



## Air terminal devices

### Jet nozzle Type DUK

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#### Product overview

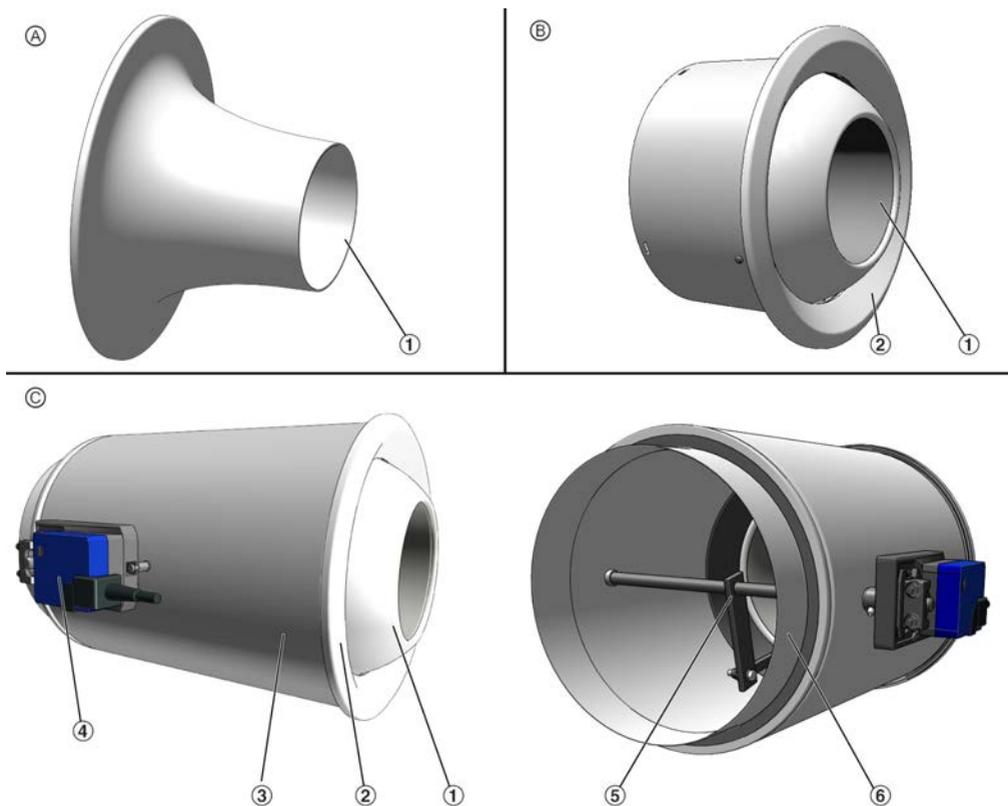


Fig. 1: Schematic illustration of DUK variants

- |   |   |   |                              |
|---|---|---|------------------------------|
| A | DUK-F, fixed nozzle                             | ③ | Casing (DUK-V-A)             |
| B | DUK-V, adjustable nozzle                        | ④ | Electric actuator (optional) |
| C | DUK-V-A-E*/..., adjustable nozzle with actuator | ⑤ | Linkage                      |
| ① | Nozzle  | ⑥ | Spigot (DUK-V-A)             |
| ② | Trim ring                                       |   |                              |

## Important notes

### Information on the installation manual

This manual enables operating or service personnel to correctly install the product described below and to use it safely and efficiently.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and general safety regulations also apply.

### Qualified staff

#### Skilled qualified electrician

Skilled qualified electricians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on electrical systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

#### Specialist personnel

Specialist personnel are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to carry out their assigned duties, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

### Limitation of liability

The information in this manual has been compiled with reference to the applicable standards and guidelines, the state of the art, and our expertise and experience of many years.

The manufacturer does not accept any liability for damages resulting from:

- Non-compliance with this manual
- Incorrect use
- Operation or handling by untrained individuals
- Unauthorised modifications

The actual scope of delivery may differ from the information in this manual for special constructions, additional order options or as a result of recent technical changes.

## Personal protective equipment

Personal protective equipment must be worn for any work in order to reduce health or safety hazards to the minimum.

The appropriate protective equipment for a job must be worn for as long as the job takes.

### Industrial safety helmet



Industrial safety helmets protect the head from falling objects, suspended loads, and the effects of striking the head against stationary objects.

### Protective gloves



Protective gloves protect hands from friction, abrasions, punctures, deep cuts, and direct contact with hot surfaces.

### Safety shoes



Safety shoes protect the feet against crushing, falling parts, and slipping on slippery ground.

### Correct use

Air terminal devices are used for the ventilation of rooms in industrial and comfort areas. The air terminal devices are connected to a supply air or extract air system (by others), which is typically connected to an air handling unit.

Air terminal devices supply cold or warm air to rooms (within the stated supply air to room air temperature differences).

Installation, operation and maintenance may have to meet increased hygiene requirements for certain areas of application.

The installation of air terminal devices in humid rooms, areas with potentially explosive atmospheres or rooms with dust-laden or aggressive air has to be assessed for each individual case.

## Transport and storage

### Delivery check

Upon delivery, carefully remove the packaging and check the unit for transport damage and completeness. In case of any damage or an incomplete shipment, contact the shipping company and your supplier immediately. Put the product back into its packaging after the delivery check to protect it from dust and contamination.



### Fixing and installation material

*Fixing and installation material is not part of the supply package (unless stated otherwise), but has to be provided by others; it has to be suitable for the installation situation.*

## Transport on site



### CAUTION!

**Danger of injury from sharp edges, sharp corners and thin sheet metal parts!**

Sharp edges, sharp corners and thin sheet metal parts may cause cuts or grazes.

- Be careful when carrying out any work.
- Wear protective gloves, safety shoes and a hard hat.

Please note:

- Be careful when unloading or moving the product, and pay attention to the symbols and information on the packaging.
- If possible, take the product in its transport packaging up to the installation location.
- Use only lifting and transport gear designed for the required load.
- Always secure the load against tipping and falling.
- Do not move bulky items just by yourself. Get help to prevent injuries and damage.

## Storage

Please note:

- Store the product only in its original packaging
- Protect the product from the effects of weather
- Protect the product from humidity, dust and contamination
- Storage temperature: -10 °C to 50 °C.
- Relative humidity: 95% max., no condensation

## Packaging

Properly dispose of packaging material.

## Installation

### General information

#### Personnel:

- Specialist personnel

#### Protective equipment:

- Industrial safety helmet
- Protective gloves
- Safety shoes

#### Installation notes:

- Fix the device only to load-bearing structural elements.
- Load suspension systems only with the weight of the device. Adjacent components and connecting ducts must be supported separately.
- Use only approved and adequately sized fixing material (fixing material is not included in the supply package).
- Refer to the technical leaflets for product weights and dimensions.
- The air terminal devices must remain accessible for cleaning even after installation.
- Installation and sealing material which the manufacturer provides is usually supplied in an extra bag.

Before you install the device, take suitable precautions to protect air distribution components from contamination during installation (VDI 6022). If this is not possible, at least cover the devices or take other precautions to protect them from contamination. In this case you have to ensure that the devices cannot be activated. Ensure that all components are clean before you install them. If necessary, clean them thoroughly. If you have to interrupt the installation procedure, protect all openings from the ingress of dust or moisture.

### Weight [kg]

NG	DUK variant							
	-V	-V-A	-V-A-E	-V-K	-V-K-E	-V-R	-V-R-E	-F
100	0.4	0.8		0.8		0.7		0.1
125	0.5	1.0		1.0		0.9		0.1
160	0.8	1.6	3.0	1.5	3.0	1.3	3.2	0.2
200	1.4	2.5	4.0	2.3	4.0	2.2	4.4	0.3
250	2.5	4.0	5.5	4.0	5.5	3.7	5.7	0.4
315	4.0	6.0	7.5	6.0	7.5	5.9	8.0	0.6
400	6.0	9.0	10.2	9.0	10.2	8.7	11.5	0.9

### Installation orientation

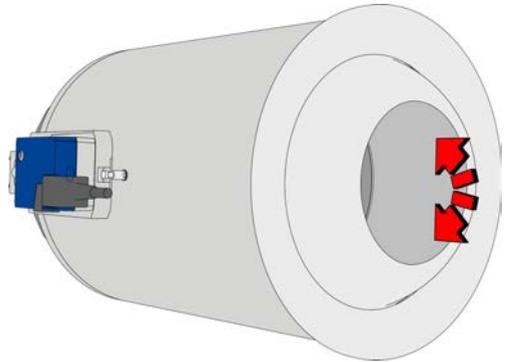


Fig. 2: DUK-V, installation orientation for DUK-V-\*E\*/.../ (actuator on the right in airflow direction)

The installation orientation of the air terminal device depends on the direction of movement of the discharge nozzle. The device is typically installed in such a way that the discharge nozzle moves upwards and downwards.

Nozzles with an actuator should hence be installed with the actuator in the horizontal nozzle axis, see Fig. 2.



#### Installation recommendation

To have all the installed nozzles always move in the same direction, we recommend you to position the actuators for all nozzles in the same way. Alternatively, you can reverse the direction of movement on the actuator.

Removing and fitting the trim ring

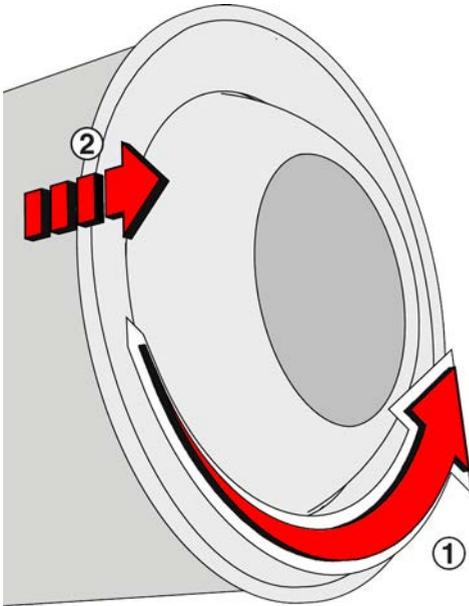


Fig. 3: Removing the trim ring

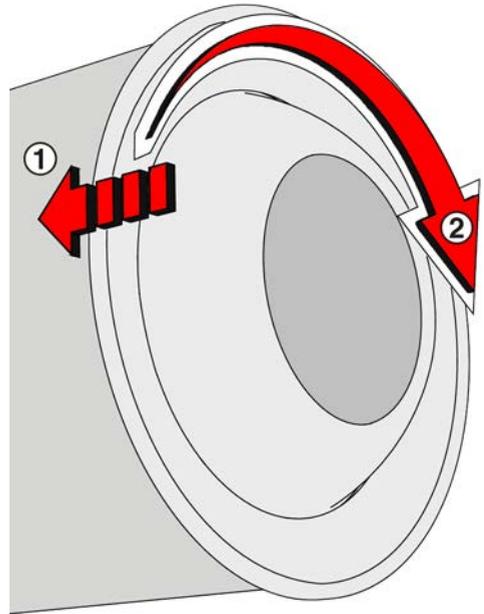


Fig. 4: Fitting the trim ring

Wall installation

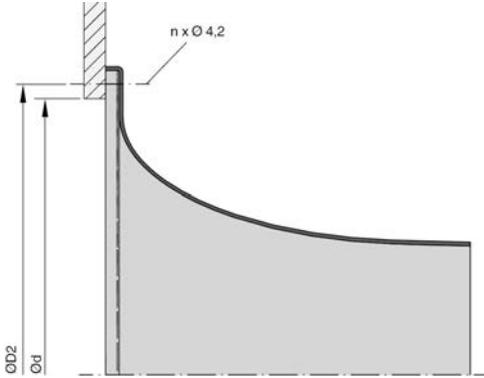


Fig. 5: DUK-F, wall installation

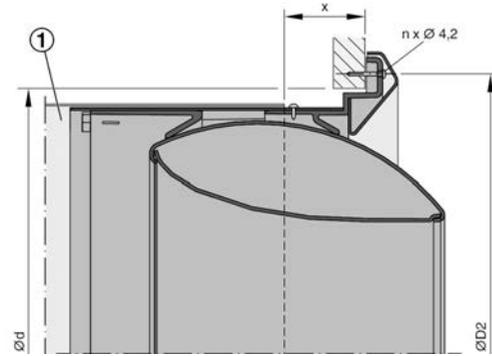


Fig. 6: DUK-V (without casing, wall installation)

- 1 Spigot, e.g. spiral duct (by others)

NG	DUK-F			DUK-V			
	ØD <sub>2</sub>	Ød	n	ØD <sub>2</sub>	Ød	n	x
100	115	100	3	125	115	3	30
125	138	125	3	148	138	3	40
160	201	160	4	179	169	4	40
200	241	200	4	232. 5	220	4	50
250	291	250	4	277. 5	265	4	50
315	376	315	8	349	330	6	55
400	461	400	8	432	415	6	70

Installation onto a duct

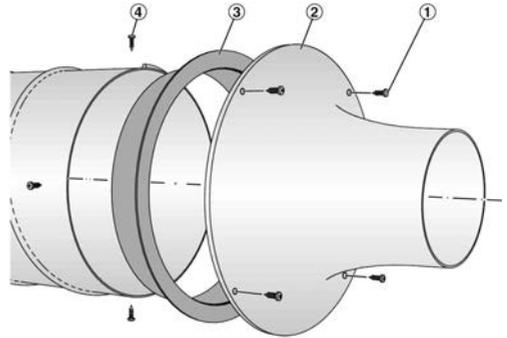


Fig. 7: DUK-F, installation onto the end of a duct

- 1 Raised countersunk self tapping screw Ø 4.2 x 19, ISO 1483 (by others)
- 2 DUK-F
- 3 Connection piece with raised edge (by others)
- 4 Self-drilling screws or other suitable fasteners (by others)

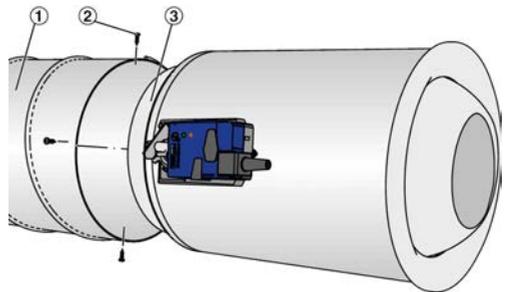


Fig. 8: DUK-V-A-E\*../. with spigot for connection to circular ducts

- 1 Spiral duct
- 2 Self-drilling screws or other suitable fasteners
- 3 Spigot (axial)

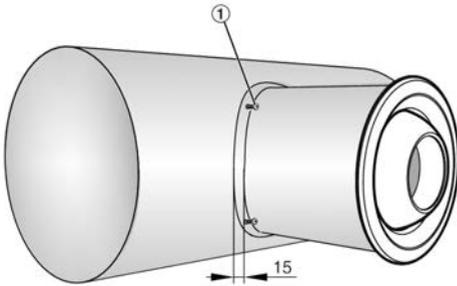


Fig. 9: DUK-V-R-\*/... with saddle connector

Provide a hole for the saddle connector in the circular duct. Fix DUK with the saddle connector to the duct; use self-drilling screws (1), for example.

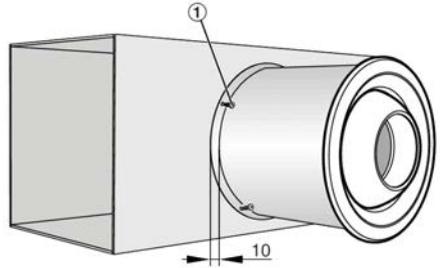


Fig. 10: DUK-V-K-\*/... with spigot for the connection to rectangular ducts

Provide a hole for the spigot in the rectangular duct. Fix DUK with the spigot to the duct; use self-drilling screws (1), for example.

**Electrical connection****Personnel:**

- Skilled qualified electrician

 **DANGER!**

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

Order code	Type	Supply voltage	Max. power rating	Signalling	Wiring diagram	Type of device
E1	NM230A	85 – 265 V AC, 50/60 Hz	6 VA 2.5 W	<ul style="list-style-type: none"> <li>■ OPEN/ CLOSE</li> <li>■ (3-point)</li> </ul>	Fig. 11, Fig. 12, Fig. 13, Fig. 14	VD, VDL, VDR, DUK
E2	NM24A	24 V AC $\pm 20\%$ , 50/60 Hz  24 V DC $\pm 20\%$	4 VA 1.5 W	<ul style="list-style-type: none"> <li>■ OPEN/ CLOSE</li> <li>■ (3-point)</li> </ul>	Fig. 11, Fig. 12, Fig. 13, Fig. 14	VD, VDL, VDR, DUK
E3	NM24A-SR	24 V AC $\pm 20\%$ , 50/60 Hz  24 V DC $\pm 20\%$	4 VA 2 W	2 – 10 V DC, Ra > 100 k $\Omega$	Fig. 15	VD, VDL, VDR, DUK

Electric open/close actuators

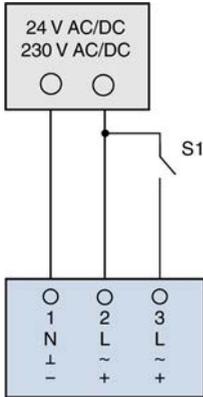


Fig. 11: Open/close control with NC or NO contact

S1	Direction of rotation
OPEN	1
CLOSED	2

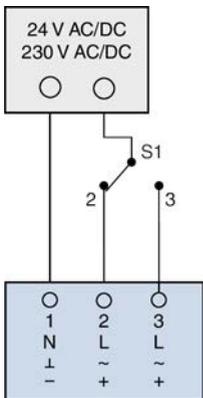


Fig. 12: Open/close control with changeover contact

S1	Direction of rotation
Pos. 2	1
Pos. 3	2

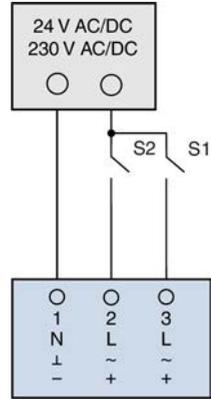


Fig. 13: 3-point control with NC or NO contact

S1	S2	Direction of rotation
OPEN	OPEN	Actuator has stopped (undefined position)
OPEN	CLOSED	1
CLOSED	OPEN	2
CLOSED	CLOSED	2

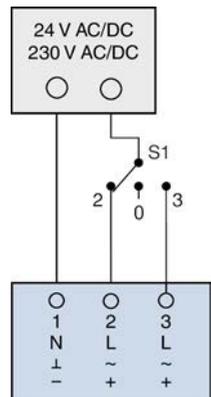


Fig. 14: 3-point control

S1	Direction of rotation
Pos. 0	Actuator has stopped (undefined position)
Pos. 2	1
Pos. 3	2

## Modulating actuators

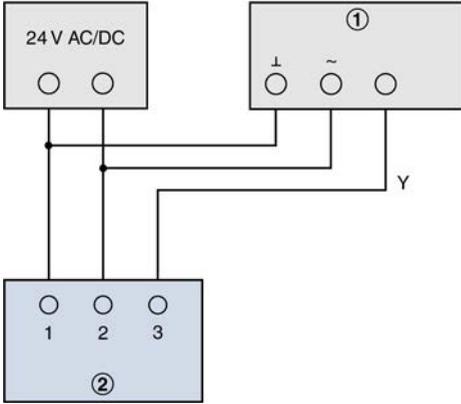


Fig. 15: Variable control

- ① Setpoint adjuster: Y = voltage signal 2-10 V DC
- ② Modulating actuator

## Commissioning

### Initial commissioning

Before you start commissioning:

- Check that the jet nozzles are correctly seated.
- Remove protective film, if any.
- Ensure that all jet nozzles are clean and free from residues and foreign matter.
- Check that electrical connections (if any) have been correctly made.
- Ensure that the devices have been correctly fixed and connected to the ducting.
- For jet nozzles with electric actuator: Check that the position of each discharge nozzle matches the operating mode, ☞ *on page 11*

**Note:** If the position of the discharge nozzle is not as it should be, you can change the direction of rotation on the actuator.

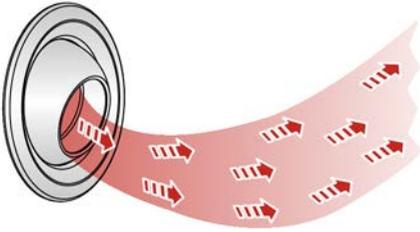


Fig. 16: Switch for changing the direction of rotation on actuators E1, E2 and E3

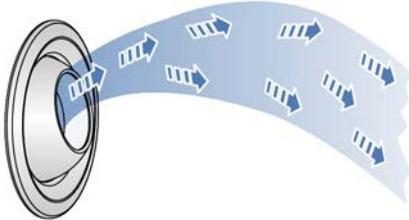
For commissioning see also VDI 6022, part 1 – 'Hygiene requirements for ventilation and air-conditioning systems and units'.

**Operating modes**

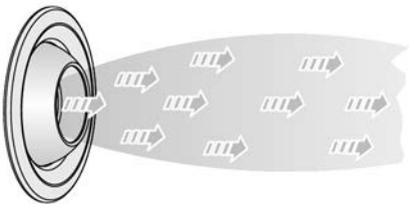
**DUK-V/...**



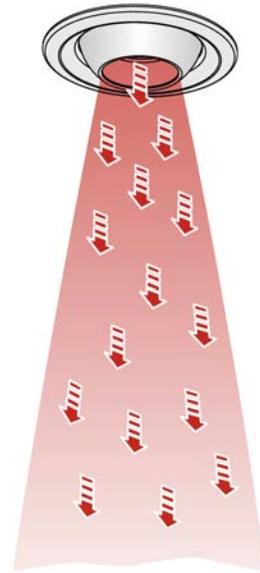
*Fig. 17: Horizontal air discharge, heating mode*



*Fig. 18: Horizontal air discharge, cooling mode*

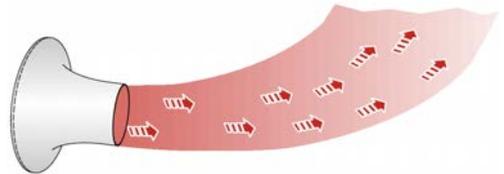


*Fig. 19: Horizontal air discharge, isothermal*

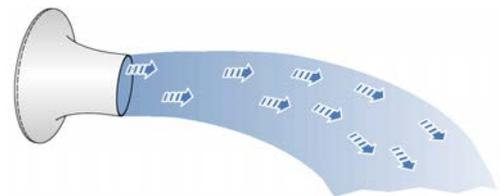


*Fig. 20: Vertical air discharge, heating mode*

**DUK-F**



*Fig. 21: Horizontal air discharge, heating mode*



*Fig. 22: Horizontal air discharge, cooling mode*



Fig. 23: Horizontal air discharge, isothermal

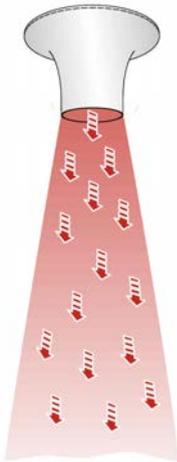


Fig. 24: Vertical air discharge, heating mode

### Setting the travel stops (swivel angle)

DUK-V-\*E\*/...

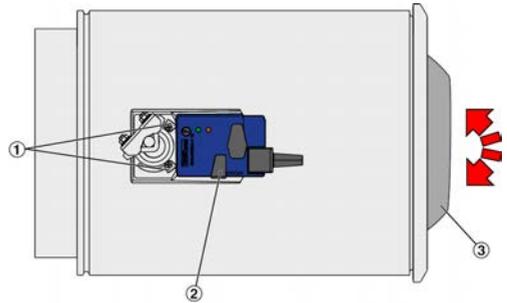


Fig. 25: Setting the travel stops for DUK-V

1. ▶ Press the push button (2) to release the gears of the actuator.
2. ▶ Move the nozzle (3) into the required position, then set the travel stops (1) with a Phillips screwdriver.

### Maintenance and cleaning

Please note:

- Before you start cleaning an air terminal device with an electric actuator, make sure that no voltage is present.
- The cleaning intervals given in the VDI 6022 standard apply.
- Clean surfaces with a damp cloth.
- Use only common household cleaners, do not use any aggressive cleaning agents.
- Do not use cleaning agents that contain chlorine.
- Do not use equipment for removing stubborn contamination, e.g. scrubbing sponges or scouring cream, as it may damage the surfaces.