

Contents

00 - Technical data	1
1 Safety instructions	1
1.1 Safety precautions when working on air Conditioning systems	1
1.2 Safety precautions when handling refrigerants	2
1.3 Safety precautions for working on vehicles with start-stop system	2
1.4 Safety precautions when handling A/C service stations	2
1.5 Safety measures for working on vehicles with high voltage system	3
1.6 Safety measures when working in the vicinity of high-voltage components	4
1.7 Safety precautions when handling pressurised containers	5
2 Laws and regulations	6
2.1 Regulations and directives	6
2.2 Filling a refrigerant circuit with other refrigerants	7
2.3 Safety at work	7
3 Repair instructions	8
3.1 Rules of cleanliness	8
3.2 Seals for the refrigerant circuit	8
3.3 Refrigerant and refrigerant oil	9
3.4 Handling pressurised containers	11
3.5 Handling refrigerant	13
4 Denomination	15
4.1 Information plate for refrigerant circuit	15
5 Technical data	16
5.1 Filling capacities for refrigerant	16
5.2 Filling capacities for refrigerant oil	16
5.3 Safety data sheets	16
6 Technical and physical principles	17
6.1 Principles of the air-conditioning technology	17
6.2 Physical properties	21
6.3 Product features	27
6.4 Function and purpose of the air conditioning system	28
6.5 Further sources of information	29
87 - Air conditioning system	31
1 Refrigerant circuit	31
1.1 System overview - refrigerant circuit	31
1.2 General description – components of the refrigerant circuit	34
1.3 Possible complaints	58
1.4 Identifying leaks	62
1.5 Replace components	72
1.6 Clean the refrigerant circuit	84
1.7 Checking pressures with the pressure gauge	98
2 Working with the A/C service station	102
2.1 General points on working with the A/C service station	103
2.2 Connecting the A/C service station to the refrigerant circuit	105
2.3 Performing gas analysis for the refrigerant	107
2.4 Exhaust refrigerant circuit.	109
2.5 Evacuating the refrigerant circuit.	112
2.6 Filling the refrigerant circuit	118
2.7 Operate the air conditioning system after filling	121
2.8 Switching off the A/C service station and disconnecting it from the refrigerant circuit	123
2.9 Filling refrigerant into the reservoir	125
2.10 Draining the A/C service station	126



2.11	Cleaning the electrically driven air conditioning compressor	126
2.12	Clean the refrigerant circuit	129
2.13	Filling contaminated refrigerant into a recycling cylinder for analysis, treatment or disposal .	133
2.14	Check pressures	139
3	Test equipment and tools	219
3.1	Tools and materials available from the distribution centre or the importer	219
3.2	Tools and materials, which are commercially available	220
3.3	Tools that can be made instead of purchasing	220