TÜV Rheinland Energy GmbH
Test Centre for Energy Appliances

TÜVRheinland®
Precisely Right.

Report No. K 2926 2020 T1
Residential space heating appliances
Type testing

DIN EN 14785

Type:
DV3000
DV3000-V
DV3000-P
DV3000-PV
DV3000W
DV3000W-V
DV3000W-P
DV3000W-PV

Models:
Diva 3000
Diva 3000-V
Diva 3000-P
Diva 3000-PV
Diva 3000 Wood
Diva 3000 Wood-V
Diva 3000 Wood-P
Diva 3000 Wood-PV

Trademark:
KLOVER

Company:
KLOVER SRL

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-11120-04-00

This accreditation is valid only for the listed standards as stated in the accreditation annex of D-PL-11120-04-00

Type testing
Residential space heating appliances fired by wood pellets
DIN EN 14785: September 2006
Correction 1 DIN EN 14785: October 2007

Applicant/contractor:	**KLOVER SRL** Via A. Volta, 8 37047 San Bonifacio (VR) - Italy
Trademark:	**KLOVER**
Type of appliances:	Residential room heating appliances fired by wood pellets with water heat exchanger, with fan assisted flue discharge and with internal fuel hopper
Models designation:	**Diva 3000; Diva 3000-V; Diva 3000-P; Diva 3000-PV; Diva 3000 Wood; Diva 3000 Wood-V; Diva 3000 Wood-P; Diva 3000 Wood-PV**
Heat input:	12,7 kW – 31,8 kW
Nominal heat output:	12,1 kW – 30,0 kW
Water heat output:	10,1 kW – 25,0 kW
Space heat output:	2,0 kW – 5,0 kW
Maximum allowable water temperature:	80 °C
Maximum allowable water pressure:	2,0 bar
Fuel:	wood pellets, class A1 acc. to EN17225-2; Ø: 6 mm, L_{max}: 30 mm
Type of fuel loading:	automatic load
Date of test:	03-04/09/2020

Remarks: All the room heaters are fitted with an automatic cleaning system for the heat exchanger. For the specific features of each single model, see the overview table on page 3 and the related manufacturer's declaration of extension (annex A 07 of the present report).
The Test Centre recommends to equip the stoves with an additional safety thermal cut-out for the integral fuel hopper.

Test results:
The technical requirements clauses 4-8 of the above mentioned standard are fulfilled. The local applicable installation conditions are to be observed.
The electrical safety, cl. 5.9. of the standard, is not part of this assessment.
The presumption of conformity with the relevant European Directives respectively Regulations could only be confirmed by full compliance with Annex ZA.

Dated in Cologne, 2021-01-25
432 / pom

TÜV Rheinland Energy GmbH
Test Centre according to Construction Product Regulation 305/2011(CPR)
Notified Body: 2456

Assessor:

Dipl.-Ing. A. Pomp

Report released after review:

Dipl.-Ing. M. Reimbold

Overview models designation table:

Model designation	Features	Heat input [kW]:	Nominal heat output [kW]:
Diva 3000 Diva 3000 Wood	-	12,7 – 31,8	12,1 – 30,0
Diva 3000-V Diva 3000 Wood-V*	Additional convection air fan installed		
Diva 3000-P Diva 3000 Wood-P	Additional heat exchanger for domestic hot water supply		
Diva 3000-PV Diva 3000 Wood-PV	Additional convection air fan installed + additional heat exchanger for domestic hot water supply		

*) tested appliance

1 Task

The Test Centre for Energy Appliances was instructed to execute the initial type testing on the appliance **DIVA 3000 Wood-V**, chosen from the manufacturer as representative model of the family, for the operation with wood pellets according to DIN EN 14785:2006, clauses 4-8.
The electrical safety, cl. 5.9. of the standard, is not part of this assessment.
The practical tests were carried out by the laboratory of CMC Centro Misure Compatibilità S.r.l. via della Fisica, 20, in Thiene (VI) – Italy on September 2020.

The (FPC) Factory Production Control was not performed.

2 Description of the appliances

2.1 Construction

Residential room heating appliances fired by wood pellets with water heat exchanger for domestic central heating system. The flue discharge for pellet operation is fan assisted. The stoves are equipped with an automatic ignition and with an automatic cleaning system for the heat exchanger.

Combustion air

The combustion air is to be taken from the installation room.

2.2 General technical data of the equipment under testing

Type:	**DV3000W-V**
Model name:	**DIVA 3000 Wood-V**
Nominal heat output:	30,0 kW
Test fuel:	wood pellets, Ø: 6 mm, L_{max}: 30 mm, maximum humidity: 7,0% Pfeifer, class A1 acc. to EN17225-2
Total dimension [mm]: Height x Width x Depth	1330 x 780 x 620
Flue spigot:	100 mm
Flue gas connection:	Vertical / Rear / Side
Weight:	325 kg
Distance of adjacent combustible materials	200 mm (Backside) distance from test wall 200 mm (Side) distance from test wall 800 mm (Front) distance from test wall

For more information see appendix: A04-A06-A08-A28-A31.

2.3 Photographs of the appliance (Type: DV3000W-V; model: Diva 3000 Wood-V)

3 Testing

3.1 General requirements

- P (pass)
- NA (not applicable)
- NT (not tested)
- F (fail)

Requirement acc. EN 14785	Clause	Tested Acc.	Requirement Complies
Production documentation	4.1	-	P
General construction requirements	4.2	A.4.7	P
Flue spigot or socket	4.3	-	P
Combustion control device	4.4	-	P
Flue ways	4.5	-	P
Cleaning tools	4.6	-	NA
Fire doors	4.7	-	P
Combustion air supply	4.8	-	
- Primary air inlet control	4.8.1	-	P
- Secondary air inlet control	4.8.2	-	NA
Internal flue gas diverter	4.9	-	NA
Retort	4.10	-	P
Ash pan and ash removal	4.11	-	P
Integral boiler	4.12		
- General construction material	4.12.1		P
- Nominal minimum wall thickness (steel)	4.12.2		P
- Welding seams and welding fillers	4.12.3		P
- Minimum wall thicknesses (cast iron)	4.12.4		NA
- Cast iron parts subject to water pressure	4.12.5		NA
- Venting of water sections	4.12.6	A 4.9.2	P
- Water tightness	4.12.7		P
- Water side connections	4.12.8		P
- Boiler internal waterways	4.12.9		P
- Design of all water boilers	4.12.9.1		P
- Boiler waterways used with indirect water systems	4.12.9.2		P
- Boiler waterways used with direct water systems	4.12.9.3		NA
Control of flue gas	4.13	-	NA
Cleaning of heating surfaces	4.14	-	P

3.2 Safety

Requirement acc. EN 14785	Clause	Tested Acc.	Requirement Complies
Temperatures of adjacent combustible materials	5.1	A.4.7 A.4.9	P
Operating tools	5.2	A.4.7	P*
Safety test for spillage of combustion gas and discharge of embers	5.3	A.4.7 A.4.9	P
Temperature in the fuel hopper	5.4	A.4.9.1	P
Safety against back burning through the fuel conveyor system	5.5	A.4.9.1	P
Safety against overheating the boiler system	5.6	-	P
Thermal discharge control	5.7	A.4.9.3	NA
Strength and leak tightness of boiler shells	5.8	A.4.7 A.4.9.2	P
Electrical safety	5.9	EN 50165	NT

*) Firedoor opening tool available.

3.3 Performance

Requirement acc. EN 14785	Clause	Tested Acc.	Requirement Complies
Flue draught	6.1	-	P
Flue gas temperature	6.2	A.4.7 A.4.8	P
Carbon monoxide emissions for pellet stoves	6.3	A.4.7 A.4.8	P
Efficient energy utilisation	6.4		
- General	6.4.1	A.4.7	P
- Efficiency at nominal heat output and at reduced heat output	6.4.2	A.4.8	P
Nominal heat output	6.5	A.4.7	P
Reduced heat output	6.6	A.4.8	P
Water heating output	6.7	A.4.7	P
Space heating output	6.8	A.4.7	P
Capacity of fuel storage	6.9	A.4.7 A.4.8	P
User operations	6.10	A.4.7	P

3.4 Appliance instructions and marking

Requirement acc. EN 14785	Clause	Tested Acc.	Requirement Complies
General	7.1	-	P
Installation instructions	7.2	-	P
User operating instructions	7.3	-	P
Marking	8.0	-	P

3.5 Evaluation of conformity

Requirement acc. EN 14785	Clause	Tested Acc.	Requirement Complies
General	9.1		P
Type testing	9.2		
- Initial type testing	9.2.1		P
- Further type testing	9.2.2		NA
Factory production control (FPC)	9.3		
- General	9.3.1		
- Raw materials and components	9.3.2		
- Control of inspection, meas. And test equipment	9.3.3		
- Process control	9.3.4		
- Product inspection, testing and evaluation	9.3.5		
- Material of construction	9.3.5.1		
- Insulation material	9.3.5.2		NT
- Seals and sealant materials	9.3.5.3		
- Manufacturing checks	9.3.5.4		
- Construction and dimensions	9.3.5.4.1		
- Other checks	9.3.5.4.2		
- Non conforming products	9.3.6		
- Corrective and preventive action	9.3.7		
- Handling, storage, packaging, preservation and delivery	9.3.8		

3.6 Resume of test results

Diva 3000 Wood-V		Nominal	Partial	Requirement
Mass of the test fuel fired hourly	kg/h	6,58	2,61	-
Flue gas mass flow	g/s	18,0	10,5	-
Flue gas temperature	°C	120,3	77,6	-
Flue draught	mbar	0,10	0,10	0,12/0,10 +/-0,02 (or declared value)
CO_2-concentration	Vol.-%	12,9	8,5	-
O_2-concentration	Vol.-%	7,2	11,8	-
CO-concentration	ppm	29	102	-
CO-emission (at 13%-O_2)	mg/m³	21	111	500/750
CO-emission	mg/kWh	52	273	-
CO-emission	mg/MJ	14	76	-
NOx-concentration	ppm	110	77	-
NOx-emission (at 13%-O_2)	mg/m³	130	137	-
NOx-emission	mg/kWh	320	338	-
NOx-emission	mg/MJ	89	94	-
CnHm-concentration measured acc. CEN/TS 15883	ppm	2	1	-
CnHm-emission (at 13%-O_2)	mg/m³	2	2	-
CnHm-emission	mg/kWh	4	5	-
CnHm-emission	mg/MJ	1	1	-
Dust concentration* measured acc. CEN/TS 15883	mg	7	8	-
Dust emission (at 13%-O_2)*	mg/m³	14,8	23,3	-
Dust emission*	mg/kWh	36	57	-
Dust emission*	mg/MJ	10	16	-
Heat input	kW	31,8	12,7	
Nominal heat output	kW	30,0	12,1	-
Water heat output	kW	25,0	10,1	-
Space heat output	kW	5,0	2,0	-
Efficiency	%	94,1	95,3	75/70

*) Average of 3 samples, based on separate calculation.

3.7 Temperatures

Diva 3000 Wood-V			
Maximum temperatures at trihedron:			
- Side	°C	48,3	65 K over $t_{ambient}$
- Back side	°C	40,3	65 K over $t_{ambient}$
- Front side	°C	50,2	65 K over $t_{ambient}$
- Floor	°C	38,9	65 K over $t_{ambient}$
Distances:			
- Backside-Pelletstove	mm	200	
- Side-Pelletstove	mm	200	
- Front-Pelletstove	mm	800	
Ambient temperature	°C	27,4	
Max. temperature in fuel hopper	°C	71,5	65 K over $t_{ambient}$
Max. temperature of operating tool 1 (handle of fuel hopper lid)	°C	71,7	60 K over $t_{ambient}$
Max. temperature of operating tool 2 (handle of firedoor)	°C	- *	35 K over $t_{ambient}$
Max. temperature of operating tool 3 (handle of ashpan)	°C	55,0	35 K over $t_{ambient}$

*) firedoor opening tool available

For detailed test results see appendix A 02.

4 Statement of the test results

The appliances:

Diva 3000
Diva 3000-V
Diva 3000-P
Diva 3000-PV
Diva 3000 Wood
Diva 3000 Wood-V
Diva 3000 Wood-P
Diva 3000 Wood-PV

of the company:

KLOVER SRL

comply for the operation with wood pellets with the requirements according to
DIN EN 14785: September 2006, clauses 4-8.

The local applicable installation conditions are to be observed.
The electrical safety, cl. 5.9. of the standard, is not part of this assessment.
The presumption of conformity with the relevant European Directives respectively Regulations could only be confirmed by full compliance with Annex ZA.

The test results presented in this report refer solely to the test object stated as described on page 2. The report does not represent a general statement about the serial production of the test object and gives not an authorization for use of a TÜV Rheinland test/certification mark.

5 Test documents

Appendix A 01 Fuel Data
Appendix A 02 Test results
Appendix A 03 Measurement Instruments

Appendix	Subject	Reference
A 04	Marking plates	--
A 05	EU Declarations of Conformity	07/09/2020
A 06	Essential requirements declarations Diva 3000 Wood-V	07/09/2020
A 07	Declaration of extension	23/10/2020
A 08	Declaration of Performances	KLOVER-063
A 09	List of electrical components	--
A 10	Combustion air fan datasheet	AVFLVALD23
A 11	Air pressure switch declaration of conformity and certificate	NS2 EU DoC – 01/2019 certif. 124682
A 12	Auger motor technical drawing	FB1165 – 4 rpm
A 13	Water thermal cut-out technical drawing and certificate	LS1 – 85 $^{+6}$ °C certif. CA02.03777
A 14	Ignition resistance technical drawing	PS13
A 15	Convection air fan technical drawing	DDL 76/86 P.30-1RDN
A 16	Firedoor safety switch datasheet and declaration of conformity	MK V11 EU DoC – 27/04/2017
A 17	Circulator datasheet	PARA ** 7/SC
A 18	Motor for automatic cleaning system of the heat exchange - datasheet	FB1118 – 3 rpm
A 19	Expansion control board drawings	Q055
A 20	Control panel drawings	F047_1
A 21	Overpressure safety valve datasheet	311
A 22	Main control board drawings of internal connections	L023
A 23	Expansion tank datasheet	--
A 24	Firedoor glass technical details	--
A 25	Seals and gaskets technical details	--
A 26	Electrical wiring diagram	--
A 27	Software settings	--
A 28	User and installation manual	CS.IST.DV3000-IT
A 29	Welders qualifications	QS-ITA-18-04702-rev.0 QS-ITA-18-04703-rev.0 QS-ITA-18-04704-rev.0 QS-ITA-18-04705-rev.0 QS-ITA-18-04706-rev.0 QS-ITA-18-04707-rev.0 QS-ITA-18-04708-rev.0 QS-ITA-18-04709-rev.0 QS-ITA-18-04710-rev.0 QS-ITA-18-04711-rev.0

A 30	Materials certificates	n. 13771 n. 14778 n. 15657 n. 830994 / 001 n. 17895 n. 17899 n. 006421 n. E1351
A 31	Overview drawing with dimensions, flueways and waterways	DV-290
A 32	Overall drawings with components	DIVA 3000
A 33	Drawing with thicknesses	--
A 34	Drawings of welding process	DV290-corpo saldato
A 35	Drawings of integral hopper and fuel transport	DV290-SP1 KLO-GC COCLEA
A 36	Drawing of fuel hopper lid with new plastic handle	DSL-501A
A 37	Drawings of firedoor	DV290-DOOR VET.DV290.INT VET.DV290.EXT
A 38	Drawing of burner	BRAC.DVP-B
A 39	Fuel hopper lid new handle - technical details	PR-PF-AE-V0

Appendix A 01

Fuel data

Test at nominal load

Verbrennungsrechnung aus der Elementaranalyse
nach DIN EN 304 Teil 2, Ausgabe 01/2004
nach DIN 4702 Teil 2, Ausgabe 3/1990

		Analysis No.	Fuel sampling date:
Analysis from:	**12/09/2019**	**1912909-001**	**05/09/19**
Fuel:	**wood pellets**		

Bestandteil im Brennstoff	Stoffanteil	Sauerstoffbedarf in Nm^3 je kg Bestandteil	Sauerstoffbedarf in Nm^3 je kg Brennstoff	Abgasbestandteile aus Brennstoff in Nm^3/kg Brennstoff							
			Stoffanteil x	CO_2		SO_2		H_2O		N_2	
	Gew. %		Sauerstoff-Bedarf	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff
c	48,000	1,860	0,893	1,850	0,8880	-	-	-	-	-	-
s	0,025	0,700	0,000	-	-	0,680	0,0002	-	-	-	-
h	6,230	5,550	0,346	-	-	-	-	11,100	0,6915	-	-
n	0,126	-	-	-	-	-	-	-	-	0,80	0,0010
o	38,300	-0,700	-0,268	-	-	-	-	-	-	-	-
wasser	7,000	-	-	-	-	-	-	1,240	0,0868	-	-
asche	0,300	-	-	-	-	-	-	-	-	-	-
summe	99,981	O min=	0,971	V CO_2 =	0,8880	V SO_2 =	0,0002	V W =	0,7783	V N_2 =	0,0010

Luftbedarf	L min =	4,6221	Nm^3/kg Brennstoff
trockene stöchiometrische Abgasmenge	V A tr min =	4,5396	Nm^3/kg Brennstoff
Max. Kohlenstoffdioxid-Anteil	CO_2 max =	19,5611	Vol.-%
Wasserdampfmenge	V w =	0,7783	Nm^3/kg Brennstoff
	V A tr min/ L min =	0,9822	
Heizwert, wf	Hu =	18926	kJ/kg
		5,257	kWh/kg

Berechnungen zum Versuchszeitpunkt

wasser	zum Versuchszeitpunkt	w =	7,000	Gew. %
Heizwert, roh	zum Versuchszeitpunkt	Hu	17430	kJ/kg

Test at reduced load

Verbrennungsrechnung aus der Elementaranalyse
nach DIN EN 304 Teil 2, Ausgabe 01/2004
nach DIN 4702 Teil 2, Ausgabe 3/1990

		Analysis No.	Fuel sampling date:
Analysis from:	**12/09/2019**	**1912909-001**	**05/09/19**
Fuel:	**wood pellets**		

Bestandteil im Brennstoff	Stoffanteil	Sauerstoffbedarf in Nm^3 je kg Bestandteil	Sauerstoffbedarf in Nm^3 je kg Brennstoff	Abgasbestandteile aus Brennstoff in Nm^3/kg Brennstoff							
			Stoffanteil x	CO_2		SO_2		H_2O		N_2	
	Gew. %		Sauerstoff-Bedarf	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff	in Nm^3 je kg Bestandteil	in Nm^3 je kg Brennstoff
c	48,000	1,860	0,893	1,850	0,8880	-	-	-	-	-	-
s	0,025	0,700	0,000	-	-	0,680	0,0002	-	-	-	-
h	6,230	5,550	0,346	-	-	-	-	11,100	0,6915	-	-
n	0,126	-	-	-	-	-	-	-	-	0,80	0,0010
o	38,300	-0,700	-0,268	-	-	-	-	-	-	-	-
wasser	7,000	-	-	-	-	-	-	1,240	0,0868	-	-
asche	0,300	-	-	-	-	-	-	-	-	-	-
summe	99,981	O min=	0,971	V CO_2 =	0,8880	V SO_2 =	0,0002	V W =	0,7783	V N_2 =	0,0010

Luftbedarf	L min =	4,6221	Nm^3/kg Brennstoff
trockene stöchiometrische Abgasmenge	V A tr min =	4,5396	Nm^3/kg Brennstoff
Max. Kohlenstoffdioxid-Anteil	CO_2 max =	19,5611	Vol.-%
Wasserdampfmenge	V w =	0,7783	Nm^3/kg Brennstoff
	V A tr min/ L min =	0,9822	
Heizwert, wf	Hu =	18926	kJ/kg
		5,257	kWh/kg

Berechnungen zum Versuchszeitpunkt

wasser	zum Versuchszeitpunkt	w =	7,000	Gew. %
Heizwert, roh	zum Versuchszeitpunkt	Hu	17430	kJ/kg

Appendix A 02 - Test results

Report- No.		**K29262020T1**		
TÜV- order- No.		**21250505**		
Manufacturer		**KLOVER SRL**		
Construction type		Residential room heating appliance fired by wood pellets with water heat exchanger, with combustion air fan and with internal fuel hopper		
max. working temperature	°C	80		
max. working pressure	bar	2		
Type of fuel charging		automatic load		
Special properties / Remarks		Additional convection air fan		
Special properties		Automatic cleaning system for the heat exchanger room air dependent		
Type designation		**DV3000W-V**		
Model name		**DIVA 3000 Wood-V**		
Test place		**Thiene (VI)**		
Standard		**DIN EN 14785:10.2006, Correction 1: 10.2007**		
Type of test		**Test at nominal load**		
Heat input from manufacturer	**kW**	**31,8**		
Heat output from manufacturer	**kW**	**30,0**		
		1. test	**2. test**	**Average**
Test date		03/09/2020	03/09/2020	
Time		09:40-12:40	12:50-15:50	
Ambient:				
Barometric pressure	mbar	1004	1004	1004
Temperature of combustion air	°C	26,3	27,9	27,1
Ambient rel. humidity	%	64	60	62
Ambient temperature (room)	°C	26,3	27,9	27,1
Type of Fuel		wood pellets		
Properties of Fuel		Ø 6 mm, Lmax 30 mm, max humidity 7,0, Pfeifer		
Number of fuel loadings		1	1	
Weight of the stove, start, measurement	kg	455,2	456,4	
Weight of the stove, end, measurement	kg	435,4	436,7	
Fuel consumption, calculated of the difference	kg	19,7	19,7	
Test duration	sec	10800	10800	
Fuel consumption "B"	kg/h	6,58	6,57	6,58
Calculation of losses in the ash (yes = 1, no = 0)	Gew . %	25,0	25,0	25,0
Residue passing through the grate, measurement	kg	0,00	0,00	0,00
Residue passing through the grate "R"	Gew . %	0,000	0,000	0,000
Carbon content of the residue passing through the grate "Cr" depending of 1kg fuel	Gew . %	0,104	0,104	0,104
Water side, measurement				
Flow , measurement	°C	75,1	75,6	75,4
Return, measurement	°C	56,1	56,2	56,1
Delta T	K	19,0	19,5	19,3
Cold water flow , measurement	kg/h	1126,5	1106,8	1116,6
Additional energy of the pump	kW	0,00	0,00	0,00
Flue, average				
Flue gas temperature, measurement	°C	119,0	121,6	120,3
Flue draught, measurement	Pa	10,0	10,0	10,0
O2 - concentration, calculated	Vol.-%	7,2	7,2	7,2
CO2 - concentration, measurement	Vol.-%	12,9	12,9	12,9
lambda value, l	-	1,511	1,510	1,510

CO - concentration, measurement	ppm	29	29	29
CO - concentration, measurement	Vol.-%	0,003	0,003	0,003
CO - concentration, measurement	mg/m³	37	36	37
CO - concentr. (at 13% - O2)	Vol.-%	0,002	0,002	0,002
CO - concentr. (at 13% - O2)	mg/m³	21	21	21
CO - concentration rel. to fuel input	mg/kWh	52	52	52
CO - concentration rel. to fuel input	mg/MJ	15	14	14
NOx - concentration, measurement	ppm	112	108	110
NOx - concentration, measurement	mg/m³	229	221	225
NOx - concentr. (at 13% - O2)	mg/m³	133	128	130
NOx - concentration rel. to fuel input	mg/kWh	326	314	320
NOx - concentration rel. to fuel input	mg/MJ	91	87	89
CnHm concentration, measurement	ppm	2	2	2
CnHm concentration, measurement	mg/m³	3	3	3
CnHm concentr. (at 13% - O2)	mg/m³	2	2	2
CnHm - concentration (total C) rel. to fuel input	mg/kWh	4	4	4
CnHm - concentration (total C) rel. to fuel input	mg/MJ	1	1	1
Dust, measurement*	mg	7		7
Dust, measurement*	mg/m³	26		26
Dust (at 13% - O2)*	mg/m³	14,8		14,8
Dust* rel. to fuel input	mg/kWh	36		36
Dust* rel. to fuel input	mg/MJ	10		10
Electrical consumption				
Rated electrical power (max)	W		470	
Electrical consumption (at nominal heat output) - acc. EN 15456	W		85	
Electrical consumption (at minimum heat output) - acc. EN 15456	W		28	
PSTBY (during stand-by) - acc. IEC 62301	W		3	
Calculation				
"Qa" loss free heating flue gas	kJ/kg	981,9	992,4	987,1
"qa" loss flue gas	%	5,6	5,7	5,7
"Qb" loss fix heating in flue gas	kJ/kg	2,6	2,6	2,6
"qb" loss fix heating in flue gas	%	0,015	0,015	0,015
"Qr" losses due to combustible constituents in the residue passing through the grate	kJ/kg	0,0	0,0	0,0
"qr" losses due to combustible constituents in the residue passing through the grate	%	0,200	0,200	0,200
"m" flue gas mass flow	g/s	18,0	18,0	18,0
cpm, acc. DIN 4702-2, version 03.90 for dry flue gas	kJ/(m³K)	1,36	1,36	1,36
cpm-H2O	kJ/(m³K)	1,51	1,51	1,51
"eta" Efficiency (direct), to consider only water heating output Pw	%	78,3	78,7	78,5
"eta" Efficiency (indirect)	%	94,2	94,1	94,1
Heating input	kW	31,9	31,8	31,8
"P" heating output, total	kW	30,0	29,9	30,0
"Pw" water heating output	kW	24,9	25,0	25,0
Space heating output: PSTR = P - Pw	kW	5,1	4,9	5,0
Space heating output, relating to heat input	%	15,9	15,4	15,6
Water heating output, relating to heat input	%	78,3	78,7	78,5
Adjustments				
Flue gas motor	rpm	1650	1650	
Fuel motor	s	6,3 ON/1,7 OFF	6,3 ON/1,7 OFF	
Convection air fan	Volt	225	225	
Cleaning time	s / min	-	-	

Report- No.		**K29262020T1**
TÜV- order- No.		**21250505**
Manufacturer		**KLOVER SRL**
Construction type		Residential room heating appliance fired by wood pellets with water heat exchanger, with combustion air fan and with internal fuel hopper
max. working temperature	°C	80
max. working pressure	bar	2
Type of fuel charging		automatic load
Special properties / Remarks		Additional convection air fan
Special properties		Automatic cleaning system for the heat exchange room air dependent
Type designation		**DV3000W-V**
Model name		**DIVA 3000 Wood-V**
Test place		**Thiene (VI)**
Standard		**DIN EN 14785:10.2006, Correction 1: 10.2007**
Type of test		**Test at reduced load**
Heat input from manufacturer	**kW**	**12,7**
Heat output from manufacturer	**kW**	**12,1**
		1. test
Test date		04/09/2020
Time		09:05-15:05
Ambient:		
Barometric pressure	mbar	1010
Temperature of combustion air	°C	26,2
Ambient rel. humidity	%	60
Ambient temperature (room)	°C	26,2
Type of Fuel		wood pellets
Properties of Fuel		Ø 6 mm, Lmax 30 mm, max humidity 7,0, Pfeifer
Number of fuel loadings		1
Weight of the stove, start, measurement	kg	442,6
Weight of the stove, end, measurement	kg	426,9
Fuel consumption, calculated of the difference	kg	15,7
Test duration	sec	21600
Fuel consumption "B"	kg/h	2,61
Calculation of losses in the ash (yes = 1, no = 0)	Gew . %	25,0
Residue passing through the grate, measurement	kg	0,00
Residue passing through the grate "R"	Gew . %	0,000
Carbon content of the residue passing through the grate "Cr" depending of 1kg fuel	Gew . %	0,104
Water side, measurement		
Flow , measurement	°C	76,3
Return, measurement	°C	57,1
Delta T	K	19,2
Cold water flow , measurement	kg/h	449,7
Additional energy of the pump	kW	0,00
Flue, average		
Flue gas temperature, measurement	°C	77,6
Flue draught, measurement	Pa	10,0
O2 - concentration, calculated	Vol.-%	11,8
CO2 - concentration, measurement	Vol.-%	8,5
lambda value, l	-	2,269

CO - concentration, measurement	ppm	102
CO - concentration, measurement	Vol.-%	0,010
CO - concentration, measurement	mg/m³	127
CO - concentr. (at 13% - O2)	Vol.-%	0,009
CO - concentr. (at 13% - O2)	mg/m³	111
CO - concentration rel. to fuel input	mg/kWh	273
CO - concentration rel. to fuel input	mg/MJ	76
NOx - concentration, measurement	ppm	77
NOx - concentration, measurement	mg/m³	157
NOx - concentr. (at 13% - O2)	mg/m³	137
NOx - concentration rel. to fuel input	mg/kWh	338
NOx - concentration rel. to fuel input	mg/MJ	94
CnHm concentration, measurement	ppm	1
CnHm concentration, measurement	mg/m³	2
CnHm concentr. (at 13% - O2)	mg/m³	2
CnHm - concentration (total C) rel. to fuel input	mg/kWh	5
CnHm - concentration (total C) rel. to fuel input	mg/MJ	1
Dust, measurement*	mg	8
Dust, measurement*	mg/m³	27
Dust (at 13% - O2)*	mg/m³	23,3
Dust* rel. to fuel input	mg/kWh	57
Dust* rel. to fuel input	mg/MJ	16
Electrical consumption		
Rated electrical power (max)	W	470
Electrical consumption (at nominal heat output) - acc. EN 15456	W	85
Electrical consumption (at minimum heat output) - acc. EN 15456	W	28
PSTBY (during stand-by) - acc. IEC 62301	W	3
Calculation		
"Qa" loss free heating flue gas	kJ/kg	776,9
"qa" loss flue gas	%	4,5
"Qb" loss fix heating in flue gas	kJ/kg	13,4
"qb" loss fix heating in flue gas	%	0,077
"Qr" losses due to combustible constituents in the residue passing through the grate	kJ/kg	0,0
"qr" losses due to combustible constituents in the residue passing through the grate	%	0,200
"m" flue gas mass flow	g/s	10,5
cpm, acc. DIN 4702-2, version 03.90 for dry flue gas	kJ/(m³K)	1,33
cpm-H2O	kJ/(m³K)	1,50
"eta" Efficiency (direct), to consider only water heating output Pw	%	79,5
"eta" Efficiency (indirect)	%	95,3
Heating input	kW	12,7
"P" heating output, total	kW	12,1
"Pw" water heating output	kW	10,1
Space heating output: PSTR = P - Pw	kW	2,0
Space heating output, relating to heat input	%	15,8
Water heating output, relating to heat input	%	79,5
Adjustments		
Flue gas motor	rpm	800
Fuel motor	s	2,4 ON/5,6 OFF
Convection air fan	Volt	OFF
Cleaning time	s / min	-

The tests were carried out under the conditions of DIN EN 14785:2006

Appendix A 03

**The requirements of the measuring instruments are fulfilled.
Before each qualified measuring analysers were calibrated with zero gas and calibration gas.**

Index	Measure	Principle	Company	Range	Instrument specification	Reference
B030	Water pressure	Manometer	Cewal DN 150	0 – 25 bar	± 0,6%	Reference manometer
B062	Temperature	PT 100 K-type thermocouples	Agilent 34970 A	0 – 300 °C	Up to 0,5 °C	Reference thermometer
B066	Gas pressure	Manometer	Testo 510	0 – 100 hPa	± 3% related to final value	Reference manometer
B068	Temperature	IR emission	Fluke Ti20	-10 – 350 °C	---	---
B070	Fuel consumption	Gravimetric	Dini Angeo DFWK	0 – 600 kg	± 10 g	Reference load
B079	Water flow	Magnetic	ABB Copa-XE DE43FI	0 – 2000 kg/h	± 1% related to the range	Reference flow meter
B084	Temperature	PT 100 K-type thermocouples	Agilent 34970 A	0 – 300 °C	Up to 0,5 °C	Reference thermometer
B090	Dust content	Gravimetric	Sartorius CPA 224 S	0,1 mg – 220 g	± 0,1 mg	Reference load
B092	Fuel consumption	Gravimetric	Dini Angeo DFWK	0 – 1200 kg	± 10 g	Reference load
B094	CO_2	Infrared-absorption	Siemens Ultramat 6E	0 – 3 % 0 – 30 %	± 1% related to the range	Reference gas: 19,93 %
	CO	Infrared-absorption	Siemens Ultramat 6E	0 – 300 ppm 0 – 3000 ppm	± 1% related to the range	Reference gas: 201,1 ppm
B095	CO	Infrared-absorption	Siemens Ultramat 23	0 – 1 % 0 – 5 %	± 1% related to the range	Reference gas: 4,876 %
B096 + B123	CO_2	Infrared-absorption	Siemens Ultramat 23	0 – 5 % 0 – 25 %	± 1% related to the range	Reference gas: 19,93 %
	CO	Infrared-absorption	Siemens Ultramat 23	0 – 1000 ppm 0 – 5000 ppm	± 1% related to the range	Reference gas: 201,1 ppm
	NOx	Infrared-absorption	Siemens Ultramat 23 + Bühler Bünox MV	0 – 1000 ppm 0 – 5000 ppm	± 1% related to the range	Reference gas: 196,9 ppm
B097	OGC	FID	Siemens Fidamat 6	0 – 3,33 ppm C3 0 – 33,3 ppm C3 0 – 333 ppm C3 0 – 3333 ppm C3	± 1% related to the range	Reference gas: 29,51 ppm propane
B098	Temperature	K-type thermocouple	Testo 925	0 – 200 °C	± 2 °C	Reference thermometer
B109	Air flow	Flow measurement	CMC / ASA 132826 P13-2800	400 - 4000 l/h	± (2 % FS)	Reference flow meter
B118	Gas volume	Diaphragm	CMC	0,016 – 2,5 m^3/h	± 5 %	Air flow
B121	OGC	FID	Siemens Fidamat 6	0 – 3,33 ppm C3 0 – 33,3 ppm C3 0 – 333 ppm C3 0 – 3333 ppm C3	± 1% related to the range	Reference gas: 29,51 ppm propane

Index	Measure	Principle	Company	Range	Instrument specification	Reference
B122	CO_2	Infrared-absorption	Siemens Ultramat 23	0 – 5 % 0 – 25 %	± 1% related to the range	Reference gas: 20,0 %
	CO	Infrared-absorption	Siemens Ultramat 23	0 – 1000 ppm 0 – 5000 ppm	± 1% related to the range	Reference gas: 206,0 ppm
	NO	Infrared-absorption	Siemens Ultramat 23	0 – 1000 ppm 0 – 5000 ppm	± 1% related to the range	Reference gas: 196,9 ppm
B140	Gas pressure	Inclined liquid column manometer	Kimo HP series	0 – 15 Pa	± 10% related to final value	Reference manometer
B141	Gas pressure	Inclined liquid column manometer	Kimo HP series	0 – 15 Pa	± 10% related to final value	Reference manometer
B149	Mass	Gravimetric	Kern FKB 15K0.5A	0 – 15 kg	± 0,5 g (reproducibility)	Reference load
B154	Gas volume	Diaphragm	Elster BK-G4M	---	Class 1,5	Air flow
B169	Electrical power	---	Yokogawa WT310E	0 – 2000 W	± 0,5 %	External calibration
B179	Stopwatch	---	RS 8111814	0 – 99 h	0,01 s	---
B180	Absolute pressure meter	Absolute pressure meter	Testo 511	0 – 999,0 hPa	±3,0 hPa	External calibration
B183	Water flow	Magnetic	ISOIL Industria MS501-T10-1A1A1A + ML210-B0A1B3A0	0 – 2000 kg/h	Accuracy: ± 0,2% r.v.	Reference flow meter

The values are continuously recorded. The scan interval is 10s. All related certificates are stored.