

## Contents

<b>00 - Technical data</b> .....	<b>1</b>
<b>1 Safety precautions</b> .....	<b>1</b>
1.1 Safety precautions when working on air conditioners .....	1
1.2 Safety precautions when handling refrigerant R744 .....	1
1.3 Safety precautions when working on vehicles with start/stop system .....	2
1.4 Safety precautions when handling air conditioner service stations .....	2
1.5 Safety precautions when handling pressure vessels .....	3
1.6 Safety precautions when handling refrigerant R1234yf and R134a .....	3
<b>2 Laws and regulations</b> .....	<b>4</b>
2.1 Legal regulations and guidelines .....	4
2.2 Charging refrigerant circuit with other refrigerants .....	5
2.3 Occupational health & safety .....	5
<b>3 Repair instructions</b> .....	<b>6</b>
3.1 Rules for cleanliness .....	6
3.2 Refrigerant circuit seals .....	6
3.3 Refrigerant and refrigerant oil .....	6
3.4 Handling pressure vessels .....	9
3.5 Handling refrigerant .....	10
<b>4 Identification</b> .....	<b>12</b>
4.1 Label for refrigerant circuit .....	12
<b>5 Technical data</b> .....	<b>13</b>
5.1 Refrigerant capacities .....	13
5.2 Refrigerant oil capacities .....	13
5.3 Safety data sheets .....	13
<b>6 Basic technical and physical principles</b> .....	<b>14</b>
6.1 Principles of air conditioning systems .....	14
6.2 Physical properties .....	19
6.3 Product properties .....	25
6.4 Function of air conditioner .....	25
6.5 Other reference material .....	26
<b>87 - Air conditioning system</b> .....	<b>28</b>
<b>1 Refrigerant circuit</b> .....	<b>28</b>
1.1 System overview - refrigerant circuit .....	28
1.2 General description of refrigerant circuit components .....	30
1.3 Possible complaints .....	43
1.4 Locating leaks .....	46
1.5 Renewing components .....	53
1.6 Cleaning refrigerant circuit .....	63
1.7 Checking pressure values with a pressure gauge .....	75
<b>2 Working with air conditioner service station</b> .....	<b>77</b>
2.1 Working with air conditioner service station .....	77
2.2 Connecting air conditioner service station to refrigerant circuit .....	79
2.3 Discharging refrigerant circuit .....	80
2.4 Evacuating refrigerant circuit .....	82
2.5 Charging refrigerant circuit .....	86
2.6 Starting up air conditioner after charging .....	88
2.7 Switching off air conditioner service station and disconnecting from refrigerant circuit .....	89
2.8 Charging internal pressure vessel with refrigerant .....	91
2.9 Connecting and disconnecting bottle of refrigerant .....	91
2.10 Discharging air conditioner service station .....	91
2.11 Cleaning refrigerant circuit .....	91



2.12	Decanting contaminated refrigerant into recycling cylinder for analysis, treatment or disposal .....	93
2.13	Checking pressures .....	94
<b>3</b>	<b>Test equipment and tools .....</b>	<b>130</b>
3.1	Tools and materials available from your distribution centre or Importer .....	130
3.2	Commercially available tools and materials .....	131
3.3	Tools you can make yourself .....	131
3.4	Adapters for connecting flushing circuits .....	132