ColorMax® Booth Systems

Manual P/N 768 625 C
– English –

Keep for Future Reference

NORDSON (UK) LTD. D STOCKPORT

CE

Order number
P/N = Order number for Nordson products

Declaration of Conformity
98/37/EC
73/23/EEC

We,

Nordson (U.K.) Limited

of

Ashurst Drive, Cheadle Heath, Stockport, Cheshire, SK3 0RY, United Kingdom

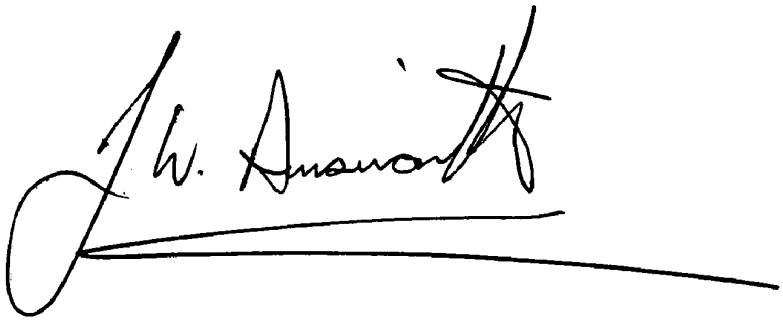
declare that under our sole responsibility for supply/manufacture of the product(s)

Product Name	ColorMax® Booth Systems
Model Number(s)	All
Product Options	All

to which this declaration relates, is in conformity with the following standards and other normative documents

Safety	BS EN 60204–1:1993 “Safety of Machinery – Electrical equipment of machines”
	EN 60335:Part 1:1988 “Safety of household and similar electrical appliances”
	BS EN 292:1991 “Safety of machinery – Basic concepts, general principles for design”

following the provisions of 98/37/EC and 73/23/EEC Directives



Jim Ainsworth
General Manager

Nordson (U.K.) Ltd., 8th December 2002

NB ref EN45014 (BS7514)

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Congratulations on the Purchase of Your Nordson Product

Nordson equipment is engineered and manufactured in accordance with strict specifications, using high quality components and state−of−the−art technologies that assure reliable, long−term performance. Your product was thoroughly tested for proper operation prior to shipment.

Before unpacking and installing your new equipment, please read this manual. It is your guide to safe installation, productive operation and effective maintenance. We recommend that you keep the manual available for future reference.

Your Safety is Important to Nordson

Carefully read the *Safety* section. Your product is designed for safe operation when used according to the published instructions. Potential hazards exist when operating instructions are not followed.

Manufacturer of Equipment

Nordson (U.K.) Ltd.
Ashurst Drive
Cheadle Heath
Stockport
England
SK3 0RY

Telephone: 0044 (0) 161−495−4200
Fax: 0044 (0) 161−428−6716

For a list of local Nordson organisations, see *Nordson International*.

Nordson International

Europe

Country		Phone	Fax
Austria		43-1-707 5521	43-1-707 5517
Belgium		31-13-511 8700	31-13-511 3995
Czech Republic		4205-4159 2411	4205-4124 4971
Denmark	*Hot Melt*	45-43-66 0123	45-43-64 1101
	Finishing	45-43-66 1133	45-43-66 1123
Finland		358-9-530 8080	358-9-530 80850
France		33-1-6412 1400	33-1-6412 1401
Germany	*Erkrath*	49-211-92050	49-211-254 658
	Lüneburg	49-4131-8940	49-4131-894 149
	Düsseldorf - Nordson UV	49-211-3613 169	49-211-3613 527
Italy		39-02-904 691	39-02-9078 2485
Netherlands		31-13-511 8700	31-13-511 3995
Norway	*Hot Melt*	47-23 03 6160	47-22 68 3636
	Finishing	47-22-65 6100	47-22-65 8858
Poland		48-22-836 4495	48-22-836 7042
Portugal		351-22-961 9400	351-22-961 9409
Russia		7-812-11 86 263	7-812-11 86 263
Slovak Republic		4205-4159 2411	4205-4124 4971
Spain		34-96-313 2090	34-96-313 2244
Sweden	*Hot Melt*	46-40-680 1700	46-40-932 882
	Finishing	46 (0) 303 66950	46 (0) 303 66959
Switzerland		41-61-411 3838	41-61-411 3818
United Kingdom	*Hot Melt*	44-1844-26 4500	44-1844-21 5358
	Finishing	44-161-495 4200	44-161-428 6716
	Nordson UV	44-1753-558 000	44-1753-558 100

Distributors in Eastern & Southern Europe

DED, Germany	49-211-92050	49-211-254 658

Outside Europe / Hors d'Europe / Fuera de Europa

- For your nearest Nordson office outside Europe, contact the Nordson offices below for detailed information.
- Pour toutes informations sur représentations de Nordson dans votre pays, veuillez contacter l'un de bureaux ci-dessous.
- Para obtener la dirección de la oficina correspondiente, por favor diríjase a unas de las oficinas principales que siguen abajo.

Contact Nordson		Phone	Fax
Africa / Middle East			
DED, Germany		49-211-92050	49-211-254 658
Asia / Australia / Latin America			
Pacific South Division, USA		1-440-988-9411	1-440-985-3710
Japan			
Japan		81-3-5762 2700	81-3-5762 2701
North America			
Canada		1-905-475 6730	1-905-475 8821
USA	*Hot Melt*	1-770-497 3400	1-770-497 3500
	Finishing	1-440-988 9411	1-440-985 1417
	Nordson UV	1-440-985 4592	1-440-985 4593

Section 1

Safety

Section 1
Safety

1. Introduction

Read and follow these safety instructions. Task and equipment specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to all persons operating or servicing equipment.

2. Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

3. Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

4. Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

5. Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual electrostatic spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

6. Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment in the spray area. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one mega–ohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

7. Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out electrical power. Close pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the equipment.

8. Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Section 2

Description

Section 2
Description

1. Intended Use

The Nordson ColorMax Booth System is designed primarily as fast and easy clean booth.

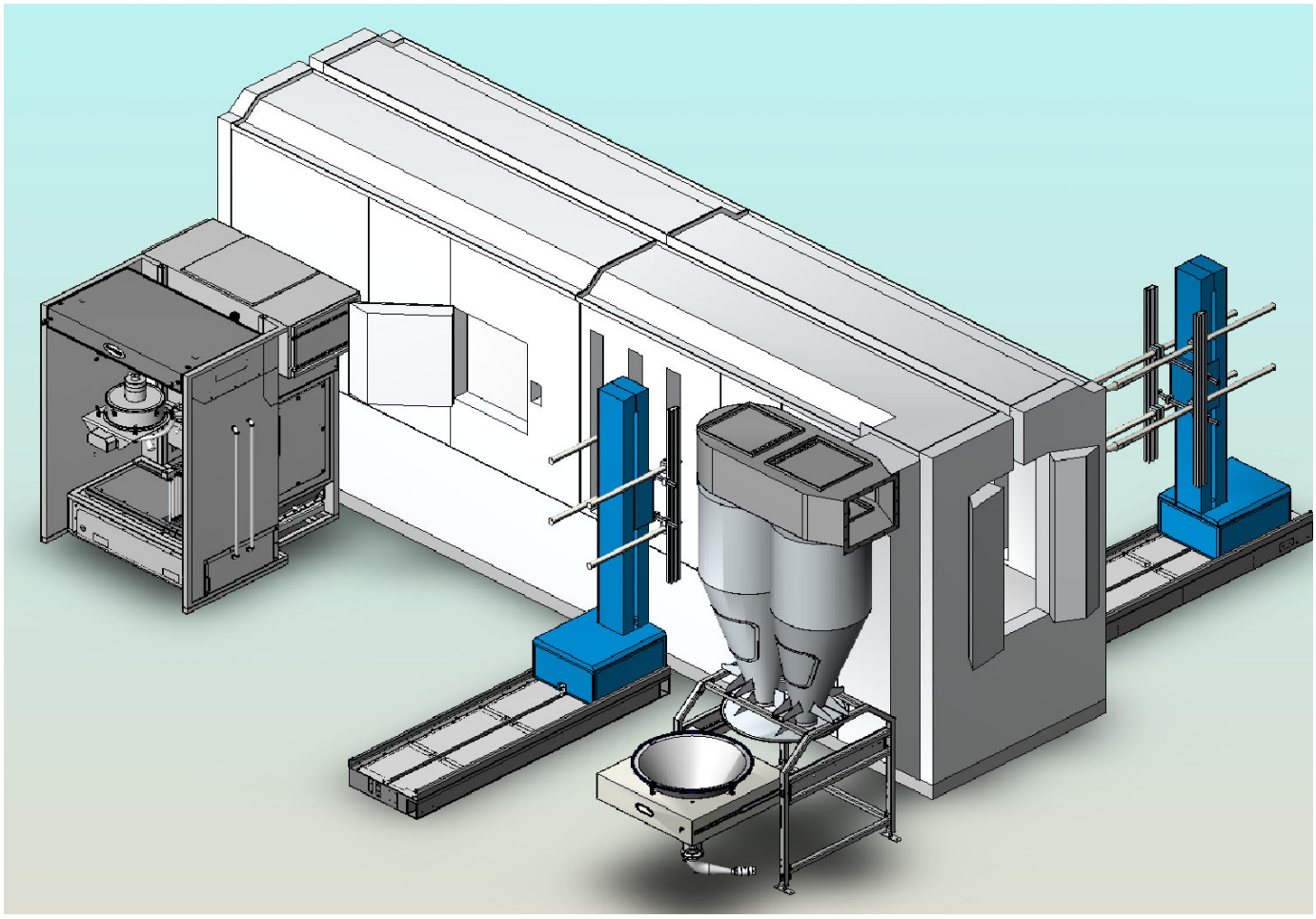

Fig. 2-1 Typical ColorMax Booth System

2. Features

The Nordson ColorMax Booth Systems forms part of a family of powder booths based on proven Nordson Booth technology. The booth system offers an economical easy clean alternative to other systems due to the method of construction.

The booth structure is made up of a combination of Stainless Steel and PVC ,which allows the powder to be blown and wiped away easily with a non−abrasive material.

Section 3

Installation

Section 3
Installation

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

1. Transport

Transport the unit so as to avoid damage. Do not throw the unit. Use suitable packaging materials and sturdy cartons. Specific weights vary between system. Contact your local Nordson representative for details

Protect the unit from exposure to humidity, dust, vibrations and prolonged exposure to bright sunlight.

2. Unpacking

Carefully unpack the unit to avoid damaging it. Check for damage caused during transport.

Save packing materials for possible later use. Otherwise recycle or dispose of properly according to local regulations.

3. Removing

Switch off the mains supply, then disconnect all electrical connections from the unit.

4. Storage

Pack the unit in suitable packing materials and sturdy cartons. Protect from humidity, dust and large temperature fluctuations (condensation).

5. Disposal

Dispose of properly according to local regulations.

6. Setting Up the Unit

WARNING: Allow only qualified personnel to perform the installation. Observe safety instructions.

Site Preparation

NOTE: Booths are generally delivered ”flat pack” for on-site assembly.

NOTE: Installation of the booth should not be undertaken without the presence of a Nordson representative or a suitably qualified person.

1. Choose a level site on which to install the ColorMax Booth, away from drafts or any other airborne contaminates.

2. Seal concrete floors with a suitable material to avoid dust. Other floor surfaces should be of a type that is easy to keep clean.

7. Electrical

WARNING: Allow only qualified personnel to perform electrical connections.

A single supply cable is required to the control panel. The supply should be fed from a suitable disconnect device. Introduce the cable into the panel using an IP6X cable gland. Ensure that all the electrical wires are suitably sized for the fan motor loading and adequate fuse/circuit protection is provided at the source of supply.

Consult your electrical/pneumatic schematic drawings for details.

8. Pneumatic

Before operating the spray booth, ensure that the air supply has reached a suitable quality and that air has been drawn off the system through the drain leg. This will ensure that any materials left in the line during installation do not enter the spray booth.

9. Set Up Procedure

Booth Conditioning Procedure

1. Remove any large items of contamination.
2. Switch on booth extraction system.
3. Recycle system should be in the spray to waste position.
4. With all doors closed, use the low pressure air lance to blow internal booth faces free of dust.
5. Damp sponge with water and wipe clean internal booth faces, base deflector and internal cyclone access area. A drop of detergent may be used for the first wash. Repeat the wash with water only.
6. While allowing the booth to dry, wipe the exterior of the booth. The blow lance may be used to decrease the drying time
7. With eye protection, mask and gloves:

WARNING: Use a sharp solvent (see below) and apply to the internal parts of the booth, base deflector and internal cyclone access area with clean lint free wipers.

- Polish dry.
- Wipe around one square metre and blow with air lance and proceed until complete.
- It is important not to touch the faces wiped with bare hands

8. Allow to dry.
9. Spray powder to waste for 5 minutes, solvent clean any areas which preferentially collect powder.
10. Clean cyclone and recycle in the normal way.
11. The system is now ready for use
12. Normal clean down procedures now apply but it may be necessary to condition the booth when necessary to ensure the best possible colour change.

10. Recommended Cleaning Solvent

Listed below is the composition of solvent we recommend in the initial set up and for maintenance cleaning. This solvent is available from Nordson upon request.

- Distillate: 5%
- Butylacetate: 17%
- Cellesolve–Acetate: 5%
- Acetone: 20%
- Benzene 80/110: 15%
- Xylol: 38%

The nearest standard solvent available to the above is cellulose thinners.

Section 4

Operation

Section 4
Operation

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

1. Daily Operation

Procedure for cleaning booth and application equipment with Powder Feed Centre (when present).

The majority of system are sold complete with a Powder Feed Centre. If a Feed Centre is not present, please ignore the steps where it is mentioned.

In order to successfully colour change the booth and application system follow the procedure outlined below.

Start Up Procedure

1. Put a box of powder into the Powder Feed Centre or hopper.
2. Start booth.
3. Put Powder Feed Centre into run mode (where applicable)
4. Ensure the dip legs enter the powder and do not catch on the bag (where applicable).
5. Put the transfer hoses into the waste holsters at the back of the Powder Feed Centre (where applicable).
6. Start the Gun Movers (where applicable).
7. Turn on the recycle.
8. Start spraying powder and run production.
9. After approx. 2 minutes of recycled powder being returned back through the recycle hose move the hose into the sieve holster. (if applicable).

Clean Down Procedure

1. Leave the guns spraying.
2. Put Powder Feed Centre into clean mode (where applicable).
3. Pull guns back so that just the nozzles are left inside the booth.
4. Close the booth doors at each end of the booth.
5. Turn the guns off.
6. Move a box of powder under the sieve to recover the powder (where applicable).
7. Blow off the exterior of the dip legs and fluid assist (where applicable).
8. Start the pump purge sequence (where applicable).
9. Blow off the outside of the guns (may be manual or automatic depending on your system).
10. After the pulsing has finished, manually clean the back of the nozzle.
11. Clean the booth base.
12. Clean the walls and roof of the booth with compressed air DO-NOT SQUEEGEE and DO-NOT TOUCH the booth walls.
13. Clean the booth base again.
14. Open the booth duct doors and clean, also clean inside the duct and the inlet to the cyclone.
15. If required, when most of the powder has been blown away wipe the inside of the booth with a DAMP cloth, ensure the cloth is damp only.
16. Drop down the surge hoppers from under the cyclones and open the cyclone inspection doors.
17. Put the recycle hoses into the purge holsters (where applicable).
18. Start the cyclone purge sequence to clean the recycle hose (where applicable).
19. Clean the surge hoppers with compressed air and clean under the base of the cyclones.
20. Replace the surge hopper to its sealing position under the cyclone and close the cyclone inspection doors.
21. Remove the box of powder from the Powder Feed Centre (where applicable).
22. Vacuum out the sieve to remove any dirt (where applicable).

Clean Down Procedure *(contd.)*

23. Manually clean the sieve using compressed air (where applicable).

24. Clean down the rest of the Powder Feed Centre (where applicable).

Section 5

Maintenance

Section 5
Maintenance

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

WARNING: Breathing in certain airborne dusts (including finishing powders) may be hazardous to health. Ask the powder manufacturer for a Material Safety Data Sheet (MSDS) for information. Use appropriate respiratory protection.

1. Daily Maintenance

NOTE: When maintaining or cleaning the sieve ensure that the screen mesh does not become damaged. If the screen mesh shows signs of damage replace immediately.

- Once per eight-hour shift, disassemble all powder component, clean each item removing any excess powder, wipe with a lint free cloth and then reassemble.
- Inspect seals for damage and replace as necessary.
- Check vent hoses for blockages, clean and refit.
- Check all external cables and hoses for damage, replace or repair as necessary.
- Visually check the complete system for leaks, rectify.

1. Daily Maintenance (contd.)

- Check the operations of any powder transfer systems.
- Every four– (4) hours, with the fan in operation, clean the booth interior, blowing the powder into the cyclone inlet of the booth.
- Every four– (4) hours check the collector bin levels – if the bin is above half full, empty it.
- Every four– (4) hours or less check the feeder hopper or powder box for powder level.
- Every four– (4) hours check the powder pump and gun, clean according to the product manual.
- Every four– (4) hours clean UV detector cleaning sequence for at least ten (10) minutes, longer if necessary, to maintain air flow (if fitted).

2. Routine Maintenance

Surge Hopper (where applicable)

- Check the hopper for foreign materials, empty and clean if necessary.

Seals

- Record the airflow at regular intervals; thus charted, any degradation of system performance due to cartridge blocking or other associated problems will become immediately apparent.

Cyclones

- Check the seals regularly on the cyclone doors and surge hopper, air leaks will adversely effect efficiency.
- Check for impact fusion and mechanically or chemically remove as efficiency will be affected.
- On units with final filters, powder leakage may not be noticed, but if adequate records have been kept, the faults will be apparent.

2. Routine Maintenance
(contd.)

Compressed Air

S Open the drop leg. Using a clean white cloth check for water, oil or other contaminates. Correct as necessary.

NOTE: The air drier, if fitted, should remain on at all times to prevent moisture from accumulating in the system components.

Grounding

S Continually check for grounding of parts to hangers. Clean/strip hangers regularly.

Electrical Safety

S The unit should be tested for electrical safety, at intervals of not more than 12 months, according to the Electricity at Work regulations 1989 (as revised) or similar for non-UK installations.

Section 6

Troubleshooting

Section 6
Troubleshooting

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

1. Important Hints for Troubleshooting

The following tables provide general information for the troubleshooting of basic problems. Sometimes more detailed information, circuit diagrams or measuring devices are also needed for troubleshooting.

It must be noted that a fault can occur for several reasons. It is advisable to check all possible causes for a given fault. Obvious causes of malfunction such as broken wires, missing fasteners etc., should be noted during visual inspections and corrected immediately.

The unit does not contain any user serviceable parts; approved parts available from Nordson must replace any parts that fail.

2. Table of Troubleshooting

Problem	Possible Cause	Corrective Action
Hand marks inside of the booth	General usage	Follow clean down procedure
Powder leakage from booth	**In Normal Operation**	
	Air volume control damper incorrectly set	Set to design booth opening velocities.
	Filter elements blocked	See Afterfilter manual
	Final Filter elements blocked	See Afterfilter manual
	Excessive external draft	Close all doors or erect barrier to eliminate draft
	Parts are entering the booth too hot	Increase cool down time from dry off oven
	On Colour Change	
	Check reasons above	See above
	Check booth doors are closed	Close doors
	Auto guns positioned to far into booth	Move guns so nozzles are level with the booth internal wall
Contamination on colour change	Inadequate cleaning	Re−clean system
	Insufficient or no spray to waste on start up with new colour	Check recycle powder for contamination, collect on aluminium foil and cure with match until clean
	Booth retains powder	Clean and condition booth as per set up procedure
	Cyclone retains impact fused powder	Remove fused powder with solvent. Do not scratch the internal surface of the cyclone
	Sieve screen damaged	Repair or replace

Problem	Possible Cause	Corrective Action
System efficiency low	**High percentage overspray**	
	Poor jigging	Re–jig
	Poor gun triggering	Take corrective action
	Poor powder	Discuss with supplier
	Low gun Kv or wrong setting	See application manuals
	Cyclone loss	
	Surge hopper seal faulty	Repair or replace
	Surge hopper over filling	Check recycle system for blockages
	Inspection door seal leaking	Repair or replace