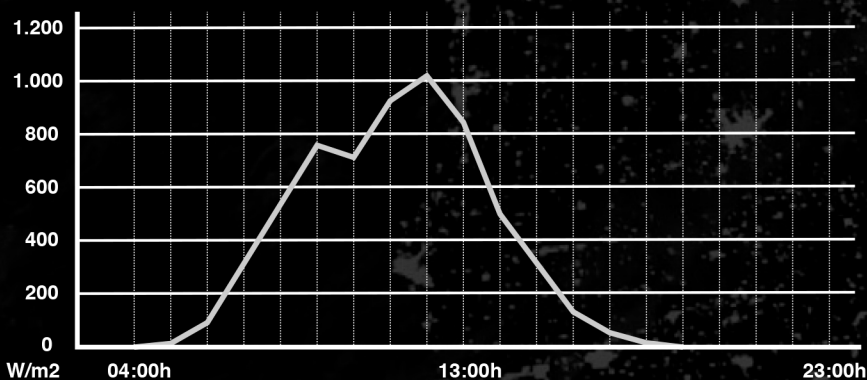


AUTOMATIC SYSTEM FOR
CLEANING SOLAR PANELS



THE NEED OF PRODUCING ENERGY THROUGH RENEWABLE RESOURCES PREVAILS MORE AND MORE IN THESE DAYS AND IT WILL DO IN A NEAR FUTURE. THAT IS THE REASON WHY SOLAR PLANTS ARE CONSIDERED A PROPER SOLUTION TO CURRENT CHALLENGES IN ENERGY MATTERS. Solar plants involve a huge step on the development of society, an endless resource which is not only the responsible for covering everyday needs in the fringe of higher energy consumption but which also preserves the environment in an eco-friendly way. The number of countries joining this initiative for producing solar energy is increasing, since- apart from being a profitable resource which generates a number of economic advantages- it also adds a positive value concerning social responsibility, environmental sustainability, commitment and technological advances in a near future, already present.

WASH AUTO PANEL has developed an innovating system contributing to this path into the future of cleaning and maintenance of photovoltaic plants, at the time it achieves higher efficiency from these plants.



Solar Radiation Average



**WASH AUTO
PANEL**

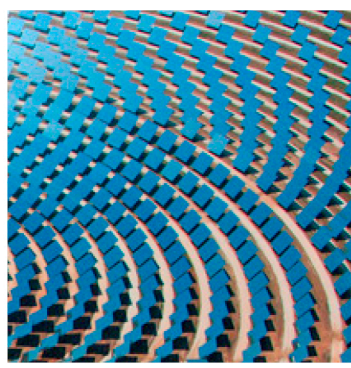
+20%
EFFICIENCY

-95%
TIME EMPLOYED

WASH AUTO PANEL OFFERS AN INNOVATING TOOL FOR CLEANING , WHICH IS DIFFERENT TO OTHERS FOR NOT DAMAGING THE PHOTOVOLTAIC PANEL SURFACE, ADAPTING ITSELF -IN A VERSATILE WAY- TO FIXED SOLAR PANELS AS MUCH AS FOLLOWERS, WHATEVER THEIR EXTENSION IS. This system guarantees up to 20% more of energy production in any solar plant, and a saving of time up to 95%, as compared to manual cleaning.

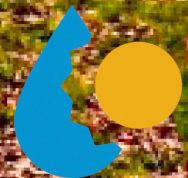


**WASH AUTO
PANEL**



WASH AUTO PANEL *Cleaning Tool* has been tested for efficiency and effectiveness in one of the highest solar plants in the presence of Torresol Energy professionals, getting the washing of thirty-one 90m²- heliostat over the 120m² in 75 minutes with 0,428 litres/m² of water consumption, resulting in an increase of the reflection up to the 15%.

WASH AUTO PANEL is always concerned with guaranteeing a better production of the photovoltaic plants.



**WASH AUTO
PANET**



WASH AUTO PANEL offers all what you need for automatic cleaning of solar panels



CLEANING TOOL

Consisting on a combination of high-quality nylon brushes which remove dirt on panels without pressure.



WATER TANK

Towed tank for water transportation during the cleaning of the photovoltaic plant.



TRACTORS

WASH AUTO PANEL advises you on which tractor better suits the needs of your individual project.



WATER SACK

Essential accessory for water reserve in areas where tap water is hard to find. From 10,000 to 500,000 litres.



The cleaning process developed by **WASH AUTO PANEL** consists on a line of pressure-controlled multidirectional jets which spread reverse-osmosis water over the photovoltaic surface. Brushes in movement remove dirt on panels, so freeing them from any barriers limiting their normal production.



Guaranteeing the maximum efficiency of solar units in an eco-friendly way is the main objective of the **WASH AUTO PANEL** *cleaning tool*.

WHAT HAVE WE **TAKEN INTO ACCOUNT?**

- **1** Possible panel curvature or damage
- **2** Too much water consumption
- **3** Dependence on cleaning staff
- **4** Cost/ Efficiency

WHAT HAVE WE **GOT?**

- **1** Eliminating pressure over panels
- **2** Reducing water consumption
- **3** Adapting to any surface and dimensions
- **4** Getting 20% more of efficiency, saving 95% of time



THE CLEANING TOOL



The *cleaning tool* developed by WASH AUTO PANEL consists on a combination of brushes placed on lineal position and made out of nylon threads, which move over the solar panel while multidirectional sprinklers spray reverse-osmosis water over the surface.

WASH AUTO PANEL Quality Controls assure that all the elements that form the *cleaning tool* do not damage the surface and get a better efficiency from the photovoltaic plant.



◀ **WASH AUTO PANEL** provides you with the connection module necessary for the installation of the extensible arm that supports the multiple brushes.



◀ The cleaning tool holds and guides the brushes at the time the sprinklers spray water over the surface in a fairly way.





▼ **WASH AUTO PANEL** provides you with booms of different length for the cleaning tool, so adapting itself to solar plants of whatever size.



A - V1



m	1.2	2.1	3.1	4.2
kg max.	990	630	440	270

A



m	1.4	2.6	3.7
kg max.	1780	1000	690

B



m	1.5	2.7	3.8	5.0
kg max.	1700	950	660	500

A - V1, V2; Non-CE



m	1.4	2.6	3.7	5.0	6.0
kg max.	1780	1000	690	510	400

B - V1; Non-CE



m	1.5	2.7	3.8	5.0	6.0
kg max.	1700	950	660	500	400



▲ *Brushes bracket length:*
from 2,5 metres up to 12 metres long.

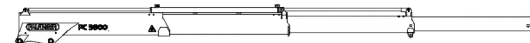
◀ *The cleaning tool is*
guided with some
controls placed into the
tractor cabin.

A



m	1.4	2.6	3.7
kg max.	2000	1420	980

B



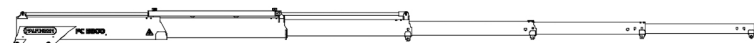
m	1.5	2.7	3.8	5.0
kg max.	2000	1360	940	720

A - V1, V2; Non-CE



m	1.4	2.6	3.7	5.0	6.0
kg max.	2000	1420	980	650	580

B - V1, V2; Non-CE



m	1.5	2.7	3.8	5.0	6.0	7.1
kg max.	2000	1360	940	720	580	280





TRANSPORTATION AND STORAGE

of inverse-osmosis water



The **WASH AUTO PANEL** towed water tank is the main accessory in the automatic cleaning process of solar panels. Its steel chassis and anti-corrosion paint offers resistance and functionality along its working life.



Model: **3000L2002**

CHASSIS

Dimensions mm 4500 x 2100 x 2000

Material Steel + anti-corrosion paint

TANK

Tank capacity l 100 / 200 / 3500

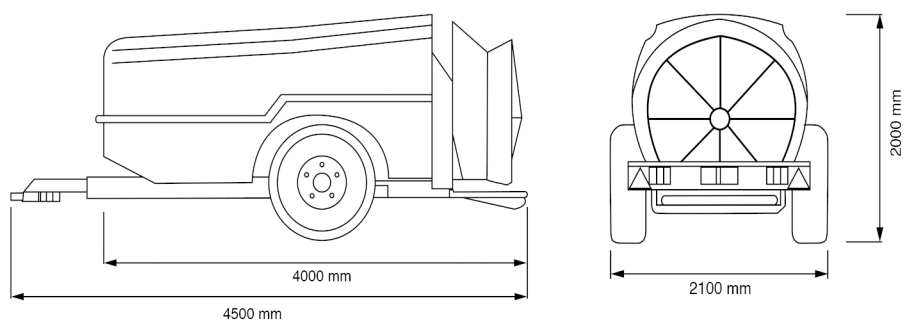
Material Polyethylene

Supplementary Tanks Washbasin / Circuit Washing

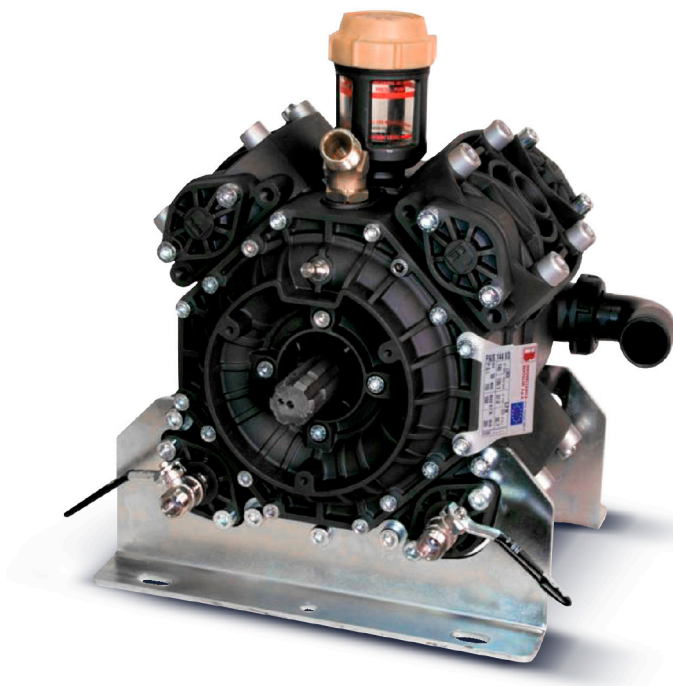
TRANSPORT KIT

Tyres 400/60-155 136 A5

Brakes Hydraulic and Parking



The towed water sacks offered **WASH AUTO PANEL** have a series of semi-hydraulic 4-diaphragm pumps with different levels of performance; from 130l/min to 150l/m, all of them with bronze connecting rods.



	PA/S 124	PAS/S 144	PAS/S 154
l/min	130	140	150
USGPM	34,3	37	39,6
bar	50	50	50
P.S.I	725	725	725



WASH AUTO PANEL offers water reserve sacks with a capacity from 10,000 litres to 500,000 litres, for those places where access to tap water is restricted and it is necessary to protect it from external agents like air or pollution, permanently or provisionally. Installation of water reserve sacks is quick and easy and the quality of the 100% recycled fabrics-made out of polyester and PVC-guarantees a higher resistance.



MASSEY FERGUSON
www.washautopanel.com 3645 GE



**WASH AUTO
PANL**



MASSEY FERGUSON, the best coworker for WASH AUTO PANEL

THE *CLEANING TOOL* SYSTEM HAS BEEN DEVELOPED IN COLLABORATION WITH THE WORLDWIDE-KNOWN TRACTOR BRAND MASSEY FERGURSON. The project for adapting the WASH AUTO PANEL *cleaning tool*, has been carried out in the I+D+I department of MASSEY FERGUSON, adapting several of its models to offer a higher efficiency and production of this innovating system, with a warranty up to 6 years or 6,000 working hours.



Because of its lightness, power and versatility, the MF3600 Series tractor is the best option for the WASH AUTO PANEL *cleaning tool*, characterized by its easy driving and strong power, so facilitating the cleaning of the photovoltaic plants.

WASH AUTO PANEL advises you on other tractor brands, such as John Deere and Kubota, for adapting the *cleaning tool*, offering the model that best suits your project needs.



JOHN DEERE

Kubota



ADVICE, QUALITY AND
COMMITMENT

The WASH AUTO PANEL qualified staff advises you on the purchase and starting of the *cleaning tool*, guaranteeing a proper functioning in any kind of project.

The policy of quality and commitment assures you an excellent result on the solar plants cleaning.



**WASH AUTO
PANEL**

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