COMMERCIAL
HEATING
SYSTEMS

MAGNUS Series / Floor-Standing Condensing Boiler

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MAGNUS Series

Floor-Standing Condensing Boiler

- 109.2 boiler efficiency
- Low emission values are eco-friendly (NOXand CO2)
- Aluminum-Magnesium-Silicon cast fin heat exchanger
- Easy transportation with castors
- Premix burner coated with stainless steel fibre
- Separable components for easy access to the boiler room
- Cascade operation for up to 8 boilers
- 7 bar operating pressure

Magnus Boiler

BAYMAK MAGNUS I -MAGNUS II series, floor-standing condensing boilers fitted with premix technology and self-burner are full modulation, high-efficiency condensing boilers running on natural gas as fuel. It can readily be transported to the boiler room on its wheels mounted on its frame, then anchored and fixed on its legs.

Chimney application methods of boilers include; vented, hermetic and semi-hermetic. Magnus boilers are designed for central heating and boiler hot water production; operating pressure of boiler exchanger ranges between 0.8-7 bars.

Thanks to the air/gas pre-mixed, modulated fan control system fitted with premix stainless burner. It has a high annual efficiency rate of 109.2% (DIN 4702-8), due to low NOx and minimum CO^2 emission value in condensing mode.

Magnus boilers are controlled either individually or as cascade by means of an external cascade control board. Magnus boiler is also equipped with a built-in digital display on the control panel, showing the operating status/fault code, which also allows reading and setting the values.

Magnus I Boiler Models

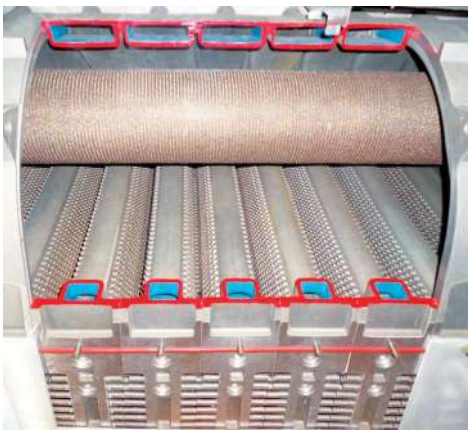
- Magnus I 285
- Magnus I 355
- Magnus I 430
- Magnus I 500
- Magnus I 575
- Magnus I 650

Magnus II Boiler Models

- Magnus II 570
- Magnus II 710
- Magnus II 860
- Magnus II 1000
- Magnus II 1150
- Magnus II 1300

Advantages of MAGNUS I - MAGNUS II Boilers

- With Al-Mg-Si cast fin heat exchanger and lightweight frame
- Cylinder, coated with stainless steel fibre, fitted with premix burner
- Modulated fan control system
- Fitted with built-in chimney back draft valve
- Easy to install and maintain for servicing
- Easy transport thanks to its castors
- Floor anchorage legs
- 109.2% high efficiency (for Magnus I 285 and Magnus II 570 according to DIN 4702-8 norm)
- Boiler controls modulated, 20% -100%
- Low NOx ≤ 35 mg/kWh
- Ultra silent ≤ 65 dBA (for Magnus I)
- Digital LCD screen, menu controlled boiler control panel
- Boiler temperature control setting, 20 °C - 90 °C
- Air pressure difference sensor (LDS)
- Temperature sensors, low water level protection
- Gas/air mixture with Venturi system
- Frost protection
- Compact dimensions, measuring 72 cm wide only (for Magnus I series)
- Option for use as hermetic, semi-hermetic or vented



Premix Burner Coated with Stainless Steel Fibre

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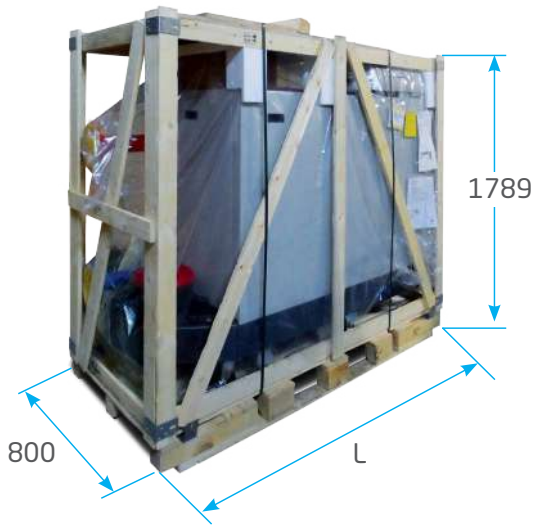
Handling - Setup Options

The boiler is delivered in one piece assembled on pallets. The floor area of the package is 80 cm wide. The package can be transported by a pallet truck or 4-wheel pallet truck. The unpackaged boiler is 72 cm wide. Therefore, the boiler can pass through the standard size doors. The boiler has integrated castors and can be moved to the desired location when unpacked.

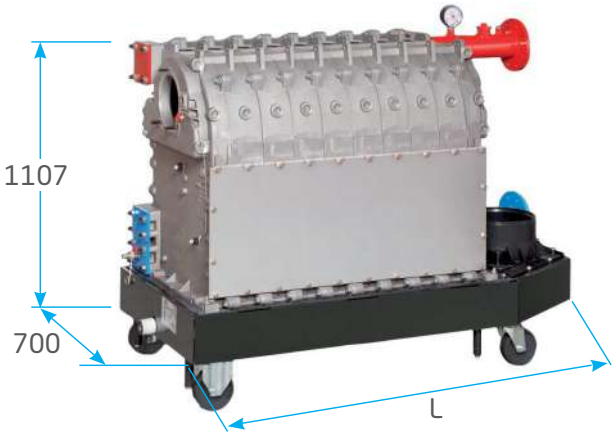
Boiler Model MAGNUS	L (mm)
285	1920
355	
430	
500	2230
575	
650	

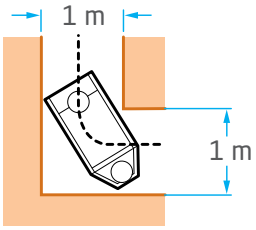


If handling is required in narrow spaces, the boiler can be dismantled as follows;

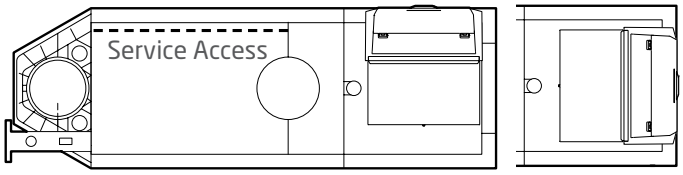
- External boiler protection case
- Boiler outer shell and panels
- Gas/air components

Boiler Model MAGNUS	Ağırlık (kg)	L (mm)
285	249	1160
355	283	
430	317	
500	356	1469
575	390	
650	424	

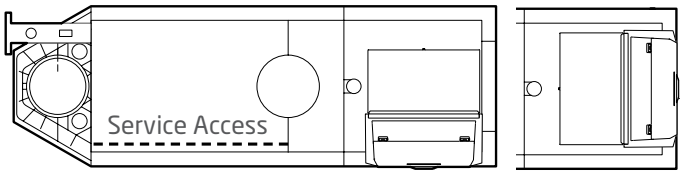




Magnus I boilers can be moved around the hallways as wide as 1 meter.



Righthand version



Left-hand version

Right or left hydraulic connections can be made in Magnus I boilers. The control panel can be easily rotated to the front and sides as a standard. This provides easy access to the boiler controls.

Magnus Boiler Control Panel

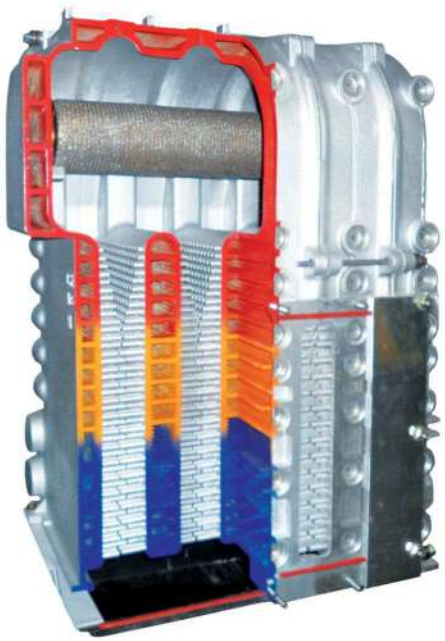
MAGNUS I - MAGNUS II boilers;

- Checks the boiler primary circulation pumps
- Advises on boiler operating status, possible fault and error codes
- Modulation-controlled
- Controlled by means of analog signals (0-10 V) depending on the delivery and return temperature.

1. LCD display
2. Power on/off key
3. PC connection (for servicing)

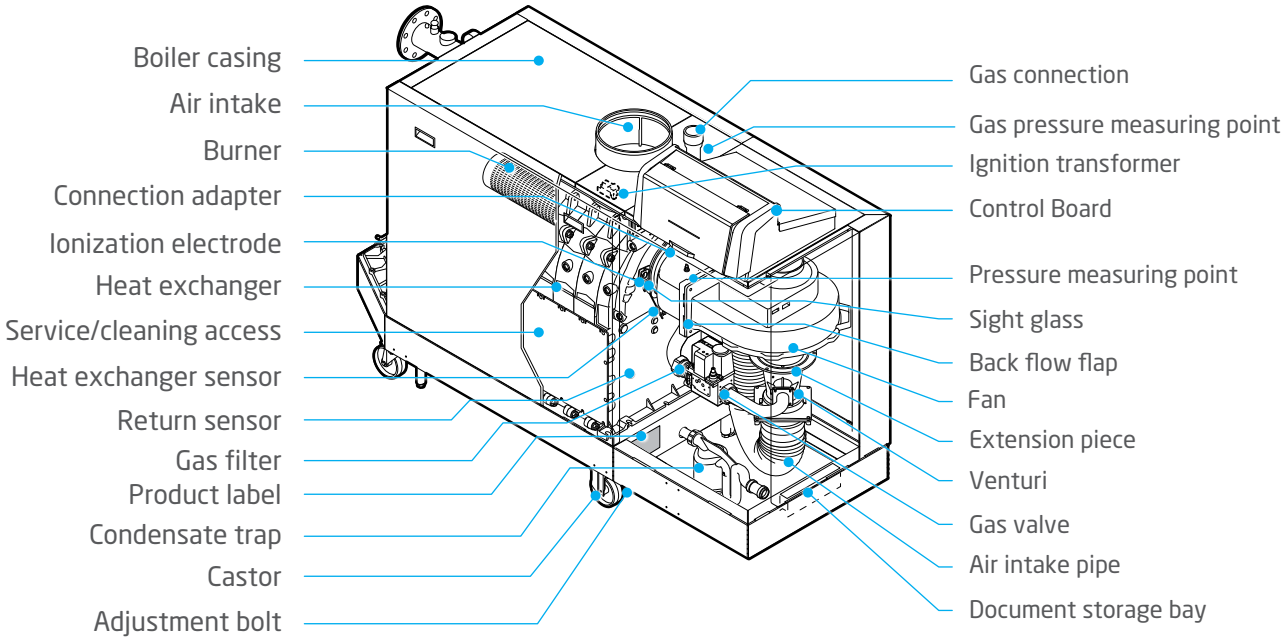
Boiler Accessories

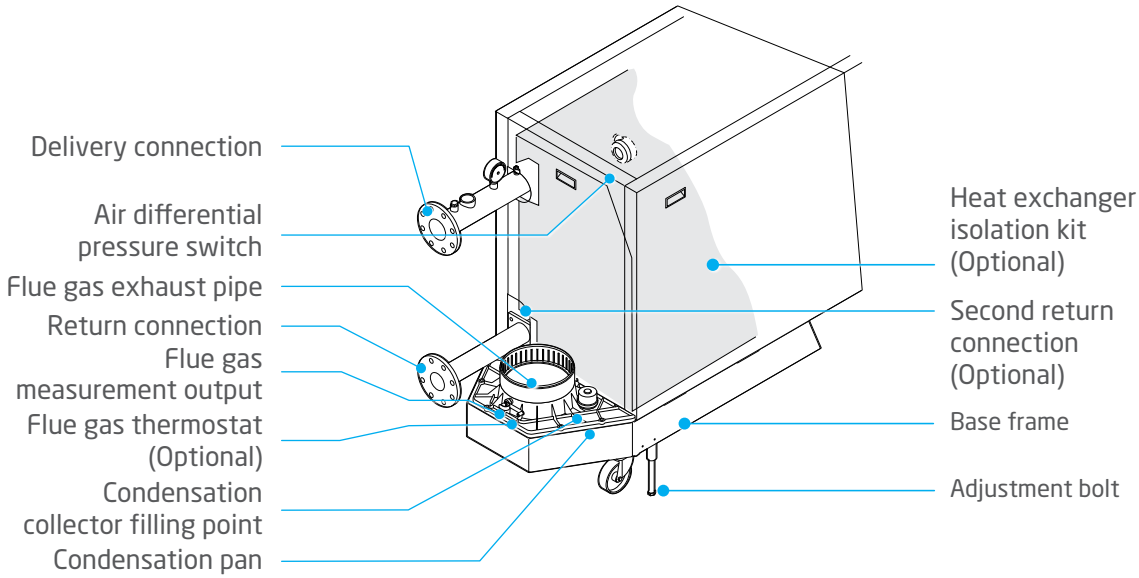
1- Outside air sensor
2- AD212 Storage tank sensor
3- AD250 Low Loss Header sensor
4- AD309 S-Bus Connection cable (12 m)
5- AD249 Additional zone kit
6- SCB-10 Main zone controller
7- Modbus PCB GTW-08 control unit
8- Modbus connection cable (12 m)
9- Cable room thermostats
10- Air intake filter
11- Service cleaning equipment
12- Neutralization container
13- RECOM connection kit for PC connection
14- Heat exchanger insulation kit
15- Flue gas thermostat
16- Second return fitting
17- Flue gas temperature switch
18- Flue gas leak control (VPS)
19- Water pressure sensor
20- Flue gas chimney kits



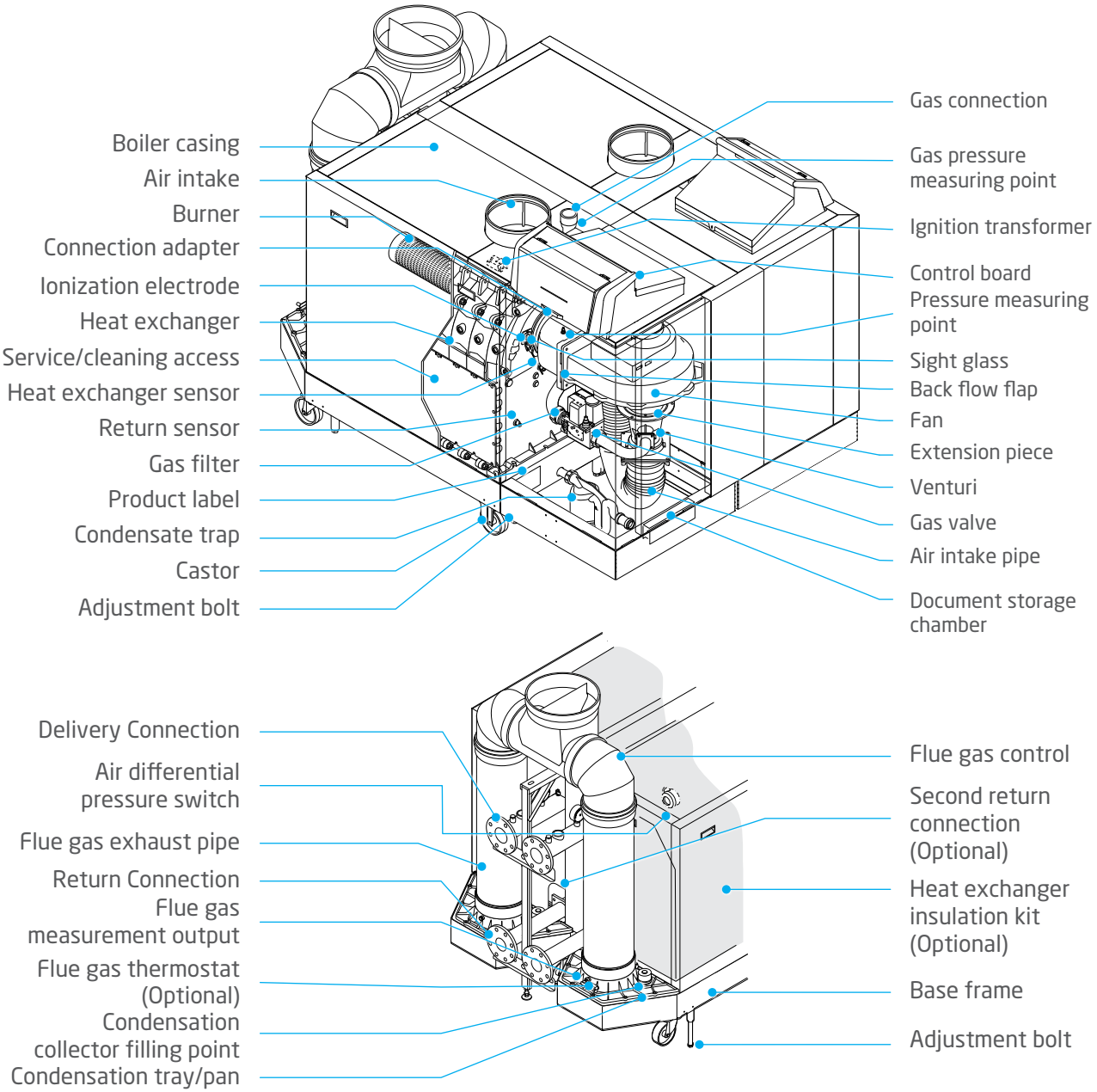
Al-Mg-Si Cast Heat Exchanger Internal Structure

Magnus I Basic Parts





Magnus II Basic Parts



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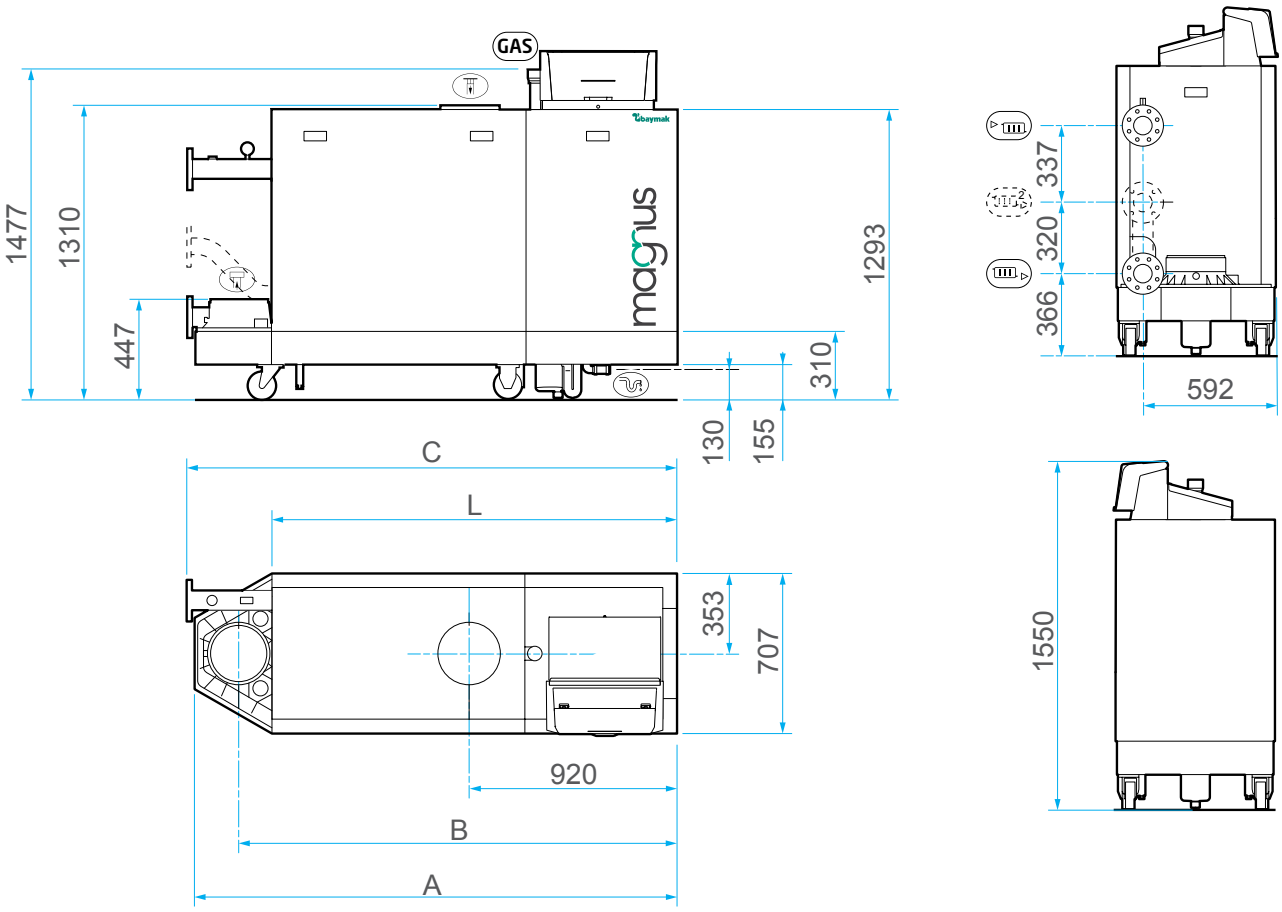
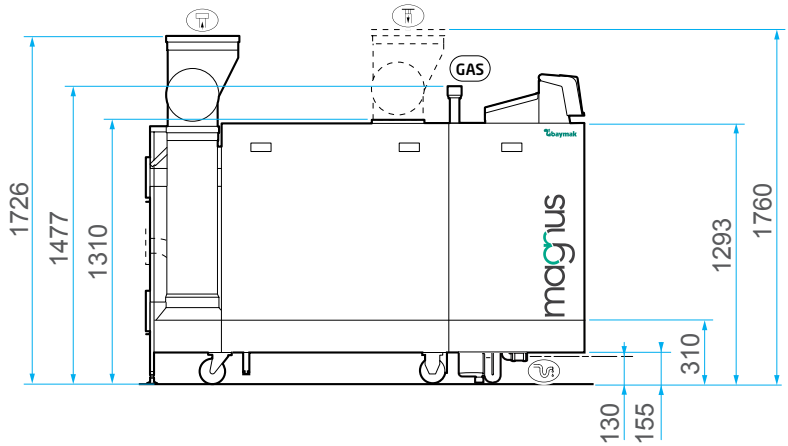
Magnus I Boiler Dimensions

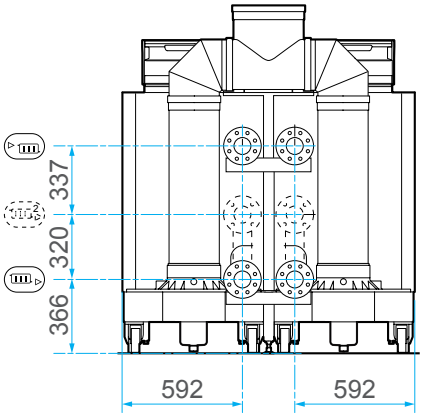


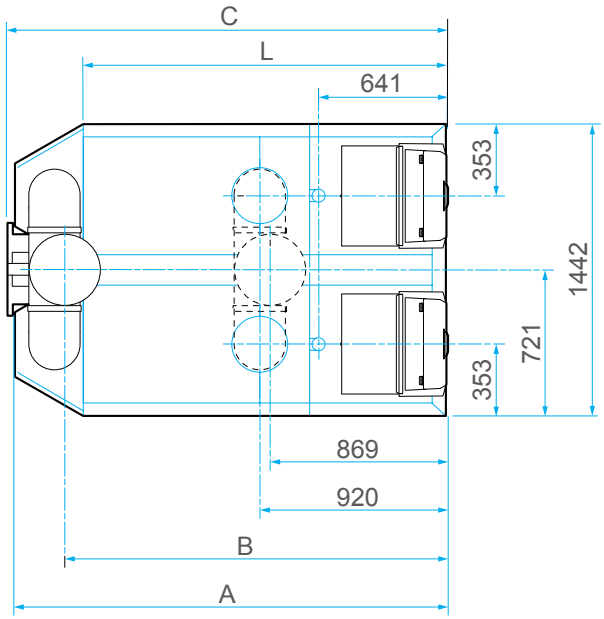
MAGNUS I	A (mm)	B (mm)	C (mm)	L (mm)
285	1833	1635	1862	1490
355	1833	1635	1862	1490
430	1833	1635	1862	1490
500	2142	1944	2172	1800
575	2142	1944	2172	1800
650	2142	1944	2172	1800

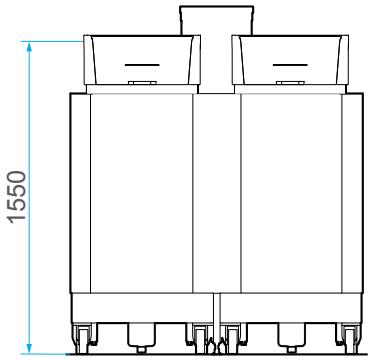
Symbol	Union Connectors
	Heating system delivery. Flanged DN 80 (DIN 2576)
	Heating system return. Flanged DN 80 (DIN 2576)
GAS	Gas connection. G2 "(Female connection)
	Condensate drain. Ø 32 mm (Internal)
	Smoke duct. Ø 250 mm
	Air intake. Ø 250 mm
	Second return (optional). Flanged DN 65 (DIN 2576)

Magnus II Boiler Dimensions





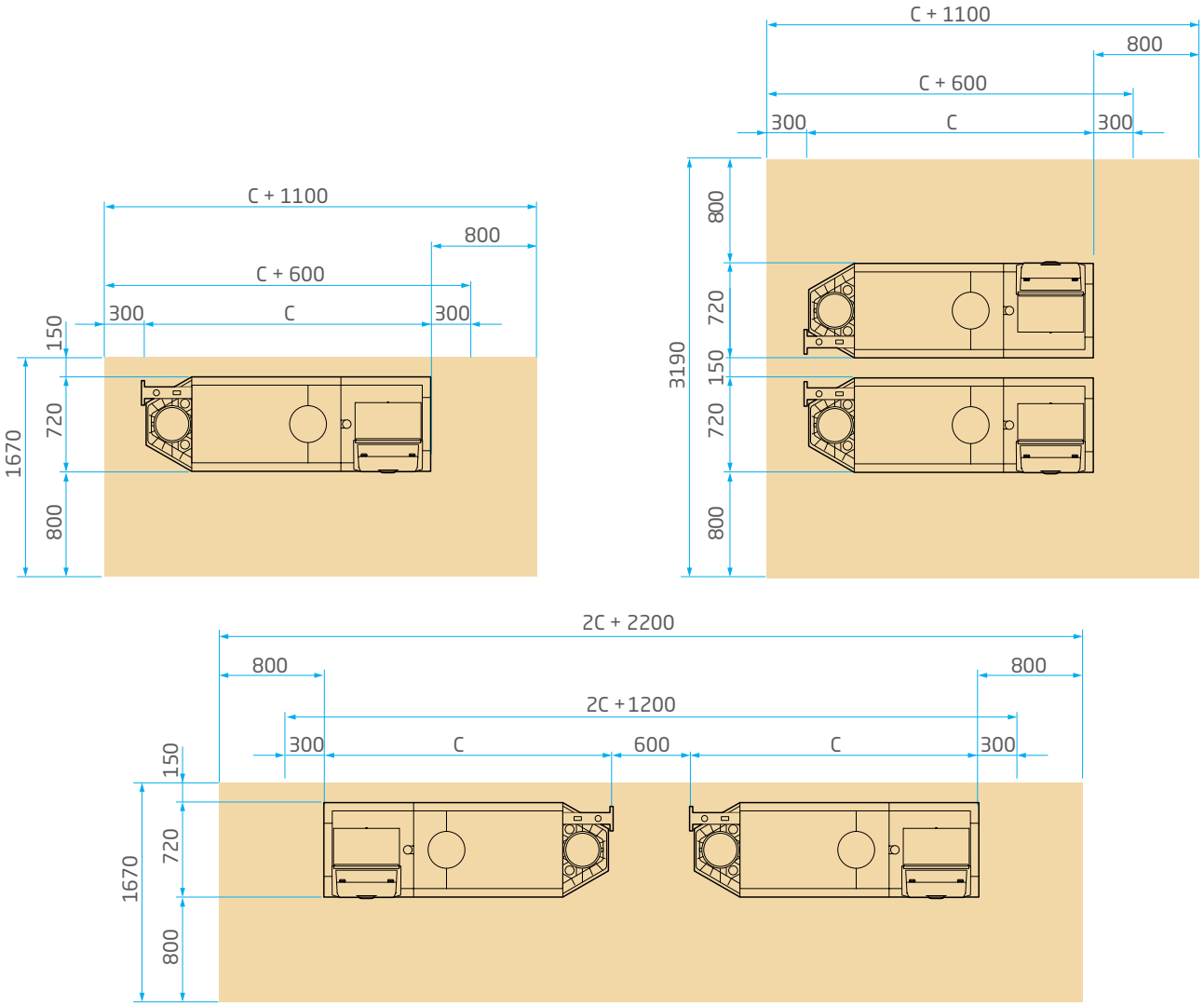




MAGNUS II	A (mm)	B (mm)	C (mm)	L (mm)
570	1833	1635	1862	1490
710	1833	1635	1862	1490
860	1833	1635	1862	1490
1000	2142	1944	2172	1800
1150	2142	1892	2172	1800
1300	2142	1892	2172	1800

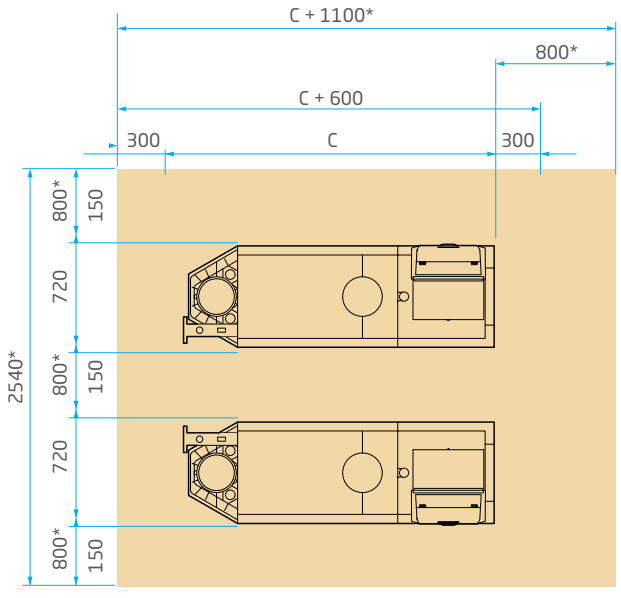
Sembol	Union Connectors
	Heating system delivery. Flanged DN 80 (DIN 2576)
	Heating system return. Flanged DN 80 (DIN 2576)
GAS	Gas connection. G2 "(Female connection)
	Condensate drain. Ø 32 mm (Internal)
	Flue gas exhaust. Ø 350 mm
	Air intake. Ø 250 mm Air supply control (Optional). Ø 350 mm
	Second turn (optional). Flanged DN 65 (DIN 2576)

Magnus I Boiler Positioning



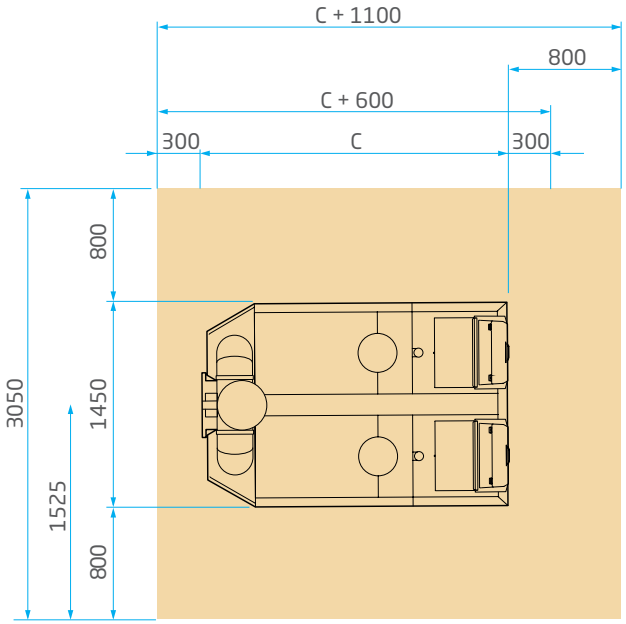
Magnus Boiler Cascade Positioning

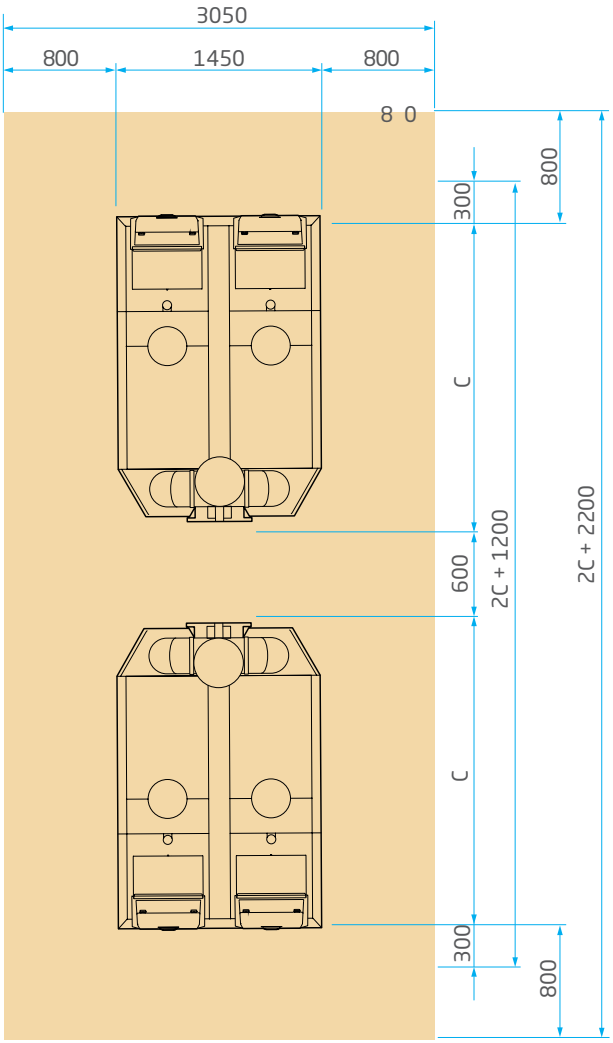
MAGNUS I	MAGNUS II	C (mm)
285	570	1862
355	710	1862
430	860	1862
500	1000	2172
575	1150	2172
650	1300	2172



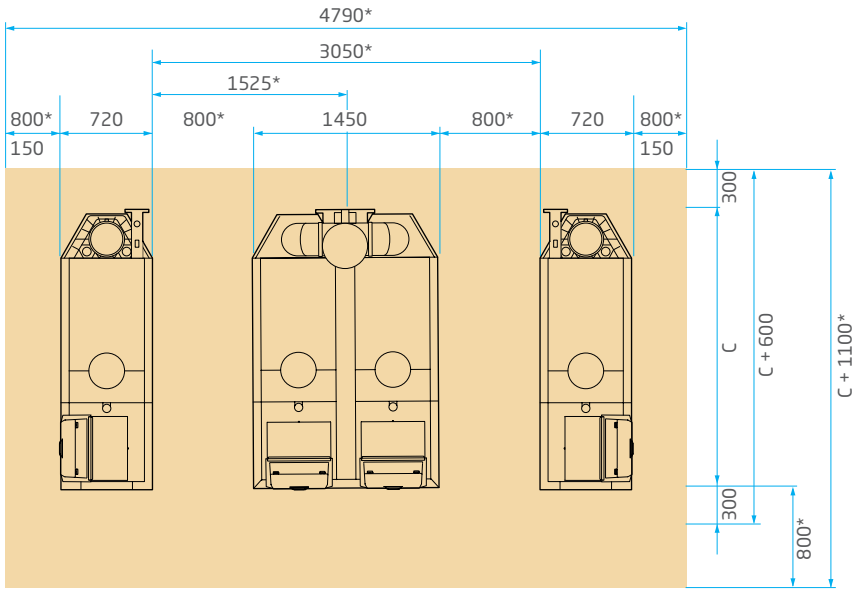
* 800 mm clearance is required depending on the direction of service access.

Magnus II Boiler Positioning





Magnus Boiler Cascade Positioning



* 800 mm clearance is required depending on the direction of service access.

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Magnus I Technical Data Sheet

MAGNUS I			BOILER TYPE 285	355	430	500	575	650
GENERAL INFORMATION								
Number of slices			5	6	7	8	9	10
Control system			Modulation, ON/OFF, (0-10 V)					
Nominal output (P_n 80/60 °C)	Minimum-Maximum	kW	51 - 261	65 - 327	79 - 395	92 - 461	106 - 530	119 - 601
Nominal Output (P_{nc} 70/50 °C)	Maximum	kW	262	328	396,4	462,4	532	602,1
Nominal Output (P_{nc} 50/30 °C)	Minimum-Maximum	kW	56 - 279	71 - 350	84 - 425	98 - 497	113 - 574	130 - 651
Nominal input (Q_{nh} H_i)	Minimum-Maximum	kW	54 - 266	68 - 333	82 - 402	95 - 469	109 - 539	122 - 610
Full-load efficiency P_n (Hi) (80/60 °C)		%	98,0	98,1	98,2	98,3	98,4	98,5
Full-load efficiency P_n (Hi) (70/50 °C)		%	98,5	98,5	98,6	98,6	98,7	98,7
Full-load efficiency (Hi) (50/30 °C)		%	104,8	105,2	105,6	106	106,4	106,8
Partial-load central heating efficiency P_n (Hi) (50/30 °C)		%	109,2	109	108,8	108,6	108,3	108,1
Weight (empty)		kg	364	398	433	495	531	568
Sound level (hermetic chimney, from 1-m distance)		dB (A)	61	61	65	65	65	65
Dimensions	Height	(mm)	1500	1500	1500	1500	1500	1500
	Width	(mm)	720	720	720	720	720	720
	Depth	(mm)	1833	1833	1833	2142	2142	2142
GAS TYPE AND COMBUSTION PRODUCT VALUES								
Gas consumption G20	Minimum-Maximum	m^3 / h	5,7 - 28,1	7,2 - 35,2	8,7 - 42,5	10,1 - 49,6	11,5 - 57	12,9 - 64,6
Gas intake pressure G20 (Gas H)	Minimum-Maximum	mbar	17 - 25	17 - 25	17 - 25	17 - 25	17 - 25	17 - 25
Flue gas losses	Minimum-Maximum	%	2,2	2,2	2,2	2,3	2,3	2,3
NOx - Annual emission G20 (Emission O2 = O2 = % 0 EN15502)		ppm	29	29	30	30	30	31
NOx - Annual emission G20 Hs (EN15502)		mg / kWh	43	43	44	45	46	47
Flue gas flow	Minimum-Maximum	kg / h	91 - 448	115 - 561	138 - 677	160 - 790	184 - 907	205 - 1027
Flue gas temperature	Minimum-Maximum	°C	30 - 60	30 - 61	30 - 64	30 - 63	30 - 66	30 - 65
Maximum pressure in the flue gas nozzle		Pa	130	120	130	150	150	150
HEATING SYSTEM CHARACTERISTICS								
Boiler water volume		Litre	49	60	71	82	93	104
Boiler water working pressure	Minimum-Maximum	bar	0,8 - 7					
Boiler maximum water temperature	Maximum	°C	110					
Boiler operating water temperature range	Minimum-Maximum	°C	20 - 90					
	Default	°C	80					
Boiler heat exchanger water pressure loss (Boiler temperature ΔT = 20K)		mbar	113	110	120	110	125	130
		kPa	11,3	11,0	12,0	11,0	12,5	13,0
Boiler heat exchanger water pressure loss (Boiler temperature ΔT = 11K)		mbar	374	364	397	364	413	435
		kPa	37,4	36,4	39,7	36,4	41,3	43,5
Power supply	Maximum	V AC / Hz	230 / 50					
Power consumption - at Full load	Maximum	W	280	345	450	567	768	720
Power consumption - at Partial load	Minimum	W	52	57	64	72	68	60
Power consumption – at Standby load		W	10	9	10	10	10	10
Electrical protection rating - Hermetic type		IP	X1					

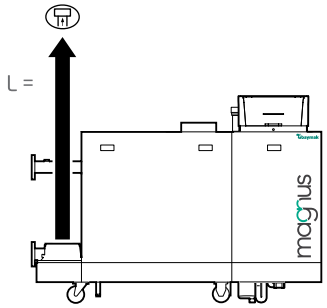
Magnus II Technical Data Sheet

MAGNUS II			BOILER TYPE 570	710	860	1000	1150	1300
GENERAL INFORMATION								
Number of slices			2 x 5	2 x 6	2 x 7	2 x 8	2 x 9	2 x 10
Control system			Modülasyon, ON / OFF, (0-10 V)					
Nominal output (P_n 80/60 °C)	Minimum-Maximum	kW	69 - 522	87 - 654	123 - 790	122 - 922	148 - 1060	158 - 1202
Nominal Output (P_{nc} 70/50 °C)	Maximum	kW	524	656	793	925	1064	1204
Nominal Output (P_{nc} 50/30 °C)	Minimum-Maximum	kW	74 - 558	94 - 700	131 - 850	130 - 994	156 - 1148	169 - 1303
Nominal input (Q_{nh} H_i)	Minimum-Maximum	kW	80 -532	91 - 666	128 - 804	127 - 938	153 - 1078	170 - 1220
Full-load efficiency P_n (Hi) (80/60 °C)		%	98,0	98,1	98,2	98,3	98,4	98,5
Full-load efficiency P_n (Hi) (70/50 °C)		%	98,5	98,5	98,6	98,6	98,7	98,7
Full-load efficiency (Hi) (50/30 °C)		%	104,8	105,2	105,6	106	106,4	106,8
Partial-load central heating efficiency P_n (Hi) (50/30 °C)		%	109,2	109	108,8	108,6	108,3	108,1
Weight (empty)		kg	707	771	837	957	1025	1095
Sound level (hermetic chimney, from 1-m distance)		dB (A)	64	64	68	68	68	68
Dimensions	Height	(mm)	1500	1500	1500	1500	1500	1500
	Width	(mm)	1460	1460	1460	1460	1460	1460
	Depth	(mm)	1833	1833	1833	2142	2142	2142
GAS TYPE AND COMBUSTION PRODUCT VALUES								
Gas consumption G20	Minimum-Maximum	m^3 / h	8,5 -56,3	9,6 -70,5	13,5 - 85,1	13,4 - 99,3	16,2 - 115,8	18,0 - 129,1
Gas intake pressure G20 (Gas H)	Minimum-Maximum	mbar	17 - 25	17 - 25	17 - 25	17 - 25	17 - 25	17 - 25
Flue gas losses	Minimum-Maximum	%	2,2	2,2	2,2	2,3	2,3	2,3
NOx - Annual emission G20 (Emission O2 = O2 = % 0 EN15502)		ppm	29	29	30	30	30	31
NOx - Annual emission G20 Hs (EN15502)		mg / kWh	43	43	44	45	46	47
Flue gas flow	Minimum-Maximum	kg / h	135 - 896	153 - 1121	216 - 1354	214 - 1579	258 - 1842	286 - 2054
Flue gas temperature	Minimum-Maximum	°C	30 - 60	30 - 61	30 - 64	30 - 63	30 - 66	30 - 65
Maximum pressure in the flue gas nozzle		Pa	130	120	130	150	150	150
HEATING SYSTEM CHARACTERISTICS								
Boiler water volume		Litre	98	120	142	164	186	208
Boiler water working pressure	Minimum-Maximum	bar	0,8 - 7					
Boiler maximum water temperature	Maximum	°C	110					
Boiler operating water temperature range	Minimum-Maximum	°C	20 - 90					
	Default	°C	80					
Boiler heat exchanger water pressure loss (Boiler temperature ΔT = 20K)		mbar	113	110	120	110	125	130
		kPa	11,3	11	12	11	12,5	13
Boiler heat exchanger water pressure loss (Boiler temperature ΔT = 11K)		mbar	374	364	397	364	413	435
		kPa	37,4	36,4	39,7	36,4	41,3	43,5
Power supply	Maximum	V AC / Hz	230 / 50					
Power consumption - at Full load	Maximum	W	560	690	900	1152	1536	1440
Power consumption - at Partial load	Minimum	W	120	124	160	166	178	148
Power consumption - at Standby load		W	20	18	20	20	20	20
Electrical protection rating - Hermetic type		IP	X1					

Air and Flue Gas Piping

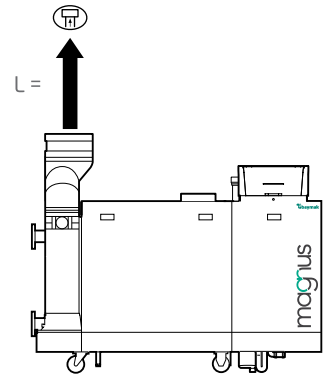
B23, B23P

In type B chimney systems, it takes the oxygen from where the boiler room is located. The flue gas is discharged through a 250 mm dia. exhaust pipe.



Diameter [1]	Maximum Flue Length (L)	
	200 mm	250 mm
Magnus I 285	50 m [1]	50 m [1]
Magnus I 355	50 m	50 m [1]
Magnus I 430	39 m	50 m [1]
Magnus I 500	32 m	50 m [1]
Magnus I 575	24 m	50 m [1]
Magnus I 650	18 m	50 m

(1) Additional 5 times 90° or 10 times 45° elbows can be used while maintaining the maximum length (specified for each boiler type and diameter)

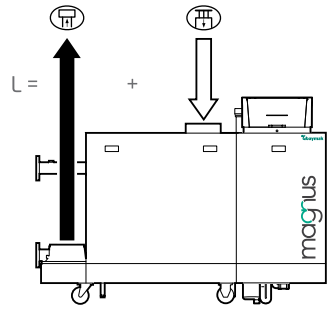


Diameter [1]	Maximum Flue Length (L)			
	200 mm	250 mm	300 mm	350 mm
Magnus II 570	15 m	50 m [1]	50 m [1]	50 m [1]
Magnus II 710	6 m	31 m	50 m [1]	50 m [1]
Magnus II 860	-	20 m	50 m [1]	50 m [1]
Magnus II 1000	-	11 m	39 m	50 m [1]
Magnus II 1150	-	5 m	26 m	50 m
Magnus II 1300	-	3 m	19 m	50 m

(1) Additional 5 times 90° or 10 times 45° elbows can be used while maintaining the maximum length (specified for each boiler type and diameter)

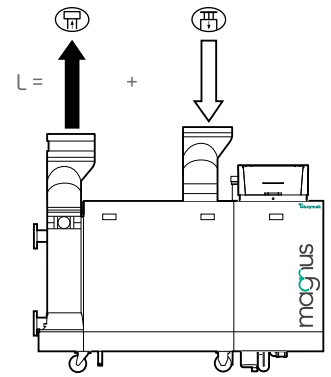
C33, C63, C93 (Fan Flue)

In type C chimney system, the combustion air is supplied to the condensing device from outside. Flue gas is discharged through a steel chimney. The air supply and flue gas outlet of this chimney system can be configured in different ways. It can also be connected to an external air supply and flue gas exhaust. The chimney flue gas and clean air pipe is 250 mm in dia.



Diameter [1]	Maximum Length for Fan Flue Operation (L)		
	200 mm	250 mm	300 mm
Magnus I 285	84 m	100 m [1]	100 m [1]
Magnus I 355	42 m	100 m [1]	100 m [1]
Magnus I 430	26 m	100 m	100 m [1]
Magnus I 500	20 m	100 m	100 m [1]
Magnus I 575	10 m	68 m	100 m [1]
Magnus I 650	4 m	48 m	100 m [1]

(1) Additional 5 times 90° or 10 times 45° elbows can be used while maintaining the maximum length (specified for each boiler type and diameter)



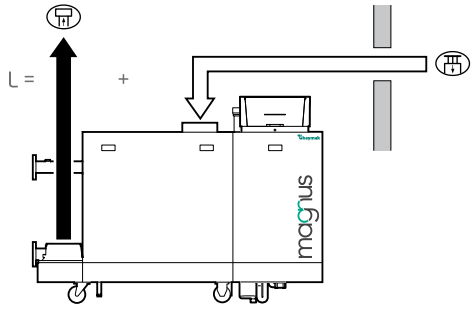
Diameter [1]	Maximum Length for Fan Flue Operation (L)		
	300 mm	350 mm	400 mm
Magnus II 570	100 m [1]	100 m [1]	100 m [1]
Magnus II 710	86 m	100 m [1]	100 m [1]
Magnus II 860	52 m	100 m [1]	100 m [1]
Magnus II 1000	26 m	70 m	100 m [1]
Magnus II 1150	10 m	32 m	48 m
Magnus II 1300	-	20 m	24 m

(1) Additional 5 times 90° or 10 times 45° elbows can be used while maintaining the maximum length (specified for each boiler type and diameter)

Air and Flue Gas Piping

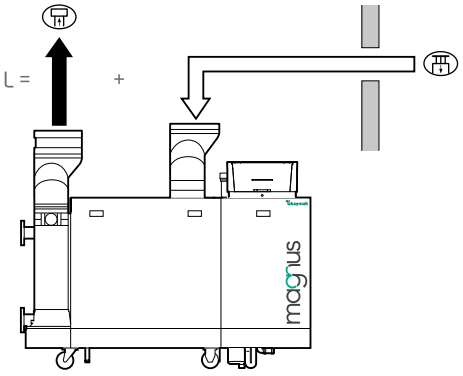
C53, C83

Condensing boiler is connected to a chimney system. Air supply of this chimney system and exhaust of flue gas can be configured in different ways. The maximum clearance between the flue gas discharge and the fresh air pipe is 36 meters. Fresh air is sucked from outside.



Diameter (1)	Maximum Flue Length (L) by Chimney Diameters		
	200 mm	250 mm	300 mm
Magnus I 285	61 m	100 m (1)	100 m (1)
Magnus I 355	30 m	100 m (1)	100 m (1)
Magnus I 430	20 m	88 m	100 m (1)
Magnus I 500	16 m	76 m	100 m (1)
Magnus I 575	10 m	53 m	100 m (1)
Magnus I 650	5 m	38 m	100 m (1)

(1) Additional 5 times 90° or 10 times 45° elbows can be used while maintaining the maximum length (specified for each boiler type and diameter)



Diameter (1)	Maximum Flue Length (L) by Chimney Diameters		
	300 mm	350 mm	400 mm
Magnus II 570	100 m (1)	100 m (1)	100 m (1)
Magnus II 710	48 m	100 m (1)	100 m (1)
Magnus II 860	24 m	83 m	100 m (1)
Magnus II 1000	-	38 m	90 m
Magnus II 1150	-	-	28 m
Magnus II 1300	-	-	-

(1) Additional 5 times 90° or 10 times 45° elbows can be used while maintaining the maximum length (specified for each boiler type and diameter)

Chimney Pipe Bend (L) Losses Chart

Dimensions	Pipe Losses Per Part Used	
	45° L Pipe Loss	90° L Pipe Loss
200 mm	1,6 m	2,8 m
250 mm	2,0 m	3,5 m
300 mm	2,4 m	4,2 m
350 mm	2,8 m	4,9 m
400 mm	3,2 m	5,6 m

Backflow Flap

In Magnus Floor-Standing condensing boilers with premix burner, fan valve is located between the fan and the heat exchanger connection adapter and it is cleanable.

Discharge of Condensate

The pH value of the condensate accumulating in the condensing boiler and in flue gas pipeline during the heating process is between 3 and 4. This condensate should be drained at appropriate pH values. In condensing boilers with a rated power of 200 kW and above condensate water neutralisation is highly recommended. The pH value will be increased up to between 6.5 - 9. This unit is optional.

Neutralization Container (Optional)

Heat Exchanger Isolation Kit

This isolation kit covers heat exchanger's surface and prevents heat loss for a more efficent heating process.

Isolation Kit (Optional)

Magnus II Chimney Equipment

Air Filter (Optional)

Cascade Control Accessories

SCB10 main cascade - zone controller
- On / Of ve Open Therm connection
- 2 direct zone / mixing valve
- 3. additional zone / mixing valve
- Storage connection
- Status info
- 0-10 V and inlet
- Cascade control from 1 up to 8 boilers

Cascade connection cable (S BUS) - 12 mt - Product Code : AD309
Should be ordered n-1 pieces of cascade.
(n=boiler amount)

Low Loss Header Sensor - Product code: AD250
Should be ordered for single or cascade applications.
One piece for system.

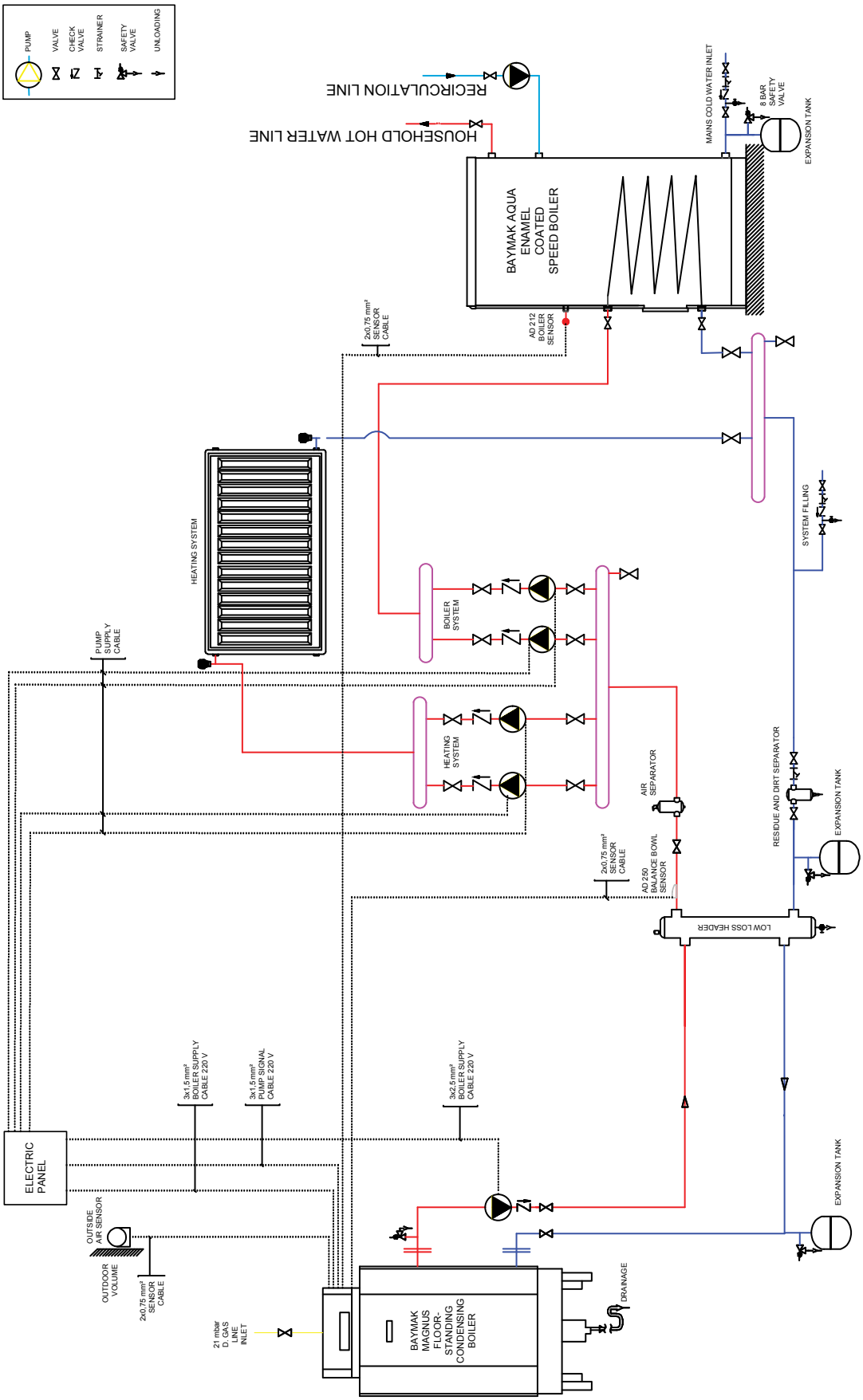
Storage tank sensor (5 mt) Product Code : AD212
Senses water temperature in storage tank and sends data to main controller.

Zone controller heating sensor (2,5 mt) Product code : AD199
Controls mixing valve with instant temperature data. Controlled via DIEMATIC iSystem panel.

PCB + AD199 (2,5 mt) Product Code : AD249
System can control extra 1 heating zone when integrated to the main cascade board (SCB-10) (Max 3 heating zones could be controlled)
Controlled via DIEMATIC iSystem panel.

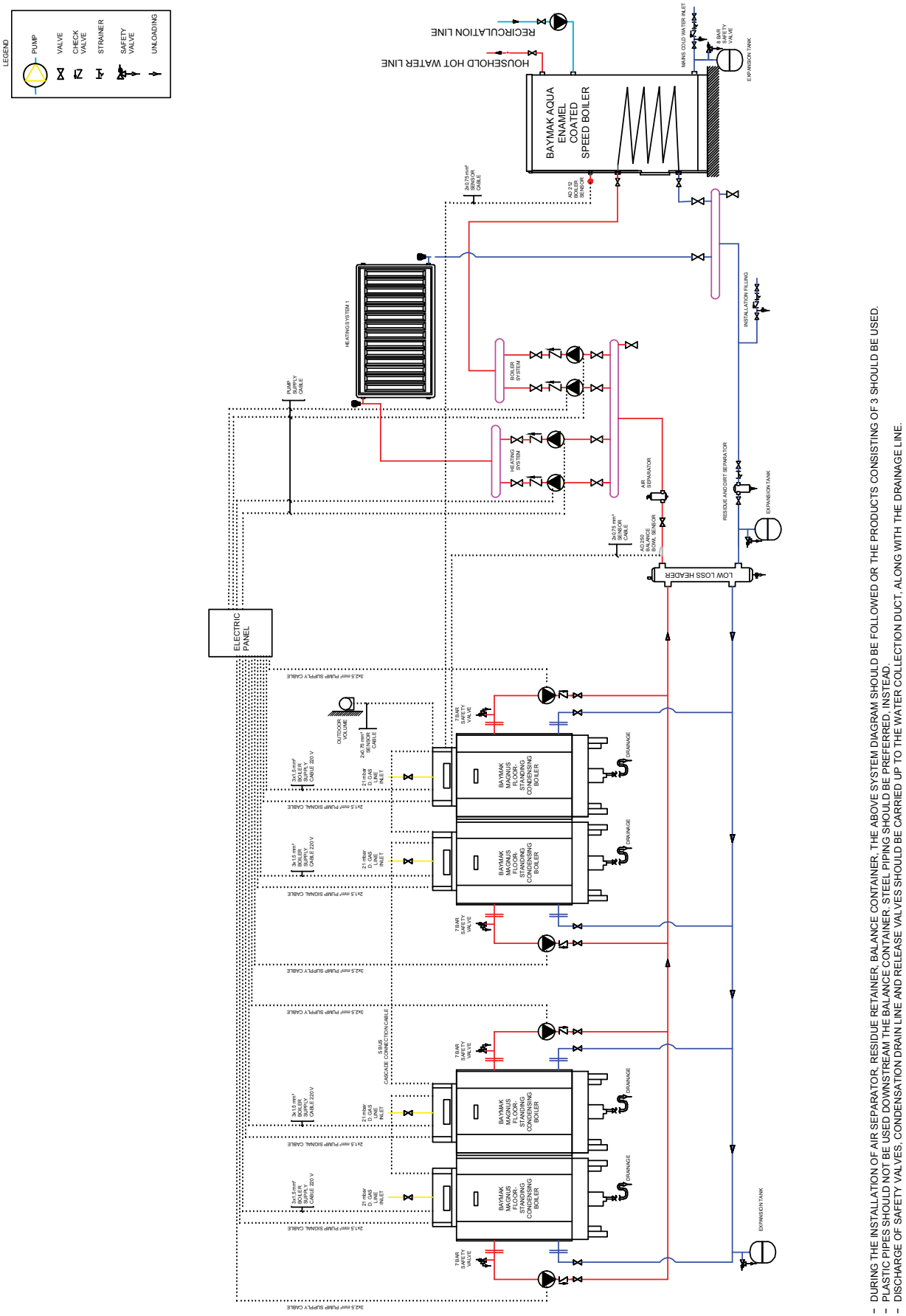
Modbus control module- Product Code : GTW-08
System becomes compatible to managed by Modbus Systems.

Magnus I Premix Floor-Standing Condensing Boiler Radiator - Boiler System Diagram



- DURING THE INSTALLATION OF AIR SEPARATOR, RESIDUE RETAINER, BALANCE CONTAINER, THE ABOVE SYSTEM DIAGRAM SHOULD BE FOLLOWED OR THE PRODUCTS CONSISTING OF 3 SHOULD BE USED.
- PLASTIC PIPES SHOULD NOT BE USED DOWNSTREAM THE BALANCE CONTAINER. STEEL PIPING SHOULD BE PREFERRED, INSTEAD.
- DISCHARGE OF SAFETY VALVES, CONDENSATION DRAIN LINE AND RELEASE VALVES SHOULD BE CARRIED UP TO THE WATER COLLECTION DUCT, ALONG WITH THE DRAINAGE LINE.

Magnus II Premix Floor-Standing Condensing Boiler Radiator - Boiler System Diagram



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