

# DIN EN 15502-2-1:2017-09 (E)

Gas-fired central heating boilers - Part 2-1: Specific standard for type C appliances and type B2, B3 and B5 appliances of a nominal heat input not exceeding 1 000 kW (includes Amendment 1:2016)

---

<b>Contents</b>	<b>Page</b>
European foreword .....	6
Introduction.....	8
<b>1 Scope .....</b>	<b>10</b>
<b>2 Normative references .....</b>	<b>11</b>
<b>3 Terms, definitions and symbols .....</b>	<b>13</b>
<b>3.1 Terms and definitions.....</b>	<b>13</b>
<b>3.2 Symbols .....</b>	<b>18</b>
<b>4 Classification .....</b>	<b>18</b>
<b>5 Construction .....</b>	<b>19</b>
<b>5.1 General .....</b>	<b>19</b>
<b>5.2 Conversion to different gases.....</b>	<b>19</b>
<b>5.3 Materials .....</b>	<b>19</b>
<b>5.4 Method of construction .....</b>	<b>20</b>
<b>5.4.1 Design .....</b>	<b>20</b>
<b>5.4.2 Checking the state of operation.....</b>	<b>20</b>
<b>5.4.3 Use and servicing.....</b>	<b>21</b>
<b>5.4.4 Connections to the gas and water pipes .....</b>	<b>21</b>
<b>5.4.5 Soundness.....</b>	<b>21</b>
<b>5.4.6 Supply of combustion air and evacuation of the combustion products.....</b>	<b>21</b>
<b>5.4.7 Dampers.....</b>	<b>22</b>
<b>5.4.8 Air proving .....</b>	<b>22</b>
<b>5.4.9 Gas/air ratio controls.....</b>	<b>23</b>
<b>5.4.10 Fan.....</b>	<b>23</b>
<b>5.4.11 Drainage.....</b>	<b>23</b>
<b>5.4.12 Operational safety in the event of failure of the auxiliary energy .....</b>	<b>23</b>
<b>5.4.13 Special provision for Low Temperature Boilers and Condensing Boilers .....</b>	<b>23</b>
<b>5.5 Burners.....</b>	<b>24</b>
<b>5.6 Pressure test points .....</b>	<b>24</b>
<b>5.7 Requirements for the application of control and safety devices.....</b>	<b>24</b>
<b>5.7.1 General .....</b>	<b>24</b>
<b>5.7.2 Adjusters and range-rating devices .....</b>	<b>24</b>
<b>5.7.3 Gas circuit.....</b>	<b>25</b>
<b>5.7.4 Gas pressure regulator .....</b>	<b>25</b>
<b>5.7.5 Ignition devices .....</b>	<b>25</b>
<b>5.7.6 Flame supervision devices .....</b>	<b>25</b>
<b>5.7.7 Gas/air ratio controls.....</b>	<b>25</b>
<b>5.7.8 Thermostats and water temperature limiting devices.....</b>	<b>25</b>
<b>5.7.9 Remote control .....</b>	<b>25</b>
<b>5.7.10 Expansion vessel and pressure gauge.....</b>	<b>25</b>
<b>5.7.11 Protection against frost for boilers intended to be installed in a partially protected place.....</b>	<b>25</b>
<b>5.7.12 Adjusting, control and safety devices for the domestic hot water circuit.....</b>	<b>25</b>

6	Electrical safety .....	26
7	Controls .....	26
8	Operational requirements .....	26
8.1	General .....	26
8.1.1	Characteristics of the reference and limit gases .....	26
8.1.2	General test conditions.....	26
8.2	Soundness.....	30
8.2.1	Soundness of the gas circuit.....	30
8.2.2	Soundness of the combustion circuit.....	30
8.2.3	Soundness of the water circuit .....	34
8.2.4	Soundness of the domestic water circuit .....	34
8.3	Hydraulic resistance.....	34
8.4	Heat inputs and heat output .....	34
8.5	Limiting temperatures.....	35
8.5.1	General .....	35
8.5.2	Limiting temperatures of the adjusting, control and safety devices.....	35
8.5.3	Limiting temperatures of the side walls, the front and the top .....	36
8.5.4	Limiting temperature of the test panels and the floor .....	36
8.6	Ignition, cross lighting, flame stability .....	36
8.6.1	General .....	36
8.6.2	Limit conditions .....	36
8.6.3	<b>A1</b> Special flue conditions <b>A1</b> .....	37
8.6.4	Reduction of the gas rate of the ignition burner .....	40
8.7	Reduction of the gas pressure.....	40
8.8	Defective closure of the gas valve immediately upstream of the main burner.....	40
8.9	Pre-purge.....	40
8.10	Functioning of a permanent ignition burner when the fan stops during the standby time.....	43
8.11	Adjustment, control and safety devices.....	44
8.11.1	General .....	44
8.11.2	Boilers intended to be installed in a partially protected place.....	44
8.11.3	Combination Boilers.....	44
8.11.4	Control devices .....	44
8.11.5	Ignition devices .....	44
8.11.6	Flame supervision device .....	44
8.11.7	Gas pressure regulator .....	44
8.11.8	Thermostats and water temperature limiting devices.....	44
8.12	Carbon monoxide .....	47
8.12.1	General .....	47
8.12.2	Limit conditions .....	47
8.12.3	Special conditions.....	48
8.12.4	Sooting .....	51
8.12.5	Supplementary test for low temperature boilers and condensing boilers .....	51
8.13	NO <sub>x</sub> .....	51
8.14	Special provisions for boilers intended to be installed in a partially protected place .....	51
8.15	Formation of condensate .....	51
8.16	Temperature of combustion products.....	51
8.17	Sound power level.....	52
9	Useful efficiencies.....	69
10	Electric auxiliary energy .....	69

<b>11</b>	<b>Risk assessment</b> .....	<b>69</b>
<b>12</b>	<b>Marking and instructions</b> .....	<b>69</b>
<b>12.1</b>	<b>Boiler marking</b> .....	<b>69</b>
<b>12.1.1</b>	<b>Supplementary markings</b> .....	<b>69</b>
<b>12.2</b>	<b>Instructions</b> .....	<b>69</b>
<b>12.2.1</b>	<b>Technical instructions</b> .....	<b>69</b>
<b>12.2.2</b>	<b>Users instructions</b> .....	<b>76</b>
<b>12.3</b>	<b>Presentation</b> .....	<b>76</b>
<b>12.4</b>	<b>Supplementary marking and instructions in the case of boilers to be installed in partially protected places</b> .....	<b>76</b>
<b>13</b>	<b>Requirements for Eco-design Regulation (No 813/2013) and Energy Labelling Regulation (No 811/2013)</b> .....	<b>76</b>
<b>101</b>	<b>Figures</b> .....	<b>76</b>
<b>102</b>	<b>Listing of tables and numbers</b> .....	<b>89</b>
<b>103</b>	<b>Annexes</b> .....	<b>89</b>
<b>Annex V</b> (informative) <b>Ⓐ</b>	<b>Standards replaced by this standard in combination with part 1 <b>Ⓐ</b></b> .....	<b>90</b>
<b>Annex XA</b> (normative) <b>Ⓐ</b>	<b>Test apparatus for type C<sub>2</sub> boilers <b>Ⓐ</b></b> .....	<b>92</b>
<b>Annex XB</b> (normative) <b>Ⓐ</b>	<b>Test methods to determine the effects of long-term thermal load, long-term condensate exposure, condensing/ non- condensing cycling and resistance to UV radiation <b>Ⓐ</b></b> .....	<b>93</b>
<b>Annex XC</b> (informative) <b>Ⓐ</b>	<b>Variations in gas quality <b>Ⓐ</b></b> .....	<b>94</b>
<b>XC.1</b>	<b>Introduction</b> .....	<b>94</b>
<b>XC.2</b>	<b>Considerations if boilers are intend to be used with larger variations in the gas quality</b> .....	<b>96</b>
<b>XC.2.1</b>	<b>Specification of the acceptable variations</b> .....	<b>96</b>
<b>XC.2.2</b>	<b>Impact of the claimed range around a set value for the normal distributed gases</b> .....	<b>96</b>
<b>XC.2.3</b>	<b>Impact of the declared values</b> .....	<b>97</b>
<b>XC.2.4</b>	<b>Relation between the RG, the DLG and the ELG</b> .....	<b>98</b>
<b>XC.2.5</b>	<b>Self adapting appliances</b> .....	<b>98</b>
<b>Annex XD</b> (informative) <b>Ⓐ</b>	<b>Example on calculation of common duct system for type C<sub>(11)</sub> boilers</b> .....	<b>99</b>
<b>Annex ZB</b> (informative) <b>Ⓐ</b>	<b>Clauses of this European Standard addressing the methods for the verification of the efficiency of the EU Directive 92/42/EEC, relating to the efficiency of new hot boilers with an output of (4 - 400) kW</b> .....	<b>102</b>
<b>Annex ZC</b> (informative) <b>Ⓐ</b>	<b>Relationship between this European Standard and the Requirements of COMMISSION REGULATION (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters <b>Ⓐ</b></b> .....	<b>103</b>