

# Mobile Powder Spray System with Box Feeder for Cable-Fed Systems



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

## Description

This instruction sheet covers the following equipment in the Nordson cable-fed mobile powder spray system with box feeder:

- dolly
- pickup tube with fluidizing adapter
- vibratory box feeder

The following mobile powder spray system components are covered in their own manuals:

- Versa-Spray cable-fed electrostatic powder spray handgun
- EXP-100M power supply
- powder pump

## Dolly Configurations

The dolly frame is either a one- or two-piece design.

- Refer to *One-Piece Dolly Frame* in *Parts* if you need to order replacement hardware or a new dolly frame.
- The two-piece dolly frame has been discontinued. Refer to *Two-Piece Dolly Frame* in *Parts* if you need to order replacement hardware for a two-piece dolly frame.

## Fluidizing Pickup Tube

A fluidizing adapter injects fluidizing air into the powder at the end of the pickup tube, providing better powder dispersion and preventing clogging. The fluidizing pickup tube was not used on previous versions of the mobile powder feed systems.

**NOTE:** If you have an older system with a standard (non-fluidizing) pickup tube, you can order and install a fluidizing pickup tube kit. Contact your Nordson representative for information on the kit to order for your system.

## Vibrator Motor Configurations

The Nordson vibratory box feeder can accommodate boxes of powder from 11–25 kg (25–55 lb). A standard or low-flow powder pump feeds powder directly from the box to a spray gun.

The vibratory box feeder is either pneumatically or electrically operated.

- Pneumatic box feeders have been discontinued. Refer to *Pneumatic Box Feeder* in *Parts* if you need to order replacement parts for a pneumatic box feeder.
- Refer to *Electric Box Feeder* in *Parts* for a retrofit kit to upgrade your box feeder and replacement parts.

## Installation



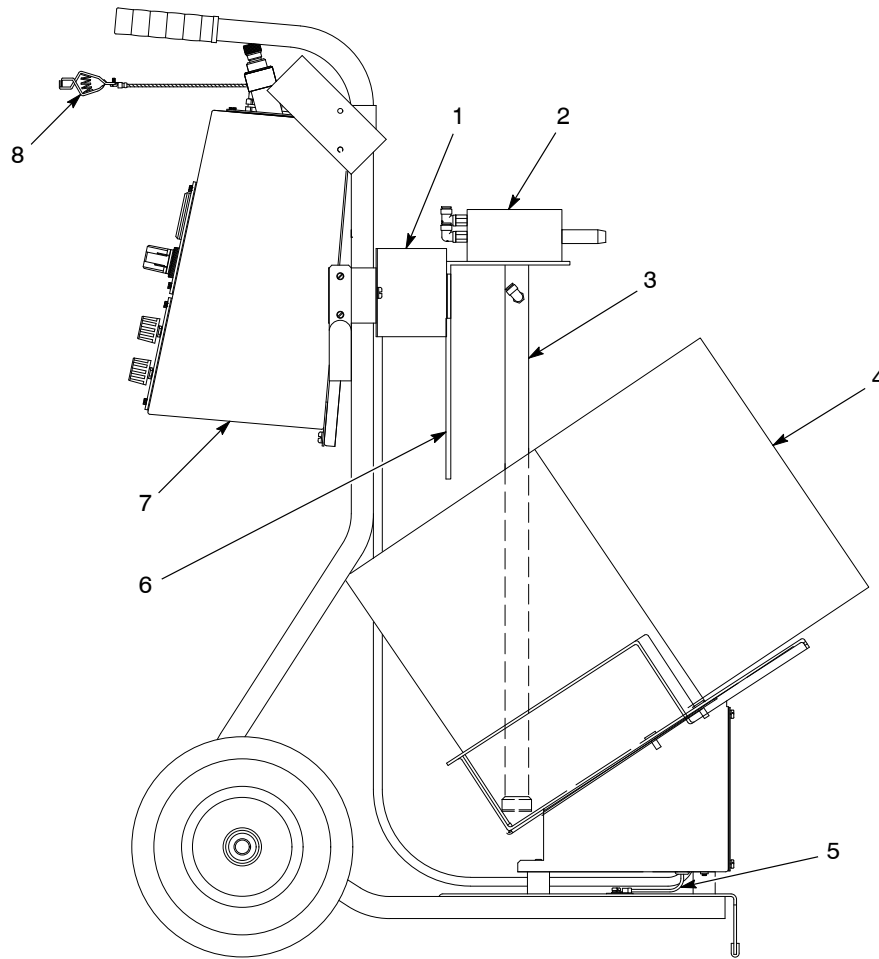
**WARNING:** All conductive equipment in the spray area must be connected to a true earth ground. Ungrounded, or poorly grounded equipment used in a powder spray area can become electrically charged. This charge can deliver a severe shock, or create sparks hot enough to cause a fire or explosion.

The system is shipped with the vibratory box feeder, control unit, pickup tube, air tubing, and ground cable installed.

See Figure 1.

Table 1 Installation Procedures

Component	Procedure
Powder Pump	<ol style="list-style-type: none"> <li>1. Install the pump (2) on the pickup tube (3).</li> <li>2. Connect the atomizing (blue) and flow rate (black) air tubing between the control unit (7) and the pump fittings. The fittings are marked F and A for flow rate and atomizing air.</li> </ol>
Spray Gun	<ol style="list-style-type: none"> <li>1. Install powder feed tubing between the pump outlet and the gun inlet.</li> <li>2. Refer to your powder spray gun manual for installation instructions.</li> </ol>
Dolly Ground Cable	Connect the dolly ground cable (8) to a true earth ground.
Spiral-Cut Tubing	<ol style="list-style-type: none"> <li>1. Cut the spiral-cut tubing into short pieces about 10-cm (4-in.) long.</li> <li>2. Use the tubing to bundle together the air tubing, gun cable, and powder feed tubing from the gun dolly. Install one piece near the gun handle, one near the pump inlet, and the others at regular intervals to prevent strain and kinking.</li> </ol>
Supply Air	Connect 10-mm tubing from a source of clean, dry air to the control unit IN port. The air supply must be clean and dry, with a maximum pressure of 7 bar (100 psi).



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Figure 1 Installation

- |                |  |                          |
|----------------|--|--------------------------|
| 1. Guide       | 4. Powder box                              | 7. EXP-100M power supply |
| 2. Powder pump | 5. Box feeder to dolly ground <sup>1</sup> | 8. Dolly ground cable    |
| 3. Pickup tube | 6. Pump mounting bracket                   |                          |

*Note:* 1: The box feeder to dolly ground wire is not present on electric vibratory box feeders.

## Operation



**WARNING:** All conductive equipment in the spray area must be connected to a true earth ground. Ungrounded, or poorly grounded equipment used in a powder spray area can become electrically charged. This charge can deliver a severe shock, or create sparks hot enough to cause a fire or explosion.

## **Powder Box Installation**

**NOTE:** The vibratory box feeder can handle boxes of powder from 11–25 kg (25–55 lb). The electric box feeder is powered through a junction box using the same source of power as the control unit. The pneumatic box feeder is operated by air from one of the auxiliary outputs on the control unit.

See Figure 1.

1. Lift the powder pump, pickup tube, and pump mounting bracket (2, 3, 6) assembly clear of the guide (1) and set it aside.
2. Place a box of powder (4) on the box feeder. Fold back the box flaps and open the plastic bag containing the powder coating. You can fold the bag over the box flaps to help hold them out of the way.

**NOTE:** Do not force the end of the pickup tube into the powder. During operation, vibration and gravity will cause the pickup tube to sink into the powder to the proper level.

3. Slide the vertical leg of the pump mounting bracket back into the guide, inserting the end of the pickup tube into the powder.
4. To prevent accidental powder spills, wrap the plastic bag around the pickup tube and loosely secure it with a tie wrap.

## **Startup**

1. Make sure that the main system power and booth exhaust fans are on before starting up the mobile powder spray system.
2. See Figure 1. Make sure that the dolly ground cable (8) is connected to a true earth ground.
3. Install a box of powder on the vibratory box feeder.
4. Start the vibrator motor.
  - **Electric Vibrator Motors:** Turn the power switch on the junction box to the on position.
  - **Pneumatic Vibrator Motors:** The air supply should be clean and dry, at a maximum pressure of 7 bar (100 psi). Increase air pressure to the pneumatic vibrator motor until it starts, then increase it again until powder starts to flow towards the pickup tube. Recommended pressure is 2.7–3.4 bar (40–50 psi).

**NOTE:** If you will not be spraying powder for more than five minutes, turn off the vibrator motor.

5. Start the atomizing and flow rate air to the pump, test the spray pattern, and adjust air pressures until you obtain the desired flow rate and spray pattern.

**NOTE:** The pickup tube will gravity-feed into the box as the powder level decreases. The pickup tube has a vented inner passage to prevent powder from clogging the intake, but damp powder can cause problems.

## ***Shutdown***

1. Turn off the vibrator motor.
  - **Electric Vibrator Motor:** Turn the power switch on the junction box to the off position.
  - **Pneumatic Vibrator Motor:** Set the vibrator motor regulator to zero.
2. Shut down the other system components using the procedures given in the gun, controller, pump, and booth manuals.
3. If you do not use the entire box of powder before shutting down for the day, remove the pickup tube from the box and reseal the bag.

## Parts

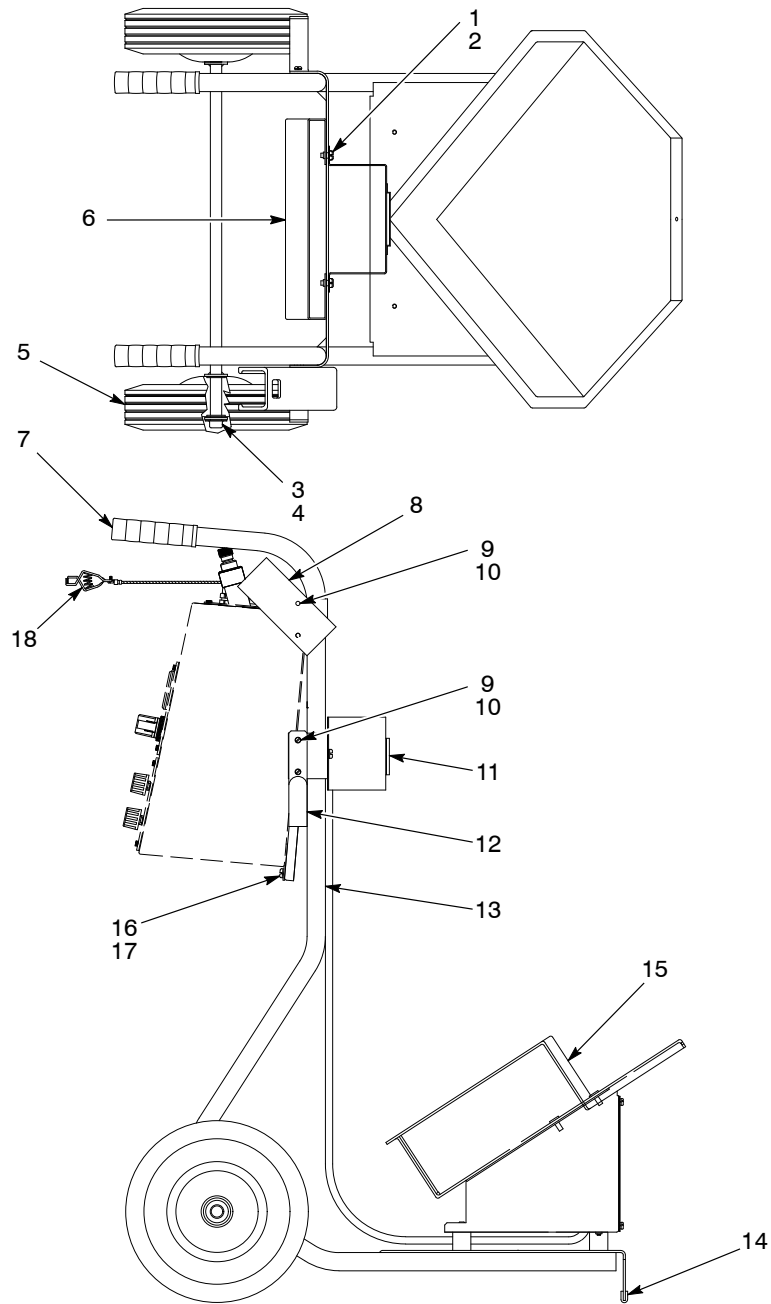
To order parts for Nordson equipment, call the Nordson Customer Service Center or your Nordson representative.

### *Dolly Frame*

#### One-Piece Dolly Frame

See Figure 2.

Item	Part	Description	Quantity	Note
—	-----	DOLLY, cable fed, box feeder	1	
1	982499	• SCREW, pan head, slotted, M6 x 12, zinc	4	
2	983128	• WASHER, lock, internal, M6, zinc	4	
3	1004373	• CAP, push, $\frac{5}{8}$ -in. shaft	2	
4	983090	• WASHER, flat, e, 0.656 x 1.356 x 0.095 in.	2	
5	901601	• WHEEL, 10 x 2.75 in.	2	
6	163611	• BRACKET, cabinet, dolly, EXP	1	
7	1004372	• GRIP, handlebar, 1-in. tube	2	
8	231989	• BRACKET, gun, dolly system	1	
9	126336	• SCREW, pan head, slotted, M5 x 12, zinc	6	
10	983127	• WASHER, lock, internal, M5, zinc	6	
11	164588	• BRACKET, pickup tube	1	
12	164578	• BRACKET, cable/hose	2	
13	1004268	• FRAME, universal dolly	1	
14	246388	• GASKET	AR	
15	-----	FEEDER, box, electric, vibratory	1	A
16	982499	SCREW, pan head, slotted, M6 x 12	2	
17	983128	WASHER, lock, m, internal, M6	2	
18	134575	WIRE, ground	1	
NOTE A: Refer to <i>Vibratory Box Feeder</i> for a breakdown of the parts in this assembly.				
AR: As Required				



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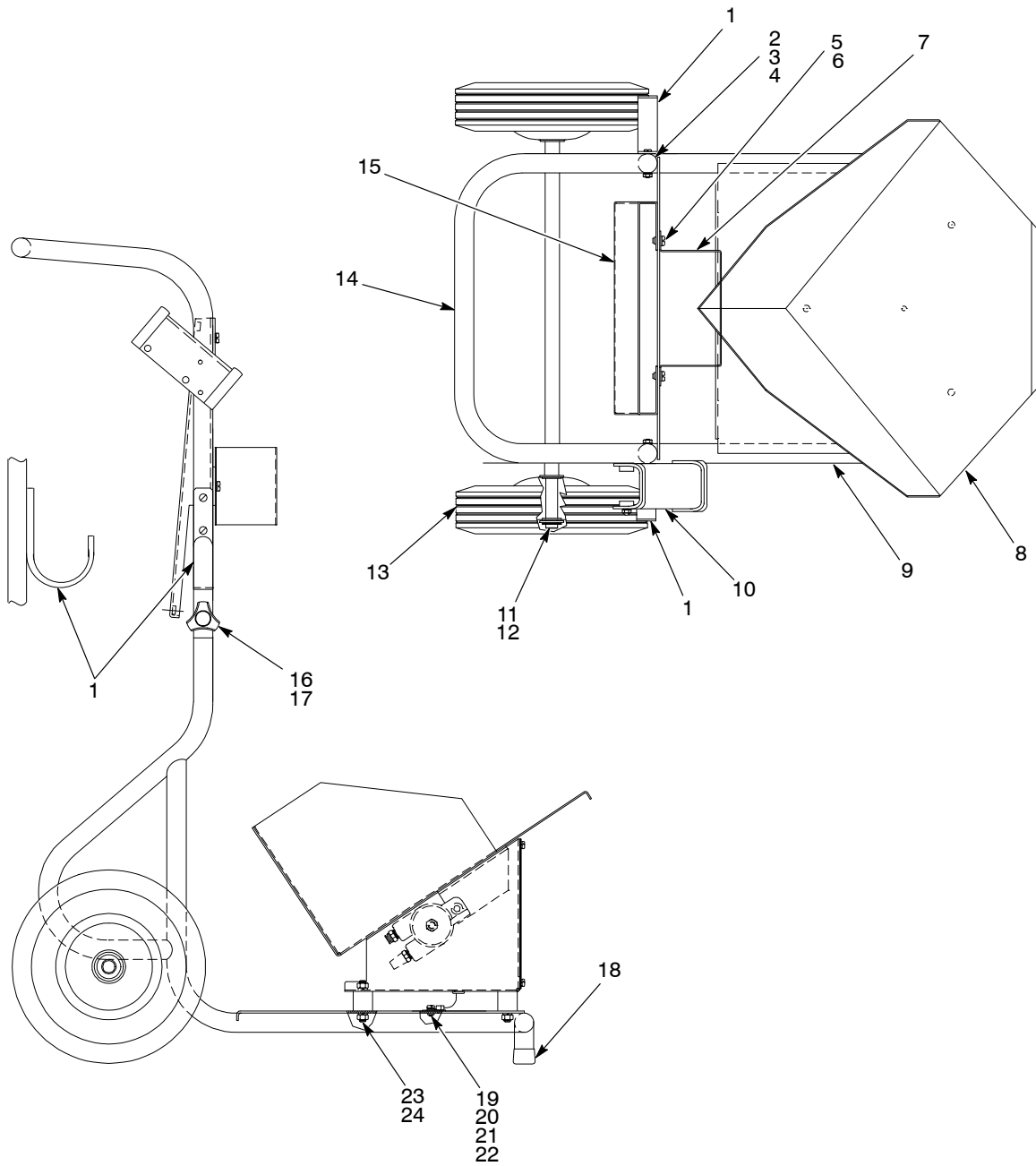
Figure 2 One-Piece Dolly Frame

## Two-Piece Dolly Frame

See Figure 3.

Item	Part	Description	Quantity	Note
—	-----	DOLLY, two-piece, cable-fed, box feeder	1	
1	164578	• BRACKET, cable/hose	2	
2	982244	• SCREW, pan head, M5 x 35	6	
3	983127	• WASHER, lock, internal, M5	6	
4	984706	• NUT, hex, M5	6	
5	982499	• SCREW, pan head, M6 x 12	8	
6	983128	• WASHER, lock, internal, M6	8	
7	164588	• BRACKET, pickup tube	1	
8	-----	• FEEDER, box	1	A
9	-----	• FRAME, lower, dolly	1	
10	231989	• BRACKET, gun, dolly system	1	
11	986111	• RING, retaining, external, 62, inverted	2	
12	983090	• WASHER, flat	4	
13	901601	• WHEEL, 10 x 2.75 in.	2	
14	-----	• FRAME, upper, dolly	1	
15	163611	• BRACKET, cabinet, dolly, EXP	1	
16	133415	• KNOB, mount	2	
17	983414	• WASHER, flat, narrow, M8	2	
18	152235	• CAP, tube-bearing, 1.00 in.	1	
19	982136	• SCREW, pan head, M5 x 16, brass	1	
20	983401	• WASHER, lock, M5	1	
21	983021	• WASHER, flat, 0.206 x 0.406 in.	1	
22	240674	• TAG, ground	1	
23	983150	• WASHER, lock, split, 0.313 in.	3	
24	984140	• NUT, hex, $\frac{5}{16}$ -18	3	
NOTE A: Refer to <i>Vibratory Box Feeder</i> for a breakdown of the parts in this assembly.				





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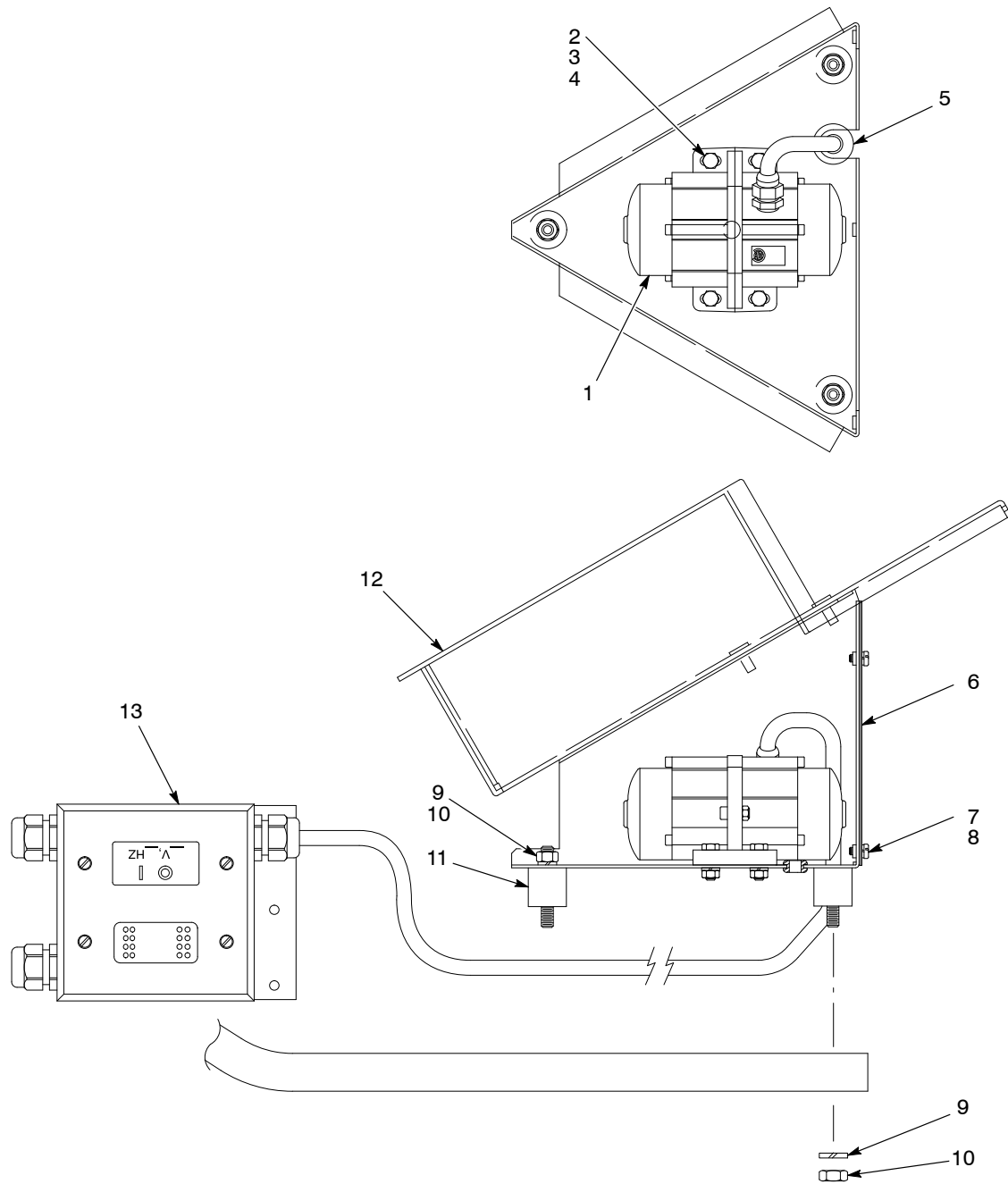
Figure 3 Two-Piece Dolly Frame

## Vibratory Box Feeder

### Electric Box Feeder

See Figure 4.

Item	Part	Description	Quantity	Note
—	1005708	KIT, feeder, box, 115 V 60 Hz	1	
—	1005709	KIT, feeder, box, 220 V 50 Hz	1	A
1	1005702	• VIBRATOR, electrical, 115 V, 60 Hz	1	
1	1005703	• VIBRATOR, electrical, 220 V, 50 Hz	1	A
2	982129	• SCREW, hex head, machined, M6 x 16, zinc	4	
3	983409	• WASHER, lock, m, split, M6, steel, zinc	4	
4	984703	• NUT, hex, M6, steel, zinc	4	
5	900707	• GROMMET, rubber, 0.500-in. ID x 0.063-in. OD	1	
6	152275	• PLATE, cover	1	
7	982000	• SCREW, pan head, slotted, M5 x 10, zinc	5	
8	983401	• WASHER, lock, m, split, M5	6	
9	983150	• WASHER, lock, e, split, $\frac{5}{16}$ in.	6	
10	984140	• NUT, hex, regular, $\frac{5}{16}$ -18 in.	6	
11	152237	• ISOLATOR, vibration, $\frac{5}{16}$ -18 x 0.56 in.	3	
12	152215	• BASE, box holder	1	
13	-----	• BOX, junction	1	B
NOTE A: This vibrator will not operate at 220 V, 60 Hz.				
B: Refer to <i>Electric Box Feeder Junction Box</i> for a breakdown of the parts included in this assembly.				
AR: As Required				



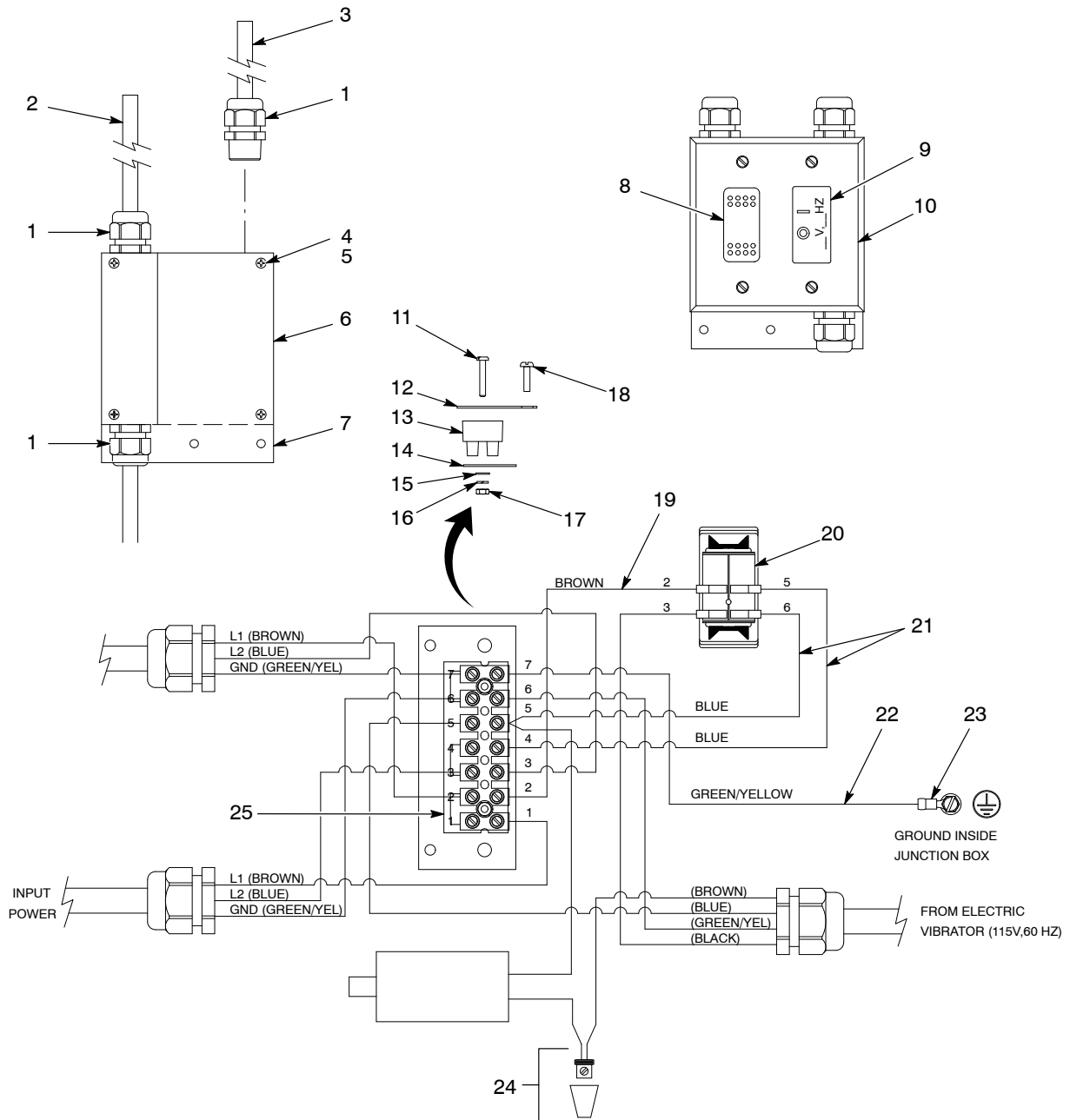
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Figure 4 Electric Vibratory Box Feeder

**Electric Box Feeder Junction Box**

See Figure 5.

Item	Part	Description	Quantity	Note
—	-----	BOX, junction	1	
1	972808	• CONNECTOR, strain relief, 1/2-in. NPT	3	
2	140794	• CABLE, SO, 16/3, 90D, black, blue-brown-green/yellow	1	
3	130629	• CABLE, power, 5 wire, 6.5 ft, female	1	
4	981058	• SCREW, fillister, recessed, tap, 8-32 x 0.500 in., zinc	4	
5	983111	• WASHER, lock, e, split, #8, steel, zinc	4	
6	1005779	• PANEL, switch	1	
7	140997	• BOX, electric, square, 5 1/2-in. NPT	1	
8	322404	• SWITCH, rocker, DPST, dust tight	1	
9	-----	• LABEL, switch	1	
10	1005880	• PLATE, cover, rocker switch	1	
11	982169	• SCREW, pan head, M3 x 16	2	
12	1005979	• MARKER, terminal block, 7 station	1	
13	1005997	• BLOCK, terminal, 7 station	1	
14	1005991	• PLATE, mounting, terminal block	1	
15	983411	• WASHER, flat, m, narrow, M3	2	
16	983400	• WASHER, lock, m, split, M3	2	
17	984700	• NUT, hex, M3	2	
18	981031	• SCREW, flat, 6-32 x 3/8	2	
19	931295	• WIRE, vinyl, 14 AWG, brown	AR	
20	1005977	• TERMINAL, push on, 90, flag, 16/14, fully insulated	4	
21	931259	• WIRE, vinyl, 14 AWG, blue	AR	
22	931191	• WIRE, vinyl, 14 AWG, green/yellow	AR	
23	933047	• TERMINAL, ring tong, 16/14, fully insulated	1	
24	939220	• CONNECTOR, wire, set screw	1	
25	933630	• JUMPER, comb type, 2 pole, 10 mm	3	
AR: As Required				



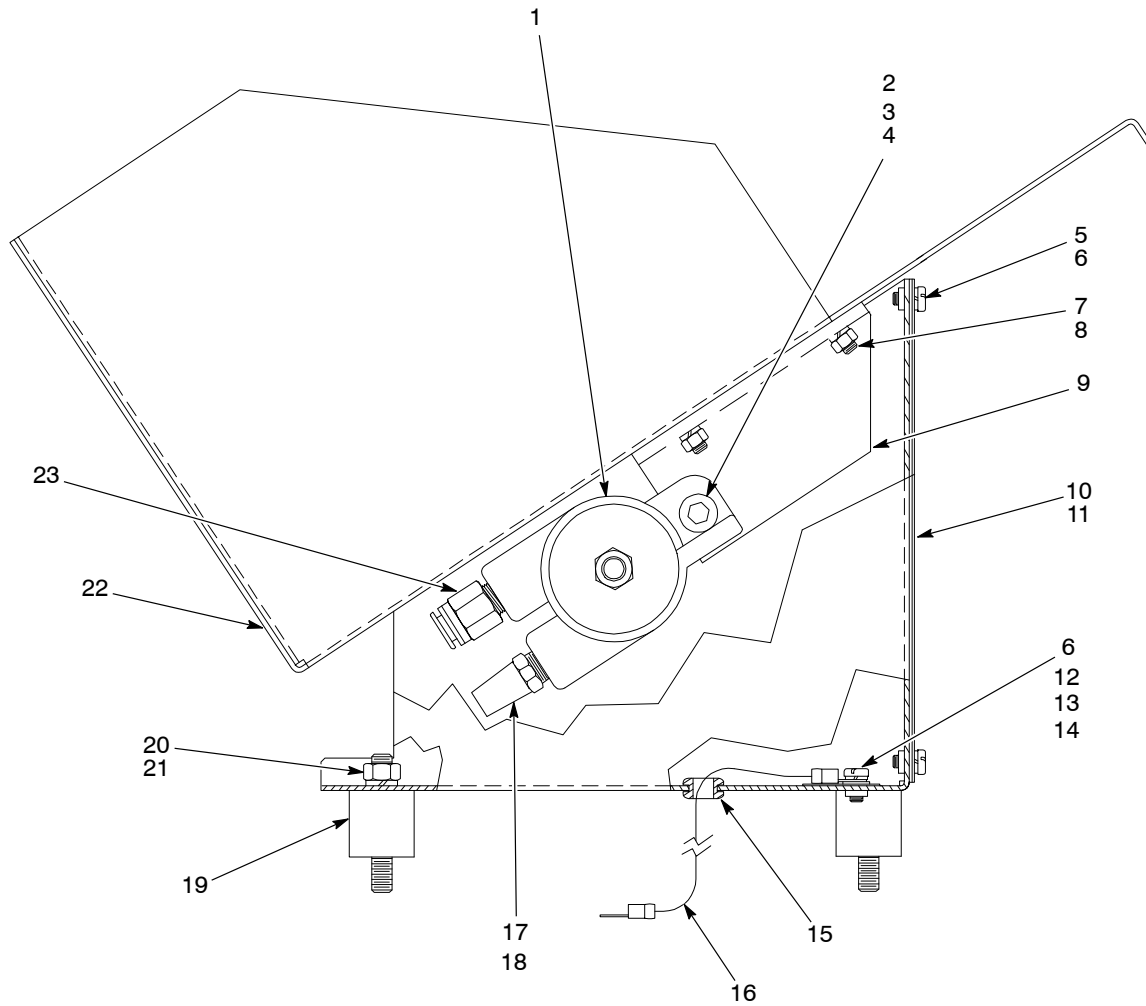
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Figure 5 Junction Box

## Pneumatic Box Feeder

See Figure 6.

Item	Part	Description	Quantity	Note
—	-----	FEEDER, box, pneumatic, universal dolly	1	
1	246656	• VIBRATOR, turbine	1	
2	982177	• SCREW, socket head, M10 x 30	1	
3	983405	• WASHER, lock, split, M10	1	
4	984711	• NUT, hex, M10	1	
5	982000	• SCREW, pan head, M5 x 10	5	
6	983401	• WASHER, lock, split, M5	6	
7	984707	• NUT, hex, M8	2	
8	983404	• WASHER, lock, split, M8	2	
9	152226	• BRACKET, vibrator, turbine	1	
10	242654	• GASKET, cabinet	AR	
11	152275	• PLATE, cover	1	
12	982136	• SCREW, pan head, M5 x 16, brass	1	
13	983021	• WASHER, flat, 0.203 x 0.406 in.	1	
14	240674	• TAG, ground	1	
15	900728	• GROMMET, rubber, $\frac{5}{16} \times \frac{5}{8} \times \frac{3}{32}$ in.	1	
16	152233	• JUMPER, ground, box feeder, vibratory	1	
17	900236	• SEALANT, paste, PTFE (1 pint)	1	
18	972615	• MUFFLER, filter, $\frac{1}{4}$ -in. NPT	1	
19	152237	• ISOLATOR, vibration, $\frac{5}{16}$ -18 x 0.56 in.	3	
20	983150	• WASHER, lock, split, 0.313 in.	3	
21	984140	• NUT, hex, $\frac{5}{16}$ -18	3	
22	152273	• BASE, box holder	1	
23	972841	• CONNECTOR, male, 10-mm tube x $\frac{1}{4}$ -in. NPT	1	
AR: As Required				



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Figure 6 Pneumatic Vibratory Box Feeder

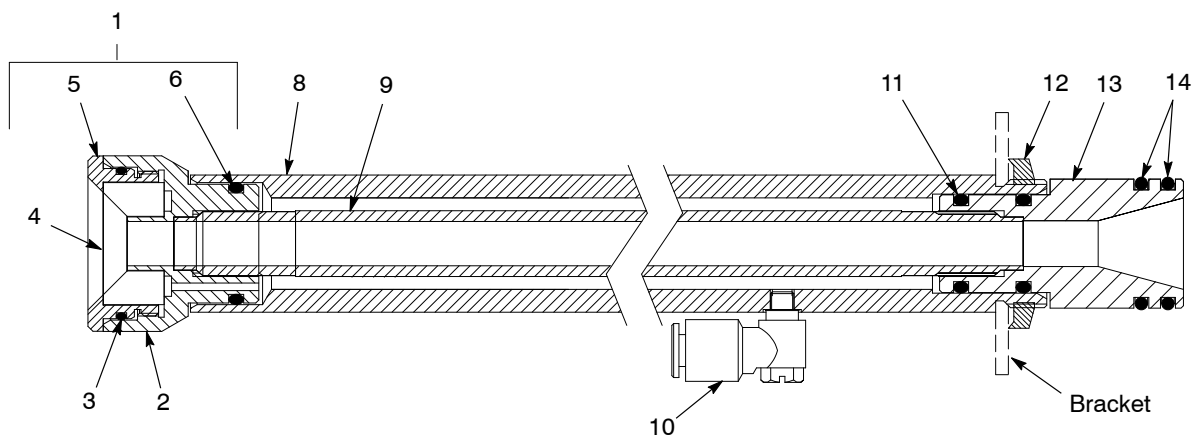
## Fluidizing Pickup Tube

### Threaded Adapter Pickup Tube

See Figure 7.

This pickup tube's insert adapter (2) threads onto the inner pickup tube (9). The threaded parts stop the fluidizing adapter from falling off the pickup tube when it is pulled out of a box of powder.

Item	Part	Description	Quantity	Note
1	1031622	KIT, adapter, fluidizing, threaded	1	
2	1031591	• ADAPTER, insert, fluidizing box feeder	1	
3	940243	• O-RING, silicone, 1.125 x 1.250 x 0.063 in.	1	
4	305789	• INSERT, fluidizing disc, box feeder	1	
5	305786	• CAP, pickup tube, fluidizing box feeder	1	
6	941178	• O-RING, silicone, conductive, 0.812 x 1.00 in.	1	
8	305785	TUBE, pickup, outer, fluidizing box feeder	1	
9	1031590	TUBE, pickup, fluidizing box feeder	1	
10	972310	ELBOW, male, M5 x 6 mm	1	
11	941145	O-RING, silicone, conductive, 0.625 x 0.812 in.	2	
12	939613	LOCKNUT, conduit, $\frac{3}{4}$ -in. NPS	1	
13	152227	ADAPTER, pump, vibratory box feeder	1	
14	941185	O-RING, silicone, conductive, 0.875 x 1.062 in.	2	



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Figure 7 Threaded Fluidizing Pick-Up Tube Parts



## O-Ring Fit Adapter Pickup Tube

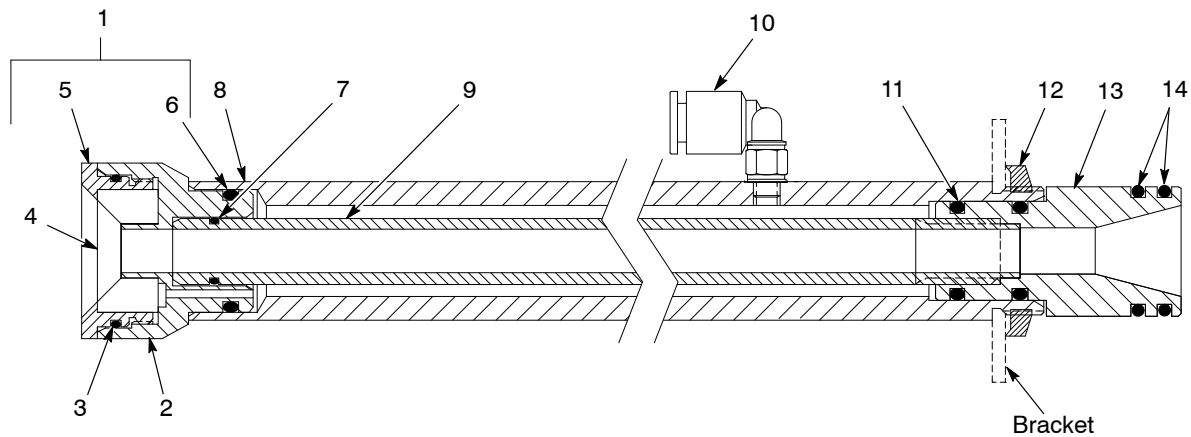
See Figure 8.

This pickup tube's insert adapter (2) fits into the inner and outer pickup tubes using an O-ring (7).

**NOTE:** The O-ring fit adapter pickup tube has been discontinued. Replacement parts are still available.

Item	Part	Description	Quantity	Note
1	306175	KIT, adapter, fluidizing, O-ring fit	1	A
2	305787	• ADAPTER, insert, fluidizing box feeder	1	A
3	940243	• O-RING, silicone, 1.125 x 1.250 x 0.063 in.	1	
4	305789	• INSERT, fluidizing disc, box feeder	1	
5	305786	• CAP, pickup tube, fluidizing box feeder	1	
6	941178	• O-RING, silicone, conductive, 0.812 x 1.00 in.	1	
7	940137	O-RING, silicone, 0.437 x 0.562 x 0.063 in.	1	
8	305785	TUBE, pickup, outer, fluidizing box feeder	1	
9	305784	TUBE, pickup, fluidizing box feeder	1	A
10	972310	ELBOW, male, M5 x 6 mm	1	
11	941145	O-RING, silicone, conductive, 0.625 x 0.812 in.	2	
12	939613	LOCKNUT, conduit, $\frac{3}{4}$ -in. NPS	1	
13	152227	ADAPTER, pump, vibratory box feeder	1	
14	941185	O-RING, silicone, conductive, 0.875 x 1.062 in.	2	

NOTE A: To convert the O-ring fit adapter pickup tube to a threaded adapter pickup tube, order the threaded insert adapter (part 1031591) and inner pickup tube (part 1031590). If you order the threaded fluidizing adapter kit (part 1031591), you will still have to order the threaded inner pickup tube (part 1031590).



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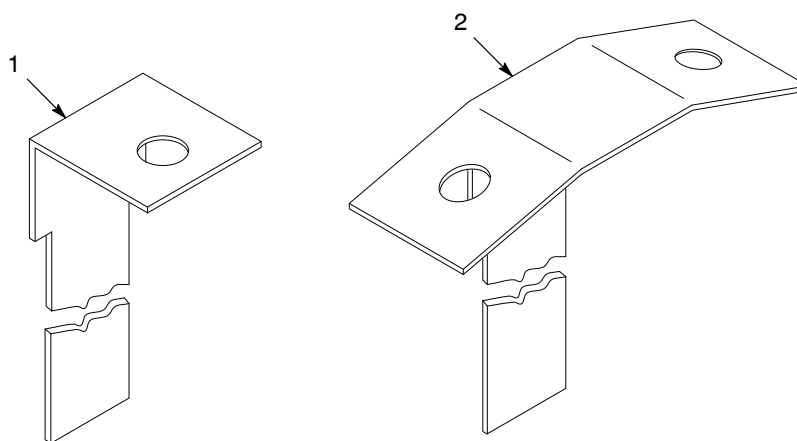
Figure 8 O-Ring Fit Fluidizing Pick-Up Tube Parts

## Pump Mounting Brackets

See Figure 9.

Use the following parts list to order replacement single or dual pump mounting brackets.

Item	Part	Description	Quantity	Note
1	152224	BRACKET, pump, box feeder, vibratory	1	
2	156453	BRACKET, pump, dual, VBF-1	1	



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Figure 9 Pump Mounting Brackets

## Air Tubing

Order air tubing in increments of one foot.

Part	Description	Note
900586	TUBING, polyurethane, 6-mm OD, blue	
900740	TUBING, polyurethane, 6-mm OD, black	
900618	TUBING, polyurethane, 8-mm OD, blue	
900619	TUBING, polyurethane, 8-mm OD, black	
900740	TUBING, polyurethane, 10-mm OD	

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