Nordson® Belt-Drive Horizontal In/Out Positioner

Customer Product Manual
Part 7750171-03
Issued 10/12

For parts and technical support, call the Finishing Customer Support Center at (800) 433-9319.

This document is subject to change without notice.
Check http://emanuals.nordson.com for the latest version.

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Nordson

NORDSON CORPORATION • AMHERST, OHIO • USA

Table of Contents

Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address: http://www.nordson.com.

Address all correspondence to:

Nordson Corporation
Attn: Customer Service
555 Jackson Street
Amherst, OH 44001

Nordson Horizontal In/Out Positioner

Safety

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.

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.

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

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.

All phases of equipment installation must comply with all federal, state, and local codes.

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.
- 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.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- 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.
- 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.

Grounding

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class II Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

- All electrically conductive objects in the spray areas shall be electrically connected to ground with a resistance of not more than 1 megohm as measured with an instrument that applies at least 500 volts to the circuit being evaluated.
- Equipment to be grounded includes, but is not limited to, the floor of the spray area, operator platforms, hoppers, photoeye supports, and blow-off nozzles. Personnel working in the spray area must be grounded.
- There is a possible ignition potential from the charged human body. Personnel standing on a painted surface, such as an operator platform, or wearing non-conductive shoes, are not grounded. Personnel must wear shoes with conductive soles or use a ground strap to maintain a connection to ground when working with or around electrostatic equipment.
- Operators must maintain skin-to-handle contact between their hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If gloves must be worn, cut away the palm or fingers, wear electrically conductive gloves, or wear a grounding strap connected to the gun handle or other true earth ground.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments or cleaning powder spray guns.
- Connect all disconnected equipment, ground cables, and wires after servicing equipment.

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.

Disposal

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

Description

The Nordson Belt-Drive Horizontal In/Out Positioner moves powder spray guns horizontally in and out of a powder coating booth. The spray guns are typically mounted on a vertical oscillator, reciprocator, or fixed gun stand, bolted to the positioner.

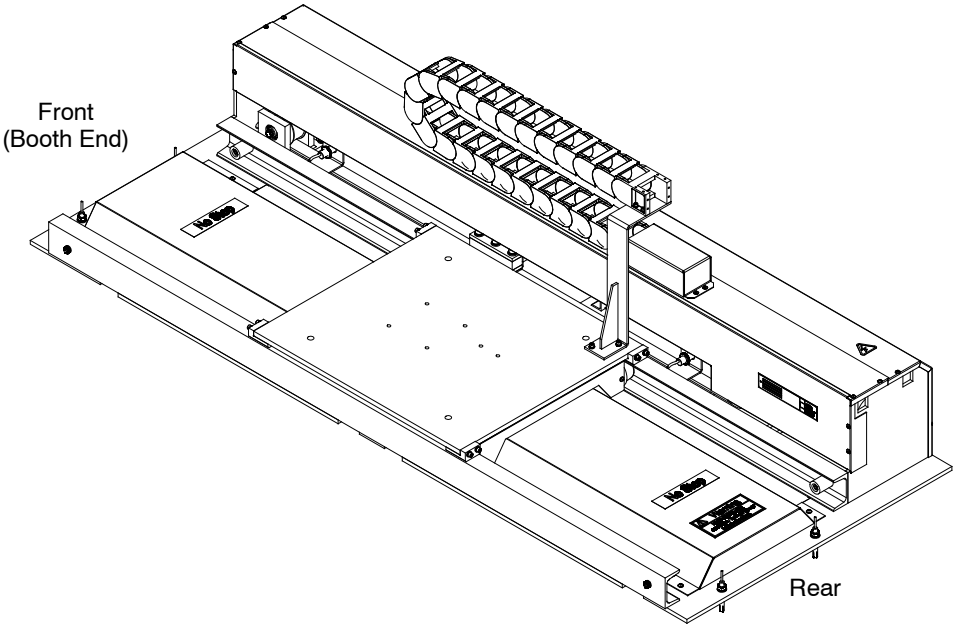


Figure 1 Belt-Drive Horizontal In/Out Positioner

Positioner Models

The positioner is available in three standard travel lengths and four motor voltages. Refer to *Positioner Part Numbers* in the following table for a description of the available configurations.

Part Number	Travel Length	Motor
7750112	1M (39 in.)	230–400V AC 50 Hz
7750113	1.5M (59 in.)	230–400V AC 50 Hz
7750114	0.6M (24 in)	230–400V AC 50 Hz
7750115	1M (39 in.)	90 V DC
7750116	1.5M (59 in.)	90 V DC
7750117	0.6M (24 in)	90 V DC
7750118	1M (39 in.)	200 V AC 50 Hz
7750119	1.5M (59 in.)	200 V AC 50 Hz
7750120	0.6M (24 in)	200 V AC 50 Hz
7750121	1M (39 in.)	200 V AC 60 Hz
7750122	1.5M (59 in.)	200 V AC 60 Hz
7750123	0.6M (24 in)	200 V AC 60 Hz

Positioner Components and Operation

See Figure 2. A vertical oscillator, reciprocator, or fixed gun stand is bolted directly to the carriage (1). The carriage is attached to the belt (8). The motor (3) and gear reducer (5) drive the belt, which moves the spray guns in or out of the booth. The belt is wrapped around the pulleys at each end of the positioner.

Low voltage control and motor power wiring are routed to connectors (7) and (4) from a remotely located position controller. The encoder (10) senses the position of the positioner carriage in relation to the forward and reverse proximity sensors (6, 9), which detect when the positioner carriage reaches the maximum desired travel positions. The optional purge proximity sensor (12) is used in US powder applications for color change move sequences.

NOTE: The proximity sensors can be positioned where desired in the travel range to adjust carriage travel for the application.

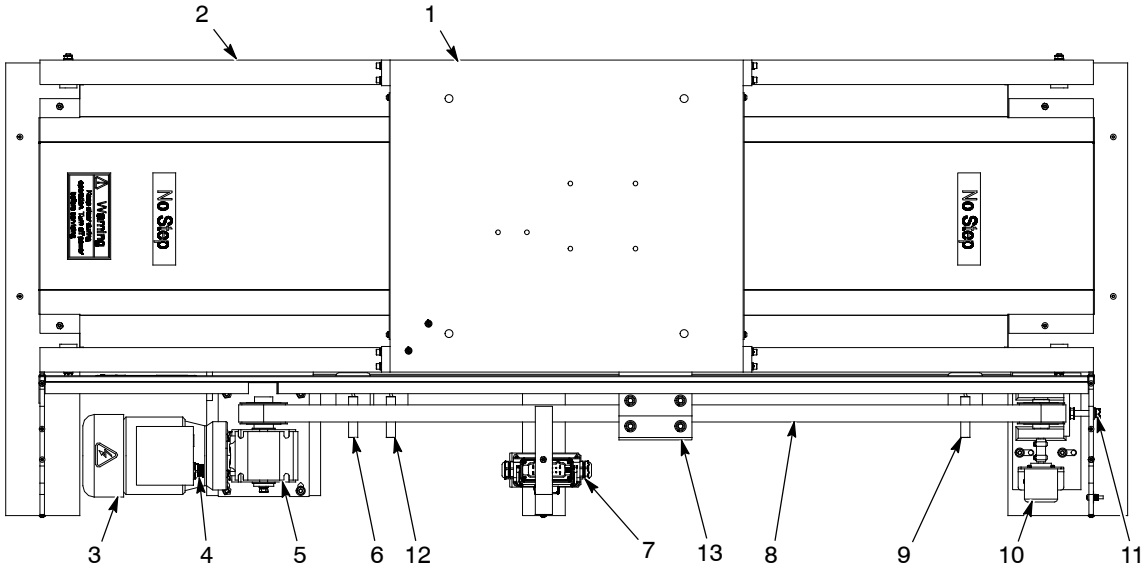


Figure 2 Positioner Components

1. Carriage assembly
2. Base
3. Motor
4. Motor connector
5. Gear reducer
6. Reverse proximity sensor
7. Sensor/encoder connector
8. Drive belt
9. Forward proximity sensor
10. Encoder
11. Belt tensioner
12. Purge prox. sensor (optional)
13. Sensor target

Specifications

Motor power	0.37 kW (0.5HP)
Gear reducer oil	
Motor RPM	1360 RPM at 50 Hz 1720 RPM at 60 Hz 1720 RPM at 90 Vdc
Max Speed	11 m/min (36 ft/min)
Max stroke length	0.6 m (24 in) 1 m (39 in) 1.5 m (59 in)
Sensor/Encoder voltage	24 VDC
Encoder PPR	635
Encoder pulse rate	2.647 pulses/mm 67.242 pulses/in
Positioner Length (L):	
Max Stroke 1 m	1935 mm (76.2 in.)
Max Stroke 1.5 m	2435 mm (95.9 in.)
Max Stroke .6 m	1535 mm (60.4 in.)

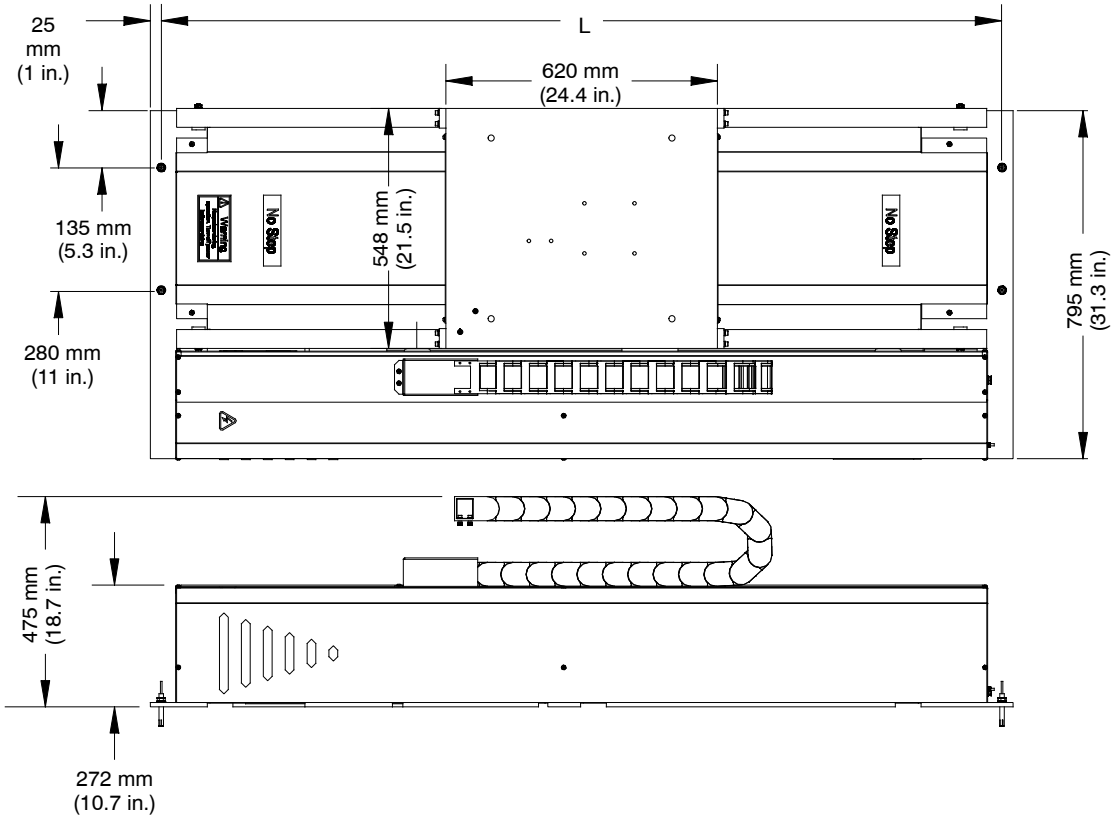


Figure 3 Positioner Dimensions

Installation

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

The installation location must provide the following:

- Level floor, within 0.5 mm (0.02 in.)
- One meter (3 ft) of clearance on sides and rear of positioner

NOTE: The positioner carriage is designed so that Nordson oscillators, reciprocators, and fixed gun stands can be bolted directly to the carriage.

1. Place the positioner in the location indicated on your system plan view drawings, next to the booth base. Do not bolt the positioner to the floor at this time.
2. See Figures 4 and 5. Using appropriate lifting equipment, carefully install the oscillator, reciprocator, or fixed gun stand (1) onto the carriage (2) and bolt it in place to the carriage with appropriately sized hex head screws, lock washers, and flat washers. Figure 5 includes the carriage hole patterns for various fixed gun stands, oscillators, and reciprocators.
3. Make any final adjustments in the position of the positioner in relation to the booth gun slots. This may require mounting spray guns in order to align the guns with the slots.
4. Bolt the positioner base (3) to the floor with M10 x 75 anchor bolts (4).
5. To provide a protected path for oscillator or reciprocator cables, install the cable carrier (8) and cover (7) on the positioner as follows:
   a. Remove the blanking plate (9) from the top of the drive housing.
   b. Secure the cable carrier and cover to the drive housing with the blanking plate screws and the screws included with the cable carrier.
   c. Mount the cable carrier bracket (6) to the positioner carriage as shown, then bolt the unsecured end of the carrier to the bracket.

   NOTE: If the threaded holes provided for the bracket in the carriage are covered by the gun stand, oscillator, or reciprocator, then provide an alternate method of anchoring the end of the cable carrier so that it moves with the carriage.
6. Remove the drive cover and connect the power cable to the positioner motor and the control cable to the 16-pin receptacle. Route the cables out of the base and to the control panel.
7. Route the oscillator or reciprocator cables through the cable carrier and positioner base to the system controls.

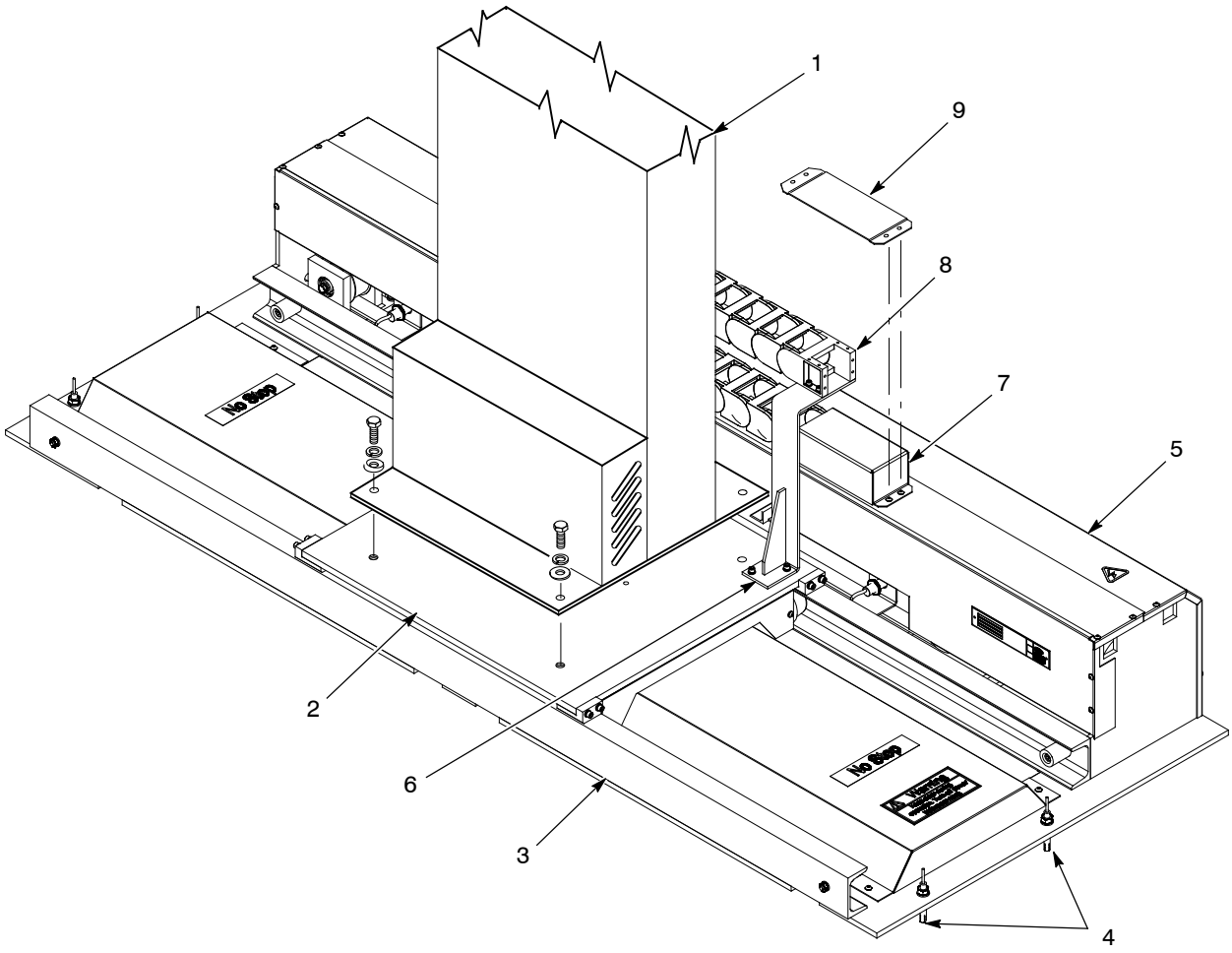


Figure 4 Installation

1. Fixed stand/oscillator/reciprocator
2. Carriage
3. Positioner base
4. Anchor bolts
5. Drive cover
6. Cable carrier bracket
7. Carrier cover
8. Cable carrier
9. Blanking plate

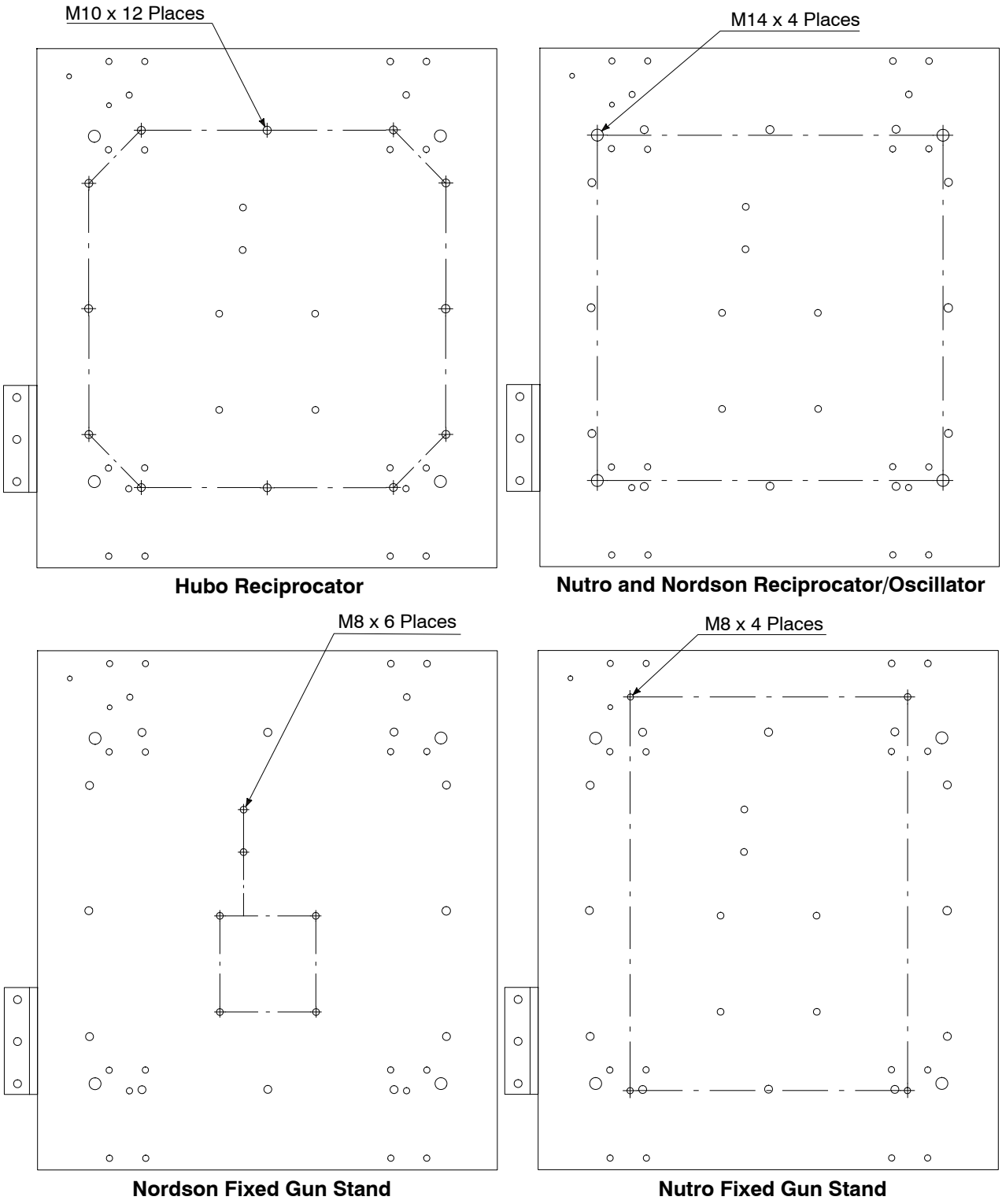


Figure 5 Carriage Hole Patterns

Optional Purge Proximity Sensor Installation

Refer to *Parts* for the proximity sensor and bracket kit part numbers. This sensor is used in the USA to detect the carriage position during color change sequences.

Mount the sensor to the right of the reverse sensor (Fig. 2, item 12) and route the cable through the sensor mounting channel to the sensor/encoder connector (Fig. 2, item 7). The gap between the sensor and the sensor target (Fig. 2, item 13) should be approximately 3 mm.

Remove the male plug from the connector. Loosen the four screws holding the terminal insert in place and remove the insert.

Loosen the dust-tight strain relief cap, remove the grommet hole plug, and feed the sensor cable into the connector body, then strip the cable leads and connect them to the insert terminals as shown in Figure 11.

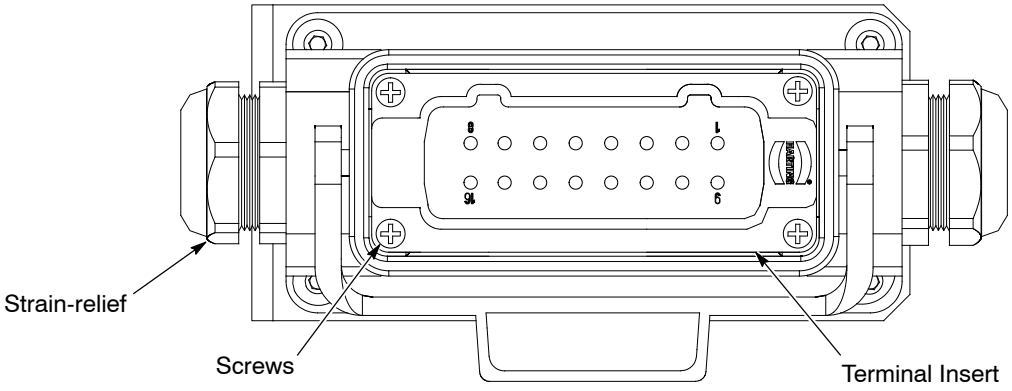


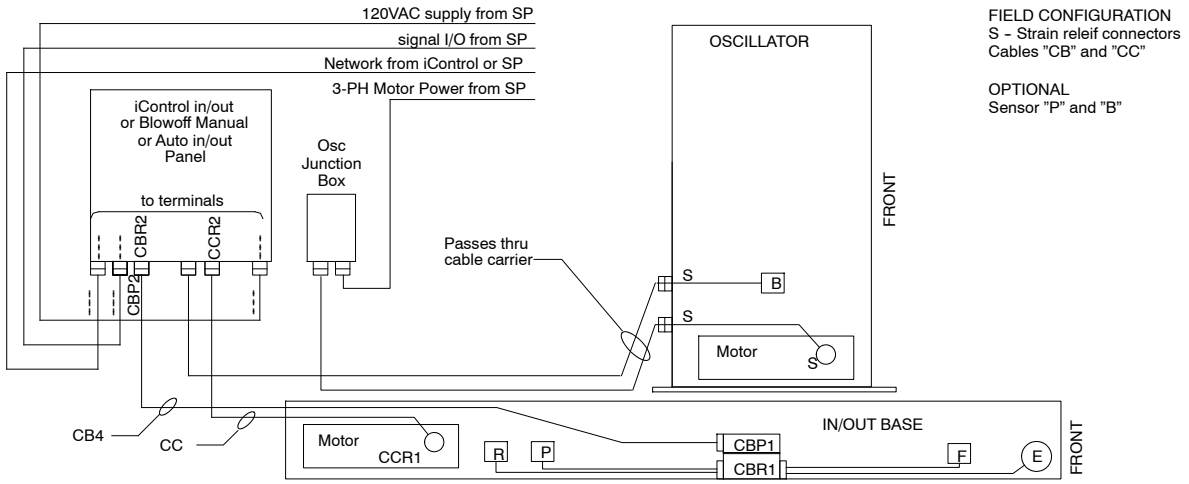
Figure 6 Sensor/Encoder Connector – Top View

Power and Control Cable Connections

Use the following tables with Figures 7, 8, 9, or 10 when routing and connecting the positioner, oscillator, and reciprocator cables.

Code	Function
Note: “n” designates cable length (in meters) or connector number.	
In/Out Positioner Configuration	
R	Reverse end-of-stroke proximity sensor
F	Forward end-of-stroke proximity sensor
E	Encoder
P	Purge limit sensor
CARn, CAPn	3-phase AC motor power connectors
CCRn	90 Vdc motor power connectors
CAn	3 phase AC motor power cable, 4-conductor shielded
CC	90 Vdc power cable, 3-conductor STOOW
CBRn, CBPn	Sensor/Encoder cable connectors
CBn	Sensor/Encoder cable, 12-conductor shielded
Reciprocator Configuration	
R	Reverse end-of-stroke proximity sensor
F	Forward end-of-stroke proximity sensor
E	Encoder
CHRn, CHPn	Sensor/Encoder cable connectors
CHn	Sensor cable, 12-conductor shielded
CGn	3-phase AC motor power cable, 4-conductor shielded

NORTH AMERICAN CONFIGURATION – NORDSON POSITIONER, NON-NORDSON OSCILLATOR



NORTH AMERICAN CONFIGURATION – iCONTROL, NORDSON POSITIONER, NON-NORDSON RECIPROCATOR

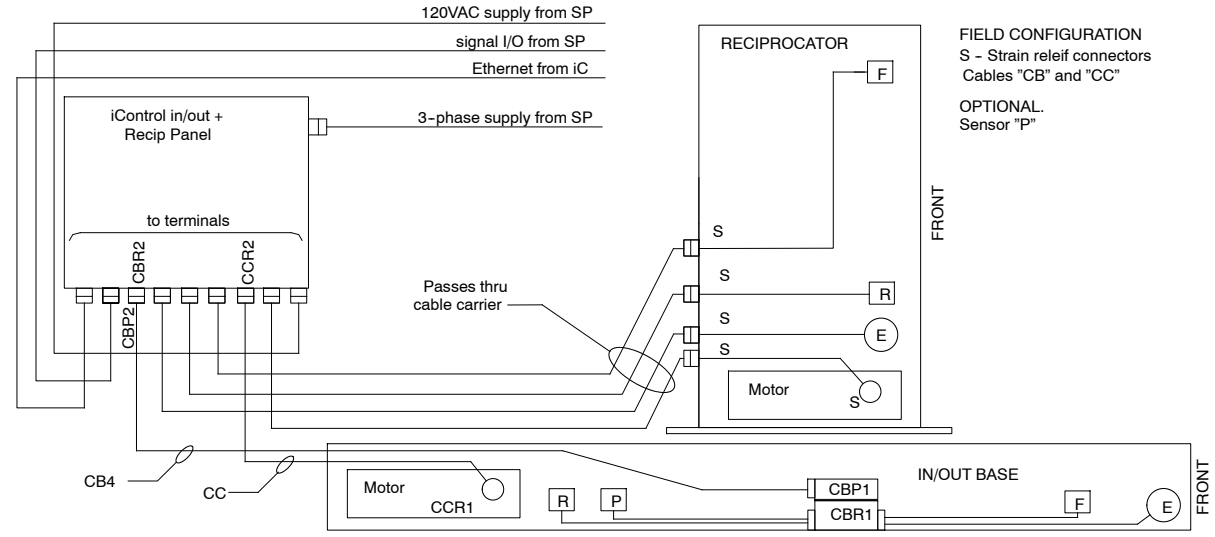


Figure 7 Cabling – Nordson Positioner, Non-Nordson Oscillator or Reciprocator – North American Systems

NORTH AMERICAN CONFIGURATION – iCONTROL, NORDSON POSITIONER AND RECIPROCATOR

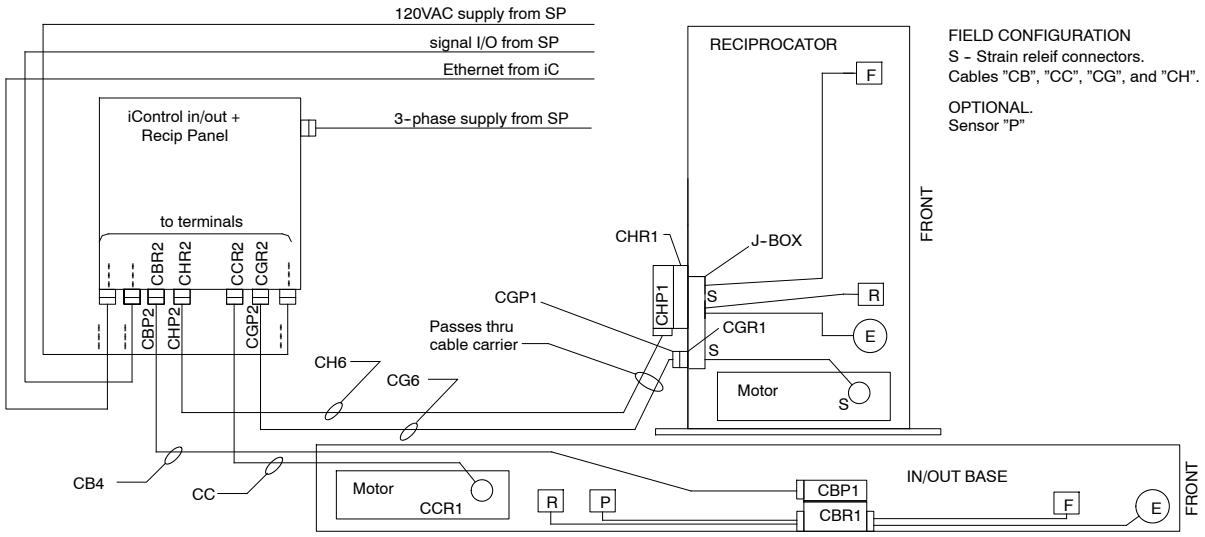
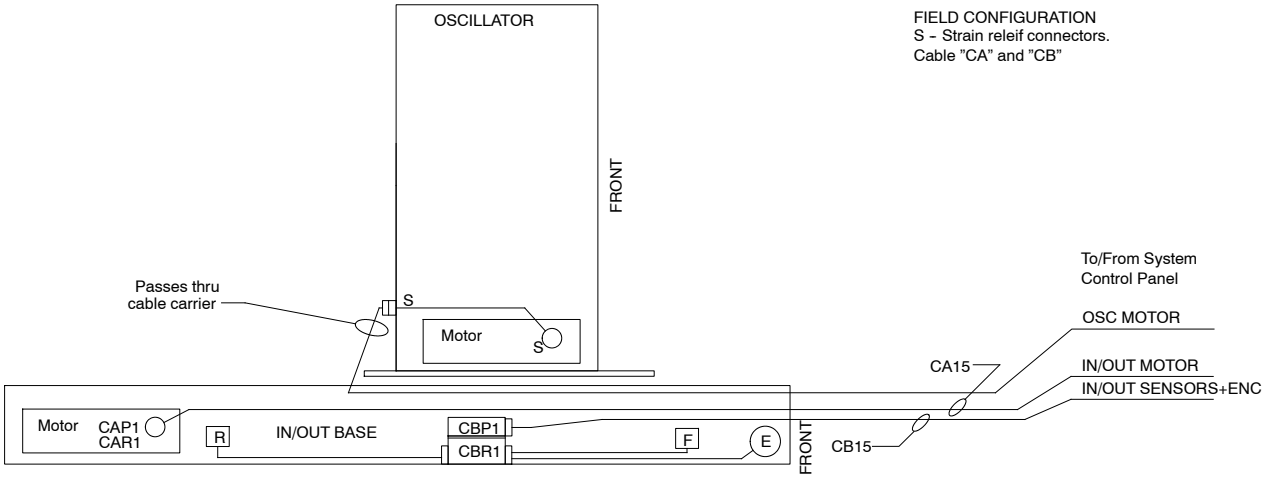


Figure 8 Cabling – Nordson Positioner and Reciprocator – North American Systems

EUROPEAN CONFIGURATION – NORDSON POSITIONER, NON-NORDSON OSCILLATOR



EUROPEAN CONFIGURATION – NORDSON POSITIONER, NON-NORDSON RECIPROCATOR

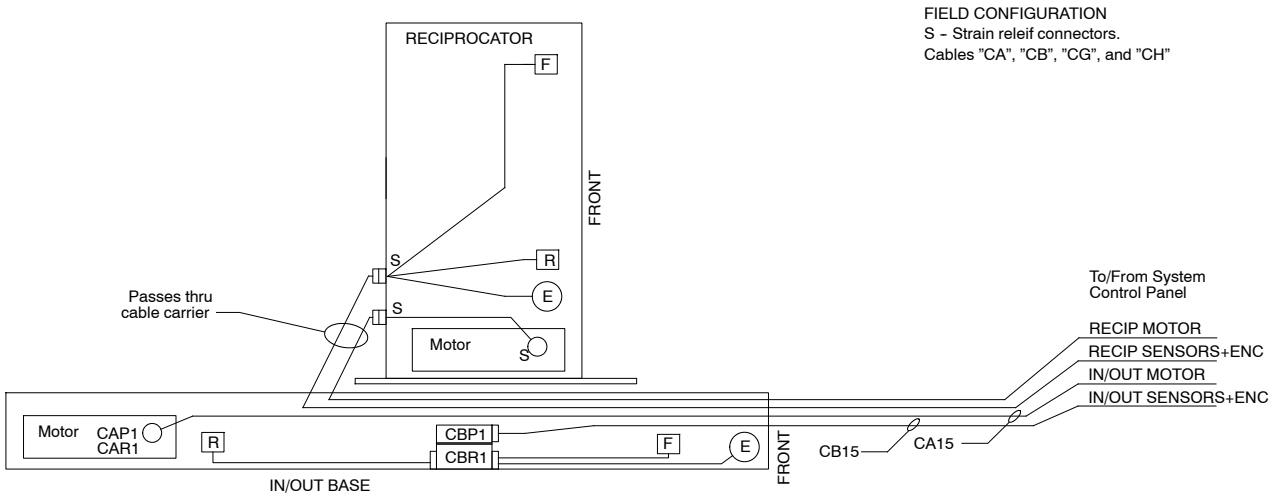


Figure 9 Cabling – Nordson Positioner, Non-Nordson Oscillator or Reciprocator – European Systems

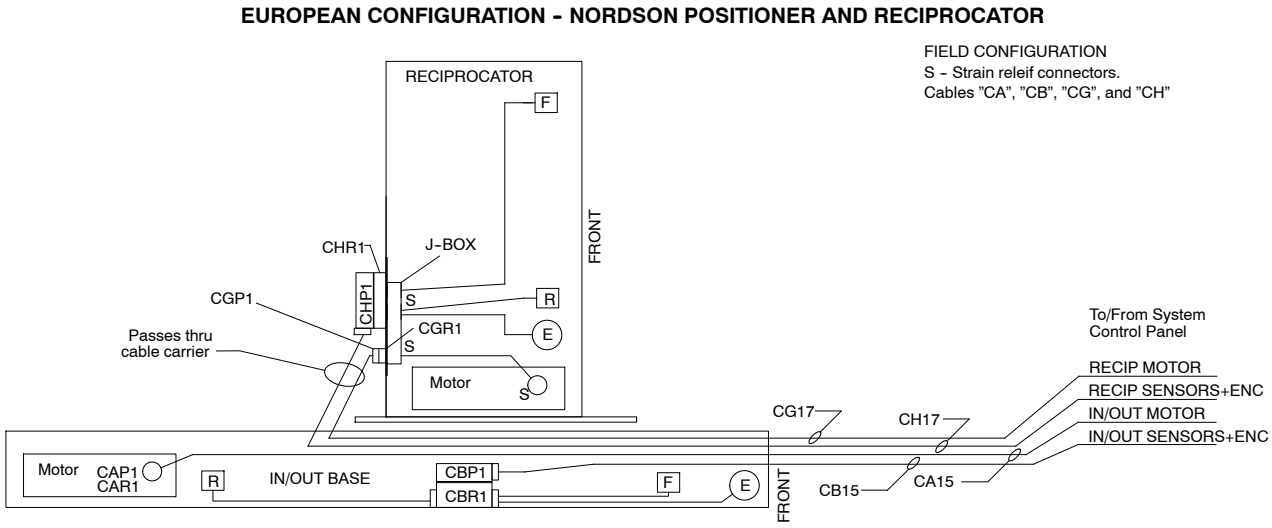


Figure 10 Cabling - Nordson Positioner and Reciprocator - European Systems

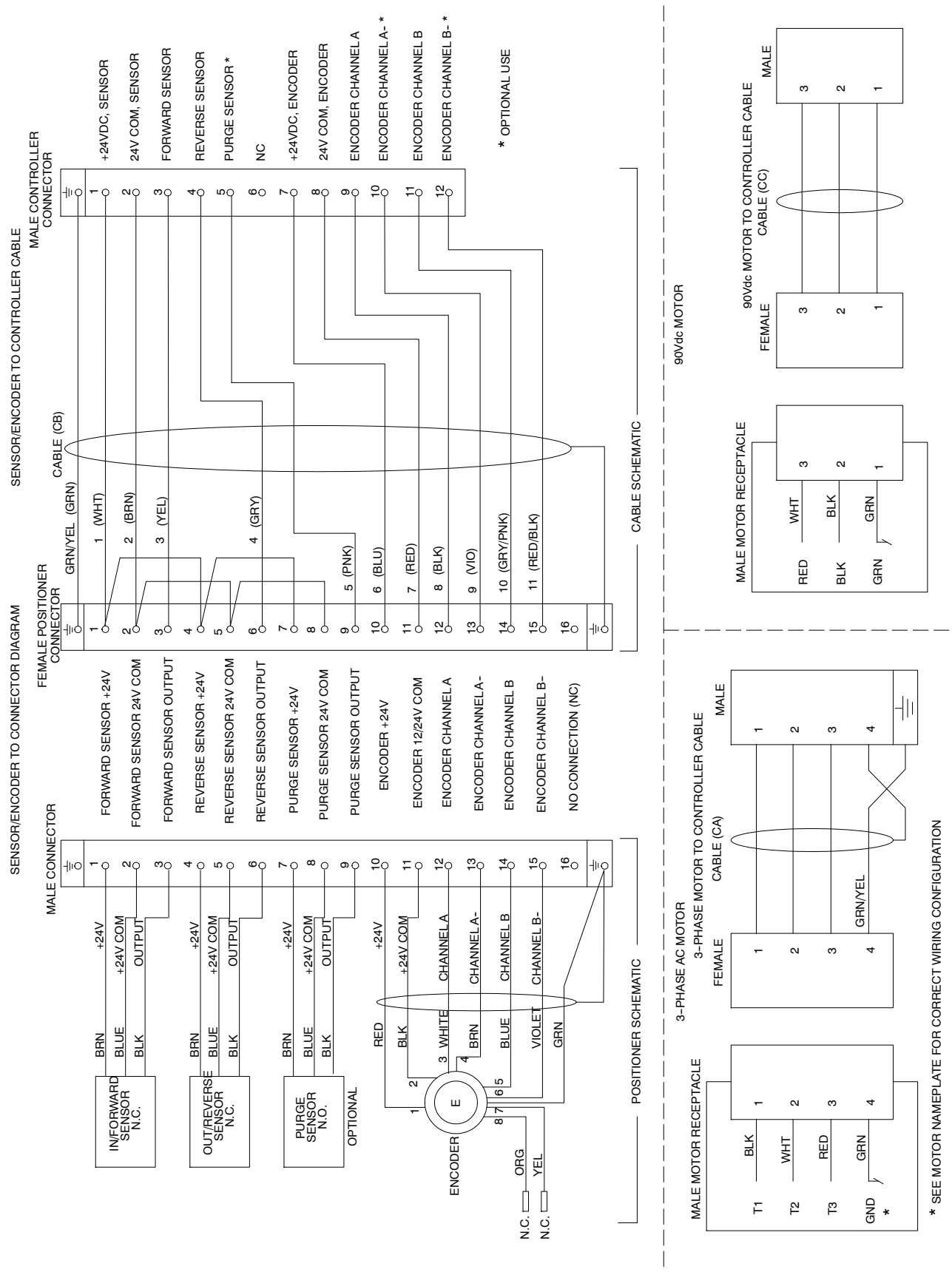


Figure 11 Positioner Wiring Diagram – Encoder, Sensors, Motor

Maintenance

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

See Figure 12. Remove the drive covers to perform the following procedures.

Item	Component	Frequency	Procedure
1	Gear Reducer	Gear reducer is maintenance-free and completely sealed. The Nord FLEXBLOC worm speed reducers are factory-filled with a food grade synthetic lubricant that is suitable for the life of the product.	
2	Drive Belt	After the first 80 hours, then monthly	Check the belt tension. Tighten if necessary. Check for belt and pulley wear. Replace parts as necessary.
3	Guide Channels	Every two weeks	Check for contaminants and clean as required.
4	Anti-tilt pads	Monthly	Check for wear and make sure there is a 1-mm gap between the pad and channel. Replace parts as necessary.
5, 6	Proximity sensors	Monthly	Make sure the proper sensing gap (3–4 mm) between the sensors (5) and target (6) is maintained.
–	Positioner interior	Monthly	Remove all debris, dust, powder, etc.

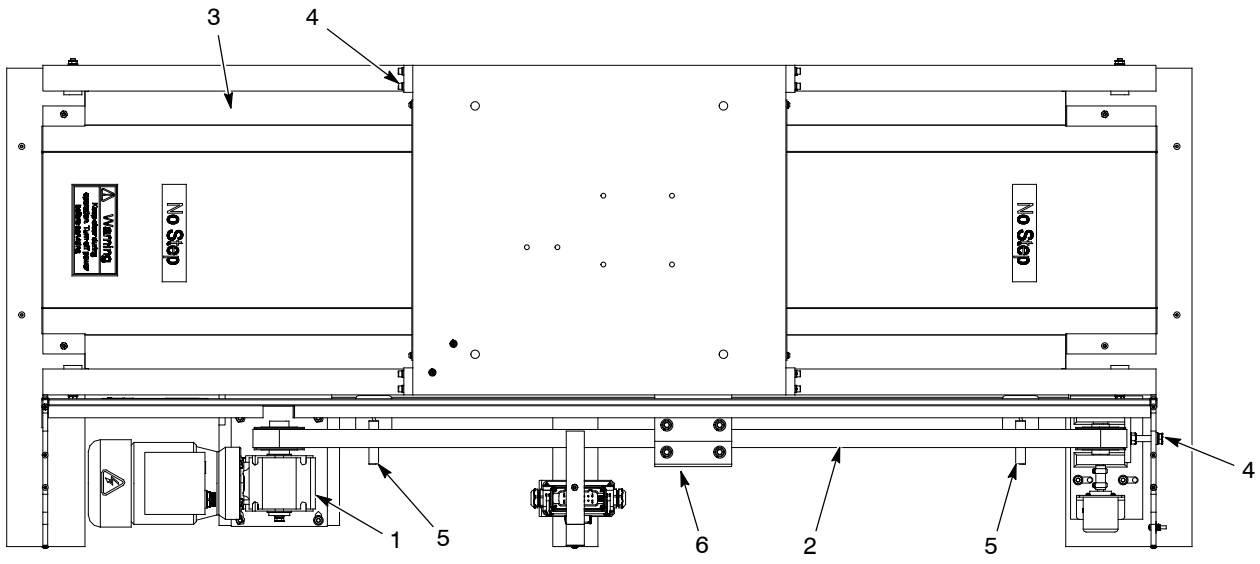


Figure 12 Positioner Maintenance

Drive Belt Tensioning

Check the drive belt tension without a load (at rest), with the carriage at the full reverse position shown in Figure 13.

To adjust the belt tension, loosen the locking nuts on the belt tensioner, adjust the jacking screw, then tighten the locking nuts. Recheck the tension and adjust until correct.

Positioner Travel Length	Deflection at 8 kg (17.64 lb)
0.6 meter (24 in.)	17 mm (0.67 in.)
1 meter (39 in.)	23 mm (0.90 in.)
1.5 meter (59 in.)	33 mm (1.29 in.)

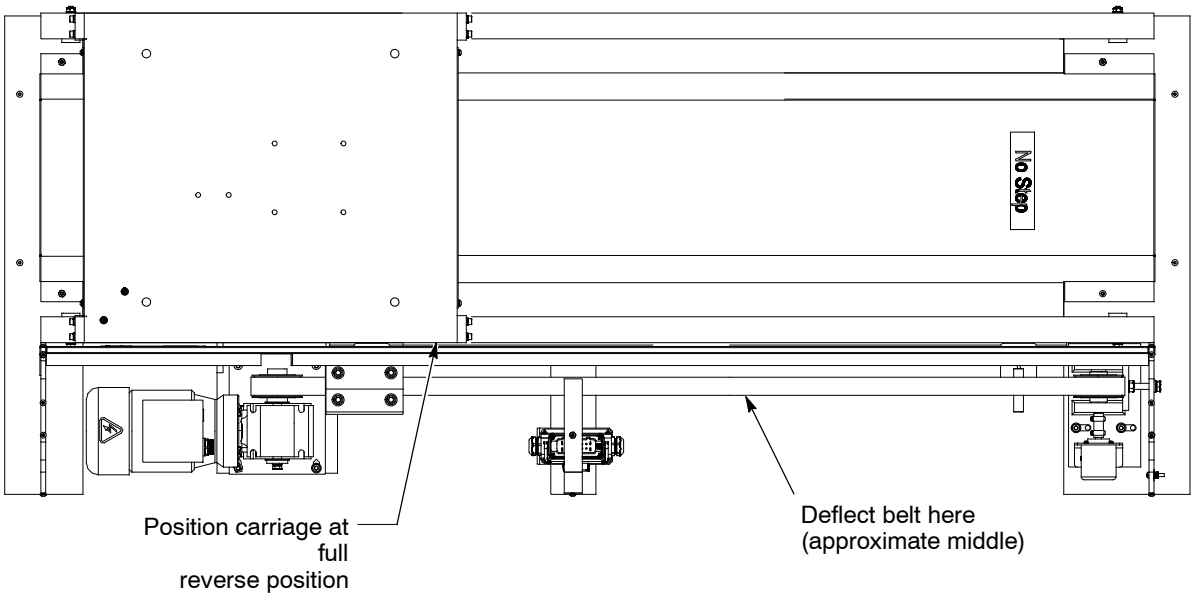


Figure 13 Belt Tensioning

Parts

To order parts, call the Nordson Finishing Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

Positioner Assemblies

Part	Description	Note
7750112	IN/OUT MOVER, 1 meter stroke, 230–400V, 50 Hz, packaged	
7750113	IN/OUT MOVER, 1.5 meter stroke, 230–400V, 50 Hz, packaged	
7750114	IN/OUT MOVER, 0.6 meter stroke, 230–400V, 50 Hz, packaged	
7750115	IN/OUT MOVER, 1 meter stroke, 90 Vdc, packaged	
7750116	IN/OUT MOVER, 1.5 meter stroke, 90 Vdc, packaged	
7750117	IN/OUT MOVER, 0.6 meter stroke, 90 Vdc, packaged	
7750118	IN/OUT MOVER, 1 meter stroke, 200V 50Hz, packaged	
7750119	IN/OUT MOVER, 1.5 meter stroke, 200V 50Hz, packaged	
7750120	IN/OUT MOVER, 0.6 meter stroke, 200V 50 Hz, packaged	
7750121	IN/OUT MOVER, 1 meter stroke, 200V 60Hz, packaged	
7750122	IN/OUT MOVER, 1.5 meter stroke, 200V 60Hz, packaged	
7750123	IN/OUT MOVER, 0.6 meter stroke, 200V 60Hz, packaged	

Drive Belts

See Figure 14, item 8.

Part	Description	Note
7750001	BELT, timing, in/out, 3 meter, 1 meter stroke	
7750054	BELT, timing, in/out, 4 meter, 1.5 meter stroke	
7750061	BELT, timing, in/out, 2.2 meter, 0.6 meter stroke	

Motors and Gear Reducers

See Figure 14, items 4 and 5.

Part	Description	Note
7750071	MOTOR, 90 Vdc, in/out	
7750072	REDUCER, gear, NEMA, in/out	A
7750033	MOTOR, 230–400 Vac 50 Hz, in/out	
7750103	MOTOR, 200 Vac 50 Hz, in/out	
7750110	MOTOR, 200 Vac 60 Hz, in/out	
7750028	REDUCER, gear, IEC, in/out	B

NOTE A: Used with 90 Vdc motor only, on 7750115, 7750116, 7750117 positioners.
B: Used with AC motors only.

Common Parts

These parts are common to all Positioner Assemblies, except as noted.

Item	Part	Description	Quantity	Note
1	1602244	ROLLER, assembly, in/out positioner	4	
2	7750020	PAD, anti-tilt, in/out	4	
3	7750091	STOP, assembly, in/out	4	
4	–	MOTOR	1	A
5	–	REDUCER, gear	1	A
6	7750035	PULLEY, in/out, 30 mm 8M belt RPP profile	2	
7	7750042	SENSOR, proximity, PNP, N.C., in/out	2	B
7	7750053	SENSOR, proximity, NPN, N.C., in/out	2	B
8	–	BELT, timing	1	C
9	7750029	ENCODER, solid, 635 PPR, 5M, in/out	1	
NS	7750130	FASTENER KIT, reciprocator/oscillator/fixed stand to in/out positioner mounting	1	D

NOTE A: Refer to Motors and Gear Reducers parts list.
B: NPN sensor used on units with 90 VDC motors. All other units use PNP sensors.
C: Refer to Drive Belt parts list.
D: Shipped loose with each positioner.

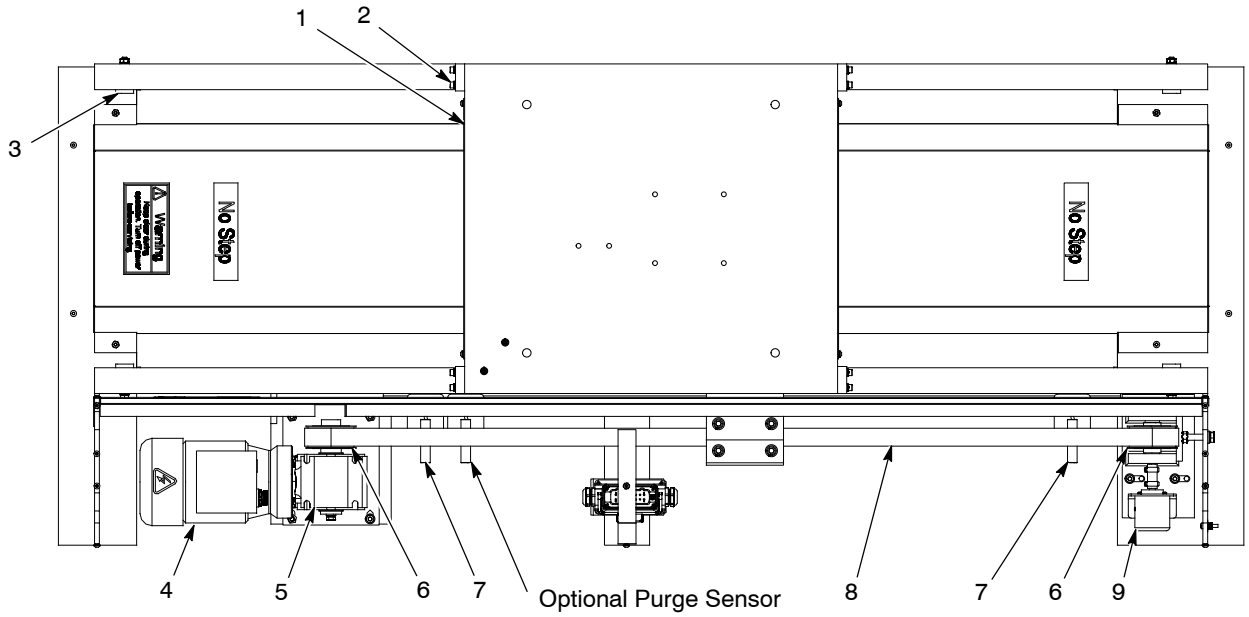


Figure 14 Positioner Maintenance

Cables

Refer to Figures 7–10 for cable usage. One motor cable and one sensor cable are required for each positioner installation.

Part	Description	Note
7750188	ASSEMBLY, CABLE, CA4, 4-core, 4 meter, CE	A, D
7750196	ASSEMBLY, CABLE, CA15, 4-core, 15 meter, CE	A, D
1107876	ASSEMBLY, CABLE, CA15, 4-core, 15 meter, single end, CE	A, D, E
7750197	ASSEMBLY, CABLE, CB4, 12-core, 4 meter, UL	B
1107875	ASSEMBLY, CABLE, CB4, 12-core, 4 meter, CE	B, D
7750202	ASSEMBLY, CABLE, CB15, 12-core, 15 meter, CE	B, D
1107873	ASSEMBLY, CABLE, CB15, 12-core, 15 meter, single end, CE	B, D, E
1097710	CORDSET, 3-pole, double ended, 12 ft.	C

NOTE A: Use on 3-phase motors.
B: Use for sensors and encoder.
C: Use for 90 Vdc motor.
D: Not for use in North America.
E: This cable has a “flying lead” connector for termination at a remote control box.

Optional Purge Proximity Sensor

Part	Description	Note
7750134	KIT, sensor mount bracket, in/out	A
1098898	SENSOR, proximity, purge, N.O.	A

NOTE A: For new sensor installation order both sensor and bracket kit.

Axle Upgrade Service Kit

Part	Description	Note
1602208	KIT, roller axle	

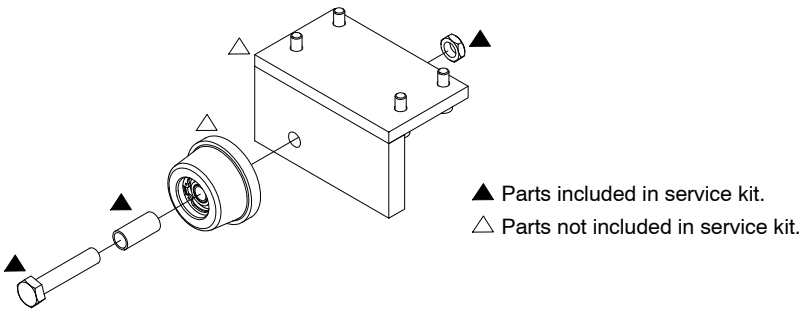


Figure 15 Axle Upgrade Service Kit

Industrial Coating Systems

Nordson Corporation
555 Jackson Street
Amherst, Ohio, 44001, USA

Declaration of Incorporation

Product : Powder Applicator Positioner

Models : In / Out Positioner

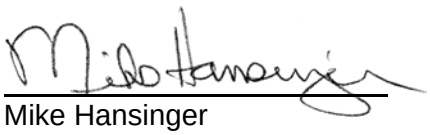
Description : The belt drive horizontal in / out positioner moves powder spray applicators horizontally in and out of the powder coating booth. A device has to be added to this positioner, typically a vertical oscillator, reciprocator or fixed applicator stand bolted to the positioner.

Issue Year : 2011

Applicable Directives :
2006/42/EC (Machinery Directive)
2006/95/EEC (Low Voltage Directive)

Standards Used for Compliance :
EN12100-1
EN60204

Quality System Certification
DNV ISO9001:2008 Cert (Houston, Texas, USA)



Date : 12 Jan 2011

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