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CLEANING HEADS

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P.A. - S.p.A. - EQUIPAGGIAMENTI TECNICI DEL LAVAGGIO

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Fax +39 0522 629600 - R.E.A. RE 156319 - Registro Imprese RE 11535 - Mecc. RE 013446
C.F. e P.IVA 01035950359 - Cap. Soc. i.v. € 750.000,00 - Codice Identificativo C.E.E. IT 01035950359
ART. 2497 - BIS C.C. DIREZIONE E COORDINAMENTO BENETTI srl R.I. TRIB. DI RE 01480690351
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PA TANK CLEANING EQUIPMENT





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ABOUT THE TANK CLEANERS

The tank cleaner is the perfect solution to effectively and efficiently clean the interiors of tanks, barrels, mixers and any kind of container where the manual cleaning is not possible or not permitted because of safety reasons.

Combining the flow with the high pressure, the powerful water jets remove even the most difficult and sticky residuals from the internal surface.

The controlled rotational speed and the indexing pattern of the water jets make the cleaning process predictable and repeatable and therefore certifiable.

APPLICATIONS

- **Transportation**
 - Truck containers
 - IBC
- **Concrete**
 - Planetary mixers
 - Twin shaft mixers
- **Oil & Gas**
 - Mud tanks
- **Tiles**
- **Waste water**
 - Wet wells
 - Sewer cleaning trucks
- **Municipalities**
 - Trash bins
- **Food & Beverage**
- **Wineries**
 - Barrels
 - Barriques
- **Breweries**
- **Cosmetic**
- **Chemical**
- **Pharmaceutical**



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TANK CLEANING HEADS: **THE BENEFITS**

Powerfull, reliable and repeatable cleaning of every point of the internal surface

cost effective compared to manual cleaning

compliance with most of the industry and governments standards for cleaning

Reduction of water and chemicals consumption

significant savings for collecting and recycling water and effluents after the cleaning

environmentally friendly and sustainable

No need for confined space entry

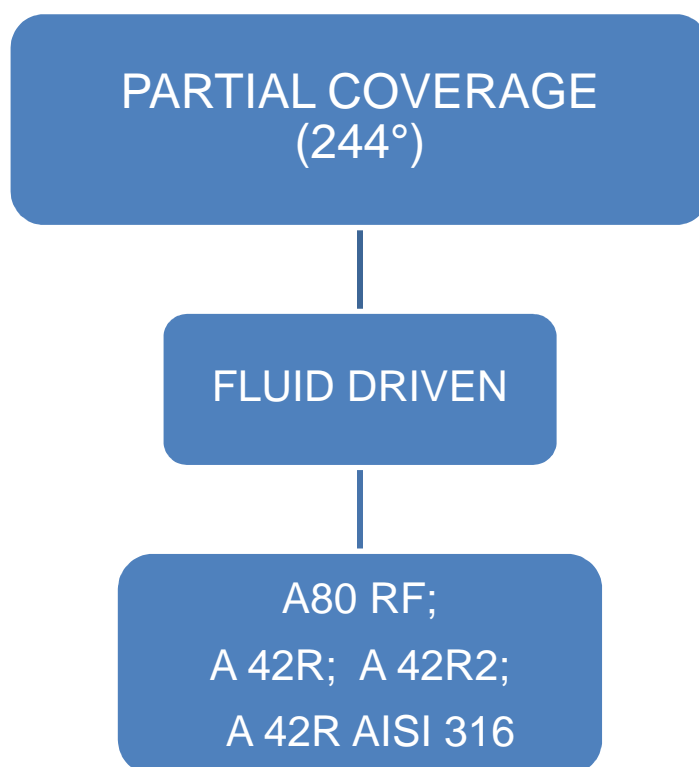
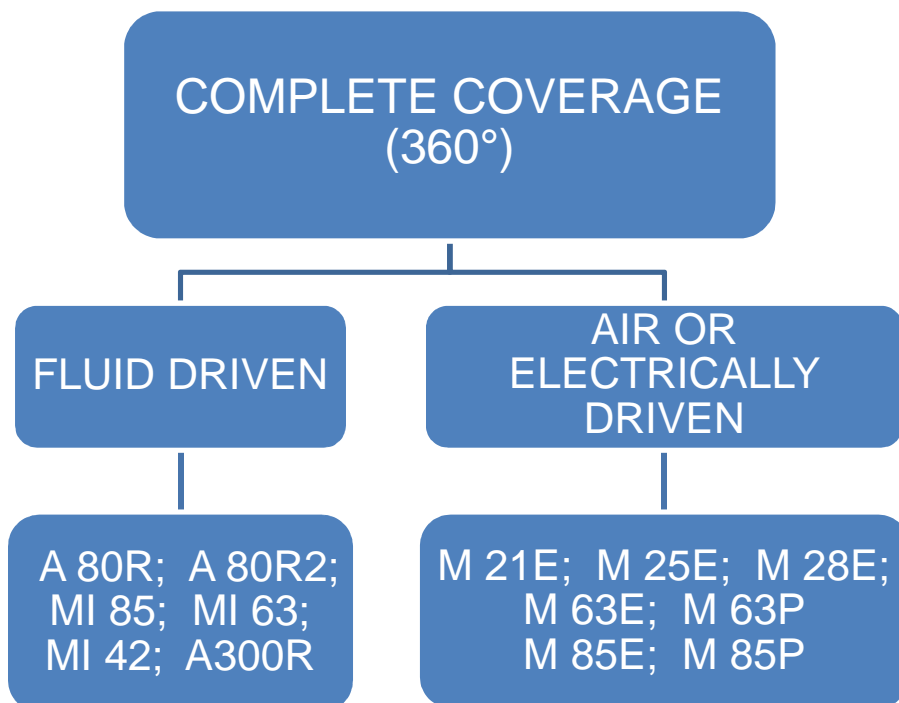
increased safety

reduced manpower costs



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1) COMPLETE COVERAGE, FLUID DRIVEN

HOW IT WORKS

These tank cleaning heads are self-propelled by the high pressure cleaning fluid and provide a complete orbital coverage of interior surfaces, for a wide range of applications

The complete coverage fluid driven cleaning heads perform two rotations around the vertical and horizontal axis, thus allowing the water jets to completely cover the internal surface of the tank.

The rotation is given by the cleaning fluid itself (normally high pressure water): the high pressure water flows through the calibrated injectors and hits a turbine which transmits the rotation to the main axis through a reduction gear.

The rotational speed is pre-set at the correct value thank to the injectors calibrated according to the operating flow rate.

This system has several key advantages:

- Precise , repeatable and reliable pattern of the water jets
- No oil in the cleaning head that could contaminate the cleaning process, since the speed reduction is accomplished with the reduction gear : no oil speed reduction
- No oil to monitor or replace
- The rotational speed is not affected by the temperature of the water.

BASE MODELS

A80R Heavy-duty unit for a wide range of cleaning application.

<http://www.pa-etl.it/it/generale/famiglia/id/370.html>





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A80R2 Similar to the A80R but with a two steps reduction gear (instead of a three steps) for a quicker cleaning.
<http://www.pa-etl.it/it/generale/famiglia/id/415.html>



MI85 Unit for tank with small openings such as barrels. It has the same engine of the A80R but with a lance, to manually place the nozzles in the center of the tank, keeping the engine outside.
<http://www.pa-etl.it/it/generale/famiglia/id/369.html>





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MI63-45 Similar to the MI85 but with a smaller nozzle holder for application in tanks with small openings such as barrels or IBC container. Min. tank's opening diameter (manually operated): 45 mm

<http://www.pa-etl.it/en/generale/famiglia/id/439.html>



MI63-65 Similar to the MI85 but with a smaller nozzle holder for application in tanks with small openings such as barrels or IBC container. Min. tank's opening diameter (manually operated): 65 mm

<http://www.pa-etl.it/en/generale/famiglia/id/367.html>





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MI42 Aisi 316 cleaning head complying the NSF standard 51 requirements for food and pharmaceutical industry applications.

<http://www.pa-etl.it/en/generale/famiglia/id/652.html>



A300R Large flow- medium pressure unit for large diameter containers. Suitable for use with centrifugal pumps.

<http://www.pa-etl.it/it/catalogo/portaugelli-rotanti-e-testine-con-ugelli-rotanti/a300r-testina-semovente-pulizia-cisterne.html>





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TECHNICAL DATA

Common features

360° cleaning pattern

Max operating temperature: 90°C – 195°F

MODEL	Inlet	Min/max flow	Rpm	Nozzle quantity and type	Material of the body	Notes
A80R	3/4" Bsp F	20-120 l/min 5.3 - 31.7 USGpm	10-15	2 or 4 x 1/4Npt *	Aisi 303	Atex version available
A80R2	3/4" Bsp F	20-80 l/min 5.3 - 21 USGpm	50-150	2 or 4 x 1/4Npt *	Aisi 303	
MI85	3/4" Bsp F	20-80 l/min 5.3 - 21 USGpm	8-18	2 or 4 x 1/4Npt *	Aisi 303	
MI63 min tank's opening dia. 65 mm	3/4" Bsp F	15-50 l/min 4 - 13.2 USGpm	8-18	2 or 4 x M4	Aisi 303	Atex version available
MI63 min tank's opening dia. 83 mm	3/4" Bsp F	15-50 l/min 4-13.2 USGpm	8-18	2 or 4 x 1/8Npt	Aisi 303	Atex version available
MI 42	1/2" Bsp F	20-65 l/min 5.3 - 17.2 USGpm	18-24	2 or 4 x 1/8Npt	Aisi 316	Atex NSF
A300 R	1" ¼ Bsp F	100-300 l/min 25 - 80 USGpm	4-6	2 or 4 x 1/4Npt *	Aisi 303	

(*) Extended nozzles for A80R, A80R2, MI85, A300R: extended nozzles are available for this models for sizes bigger than 065. This nozzles provide a more consistent water jet and therefore a stronger impact.

Lance size for MI63, MI85:

for all MI63 and MI85 fluid driven heads, PA offer different lance sizes to fit the tanks dimensions as the head should always be positioned in the centre of the tank.

Atex Versions (for application in potentially explosive environments):

for the A80R and the MI63 cleaning heads, an Atex version is available.

The MI 42 is supplied with the Atex certification.



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SELECTION

The main elements to consider when choosing the proper unit are :

- Operating flow rate and pressure
- Tank shape and dimensions
- Access opening size
- Material to be cleaned
- Chemical products used in the cleaning process
- Time available for the complete cleaning process

Once these informations are provided by the client, PA is in a position to recommend the right unit.

In case aggressive chemicals are used, we suggest reading our manuals for checking compatibility with the existing sealings.

The client is always provided with a **FORM** (download from PA website) to be kindly completed in order to gather all useful information for PA to select and suggest the right assembly for the specific job.

All the fluid driven cleaning heads are supplied pre-rated and tested in relation to working flow rate and pressure. The cleaning heads are therefore provided with:

- The internal injectors sized according to the flow rate
- The external nozzles sized according to the working pressure (external nozzles are to be ordered and billed separately).



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2) COMPLETE COVERAGE, AIR OR ELECTRICALLY DRIVEN

HOW IT WORKS

These tank cleaning heads are powered either by pneumatic or electric motors. They provide a complete orbital coverage of interior surfaces, for a wide range of applications.

These cleaning heads perform two rotations around the vertical and horizontal axis, thus allowing the water jets to completely cover the internal surface of the tank.

The air or electrically driven cleaning heads have three key advantages:

- The rotational speed is not affected by the operating flow rate => regular rotation even with very small flow rates
- Reduced internal loss of pressure thank to the lack of the reduction gear
- Very simple unit thank to the lack of the reduction gear.

BASE MODELS

M21 E Electrically driven cleaning head, specific for small tank and barrels.

<http://www.pa-etl.it/en/generale/famiglia/id/234.html>





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M25 E Electrically driven cleaning head, specific for wine barrels with suction system.

<http://www.pa-etl.it/en/generale/famiglia/id/366.html>



M28 E Elbow version of the M25 E for reduced space applications

<http://www.pa-etl.it/en/generale/famiglia/id/547.html>





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- M63 E-45** Electrically driven version of the MI63. Min. tank's opening diameter (manually operated) : 45 mm.
<http://www.pa-etl.it/en/generale/famiglia/id/440.html>



- M63 E-65** Electrically driven version of the MI63. Min. tank's opening diameter (manually operated): 65 mm.
<http://www.pa-etl.it/en/generale/famiglia/id/368.html>





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M85 E Electrically driven version of the MI85
<http://www.pa-etl.it/en/generale/famiglia/id/369.html>



M63 P-45 Air driven version of the MI63. Min. tank's opening diameter (manually operated)
: 45 mm
<http://www.pa-etl.it/en/generale/famiglia/id/440.html>





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M63 P-65 Air driven version of the MI63. Min. tank's opening diameter (manually operated)
: 65 mm

<http://www.pa-etl.it/en/generale/famiglia/id/368.html>



M85 P Air driven version of the MI85

<http://www.pa-etl.it/en/generale/famiglia/id/369.html>





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TECHNICAL DATA

MODEL	Max Pressure	Min/max flow	Rpm	Nozzle qty and type
M21E	220 Bar 3.200 Psi	10 – 21 l/min 2.6 - 5.5 USGpm	14	2 x M4
M25E	140 Bar 2.000 Psi	10 - 25 l/min 2.6 - 6.5 USGpm	14	2 x M4
M28E	140 Bar 2.000 Psi	10 - 25 l/min 2.6 - 6.5 USGpm	14	2 x M4
M63P min dia.45mm Air driven	140 Bar 2.000 Psi	15 - 40 l/min 4 - 10.5 USGpm	8 -13 depending on air motor	2 or 4 x M4
M63E min dia.45mm Electrically driven	140 Bar 2.000 Psi	15 - 40 l/min 4 - 10.5 USGpm	10	2 or 4 x M4
M63P min dia.50mm Air driven	140 Bar 2.000 Psi	15 - 40 l/min 4 - 10.5 USGpm	8 - 13	2 or 4 x 1/8Npt
M63E min dia.50mm Electrically driven	140 Bar 2.000 Psi	15 - 40 l/min 4 - 10.5 USGpm	10	2 or 4 x 1/8Npt
M85P Air Driven	140 Bar 2.000 Psi	20 - 80 l/min 5.3 - 21 USGpm	8 - 13	2 or 4 x 1/4Npt *
M85E Electrically driven	140 Bar 2.000 Psi	20 - 80 l/min 5.3 - 21 USGpm	10	2 or 4 x 1/4Npt *

(*) Extended nozzles for M85P, M85E: extended nozzles are available for this models for sizes bigger than 065. This nozzles provide a more consistent water jet and therefore a stronger impact.

Electrically driven versions and Power supply:

we supply different transformers in line with the local power supply specifications only for the small models M21E, M25E and M28E. (not supplied for M63E and M85E models).

Lance size:

As for M25E and all M63 and M85 heads, fluid-air or electrical powered units, we offer different lance sizes to fit the tanks dimensions (as the head should always be positioned in the centre of the tank)



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SELECTION

The main elements to consider when choosing the proper unit are :

- Operating flow rate and pressure
- Tank shape and dimensions
- Access opening size
- Material to be cleaned
- Chemical products used in the cleaning process
- Time available for the complete cleaning process

Once these information are provided by the client, PA is in a position to recommend the right unit.

In case aggressive chemicals are used, we suggest to read our manuals for checking compatibility with the existing sealing.

The client is always provided with a **FORM** (download from PA website) to be kindly completed in order to gather all useful information for PA to select and suggest the right assembly for the specific job.

All the air or electrically driven cleaning heads are tested in relation to working flow rate and pressure. The cleaning heads are therefore provided with:

- the external nozzles sized according to the working pressure. A set of M4 external nozzles is provided for the M21E, M25E and M28E. External nozzles are to be ordered and billed separately for the others cleaning heads.



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3) PARTIAL COVERAGE, FLUID DRIVEN

HOW IT WORKS

These tank cleaning heads are self-propelled by high pressure cleaning fluid and provide a partial coverage of interior surfaces of open-topped containers, for a wide range of applications.

The partial coverage fluid driven cleaning heads perform two rotation around the vertical and around the inclined axis, thus allowing the water jets to cover a section of 244° of the internal surface of the tank.

The rotation is given by the cleaning fluid itself (normally high pressure water): the high pressure water flows through the calibrated injectors and hits a turbine which transmit the rotation to the main axis through a reduction gear.

The rotational speed is pre-set at the correct value thank to the injectors calibrated according to the operating flow rate.

The partial coverage has two key advantages:

- No cover required to clean open-topped containers
- Save of water: once the cleaning head is placed in the centre of the container, only the bottom and the lateral surfaces are hit by the water jets.



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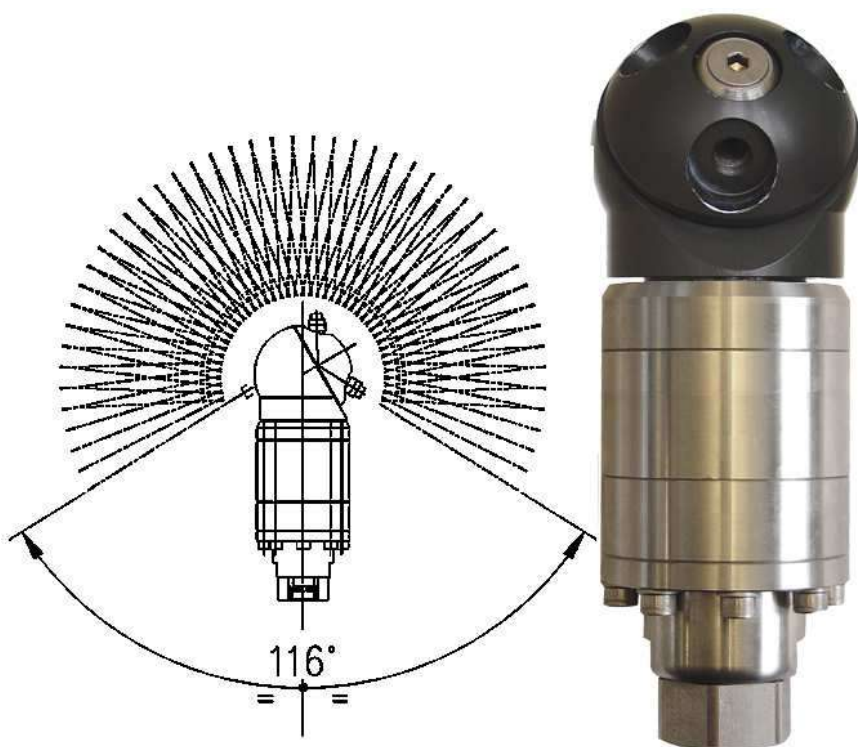
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BASE MODELS

A42R Heavy-duty unit for a wide range of cleaning application. The special design of the fluid driven engine allows two different cycle duration according to the required cleaning accuracy

<http://www.pa-etl.it/en/generale/famiglia/id/507.html>





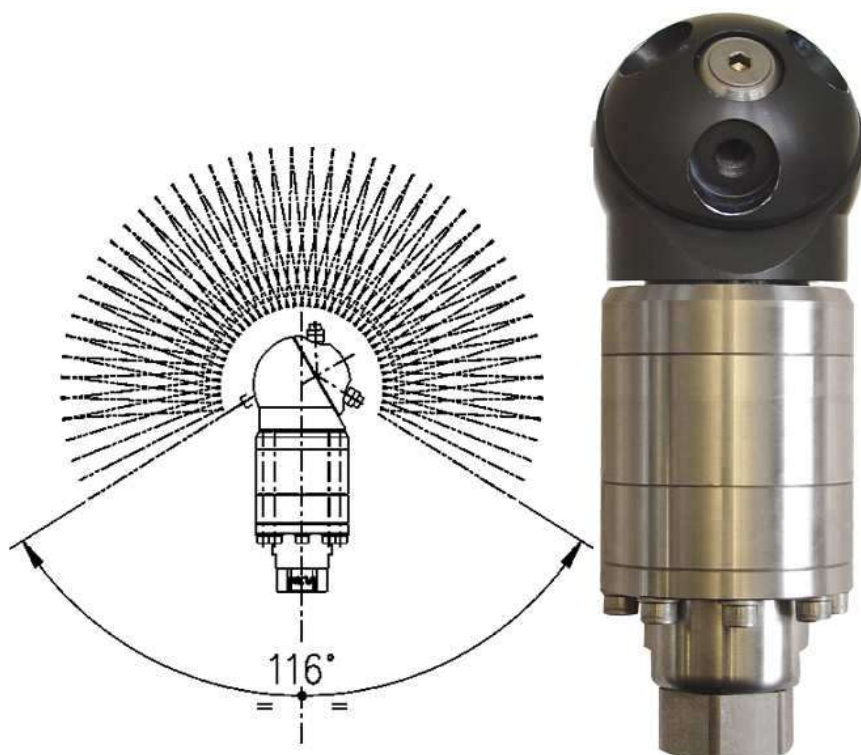
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A42R2 Similar to the A42R but with a 2 steps reduction gear (instead of a three steps) for a quicker cleaning

<http://www.pa-etl.it/en/generale/famiglia/id/500.html>





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A42R316 Aisi 316 special version of the A42R complying the NSF standard 51 requirements for food and pharmaceutical industry applications.

<http://www.pa-etl.it/en/generale/famiglia/id/668.html>





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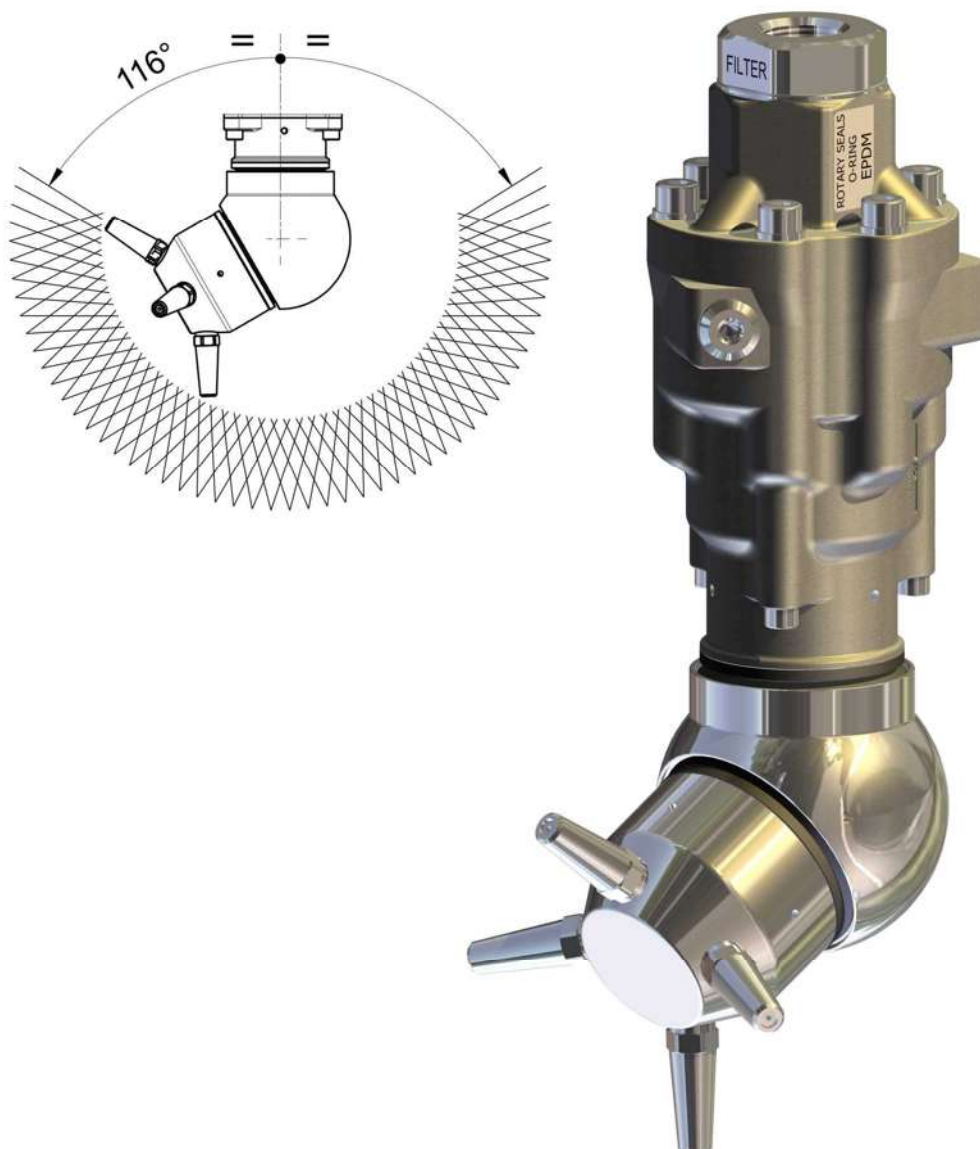
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A80 RF

High flow unit for large open-topped containers

<http://www.pa-etl.it/it/catalogo/portaugelli-rotanti-e-testine-con-ugelli-rotanti/a80rf-testina-semovente-pulizia-frontale-copertura-parziale.html>





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TECHNICAL DATA

MODEL	Max Pressure	Min/max flow	Rpm	Nozzle qty and type
A42R	140 Bar 2.000 Psi	20 - 50 l/min 5,3 - 13,2 USGpm	30 - 37	3 x 1/8Npt
A42R2	140 Bar 2.000 Psi	20 - 50 l/min 5,3 - 13,2 USGpm	120 - 170	3 x 1/8Npt
A42R 316	140 Bar 2.000 Psi	20 - 55 l/min 5,3 - 14.5 USGpm	18 - 24	3 x 1/8Npt
A80RF	140 Bar 2.000 Psi	20-120 l/min 5.3 - 31.7 USGpm	10 - 15	2 or 4 x 1/4Npt *

(*) Extended nozzles for A80RF: extended nozzles are available for this models for sizes bigger than 065. This nozzles provide a more consistent water jet and therefore a stronger impact.

SELECTION

The main elements to consider when choosing the proper unit are :

- Operating flow rate and pressure
- Tank shape and dimensions
- Material to be cleaned
- Chemical products used in the cleaning process
- Time available for the complete cleaning process

Once these information are provided by the client, PA is in a position to recommend the right unit.

In case aggressive chemicals are used, we suggest to read our manuals for checking compatibility with the existing sealing.

All the fluid driven cleaning heads are supplied pre-rated and tested in relation to working flow rate and pressure. The cleaning heads are therefore provided with:

- The internal injectors sized according to the flow rate
- The external nozzles sized according to the working pressure (external nozzles are to be ordered and billed separately).



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TANK CLEANING HEADS - GENERAL CONSIDERATIONS

- Each head is tested individually and it is equipped with its own serial number
- Every single head is packaged individually and accompanied by technical and maintenance manuals
We suggest every customer to carefully read our manuals (Technical manual and Maintenance booklet)
- Carrying a regular maintenance on the head will surely extend its life and assure a proper performance.
- Outlet nozzles are to be ordered and are billed separately.
They are sized in line with flow and pressure.
Nozzle sizing charts are available on the web for nozzle selection

FLUID DRIVEN ASSEMBLIES

- All fluid-driven models are sized and tested in line with the given specifications of flow and pressure
- Self-propelled heads normally loose approx. 10 – 20 bar (145 – 290 psi) of the pump pressure according to the flow rate, because of internal friction
- The choice of the number of nozzles depends on the available flow and on the tank's dimension
- For efficient cleaning we suggest to rate each nozzle with at least 10 l/m (2,5Gpm)
- For complete coverage fluid driven cleaning heads, the use of 4 nozzles is advisable in case of tanks with diameter bigger than 3 meters (9.8 feet).



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SURFACE CLEANERS

The range of surface cleaners includes self-propelled units using the same water engines developed for the tank cleaners. This design, based on calibrated injectors coupled with the turbine and with the reduction gear, allows a perfect control of the rotational speed. The cleaning process is therefore predictable and repeatable and can be optimised from a cost and time point of view.

The rotational speed, typically around 150 -200 rpm, is much lower compared to the swivel spinner activated by the reaction thrust of the water. The water jet are therefore more consistent since the water does not nebulize. Thanks to the high impact water jets, the cleaning action is efficient even at distances up to one meter.

APPLICATIONS

- Touchless drive-through carwash
- Industrial vehicles cleaning
- Rail vehicles: trains, underground
- Conveyor belts

HOW IT WORKS

These surface cleaning heads are self-propelled by the high pressure cleaning fluid.

In this water engine, the high pressure water flows through the calibrated injectors and hits a turbine which transmits the rotation to the main axis through a reduction gear.

The rotational speed is pre-set at the correct value thank to the injectors calibrated according to the operating flow rate.

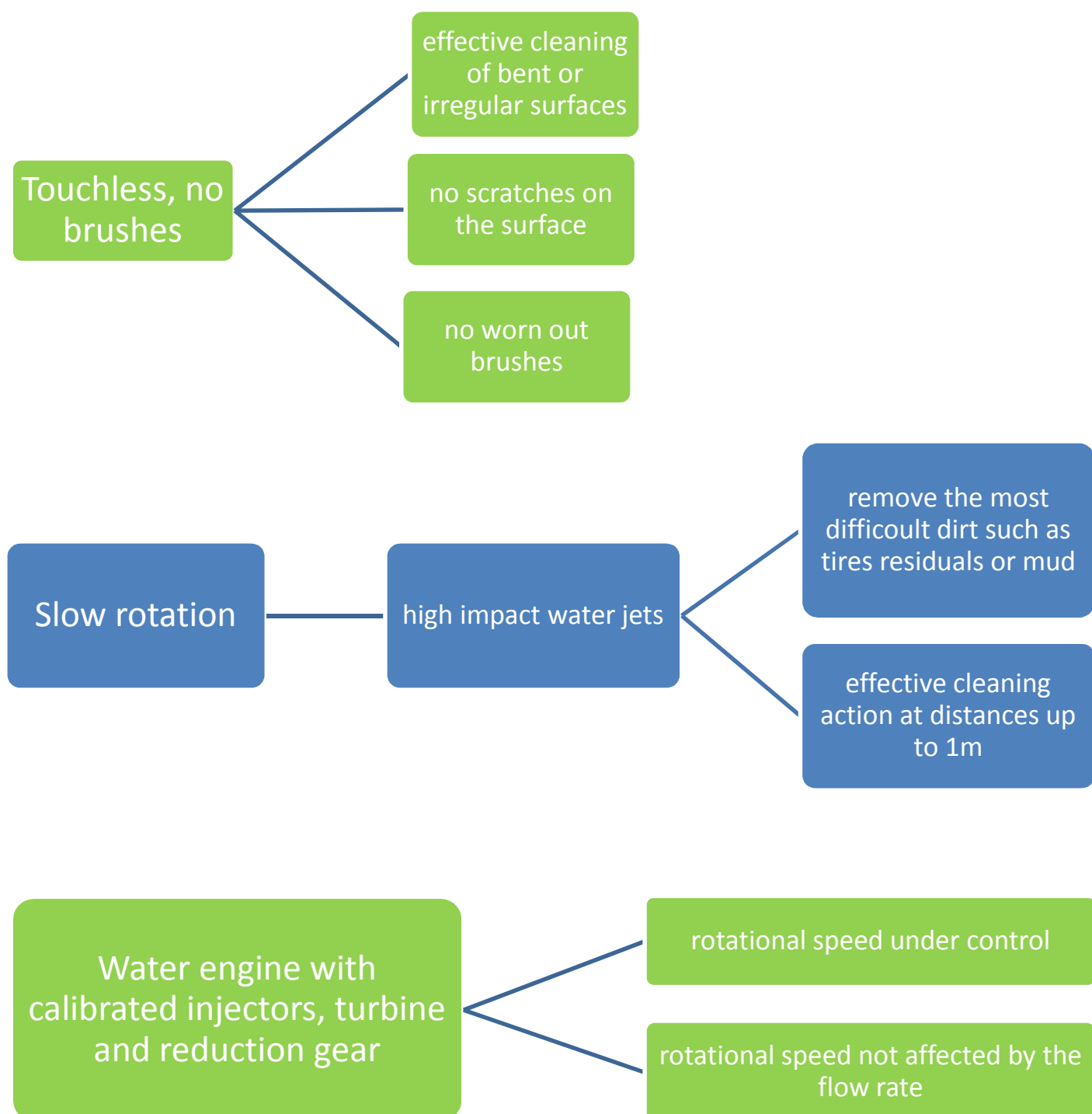


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WATER ENGINE SURFACE CLEANERS: **THE BENEFITS**





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BASE MODELS

A80-FR2

High flow unit for frontal or radial cleaning

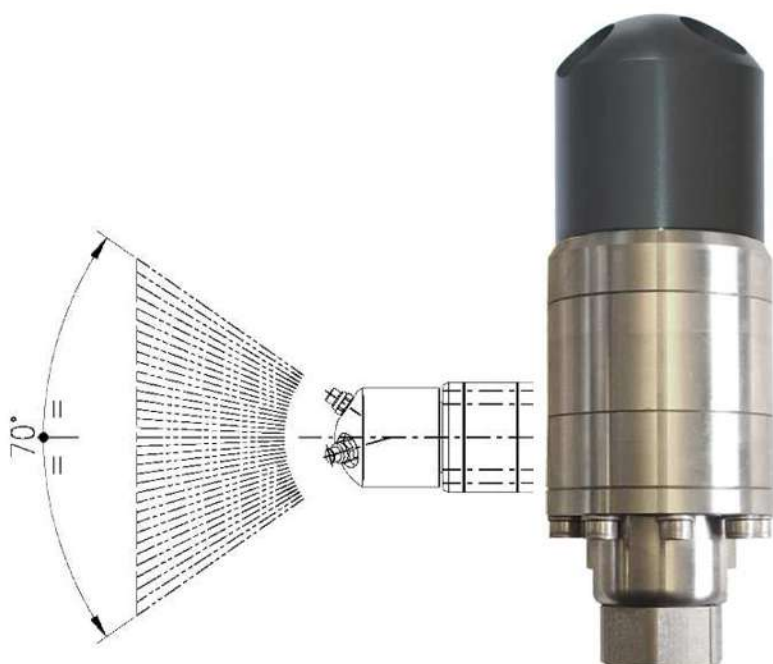
<http://www.pa-etl.it/en/generale/famiglia/id/373.html>



A42-FR2

Three nozzle unit. All the nozzles are oriented at the same angle.

<http://www.pa-etl.it/en/generale/famiglia/id/499.html>





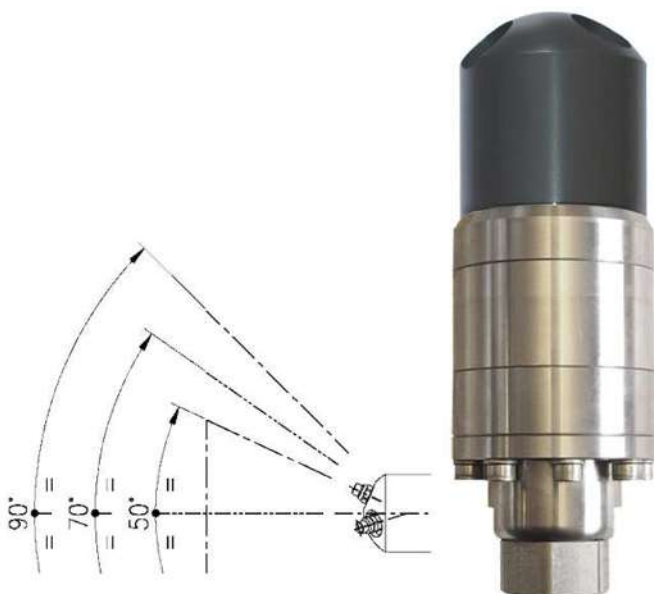
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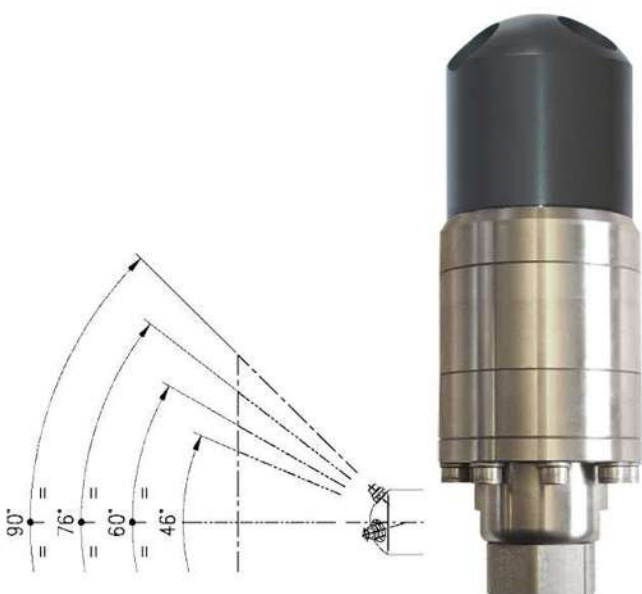
A43-FR2 Three nozzle unit. The nozzles are oriented at three different angles.

<http://www.pa-etl.it/en/generale/famiglia/id/508.html>



A44-FR2 Four nozzle unit. The nozzles are oriented at four different angles.

<http://www.pa-etl.it/en/generale/famiglia/id/515.html>



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**TECHNICAL DATA**

MODEL	Max Pressure	Min/max flow	Rpm	Nozzle qty and type
A80FR2	140 Bar 2.000 Psi	20 - 80 l/min 5,3 - 21 USGpm	50 - 150	2 x 1/4Npt
A42FR2	140 Bar 2.000 Psi	20 - 60 l/min 5,3 - 16 USGpm	180 - 260	3 x 1/4Npt *
A43FR2	140 Bar 2.000 Psi	20 - 60 l/min 5,3 - 16 USGpm	180 - 260	3 x 1/4Npt *
A44FR2	140 Bar 2.000 Psi	20 - 60 l/min 5,3 - 16 USGpm	180 - 260	4 x 1/4Npt *

(*) Extended nozzles are available for this models for sizes bigger than 065. This nozzles provide a more consistent water jet and therefore a stronger impact.