Fraunhofer Institut
Bauphysik

Institution for testing, supervision
and certification,
officially recognized by the building
supervisory authority

Research, development,
demonstration and consultancy in
the field of building physics

Directors
Univ.-Prof. Dr.-Ing. Gerd Hauser
Univ.-Prof. Dr.-Ing. Klaus Sedlbauer

Test report P8-094/2006

Report about the initial type test of the open fire fired by solid fuels type „Magnum 36"" according to DIN EN 13229

Ordering party:
Schiedel Skorstene A/S
Industrivej 23
7470 Karup
Denmark

Stuttgart,
August 04, 2006

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Notified test laboratory Number	Heating and chimney systems Fraunhofer-Institut für Bauphysik (IBP) Nobelstr. 12 70569 Stuttgart Germany 1004
Report number	P8-094/2006
Manufacturer	Schiedel Skorstene A/S Industrivej 23 7470 Karup Dänemark
Type Serial number	„Magnum 36" " -
Nominal heat output	16,9 kW
Description	Lightweight concrete with firebrick lining of the firebox and with a cut off device made of cast iron in the flue gas collector
Ordering party	Manufacturer
Supply date	January 20, 2006
Choice of the appliance	By the manufacturer

Short report of the test laboratory:

This report contains the results of the initial type test of the open fire fired by solid fuels type „Magnum 36" " according to DIN EN 13229 and according to the essential characteristics of Annex ZA1 of DIN EN 13229, who have to be tested by a notified test laboratory: fire safety, emission of combustion products, surface temperature, thermal output/energy efficiency.

The open fire „Magnum 36" " was tested with the test fuel wood logs and for the operational mode: intermittent burning appliance not meeting the requirement for reduced combustion.

The open fire „Magnum 36"" was tested with the following distances to adjacent combustible materials:

	Thickness / Distance		
	side wall	rear wall	hearth
	cm	cm	cm
Distance open fire – adjacent combustible materials	7,5	7,5	0,0

The tests were carry out in the laboratory DAP-PL-3743.25 "heating/chimney systems" of the Fraunhofer-Institut für Bauphysik (IBP) which has a flexible accreditation according to DIN EN ISO/IEC 17025 and is a notified body for space heating appliances burning solid and liquid fuels (notified body number 1004).

This report is written without prejudice of the rights of a third party in particular of the industrial property rights of the ordering party or of the manufacturer.

This report contains 12 pages and 4 annexes.

Stuttgart, August 04, 2006

Fraunhofer-Institut für Bauphysik

Editor
i. A.

Vera Gräff

Dipl.-Ing. Vera Gräff

Head of the test laboratory

A. Kalisch

Dr.-Ing. Andreas Kalisch

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Check of materials, design and construction according to 4

requirement	requirement according to	requirement is fulfilled
Production documentation	4.1	
• Documents, drawings		yes
• Specification of the materials		yes
• Nominal heat output		yes
General construction requirements	4.2	
• No asbestos		not to apply
• No hard solder with cadmium		not to apply
• Thermal insulation: non combustible, no hazard to health		not to apply
• Replacement parts: designed to ensure correct fitting		not to apply
• Seal: located securely		not to apply
• Seal is made with fire cement: supported by adjacent metal surfaces		not to apply
Flue spigot or socket	4.3	
• Good fit, suitable gas tightness		yes
• Overlap length:		
– $\varnothing \leq 160$ mm $\rightarrow \geq 25$ mm		not to apply
– $\varnothing \geq 160$ mm $\rightarrow \geq 40$ mm		not to apply
• Insertion depth ≥ 25 mm		yes
Combustion control device	4.4	
• Easily accessible		not to apply
• Permanently marked		not to apply
Flue ways	4.5 and 4.6	
• Minimum dimension:		
– Bituminous coal ≥ 30 mm		not to apply
– Other than bituminous coal ≥ 15 mm		not to apply
• Brushes and scrapers available, where ordinary household bushes cannot be used effectively		yes
Fire doors and charging doors	4.7	
• Appliance can be filled with commercial fuels		not to apply
• Prevents accidental opening		not to apply
• Facilitates positive closure		not to apply

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Check of materials, design and construction according to 4

requirement	requirement according to	requirement is fulfilled
Combustion air supply	4.8	
• Primary air inlet control		not to apply
• Adjusting control: operation is readily understandable		not to apply
• Means of identification of the thermostat		not to apply
• Secondary air inlet control: no restrictions when the firebox is filled to the recommended capacity		not to apply
Internal flue gas diverter	4.9	
• Capable of maintaining any position		not to apply
• No isolation fire box – flue outlet		not to apply
• If removable, ensures correct assembly		not to apply
Bottom grate	4.10	
• If removable, ensures correct assembly		not to apply
• De-ashing mechanism: be capable of de-ashing the fuel		not to apply
Front fire bars, deepening plate	4.11	
• No incorrectly fitted is possible		not to apply
• No accidentally dislodged is possible		not to apply
Ashpan, Ash removal	4.12	
• Ashpan capable of containing the residue from two full charges		not to apply
• Retaining sufficient space above to allow primary air flow through the bottom grate ore fire bed		not to apply
Control of flue gas	4.14	
• Flue damper fitted		not to apply
• Easy to operate		not to apply
• Aperture ≥ 20 cm² or ≥ 3 % of the cross sectional area of the blade		not to apply
• Position recognisable		not to apply
• Draught regulator: easily accessible for cleaning		not to apply
Cleaning of heating surfaces	4.15	
• Accessible from the flue gas side for inspection		yes
• Special tools required: supplied by the manufacturer		yes

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Check of safety according to 5

requirement	acc. to	test acc. to	requirement is fulfilled
Cut off device for appliances without doors	5.1		
• Separates the appliance from the chimney			yes
• Shall not hinder control or cleaning of the connection parts			yes
• Shall maintain the position			yes
• Position is marked			yes
• Only into flue gas collector, flue spigot or flue gas connector			yes
Temperatures of adjacent combustible materials	5.2	A.4.7 and	
• Temperatures ≤ 65 K above ambient temperature		A.4.9	yes
Operating tools	5.3	A.4.7	
• Operating tool provided			not to apply
• Maximum surface temperatures			not to apply
Natural draught safety test	5.4	A.4.9.4	
• Flue draught ≥ 3 Pa			not to apply
• Or flue draught < 3 Pa CO-Volume ≤ 250 dm³/10 h			not to apply
Safety test for spillage of combustion gas and discharge of embers	5.5	A.4.7 and	
• No potentially harmful spillage of flue gases		A.4.9	yes
• No fall out of embers			yes
Temperature in integral fuel storage container	5.6	A.4.7 and	
• Temperature ≤ 65 K above ambient temperature		A.4.9	not to apply
Thermal discharge control	5.7	A.4.9.6	
• Operates before 105 °C			not to apply
Strength and leak tightness of boiler shells	5.8	A.4.9.5 and	
• No leak or permanently deformation		A.4.7	not to apply

Test fuel specifications according to Table B.1

Test fuel	Moisture content	Ash content	Volatile matter	Hydrogen content	Carbon content	Sulfur content	Net calo-rific value	Length
	% i. an	% i. an	% i. waf	% i. an	% i. an	% i. an	kJ/kg i. an	cm
Wood log (Beech)	14,39	0,04	-	5,18	45,89	-	16830	33
Timber wood	12,20	-	-	5,96	48,70	-	16470	-

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Test of nominal heat output, efficiency and of the minimum refuelling interval according to A.4.7

		requirement acc. to	test 1	test 2	average from 1 and 2	requirement is fulfilled
Date			06.02.06	06.02.06		
Test fuel		Tab. B.1	Wood log	Wood log		
Fuel load	kg	A.4.2	8,05	7,99		
Flue draught	Pa	6.1	11	11	11	yes
Flue gas temperature	°C		138	136	137	
Flue gas temperature in the flue gas outlet	°C		140	138	139	
CO_2-content	%		1,45	1,43	1,44	
Flue gas mass flow	g/s		168,8	169,5	169,1	
CO-content	%		0,03	0,03		
CO-content to reference 13 % O_2	%	6.3	0,17	0,18		yes
Refuelling interval	h	6.5	1,00	1,00		yes
Thermal losses in the flue gas	%		53,49	52,72		
Chemical losses in the flue gas	%		1,41	1,45		
Heat losses due to combustible constituents in the residue	%		0,50	0,50		
Efficiency	%	6.4	44,60	45,33	44,96	yes
Total heat output	kW	6.8	16,8	16,9	16,9	yes
Deviation of the refuelling interval from the minimum value	%	A.5	0,0	0,0		yes
Calculated test duration	h	A.4.7.4	not to apply	not to apply		-
Calculated heat output	kW	A.4.7.4	not to apply	not to apply		-
Fall out of embers		5.5	no	no		yes
Spillage of flue gases		5.5	no	no		yes

Check of the temperatures on the operating tools and on the adjacent combustible materials according to A.4.7

		requirement acc. to	test result	requirement is fulfilled
Date	-		06.02.06	
Test fuel	-	Tab. B1	Wood log	
Total fuel load	kg		38,00	
Numbers of burning periods	-		5	
Flue draught	Pa	6.1	11	yes
Heat output	kW		16,9	
Operating tools necessary	-		-	
Operating tools supplied	-		-	
Temperature on the operating tools above ambient temperature:				
• fire door knob	K	5.3	not to apply	-
• Primary air device knob	K	5.3	not to apply	-
• Secondary air device knob	K	5.3	not to apply	-
• Flue damper knob	K	5.3	not to apply	-
Maximum temperatures of the adjacent combustible materials above ambient temperature				
• Hearth	K	5.2	45[1)]	yes
• Rear wall	K	5.2	22	yes
• Side wall	K	5.2	15	yes
• Fuel storage container	K	5.2	not to apply	-

[1)] messured in construction without vent holes

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Temperature safety test according to A.4.9.3 [1)]

		requirement acc. to	test result	requirement is fulfilled
Date	-		16.05.06	
Test fuel	-	Tab. B1	Timber wood	
Total fuel load	kg		179,33	
Numbers of burning periods	-		15	
Flue draught	Pa	6.1	15	
Maximum temperatures of the adjacent combustible materials above ambient temperature				
• Hearth	K	5.2	17	yes
• Rear wall	K	5.2	28	yes
• Side wall	K	5.2	25	yes
• Fuel storage container	K	5.2	-	not to apply
Fall out of embers	-	5.5	no	yes
Spillage of flue gases	-	5.5	no	yes
Damages on the appliance	-		no	

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[1)] The test was performed with a little deviation to the test described in DIN EN 13229 A 4.9.3, because the test is not applicable for such big openings of the fire-box. It is not possible to stack the grids to a level of up to two thirds of the fire-box opening because burning pieces of wood will fall out of the fire-box. The test was carried out in the following way: The grids were stacked to a level of up to one half of the fire-box opening.

Operation with open fire box according to A.4.9.7

		require-ment acc. to	test results	requirement is fulfilled
Date	-		06.02.06	
Test fuel	-	Tab. B.1	Wood log	yes
Total fuel load	kg	A.4.2	7,990	yes
Flue draught	Pa		6	yes
Duration of the burning period	h		1,00	yes
Fall out of embers	-	5.5	no	yes
Spillage of flue gases	-	5.5	no	yes

Check of the instructions according to 7

	requirement according to	requirement is fulfilled
In the language of the country of intended destination	7.1	yes
Not in contradiction to the test results	7.1	yes
Requirements of all dashes	7.2	yes
Requirements of all dashes	7.3	yes
The following requirements of 7.2 are not fulfilled: non		
The following requirements of 7.3 are not fulfilled non		

Check of the marking information according to 8

	requirement according to	requirement is fulfilled
Legibly	8	yes
Permanent	8	yes
Completed designation	8	yes

The following designation are missed:
non

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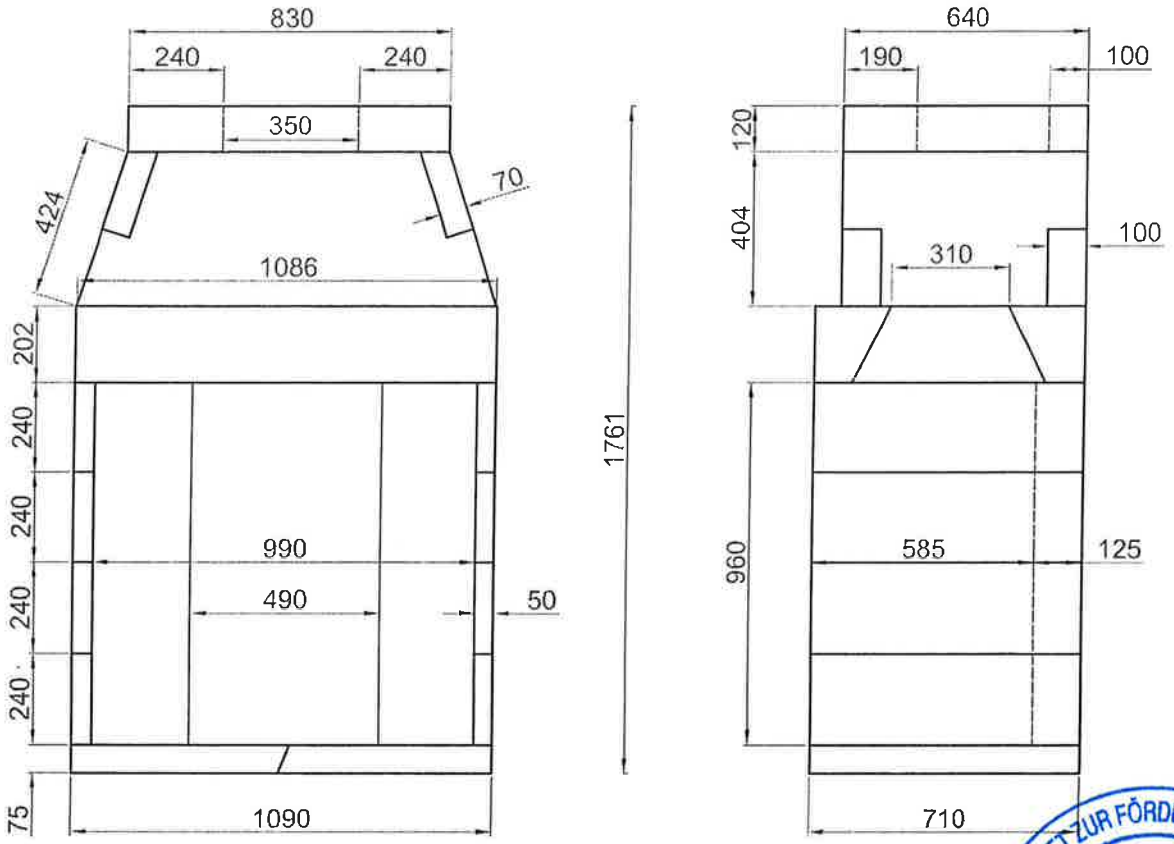
– Annex 1 –

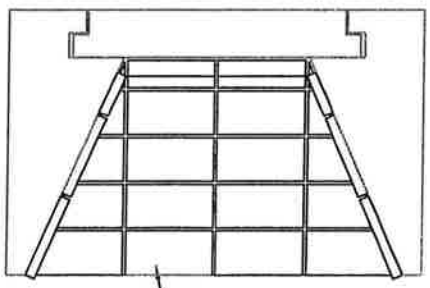
Photo

Open fire „Magnum 36" "
of the manufacturer Schiedel Skorstene A/S, 7470 Karup, Denmark

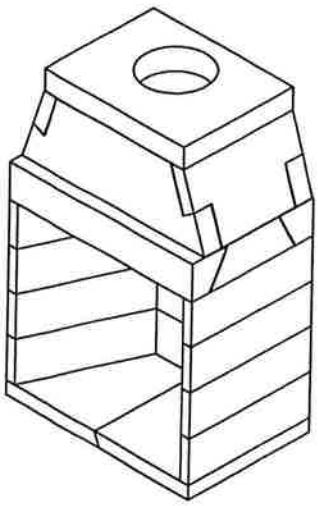
– Annex 2 –

Drawings





Combustion Chamber is lined with Fireproof Bricks according to Manufactors instructions.



All measures in mm

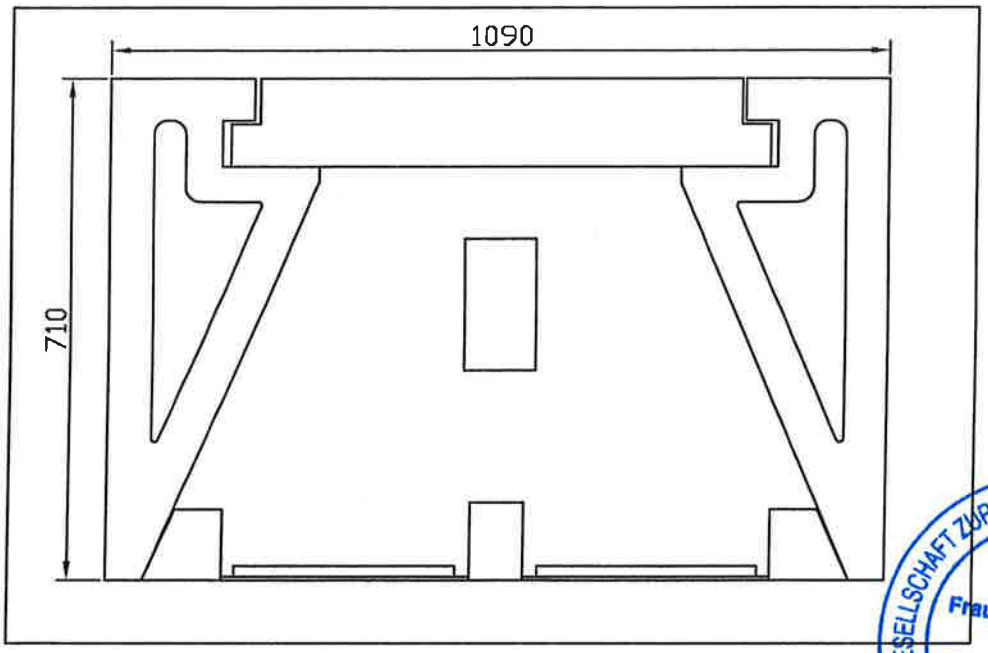
Subject:

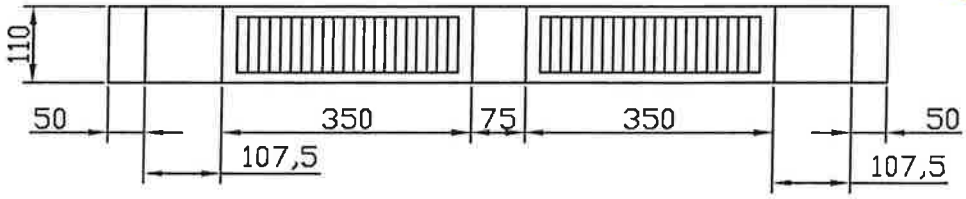
36" Magnum - 4 sideelements

SCHIEDEL

Industrivej 23
7470 Karup J.

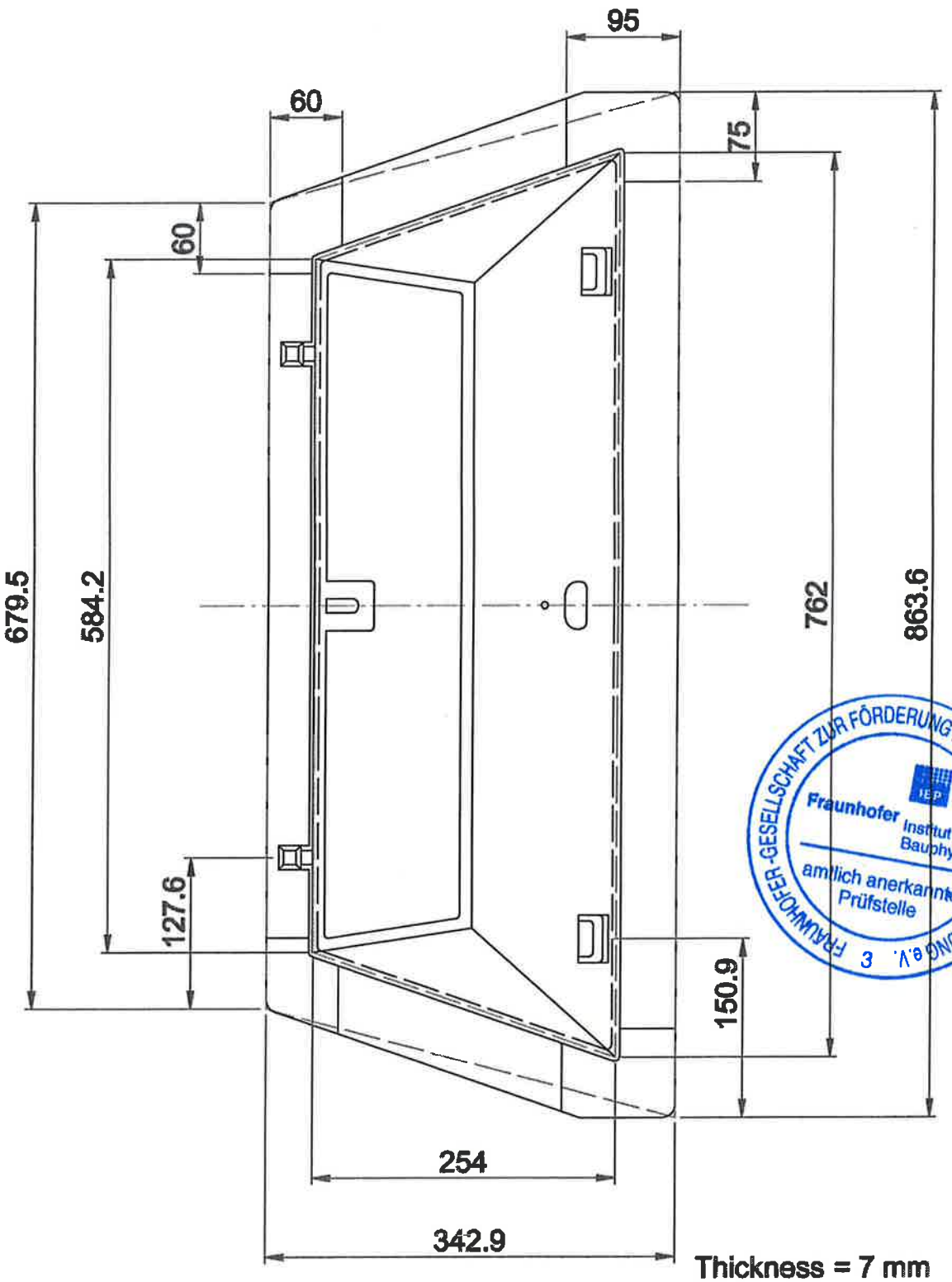
Area: dm²	Measure: 1:20	Date: 230403	Resp: MG/SH
Vol: l.	Tol.: ± 3 mm	Rev.: 300805	Drawing Nr.: 82036
Material: Pumice			





Areal af luftindtag 236 cm²

SCHIEDEL		Emne: Bund med luftkanaler			
		Mat.:	Mål:	Dato: 250406	Tegn.nr.:
Industrivej 23 7470 Karup J.	Areal: dm²	Tol.:		Rev.:	BILAG B
	Vol.: l.			Ansv.: MG/SH	



Thickness = 7 mm
Corners = 10 mm

SCHIEDEL

Industrivej 23
7470 Karup J.

Subject: Cut-off Device 30"					
Mat.: Cast Iron	Measure: 1:5	Date: 280601	Drawing Nr: 80930-2		
Area: dm²	Tol.: ± 3 mm	Rev.: 180505			
Mass: l.		Resp: MG/SH			

– Annex 3 –

Marking Information

Label

Manufacturer:	Schiedel Skorstene A/S Industrivej 23 7470 Karup Denmark
Type:	„Magnum 36" "
Capable operation:	Intermittent
Nominal heat output:	16,9 kW
Standard:	DIN EN 13229: 2005-10
Fuel:	Wood log
CO-content to reference 13 % O_2:	0,18 %
Efficiency:	45 %

– „read and follow the operation instructions" –

– „use only recommended fuels" –

– Annex 4 –

Installation and User Operating Instructions

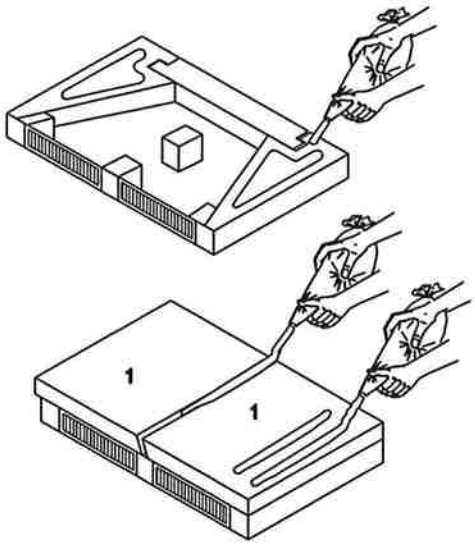
Product specifications

Manufacturer	Schiedel Skorstene A/S Industrivej 23 7470 Karup J. Denmark
Type	KingFire Magnum Fireplace 36"
Standard	EN 13229:2001 and EN 13229 A2
Nominal heat output	16,9 Kilowatt
Mean flue gas temperature	139 °C
Flue gas mass flow	169,1 gram pr. second
Minimum chimney draught requirements	11 Pa
Supply of combustion air	National regulations need to be complied
Thermal resistance	0,354 $m^2 \cdot K / W$
Efficiency	45 %
Mass of fireplace	700 kg
Material – cut-off device	Cast iron
Material – grates in vent holes	Metal
Material – fireplace	Light weight concrete
Used for	Indoor and outdoor fireplace
Size height x width x depth	1761 x 1090 x 710 mm
Size opening height x width	960 x 990 mm
Distance to combustible material	75 mm
Recommended fuel	Birch wood and beech wood
Modification	Any modification of the construction can cause permanent damages to the fireplace and the surroundings. The guarantee becomes void. Changing is only allowed with approval of the manufacturer
Heat generation	Be aware that the surface of the fireplace becomes warm
Radiant heat	Be aware that the fireplace opening generates radiant heat
Chimney fire	In case of chimney fire Call fire brigade
Installation room	If the pressure in the room is low it can be necessary to install a chimney fan
Sweeping	National regulations need to be complied
Ventilation	National regulations need to be complied
Cleaning	As needed
IMPORTANT: READ AND FOLLOW THE INSTRUCTIONS	

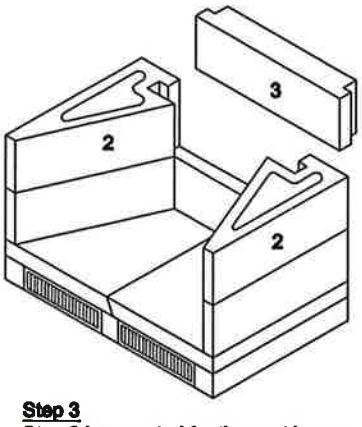
INSTALLATION INSTRUCTIONS KINGFIRE MAGNUM 36"

NATIONAL REGULATIONS NEED TO BE COMPLIED

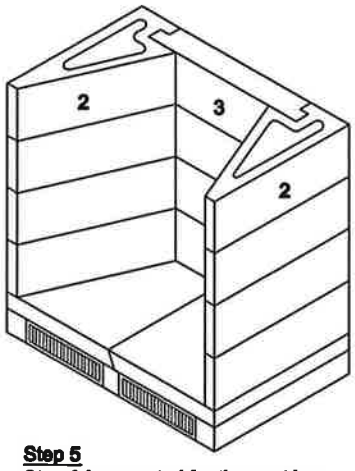
Floor construction: Calculate the carrying capacity of the floor from the total weight of the fireplace and chimney.
Non-combustible floor: The fireplace must be placed on minimum 100 mm concrete foundation, minimum 150 mm larger than the Fireplace(both wide and length)
Combustible floor: Build-up with vent holes (metalgrates)



Extra glue is removed to avoid "bumps" on the outside of the elements. Be particularly aware where the Fireproof Bricks are going to be.

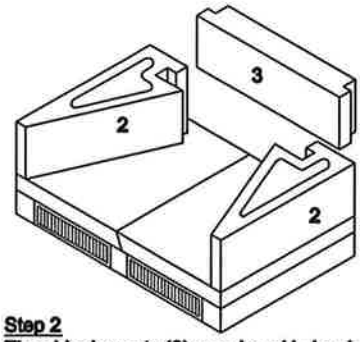


Step 3
Step 2 is repeated for the next layer.

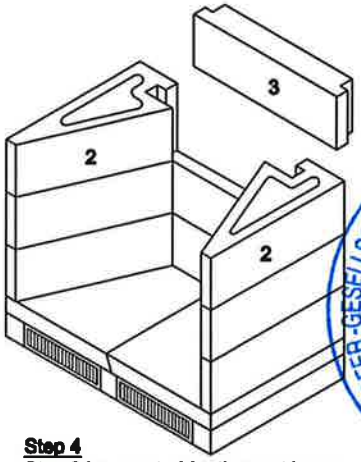


Step 5
Step 2 is repeated for the next layer.

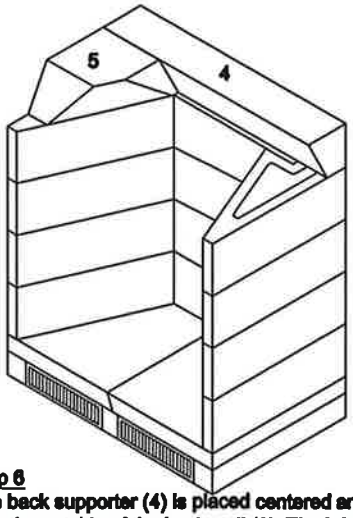
Step 1
The Start Plates (1) are placed on the foundation, so the whole surface is supported.
Make sure the Start Plates are horizontal by using a level. The Fireplace is glued with the enclosed Chimney glue.
The best way to apply the glue is by using the enclosed mortarbag. Press the elements together leaving only a few mm joint. It is recommended to apply 2 mortar streaks side by side.
Make sure the elements are in level and plumb during the entire build up process.



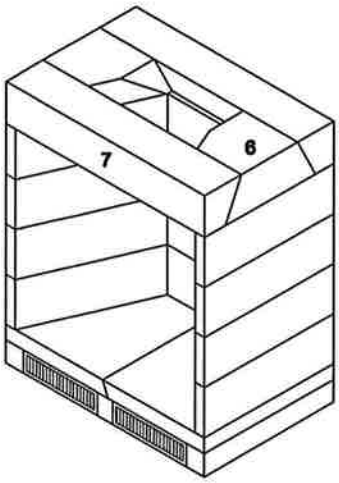
Step 2
The sideelements (2) are placed in level with the Start Plate (1) edges and the backwall (3) is lowered into the sideelements leave openings.



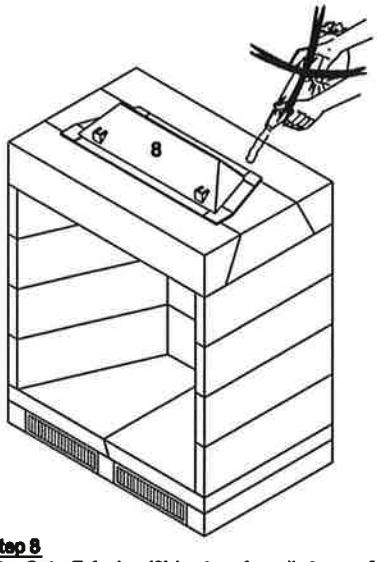
Step 4
Step 2 is repeated for the next layer.



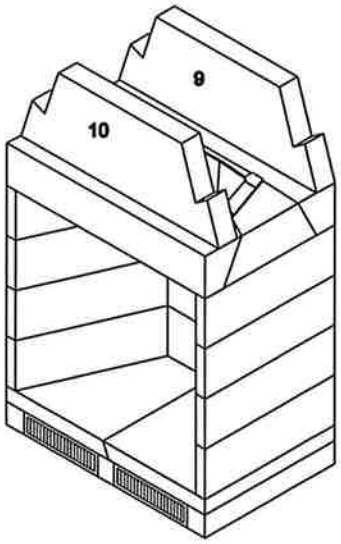
Step 6
The back supporter (4) is placed centered and in line with the outside of the back wall (3). The left Cut-off device supporter (5) is placed on the top sideelement (2)



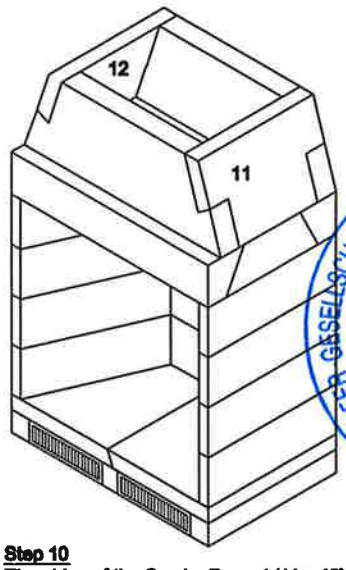
Step 7
The right Cut-off device supporter (6) is placed on the top sideelement (2) and the front cut-off device supporter (7) is placed to fit the Cut-off device supporters (left and right) (5+6) and in line with the front edge of the sideelements (2)



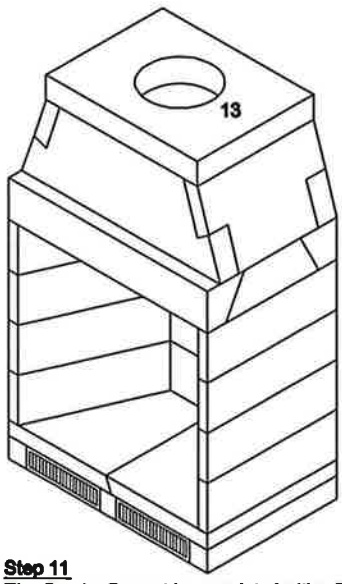
Step 8
The Cut-off device (8) is placed so all planes of the Cut-off device is supported.
IMPORTANT: The Cut-off device (8) CANNOT be build in or in any way be fastened. Allow c 15 mm freedom of movement to all sides, since the Cut-off device expands influenced by heat.



Step 9
The back Smoke Bonnet (9) is placed centered and in line with the outside of the back Cut-off device supporter (4)
The front Smoke Bonnet (10) is placed on the front Cut-off device supporter (7) and the Smoke Bonnet is adjusted when the side of the Smoke Bonnet (11 + 12) are placed (see step 10)



Step 10
The sides of the Smoke Bonnet (11 + 12) are placed in the leave openings in the front and back of the Smoke Bonnet (9 + 10)



Step 11
The Smoke Bonnet is completed with a Top plate (13) which makes the foundation for the construction of the chimney.

Firebricks
Product: Schiedel or similar

Mortar for Firebricks
Product: Maade Industri or similar

SCHIEDEL

Instructions for KingFire Magnum Fireplace

Congratulations with the new Fireplace. To get the best utilization and a long life of the Fireplace, the following instructions must be kept.
National regulations need to be complied. The Fireplace shall not be used as an incinerator.

The first lightning in the Fireplace cannot be done until 48 hours after the fireproof bricks are build in. The fireproof bricks are built in the Fireplace with a Fireplace mortar.
It is recommended that only birch wood and beech wood with a humidity of up to 15% is used for fuel.

First lightning:
Arrange kindling's with a firelighter in the middle as shown on picture.
Make sure the Cut-off device is open to ensure free passage of the smoke.
Lit the firelighter.

When the fire is burning, put 2 – 3 pieces of wood on as shown on picture.

At the first lightning it is only allowed to stoke up the fire as instructed above because the Fireplace cannot be heavy loaded at the first lightning.

Subsequently lightings:
Lit the Fireplace as described for the first lightning. Wait until the fuel is burned through (see picture) and the Fireplace can now be used with a reasonably amount of fuel.

Notice:
A maximum of 8 kg wood every hour is allowed.
When firing is done, the Cut-off device cannot be closed as long as there are live pieces of wood in the Fireplace.
If the fireplace needs to be emptied out before firing is done, the live pieces of wood should be placed in a steel bucket with a matching lid and handled the same way as the removal of ashes/cleaning. When the ashes is removed from the Fireplace it should be placed in a steel bucket with a matching lid and then placed unavailable and on fireproof material. The ashes can first be disposed when it is ensured that there are no live pieces of wood left in the ashes. The fireplace is cleaned as needed.

Enjoy the Fireplace, Schiedel Skorstene A/S.