

The logo consists of a grey square with the word "ESTA" written in red, bold, uppercase letters inside it.

Manual

DUSTOMAT 4 H

Fan Unit
ESTA Standard Control System

DUSTOMAT 4-10 H (order no.: 09,731)
DUSTOMAT 4-24 H (order no.: 09,761)

and variations

Manual
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1. General instructions

1.1 Target group

This manual is intended for

- Operators trained on the device who are familiar with the extraction process
- Trained electrical specialists

Only change settings on the control unit with the support of ESTA customer service

1.2 Tips



Read the instructions carefully before working with the device.

The device must be used only by persons who have been instructed in its handling and are explicitly authorised to use it.

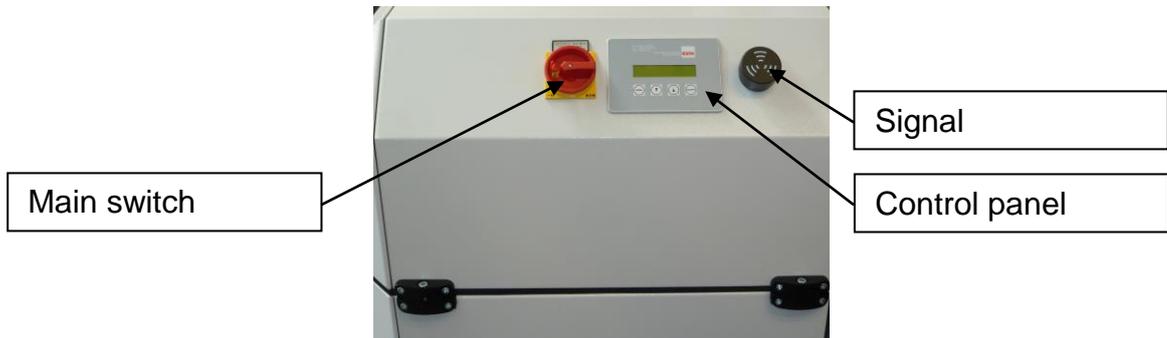
Always keep the instructions at the place where the device is being used, so that they can be seen by personnel at all times.

2 Product Description

2.1 Device image DUSTOMAT 4 H



2.1.1 Control unit ESTA standard control



2.2 Functional description

The control unit is integrated within the fan unit. The control unit is equipped with a pressure sensor as a control device for overseeing minimum airflow volume. This control device measures the negative pressure behind the filter unit. With increased dust soiling of the filters in the filter unit, the flow resistance increases along with the negative pressure behind the filter.

If the value set in the control system for the nominal volume flow is reached during operation, this will be indicated by a message in the text field of the control panel. At the same time, the filter cartridges are cleaned automatically with compressed air. A pneumatic jet pulse cleaning device is integrated within the device's filter unit for this very purpose. Intense pulses of compressed air are successively introduced into the filter cartridges in the filter unit. The filters are freed from dust and regenerated through this cleaning.

2.3 Minimum volume flow monitoring

The minimum volume flow is monitored through differential pressure measurement. This is integrated into the control unit. If the nominal volume flow set at the factory is fallen short of, the automatic cleaning of the filter cartridges begins. The filter cartridges are automatically cleaned with compressed air. If the minimum volume flow set in the device is reached, this will be indicated by a message in the text field of the control panel and an acoustic signal. System shutdown and inspection is mandatory.

Extraction elements with various intake port diameters can be operated with the device. When so doing, you must ensure that

- The minimum airflow volume sucked away is not undershot.
 - The minimum airflow volume depends on the diameter of the intake port of the extraction element and the requisite conveying velocity.

3 Safety

3.1 Hazard categories

Safety instructions and cross-topic information are indicated in this manual by symbols.

Based on the severity of the hazard, the hazard warnings are categorized as follows:

	<p>DANGER</p> <p>Hazard warning about an immediate danger to people. Failure to comply can lead to severe injury or death.</p>
	<p>WARNING</p> <p>Warning about a recognisable hazard. Failure to comply can lead to severe injury or death, and can destroy the device or parts thereof.</p>
	<p>CAUTION</p> <p>Instruction about a hazard. Failure to comply can lead to mild injury and to damage to the device.</p>

3.2 Symbol explanation

	Further information
	Reference to ESTA customer service
	Reference to legal regulations

3.3 General safety instructions

In all emergencies, the device must be disconnected from the power supply immediately, turned off at the main switch and the plug pulled immediately.

If there is a fire, alert the fire department immediately, and contain the fire by appropriate means. Therefore keep a suitable extinguishing agent near the device before start-up and during operation.

All movable machine parts driven by electric motors must be covered by fixed, securely fastened protective covers that can be removed only with tools.

3.4 Preventing electrical hazards

	<p>DANGER</p> <p>Electric shock from high voltages</p> <ul style="list-style-type: none">• Follow the safety rules for working with electrical devices!• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.
	<p>DANGER</p> <p>Residual hazard from loose or open covers</p> <ul style="list-style-type: none">• Keep covers closed during operation!• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.

All electrical parts must be covered by fixed, securely fastened protective covers that can be removed only with tools. The device complies with Protection Class I according to DIN EN 60335.

After use, before moving the device to another site and before cleaning, maintenance, or replacement or removal of movable parts, switch off the system at the main switch and pull the mains connector.

4 Control system description

4.1 ESTA Standard Control System control panel

Switch on the device at the main switch. The suction in manual mode is then switched on and off by pressing the "ON/OFF" button.



1. Accessing the operation menu
2. Entering the ESC function in the menu



1. Navigation in the menus
2. Value adjustment
If held down, automatic value adjustment starts. The value increases if the key is pressed down for an additional 5 seconds.



1. Beyond the menu functions:
Switching the extractor fan on and off / post-cleaning start
2. Within the menu function:
Selection / ENTER function

4.1.1 Operating on the control panel of the ESTA standard control

Once the device has been switched on at the main switch it is ready for operation. In this process the extractor fan is not activated.

ESTA dust extractor
Ready for operation



Switching the suction operation on and off.

Display in suction operation.

Extractor fan: ON
DP filter = - 0.1 mbar

Post cleaning running
Valve number = 2

After deactivation, the post-cleaning of the filter starts automatically. Then the device switches back to a "**ready for operation**".

4.1.2 Menu selection / Operation menu

The normal user can only get into the operation menu in which he is able to operate additional functions or open further information. The additional menu items can only be accessed by production or ESTA service.

Operation menu:



The operation menu is accessed using the MODE button.

OPERATION MENU

1. Sensor selection
2. Cleaning test
3. Drawer
4. Precoat. Function
5. Operating hours
6. Maintenance
7. Error messages
8. Button sound on/off
9. Language selection
10. Software version
11. Code entry

1. Sensor selection

Change? -> ^

1. DP filter
2. DP control filter
3. DP negative pressure

Choice of which differential pressure sensor is displayed.

2. Cleaning test

Cleaning: OFF
Test start with ON / OFF

Cleaning valve = 1
Test stop with ON / OFF



The cleaning valves are activated with the current pulse and pause time. Cleaning runs until "test stop" is commanded with the ON/OFF button or until the menu is exited.

5. Operating hours

Operating hours
= 2 h



The operating hours record the running time of the fan.
MODE button Menu function cancellation

6. Maintenance

1998 h
until maintenance



The **maintenance menu** displays the hours set under minus the operating hours under **maintenance interval**.

MODE button Menu function cancellation

8. Button sound on/off

Button sound: OFF
Switch with ON / OFF

Button sound: ON
Switch with ON / OFF

There is a normal "good" sound and a "bad" sound, which indicates commands that cannot be executed; such as selection and navigation at the end or start of menus or value ranges.

9. Language selection



This is where you select the menu language.

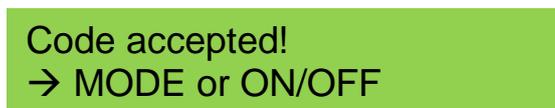
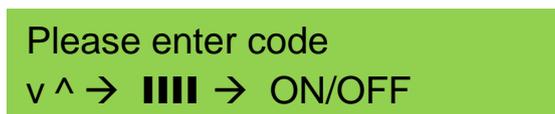
10. Software version



Displays the software version with date.

11. Code entry

Code entry access to the service menu **settings** enables parameter settings to be made without a hardware key. A 4-digit access code is required for this. If required, you can get this access code from ESTA customer services. The access code is valid for at least one, and a maximum of two, operating hours after entry.



1. Value adjustment
If held down, automatic value adjustment starts. The value increases if the key is pressed down for an additional 5 seconds.



2. Within the menu function:
Selection / ENTER function



3. Entering the ESC function in the menu

In the event of the access code being entered incorrectly, the following message appears.

Incorrect access code!
→ MODE or ON/OFF



1. Within the menu function:
Selection / ENTER function



2. Entering the ESC function in the menu



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4.1.3 Service menu / Settings

Once the **code entry** has been successfully activated, the following settings can be made.

Only do this with the support of ESTA customer service.

The following settings are linked to the error messages below:

SETTINGS	
1. Type of cleaning	
2. Upper threshold	
3. Lower threshold	
4. No. of valves	
5. Pulse time	
6. Pause time	
7. Jet alarm threshold	←→
8. Precoat. threshold	
9. Post-clean. cycles	
10. Brush maintenance	
11. Brushing duration	
12. Repetition	
13. Start mode	
14. Star start-up time	
15. Wait → Triangle	
16. Fail-safe fault	
17. Drawer aid	↘
18. Control threshold	↘
19. Neg. press. threshold	↘
20. Motor control variable	↘
21. Rem. ctrl overrun	
22. Maintenance interval	
23. Maintenance reset	
24. Parameter reset	
25. System message	

Control filter full
Operation prohibited

**Check
suction power**

1. Value adjustment
If held down, automatic value adjustment starts. The value increases if the key is pressed down for an additional 5 seconds.



2. Within the menu function:
Selection / ENTER function



3. Entering the ESC function in the menu

4.1.4 Parameter list DUSTOMAT 4-10 H

The values in the following table apply as reference values for the configured parameters.

Here external losses of pressure that may occur through the connected pipeline are not considered.

	Parameter	Adjustment range	Set value at		
			ø125		
	Language selection	DE, EN, ES, FR, etc.	DE		
1.	Type of cleaning	Brush / jet	Jet		
2.	Upper threshold, cleaning	0 - 30 mbar	30		
3.	Lower threshold, cleaning	0 - 30 mbar	30		
4.	No. of valves	1 - 5	2		
5.	Pulse time	0.0001 - 0.9999 sec	0.15		
6.	Pause time	0.1 - 999.9 sec	3		
7.	Jet alarm threshold horn	0 - 30 mbar	17		
8.	Pre-coating threshold	0 - 30 mbar	0		
9.	Post-cleaning cycles	0 - 20	6		
13.	Start mode	Direct / star-delta / FC	Direct		
14.	Star start-up time	0 - 60 sec	0		
15.	Waiting time until delta	0 - 1000 ms	500		
18.	Control filter threshold	0 - 30 mbar	12		
19.	Negative pressure threshold	0 - 60 mbar	23		
20.	Motor control variable	0 - 100% (in 5% steps)			
21.	Rem. ctrl overrun	0 - 60 min.	1		
22.	Maintenance interval	0 - 10 h x 1000	2		

4.1.5 Parameter list DUSTOMAT 4-24 H

The values in the following table apply as reference values for the configured parameters.

Here external losses of pressure that may occur through the connected pipeline are not considered.

	Parameter	Adjustment range	Set value at		
			ø160	ø180	ø200*
	Language selection	DE, EN, ES, FR, etc.	DE		
1.	Type of cleaning	Brush / jet	Jet		
2.	Upper threshold, cleaning	0 - 30 mbar	20	19	17
3.	Lower threshold, cleaning	0 - 30 mbar	19	18	16
4.	No. of valves	1 - 5	2		
5.	Pulse time	0.0001 - 0.9999 sec	0.15		
6.	Pause time	0.1 - 999.9 sec	3		
7.	Jet alarm threshold horn	0 - 30 mbar	21		
8.	Pre-coating threshold	0 - 30 mbar	0		
9.	Post-cleaning cycles	0 - 20	6		
13.	Start mode	Direct / star-delta / FC	Direct		
14.	Star start-up time	0 - 60 sec	0		
15.	Waiting time until delta	0 - 1000 ms	500		
18.	Control filter threshold	0 - 30 mbar	12	12	12
19.	Negative pressure threshold	0 - 60 mbar	31	29	26
20.	Motor control variable	0 - 100% (in 5% steps)			
21.	Rem. ctrl overrun	0 - 60 min.	1		
22.	Maintenance interval	0 - 10 h x 1000	2		

* Standard

5 Faults/error messages

5.1 Possible error messages on the control panel

1. Error messages

The system is
fault-free

The system monitors the valve outlets for short-circuits and disconnection. Monitoring only starts when a valve is activated.

2. Rotating field

Rotating field incorrect
Operation prohibited

The control system checks the rotating field of the feed every time the main switch is activated. In the event of an incorrect field of rotation, this message appears and system operation is not possible. The rotating field must be changed. To do this, switch the system off again on the main switch, and change the rotating field on the supply cable.

3. Motor fault

EMERGENCY OFF:
Motor fault



The input motor fault on the power unit is activated. The collective fault and horn relays are triggered. The mains, star and delta contactor relays are deactivated. Suction operation can only be switched back on once the motor fault has been eliminated. The fault must be confirmed with the ON/OFF button.

4. Collective fault

EMERGENCY OFF: Input
Collective fault



An external contact at terminal 45, 46 leads to an EMERGENCY OFF message. Operation is interrupted and can only be confirmed with the ON/OFF button. If the external error message no longer exists, operation continues.

5. Valve error ;F

XXXX ,F!
XXXX

If ,F! is shown on the display after cleaning is performed in the **Jet cleaning cleaning mode**, a valve error was detected during the cleaning process. A more detailed description of the error is accessible in the **operation menu** in the sub-menu **error messages**. If a valve error has occurred, cleaning is continued despite the error. The cause of the error should be eliminated immediately.

Valve number: X
Fault: interruption

The cause of this fault could be a severed cable or a defective valve.

Valve number: X
fault: excess current

The cause of this fault could be a short-circuit in the cable or valve.

6. Jet alarm threshold exceeded

Jet alarm threshold exceeded



This error message appears if the differential pressure over the filter continues to increase despite cleaning being applied.

The message must be confirmed with the ON/OFF button. Then cleaning must be started via the operation menu under the menu item **cleaning test**.

7. Control filter full

**Control filter full
Operation prohibited**



This message appears if the set threshold is exceeded. The collective fault and horn relays are switched on. The message can be confirmed with the ON/OFF button once the threshold is fallen short of.

8. Check suction power

**Check
suction power**



This message appears when the negative pressure threshold is exceeded. The collective fault and horn relays are switched on. The message is automatically reset when the value falls below the threshold.

The message can be confirmed with the ON/OFF button. The pressure is checked again after 10 seconds. If the threshold continues to be exceeded, the error message re-appears.

9. Negative pressure exceeded

**Negative pressure
exceeded**



This message appears when the negative pressure threshold is exceeded at the separate pressure switch. The device switches off. After that, the suction pipe should be checked.

The message is to be confirmed with the ON/OFF button.

10. Please check your Parameter settings

**PLEASE CHECK YOUR
PARAMETER SETTINGS**



One or more parameters are outside the permissible range. The error prevents the activation of suction operation. The factory parameters can be set or completely re-established in the service menu **settings**. The relevant hardware key or a code entry is required for this purpose.

Cancel with the MODE button.

11. EepromParameterFailure

EEPROM PARAMETER FAILURE

The parameter data is damaged. The error prevents the activation of suction operation. If this message appears the user can do the following:



1. Press the MODE button to access the **operation menu**.
2. Point 1. **Select the sensor** and confirm the selection with "ON/OFF".
3. Select another differential pressure sensor and confirm the selection with "ON/OFF".

If the error message is still displayed, switch the device off and back on again at the main switch. If the error message continues to be displayed after this, get in touch with ESTA customer services.



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12. Calibration data failure

CALIBRATION DATA FAILURE

The calibration data is damaged. This fault can only be resolved by the manufacturer. The control system can no longer be put into operation.



Cancel with the MODE button.

5.2 Troubleshooting



DANGER

High-voltage electric shock when working on the open switch cabinet

- Follow the safety rules for working with electrical devices!
- Secure the device against reactivation with a padlock!
- Render the device voltage-free by pulling the mains connector!
- Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.

Fault	Possible cause	Possible solution
Suction too weak	Filter soiled.	Clean filter.
	The throttle in the suction pipe system is shut too firmly	Open the throttle in the suction pipe system accordingly
	Clog due to deposited residue in the suction pipe system	Check the suction pipe system for deposited residue and clogs, and clean it if necessary.
	Cleaning point too low, meaning no cleaning of the filter.	Contact ESTA customer services to adjust the cleaning point.
Automatic cleaning always starts after switching on the device.	Filter worn.	Perform filter change.
	Collection drawer full.	Replace disposal carton; empty collection drawer if necessary.
Minimum volume flow undercut; acoustic signal is activated.	The resistances in the suction pipe system are too high	Check suction pipe system; if necessary, use a pipeline with a larger diameter or reduce the length of the pipeline
	Cleaning point set up too high.	Contact ESTA customer services to adjust the cleaning point.
	Clog due to deposited residue in the suction pipe system	Check the suction pipe system for deposited residue and clogs, and clean it if necessary.
	The throttle in the suction pipe system is shut too firmly	Open the throttle in the suction pipe system accordingly
	Motor protection trips.	Motor was switched on/off too often within a short period of time.



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