Nordson® 110 Vac Rotary Sieve

Customer Product Manual
Part 108167E

For parts and technical support, call the Industrial Coating Systems Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

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NORDSON CORPORATION • AMHERST, OHIO • USA

Nordson Corporation welcomes requests for information, comments and inquiries about its products.

Address all correspondence to

Nordson Corporation
555 Jackson Street
Amherst, OH 44001

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Nordson 110 Vac Rotary Sieve

1. 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.

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Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual electrostatic spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

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Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment in the spray area. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

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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.

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2. Description

The Nordson rotary sieve is a high-volume powder sieve capable of handling 544 kg/hr (1200 lbs/hr) of a typical epoxy powder, when equipped with the standard 60 mesh screen. This is sufficient capacity for up to 24 Nordson powder spray guns.

There are two versions of the sieve:

- Old-style units are powered by a one-quarter horsepower, 1725 rpm, single-phase electric motor that operates at 110 Vac, 60 Hz.

- New-style units are powered by a one-quarter horsepower, single-phase motor that operates at 115/230 Vac, 50/60 Hz. The motor produces 1425 rpm at 50 Hz and 1725 rpm at 60 Hz.

NOTE: New-style sieves are configured to operate at 115 Vac. See the wiring diagram located on the motor nameplate to change the operating voltage to 230 Vac.

NOTE: Check the voltage rating stamped on the motor nameplate to determine which motor is installed.

See Figure 1. The old- and new-style units are functionally the same. The motor bearings and impeller end bearing are protected from powder contamination by a constant flow of air at 0.7 bar (10 psi), delivered by a preset miniature air regulator (2). The air supply to the bearings is interlocked with the motor electrical supply to prevent damage to the bearings.

An easily removable end cap (4) allows access for cleaning or repair, and houses the impeller end bearing and seal. An electrical limit switch (3), mounted on the sieve housing, prevents operation unless the end cap is in place on the housing. Cast into the end cap is a waste outlet (5).

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2. Description (contd.)

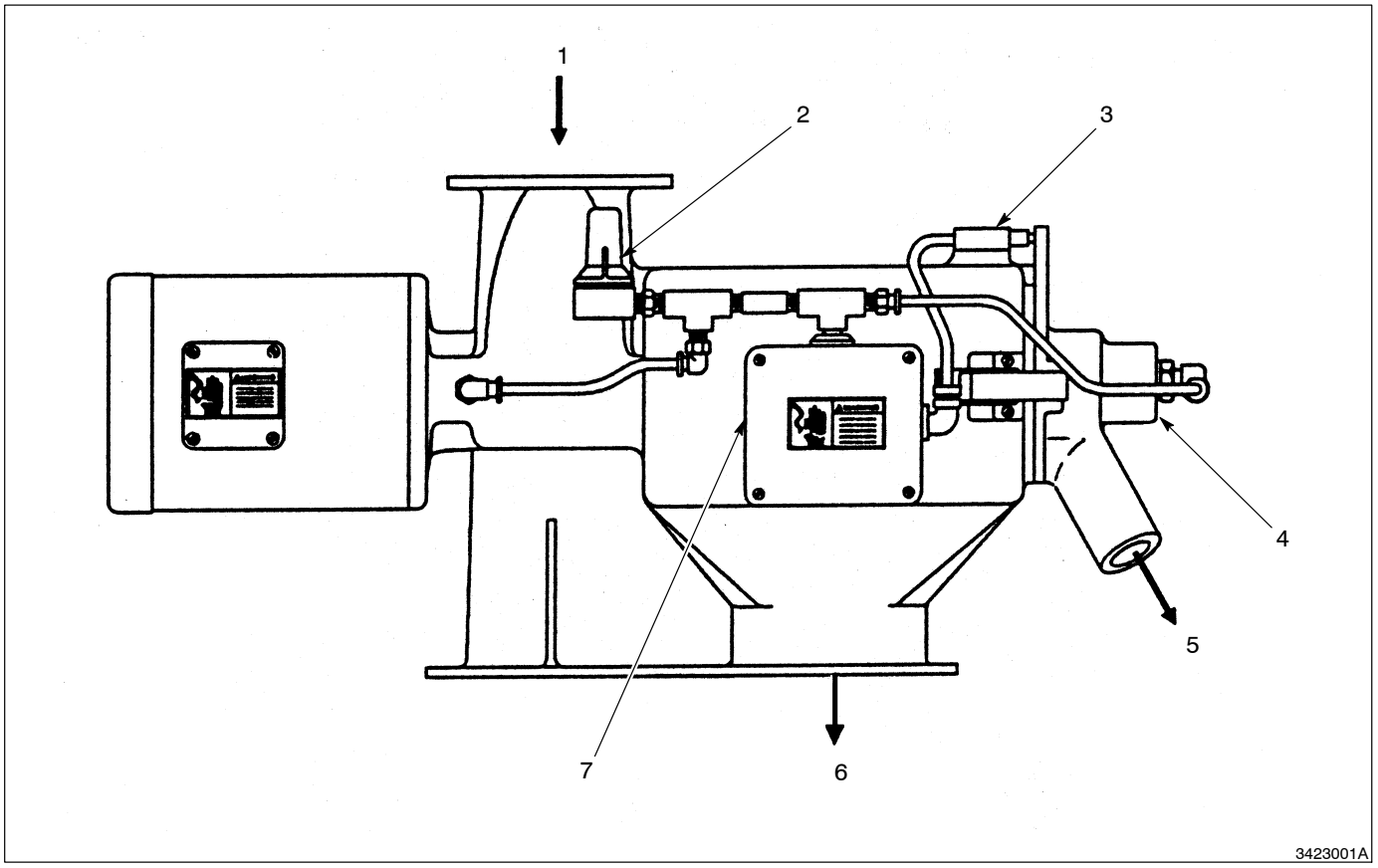

Fig. 1 Rotary Sieve (Rear View)

1. Powder from cyclone
2. Air regulator
3. Limit switch (end cap interlock)
4. End cap
5. Waste outlet
6. Screened powder to hopper
7. Electrical enclosure with pressure switch for air interlock

See Figure 2. The impeller (2) is PTFE-coated to prevent impact fusion. The screens (3) are nylon mesh, cylindrical in shape, and secured to each end of the screen support (4) by stainless steel clamps.

The standard screen is 60 mesh. Optional screens are available in 40, 80, and 100 mesh. Using a mesh finer than 60 will result in a lower sieve capacity, while a coarser mesh will increase capacity.

NOTE: Do not use a screen finer than 100 mesh.

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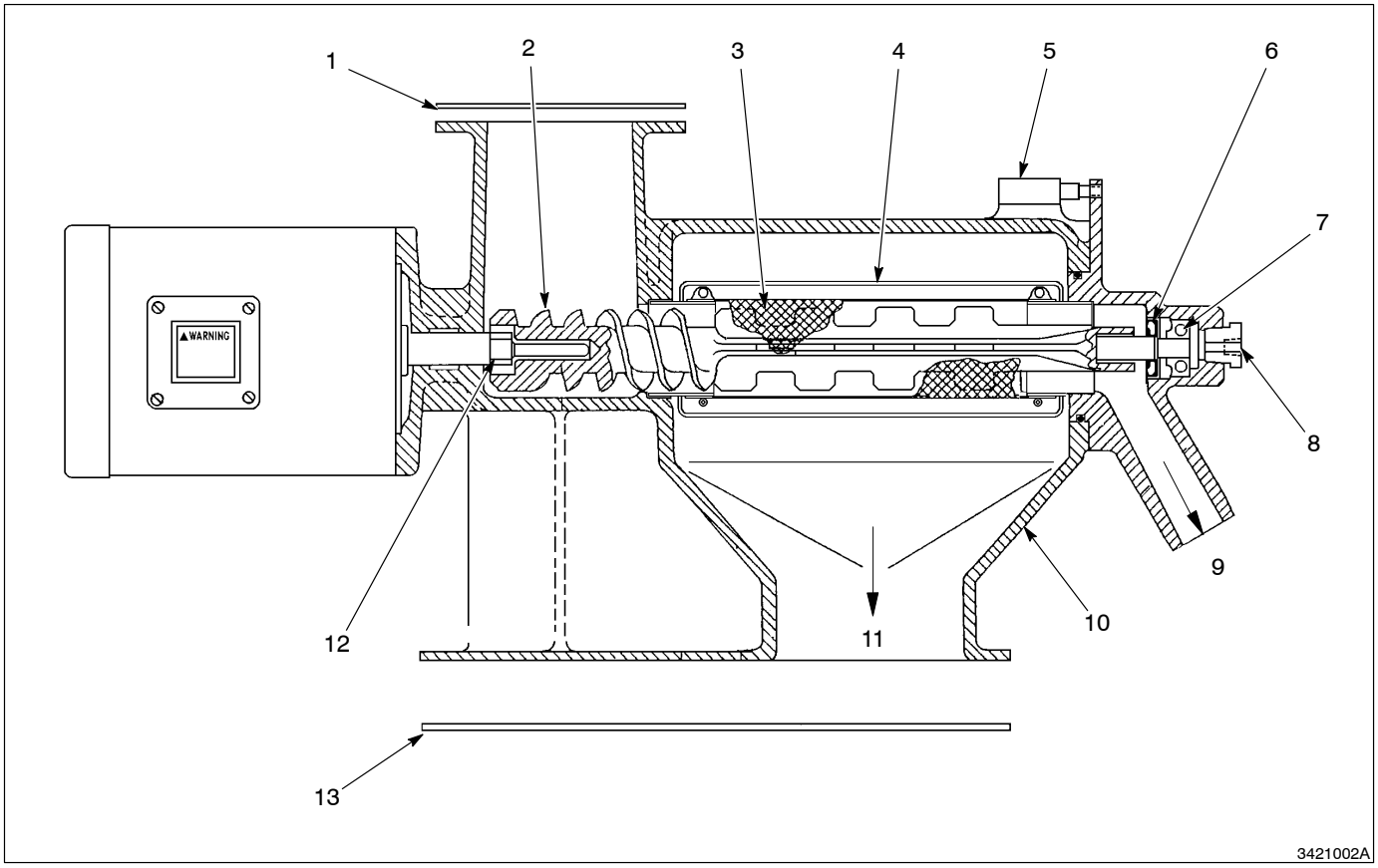

Fig. 2 Rotary Sieve

1. Cyclone gasket
2. Impeller
3. Screen
4. Screen support
5. Limit switch
6. Seal
7. Bearing
8. Air in
9. Waste outlet
10. Sieve housing
11. Screened powder
12. Motor drive lug
13. Sieve gasket

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Theory of Operation

See Figure 2. The powder enters the sieve through the inlet at the top of the sieve. The screw portion of the impeller (2) forces the powder into the housing, where the impeller blades throw the powder against the screen (3). Air currents set up by the blades help in the screening process. The screened powder (11) falls out the bottom of the sieve through a 12.7-cm (5-in.) diameter hole and into the hopper.

Powder particles too large to pass through the screen travel through the center to the waste outlet (9) in the end cap.

NOTE: A five gallon waste bucket, cover with gasket, clamp, and hose are recommended.

Fluidization air from the hopper, along with air from the transfer pumps, creates a slight positive pressure inside the sieve housing.

NOTE: Without a sealed waste bucket, this pressure could force powder out the waste outlet instead of through the screen.

3. Installation

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

WARNING: Power to the sieve must be disconnected before performing any of the following procedures. Lock out and tag the master disconnect. Failure to follow these instructions could result in personal injury or property damage.

Hopper Cover Preparation

NOTE: If you are using a Nordson hopper with weld nuts and knockouts in the cover, skip this section and go to the next section, *Mounting*.

1. See Figure 3. Place the sieve on the hopper cover to determine the optimum mounting location. Trace around the sieve housing to mark the approximate location.

   NOTE: As an alternative, the sieve housing or the sieve gasket can be used as a template, though there is more chance of error using this method.

2. Lay out the exact locations for the eight bolt holes and hopper inlet hole. Drill four 0.38-in. bolt holes, four 0.44-in. bolt holes, and cut a 12.7-cm (5-in.) diameter hole in the hopper cover.

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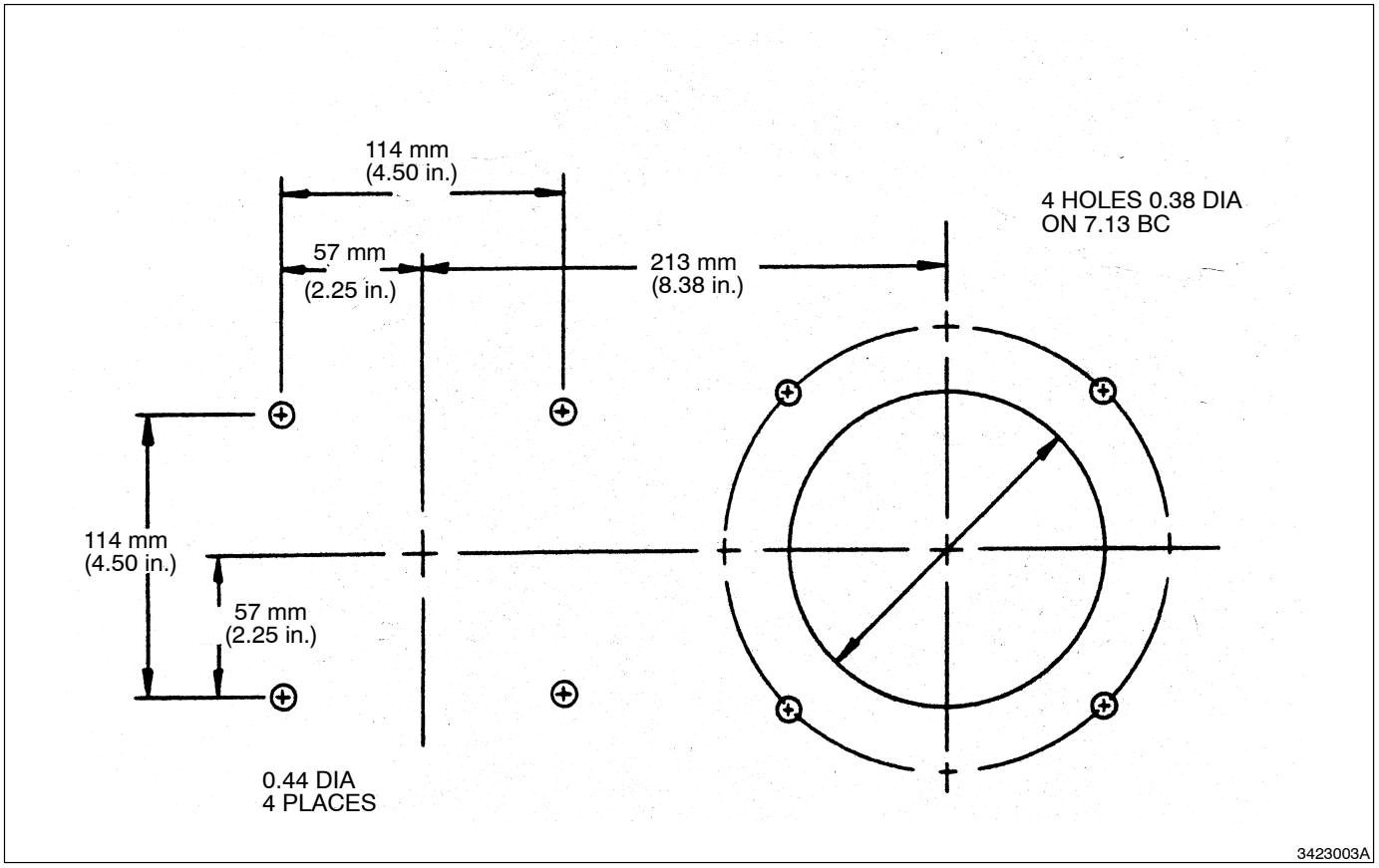

Fig. 3 Sieve Mounting Hole Pattern

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Mounting

NOTE: If you are using a hopper cover that does not have weld nuts or knockouts, refer to *Hopper Cover Preparation*.

1. Place the large oval gasket on the cover and align the bolt holes. Place the sieve on top of the gasket and align.

2. Secure the sieve to the hopper cover with $^3/_8$-in. and $^1/_4$-in. bolts and lockwashers.

   NOTE: Use nuts if the hopper cover is not equipped with weld nuts.

3. Install the cyclone on the sieve intake, using the round gasket furnished with the sieve. Secure the cyclone to the sieve with $^3/_8$-in. bolts, lockwashers, and nuts.

NOTE: An optional vent assist is available, consisting of a duct adapter, threaded nipple, and air nozzle. It is designed to be installed in the cyclone vent line.

NOTE: The interior of the sieve is positively pressurized. Use an airtight waste bucket and hose to prevent excess waste.

4. Install the waste hose onto waste outlet and secure with a $2^1/_2$-in. hose clamp.

5. Place the cover on the waste bucket and snap it in place.

6. Install the hose on the cover inlet tube and secure it in place with a $2^1/_2$-in. hose clamp.

Pneumatic

The air regulator supplied is factory-set to deliver 0.7 bar (10 psi) to the motor and impeller end bearings. Do not change this setting. Supply the air regulator with clean, dry, compressed air (minimum 3.5 bar (50 psi), maximum 8.3 bar (120 psi)).

The inlet port to the air regulator is $^1/_4$ NPT. Install a suitable fitting in the inlet port and connect a supply air line.

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Electrical

Electrical requirements for the old-style sieve are 110/120 Vac, 1 phase, @ 60 Hz.

Electrical requirements for the new-style sieve are 115/230 Vac, 1 phase, @ 50/60 Hz.

NOTE: New-style sieve motors are prewired for 115 Vac power. See the wiring diagram located on the motor nameplate to configure the motor for 230 Vac operation.

NOTE: A 3.66-m (12-ft) power and control cord, 16 AWG, 90 °C (194 °F), equipped with a 5-pin male plug is furnished with the sieve.

1. Install the plug into the female receptacle at the bottom of the electrical enclosure. Secure the plug by threading the plug nut onto the receptacle.

2. Route the cord to a system electrical enclosure and connect it to a terminal strip as follows:

Wire Color	Function
Black	L1
White	L2
Red	Interlock
Orange	Interlock
Green	Ground

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Interlocks

See Figure 4. The old-style sieve is equipped with three interlocks: the end cap limit switch, the air pressure switch, and the integral overheat switch.

The new-style sieve is equipped with two interlocks: the end cap limit switch and the air pressure switch.

The switches on both versions are wired in series. At the system electrical enclosure, make connections to prevent the motor from starting unless the sieve interlock switches are closed. Wire the sieve system so that the sieve will not operate unless the booth exhaust fans are on.

NOTE: Wire the motor so the direction of rotation is counterclockwise, as viewed from the motor end.

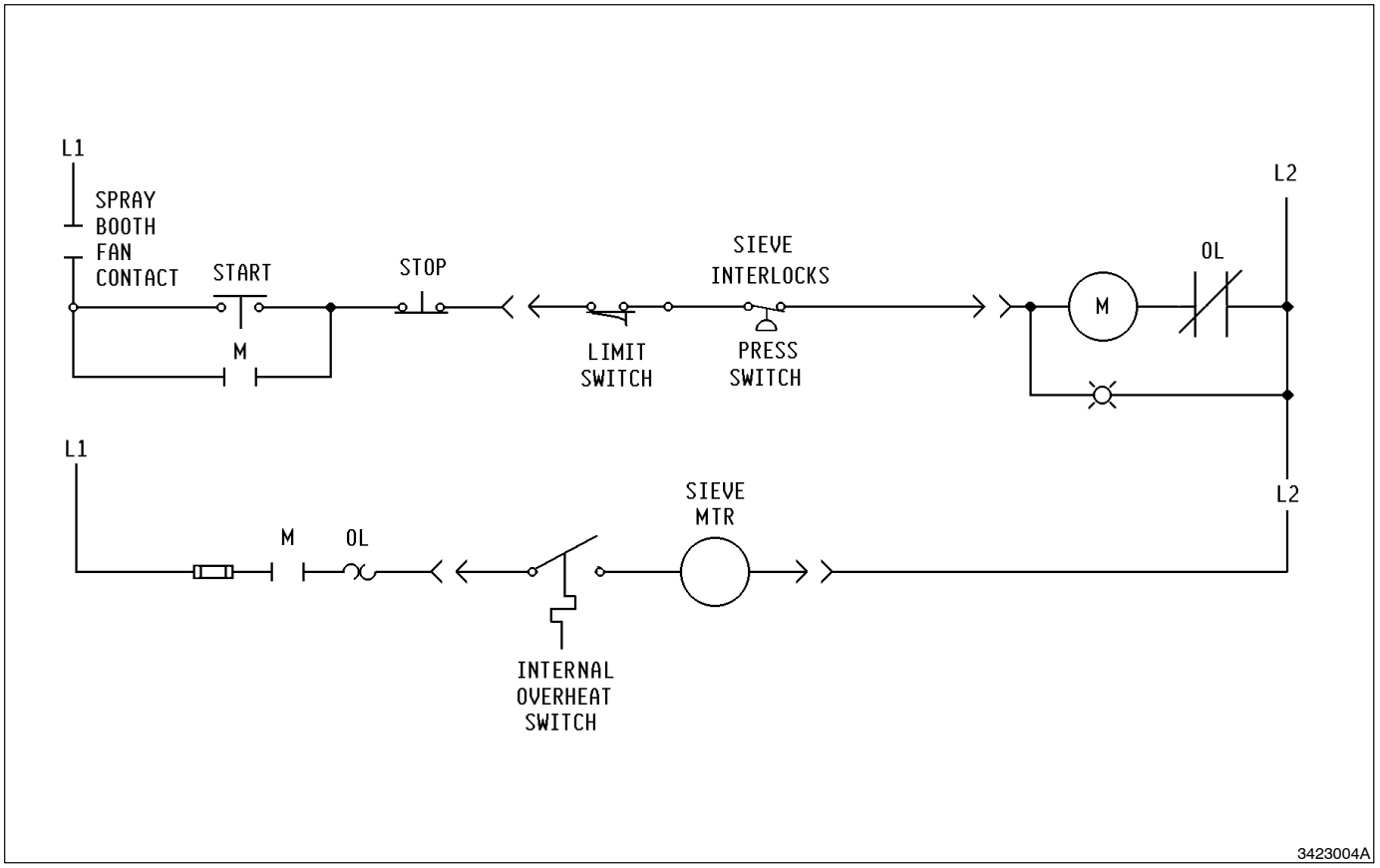

Fig. 4 Typical Control Circuit with Interlocks

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4. Maintenance

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

WARNING: Power to the sieve must be disconnected before performing any of the following procedures. Lock out and tag the master disconnect. Failure to follow these instructions could result in personal injury or property damage.

CAUTION: Do not use metal or sharp pointed objects to clean the impeller, as the PTFE coating will be damaged, which could lead to a build up of impact-fused powder in that area. Use a plastic or wooden tool (a tongue depressor or a popsicle stick works well).

- Remove the end cap and clean the screen support, screen, and impeller once per shift.
- Use low-pressure compressed air to clean loose powder off the parts removed. Place parts inside the booth and keep the exhaust fans on when cleaning.
- Examine the screen for tears or other damage and replace if necessary.
- Blow loose powder out of the drive end recess on the impeller shaft. Clean out any powder packed into the hole and hex recess on the impeller shaft. Clean the interior of the sieve housing.

5. Troubleshooting

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

WARNING: Power to the sieve must be disconnected before performing any of the following procedures. Lock out and tag the master disconnect. Failure to follow these instructions could result in personal injury or property damage.

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Electrical

See Figures 5 and 6 for the appropriate electrical connections inside the sieve electrical enclosure. If the sieve fails to start, check all of the system electrical connections, including the interlock switches.

Checking Interlock Switches

With air pressure present at the pressure switch, and the end cap in place, use a multimeter to check for continuity across pins 2 and 4 in the female receptacle on the underside of the sieve electrical enclosure. If you are unable to obtain a reading, one or more of the switches may be malfunctioning. Refer to Table 1.

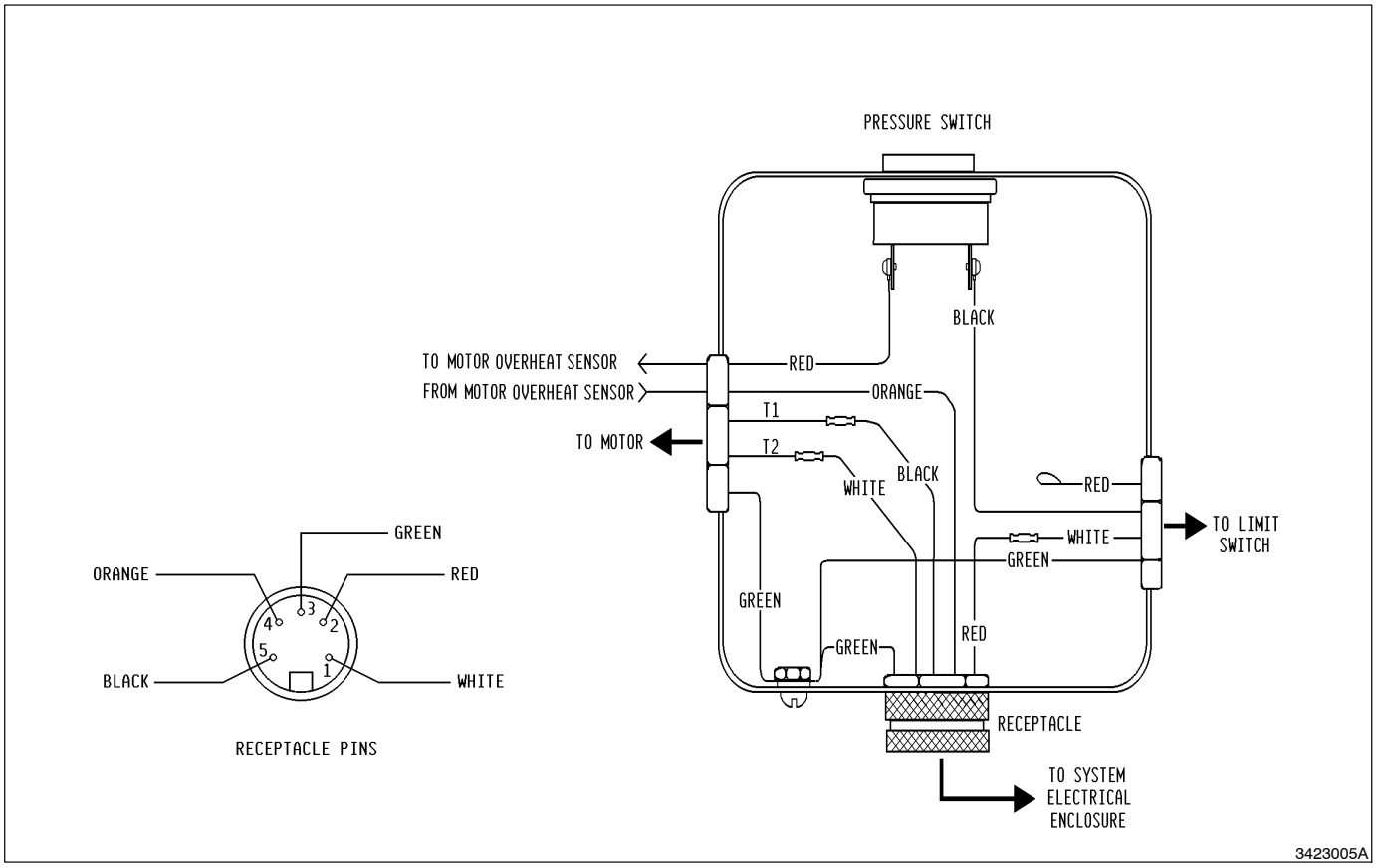

Fig. 5 Old-Style Sieve Electrical Enclosure

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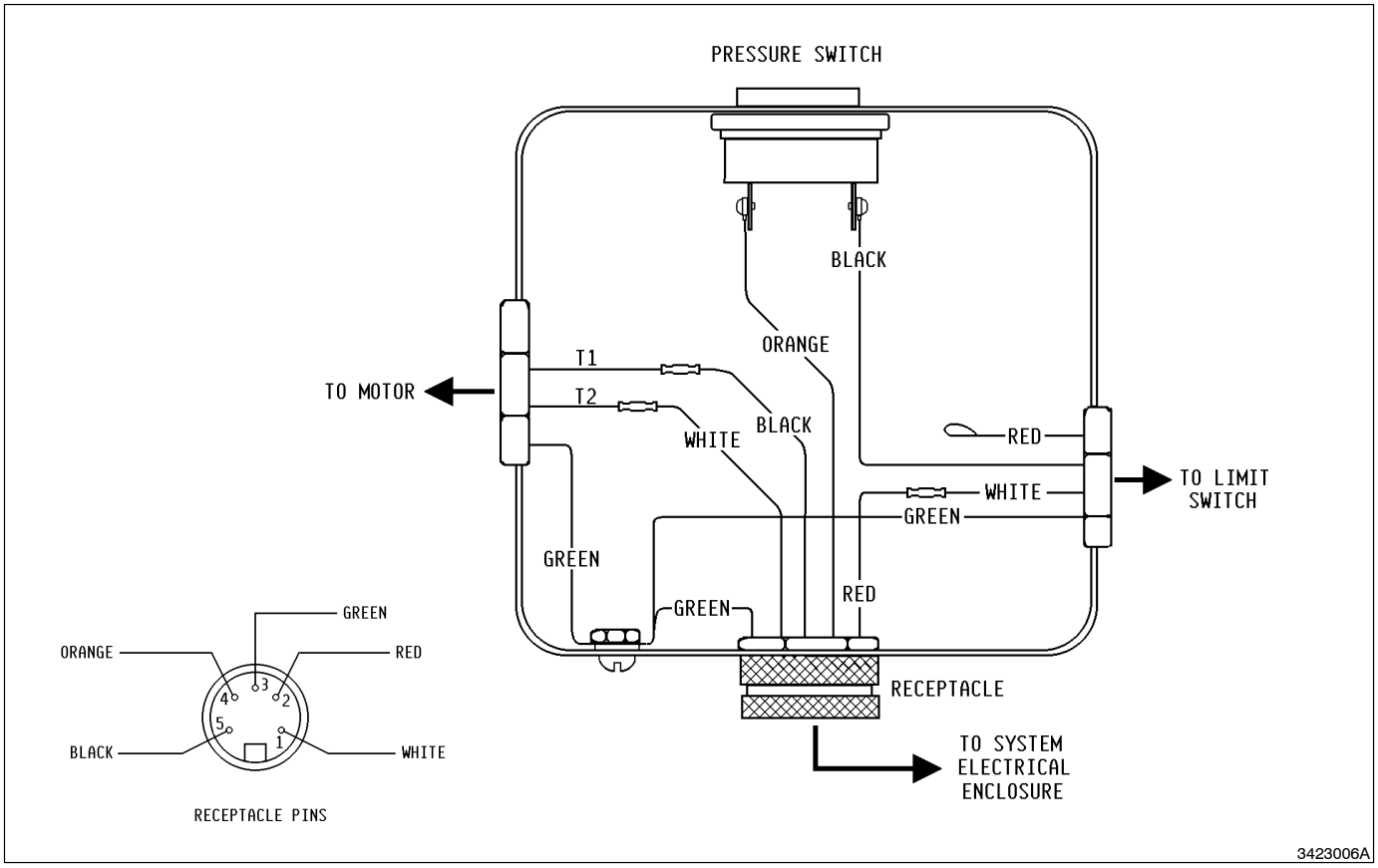

Fig. 6 New-Style Sieve Electrical Enclosure

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Checking Interlock Switches (contd.)

Table 1 Switch Checks

Switch	Check to make sure the ...
Pressure	• compressed air is present at the switch. • continuity across the switch contacts (inside the electrical enclosure mounted on the side of the sieve housing). • switch is closed.
End Cap Limit	• end cap is in place and that the switch shaft is depressed far enough to close the internal contacts. • continuity from pin 2 to the black wire connection on the pressure switch (inside the enclosure). • set screw threaded into the top ear of the end cap is adjusted so that the switch contacts are closed when the end cap is installed on the housing.
Motor Thermal Overload (old-style only)	• continuity from the red wire connection on the pressure switch (inside the enclosure) to pin 4. An overheated motor will cause the thermal overload switch to open, breaking continuity.

Screen Tearing

Make sure that the screen is correctly installed on the support and securely clamped.

6. Repair

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

WARNING: Power to the sieve must be disconnected before performing any of the following procedures. Lock out and tag the master disconnect. Failure to follow these instructions can result in personal injury or property damage.

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End Cap Bearing and Seal Assembly Replacement

1. Release the two tension clamps and disconnect the air line feeding the impeller end bearing. Twist the end cap slightly while pulling it away from the housing.

2. Remove the impeller, screen support, and screen.

3. Check the screen and impeller for damage and replace if necessary. Check the end cap O-ring and replace if necessary.

4. Check the bearing for powder contamination. If necessary, replace the entire end cap assembly, with the seal and bearing installed, or, the end cap can be rebuilt.

NOTE: Replace the bearing and seal with Nordson parts only. The seal is compatible with most powders on the market today. Other seal materials could react with the powders being used and deteriorate quickly, allowing powder to contaminate the bearing and cause premature failure.

Rebuilding the End Cap

1. See Figure 7. Remove the bushing and elbow from the end cap. Place the end of the end cap on the arbor press. Carefully press out the bearing and seal.

2. Carefully press a new bearing (2) into the sieve housing.

3. Fold the lip (5) away from the shield (3) and remove the spring from the seal, if present. Press the new seal assembly into the end cap. The side of the seal with the shield must face away from the bearing.

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Rebuilding the End Cap (contd.)

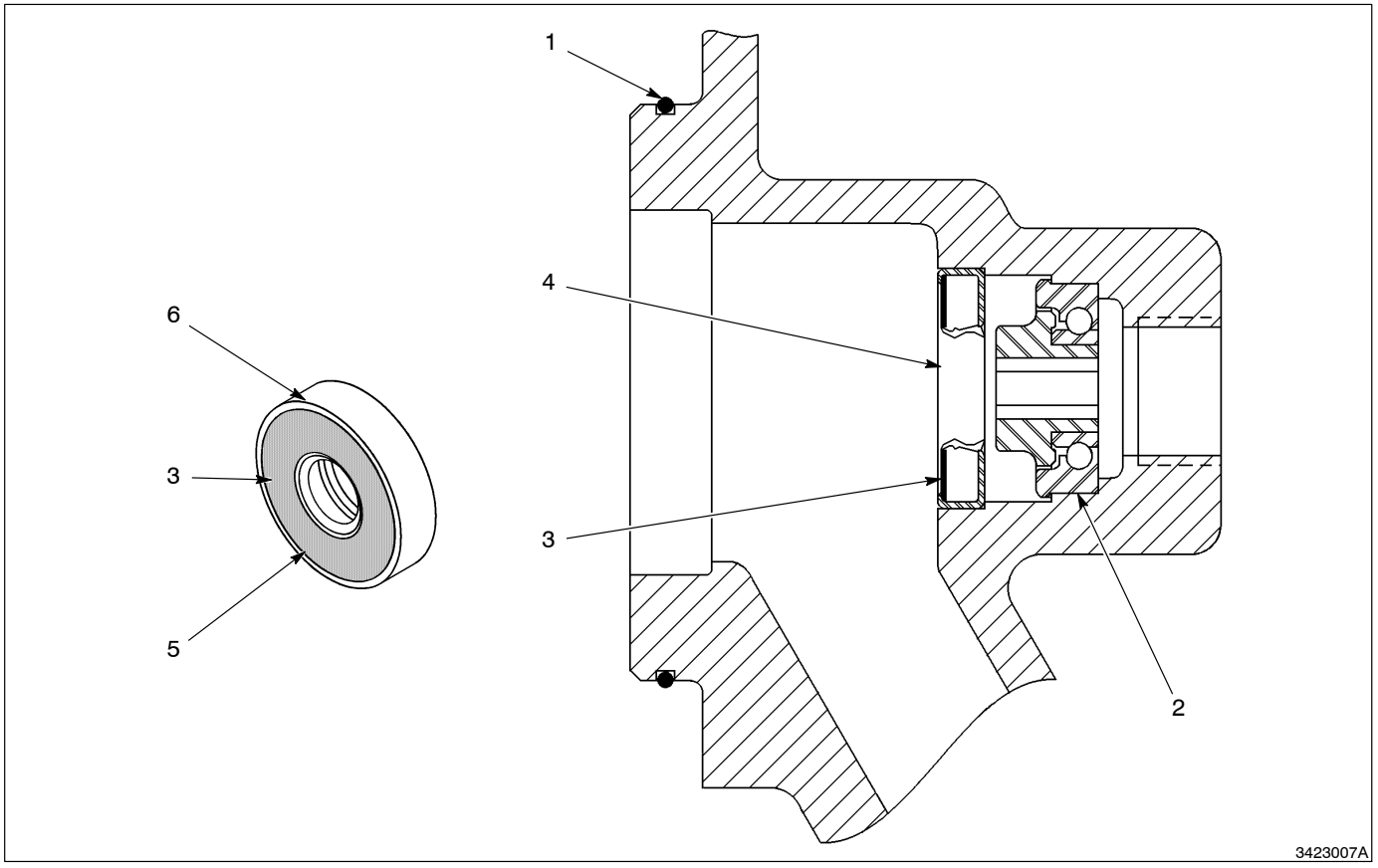

Fig. 7 End Cap

1. O-ring
2. Bearing
3. Shield
4. Seal assembly
5. Lip
6. Rolled edge of metal housing

NOTE: Make sure that the seal assembly is correctly oriented. The seal will fail if it is installed backwards, causing bearings to be contaminated with powder.

Motor Replacement

1. Disconnect the power to the sieve at a breaker or master disconnect ahead of the sieve.
2. Remove the motor junction box cover.
3. Disconnect the electrical leads and flexible conduit.
4. Remove the four bolts and lockwashers that secure the motor to the sieve housing.
5. Remove the motor.

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7. Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use this five-column parts list, and the accompanying illustration, to describe and locate parts correctly.

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The six-digit number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

Item	Part	Description	Quantity	Note
—	000 000	Assembly	1	
1	000 000	• Subassembly	2	A
2	000 000	• • Part	1	

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

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Rotary Sieve See Figure 8.

Item	Part	Description	Quantity	Note
—	127 462	Sieve, rotary	1	
1	970 966	• Clamp, hose, 2.5 in.	2	
2	249 452	• Screen, 60 mesh	1	A, B
3	249 458	• Support, screen	1	
4	147 876	• • Service kit, oil seal	1	B
5	249 465	• • Bearing	1	B
6	942 410	• • O-ring, silicone, 3.875 x 4.00 x 0.125 in.	1	B
7	- - - - - -	• • Cap, end	1	
8	981 736	• Screw, set, with Nylok, $^1/_4$-20 x 0.375	1	
9	971 506	• Elbow, male, $^3/_8$ tube x $^1/_4$ NPT	1	
10	900 511	• Tubing, 0.375 x 0.062	2	
11	249 457	• Impeller, insert and shaft	1	
12	104 165	• Latch, tension	2	
13	249 462	• Switch, limit	1	
14	111 687	• Gasket, rotary sieve, inlet	1	
15	127 463	• Motor, drive and lug	1	
16	249 467	• Regulator, in-line air	1	
17	973 037	• Nipple, hex, $^1/_4$ x $^1/_4$ x 1.45, stainless steel	1	
18	973 260	• Tee, pipe, hyd, $^1/_4$, stainless steel	2	
19	973 036	• Nipple, brass, sched 40, $^1/_4$, 3.0	1	
20	971 258	• Connector, male, $^3/_8$ tube x $^1/_4$ NPT, brass	2	
21	939 512	• Switch, pressure, normal open, 2	1	
22	111 686	• Gasket, rotary sieve, base	1	
23	129 783	• Receptacle, cord	1	
24	129 784	• Cord, 12 ft, male, 110 V	1	
NS	249 468	• Cap, end, sieve	1	B

NOTE A: Refer to *Options* for screens in 40, 80, and 100 mesh.
B: Recommended spare part. Refer to *Options*.
NS: Not Shown

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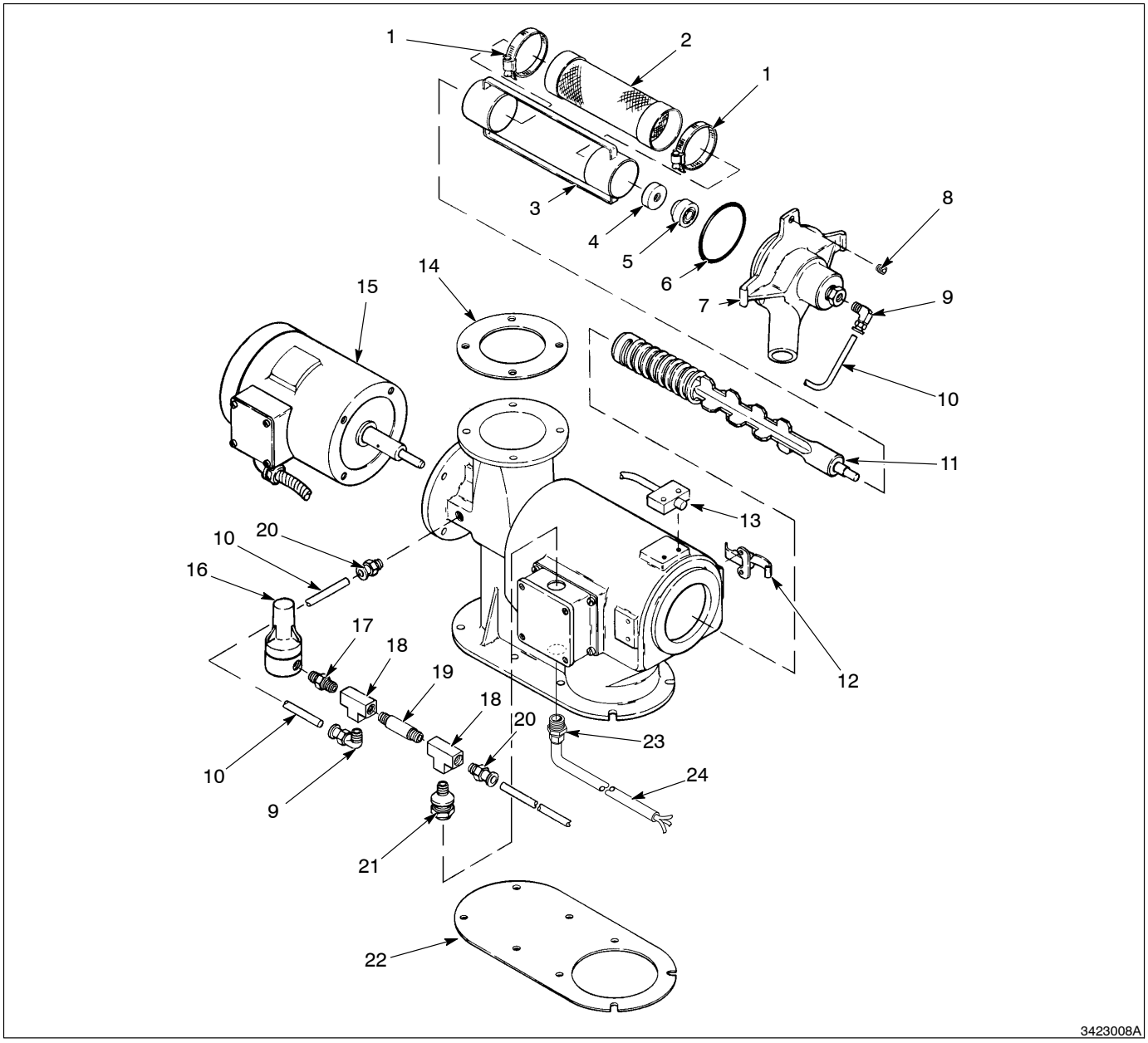

Fig. 8 Rotary Sieve

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Options

This table lists the available options.

Part	Description	Quantity	Note
249 451	Screen, 40 mesh	1	
249 453	Screen, 80 mesh	1	
249 454	Screen, 100 mesh	1	
242 402	Hose, flexible, 10 feet	AR	
246 569	Adapter, duct	1	
144 837	Bucket, scrap, sieve, 5 gal	1	
174 806	Tube, vent, 3.5 inch, with assist	1	A, B
174 800	Flange, vent, 3.5 inch	1	A, C
243 052	Hose, flexible	AR	A
970 967	Clamp, hose	2	A
237 615	Cyclone, 10 port accumulator	1	

NOTE A: For retrofitting older-style Nordson rotary sieve systems; higher performance design.
B: Was PM10533.
C: Was PM10534.
AR: As Required

Spare Parts

This table lists the recommended spare parts.

Part	Description	Quantity	Note
- - - - - -	Screens	AR	A
249 468	Cap, end, assembly, sieve	1	B
147 876	Service kit, oil seal	2	B
249 465	Bearing	2	B
942 410	O-ring, silicone, 3.875 x 4.00 x 0.125 in.	2	B

NOTE A: Order according to your application.
B: End cap assembly includes the seal and bearing. If necessary to replace the bearing and end seal, change the end cap and rebuild off-line with the spare bearing and seal. This will reduce downtime.
AR: As Required

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8. Specifications

The following are the specifications for the Nordson 110 Vac rotary sieve:

Sieve

Height	406 mm (16 in.)
Length	965 mm (38 in.)
Width	330 mm (13 in.)
Weight with motor	25 kg (55 lbs)
Capacity	544 kg/hr (1200 lbs/hr)

Air Requirements

The regular air input requirements are:

- Minimum 3.5 bar (50 psi)
- Maximum 8.3 bar (120 psi)
- Regulator output 0.7 bar (10 psi)

Motor

Old style: 110 Vac @ 60 Hz, 1-phase, 1725 rpm.

New style: 115/230 Vac @ 50/60 Hz, 1-phase, 1425/1725 rpm.

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