



Contents

00 - Technical data	1
1 Safety information	1
1.1 Safety precautions when working on air conditioning systems	1
1.2 Safety precautions when handling refrigerants	1
1.3 Safety measures when working on vehicles with a start/stop system	2
1.4 Safety precautions when working on the cooling system	2
1.5 Safety precautions for working on vehicles with auxiliary/supplementary heater	2
2 Identification	4
2.1 Identification of heater and air conditioning unit	4
3 General information	6
3.1 Notes for vehicles with start-stop system	6
3.2 Type plates	6
4 Repair instructions	10
4.1 Working on refrigerant circuit	10
4.2 General repair instructions	10
4.3 Refrigerant circuit seals	10
5 Technical data	12
5.1 Refrigerant capacity	12
5.2 Refrigerant oil capacities	12
5.3 Oil distribution	13
80 - Heating	14
1 Overview of fitting locations - heating	14
1.1 Overview of fitting locations - components not located in passenger compartment	14
1.2 Overview of fitting locations - components located in front section of passenger compartment	16
2 Control motors	19
2.1 Overview of fitting locations – control motors at front	19
2.2 Removing and installing temperature flap control motor V68 with potentiometer G92	20
2.3 Removing and installing air recirculation flap control motor V113	21
2.4 Removing and installing air distribution flap control motor V428 with potentiometer G645	21
3 Heater	22
3.1 Assembly overview – heater unit	22
3.2 Removing and installing fresh air blower V2	27
3.3 Removing and installing fresh air blower control unit J126	27
3.4 Removing and installing dust and pollen filter	27
3.5 Removing and installing heater unit	27
3.6 Dismantling and assembling heater unit	27
3.7 Checking auxiliary air heater element Z35 with auxiliary air heater control unit J604	27
3.8 Removing and installing auxiliary air heater element Z35 with auxiliary air heater control unit J604	27
3.9 Removing and installing heat exchanger	27
4 Air duct	28
4.1 Assembly overview – air duct and air distribution in passenger compartment	28
4.2 Removing and installing driver side footwell vents	28
4.3 Removing and installing front passenger side footwell vents	28
4.4 Removing and installing rear footwell vent	28
4.5 Removing and installing fresh air intake	28
4.6 Removing and installing cover for fresh air intake	28
4.7 Removing and installing air intake duct	28
4.8 Checking forced ventilation for passenger compartment	29
4.9 Removing and installing forced ventilation for passenger compartment	29



4.10	Removing and installing air duct for defroster vent	29
4.11	Removing and installing air duct for centre vent	29
5	Operating and display unit	30
5.1	Overview of operating and display unit	30
5.2	Removing and installing operating and display unit	32
6	Other controlling and regulating components	33
6.1	Removing and installing ambient temperature sensor G17	33
87	Air conditioning system	34
1	Overview of fitting locations - air conditioning system	34
1.1	Overview of fitting locations - components not located in passenger compartment	34
1.2	Overview of fitting locations - components located in front section of passenger compartment	38
2	Refrigerant circuit	43
2.1	System overview - refrigerant circuit	43
2.2	Assembly overview – condenser	46
2.3	Removing and installing refrigerant circuit pressure sender G805	48
2.4	Removing and installing expansion valve	49
2.5	Removing and installing condenser	53
2.6	Removing and installing desiccant bag or cartridge	56
2.7	Removing and installing refrigerant line with internal heat exchanger	67
2.8	Removing and installing damper weight for refrigerant line, low-pressure side	70
2.9	Removing and installing evacuating and charging valves on low and high-pressure side	71
2.10	Commissioning air conditioning system after filling refrigerant circuit	73
3	Air conditioner compressor	74
3.1	Assembly overview – drive unit of air conditioner compressor	74
3.2	Assembly overview - pulley	78
3.3	Removing air conditioning compressor from and installing on bracket	85
3.4	Removing and installing air conditioner compressor	88
3.5	Checking high-pressure safety valve on air conditioner compressor	93
3.6	Removing and installing pulley	94
4	Front heater and air conditioning unit	104
4.1	Assembly overview – heater and air conditioning unit	104
4.2	Assembly overview - add-on parts of heater and air conditioning unit and of air intake box	111
4.3	Assembly overview – evaporator housing	113
4.4	Assembly overview - flaps and partitions in air distribution housing	115
4.5	Removing and installing heater and air conditioning unit	118
4.6	Dismantling and assembling heater and air conditioning unit	124
4.7	Removing and installing air distribution housing	126
4.8	Removing and installing holder for heater and air conditioning unit	127
4.9	Removing and installing evaporator	128
4.10	Removing and installing fresh air blower control unit J126	130
4.11	Removing and installing dust and pollen filter	132
4.12	Removing and installing fresh air blower V2	136
4.13	Checking auxiliary air heater element Z35 with auxiliary air heater control unit J604	139
4.14	Removing and installing auxiliary air heater element Z35 with auxiliary air heater control unit J604	141
4.15	Removing and installing heat exchanger	143
4.16	Removing and installing coolant pipes on heat exchanger	167
4.17	Removing and installing evaporator temperature sensor G308	171
4.18	Checking condensation drain	173
4.19	Removing and installing condensation drain	175
5	Air duct	180
5.1	Assembly overview – air duct and air distribution in passenger compartment	180
5.2	Removing and installing fresh air intake	181



5.3	Removing and installing cover for fresh air intake	184
5.4	Removing and installing air intake duct	186
5.5	Removing and installing driver side footwell vents	187
5.6	Removing and installing front passenger side footwell vents	189
5.7	Removing and installing rear footwell vent	190
5.8	Removing and installing air duct for rear centre console vent	192
5.9	Checking forced ventilation for passenger compartment	192
5.10	Removing and installing forced ventilation for passenger compartment	193
5.11	Removing and installing air duct for defroster vent	194
5.12	Removing and installing air duct for centre vent	194
6	Operating and display unit	196
6.1	Overview of fitting locations – operating and display unit	196
6.2	Removing and installing operating and display unit	200
7	Control motors	203
7.1	Overview of fitting locations – control motors at front	203
7.2	Removing and installing temperature flap control motor V68 with potentiometer G92	208
7.3	Removing and installing defroster flap control motor V107 with potentiometer G135	212
7.4	Removing and installing air recirculation flap control motor V113	215
7.5	Removing and installing left temperature flap control motor V158 with potentiometer G220	220
7.6	Removing and installing right temperature flap control motor V159 with potentiometer G221	224
7.7	Removing and installing fresh air/air recirculation, air flow flap control motor V425 with potentiometer G644	228
7.8	Removing and installing front air distribution flap control motor V426 with potentiometer for front air distribution flap control motor G642	232
7.9	Removing and installing air distribution flap control motor V428 with potentiometer G645	237
7.10	Removing and installing air distribution flap actuator	241
8	Other controlling and regulating components	249
8.1	Removing and installing sunlight penetration photosensor G107	249
8.2	Removing and installing air quality sensor G238	250
8.3	Working principles of air quality sensor G238	252
8.4	Removing and installing ambient temperature sensor G17	253
8.5	Removing and installing humidity sender for air conditioning system G260	254
8.6	Removing and installing left vent temperature sender G150	254
8.7	Removing and installing right vent temperature sender G151	257
8.8	Removing and installing footwell vent temperature sender G192	259