

# 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>

2014-06-29 Version 4: Revised some of the ACC parameter definitions after trawling through the STAR Diagnostic Assistance System (DAS). The Version 4 text is coloured in red for easy identification.

## 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, mvmler, Benz915, Magnified, alberto\_robles, SirHumphrey, benzboyz, Jerry, Bullethead\_D et alia. My apologies if I have forgotten any other significant contributors on this subject.

2014-06-29 Version 4: Thanks to BenzWorld Member 'Ex-Fed for alerting me to the method for changing the settings for 'ESL Gndbel. Grundbelöftung {Basic Ventilation}' which is the ACC 'Hot countries' option. As a result I was able to change the ACC 'Electric suction fan (25% basic ventilation)' to 'Electric suction fan (30% basic ventilation)' and to revise some of the ACC parameter definitions after trawling through the STAR Diagnostic Assistance System.

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.

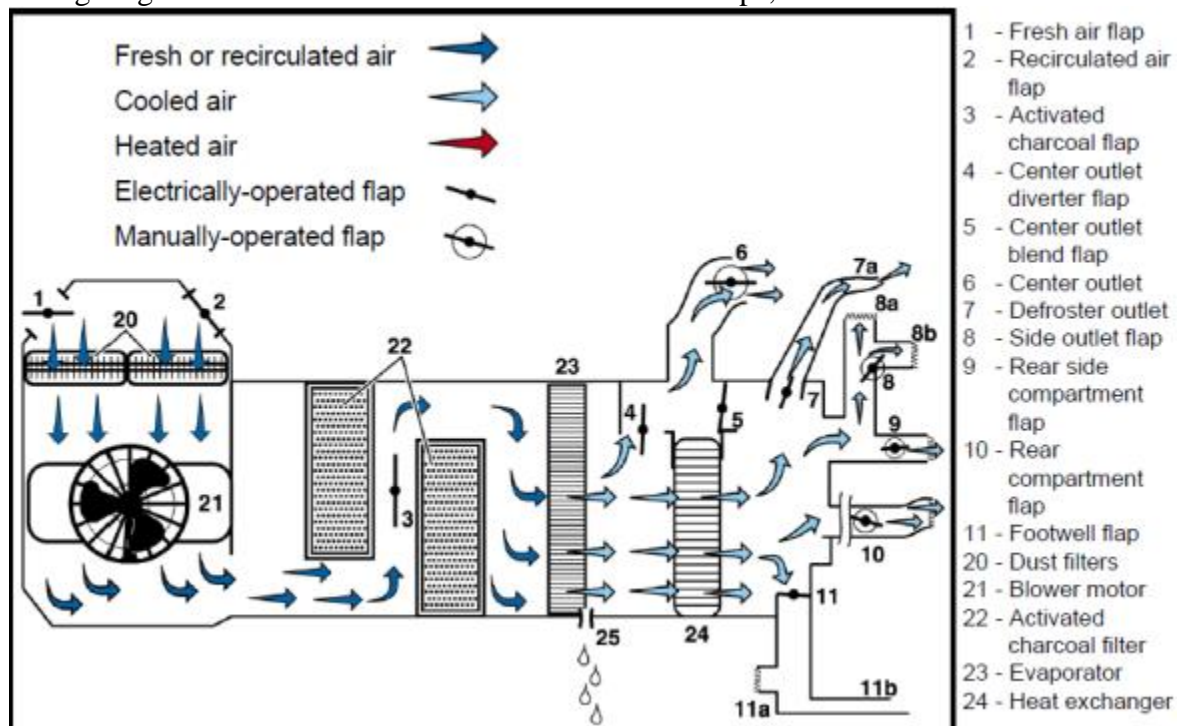
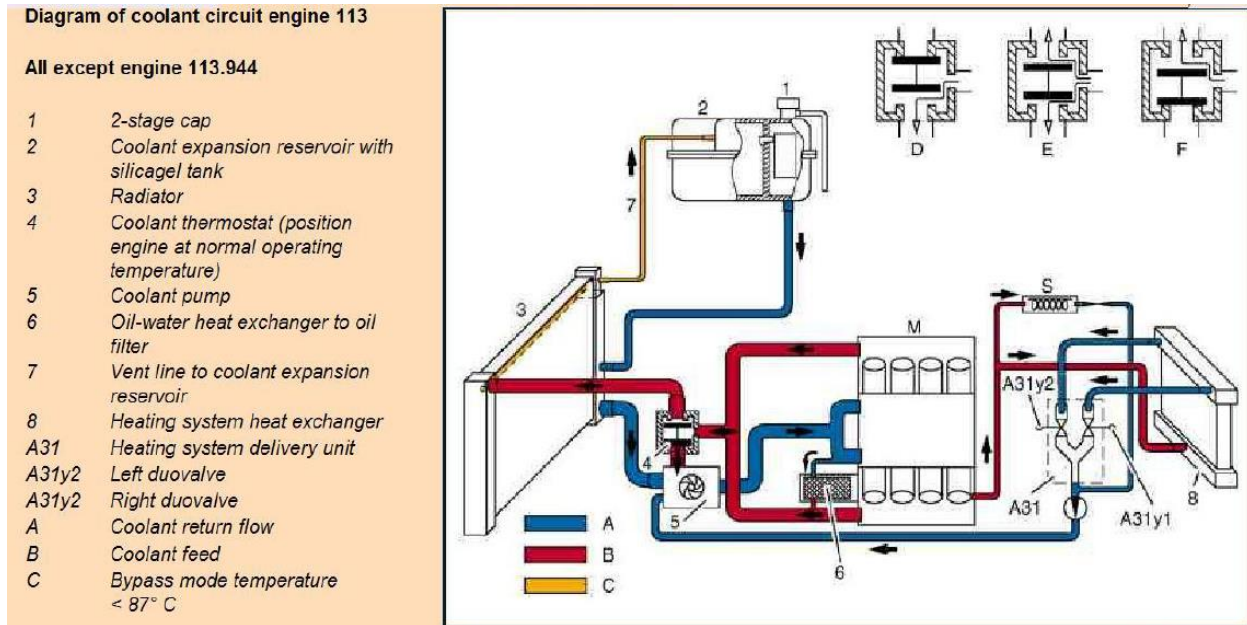


Figure 1 Definition of W220 Automatic Climate Control (ACC) Flaps/Vents/Outlets

- #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



## 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

In Version 4 of this document some of the ACC parameter definitions were revised after trawling through the STAR Diagnostic Assistance System. To see how this was done refer to Appendix A. ACC Parameter Coding Definitions.

Parameter	Legend	Value Engine Off and Cold <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
NR.00:	In Car Temperature Sensor (N22/b1), ACC Pushbutton Control Module (N22) Front Compartment	+25,0°C	+22,4°C	+23,2°C
NR.01:	In Car Temperature Sensor (N70b1), Overhead Control Panel (OCP) (N70)	+26,2°C	+21,7°C	+27,7°C
NR.02:	Outside/Ambient Temperature Sensor (B14)	+22,5°C	+42,5°C	+35,5°C
NR.03:	Heater Core Temperature Sensor Left (B10/2) Front Compartment	+22,3°C	+18,9°C	+2,4°C
NR.04:	Heater Core Temperature Sensor Right (B10/3) Front Compartment	+22,2°C	+11,9°C	+2,2°C
NR.05:	Evaporator Core Temperature Sensor (B10/6) Front Compartment	+22,6°C	+2,8°C	+2,1°C
NR.06:	Engine Coolant Temperature Sensor (B11/4)	+20°C	+93°C	+82°C
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 (B12/1)	+20,7°C	+48,1°C	+37,8°C
NR.09:	L Unter {Under} Kühlung {??} Kühlung {Cooling} and possibly L Unterkühlung {Cooling Lower} also L Unterkuehlung {degrees the refrigerant is cooled before it exits the condenser} <sup>4</sup>	+4,9K	+9,1K	+9,4K
NR.10:	Blower Control Voltage, Front Compartment	1.5 V	1.8V	2.1V

<sup>1</sup> ACC Settings Engine Off: Centre Vent: AUTO, Left Temp: 22°C, Right Temp: 21°C, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: Off, Recirculate: Off

<sup>2</sup> 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

<sup>3</sup> ACC Settings at 105Km/h: Centre Vent: MANUAL, Left Temp: 22°C, Right Temp: 21°C, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: On, Recirculate: Off

<sup>4</sup> Refer to Section Unterkühlung at end of document.

Parameter	Legend	Value Engine Off and Cold <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
	Value: 1.2, 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			
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)	+15,5°C	+17°C	+19,5°C
NR.19:	Max Unter {Under} Kühlung {??} Kühlung {Cooling} and possibly Max Unterkühlung {Cooling Lower} } also Max Unterkuehlung {degrees the refrigerant is cooled before it exits the condenser} <sup>5</sup>	+4,8K	+9,7K	+13,8K
NR.20:	Engine Coolant Electric Suction Fan (M4/3) Rotation. <i>Actual percentage of maximum RPM as demanded by the control unit. At high speeds the fan may be freewheeling with 0% electrical demand.</i> Value: 0% – 100%	25%	33%	0%
NR.21:	Engine Speed <i>Value in RPM</i>	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 <sup>6</sup>	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%

<sup>5</sup> Refer to Section Unterkühlung at end of document.

<sup>6</sup> 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. *Checked NR.24: Battery Voltage parameter value after installing a new battery. STAR showed actual battery voltage as 12.9V. NR.24: Battery Voltage parameter value = 11.7V as before.*

<b>Parameter</b>	<b>Legend</b>	<b>Value Engine Off and Cold<sup>1</sup></b>	<b>Value Maximum Cooling Engine at Idle<sup>2</sup></b>	<b>Value Vehicle at Speed<sup>3</sup></b>
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	AUS	AUS	EIN



Parameter	Legend	Value Engine Off and Cold <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
	Filter (ACF)} (A32m2) (#3) LED Value: AUS {OFF}, EIN {ON} 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:	Geb1 {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 <b>See Section 12.2.19 Automatic lowering for convenience closing (tunnel mode switching) (NR.69:)</b>	automat.	automat.	automat.
NR.70:	Follst {??}. Kontr {Control} Value: aktiv {active}, and TBD	aktiv	aktiv	aktiv
NR.71:	UL <del>Possibly</del> 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	aktiv	aktiv	aktiv

Parameter	Legend	Value Engine Off and Cold <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
	(with activated charcoal filter) <sup>7</sup> Value: aktiv {active}, inaktiv {inactive} See Section 12.2.5 Pollutant-dependent switchover to recirculated air (NR.71:)			
NR.72:	UL Possibly Umluft {Recirculate} Logik {Logic} GEN {??} “Pollution-dependant recirculated air circuit -Inactive, -Active (with activated charcoal filter) Standard, -Active (without activated charcoal filter) Active (with activated charcoal filter)” Value: aktiv {active}, inaktiv {inactive} See Section 12.2.5 Pollutant-dependent switchover to recirculated air (NR.71:)	inaktiv	inaktiv	inaktiv
NR.73:	Tunnel Funktion {Tunnel Function} Convenience Locking (Tunnel Shift) <sup>8</sup> Value: aktiv {active}, inaktiv {inactive} See Section 12.2.6 Convenience closing (tunnel circuit) (NR.73:)	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 display” <sup>9</sup> Value: generell {general}, and TBD See Section 12.2.7 Bar display for blower in automatic mode (NR.74:)	generell	generell	generell
NR.75:	Reheat Modus {Reheat Mode} “Standard and icing protection.” <sup>10</sup> Value: aktiv {active}, inaktiv {inactive} See Section 12.2.8 REHEAT mode (NR.75:)	inaktiv	inaktiv	inaktiv
NR.76:	Umluft Manuell {Manual Fan Recirculate} Value: zeitbegr. {??}, and TBD For a 171.456 vehicle “Manual recirculated air control”. Options are: “LIMITED: After a certain time, the recirculated air flap will open again slightly to prevent the oxygen concentration in the air dropping. UNLIMITED: The recirculated air flap always remains 100% closed. Warning: After a time, the oxygen concentration in the interior air will	zeitbegr.	zeitbegr.	zeitbegr.

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

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

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

<sup>10</sup> 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 <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
	drop because no fresh air is coming in.”			
NR.77:	Display Readout for ACC display: night design Value: gen. neg. {negative display} automat. {automatic} See Section 12.2.9 Readout in display: night design (NR.77:)	gen. neg.	gen. neg.	gen. neg.
NR.78:	National version for Air Conditioner: Remaining World or Hot Countries <sup>11</sup> . Heissland {Hot Country} Value: aktiv {active}, inaktiv {inactive} See Section 12.2.2 National version climate control (NR.78:)	inaktiv	inaktiv	inaktiv
NR.79:	Maxcool: ACTIVATED: In automatic mode, the message ‘MAX COOL’ appears in the display if high cooling output is requested. DEACTIVATED: Message ‘MAX COOL’ is never shown. Value aktiv {active}, inaktiv {inactive}	aktiv	aktiv	aktiv
NR.80:	Display Readout for ACC display: day design, Value: automat. {automatic}, ?? {positive display}. See Section 12.2.10 Readout in display: day design (NR.80:)	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 See 12.2.11 Section Key-responsive storing of AC settings (NR.81:)	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. <sup>12</sup> Value: möglich {possible}, and not possible See Section 12.2.12 100% recirculated air mode is possible (NR.83:)	möglich	möglich	möglich
NR.84:	Gebf. {Fan} Reaktion {Response} Possibly Immediate blower reaction when temperature is adjusted <del>TBC</del> Confirmed Value: aktiv {active}, m.Sonne, and TBD	aktiv	aktiv	aktiv

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

<sup>12</sup> 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 <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
	See Section 12.2.13 Immediate blower reaction when temperature is adjusted (NR.84:)			
NR.85:	Grundeinstell {Basic Service} Possibly Automatic basic setting for rear air conditioning TBC Value: automat. {automatic}, inaktiv{inactive}. See Section 12.2.14 Automatic basic setting Rear air conditioning (NR.85:)	automat.	inaktiv	inaktiv
NR.86:	UL-KL. Bei {??} "0" UL Possibly Umluft {Recirculate} Position of main air flap (ie Recirculated Air Flap with ACC switched off) <sup>13</sup> . Value: geschl. {closed}, and open See Section 12.2.15 Recirculated air flap with automatic air conditioning switched off (NR.86:)	geschl.	geschl.	geschl.
NR.87:	Grundbelöftung {Basic Ventilation} Possibly electric engine coolant fan TBC Value: aktiv {active}, and TBD See Section 12.2.16 Suction fan control Basic fresh air flow (NR.87:)	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} See Section 12.2.18 Electric suction fan (NR.92: and NR.93:)	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} See Section 12.2.18 Electric suction fan (NR.92: and NR.93:)	inaktiv	inaktiv	inaktiv

<sup>13</sup> 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 <sup>1</sup>	Value Maximum Cooling Engine at Idle <sup>2</sup>	Value Vehicle at Speed <sup>3</sup>
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
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.	+25,3°C	+22,4 °C	+25.5°C

## 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;

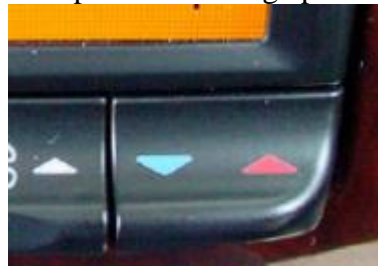
- #8a Side Window Fixed Outlet Front Compartment Left and Right.

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 <sup>14</sup>
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%, AUF {Open}	ZU
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}	AUS

<sup>14</sup> ACC Settings Engine Off: Centre Vent: AUTO, Left Temp: 22°C, Right Temp: 21°C, Blower: AUTO, Left Air Delivery: AUTO, Right Air Delivery: AUTO, ACF: Off, Recirculate: Off

Parameter	Legend	Typical Default Value <sup>14</sup>
	Value AUS {Off} 1%, 2%, 3% – 98%, 99%, EIN {On}	

## 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>

<b>ACC DTC</b>	<b>Description</b>
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-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).

<b>ACC DTC</b>	<b>Description</b>
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.

## 11. Conclusion

Like all reverse engineering projects it is often difficult to understand the original thinking and design that was used to implement a particular function. In the case of the M-B ACC parameters and their values, it is even more difficult to decide what is meant due to the design language being German, and due to the use of abbreviations, which often do not translate well.

In my mind there is still much doubt over exactly what is meant by some of the terms used in the parameter definitions. What is also really confusing is that in many cases there appears to be no consistency between the values as displayed using the Residual Heat and Ventilation (REST) button

compared with the terms discovered in STAR DAS. For example, according to DAS the parameter “Bar display for blower in automatic mode” has possible values of ‘Display’ or ‘Do not display’ and must definitely be the parameter as defined by NR.74. Whereas the value shown for NR.74: using the REST button displays “generell” {general} and an alternative option, yet to be determined. It may be that the ACC was designed by a manufacturer who used one set of terminology which is what is seen when using the REST button, but when the ACC is accessed via the STAR DAS, the terminology as required by M-B is used, with some form of internal translation being hidden in the vehicle computer systems.

What has led me to this conclusion is that when using my 2011 STAR DAS XEntry in Simulation Mode, it automatically defaults to a W221 S500 vehicle and W220 S500 values are not available. Then perusing the ACC codings for a W221 S500, the terminology appears much simpler and easier to understand, almost as though it has evolved, and after one generation has improved markedly. However, even though many of the functions have also remained the same from one generation to the next, it is still hard going trying to understand what it all means.

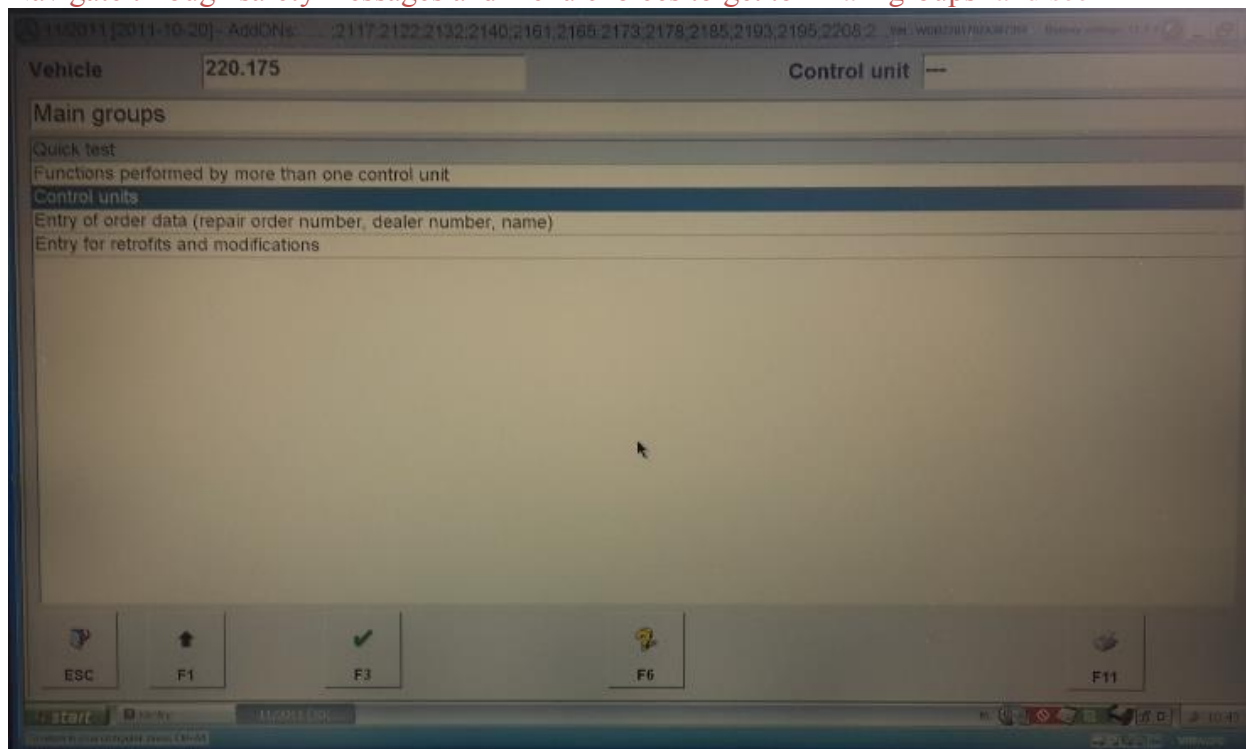
## 12. Appendix A. ACC Parameter Coding Definitions

The STAR Diagnostic Assistance System was used to read the W220 S500 possible coding values and definitions for the Automatic Climate Control parameters which are controlled by the Central gateway (CGW) control unit.

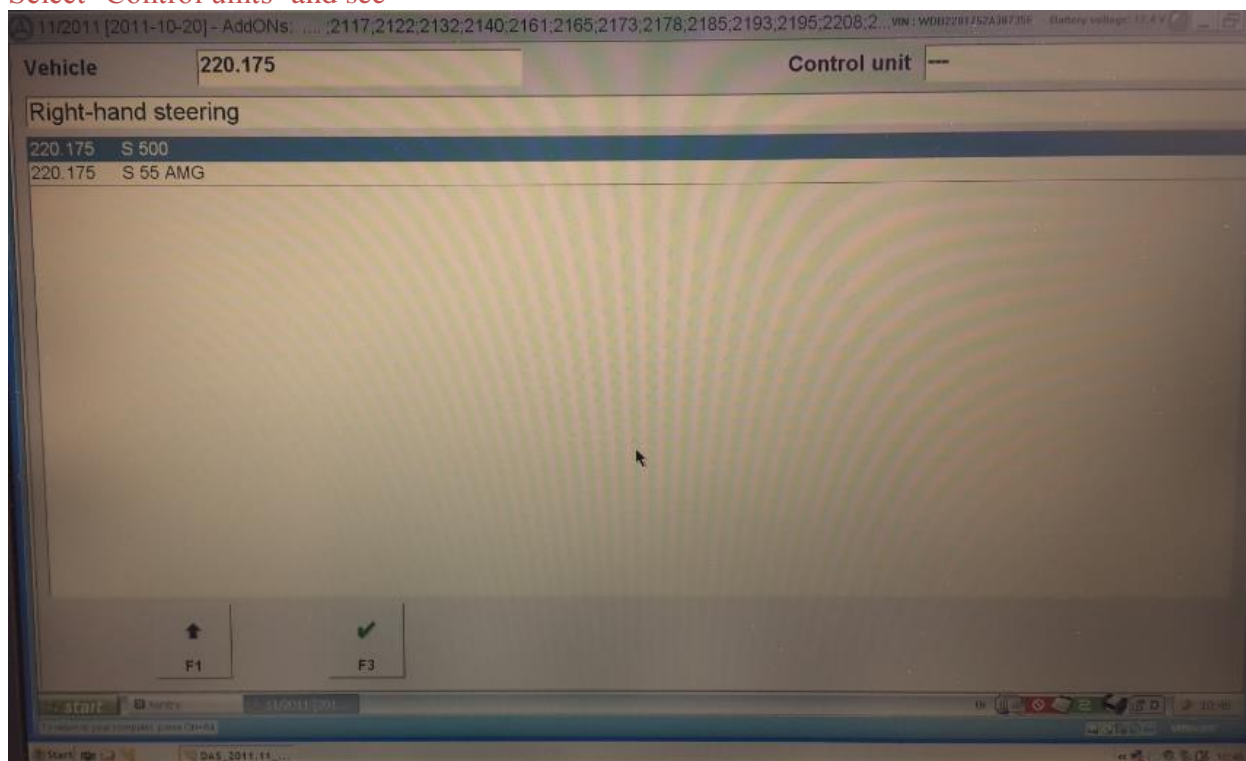
### 12.1. Summary: of Method

Connect STAR

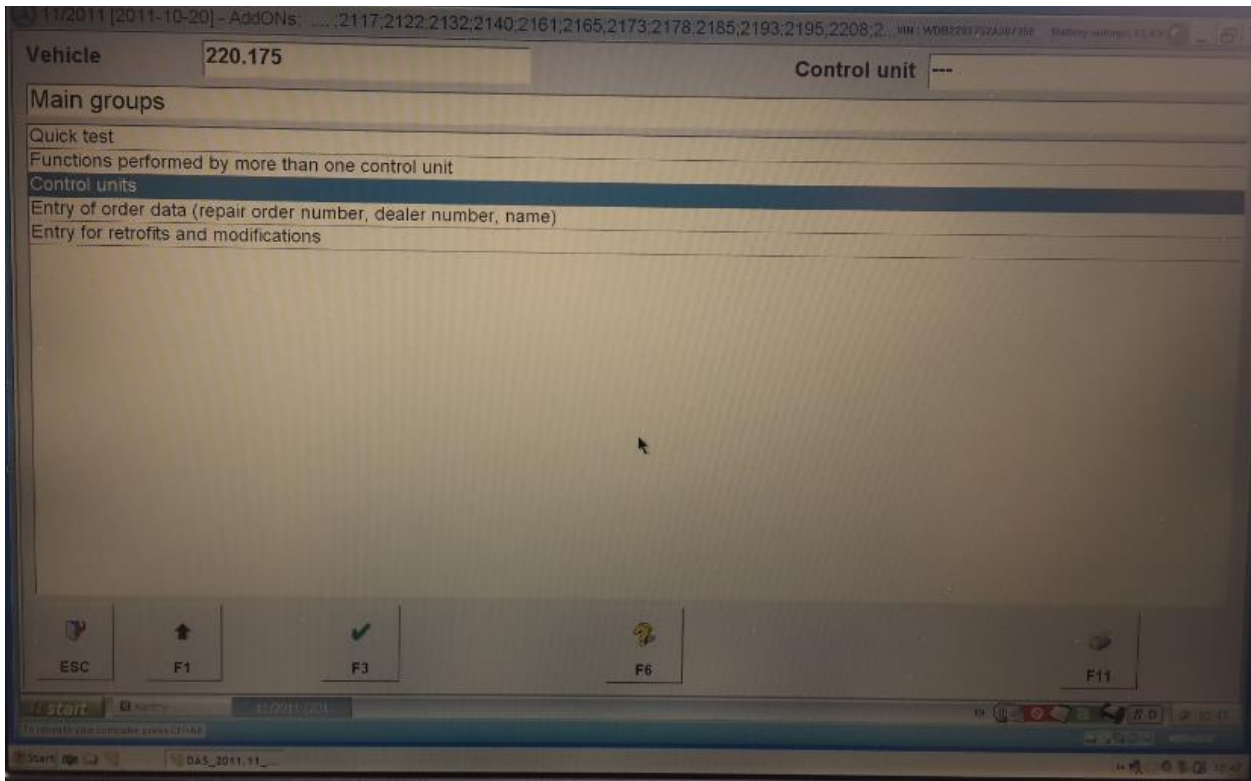
Navigate through safety messages and menu choices to get to 'Main groups' and see



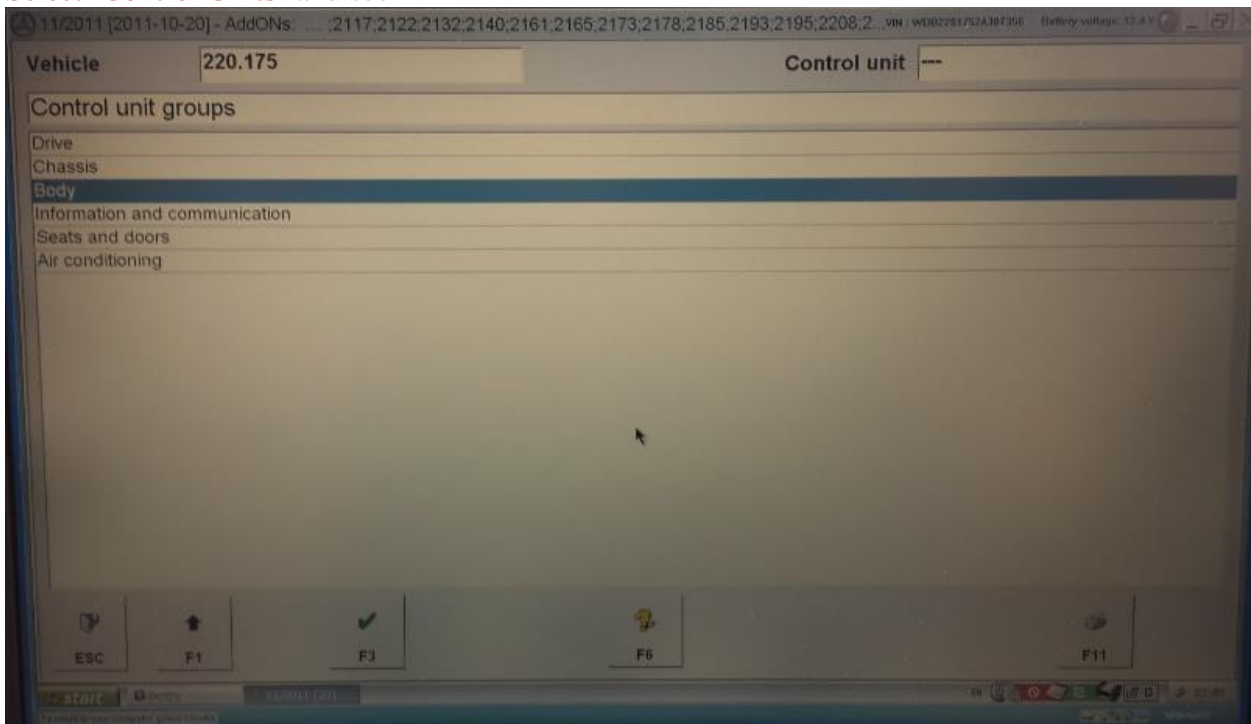
Select 'Control units' and see



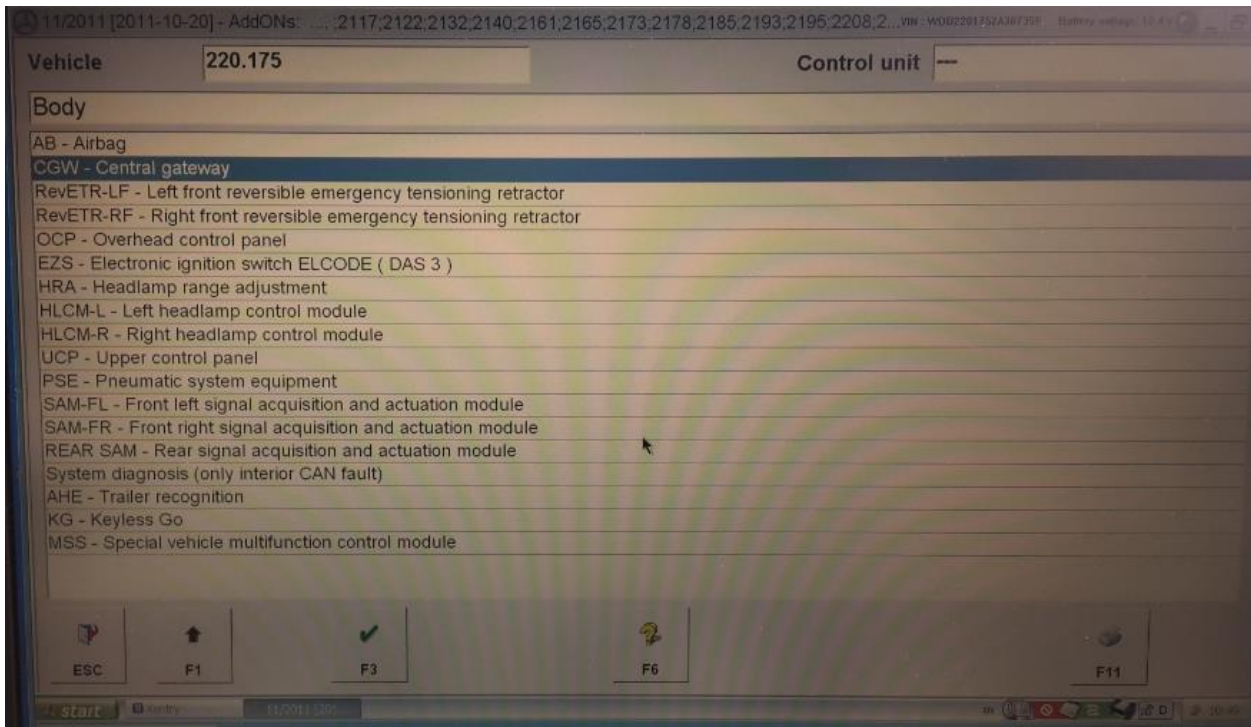
Select appropriate setting for your vehicle and see



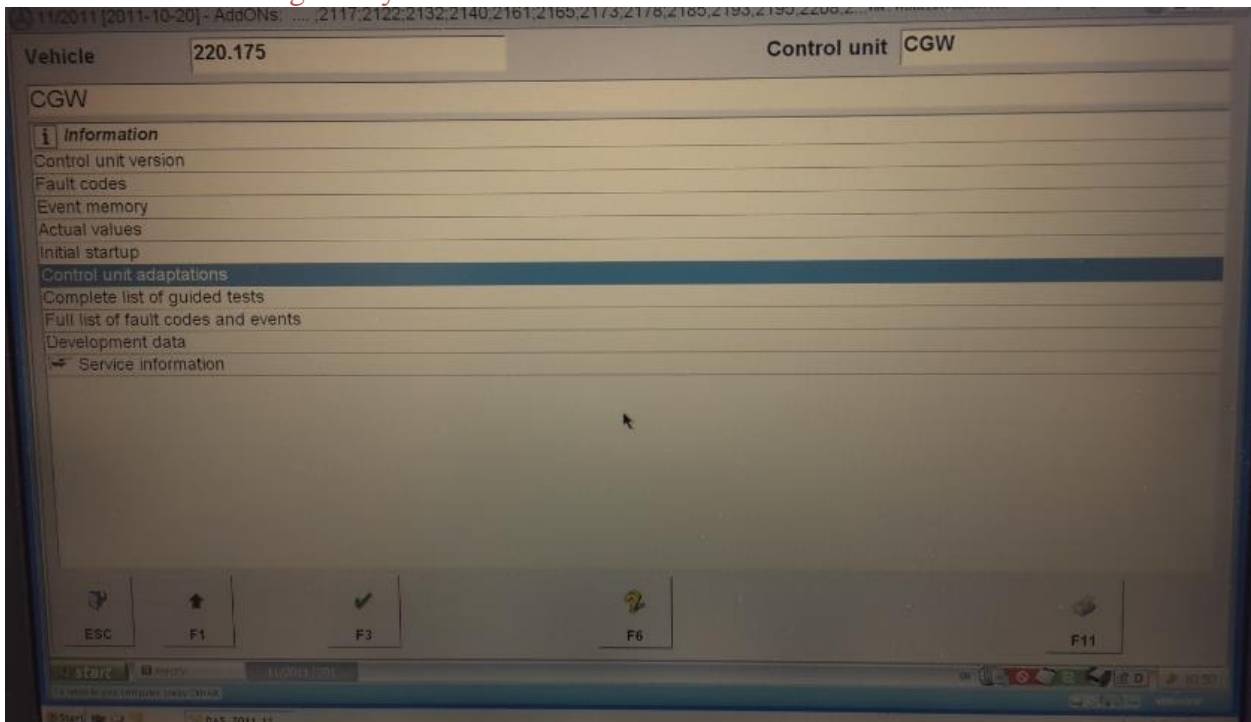
Select 'Control Units' and see



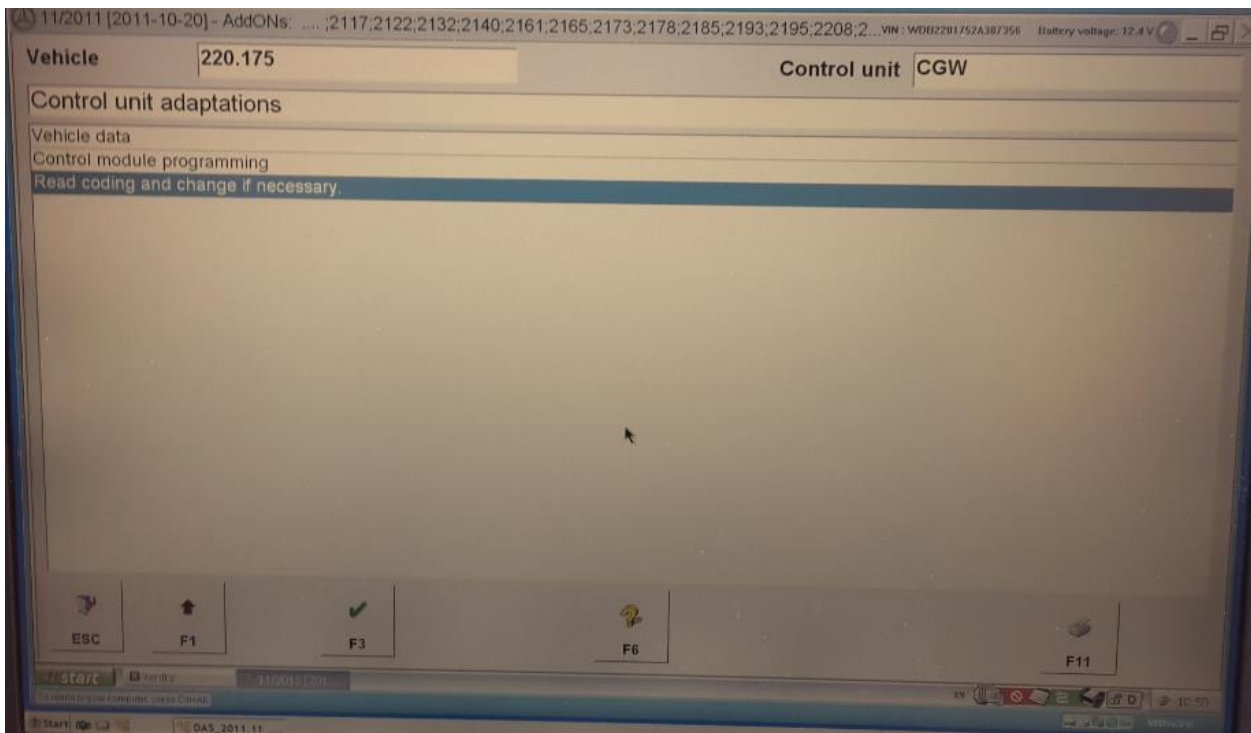
Select 'Body' and see



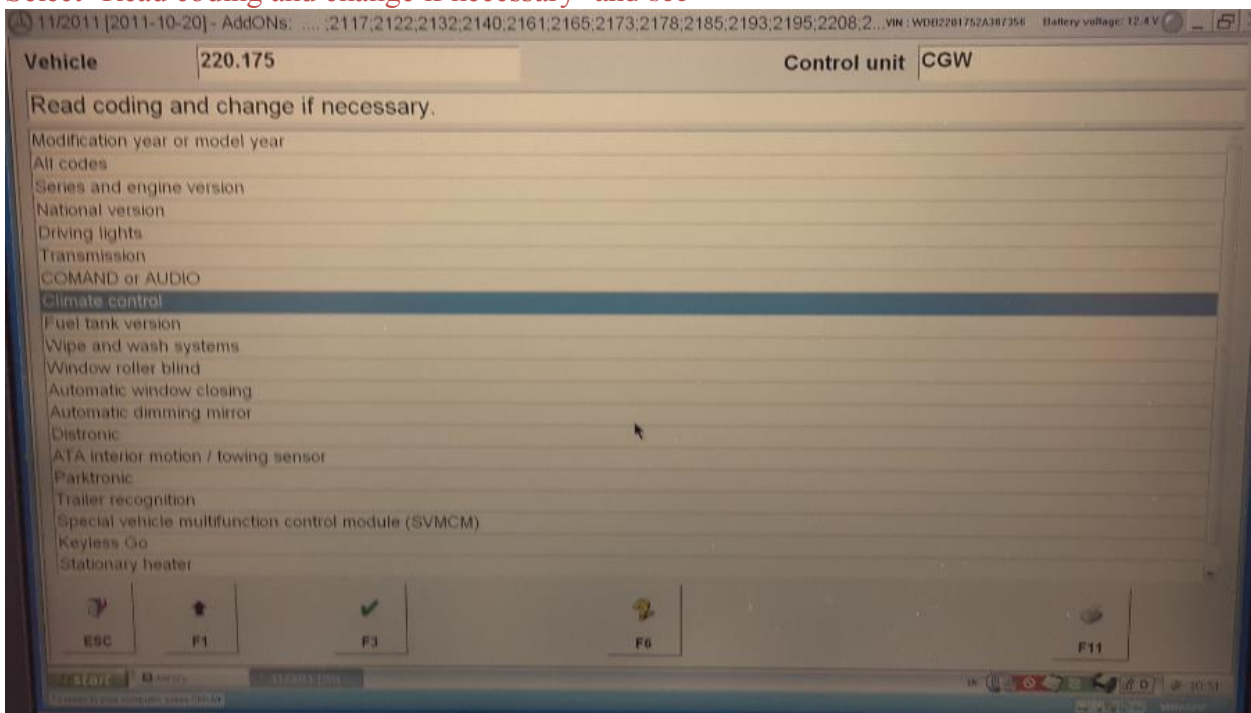
Select 'CGW-Central gateway' and see



Select 'Control Unit Adaptations' and see

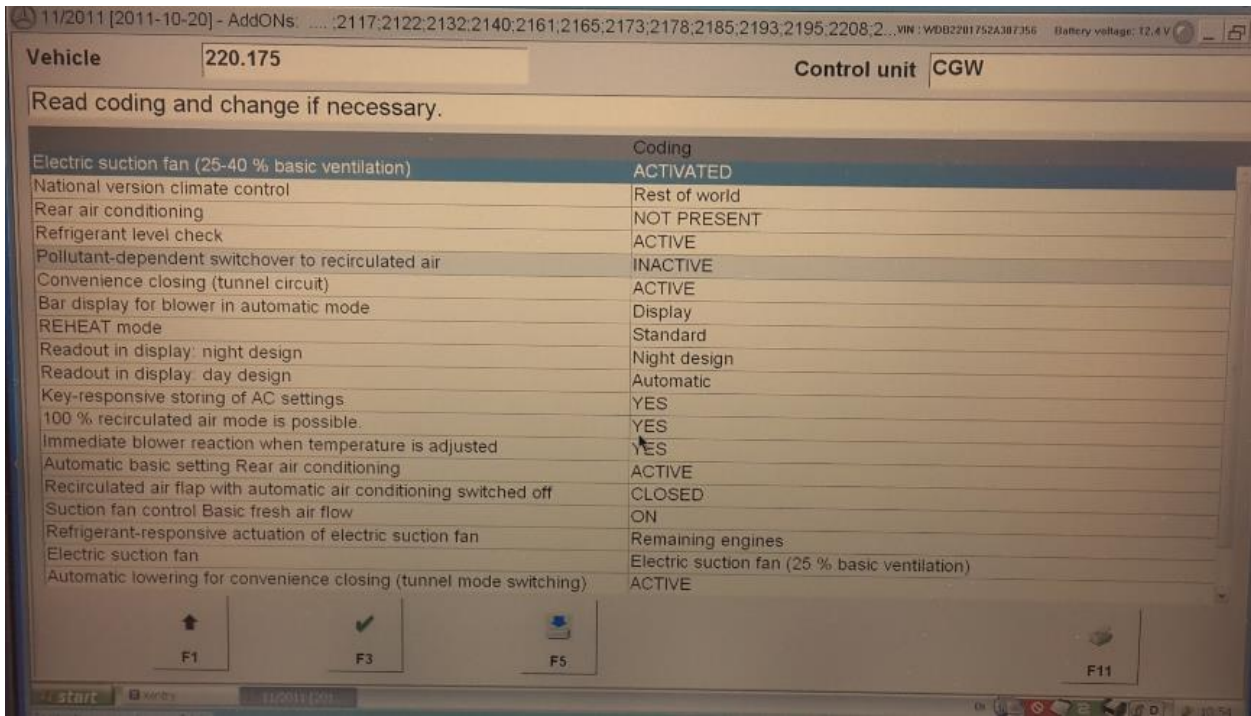


Select 'Read coding and change if necessary' and see



Select 'Climate control' and see





This window shows the ACC parameters controlled via the Central gateway (CGW) and their corresponding values. I then investigated each one in turn to better understand the function being controlled.

## 12.2. ACC Parameters and Possible Values

Warning: Please note that the coding values as stored and shown below are for my particular vehicle only, an Australian delivered 2003 Updated Version of W220 S500L with two zone air conditioning. Other vehicles will most likely have different values to mine.

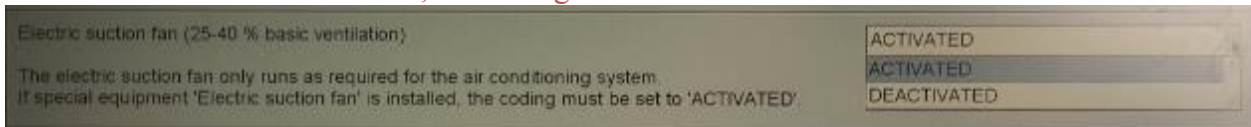
### 12.2.1. Electric suction fan (25-40 % basic ventilation)

My OEM coding value was set to 'ACTIVATED'.



STAR DAS says:

“The electric suction fan only runs as required for the air conditioning system. If special equipment ‘Electric suction fan’ is installed, the coding must be set to ‘ACTIVATED’.”



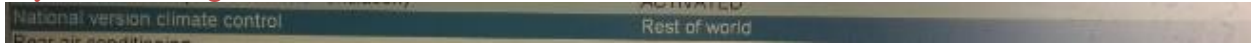
Coding options are: ‘ACTIVATED’ or ‘DEACTIVATED’.

My interpretation as to what M-B means for parameter ‘Electric suction fan (25-40 % basic ventilation)’ is;

- **ACTIVATED:** When the “special equipment” ‘Electric suction fan’ is installed, the coding must be set to ‘ACTIVATED’ to allow the engine electronics to run the electric suction fan as required for the air conditioning system in addition to the control required for engine cooling. The basic ventilation obtained for the air conditioner is supplied for vehicle speed <70Km/h and air temperature >15°C. The OEM factory setting for normal climates is 25%, but options for 30% and 40% are also available. The actual percentage setting used for the ACC basic ventilation is coded by parameter ‘Electric suction fan’, see Section 12.2.18. The engine electronics calculate the fan speed setting depending on the engine temperature and compares this with the request from the air conditioning. The greater of the two is output as the control signal.
- **DEACTIVATED:** The electric suction fan only runs as required for engine cooling. (To Be Confirmed.)

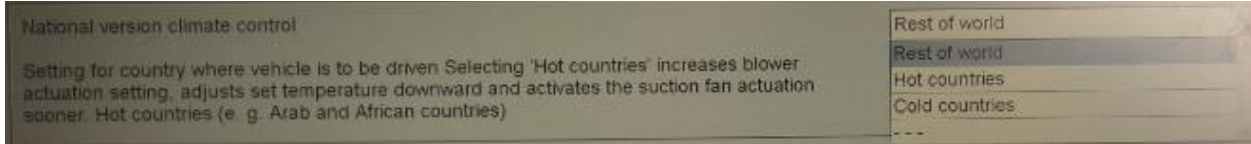
### 12.2.2. National version climate control (NR.78:)

My OEM coding value was set to 'Rest of world'.



STAR DAS says:

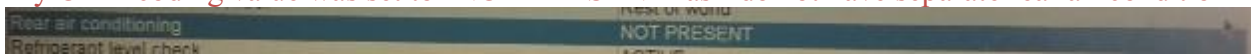
“Setting for country where vehicle is to be driven Selecting ‘Hot countries’ increases blower actuation setting, adjusts set temperature downwards and activates the suction fan actuation sooner. Hot countries (e. g. Arab and African countries)”



Coding options are: 'Rest of world', 'Hot countries', or 'Cold countries'.

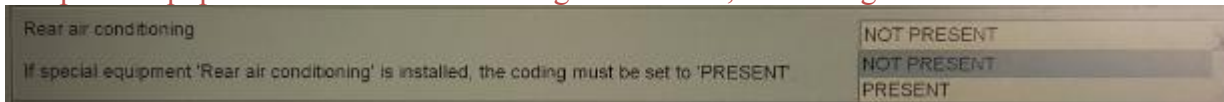
### 12.2.3. Rear air conditioning

My OEM coding value was set to 'NOT PRESENT' as I do not have separate rear air conditioning.



STAR DAS says:

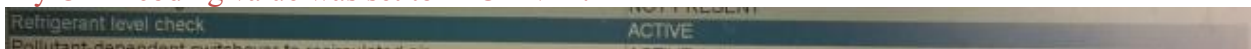
“If special equipment ‘Rear air conditioning’ is installed, the coding must be set to ‘PRESENT’.”



Coding options are: 'NOT PRESENT' or 'PRESENT'.

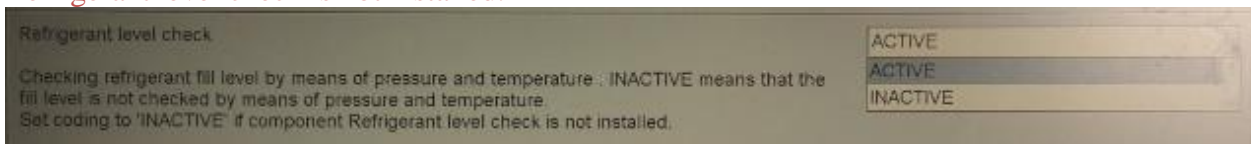
### 12.2.4. Refrigerant level check

My OEM coding value was set to 'ACTIVE'.



STAR DAS says:

“Checking refrigerant fill level by means of pressure and temperature. INACTIVE means that the fill level is not checked by means of pressure and temperature. Set coding to 'INACTIVE' if component Refrigerant level check is not installed.”



Coding options are: 'ACTIVE' or 'INACTIVE'.

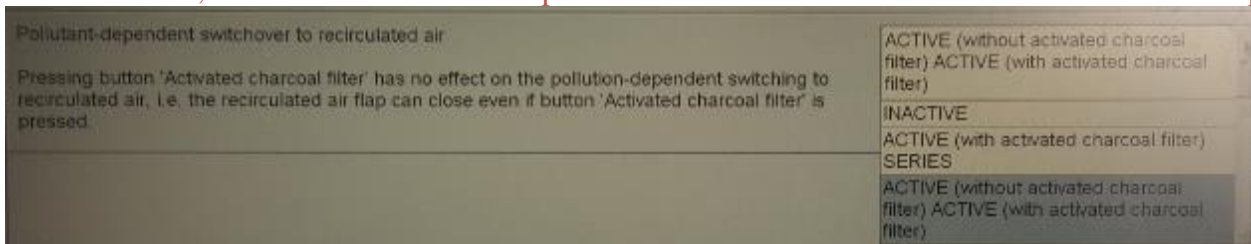
### 12.2.5. Pollutant-dependent switchover to recirculated air (NR.71:)

My OEM coding value was set to 'INACTIVE'. However I took the opportunity to change it to 'ACTIVE (without activated charcoal filter) ACTIVE (with activated charcoal filter)'.



STAR DAS says:

“Pressing button ‘Activated charcoal filter’ has no effect on the pollution-dependent switching to recirculated air, i.e. the recirculated air flap can close even if button ‘Activated charcoal filter’ is pressed.”



Coding options are: ‘ ‘INACTIVE’, ‘ACTIVE (with activated charcoal filter) SERIES’, or ‘ACTIVE (without activated charcoal filter) ACTIVE (with activated charcoal filter)’.

**My interpretation** as to what M-B means for parameter ‘Pollutant-dependent switchover to recirculated air’ is;

- **INACTIVE:** The activated charcoal filter and the recirculated air modes of operation of the ACC are independently selectable as required by the driver.
- **ACTIVE (with activated charcoal filter) SERIES:** Whenever the activated charcoal filter option is selected in the ACC, automatic switchover to recirculated air mode of operation will occur once the sensed pollution levels exceed a preset amount.
- **ACTIVE (without activated charcoal filter) ACTIVE (with activated charcoal filter):** The ACC will automatically switch to recirculated air whenever the sensed pollutant levels reach a certain level, regardless of whether the charcoal filter has been selected or not.

What SERIES means is a mystery.

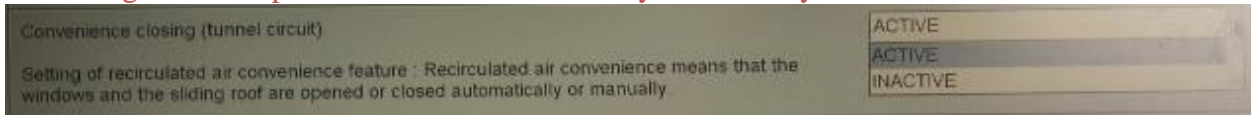
### 12.2.6. Convenience closing (tunnel circuit) (NR.73:)

My OEM coding value was set to ‘ACTIVE’.



STAR DAS says:

“Setting of recirculated air convenience feature: Recirculated air convenience means that the windows and the sliding roof are opened or closed automatically or manually.”



Coding options are: ‘ACTIVE’ or ‘INACTIVE’.

**My interpretation** as to what M-B means for parameter ‘Convenience closing (tunnel circuit)’ is; See also the similar parameter at Section 12.2.19 Automatic lowering for convenience closing (tunnel mode switching) near the bottom of the list. Both parameters have identical definition statements.

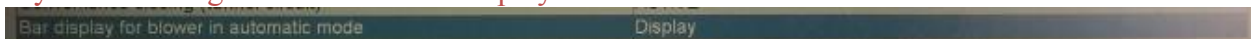
There are two distinct functions associated with the convenience function.

- Any or all open windows and sliding roof may be automatically closed by holding the ACC ‘Recirculate’ button in for a couple of seconds. Ref WIS, the sliding roof and windows are closed one after another to avoid excessively high electrical currents.
- All the vehicle windows and the sliding roof may be simultaneously and remotely opened (lowered) or closed (raised) using the key fob. The key must be in close proximity to the door handle receiver as an IR control signal is used.

I suspect that the first convenience function is set by this parameter and the second convenience function is set by the parameter at the bottom of the list.

### 12.2.7. Bar display for blower in automatic mode (NR.74:)

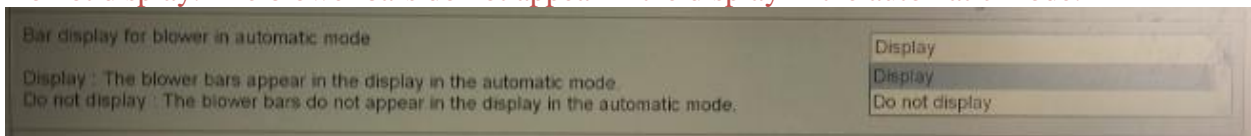
My OEM coding value was set to ‘Display’.



STAR DAS says:

“Display: The blower bars appear in the display in the automatic mode.

Do not display: The blower bars do not appear in the display in the automatic mode.”



Coding options are: ‘Display’ or ‘Do not display’.

### 12.2.8. REHEAT mode (NR.75:)

My OEM coding value was set to 'Standard'.

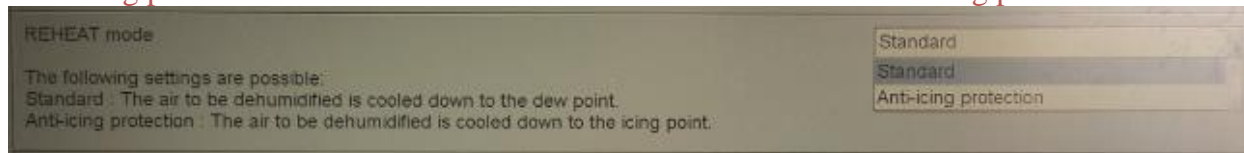


STAR DAS says:

“The following settings are possible:

Standard: The air to be dehumidified is cooled down to the dew point.

Anti-icing protection: The air to be dehumidified is cooled down to the icing point.”



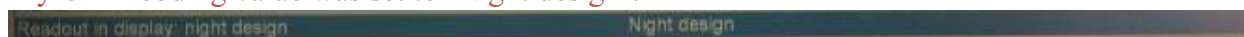
Coding options are: 'Standard' or 'Anti-icing protection'.

**My interpretation** as to what M-B means for parameter 'REHEAT mode' is;

- Standard: No special anti-icing capability is provided and the air passing through the evaporator is cooled down to the dew point (liquid stage only) before entering the passenger compartment. Once enough droplets of liquid accumulate on the evaporator they will be naturally exhausted due to vibration and gravity via the ACC drain pipes.
- Anti-icing protection: Prevents the possibility of the ACC evaporator from icing up in higher humidity environments. Excess ice can reduce air flow through the evaporator and consequently the ACC will not work properly. Excess pressures may even damage the compressor. The air to be dehumidified is cooled down past the dew point (where liquid is formed) to the icing point (where ice is formed) and then the evaporator is momentarily heated slightly to de-ice it. This causes the ice to change back to liquid again, and because there is usually a lot of it, it will naturally be exhausted through the ACC drain pipes. (To Be Confirmed)

### 12.2.9. Readout in display: night design (NR.77:)

My OEM coding value was set to 'Night design'.

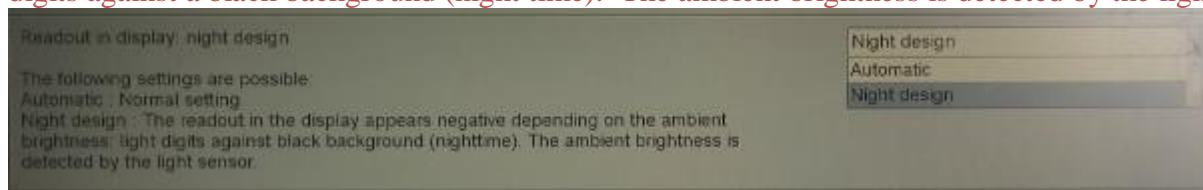


STAR DAS says:

“The following settings are possible.

Automatic: Normal setting

Night design: The readout in the display appears negative depending on the ambient brightness: light digits against a black background (night time). The ambient brightness is detected by the light sensor.”



Coding options are: 'Automatic' or 'Night design'.

### 12.2.10. Readout in display: day design (NR.80:)

My OEM coding value was set to 'Automatic'.

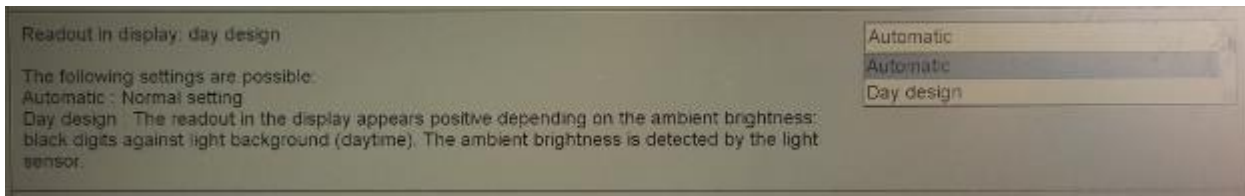


STAR DAS says:

“The following settings are possible.

Automatic: Normal setting

Day design: The readout in the display appears positive depending on the ambient brightness: black digits against a light background (day time). The ambient brightness is detected by the light sensor.”



Coding options are: 'Automatic' or 'Day design'.

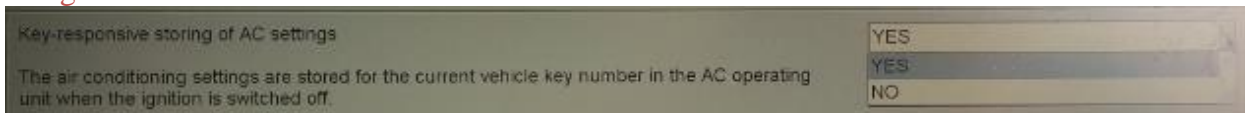
### 12.2.11. Key-responsive storing of AC settings (NR.81:)

My OEM coding value was set to 'YES'.



STAR DAS says:

"The air conditioning settings are stored for the current vehicle key number in the AC operating unit when the ignition is switched off."



Coding options are: 'YES' or 'NO'.

### 12.2.12. 100% recirculated air mode is possible (NR.83:)

My OEM coding value was set to 'YES'.



STAR DAS says:

"Never allow the use of 100% recirculated air in desert countries.

In desert countries, the vacuum associated with 100% recirculated air mode may cause sand to enter the interior compartment."



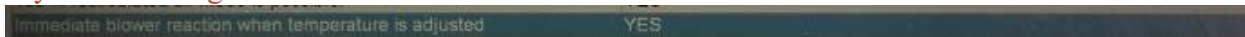
Coding options are: 'YES' or 'NO'.

Note **my interpretation** as to what M-B means for parameter "100% recirculated air mode is possible" is:

- YES: 100% recirculated air mode is possible.
- NO: 100% recirculated air mode is not available. In desert countries, the vacuum associated with having 100% recirculated air may cause dust to be drawn into the interior compartment.

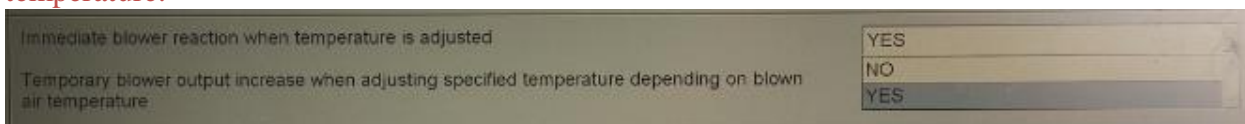
### 12.2.13. Immediate blower reaction when temperature is adjusted (NR.84:)

My OEM coding value was set to 'YES'.



STAR DAS says:

"Temporary blower output increase when adjusting specified temperature depending on blown air temperature."



Coding options are: 'NO' or 'YES'.

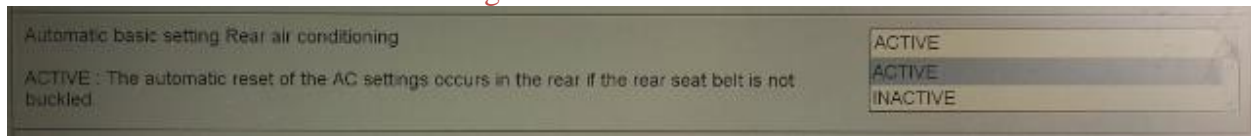
### 12.2.14. Automatic basic setting Rear air conditioning (NR.85:)

My OEM coding value was set to 'ACTIVE'.



STAR DAS says:

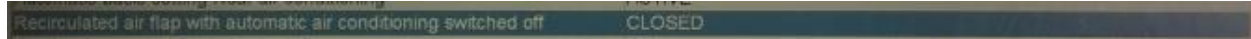
“The automatic reset of the AC settings occurs in the rear if the seat belt is not buckled.”



Coding options are: ‘ACTIVE’ or ‘INACTIVE’.

### 12.2.15. Recirculated air flap with automatic air conditioning switched off (NR.86:)

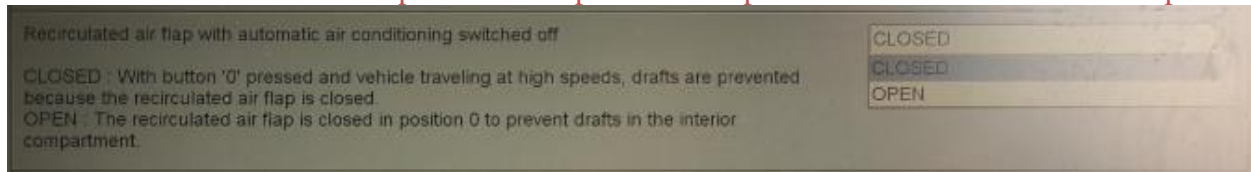
My OEM coding value was set to ‘CLOSED’.



STAR DAS says:

“CLOSED: With button ‘0’ pressed and the vehicle traveling at high speeds, drafts are prevented because the recirculated air flap is closed.

OPEN: The recirculated air flap is closed in position 0 to prevent drafts in the interior compartment.”



Coding options are: ‘CLOSED’ or ‘OPEN’.

Note this definition doesn’t make sense and implies that the recirculated air flap is closed with the ACC on/off button in position ‘0’ for **both** ‘CLOSED’ and ‘OPEN’ options.

**My interpretation** (yet To Be Confirmed) as to what M-B really means for ACC parameter ‘Recirculated air flap with automatic air conditioning switched off’ is;

- CLOSED: With ACC button ‘0’ pressed and the vehicle traveling at high speeds, drafts are prevented because the recirculated air flap is **closed**.
- OPEN: The recirculated air flap is **open** in position 0.

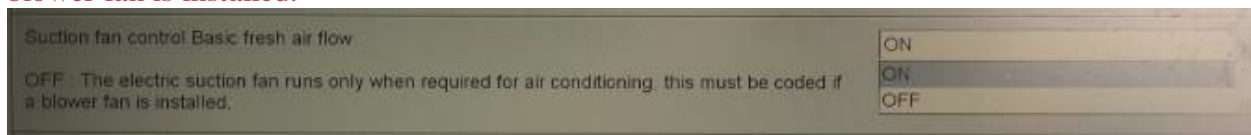
### 12.2.16. Suction fan control Basic fresh air flow (NR.87:)

My OEM coding value was set to ‘ON’.



STAR DAS says:

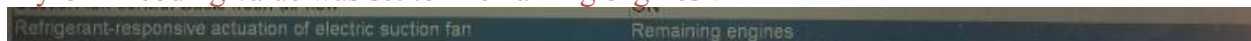
“OFF: The electric suction fan runs only when required for air conditioning. This must be coded if a blower fan is installed.”



Coding options are: ‘ON’ or ‘OFF’.

### 12.2.17. Refrigerant-responsive actuation of electric suction fan

My OEM coding value was set to ‘Remaining engines’.



STAR DAS says:

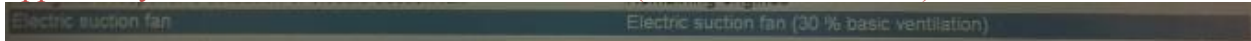
“Please select a profile.”



Coding options are: ‘Remaining engines’, M137, OM628 Rest of World’, ‘BR230’, ‘M113 USA’, ‘M137’, or ‘---’.

**12.2.18. Electric suction fan (NR.92: and NR.93:)**

My OEM coding value was set to ‘Electric suction fan (25% basic ventilation)’. However I took this opportunity to increase it to ‘Electric suction fan (30% basic ventilation)’.



STAR DAS says:

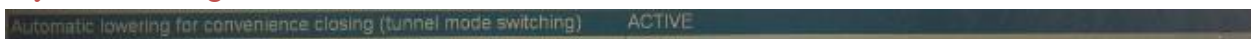
“Please select a profile.”



Coding options are: ‘Electric suction fan (25% basic ventilation)’, ‘Electric suction fan (40% basic ventilation)’, ‘Electric suction fan (30% basic ventilation)’ or ‘---’.

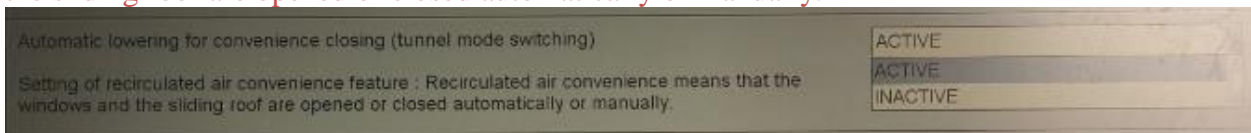
**12.2.19. Automatic lowering for convenience closing (tunnel mode switching) (NR.69:)**

My OEM coding value was set to ‘ACTIVE’.



STAR DAS says:

“Setting of recirculated air convenience feature: Recirculated air convenience means that the windows and the sliding roof are opened or closed automatically or manually.”



Coding options are: ‘ACTIVE’ or ‘INACTIVE’.

**My interpretation** as to what M-B means for parameter ‘Automatic lowering for convenience closing (tunnel mode switching)’ is;

See also the similar parameter at Section 12.2.6 Convenience closing (tunnel circuit) (NR.73:) near the top of the list. Both parameters have identical definition statements.

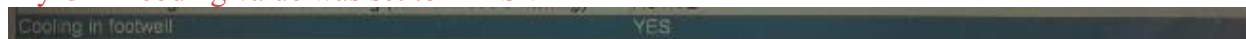
There are two distinct functions associated with the convenience function.

- Any or all open windows and sliding roof may be automatically closed by holding the ACC ‘Recirculate’ button in for a couple of seconds. Ref WIS, the sliding roof and windows are closed one after another to avoid excessively high electrical currents.
- All the vehicle windows and the sliding roof may be simultaneously and remotely opened (lowered) or closed (raised) using the key fob. The key must be in close proximity to the door handle receiver as an IR control signal is used.

I suspect that the first convenience function is set by the parameter at the top of the list and the second convenience function is set by this parameter.

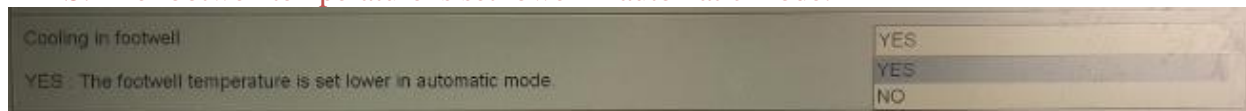
### 12.2.20. Cooling in footwell

My OEM coding value was set to 'YES'.



STAR DAS says:

“YES: The footwell temperature is set lower in automatic mode.”



Coding options are: 'YES' or 'NO'.

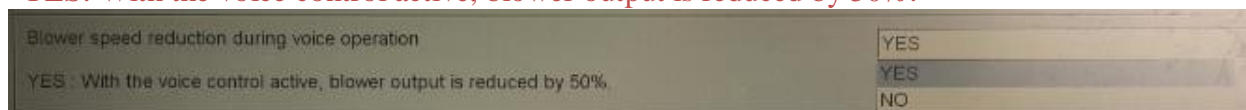
### 12.2.21. Blower speed reduction during voice operation

My OEM coding value was set to 'YES'.



STAR DAS says:

“YES: With the voice control active, blower output is reduced by 50%.”



Coding options are: 'YES' or 'NO'.

**My interpretation** of parameter 'Blower speed reduction during voice operation' is;

- YES: With the voice control active, the ACC blower fan speed is reduced by 50%. This reduces the noise level and allows better voice control operation.
- NO: With the voice control active, the ACC blower fan speed does not change.