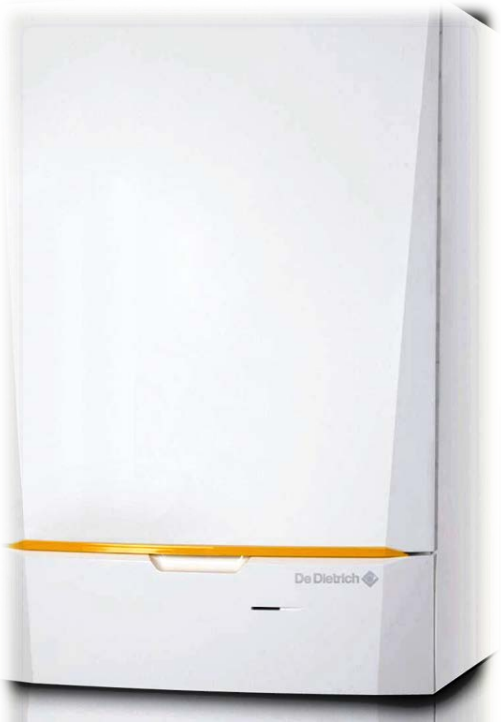
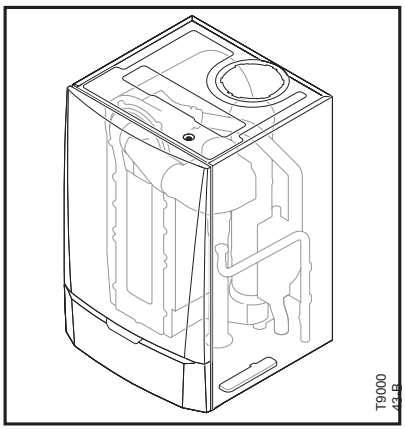
DDR AMERICAS INC.
1090 Fountain Street North, Unit 10
Cambridge, Ontario, Canada N3E 1A3
Tel: 519.650.0420 Fax: 519.650.1709



MCA Pro Submittal



Project Name	
Project location	
Contractor	
Engineering Firm	
Boiler Representative	
Sales Rep. Phone	
Date Created	

Relief Valve	
Boiler Options	
Code	

Revision

1		Date:	4		Date:
2		Date:	5		Date:
3		Date:	6		Date:

Technical specifications

Item	Unit	MCA Pro			
		45	65	90	115
Firing Sequence	Type	Modulating, ON/OFF, Remote 0-10 V			
Minimum Fuel Input	MBH/kW	34-9.9	34	55/16.2	82/24.0
Minimum Fuel Input	MBH/kW	156/45.7	235/68.8	326/95.5	399/117.0
Minimum Heat Output	MBH/kW	33/9.6	45/13.3	54/15.8	79/23.1
Maximum Heat Output	MBH/kW	146/43.0	222/65.0	306/89.5	368/108.0
Efficiency					
Thermal Efficiency CSA Certified	%	94.0			
Combustion Efficiency CSA Certified	%	94.3			
Boiler Usable Effciency	%	Up to 98.2			
Stand by Losses (Average)	%	<0.3			
Gas and Venting Data					
Gas Type	-	Natural Gas/Propane(LPG)			
Gas Inlet Pressure-Natural Gas	inch w.c/mbar	3.5-14 / 8.7-35			
Gas Inlet Pressure-Propane	inch w.c/mbar	8-13 / 20-32.5			
Nox Emission (O2-0%, dry)	ppm	<21			
Flue Gas Mass Range	Lb/h	31-152	46-229	62-304	79-392
	Kg/h	14-69	21-104	28-138	36-178
Max. Flue Gas Temp. PVC/CPVC venting	°F/°C	230/110			
Combustion Air Temperature	°F/°C	32-104/0-40			
Gas Vent Category	Types	IV-BH : ANSI Z21.13a / CSA 4.9			
Vent Size - Single Pipe	Inch/mm	3/76.2	4/101.6	4/101.64	4/101.6
Vent Size - Connection Pipe	Inch/mm	80/125	100/150	100/150	100/150
Residual Fan Duty	inch w.c.	0.6	0.6	0.7	0.9
	mbar	1.5	1.5	1.8	2.2
Water					
Max. Water Temperature Safety Limit	°F/°C	230/110			
Operating Water Temp. Range PVC	°F/°C	68-158/20-70			
Operating Water Temp. Rang CPVC / PP / SS	°F/°C	68-190/20-88			
Water Pressure Range	psig/bar	12-56/0.83-3.86			
Water Coatent	USG/L	1.5/5.5	1.7/6.5	2.0/7.5	2.0/7.5
Water Flow Min.	USGPH	425	640	890	1360
Water Flow Max.	USGPH	1050	1450	1700	1700
Water Resistance (ΔT = 36°F/20°C	ft H_2O	3.0	4.4	4.7	8.2
	mbar	90	130	140	245
Electircal					
Main Supply	V/H/P	120 / 60 / 1			
Tating of the Main Fuse F1	A	6.3 A			
Power Consumption	W	3.5-68	3.5-79	3.5-129	3.5-209
Electrical Protection Index	IP-IEC-N	IP X4D / NEMA-3R			
Other Characteristics					
CSA Certified Installion Altitude	ft/m	Max. 4,500/1,370 (Canada) For higher altitudes consult factory			
Dry Boiler Weight	Lb/kg	117/53	133/60	148/67	150/68
Wetted Weight	Lb/kg	130/59	147/67	165/75	167/76
Noise Level at @ 1m (Aberage)	dB(A)	45	45	52	51

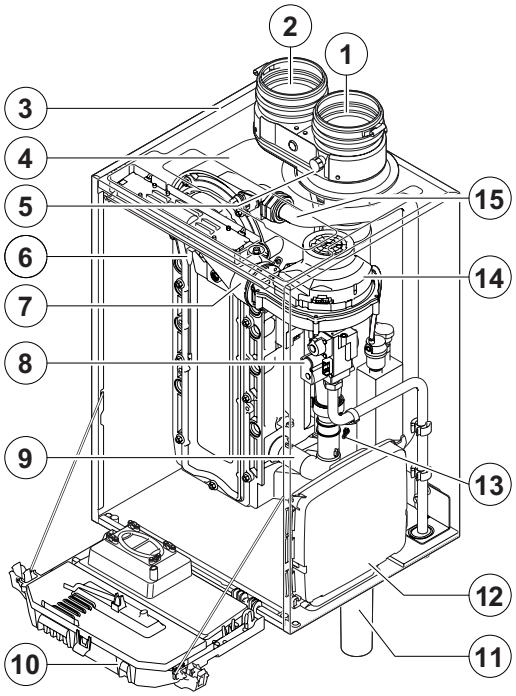
Technical description

General description

The MCA Pro boilers are high-efficiency wall-hung condensing gas-fired boilers

- High efficiency heating.
- Natural gas and propane gas-fired wall-mounted condensing heating boiler.
- Low emissions.
- Suitable for weather-responsive operation in closed loop, forced circulation hot water heating systems. Production of domestic hot water (DHW) can be assured by a separate DHW tank.
- Ideal for cascade systems. Consult factory.
- The boiler is suitable to operate from sea level to a maximum altitudes of 1370m/4550ft. (Above 700/2300ft. altitude, start and minimum fans speed setting should be change

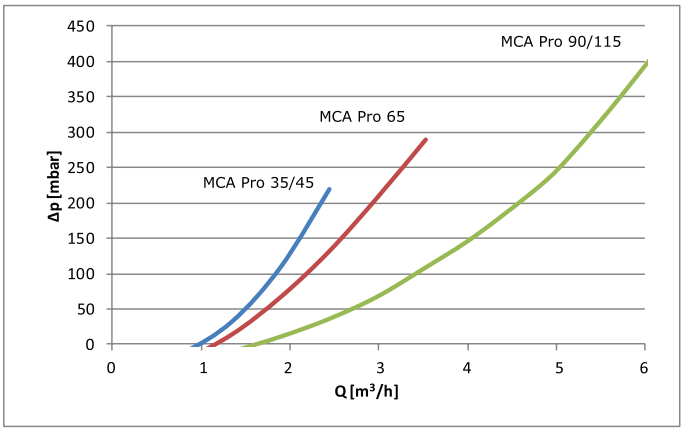
Main parts

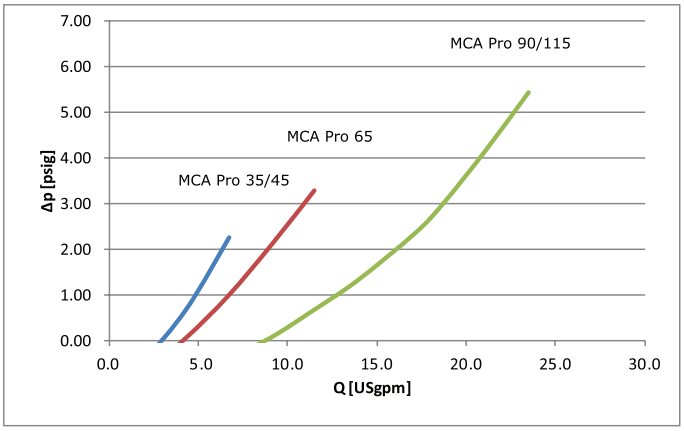


1. Flue gas exhaust
2. Combustion air
3. Boiler casing
4. Heat exchanger
5. Flue gas test port
6. Ignition/ionization electrode
7. Manifold pipe
8. Combined Venturi and gas valve unit
9. Air intake silencer
10. Control panel cabinet
11. Siphon
12. Auxilliary control cabinet
13. Flue gas temperature sensor
14. Fan
15. Internal heating supply pipe

Technical description

Operating principle





Δp Pressure drop
Q Water flow

Boiler pump

⚠ CAUTION

If the power consumption of the pump is more than 150 VA/1.3A, it must be connected to the SCU-S02 (Accessory)

The boiler is supplied without a pump. The proper pump selection has to reflect the pressure drop and system flow calculation which includes the DHW sizing.

Back flow preventer
A backflow preventer must be used in the cold water supply piping when required by national or local codes having jurisdiction.

If possible, install the pump directly under the boiler on the return connection. The pump must be pumping into the boiler.

Recommended pumps for the MCA Pro boilers are:

- Taco
- Wilo
- Grundfos

System in cascade

The boiler is ideally suited for a cascade system. There are a number of standard solutions available. For example:

- Cascade systems (quick assembly) for the installation of 2 to 6 boilers next to each other or 3 to 6 boilers mounted back to back on a free-standing frame. When the boilers are mounted next to each other, they can be mounted either on the wall or on a freestanding frame. The wall or the frame must be able to bear the weight of the boilers and must be sufficiently stable.
- Hydraulic separators/Low loss headers for a cascade system of 2 or 3 boilers (MCA Pro 45 and/or MCA Pro 65). The supply and return of each boiler can be directly connected to these.

i Please contact us for further information.

DHW tank connection

An indirect DHW tank can be connected to an individual boiler. The DHW tank can be connected to the boiler in two ways:

- Using a three-way diverting valve.
- Using a DHW tank pump.

Water low rate

The minimum and maximum waterflow, as listed on the next page should be taken into account to protect the boiler for to low- or high waterflow / temperature differences in the heat exchanger.

The boiler's modulating control system limits the maximum difference in temperature between the heating supply and return and the maximum speed at which the supply temperature increases, this could cause a reduction of heat output of the boiler.

Installation

Regulations governing installation

⚠⚠ WARNING

Installation of the boiler must be done by a qualified professional in accordance with prevailing local and national regulations. The professional must comply with local/national requirements.

Package list

Standard delivery

- The boiler is fitted with a 3-prong power supply cable/plug
- Power cable for pump
- Mounting rail and mounting accessories for wall mounting
- Wall mount template
- Connection kit accessory with separate assembly instructions
- Installation and Service Manual
- User Guide
- 3 tubes of X100 water treatment
- Outdoor sensor

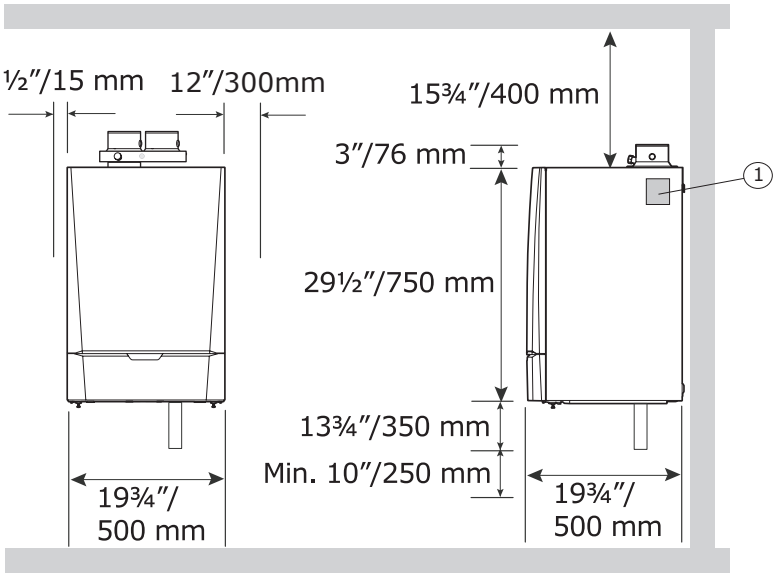
These installation and maintenance instructions deal only with the items included in a standard delivery. For installation and assembly of any accessories supplied with the boiler, see the relevant installation/assembly instructions.

Accessories/Options

Description
Pipe vent adapter 80/125 (MCA Pro 45)
Pipe vent adapter 100/150 (MCA Pro 65/90/115)
DHW sensor
IF-01 control PCB
SCU-S02 control PCB
Heat exchanger cleaning tool
Maintenance set A, B, C
Floor stand
Bacnet Gateway
Concentric Adapter

Installation

Rating plate & warning label location



Rating plate

1 Sticker boiler vent rating
2 Rating plate
3 Sticker explanation rating plate
4 Sticker warning and instructions

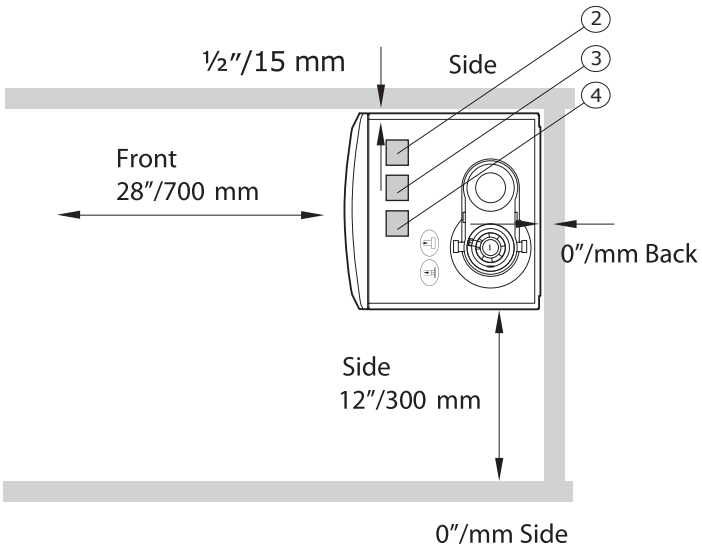
The boiler rating plate on top of the boiler features the boiler serial number and important boiler specifications, for example the model and unit category. Other instruction labels are affixed at the right side of the boiler casing.

Minimum service clearances

- Determine the ideal position for mounting the boiler. Take into account the prevailing codes and clearance requirements around the boiler.
- When choosing the position for mounting the boiler, bear in mind the authorised position of the combustion gas discharge outlets and the air intake opening.
- To ensure adequate accessibility to the appliance and facilitate maintenance, leave enough service space around the boiler.
- 12"/300 mm on the right hand side of the boiler is needed for reading warning and instruction stickers.

⚠⚠ WARNING

- Mount the appliance to a solid wall capable of bearing the weight of the appliance when full of water and fully equipped.
- It is forbidden to store flammable products and materials in the boiler room or close to the boiler, even temporarily.



Minimum Clearances to Combustibles

Top	Front	Rear	Left	Right	Vent pipe *
0	0 A, C	0	15mm	300mm	0

A = Alcove
C = Closet
* Refer to the Installation instructions

⚠ CAUTION

- The boiler must be installed indoors in a frost-free environment.
- A grounded electrical connection must be available close to the boiler.
- A connection to the drainage system for the discharge of condensate must be available close to the boiler.

Installation

Ventilation

- Installation, servicing and maintenance of this product must be performed by a licenced and trained heating contractor, experienced in hot water heating boilers as well as gas combustion. The installation must conform to all national and local codes having jurisdiction.
- In Canada: CSA B149.1 Gas Code
- In USA: ANSI Z223.1 (NFPA 54) Gas Code and ASME CSD-1. If you have any technical questions or need assistance with this product, please call your local Sales Representative or DDR Americas Inc.

(1) Distance between the front of the boiler and the internal wall of the cupboard.

⚠⚠⚠ DANGER

If the boiler is installed in a closed cupboard, respect the minimum dimensions given in the diagram (opposite). Also allow openings to obviate the following hazards:

- Accumulation of gas
- Heating of the cupboard
- Failure to heed this warning could result in personal injury, property damage or death.

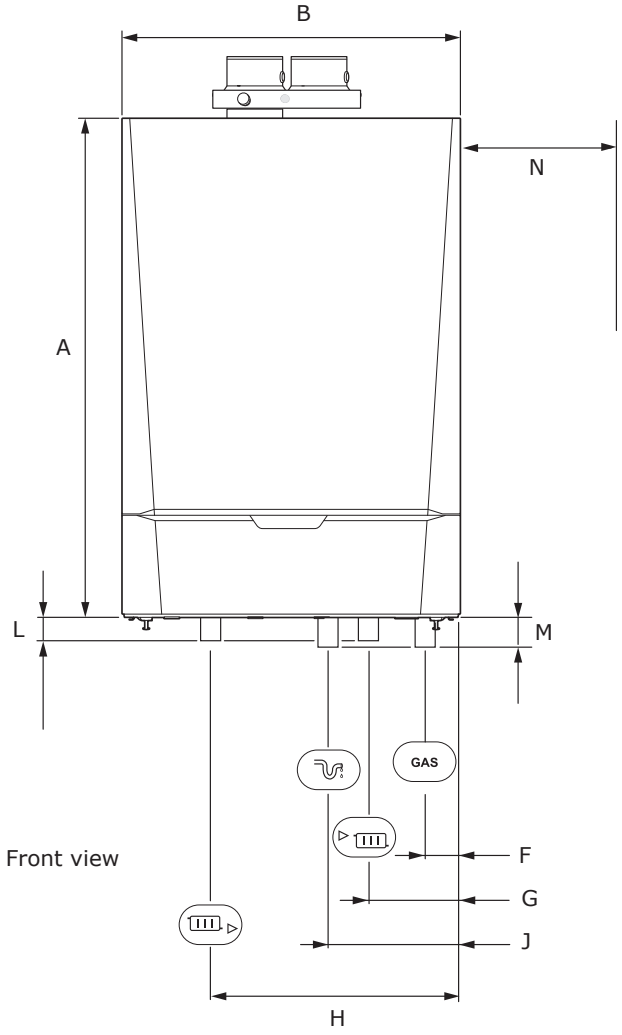
In the absence of local code requirements, the minimum cross section of the openings:
S1+S2 = 23.½ in^2/150 cm^2

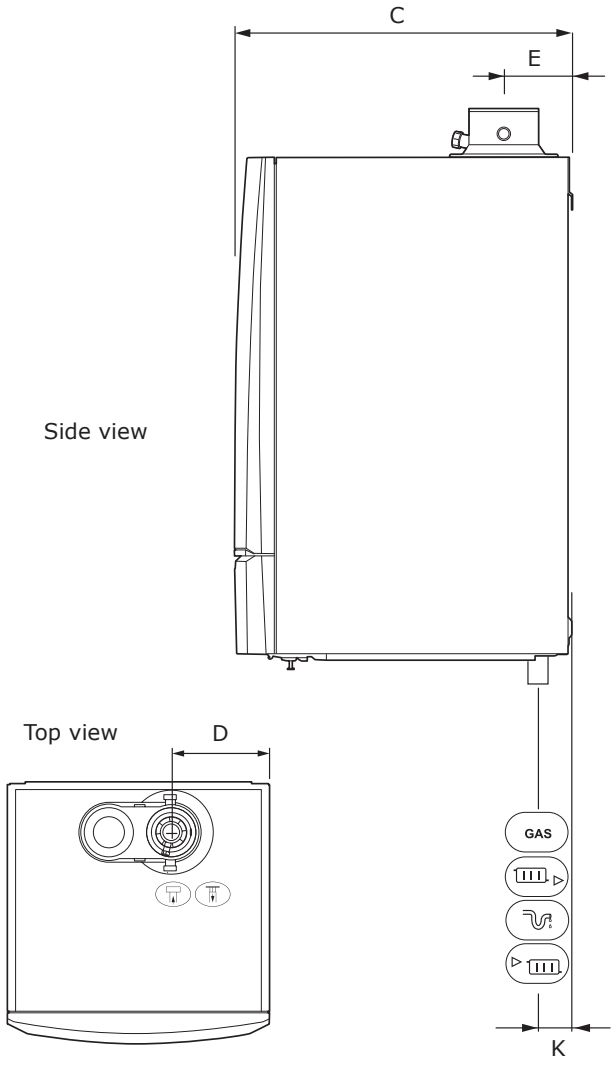
⚠ CAUTION

Follow local and national codes having jurisdiction

Installation

Dimensions without bottom connection kit accessory



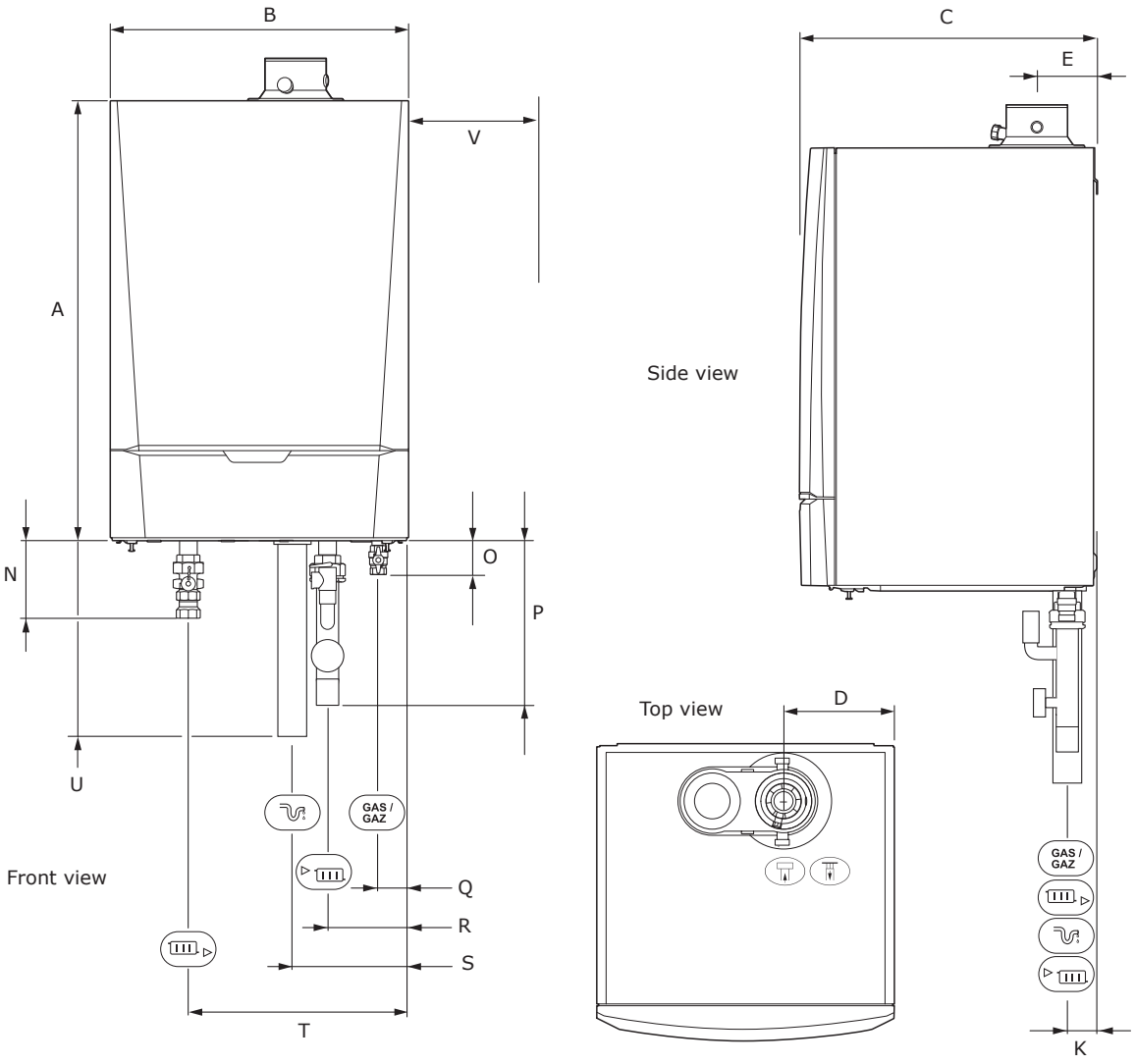


MCA Pro		
		inch/mm
A	Height	29½/750
B	Width	19¾/500
C	Depth	19¾/500
D	Right side/vent	7½/191
E	Back/vent	4/100
F	Right side/gas pipe	2/50
G	Right side/supply pipe	5⅛/130
H	Right side/return pipe	14⅜/365
J	P-trap	7½/191
K	Back/center of pipe	2/50
L	Pipe length of G and H	1 7/16/36
M	Pipe length of F and J	1½/40
N	Distance between boilers	12/300

	Connection of the vent pipe; 3"/80mm(MCA Pro 35/45), 4"/100mm(MCA Pro 65/90/115)
	Connection of the combustion air pipe; 3"/80mm (MCA Pro 35/45), 4"/100mm (MCA Pro 65/90/115)
	P-trap
	Heating circuit return pipe; 1¼" Male thread (NPT)
GAS	Gas connection; ¾" Male thread (NPT)
	Heating circuit supply pipe; 1¼" Male thread (NPT)

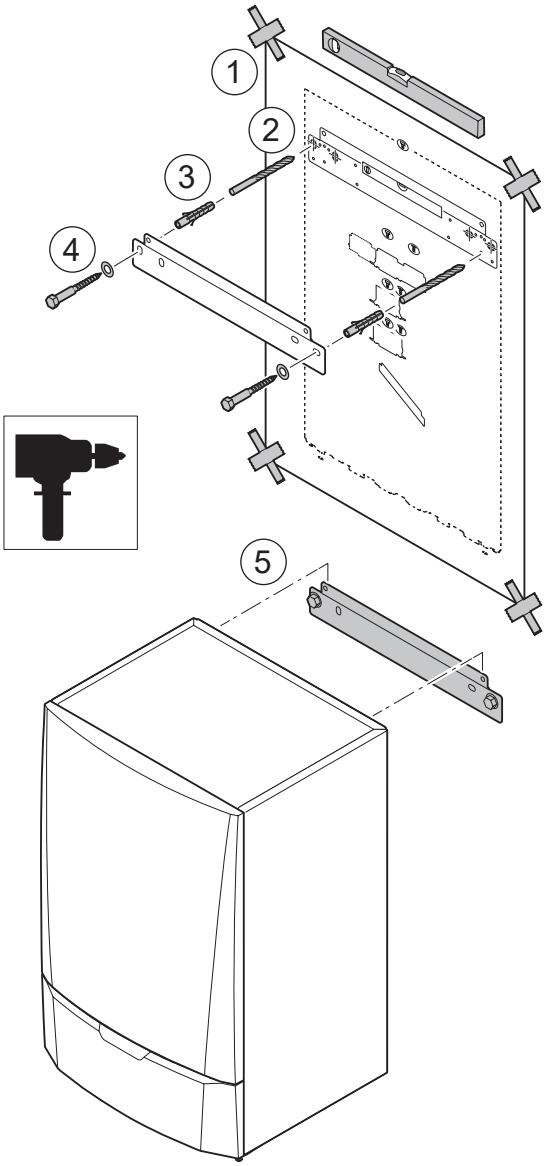
Installation

Dimensions with bottom connection kit accessory



MCA Pro		
		inch/mm
A	Height	29½/750
B	Width	19¾/500
C	Depth	19¾/500
D	Right side/vent	7½/191
E	Back/vent	4/100
K	Back/center of pipe	2/50
N	Pipe length of G and H	5⅜/135
O	Pipe length of F and J	2⅜/60
P	Supply pipe length	11⅛/282
Q	Right side/gas pipe	2/50
R	Right side/supply pipe	5⅛/130
S	P-trap	7½/191
T	Right side/return pipe	14⅜/365
U	P-trap length	13¼/335
V	Distance between boilers	12/300

	Connection of the vent pipe; 3"/80mm (MCA Pro 35/45), 4"/100mm (MCA Pro 65/90/115)
	Connection of the combustion air pipe; 3"/80mm (MCA Pro 35/45), 4"/100mm (MCA Pro 65/90/115)
	P-trap
	Heating circuit return pipe; 1¼" Male thread (NPT)
GAS	Gas connection; ¾" Male thread (NPT)
	Heating circuit supply pipe; 1¼" Male thread (NPT)



Mounting the boiler

Ensure the boiler and its controls are protected from dripping or spraying water during normal operation.
The boiler should be installed in a location so that any water leaking from the boiler or piping connection or relief valve will not cause damage or the area surrounding the unit or any lower floors in the structure.
The boiler is delivered with a mounting template.
A hanging bracket situated at the rear of the casing enables the boiler to be directly hung on the mounting bracket.

⚠ CAUTION

Check the stability of the wall before mounting the boiler.
Do not install the boiler on a non load bearing wall.

1. Position the mounting template to the wall with masking tape.

⚠ CAUTION

- Using a water level, check that the mounting template is perfectly horizontal.
- During mounting, cover up the vent to protect the boiler and its connections from dust and debris. Only remove this protection when the vent is fitted.
- The boiler must be installed such that no water can get into the boiler casing and electrical parts of the boiler.

2. Drill two Ø ⅝"/16 mm holes by 2”/50mm deep in the concrete.
3. Insert the ⅝”/16 mmwall plugs.
4. Attach the mounting bracket to the wall with the provided ⅝”/16 mm bolts.
5. Hang the boiler on the mounting bracket.
6. Alternately, the hanging bracket can be affixed to a ½"/13 mm plywood sheet fixed to the wall studs or a timber brace spanning the wall studs.

⚠ CAUTION

The boiler is delivered with a connection kit accessory. Install this set before carrying out the water and gas connections as described in the installation examples.

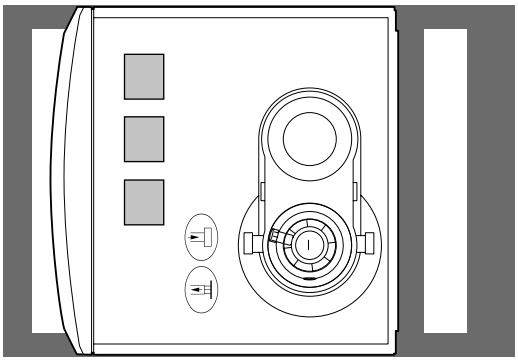
Floor stand assembly

Floor stand assembly

The MCA Pro boilers are designed for wall mounting using the provided wall bracket. Do not install the MCA Pro on the floor or on carpeting. If the MCA Pro is to be installed on the floor, an optional floor stand is available.

⚠⚠⚠ DANGER

When mounting the MCA Pro boiler on a wall, make sure the wall is able to support an minimum of 166.6 lbs/75.6 kg and is vertically plumb. Failure to heed this warning could result in personal injury, property damage or death.



Installation

Installation Examples

MCA Pro Boiler with one heating circuit

This is an example/reference ONLY. Ensure all federal/state/provincial and local codes are adhered to.

1 MCA Pro Boiler

2 Boiler pump with isolation valve

3 Heating load

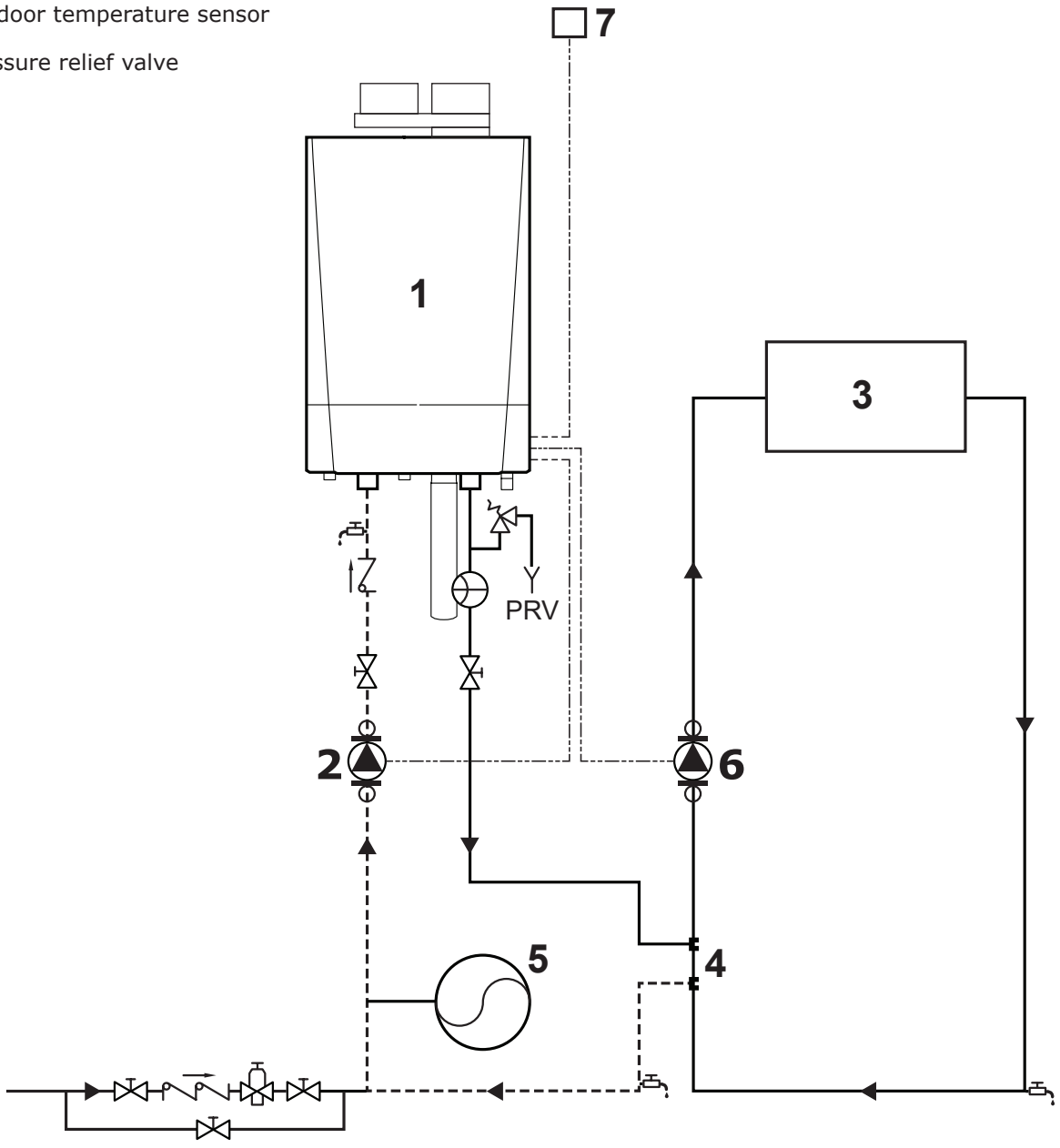
4 Closely spaced tees

5 Expansion tank

6 Heating system pump with isolation valve

7 Outdoor temperature sensor

PRV Pressure relief valve



Installation

MCA Pro Boiler with one heating circuit and DHW tank

This is an example/reference ONLY. Ensure all federal/state/provincial and local codes are adhered to.

1 MCA Pro Boiler

2 Boiler pump with isolation valve

3 Heating load

4 Closely spaced tees

5 Expansion tank

6 Heating system pump with isolation valve

7 Outdoor temperature sensor

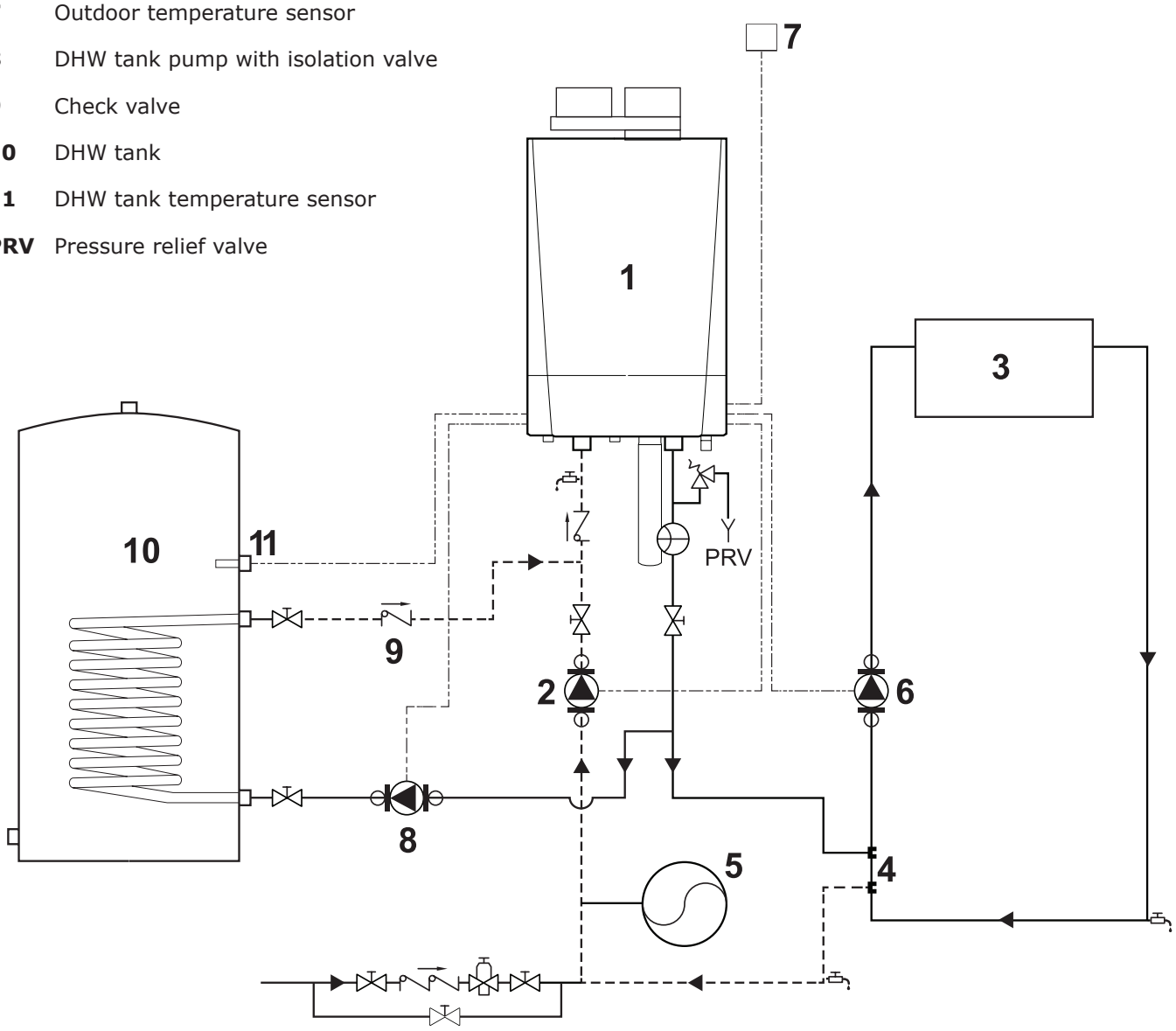
8 DHW tank pump with isolation valve

9 Check valve

10 DHW tank

11 DHW tank temperature sensor

PRV Pressure relief valve



Model RVW40

ASME HOT WATER SAFETY RELIEF VALVE

(10410 Series)

Job Name:	Contractor:
Job Location:	P.O. Number:
Engineer:	Representative:
Tag:	Wholesale Distributor:

DESCRIPTION

ASME Section IV capacity certified bronze safety relief valve for protection of hot water heating boilers, systems and similar equipment. It can be Pre-set to any pressure ranging between 20 to 80 psig (1.4 to 5.5 bar) at 250°F (121°C) max.

FEATURES

- ❒ ASME Section IV Certified Capacity
- ❒ Corrosion Resistant Construction
- ❒ Male or Female NPT inlet,
- ❒ Optional Polished or Satin Chrome Finish
- ❒ MADE IN THE USA

MATERIALS

Body: ASTM B584 Bronze
Spring: Stainless Steel
Seat: Silicone

OPTIONS

☑ 3/4" Male NPT ☐ 3/4" Female NPT
☑ B = Brass finish
☐ P = Polished chrome finish
☐ S = Satin chrome finish
☐ Set pressure (20-80 psig)

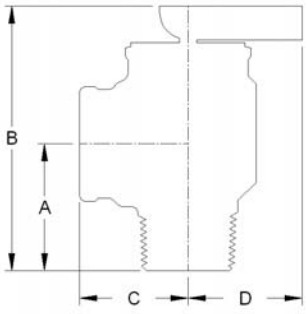
CAPACITY

Set Pressure PSIG (bar)	Capacity BTU/Hr
20 (1.38)	377,000
25 (1.72)	427,000
✓ 30 (2.07)	477,000
35 (2.41)	532,000
40 (2.76)	587,000
45 (3.10)	642,000
50 (3.45)	697,000
55 (3.79)	752,000
60 (4.14)	807,000
65 (4.48)	862,000
70 (4.83)	917,000
75 (5.17)	972,000
80 (5.52)	1,027,000

DIMENSIONS

Model	Series	Size	A	B	C	D
✓ RVW40	10417	3/4M	1.39 (35)	2.90 (74)	1.19 (30)	1.25 (32)
RVW40F	10418	3/4F	1.23 (31)	2.74 (70)	1.19 (30)	1.25 (32)

All dims in inches (mm)



APPROVALS

HV NB

ASME Section IV Heating Boilers
Canadian Registration Number 0G8547.5C

Conbraco Industries, Inc. 701 Matthews Mint Hill Rd. Matthews NC 28105 USA ; www.Apollovalves.com ; 704-841-6000