

# **AC Reciprocator Controller**

Manual P/N 317 274 B  
– English –



NORDSON (UK) LTD. • STOCKPORT



#### **Order number**

P/N = Order number for Nordson products

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# 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** AC Reciprocator Controller

**Model Number(s)** 765152

**Product Options** All

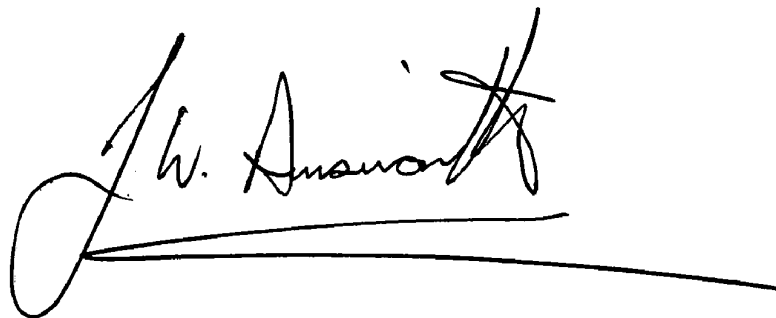
to which this declaration relates, is in conformity with the following standards and other normative documents

**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

A handwritten signature in black ink, appearing to read 'J. Ainsworth', with a long horizontal line extending from the end of the signature.

Jim Ainsworth  
General Manager

Nordson (U.K.) Ltd., 12th March 2001

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***

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

## Distributors in Eastern & Southern Europe

<b>DED, Germany</b>	49-211-92050	49-211-254 658
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**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
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**Africa / Middle East**

DED, Germany	49-211-92050	49-211-254 658
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**Asia / Australia / Latin America**

Pacific South Division, USA	1-440-988-9411	1-440-985-3710
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**Japan**

Japan	81-3-5762 2700	81-3-5762 2701
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**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.

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### **2. Qualified Personnel**

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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.

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### **3. Intended Use**

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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

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### **4. Regulations and Approvals**

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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.

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## **5. Personal Safety**

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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.

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## 6. Fire Safety

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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***

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



## Section 2

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# ***Description***

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## Section 2

### Description

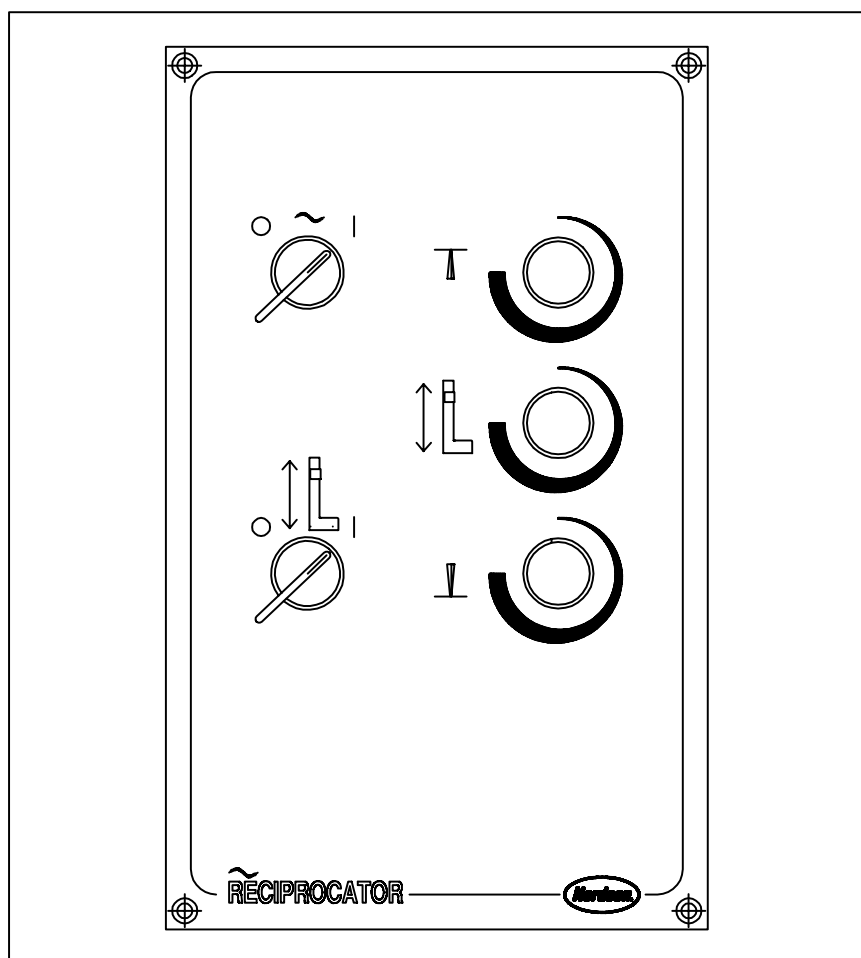


Fig. 2-1

#### 1. **Intended Use**

The Nordson AC Gunmover Controller is intended for use in the control of Nordson AC Reciprocator Columns.

The columns cover a range of standard heights,  
1.0 meters stroke length – 766802,  
1.5 meters stroke length – 766803,  
2.0 meters stroke length – 766804,  
2.5 meters stroke length – 766805.

The controller is designed for the use in powder coating installations.

## 2. Features

The controller features are listed below.

- Single control for speed of travel.
- Operator control of top and bottom turnaround position for working stroke.
- Internal, maintenance, setting for maximum overall stroke length.
- Capacity of six Nordson powder spray guns.
- Maximum speed of travel of 0.5 meters per second.
- Position of turnaround point does not vary with speed of travel.
- Choice of mounting cases, wall mount or for 19" rack mounting. (These must be ordered separately)

## 3. Operation Controls

The front panel control are as follows.

### Power On/Off (1)

Controls the AC main supply to the controller.

### Reciprocator On/Off (2)

Controls the movement of the carriage.

### Top Limit (3)

Adjusts the point at which the carriage changes direction from up stroke to down stroke. The maximum working stroke is set internally. The minimum working stroke is 0.5 meters that is the top turnaround point must be 500 mm higher than the bottom point.

### Speed (4)

Control for the speed of the carriage

### Bottom Limit (5)

As for top limit adjusting the point at which the stroke changes from down to up.

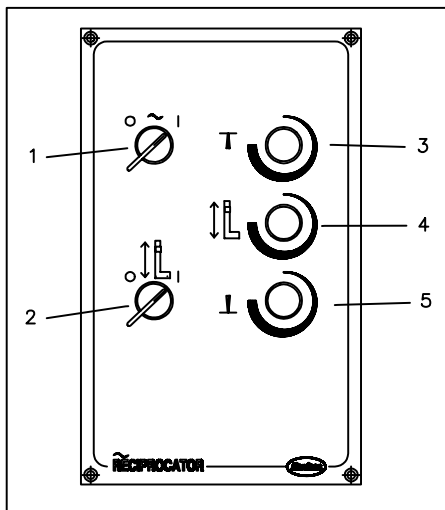


Fig. 2-2

## *Section 3*

---

# ***Installation***

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## 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. See section *Specifications* for dimensions and weight. Protect the unit from exposure to humidity, dust and vibrations.

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### 2. *Unpacking*

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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 services 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.

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## **6.    *Setting up the Unit***

---



**WARNING:** Allow only qualified personnel to perform the installation. Observe safety instructions. For wall mounted units, fix the casing to a suitable bracket. Allow 100 mm clearance around the unit for cooling.

For rack mounting units, fit the brackets to the outside of the dual case to allow for fixing to standard 19" rack mounting rails.

1. Insert the chassis assembly into the case.
2. Locate and fit earth cable from chassis to case.
3. Fit the front panel screws.
4. If required fit a blanking plate in any unused locations.

---

## **7.    *Electrical***

---



**WARNING:** Allow only qualified personnel to perform electrical connections. Observe the safety instructions.

A single supply cable is required to the controller. The supply should be fed from a suitable disconnect device.

The cable connects to an IEC type 10A rated socket.

Ensure that all the electrical wires are suitably sized for the loading and adequate fuse/circuit protection is provided at the source of supply (refer to the technical section, for power requirements before installation).

Connect the 10 way cable between the output socket on the controller and a Nordson AC Reciprocator Column.



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## **8. Initial Set up**

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**NOTE:** The inverter has been factory set by Nordson and tested and does not require further adjustment. It should be noted that the internal configuration has been modified from the default as supplied.

To adjust the maximum stroke length of the Reciprocator use the following procedure:

1. Remove the chassis from the casing.
2. With the power switch on and the speed control set to 0, turn ON the Reciprocator On/Off switch.
3. Apply a little speed, moving the carriage to the desired turn point, then turn the speed control back to zero.
4. Adjust RV2 for the top limit and RV1 for the bottom limit until the required maximum stroke length is achieved.

**NOTE:** Clockwise turn on RV1 and RV2 opens the limits.

5. Increase speed slowly and check for correct operation.
6. Turn off the controller.
7. Replace the controller in the case.



## *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 Startup and Shutdown*

---

1. Turn ON the Power Switch and wait for 15 seconds for the internal computer to run a self test.
2. Turn ON the Reciprocator Run Switch.
3. Adjust the speed of travel.
4. Change the top and bottom limits on the controller as required to correctly pass the spray gun over the piece being painted.

**NOTE:** The unit will stop if the limits are brought closer than approx 500 mm.

**NOTE:** The unit will stop if the speed control is left at zero or the run switch is off, for a period of 5 minutes with the Reciprocator turned on.

5. To switch off, reduce speed to zero and turn OFF the Reciprocator Run Switch, this provides a controlled stop. Wait for 5 seconds to allow injection braking to hold carriage.
6. Turn OFF the Power Switch.

**NOTE:** The following procedure must always be followed. Failure to do so may result in the Reciprocator carriage overrunning it's limits.



# ***Maintenance***

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## 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.

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### **1. Daily Maintenance**

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1. Visually check the complete system for correct operation.
2. Ensure all controls are operating correctly.

---

### **2. Maintenance – Routine**

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1. Check cables for damage replace as necessary.
2. Clean to avoid build up of dust or other materials that may affect the operation of the unit

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### **3. Electrical Safety**

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1. 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.

---

**4.    *Circuit Board  
Replacement***

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1. The Reciprocator Limit P.C.A. can be removed by using the following procedure.
2. Turn off the supply to the controller and disconnect the supply cable from the controller.
3. Remove the chassis from the casing by removing the four front panel screws, and remove the plug-in connectors from the Reciprocator Limit P.C.A.
4. Remove the Reciprocator Limit P.C.A. by gently moving the two tabs at either end which clip it to the mounting rail.
5. Fit a new circuit board by reversing the above procedure, ensure that the board is secure on the mounting rail.
6. Refit the connectors to the circuit board.
7. Before operation follow the Initial Set-up section *Installation*.

# ***Troubleshooting***

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# 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. Introduction

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.

Any parts that fail must be replaced by approved parts available from Nordson.

**NOTE:** It should be noted that the inverter internal configuration has been modified from the default as supplied.

### 2. Troubleshooting

Problem	Possible Cause	Corrective Action
<b>Controller fails to operate</b>	Supply not switched on	Check Supply
	Fuse in supply failed	Check Fuse
	Reciprocator Start Switch not operated	Operate Switch
	Machine left at zero speed for more than five minutes	Switch off and restart machine
	Limits crossed	Check LED indicator LR on P.C.A. if lit then raise/lower the top/bottom limits until LED is not lit
	Incorrect start/shut down procedure	Observe and follow correct procedure. Instructions can be found on page 4-1 of this manual

**2. Troubleshooting** (contd.)

Problem	Possible Cause	Corrective Action
<b>Carriage fails to move</b>	Interconnecting cable not fitted Carriage Jammed Chain broken or off sprockets Speed set to zero Reciprocator Limit PCA failed	Fit Cable Switch off and check for free operation Check chain Adjust speed control Replace PCA
<b>Gun Bounce</b>	Gun bars too long Reversal too fierce	Shorten or brace gun bars Consult Nordson
<b>No movement or drives in only one direction</b>	Column potentiometer faulty or incorrectly set Drive belt broken Failure of limit circuits	Check reset or replace as necessary Replace drive belt in column Check operation of circuits manually using door mounted limit controls. Replace Reciprocator Limit PCA
<b>Erratic Motion</b>	Loose Carriage Loose drive sprocket Slack chain Worn gearbox Drive incorrectly set	Check, replace or adjust carriage wheels Check, replace or adjust sprocket Adjust chain tension Check, replace gearbox Refer to Nordson

**NOTE:** Other controls and adjustments within the controller must not be adjusted by the customer. The configuration of the drive has been set at the factory for optimum operation and adjustments may only be made by qualified personnel under the supervision of Nordson. Controllers with settings not in line with factory settings may be subjected to operating conditions outside those tested by Nordson and therefore may not be the subject of warranty claims.

## *Section 7*

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# ***Parts***

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## Section 7

### Parts

#### 1. Introduction

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use the parts list, and the accompanying illustration, to describe and locate parts correctly.

#### **Using the Illustrated Parts List**

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (-----) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

Item	Part	Description	Quantity	Note
—	000 0000	Assembly	1	A
1	000 000	• Subassembly	2	
2	000 000	• • Part	1	

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

**2. Parts List**

Item	Part	Description	Quantity	Note
–	765 152	Controller, AC, Reciprocator	1	
1	769 026	• Connector, Insert, 10 Way, Female	1	
2	769 025	• Connector, Housing, 10 Way, Rear Entry	1	
3	765 138	• Control Panel Knob	3	
4	765 141	• Potentiometer, 10K, 1W	3	
5	765 149	• Drive, AC	1	
6	769 218	• P.C.A. Reciprocator Limits	1	
–	765 151	Wall Mount Casing (capacity 1 controller)	AR	A
–	765 152	19" Rack Mount Casing (capacity 1–2 controllers)	AR	A
–	765 150	Blanking panel	AR	B

NOTE A: A casing must be ordered separately as required.

B: Blanking panel required if only 1 controller is fitting in a 19" Rack Casing

AR: As Required

NS: Not Shown

# ***Specifications***

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## Section 8 Specifications

### 1. *Electrical*

<b>Voltage</b>	220–240 VAC, +/–10%
<b>Frequency</b>	45–65 Hz
<b>Current</b>	8 A

### 2. *Mechanical*

<b>Height</b>	352 mm
<b>Width</b>	216 mm
<b>Depth</b>	395 mm (allowance required for cable exits)
<b>Weight</b>	7.65 kg (Chassis only)

### 3. *Noise*

Less than 70 dbA measured at a distance of 1 m from the surface of the unit and at a height of 1.6 m.

#### 4. Circuit Schematic

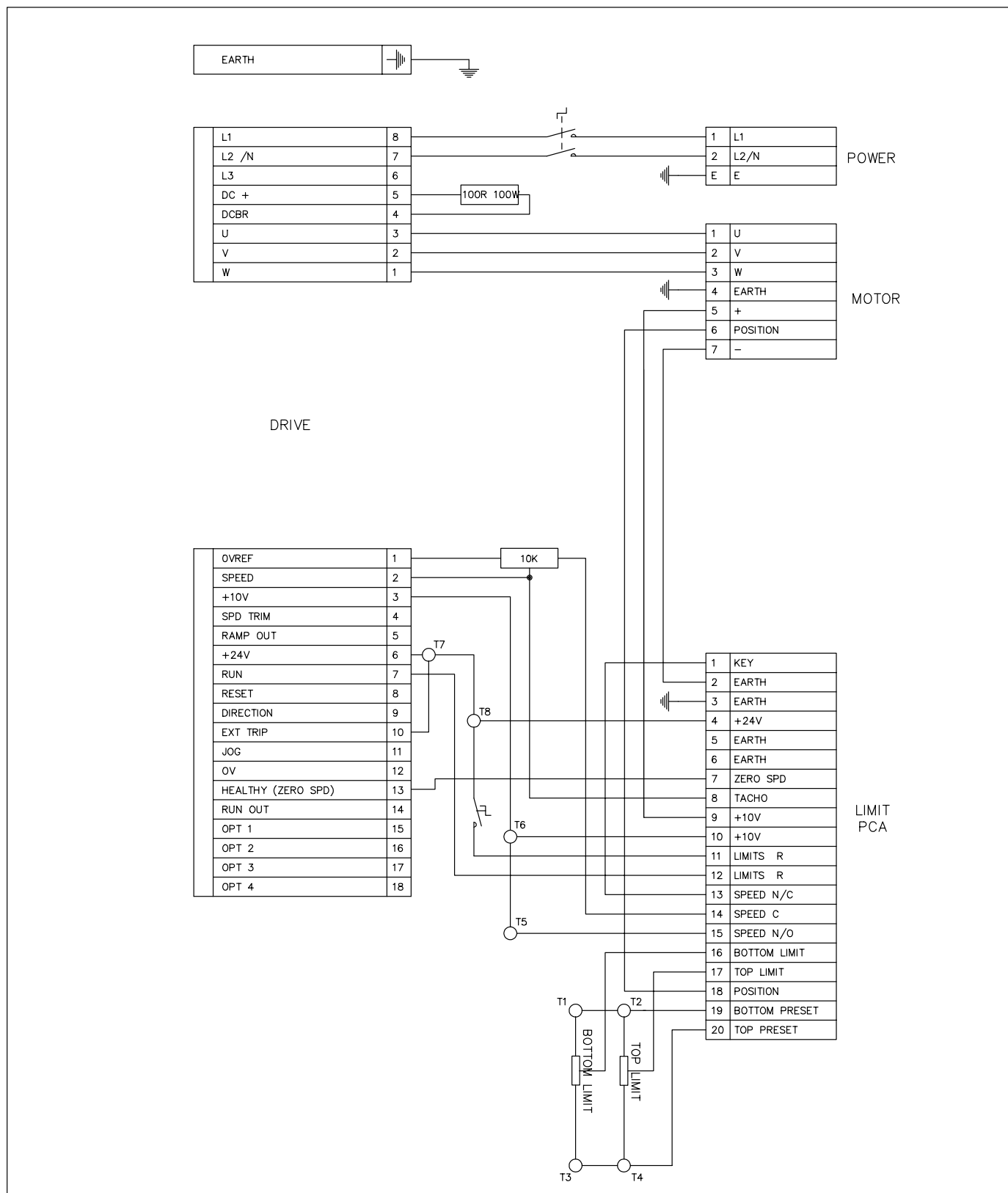


Fig. 8-1