The World of Extraction ESTA

OPERATING INSTRUCTIONS

SRF T-2/T-4

Welding Fume Filter

The World of Extraction ESTA

Welcome to the sphere of suction technology

Your purchase of an **ESTA** machine has been a good decision. The design of our quality products complies with the latest state of the art. **ESTA** products have been devised to provide for clean air at the workplaces at which they are applied. This results in an even more enhanced level of quality and longer machine times and, particularly, healthier working conditions. Should you have any questions pertaining to suction technology issues, please feel free to contact us at any time. Our experts will be gladly at your disposal.

Your **ESTA Absaugtechnik** Team

www.esta.com

Operating Instructions

SRF T-2
SRF T-4

Item no. 55.101 (SRF T-2)
Item no. 55.102 (SRF T-4)

Do not use this device unless you have
read the operating instructions and understood them.

Original operating instructions
55101-08-01

Edition notice

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ESTA Apparatebau GmbH & Co. KG
Gotenstr. 2-6
89250 Senden
Germany

Tel.: +49 (0) 73 07 80 4 -0
Fax: +49 (0) 73 07 80 4 -500
Email: info@esta.com
www.esta.com

Copyright notice (per DIN ISO 16016:2007-12)

Warning and safety information

Danger from electrical current

Note

Reference to ESTA customer service

Reference to legal regulations

Contents

1. General notes on safety

Before operation, all persons who are to use the device or perform maintenance on it must be provided with information, instructions and training in using the device and on the substances for which it is to be used, including the procedure for safe disposal of the collected material. Responsibilities must be clearly established for the following:

- **Installation**
- **Commissioning**
- **Operation**
- **Maintenance and repairs**

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 operating instructions in the place where the device is being used, so that they can be viewed by personnel at all times.

The device must be used exclusively for the extraction of welding fumes. The device may not be used to extract liquids, aggressive gases easily-flammable media or glowing particles (hotspots or similar) under any circumstances.

The use of the device while welding oiled metal parts is not permitted. **Fire hazard!**

The device may not be used or stored outside in wet conditions.

Only original ESTA spare parts may be used; otherwise your warranty is voided.

During extraction, the volume flow returned from the device to the room must be no more than 50% of the supply air. With open room ventilation, supply air flow should be assumed as equal to the room volume every hour. This means that the rate of air replacement must be once per hour.

Supply air flow [m^3/h] = room volume [m^3] ∗ air replacement rate [1/h]

Example:
When the device is operating at the nominal airflow volume of 200 m^3/h, the same volume of fresh air must be fed in. This occurs with natural ventilation if the volume of the work room is 2000 m^3 (e.g., 58 m^2 surface with a 3.5 m ceiling height).

When using the extraction element of the extraction arm, take into account the suction distance of approx. 200 mm and position the arm based on the thermally induced motion of the welding smoke.

You must ensure that the power cable does not become damaged from being run over, crushed, strained or suchlike.

The power cable should be checked regularly for signs of damage or ageing.

The device must not be used if damage is detected to the power cable.

Replacing the power cable and the power plug may only be performed by an electrical specialist or a person trained for this purpose.

The spare parts of the mains or device connection cables required for this must only be used with original parts specified by ESTA. This will ensure that these components are splash-proof and possess the necessary mechanical strength required by the applicable standards.

The power plug may only be plugged in once the welding fume filter has been set up in its installation location. This requires a 16-A Schuko wall socket with a slow-blow fuse (VDE-approved).

All plugs and connectors used for the connection of electrically driven industrial dust extractors and standard dust extractors must comply with EN 61241-14. Coupling connector devices and adapters are not permitted.

After use, before moving the device to another site and before cleaning, maintenance, or replacement, or removal of movable parts, the device must be unplugged and, if present, the compressed air supply disconnected.

Use only original ESTA accessories to operate the dust extractor.

The device contains toxic dust after the first time it is used. Emptying and maintenance procedures must be performed by expert personnel who are wearing appropriate personal protective equipment. The device may not be operated without the complete filtration system!

The directives 89/655/EEC and TRGS 560 require that safety devices for the prevention or remedy of hazards be subject to regular maintenance and inspection by a trained person for their fault-free function.

In all emergencies, the device must be disconnected from the power supply immediately, turned off at the emergency stop switch and the plug pulled immediately. If there is a fire, the fire department is to be alerted immediately, and the fire must be contained by appropriate means.

2. Preventing mechanical hazards

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

Residual risk:
If a covering that can only be unfastened with tools is removed, a risk of injury cannot be ruled out when the machine is running.

3. Preventing electrical hazards

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 EN 60 335.

Residual risk:
If a covering that can only be unfastened with tools is removed, the risk of electric shock cannot be ruled out.

4. Preventing dust hazards

When emptying the dust collection container, it is possible to inhale dust. This risk can be minimised by complying with the specifications outlined in section "Disposal of the collected dust".
When transporting the device, all suction openings must be closed to prevent dust from escaping.

5. Intended use

The ESTA welding fume filter has been manufactured according to the latest technology and all recognized safety regulations.

The SRF T-2 or T-4 welding fume filter is suitable for the extraction of welding fumes when welding unalloyed or low-alloyed steels at individual portable welding stations. Cleaned air can be returned in the work room. The devices is equipped with dust class “M” (moderate hazard) filters for the separation of dust and fumes with an exposure limit of more than 0.1 mg/m^3.
A special version of the device allows the use of a soldering fume filter.

Not suitable for the extraction of welding fumes during the welding of oil-covered parts.

The device may not be used or stored in wet conditions.

The devise is designed for commercial use, such as in industrial enterprises and workshops.

Other applications are considered unintended use. ESTA is not liable for damages due to unintended use.

The dust extractor has been constructed by ESTA in accordance with the operator’s specifications.

When connecting a suction hose, make sure that only electrically conductive hoses are used and that the electrical connection between the hose and the port is fault-free. If a so-called “spiral hose” is used, the metal spirals must be stripped and pressed to the bare wall of the extraction port with a pipe clamp after the hose is attached.

All plugs and connectors used for the connection of electrically driven industrial dust extractors and standard dust extractors must comply with EN 61241-14. Extension cables, coupling connector devices and adapters are not permitted.

6. Technical data and description

6.1 Welding fume filter

Technical changes reserved

Model: (see model plate)		T-2	T-4
Max. airflow volume	[m³/h]	200	400
Connection diameter	[mm]	50	2 x 50
Max. vacuum	[Pa]	19,000	19,000
Connection voltage	[V]	230	230
Drive power	[kW]	1.1	2.2
Nominal frequency	[Hz]	50	50
Filter area	[m²]	0.8	1.6
Dimensions (L x W x H)	[mm]	390 x 210 x 500	490 x 400 x 560
Max. sound pressure level	[dB(A)]	66	66
Weight	[kg]	15	27
Production year		See model plate	

6.2 Function description

The welding fume filter is equipped with either a 1.1 kW (T-2) or 2 x 1.1 kW (T-4) turbine suction unit, depending on the model. The device is switched on and off via a green rocker switch.

The vacuum created by the turbine sucks in air via the suction hose that is connected to the intake port.

A specially designed permanent filter located in the filter housing separates the dust from the extracted air.

The purified air is returned to the room through an exhaust slot.

The minimum volume flow is indicated by the red dot on the integrated manometer. If the minimum volume flow is not reached, the filter must be cleaned using compressed air.
By cleaning the filter elements, fume residue is removed and the filter elements are regenerated. The tray at the bottom collects the extracted dust. The tray must be checked after each use.

7. Delivery, assembly and commissioning

7.1 Delivery and transport

The welding fume extractor is delivered in a cardboard packaging. The device is ready to plug in and use immediately on delivery.

Please inspect the device for transportation damage when it arrives.
Any identifiable damage must be reported and documented immediately.

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When setting up the device, ensure that the floor has sufficient load-bearing capacity.

7.2 Assembly

No additional assembly work is required, other than connecting the device to the power supply, the suction hose and the compressed air supply when cleaning the device after use.

7.3 Commissioning

Only persons authorised in accordance with section “General notes on safety” may commission the device.
Before establishing cable connections between the device and the mains, check that the operating voltage specified on the factory plate matches that of the mains supply.

Set up the device on an even surface as close as possible to the workstation. The wheels on T-4 type devices must be locked.

Before the device is first used, a function check must be performed.

The on/off switch is used to switch the device on and off.

8. Maintenance and troubleshooting

8.1 Maintenance instructions

For maintenance by qualified personnel, the device must be opened, cleaned, and inspected at the given locations, as far as this is feasible, without any hazard being posed to maintenance personnel or to other persons. Appropriate precautionary measures are to be taken prior to the cleaning and removal of wear parts. This includes locally filtered forced-air ventilation in the area in which the device is being maintained and proper personal protective gear.

During maintenance or repair work, all soiled objects that can no longer be adequately cleaned must be disposed of. Such objects must be discarded in impermeable bags in compliance with applicable regulations for disposal of such refuse.

If the device is not needed in its location of use for a long time, it must be stored in a dry room. The temperature should not be below 5°C or above 25 °C.
Before storing the device, we recommend that you wipe it clean with a damp cloth; clean the filter; and empty the dust container.

Under no circumstances may the device be cleaned by being sprayed down with jets of water.

The operator is obligated to have maintenance performed once per year. During this process, the correct function of the device must be checked by a trained specialist. Records must be kept of the main annual inspection in the maintenance book provided. The date of the inspection, detected deficiencies and the name of the auditor must be visible from this. The date of the next maintenance session can be read on the inspection plate installed on the device.

8.2 Inspection and maintenance intervals

Regular maintenance consists of 3 intervals:

1. Daily inspection includes:

➢ ***By the device user***

Visual inspection

- For damage to the device or its parts,
- For mechanical damage to the power cable
- For a full dust collection container (regulations require that the container be emptied if it is more than 2/3 full),

2. Monthly inspection includes:

➢ ***By expert maintenance personnel***

Visual and function check

- for filter leaks (dust trails or deposits on the air outlets)
- to ensure the minimum airflow volume control is working To carry out the check, the air inlet of the device must be closed, and the manometer needle should move past the red dot.

3. The main annual inspection includes:

The last test by ESTA is documented on the device.

➢ ***In collaboration with the ESTA maintenance service***

- Flow volume measurement
- Low-pressure measurement
- Power consumption measurement
- Visual check of filters
- Seal inspection

After maintenance, the device receives a new test plate to document that maintenance has been performed.

This inspection must be performed once annually!

Written records of servicing work are to be kept in the maintenance book provided. This must make clear the equipment inspected and, if necessary, the deficiencies found, along with the name of the inspector and the date of the inspection.
Switch off the dust extractor immediately following a malfunction and notify the responsible maintenance service.

Maintenance work must be performed according to accident prevention regulations. The device must be disconnected from the mains and compressed air supply.

According to work equipment user directives 89/655/EEC and TRGS 560, safety devices for the prevention or removal of hazards must be regularly maintained and inspected by an expert for safe, flawless operation.

Get the most from ESTA's maintenance service!

A maintenance contract ensures a long life span and smooth operation for your dust extractor.
We'll make you a great offer — just call us up:

ESTA Maintenance Service: +49 (0) 7307 804 - 0
ESTA Spare Parts Service: +49 (0) 7307 804 - 0

8.3 Troubleshooting

If a fault is detected, always use the following check list. Immediately call the ESTA maintenance service if a fault emerges which is not covered in this list. Do not perform any repair work on the device yourself which is explicitly permitted.

Fault	Possible cause	Possible solution
Suction too weak, manometer needle on red dot.	Main filter is dirty.	Clean filter.
	Suction hose is blocked.	In a vacuumed room, hold the hose vertically and knock out with a rubber mallet.
Manometer needle stays on or past the red dot despite cleaning the filter.	Filter pores are blocked.	Perform filter change.

Should dust escape or cloud up from the air outlet openings; given the development of smoke; or should the ventilator run loudly; disconnect the device from the power supply immediately.

9. Monitoring the minimum air volume flow

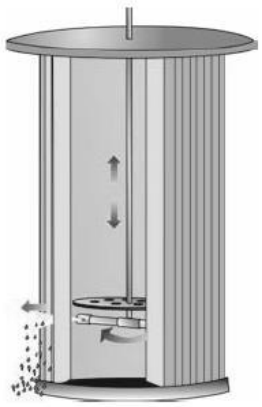
A safety device is built into the device for monitoring the minimum air flow volume to be extracted. The air flow volume is monitored using a manometer. A red dot is positioned on the scale to indicate the minimum volume flow limit. If the manometer shows excessive negative pressure, the filter must be cleaned.

10. Cleaning

The people assigned to cleaning work must be instructed on the aspirated toxic materials and wear a breathing protection mask with a class P3 particle filter, as well as protective gloves. Harm to bystanders must be prevented by all means.

During cleaning work, all soiled objects that can no longer be adequately cleaned must be disposed of. Such objects must be discarded in impermeable dust bags in compliance with the applicable regulations for disposal of such refuse.

10.1 Rotary cleaning system



Minimum air pressure: 4.5 bar
Maximum air pressure: 6 bar
If the manometer needle of the device has moved past the red dot during operation (meaning the minimum volume low is not reached), the filter must be cleaned.
This procedure should be carried out during downtimes. The following steps must be carried out in the described order:

After the device has shut down, wait approx. one minute for the dust in the device to settle.

Then connect a compressed air hose with a DN-type 7.2 ¼-inch coupling to the ¼-inch nipple on the rotary cleaning unit. After opening the valve lever, the compressed air causes the cleaning nozzle to rotate inside the fine filter cartridge. By moving the tube up and down, fume residue is removed and the filter is regenerated from top to bottom.
The tray at the bottom collects the extracted dust. The tray must be emptied after each cleaning. To empty the tray, unscrew the knurled nuts and remove the tray.

If the suction power does not improve after cleaning, the filter must be replaced.

10.2 Changing the filter

The replacement of the filters must be performed in a well-ventilated room or outdoors. The people assigned to this work must be instructed on the extracted toxic materials and wear a breathing protection mask with a class P3 particle filter, as well as protective gloves. Harm to bystanders must be prevented by all means.

After an extended period of operation, the filters clog up slowly due to the ingress of extremely fine dust in the pores. Even a cleaning device can no longer remove this infiltrated dust. The filter must be replaced with a new one.
If possible, the filter must be replaced when there is no other work going on. The old filter must be disposed of according to local regulations.

Before replacing the filter, any loose dust must first be removed using the accompanying cleaning system, and the device disconnected from the mains.

Unscrew the four cross-head screws from the cover of the device, and lift up the entire part by the handle.
Now unscrew the two safety nuts from the threaded rod of the filter in question and remove the U-profile.
The filter can now be removed.
The new filter is installed using the same procedure in reverse order.

Do not clean the removed filter mat by beating or blowing on it.

11. Disposal

Persons assigned to disposal work must be instructed on the extracted toxic materials and wear a breathing protection mask with a class P3 particle filter, as well as protective clothing. Harm to bystanders must be prevented by all means.

11.1 Disposal of the collected dust

To dispose of the collected dust, the dust collection tray must be removed by unscrewing the two knurled nuts. The dust collection tray can now be removed.
The dust in the tray must be disposed of according to the local regulations.

11.2 Disposal of the device

To dispose of the device, first empty the dust collection tray and remove the filter cartridges, then dispose of these according to local regulations.

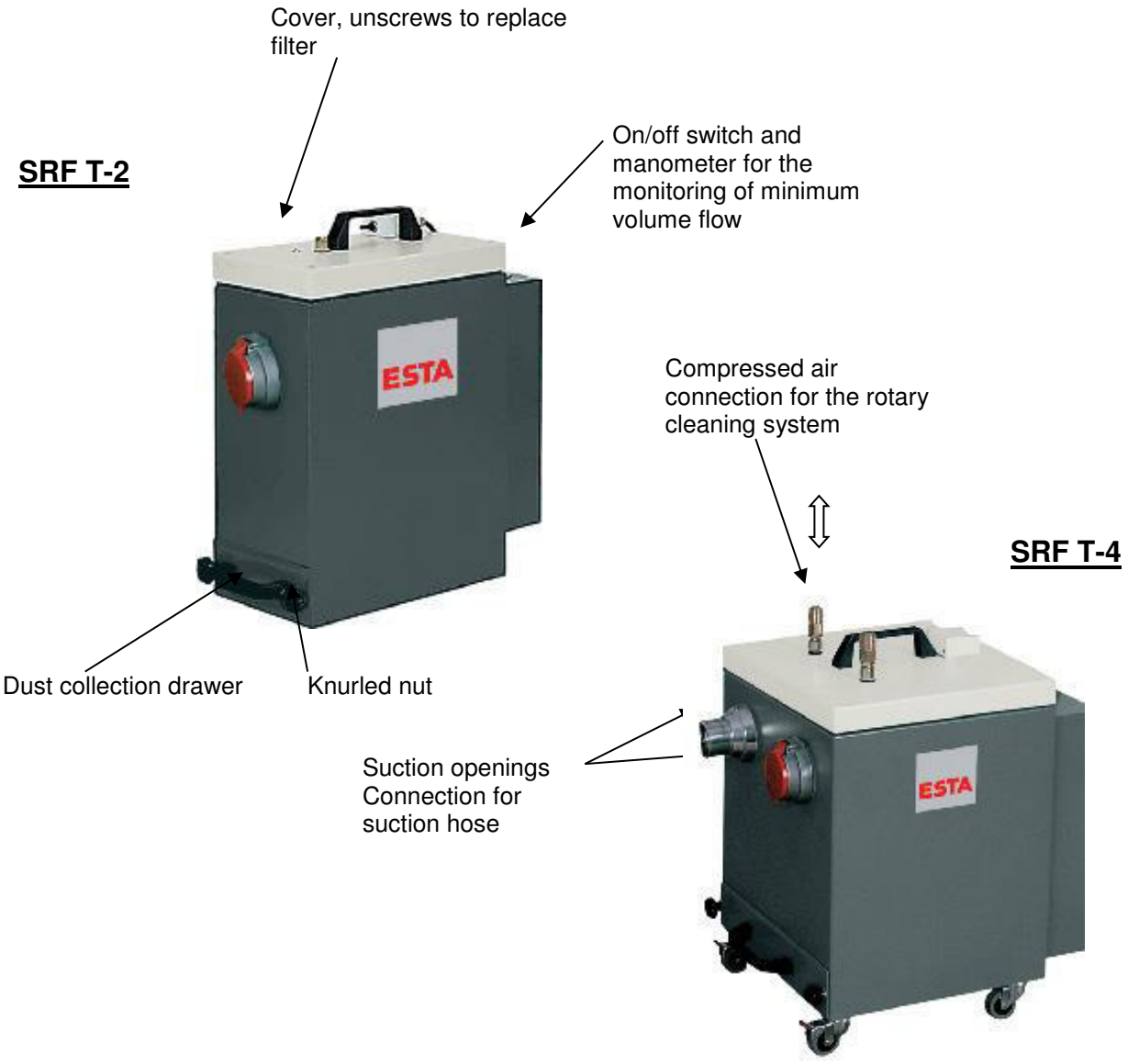
The device must be packaged in an appropriate manner and disposed of according to local regulations.

Due to contamination of the device with dust hazardous to health, it cannot be returned to ESTA.

12. Device image

SRF T-2 / SRF T-4 welding fume filter

SRF T-2



With reference to the model information, please request the replacement parts you need from the ESTA Spare Part Service: +49 (0) 7307 804 - 0

13. Declaration of Conformity

Name of manufacturer: ESTA Apparatebau GmbH & Co. KG
Address of manufacturer: Gotenstraße 2 - 6
89250 Senden

Name of the authorised
document representative: ESTA Apparatebau GmbH & Co. KG
Gotenstraße 2 - 6
89250 Senden

We hereby declare that the design of the machine

Machine: Dust extractor for the collection, transport and separation of dry dust and welding fumes
Series: SRF T welding fume filter
Model: **SRF T-2, …T-4**

was developed, designed and produced in accordance with the requirements of directive 2006/42/EG. The protective aims of the 2014/35/EU Low Voltage Directive have been accomplished in accordance with Appendix I, No. 1.5.1 of the 2006/42/EC Machinery Directive.

The device also fulfils the protection requirements of the following EU directives:

2014/30/EU EU Electromagnetic Compatibility Directive

Reconciled norms used:

DIN EN 12100	Safety of machinery – Basic concepts, general principles for design
DIN EN 13857	Safety of machinery, devices and systems; safety distances to prevent hazard zones from being reached
DIN EN 349	Safety of machinery; minimum distances for preventing body parts from being crushed
DIN EN 60335	Safety of electrical devices for household use and similar (Part 1 and part 2-69)
EN 61000-6-3	Electromagnetic compatibility – Interference for residential, commercial and light-industrial environments
EN 61000-6-4	Electromagnetic compatibility – Interference for industrial environments
EN 61000-3-11	Electromagnetic compatibility – Limits – Limitation of voltage changes

National norms and technical specifications used:

VDI 3677 Filtering separators

Senden, 16/06/2016

Dr. Peter Kulitz
Managing Director

Notes

ESTA Apparatebau GmbH & Co. KG
Gotenstraße 2 - 6
89250 Senden / Ay

Tel.: +49 (0) 7307 804 - 0
Fax: +49 (0) 7307 804 - 500
Email: info@esta.com

www.esta.com

Notes

ESTA Apparatebau GmbH & Co. KG
Gotenstraße 2 - 6
89250 Senden / Ay

Tel.: +49 (0) 7307 804 - 0
Fax: +49 (0) 7307 804 - 500
Email: info@esta.com

www.esta.com

Notes

ESTA Apparatebau GmbH & Co. KG
Gotenstraße 2 - 6
89250 Senden / Ay

Tel.: +49 (0) 7307 804 - 0
Fax: +49 (0) 7307 804 - 500
Email: info@esta.com

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ESTA Apparatebau GmbH & Co. KG
Gotenstrasse 2 – 6
D-89250 Senden, Germany

Phone: +49 (0) 73 07 - 8 04 - 0
Fax: +49 (0) 73 07 - 8 04 - 500
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