



**FINISHING LINE FOR  
CONCRETE BLOCKS  
AND SLABS**



# CALIBRATION AND GRINDING MACHINES, SERIES M50 BLOCK, FOR BLOCKS AND SLABS IN AGGLOMERATE CONCRETE

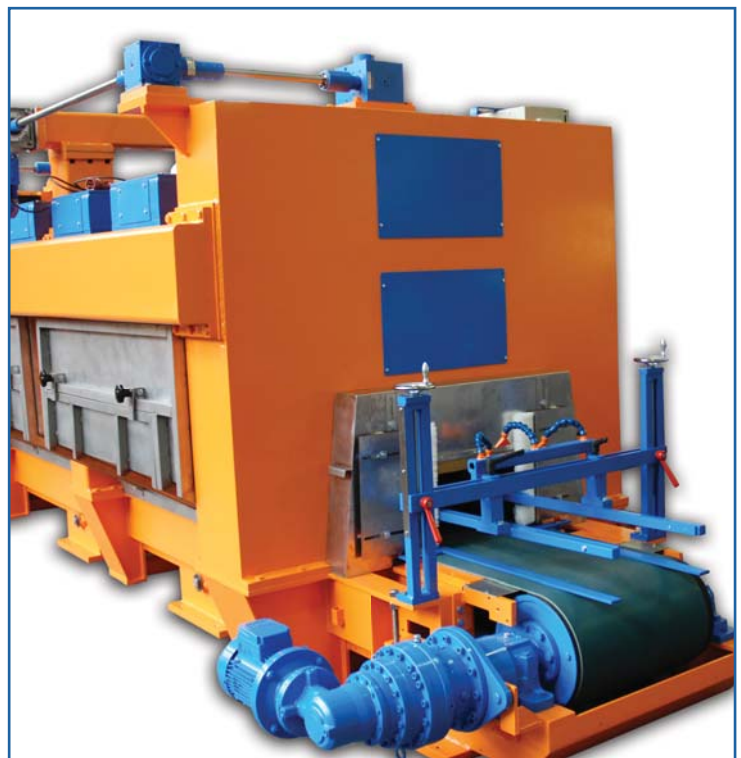
M50 BLOCK MODEL



## TECHNICAL DATA

- Possibility to use diamond tools or silicon carbide tools
- Number of working heads: up to 6
- Abrasive tool diameter: 640 mm ( 25 inches)
- Applicable heads power: up to 50 hp
- Belt width for material transfer: 550 mm ( 22 inches)
- Workable width: 530 mm ( 21 inches)
- Thickness of items to be worked: from 25 mm ( 1 inch) up to 400 mm (16 inches)
- Transfer belt speed: up to 6 m per minute ( 20 feet per minute)
- Water use: 2.5/3 cubic meters ( 660/792 gallons) per hour per working head.

M 50 BLOCK, VIEW OF BLOCK ENTRY AND BLOCK EXIT



As an absolutely innovation in agglomerate concrete blocks, we are proud to present to the operators of the sector the new grinding machine M 50 BLOCK.

Designing and building this machine, unique in its gender, we intended to give a definitive answer, without any compromise, for the manufacturers of calibrated and grinded blocks to the following issues:

- 1 - Possibility to grind and polish products with thickness in a very large range: from 25 mm ( 1 inch) up to a more standard thickness of 200 mm ( 8 inches ) and also block ends at 400mm ( 16 inches ) and more, obviously including intermediate thicknesses.
- 2 - Easy machine setting to prepare the grinding of lots with different thickness without complex tunings and abrasive tools spacers use.
- 3 - Together with the above the possibility to install onto the grinding heads high powers that allow to use a wide range of abrasive tools and to get unexceptionable quality levels for the final product.

**The answer is the new M 50 BLOCK.**

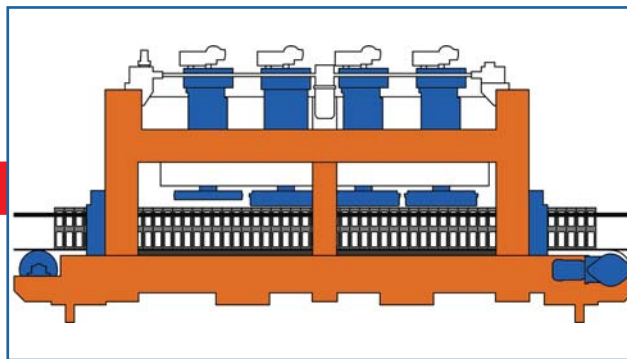
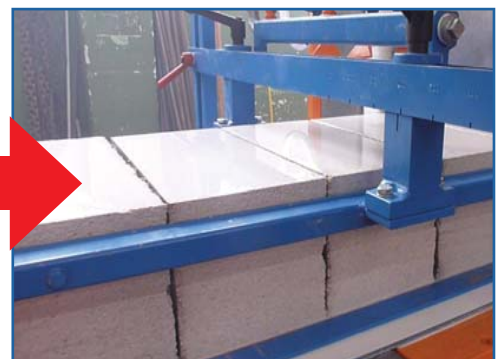
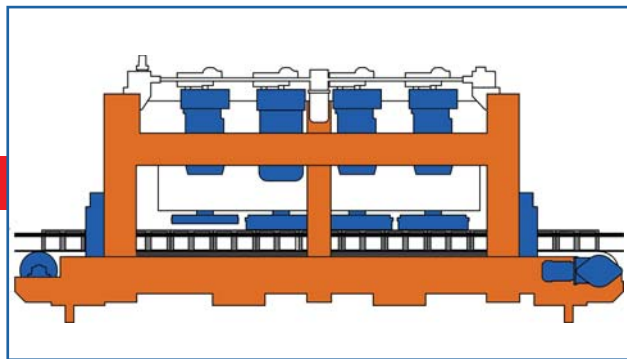
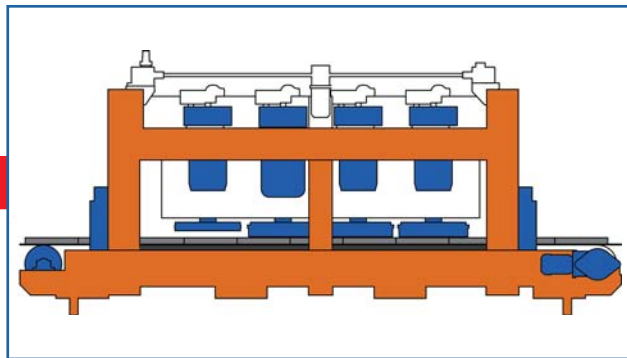
Peculiar characteristic of the new machine is a structural beam with very high robustness and stiffness carrying the working heads, that

disposes of a vertical excursion trough slides applied to structural pillars at the two ends of the machine. This servo assisted system allows to move in the best position the working heads in order to cope the thickness of the items to be grinded. The beam positioning is controlled from the machine control panel where it is possible to set the desired working position through a keyboard. Once the beam reaches the requested position it is locked on to the slides by hydraulic brakes that give high stiffness to the assembly.

Each working head has its own vertical movement electronically controlled, that produces the working pressure of the tools with a complete use of them. The working heads, in variable number upon customer choice, can install diamond tools or abrasive stones in silicon carbide and motor powers up to 50 HP.

The blocks are transferred under the heads by a reinforced PVC belt that slides onto anti wear plates at speed controlled electronically from the machine control panel. During grinding the blocks are laterally hold back by guides which position can be set upon the blocks dimension.

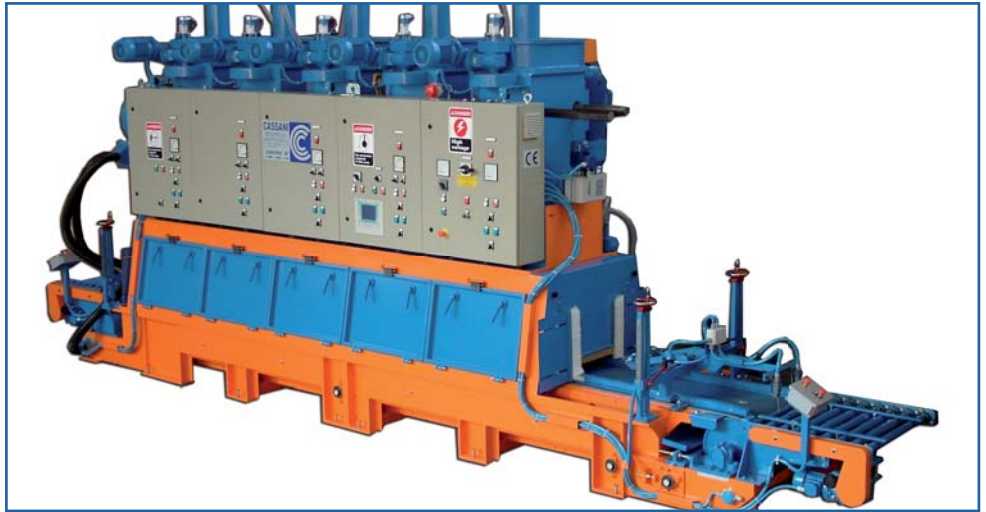
The grinding surfaces are cooled by water injection at the contact point with the grinding tools.



# CALIBRATING AND GRINDING MACHINES FOR BLOCKS, SLABS AND OTHER PRODUCTS IN AGGLOMERATE CONCRETE

Directly originated from calibrating and grinding machines for tiles, these machines are especially suitable to calibrate and grind blocks, slabs and other products in agglomerate concrete with thickness up to 400 mm (16 inches) and more upon request, provided that the thickness difference between the thinner and the thicker items should be not bigger than 50 mm (2 inches). This thickness range can be increased up to 100mm (4 inches) installing removable spacer between tools supports and tools themselves.

The machines are produced in several series that are: "SERIE 100", "SERIE 90", "SERIE 3000" and "SERIE 4000". These series differ in their working width, and for other manufacturing details as per the following:



SERIE	100	90	3000	4000
Working width (mm/inches)	430/17	530/21	700/27	830/33
Abrasive tool diameter (mm/inches)	570/22	640/25	790/31	900/35
Max installable power (HP)	40	60	75	100

Each series can be assembled with a set of grinding heads variable between 1 and 10 and each head can be equipped with diamond tools or standard silicon carbide abrasive.

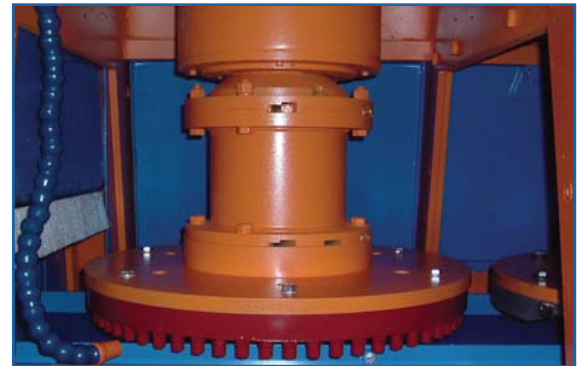
The maximum power for the grinding heads motors is :

- SERIE 100 : 40 HP
- SERIE 90 : 60 HP
- SERIE 3000: 75 HP
- SERIE 4000: 100 HP

Each series can have a head number variable between 1 up to 10 and the heads can be equipped with diamond tools or conventional abrasives in silicon carbide.

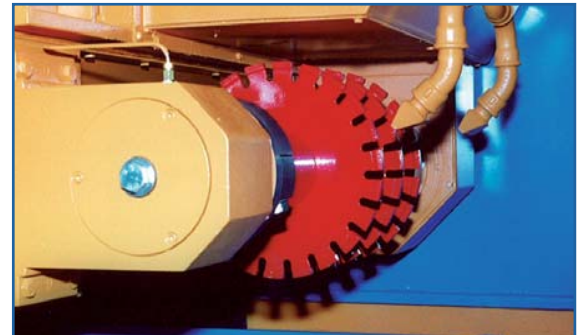
All the series have the following common characteristics:

- Heads working pressure mechanically applied with electronic continuous check of motor ampere absorption
- They can be installed diamond abrasive tools or silicon carbide tools
- Grinding surface cooling through water injection at contact point with abrasive.
- Agglomerate concrete items move along the grinding line via PVC belt supported by special anti abrasive steel device. The belt has a variable speed electronically controlled.
- The material to be grinded is hold by lateral guides adjustable.
- High ruggedness construction apt to install high powers with relevant performances in terms of production volumes an quality.



Spacer installation

Diamond tool to create grooves



## DRY CALIBRATION AND GRINDING MACHINES

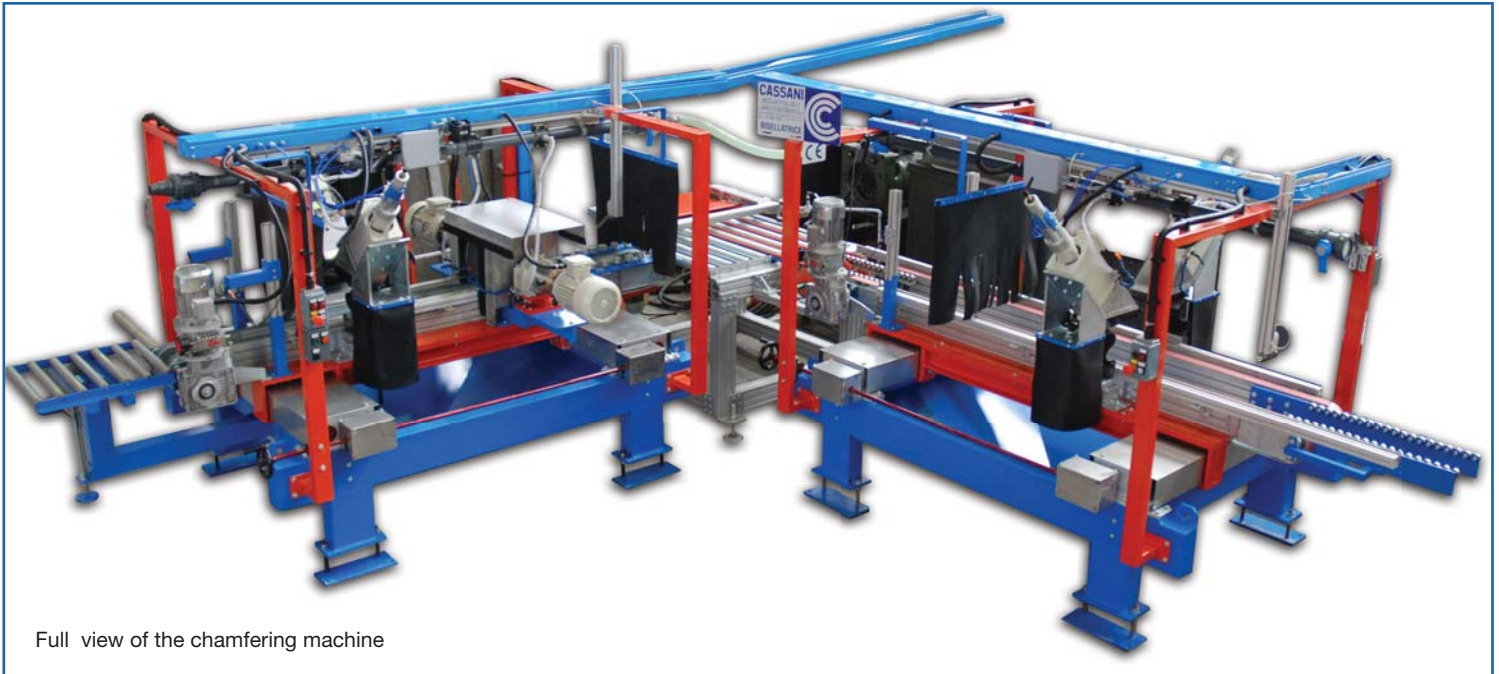
These operations are possible even without cooling water in a full dry process, obviously with a special machine configuration different from the one developed with water cooling systems.

To get this result we did a wide search in order to:

- Identify a diamond tool capable to dry grinding
- Identify the optimum speed for this kind of tool with the possibility to have a variable speed in case of customer request
- Protect efficiently the machine components from the powders no more detained by the water
- Protect the working environment from grinding powders

For this last point the machine is encapsulated in a depressurized room with automatic pneumatic closures and equipped with a suction system with a properly dimensioned filter to collect in special containers the powders without environment pollution.

# CHAMFERING MACHINES FOR BLOCKS-SLABS



Full view of the chamfering machine

These chamfering machines have been designed and built for concrete blocks and slabs chamfering.

They are able to chamfer different type of blocks and slabs, they can be set for great thickness differences from a minimum thickness of 50mm (2 inches) up to a maximum thickness of 400mm (16 inches) and even more on demand.

The max plane dimensions of the workable products are 400 mm X 400 mm (16" x 16") as standard option and more on demand.

The machine is composed of two bodies which axes forms a 90° angle. Blocks or slabs are chamfered first on two parallel sides in the first machine body, then they are diverted to the second body where the remaining two sides are chamfered.

The items transfer is via belts and rollers during the 90° diversion.

Due to the dimensional differences between the blocks out of the vibro presses first the calibration is done on the faces with possible dimensional differences using two diamond plates of proper dimensions. In this way at the end of the cycle the chamfer dimensions are warranted to be uniform along the four sides of the block.

Two couples of diamond tools, at 45° respect the concrete item surface, provide the chamfering. Different kind of tools are available depending on the chamfer type requested.



Details of chamfering heads at 45°



Details of the grinding heads

Chamfering of blocks



Chamfering of slabs



# POLISHING MACHINES FOR BLOCKS AND SLABS SERIES T SWING BLOCK

When the grinding finishing, even if done using polishing abrasives, is not enough, when it is requested a polishing with a very high glossiness level comparable with natural stones, it is necessary to use a polishing machine.

For this reason we developed a series of polishing machines for blocks, the "SERIE T SWING BLOCK", that working on grinded material can obtain a glossiness impossible with a grinding machine.

These machines use abrasives "FRANKFURT" type, available all over the world, with a wide choice for all the needs, but in addition they have specific characteristics that make them different from common grinding machines:

- working pressure of polishing heads pneumatically actuated. The pressure is in this way very smooth and elastic, the abrasive is continuously in contact with the material in process. The heads do not remove great quantities of material but they only gradually eliminate the scratches left by the grinding operations obtaining at each head a gradual gloss increase.
- the rotating shaft is not rigidly linked to the plate that carries the abrasives, instead between the two it has been inserted an elastic joint that makes the abrasive to uniformly lean onto the material in process.
- the polishing heads can be installed on a beam with transverse movement that, during the polishing, can move with oscillations with variable amplitude and speed. These oscillations perpendicular to the feed motion of the material to be polished increases considerably the glossing even with dark materials.

As per our tradition these machines have a very high stiffness and, due to the acid compounds release from the polishing millstones, we largely use stainless steel in addition to very well done galvanic zinc plating before painting. A control panel is installed onto the machine and in addition, each polishing head has its own control panel.

Our polishing machine for block are grouped into two main categories:

- Polishing machines capable to work on materials with different thickness provided that this difference is inside the range of 50 mm (2 inches). This range can be widen up to 100 mm (4 inches) using spacers in the heads
- polishing machines capable to work on materials with very high thickness differences between 25 mm (1 inch) up to 400 mm (16 inches) and more if requested.

In this second category the beam holding the polishing heads is installed onto slides and has a large vertical excursion



so that the heads can be moved in the optimum position, pending the material thickness, from the machine control panel.

The machines are produced in several series that are: "SERIE 100", "SERIE 90", "SERIE 3000" and "SERIE 4000".

These series differ in their working width, and for other manufacturing details as per the following scheme:

**SERIE 100** : working width of 430 mm (17 inches)

**SERIE 90** : working width of 530 mm (21 inches)

**SERIE 3000**: working width of 700 mm (27 inches)

**SERIE 4000**: working width of 830 mm (33 inches)

All the categories can be built with a number of polishing heads between a minimum of 6 heads up to 14 heads as standard configuration, special configuration possible on request.

All the series have the following common characteristics:

- Heads working pressure pneumatically applied
- Plate abrasive carrying with diameter of 500 mm (20 inches) with elastic joint
- Oscillating bridge with speed and amplitude control. SERIE 100 can be prepared with a not oscillating bridge.
- FRANKFURT type abrasives usage
- Polishing surface cooling through water injection at contact point with abrasive.
- Head engine power from 7.5 HP up to 15 HP.



# SHOT BLASTING MACHINE FOR BLOCKS AND SLABS

In the process of manufacturing and finishing of building materials, especially of blocks, slabs and tiles, it is more and more prized and requested the finishing with sanding effect.

This effect is obtained with sand shooting onto the item in process that produces a scratchy/satin surface.

The technology of our machines is based on the dry shooting of the items in process using steel shots of various grits that are shoot by one or more turbines.

The shooting is done inside a closed chamber where the steel shots, after hitting the items in process, are contained and separated from the powder generated by their hits on the items surface. The steel shots are collected to be re-used and the is sucked, filtered in special tanks for subsequent disposal.

The working width of our machines ranges from 600mm (24 inches) up to 2000mm (80 inches).

The thickness of the items in process ranges up to 500mm (20 inches).

The most common configuration is the one with two turbines installed in the upper part of the



machine (standard models), this allows the sand blasting only onto the upper surface of the items in process. Upon request it is possible to install other turbines in order to treat contemporaneously five faces of the item in process.

## Our shot blasting machines have the following common characteristics:

- Turbine speed variable installing different power motors
- Sand flux controllable at turbine level
- Transfer of the material in process with steel mesh belt
- Steel mesh belt speed controllable electronically
- Sand shooting chamber with special steel armor protection interchangeable
- Steel shots automatic separation from powder and automatic recover for reuse
- Powders sucking filtering and stocking without environmental pollution



## HANDLING CLAMPS

During blocks and pavers processing only part of the production is treated for calibration, grinding and shot blasting. For this only a few pallets with already packed material are sent to the various treatments.

We have developed various types of robot clamps capable to get from the packed pallets the materials handling them to be loaded on the finishing lines.

At the end of the process our robot clamps can handle the finished material

packing it again on pallets as it was at the beginning of the processing.

The pallets used are the same that have been unloaded by the first unpacking robot that the system transfer to the end of the line to the packing robot station.

Our clamps, pending on the material to be handled, can have an hydraulic actuated closure, pneumatic or pneumatic together with



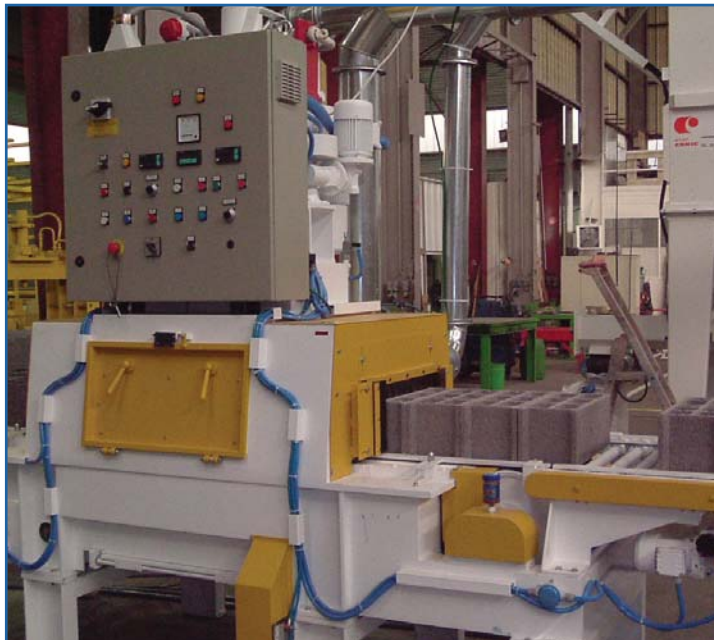
a vacuum sucking device very useful for small items like pavers.

Our clamps can handle various layers of material with variable stroke lengths together with variable rotations.



# CALIBRATION AND GRINDING OF CONCRETE BLOCKS THICKNESS

The manufacturing technology for concrete blocks, based on vibro presses, does not assure to have items with the same thickness. This defect can cause problems in walls manufacturing even if the thickness differences are small.



In order to solve this problem we prepared calibration/grinding machines that produces blocks with thicknesses uniform inside tolerance of tenths of millimeter.

The calibration/grinding is done using one or more diamond tools designed for this operation, the process can be done with water tool cooling or with a dry process.

Obviously these two kind of process induce different machine types due to different diamond tools, to machine mechanical parts protection, for the air-tight confinement of the working area and to the powder sucking systems, all these necessary in case of dry grinding.

For the dry process it is mandatory the usage of special filters in the powder sucking plant in order to allow safe operations relatively to the working environment.

These machines can be equipped with a laser thickness sensor that allows a check of the items in process and consequently allows the continuous tuning of the tools position for the automatic balancing of the tool wear.

Our calibrating/grinding machines are based on the same technology of all the other machine produced and they can be produced in different models with different number of working heads and different working width that are provided in the range of 400mm (16 inches) up to 700 mm (27 inches).



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