

# ShearClean™

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The Meech ShearClean™ web cleaning system is innovative and based on patented technology that utilises well established aerodynamic and fluid dynamic technologies to achieve the very highest levels of cleaning efficiency without the need for physical contact.

ShearClean comprises three major components - a cleaning head, compact extraction system and control panel. The cleaning head incorporates proprietary “non contact” cotton covered cleaning rollers and ionising bars for control of static charges. Connection to a Meech Compact Extraction System allows easy removal and collection of contaminants. The system is controlled and can be interlocked with the line via the control panel.

The proprietary cleaning rollers operate at a high rotational velocity, typically within 1mm of the surface of the web. The roller design has been optimised to generate a high speed boundary layer of air. The greater energy of this layer destroys the boundary layer associated with the incoming web, exposing even the smallest particles resting on it to the powerful cleaning force. The low pressure, high velocity region created by the roller lifts and removes the particles from the web and carries them to the vacuum extraction chamber from which they are evacuated to the compact extraction unit.

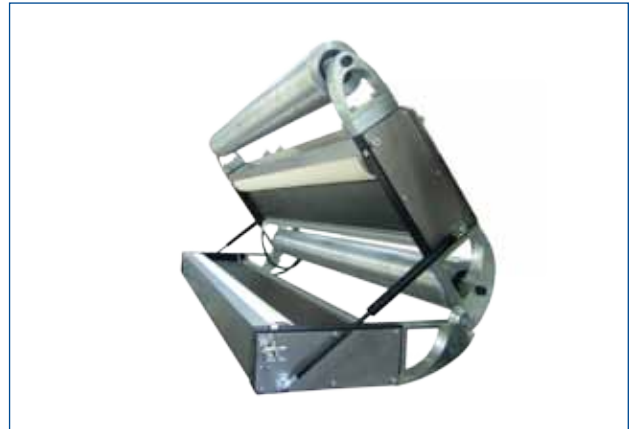
Ionising bars ensure neutralisation of static charges on the web and easy breakdown of the bonds holding contaminants to the web surface. The risk of re-attraction of contaminants to the cleaned web surfaces is also minimised.

Users include:

- Avery Dennison
- CCL
- Changmao
- OVD Kinegram



Compact Extraction Unit variable vacuum control and filter condition status.



ShearClean head unit internal view showing optional gas struts.

## Applications

ShearClean can be used in a wide variety of applications and being non-contact it is compatible with all materials that you currently run, or may run in the future.

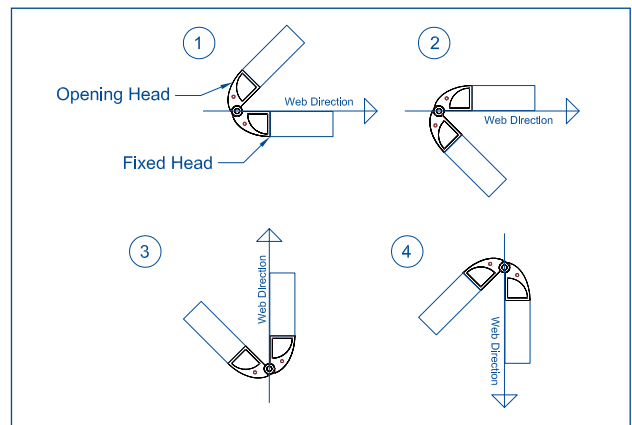
Typical applications include:

- Specialty Films
- Labelling
- Laminating
- Printing
- Food Packaging
- Coating
- Pharmaceutical
- LCD Screens
- Filter Material

## Installation

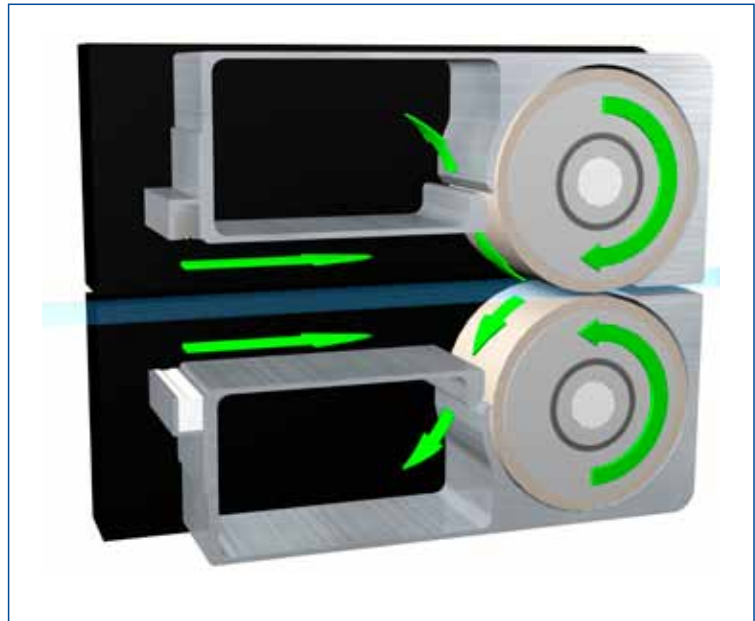
The ShearClean head unit can be installed on a web travelling at any angle without jeopardising cleaning performance. It is preferable, although not essential, that the head unit is installed in an area where the web is under constant tension. The head unit includes path rollers which are used to align the web between the internal cotton rollers.

The head unit can be configured to open in four configurations.



## How ShearClean Works

- High speed internal rollers rotate at 4000rpm in the opposite direction to the web. This roller speed is factory set to clean webs moving at up to 450 m/min (1,475 ft/min) and can be adjusted for faster webs if required.
- The high speed rollers do not touch the web and there is a space of 0.5 - 1mm between each roller and the web.
- The boundary layer produced on the roller is substantially greater than the boundary layer on the web.
- ShearClean uses this superior boundary layer to strip the surface boundary layer off the web that holds the contaminants against the web surface.
- A crucial low-pressure zone is also created at the web surface. This low-pressure zone dislodges the contaminants.
- Now airborne, the contaminants are swept into the ShearClean vacuum chamber.



- An integrated aerodynamically designed 'Shear Bar' keeps the roller clean and prevents re-contamination of the web.
- Model 914 ionising bars with 905 power units provide effective static control to optimise the cleaning performance and prevent re-contamination of the web.

## Design Features

The ShearClean is constructed from extruded anodised aluminium and stainless steel, which provides a highly rigid and compact system that can be easily installed in most applications up to a web width of 1,800mm (70").

Based on our unrivalled experience and an extensive development program, we have included several unique features in the system:

Feature	Benefit
Non contact cleaning	Eliminates risk of surface marking and damage. No interference with web tension or web tracking. Suitable for both single and double sided cleaning.
Integrated static control	Neutralises static charges to optimise cleaning performance and prevent re-contamination.
Hinged, clam shell design	Allows unit to open for easy threading of the web.
No consumable items	No requirement for expensive replacement sticky tapes. Minimum maintenance and low running costs.
Compact design	Flexible positioning & easy installation.
Variable vacuum control	Easy to set up and adjust extraction system.
Quiet operation	Can be installed in enclosed work areas. No H&S issues due to noise.

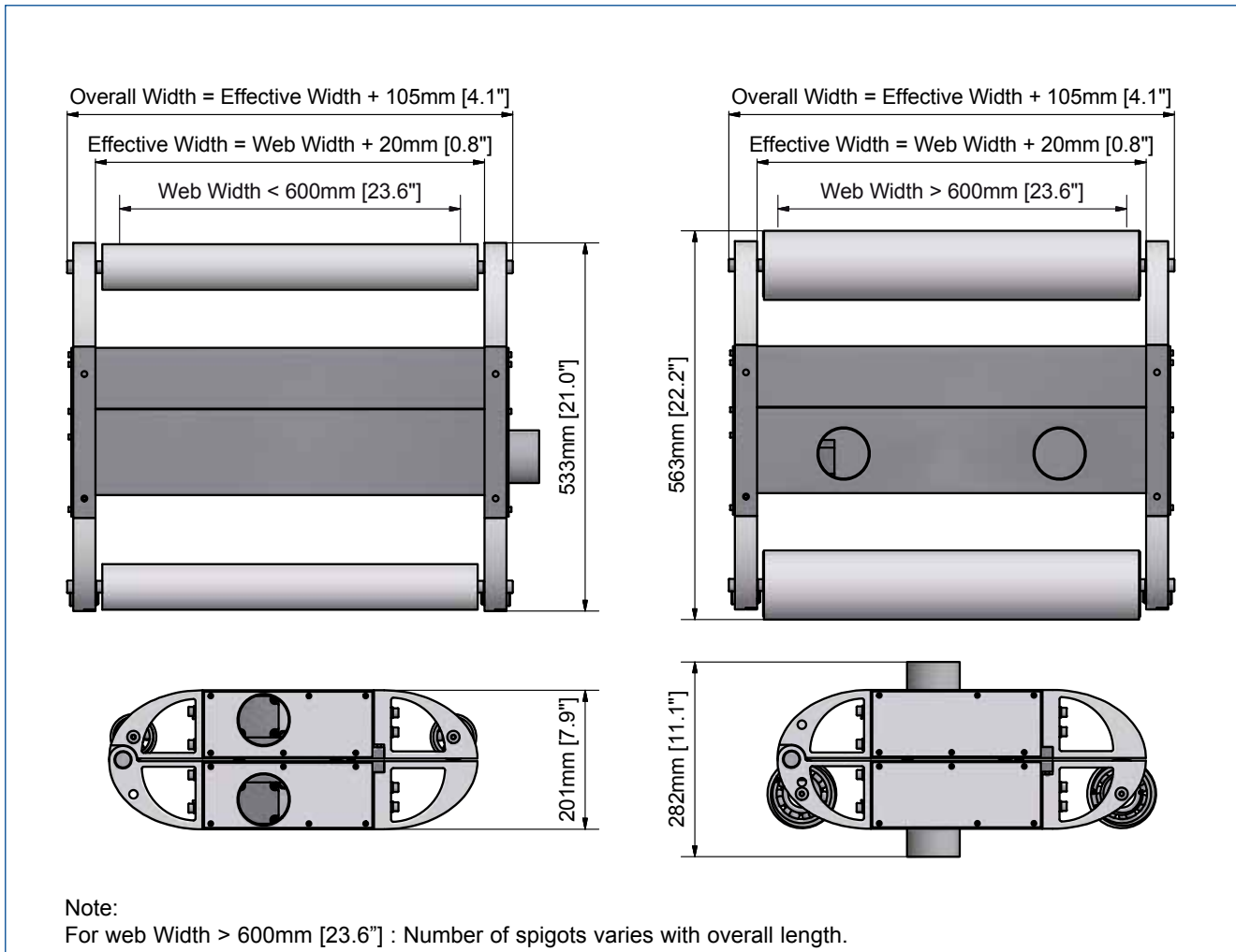
## Options:

ShearClean systems can be manufactured to include a range of options including:

- Gas struts to aid manual opening/closing of the head unit.
- Pneumatics to provide automated opening/closing of the head unit.
- Vacuum Level Monitoring for automatic control of performance.

## ShearClean Sizing and General Assembly

The ShearClean head unit can be configured with either side or top air spigot connections as shown in the drawings below.



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