

Assembly Manual



DUNOS_R / DUNOS_{RW}

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1. General

1.1. Information about this manual

This manual contains information necessary for the safe operation of the rotation cleaner. The operator must ensure that this manual has been carefully read and understood by all persons charged with installation, operation and maintenance of the appliance. The basis of working in safety is the observance of all safety notices provided.

The manual is an essential part of the product and must be kept freely available at all times to every person handling the product.

In addition to the notices in this manual, the local accident prevention regulations and national workplace safety requirements also apply.

1.2. Symbols used



This symbol indicates an imminent danger, which can lead to severe injuries or death.



This symbol indicates a potential danger, which can lead to severe injuries or death.



This symbol indicates a potential danger, which can lead to mild to severe injuries.



This symbol indicates a potential danger, which can lead to damage to property.

1.3. Limitation of liability

The legally prescribed liability conditions apply. Excluded from liability are:

- failure to observe this manual
- improper use
- use of untrained staff
- use of unauthorised replacement parts
- conversions performed by the operator, which have not been discussed with and authorised by the manufacturer

Furthermore, the general terms and conditions also apply.

1.4. Copyright

Copyright applies to this manual.

© Copyright by AquaDuna GmbH & Co. KG (2019)

The transfer of this manual to third parties, reproduction in any way - even in the form of excerpts - as well as the use and/or disclosure of the contents without written permission is not allowed.

In individual cases, for in-house use by the operator or for the purposes of training, it is permissible to distribute the manual to third parties or to reproduce it.

1.5. Warranty

The legally prescribed warranty period of one year shall apply. Supplementary warranty conditions may be referred to in the sales documentation.

2. Safety

2.1. Proper use

Rotation cleaners are intended for the internal cleaning of enclosed containers.



Operation outside of a container can lead to severe injury from the high impact of the emerging liquid. The cleaning agent would additionally be widely dispersed into the environment.

The pre-conditions for safe operation of the rotation cleaner may be found in the following chapter, Operating conditions!

Another or derived usage is not deemed to be approved usage and AquaDuna GmbH & Co KG is not liable for any consequent damage.

2.2. Operating conditions



For the proper use of the rotation cleaner, the observance of the following conditions is essential, with non-observance carrying the threat of severe injury.

- The rotation cleaners may only be operated in closed containers.
- The rotation cleaner should be operated with a 500µm prefilter.
- The bearing of the rotation cleaner is hydrodynamic, therefore the rotation cleaner must not be operated with air or steam.
- All media piping should be ventilated.
- When installing the rotation cleaner inside a container, e.g. a tank, it should be observed that the distance of the rotation cleaner to the wall of the container or fittings is sufficient, so that any contact may be excluded.
- All mechanical connections should be secured against self-loosening. Before commissioning, the rotation cleaner should be checked for smooth running and firm positioning.
- The permissible environmental temperature for operating the rotation cleaner is 4-138°C, the maximum permissible temperature of the cleaning agent is 97°C.

The operator is responsible for observance of the conditions.

2.3. Staff qualifications

The operator of the rotation cleaners is obliged to train the assembly and operating staff. All persons handling rotating and spraying devices must have been instructed on the hazards connected with these appliances.



Persons who are not registered as operating staff should not linger within the operating area of the appliances. The operator must assure the necessary measures.

2.4. Duties of the operator

AquaDuna GmbH & Co. KG cannot issue a CE mark in accordance with the Machinery Directive; the rotation cleaners are incomplete machines.

The incomplete machinery must not be put into service until the machinery into which it is incorporated complies with the provisions of Directive 2006/42/EC, where this Directive applies to such machinery.

3. Technical data

3.1. Function

The DUNOS_R rotation cleaner is intended for the cleaning of containers and tanks. The cleaning agent flows through the cleaner and causes the rotational movement through slotted nozzles. Simultaneously a hydrodynamic bearing of the cleaner's housing occurs, which stays almost wear-free during operation.

The cascades emerging from the slotted nozzles extensively strike the wall of the container. The thereby emerging washing-down forces remove deposits from the container wall and potentially the fittings. According to the deposit for cleaning away, a cleaning agent is to be added, whose type and dosage is to be set by the operator.

3.2. General operating values

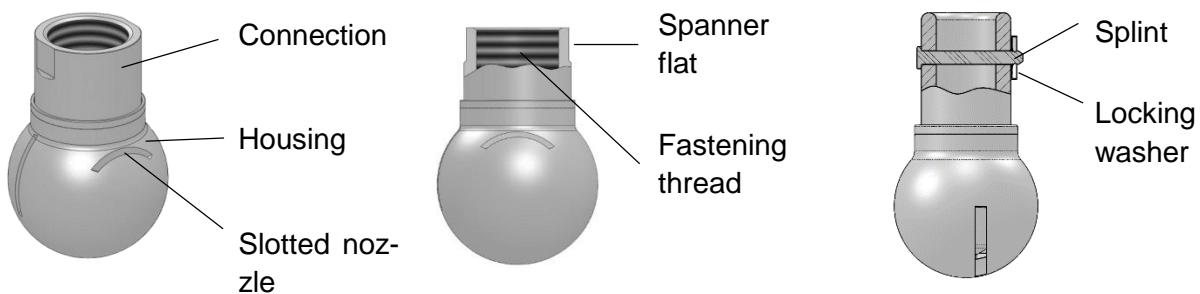
Environmental temperature:	max. 138°C
Agent temperature:	max. 97°C
Pressure:	max. 12 bar
Filter:	500 µm

3.3. Material

Standard material: for stainless steel parts 1.4404,
for the PEEK TF10 bearings.

At the customer's request, special materials may be used, for example, 1.4435, 1.4571 or hastelloy.

3.4. Structure of DUNOS_R



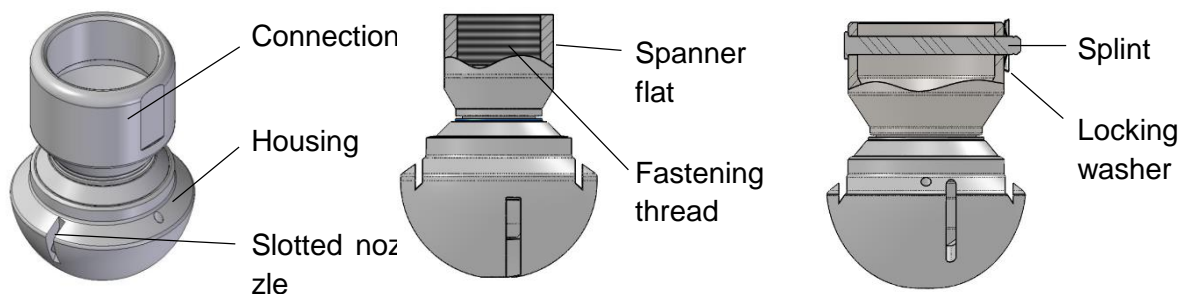
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The rotation cleaners are deliverable in the standard versions of DR15, DR32, DR60 and DR90, as well as DRW27 and DRW50. The form and arrangement of the slotted nozzles are variable, the range of types is described as follows.

3.5. Measurements DUNOS R

DUNOS	R15	R32	R60	R90
Installation diameter (min.)	DN 20	DN 40	DN 65	DN 100
Media connection (thread)	IG 1/8"	IG 3/8"	IG 3/4" / 1"	IG 2"
Media connection (splint)	Ø10	Ø13 / Ø18	Ø25.4 / Ø29	Ø41 / Ø52
Working pressure	1-8 bar	1-8 bar	1-8 bar	1-8 bar
Flow rate	up to 0.5	up to 4 m ³ /h	up to 10 m ³ /h	up to 16 m ³ /h
Cleaning radius	up to 0.75 m	up to 2 m	up to 2.5 m	up to 3.5 m

3.6. Structure of DUNOS RW

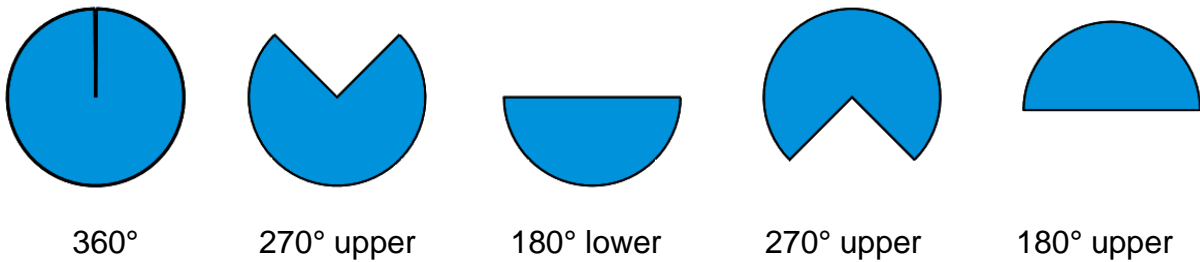


3.7. Measurements DUNOS RW

DUNOS	RW27	RW50
Installation diameter (min.)	DN 32	DN 65
Media connection (thread)	IG 1/4"	IG 3/4" / 1"
Media connection (splint)	Ø13	Ø28 / Ø33.7
Working pressure	1-8 bar	1-8 bar
Flow rate	up to 2.5 m ³ /h	up to 6 m ³ /h
Cleaning radius	Up to 1.5 m	up to 2.5 m

3.8. Arrangement of the slotted nozzles

From the arrangement of the slotted nozzles, the following spraying angles may be achieved:



At the customer's request, variations to spraying angles may be made.

3.9. Special versions



At the customer's request, the thread connections specified may be replaced with customised welding ends. (→ Illustration)

Thread connections may also be equipped with non-standard threads.

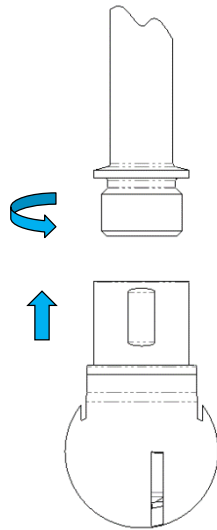
In all cases, when the standard measurements are customised, a construction check by us of the desired geometrics is necessary.

4. Installation and commissioning

4.1. Mounting

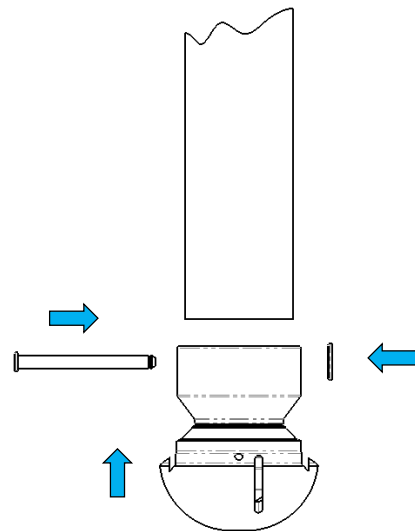
After unpacking the rotation cleaner, the cleaner should then be checked over for outer damage.

If no support tube (lance) is supplied fully assembled, the cleaner must be fitted to a suitable connection.



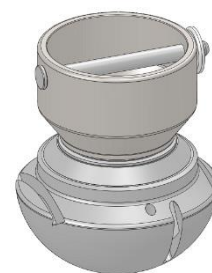
Rotation cleaner with thread connection

Screw on rotation cleaner,
use a wrench flat.



Rotation cleaner with splint connection

Insert rotation cleaner,
plug splint through,
mount locking washer.



WARNING!

The rotation cleaner should not be subject to any mechanical blows.

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4.2. Commissioning



Before commissioning, the agent supply piping to the rotation cleaner is to be rinsed through. Metallic impurities and welding residue may lead to damage to the rotation cleaner.

The prefilter in the agent supply piping to the rotation cleaner must be checked for proper function and the filter body (500µm) must be installed.

During commissioning, it must be ensured that the agent supply piping to the rotation cleaner is ventilated.

For hand-guided fittings, these are not to be opened abruptly in order to avoid pressure shocks.

5. Operation

For operation in automatically cleaning facilities, operators must be familiar with the shutdown process or the emergency stop procedure for the facility.



The rotation cleaner should not be subject to any mechanical blows, it is essential to avoid any pressure shocks.



After each application, the cleaner is to be cleansed of cleaning agent residue by rinsing with a neutralising detergent. Then a visual inspection as well as a check of the cleaner for damage are to be carried out. Only undamaged rotation cleaners should be implemented.

6. Maintenance

- The rotation cleaners are generally maintenance-free.
- Any potentially necessary servicing work is only permissible by the manufacturer.
- The warranty is void following servicing work carried out by the operator.

7. Integration and activation

7.1. Integration into a cleaning facility

If the rotation cleaner is integrated into an automatically running facility, then it is to be ensured that the rotation cleaner can be monitored visually during its functioning. The function check is to be documented during such inspections.

7.2. Activation using hand-guided controls

If the rotation cleaner is to be controlled by hand-guided means, then it must be observed that pressure shocks are avoided. The servicing elements are thus to be opened and closed slowly.

8. Emergency shutdown

In order to bring about an emergency shutdown of the rotation cleaner, it is essential that the operators of the facility are familiar with the facility's design. It is vital, that training in emergency shutdown be given and the necessary elements for emergency shutdown be known. The training of those entrusted with cleaning is to be documented.

9. Transportation

9.1. Scope of delivery

Included within the scope of delivery are the complete rotation cleaner and this operating manual. For optional versions, please extract these from the delivery paperwork.

9.2. Transportation and packaging

Our products are manufactured, assembled and checked with the greatest diligence. However, should there be any grounds for complaint, we will of course rectify these in the context of our warranty. Even after the warranty period, we will be glad to assist you.

For all deliveries, it is fundamental that the delivery note be compared with the scope of delivery. After establishing that everything is present, the goods are to be checked for damage.

Should damage be evident, then a note made on the delivery papers is vital. The damage must be counter-signed by the carrier.

For returns, either the packaging is to be retained or such packaging is to be chosen, so that the equipment does not become damaged.

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10. Quality assurance

Quality of construction, manufacture, assembly, final inspection and checking are second nature to us. It represents an absolute precondition for the enduring, efficient and high-value production of our sophisticated products.

All our products undergo a final functional test (100% check). We thereby ensure that only reliable products are allowed to leave our premises.

11. Disposal

All materials, stainless steels and PEEK used in production of the rotation cleaner are not harmful to the environment. These materials are able to be disposed of in the manner intended for them.



It is to be ensured that no contamination from substances during operation is still present. In this regard, correspondingly suitable substances are to be used in rinsing those parts to be disposed of.

12. Masthead

Original operating manual

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