

# SelfCookingCenter® CombiMaster® Plus CombiMaster®

Original Installation Manual



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## Device transfer

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### Device transfer

Dealer	Specify for all queries:
Installer	Appliance model
	<input type="text"/>
	Device no.:
	<input type="text"/>
	Set to gas type:
	<input type="text"/>
	Your device was checked by:
	<input type="text"/>

# 1 Introduction

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## 1 Introduction

### 1.1 About this manual

- > This installation manual is part of the device, and contains information on its safe installation.
- > Read this installation manual completely before installing the device.
- > This installation manual must be kept available to installers at all times at the installation location.
- > Keep this installation manual on hand throughout the entire life of the device.
- > This installation manual is to be passed on to any subsequent operators of the device.

Target group

The target group for this installation manual are competent technicians who are familiar with the process of installing and operating the device.

Illustrations

All illustrations in this manual are examples only. Deviations between these illustrations and the device on site are possible.

# 1 Introduction

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This manual applies to the following devices:

- > all SelfCookingCenter® WE units
- > SelfCookingCenter® XS
- > all CombiMaster® Plus units
- > CombiMaster®

Abbreviations used in this manual:

Product name	Abbreviation used
SelfCookingCenter® WE	SCC
SelfCookingCenter® XS	SCC
CombiMaster® Plus	CMP
CombiMaster®	CM

Appliance size	Abbreviation used
6 x 2/3 GN	60
6 x 1/1 GN	61
6 x 2/1 GN	62
10 x 1/1 GN	11
10 x 2/1 GN	12
20 x 1/1 GN	21
20 x 2/1 GN	22

Unit sizes 60, 61, 62, 11, and 12 are referred to collectively as tabletop units.

Unit sizes 21 and 22 are referred to collectively as floor units.

Device overview:

	60	61	62	11	12	21	22
SCC Electro	X	X	X	X	X	X	X
SCC Gas		X	X	X	X	X	X
CMP Electro	X	X	X	X	X	X	X
CMP Gas		X	X	X	X	X	X
CM Electro		X		X			

# 1 Introduction

## 1.2 Warnings used



**DANGER!**

Directly hazardous situation that may result in severe injury or death.



**WARNING!**

Possibly hazardous situation that could potentially result in serious injury or death.



**CAUTION!**

Possibly hazardous situation that could result in minor injury.



**CAUTION!**

Fire hazard!



**CAUTION!**

Danger of burns!



**CAUTION!**

Corrosive substances!



**DANGER!**

High voltage.

Caution, danger to life

Non-compliance can result in severe injury or death.



**ATTENTION!**

Non-compliance may result in material damage.

# 1 Introduction

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## 1.3 Warranty

Exceptions to the warranty include

- > Damage to glass, light bulbs and seal materials,
- > Damage resulting from improper use, installation, maintenance, repair or descaling,
- > Use of the device for purposes other than those for which it is intended,
- > Modifications or technical alterations to the device not authorized by the manufacturer,
- > Usage of non manufacturer-original service components,
- > Damage resulting from failure to observe the instructions in this manual.



## 2 Safety instructions

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### 2 Safety instructions

Incorrect installation

- > Incorrect installation, service, maintenance or cleaning of this device can result in damage, injury or death, as can modifications to the device. Read the installation manual carefully prior to installation.

Device usage

- > The device may only be used for purposes of cooking food in commercial kitchens. All other uses are counter to its intended purpose, and may be dangerous.
- > The appliance is approved for use at altitudes up to 4,000 m pursuant to EN / IEC 60335.

Gas appliances



#### WARNING!

Combustion gases!

When installing under an exhaust hood: Switch the exhaust hood on when the device is in operation.



#### WARNING!

Fire hazard!

When connecting to a chimney: Clean the ventilation pipe regularly in accordance with country-specific regulations (contact installer).

- > Do not place anything atop the device's exhaust pipes.
- > Make sure that the area around the combustion air extractor is not blocked by any objects.
- > Only operate in wind-free areas.

## 2 Safety instructions

---

### Operating personnel

- > This appliance must not be used by children or by persons with reduced physical, sensory or mental capabilities, or by persons with insufficient experience and/or knowledge, unless such persons are under the supervision of another person who takes responsibility for their safety and the persons have been notified of the hazards of the appliance.
- > Cleaning and user maintenance may not be performed by children even under supervision.
- > To avoid accidents or damage to the device, it is imperative that operating personnel receive regular training and safety instructions.

### Explosion hazard



#### **WARNING!**

#### Explosion hazard

If you smell gas:

- > Shut off gas supply immediately,
- > Do not touch any electrical switching elements,
- > Ventilate the room well,
- > Avoid any open flames or sparks,
- > Use an external telephone to inform the gas provider immediately. If the gas provider cannot be reached, call the local fire department.

## 3 Installation instructions

---

### 3 Installation instructions

- Standards
- > The mentioned standards are according to German regulations.
  - > Local and country-specific standards and regulations regarding the installation and operation of commercial cooking appliances must be observed at all times.
  - > In all other countries, the corresponding country-specific standards and regulations are to be observed.
- Liability / Warranty
- > Damage occurring as a result of non-compliance with installation instructions is excluded from the warranty.
  - > Installations and repairs not carried out by authorized professionals or not using original spare parts, and technical modifications to the machine which are not approved by the manufacturer, void the manufacturer's warranty and product liability.
- Conformity
- > Device conformity is in reference to the overall unit at the time of delivery. The operator is responsible for ensuring extended conformity following any expansions/connection of additional functions.
- Connection work>
- The necessary connections (water, electricity, and gas) must only be set up by trained professionals in accordance with local regulations.
- Prior to installation
- > Check the device for transport damage. If you suspect the device has been damaged in transit, contact your specialist dealer/freight forwarder immediately!
- Disposing of old appliances
- > When the device reaches the end of its service life, it must not be taken to a municipal collection point for trash or used electrical appliances. We would be pleased to assist you in disposing of the device.

### 3 Installation instructions

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- Air filter maintenance:
- > The device automatically detects dirty air filters. It will display a service prompt instructing you to replace the air filter.
  - > Never operate the device without the air filter.

When replacing the air filter, please note:

Tabletop units                      The user may replace the air filter. To replace the air filter, carefully latch the new filter into the correct position. Follow the instructions in the Building Equipment and Appliances chapter of the user's manual.

Unit size 60                              Air filter part number: 40.04.771

Unit sizes 61, 62, 11 and 12              Air filter part number: 40.02.684

Floor units                              Air filters on these units must only be replaced by authorized service partners.



#### **ATTENTION!**

Water jet protection and reach-through protection on floor units are only guaranteed if air filter and cover are correctly installed.

## 4 Device transportation

### 4 Device transportation



#### CAUTION!

Risk of injury!

Device may tip.

When transporting: Secure the device against tipping.



#### CAUTION!

Risk of injury!

Note device weights.

Use lifting aids.

Wear safety shoes.

Weight (without packaging)

	60	61	62	11	12	21	22
SCC Electro [kg]	72	111	145	136	189	266	343
SCC Electro [lb]	159	245	320	300	417	586	756
SCC Gas [kg]		130	173	159	205	294	381
SCC Gas [lb]		287	381	351	452	648	840
CMP Electro [kg]	62	103	147	132	182	254	334
CMP Electro [lb]	137	227	324	291	401	560	736
CMP Gas [kg]		114	160	143	196	284	354
CMP Gas [lb]		251	353	315	432	626	780
CM Electro [kg]		99		128			
CM Electro [lb]		218		282			

Unit size 60



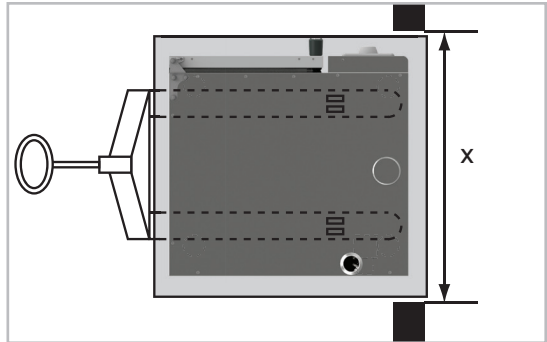
#### ATTENTION!

Risk of damage to the device!

When transporting device, ensure that air filter box and USB port remain undamaged.

## 4 Device transportation


Transporting unit with pallet:



Note required door width:

Appliance size	60	61	62	11	12	21	22
x [mm]	880	920	1120	920	1120	950	1150
x [Inch]	34 3/4	36 1/4	44 1/8	36 1/4	44 1/8	37 1/2	45 1/4

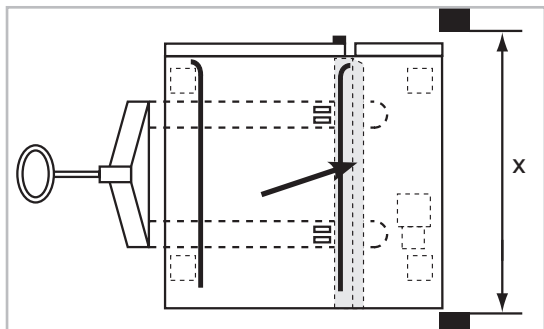
Transporting unit without pallet:

 **ATTENTION!**

Risk of damage to the device!

Only floor units may be transported without a pallet using hand lifts.

Lay wooden beams underneath in gray area.



## 4 Device transportation



### ATTENTION!

Risk of damage to the device!

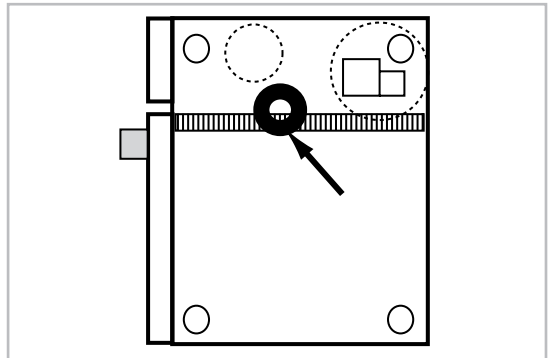
Tabletop units not secured with a palette may only be transported using carrying straps.

Note required entrance width:

Appliance size	60	61	62	11	12	21	22
x [mm]	630	845	1045	845	1045	925	1145
x [Inch]	24 6/8	33 1/4	41 1/8	33 1/4	41 1/8	36 3/8	45 1/8

Center of mass

Keep the device's center of mass in mind to prevent it from tipping over.



### ATTENTION!

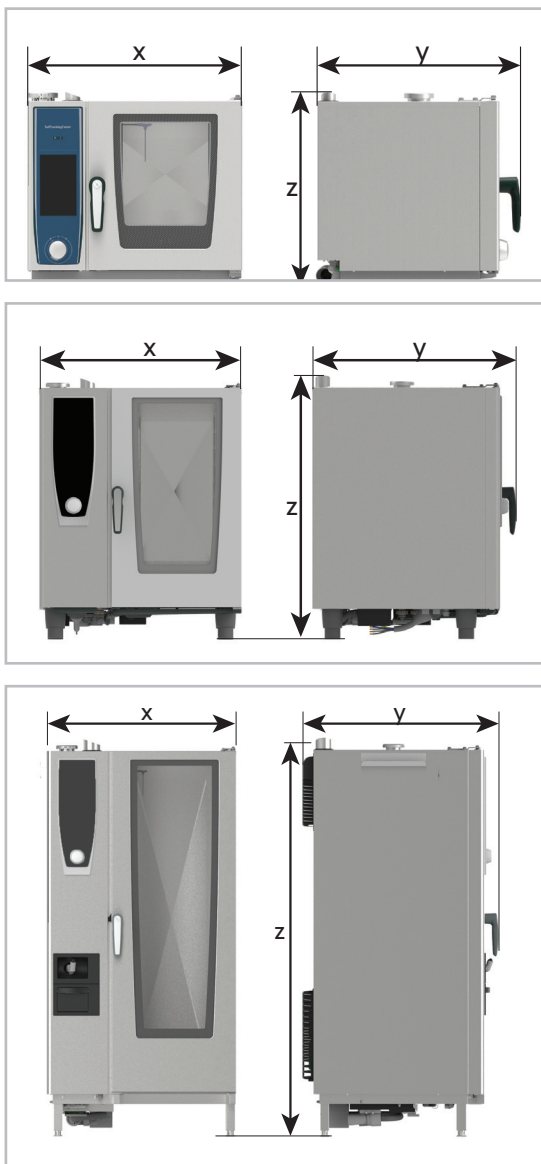
Risk of damage to the device!

Note height of entrances.

## 5 Setting up the device

### 5 Setting up the device

#### 5.1 Device dimensions





## 5 Setting up the device

Width x	60	61	62	11	12	21	22
SCC, CMP, CM [mm]	657	847	1069	847	1069	879	1084
SCC, CMP, CM [Inch]	25 7/8	33 3/8	42 1/8	33 3/8	42 1/8	34 5/8	42 5/8

Depth y	60	61	62	11	12	21	22
SCC, CMP, CM [mm]	623	843	1043	843	1043	909	1114
SCC, CMP, CM [Inch]	24 1/2	33 1/4	41 1/8	33 1/4	41 1/8	35 3/4	43 7/8

Height z	60	61	62	11	12	21	22
SCC, CMP, CM el [mm]	598	832	832	1092	1092	1842	1842
SCC, CMP, CM el [Inch]	23 1/2	32 3/4	32 3/4	43	43	72 1/2	72 1/2
SCC, CMP gas [mm]		832	832	1092	1092	1842	1855
SCC, CMP gas [Inch]		32 3/4	32 3/4	43	43	72 1/2	73

## 5 Setting up the device

### 5.2 Minimum distances



#### ATTENTION!

Device overheating may cause material damage!

If the ambient temperature to the left of the device becomes too high, it may trigger an emergency shutdown of the device.



#### ATTENTION!

Device overheating may cause material damage!

Do not install fryers onto the back of the device.

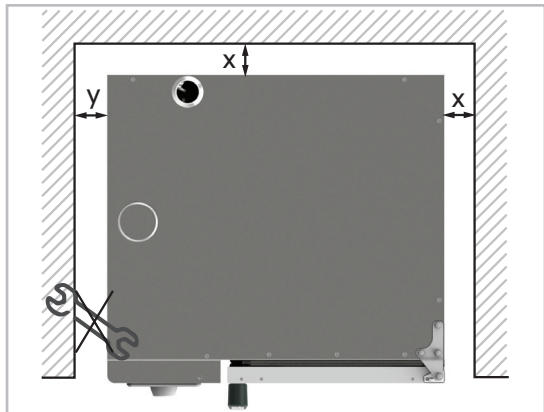


#### ATTENTION!

Frost may cause material damage!

Only install devices in frost-proof rooms.

Minimum distance to walls

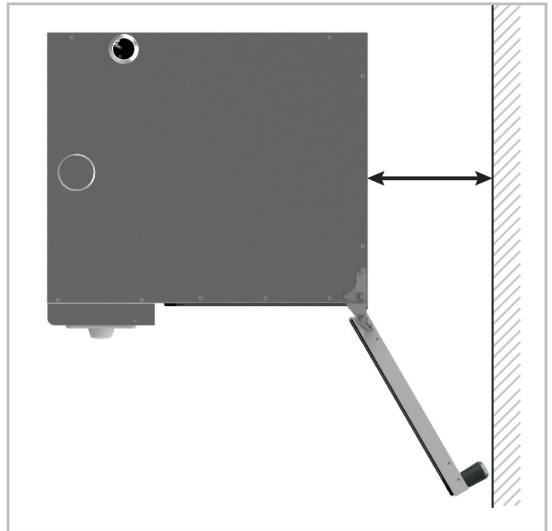
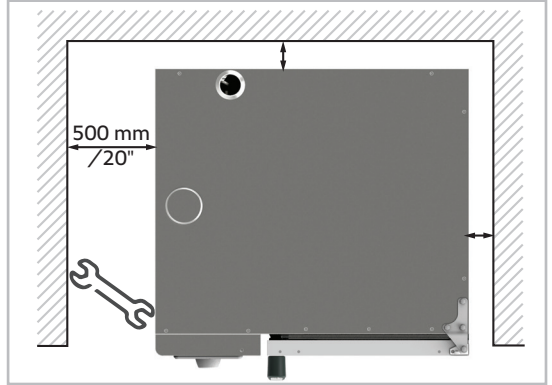


## 5 Setting up the device

Appliance size	60	61	62	11	12	21	22
x [mm]	10	50	50	50	50	50	50
x [Inch]	1/2	2	2	2	2	2	2
y [mm]	10	50	50	50	50	500	500
y [Inch]	1/2	2	2	2	2	20	20

### Recommendation

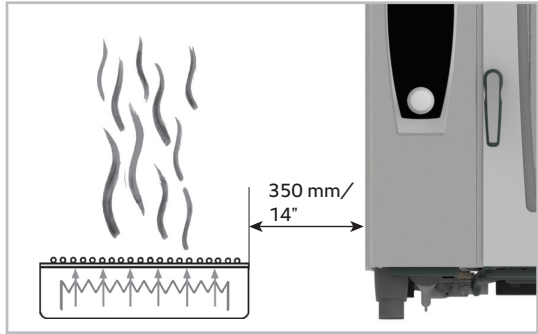
At least 500 mm away from left side of the device so that service work can be performed.



Appliance size	60	61	62	11	12	21	22
x [mm]	279	246	316	246	316	268	338
x [Inch]	11	10	12 1/2	10	12 1/2	11	13

## 5 Setting up the device

Minimum distance to other devices Minimum 350 mm distance between left side of the device and heat sources.



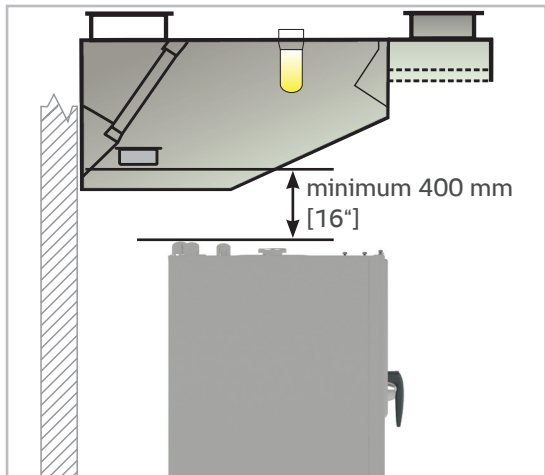
Heat shield

If it is not possible to keep the left side (or right, on 61 and 11) of the device a sufficient distance away from heat sources, a heat shield can reduce thermal loads.

Minimum distance to ceiling

Gas appliances:

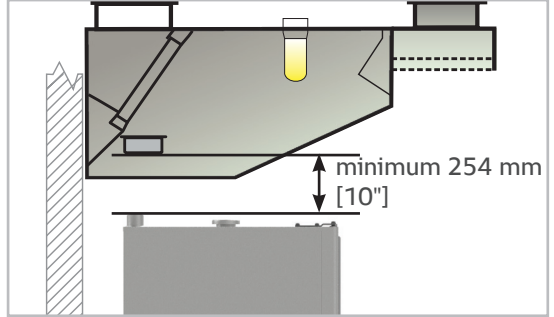
A distance of at least 400 mm [16"] must be kept between the flue pipes of the appliance and the grease filters of the exhaust hood / ventilation ceiling .



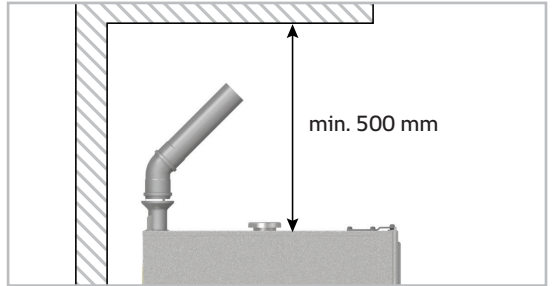
# 5 Setting up the device

## Electric appliances

A distance of at least 254mm [10"] must be kept between the vent pipe of the appliance and the grease filters of the exhaust hood / ventilation ceiling .



If steam from the ventilation pipe cannot be directed into an exhaust hood or a ventilating ceiling, there must be at least 500mm clearance space above the device.



## Condensation breaker

This clearance space is sufficient to install a condensation breaker so that exhaust air can be directed into non-critical areas.

## Other



### ATTENTION!

Device malfunction!

Avoid vapor sources near the cooling air filter. Moisture intake may result in device malfunctions.

## 5 Setting up the device

### 5.3 Securing the device

#### 5.3.1 Tabletop units

Unit size 60

For safety reasons, tabletop units should only be placed atop a manufacturer-original oven stand or base unit. Maximum working height for the topmost rack is 1600 mm.

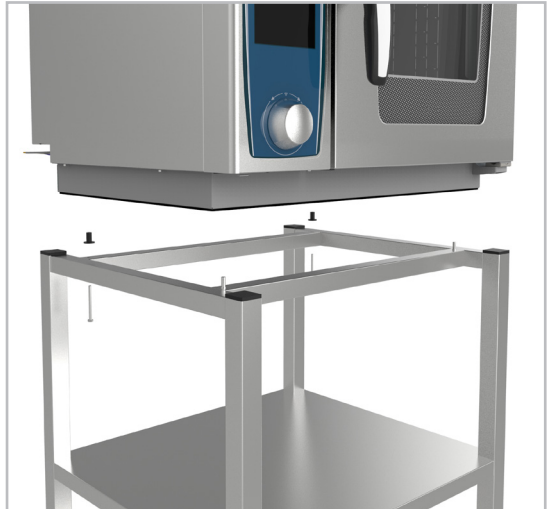
These units do not have height-adjustable feet; instead, they are set up directly on the installation surface.

The installation surface must be level, clean and free of grease. Unevenness across the width of the device must be no greater than 1 mm.

A sealant band is affixed to the underside of the device to seal the installation site. This prevents dirt from getting underneath the device. When moving the device, take care not to damage this seal.

Mounting onto an oven stand:

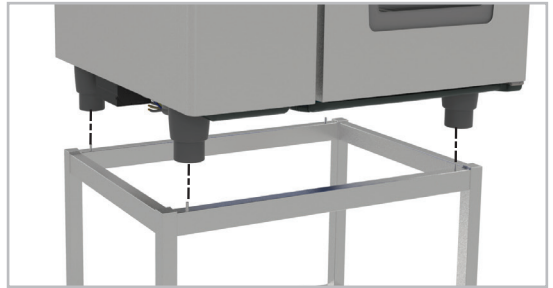
Insert the two included neoprene blind rivet nuts into the holes in the rear part of the underbody. Place the device onto the oven stand. Secure in place using the screws provided.



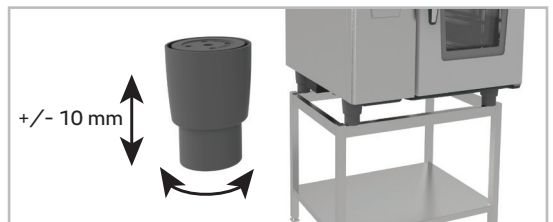
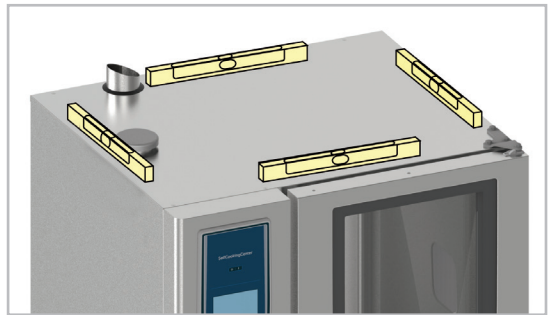
## 5 Setting up the device

Unit sizes 61, 62, 11, 12

- > Place the unit onto the stand. Lock the feet of the unit in place using the locating pins on the stand.



- > Level the device



Gas appliances:



**WARNING!**

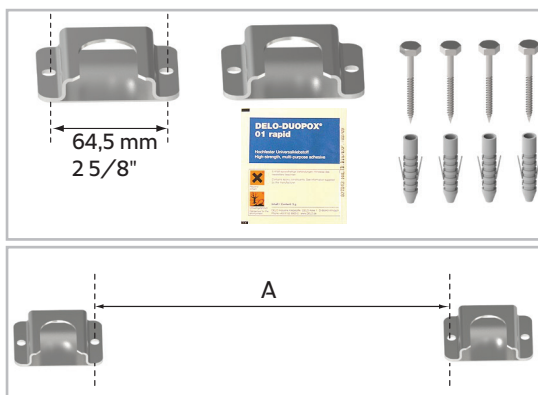
Risk of damage / injury!

Secure the gas device against slipping.

## 5 Setting up the device

Installing onto an original oven stand:

- > use the mounting kit (Part number 8700.0317) to attach the stand to the floor, either with screws and dowels or with the special adhesive provided.



Appliance size	61 / 11	62 / 12
A [mm]	745.5	965.5
A [Inch]	29 3/8	38



### NOTE!

Oven stand mounting set is not included in delivery and must be ordered separately.

- > Insert the oven stand into the foot locks and set the stand up horizontally in the installation location.





## 5 Setting up the device

Securing a gas appliance:

Installing onto an original oven stand, a work table or onto the kitchen floor (e.g., Combi-Duos):

- > Connect unit feet with foot locks (Part number 12.00.519):
  - 1 Unscrew the bases of the feet
  - 2 Push the retaining plates into the bases and secure using the nuts provided
  - 3 Screw the bases back in with the retaining plates in place
- > Secure the retaining plates to the installation site using screws and dowels or nuts and bolts.



**NOTE!**

Oven stand foot locks are not included in delivery and must be ordered separately.

Movable oven stands/base units



**WARNING!**

Risk of damage / injury!

Damage to electrical or gas lines

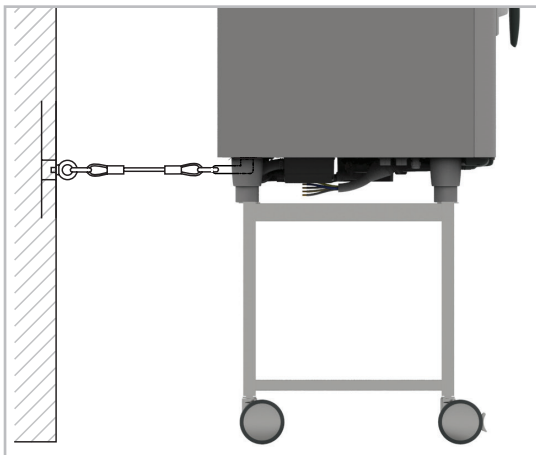
When mounting onto a rolling base unit or movable oven stand, secure additionally with a chain or rope to prevent slippage.

## 5 Setting up the device



### NOTE!

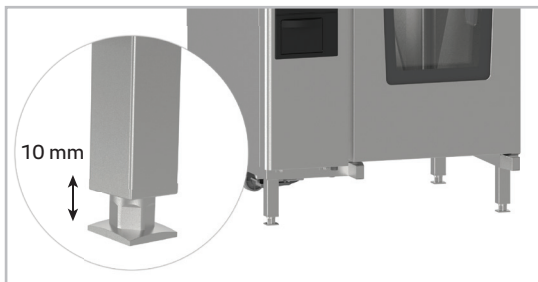
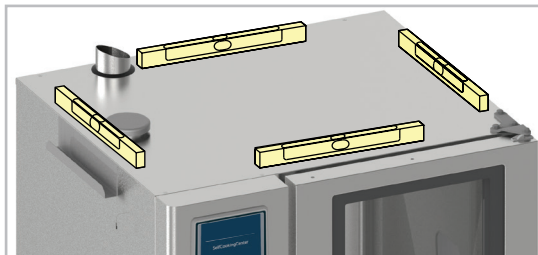
Oven stand foot locks are included in delivery with movable oven stand.



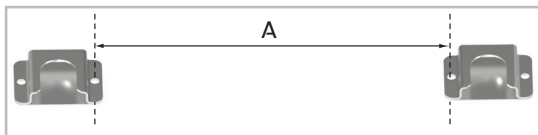
## 5 Setting up the device

### 5.3.2 Floor units

Make sure the unit is level.



Secure the unit against slipping. The enclosed mounting kit may be used to do this.



Appliance size	21	22
A [mm]	732.5	937.5
A [Inch]	28 7/8	37

## 5 Setting up the device

If using the mounting kit, push the floor unit into the foot locks.



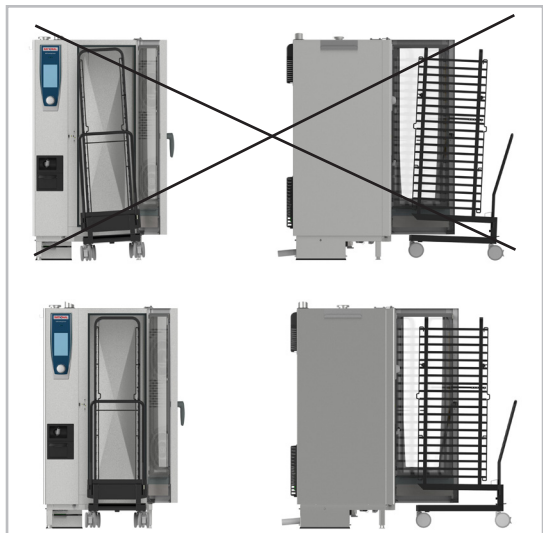
### Mobil oven racks

Make sure the mobile oven rack is positioned level within the unit.



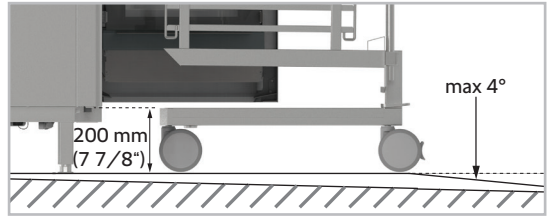
**ATTENTION!**

Incorrectly aligning the oven rack may cause the device to malfunction (e.g., during cleaning).



## 5 Setting up the device

Make sure there is 200mm distance between the upper edge of the entry ramp and the floor with the unit feet.



Checking the cooking cabinet door for leaks

SCC: activate the "Rinse Without Tabs" cleaning programme.

CMP: activate the interim cleaning (CLE3) cleaning programme.

Entry ramp

If the floor is uneven, use an entry ramp to compensate the unevenness. The approach angle must be no greater than 4°.



### WARNING!

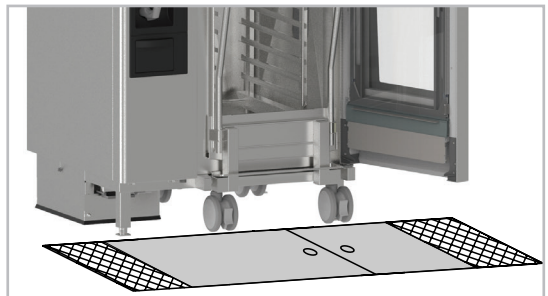
Scalding hazard!

Hot cooking liquid

Exceeding the approach angle can result in hot cooking liquid spilling over from cooking vessels.

Gully grids in front of floor units:

Position the rolling aid near the entry area of the mobile oven rack.



## 5 Setting up the device

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### Handle storage

The included holder provides a secure place to store the mobile oven rack handle during cooking. Insert the holder into the left side wall of the unit. Remove the side wall to mount the holder. Then attach the handle.



### NSF cover panel

For hygiene reasons and in accordance with NSF Standard 4 or DIN EN 203-3, a cover panel must be installed over the ball cock or the cleaning pump on Units 21 and 22. This cover is included with the unit.



## 6 Electrical connection

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### 6 Electrical connection



**DANGER!**

Danger to life!

High voltage.

Observe local energy supply company regulations during installation!



**WARNING!**

Danger to life!

Connecting incorrectly may result in electric shock!

Note color coding of wires!

Color coding of wires:

yellow/green = protective conductor,

blue = neutral conductor

brown, gray or black = phase L1, L2, L3



**ATTENTION!**

Improper connection can cause damage to the unit (e.g., fan motor).



**DANGER**

Danger to life!

All electric circuits must be turned off before you access the supply circuits.

## 6 Electrical connection

### 6.1 General information

Only connect the device in accordance with the installation instructions and the information on the rating label.

Connect the device to a standard power supply in accordance with the applicable regulations.

Observe VDE regulations and/or local energy supply company regulations!

All devices are installed with a protective conductor terminal. It may also be necessary to include a RCD fault-current circuit breaker when installing the device to comply with country-specific standards and regulations. In this case:

Appliance size 61 - 22

Connect appliances to a type B (RCD type B) residual current circuit breaker.

Appliance size 60

Connect appliances of 1 NAC 220V/230V/240V voltages to a type A (RCD Type A) or optionally to a type B (RCD type B) residual current circuit breaker.

Connect appliances of other voltages to a type B (RCD type B) residual current circuit breaker.



#### CAUTION!

Improper installation can lead to personal injury or property damage!

Customer: provide accessible all-pole disconnect device with at least 3mm contact separation.

Appliances with the “USV” option

With the “USV” appliance option, electronic components can be connected to a stable voltage supply.

With this option, a second connection cable for the electronic components will be brought out of the appliance.

When performing servicing work in the appliance, both voltage sources must be disconnected from the mains.



## 6 Electrical connection

UltraVent, hood

Prior to performing servicing work, all appliances and the UltraVent or hood must be disconnected from the mains.

Remove the left side panel to access the connection port.

Removing the left side wall

- > Remove the screws on the bottom of the side panel.
- > Pull the side panel down from the device.
- > Remove the side panel.



Units 12, 21 and 22 Electro:

Maximum connection impedance at the grid connection point is  $0.09\Omega$ .

The cross-sections of the connection lines depend on current consumption and local regulations.

## 6 Electrical connection

---

### 6.2 Electrical devices

	Each device should have its own protected power supply line. Use a fixed connection to connect each device to the power supply.
3NAC 400V only	Either a fixed connection or a plug connection may be used to connect the device to the power supply.
Tabletop units	are equipped with power cables (without plugs). The cables are around 2.5 m in length.
Floor units	are delivered without power cables.
Cable connection point	The main fuse (tabletop units) or connection terminal (floor units) is behind the removable left side panel inside the electrical compartment.

### 6.3 Gas devices

We recommend that each device have its own protected supply line.

Either a fixed connection or a plug connection may be used to connect the device to the power supply.

All units (floor and tabletop units) are delivered with an approximately 2.5 m connection cable (without plug).



#### ATTENTION!

Non-functioning device!

Note polarity of electrical connection! Burners will not function if polarity is incorrect.

Floor units	If the standalone units are secured with a circuit breaker, this must be at least of type "C".
-------------	--

## 6 Electrical connection

### 6.4 Power supply cable



#### ATTENTION!

In order to avoid hazards, the mains power cable may only be replaced by the manufacturer, its customer service representative or similarly qualified personnel.



#### ATTENTION!

Non-functioning device!  
Tighten mains lead cleat.

Electrical devices:

Connect a supply cable of at least Type H07RN-F and tighten the mains lead cleat.

Connect the cable according to the following diagram:

Gray connector terminals:

L1, L2, L3 (independent of rotary field).

Blue connector terminal:

Neutral conductor (neutral wire) (3NAC only).

Yellow-green connector terminals: Protective conductors.

Gas devices:

Should the connection line need to be replaced as part of service work, use a cable of quality no less than H05 RN-F 3x2.5mm<sup>2</sup>.

## 6 Electrical connection

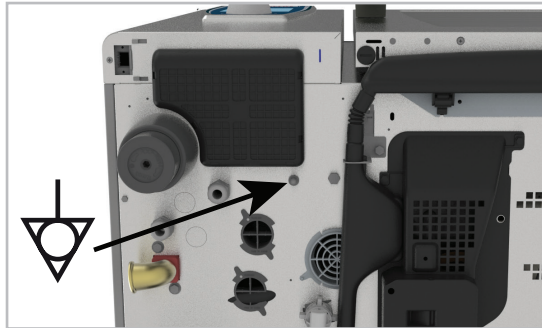
### 6.5 Equipotential bonding

A connection site for optional equipotential bonding is located on the bottom or the back of the device.

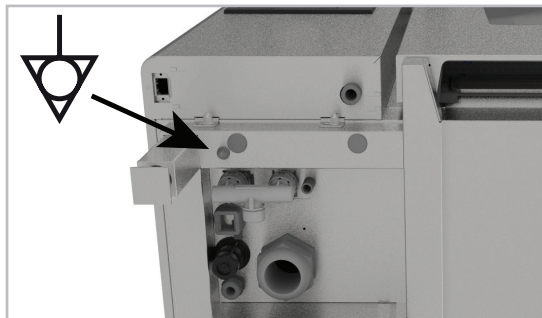
60:



61, 62, 11, 12:



21, 22:



## 6 Electrical connection

### 6.6 Connection values

SCC, CM\_P, CM Electrical devices

Appliance size	60	61	62	11	12	21	22
Input voltage	Power [kW] / Current consumption [A]						
3 AC 200V	5,3 / 15,5	10,1 / 29,8	20,7 / 59,1	17,2 / 49,5	34 / 97,6	34,3 / 99	62,3 / 182
3 AC 230V	5,70 / 14,5	11,2 / 27,9	22,3 / 55,5	18,6 / 46,5	36,7 / 91,6	37 / 92,9	67,3 / 168
3 NAC 400V	5,7 / 8,5	11 / 16	22,3 / 32,2	18,6 / 26,7	36,7 / 52,7	37 / 53,4	65,5 / 95,5
3 AC 400V		11 / 16	22,3 / 32,2	19,6 / 26,7	36,7 / 52,7	37 / 53,4	65,5 / 95,5
3 NAC 415V	6,2 / 8,7	11,2 / 16,7	24,2 / 33,3	20,2 / 28	39,9 / 55,1	39,9 / 55,1	70,7 / 99,5
3 AC 440V		11,2 / 14,6	22,3 / 29	18,6 / 24,3	36,7 / 47,9	37 / 48,5	67,3 / 88,3
3 AC 480V		11,2 / 13,4	22,3 / 26,7	18,6 / 22,3	36,7 / 44	37 / 44,7	67,3 / 80,9
1 NAC 230V	5,3/ 22,9	11,2 / 48,3					
1 NAC 240V	5,7/ 24	12 / 50					
2 AC 230V	5,3/ 22,9						
2 AC 240V	5,7 / 24	11,2 / 47					

## 6 Electrical connection

### SCC\_WE, CM\_P Gas devices

Appliance size	61	62	11	12	21	22
Input voltage	Power [kW] / Current consumption [A]					
1NAC 100V	0,4 / 4		0,5 / 5		0,95 / 9,5	
1NAC 110V	0,4 / 3,7		0,5 / 4,5		0,95 / 8,7	
1NAC 120V	0,4 / 3,4		0,5 / 4,2		0,95 / 7,9	
1NAC 127V	0,4 / 3,2		0,5 / 4		0,95 / 7,5	
1NAC 220V	0,4 / 1,8	0,77 / 3,5	0,5 / 2,3	0,8 / 3,7	0,95 / 4,3	1,6 / 7,33
1NAC 230V	0,4 / 1,74	0,77 / 3,35	0,5 / 2,17	0,8 / 3,48	0,95 / 4,13	1,6 / 6,96
1NAC 240V	0,4 / 1,66	0,77 / 3,21	0,5 / 2,1	0,8 / 3,33	0,95 / 3,96	1,6 / 6,66
2 AC 200V	0,4 / 2	0,77 / 3,85	0,5 / 2,5	0,8 / 4,0	0,95 / 4,75	1,6 / 8
2 AC 220V	0,4 / 1,8	0,77 / 3,5	0,5 / 2,3	0,8 / 3,7	0,95 / 4,3	1,6 / 7,3
2 AC 230V	0,4 / 1,74	0,77 / 3,35	0,5 / 2,17	0,8 / 3,48	0,95 / 4,13	1,6 / 6,96
2 AC 240V	0,4 / 1,66	0,77 / 3,21	0,5 / 2,1	0,8 / 3,33	0,95 / 3,96	1,6 / 6,66

## 6 Electrical connection

Fuse [A]

	60	61	62	11	12	21	22
3 AC 200V	16	35	63	63	100	100	200
3 AC 230V	16	32	63	63	100	100	200
3 NAC 400V	10	16	32	32	63	63	100
3 AC 400V		16	32	32	63	63	100
3 NAC 415V	10	16	40	32	63	63	100
3 AC 440V		16	32	32	63	63	100
3 AC 480V		15	32	25	50	50	100
1 NAC 230V	25	50					
1 NAC 240V	25	50					
2 AC 230V	25	50					
2 AC 240V	25	50					

Maximum permissible tolerance for input voltage (see type label for input voltage) is within the range of -15% to + 10%.

## 7 Water connection

### 7 Water connection

The device complies with all relevant regulations (SVGW, KIWA, WRAS).

#### 7.1 Prerequisites

- > The user must supply each device with its own water tap.
- > Rinse the water supply line before connecting the device to water!
- > Water pressure (dynamic pressure ) 1.5 - 6bar, 3bar recommended.

#### Unit CMP XS

due to descaling of the steam generator:

- > Drinking water protection for substance class 3 pursuant to EN 1717, such as a CA system separator pursuant to EN 14367, must be installed in the feed line on the tap at the drinking water network connection point.
- > The CA system separator is supplied for NL and CH, and are available through RATIONAL using part number 50.01.820 for other European countries.

#### All other appliances

meet the requirements for drinking water protection pursuant to EN1717 in as-delivered condition.

- > Flow rates required for each device (max.):

Appliance size	60	61	62	11	12	21	22
l/min	7	20	25	20	25	25	25

Connect the device to drinking water-quality water.

Connect a flexible drinking-water connection hose in accordance with EN 61770 or EN 13618 or of similar quality. Take any necessary safety precautions with the water tap, such as backflow preventers or CA system separators.

The water connection hose must comply with country-specific hygiene standards for drinking water hoses.

Water connection hoses complying with EN



## 7 Water connection

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61770 are available through Rational using part number 2067.0709.

The materials used in this connection hose meet KTW, DVGW W270, WRAS and FDA requirements.

Use only new hoses as water connections. Do not re-use old hoses.



### ATTENTION!

Non-functioning device!

Ensure that the minimum water conductivity value of  $50\mu\text{S}/\text{cm}$  (Micro Siemens) is maintained.

UK only:

WRAS approval IRN R160

To be carried out by the installer:

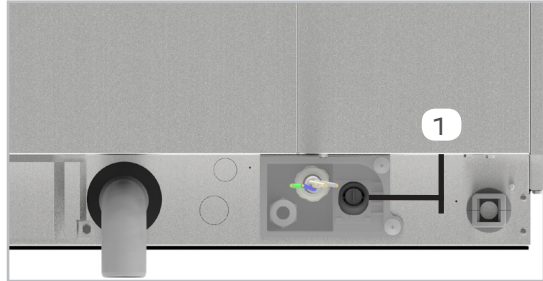
An approved double check valve or some other no less effective backflow prevention device shall be fitted at the point of connection directly to the water tap.

## 7 Water connection

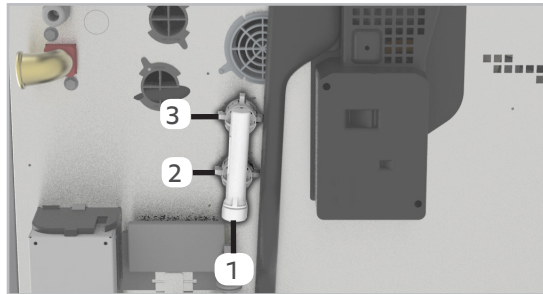
### 7.2

### Device water connection

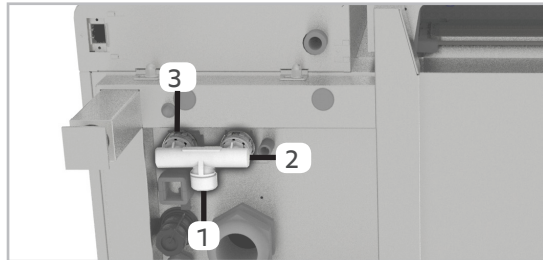
Unit size 60:



Unit sizes 61, 62, 11, 12:



Unit sizes 21, 22:



Water connection legend

1 = 3/4" common water supply line.  
(cold water up to 30°C [86°F])

61, 62, 11, 12, 21, 22:

If split water connection:

2 = 3/4" cold water supply line (max. 30°C  
[86°F]).

3 = 3/4" soft water supply line (max 30°C  
[86°F]) (steam generator, hand shower, SCC  
only: additional humidification, cleaning).

max 30°C [86°F]:

Observe country-specific standards and regulations.

## 7 Water connection

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Note:

The manufacturer recommends preventative inspection be conducted around six months after device commissioning to ascertain the degree of limescale buildup in the steam generator, especially for CMP units.

This inspection should be performed by a trained technician.

### 7.3 Water treatment

- > The water connection must not use treated water with hardness below 6°e, as such water is aggressive and corrosive, and can shorten the lifespan of the device.
- > Connecting the SCC to water with hardness below 8,75°e:  
When the self-test begins, the system will prompt the user to indicate the hardness of the water the device is connected to. Select "Water hardness below 8,75°e."
- > Observe all country-specific regulations regarding water and sewer connections, especially those regarding installation of water intake points.

In most cases, water connections do not require additional filters or water treatment.

Filtration and/or water treatment (A, B, C, D) may be necessary if water conditions are critical.

Contact the local water supply company to inquire about water chloride levels ( $\text{Cl}^-$ ), chlorine levels ( $\text{Cl}_2$ ) and hardness.

### 7.4 Selecting water filters

A) Fine filters

We recommend fine filters with fineness of 5 - 15 $\mu\text{m}$  for filtering water contaminated with sand, iron particles or suspended matter.

B) Active carbon filters

If water contains high levels of  $\text{Cl}_2$  (over 0.2mg/l, corresponds to 0.2ppm) (information provided by water supply company), an upstream active carbon filter must be installed.

## 7 Water connection

### C) Reverse osmosis system

Due to corrosion risks, a reverse osmosis system must be used if and only if chloride ( $\text{Cl}^-$ ) concentrations are above 80mg/l (corresponds to 80ppm, information provided by water supply company).

Note: Ensure that the minimum conductivity value of 50 $\mu\text{S}/\text{cm}$  (Micro Siemens) is being maintained.

### D) Water softening:

#### SCC:

When used properly, these devices remove lime from water completely independently, so upscale water softening is not necessary.

#### CMP/CM:

Recommended for treating water if severe calcification occurs (without chloride contamination). Systems: Weak acid decarbonization ( $\text{H}^+$  ion exchange). Sodium ion exchangers (as are commonly found in dishwashers) are not recommended.

Phosphate metering is also not recommended due to its negative effects on the water system.

### Important for soft water connections:

To increase filter capacity, split the water connection into cold water and soft water (not possible with size 60 units) - remove the common water supply line.

Filter size sufficient for:

Average soft water consumption

(without hose shower) at max. flow rate of 16l/min.

Appliance size	61	62	11	12	21	22
[l/h]	3.0	8.0	6.3	10.4	12.5	15.0

### Important for filter connections:

Water hose with minimum  $\varnothing 1/2''$ .

Filter connection  $\varnothing 3/4''$ .

When using a combination of filters, ensure filter sequence of A-B-C or A-B-D in direction of flow.

## 8 Gas connection

### 8 Gas connection



**CAUTION!**

Danger to life!

Connecting incorrectly may result in burns.

Observe local regulations.



**DANGER!**

Poisoning hazard!

Make sure that factory settings conform with actual connection conditions:

- > Perform exhaust gas analysis when first commissioning steam- and convection burners (CO, CO<sub>2</sub>)
- > record these values.

If undiluted CO levels are above 150ppm for convection and 400ppm for steam, a company-trained and certified technician must be called in to check burner settings in accordance with setting instructions, and adjust these settings if needed.

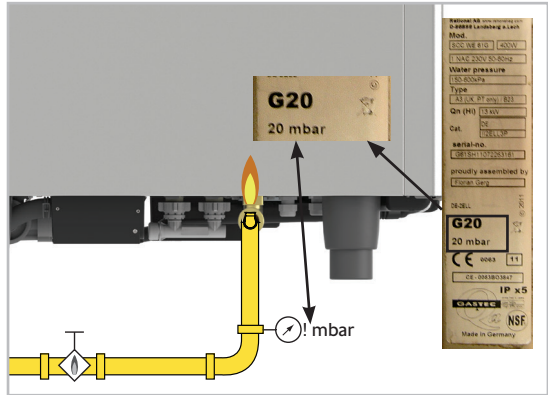
Observe all local gas company regulations!

#### Australian Supplement to Gas Installation

- > To be installed only by authorised person in accordance with AS 5601, local authority, gas, electricity, any applicable statutory regulations and manufacturer requirements.
- > Particular attention should be given to relevant requirements regarding ventilation.
- > This appliance is not suitable for use in marine environment.

## 8 Gas connection

Check the type of gas available and the dynamic connection pressure against the values specified on the device.



Pipe diameter at least 3/4", in accordance with local regulations.

Gas connection internal thread.

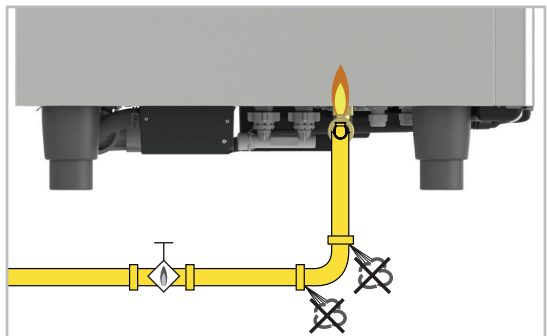
Gas shut-off valve on each device.

Gas connection with gas outlet possible.

All connection components installed on-site must be checked in accordance with DIN-DVGW (local gas supply company).

Secure the unit against slipping.

Use a suitable gas leak detector to check for leaks in the gas supply and gas distribution within the device.



## 8 Gas connection

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### Notes



#### **DANGER!**

Gas connections must only be set up by locally authorized gas technicians!

Set up the gas connection line in accordance with the rated thermal load specified on the type label.



#### **ATTENTION!**

Device malfunction!

If line pressure deviates from connection flow pressure (>20%), contact gas supply company.

Maintain maximum flow pressure limits:

- 30mbar for natural gas
- 58mbar for LPG

Otherwise:

- > do not start the device,
- > shut off the gas connection to the device.



#### **ATTENTION!**

Non-functioning device!

Gas components are designed for maximum connection flow pressure of 65 mbar. Higher operating pressures are not permitted.

## 8 Gas connection

### Gas consumption

Gas type	Required connection flow pressure	Wobbe index [MJ/m <sup>3</sup> ]		Maximum consumption at rated thermal load (15°C, 1013mbar)		
		Wi	Ws	61	62	11
Natural gas H G20	18-25 mbar	45,67	50,72	1,4 m <sup>3</sup> /h 13 kW	3,05 m <sup>3</sup> /h 28 kW	2,35 m <sup>3</sup> /h 22 kW
Natural gas L G25	20-30 mbar	37,38	41,52	1,63 m <sup>3</sup> /h 13 kW	3,53 m <sup>3</sup> /h 28 kW	2,76 m <sup>3</sup> /h 22 kW
Liquid gas G30	25-57,5 mbar	80,58	87,33	1,22 kg/h 14 kW	2,66 kg/h 31 kW	2,09 kg/h 24 kW
Liquid gas G31	25-57,5 mbar	74,75	81,19	1,08 kg/h 13 kW	2,33 kg/h 28 kW	1,84 kg/h 22 kW

Gas type	Required connection flow pressure	Wobbe index [MJ/m <sup>3</sup> ]		Maximum consumption at rated thermal load (15°C, 1013mbar)		
		Wi	Ws	12	21	22
Natural gas H G20	18-25 mbar	45,67	50,72	4,33 m <sup>3</sup> /h 40 kW	4,77 m <sup>3</sup> /h 44 kW	8,76 m <sup>3</sup> /h 80 kW
Natural gas L G25	20-30 mbar	37,38	41,52	5,12 m <sup>3</sup> /h 40 kW	5,58 m <sup>3</sup> /h 44 kW	10,13 m <sup>3</sup> /h 80 kW
Liquid gas G30	25-57,5 mbar	80,58	87,33	3,79 kg/h 44 kW	4,15 kg/h 48 kW	7,53 kg/h 88 kW
Liquid gas G31	25-57,5 mbar	74,75	81,19	3,34 kg/h 40 kW	3,69 kg/h 44 kW	6,72 kg/h 80 kW

### Australian Supplement to Gas Installation

Appliance size	61	62	11	12	21	22
Heat Load	47 MJ/h	101 MJ/h	79 MJ/h	162 MJ/h	158 MJ/h	324 MJ/h
Inlet pressure NG (min - max)	1.13 kPa - 2.5 kPa	1.13 kPa - 2.5 kPa	1.13 kPa - 2.5 kPa	1.13 kPa - 2.5 kPa	1.13 kPa - 2.5 kPa	1.13 kPa - 2.5 kPa
Inlet pressure LPG (min - max)	2.75 kPa - 3.5 kPa	2.75 kPa - 3.5 kPa	2.75 kPa - 3.5 kPa	2.75 kPa - 3.5 kPa	2.75 kPa - 3.5 kPa	2.75 kPa - 3.5 kPa



## 9 Exhaust gas connection

### 9 Exhaust gas connection



**DANGER!**

Asphyxiation hazard!

Combustion products (CO and CO<sub>2</sub>)

Prevent unacceptable concentrations of harmful combustion products within the installation room.

Set up the device under conditions of adequate ventilation.

Observe instructions given in the currently valid versions of all local standards during installation.

Type A3, B13, B13BS Gas device      Installation as per DVGW G631, dated 03/2012

Exhaust gas and room volumes (specified values apply only to the individual devices)

Appliance size	61	62	11	12	21	22
Min. room size with free ventilation [m <sup>3</sup> ]	52	112	88,0	160	176	*
Min. room size with constant ventilation [m <sup>3</sup> ]	26,0	56,0	44,0	80,0	88,0	*
Min. combustion air supply [m <sup>3</sup> /h]	21	45	35	64	70	128
Max. exhaust gas volumes [m <sup>3</sup> /h]	38	108	78	160	150	311
Max. exhaust gas temperature [°C]	350	520	470	590	430	520

Free ventilation

Combustion air supply through windows and doors

Constant ventilation

Combustion air supply via two ventilation openings to the outside, each with 150cm<sup>2</sup> free cross section (one near the ceiling, the other near the floor)

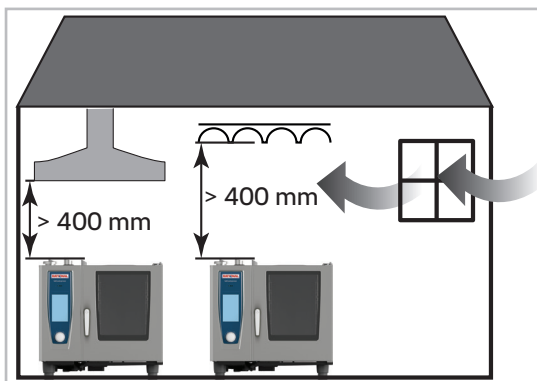
\* Combustion air supply through air conditioning plants.

Kitchens having gas appliances installed with total rated thermal loads over 50kW must have air conditioning plants for intake and exhaust ventilation. These air conditioning plants also secure combustion air supply for gas units if designed in accordance with VDI 2052.

## 9 Exhaust gas connection

### 9.1 Type A3

A3 / 61



Room air-dependent gas furnaces with fans in front of burners without flow guards and total rated load in installation space less than or equal to 14kW. It is not mandatory that gas only be supplied to the burners when the exhaust system is in operation.

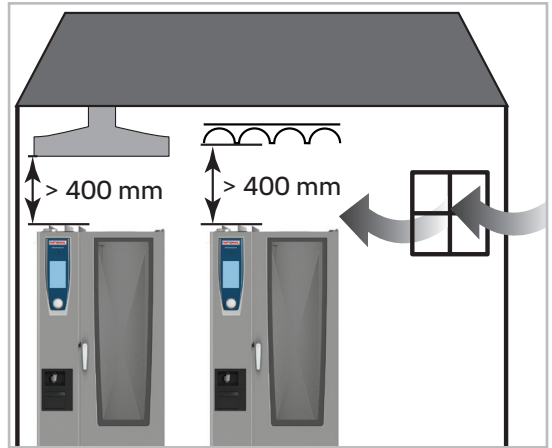
Updraft lines are not required.

To install Type A gas units with total rated loads less than or equal to 14kW, it is sufficient if

- > the installation space has a capacity of more than  $2\text{m}^3/\text{kW}$ , or
- > there is a door or window to the outside that can be opened, or
- > the kitchen ventilation system in use has a minimum extraction volume of  $15\text{m}^3/\text{h}$  per kW total rated load and corresponding ventilation openings.

## 9 Exhaust gas connection

A3 / 62, 11, 12, 21, 22



Room air-dependent gas furnaces with fans in front of burners without flow guards and total rated load in installation space greater than 14kW.

Updraft lines are not required.

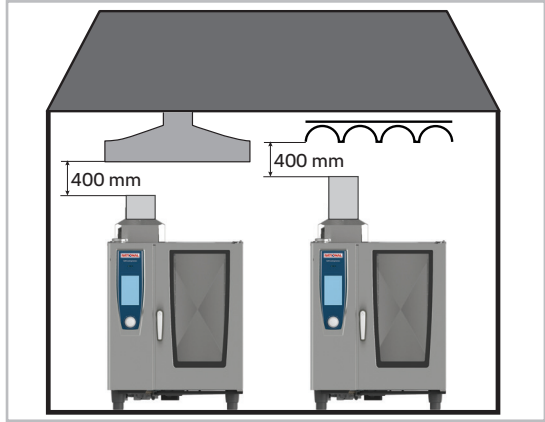
Exhaust gases must be directed outside through kitchen ventilation systems. Type A gas appliances first emit exhaust gases into the room, and must promptly be extracted via the kitchen ventilation system.

Monitor the exhaust vent to ensure that gas is only fed to the burners when extraction is ensured.

\* A distance of at least 400 mm must be kept between the flue pipes of the appliance and the grease filters of the exhaust hood / ventilation ceiling .

## 9 Exhaust gas connection

### 9.2 Type B13



Room air-dependent gas furnaces with fans in front of burners and flow guards.



**ATTENTION!**

Type B13 installations may only be performed with the original flow guards listed below.

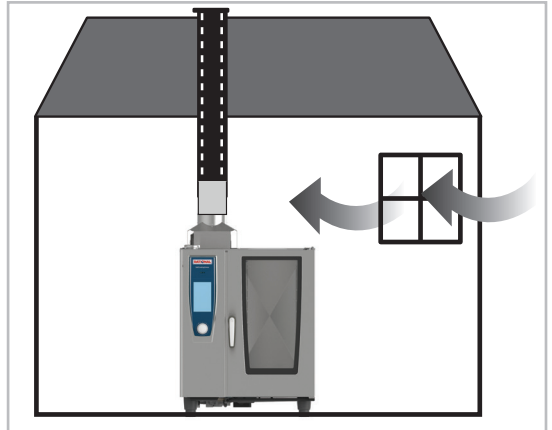
With B13 installations, ensure that a vertical updraft line is on hand.

The updraft line must end 400mm beneath the grease filter. The device must be installed underneath an exhaust hood or a ventilation ceiling.

Monitor the exhaust vent to ensure that gas is only fed to the burners when extraction is ensured.

## 9 Exhaust gas connection

### 9.3 Type B13BS

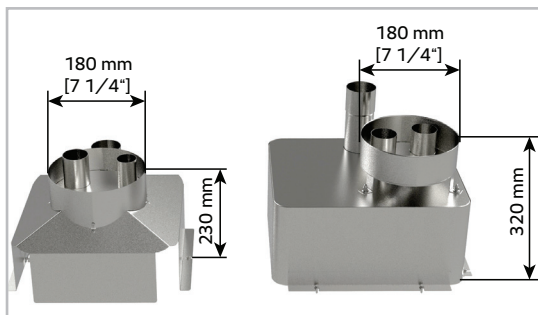


Fixed connection to a chimney is permitted if a flow guard is also in use.

Contact the local master chimney sweep or an authorized authority for assistance in calculating the intake and exhaust air required.

## 9 Exhaust gas connection

### 9.4 Flow guards for B13 and B13BS



Flow guards are not included with the device, but can be ordered using the following part numbers:

Appliance size	61	62	11	12	21	22
Item number	70.00.737	70.00.768	70.00.757	70.00.769	70.00.770	70.00.771

Installation instructions are included with the flow guards.

#### Exhaust gas system

- > Exhaust pipes must be seal-connecting and installed in accordance with local standards; continuous suction must be ensured. Backlogging will result in the safety temperature limiter (set to 103°C) being triggered in the flow guard.
- > Due to high exhaust gas temperatures, do not use exhaust pipes made of aluminum or of any materials that are not temperature-resistant up to 400°C!

### 9.5 Maintenance

As per the specified standards, we recommend gas components undergo annual maintenance.

After maintenance or repair work:

- > Check that the compensation tube is positioned correctly.
- > Check the gas supply line components for leaks.

## 10 Wastewater connection

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### 10 Wastewater connection



#### ATTENTION!

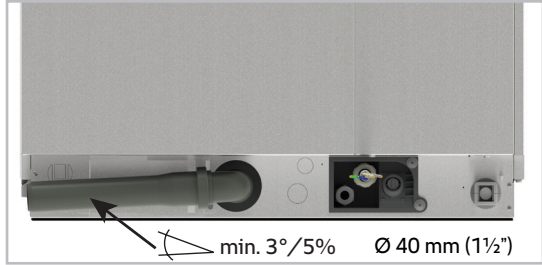
Use only steam temperature-resistant pipes for wastewater drainage. Do not use hoses.

- > Device complies with all relevant regulations (SVGW, KIWA, WRAS).
- > Connection set for device drain  
DN 40/50 Part number: 8720.1031
- > Welding a drain pipe onto the device drain is not permitted (could result in damage to the device).
- > Use DN 50 pipe (DN 40 for size 60 units) with a constant gradient (at least 5% or 3°); do not reduce pipe diameter.
- > Observe drain dimensioning requirements: steam generator short-term pump-off rate = 0.7l/s
- > Average wastewater temperature: 65°C [149°F]
- > Applicable standard: DIN 1986, T1
- > If floor drain has no odor seal, make sure a 2cm [1" ] free outflow zone is in place.
- > We recommend integrating a siphon into the wastewater connection in order to optimize energy consumption.
- > Unit sizes 60 through 12 may have both a wall drain and a floor drain
- > Each device must have its own wastewater connection (including Combi-Duos).

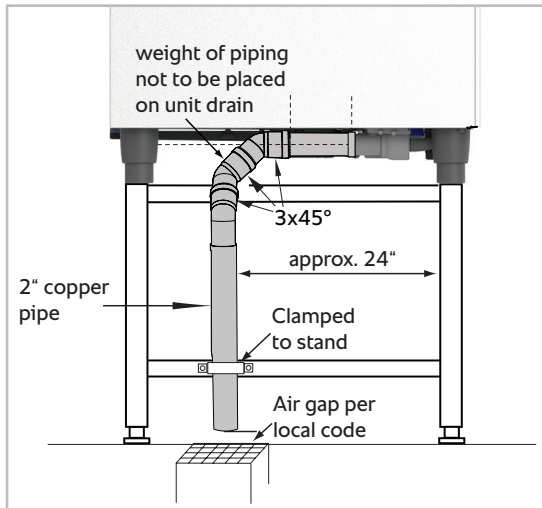
Tabletop units

# 10 Wastewater connection

Unit size 60



Unit sizes 61, 62, 11, 12

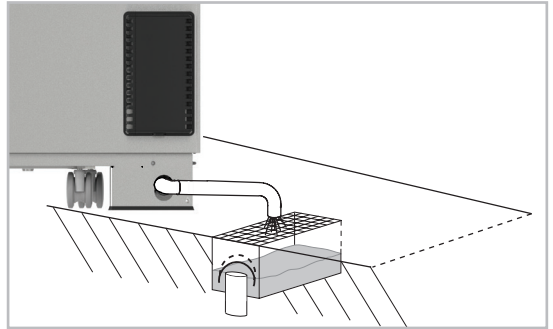
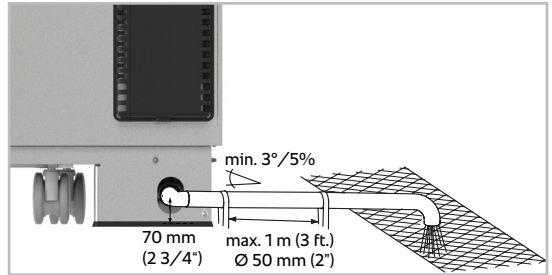




## 10 Wastewater connection

### Floor units

- > Floor units can only use floor drains



### NOTE!

The average height of the water drainage pipe is 70 mm.

### Options

- > Additional riser tube to reduce steam escaping from drain pipe with open drain systems.
- > Tabletop units:  
Increase ground clearance using 110 mm feet and height-adjustable transport trolley for mobile oven racks.
- > Floor units:  
Increase ground clearance by raising up unit and mobile oven rack.

## 11 Ventilation, technical data, heat dissipation

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### 11 Ventilation, technical data, heat dissipation

On-site ventilation:

When installing an exhaust hood, observe the following:

- > VDI Directive 2052 and local construction authority regulations on exhaust hoods. The exhaust hood should protrude 300-500 mm over the front of the device.
- > Install the device underneath an exhaust hood if using a VarioSmoker.
- > Install a grease filter into the protruding part of the exhaust hood.

Option

Exhaust hoods are available for most devices (including for retrofitting). Consult the hood installation guide for information on connecting the hood.



**ATTENTION!**

Asphyxiation hazard!

Flue gases (CO and CO<sub>2</sub>)

Prevent unacceptable concentrations of harmful flue gases within the installation room. Set up the device under conditions of adequate ventilation.

# 11 Ventilation, technical data, heat dissipation

Technical data

Noise emissions value: <70dBA

Water jet protection: IPX5

Thermal load - **SCC** devices [kJ/h]:

Electrical devices	60	61	62	11	12	21	22
latent:	1.020	2.050	3.450	3.450	6.350	6.850	10.900
sensitive:	1.350	2.450	4.450	4.450	7.750	8.850	14.000

Gas appliances	61	62	11	12	21	22
latent:	2.050	3.450	3.450	6.350	6.850	10.900
sensitive:	2.450	4.450	4.450	7.750	8.850	14.000

Thermal load - **CMP/CM** devices [kJ/h]:

Electrical devices	60	61	62	11	12	21	22
latent:	1110	2.143	4.167	3.529	6.667	7.200	12.500
sensitive:	1420	2.727	5.000	4.615	9.474	9.000	14.286

Gas appliances	61	62	11	12	21	22
latent:	2.143	4.167	3.529	6.667	7.200	11.583
sensitive:	2.571	5.000	4.286	9.231	8.780	13.636

We reserve the right to make technical developments / modifications.

## 12 Initial start-up

### 12 Initial start-up

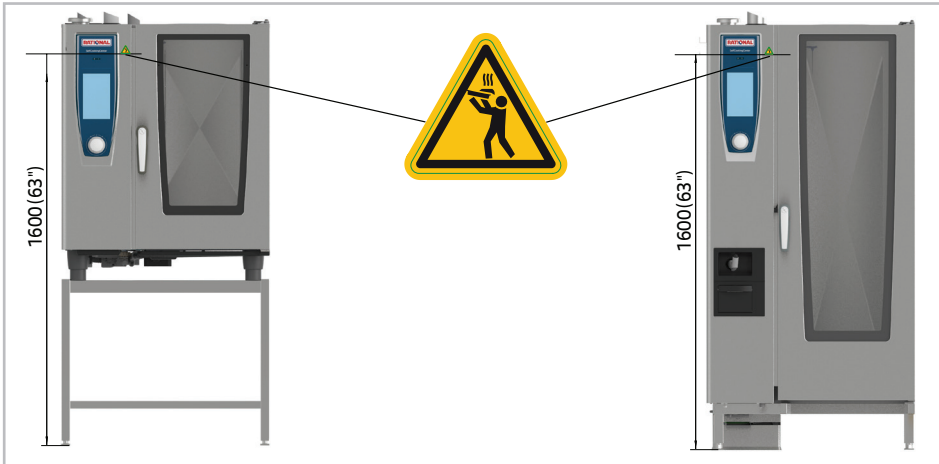


#### WARNING!

Scalding hazard!

To avoid scalding, when working with liquids or foods that become liquid when heated to higher temperatures, only use containers that are easy to monitor. (DIN: IEC 60335-2-42).

The “Max. rack height for containers with liquid” safety decal is included in the starter kit. After installing the device, attach the decal at a height of 1600 mm (see examples)



#### ATTENTION!

Risk of fire!

Remove packaging and transportation materials, starter kit, grids and containers from the cooking chamber.

## 12 Initial start-up

### Self test

When first commissioning a new device, start a one-time self-test. This test serves to adjust the device to its specific ambient conditions.

It runs automatically, and takes between 45 and 65 minutes depending on the size of the unit; if an UltraVent is in use, the test will take around 20 minutes longer.

- > To perform the self-test, check the hook ladders and the air baffle to ensure they are seated correctly.
- > The device must be connected to water, wastewater, and electricity as per installation instructions; gas devices must also be connected to gas supply and exhaust lines.
- > The left side panel must be closed.
- > With tabletop units, insert a flat GN container into the middle of the hook ladders, with the opening facing the bottom.
- > With floor units, insert two GN into the mobile oven rack: one centered in front of each fan, with the openings facing the bottom.



- > Do not open the cooking chamber door during the self-test.

## 12 Initial start-up

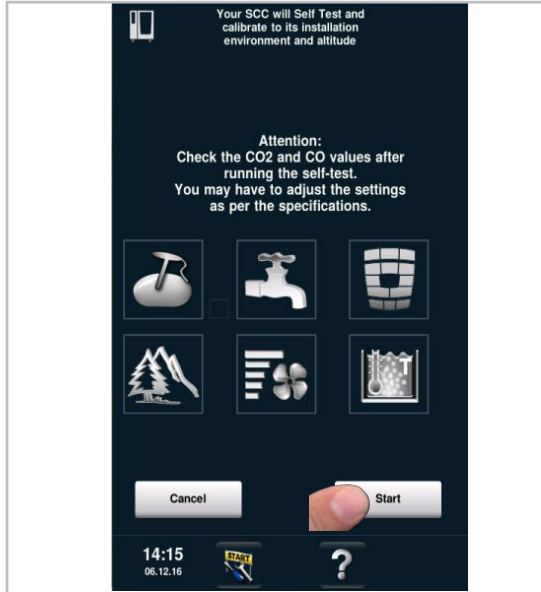


**DANGER!**

Poisoning hazard!

With gas units, conduct exhaust gas analysis following self-test.

SCC



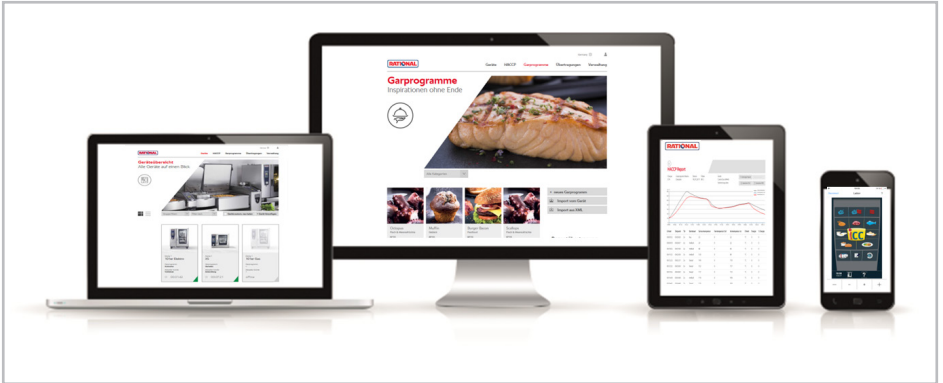
CMP/CM



## 13 ConnectedCooking

### 13 ConnectedCooking

ConnectedCooking is arguably the most state-of-the-art networking solution for professional kitchens.



Requirements:

- > Ethernet port on the appliance (SCC from 03/2017 standard, CM\_P optional).
- > On-site provision of a network plug and a network cable (CAT5). Alternatively, the connection can be established via WLAN module by consultation with the Service Partner. The appliance shall be connected to a network in the same way as connecting a PC.

More at:

[ConnectedCooking.com](http://ConnectedCooking.com)

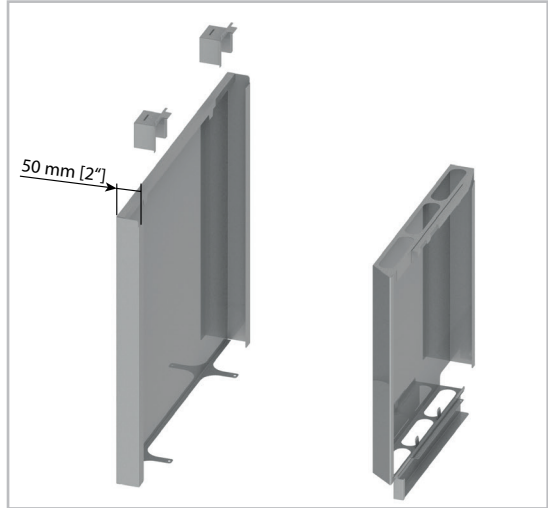
## 14 Options

### 14 Options

#### Left and right heat shields

If it is not possible to keep the left side (or right, on unit sizes 61 and 11) of the device a sufficient distance away from heat sources, an additional heat shield can reduce thermal loads.

The heat shield for appliance sizes 61 - 22 is not suitable for the Combi-Duo and the Ultravent.



Unit size	60	61	62	11	12	21	22
heat shield left	60.74.182	60.70.390	60.70.392	60.70.391	60.70.393	60.70.394	60.70.395
heat shield right		60.70.736		60.70.743			



## 14 Options

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Adjusting height on unit sizes 61, 62, 11, 12

If devices of these sizes do not have sufficient ground clearance (e.g., when setting up a Combi-Duo), ground clearance can be increased using longer foot bases (110mm).



To do this, simply replace the standard foot bases with longer ones.

Article number: Foot extension: 12.00.224



**ATTENTION!**

Scalding hazard!

The topmost rack rail may then be higher than 1600 mm.

## 14 Options

### Height adjustable transport trolley for mobile oven rack

When using a mobile oven rack and a mobile oven rack transport trolley, height differences can be compensated by using an adjustable transport trolley.

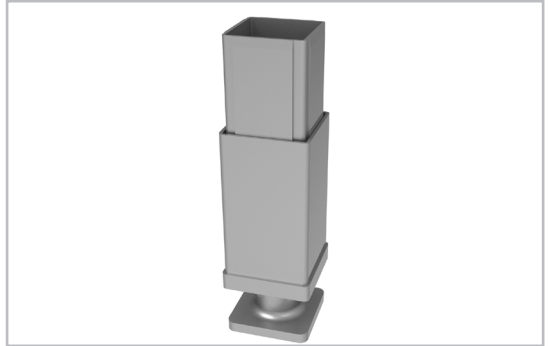


Appliance size	61, 11	62, 12
Article number:	60.60.188	60.70.160

## 14 Options

### Raising floor units

If ground clearance underneath floor units is too low, use foot extensions to increase the height of the device by 70 mm.



Article number: 60.21.179 (1x)

Article number: 60.70.407 (set of 4)



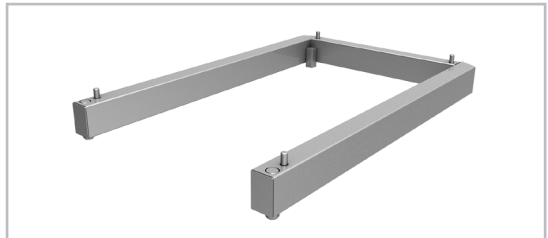
**ATTENTION!**

Scalding hazard!

The topmost rack rail may then be higher than 1600 mm.

### Raising mobile oven racks

When using foot extensions on floor units, compensate the height difference on the mobile oven rack using mobile rack oven elevation (70 mm).

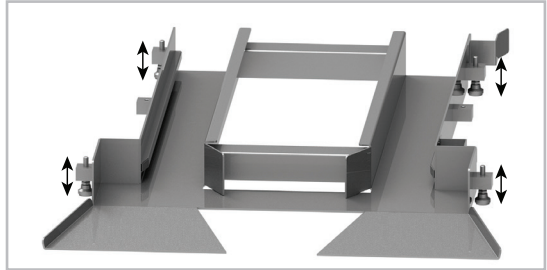


Appliance size	21	22
Article number:	60.21.184	60.22.184

## 14 Options

### Floor unit entry ramps

If the ground is not level in the mobile oven rack entry area on floor units, use an entry ramp to compensate this. The plate feet are adjustable by +/- 10 mm.



The entry ramp is attached to the right foot of the device using the ramp clamps.

Appliance size	21	22
Article number:	60.21.080	60.22.181

# 14 Options

## Condensation breaker

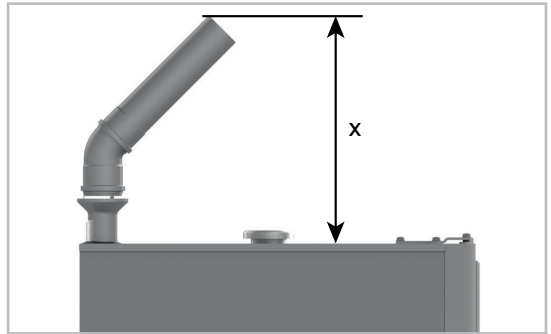


### ATTENTION!

Device malfunction!

Extending the ventilation pipe without using a condensation breaker can cause the device to malfunction.

Installing a condensation breaker and the included pipes can divert steam escaping from the exhaust pipe into non-critical areas, or towards the extraction range of a ventilation system.

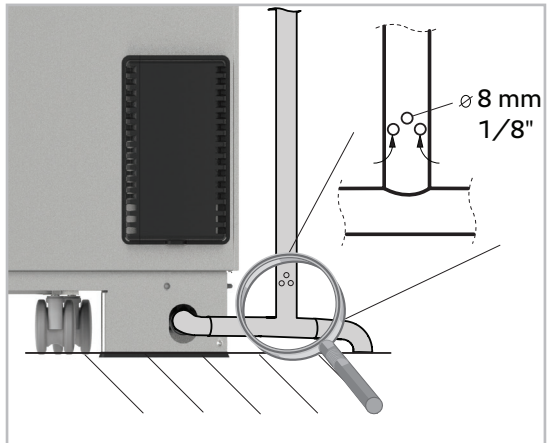


Appliance size	60	61, 62, 11	12	21, 22
Article number:	60.74.037	60.72.591	60.72.592	60.72.593
x mm [Inch]	440 [17]	460 [18]	460 [18]	460 [18]

## 14 Options

### Reducing excessive steam emissions

An additional riser pipe can be attached to the exhaust pipe to reduce excess steam emissions. The bottom part of the riser pipe has holes in it to create a chimney effect.



## Wall mount

Unit sizes 60 and 61 only

The two devices named above can be attached to the wall using a wall mount.



**ATTENTION!**

Be sure to follow the corresponding modification instructions when performing wall installations.



Appliance size	60	61
Article number:	60.30.968	60.70.963

## 14 Options

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### Interfaces

#### SCC

come with an Ethernet interface as part of their standard equipment. An CAT-5 Ethernet cable must be used to connect to a network.

Connection location:

Unit size 60: on the rear of the unit

Unit sizes 61-22: on the underside of the unit

A detailed description on connecting to a network is provided in the user manual.

#### CMP

can optionally be ordered or retrofitted with Ethernet interfaces.

Part number for add-on kit: 87.01.420

#### External signal unit

Outlet for connecting an external signal unit (optional only for electrical devices, unit sizes 61-22).



#### ATTENTION!

External signal units must not be attached to the device or placed atop it.

If the device has been ordered including the external signal unit option, a 230V outlet will be supplied in the device (electrical compartment). This outlet is controlled parallel to the device loudspeaker or buzzer.

The electrical compartment has additional gray (phase), blue (neutral) and yellow/green (ground) terminals to connect the external signal unit; see also the wiring diagram included with the device.



## 15 Conversion tables

### 15 Conversion tables

	°dH	°f	°e	ppm	mmol/l	gr/ gal(US)	mval/kg
1 °dH	1	1.79	1.25	17.9	0.1783	1.044	0.357
1 °f	0.56	1	0.70	10.0	0.1	0.584	0.2
1 °e	0.8	1.43	1	14.32	0.14	0.84	0.286
1 ppm	0.056	0.1	0.07	1	0.01	0.0584	0.02
1 mmol/l	5.6	0.001	0.0007	100	1	0.00058	2
1 gr/gal (US)	0.96	1.71	1.20	17.1	0.171	1	0.342
1 mval/kg	2.8	5.0	3.5	50	0.5	2.922	1

	CaO[mg/l]	CaCO <sub>3</sub> [mg/l]	Ca <sup>2+</sup> [mg/l]
1 °dH (Germany)	10.00	17.86	7.14
1 °f (France)	5.60	10.0	4.00
1 °e (GB)	8.01	14.3	5.72
1 ppm (USA)	0.56	1.0	0.40
1 mmol/l (chem. cons.)	56.00	100.0	39.98
1 gr/gal (USA)	9.60 / 64.8	17.11	6.85
1 mval/kg (milliequivalent)	28.00	50.0	19.99

kPa	mbar	psi	inch/wc
0.1	1	0.0147	0.4014
0.2	2	0.0294	0.8028
0.3	3	0.0441	1.2042
0.4	4	0.0588	1.6056
0.5	5	0.0735	2.0070
0.6	6	0.0882	2.4084
0.7	7	0.1029	2.8098
0.8	8	0.1176	3.2112
0.9	9	0.1323	3.6126
1	10	0.147	4.0140
1.2	12	0.1764	4.8168
1.4	14	0.2058	5.6196
1.6	16	0.2352	6.4224
1.8	18	0.2646	7.2252

## 15 Conversion tables

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2	20	0.294	8.0280
2.5	25	0.3675	10.0350
3	30	0.441	12.0420
3.5	35	0.5145	14.0490
4	40	0.588	16.0560
4.5	45	0.6615	18.0630
5	50	0.735	20.0700
5.5	55	0.8085	22.0770
6	60	0.882	24.0840
6.5	65	0.9555	26.0910
7	70	1.029	28.0980
7.5	75	1.1025	30.1050
8	80	1.176	32.1120
8.5	85	1.2495	34.1190
9	90	1.323	36.1260
9.5	95	1.3965	38.1330
10	100	1.47	40.1400
20	200	2.94	80.2800
30	300	4.41	120.4200
40	400	5.88	160.5600
50	500	7.35	200.7000
100	1000	14.7	401.4000

### 3 Installation instructions

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