DC Gunmover Controller

Wall Mount Panel

Manual P/N 768 617 C
– English –

Keep for Future Reference

NORDSON (UK) LTD. ● 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

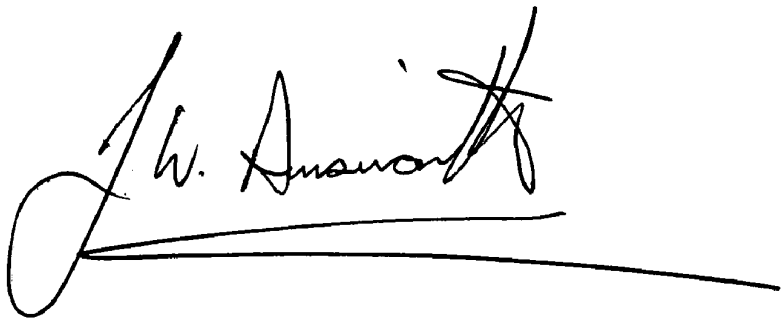
declare that under our sole responsibility for supply/manufacture of the product(s)

Product Name	DC Gunmover Controller
Model Number(s)	765154
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., 14th 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

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

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SK3 0RY

Telephone: 0044 (0) 161–495–4200
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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 DC Gunmover Controller is intended for use in the control of Nordson Reciprocator Columns. The columns cover a range of standard heights:

1.0 metres stroke length – 765 022
1.5 metres stroke length – 765 023
2.0 metres stroke length – 765 024
2.5 metres stroke length – 765 025

The Controller is designed for use in powder coating installations.

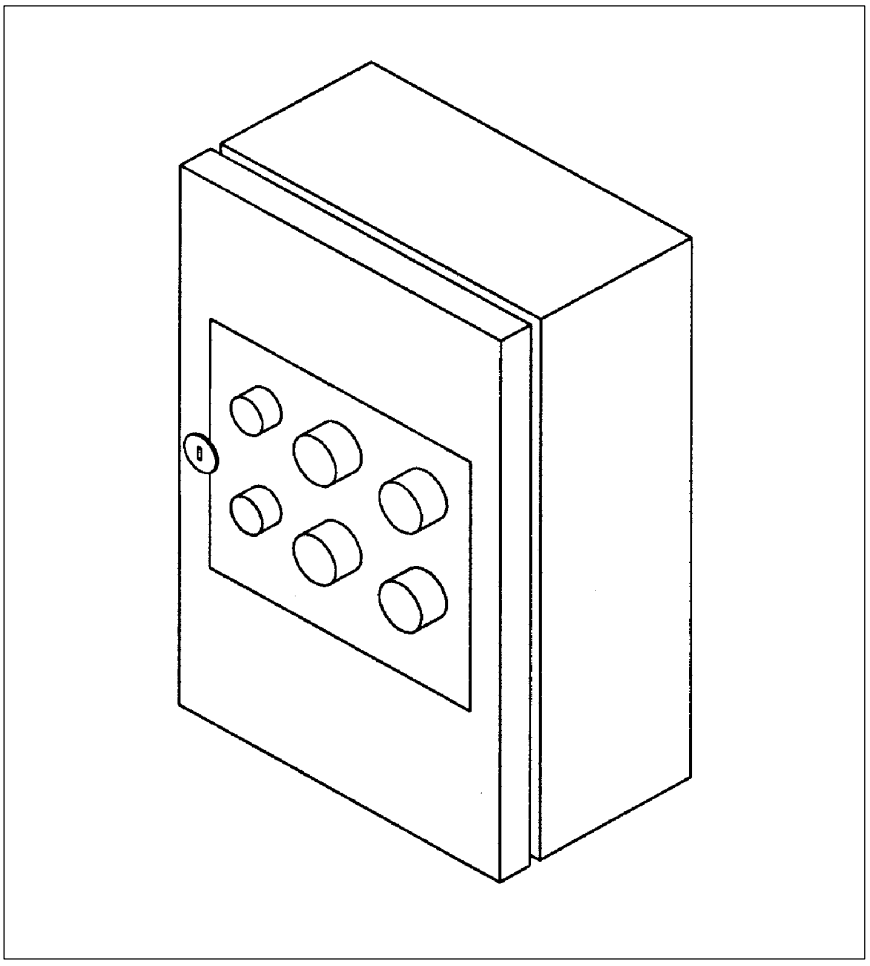

Fig. 2-1

2. Features

The Controller features are listed below:

- Independent control over speed of travel in each direction.
- Independent operator control of top and bottom turnaround position of the working stroke.
- Internal control over the maximum stroke length. Maximum capacity of 30kg load, working, equivalent to more than 10 Nordson powder spray guns and mounting hardware.
- Maximum speed of travel of 120 feet per minute.

3. Operational Controls and Indications

The front panel controls are as follows:

- **Main Isolator**
  Disconnects power to the internal control circuits, the switch is interlocked with the door ensuring that power is not on when the door is open.
- **Start**
  A momentary push action switch that disengages the motor brake, and enables the electronics to control the motor. There is a delay after pressing the switch before the reciprocator carriage moves.
- **Stop**
  A momentary action switch that engages the motor brake and disables the motor control electronics.
- **Top Limit**
  Adjusts the point at which the carriage changes from up stroke to down stroke for the working stroke. The maximum working stroke for each machine is set internally. The minimum working stroke is approx. 450mm, i.e. the top limit must be 450mm higher than the bottom limit.
- **Bottom Limit**
  Adjusts the point at which the carriage changes from down stroke to up stroke for the working stroke. The maximum working stroke for each machine is set internally. The minimum working stroke is approx. 450mm, i.e. the bottom limit must be 450mm lower than the top limit.
- **Up Speed**
  Adjusts the speed of travel in the up direction.
- **Down Speed**
  Adjusts the speed of travel in the down direction.

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. See *Specifications* section for dimensions and weights.

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

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.

Choose a location for the Controller where there is free circulation of air, a clearance of 150 mm on all sides should be allowed.

The Controller requires at least 600 mm to the front of the cabinet to allow the door to open.

1. Fix the Controller to its support using the four fixing holes in the corners of the unit. The Controller should be mounted vertically.

2. Connect the ten–way connector on the underside of the Controller to the reciprocator column using the cable provided.

7. Electrical

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

1. The Controller requires a single phase 240 VAC supply which can supply a minimum of 10 A. We suggest a cable of 1.5 mm^2, 3 cores be used and that this supply be protected by a 10–Amp fuse or a 10–Amp type 2 circuit breaker.

2. Connect the cable cores to the connector supplied as follows:

   Live – L1– Brown connects to terminal 1
   Neutral – L2 – Blue connects to terminal 2
   Earth – E – Green/Yellow connects to terminal E.

8. Configuration

WARNING: Allow only qualified personnel to perform electrical work. Observe the safety instructions. This section requires operation of the panel with the control panel door open and the supply energised, exercise extreme caution.

NOTE: Read this complete section thoroughly before commencing.

1. Withdraw the reciprocator from the booth.
2. Set the speed controls on the front panel to zero.
3. On the control panel set the top limit to zero (fully anti–clockwise), set the bottom limit to nine (fully clockwise).
4. Apply power to the control panel, this will require the use of a suitable tool to turn the isolator into the energised position.
5. Start the control panel by depressing the Start push–button.
6. Turn one of the speed controls slightly clockwise until the reciprocator carriage starts to move up or down the column slowly. If the carriage fails to move, turn the control to zero and operate the other speed control until the carriage starts to move.
7. The carriage will be moving towards the top or bottom of the reciprocator.
8. If the limits have been set for the column the carriage will stop at or before reaching the maximum stroke length.
9. When the desired limit is reached turn both speed controls to zero.
10. Open the control panel door and adjust the appropriate top or bottom preset potentiometer on the Reciprocator Limit P.C.A. A clockwise rotation of RV2 will raise the top limit. A clockwise rotation of RV1 will lower the bottom limit.
11. Turn the other speed control clockwise a small amount and repeat the above procedure from paragraph 7 until both the top and bottom limit are set.
12. Increase the speed gradually trimming the limits accordingly until maximum speed is reached.
13. Switch off the controller and place the reciprocator into the gunslots. Start the reciprocator with the speeds set low, check for correct stroke, increase speed and check that no contact is made with the booth.

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.

WARNING: Ensure that the vicinity of the reciprocator is clear of personnel before starting. Failure to do so may result in personal injury.

1. Daily Operation

1. Ensure the emergency stop button is not activated. If the emergency stop button has been pressed investigate reasons before turning on the equipment.
2. Turn on the panel isolator.
3. Check the speed controls are set at zero.
4. Press the Start push–button.
5. Adjust the speed and stroke controls as required.
6. At the end of use turn the speed controls to zero, then press the Stop push–button.
7. Turn off the panel using the isolator.

CAUTION: Do not use the emergency stop button to turn off the reciprocator except in an emergency. The action may cause other items of equipment associated with the process to be stopped as well.

Placing the working limits too close together will cause the machine to stop, if this happens raise/lower the limits and restart the machine.

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

- Check for the correct operation of all controls. Do not operate the equipment with faulty controls.
- Clean any powder and dust from the cabinet.
- Check all cables for damage, replace any damaged cables.

2. Circuit Board Replacement

The Reciprocator Limit P.C.A. can be removed by using the following procedure.

1. Turn off the power to the controller using the door isolator.
2. Open the cabinet door, and remove the plug in connectors from the Reciprocator Limit P.C.A.
3. Remove the Reciprocator Limit P.C.A. by gently moving the two tabs at either end which clip it to the mounting rail.
4. Fit a new circuit board by reversing the above procedure, ensure that the board is secure on the mounting rail.
5. Refit the connectors to the circuit board.
6. Before operation follow chapter *Configuration* in section *Installation.*

3. Replacement of Other Components

Nordson do not recommend customer replacement of any other parts in the Controller.

Customers should either return the unit to their nearest Nordson representative or arrange for a Nordson appointed service engineer to visit to repair the unit.

4. Electrical Safety

The Controller should be periodically tested in accordance with the Electricity at work Regulations (1989).

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

Problem	Possible Cause	Corrective Action
No motion when start pressed (no clunk from contactor)	No supply voltage	Check supply
		Check Isolator Closed
		Check Emergency Stop button not pushed
		Check no remote Emergency Stop button has been pressed
	Limits crossed	Check LED indicator LR on P.C.A. if lit then raise/lower the top/bottom limits until LED is not lit
	Motor overtemperature	Check that Drive Operational LED is lit on drive if not lit consult Nordson

Problem	Possible Cause	Corrective Action
No motion when start button pressed contactor closes when button pressed	Carriage or gearbox jammed	Check for free operation
	Chain broken or off sprockets	Check chain
	Speed set to zero	Adjust speed control
	Reciprocator Limit PCA failed	Replace PCA
Gun Bounce	Gun bars too long	Shorten or brace gun bars
	Reversal too fierce	Consult Nordson
No movement or drives in only one direction	Column potentiometer faulty or incorrectly set	Check re–set or replace as necessary
	Potentiometer gearbox or coupling loose	Check gearbox and coupling
	Failure of limit circuits, Reciprocator Limit LEDs TL and BL do not illuminate	Check operation of circuits manually using door mounted limit controls. Replace Reciprocator Limit PCA
Erratic Motion	Loose Carriage	Check, replace or adjust carriage wheels
	Loose drive sprocket	Check, replace or adjust sprocket
	Slack chain	Adjust chain tension
	Worn gearbox	Check, replace gearbox
	Drive incorrectly set	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

Parts

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	
1	000 000	• Subassembly	2	A
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. Wall Mount DC Controller

Item	Part	Description	Quantity	Note
–	765 154	Controller, Reciprocator, D.C., Wall mount	1	
1	765 139	• Legend Plate	1	
2	765 131X	• Drive, D.C. Pre 1994 (BBC)	1	A
	765 130	• Drive, D.C. 1994 – 1999 (Eurotherm SSD 540)	1	
	765 157	• Drive, D.C. Post 1999 (Eurotherm 514C)	1	
2a	765 158	• Filter, Unit post 1999	1	B
3	769 026	• Connector, Insert, 10 Way, Female	1	
4	769 025	• Connector, Housing, 10 Way, Rear Entry	1	
5	769 211	• P.C.A., Reciprocator Limit, Pre 1994	1	
	769 213	• P.C.A., Reciprocator Limit, 1994 – 1999 (Orange)	1	
	769 218	• P.C.A., Reciprocator Limit, Post 1999 (Green)	1	C
6	769 922	• Plate Identification	1	
7	769 020	• Connector, Housing, 4 Way, Rear Entry	1	
8	769 022	• Connector, Insert, 4 Way, Male	1	
9	765 141	• Potentiometer, 1 Watt, 10K	4	
10	765 138	• Knob	4	
11	769 021	• Connector, Insert, 4 Way, Female	1	
12	769 019	• Connector, Hood, 4 Way, Top Entry	1	
13	769 401	• Nut, M3, Nyloc	4	
14	765 140	• Nut, Potentiometer	4	
15	765 056	• Cable, Reciprocator, 10 Way, 6 MTR	1	

NOTE A: This Drive is supplied as a service exchange

B: Must be fitted with 765 157 DC Drive Unit.

C: The new Electronic PCA can be fitted to Controllers 1994 – 1999 , but a small wiring modification is required.

AR: As Required

NS: Not Shown

Section 8

Specifications

Section 8
Specifications

1. Electrical

Voltage (Volts)	240
Frequency (Hz)	50
Power (kW)	2.0
Average Running Current (A)	7.4

2. Mechanical

Height (mm)	540
Width (mm)	400
Depth (mm)	320
Weight (kg)	24
Ambient Temperature Max (C)	32

3. Noise

Less than 70 dB(A). Measured at a distance of 1 m from the surface of the unit and at a height of 1.6 m.

4. Electrical Schematic

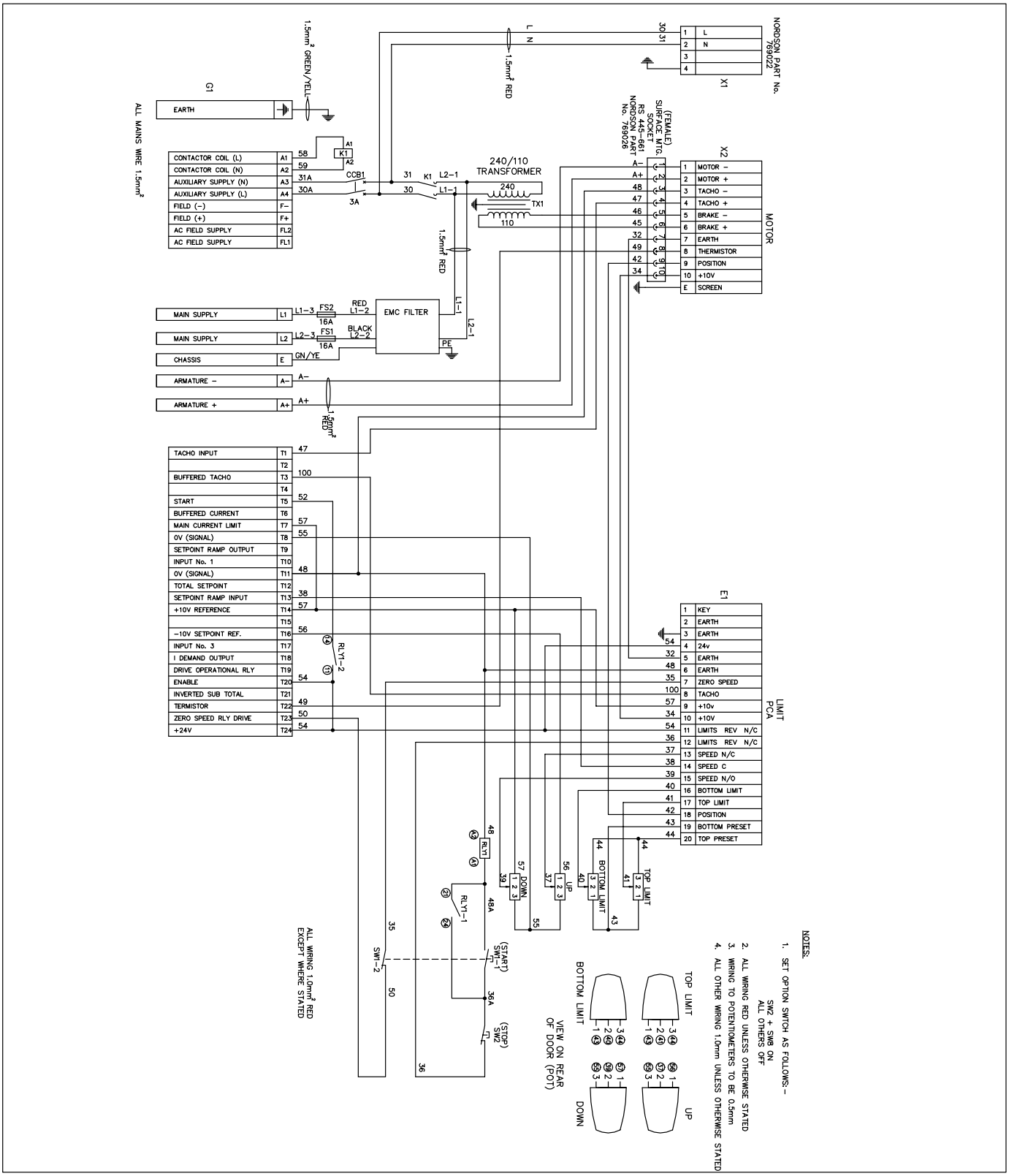

Fig. 8-1 Schematic of 514C Drive