

SIMEX ART 1000

Asphalt Repair Technology



INTRODUCTION

Simex ART is an attachment for compact loaders (track loaders and skid steers), designed for the restoration of deteriorated road surfaces through a cold regeneration technology of the bituminous conglomerate (asphalt).

ART is a patented technology which reuses 100% of the material present on site without removing the milled material or adding other aggregates. It is used in functional road surface maintenance, at a depth varying between 30 and 100 mm. The equipment combines asphalt milling with the particle size reduction and mixing of rejuvenators.

APPLICATION FIELDS



Simex ART is specifically designed for surficial restoration of deteriorated road surfaces, such as:

- branch or “alligator cracking”
- bumps, dips, ripples
- potholes and gaps
- localized pavement alterations

MAIN GOALS

- 1) To repair road surface distress quickly and effectively, without totally disrupting traffic flow and, especially, without repeatedly having to carry out emergency maintenance.
- 2) To reduce the costs of purchasing and handling new mixes by using only the existing asphalt.
- 3) Environmental sustainability: 100% of the materials present on site are recovered and regenerated, while reducing construction site traffic resulting from supplying new materials and removing waste.
- 4) To overcome the problem of RAP disposal.

DESCRIPTION

The equipment, advancing to a certain milling depth, combines the following phases:

- Milling of the damaged road section.
- Controlled injection* of the rejuvenator in the milling chamber.

- Size reduction of the milled material.
- Mixing, obtaining the recycled RAP (reclaimed asphalt pavement) ready for road resurfacing.

After being regenerated, the mix is deposited directly by the equipment on the milling track and is ready to be leveled and compacted with a roller or vibrating plate.

*The injection of the rejuvenator is controlled by a mechatronic system which regulates the quantity of injected rejuvenator according to depth and ground speed in order to maintain a defined percentage of rejuvenator with respect to the mass of milled asphalt.

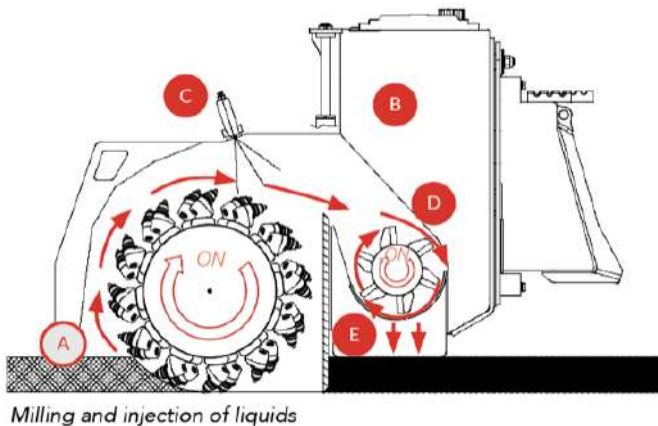


The cold mix after milling and mixing with rejuvenator

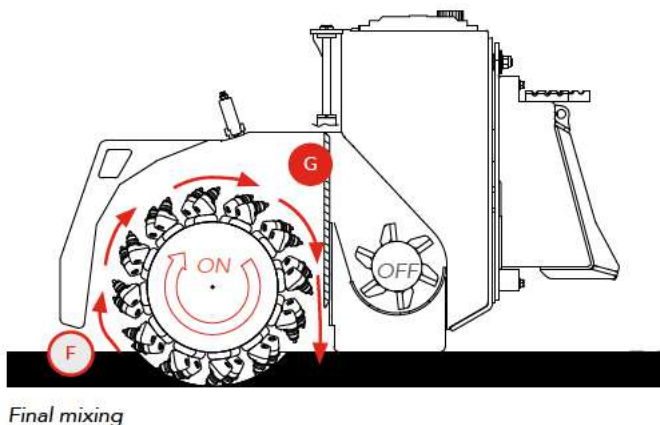


Final result after compaction

OPERATING METHODS



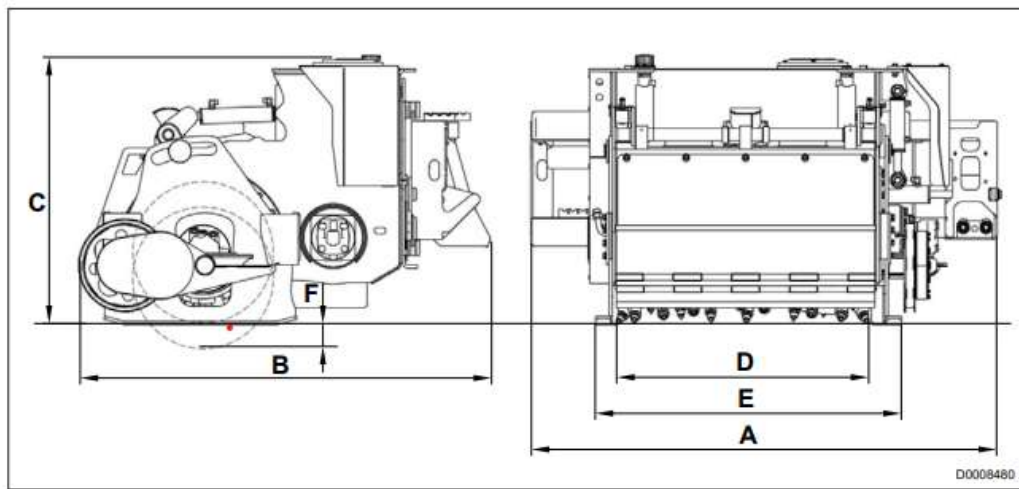
Milling (A) from 30 to 100 mm depth (hydraulic adjustment), depending on extent of distress. Milled material is mixed with rejuvenator contained in the tank (B) and nebulized (C) at high pressure using special pump. Mixed milled material goes into second chamber where crusher drum (D) reduces to correct particle size and further mixes it. Output grille (E) checks the obtained size (0-15 mm). Nebulization is granted by a Simex system that ensures maintaining the correct additive percentage depending on ground speed detected. It may be necessary to spray water using the integrated nebulization system (depending on type of additive used and conditions and type of asphalt to be resurfaced).



Mixing (F) milled material obtained using milling drum. The chamber of the crusher drum is closed with special scraper (bulkhead) (G).

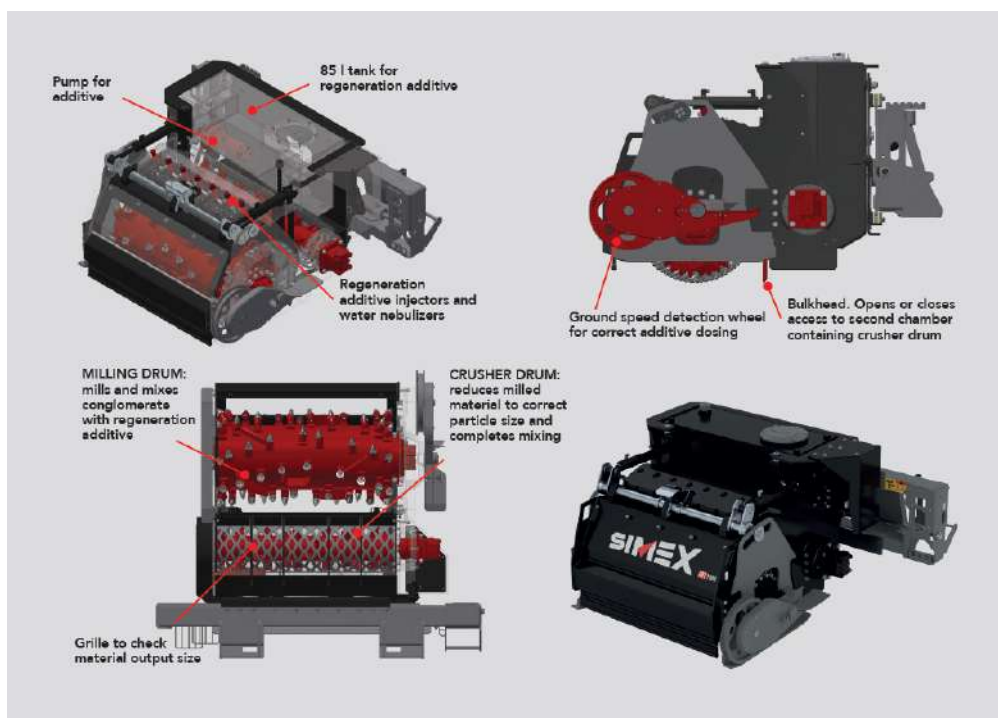
Once the activity of ART 1000 is completed, compaction comes next (plate or roller). The end result is a 100% regenerated bituminous conglomerate which, once compacted, can be driven on immediately.

FEATURES



Mod.	A	B	C	D	E	F
ART1000	1840 mm	1625 mm	1050 mm	1000 mm	1210 mm	100 mm

Technical data	Unit of measure	ART 1000
Max. oil pressure	BAR	300
Required oil flow	l/min	110-190
Drum rotation speed	rpm	145-205
Max. hydraulic power	kW	60
	CV	82
Operating weight	kg	1650



SIMEX ART TECHNOLOGY ADVANTAGES

Operational advantages

- Restoration of road surface distress, quickly and with long-lasting results, which allows for adequate road maintenance planning.
- A dynamic and smaller construction site: no large machines are required, which significantly reduces traffic disruption. A reduced number of workers and a single vehicle (truck) which transports all the equipment on site.
- Money savings: zero costs for the procurement and transport of new mixes and virgin aggregates, in addition to not having to remove and dispose of the RAP.
- suitable for activity on surfaces of limited size.

Environmental advantages

- No impact: pre-existing materials are reused, recycling and rehabilitating aged bitumen. Technically, this operation can also be repeated in subsequent maintenance operations.
- Use of eco-friendly materials.
- No handling or management of special materials or waste.
- On site recycling ensures save of energy if compared to traditional laying of hot mixes.

TECHNOLOGY VALIDATION

Numerous road tests were carried out in Italy, in the Emilia Romagna region. Thanks to the collaboration with the University of Bologna, at the Department of Civil, Chemical, Environmental and Materials Engineering, these road sections have been subjected to investigation with core drilling, field tests and laboratory analyses.

The results indicate excellent performance values capable of guaranteeing the durability and safety of the rehabilitation. Some stretches have been subjected to traffic (heavy in some areas) for almost two years to prove the results achieved.