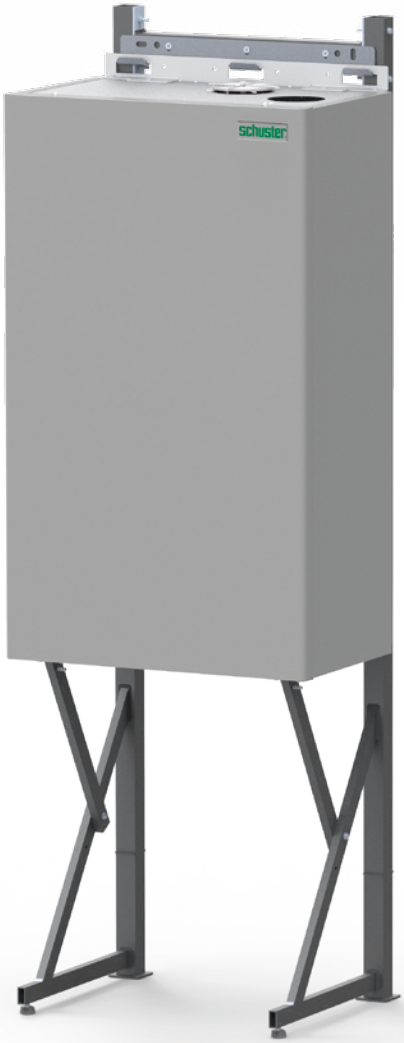
BWA 140 EXT

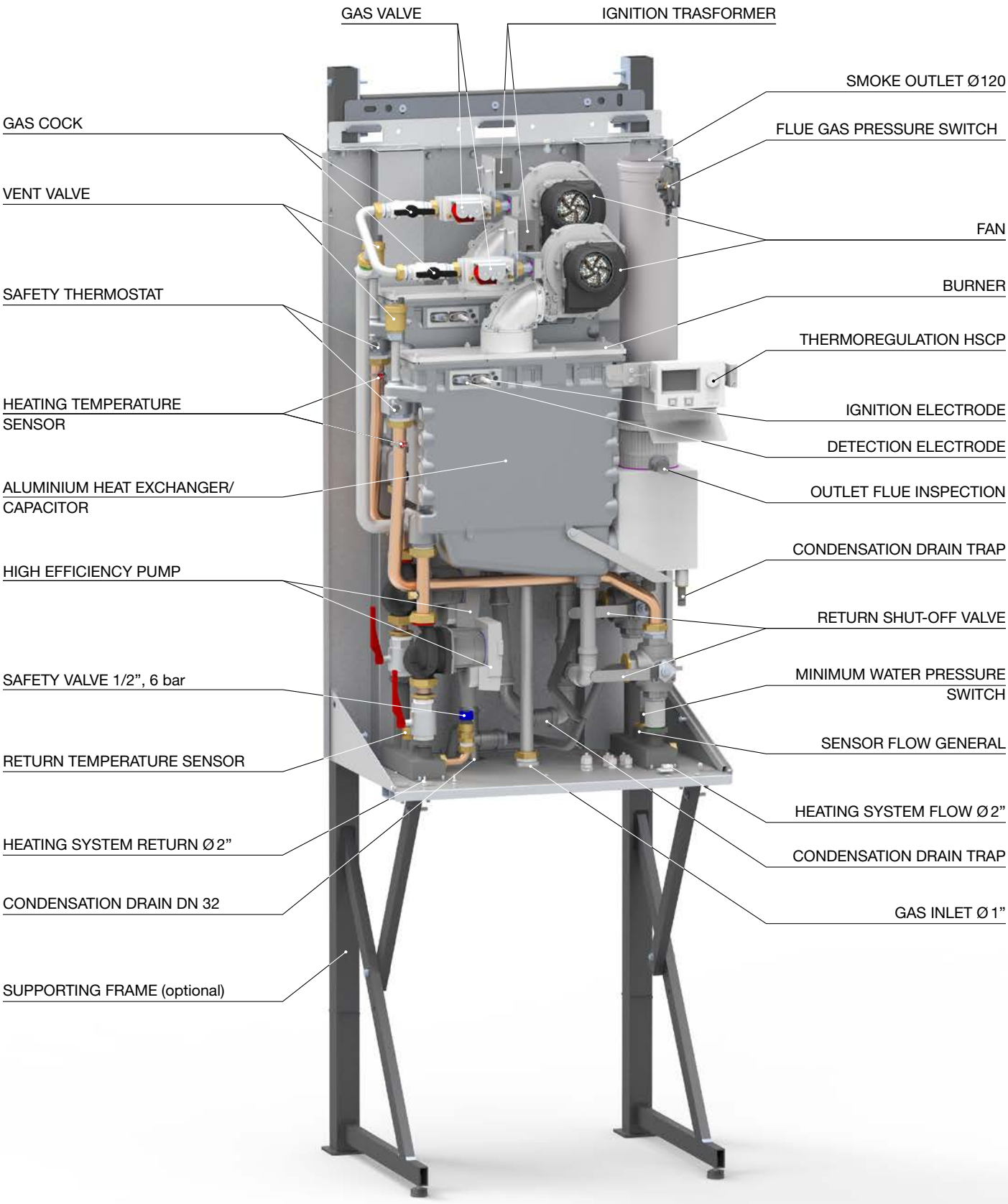


MODULATING CONDENSING BOILER with double premix low NOx burner
and double heat exchanger EXPANDABLE IN BATTERY for indoor and outdoor installations (IPX5D)

OUTPUT RANGE	from 115 to 560 kW (in battery)
WORKING TEMPERATURE	no limit on the return temperature
SUPPLY	Natural Gas or LPG
MODELS	140 EXT
SEASONAL EFFICIENCY	**A**

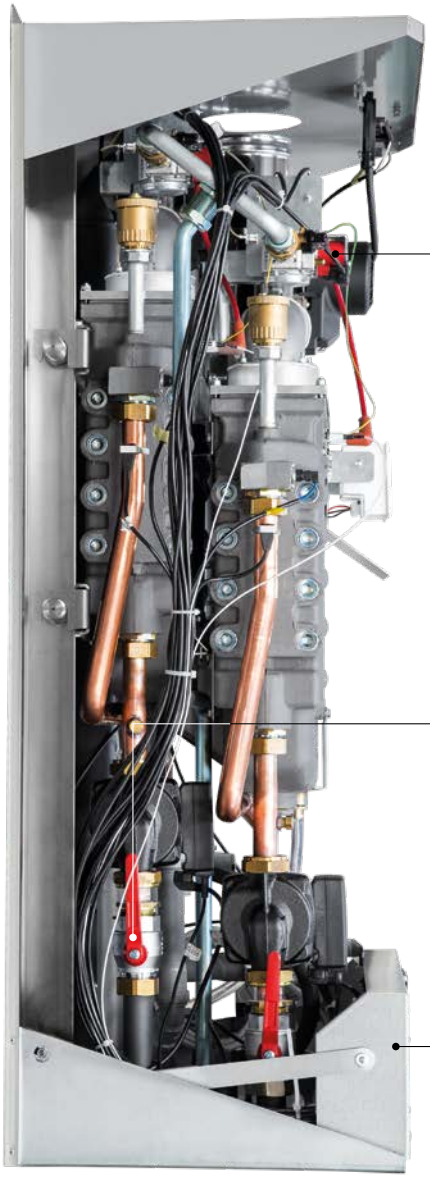
Wall hung with dedicated supporting kit
available in battery up to 4 units for a total of 560 kW
can be combined both with MIXING HEADER and with PLATE HEAT EXCHANGERS

MAIN COMPONENTS



PRODUCT PLUS VALUES

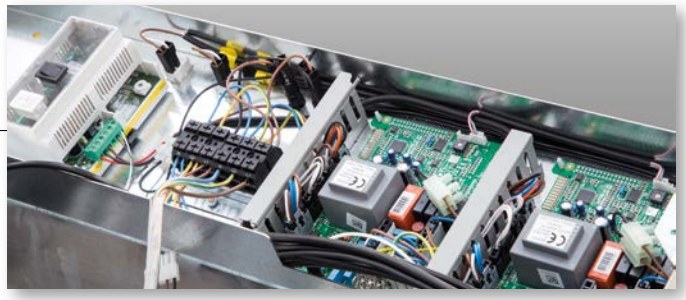
- **Calibration possibility according to the thermal requirement of the system**
  (possible customization of the requested power)
- 2 complete interceptables **THERMAL ELEMENTS**, operating also separately in case of necessity, controlled by the BMM (Burner Module Manager) electronic cards
- **2 LOW WATER CONTENT HEAT EXCHANGERS IN Al/Si/Mg** alloy, the best for:
  - 100% wet surfaces of the boiler body
  - for long time guaranteed efficiency, thanks to the absence of scaling
  - reliability, thanks to the optimized circulation that avoids thermal overloads (NTC control's sensors)
  - long lasting, fruit of the multi-year metallurgical Schuster experience
- **2 LOW NOX PREMIX MODULATING BURNERS**
  in class 6, composed by:
  - 2 fans (40 Pa of manometric head) with electronically controlled speed
  - 2 safety gas valves with constant air-gas ratio
  - radiating flame surface in "metallic sponge" (guaranteed operation up to 13 mbar of natural gas pressure)
- **2 MODULATING PUMPS** (one for each thermal element) with antifreeze protection , antijamming and overrun circulation
- **MINIMUM WATER PRESSURE SWITCH**
- ready for the **ELECTRICAL CONNECTION** of the additional safety devices
- **OPTIONAL HYDRAULIC GROUPS** including:
  - Pipe for installation of safety devices and accessories
  - Differential pressure switch for the control of water circulation
  - Hydraulic connection system
  - Mixing header
- **COMPLETE OUTER CASING FOR OUTDOOR INSTALLATION** in electro-galvanized steel sheet with epoxy-polyester painting
- **CONVERSION KIT from Nat. Gas to LPG, optional**
- **EXPANDIBLE IN CASCADE** up to 1120 kW (8 boilers, 2 group of 4 booiler in cascade)
- **OPTIONAL ACCESSORIES** for cascade installation



View that underlines the particular skew between the 2 thermal elements in order to facilitate the maintenance interventions

Pumps and gate valves

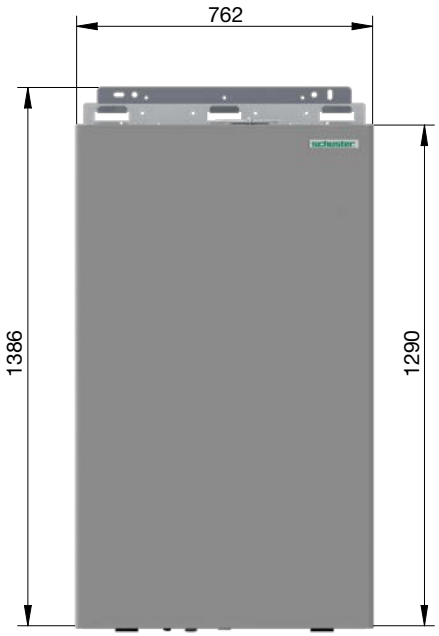
Group of: fan, modulating gas valve, premix burner



Assembly of the electronic PCBs for the management of the thermal elements and BCM 2.0

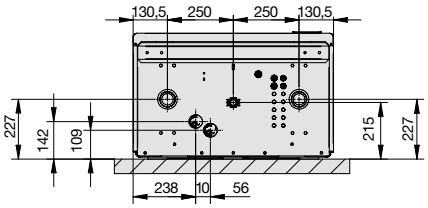
DIMENSIONS OF A SINGLE BOILER BWA 140 EXT

FRONT VIEW

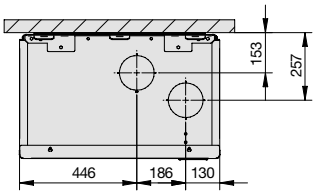


SIDE VIEW

VIEW FROM BELOW

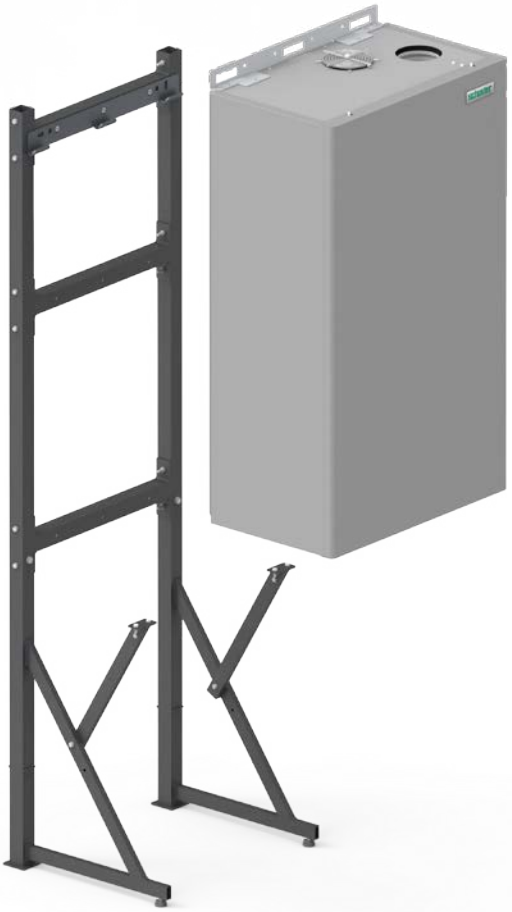


VIEW FROM ABOVE

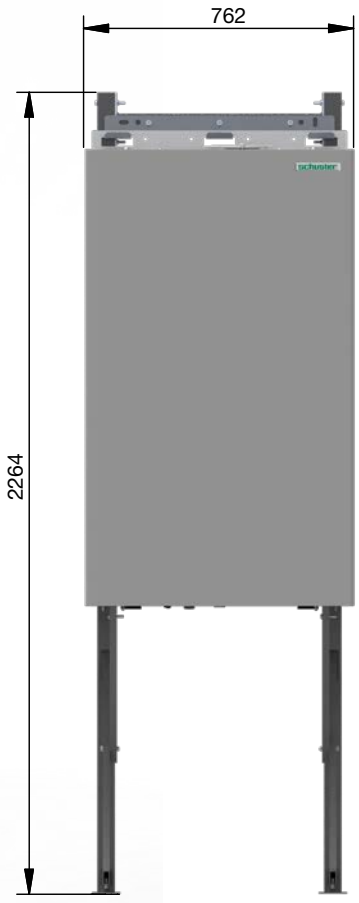


BWA	Net Weight kg	Gross Weight (with packaging) kg
140 EXT	160	180

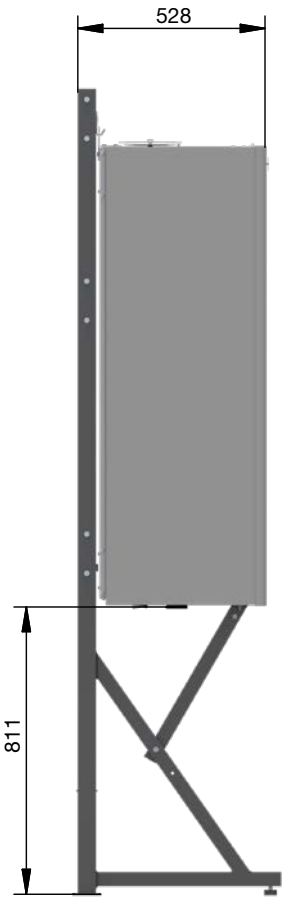
DIMENSIONS WITH SUPPORTING FRAME (optional)



FRONT VIEW



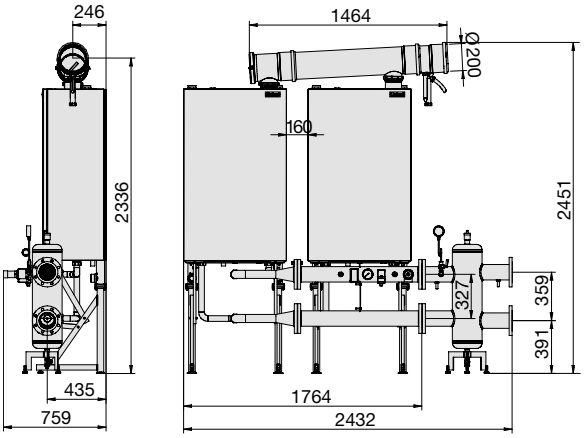
SIDE VIEW



BWA 140 EXT IN BATTERY

The BWA 140 EXT is foreseen, thanks to an opportune and dedicated series of accessories, to be assembled in battery.
The combinations can be in groups of 2 - 3 & 4 units, up to a maximum of 560 kW.

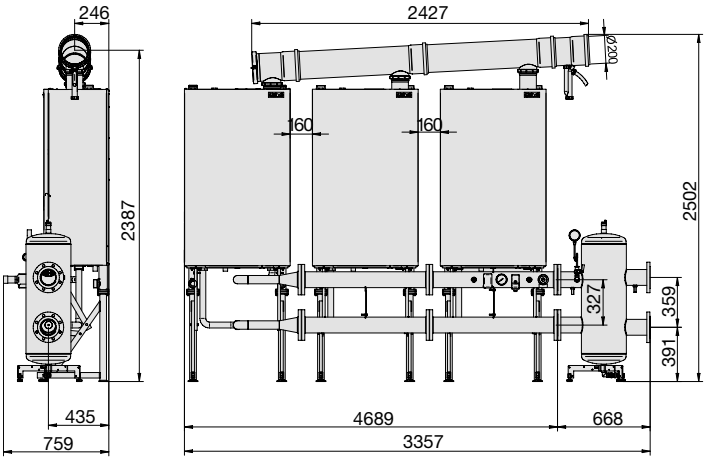
DIMENSIONS OF TWO BWA 140 EXT IN BATTERY



Operational data		BWA 140 EXT
Minimum Input on N.C.V. Qmin	kW	11
Nominal Input on N.C.V. Qn	kW	270
Nominal Output (60/80°C) Pn	kW	263.20
Nominal Output (30/50°C) Pcond	kW	271.36
Setting temperature of the gas cut-off valve	°C	98^{+0}_{-5}

Warning: The flue ducts in plastic material (PPS) are suitable only for Indoor installations.

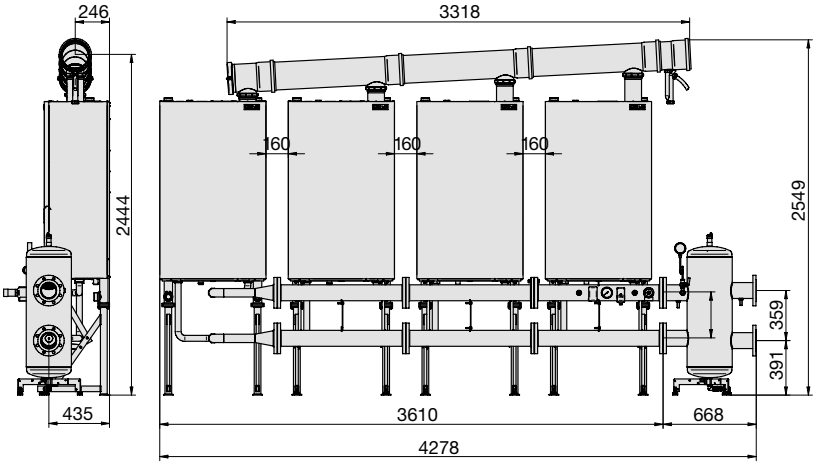
DIMENSIONS OF THREE BWA 140 EXT IN BATTERY



Operational data		BWA 140 EXT
Minimum Input on N.C.V. Qmin	kW	11
Nominal Input on N.C.V. Qn	kW	405
Nominal Output (60/80°C) Pn	kW	394.8
Nominal Output (30/50°C) Pcond	kW	407.04
Setting temperature of the gas cut-off valve	°C	98^{+0}_{-5}

Warning: The flue ducts in plastic material (PPS) are suitable only for Indoor installations.

DIMENSIONS OF FOUR BWA 140 EXT IN BATTERY



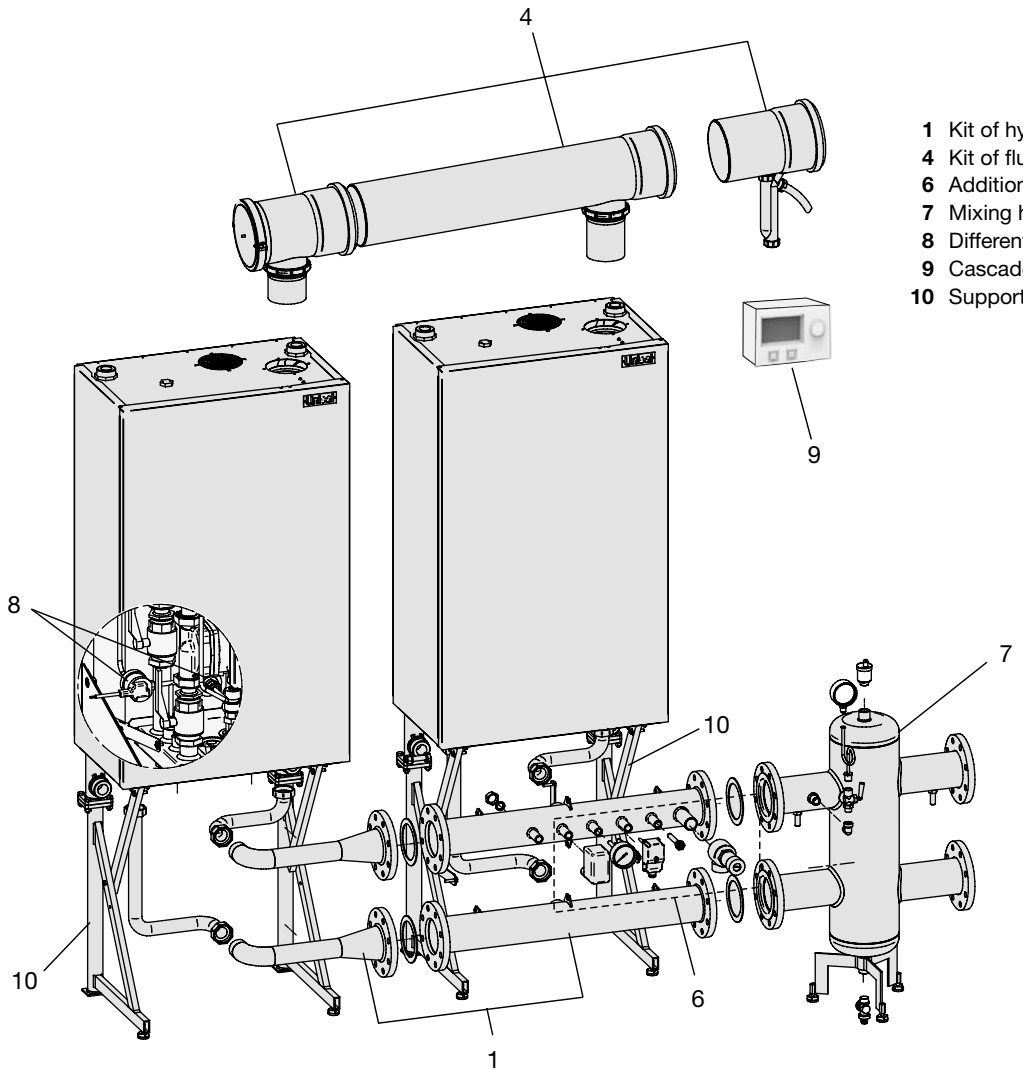
Operational data		BWA 140 EXT
Minimum Input on N.C.V. Qmin	kW	11
Nominal Input on N.C.V. Qn	kW	540
Nominal Output (60/80°C) Pn	kW	526.40
Nominal Output (30/50°C) Pcond	kW	542.72
Setting temperature of the gas cut-off valve	°C	98^{+0}_{-5}

Warning: The flue ducts in plastic material (PPS) are suitable only for Indoor installations.

ACCESSORY KITS FOR BWA 140 EXT IN BATTERY

		No. of units	2x	3x	4x
1	Kit of hydraulic manifolds for 2 units battery		1		
2	Kit of hydraulic manifolds for 3 units battery			1	
3	Kit of hydraulic manifolds for 4 units battery				1
4	Kit of flue ducts for 2 units battery		1	1	1
5	Expansion kit of flue ducts for battery of 3 & 4 units			1	2
6	Additional safety kit		1	1	1
7	Mixing header kit		1	1	1
8	Differential pressure switch kit		2	3	4
9	Cascade Manager CM 140		1	1	1
10	Supporting frame		2	3	4

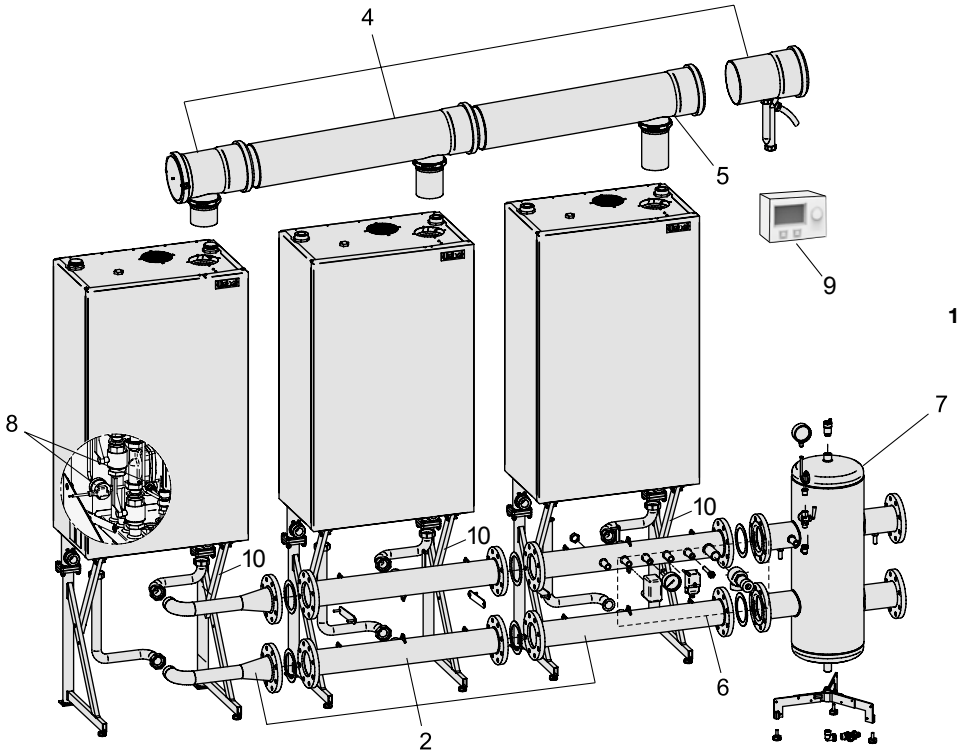
EXAMPLE OF 2 BWA 140 EXT IN BATTERY



1 Kit of hydraulic manifolds for 2 units battery
4 Kit of flue ducts for 2 units battery
6 Additional safety kit
7 Mixing header kit
8 Differential pressure switch kit
9 Cascade Manager CM 140
10 Supporting frame

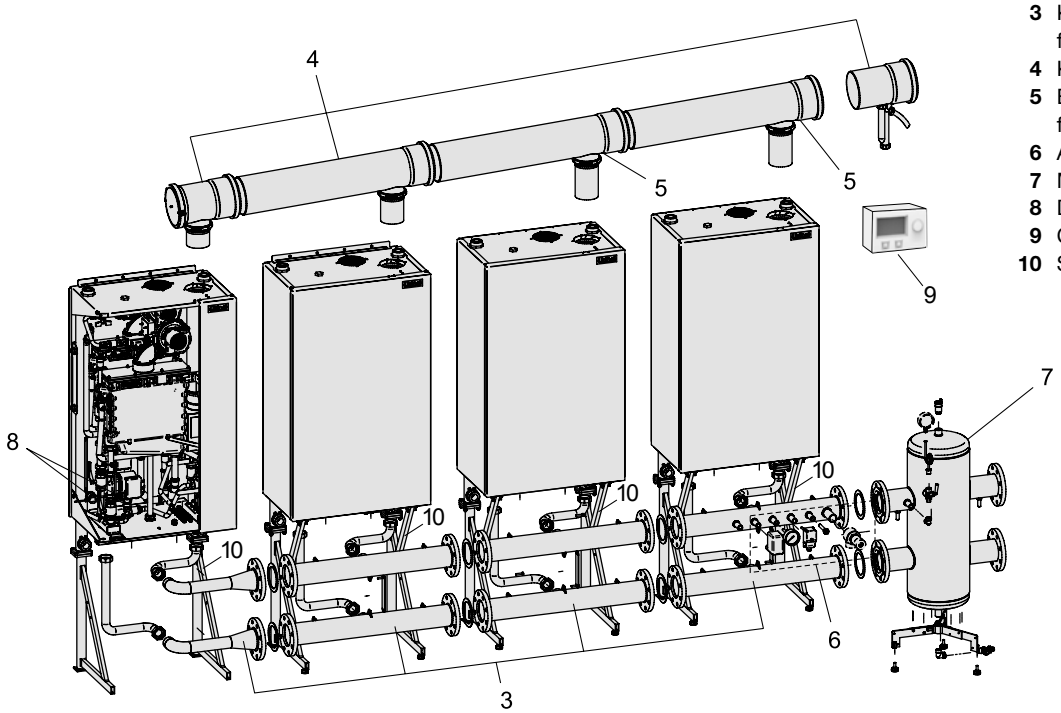
ACCESSORY KITS FOR BWA 140 EXT IN BATTERY

EXAMPLE OF 3 BWA 140 EXT IN BATTERY



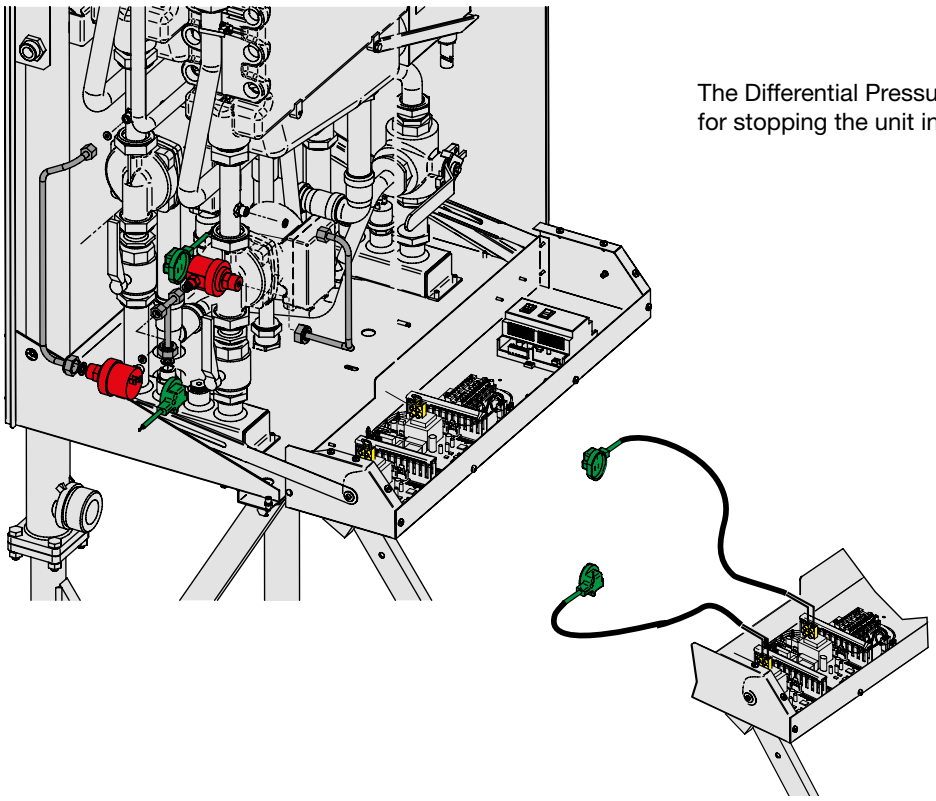
2 Kit of hydraulic manifolds for 3 units battery
4 Kit of flue ducts for 3 units battery
5 Expansion kit of flue ducts for battery of 3 & 4 units
6 Additional safety kit
7 Mixing header kit
8 Differential pressure switch kit
9 Cascade Manager CM 140
10 Supporting frame

EXAMPLE OF 4 BWA 140 EXT IN BATTERY



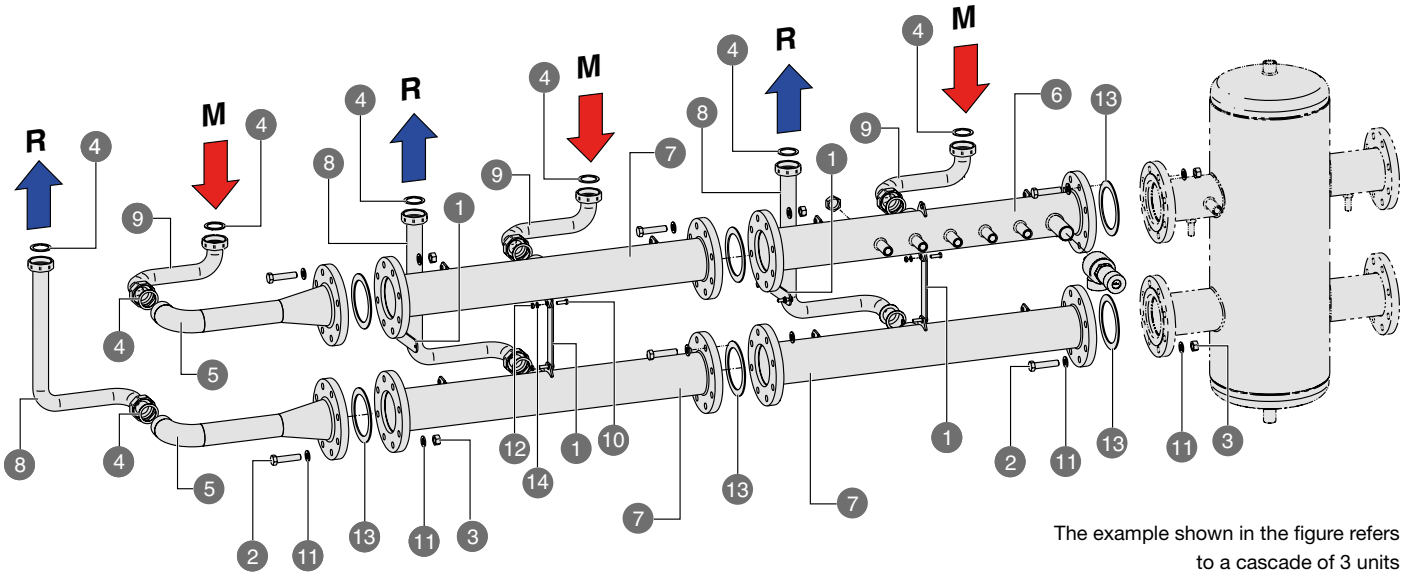
3 Kit of hydraulic manifolds for 4 units battery
4 Kit of flue ducts for 2 units battery
5 Expansion kit of flue ducts for battery of 3 & 4 units
6 Additional safety kit
7 Mixing header kit
8 Differential pressure switch kit
9 Cascade Manager CM 140
10 Supporting frame

DIFFERENTIAL PRESSURE SWITCH KIT



The Differential Pressure Switch kit is a safety device used for stopping the unit in case the pump is defective.

MOUNTING SCHEME OF HYDRAULIC MANIFOLDS



The example shown in the figure refers to a cascade of 3 units

Pos.	Description	No. of units		
		2x	3x	4x
1	Mounting bracket of the battery anifold	2	4	6
2	Screw M16	32	48	64
3	Nut M16	32	48	64
4	Gasket 2”	8	12	16
5	Return manifold of a single unit	2	2	2
6	Additional safety kit	1	1	1
7	Battery manifold	1	3	5

Pos.	Description	No. of units		
		2x	3x	4x
8	Return pipe between boiler & manifold	2	3	4
9	Flow pipe between boiler & manifold	2	3	4
10	Screw M10 x 40	4	6	8
11	Washer Ø 17 / 30	64	96	128
12	Nut M8	8	12	16
13	Gasket DN 100	4	6	8
14	Washer	8	12	16

TECHNICAL DATA

ELECTRICAL, HYDRAULIC, INSTALLATION DIAGRAMS AND CONTROLLERS can be unloaded from the web site www.schusterboilers.com at the page of the product

		BWA 140 EXT
Appliance category		II_{2H3P}
Modulation Ratio		1:12.3
Nominal Heat Input on P.C.I. Qn	kW	135
Minimum Heat Input on P.C.I. Qmin	kW	11
Nominal Output (Tr 60 / Tm 80 °C) Pn	kW	131.60
Minimum Output (Tr 60 / Tm 80 °C) Pn min	kW	10.5
Nominal Output (Tr 30 / Tm 50 °C) Pcond	kW	136.1
Minimum Output (Tr 30 / Tm 50 °C) Pcond min	kW	11.5
Efficiency at max. output (Tr 60 / Tm 80°C)	%	97.48
Efficiency at min. output (Tr 60 / Tm 80°C)	%	95.1
Efficiency at max. output (Tr 30 / Tm 50°C)	%	100.8
Efficiency at min. output (Tr 30 / Tm 50°C)	%	104.3
Efficiency at 30% output (Tr 30°C)	%	108.3
Combustion efficiency with nominal load	%	97.5
Combustion efficiency with minimum load	%	98.35
Heat loss at casing with burner in operation (Qmin)	%	3.28
Heat loss at casing with burner in operation (Qn)	%	0.02
Flue gas temperature tf-ta (min)(*)	°C	33
Flue gas temperature tf-ta (max)(*)	°C	55
Maximum allowable temperature	°C	100
Maximum operating temperature	°C	85
Flue gas mass flow rate (min)	kg/h	12.58
Flue gas mass flow rate (max)	kg/h	153.03
Excess λ air	%	25.53
Flue losses with burner in operation (min)	%	1.65
Flue losses with burner in operation (max)	%	2.90
Minimum heating circuit pressure	bar	0.5
Maximum heating circuit pressure	bar	6
Max allowable pressure of the generator	bar	8
Water content	l	10
Gas Consumption Natural (20 mbar) gas G 20 a Qn	m^3/h	14.27
Gas Consumption Natural gas (20 mbar) G 20 a Qmin	m^3/h	1.16
Gas Consumption G25 (supply pressure 25 mbar) Qn	m^3/h	16.60
Gas Consumption G25 (supply pressure 25 mbar) Qmin	m^3/h	1.35
Gas Consumption G31 (supply pressure 37/50 mbar) Qn	kg/h	10.48
Gas Consumption G31 (supply pressure 37/50 mbar) Qmin	kg/h	0.85
Max. available pressure at the chimney base	Pa	40
Condensate production max	kg/h	21.8
Emissions		
CO at Minimum Heat Input with 0% of O_2	mg/kWh	139
NO_x at Nominal Heat Input with 0% of O_2	mg/kWh	58
NO_x Class		6
Electrical Data		
Voltage/Frequency electric power supply	V/Hz	230/50
Fuse on main supply	A (R)	4
Insulation degree	IP	X5D

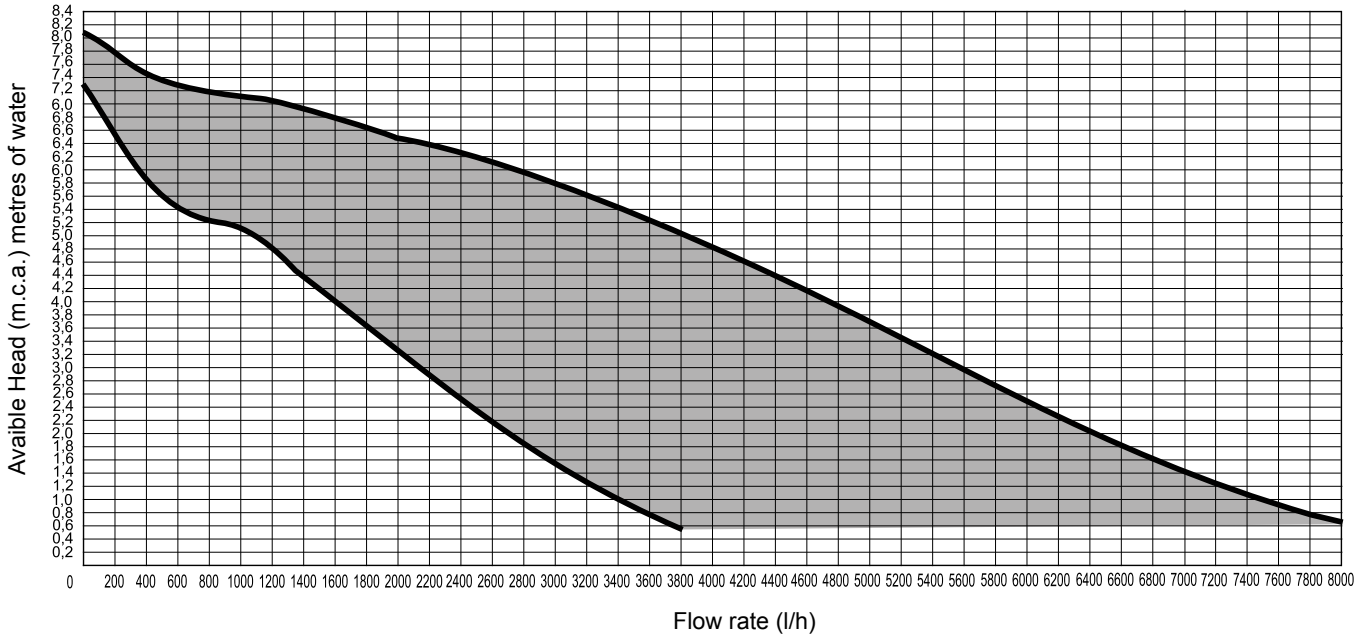
Room Temperature = 20°C. (*) Temperatures detected with the unit in operation (Tr 60 / Tm 80°C).

DATA ACCORDING TO ErP DIRECTIVE

ELECTRICAL, HYDRAULIC, INSTALLATION DIAGRAMS AND CONTROLLERS can be unloaded from the web site www.schusterboilers.com at the page of the product

			BWA 140 EXT
NOMINAL HEAT OUTPUT	P_n	kW	132
SEASONAL SPACE HEATING ENERGY EFFICIENCY	η_s	%	93
SEASONAL EFFICIENCY CLASS IN HEATING MODE			**A**
FOR CH ONLY AND COMBINATION BOILERS: USEFUL HEAT OUTPUT			
USEFUL HEAT OUTPUT in high temperature regime (Tr 60 °C / Tm 80 °C)	P_4	kW	71,2
USEFUL EFFICIENCY AT NOM. HEAT OUTPUT in high-temperature regime (Tr 60°C / Tm 80°C)	η_4	%	87,8
USEFUL HEAT OUTPUT AT 30% OF NOM. HEAT OUTPUT in low-temperature regime (Tr 30°C)	P_1	kW	23,7
USEFUL EFFICIENCY AT 30% OF NOM. HEAT OUTPUT in low-temperature regime (Tr 30 °C)	η_1	%	97,6
RANGE-RATED BOILER: YES / NO			SI
AUXILIARY ELECTRICITY CONSUMPTION			
AT FULL LOAD	el_{max}	kW	0,474
AT PART LOAD	el_{min}	kW	0,159
IN STAND-BY MODE	P_{SB}	kW	0,007
OTHER ITEMS			
STAND-BY HEAT LOSS	P_{stby}	kW	2,68
EMISSIONS OF NITROGEN OXIDES referred to NCV & (GCV)	NO_x	mg/kWh	58 (52)
CONSUMPTION OF ANNUAL ELECTRICITY	Q_{HE}	GJ	653

DIAGRAM OF FLOW RATE/PRESSURE AVAILABLE FOR INSTALLATION



		BWA 140 EXT
Power supply	kW	135
Max flow rate demanded l/h (Δt 15 K)	l/h	7545
Nominal flow rate request (Δt 20 K)	l/h	5659