



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	2
1.3 Safety measures when working on vehicles with a start/stop system	2
1.4 Safety precautions when using air conditioner service stations	2
1.5 Safety measures for working on vehicles with high-voltage system	3
1.6 Safety precautions when working in the vicinity of high-voltage components	4
1.7 Safety precautions when working on pressure vessels	4
2 Laws and regulations	5
2.1 Legal regulations and standards	5
2.2 Charging refrigerant circuit with different refrigerants	6
2.3 Occupational health and safety	7
3 Repair notes	8
3.1 Rules for cleanliness	8
3.2 Refrigerant circuit seals	8
3.3 Refrigerant and refrigerant oil	9
3.4 Handling pressure vessels	11
3.5 Handling refrigerants	12
4 Identification	14
4.1 Notice for refrigerant circuit	14
5 Technical data	15
5.1 Refrigerant capacity	15
5.2 Refrigerant oil capacities	15
5.3 Safety data sheets	15
6 Basic technical and physical properties	16
6.1 Basics of air conditioning technology	16
6.2 Physical properties	20
6.3 Product characteristics	27
6.4 Function and role of air conditioning system	27
6.5 Other reference material	29
87 - Air conditioning system	30
1 Refrigerant circuit	30
1.1 System overview - refrigerant circuit	30
1.2 General description - components of refrigerant circuit	36
1.3 Possible complaints	72
1.4 Investigating leaks	76
1.5 Renewing components	87
1.6 Cleaning refrigerant circuit	99
1.7 Checking pressures with pressure gauge	133
2 Working with air conditioner service station	137
2.1 Working with air conditioner service station	138
2.2 Connecting air conditioner service station to refrigerant circuit	140
2.3 Performing gas analysis of refrigerant	143
2.4 Purging refrigerant circuit	146
2.5 Evacuating refrigerant circuit	149
2.6 Charging refrigerant circuit	155
2.7 Bringing air conditioning system into service after charging	158
2.8 Switching off air conditioner service station and separating from refrigerant circuit	160
2.9 Charging refrigerant in reservoir	162
2.10 Emptying air conditioner service station	163



2.11	Cleaning electrical air conditioning compressor	163
2.12	Cleaning refrigerant circuit	166
2.13	Filling contaminated refrigerant in a recycling cylinder for analysis, processing or disposal ..	169
2.14	Checking pressures	174
3	Testing equipment and tools	262
3.1	Tools and materials available from distribution centre or importer	262
3.2	Tools and materials available commercially	262