

# NHR-25 Feed Hopper with Agitator

## Description

This instruction sheet provides specifications, installation instructions, and parts lists for the NHR-25 Powder Feed Hopper with Agitator. This hopper is used to fluidize very fine powders used in coating the internal surfaces of containers and pressure vessels. See Figure 1 for the hopper components.

The hoppers are shipped assembled. The level sensor and the powder feed and transfer pumps are sold separately.

The hopper includes the following: Four pump mounts and pickup tubes for powder feed pumps, two pump mounts for the transfer pumps used to vent the hopper, and two inlet assemblies with barbed connector for bulk feeding powder into the hopper. The powder in the hopper is fluidized by compressed air diffused through the fluidizing plate in the fluidizing drum, an air-powered vibrator, and an air-powered agitator.

## Specifications

	Specification
Powder Capacity:	11 kg (25 lb)
*Feed Pump Adapters and Pickup Tubes:	4
*Transfer Pump Adapters:	2
Height:	63 cm (24.5 in.)
Diameter:	40.00 cm (15.75 in.)
Weight (Empty, without pumps):	13.6 kg (30 lb)
Weight (Empty, with all pumps):	18.6 kg (41 lb)
Weight (Full to Capacity, with pumps):	30 kg (66 lb)
Fluidizing Pressure:	0.1–0.6 bar (2–8 psi)
Fluidizing Air Tubing:	10-mm OD
Agitator Motor Air Requirements	480 l/min
Agitator Blades:	6
Vibrator Motor Air Requirements (maximum)	4.5 CFM at 60 psi
*Pumps must be ordered separately.	

## Hopper Components and Connections

Powder pumps and level sensor are not part of the hopper assembly. They are usually included as part of an engineered system.

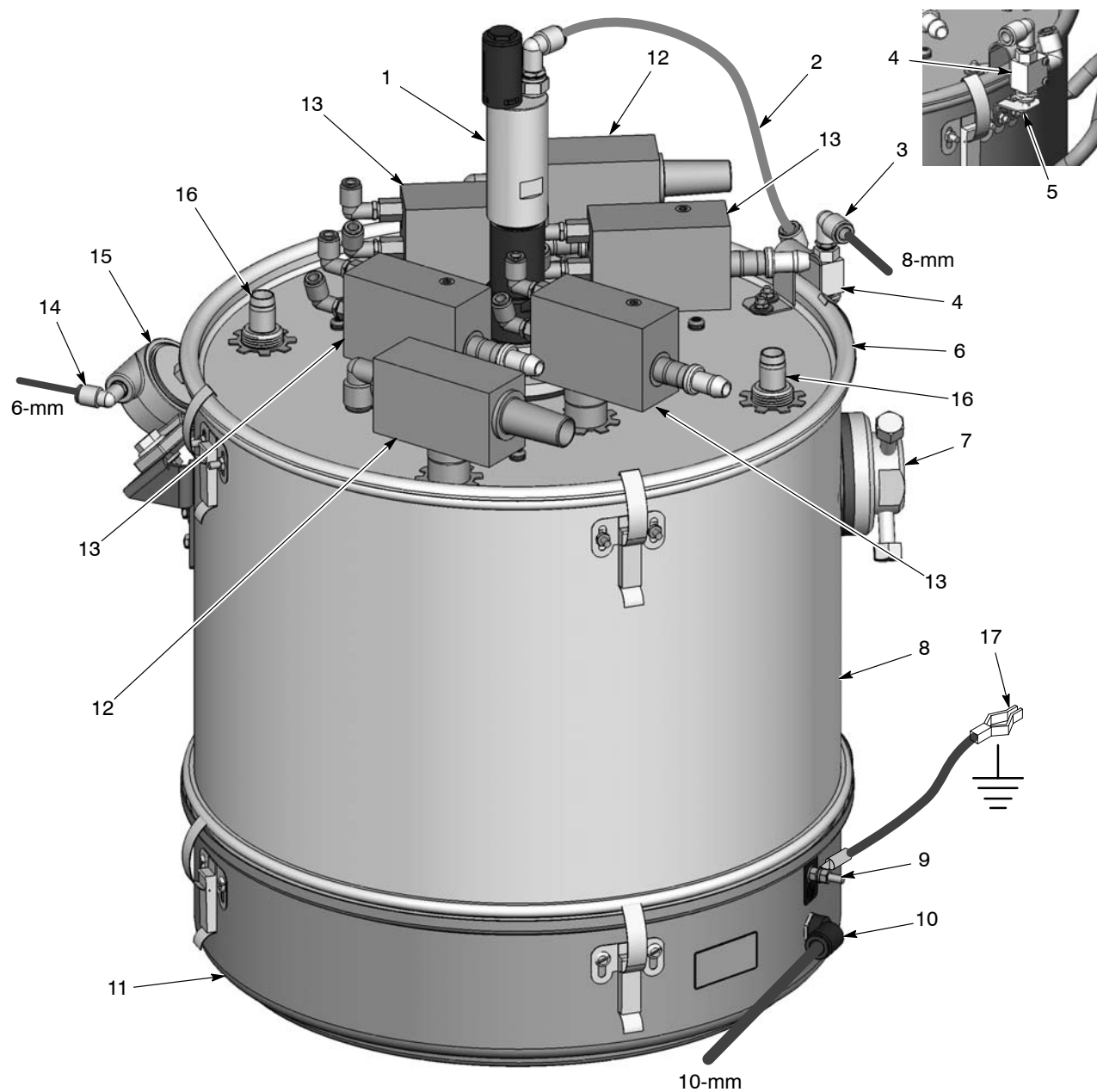


Figure 1 Hopper Components and Connections

- |                             |                                    |                                      |
|-----------------------------|------------------------------------|--------------------------------------|
| 1. Agitator motor           | 7. Level sensor well               | 13. Feed pumps                       |
| 2. Air tubing 8-mm          | 8. Hopper body                     | 14. Vibrator motor fitting (6-mm)    |
| 3. Air inlet fitting (8-mm) | 9. Ground stud                     | 15. Vibrator motor                   |
| 4. Limit switch             | 10. Fluidizing air fitting (10-mm) | 16. Inlet hose connector (bulk feed) |
| 5. Limit switch bracket     | 11. Fluidizing drum                | 17. Ground cable                     |
| 6. Cover                    | 12. Transfer pumps (venting)       |                                      |

# Installation

## ***Basic Installation and Connections***

See Figure 1.

1. Unpack the hopper assembly and remove all the packaging.
2. The cover (6) is installed on the hopper prior to packaging. Make sure that the limit switch (4) and bracket are aligned (5) and the switch shaft is depressed.
3. Connect the short length of 8-mm OD blue flexible air tubing (2) from the side elbow fitting on the limit switch (4) to the elbow fitting on the agitator motor.
4. Supply regulated compressed air to the hopper as follows:
  - Fluidizing air: 10-mm tubing to the elbow fitting (10) on the fluidizing drum (11).
  - Agitator motor: 8-mm tubing to the top elbow fitting (3) on the limit switch (4).
  - Vibrator motor: 6 mm tubing to the elbow fitting (14) on the vibrator motor (15).
5. Install four powder feed pumps (13) on the four inside pump adapters.
6. Install two transfer pumps (12) on the two outside pump adapters.
7. Connect two powder hoses from the bulk source pumps to the two barbed inlet connectors (16).



**WARNING:** The hopper must be connected to a true earth ground. Failure to ground the hopper could result in personal injury or equipment damage.

8. Connect the ground cable ring-tong terminal to the ground stud and clamp the cable to a true earth ground.
9. Install a level sensor in the well on the side of the hopper body.

## Hopper Body Installation

See Figure 2.

10. When assembling the body (1) on the fluidizing drum (4), make sure the body is centered on the gasket (2). Verify that there are equal amounts of the gasket exposed along the edge of the body. If exposed gasket is not equally distributed, reposition the body.
11. Lock the body (1) in place by clamping clamps A and C down together. Then, repeat for clamps B and D.
12. Re-verify that the gasket (2) is exposed equally along the inside edge of the body (1).

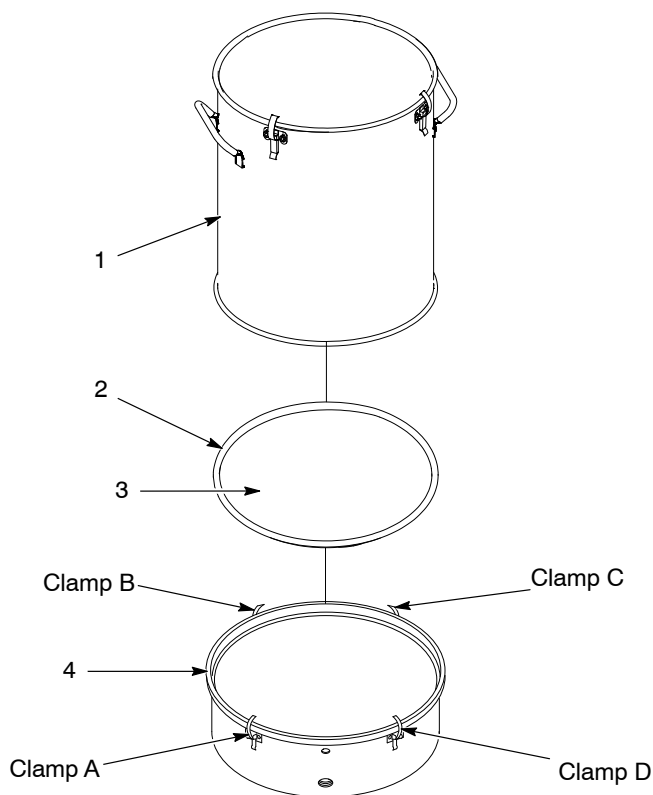


Figure 2 Hopper Body Installation

18. Body  
19. Gasket

20. Fluidizing plate  
21. Drum

## Operation



**CAUTION:** Always turn on the fluidizing air and vibrator motor before turning on the air to the agitator motor. This will prevent damage to the agitator blades. Starting the agitator motor without fluidizing the powder could snap off the agitator blades.

1. Turn on the fluidizing air and the air supply to the vibrator motor.
2. Turn on the air supply to the agitator motor.
3. Supply operating air to the transfer pumps to vent the hopper and prevent powder from contaminating the room.
4. Turn on the flow-rate and atomizing air to the feed pumps to start spraying powder.



**WARNING:** The limit switch cuts off the air supply to the agitator motor when the cover is removed, to prevent injury to personnel. Do not disable or bypass the limit switch.

## Maintenance

Periodically, empty the hopper and clean the interior. Clean the fluidizing plate and inspect it for signs of air contamination. If the plate is discolored and appears to be contaminated, replace it. Check your air supply and correct any contamination problems.

**NOTE:** Inspect and verify hopper ground connection periodically.

## Parts

For parts and service, call the Nordson Finishing Customer Service Center at (800) 433-9319, or contact your Nordson representative.

### Cover Parts

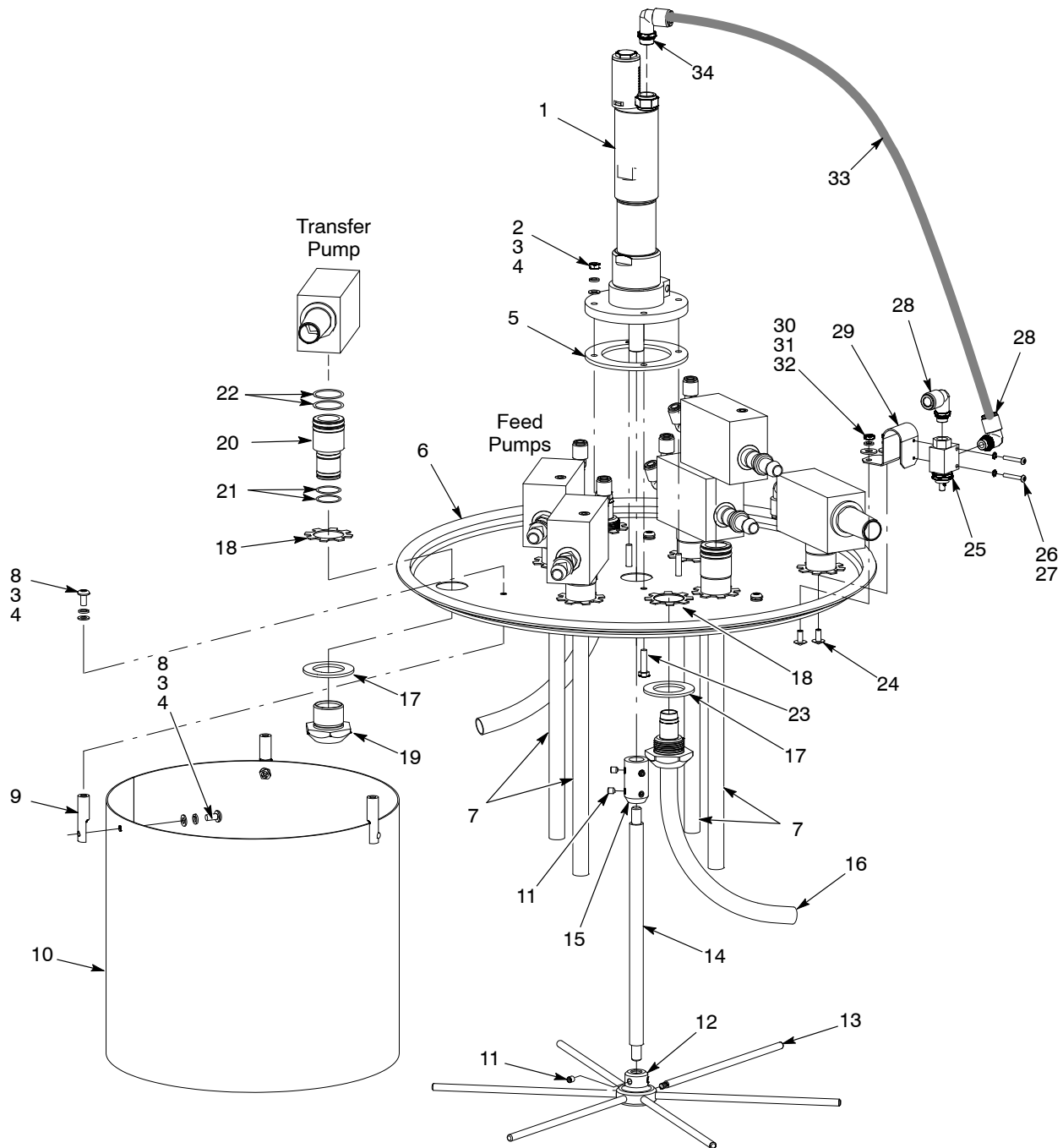


Figure 3 Cover Parts

**Cover Parts** (contd)

See Figure 3.

Item	Part	Description	Quantity	Note
–	1091703	HOPPER ASSEMBLY, NHR-25, w/agitator	1	
1	1091372	• MOTOR, pneumatic, low RPM, non-reversible, with flange	1	
2	984571	• NUT, hex, M5 stainless steel	4	
3	-----	• WASHER, lock, split, M5 steel, nickel	10	
4	983264	• WASHER, flat, regular, M5, stainless steel	10	
5	1091373	• GASKET, pneumatic motor, hopper	1	
6	1091692	• COVER ASSEMBLY, hopper, NHR-25, w/agitator, packaged	1	
7	1074868	• TUBE, pickup, 25 lb, packaged	4	A
8	-----	• SCREW, pan head, recessed, M5 x 10, stainless steel	6	
9	1091676	• SUPPORT, baffle, hopper	3	
10	1091675	• BAFFLE, hopper	1	
11	1091427	• SCREW, set, cup, M5 x 6, stainless steel	9	
12	1091376	• HUB, agitator, hopper	1	
13	1091377	• BLADE, agitator, hopper	6	
14	1091378	• SHAFT, agitator, hopper	1	
15	1091379	• COLLAR, agitator, hopper	1	
16	1091833	• INLET ASSEMBLY, delivery hose, hopper	2	
17	983055	• WASHER, pump mount	4	
18	939613	• LOCKNUT, conduit, $\frac{3}{4}$ in. NPS	4	
19	164063	• MOUNT, pump	2	
20	152227	• ADAPTER, pump	2	
21	941145	• O-RING, silicone, conductive, 0.625 x 0.812 in.	4	
22	941185	• O-RING, silicone, conductive, 0.875 x 1.062 in.	4	
23	-----	• SCREW, hex head, M5 x 20, stainless steel, full thread	4	
24	-----	• SCREW, truss head, 10–32 x 0.375 in. stainless steel	8	
25	164636	• SWITCH, limit, 1/8 in. NPT	1	
26	760580	• SCREW, philips head, M3 x 20, zinc	2	
27	-----	• WASHER, lock, external tooth, M3, steel, zinc	2	
28	972276	• CONNECTOR, male, elbow, 8 mm x $\frac{1}{8}$ in. unithread	2	
29	1091729	• BRACKET, limit switch, hopper cover	1	
30	-----	• NUT, hex, small pattern, 10–32	2	
31	983120	• WASHER, lock, split, #10, steel, nickel	2	
32	983058	• WASHER, flat, 0.219 x 0.50 x 0.049, stainless steel	2	
33	900618	• TUBING, polyurethane, 8-mm OD, blue	AR	
34	972277	• CONNECTOR, male, elbow, 8-mm x $\frac{1}{4}$ in. unithread	1	
NOTE A: Complete kit used for powder pumps. Refer to parts list on page 10.				
AR: As Required				
Continued...				

## Body Parts

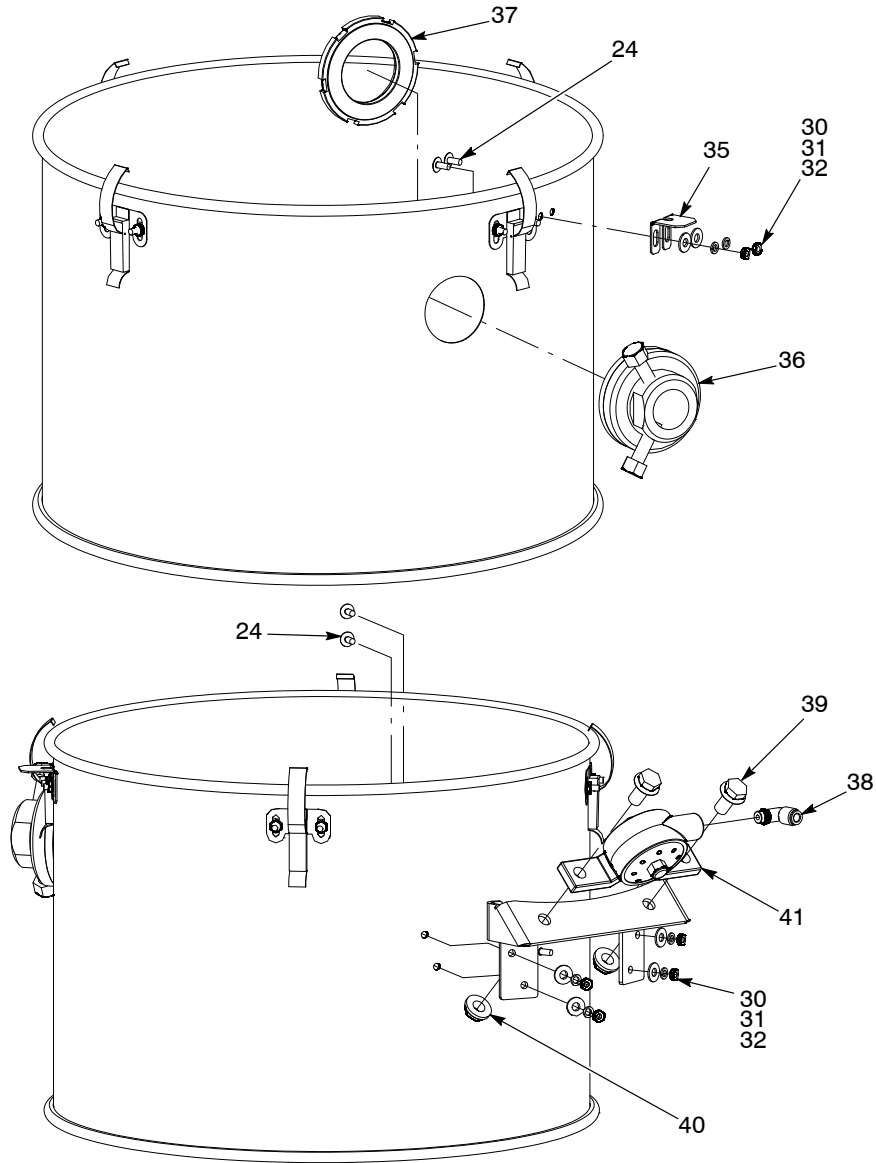


Figure 4 Body Parts

Item	Part	Description	Quantity	Note
35	1091728	• BRACKET, limit switch, hopper body	1	
36	174607	• KIT, well, level sensor	1	
37	144705	• • NUT, conduit, 1-1/2 in.	1	
NS	237302	• • GASKET, sensor well	1	
38	972126	• CONNECTOR, male, elbow, 6-mm x 1/8 in. unithread	1	
39	-----	• SCREW, hex, serrated, M10 x 20	2	
40	-----	• NUT, hex, flanged, serrated, M10	2	
41	1091370	• MOTOR, vibrator, hopper	1	
NS: Not Shown				



## Fluidizing Drum Parts

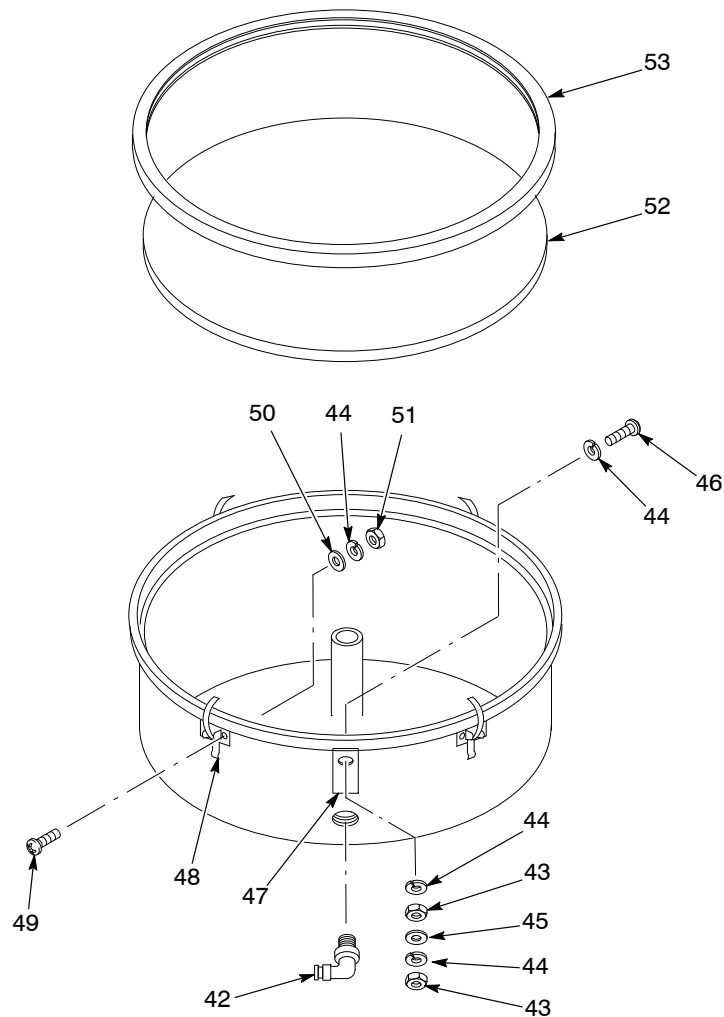


Figure 5 Fluidizing Drum

Item	Part	Description	Quantity	Note
—	1074531	DRUM, hopper, fluidizing, NHR, assembly, packaged	1	
42	1074535	• ELBOW, male, $\frac{3}{8}$ -in. RPT x 10-mm tube	1	
43	984702	• NUT, hex, M5, brass	2	
44	983401	• LOCK WASHER, split, M5, steel, zinc	11	
45	1070621	• WASHER, flat, M5, brass	1	
46	982126	• SCREW, pan head, M5 x 25, brass	1	
47	240674	• TAG, ground	1	
48	164064	• LATCH, hopper, curve base	4	
49	982000	• SCREW, pan head, M5 x 10, zinc	8	
50	1040877	• WASHER, flat, M5	7	
51	984706	• NUT, hex, M5, steel, zinc	8	
52	1608053	PLATE, hopper, fluidizing, NHR, dia 405/406	1	A
53	1608054	GASKET, hopper, U-channel, NHR	1	A

NOTE A: These parts are not included with the fluidizing drum assembly, only with the complete hopper assembly.

## Pump Mount and Pickup Tube Kit

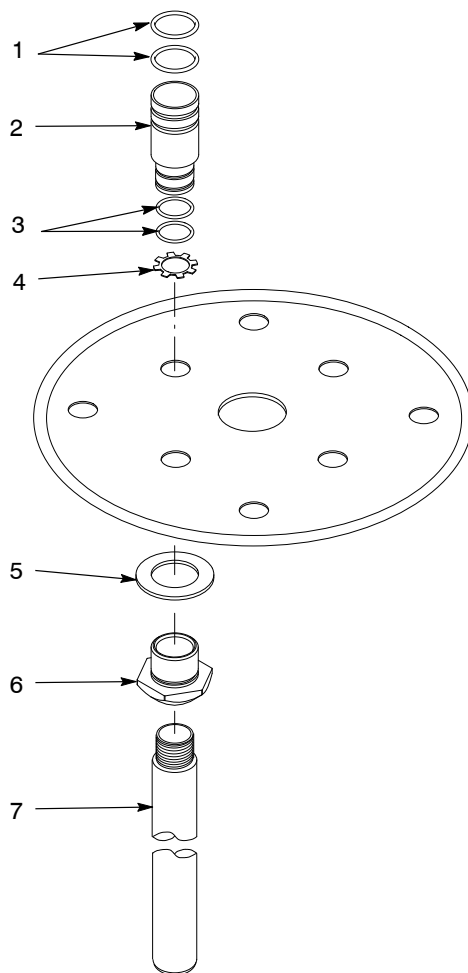


Figure 6 Pickup Tube Kit for Powder Feed Pumps

Item	Part	Description	Quantity	Note
–	1074868	TUBE, pickup, 25 lb, packaged		
1	941185	• O-RING, silicone, conductive, 0.875 x 1.062 in.		A
2	152227	• ADAPTER, pump, vibratory box feeder		A
3	941145	• O-RING, silicone, conductive, 0.625 x 0.812 in.		A
4	939613	• LOCKNUT, conduit, $\frac{3}{4}$ -in. NPS		A
5	983055	• WASHER, pump mount		A
6	164063	• MOUNT, pump		A
7	1071366	• TUBE, pickup, 0.360-in. ID x 10 in.		B
NOTE A: These parts are used to mount the transfer pumps on the hopper lid.				

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