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<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>03/13</td>
<td>New Release.</td>
</tr>
<tr>
<td>02</td>
<td>06/18</td>
<td>Updated wiring diagrams to include high and low voltage gear motor wiring. Added details to show 6 and 9 pole motor junction box configurations. Updated electrical connection instructions, and updated replacing the gear motor instructions.</td>
</tr>
<tr>
<td>03</td>
<td>2/20</td>
<td>Updated maintenance hours for gun carriage and V-rails, and added instruction to lubricate V-rails when installing carriage assembly.</td>
</tr>
</tbody>
</table>
NVO2 Oscillator

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 Safety Data Sheets (SDS) 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 SDS 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

See Figure 1. Vertical oscillators are designed to move spray guns up and down in a smooth, repetitious pattern for thorough coverage of parts being coated. The standard oscillator can support up to 40 kg (88 lb) or 8 automatic spray guns. The heavy duty oscillator can support up to 80 kg (176 lb) or 16 automatic spray guns. Oscillators are available with a Variable Frequency Drive (VFD) to control the stroke speed.

Oscillators are typically mounted to either the floor or a horizontal in/out positioner, which moves the oscillator on- and off-line. Refer to Table 1 for component descriptions.

Figure 1  Major Components
Table 1  Component Descriptions

<table>
<thead>
<tr>
<th>Item</th>
<th>Component</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VFD</td>
<td>Controls the stroke speed</td>
</tr>
<tr>
<td>2</td>
<td>Internal Air Regulator</td>
<td>Controls supply air to the accumulator and air cylinder</td>
</tr>
<tr>
<td>3</td>
<td>Gear Motor</td>
<td>Rotates the torque arm to move the gun carriage</td>
</tr>
<tr>
<td>4</td>
<td>Adjustable Torque Arm</td>
<td>Moves the gun carriage and is used to adjust the stroke length between 100–450 mm (4–18 in.)</td>
</tr>
<tr>
<td>5</td>
<td>Air Cylinder</td>
<td>Counter balances the gun carriage during oscillator operation</td>
</tr>
<tr>
<td>6</td>
<td>Accumulator</td>
<td>Stores air to operate the air cylinder</td>
</tr>
<tr>
<td>7</td>
<td>Connecting Rod</td>
<td>Connects the gun carriage to the torque arm</td>
</tr>
<tr>
<td>8</td>
<td>Gun Carriage</td>
<td>Mounting point for the gun mounts and guns</td>
</tr>
<tr>
<td>9</td>
<td>Eye Bolt</td>
<td>Lift point for moving the oscillator</td>
</tr>
<tr>
<td>10</td>
<td>Sensor and Motor Connectors</td>
<td>Connections for the sensor and motor cables from the system controller; Only on models without a VFD that use proximity sensor</td>
</tr>
<tr>
<td></td>
<td>Proximity Sensor</td>
<td>Installed on models that do not use a VFD; Sends signal to the controller to indicate that the gun carriage has reached the lower limit of travel</td>
</tr>
</tbody>
</table>
Installation

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

Read and understand the following procedures before installing the oscillator in a system. Contact a local Nordson representative regarding these procedures if necessary.

Installation consists of the following tasks:

- Remove the oscillator from the shipping container
- Mount the oscillator
- Install the gun mount and guns
- Electrical connections

**Remove the Oscillator from the Shipping Container**

**WARNING:** Only use approved and tested lifting equipment that can lift at least 270 Kg (600 lb) or more. Lifting straps, ropes, or chains used with the lifting equipment must also be capable of supporting at least 270 Kg (600 lb) or more. Failure to observe this warning could result in death, injury, or property damage.

1. Remove the top, cross supports, and all of the sides on the shipping container.
2. See Figure 2. Attach lifting equipment to the eye bolt (5). Carefully lift the oscillator upright and off of the shipping container.
3. Stand the oscillator upright onto the floor or onto the in/out positioner.
4. Remove the screws (1) securing the access panels (2, 3) and gear motor cover (4).
Figure 2  Removing the Covers

1. Screw
2. Upper access panel
3. Lower access panel
4. Gear motor cover
5. Eye bolt
Mount the Oscillator

CAUTION: The oscillator is designed for use with a Nordson in/out positioner. If using another type of in/out positioner, make sure that it can support at least 340 Kg (750 lb) or more.

The oscillator is typically installed onto manual or automatic in/out positioners, a fixed stand, or bolted to the floor. A Nordson in/out positioner ships with fasteners included in a hardware kit for oscillator installations. Other fasteners may be required if using another type of in/out positioner.

NOTE: Using an in/out positioner — The payload capacity with hoses, cables and mounting hardware is 40 kg (88 lb) or 8 automatic guns for the standard oscillator and 80 kg (176 lb) for the heavy duty oscillator. On the heavy duty oscillator, if the payload meets or exceeds 60 kg (132 lb), about 12 guns or more, it will be necessary to install the counterweight kit. This kit is used as a counter balance to prevent the rear wheels of the in/out positioner from unloading. Refer to the Kits section to order a counterweight kit.

1. IN/OUT POSITIONERS ONLY: Perform the following:
   a. Set the oscillator onto the in/out positioner and secure it to the in/out positioner carriage.
   b. See Figure 3. Install the counterweights (4) to the oscillator using the screw and (6) and lock washer (5). Tighten the screw securely.

2. If mounting the oscillator to the floor or a fixed stand, use the existing four mounting holes (8) in the oscillator base (9). If necessary, drill new holes into the base or floor. Use properly sized fasteners to secure the oscillator.

   CAUTION: The rubber plug on the gear box vent must be removed to allow proper venting during use.

3. Remove the rubber plug (1) from the pressure vent (2).

Electrical Connections

WARNING: Connect the oscillator power cable to a disconnect or other device that will allow power to be locked out for service. Failure to observe this warning may result in personal injury or death.

NOTE: Check the gear motor ID plate to ensure that the correct voltage is being supplied to the gear motor.

Grounding

See Figure 3. Ground the oscillator using the grounding post (12) to a true earth ground. Test the ground and make sure it meets local code requirements.
ATEX MOTOR ONLY: If the oscillator has an ATEX motor, make sure that the gear motor ground wire is attached to the ground post (7).

1. Oscillators with Dual Voltage motor:

NOTE: The oscillator motor terminal box is wired for high-voltage on dual voltage (230/460 or 230/380–415) models. If using a low-voltage power supply for the oscillator, re-wire the terminal box for low-voltage and the appropriate 9 or 6 terminal motor versions. This applies to a dual-voltage oscillator regardless if it is a version with or without a VFD.

   a. See Figure 3. Remove the screws (15) securing the junction box cover (14).

   b. See Figure 22 (with VFD) or 24 (without VFD), page 44 or 46 for low-voltage wiring diagram and motor terminals. Determine if the motor is a 6 or 9 terminal motor. Change the connection of the terminal jumpers included with the motor as shown for low voltage for the appropriate 6 or 9 terminal version.

   c. See Figure 3. Reinstall the junction box cover (14) using the removed screws (15).

2. Oscillators without VFD: Perform the following steps:

   a. See Figure 3. Connect the motor cable from the system controller to the connector (10).

   b. Connect the proximity sensor cable from the system controller to the connector (11). If necessary, see Figure 23 or 24, page 45 or 46 for the wiring diagram.

3. Oscillators with VFD: Perform the following steps:

   a. Connect a motor cable to the connector (13). See Figure 21 or 22, page 43 or 44 for wiring diagram.
Figure 3 Installation

1. Rubber plug
2. Gear box vent
3. Gear motor
4. Counterweights
5. Lock washer
6. Screw
7. Ground post
8. Mounting holes
9. Oscillator base
10. Connector (without VFD)
11. Connector (without VFD)
12. Grounding post
13. Connector (with VFD)
14. Junction box cover
15. Screws (4)
**Set the Parameters for VFD Configurations**

Table 2 lists the Nordson-specific parameter settings along with parameters that are specific to the supply voltage.

**NOTE:** Before putting the oscillator into service, verify that the voltage-specific parameters settings are correct.

Review the following before verifying the VFD parameters:

- The RUN and RF buttons on the VFD keypad are inactive.
- Power to the oscillator can be locked out by turning the VFD power switch to OFF.
- The oscillator can immediately start when power is applied to the VFD. Warn personnel in the area to stand away from the oscillator before turning the VFD power switch to ON.
- The oscillator can be stopped at any time using the STOP button.
- The oscillator cannot be restarted from the VFD keypad. Cycle power to the VFD to restart the oscillator.
- The VFD displays cycles/minute of the oscillator stroke. The speed range is 9.5–40 cpm. Use the up and down arrow buttons to change the speed.

See Figure 4 and refer to Table 2. Use the following procedure to set or change the VFD parameters.

1. Turn the VFD power switch (1) to ON. If the oscillator starts to operate, press **STOP** on the keypad (2).
2. Press **M** on the keypad (2) to access the parameters.
3. If **PASS** then **0000** appears on the display (3). Press the up or down arrow keys to enter password **225**. Press **M** to accept the password.  
   **OR**  
   If **Pnnn** appears, press the up or down arrow keys to select a parameter number.
4. To change a parameter setting:  
   a. Press **M**. The current parameter setting appears.
   b. Press either the up or down arrow buttons until the desired setting appears on the display.
   c. Touch **M** to save the parameter setting and exit.
Figure 4 Setting VFD Parameters
Table 2  Nordson-Specific and Voltage-Specific Parameter Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>P100: Start Control Source: Terminal Strip</td>
<td>1 1 1 1</td>
</tr>
<tr>
<td>P102: Minimum Frequency (B)</td>
<td>20 20 20 20</td>
</tr>
<tr>
<td>P103: Maximum Frequency (B)</td>
<td>90.0 90.0 90.0 90.0</td>
</tr>
<tr>
<td>P104: Acceleration Time</td>
<td>3.0 3.0 3.0 3.0</td>
</tr>
<tr>
<td>P105: Deceleration Time</td>
<td>3.0 3.0 3.0 3.0</td>
</tr>
<tr>
<td>P110: Start Method: Start on Power-Up</td>
<td>1 1 1 1</td>
</tr>
<tr>
<td>P177: Speed Units: RPM Display (C)</td>
<td>1 1 1 1</td>
</tr>
<tr>
<td>P178: Scale Factor for P177</td>
<td>0.44 0.44 0.44 0.44</td>
</tr>
</tbody>
</table>

Settings Specific to Supply Voltage

<table>
<thead>
<tr>
<th>Supply Voltage (Vac)</th>
<th>Oscillator Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>200–230 (D)</td>
<td>1601175</td>
</tr>
<tr>
<td></td>
<td>1602380</td>
</tr>
<tr>
<td>380–415</td>
<td>1601227</td>
</tr>
<tr>
<td></td>
<td>1601229</td>
</tr>
<tr>
<td></td>
<td>1602381</td>
</tr>
<tr>
<td></td>
<td>1602382</td>
</tr>
<tr>
<td>460</td>
<td>1601231</td>
</tr>
<tr>
<td></td>
<td>1602383</td>
</tr>
<tr>
<td>575/600</td>
<td>1601233</td>
</tr>
<tr>
<td></td>
<td>1602384</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>P107: Line Volts Select (E)</td>
<td>0 or 1 0 1 1</td>
</tr>
<tr>
<td>P302: Motor Voltage</td>
<td>208 400 460 575</td>
</tr>
<tr>
<td>P303: Motor Current</td>
<td>4.0 2.1 1.8 1.5</td>
</tr>
<tr>
<td>P304: Motor Frequency</td>
<td>60 50 60 60</td>
</tr>
<tr>
<td>P305: Motor Speed</td>
<td>1650 1650 1650 1650</td>
</tr>
</tbody>
</table>

(A) The Nordson settings must be re-entered if replacing a VFD that shipped with the oscillator.
(B) The minimum and maximum frequency settings limit the oscillator stroke between 10–40 cpm.
(C) This value Represents cpm.
(D) The gear motor junction box must be configured for low voltage.
(E) Voltage supplied to the VFD determines the setting:
0—if the input voltage is 200–208 or 380–415 Vac
1—if the input voltage is 230, 460, or 575 Vac

NOTE: If necessary to reset all parameters to the VFD factory default settings, go to Parameter 199:
- Enter “3” if the voltage supply is 60 Hz
- Enter “4” if the voltage supply is 50 Hz

All parameters listed in Table 2 must be re-entered after a factory default reset.
**Set the Parameters for a Remote VFD**

Make sure that the following parameters are set on the remote VFD before operating the oscillator:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor-Specific</td>
<td>Must match the data on the motor identification plate</td>
</tr>
<tr>
<td>Minimum Output Frequency (A)</td>
<td>20 Hz</td>
</tr>
<tr>
<td>Maximum Output Frequency (A)</td>
<td>90 Hz</td>
</tr>
</tbody>
</table>

(A) The minimum and maximum frequency settings limit the oscillator stroke between 9–41 cpm.

**Set the Cycle Rate**

See Figure 5. A cycle is one full up and down stroke. The cycle rate range is 9–41 cycles/min. and is adjusted by varying the VFD frequency output. Use the following equation to determine the desired frequency:

\[
\text{Rate (cycles/min.)} \times 2.2 = \text{Frequency (Hz)}
\]

For example, the frequency output for the desired rate of 20 cycles/min. is:

\[
20 \times 2.2 = 44 \text{ Hz}
\]

![Figure 5 Frequency-to-Cycle Rate](image-url)
**Maximum Carriage Speed**

See Figure 6. The maximum allowable carriage speed is 100 ft/min. The maximum speed occurs at the midpoint of an up or down stroke and is a function of stroke length and cycle rate. At stroke lengths greater than 9.5 in., the cycle rate is limited by the maximum carriage speed as shown.

Use the following equation to determine the maximum cycle rate:

\[
\frac{382}{\text{stroke}} = \text{Max. Rate (cycles/min.)}
\]

For example, given a known stroke of 12 in., the maximum cycle rate is:

\[
\frac{382}{12} = 31.8 \text{ cycles/min.}
\]

**NOTE:** Refer to the *Adjusting the Stroke* section to adjust the stroke.

![Figure 6 Maximum Carriage Speed](image_url)
Install the Gun Mount and Guns

See Figure 7. The maximum oscillator payload is 80Kg (176 lb) at a distance of 610 mm (24 in.) from the mounting flange.

1. Install the spray guns onto the desired gun mount.
2. Install the gun mount onto the gun carriage (2) using the appropriate hardware.
3. Make sure that the gun mount does not interfere with the operation of the oscillator (1).
Figure 7  Installing the Gun Mount and Guns

MAXIMUM PAYLOAD

610 mm (24 in.)

40 Kg (88 lb)
OR
80 Kg (176 lb)
**Connect Supply Air to the Air Connection Port**

1. See Figure 8. Connect an 8-mm supply air line (4) to the air fitting (3) on the oscillator (5).

2. Perform the **Adjust the Air Pressure** procedure to balance the load of the guns and the mounting hardware.

**Adjust the Air Pressure**

The air pressure must be adjusted to balance the guns and mounting hardware (load) that are mounted to the gun carriage. The air pressure operating requirements follows:

<table>
<thead>
<tr>
<th>Air Pressure Operating Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Oscillator</strong></td>
</tr>
<tr>
<td>1.4 bar (20 psi)^A to 3.4 bar (50 psi)^B</td>
</tr>
<tr>
<td><strong>A</strong>: Without guns or mounting hardware</td>
</tr>
<tr>
<td><strong>B</strong>: Maximum capacity of 40 Kg (88 lb)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pressure Operating Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Duty Oscillator</strong></td>
</tr>
<tr>
<td>1.4 bar (20 psi)^A to 5.8 bar (85 psi)^B</td>
</tr>
<tr>
<td><strong>A</strong>: Without guns or mounting hardware</td>
</tr>
<tr>
<td><strong>B</strong>: Maximum capacity of 80 Kg (176 lb)</td>
</tr>
</tbody>
</table>

Perform the following:

1. Disconnect and lock out power to the oscillator.

2. Make sure that the hoses and cables are connected to the guns.

3. Remove the screws securing the lower access panel to the oscillator as shown in Figure 2.

4. Using the air pressure regulator (1), start at 1.4 bar (20 psi) and slowly increase the air pressure until the connecting rod (2) can be manually pulled into the horizontal position and remain there.

5. Manually move the load slightly up, then down. If necessary, adjust the air pressure until the required force to move the load up and down is about the same in both directions.

6. Install the lower access panel using the screws as shown in Figure 2. Tighten the screws securely.

**Install Panels and Covers**

See Figure 2. Make sure that all covers and panels are installed and secured using the screws.
Figure 8  Supply Air Connection
1. Air pressure regulator  3. Air fitting  5. Oscillator
2. Connecting rod  4. 8-mm supply air line
Operation

Operation is dependent upon the application requirements. Refer to the System Documentation manual that shipped with the system for operating procedures.

**WARNING:** Failure to observe the following could result in property damage, injury, or death:

- Before starting the oscillator, make sure nothing interferes with the gun mount or spray guns.
- The oscillator could immediately start when power is applied to the VFD. Warn personnel in the area to stand away from the oscillator before turning the VFD power switch to ON.
- Never open the access panels while the oscillator is operating.

*Adjusting the Stroke*

See Figure 9. Perform the following to adjust the stroke:

1. Lock out power to the oscillator.
2. If the load has not been balanced, perform the *Adjust the Air Pressure* procedure.
3. Remove the screws securing the bottom access panel as shown in Figure 2.
4. Perform the following to adjust the stroke:
   a. Loosen the screw (2) at the bottom of the connecting rod (1).
   b. Turn the adjustment nut (4) clockwise to decrease or counterclockwise to increase the distance between the center lines in the middle of the motor shaft (3) and the center of the connecting rod screw (2). The stroke equals this distance multiplied by 2.
   c. Tighten the screw (2) at the bottom of the connecting rod (1) to 90–100 ft-lbs.
5. Install lower access panel using the lock washers and screws as shown in Figure 2. Tighten the screws securely.

**CAUTION:** After performing this procedure, the cycle rate may need to be adjusted to prevent the carriage from over-speeding. The maximum carriage speed is 100 fpm.

6. If necessary, adjust the cycle rate. Refer to the *Maximum Carriage Speed* section for the procedures.
Figure 9  Changing the Stroke

1. Connecting rod
2. Bottom connecting rod screw
3. Motor shaft
4. Adjustment nut

Stroke = Distance $\times$ 2
## Maintenance

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

**WARNING:** Disconnect equipment from the line voltage before servicing the equipment. Failure to observe this warning may result in a severe shock.

Refer to Table 3 and Figure 10.

<table>
<thead>
<tr>
<th>Description</th>
<th>Item</th>
<th>Frequency</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Cleaning</td>
<td>—</td>
<td>Monthly or 500 Hours</td>
<td>Clean the interior of the oscillator.</td>
</tr>
<tr>
<td>Gun Carriage and V-rails</td>
<td>1, 2</td>
<td>Monthly or 250 Hours</td>
<td>Wipe overspray off the V-rails and lubricate the V-rail running surface with a light coat of 3-IN-ONE® oil or ISO Grade 22–32 machine oil.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monthly or 250 Hours</td>
<td>Inspect the V-rail wear. Scoring indicates that the rails and carriages must be replaced.</td>
</tr>
<tr>
<td>Crank Arm Rod Ends</td>
<td>3, 4</td>
<td>Monthly or 500 Hours</td>
<td>Make sure that the screws are tight. Torque value: 120–135 N•m (90–100 ft-lb).</td>
</tr>
<tr>
<td>Motor</td>
<td>5</td>
<td>Monthly or 500 Hours</td>
<td>Clean the grille over the fan on the rear of the motor. Make sure that it is clear of any dirt buildup.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>First 500 hours/five weeks of operation</td>
<td>Check the motor current draw and compare the reading to the value on the motor identification plate. Actual draw should be 50–70% of the value shown on the identification plate.</td>
</tr>
<tr>
<td>Air Cylinder</td>
<td>6</td>
<td>Monthly or 500 Hours</td>
<td>Disconnect power. With the air on, listen for air leaks. Repair or replace leaking components.</td>
</tr>
<tr>
<td>Gearbox</td>
<td>7</td>
<td>10,000 hours or 2 years</td>
<td>Replace the gear oil.</td>
</tr>
</tbody>
</table>
Figure 10  Maintenance Points

1. Carriage
2. V-rail
3. Top connecting rod screw
4. Bottom connection rod screw
5. Motor
6. Air cylinder
7. Gearbox
# Troubleshooting

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

These troubleshooting procedures cover only the most common problems. If you cannot solve a problem with the information given here, contact your local Nordson representative for help.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Excessive vibration</strong></td>
<td>Worn gun carriage V-rail or bearings.</td>
<td>Check for excessive V-rail wear. Replace the V-rails and carriages if necessary.</td>
</tr>
<tr>
<td></td>
<td>Worn gearbox.</td>
<td>Check for excessive noise, heat, current draw. Replace gearbox if necessary.</td>
</tr>
<tr>
<td></td>
<td>Worn air cylinder.</td>
<td>Check for air leaks, looseness, and binding. Replace the air cylinder if necessary.</td>
</tr>
<tr>
<td>2. <strong>Oscillator will not start</strong></td>
<td>Motor does not start.</td>
<td>Check all electrical connections leading to the motor. Verify that the proper line voltage is supplied to the motor. Check all motor circuit breakers. Check motor rotation. The motor should be free from obstructions.</td>
</tr>
<tr>
<td></td>
<td>Excessive load.</td>
<td>Check the load. Reduce the load if it exceeds the oscillator limits.</td>
</tr>
<tr>
<td></td>
<td>Incorrect or no air pressure.</td>
<td>Adjust air pressure.</td>
</tr>
<tr>
<td></td>
<td>VFD parameters incorrectly set.</td>
<td>Refer to Table 2 on page 13. Set VFD parameters to factory defaults and re-enter Nordson parameters.</td>
</tr>
<tr>
<td></td>
<td>Jumper wire incorrectly installed or not installed at VFD terminals.</td>
<td>Refer to Figure 12, item 11 on page 26. Verify jumper installation, or install jumper as shown.</td>
</tr>
<tr>
<td>3. <strong>Cannot change speed with VFD keys</strong></td>
<td>VFD parameters incorrectly set.</td>
<td>Refer to Table 2 on page 13. Set VFD parameters to factory defaults and re-enter Nordson parameters.</td>
</tr>
<tr>
<td>4. <strong>VFD does not display Cycles Per Minute</strong></td>
<td>VFD parameters incorrectly set.</td>
<td>Refer to Table 2 on page 13. Set VFD parameters to factory defaults and re-enter Nordson parameters.</td>
</tr>
<tr>
<td>5. <strong>VFD indicates fault F_HF (high DC bus voltage</strong></td>
<td>Air pressure set incorrectly.</td>
<td>Adjust pressure as described on page 18.</td>
</tr>
</tbody>
</table>
| | VFD parameters incorrectly set. | Refer to Table 2 on page 13. Set VFD parameters to factory defaults and re-enter Nordson parameters.
Repair

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

Remove the Panels and Gear Motor Cover

1. See Figure 11. Remove the screws (1) from the applicable panel (2, 3) or gear motor cover (4) to gain access to an oscillator part.

2. When repairs are complete, install the applicable cover using the screws, and tighten securely.

Figure 11 Removing the Covers

1. Screw
2. Upper access panel
3. Lower access panel
4. Gear motor cover
Replace the VFD

**WARNING:** Disconnect and lock out power to the oscillator before performing repairs. Make sure that the VFD power switch is OFF.

1. Remove the screws (8) securing the cover (7) to the VFD (1).
2. Loosen the strain reliefs (10). Disconnect the gear motor cable wires (6) and the supply power cable wires (5) from the terminal board (9).
3. Remove the screws (4) and lock washers (3) securing the VFD (1) to the oscillator (2).
4. Install the new VFD (1) to the oscillator (2) using the lock washers (3) and screws (4). Tighten the screws securely.
5. Insert the motor cable and power supply cable through the strain reliefs (10). Connect the gear motor cable wires (6) and power supply cable wires (5) to the terminal board (9) as shown.
6. Obtain a 50-mm (2-in.) length of 18 AWG wire. Strip 6 mm (0.25 in.) of insulation from each end of the wire to create a jumper wire.
7. Connect the jumper wire (11) between terminals 1 and 4 as shown.
8. Install the cover (7) using the screws (8). Tighten the screws securely.
9. Refer to the *Set the Parameters for VFD Configurations* in the *Installation* section to reset the parameters.

---

**Figure 12** Replacing the VFD

1. VFD
2. Oscillator
3. Lockwasher
4. Screw
5. Power supply cable wires
6. Gear motor cable wires
7. Cover
8. Cover screw
9. Terminal board
10. Strain reliefs
11. Jumper wire
Replace the Gear Motor

**CAUTION:** The gear motor is heavy. An assistant is required to safely remove the gear motor from the oscillator.

**Remove the Old Gear Motor**

1. See Figure 13. Move the gun carriage (1) to the top stroke position. Use a block (2) as shown to support the gun carriage (1).
2. Disconnect power and relieve the air pressure.

**NOTE:** Check the gear motor ID plate on the new motor being installed to ensure that the motor voltage matches voltage of power being supplied to the gear motor.

3. On the old oscillator gear motor being replaced, remove the screws (12) and lock washers (13) securing the cover to the junction box (11).
4. Remove the cable strain relief (10) and set aside to use with the new gear motor.
5. Disconnect the cable wires inside the junction box (11). Carefully pull the cable (9) out of the junction box.
6. Remove the lower access panel as shown in Figure 11.
7. Remove the bottom connecting rod screw (22), washer (21), and the spacer (19). Then remove the four torque arm screws (23) and the washers (24) from the clamp hub (16) to remove the torque arm (18).
8. Loosen the M8 screw (15) to remove the clamp hub (16) from the gear motor shaft (7).
9. Remove the nuts (3), lock washers (4), and flat washers (5) securing the gear motor (6), and remove gear motor from the oscillator. Do not remove the screws (17).

**Install the New Gear Motor**

1. Install the new gear motor using the nuts (3), lock washers (4), and the flat washers (5). Tighten the nuts to 50 N•m (37 ft-lb).
2. Install the shaft key (8) onto the new gear motor (6).
3. Guide the clamp hub (16) onto the gear motor shaft until it bottoms out and tighten the M8 screw (15).
4. Connect the torque arm (18) to the clamp hub (16) using the screws (23) and washers (24). Tighten the screws to 26 N•m (19 ft-lb).
5. Connect the connecting rod (20) back to the torque arm (18) by screwing the bottom connecting rod screw (22) with washer (21) and spacer (19) through the torque arm (18) and into the stroke adjustment block (14). Torque to 120-135 N•m (90-100 ft-lb).
NOTE: The oscillator gear motor can be supplied with either a 6 or 9 terminal motor. The version installed on a unit is determined by the number of terminals inside the oscillator gear motor junction box. The 6 and 9 terminal motors are interchangeable as long as the motor junction box is correctly wired and terminal jumpers are installed for the proper power supply voltage where the oscillator is installed.

6. Remove the screws (12) and washers (13) securing the cover to the junction box (11) on the new gear motor. Install the strain relief (10) from the old gear motor.

7. Insert the cable (9) into the strain relief (10).

Wiring diagram schematic by Oscillator configuration

<table>
<thead>
<tr>
<th>Oscillator configuration</th>
<th>Figure used in Wiring Diagram section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillator with VFD, high-voltage gear motor, motor junction box with 6 or 9 terminals.</td>
<td>Figure 21, page 43</td>
</tr>
<tr>
<td>Oscillator with VFD, Low-Voltage Gear Motor, motor junction box with 6 or 9 terminals.</td>
<td>Figure 22, page 44</td>
</tr>
<tr>
<td>Oscillator without VFD, high-voltage gear motor, motor junction box with 6 or 9 terminals.</td>
<td>Figure 23, page 45</td>
</tr>
<tr>
<td>Oscillator without VFD, low-voltage gear motor, motor junction box with 6 or 9 terminals.</td>
<td>Figure 24, page 46</td>
</tr>
</tbody>
</table>

8. Refer to above table. Based on local power voltage being supplied to the oscillator motor and oscillator configuration, refer to appropriate electrical schematic figure used in Wiring Diagram section. Determine if the new gear motor is a 6 or 9 terminal motor. Configure the connection of the terminal jumpers and connect the cable wires to junction box (11). Connect the cable wires to the junction box (11). Refer to the Wiring Diagram section if necessary.

9. See Figure 13. Tighten the cable strain relief (10).

10. Install the cover to the junction box (11) using the screws (12) and the lock washers (13). Tighten the screws securely.

11. If the oscillator had an ATEX motor with a separate wire attached to the ground, make sure the new gear motor ground wire is attached to the ground post.
Figure 13  Replacing the Gear Motor

1. Gun carriage
2. Block
3. Nuts
4. Lock washers
5. Flat washers
6. Gear motor
7. Motor shaft
8. Shaft key
9. Cable
10. Cable strain relief
11. Junction box
12. Screws
13. Lock washers
14. Adjustment block
15. M8 screw
16. Clamp hub
17. Screws
18. Torque arm
19. Spacer
20. Connecting rod
21. Washer
22. Bottom connecting rod screw
23. Screws
24. Washers
Replace the Carriage

**NOTE:** The V-rail will also get replaced with the carriage.

Use the following procedure to replace the bearings. Read the following before performing these procedures:

- Remove the payload from the gun mounting plate assembly.
- Have the Carriage Kit on hand. Refer to the *Parts* section for ordering information.
- A block is required to secure the gun mounting plate assembly in the top stroke position. Make sure that the block can support the weight of the gun mounting plate assembly.

Remove the Air Cylinder
1. See Figure 14. Remove the guns and mounting hardware from the mounting plate bracket (1).
2. Move the gun mounting plate assembly (1) to the top stroke position. Use a block (2) as shown to secure the assembly (1).
3. Relieve the air pressure to the oscillator.
4. Disconnect the air line (3) from the air cylinder fitting (4).
5. Remove the clips (6) and pin (7) securing the air cylinder (5) to the bracket (8).
6. Remove the two screws securing the rod end mount (10) to the gun mount plate (11), and collapse the air cylinder rod into the housing. Remove the air cylinder from the oscillator.

**NOTE:** The gun mounting plate assembly needs to be guided down because it will drop down under its own weight.

7. Move the gun mounting plate assembly (1) to the bottom stroke position by carefully removing the block (2).
8. Remove the carriage assembly from the oscillator. Refer to the *Remove the Carriage Assembly* section.
Figure 14 Removing the Air Cylinder

1. Gun mounting plate assembly
2. Block
3. Air line
4. Air cylinder fitting
5. Air cylinder
6. Clips
7. Pin
8. Bracket
9. Rod end mount screws
10. Rod end mount
11. Gun mount plate

SHOWN IN TOP STROKE POSITION
Remove the Carriage Assembly

See Figure 15.

CAUTION: Be careful when removing the screw (7) in the next step. The gun carriages (1) will slide down until the gun plate assembly (4) contacts the bottom of the gun plate assembly opening.

1. Remove the screw (7) and washer (6) securing the connecting rod (2) to the gun plate (4). Swing the connecting rod to the left and away from the gun plate assembly.

CAUTION: Be careful when removing the screws (5) in the next step. The gun carriages (1) will slide off the V-rails (3) if no precaution is taken. Before removing the screws in the next step, secure cable ties around the V-rails and through the holes in the V-rail to keep the gun carriages (1) from falling.

2. Remove the eight screws (5) securing the gun plate assembly (4) to the gun carriage (1). Remove the gun plate assembly (4).

3. Carefully, cut the cable ties from the V-rails (3) while guiding the gun carriages (1) down and off the V-rails.

4. Remove the screws (8) supporting the V-rail, and remove the V-rail from the oscillator.

5. Replace the Gun Carriage Assembly. Refer to the Install the Carriage Assembly section on page 34.
Figure 15  Removing the Carriage Assembly

1. Carriage
2. Connecting rod
3. V-rail
4. Gun mounting plate assembly
5. Gun plate screws
6. Connecting rod washer
7. Connecting rod screw
8. V-rail screws
Install the Carriage Assembly

The carriage assembly kit includes the carriages secured to the V-rail with carriage cable ties and V-rail cable ties. Do not remove either kind of cable tie until instructed to do so in the procedure below.

1. See Figure 16 and 17. Secure the V-rail to the oscillator using the V-rail screws (8).
2. Lubricate the V-rail running surface with a light coat of 3-IN-ONE oil or ISO Grade 22–32 machine oil.
3. Cut and remove the carriage cable ties and install the gun mounting plate assembly (4) onto the upper and lower carriages (1) using the gun plate screws (5).
4. Once the gun plate assembly is secure, cut and remove the V-rail cable ties.
5. Apply grease to the threads of the connecting rod screw (7). Install the connecting rod (2) using the connection rod washer (6) and screw (7). Torque to 90–100 ft lbs.
6. Install the air cylinder. Refer to the Install the Air Cylinder section.

![Figure 16 Removing Cable Ties from Carriage Assembly](image-url)
Figure 17   Installing the Carriage and Gun Mounting Plate Assemblies

1. Carriage
2. Connecting rod
3. V-rail
4. Gun mounting plate assembly
5. Gun plate screws
6. Connecting rod washer
7. Connecting rod screw
8. V-rail screws
Install the Air Cylinder

1. See Figure 18. Move the gun mounting plate assembly (1) to the top stroke position. Use a block (2) as shown to secure the gun mounting plate assembly (1).

2. Install the upper part of the air cylinder (5) securing the rod end mount (10) to the gun mount plate (11) using the two rod end mount screws (9).

3. Secure the lower part of the air cylinder by using the pin (7) and clips (6).

4. Connect the airline (3) to the air cylinder fitting (4).

NOTE: The gun mounting plate assembly needs to be guided down because it will drop down under its own weight.

5. Move the gun mounting plate assembly (1) to the bottom stroke position by carefully removing the block (2). The gun mounting plate assembly should drift downward.
Figure 18  Installing the Air Cylinder

1. Gun mounting plate assembly
2. Block
3. Air line
4. Air cylinder fitting
5. Air cylinder
6. Clips
7. Pin
8. Bracket
9. Rod end mount screws
10. Rod end mount
11. Gun mount plate

SHOWN IN TOP STROKE POSITION
**Replace the Air Cylinder**

1. Refer to the *Remove the Air Cylinder* section of page 30 to remove the air cylinder from the oscillator.

2. Perform the following:
   a. Remove the air cylinder fitting (see Figure 18), breather vent (15), washer (14), Rod end mount (13), and lock nut (12) from the old air cylinder.
   b. Install these parts onto the new air cylinder. Tighten the lock nut until it contacts the plate, then back it off ½ turn.

3. Install the new air cylinder (5) according to the *Install the Air Cylinder* section on page 36.
Figure 19  Installing the Air Cylinder

5. Air cylinder  13. Rod end mount  15. Breather vent
12. Lock nut  14. Flat washer
Parts

To order parts, call the Nordson Industrial Coating Customer Service Center at (800) 433–9319 or contact your local Nordson representative.

Parts listed in this manual are used on all oscillator models. For parts not listed in this manual, contact your Nordson representative or the Nordson Industrial Coating Customer Service Center.

If using a manual In/Out mover, order the Handle Kit for moving the oscillator.

Figure 20  Parts
Oscillator Assemblies

The following Oscillators are available.

### Standard Capacity – 40 Kg

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillators Configured With VFD</td>
<td></td>
</tr>
<tr>
<td>1601227</td>
<td>OSCILLATOR, NVO2, 380–415 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>1601229</td>
<td>OSCILLATOR, NVO2, 380–415 V, 50/60 Hz, VFD, ATEX</td>
</tr>
<tr>
<td>1601231</td>
<td>OSCILLATOR, NVO2, 460 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>1601175</td>
<td>OSCILLATOR, NVO2, 200–230 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>1601233</td>
<td>OSCILLATOR, NVO2, 575/600 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>Oscillators Configured Without VFD</td>
<td></td>
</tr>
<tr>
<td>1601235</td>
<td>OSCILLATOR, NVO2, 230/380–415 V, 50 Hz</td>
</tr>
<tr>
<td>1601246</td>
<td>OSCILLATOR, NVO2, 230/460 V, 60 Hz</td>
</tr>
<tr>
<td>1601247</td>
<td>OSCILLATOR, NVO2, 575/600 V, 60 Hz</td>
</tr>
<tr>
<td>1601245</td>
<td>OSCILLATOR, NVO2, 200 V, 50 Hz</td>
</tr>
</tbody>
</table>

### High Capacity – 80 Kg

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillators Configured With VFD</td>
<td></td>
</tr>
<tr>
<td>1602381</td>
<td>OSCILLATOR, NVO2HD, 380–415 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>1602382</td>
<td>OSCILLATOR, NVO2HD, 380–415 V, 50/60 Hz, VFD, ATEX</td>
</tr>
<tr>
<td>1602383</td>
<td>OSCILLATOR, NVO2HD, 460 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>1602380</td>
<td>OSCILLATOR, NVO2HD, 200–230 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>1602384</td>
<td>OSCILLATOR, NVO2HD, 575/600 V, 50/60 Hz, VFD</td>
</tr>
<tr>
<td>Oscillators Configured Without VFD</td>
<td></td>
</tr>
<tr>
<td>1602385</td>
<td>OSCILLATOR, NVO2HD, 230/380–415 V, 50 Hz</td>
</tr>
<tr>
<td>1602386</td>
<td>OSCILLATOR, NVO2HD, 230/380–415 V, 50 Hz, ATEX</td>
</tr>
<tr>
<td>1602387</td>
<td>OSCILLATOR, NVO2HD, 230/460 V, 60 Hz</td>
</tr>
<tr>
<td>1602389</td>
<td>OSCILLATOR, NVO2HD, 575/600 V, 60 Hz</td>
</tr>
<tr>
<td>1602390</td>
<td>OSCILLATOR, NVO2HD, 200 V, 50 Hz</td>
</tr>
</tbody>
</table>

### Gear Motors

See Figure 20 and the following parts list

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1601248</td>
<td>GEAR MOTOR, 400 V–50 Hz</td>
</tr>
<tr>
<td></td>
<td>1601254</td>
<td>GEAR MOTOR, 400 V–50 Hz, ATEX</td>
</tr>
<tr>
<td></td>
<td>1601247</td>
<td>GEAR MOTOR, 230/460 V, 60 Hz</td>
</tr>
<tr>
<td></td>
<td>1601177</td>
<td>GEAR MOTOR, 200 V, 50 Hz</td>
</tr>
<tr>
<td></td>
<td>1601249</td>
<td>GEAR MOTOR, 575 V, 60 Hz</td>
</tr>
</tbody>
</table>
### Inverters

See Figure 20 and the following parts list

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1106722</td>
<td>INVERTER DRIVE, 1 hp, disconnect, 200/240 V</td>
</tr>
<tr>
<td></td>
<td>1106723</td>
<td>INVERTER DRIVE, 1 hp, disconnect, 400/480 V</td>
</tr>
<tr>
<td></td>
<td>1106724</td>
<td>INVERTER DRIVE, 1 hp, disconnect, 480/600 V</td>
</tr>
</tbody>
</table>

### Sensors

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Shown</td>
<td>SENSOR, inductive, proximity, 3-wire, NO, PNP, 18-mm</td>
</tr>
</tbody>
</table>

### Kits

See Figure 20 and the following parts list

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1603137</td>
<td>KIT, RAIL, with dual carriage, NVO2, 80 kg</td>
</tr>
<tr>
<td>1</td>
<td>1603141</td>
<td>KIT, RAIL, with dual carriage, NVO2, 40 kg</td>
</tr>
<tr>
<td>2</td>
<td>1603138</td>
<td>KIT, FLAP SEAL, NVO2</td>
</tr>
<tr>
<td>3</td>
<td>1107802</td>
<td>KIT, AIR CYLINDER, 500-mm stroke, 50 mm diameter</td>
</tr>
<tr>
<td>4</td>
<td>1603139</td>
<td>KIT, DRIVE ROD AND ROD END SET, NVO2</td>
</tr>
<tr>
<td>5</td>
<td>1600187</td>
<td>KIT, COUNTERWEIGHT, 33.9 Kg, GBL oscillator</td>
</tr>
<tr>
<td>6</td>
<td>1104658</td>
<td>KIT, HANDLE, In/Out mover</td>
</tr>
<tr>
<td>7</td>
<td>1107803</td>
<td>KIT, REGULATOR, with gage, 0–100 psi, 1/8 NPT</td>
</tr>
</tbody>
</table>
## Specifications

Refer to Table 4.

<table>
<thead>
<tr>
<th>Hardware Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
</tr>
<tr>
<td>Refer to the part number descriptions in the Oscillator Assemblies section.</td>
</tr>
<tr>
<td>Motor</td>
</tr>
<tr>
<td>See motor identification plate</td>
</tr>
<tr>
<td>Enclosure</td>
</tr>
<tr>
<td>TEFC, IP55</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>210 kg (463 lb) without guns or mounting hardware</td>
</tr>
</tbody>
</table>

### Operating Specifications

<table>
<thead>
<tr>
<th>Gun Speed Velocity Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum: 9 cycles per minute (up and down) @ 20 Hz</td>
</tr>
<tr>
<td>Maximum: 40 cycles per minute (up and down) @ 88 Hz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stroke Center Line from Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920 mm (75.6 in.) (Without in/out positioner)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stroke Length Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>100–450 mm (4–18 in.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 kg (176 lb) @ 610 mm (24 in.) from gun mounting flange</td>
</tr>
<tr>
<td>40 Kg (88 lb) maximum for 40 Kg units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient Operating Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>5–50 °C (41–122 °F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>With VFD:</td>
</tr>
<tr>
<td>2427 mm H x 841 mm W x 676 mm D</td>
</tr>
<tr>
<td>(95.6 in. H x 33 in. W x 26.6 in. D)</td>
</tr>
<tr>
<td>Without VFD:</td>
</tr>
<tr>
<td>2427 mm H x 701 mm W x 676 mm D</td>
</tr>
<tr>
<td>(95.6 in. H x 27.6 in. W x 26.6 in. D)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommended Gear Reducer Oil</th>
</tr>
</thead>
</table>

### Compressed Air Requirements

<table>
<thead>
<tr>
<th>Supply Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum: 5.8 bar (85 psi)</td>
</tr>
<tr>
<td>Maximum: 6.5 bar (94 psi)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
</tr>
</tbody>
</table>
Wiring Diagrams

See Figures 21, 22, 23, and 24

NOTE: The 6 and 9 terminal motors are interchangeable as long as the motor junction box is correctly wired and terminal jumpers are installed for the proper power supply voltage where the oscillator is installed.

Figure 21  High Voltage Gear Motor with VFD
NOTE: The 6 and 9 terminal motors are interchangeable as long as the motor junction box is correctly wired and terminal jumpers are installed for the proper power supply voltage where the oscillator is installed.

Figure 22  Low Voltage Gear Motor with VFD
NOTE: The 6 and 9 terminal motors are interchangeable as long as the motor junction box is correctly wired and terminal jumpers are installed for the proper power supply voltage where the oscillator is installed.

Figure 23  Wiring Diagram for Oscillators without VFD (High Voltage)
NOTE: The 6 and 9 terminal motors are interchangeable as long as the motor junction box is correctly wired and terminal jumpers are installed for the proper power supply voltage where the oscillator is installed.

Figure 24  Wiring Diagram for Oscillators without VFD (Low Voltage)
EU DECLARATION of CONFORMITY

Product: Oscillator

Models: Oscillator ATEX standard version & ATEX VFD version (variable frequency drive)

Description: This is a machine for the movement of automatic spray guns while spraying.

Applicable Directives:
2006/42/EC - Machinery Directive
2014/34/EU - ATEX Directive

Standards Used for Compliance:
EN/ISO12100 (2010)
EN60204-1 (2018)

Type of Protection:
- Ambient Temperature: +5°C to +50°C
- Ex II 3D c 125°C

Date: 31Jan2020

Jeremy Krone
Supervisor Product Development Engineering
Industrial Coating Systems
100 Nordson Drive
Amherst, Ohio, USA

Nordson Authorized Representative in the EU
Person authorized to compile the relevant technical documentation.

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