Used			
NR.66:	Not Used			
NR.67:	Not Used			
NR.68:	Not Used			
NR.69:	Tunnel Mode (Press either Recirc. or ACF switch for greater than 5 secs. Closes all Windows and Sliding Tilting Roof.) Value: automat. {automatic}, and TBD	automat.	automat.	automat.
NR.70:	Follst {??}. Kontr {Control} Value: aktiv {active}, and TBD	aktiv	aktiv	aktiv
NR.71:	UL Possibly Umluft {Recirculate} Logik {Logic} Aktivkohle Filter (AKF) {Activated Charcoal Filter (ACF)} "Pollution-dependant recirculated air circuit -Inactive, -Active (with activated charcoal filter) Standard, -Active (without activated charcoal filter) Active (with activated charcoal filter)"[7] Value: aktiv {active}, inaktiv {inactive}	aktiv	aktiv	aktiv
NR.72:	UL Possibly Umluft {Recirculate} Logik {Logic} GEN {??}	inaktiv	inaktiv	inaktiv

[7] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

Parameter	**Legend**	**Value Engine Off and Cold**[1]	**Value Maximum Cooling Engine at Idle**[2]	**Value Vehicle at Speed**[3]
	Value: aktiv {active}, inaktiv {inactive}			
NR.73:	Tunnel Funktion {Tunnel Function} Convenience Locking (Tunnel Shift)[8] Value: aktiv {active}, inaktiv {inactive}	aktiv	aktiv	aktiv
NR.74:	Gebläse Balken {Fan Beam} "Beam indicator for blower in automatic mode." ACC bar display for blower in automatic mode. "Display" and "Do not indicate"[9] Value: generell {general}, and TBD	generell	generell	generell
NR.75:	Reheat Modus {Reheat Mode} "Standard and icing protection."[10] Value: aktiv {active}, inaktiv {inactive}	inaktiv	inaktiv	inaktiv
NR.76:	Umluft Manuell {Manual Fan} Value: zeitbegr. {??}, and TBD	zeitbegr.	zeitbegr.	zeitbegr.
NR.77:	Display Value: gen. neg. {??} automat. {automatic}	gen. neg.	gen. neg.	gen. neg.
NR.78:	National version for Air Conditioner: Remaining World or Hot Countries[11]. Heissland {Hot Country} Value: aktiv {active}, inaktiv {inactive}	inaktiv	inaktiv	inaktiv
NR.79:	Maxcool Value aktiv {active}, inaktiv {inactive}	aktiv	aktiv	aktiv
NR.80:	Display Readout for ACC display: day design, night design or automatic Value: automat. {automatic}, day and night.	automat.	automat.	automat.
NR.81:	Abspeicherung {Storage} Possibly key responsive storage of ACC settings ie each remote control key stores ACC settings. Value: Schlüssel {Key}, and TBD	Schlüssel	Schlüssel	Schlüssel
NR.82:	Schnellauf {High Speed} Value: aktiv {active}, inaktiv {inactive}	aktiv	aktiv	aktiv
NR.83:	Umluft {Fan} 100% 100% recirculated air mode is possible.[12] Value: möglich {possible}, and not possible	möglich	möglich	möglich
NR.84:	Gebl. {Fan} Reaktion {Response} Possibly Immediate blower reaction when temperature is adjusted TBC Value: aktiv {active}, m.Sonne, and TBD	aktiv	aktiv	aktiv
NR.85:	Grundeinstell {Basic Service}	automat.	inaktiv	inaktiv

[8] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

[9] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

[10] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

[11] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

[12] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

Parameter	Legend	Value Engine Off and Cold[1]	Value Maximum Cooling Engine at Idle[2]	Value Vehicle at Speed[3]
	Possibly Automatic basic setting for rear air conditioning TBC Value: automat. {automatic}, inaktiv{inactive}.			
NR.86:	UL-KL. Bei {??} "0" UL Possibly Umluft {Recirculate} Position of main air flap (ie Recirculated Air Flap with ACC switched off)[13]. Value: geschl. {closed}, and open	geschl.	geschl.	geschl.
NR.87:	Grundbelöftung {Basic Ventilation} Possibly electric engine coolant fan TBC Value: aktiv {active}, and TBD	aktiv	aktiv	aktiv
NR.88:	ESL 20 bar 100% Value: aktiv {active}, and TBD	aktiv	aktiv	aktiv
NR.89:	ESL 20 bar 90% Value: inaktiv {inactive}, and TBD	inaktiv	inaktiv	inaktiv
NR.90:	ESL 18 bar 100% Value: inaktiv {inactive}, and TBD	inaktiv	inaktiv	inaktiv
NR.91:	ESL 18 bar 90% Value: inaktiv {inactive}, and TBD	inaktiv	inaktiv	inaktiv
NR.92:	ESL Gndbel. Grundbelöftung {Basic Ventilation} 25% Basic setting for electric engine coolant fan for vehicle speed <70Km/h and air temperature >15C. ACC may over-ride this value if required. Value: inaktiv {inactive}, aktiv {active}	aktiv	aktiv	aktiv
NR.93:	ESL Gndbel. Grundbelöftung {Basic Ventilation} 40% Basic setting for electric engine coolant fan for vehicle speed <70Km/h and air temperature >15C. ACC may over-ride this value if required. Value: inaktiv {inactive}, aktiv {active}	inaktiv	inaktiv	inaktiv
NR.94:	Not Used			
NR.95:	TBD	aktiv		
NR.96:	A/C Compressor Torque (Nm) Value: 0 Nm – TBD Nm This is an estimated value the ACC Controller sends to the ECU. The ACC delays the signal to the compressor a little bit and sends the desired torque value to the ECU. The ECU then informs the engine that there will be an additional torque applied. Thus any load shock to the engine by the compressor engaging is avoided.	0 Nm	24 Nm	18 Nm
NR.97:	A/C Komp {Compressor} Stell {Capacity} Value AUS {OFF} 0% – 100%	0%	70%	46%
NR.98:	A/C Compressor Valve DC Current (mA) Value: 0 mA – 1000 mA TBC	0 mA	700 mA	460 mA

[13] Reference: Workshop Information System (WIS) (via Diagnostic Assistance System (DAS) and Xentry) document GF80.57-P-4102-03IA

Parameter	Legend	Value Engine Off and Cold[1]	Value Maximum Cooling Engine at Idle[2]	Value Vehicle at Speed[3]
NR.99:	Inner Regler {Internal Controls} This is a weighted average from NR.01: and NR.02: which the ACC uses for a calculation of TBD.	+25,3ºC	+22,4 ºC	+25.5ºC

8. ACC Flap/Vent, Engine Fan and A/C Compressor Test Menu

8.1. Aim

This menu allows testing of the Auto Climate Control (ACC) Flaps/Vents/Outlets and the operation of the Engine Coolant Fan and the A/C Compressor.

8.2. Test Examples

For example, each electrically operated Flap/Vent/Outlet can be exercised through its full range of operation whilst subjectively or objectively monitoring the resulting effect on the Auto Climate Control (ACC) air flow and/or output temperature.
Test Parameter NR.12: allows the Engine Coolant Electric Suction Fan (M4/3) to be tested through most of its operational range; Off, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, On. Note the engine must be running for this test and hence the fan may not be set to 'Off'.
Similarly, Test Parameter NR.13: allows the A/C Compressor to be tested by varying its Capacity from; Off, 1%, 2%, 3% up to 98%, 99%, On.

8.3. Method

Press the Residual Heat and Ventilation (REST) button and Recirculate Air Button for greater than five seconds with ignition on (position 2) or with engine running.

Figure 5 Recirculate and Residual Heat and Ventilation (REST) Buttons

Returns a menu with Flaps Symbol and Parameters NR.00: – NR.13: representing the electrically operated Flap/Vent Door, Engine Coolant Fan and A/C Compressor Settings.

Figure 6 ACC Flap/Vent, Engine Fan and A/C Compressor Menu for NR.00:

The ACC Blower Speed changes to maximum speed, i.e. Manual Max with 7 bars.

All electrically operated flaps/vents are commonly set to the Menu default of ZU {Closed}. See Table below. This results in all ACC Blower air exiting the following manually-operated flaps if open;
#8a Side Window Fixed Outlet Front Compartment Left and Right

#8b Side Door Fixed Outlet Front Compartment Left and Right
#9 Side Outlet Rear Compartment (B Pillar) Left and Right
#10 Centre Outlet Rear Compartment.

If all manually-operated flaps are closed the blower air exits via;
#8a Side Window Fixed Outlet Front Compartment Left and Right.

Use the Left Increase or Decrease Temperature Button to scroll through parameters.

Figure 7 Left Increase or Decrease Temperature Button

Use the Right Increase or Decrease Temperature Button to test the full range of operation of the displayed Parameter. Allow plenty of time for the Flap/Vent to change position.

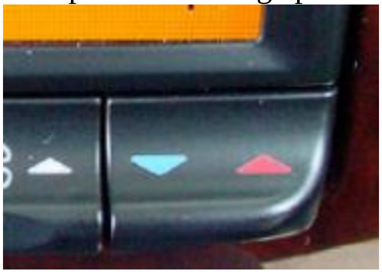


Figure 8 Right Increase or Decrease Temperature Button

Press Residual Heat and Ventilation (REST) button to exit the Menu. All electrically operated Flap/Vent, Engine Fan and A/C Compressor settings return to normal operation as required by the Auto Climate Control (ACC) Module.

8.4. Legend ACC Flap/Vent, Engine Fan and A/C Compressor Settings

Parameter	Legend	Typical Default Value[14]
NR.00:	All ACC Electrically Operated Flaps/Vents Value: ZU ({Closed}, AUF {Open} NB: Fresh Air (#1) and Recirculated Air (#2) Flaps operate as a pair, eg when NR.00: = ZU {Closed} Recirculated Air Flap (#2) is also Closed and Fresh Air Flap (#1) is Open.	ZU
NR.01:	Defroster Outlet Flap Left (M16/13) (#7) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.02:	Defroster Outlet Flap Right (M16/14) (#7) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.03:	Footwell Flap Left Front Compartment (M16/15) (#11) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.04:	Footwell Flap Right Front Compartment (M16/16) (#11) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%,	ZU

[14] ACC Settings Engine Off: Centre Vent: AUTO, Left Temp: 22ºC, Right Temp: 21ºC, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: Off, Recirculate: Off

Parameter	Legend	Typical Default Value[14]
	AUF {Open}	
NR.05:	Centre Outlet Front Compartment Temperature Regulating Blend Flap Left (M16/19) (#5) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.06:	Centre Outlet Front Compartment Temperature Regulating Blend Flap Right (M16/20) (#5) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.07:	Centre Outlet Front Compartment Diverter Flap Left (M16/17) (#4) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.08:	Centre Outlet Front Compartment Diverter Flap Right (M16/18) (#4) Value: ZU {Closed}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, AUF {Open}	ZU
NR.09:	Recirculated Air (#2) Flap (M16/21) Value: ZU {Closed}, 70%, AUF {Open} NB: Fresh Air (#1) and Recirculated Air (#2) Flaps operate as a pair, eg when NR.09: = ZU {Closed} Recirculated Air Flap (#2) is Closed and Fresh Air Flap (#1) is Open.	ZU
NR.10:	Aktivkohle Filter (AKF) {Activated Charcoal Filter (ACF)} (A32m2) (#3) LED Value: AUS {OFF}, EIN {ON} Bypass Flap Value: AUS {Open}, EIN {Closed}	ZU
NR.11:	Flap Calibration Value: inaktiv {inactive} 0 – TBD	0
NR.12:	Engine Coolant Electric Suction Fan (M4/3) Value: AUS {Off}, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, EIN {On}	20%
NR.13:	A/C Komp {Compressor} Stell {Capacity} Value AUS {Off} 1%, 2%, 3% – 98%, 99%, EIN {On}	AUS

9. ACC Fault/Error Diagnostic Trouble Codes (DTC).

9.1. Aim

To access/review/read the Automatic Climate Control (ACC) Fault/Error Diagnostic Trouble Codes (DTC) which are permanently stored in the ACC system, and to clear/reset/erase them from ACC memory.

9.2. Example

For example using the clear/reset/erase procedure you can unlock the Air Conditioner (A/C) compressor after recharging if you've run out of refrigerant gas.

9.3. Access/Review/Read Automatic Climate Control (ACC) Fault/Error Diagnostic Trouble Codes (DTC) Procedure

Ensure the starting position is with both ACC AUTO knobs pressed in (knob is inside, which means the system is in "Auto" function mode).

Figure 9 Both ACC AUTO Knobs Pressed In

Press Residual Heat and Ventilation (REST) and Activated Charcoal Filter Buttons simultaneously for greater than 5 seconds with ignition on (position 2) or with engine running.

Figure 10 Activated Charcoal Filter and Residual Heat and Ventilation (REST) Buttons

The ACC display screen shows "searching … ".
Then ACC display screen shows
"DIAGN.
ERROR ----"

Figure 11 Fault/Error Codes Menu

Use the Right Increase or Decrease Temperature Button to scroll up and down to see each fault/error code.

Figure 12 Right Increase or Decrease Temperature Button

Press Residual Heat and Ventilation (REST) button to exit Menu.

9.4. Legend/Description/Meaning

Reference: Edited version of http://www.benzworld.org/forums/w220...ssue-w220.html

ACC DTC	Description
B1000	AAC Pushbutton Control Module (N22) is defective.
B1022	Fault in CAN communication with control unit Electric Seat Adjuster Front Left (ESA-FL).
B1023	Fault in CAN communication with control unit Electric Seat Adjuster Front Right (ESA-FR).
B1053	Fault in CAN communication with control unit Door Control Module Rear Right (DCM-

ACC DTC	Description
	RR).
B1054	Fault in CAN communication with control unit Door Control Module Front Right (DCM-FR).
B1055	Fault in CAN communication with control unit Door Control Module Front Left (DCM-FL).
B1056	Fault in CAN communication with control unit Door Control Unit Rear Left (DCM-RL).
B1057	Fault in CAN communication with control unit Overhead Control Panel (OCP).
B1059	Fault in CAN communication with control unit Signal Acquisition Module Front Left (SAM-FL).
B1074	Fault in CAN communication with control unit Electronic Ignition Switch (EIS).
B1075	Fault in CAN communication with control unit Signal Acquisition Module Front Right (SAM-FR).
B1076	Fault in CAN communication with control unit Signal Acquisition Module Rear (REAR SAM).
B1087	Fault in CAN communication with control unit Stationary Heater (TSTH).
B1088	Fault in CAN communication with control unit Instrument Cluster Module (ICM).
B1219	In Car Temperature Sensor (N22b1) AAC Pushbutton Control Module (N22).
B1228	Heater Core Temperature Sensor Left Front Compartment (B10/2).
B1229	Heater Core Temperature Sensor Right Front Compartment (B10/3).
B1230	Evaporator Core Temperature Sensor Front Compartment (B10/6).
B1241	Refrigerant (R134A) Level is too low.
B1256	Evaporator Core Temperature Sensor Front Compartment (B10/6).
B1257	Refrigerant (R134A) Pressure is 0 bar.
B1267	Communication Fault of A/C Bus.
B1268	Communication fault of A/C Bus with Centre Vent Control Module (N18/4).
B1269	Communication fault of A/C Bus with Multi-function Sensor (B31/1).
B1270	Communication fault of A/C Bus with 4 Quadrant Sun Sensor (B32/2).
B1271	Communication fault of A/C Bus with Stepper Motor Control Module (N22/5).
B1298	Evaporator Core Temperature Sensor, Rear Passenger Compartment (B10/6).
B1417	Duo Heater Valve Left Front (A31y1).
B1418	Duo Heater Valve Right Front (A31y2).
B1424	Activated Charcoal Filter Flap (#3) Adjustment Motor (A32m2).
B1426	Circulation Pump (A31/1m1)
B1429	RR Duo Valve (A31/1y2)
B1434	Voltage Supply of A/C Bus.
B1451	Centre Outlet Left Diverter Flap (#4) Actuator Motor (M16/17).
B1452	Centre Outlet Left Temperature Regulating Blend Flap (#5) Actuator Motor (M16/19).
B1453	Fresh Air (#1) and Recirculated Air (#2) Flap Actuator Motor (M16/21).
B1455	Defroster Vent Flap Left (#7) Actuator Motor (M16/13).
B1456	Defroster Vent Flap Right (#7) Actuator Motor (M16/14).
B1457	Footwell Flap Left (#11) Actuator Motor (M16/15).
B1458	Footwell Flap Right (#11) Actuator Motor (M16/16).
B1463	Centre Outlet Right Diverter Flap (#4) Actuator Motor (M16/18).
B1464	Centre Outlet Right Temperature Regulating Blend Flap (#5) Actuator Motor (M16/20).
B1849	Fault in CAN communication with Control Unit Rear Compartment ACC Module (N22/4).

9.5. Reset/Clear/Erase Fault/Error Diagnostic Trouble Codes (DTC) Procedure

To Reset/Clear/Erase a Fault/Error Diagnostic Trouble Codes (DTC) repeat the method to access/review/read the fault/error codes in the Automatic Climate Control (ACC) system. But ensure the starting position is with both ACC AUTO Air Delivery knobs pressed in (knob is inside, which means the system is in "Auto" function mode).

Figure 13 Both ACC AUTO Air Delivery Knobs Pressed In

Then press Residual Heat and Ventilation (REST) and Activated Charcoal Filter Buttons simultaneously for greater than 5 seconds with ignition on (position 2) or with engine running.

The ACC display screen shows "searching … ".
Then ACC display screen shows
"DIAGN.
ERROR ----"

Use the Right Increase or Decrease Temperature Button (TBC) to scroll up and down to see the fault/error codes.

To Reset/Clear/Erase a Fault/Error Code set the screen on the Fault Code (TBC) then press out Left ACC AUTO Air Delivery Button (ie place Left AUTO Air Delivery button extended in Manual Mode) and then press out Right ACC AUTO Air Delivery Button (ie place Right AUTO Air Delivery button extended in Manual Mode).

Figure 14 Left AUTO Air Delivery Button Extended In Manual Mode

Then press the left one in first, and then the right one in.
The display shows "errors deleted".
Press Residual Heat and Ventilation (REST) button to exit Menu.
Turn ignition off, then back on again, and the ACC screen is reset and back to normal.

10. Unterkühlung

Unterkühlung means the number of degrees the refrigerant is cooled before it exits the condenser.

The unit for the temperature reduction is usually degrees Kelvin [K]. Note a change (reduction or increase) of 1K = a change of 1C. However an absolute temperature of 27C = 300K.

In a refrigerative air conditioner, when the refrigerant has warmed up after cooling the inside of the car it turns back to a gas. The air conditioner compressor will then turn the gaseous refrigerant back to a liquid again ready for another cycle. The process of compressing the gas to a liquid generates a lot of heat, which is dissipated in the condenser (the hot finned heat exchanger in front of the car's radiator).

Subcooling is a measurement of how much the liquid in the condenser cools down before exiting the condenser. When the hot gas in the condenser first turns to liquid, its temperature is at the saturation point. This means that the temperature of the liquid as it first forms is at the same temperature at which the refrigerant is condensing — the saturation temperature. Unterkühlung or subcooling is the number of degrees the liquid refrigerant is allowed to cool before it leaves the condenser. According to one reference, the general rule of thumb is that it should give up about 10 degrees Fahrenheit (or about 5 degrees Kelvin) before it leaves the condenser coil, however 15 degrees Fahrenheit (or about 8 degrees Kelvin) is also common.

By checking the subcooling you can tell how much refrigerant is in the condenser.
If the subcooling is too low, the condenser will "run out of" refrigerant prematurely at higher load conditions, overheating the compressor and reducing performance and efficiency.
If the subcooling is too high, the system will be overcharged, reducing performance, efficiency, and ultimately damaging compressor valves and start components.

Typical values for Unterkühlung or subcooling in a W220 Mercedes Benz are; (NR.09:) 10K. The maximum value is given by NR.19: and is about 14K.