Section 12

Shear Strap Drive Shaft Coupling
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Carefully review and follow the instructions in the Safety section. Also, read and follow the specific safety instructions in the text.

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. Description

Your Nordson 800M applicator is equipped with a shear strap type drive coupling. This device physically connects the gear pump shaft to the drive assembly.

Fig. 12-1 Coupling Location (Typical)

1. Gear pump
2. Shear strap coupling
3. Speed reducer
1. Description (contd.)

In case of excessive drive torque (from an overpressure condition or blockage in the hydraulic system), the replaceable shear strap breaks, thereby separating the gear pump shaft from the drive assembly and preventing damage to the gear pump.

The coupling disassembles easily into two halves for easy separation of the pump shaft from the reducer shaft. This is required when servicing the pump or drive assembly.
## 2. Troubleshooting the Drive Coupling

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broken drive coupling shear strap due to excessive torque in drive system</td>
<td>Plugged dispensing nozzle(s)</td>
<td>Clean or replace nozzle(s)</td>
<td>Section 5, subsection Nozzle Cleaning</td>
</tr>
<tr>
<td></td>
<td>Adhesive not sufficiently melted when the pump is started</td>
<td>Increase temperature setpoints to normal settings. Avoid starting pump with below-normal temperature settings</td>
<td>Melter unit manual; also Section 5 of this manual, subsections Filter Flushing and Filter Cleaning</td>
</tr>
<tr>
<td></td>
<td>Adhesive with too high a viscosity rating is being used</td>
<td>Flush system and use lower viscosity adhesive</td>
<td></td>
</tr>
<tr>
<td>Faulty dispensing device solenoid. Module remains closed while pump is on</td>
<td></td>
<td>1. Check air supply to solenoid; adjust if necessary 2. Replace faulty solenoid</td>
<td>Section 3, subsection Dispensing Device and Recirculation Valve Solenoid Installation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty dispensing module</td>
<td></td>
<td>Repair or replace faulty module</td>
<td>Section 9</td>
</tr>
<tr>
<td>Recirculation valve closed while the dispensing module is also closed</td>
<td></td>
<td>1. Check air supply to solenoid; adjust if necessary 2. Replace faulty solenoid 3. Repair or replace faulty module</td>
<td>Section 3, subsection Dispensing Device and Recirculation Valve Solenoid Installation</td>
</tr>
<tr>
<td>Solenoid wiring logic is incorrect</td>
<td></td>
<td>Check wiring to ensure that solenoids receive the signal to trigger the modules when pump is operating</td>
<td>Section 3, subsection Dispensing Device and Recirculation Valve Solenoid Installation</td>
</tr>
</tbody>
</table>

Continued on next page
### Problem | Possible Cause | Corrective Action | Refer to
--- | --- | --- | ---
Broken drive coupling shear strap due to excessive torque in drive system | Pump binds or locks up | Replace the pump | Section 7, subsection Replacing the Gear Pump
Shear strap is misaligned | Align the shear strap as described later in this section | Replacing the Shear Strap procedure in this section

### 3. Servicing the Drive Coupling

**Removal**

1. Shut down the applicator motor.
2. Lock out and disconnect input power from the applicator.
3. Loosen but do not remove the two set screws on the larger half of the coupling. These screws secure the coupling to the speed reducer shaft.
4. While holding the smaller half of the coupling in place, remove the two socket head set screws that secure the two halves of the coupling together. Then remove the lower coupling half.
5. Slide the upper coupling half towards the reducer to clear the shear strap from the gear pump shaft, then remove the upper coupling half.

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**Fig. 12-2  Coupling removal details**

1. Larger coupling half  
2. Set screws  
3. Socket head screws  
4. Smaller coupling half  
5. Shear strap
Checking and Aligning the Pump Shaft and Speed Reducer Shaft

Vertical Shaft Alignment

1. If the coupling is installed, remove it.

2. Measure the distance from the bottom surface of the applicator mounting plate to the center line of the reducer shaft. This is dimension Y.

3. Measure the distance from the bottom surface of the applicator mounting plate to the center line of the pump shaft. This is dimension X.

4. Subtract dimension X from dimension Y. If the difference (dimension Z) is greater than 0.015 in. (0.38 mm), complete steps 5 – 10. Otherwise reinstall the coupling.

5. Select the correct shim(s) from the Speed Reducer Shim Kit so that dimension Z is equal to or less than 0.015 in. (0.38 mm).

WARNING: Risk of personal injury and/or equipment damage. The motor/reducer assembly is heavy and can cause personal injury or equipment damage if it drops. Use a mechanical lifting device to support the motor/reducer assembly when performing the next step.
Vertical Shaft Alignment (contd.)

6. With a mechanical lifting device in place to support the motor/reducer assembly, remove the bolts that secure the reducer to the mounting plate.

7. Lower the motor/reducer assembly and insert the shim(s).

8. Raise the motor/reducer assembly into place, then reinstall and hand-tighten the mounting bolts.

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Fig. 12-4 Reducer Shim Details (Side View)

1. Shim(s) 3. Mounting bolts
2. Applicator mounting plate 4. Reducer
Angular Shaft Alignment

9. Check for proper axial alignment of the pump shaft and reducer shaft. If dimension A is greater than 0.5 degree, loosen the reducer mounting bolts, reposition the assembly, and retighten the bolts.

10. When the vertical and axial alignments are correct, torque the reducer mounting bolts to the value specified in Section 7 of this manual. See Figure 12-4.

Resume normal operation as directed in Section 4.
Installation

1. Place the larger coupling half on the reducer shaft so the coupling keyway aligns with the reducer shaft key.

2. Adjust the coupling half so that the shear strap engages with the pump shaft tang.

   **NOTE:** If it is necessary to align the shear strap slot with the pump shaft tang:

   - On DC drives, remove the fan cover from the end of the motor, hand-turn the fan blades until the shear strap slot aligns with the pump shaft tang, then reinstall the motor fan cover.

   - On AC drives, electrically jog the motor until the shear strap slot aligns with the pump shaft tang.

3. Install the smaller coupling half and two socket head screws. Do not tighten the screws yet. See Figure 12-2.
Installation (contd.)

4. Position the coupling so dimension \( A \) (the distance from the bottom of the shear strap to the end of the pump shaft) is no more than 0.060 in. (1.5 mm).

5. Torque the socket head screws to 12 ft-lb (16.3 N\(\cdot\)m).

6. Install and torque the two coupling set screws to 7 ft-lb (9.5 N\(\cdot\)m).

This completes the coupling replacement procedure. Resume normal operation as directed in Section 4.
Replacing the Shear Strap

The drive coupling shear strap is designed to break if the torque rating of the strap is exceeded.

Do not replace the shear strap until the cause of the excessive torque is found and corrected.

1. Remove the coupling as described earlier in this section.

2. Remove the two socket shoulder head screws, shear strap pieces, and springs. Discard the old shear strap pieces.

3. Obtain a new shear strap with the same breaking torque as the old one (150, 300, 450, or 600 in.-lb). See table of replacement shear strap part numbers at end of this section.

4. Insert the two socket head shoulder screws through the new shear strap mounting holes.
Replacing the Shear Strap
(contd.)

5. Install a spring onto each screw, then start threading the two screws into the coupling. Alternately tighten one screw and then the other until the screw shoulders touch the coupling.

6. Tighten the shoulder screws.

7. Reinstall the coupling assembly.

This completes the procedure for replacing the coupling shear strap. Resume normal operation as directed in Section 4.
### Parts List with Illustration

#### Shear Strap Drive Coupling (Typical)

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
<th>Description</th>
<th>Quantity</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>164 219</td>
<td>Coupling, Shear Strap, 0.875 in. (22.2 mm) bore</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>981 233</td>
<td>Screw, Socket Head</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>981 576</td>
<td>Screw, Socket Set, 10-24 x 0.25 in.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>Spring, Compression</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>Strap, Shear</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>Screw, Shoulder, Socket Head</td>
<td>2</td>
<td>A</td>
</tr>
</tbody>
</table>

**Note A:** These items differ, depending on which drive coupling assembly is used.

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*Fig. 12-10 Drive Coupling Assembly*
Replacement Shear Straps

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>148 300</td>
<td>Strap, Shear, 150 in.-lb</td>
<td></td>
</tr>
<tr>
<td>164 286</td>
<td>Strap, Shear, 300 in.-lb</td>
<td></td>
</tr>
<tr>
<td>164 287</td>
<td>Strap, Shear, 450 in.-lb</td>
<td></td>
</tr>
<tr>
<td>164 288</td>
<td>Strap, Shear, 600 in.-lb</td>
<td></td>
</tr>
</tbody>
</table>