Nordson Corporation

OPERATOR'S CARD

P/N 229 757A

Tribomatic® Powder Disc

Introduction

This card contains only the information necessary for operation, maintenance, and troubleshooting.

For repair and parts information, refer to the product manual.

Safety

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

Follow the safety procedures required by your company and government or other regulatory agencies. Obtain Material Safety Data Sheets (MSDS) for all materials used with this equipment, and follow the recommendations for safe handling and use.

This equipment must be used solely for the purpose it was designed. The following can be considered unintended uses that can result in personal injury, death, or property damage.

- Using incompatible materials
- Making unauthorized modifications
- Installing unauthorized or damaged parts
- Using unapproved auxiliary equipment
- Exceeding the equipment ratings
- Failing to follow government or agency rules and regulations

Wear an approved dust mask or respirator and safety glasses or goggles whenever handling powder coatings.

Wash skin frequently with soap and water, especially before eating or drinking. Do not use solvents to remove powder coatings from skin. Do not use compressed air to blow powder off skin or clothes.

Keep clear of moving equipment. Shut off moving equipment, wait until it comes to a complete stop, and lock out power before making adjustments or repairs. Secure equipment to prevent uncontrolled movement.

Do not operate equipment with safety guards, door, or covers removed.

Before adjusting or cleaning pneumatically or electrically operated equipment, shut off air or power. Relieve air pressure and lock out and tag valves and switches.

Do not smoke, weld, grind, or use open flames near the spray booth or powder spray.

Do not disconnect electrical cords while the spray system is operating. An arc can jump from the plug to the receptacle and start a fire or cause an explosion.

Make sure all equipment in the spray area is grounded. Resistance to ground must not exceed one megohm.

If you notice static sparking shut down the powder coating system immediately. Do not restart the system until the cause of the sparking has been eliminated.

If a malfunction occurs, shut down the system immediately. Do not restart the system until the problem has been corrected.

Powder Disc System

System Components

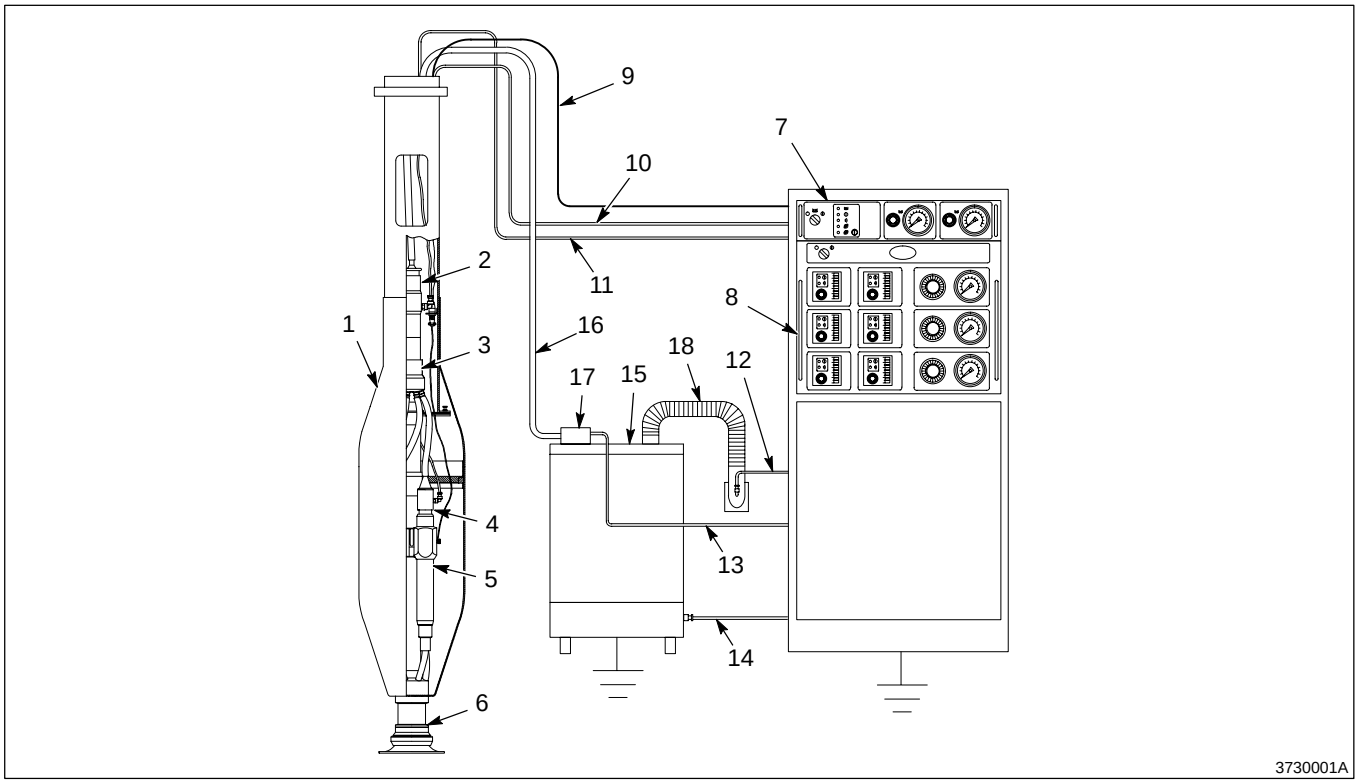

Fig. 1 Typical powder disc system

1. Powder disc
2. Booster diffuser
3. Distributor
4. Charge module diffusers
5. Charge modules
6. Sprayhead
7. Main control panel
8. Charge module control panel
9. Ground cable
10. Booster air
11. Diffuser air
12. Vent-assist air
13. Pump air
14. Fluidizing air
15. Feed hopper
16. Feed hose
17. Powder pump
18. Vent hose

System Operation

See Figure 1. The feed hopper (16) stores and fluidizes the powder supply. A powder pump (18) delivers the powder to the powder disc (1) through a powder feed hose (17). The vent hose (19) conveys fluidizing air and powder dust into the spray booth.

The booster diffuser (2) adds air to the powder to evenly distribute it and increase its velocity. The distributor (3) divides the powder flow into separate streams, one for each charge module (5).

NOTE: High-volume versions of the powder disc do not have a booster diffuser or distributor. Instead, powder is delivered directly to the charge module diffusers by separate powder pumps (one for each charge module).

The charge module diffusers (4) add more air to the powder and increase its velocity. The powder is electrostatically charged as it flows through the charge modules. The disc at the bottom of the sprayhead (6) directs the powder cloud toward the workpieces.

The charge modules are grounded through the charge module control panel (8), where the charge received by the powder is shown on charge meters. This panel also includes the pump, booster diffuser, and charge module diffuser air controls.

The main control panel (7) includes fluidizing and vent-assist air controls, system status LED indicators, and a main power switch.

Master Control Panel

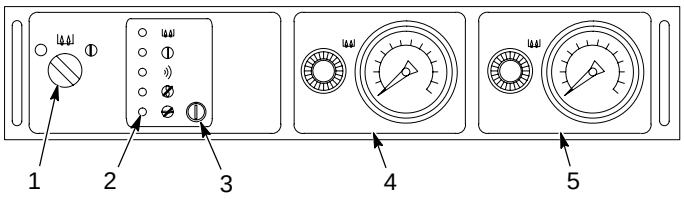

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Fig. 2 Master control panel

1. Three-position switch:
   Left Off
   Straight up Fluidize (feed hopper)
   Right On (powder spray)
2. LEDs (top to bottom):
   Fluidizing air on
   Power on
   Fault warning/Alarm
   Exhaust fan stopped
   Conveyor interlock bypassed
3. Conveyor interlock bypass keyswitch
4. Fluidizing air regulator and gauge
5. Vent-assist air regulator and gauge

Charge Module Control Panel

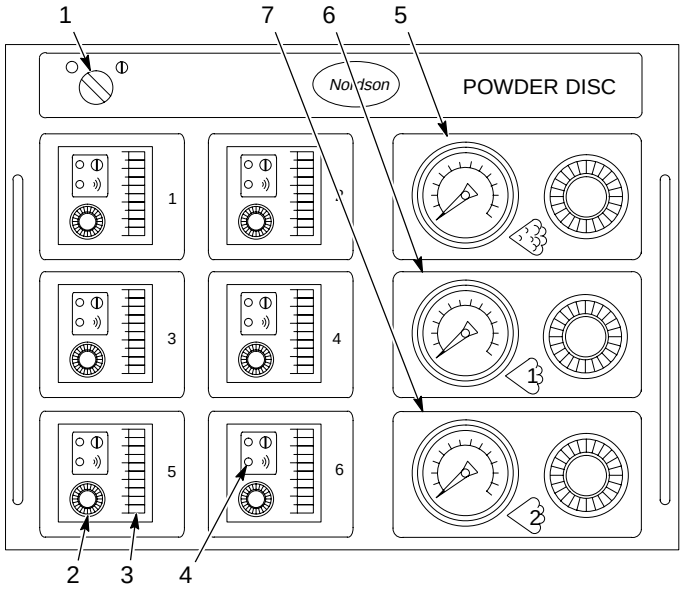

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Fig. 3 Charge module control panel

1. Power switch
2. Low charge alarm potentiometer
3. Charge meter
4. LEDs (top to bottom):
   Power on
   Low charge alarm
5. Pump air regulator and gauge
6. Charge module diffuser air regulator and gauge
7. Booster diffuser air regulator and gauge

Operation

Initial Startup—New System

1. Fill the feed hopper $^{2}/_{3}$ full with new powder.

2. See Figure 2. Turn the three-position switch (1) to the Fluidize position.

3. Adjust the fluidizing air regulator (4) to 1.7 bar (25 psi). Wait several minutes for the powder in the feed hopper to become adequately fluidized.

4. Adjust the vent-assist air pressure (5) to 2.7 bar (40 psi)

5. Turn the three-position switch to the On position.

6. See Figure 3. Turn the power switch (1) to the On position to start spraying powder.

7. Adjust the regulators (5, 6, 7) on the charge module control panel:

Pump	1–2 bar (15–30 psi)
Diffusers	3.5–5.5 bar (50–80 psi)
Booster	$^{1}/_{2}$ atomizing pressure

NOTE: Pressures given are suggested startup pressures. Adjust the air pressures to obtain a smooth flow of powder at the rate needed for your application.

8. Adjust the low charge alarm potentiometers (2) to a setting below the normal charging rate.

9. Turn the three-position switch (Figure 2, (1)) to the Off position.

Daily Startup

Before starting production, make sure

- all equipment in the spray area is grounded
- all hoses and cables are connected properly
- fire detection system is on and operating properly
- conveyor interlock is not in bypass mode
- feed hopper powder supply is adequate
- air supply shutoff valve is open, and air dryer and filters are operating properly
- spray booth exhaust fan is on

1. Turn the three-position switch (Figure 2, (1)) to the Fluidize position. Wait several minutes for the powder in the feed hopper to become adequately fluidized.

2. Turn the three-position switch to the On position.

3. Make air pressure adjustments as needed.

Short Production Stop

Turn the three-position switch (Figure 2, (1)) to the Fluidize position.

Daily Shutdown

1. Turn the three-position switch (Figure 2, (1)) to the Off position.

2. Perform daily maintenance procedures.

Powder Coating Hints

Try to keep the powder flow rate as low as possible without affecting the charging level and desired film build. Increase flow air pressure to increase the powder flow rate.

The higher the velocity and volume of the powder (flow-rate air pressure plus booster-diffuser air pressure), the greater the electrostatic charge the powder will receive.

Keep the air velocity through the spray booth as low as possible without allowing overspray to escape from the booth. ANSI/NFPA-33 requires 30m/min (100 fpm) through all booth openings.

Maintain atomizing and diffuser air pressure-to-flow pressure ratios. If atomizing and diffuser air pressure are set too high, powder will surge from the disc.

Maintenance

Use these procedures to establish a regular maintenance schedule for your Tribomatic Powder Disc.

NOTE: Do not use solvents or sharp metal tools to clean powder disc parts. Solvents can damage O-rings and plastic parts. Scratches in powder contact surfaces made by sharp tools will allow powder to collect, fuse together on impact, and clog the equipment.

Daily Maintenance

WARNING: Blowing out the charge modules with compressed air can generate an electrostatic charge in the charge modules strong enough to deliver a severe shock. Always make sure the charge modules are connected to ground before cleaning them.

1. Turn on the booth exhaust fan.
2. Disconnect the powder feed hose from the powder pump. Blow out the hose with compressed air.
3. Disassemble and clean the powder pump. Replace worn or damaged parts.
4. Disconnect the booster diffuser from the distributor. Blow out the distributor and the booster diffuser.
5. Slide the top half of the cover up the mounting tube. Disconnect the tubing from the charge module diffusers and the diffusers from the charge modules.
6. Blow out the charge modules and diffusers with compressed air.
7. Disassemble the sprayhead and clean the parts with compressed air and a clean cloth.
8. Check all equipment ground connections.

Weekly/Color Change

1. Perform the daily maintenance procedures.
2. Clean the spray booth, powder collection system, feed hoppers, and any other powder handling equipment (drum trucks, bulk unloaders, transfer pumps).
3. Clean the spray area. Wipe down the powder disc and reciprocator control cabinets with a clean cloth.
4. Check all ground connections with an ohmmeter. Resistance to ground must not exceed 1 M. Best results are obtained when the resistance is less than 500 ohms.
5. Remove the powder disc cover and blow out the internal powder tubing with compressed air.
6. Disassemble the booster and charge module diffusers and clean the parts with low-pressure compressed air and a clean cloth.
7. Blow out the tubing connecting the distributor to the charge module diffusers and the tubing assemblies connecting the charge modules to the sprayhead with compressed air.
8. Disassemble the charge modules and clean the parts with low-pressure compressed air and a clean cloth.
9. Replace any worn or damaged charge module parts. Worn inner and outer charge module sleeves can be turned end-for-end and reused.

Troubleshooting

Problem	Possible Cause	Corrective Action
1. No powder spraying	No supply air or pressure set too low	Make sure control panels are getting air. Check supply air pressure.
	Blockage in system	Shut down system and clean components, starting with feed hopper. Check powder supply for oil or water contamination. Check air dryer for proper operation. Drain air filters and inspect filter elements for contamination.
	Solenoid valve malfunction	Repair or replace solenoid valve in control panel.
	Pump (Flow) air pressure too low	Increase air pressure.
2. Powder puffing or surging from disc, or inadequate flow	Powder level in feed hopper too low	Add powder to feed hopper.
	Blockage in system	Shut down system and clean components, starting with pump.
	Pump venturi throat worn	Replace venturi throat.
	Atomizing and diffuser pressure-to-flow pressure ratio incorrect	Increase flow pressure or decrease atomizing and diffuser pressure.
3. Poor powder charging—no electrostatic wrap or adhesion	Flow and/or atomizing air pressure too low	Increase air pressures.
	Pump venturi throat worn	Replace venturi throat.
	Excess moisture in air supply	Check air dryer and air filters.
	Charge module wear sleeves worn	Replace wear sleeves. Refer to disc manual.
	Too many fine particles in powder supply	Add new, unused powder to feed hopper to lower ratio of reclaimed powder-to-new powder.
	Powder not suitable for tribo-charging	Consult with powder manufacturer.
4. Powder not charging	Charge modules not grounded	Remove disc cover and check ground connections from disc to control panel to ground.
	Control panel malfunction	Repair or replace control panel.

Notes

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