

AIRBRUSH PAINTING SYSTEMS

Baumgartner Trading AG, a swiss company in Zurich, has been the European representative of the Japanese high-tech firm LAC, for almost 20 years. Specializing in the development and production worldwide of the unique digital 3D printing and airbrushing machines.

Vehicle ArtRobo is our latest generation of 3D direct printing systems for large-scale graphics, logos, decoration and photorealistic images on car bodies, trucks, buses, aircraft and countless other objects with curved or flat surfaces, on a wide range of substrates.

This is the first time that a digital printer is equipped with an automatic surface tracing system, supporting 3D direct printing on uneven surfaces. Thanks to this innovation the VAR offers incredible versatility and an almost unlimited number of business opportunities.



Car hood for AkzoNobel-Presentation, VAR 3D-printed, Sikkens clearcoat

3D direct to substrate printing, "Ink replaces Vinyl stickers", means extremely low production cost. The printed graphic is highly resistant to outdoor conditions, but easily erased with no damage, with our special detergent removal agent. This ensures developing a fast growing, innovative repeat business with high profits and growth.



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MASCHINE VERSION	PRINTING SURFACE (METERS)		STANDARD Z - DISTANCE	WEIGHT
	WIDTH	HEIGHT		
ARTROBO NNV 1.2 Single speed, Double speed, High speed,	Printing width 1.2 m	Printing height 0.8 m	Z-axis 200 mm	130 kg
ARTROBO NNV 2.5 Single speed, Double speed, High speed,	Printing width 2.5 m	Printing height 1.5m	Z-axis 200 mm (upgradeable)	300 kg
ARTROBO NNV 3.1 Single speed, Double speed, High speed,	Printing width 3.1 m	Printing height 2.0m (Options A,B,C)	Z-axis 200 mm (upgradeable)	340 kg
ARTROBO NNV 4.5 Single speed, Double speed, High speed,	Printing width 4.5 m	Printing height 2.0m (Options A,B,C)	Z-axis 200 mm (upgradeable)	550 kg
ARTROBO NNV 7.0 Single speed, Double speed, High speed,	Printing width 7.0 m	Printing height 2.0m (Options A,B,C)	Z-axis 200 mm (upgradeable)	730 kg
ARTROBO NNV 10.0 Single speed, Double speed, High speed,	Printing width 10.0 m	Printing height 2.0m (Options A,B,C)	Z-axis 200 mm (upgradeable)	1050 kg
ARTROBO NNV 15.0 Single speed, Double speed, High speed,	Printing width 15.0 m	Printing height 2.0m (Options A,B,C)	Z-axis 200 mm (upgradeable)	1580 kg

Options regarding the printing height:

- A: Printing height 2.5 meter
- B: Printing height 3.0 meter
- C: Printing height 3.5 meter

Upgrade-Options for the Z-axis:

The standard Z-axis length for all ArtRobo machines is 200 mm.
The following Z-axis lengths are available as an option or Upgrade:

- a: Z-axis length 250mm
- b: Z-axis length 300mm
- c: Z-axis length 350mm
- d: Z-axis length 400mm
- e: Z-axis length 450mm

ArtRobo Universal 3D-surface printing machine specially designed for printing directly on automobile surfaces and over 100 other types of flat or uneven surfaces and substrates.



ArtRobo NNV 1.2



Machine versions with various printing speeds

Single Speed:	5 N-nozzles
Double Speed:	10 N-nozzles
High Speed:	20 N-nozzles

Resolutions

Pitch 1, Pitch 2, Pitch3)

Colorfastness, UV Resistance

10 years UV/Outdoor Resistance for vehicles and other applications,

Dimension the printing area

Width: (1.2 meter) x Height (0.8 meter)
Z-Axis: (200 mm)

Our systems differ by their printing width, printing height and Z-axis. The maximum print size of an image is based on the physical width and height of the machine. But the ArtRobo can print images which are larger than the size of the machine itself (vertically an horizontally), by using Photoshop and the included joint printing software which creates large printouts sectionwise, with smooth transitions between the printed sections.

Machine height and printable height

The machine height differs from the printable height. For stability reasons the machine is built on a base with a height of 570mm. The height of the lowest printable line is located at 450mm from the floor.

Physical height of the machine

Example: machine with printable height of 0.8m.
0.45m top frame + 0.57 bottom base + print height 0.8m,
Resulting machine height = 1.82 Meter.

Technical Information

Options for the print height: not available, standard 0.8m

Options for the Z-axis: The standard Z-axis distance is 20cm. Optionally available: 25cm, 30cm, 35cm, 40cm, 45cm

Colour System: 5-colour process with CMYK+White. UV resistant, acetone based vinyl resin pigment, original ArtRobo inks with outstanding colorfastness.

Software for the print station: Original, Windows-based ArtRobo software, included in the machine, together with the print station PC and NC controller.

Software for Image Editing: Adobe Photoshop, versions 7 and later, on Windows or Apple MAC system (not included).

Electric Power : 220 Volts (600w)

Compressed Air: Air compressor (120 PSCI max) and 7.0 bar to machine. Small air quantity required (airless system).

User Manuals: ArtRobo Operation Instruction Manual

ArtRobo Universal 3D-surface printing machine specially designed for printing directly on automobile surfaces and over 100 other types of flat or uneven surfaces and substrates.



ArtRobo NNV 2.5



Machine versions with various printing speeds

Single Speed: 5 N-nozzles
 Double Speed: 10 N-nozzles
 High Speed: 20 N-nozzles

Resolutions

Pitch 1, Pitch 2, Pitch3)

Colorfastness, UV Resistance

10 years UV/Outdoor Resistance for vehicles and other applications,

Dimension of the printing area

Width: (2.5 meter) x Height (1.5 meter)
 Z-Axis: (200 mm)

Our systems differ by their printing width, printing height and Z-axis. The maximum print size of an image is based on the physical width and height of the machine. But the ArtRobo can print images which are larger than the size of the machine itself (vertically an horizontally), by using Photoshop and the included joint printing software which creates large printouts sectionwise, with smooth transitions between the printed sections.

Machine height and printable height

The machine height differs from the printable height. For stability reasons the machine is built on a base with a height of 570mm. The height of the lowest printable line is located at 450mm from the floor.

Physical height of the machine

Example: machine with printable height of 1.5m.
 0.45m top frame + 0.57 bottom base + print height 1.5m,
 Resulting machine height = 2.52 Meter.

Technical Information

Options for the print height: not available, standard 1.5m

Options for the Z-axis: The standard Z-axis distance is 20cm. Optionally available: 25cm, 30cm, 35cm, 40cm, 45cm

Colour System: 5-colour process mit CMYK+White. UV resistant, acetone based vinyl resin pigment, original ArtRobo inks with outstanding colorfastness.

Software for the print station: Original, Windows-based ArtRobo software, included in the machine, together with the print station PC and NC controller.

Software for Image Editing: Adobe Photoshop, versions 7 and later, on Windows or Apple MAC system (not included).

Electric Power : 220 Volts (600w)

Compressed Air: Air compressor (120 PSCI max) and 7.0 bar to machine. Small air quantity required (airless system).

User Manuals: ArtRobo Operation Instruction Manual

ArtRobo Universal 3D-surface printing machine specially designed for printing directly on automobile surfaces and over 100 other types of flat or uneven surfaces and substrates.



ArtRobo NNV 3.1



Machine versions with various printing speeds

Single Speed:	5 N-nozzles
Double Speed:	10 N-nozzles
High Speed:	20 N-nozzles

Resolutions

Pitch 1, Pitch 2, Pitch3)

Colorfastness, UV Resistance

10 years UV/Outdoor Resistance for vehicles and other applications,

Dimension of the printing area

Width: (3.1 meter) x Height (2.0 meter)
Z-Axis: (200 mm)

Our systems differ by their printing width, printing height and Z-axis. The maximum print size of an image is based on the physical width and height of the machine. But the ArtRobo can print images which are larger than the size of the machine itself (vertically an horizontally), by using Photoshop and the included joint printing software which creates large printouts sectionwise, with smooth transitions between the printed sections.

Machine height and printable height

The machine height differs from the printable height. For stability reasons the machine is built on a base with a height of 570mm. The height of the lowest printable line is located at 450mm from the floor.

Physical height of the machine

Example: machine with printable height of 2.5m (option A)
0.45m top frame + 0.57 bottom base + print height 2.5m,
Resulting machine height = 3.52 Meter.

Technical Information

Options for the print height: Standard print height is 2.0m. According to the customers requirements and to the available room height, the following optional print heights are available: 2.5 Meter, 3.0 Meter, 3.5 Meter.

Options for the Z-axis: The standard Z-axis distance is 20cm. Optionally available: 25cm, 30cm, 35cm, 40cm, 45cm

Colour System: 5-colour process mit CMYK+White. UV resistant, acetone based vinyl resin pigment, original ArtRobo inks with outstanding colorfastness.

Software for the print station: Original, Windows-based ArtRobo software, included in the machine, together with the print station PC and NC controller.

Software for Image Editing: Adobe Photoshop, versions 7 and later, on Windows or Apple MAC system (not included).

Electric Power : 220 Volts (600w)

Compressed Air: Air compressor (120 PSCI max) and 7.0 bar to machine. Small air quantity required (airless system).

ArtRobo Universal 3D-surface printing machine specially designed for printing directly on automobile surfaces and over 100 other types of flat or uneven surfaces and substrates.



ArtRobo NNV 4.5

Machine versions with various printing speeds

Single Speed:	5 N-nozzles
Double Speed:	10 N-nozzles
High Speed:	20 N-nozzles

Resolutions

Pitch 1, Pitch 2, Pitch3)

Colorfastness, UV Resistance

10 years UV/Outdoor Resistance for vehicles and other applications,

Dimension of the printing area

Width: (4.5 meter) x Height (2.0 meter)
Z-Axis: (200 mm)

Our systems differ by their printing width, printing height and Z-axis. The maximum print size of an image is based on the physical width and height of the machine. But the ArtRobo can print images which are larger than the size of the machine itself (vertically an horizontally), by using Photoshop and the included joint printing software which creates large printouts sectionwise, with smooth transitions between the printed sections.

Machine height and printable height

The machine height differs from the printable height. For stability reasons the machine is built on a base with a height of 570mm. The height of the lowest printable line is located at 450mm from the floor.

Physical height of the machine

Example: machine with printable height of 2.5m (option A)
0.45m top frame + 0.57 bottom base + print height 2.5m,
Resulting machine height = 3.52 Meter.

Technical Information

Options for the print height: Standard print height is 2.0m. According to the customers requirements and to the available room height, the following optional print heights are available: 2.5 Meter, 3.0 Meter, 3.5 Meter.

Options for the Z-axis: The standard Z-axis distance is 20cm. Optionally available: 25cm, 30cm, 35cm, 40cm, 45cm

Colour System: 5-colour process mit CMYK+White. UV resistant, acetone based vinyl resin pigment, original ArtRobo inks with outstanding colorfastness.

Software for the print station: Original, Windows-based ArtRobo software, included in the machine, together with the print station PC and NC controller.

Software for Image Editing: Adobe Photoshop, versions 7 and later, on Windows or Apple MAC system (not included).

Electric Power : 220 Volts (600w)

Compressed Air: Air compressor (120 PSCI max) and 7.0 bar to machine. Small air quantity required (airless system).

ArtRobo Universal 3D-surface printing machine specially designed for printing directly on automobile surfaces and over 100 other types of flat or uneven surfaces and substrates.



Dimension of the printing area

Width: (7.0 meter) x Height (2.0 meter)
Z-Axis: (200 mm)

Our systems differ by their printing width, printing height and Z-axis. The maximum print size of an image is based on the physical width and height of the machine. But the ArtRobo can print images which are larger than the size of the machine itself (vertically or horizontally), by using Photoshop and the included joint printing software which creates large printouts sectionwise, with smooth transitions between the printed sections.

Machine height and printable height

The machine height differs from the printable height. For stability reasons the machine is built on a base with a height of 570mm. The height of the lowest printable line is located at 450mm from the floor.

Physical height of the machine

Example: machine with printable height of 2.5m (option A)
0.45m top frame + 0.57 bottom base + print height 2.5m,
Resulting machine height = 3.52 Meter.

ArtRobo NNV 7.0



Machine versions with various printing speeds

Single Speed: 5 N-nozzles
Double Speed: 10 N-nozzles
High Speed: 20 N-nozzles

Resolutions

Pitch 1, Pitch 2, Pitch3)

Colorfastness, UV Resistance

10 years UV/Outdoor Resistance for vehicles and other applications,

Technical Information

Options for the print height: Standard print height is 2.0m. According to the customers requirements and to the available room height, the following optional print heights are available: 2.5 Meter, 3.0 Meter, 3.5 Meter.

Options for the Z-axis: The standard Z-axis distance is 20cm. Optionally available: 25cm, 30cm, 35cm, 40cm, 45cm

Colour System: 5-colour process mit CMYK+White. UV resistant, acetone based vinyl resin pigment, original ArtRobo inks with outstanding colorfastness.

Software for the print station: Original, Windows-based ArtRobo software, included in the machine, together with the print station PC and NC controller.

Software for Image Editing: Adobe Photoshop, versions 7 and later, on Windows or Apple MAC system (not included).

Electric Power : 220 Volts (600w)

Compressed Air: Air compressor (120 PSCI max) and 7.0 bar to machine. Small air quantity required (airless system).

Joint Picture Management (JPM): Supports printing onto vehicles with image formats that are larger than the maximum print size of the machine:

Image A Joint



Image B Joint



Overlapping areas with gradations 100% - 0% - 100%



Printing of a 7m truck with a 4.5 machine

All ArtRobo Systems are equipped with the special «Joint Picture Management» software. This solution allows to print larger areas, independently from the size of the machine which is being used. The picture is first tiled into a number of sections using Photoshop (horizontally und vertically). Then the joining edges of these image sections get 100 pixel wide overlapping areas with a gradation from 100% to 0% and vice versa. This way the ArtRobo can print and join these individual image sections, creating a large image with smooth transitions.

Photo of an image-joining example, using the JPM system



Image section a1 (printed)

Image section a2 (still printing)



CURVED SURFACE TRACING SYSTEM

On vehicles such as cars, vans, trucks, pickups and aircraft there are usually many variably curved and uneven body areas...

In order to reach the highest quality while printing directly on curved surfaces it is crucial, that the printing distance between the printhead and the body is continuously, automatically controlled.

Namely the curved surface has to be traced and followed in both horizontal and vertical direction.

For this the Vehicle Art Robo has a special, unique CST «Curved Surface Tracing System».

And also on smooth surfaces, the CST system facilitates the simple and quick positioning of the VAR.

Z-AXIS CONTROL (3D-SURFACE PRINTING)

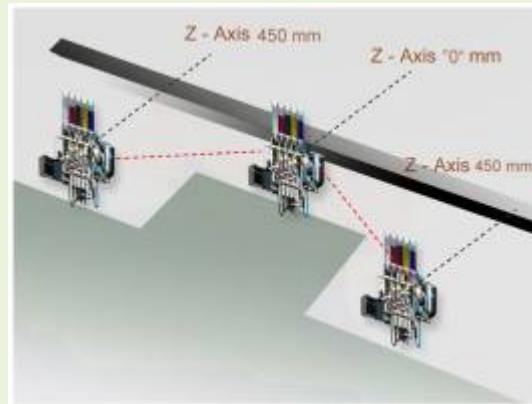
The data input is performed semi-automatically on all curved surfaces. A measuring probe detects the Z-points of the curvature and their printing distance. The distance of each measuring point is automatically transferred to the VAR printing station. These values are stored as the «body-data file» and used to control the Z-axis in the printing process.

With its unique curved surface tracing system the ArtRobo produces an excellent print quality on virtually all curved, irregular and of course smooth surfaces and materials. This applies not only to the automotive sector, but also to many other interesting services and for numerous industrial applications.

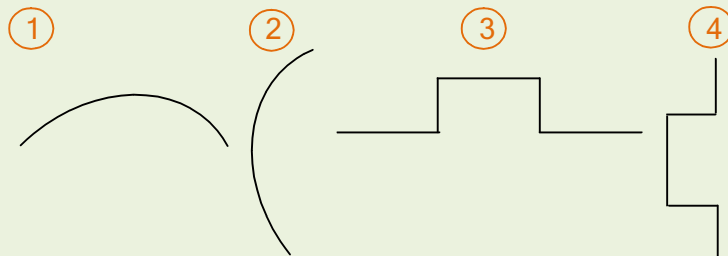
PRINthead FRONT VIEW



PRINthead SIDE VIEW



Printable shapes (examples) - Min. 200 mm, Max. 450 mm





ARTROBO - SYSTEM COMPONENTS

1. Image Editing Station (PC or MAC)
2. Artrobo Print Station (PC)
3. LAC Controller unit
4. Air Compressor 7Bar output
5. Air regulator und filter
6. Air dryer
7. ArtRobo machine mechanism and printhead

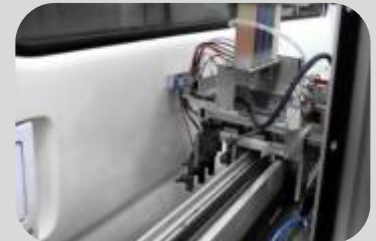
ARTROBO - PREPARATION AND PRINTING

1. Image Editing with Photoshop, Saved as TIF File
2. Print-Station: TIF transfer, Conversion to VAR Format
3. Switch on LAC Controller
4. Enter body data using semi automatic body data entry
5. Filling ink tank with ArtRobo NNV pigment inks
6. Set print conditions (Pitch, Speed, Body data, color settings)
7. Test print / Remove Test Print / Print Image

Surface Cleaning



Body Data Capturing



Direct-Printing





Yellow
Magenta
Cyan
Black
Weiss

The superfine pigment particles of the Art Robo NNV colours settle in the materials surface microscopic wells (even on glass) and adhere to it. After the complete drying, the paint is resistant to scratches and other mechanical influences.

The advanced nozzle technology of the ArtRobo stands apart from the usual principle of piezoelectric inkjet nozzles as used in most digital printers. A special feature of these valve jets is their ability to print much larger and thus extremely UV-resistant pigment particles reliably and consistently. This is the reason why an outdoor life of 10 years can be reached without any problems, while other inkjet prints start to fade after 2 years.

Besides the described automotive applications, the ArtRobo NNV system is ideally suited for very demanding areas such as architecture, thanks to the outstanding outdoor resistance of the colours. Various industrial users had the ArtRobo undergo rigorous colour testing, which it passed with excellent results.

With the basic colours CMYK any colour can be reproduced

The special pigment inks for the ArtRobo NNV consist of Cyan, Magenta, Yellow and Black (CMYK primary colors). In addition, the White ink is used by the VAR as a background automatically for black or other dark body colours. The White ink can be used as a foreground colour.

The ink usage of the ArtRobo system is very economical

The ArtRobo system has a very modest ink consumption when compared to other technologies and features extremely low production cost. With its high-quality pigment inks the ArtRobo ensures perfect, very durable photorealistic images on any substrate. Because of these superior properties, the users of the ArtRobo system are able to provide very attractive direct-to-substrate print services at high profit margins.

ArtRobo NNV pigments versus dyes

Dyes dissolve completely in the colour (like sugar in water). After printing, these inks dry out, but on contact with water they will dissolve again completely, which melts and damages the print. The very UV-resistant ArtRobo NNV pigments however, are water resistant and weatherproof, even without coating and therefore they are the ideal solution for hundreds of outdoor applications.



Adhesive Film



Colour



1. Technology

Ordinary, commonly available cutting plotters and inkjet printers of different brands and types

2. Print format

Limited print format. Time consuming, sectionwise application of the printed adhesive film to realize large formats

3. Unsticking / Shrinking:

Adhesive films have a limited outdoor life of 2 to 3 years
Problems: unsticking, shrinking, fading

4. Short-term applications / Repeat Business

High material costs
High application/removing cost (especially for large areas)
Not a practical and economical short-term solution

5. Adhesive film application

High material cost of printed vinyl adhesive film
Time consuming application of vinyl film on vehicle body

6. Bubble formation

Bubble formation in critical areas of vans etc. Resulting paint damage by cutting (rust, expensive warranty claims)

7. Concavities and convexities

Many «beware-of-film» areas on most vehicles, eg rivets, corrugated iron, edges etc.

8. Look and appearance

Short lifespan, rapid fading of colors, Ugly edges by the shrinkage of the adhesive film

9. Glass surfaces

Special film for images on glass are required.
High material costs

10. Material-transitions and surface-changes

Films don't stick at all or only very poorly on many of the materials. Material transitions are often very problematic.

→ World's first and only 3D-surface direct printing technology with an active z-axis printhead control (CST System)

→ The Vehicle ArtRobo (NNV 15.0) system prints a 15m bus body side directly in one single step

→ ArtRobo direct surface prints have a durability of 10 to 15 years. No unsticking, shrinking or fading!

→ Supports short and medium term applications: Fast printing, easily removable with special detergent, no damage to original paint. Same surface can be reprinted economically as often as wanted for short term use.

→ Fast and easy. No amount of work, thanks to automatic 3D printing onto vehicle surfaces and other curved objects

→ Perfect, bubble-free finish, thanks to 3D printing on curves and edges, no knives, damage or rust. Happy customers!

→ Reliable, easy 3D printing onto all complex surfaces such as rivets, corrugated iron, corrugated sheets, hinges etc.

→ Very long lasting intense colour, scratch proof and carwash resistant. Perfect look after many years of outdoor use.

→ Perfect, transparent images by direct printing on the glass, without any additional material costs

→ Direct printing onto all surfaces for any indoor or outdoor applications. Perfect results on material transitions.



Short- and medium-term applications (events, daily, seasonal and up to 5 years)

The printout can be easily removed and replaced by new pictures and graphics as often as needed, if it is no longer current, without damaging the original paint (special cleaner). This short- and medium-term applications are possible with more than 100 various other materials, such as Glass, steel, aluminum, plastics, ceramics, wood ...

Long-term applications (decoration, architecture, etc., 10 to 15 years or more)

The printed image can be permanently sealed with 2K clear coat. It is possible to apply the clearcoat to more than 100 substates, such as Glass, steel, aluminum, plastics, ceramics, wood ...

Unlimited applications thanks to 3D-direct printing on all objects and materials

VEHICLES: Direct 3D printing of advertising and decoration on the bodies of coaches, vans, PWKs, trucks, refrigerated truck bodies with riveted surfaces, truck and ship containers and tank cars and trucks tarpaulins. Decorations on motorcycle fairings, motor homes, caravans. Direct printing on glass surfaces, with or without transparency, for inside, outside or both sides viewing.



ArtRobo 3D: Added Value and Unique Selling Proposition



The versatility and flexibility of the ArtRobo system allows you to enter many different market niches. In many cases, ArtRobo printing technology is a fast, cost-effective development and implementation tool for innovation, especially in areas where there is an increasing need for personalization. The possibilities to create added-value with the ArtRobo are virtually unlimited and represent for a company a very strong Unique Selling Proposition.



FURNITURE AND EQUIPMENT: Printing and decoration of furniture, lighting equipment and various wooden objects such as doors, gates, partitions, etc. printing on glass surfaces or glass blocks with or without transparency, for inside, outside or both sides viewing. Decoration of masonry walls inside / outside (tromp oeil), gypsum panels, radiators, blinds, shutters, hardwood floors, rugs, rattan furniture, refrigerators, showers, kitchen splash backs, garden furniture, granite, marble, ceramic tiles etc.





WALL AND FACADE COMPONENTS: Direct printing on outside walls and facades of houses for the purpose of decorating residential, retail stores and industrial buildings. Printing of venetian blinds, shutters, garage doors and industrial doors. Printing of Facade components, corrugated sheets, acrylic glasses for porches, conservatories, decoration of encasement, etc.



TEXTILE PRINTING: Dresses, Decoration on sails, Curtains, Theatre backdrops, Jeans, Leather jackets, Handbags, etc.
ART: Canvas printing, Reproduction of classic art, Facadeprinting "Art on Buildings", Approved graffiti directly to wall.



VISUAL COMMUNICATION: Billboard signs, exhibition stands, vending cars, rides, very durable outdoor advertising, amusement park applications, communication on walling etc.



FURTHER APPLICATIONS: please visit our continously updated website: www.baumgartner-trading.com
PROFITABILITY: please check PDF www.baumgartner-trading.com/resources/FarbestattFolieRendite.pdf