

# Operation and Maintenance Instruction Manual

Escalator Deep Cleaner

## ***Rotomac 360***



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The manufacturer reserves the right to make adjustments to the machine.

This Operation and Maintenance Instruction Manual is intended for service personnel only!

## **Preliminary remarks**

Safety and reliability are absolutely essential to guarantee a long and trouble-free service life of the Rotomac 360. In order to fulfil these requirements, the operator must obtain sufficient skill in handling the machine, its maintenance and care. It is therefore vital that the operator receives instruction and training from JUMA Reinigungstechnik GmbH specialists before the cleaning machine is started for the first time.

The present Operation and Maintenance Instruction Manual represent additional assistance for the operator in obtaining the information necessary for correct and safe use of the cleaning machine.

The nearest customer service centre should be informed immediately if some technical fault in this cleaning machine should occur.

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# 1 Safety instructions

## 1.1 Preliminary remarks

The escalator deep machine Rotomac 360 was manufactured according to state-of-the-art technology and in compliance with all relevant regulations. This, however, does not guarantee that some other unavoidable dangers for persons and property can occur. All personnel working with this machine must therefore read and follow these operating instructions, and in particular the safety regulations, with great care.

These operating instructions must remain at the machine for use by the operator. Each operator must receive thorough instruction on handling and working with the machine.

## 1.2 Owner's duties

In accordance with EU directive on the use of operating equipment 89/655/EEC Art. 6(1) and 7 and EU framework directive 89/391/EEC Art. 1(1) and Art. 6(1), the owner of the equipment is obliged to instruct all persons, particularly with regard to safety, who will be authorised to work on assembly, operation, maintenance, repair or dismantling of the machine.

The owner is also obliged in accordance with EU directive on the use of operating equipment 89/655/EEC Art. 4a to inspect the machine before start-up, following repair work and following faults or malfunction.

## 1.3 Intended and specified use

The escalator deep cleaning machine Rotomac 360 is exclusively intended for basic and maintenance cleaning of indoor and outdoor escalators. Any use beyond this stipulation must be considered as contrary to the manufacturer's intentions. The manufacturer will not be liable for any damage resulting from such work; all risk in this case will be borne exclusively by the operator. Correct use of the machine also includes compliance with the conditions of operation and maintenance stipulated by the manufacturer.

- The escalator deep cleaning machine Rotomac 360 is not intended nor suitable for cleaning hazardous dirt.
- The machine is not fire-proof.
- The machine is also not licensed for use in cleaning public streets and paths.

## 1.4 Who may operate the machine?

The machine may only be used by persons who have been instructed in its operation and who are expressly authorised to carry out such work. These persons should be at least 18 years old.

All relevant accident prevention regulations and other generally recognised rules of safety engineering, industrial medicine and the highway code must be strictly observed.

Assembly, equipment, maintenance and repair work demand special knowledge and may only be carried out by specially trained experts.

## 1.5 Safety for the operator

- The user must under no circumstances touch the plug of the power supply with damp hands.
- When the machine is being disconnected from the power network, only the plug itself may be pulled - never the power cable.
- The machine may be repaired or opened only by qualified electricians.



If work on the opened machine with connected current is absolutely necessary, such work may be carried out only by a qualified electrician who is familiar with all attendant dangers and the relevant work stipulations (VDE0100). When work is carried out on machine or parts when live, only tools specially intended for this purpose may be used

## 1.6 Modifications and changes to the machine

It is forbidden for reasons of safety to carry out modifications to this machine. Any unauthorised modifications to the machine automatically invalidate all liability claims against the manufacturer for any damage caused by the modified machine.

Original parts and accessories have been specially designed for this machine. Parts and fittings made by other manufacturers have not been tested by us and are therefore not approved for use. Assembly and installation of such parts could impair the safety and the perfect functioning of the machine. JUMA Reinigungstechnik GmbH expressly refuses to accept liability for any damage resulting from the use of non-original parts and accessories.

## 1.7 General safety instructions

- When the machine is not in use, it must always be locked away and the key removed.  
If it is not possible to lock away the machine, some other suitable measures must be taken to prevent unauthorised use.
- Neither the electrical nor mechanical safety devices on the machine may be changed or put out of action.
- It must be ensured that no other persons, in particular children, are in the vicinity of the machine when it is in operation.
- The machine may only be transported in elevators whose permitted load is adequate for this purpose.

## 1.8 Safety instructions for mains-operated machines

Care must be taken that the mains cable incurs no damage by being crushed, torn, frayed, driven over, etc. This connection must be examined regularly for damage, bare points, scorched areas, etc. The machine may not be used unless the mains connections is in perfect condition. The plug must always be disconnected prior to any cleaning or maintenance work on the machine, or when accessories are being fitted and replaced. When parts, such as brushes, mains connection cables, plugs, etc. are being replaced, all technical data provided by the manufacturer must be observed and only original spare parts used; otherwise safety of the ma-

chine could be impaired. If the power cable is damaged, it must be replaced by a service workshop approved by the manufacturer as special tools are required for such work.

## 1.9 Information on the warning signs

The purpose of the warning signs used in these operating instructions is to emphasise certain sources of danger in the escalator deep cleaning machine Rotomac 360.

The following symbols are used in these operating instructions:



Indicates a **possibly dangerous situation** through contact with **parts conducting electricity**.

Failure to observe these warnings could lead to **death** or **serious injury**.



Indicates a **possibly dangerous situation**.

Failure to observe such warnings could lead to **serious injury**.



Indicates special information for optimum use or to facilitate operation of the machine.

### 1.10 Warning signs and stickers



Markings, warning signs and stickers may never be removed!

Damaged or illegible warning signs and stickers must be replaced or repaired immediately!

### 1.11 Product liability

The operator is expressly notified that the machine must be used only for the intended purpose. If the machine is not used for the intended purpose, such use will be at the sole risk and responsibility of the user.

JUMA Reinigungstechnik GmbH will not accept any liability in such cases.

### 1.12 Emissions

The A-assessed equivalent continuous sound level of this machine measures  $78 \pm 2$  dB (A).

### 1.13 Sources of danger

If the operator on the escalator wishes to leave machine, he must lower the machine, i.e. let the machine rest on the glide strip. The machine must then be moved in this lowered position with the escalator to the bottom end of the escalator.



The machine may not be left unattended and unlocked on the escalator. All safety instructions and regulations applicable to the escalator being cleaned must be strictly observed.

### 1.14 Procedure in case of emergency

Lower machine, turn key switch to "0" and remove key.

## 2 Description

### 2.1 Technical data

Working width:		520 mm
Min step height:		185 mm
Max step height:		235 mm
Basic cleaning per step:		30 s (2x)
Maintenance cleaning per step:		45 s (2x)
Intensive cleaning per step:		60 s (2x)
Max. air volume of suction.:		162 m <sup>3</sup> / h
Low pressure:		300 mbar
Type of current/ frequency:	A.C. current	50 Hz
Rated voltage:		230 V
Rated power input:		1900 W
Power output:	Brush motor	750 W
	Suction motor	1500 W
	Spindle drive	2x180 W
	Pump	40 W
Number of brushes:		11
Capacity of fresh-water tank:		15 l
Capacity of dirty-water tank:		15 l
Dimensions:	Length	1350 mm
	Width	536 mm
	Height	1250 mm
Operational weight (incl. filled fresh-water tank and mains cable):		170 kg
Noise level:		78 ± 2 dB (A)

**2.2 List of reference numbers**

1	Cover of dirty-water tank	26	Guide rail
2	Dirty-water tank	27	Opening for replacing brush
3	Service hours counter	28	Glide rail
4	Control panel	29	Coupling for fresh-water tube
5	Suction machine OFF/ON	30	Fresh-water tank
6	LOWER machine	31	Handle
7	RAISE machine	32	Fresh-water tank cover
8	Touch operation of brushes	33	Hood
9	STOP key	34	Chain
10	Key switch	35	Chain wheel
11	Touch operation of pump	36	Chain adjuster
12	Automatic ON	37	Spray nozzle
13	Shaft	38	Suction machine
14	Device socket	39	Filter
15	Device plug	40	Collecting container
16	Travelling support / step height adjustment	41	Ball
17	Mains plug	42	Pressure spring
18	Lifting spindle	43	Spray nozzle
19	Brake	44	Coupling ring
20	Safety support / step height adjustment	45	Rim comb
21	Suction basin	46	Fixing axle
22	Seal strip	47	Emergency STOP button
23	Stripping brush		– Numbers 34 to 37 and 41 to 44 see Fig. 24 on page 21,
24	Brush		– Numbers 38 to 40 see Fig. 23 on page 21,
25	Cover for brush-replacement opening		– Number 45 see Fig. 16 on page 17.
			– Number 46 see Fig. 17 on page 18.

### 2.3 Location of components

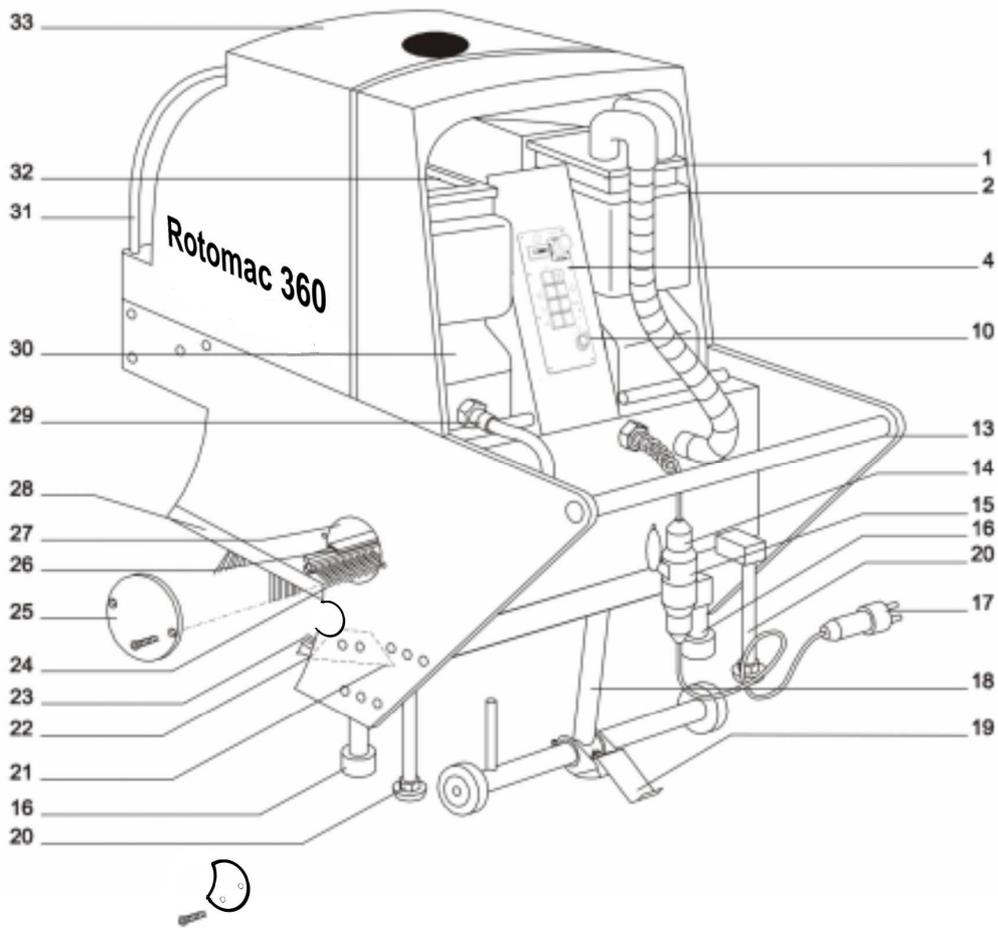


Fig. 1: Location of components

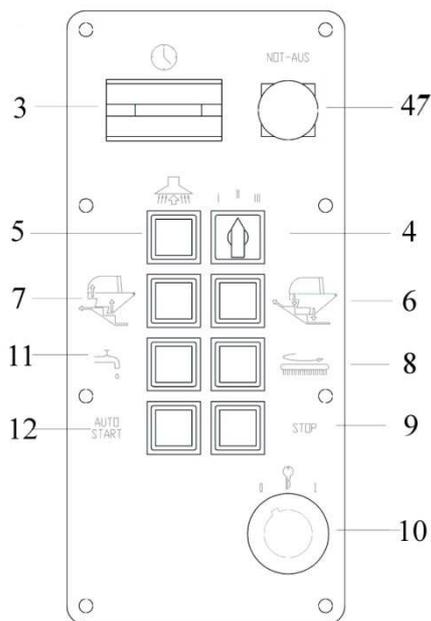


Fig. 2: Control panel

## 3 Operation

### 3.1 Before start-up

All local safety regulations and instructions must be observed for each start-up.

The escalator must be inspected jointly with the party responsible for the escalator, who should also be informed of any discoloration or paint stains etc. caused by repair and renewal work.

### 3.2 Assemble brushes

If brushes (24) have not yet been installed in the guide rail (26), the lid (25) on the opening for replacing brushes (27) in the left side wall should be opened (see Fig. 3: Brush assembly).



If possible, brushes of the same design (brush length, hardness etc.) should not be installed directly behind each other in order to avoid unbalance effects and to achieve an ideal cleaning result!

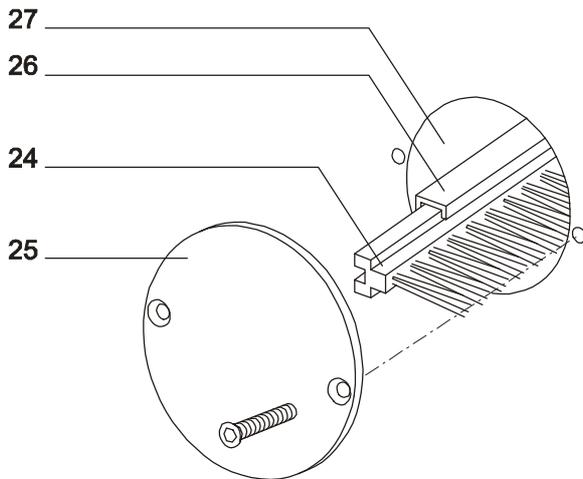


Fig. 3: Brush assembly

The procedure below should be followed:

- Insert power plug.
- Set key switch (10) to "1".
- Raise machine [pushbutton (7) on operating console (4)].
- Move rail in the opening for replacing brushes (27) (pushbutton (8) Touch operation for bush).



In order to prevent the brushes being moved by accidental contact with the pushbutton, the button will only react to activation after a delay of one second !

- Set key switch (10) to "0".
- Shove in brush (24) until it hits against the right side wall.
- Set key switch (10) to "1".
- Move next rail completely in the opening for replacing brushes (27) (pushbutton (8) touch operation for brush).
- Set key switch (10) to "0".
- Repeat this procedure until all brushes have been inserted.
- Then screw on lid (24) once more.



Use only original JUMA Reinigungstechnik brushes: the size and shape of these have been tested and are adjusted to fit the escalator! A set of brushes consists of brushes with different brush lengths, bristles and bristle materials

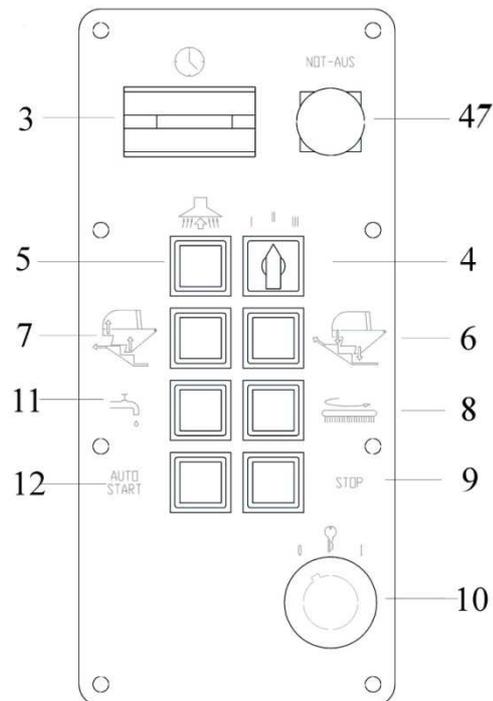


Fig. 4: Control panel

### 3.3 Filling fresh water

(see Fig. 5 on page 11)

- Unlock coupling (29) and separate from fresh-water tank (30).
- Draw fresh-water tank forward on shaft (13) and withdraw from machine.
- Remove lid (32) and fill in a maximum of 15 litres (recommended: 10 litres) of fresh water.
- Use the cleaning **Roto-Escal** or Piccomat or Sormascal in the recommended mixing proportion (see operation instructions).



Each time the fresh-water tank is being filled, the dirty-water tank (2) should also be inspected and emptied if necessary. See Chapter 3.1414 Emptying the dirty-water tanks on page 16.

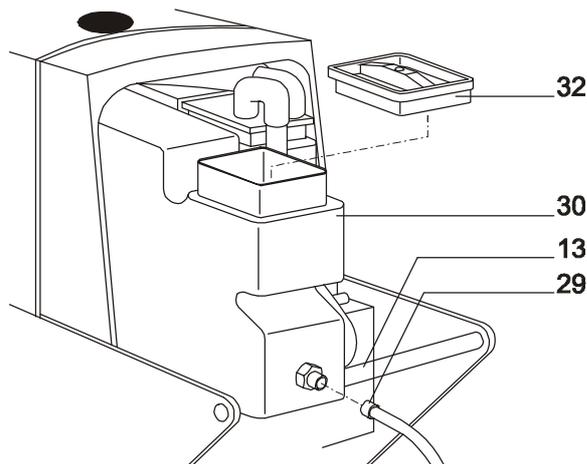


Fig. 5: Fill up with fresh water

- Check the position of the suction basin (21). See Fig. 6: the seal strip must extend 15-16 mm above the rim of the side wall.

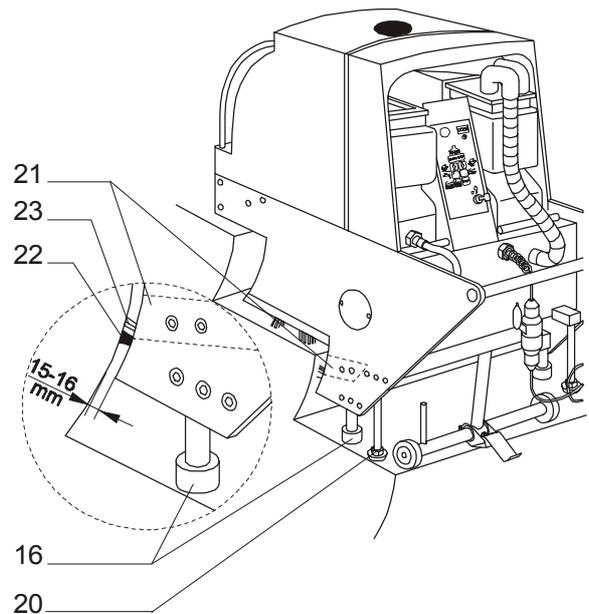


Fig. 6: Adjusting seal strip

### 3.4 Preparations on site

The cleaning date should be co-ordinated with the maintenance personnel (possibly process electrician) in charge of the escalator.

The safety manager should also be informed if necessary.



Have the escalator switched off by the relevant specialists and secured against being switched on by accident!

Remove escalator key!

The operator must plug in the mains cable for the machine, or a suitable socket must be shown to him.

The operator must furthermore obtain instruction on manual control of the escalator or else ensure that some person familiar with the workings of the escalator is available near by at all times.

### 3.5 Safety measures on site

All unauthorised persons must be prevented from approaching the entrances at both ends of the escalator by means of safety measures (e.g. red-and-white barrier chains).

The machine, the transport trolley and, when available, accessories trolley are to be placed in the cordoned-off level area at the bottom of the stairs to prevent any unauthorised use.

### 3.6 Preliminary work



All foreign bodies such as: cigarette packages, cans, etc. must always be removed before any work commences!



Any objects jammed in the machine, such as small stones, bits of glass, etc. are a significant impediment to achieving a good result. Care must therefore be taken that all such objects are removed in advance. The handheld cleaning equipment is ideal for this purpose!

Remove any dirt from the grooves in the steps with a hand rake before brushing or sweeping clean.



Handheld cleaning equipment should not be left lying on the escalator, otherwise there is danger of it being drawn into the machine!

### 3.7 Working instructions



The detergent applied to the escalator surface will lead to danger of slipping! Shoes with non-slip soles must therefore always be worn during work on the stairs!

Scratching or erosion on the escalator steps caused by wear, corrosion or material faults can not be repaired.

### 3.8 Positioning machine on escalator

The machine with extended lifting spindles (18) should then be shoved into the escalator and moved by authorised escalator operators to the first completely extended step (Fig. 7).

The escalator is then stopped completely.



Ensure that the escalator is switched off by the relevant personnel and secured against accidental starting!  
Remove escalator keys!

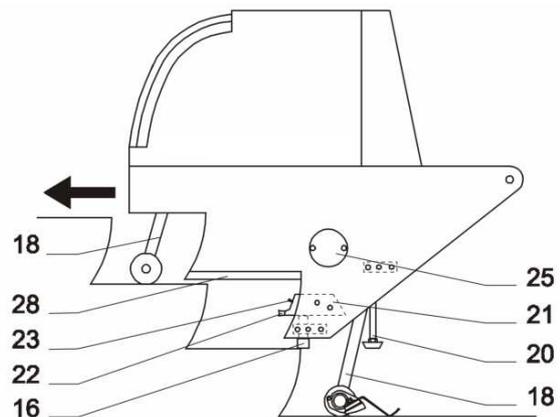


Fig. 7: Fixing the machine

### 3.9 Setting step height



The machine is in danger of falling if the travelling supports (16) and safety supports (20) are not adjusted properly to the step height of the escalator to be cleaned.

- Move machine to the first completely extended step.
- Fix machine on the right side of the escalator.
- Lower machine and shove forward as far as possible on the tread of the stair.
- Remove the clamp on the left travelling support (16) (see Fig. 8) and move the travelling support in or out until the machine is positioned horizontally with the left travelling support (27) on the tread of the stair; then tighten the clamp on the left travelling support.
- Adjust the safety support (20) on the left side of the machine according to the same procedure.
- Place machine on the left side of the escalator, lower and push forward as far as possible on the tread of the stair.
- Set the travelling support (16) and the safety support (20) on the right side of the machine according to the procedure described above.



Make sure that the machine is resting uniformly on the two travelling strips and all four supports and that the wheels are approx.. 2 mm distant from the step!

If this is not the case, the adjustment procedure must be repeated!



Incorrectly adjusted travelling supports (16) will mean that the operator will have to use more force!

- Start the cleaning operation.



It will be possible to start the cleaning process only when the running gear has been driven to the point where the limit switch is activated at the lifting spindles (18)!

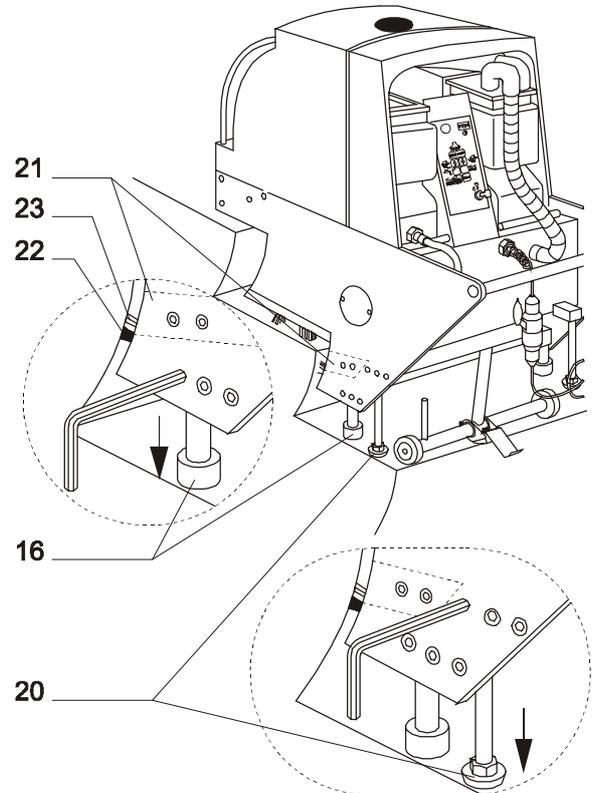


Fig. 8: Setting step height

### 3.10 Select cleaning programme

(see Fig. 9: Control panel)

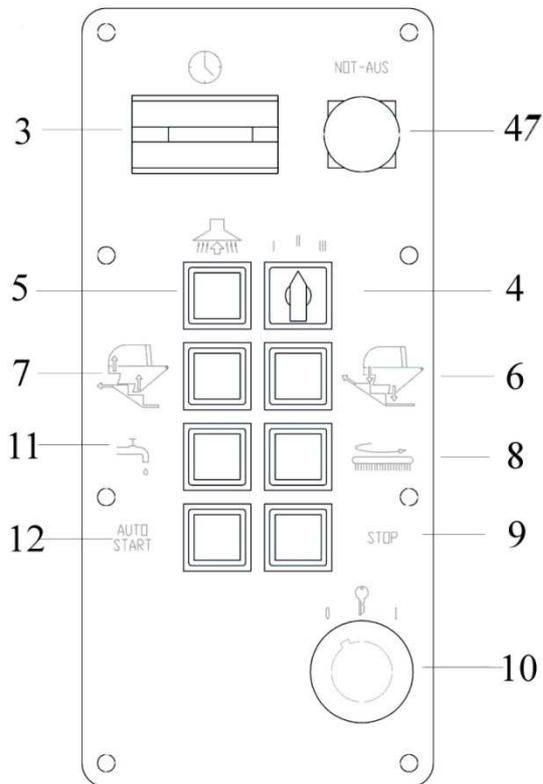


Fig. 9: Control panel

The machine is provided with 3 cleaning programmes, which have been tested and optimised by JUMA Reinigungstechnik. An ideal cleaning performance is achieved with a minimum use of water.

#### 3.10.1 Programme 1: Quick Cleaning Cycle

Duration of a cleaning cycle 30 seconds.

#### 3.10.2 Programme 2: Maintenance Cleaning

Duration of cleaning cycle 45 seconds.

#### 3.10.3 Programme 3: Intensive Cleaning

Duration of cleaning cycle 60 seconds.

### 3.11 Cleaning the escalator

In order to achieve an ideal moisture content on the brushes, the first step should be cleaned twice at the beginning of the cleaning operation. If there is strong sunlight or high temperature in the surroundings, preliminary spray of the escalator should be over a length of no more than 3-4 steps, since the cleaning liquid dries very quickly on warm steps. After the machine - lying on the left side of the escalator - is shoved into the escalator step until the wheels stop (see Fig. 7), it is then lowered (Fig. 10: Lowering the machine ) and shoved into the stairs on the glide rails (28) until the seal strip (22) is arrested (Fig. 11: Positioning the machine ).

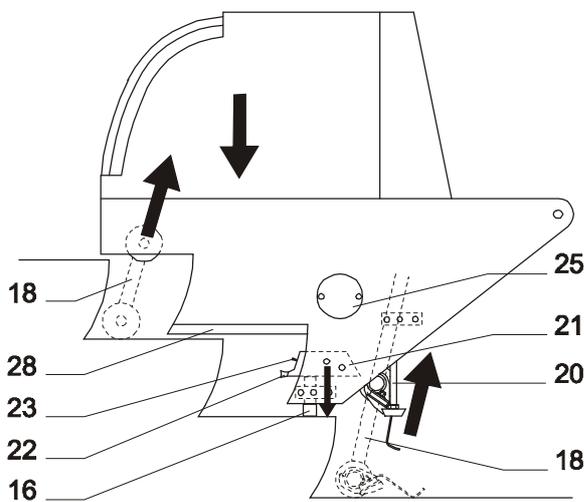


Fig. 10: Lowering the machine

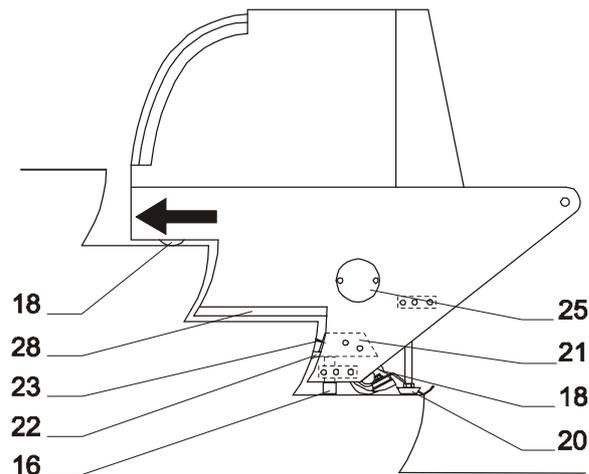


Fig. 11: Positioning the machine

The pre-selected programme can now be started. When the cleaning cycle has been completed, the machine is raised (Fig. 12: Raising the machine ).



When raising the machine, the operator must ensure that the glide rails do not hang on the inside walls of the escalator.

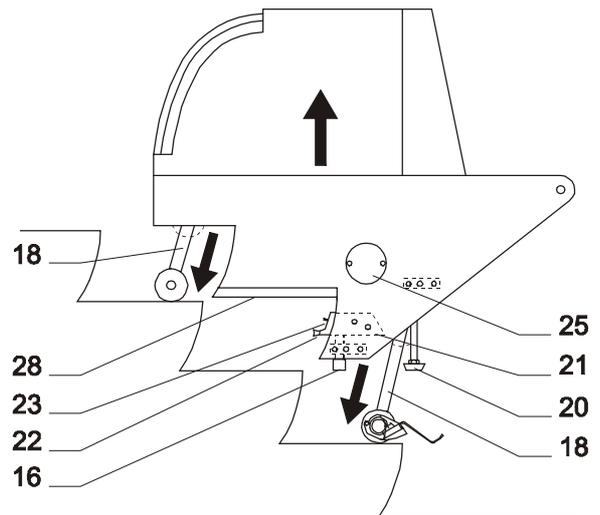


Fig. 12: Raising the machine

The machine is then shoved forward again until the wheels stop on the next highest step (Fig. 7), and then lowered again. The machine can now be shoved on the glide rails into the new working position (Fig. 11: Positioning the machine ).

Repetition of the procedure described above will allow the escalator to be cleaned from the bottom to the top completely-extended step.



Always ensure that the power cable is disconnected and wound up before the escalator is started again to avoid accidents!

The switched-off and lowered machine is then driven downwards with the escalator to the position of the last extended step.

After the cable has been connected once more, the procedure described above can be started anew and the escalator cleaned again up to the top completely extended step. After the machine has been run from the lower to the highest completely extended step, one side of the escalator will have been cleaned.

The machine must now be shifted from the left to the right (Fig. 13: Shifting machine ).

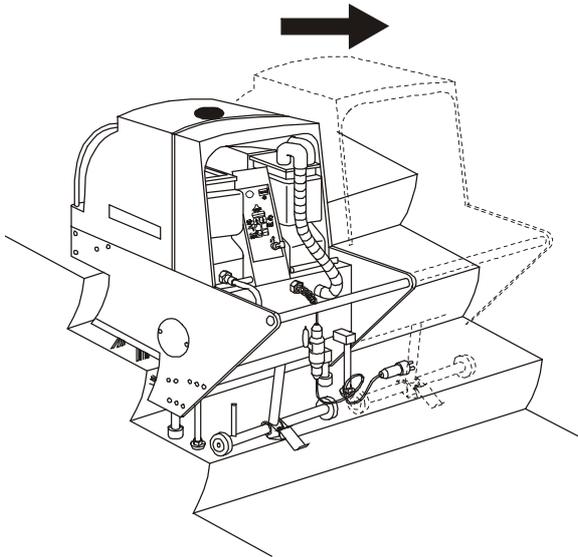


Fig. 13: Shifting machine

The cleaning process can then be started for the right side and take place as described above.

### 3.12 Subsequent cleaning

Manual cleaning equipment has been developed by JUMA Reinigungstechnik GmbH by means of comprehensive practical tests.

With this equipment, any subsequent cleaning that may become necessary, such as major soiling on the edges and the joining areas between two steps, can be carried out easily.



The manual cleaning equipment manufactured by JUMA Reinigungstechnik GmbH is particularly suitable for minor subsequent cleaning.

### 3.13 Refilling with fresh water

The operator must carry out regular checks at the transparent feeder tube for fresh water (29) to ensure that the machine is receiving a supply of detergent solution. If bubbles appear in the tube or if no liquid can be seen, the fresh-water tank is empty and must be refilled.

Let the machine stand in the lowered position on the escalator and fill fresh water along with cleaning agent according to instructions in Chapter 3.3.



When the fresh-water tank is being filled it is essential that the dirty-water tank is emptied

### 3.14 Emptying the dirty-water tanks

(see Fig. 14: Remove dirty-water tank and Fig. 15: Insert dirty-water tank )

- Set key switch (10) to "0" position.
- Draw the dirty-water tank (2) forward and set down onto shaft (13).
- Remove tank lid (1) with suction tubes and let hang to the side.
- Grip tank on the carrying-troughs and dispose of dirty water according to the relevant environment regulations.



All valid regulations regarding waste water must be strictly observed when the dirty water is being dumped!

- Place dirty-water tank (2) onto shaft (13) and insertion area.
- Replace tank cover (1).
- Shove in tank (2) and check secure mounting.
- Set key switch (10) to position "1".
- Start suction with START/STOP key (5).
- Check fitting of tank cover !
- Switch off suction with START/STOP key (5).
- The work can now be continued.

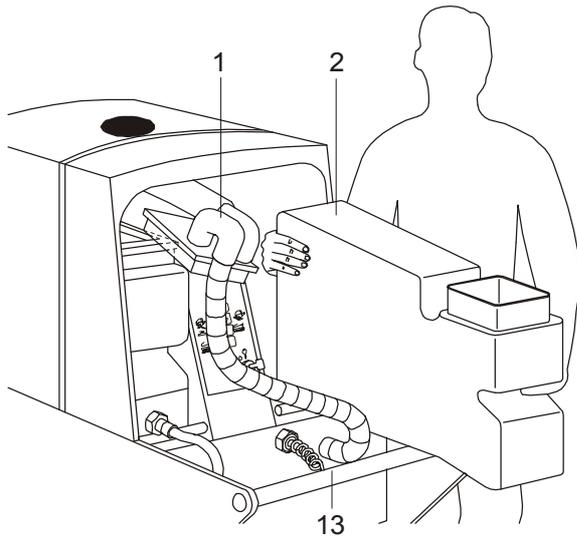


Fig. 14: Remove dirty-water tank

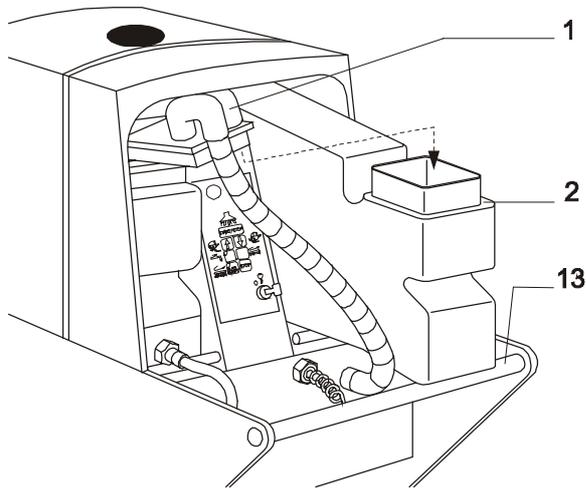


Fig. 15: Insert dirty-water tank

### 3.15 Ending the cleaning process

- Move machine as described in Chapter 3.11 with the escalator to the lowest completely extended step.
- The machine is then raised over the lifting spindle drive (18).
- If the escalator is going downwards, leave the escalator at the lower end, while making sure that:



When the machine is driving over the rim comb (45) the rear axle along with the brake (19) must always be raised in order to prevent the machine catching on the escalator's rim combs

Take out the machine with transport trolley (Fig. 17) (see Chapter 3.16 Use of transport trolley) and bring to place of storage.

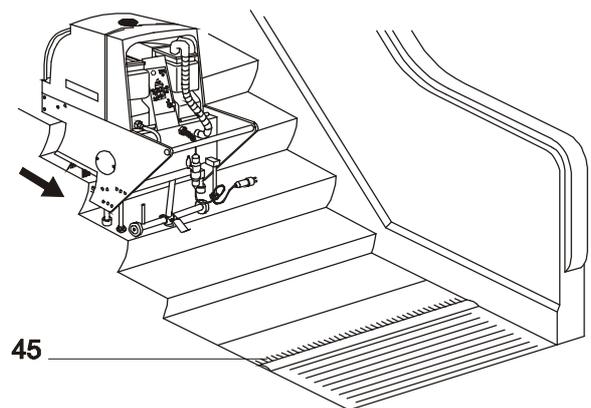


Fig. 16: Removal of machine from escalator

### 3.16 Use of transport trolley

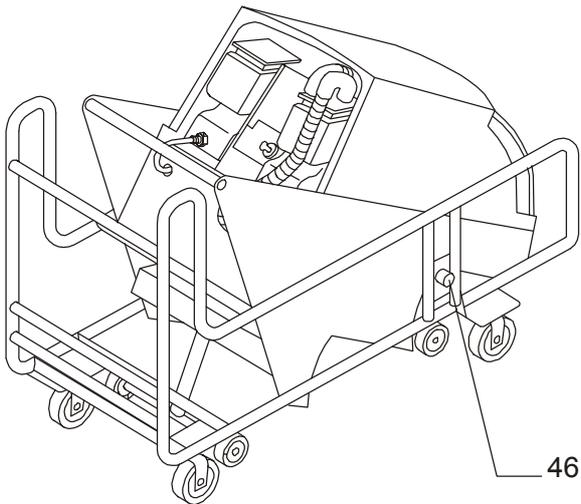


Fig. 17: Transport trolley



Before the travelling mechanism is driven from the stairs, the rollers on the transport trolley must always be secured with the brakes!

After the fixing axle (46) has been inserted and secured, the travelling mechanism can be drawn in and the machine thus placed on the transport trolley.



The fixing axle (46) must be secured against slipping out by means of the supplied permanent cotter pin !

The guide rollers of the transport trolleys allow the machine to be manoeuvred easily (see Fig. 19).

#### 3.16.1 Preparation for transport

For transport, the machine is removed from the transport trolley with the shaft in front after the fixing axle (46) has been removed and driven into the shaft (see Fig. 18: ).

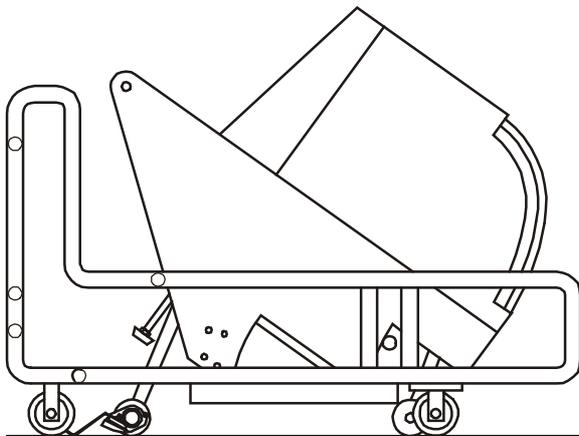


Fig. 18: Moving into transport position

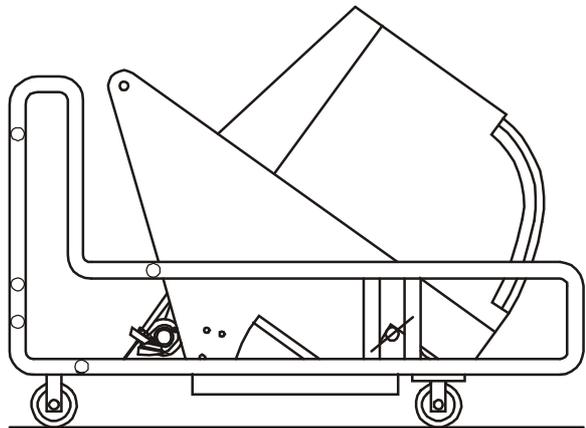


Fig. 19: Machine in transport position

### 3.16.2 Use of transport trolley for maintenance

In preparation for maintenance, the machine is removed from the transport trolley with the shaft in front, after the fixing axle (46) has been withdrawn, and driven into the shaft (see Fig. 20: ).

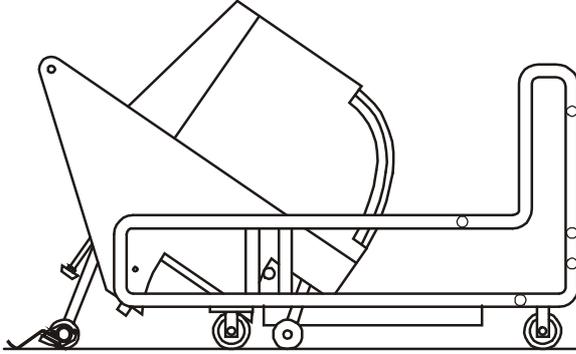


Fig. 20: Moving into maintenance position



Before the travelling gear is drawn in, the roller of the transport trolley must always be secured with the brakes!

After the fixing axle (46) has been inserted and secured again, the travelling gear can be drawn in to about half its length and the machine then swung into the maintenance position on the trolley.



The fixing axle (46) must be secured against slipping out by means of the supplied permanent cotter pin!

In this way maintenance and cleaning work can be carried out easily and quickly (see Fig. 21: Machine in maintenance position).

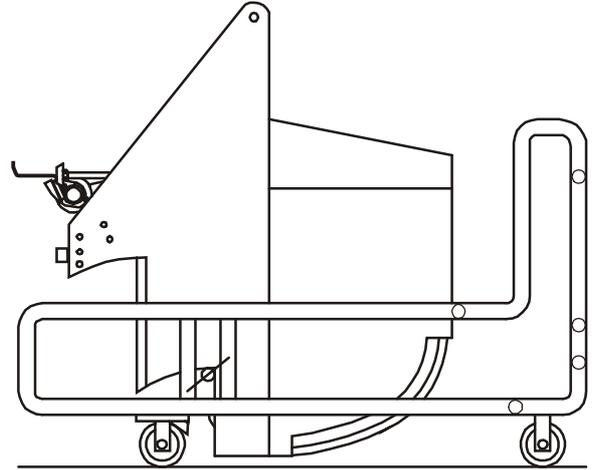


Fig. 21: Machine in maintenance position

## 4 Maintenance / Care

### 4.1 Safety measures during cleaning and maintenance of the machine

- Before any maintenance or cleaning work is carried out, the machine must be separated from the mains with the main switch being set to "0" and the mains plug disconnected. This will prevent accidents caused by electrical voltage or moving parts.
- During cleaning or maintenance work on the machine, when parts are being replaced or new equipment fitted for a new function, care must be taken that the machine can not accidentally start, roll or turn over and that no parts can fall down or flap closed.

If the operator has any questions or doubts regarding safety, he must request advice from the manufacturer or the relevant sales agent before starting the machine.

### 4.2 Daily care

- Examine the power cable for any damage.
- Always empty the dirty-water tank (2) following use and rinse thoroughly with water (Note instructions in Chapter 3.14).
- Inspect brushes (24) (Note instructions in Chapter 3.2) and clean.
- Rinse out suction basin (21).
- Clean stripping brush (23).

### 4.3 Weekly care

- Clean and lightly lubricate the extended lifting spindles (18).
- Check suction tubes for leaks.
- Check seal strips (22) and renew if necessary (Fig. 22: Suction basin / ).

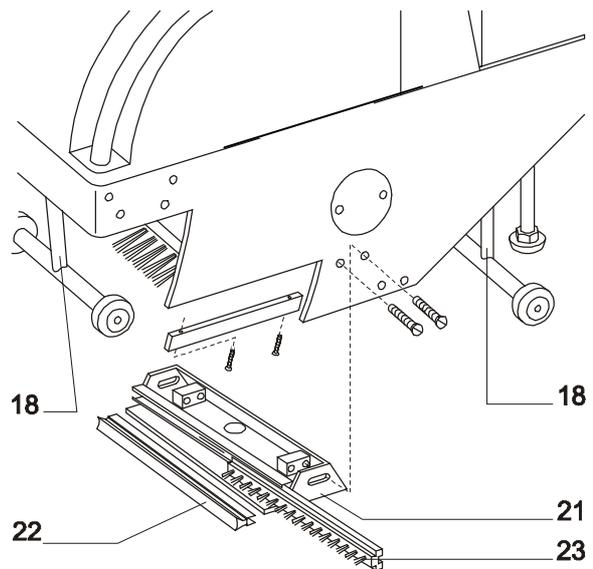


Fig. 22: Suction basin / seal strip

### 4.4 Maintenance after 30 service hours



Maintenance work may be carried out by trained personnel only.

- Remove suction basin (21) and stripping brush (23) and rinse (Fig. 22: Suction basin / seal strip)
- Check chains (34) for correct tension and, if necessary, tighten with chain adjuster (36) (see Chapter 4.6.1 Tightening the chain and Fig. 24: Chain drive / spray nozzles on page 21).
- Clean chains (34) and treat with a chain spray (15).
- Check spray nozzles (37) and clean if necessary.
- Check glide rails (28) on the right and the left. Replace if showing signs of wear (Fig. 22: Suction basin / ).
- Check sliding elements of the step adjustment device (16 and 19). Replace in case of wear.
- Check seal strip (22) and renew if necessary (Fig. 22: Suction basin / ).

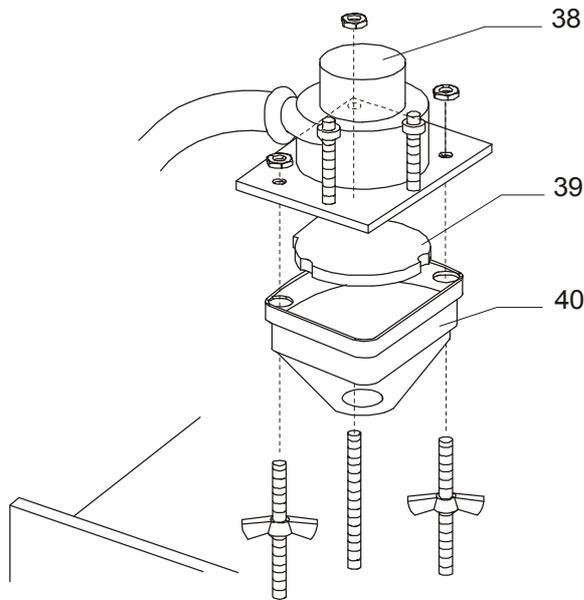


Fig. 23: Collecting container

#### 4.5 Maintenance after 100 service hours

Maintenance work may be carried out by trained personnel only.

- Maintenance work in this case should be carried out as after 30 service hours, but here the chains (34) and chain wheels (35) must be checked for wear and replaced if required (see Fig. 24: Chain drive / spray nozzles).
- The brushes (24) must be dismantled and inspected (Fig. 3: Brush assembly on page 10). New brushes must be fitted when necessary.
- Clean collecting container (40) under the suction device (38), wash out or replace filter (39) (Fig. 23: Collecting container on page 21).
- Check all electrical components.

#### 4.6 Annual maintenance

An electrically driven machine must be examined every year in accordance with VDE 702 or some comparable international standards.

This examination must be carried out by a service technician trained by JUMA Reinigungstechnik GmbH

#### 4.6.1 Tightening the chain

(see Fig. 24: Chain drive / spray nozzles)

The chains must be tightened so that the centre of each chain can be raised by hand between the chain wheels by approx. 3 mm ("A") or pressed together by 4 - 5 mm ("B").

The chain can be tensioned by adjusting the pressure spindle (36) in the direction of the arrow.

The suspension chains on the left and right ("A") must always have the same tension!

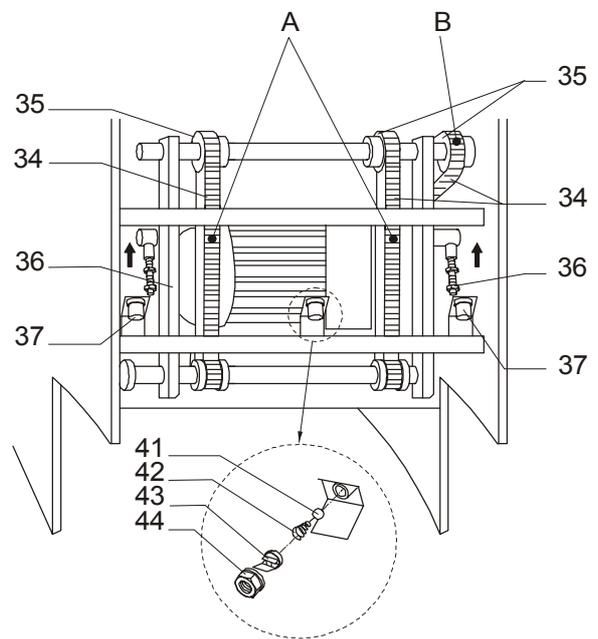


Fig. 24: Chain drive / spray nozzles

The wearing limit of a chain has been reached when the distance "s" between the 1<sup>st</sup> and 12<sup>th</sup> roller exceeds 135.0 mm; see

Fig. 25: Wear measurement chain drive.

With a brand new chain this dimension "s" should measure 131.4 mm.

These values are valid for all 3 chains.

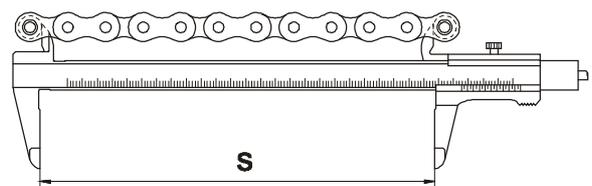


Fig. 25: Wear measurement chain drive

#### 4.6.2 Cleaning and replacing fresh-water nozzles

(see Fig. 24: Chain drive / spray nozzles on page 21)

- Screw off coupling ring (44).
- Remove pressure spring (42), spray nozzle (43) and ball (41).

- Clean spray nozzle, using only instruments without sharp edges.
- Re-assemble fresh-water nozzle as shown in illustration, while making sure:



The spray nozzles must be aligned in their mounting according to the turning safety device! The coupling ring should only be twisted on manually!

#### 4.7 Troubleshooting and remedy

Fault	Cause	Remedy
Machine can not be started with AUTOSTART	Lifting spindles (18) are not in end position	Press LOWER key (6) once again
Machine cleans poorly	Spray nozzle (37) is blocked	Clean spray nozzle (37)
	Brushes (24) are soiled	Clean brushes (24)
	Brushes (24) are worn	Replace brushes (24)
Detergent return to the machine is too low	Seal strip (22) is defect	Replace seal strip (22)
	Suction basin (21) is set incorrectly	Adjust suction basin (21)
	Stripping brush (23) is dirty	Remove suction basin (21) and clean stripping brush (23)
Dirt streaks are visible on front face	Stripping brush (23) is dirty	Remove suction basin (21) and clean stripping brush (23)
	Stripping brush (23) is worn	Remove suction basin (21) and clean stripping brush (23)
Water residues on escalator	Cover (1) of dirty-water tank (2) does not close tight	Attach cover (1) anew
	Cover (1) of dirty-water tank (2) does not close tight	Replace tank cover



If the fault in the machine can not be remedied according to the procedures described in the table above, the customer service of JUMA Reinigungstechnik GmbH should be notified and the necessary repair work carried out by its staff.

## 5 Notice

## Instructions to the filter cleaning Rotomac 360

- After the quick coupling of the fresh water tanks there is the filter cartridge
- By means of two open end wrenches SW 17 the cartridge can be opened (as a rule it can be also opened with the hand)!
- In the cartridge is of the red fine filters
- This filter clean daily (blow out)
- Mount in reverse order cartridge again (sturdy pull)

