BORUM

2-COMPONENT* APPLICATION EQUIPMENT
TECHNICAL NOTE

** also called MMA, Cold plastic, Cold applied plastic (CAP)*

2-COMPONENT MATERIAL

There are different kinds of 2-component systems* – at Borum we have chosen to mainly work with the 98:2 system for the larger machines. This system consists of 2-components; 98% paint and 2% hardener to cure the material.

When initiated Component A is combined with the accelerated Component B the curing process starts immediately! The pot-life when mixed at room temperature is about 3 minutes – higher temperature reduces pot-life. Working with 2-component is temperature related, the viscosity of the material is different on cold mornings and hot afternoons, so you have to adjust the material to make it suitable for the application. With 2-component you get a wear resistant road marking with good visibility, durability and low dirt pick up.

NB! When working with 2-component, whenever the application is stopped, application equipment has to be cleaned from the mixed material immediately!

Recommendations regarding viscosity of the material for application:

- Dots > 8500 cp (centipoise)
- Agglomerate > 8000 cp
- Extruder > 6500 cp (for making ribs approx. 8500 cp)
- Paint – depending on the size of the nozzle

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GENERAL INTRODUCTION

Being equipped with a static mixer for internal mixing of the paint and hardener, as well as an advanced cleaning system that is easily triggered from the machines' computer, the Borum 2-component equipment is constructed to provide high quality road markings.

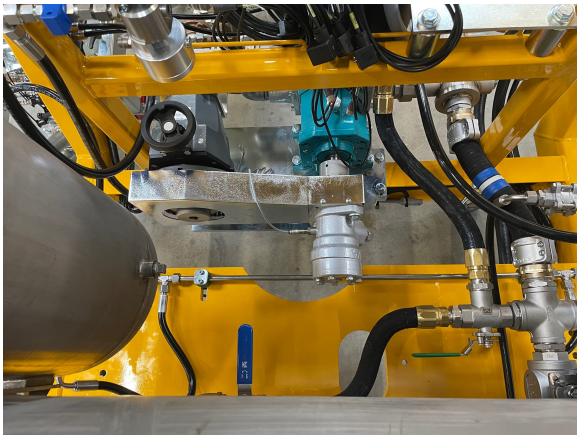
THE BORUM 2-COMPONENT EQUIPMENT (LOW PRESSURE SYSTEM) CONSISTS OF:

1. Material system with 3 containers for:

- Paint
- Hardener
- Solvent for cleaning

2. Feeder system with:

- Pump set-up that ensures the 98:2 ratio for the paint and hardener
- Mixer for blending the paint and the hardener. The mixing of the material is done internally, so it is not affected by external factors as wind, etc. as for external mixing.
- Pressure valves digitally controlled by Borum LineMaster computer. No need for mechanical setting.



PUMP UNIT

- Consisting of a lobe type paint pump and gear type pump for hardener.
- The two pumps are driven by one hydraulic motor via chain and variable gearbox securing the 98:2 relation between paint and hardener.
- The system has a flow sensor for controlling that hardener flows when working.
- There is a controller for performing the flushing of the application equipment and mixer.

ALARMS

To help avoid non-cured markings to be applied as well as to clean the equipment in due time, the following alarms can be set:

- Alarm when hardener does not flow during marking work.
- Alarm when there is a break in the marking works (which is longer than set in the computer).

MIXER AND VALVES

- A mixer blending paint and hardener, and three valves switching between paint/hardener and solvent.
- The feeder system mixes the two components in the ratio 98:2 (can be adjusted approx 1-1,5% on the gearbox).
- The system is capable of handling both paint and solvent, switching between the materials for either marking or cleaning.
- The pump is capable of resisting pulsations from valves turning on/off.
- The applicators are supplied with a steady flow of material.

2-COMPONENT EXTRUDER

LINE TYPES: FLAT AND PROFILED LINES (CONTINUOUS AND INTERRUPTED LINES), RIBS

Quick connectors to the mixer and to the lifting cylinder for quick and easy exchange of head.

One extruder head for each specific line width.
Available sizes are 10, 12, 15, 17, 20, 22, 24, 25, 30 cm.

Line thickness is around 1-3 mm.

Recommended paint viscosity:

- extruded lines > 6500 cp.
- ribs > 8500 cp.

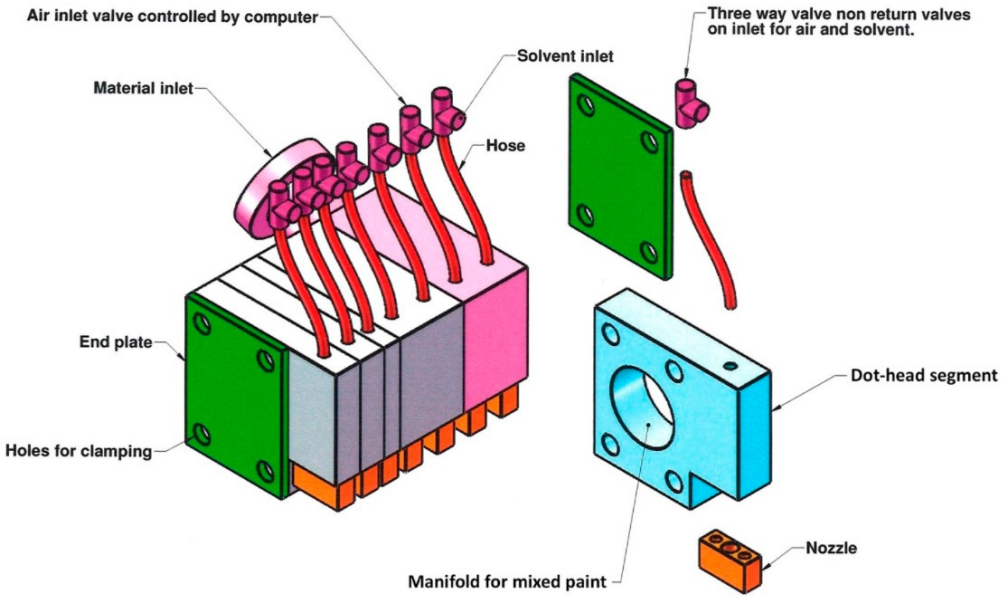
Cleaning of the system is controlled by the Borum LineMaster computer on the machine.

The application equipment is mounted on a sliding retainer frame that can be used for all Borum 2-component equipment.

Usual marking speed is between 2 - 6 km/h. Based on work and weather conditions, operator experience, etc. faster application speeds can be achieved.

CLICK BELOW TO SEE A VIDEO OF THE 2-COMPONENT EQUIPMENT IN ACTION

2-COMPONENT DOT EQUIPMENT



LINE TYPES: PROFILED DOTS

The unit consists of a basic unit with 6 dots in a row. It is possible to add additional rows one by one until you obtain the wanted line width. It's like Lego building blocks!

Number of dots per meter (length-wise) is controlled in the LineMaster computer.

Dot height is around 3-4 mm and dot diameter 22 - 25 mm.
Line width is between 10-30 cm. depending on the number of modules.
Quantity dots/m 15-20.

Recommended material viscosity > 8500 cp.

Cleaning of the system is controlled by the Borum LineMaster computer on the machine.

Usual working speed when doing dotted lines is 4-5 km/h.

CLICK BELOW TO SEE A VIDEO OF THE 2-COMPONENT DOT EQUIPMENT IN ACTION

2-COMPONENT AGGLOMERATE EQUIPMENT

LINE TYPES: AGGLOMERATE MARKINGS

The agglomerate equipment (needle roller) is mounted under the 2-component extruder, which is slightly wider than the required line width. The agglomerate equipment only works together with the 2-component extruder.

The roller is hydraulically driven and the rpm is controlled by the LineMaster.

Line width is between 10-30 cm.
Line thickness is up to 4 mm.

Recommended paint viscosity > 8000 cp.

Cleaning of the system is controlled by the Borum LineMaster computer on the machine.

Usual working speed when doing agglomerate lines is 4-5 km/h.

CLICK BELOW TO SEE A VIDEO OF THE 2-COMPONENT AGGLOMERATE EQUIPMENT IN ACTION

LINEMASTER COMPUTER

The Borum LineMaster computer gives you total control of all your road marking tasks, from line application and pre-marking to reporting and invoicing. All line marking functions are controlled from this unit, which makes Borum road marking machines simple and easy to use. This helps with maintaining a good uptime for the machine, together with giving the operator a detailed overview of the line marking process.

- Robust design
- User friendly set-up of Line programs
- Store up to 99 lines and 30 programs
- Controls various equipment in one unit
- Easy adjustment & calibration
- Low material tank level alarm
- Marking reports
- Operator training programme

With the LineMaster Computer you can control up to 6 paint or spray guns, 6 bead guns and equipment with up to 24 shutters.

More over, it controls all these various sets of equipment in this ONE unit.