POWER-TECH R1BK - Hi Power

Floor standing condensing boiler for outdoor installation

FLEXIHEAT UK LTD
www.flexiheatuk.com
01202 822221

1. GENERAL FEATURES

The High Power Heating Units series for outdoor installation is available in the following three outputs 50, 60, 75, 100 and 118 kW, with ø 28 mm stainless steel heat exchanger, to satisfy the power increase requests in an extremely limited space. Boilers are designed to suit individual installations.

The R1BK 50 -60 models is a boiler equipped with one heat exchanger, while the R1BK 75, R1BK 100 and R1BK 120 models are boilers equipped with two Radiant Combi-Tech® heat exchangers made by a ø 28 mm stainless steel spiral single pipe, fitted in a single casing. This boiler, in addition to a size advantage, 70 cm wide (75 , 100 and 118 kW), also offers advantages in terms of power. It can be set up as a 75 kW (50 + 25 kW), 100 kW (50 + 50 kW) and as 118 kW (59 + 59 kW, by offering a great flexibility for the installation of high power systems. It also offers advantages in terms of performances such as a 1:20 (118 kW) modulation, the possibility of excluding one boiler and, in case of one boiler failure, the ability to never leave the system shut down with the other boiler functioning.

The R1BK series can be installed either in a boiler room or outside, thus allowing to solve more complex building situations where it is not possible to have a dedicated room that complies with standards in force. The new models are available with outputs ranging from 50 to 118 kW for individual installations, fitted with hydraulic separator integrated in a metal casing box. Units are supplied with accessories tested for outdoor installation and complete with galvanized sheet metal casing painted with epoxy powders and top protection cap in ABS material.

2. TECHNICAL DATA

Model		R1BK 50	R1BK 60	R1BK 75
CE certification	n°	0476CQ0134		
Gas category		$II_{2H3B/P}$	$II_{2H3B/P}$	$II_{2H3B/P}$
Flue system type	type	B23p-B33-C13-C33-C43-C53-C63-C83-C93		
Compositions	kW	1x50	1x60	1x25 + 1x50
Energy efficiency 92/42 CEE	no. stars	4	4	4
Heat Input max. (C.H.)	kW	50	59	75
Heat Input min. (C.H.)	kW	5	6	3.70
Heat Output max. - 60/80°C	kW	49.19	57.32	72.83
Heat Output min. - 60/80°C	kW	4.83	5.75	3.50
Heat Output max. - 30/50°C	kW	53.40	62.84	79.35
Heat Output min. - 30/50°C	kW	5.29	6.44	3.87
Heat Output max at 30% Heat Input average - return 30°C	kW	8.98	10.51	12.69
Efficiency at 100% Heat Imput - 60/80°C	%	98.37	97.15	97.10
Heat Input average efficiency - 60/80°C	%	97.88	97.0	97.30
Efficiency Heat Output min. - 60/80°C	%	96.51	95.80	94.60
Efficiency at 100% Heat Input - 30/50°C	%	106.80	106.50	105.80
Efficiency Heat Output min. - 30/50°C	%	105.70	107.30	104.60
Efficiency at 30% Heat Input average - return 47°C	%	102.80	102.70	99.10
Efficiency at 30% Heat Input average - return 30°C	%	108.83	107.80	107.50
Combustion data				
Maximum combustion efficiency	%	97.90	97.20	97.70
Minimum combustion efficiency	%	98.0	98.20	98.0
Flue efficiency losses with burner on (Heat Input max.)	%	2.10	2.80	2.30
Flue efficiency losses with burner on (Heat Input min.)	%	2.0	1.80	2.0
Flue efficiency losses with burner off	%	0.02	0.02	0.02
Casing efficiency losses (Heat Input max.)	%	-0.47	0.05	0.6
Casing efficiency losses (Heat Input min.)	%	1.49	2.40	3.4
Casing efficiency losses with burner off	%	0.03	0.03	0.03
Fumes temperature - Heat Input max.	°C	66.4	81.20	66.4
Fumes temperature - Heat Input min.	°C	56.8	58.70	56.8
Fumes mass - Heat Input max.	g/s	22.19	26.10	22.19(50kW)-11.02(25kW)
Fumes mass - Heat Input min.	g/s	2.28	2.70	2.28(50kW)-1.78(25kW)
CO2 Heat Input max. - G20	%	9.3-9.1	9.4-9.2	9.3-9.1
CO2 Heat Input min. - G20	%	9.0-8.8	9.1-8.9	9.0-8.8
CO2 Heat Input max. - G30	%	11.3-11.1	11.4 - 11.2	11.3-11.1(50kW)-11.5-11.3(25kW)
CO2 Heat Input min. - G30	%	10.9-10.7	10.8 - 10.6	10.9-10.7(50kW)-10.75-10.65(25kW)
CO2 Heat Input max. - G31	%	10.3-10.1	10.3 - 10.1	10.3-10.1(50kW)-10.4-10.2(25kW)
CO2 Heat Input min. - G31	%	9.8-9.6	9.8- 9.6	9.9-9.7(50kW)-19.95-9.85(25kW)
CO Heat Input max	ppm	68	91	68
CO Heat Input min.	ppm	1	1	1
Weighted CO (0% O2)	ppm	9	12	9
Weighted NOx (0% O2)	mg/kWh	46	32	46(50kW)-34(25kw)
NOx class	class	6	6	6
Central heating circuit				
Temperature setting - Central heating	°C	30-80/25-45	30-80/25-45	30-80/25-45

Model		R1BK 50	R1BK 60	R1BK 75
Max. operating temperature - Central heating	°C	80	80	80
Max. operating pressure - Central heating	bar	3	3	5
Min. operating pressure - Central heating	bar	0.3	0.3	0.3
Primary circuit water content	litres	22.90	24.40	24.40
Dimensions				
Width	mm	480	480	735
Depth	mm	582	582	582
Height	mm	1455	1455	1455
Gross weight	kg	103	103	143
Hydraulic Connections				
C.H. Flow	Ø	1"1/4	1"1/4	1"1/2
Gas	Ø	3/4"	3/4"	1"
C.H. Return	Ø	1"1/4	1"1/4	1"1/2
Flue systems				
Fan - Max. available pressure	Pa	100	100	76 [1]
Fan - Min. available pressure	Pa	30	21.5	4 [1]
Max. Flue length Ø60 - Horiz. / Vertical single pipe	m	5	-	5(50kW)-16(25kW)
Max. Flue length Ø80 - Horiz. / Vertical single pipe	m	25	17	25(50kW)-35(25kW)
Max. Flue length Ø100 - Horizontal pipe	m	-	-	30
Max. Flue length Ø60/60 - Horizontal - Vertical Twin	m	6	-	6[1]
Max. Flue length Ø80/80 - Horizontal - Vertical Twin	m	40	22	40 [1]
Max. Flue length Ø60/100 - Horiz. / Vert. Concentric	m	3	-	6(25kW)
Max. Flue length Ø80/125 - Horiz. / Vert. Concentric	m	10	-	10(50kW)-10(25kW)
Electrical specifications				
Voltage-frequency	V/Hz	230/50	230/50	220-230/50
Max Power consumption	W	108	186	216
Max Power consumption - boiler pump (100%)	W	55	95	110
Electric power with boiler OFF	W	3.5	7	7
Protection rating	IP	X5D	X5D	X5D
Gas supply				
Supply pressure - G20	mbar	20	20	20
Supply pressure max. - G20	mbar	25	25	25
Supply pressure min. - G20	mbar	15	15	15
Fan speed Max. HEATING output - G20	Hz	247	250	247 (50kW)-192 (5kW)
Fan speed Min. HEATING output - G20	Hz	53	45	53 (50kW) - 50 (25kW)
Gas consumption - G20	m^3/h	5.29	6.24	7.93
Supply pressure - G30	mbar	30	30	30
Supply pressure max. - G30	mbar	35	35	35
Supply pressure min. - G30	mbar	20	20	20
Fan speed Max. HEATING output - G30	Hz	230	228	230 (50kW)-180 (5kW)
Fan speed Min. HEATING output - G30	Hz	53	45	53 (50kW) - 50 (25kW)
Gas consumption - G30	kg/h	3.94	4.65	5.91
Supply pressure - G31	mbar	37	37	37
Supply pressure max. - G31	mbar	45	45	45
Supply pressure min. - G31	mbar	25	25	25
Fan speed Max. HEATING output - G31	Hz	240	248	240 (50kW)-190 (25kW)
Fan speed Min. HEATING output - G31	Hz	53	45	53 (50kW) - 50 (25kW)
Gas consumption - G31	kg/h	3.88	4.58	5.83

[1] Single thermal unit

Model			**R1BK 100**	**R1BK 120**
CE certification	n°		0476CQ0134	0476CQ0134
Gas category			$II_{2H3B/P}$	$II_{2H3B/P}$
Flue system type	type		B23p-B33-C13-C33-C43-C53-C63-C83-C93	
Compositions			2x50	2x59
Energy efficiency 92/42 CEE	n° stars		4	4
Heat Input max. (C.H.)	kW		100	118
Heat Input min. (C.H.)	kW		5	6
Heat Output max. - 60/80°C	kW		98.37	114.64
Heat Output min. - 60/80°C	kW		4.83	5.75
Heat Output max. - 30/50°C	kW		106.80	125.67
Heat Output min. - 30/50°C	kW		5.29	6.44
Heat Output max at 30% Heat Input average - return 30°C	kW		17.14	20.05
Efficiency at 100% Heat Imput - 60/80°C	%		98.37	97.15
Heat Imput Average efficiency 100% Pn - 60/80°C	%		97.88	97.0
Efficiency Heat Output min. - 60/80°C			96.51	95.80
Efficiency at 100% Heat Input - 30/50°C	%		106.80	106.50
Efficiency Heat Output min. - 30/50°C			105.70	107.30
Efficiency at 30% Heat Input average - return 47°C	%		102.80	102.70
Efficiency at 30% Heat Input average - return 30°C	%		108.83	107.80
Combustion data				
Maximum combustion efficiency	%		97.90	97.20
Minimum combustion efficiency	%		98.0	98.20
Flue efficiency losses with burner on (Heat Input max.)	%		2.10	2.80
Flue efficiency losses with burner on (Heat Input min.)	%		2.0	1.80
Flue efficiency losses with burner off	%		0.02	0.02
Casing efficiency losses (Heat Input max.)	%		-0.47	0.05
Casing efficiency losses (Heat Input min.)	%		1.49	2.40
Casing efficiency losses with burner off	%		0.03	0.03
Fumes temperature - Heat Input max.	°C		66.4	81.20
Fumes temperature - Heat Input min.	°C		56.8	57.70
Fumes mass - Heat Input max.	g/s		22.19	26.10
Fumes mass - Heat Input min.	g/s		2.28	2.70
CO2 Heat Input max. - G20	%		9.3-9.1	9.4-9.2
CO2 Heat Input min. - G20	%		9.0-8.8	9.1-8.9
CO2 Heat Input max. - G30	%		11.3-11.1	11.4 - 11.2
CO2 Heat Input min. - G30	%		10.9-10.7	10.8 - 10.6
CO2 Heat Input max. - G31	%		10.3-10.1	10.3 - 10.1
CO2 Heat Input min. - G31	%		9.8-9.6	9.8- 9.6
CO Heat Input max	ppm		68	91
CO Heat Input max.	ppm		1	1
Weighted CO (0% O2)	ppm		9	12
Weighted NOx (0% O2)	mg/kWh		46	32
NOx class	class		6	6
Central heating circuit				
Temperature setting - Central heating	°C		30-80/25-45	30-80/25-45
Max. operating temperature - Central heating	°C		80	80

Model			R1BK 100	R1BK 120
Max. operating pressure - Central heating	bar		3	3
Min. operating pressure - Central heating	bar		0.3	0.3
Primary circuit water content	litres		24.40	24.40
Dimensions				
Width	mm		735	735
Depth	mm		582	582
Height	mm		1455	1455
Gross weight	kg		138	138
Hydraulic Connections				
C.H. Flow	Ø		1"1/2	1"1/2
Gas	Ø		1"	1"
C.H. Return	Ø		1"1/2	1"1/2
Flue systems				
Fan - Max. available pressure	Pa		100 [1]	100 [1]
Fan - Min. available pressure	Pa		30 [1]	21,5 [1]
Max. Flue length Ø60 - Horiz. / Vertical single pipe	m		5 [1]	-
Max. Flue length Ø80 - Horiz. / Vertical single pipe	m		25 [1]	17 [1]
Max. Flue length Ø100 - Horizontal pipe (collettore)	m		8	2
Max. Flue length Ø60/60 - Horizontal - Vertical Twin	m		6 [1]	-
Max. Flue length Ø80/80 - Horizontal - Vertical Twin	m		40 [1]	22 [1]
Max. Flue length Ø60/100 - Horiz. / Vert. Concentric	m		3 [1]	-
Max. Flue length Ø80/125 - Horiz. / Vert. Concentric	m		10 [1]	-
Electrical specifications				
Voltage-frequency	V/Hz		220-230/50	220-230/50
Max Power consumption	W		216	216
Max Power consumption - boiler pump (100%)	W		110	110
Electric power with boiler OFF	W		7	7
Protection rating	IP		X5D	X5D
Gas supply				
Supply pressure - G20	mbar		20	20
Supply pressure max. - G20	mbar		25	25
Supply pressure min. - G20	mbar		15	15
Fan speed Max. HEATING output - G20	Hz		247 [1]	250 [1]
Fan speed Min. HEATING output - G20	Hz		53 [1]	45 [1]
Gas consumption - G20	m^3/h		10.59	12.48
Supply pressure - G30	mbar		30	30
Supply pressure max. - G30	mbar		35	35
Supply pressure min. - G30	mbar		20	20
Fan speed Max. HEATING output - G30	Hz		230 [1]	228 [1]
Fan speed Min. HEATING output - G30	Hz		53 [1]	45 [1]
Gas consumption - G30	kg/h		7.88	9.30
Supply pressure - G31	mbar		37	37
Supply pressure max. - G31	mbar		45	45
Supply pressure min. - G31	mbar		25	25
Fan speed Max. HEATING output - G31	Hz		240 [1]	248 [1]
Fan speed Min. HEATING output - G31	Hz		53 [1]	45 [1]
Gas consumption - G31	kg/h		7.77	9.16

[1] Single thermal unit

3. DIMENSIONS

R1BK 50 - R1BK 60 - Left side

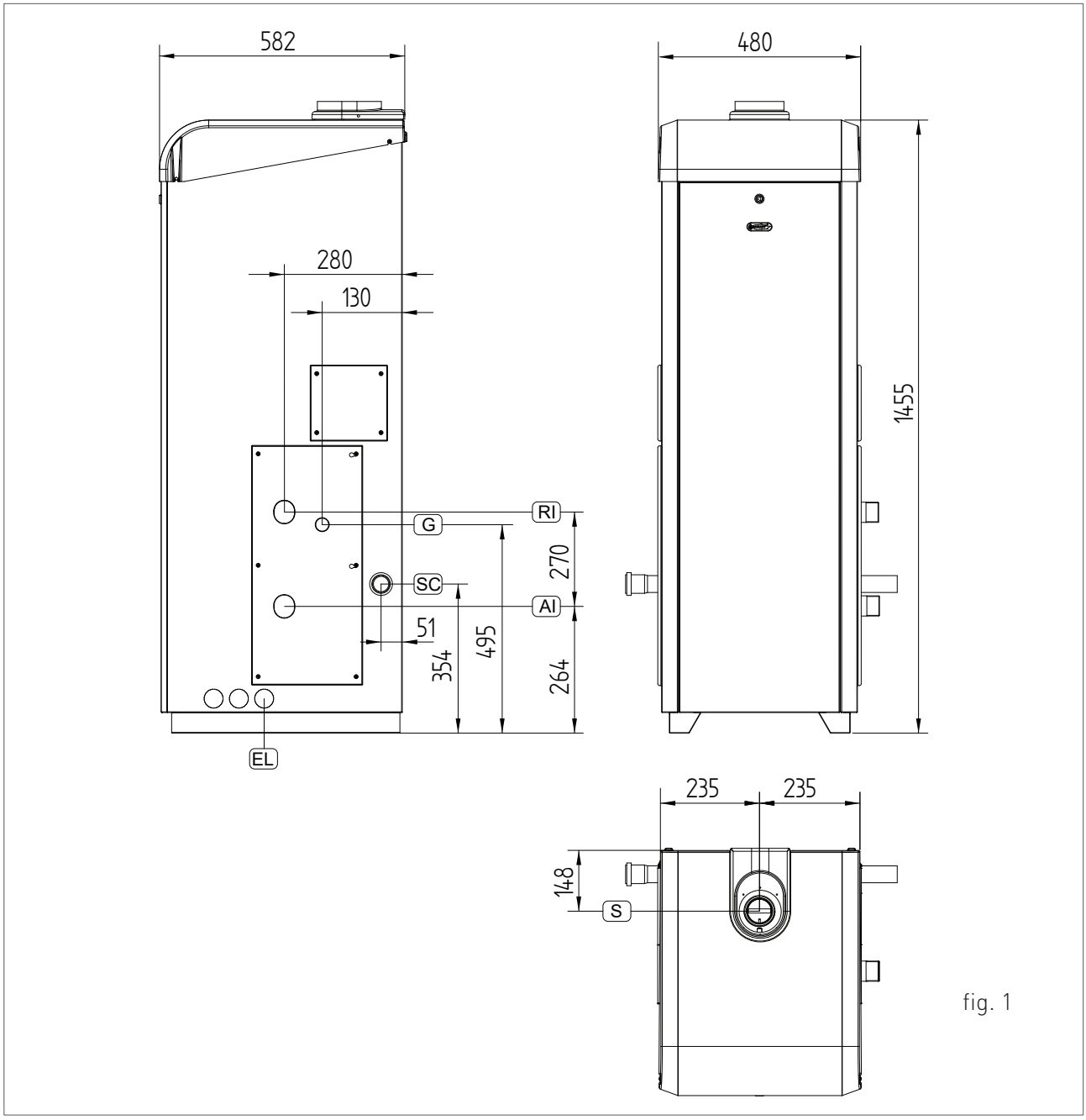


fig. 1

AI	HEATING FLOW	Ø1"1/2
RI	HEATING RETURN	Ø1"1/2
G	GAS	Ø3/4"
SC	CONDENSATE DRAIN	Ø25
E	CABLE GLANDS	Ø20
S	FLUE OUTLET	Ø80

R1BK 50 - R1BK 60 - Right side

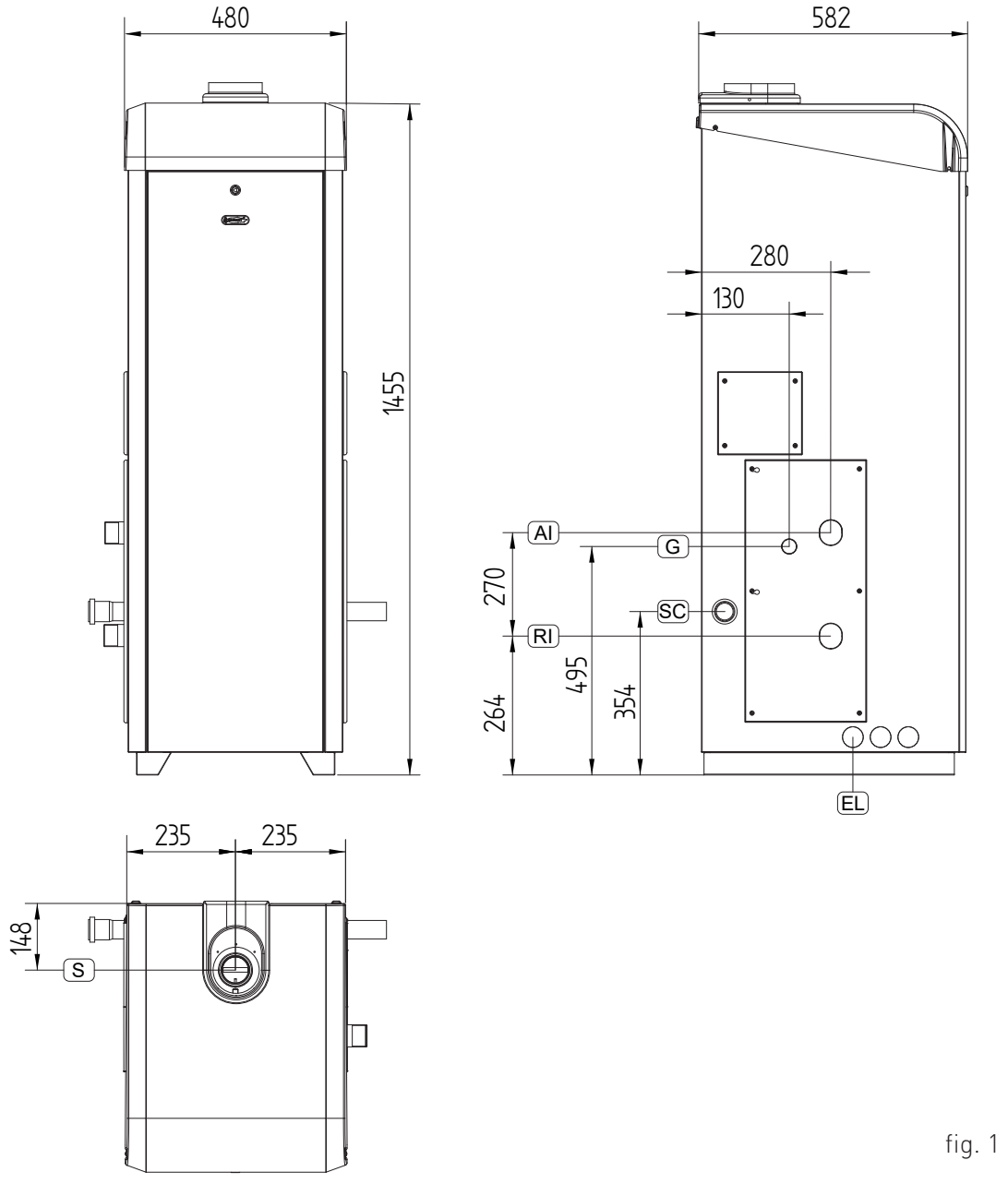
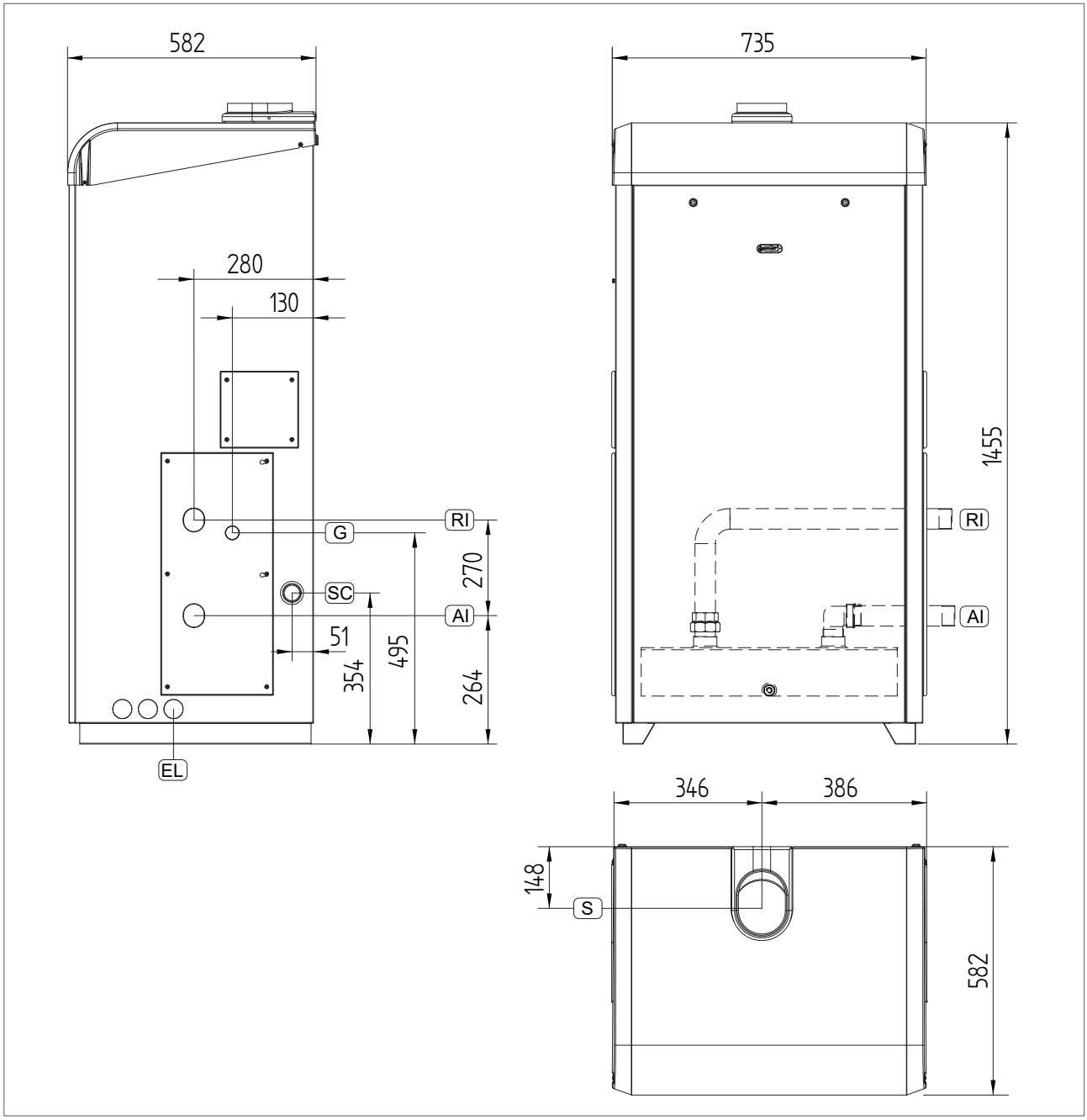


fig. 1

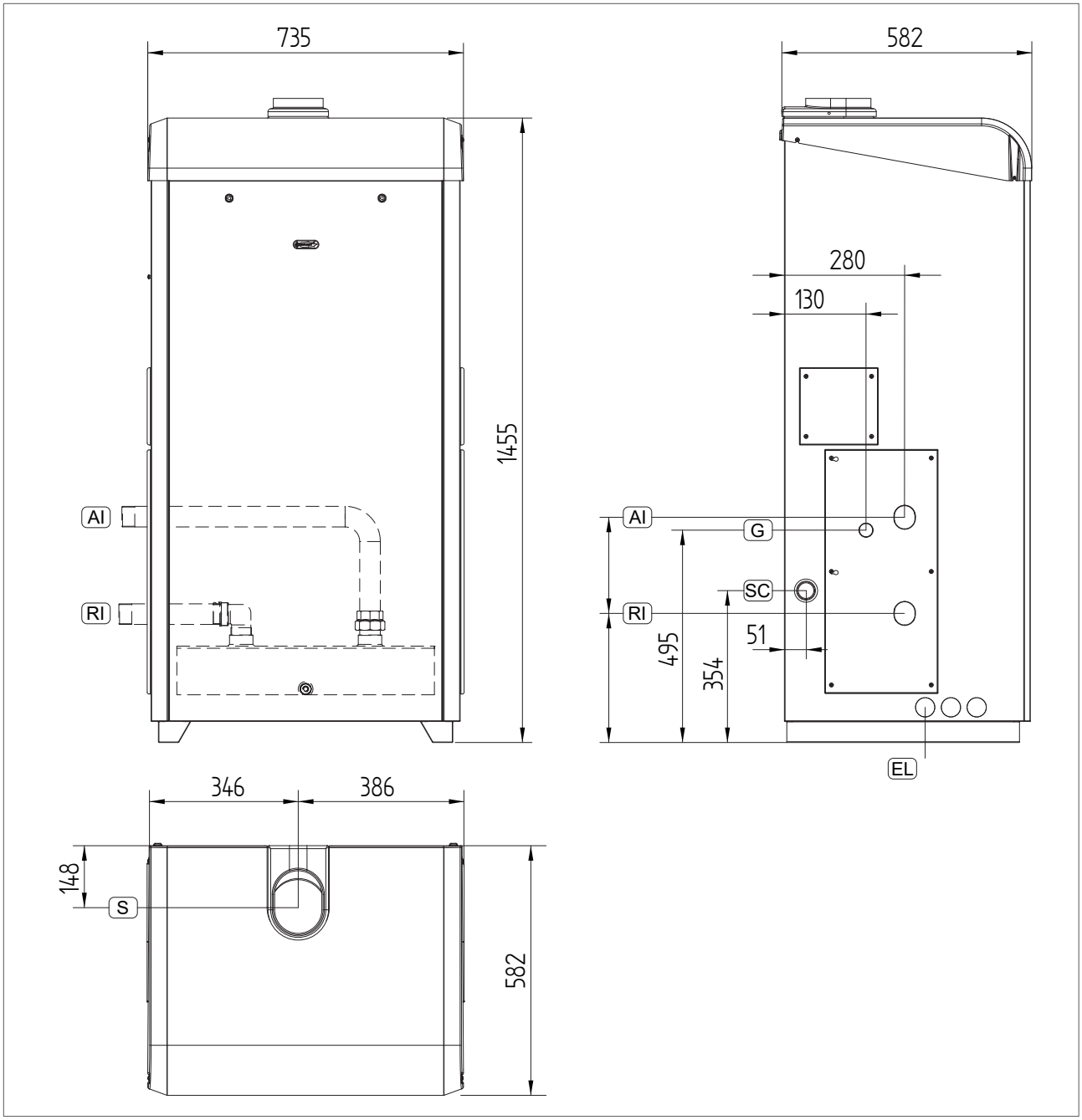
AI	HEATING FLOW	Ø1"1/2
RI	HEATING RETURN	Ø1"1/2
G	GAS	Ø3/4"
SC	CONDENSATE DRAIN	Ø25
E	CABLE GLANDS	Ø20
S	FLUE OUTLET	Ø80

R1BK 75 - 100 - 120 - Left side



AI	HEATING FLOW	Ø1"1/2
RI	HEATING RETURN	Ø1"1/2
G	GAS	Ø1"
Sc	CONDENSATE DRAIN	Ø25
E	CABLE GLANDS	Ø20
S	FLUE OUTLET	Ø100

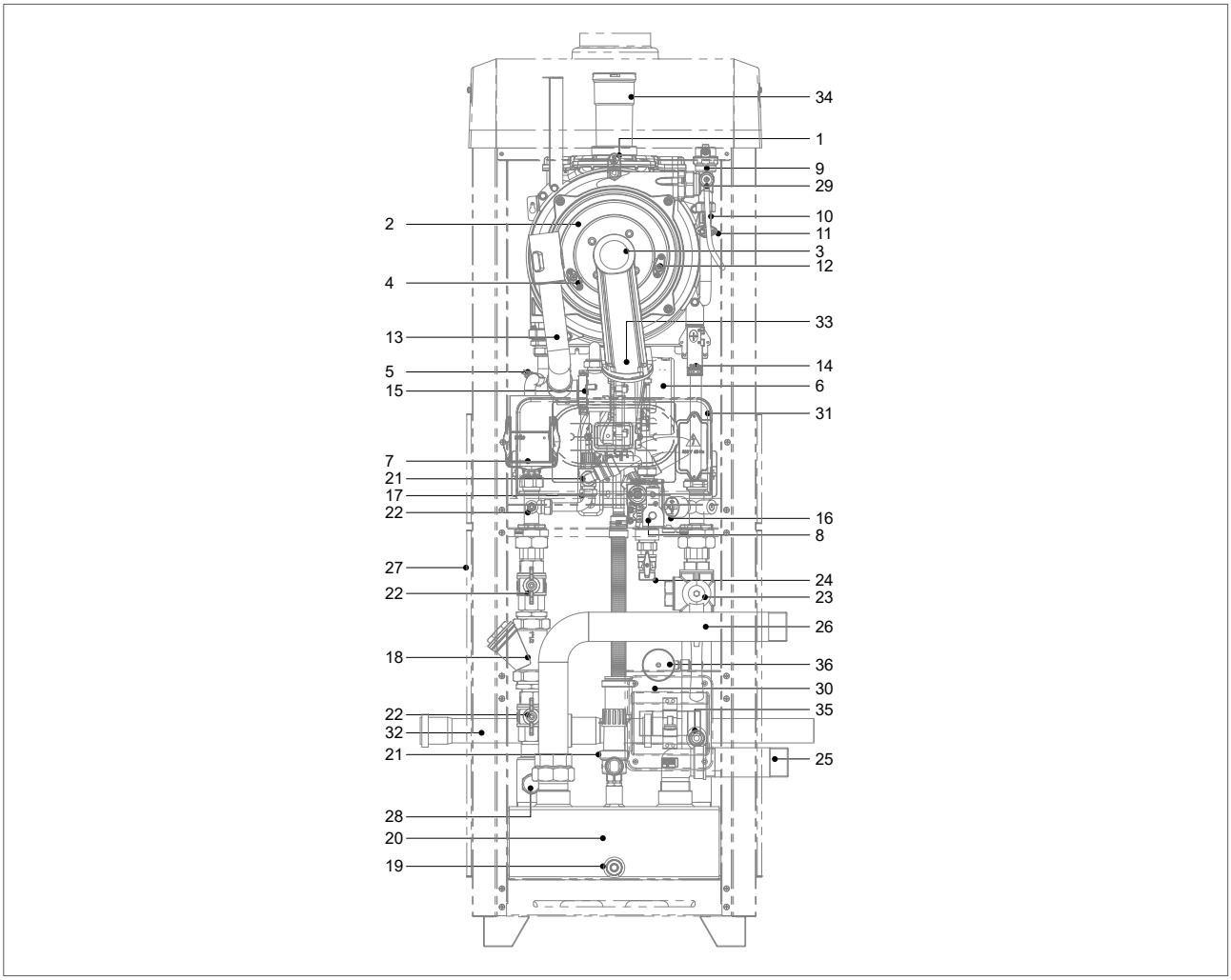
R1BK 75 - 100 - 120 - Right side



AI	HEATING FLOW	Ø1"1/2
RI	HEATING RETURN	Ø1"1/2
G	GAS	Ø1"
Sc	CONDENSATE DRAIN	Ø25
E	CABLE GLANDS	Ø20
S	FLUE OUTLET	Ø100

4. TECHNICAL ASSEMBLY

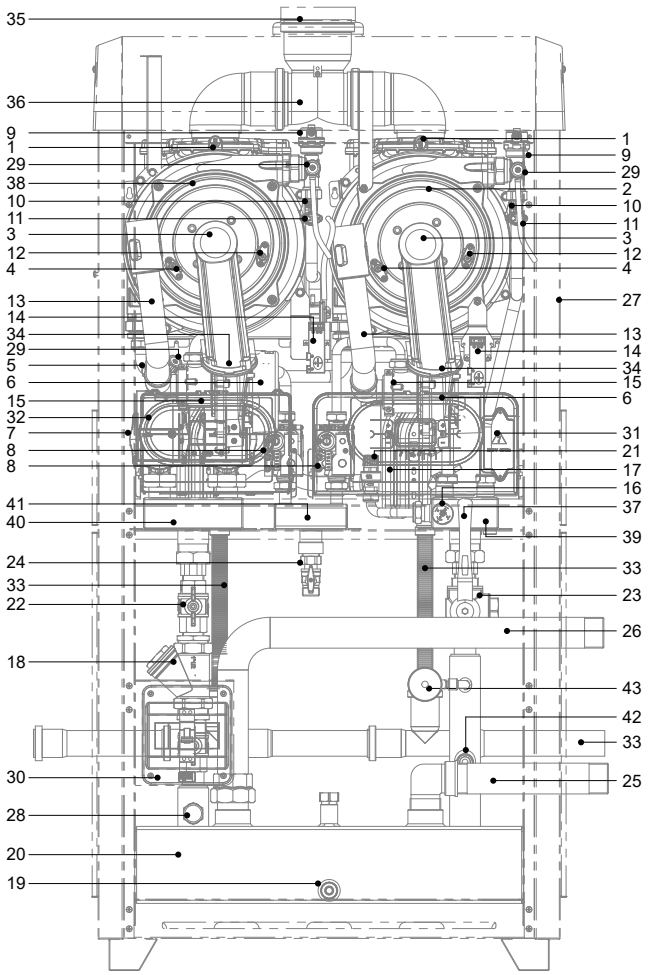
R1BK 50 - 60



KEY

1. FUMES SAFETY THERMOFUSE
2. UNIT HEAT EXCHANGER
3. BURNER UNIT
4. DETECTION ELECTRODE
5. HEATING RETURN PROBE
6. ELECTRIC FAN
7. CIRCULATOR
8. ELECTRONIC GAS VALVE
9. AIR RELIEF VALVE
10. HEATING PROBE
11. SAFETY THERMOSTAT
12. LIGHT UP ELECTRODE
13. AIR SUCTION TUBE
14. START-UP TRANSFORMER
15. PROPORTIONAL VENTURI
16. WATER PRESSURE SWITCH
17. CONDENSATE COLLECTION SIPHON
18. STRAINER
19. SYSTEM DRAIN VALVE
20. HYDRAULIC SEPARATOR
21. SAFETY VALVE
22. ISOLATING VALVE
23. ISOLATING THREE-WAY VALVE
24. GAS VALVE
25. Ø1"1/2 HEATING FLOW FITTING
26. Ø1"1/2 HEATING RETURN FITTING
27. BOX
28. EXPANSION VESSEL CONNECTION
29. MANUAL AIR RELIEF VALVE
30. ELECTRICAL CONNECTIONS BOX
31. CONTROL PANEL
32. CONDENSATE DRAIN
33. FLUE MANIFOLD INTEGRATED NON RETURN VALVE
34. FLUE EXHAUST FITTING
35. INSPECTION MANHOLE
36. WATER PRESSURE GAUGE

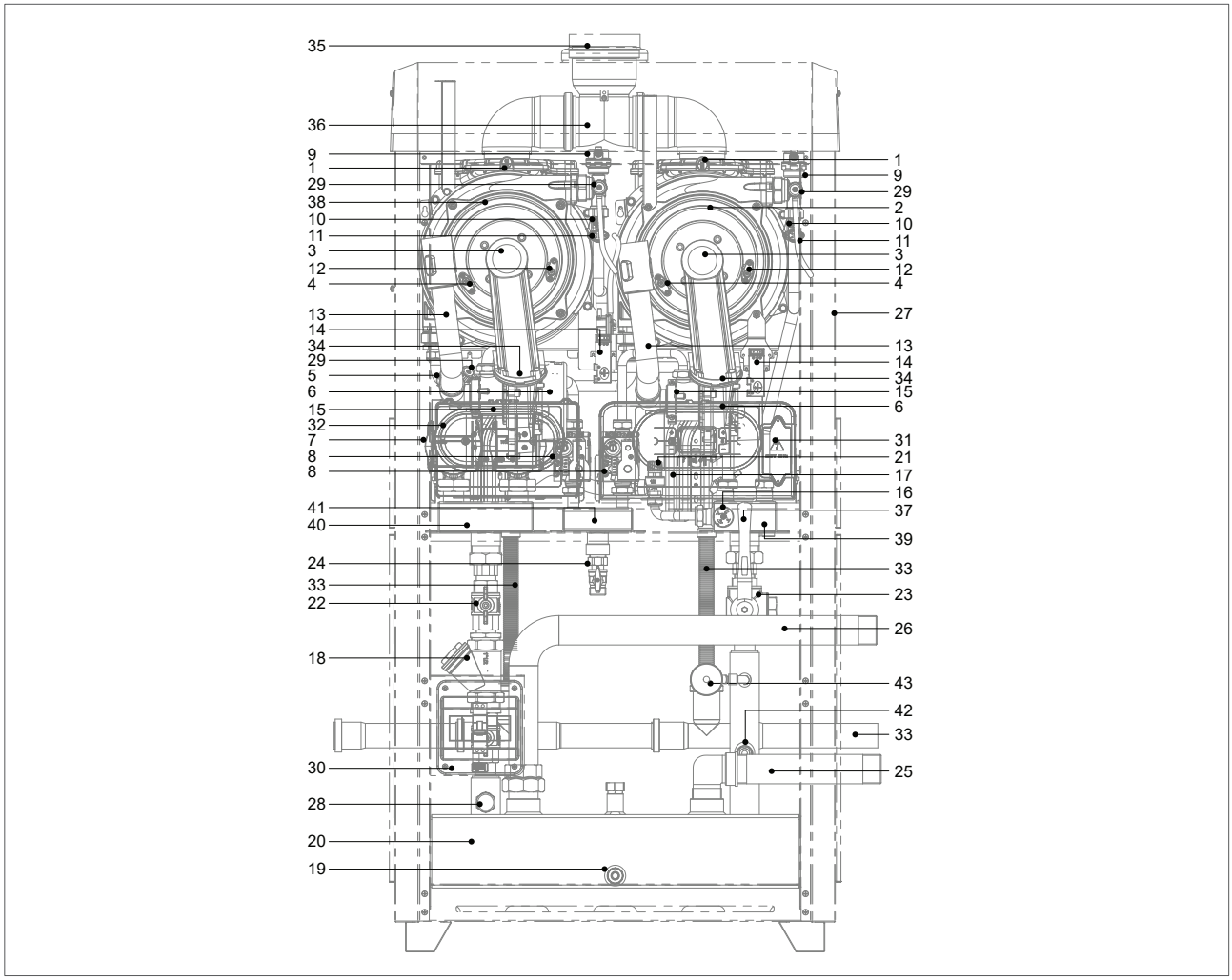
R1BK 75



KEY

1. FUMES SAFETY THERMOFUSE
2. UNIT HEAT EXCHANGER MASTER - 25 KW
3. BURNER UNIT
4. DETECTION ELECTRODE
5. HEATING RETURN PROBE
6. ELECTRIC FAN
7. CIRCULATOR
8. ELECTRONIC GAS VALVE
9. AIR RELIEF VALVE
10. HEATING PROBE
11. SAFETY THERMOSTAT
12. LIGHT UP ELECTRODE
13. AIR SUCTION TUBE
14. START-UP TRANSFORMER
15. PROPORTIONAL VENTURI
16. WATER PRESSURE SWITCH
17. CONDENSATE COLLECTION SIPHON
18. STRAINER
19. SYSTEM DRAIN VALVE
20. HYDRAULIC SEPARATOR
21. SAFETY VALVE
22. ISOLATING VALVE
23. ISOLATING THREE-WAY VALVE
24. GAS VALVE
25. Ø1"1/2 HEATING FLOW FITTING
26. Ø1"1/2 HEATING RETURN FITTING
27. BOX
28. EXPANSION VESSEL CONNECTION
29. MANUAL AIR RELIEF VALVE
30. ELECTRICAL CONNECTIONS BOX
31. CONTROL PANEL MASTER
32. CONTROL PANEL SLAVE
33. CONDENSATE DRAIN MANIFOLD
34. FLUE MANIFOLD INTEGRATED NON RETURN VALVE
35. FLUE EXHAUST FITTING
36. FLUE MANIFOLD
37. HEATING FLOW MANIFOLD SENSOR
38. UNIT HEAT EXCHANGER SLAVE - 50 KW
39. HEATING FLOW MANIFOLD
40. HEATING RETURN MANIFOLD
41. GAS MANIFOLD
42. INSPECTION MANHOLE
43. WATER PRESSURE GAUGE

R1BK 100 - 120



KEY

1. FUMES SAFETY THERMOFUSE
2. UNIT HEAT EXCHANGER MASTER - 50 KW
3. BURNER UNIT
4. DETECTION ELECTRODE
5. HEATING RETURN PROBE
6. ELECTRIC FAN
7. CIRCULATOR
8. ELECTRONIC GAS VALVE
9. AIR RELIEF VALVE
10. HEATING PROBE
11. SAFETY THERMOSTAT
12. LIGHT UP ELECTRODE
13. AIR SUCTION TUBE
14. START-UP TRANSFORMER
15. PROPORTIONAL VENTURI
16. WATER PRESSURE SWITCH
17. CONDENSATE COLLECTION SIPHON
18. STRAINER
19. SYSTEM DRAIN VALVE
20. HYDRAULIC SEPARATOR
21. SAFETY VALVE
22. ISOLATING VALVE
23. ISOLATING THREE-WAY VALVE
24. GAS VALVE
25. Ø1"1/2 HEATING FLOW FITTING
26. Ø1"1/2 HEATING RETURN FITTING
27. BOX
28. EXPANSION VESSEL CONNECTION
29. MANUAL AIR RELIEF VALVE
30. ELECTRICAL CONNECTIONS BOX
31. CONTROL PANEL MASTER
32. CONTROL PANEL SLAVE
33. CONDENSATE DRAIN MANIFOLD
34. FLUE MANIFOLD INTEGRATED NON RETURN VALVE
35. FLUE EXHAUST FITTING
36. FLUE MANIFOLD
37. HEATING FLOW MANIFOLD SENSOR
38. UNIT HEAT EXCHANGER SLAVE - 50 KW
39. HEATING FLOW MANIFOLD
40. HEATING RETURN MANIFOLD
41. GAS MANIFOLD
42. INSPECTION MANHOLE
43. WATER PRESSURE GAUGE

5. WATER CIRCUIT

R1BK 50 - 60

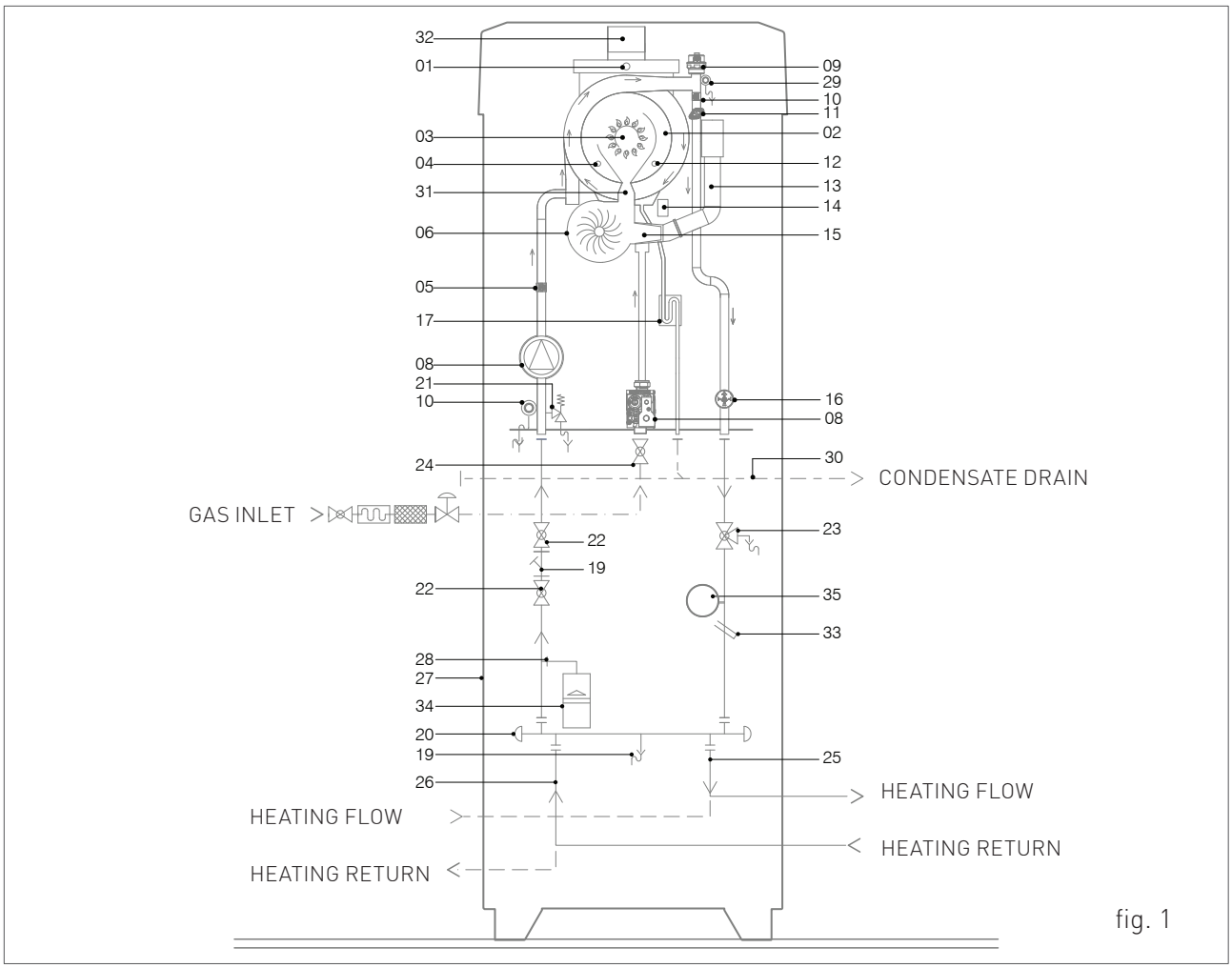


fig. 1

KEY

1. FUMES SAFETY THERMOFUSE
2. UNIT HEAT EXCHANGER
3. BURNER UNIT
4. DETECTION ELECTRODE
5. HEATING RETURN PROBE
6. ELECTRIC FAN
7. CIRCULATOR
8. GAS VALVE
9. AIR RELIEF VALVE
10. HEATING PROBE
11. SAFETY THERMOSTAT
12. LIGHT UP ELECTRODE
13. AIR SUCTION TUBE
14. START-UP TRANSFORMER
15. PROPORTIONAL VENTURI
16. WATER PRESSURE SWITCH
17. CONDENSATE COLLECTION SIPHON
18. STRAINER
19. SYSTEM DRAIN VALVE
20. HYDRAULIC SEPARATOR
21. SAFETY VALVE
22. ISOLATING VALVE
23. ISOLATING THREE-WAY VALVE
24. GAS VALVE
25. Ø1"1/2 HEATING FLOW FITTING
26. Ø1"1/2 HEATING RETURN FITTING
27. BOX
28. EXPANSION VESSEL CONNECTION
29. MANUAL AIR RELIEF VALVE
30. CONDENSATE DRAIN MANIFOLD
31. FLUE MANIFOLD INTEGRATED NON RETURN VALVE
32. FLUE EXHAUST FITTING
33. INSPECTION SOCKET
34. EXPANSION VESSEL (BY INSTALLER)
35. WATER PRESSURE GAUGE

R1BK 75 - 100 - 120

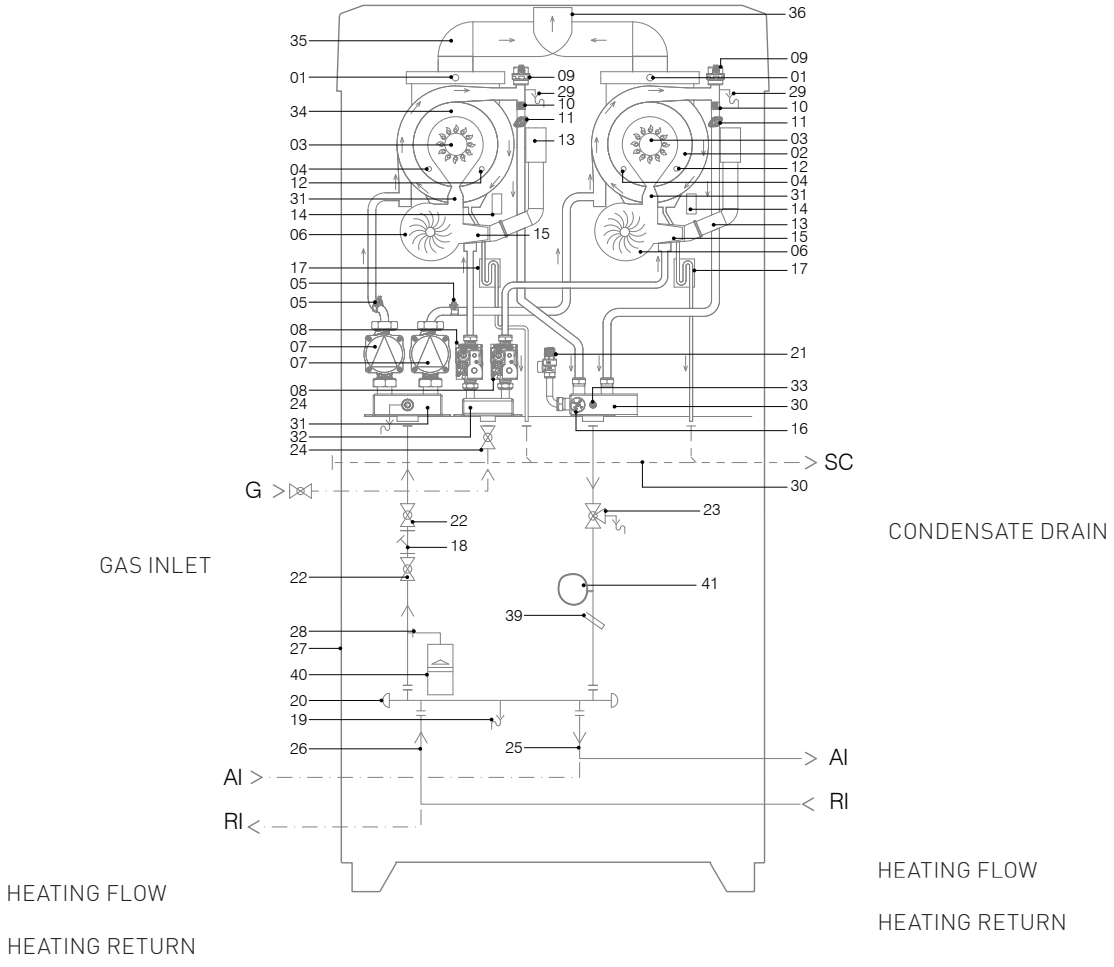


fig. 1

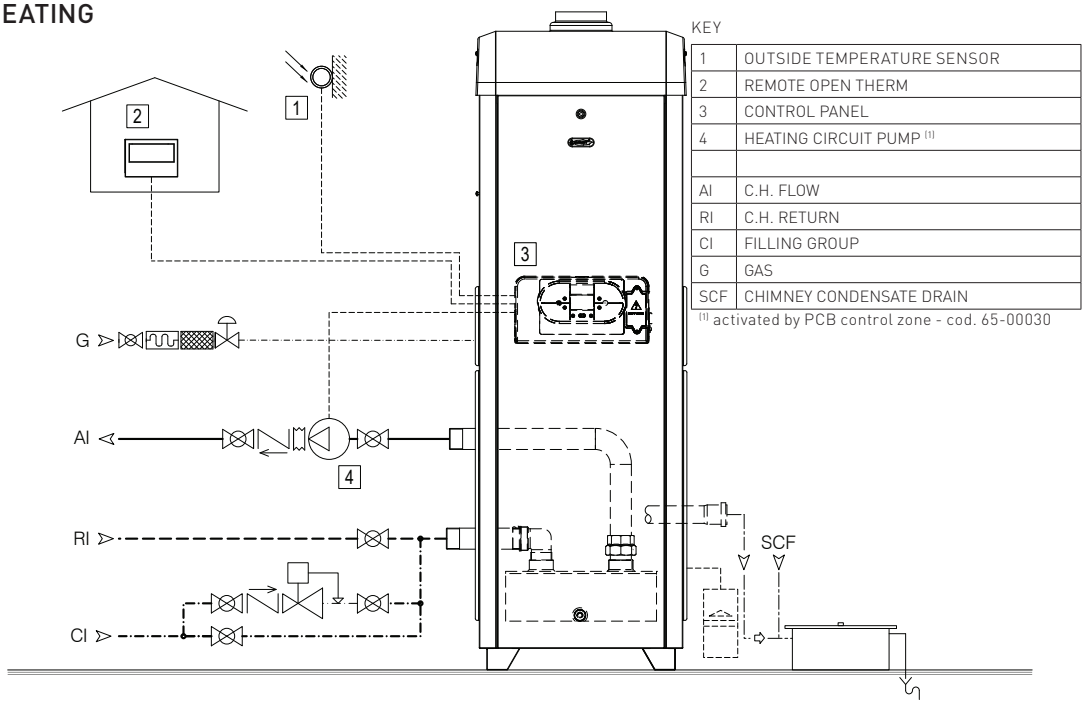
KEY

1. FUMES SAFETY THERMOFUSE
2. UNIT HEAT EXCHANGER MASTER
3. BURNER UNIT
4. DETECTION ELECTRODE
5. HEATING RETURN PROBE
6. ELECTRIC FAN
7. CIRCULATOR
8. ELECTRONIC GAS VALVE
9. AIR RELIEF VALVE
10. HEATING PROBE
11. SAFETY THERMOSTAT
12. LIGHT UP ELECTRODE
13. AIR SUCTION TUBE
14. START-UP TRANSFORMER
15. PROPORTIONAL VENTURI
16. WATER PRESSURE SWITCH
17. CONDENSATE COLLECTION SIPHON
18. STRAINER
19. SYSTEM DRAIN VALVE
20. HYDRAULIC SEPARATOR
21. SAFETY VALVE
22. ISOLATING VALVE
23. ISOLATING THREE-WAY VALVE
24. GAS VALVE
25. Ø1"1/2 HEATING FLOW FITTING
26. Ø1"1/2 HEATING RETURN FITTING
27. BOX
28. EXPANSION VESSEL CONNECTION
29. MANUAL AIR RELIEF VALVE
30. CONDENSATE DRAIN MANIFOLD
31. FLUE MANIFOLD INTEGRATED NON RETURN VALVE
32. FLUE EXHAUST FITTING
33. FLUE MANIFOLD
34. HEATING FLOW MANIFOLD SENSOR
35. UNIT HEAT EXCHANGER SLAVE
36. HEATING FLOW MANIFOLD
37. HEATING RETURN MANIFOLD
38. GAS MANIFOLD
39. INSPECTION MANHOLE
40. EXPANSION VESSEL (BY INSTALLER)
41. WATER PRESSURE GAUGE

6. SYSTEM MECHANICAL CIRCUIT

R1BK 50 - 60

ONLY HEATING



KEY

1	OUTSIDE TEMPERATURE SENSOR
2	REMOTE OPEN THERM
3	CONTROL PANEL
4	HEATING CIRCUIT PUMP [1]
AI	C.H. FLOW
RI	C.H. RETURN
CI	FILLING GROUP
G	GAS
SCF	CHIMNEY CONDENSATE DRAIN

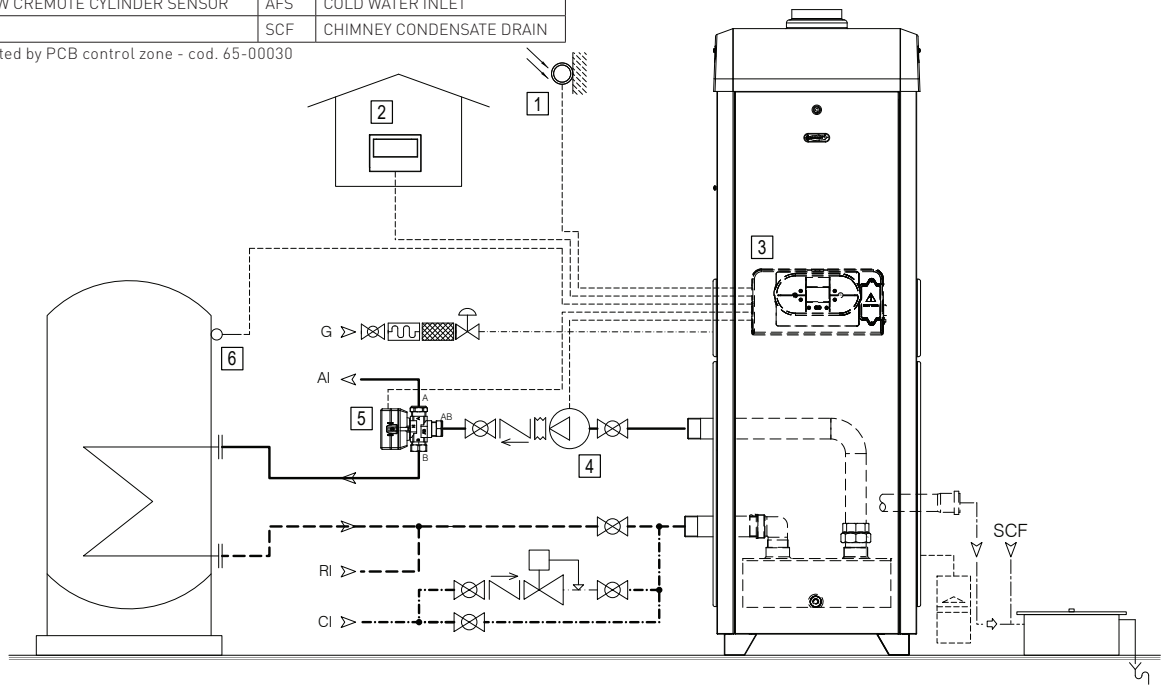
[1] activated by PCB control zone - cod. 65-00030

WITH REMOTE STORAGE CYLINDER

KEY

1	OUTSIDE TEMPERATURE SENSOR	AI	C.H. FLOW
2	REMOTE OPEN THERM	RI	C.H. RETURN
3	CONTROL PANEL	CI	FILLING GROUP
4	HEATING CIRCUIT PUMP [1]	G	GAS
5	DWH MIXING VALVE	ACS	D.H.W. OUTLET
6	DHW CREMOTE CYLINDER SENSOR	AFS	COLD WATER INLET
		SCF	CHIMNEY CONDENSATE DRAIN

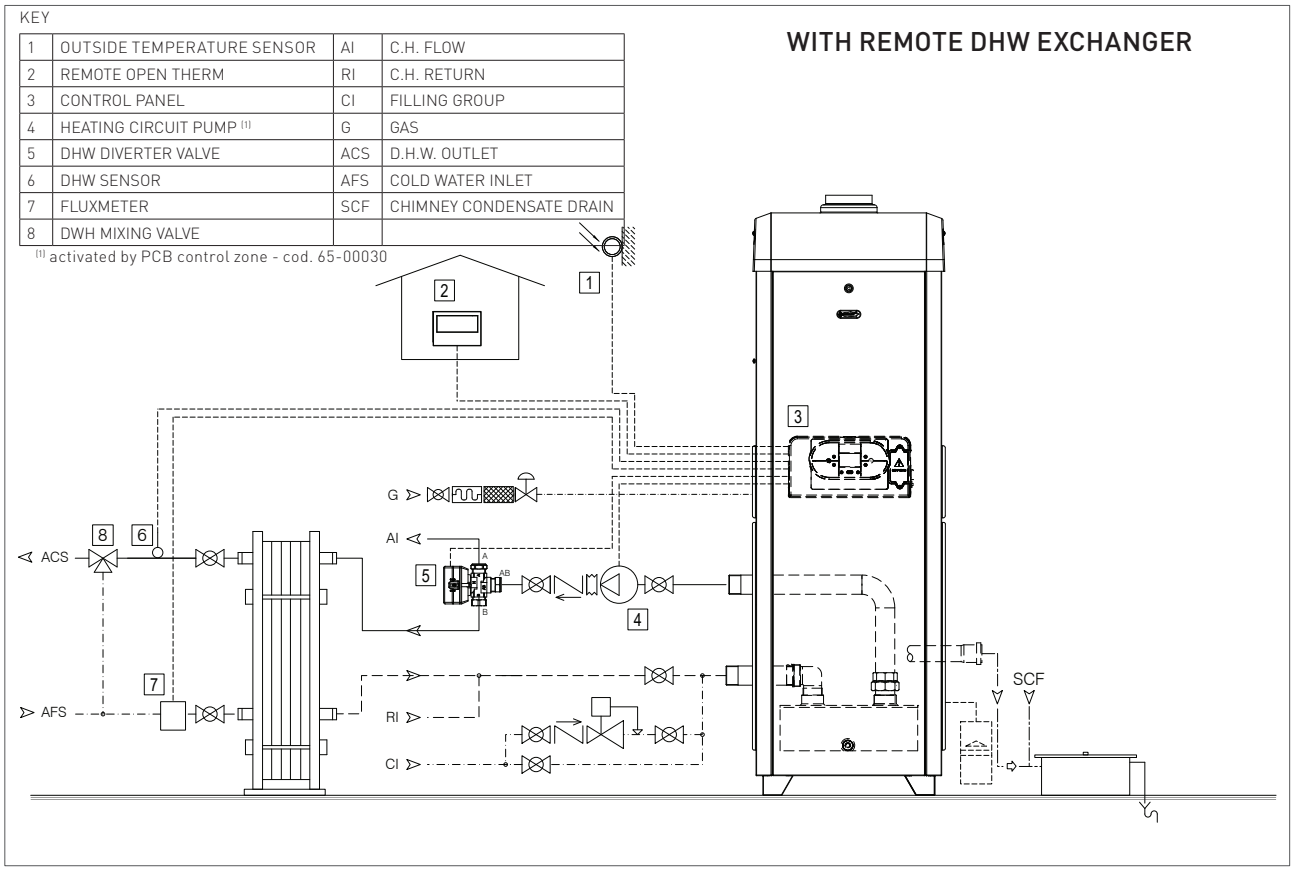
[1] activated by PCB control zone - cod. 65-00030



KEY

1	OUTSIDE TEMPERATURE SENSOR	AI	C.H. FLOW
2	REMOTE OPEN THERM	RI	C.H. RETURN
3	CONTROL PANEL	CI	FILLING GROUP
4	HEATING CIRCUIT PUMP [1]	G	GAS
5	DHW DIVERTER VALVE	ACS	D.H.W. OUTLET
6	DHW SENSOR	AFS	COLD WATER INLET
7	FLUXMETER	SCF	CHIMNEY CONDENSATE DRAIN
8	DWH MIXING VALVE		

[1] activated by PCB control zone - cod. 65-00030



HEATING ONLY INSTALLATION

The boiler can manage a heating system at a fixed point delivery temperature or in climatic compensation with an external probe, managing the modulation according to the actually requested thermal load.

HEATING INSTALLATION + REMOTE BOILER SUPPLY SYSTEM

The boiler can manage a heating system at a fixed point delivery temperature or in climatic compensation with an external probe, managing the modulation according to the actually requested thermal load.
The boiler probe activates the system in order to pre-heat the boiler, the boiler will be put into domestic circuit mode and the deviating valve switches to the remote boiler.

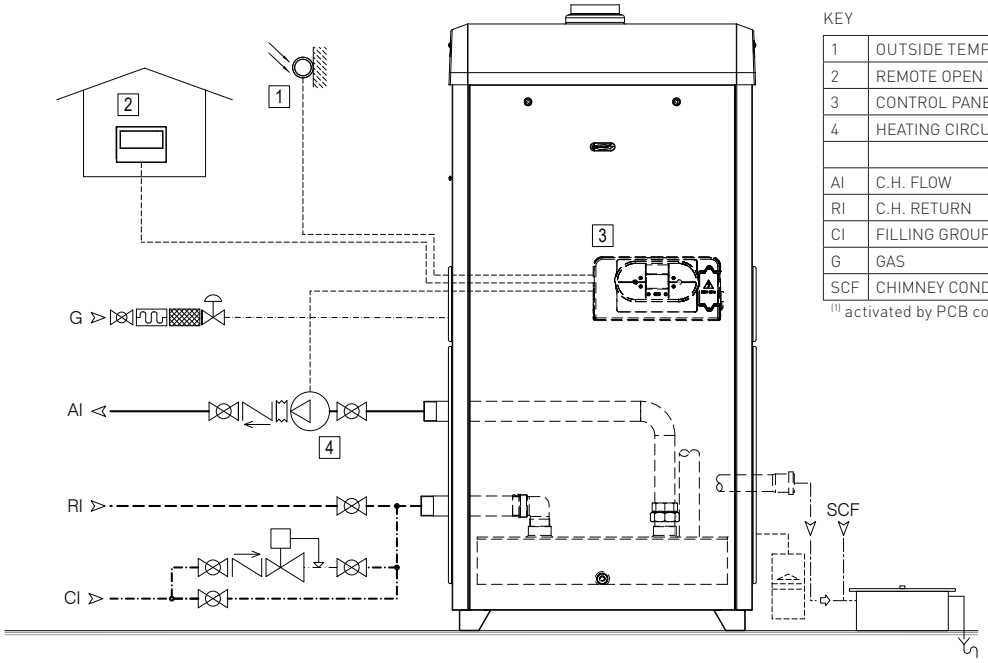
HEATING INSTALLATION + REMOTE HEAT EXCHANGER FOR INSTANTANEOUS D.H.W. PRODUCTION

The boiler can manage a heating system at a fixed point delivery temperature or in climatic compensation with an external probe, managing the modulation according to the actually requested thermal load.
In the version with heat exchanger for instantaneous D.H.W. production, the flow-meter at cold water inlet, detects the sanitary request, switches the diverter valve on the exchanger and activates the boiler in sanitary mode. The NTC temperature probe at the exit of the exchanger detects the D.H.W. outlet temperature ensuring the Setpoint set by the user.

Please note: The R1BK 120 model is not suitable to be combined with a plate exchanger for DHW production.

R1BK 75 - 100 - 115

ONLY HEATING



KEY

1	OUTSIDE TEMPERATURE SENSOR
2	REMOTE OPEN THERM
3	CONTROL PANEL
4	HEATING CIRCUIT PUMP [1]
AI	C.H. FLOW
RI	C.H. RETURN
CI	FILLING GROUP
G	GAS
SCF	CHIMNEY CONDENSATE DRAIN

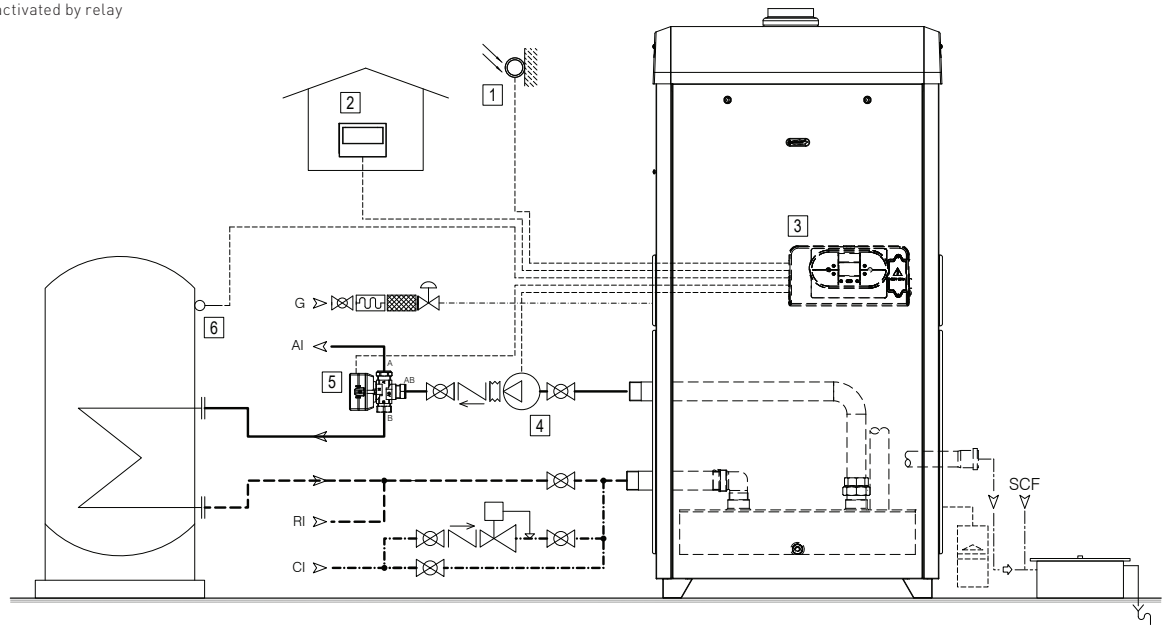
[1] activated by PCB control zone - cod. 65-00030

WITH REMOTE STORAGE CYLINDER

KEY

1	OUTSIDE TEMPERATURE SENSOR	AI	C.H. FLOW
2	REMOTE OPEN THERM	RI	C.H. RETURN
3	CONTROL PANEL	CI	FILLING GROUP
4	HEATING CIRCUIT PUMP [1]	G	GAS
5	DWH MIXING VALVE	ACS	D.H.W. OUTLET
6	DHW CREMOTE CYLINDER SENSOR	AFS	COLD WATER INLET
		SCF	CHIMNEY CONDENSATE DRAIN

[1] activated by relay

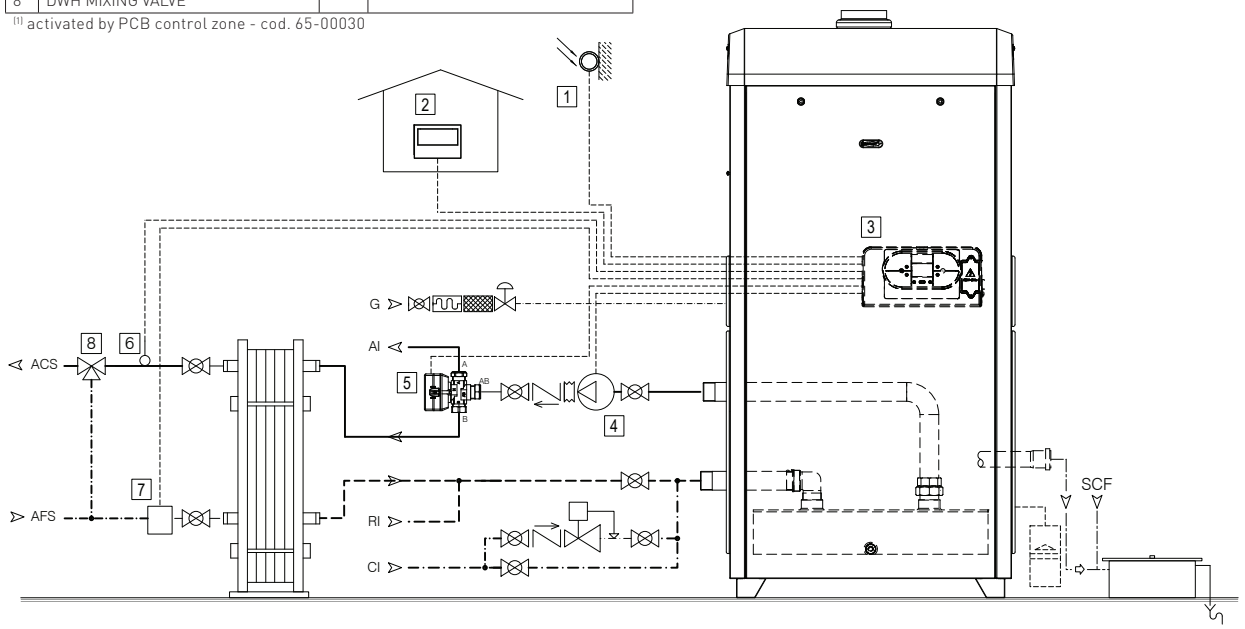


KEY

1	OUTSIDE TEMPERATURE SENSOR	AI	C.H. FLOW
2	REMOTE OPEN THERM	RI	C.H. RETURN
3	CONTROL PANEL	CI	FILLING GROUP
4	HEATING CIRCUIT PUMP [1]	G	GAS
5	DHW DIVERTER VALVE	ACS	D.H.W. OUTLET
6	DHW SENSOR	AFS	COLD WATER INLET
7	FLUXMETER	SCF	CHIMNEY CONDENSATE DRAIN
8	DWH MIXING VALVE		

[1] activated by PCB control zone - cod. 65-00030

WITH REMOTE DHW EXCHANGER
(Only for R1BK 75 - R1BK 100 models)



HEATING ONLY INSTALLATION

The boiler can manage a heating system at a fixed point delivery temperature or in climatic compensation with an external probe, managing the modulation according to the actually requested thermal load.

HEATING INSTALLATION + REMOTE BOILER SUPPLY SYSTEM

The boiler can manage a heating system at a fixed point delivery temperature or in climatic compensation with an external probe, managing the modulation according to the actually requested thermal load.
The boiler probe activates the system in order to pre-heat the boiler, the boiler will be put into domestic circuit mode and the deviating valve switches to the remote boiler.

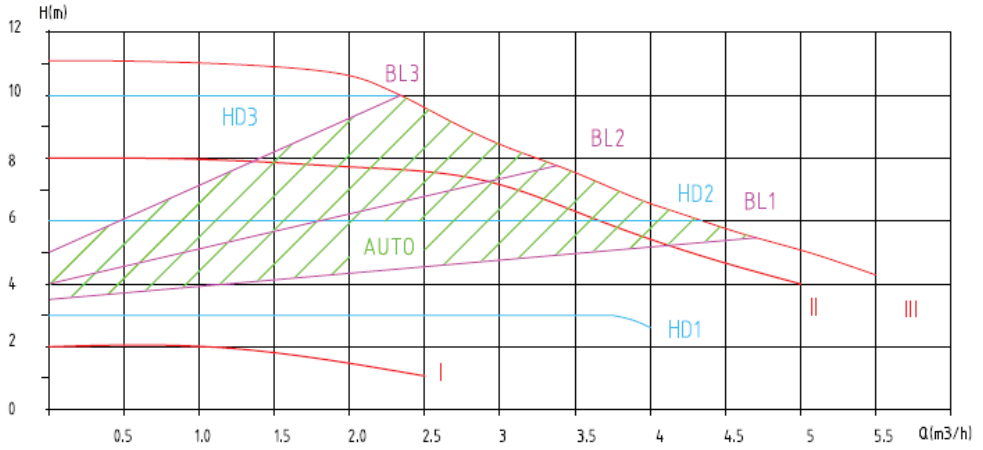
HEATING INSTALLATION + REMOTE HEAT EXCHANGER FOR INSTANTANEOUS D.H.W. PRODUCTION

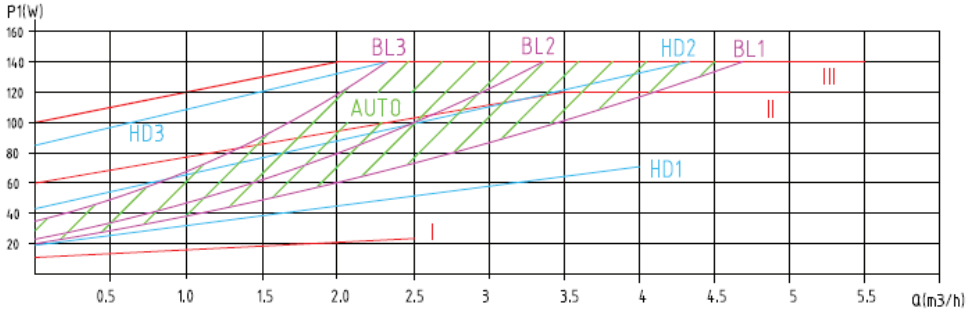
The boiler can manage a heating system at a fixed point delivery temperature or in climatic compensation with an external probe, managing the modulation according to the actually requested thermal load.
In the version with heat exchanger for instantaneous D.H.W. production, the flow-meter at cold water inlet, detects the sanitary request, switches the diverter valve on the exchanger and activates the boiler in sanitary mode. The NTC temperature probe at the exit of the exchanger detects the D.H.W. outlet temperature ensuring the Setpoint set by the user.

Please note: The R1BK 120 model is not suitable to be combined with a plate exchanger for DHW production.

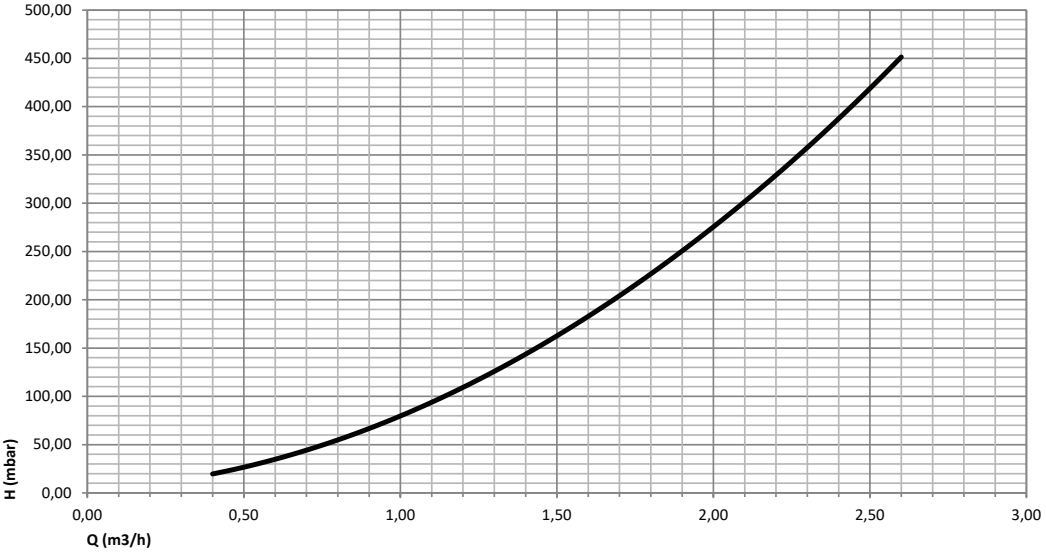
7. HEAD/FLOW DIAGRAM

PUMP - These curves include the hydraulic losses as per the attached graph [1]





HYDRAULIC PRESSURE LOSSES [1]



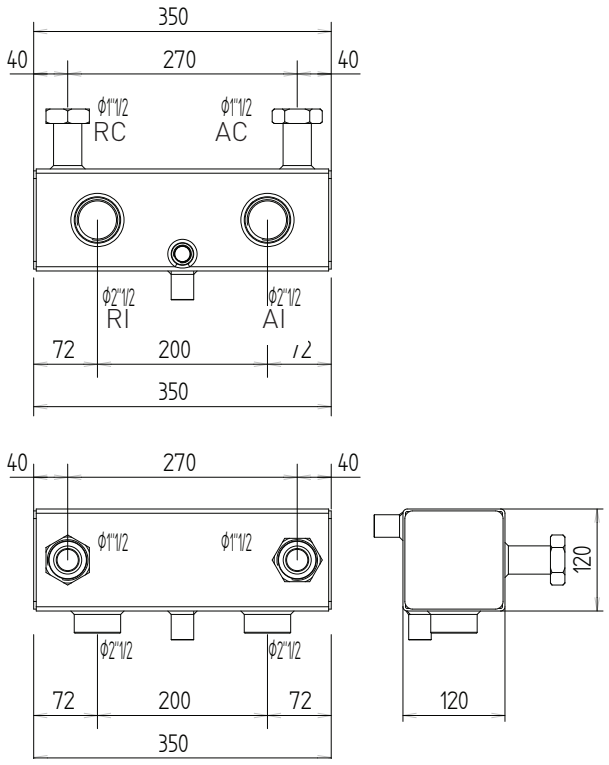
NOTE:(1) These information are related to one heat exchanger only

HYDRAULIC COMPENSATOR

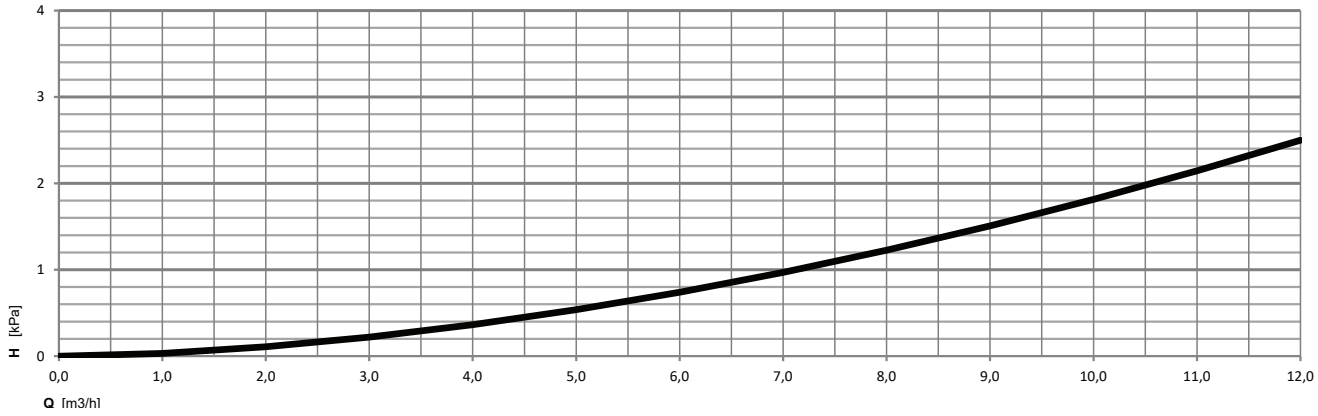
In order to guarantee that the boiler is always functioning without problems related to the flow rates variability on the secondary circuit, it is absolutely necessary to install a hydraulic compensator. .

code 26205LA **DN 100 - Ø1"1/2 connections**

for R1BK 50 - 60 models

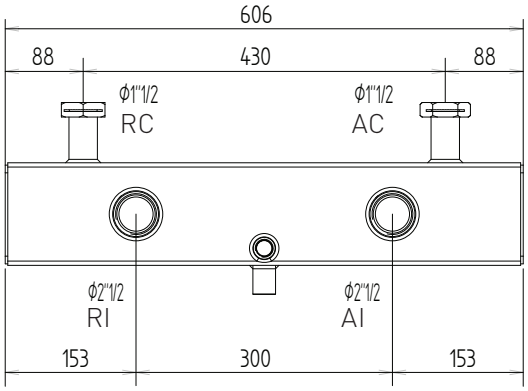


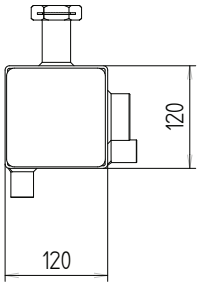
Flow	Seed	Head
m3/h	m/s	kPa
0	0,000	0,000
1	0,023	0,032
2	0,046	0,108
3	0,069	0,219
4	0,092	0,363
5	0,115	0,537
6	0,138	0,740
7	0,161	0,970
8	0,184	1,226
9	0,207	1,507
10	0,230	1,814

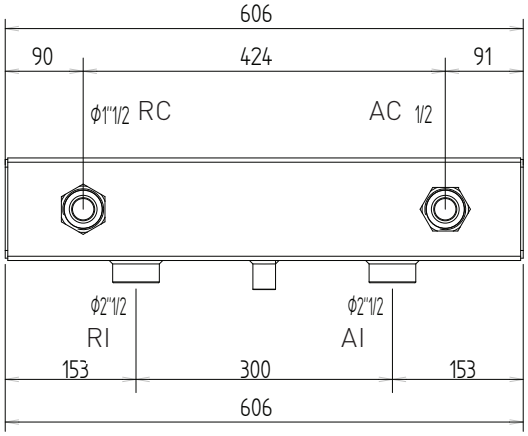


AC	HEATING FLOW - BOILER	Ø1"1/2
RC	HEATING RETURN - BOILER	Ø1"1/2
AI	HEATING FLOW - PLANT	Ø2"1/2
RI	HEATING RETURN - PLANT	Ø2"1/2

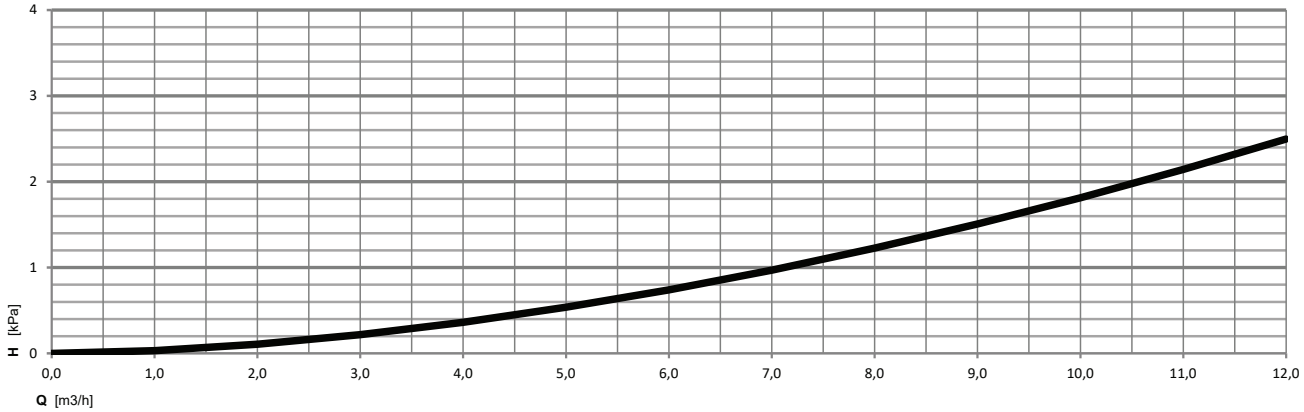
cod. 12-01735 **DN 100 - Ø1"1/2 connections**
for R1BK 75 - 100 - 120 models







Flow	Seed	Head
m3/h	m/s	kPa
0	0,000	0,000
1	0,023	0,048
2	0,046	0,161
3	0,069	0,327
4	0,092	0,542
5	0,115	0,801
6	0,138	1,103
7	0,161	1,445
8	0,184	1,826
9	0,207	2,245
10	0,230	2,701



AC	HEATING FLOW - BOILER	Ø1"1/2
RC	HEATING RETURN - BOILER	Ø1"1/2
AI	HEATING FLOW - PLANT	Ø2"1/2
RI	HEATING RETURN - PLANT	Ø2"1/2

8. ACCESSORIES

PLATE HEAT EXCHANGER

HEAT EXCHANGER TABLE

In case of a standard boiler's replacement in an old system with impurities and in case of problems during the system flushing, the installation of a heat exchanger is recommended to prevent boiler's obstructions that might compromise its functioning. The heat exchanger, interface between the primary circuit which includes the boiler and the secondary circuit, guarantees a real separation of thermal carriers flows and the consequently boiler safeguard.

Boiler version	Primary				Secondary				Plate heat exchanger			
	Q	T_{IN}	T_{OUT}	H_{max}	Q	T_{IN}	T_{OUT}	H_{max}				
	m3/h	°C	°C	kPa	m3/h	°C	°C	kPa	code	model	plate	type
R1BK 50	2,20	80	60	2,79	2,92	55	70	4,87	25-01220	SE040+DN32PL35	35	gasketed
R1BK 60	2,59	80	60	3,86	3,45	55	70	6,75				gasketed
R1BK 75	3,29	80	60	4,13	4,37	55	70	7,23	25-01221	SE040+DN32PL35	45	gasketed
R1BK 100	4,39	80	60	4,98	5,84	55	70	8,72	25-01222	SE040+DN32PL59	59	gasketed
R1BK 120	5,18	80	60	5,91	6,89	55	70	10,37	25-01223	SE040+DN32PL67	67	gasketed

DWH EXCHANGER TABLE

In case it is necessary to produce instant domestic hot water, it is possible to combine a plate exchanger with the boiler.

Boiler version	Primary				Secondary				Plate heat exchanger			
	Q	T_{IN}	T_{OUT}	H_{max}	Q	T_{IN}	T_{OUT}	H_{max}				
	m3/h	°C	°C	kPa	m3/h	°C	°C	kPa	code	model	plate	type
R1BK 50	2,2	80	60	8,71	1,08	10	50	2,06	25-01262	SE020+DN32PL15	15	gasketed
R1BK 60	1,28	80	60	2,86	2,59	10	50	12,07				gasketed
R1BK 75	1,62	80	60	4,59	3,29	10	50	19,38				gasketed
R1BK 100	2,16	80	60	3,08	4,39	10	50	12,97	25-01263	SE020+DN32PL25	25	gasketed

NOTES:
The dimensions shown in the table must be understood as purely indicative and are therefore subject to design verification by the designer who draws up the project.
The R1BK 120 model is not suitable to be combined with a plate exchanger for DHW production.

9. TYPES OF FUME EXHAUST SYSTEMS

R1BK 50 - 60

STAILESS STEEL VERTICAL FLUE KIT Ø80 mm
code 50-00377

It allows fumes discharge directly from roof and draws air from atmosphere

Please see the maximum discharge length in the table in chapter "technical data".

The maximum discharge and intake length (or linear reference length) can be calculated summing the length of the linear tube and that equivalent to each additional curve with respect to the first.

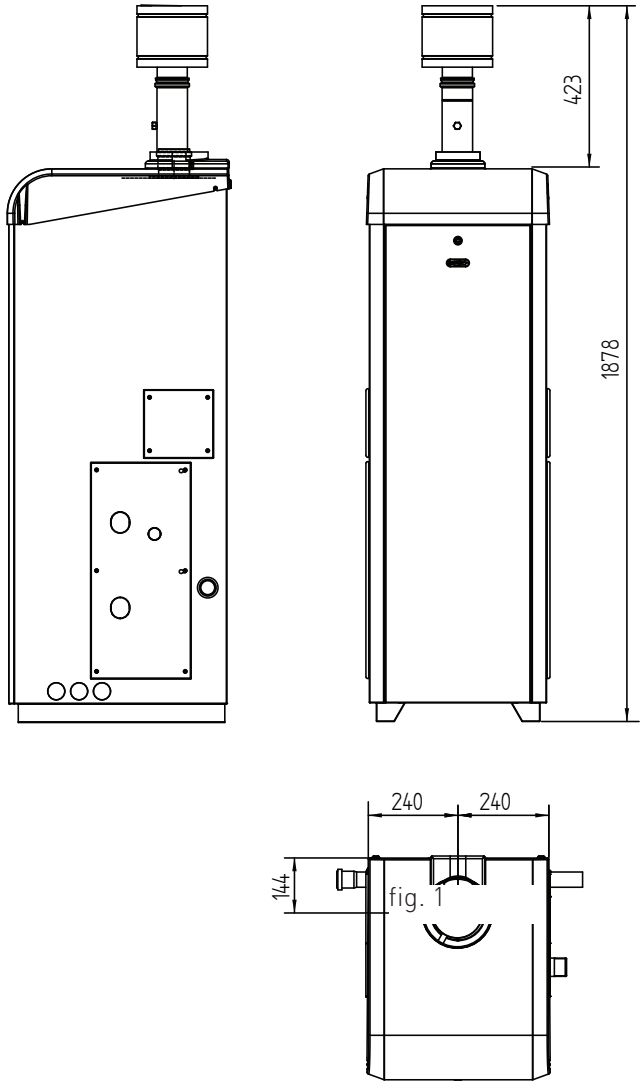


fig. 1

Description	Equivalent lenght [m]
Bend 90° Ø80 MF	1.5
Bend 45° Ø80 MF	0.8

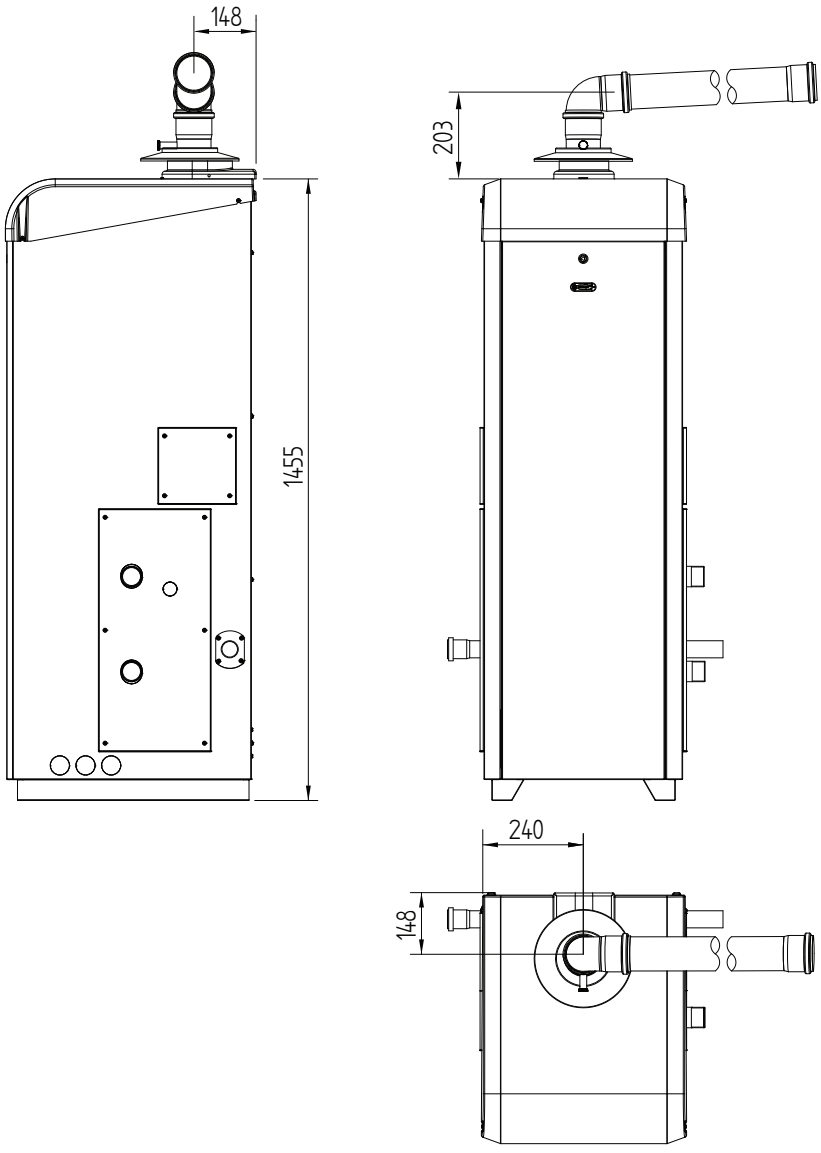
STAILESS STEEL HORIZONTAL FLUE KIT Ø80 mm

Cod. 50-00467

It allows fumes discharge and draws air from atmosphere.

Please see the maximum discharge length in the table in chapter "TECHNICAL DATA".

The maximum discharge and intake length (or linear reference length) can be calculated summing the length of the linear tube and that equivalent to each additional curve with respect to the first.



Description	Equivalent lenght [m]
Bend 90° Ø80 MF	1.5
Bend 45° Ø80 MF	0.8

R1BK 75 - 100 - 120

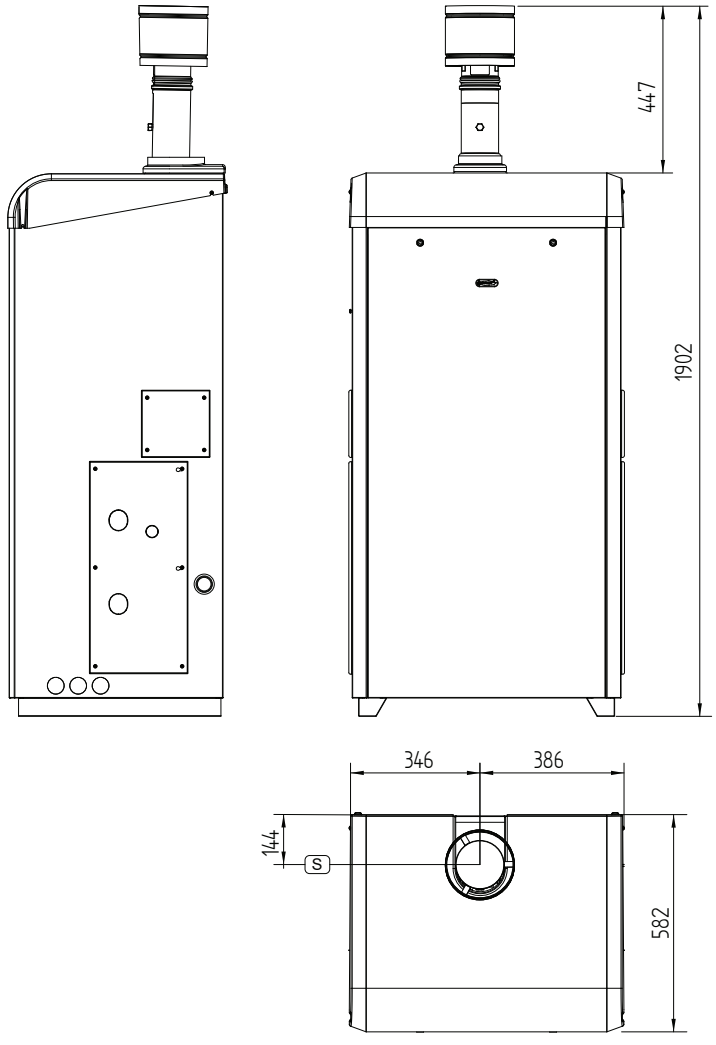
STAILESS STEEL VERTICAL FLUE KIT Ø100 mm

code 80019LA

It allows fumes discharge directly from roof and draws air from atmosphere.

Please see the maximum discharge length in the table in chapter "technical data".

The maximum discharge and intake length (or linear reference length) can be calculated summing the length of the linear tube and that equivalent to each additional curve with respect to the first.



Description	Equivalent lenght [m]
Bend 90° Ø80 MF	1.5
Bend 45° Ø80 MF	0.8

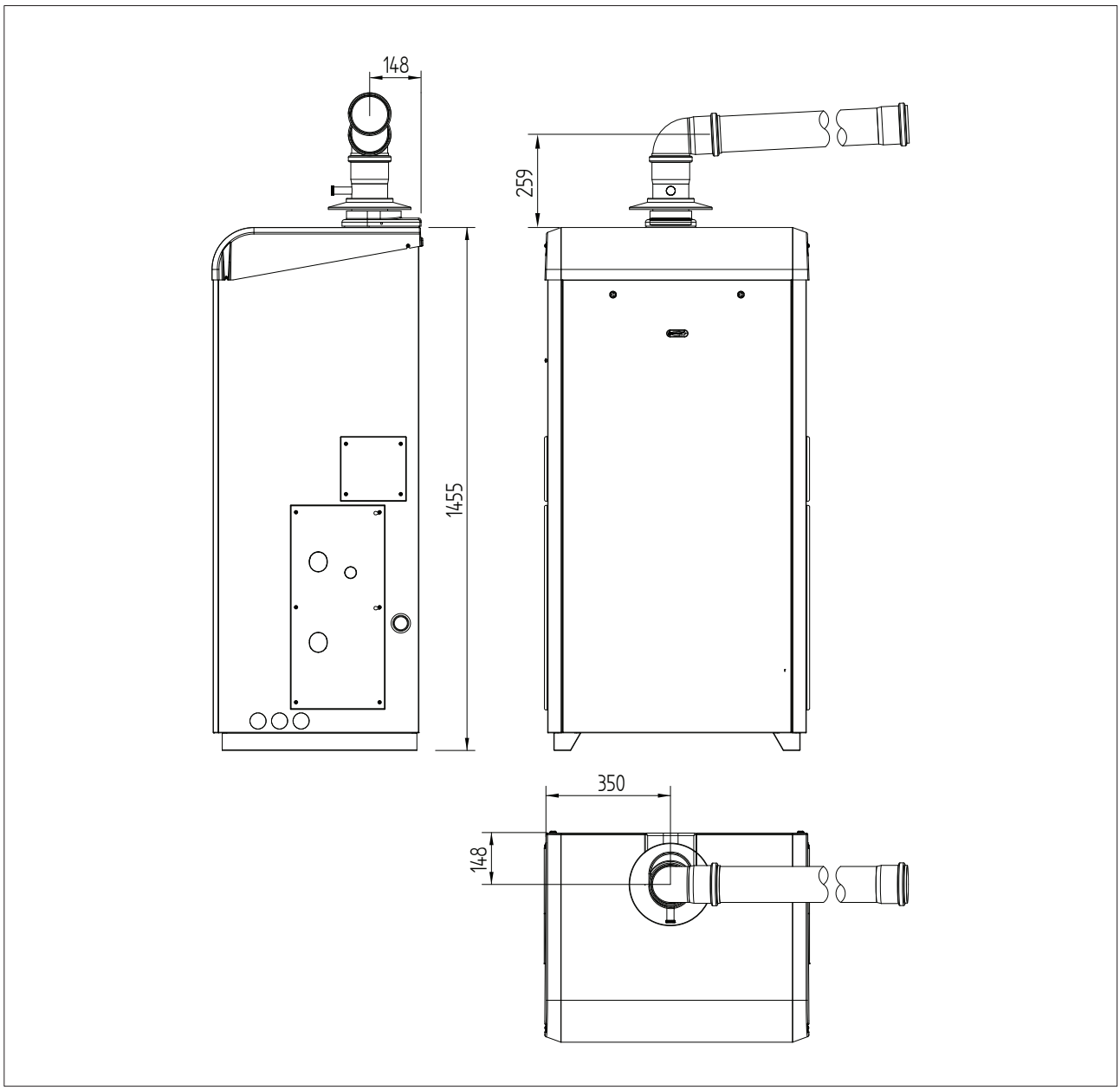
STAILESS STEEL HORIZONTAL FLUE KIT Ø80 mm

Cod. 50-00468

It allows fumes discharge and draws air from atmosphere.

Please see the maximum discharge length in the table in chapter "TECHNICAL DATA".

The maximum discharge and intake length (or linear reference length) can be calculated summing the length of the linear tube and that equivalent to each additional curve with respect to the first.



Description	Equivalent lenght [m]
Bend 90° Ø80 MF	1.5
Bend 45° Ø80 MF	0.8

10. WIRING DIAGRAMS

R1BK 50 - 60

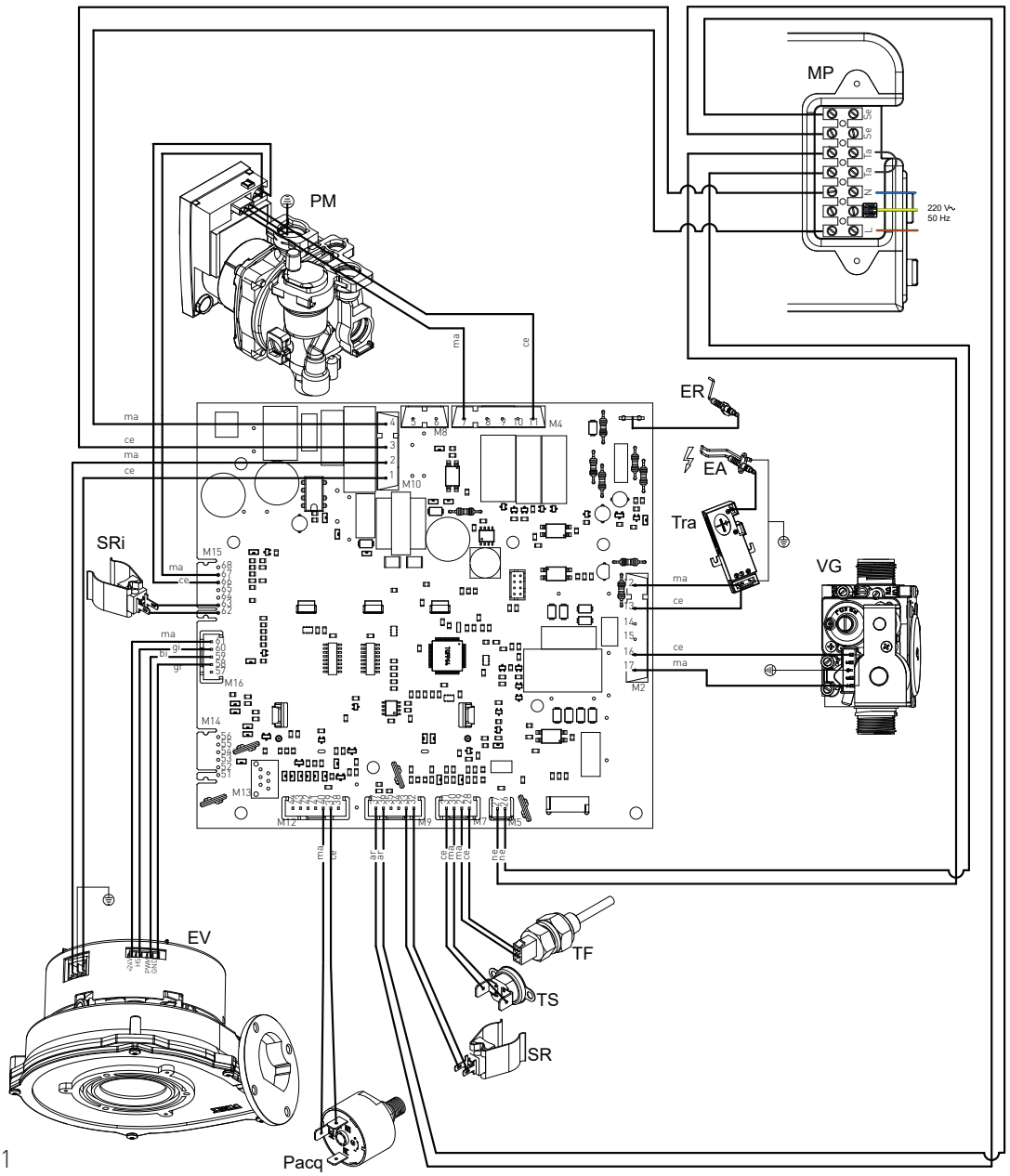


fig. 1

ER: DETECTION ELECTRODE
EA: START-UP ELECTRODE
CRE: CIRCULATOR MODULATING
VG: GAS VALVE
TRA:START-UP TRANSFORMER
SRR: HEATING RETURN PROBE

TS: SAFETY THERMOSTAT
PACQ:WATER PRESSURE SWITCH
TF: FUMES THERMOFUSE (102°C)
SR: HEATING PROBE
EV: ELECTRIC FAN

MP: PANEL TERMINAL
SE: EXTERNAL PROBE
TA: ENVIRONMENT THERMOSTAT
L: LINE
N: NEUTRAL
NE: BLACK

CE: BLUE
MA: BROWN
AR: ORANGE
GI: YELLOW
BI: WHITE
GR. GREY

R1BK 75 - 100 - 120 MASTER

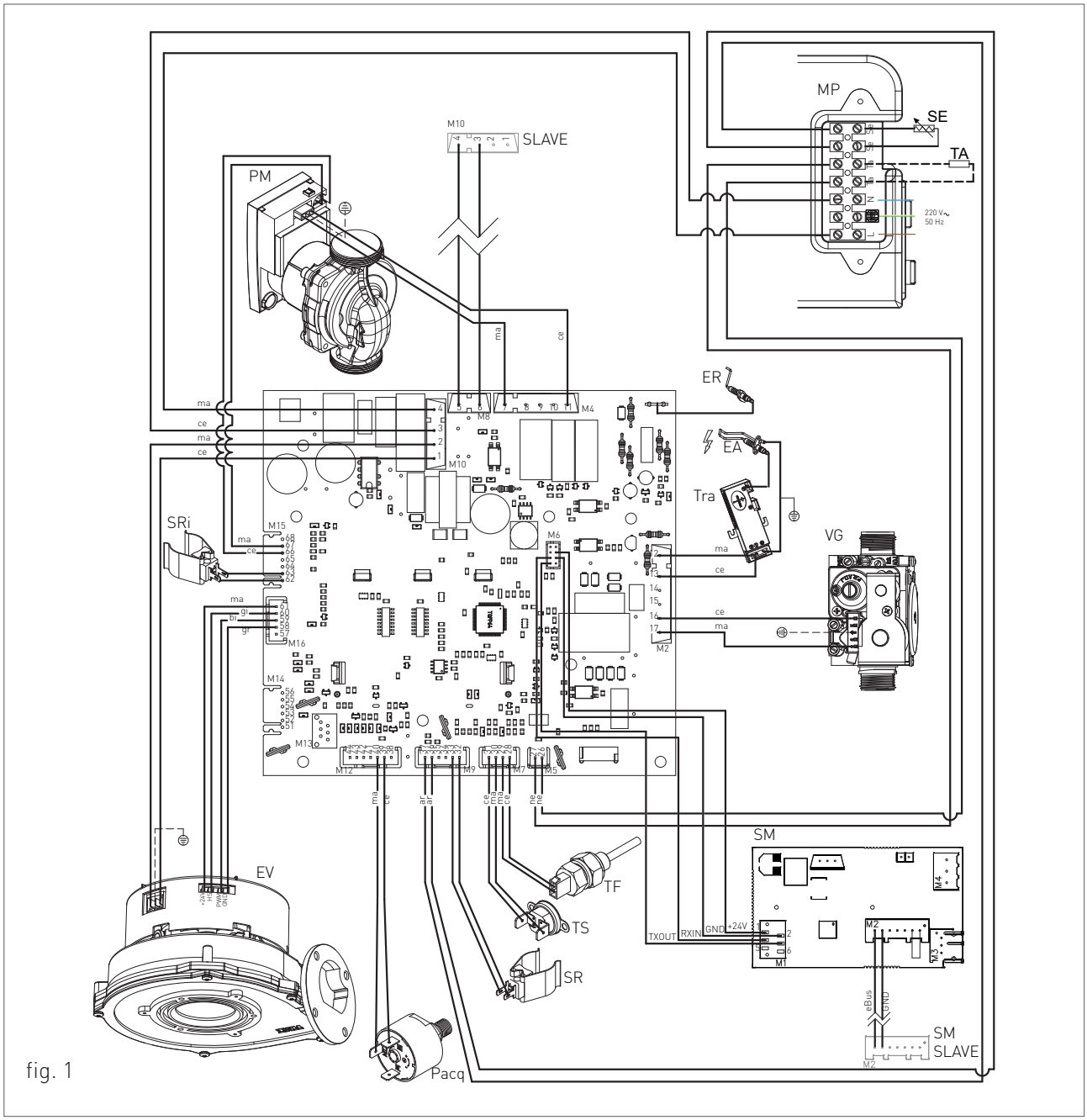


fig. 1

ER: DETECTION ELECTRODE	TS: SAFETY THERMOSTAT	MP: PANEL TERMINAL	CE: BLUE
EA: START-UP ELECTRODE	PACQ:WATER PRESSURE SWITCH	SE: EXTERNAL PROBE	MA: BROWN
PM: MODULATING CIRCULATOR	SR: HEATING PROBE	TA: ENVIRONMENT THERMOSTAT	AR: ORANGE
VG: GAS VALVE	EV: ELECTRIC FAN	L: LINE	GI: YELLOW
TRA:START-UP TRANSFORMER	TF: FUMES THERMOFUSE (102°C)	N: NEUTRAL	BI: WHITE
SM: MODBUS BOARD	SRI: SYSTEM RETURN PROBE	NE: BLACK	GR. GREY

R1BK 75 - 100 - 120 - SLAVE

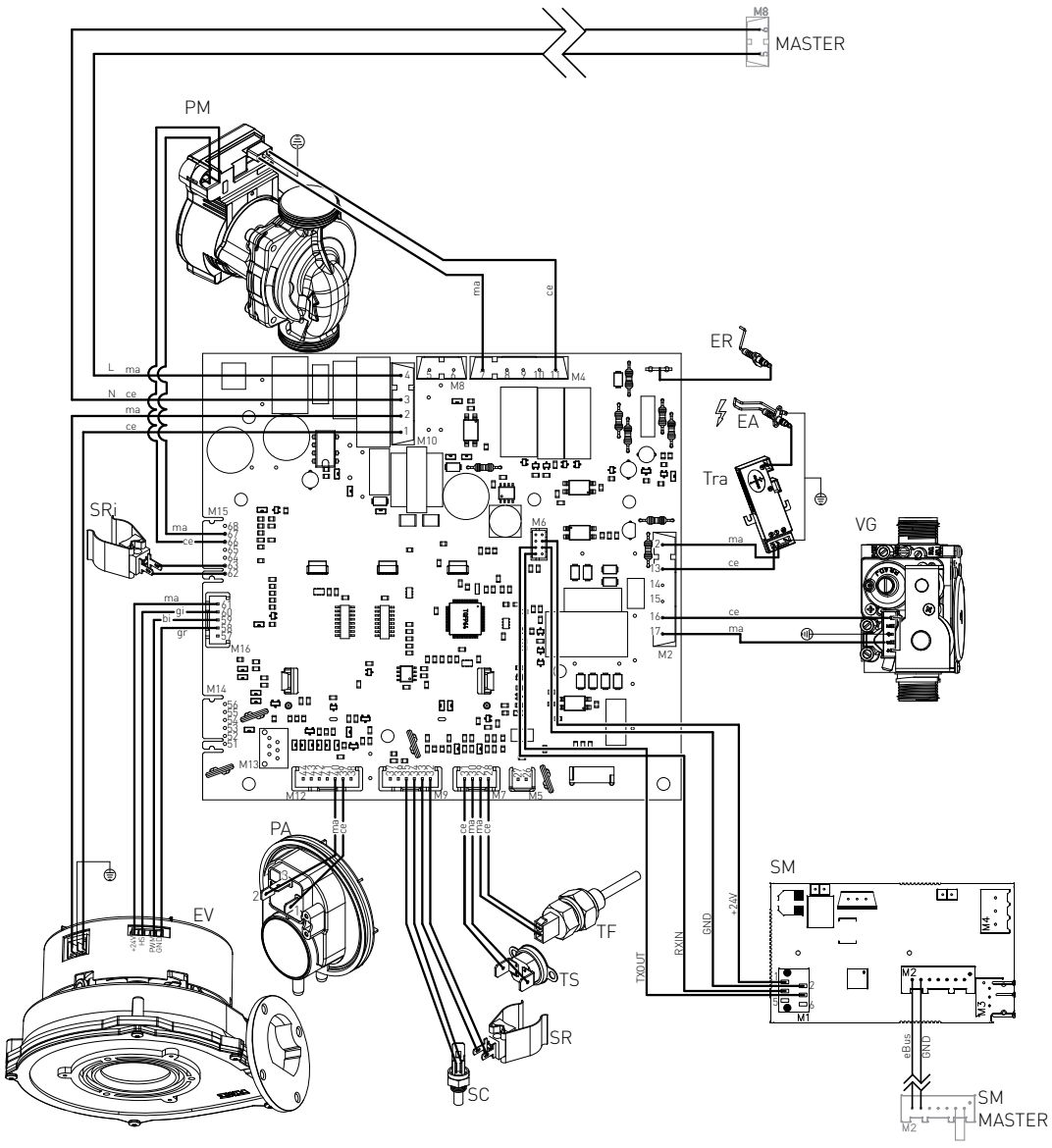


fig. 1

ER: DETECTION ELECTRODE
EA: START-UP ELECTRODE
PM: MODULATING CIRCULATOR
VG: GAS VALVE
TRA:START-UP TRANSFORMER
SC: COLLECTOR PROBE
PA: AIR PRESSURE SWITCH

TS: SAFETY THERMOSTAT
MP: PANEL TERMINAL
SR: HEATING PROBE
EV: ELECTRIC FAN
TF: FUMES THERMOFUSE (102°C)
SRI: SYSTEM RETURN PROBE

SM: MODBUS BOARD
L: LINE
N: NEUTRAL
NE: BLACK

CE: BLUE
MA: BROWN
AR: ORANGE
GI: YELLOW
BI: WHITE
GR. GREY

11. ACCESSORIES

Model		R1BK 50	R1BK 60	R1BK 75	R1BK 100	R1BK 120
CLOUDWARM WIFI APPLICATION Recessed installation (wired) NB: If you do not have a Wi-Fi network, you can access it via a GSM modem, purchased separately	code 40-00292	√	√	√	√	√
EASY REMOTE – Remote boiler controller, it performs a dual function, thermostat and remote control of the boiler.	code 40-00017	√	√	√	√	√
WEEK – Digital Chrono thermostat – Weekly settings it manages weekly programs and controls 2 temperature levels: day-night.	code 86047LA	√	√	√	√	√
ZONE VALVE MANAGEMENT KIT – to control multiple temperature zones combined with the remote boiler controller.	code 65-00030	√	√	√	√	√
OUTSIDE TEMPERATURE SENSOR - It allows the generator to operate with sliding temperature	code 73518LA	√	√	√	√	√
STAINLESS STEEL VERTICAL FLUE KIT Ø80 W/ FLUE TERMINAL	50-00377	√	√	-	-	-
STAINLESS STEEL VERTICAL FLUE KIT Ø100 W/ FLUE TERMINAL	80019LA	-	-	√	√	√
STAINLESS STEEL HORIZONATL FLUE KIT Ø80 W/ FLUE TERMINAL	50-00467	√	√	-	-	-
STAINLESS STEEL HORIZONATL FLUE KIT Ø100 W/FLUE TERMINAL	50-00468	-	-	√	√	√
BOX ASSEMBLY – SINGLE UNIT	35-00151	√	√	√	√	√
BOX ASSEMBLY – DOUBLE UNIT	35-00176	√	√	√	√	√

Document name					Series
R1BK-RAD-ING-SCH.PROD-2409.1.indd					POWER-TECH R1BK Single installation
Rev	Date	Compiled	Status	Approved	Note
01	05-2020	N.V.	Completed	N.V.	First emission
02	05-2021	N.V.	Completed	N.V.	Update
03	01-2023	N.V.	Completed	N.V.	Update
04	01-2024	N.V.	Completed	N.V.	Update
04	05-2024	N.V.	Completed	N.V.	Update
05	09-2024	N.V.	Completed	N.V.	Update