

Mobile Powder Feed System with Box Feeder



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 mobile powder feed systems with vibratory box feeders. These systems are available in two configurations:

- **Bulk Transfer System:** Used to transfer powder from boxes to powder feed hoppers. This system includes a transfer pump and pneumatic controls for the pump.
- **Gun Feed System:** Used to supply powder directly to a powder spray gun. This system includes a powder feed pump, but no pneumatic controls for the pump. Pump air must be supplied and controlled by a remotely mounted spray gun controller.

New mobile systems are equipped with electrically powered vibratory box feeders. Older systems were equipped with pneumatically powered vibratory box feeders.

Systems with Electric Box Feeders

These systems include the following components:

- two-wheel dolly
- vibratory box feeder with electric motor (115 V, 60 Hz or 220 V, 50 Hz)
- single gauge/regulator module (bulk transfer systems only)
- fluidizing pickup tube
- transfer pump (bulk transfer) or powder feed pump (gun feed)
- air tubing, fittings, ground cable, and fitting for supply air tubing

Systems with Pneumatic Box Feeders

These discontinued systems included the same components as those with electric box feeders except for:

- vibratory box feeder with pneumatic motor
- single gauge/regulator module (gun feed system) or dual gauge/regulator module (bulk transfer system)

Dolly Configurations

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

- Refer to *One-Piece Dolly* 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* 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 adapter, you can order and install a fluidizing pickup tube kit. Contact your Nordson representative for information on the kit to order for your system.

Vibratory Box Feeders

The vibratory box feeder can accommodate boxes of powder from 11–25 kg (25–55 lb). New vibratory box feeders are electrically operated. Pneumatically operated box feeders have been discontinued, but repair parts can still be ordered or they can be upgraded to electric box feeders.

NOTE: To upgrade a pneumatic box feeder to an electric box feeder, order a complete *Electric Vibratory Box Feeder* kit. The kit includes a new box feeder and electrical junction box with on/off switch and the hardware required to mount them to the dolly frame.

Installation

Systems are shipped with all components except the pump installed on the dolly.

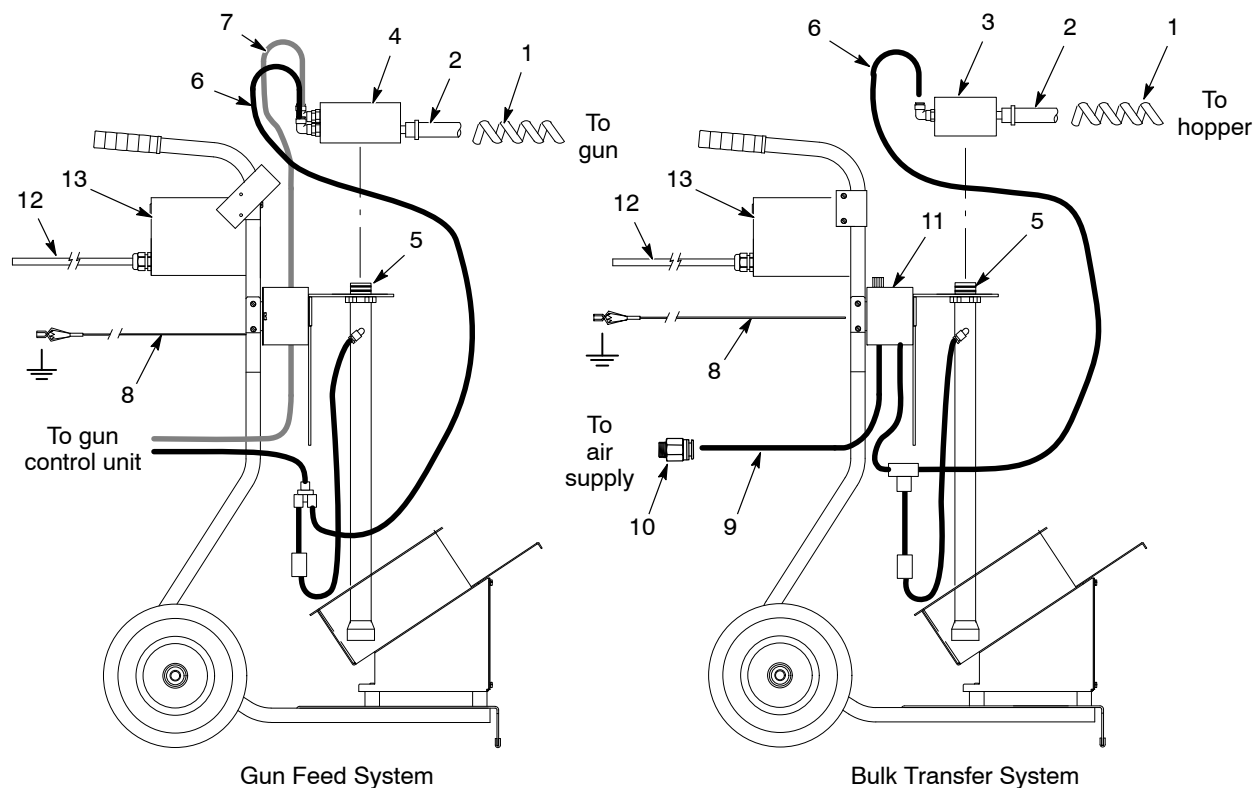
Refer to Table 1 for installation procedures. Connections are shown in

- Figure 1 for systems with electric box feeders
- Figure 2 for discontinued systems with pneumatic box feeders

Table 1 Installation Procedures

Component	Procedure						
Powder Pump	<ol style="list-style-type: none"> 1. Install the pump (3 or 4) on the pickup tube (5). 2. Make the following connections for the appropriate pump: <ul style="list-style-type: none"> • Bulk Transfer System: Powder feed tubing (2) to the pump outlet. 10-mm flow rate air tubing (6) to the pump air fitting. • Gun Feed System: Powder feed tubing (2) to the pump outlet. Flow rate (black) air tubing (6) from the tee to the pump fitting marked F (see note below). Flow rate (black) air tubing from the tee to the gun control unit flow rate air port (see note below). Atomizing (blue) air tubing (7) from the gun control unit atomizing air port to the pump fitting marked A (see note below). <p>NOTE: Versa-Spray and Tribomatic pumps use 6-mm air tubing and fittings; Sure Coat pumps use 8-mm air tubing and fittings. When used with Tribomatic spray guns, the atomizing air tubing is connected to the diffuser on the spray gun. The Tribomatic pump only has a flow rate air fitting.</p>						
Supply Air	<p>NOTE: This procedure applies to bulk transfer systems with electric or pneumatic box feeders, and to gun feed systems with pneumatic box feeders.</p> <p>Connect 10-mm tubing (9) from a source of clean, dry air to the gauge/regulator module (11) IN port. If necessary, use the $\frac{3}{8}$-in. tube x $\frac{1}{4}$-in. NPT male connector (10) to connect the tubing to the air supply. The air supply must be clean and dry, with a maximum pressure of 7 bar (100 psi).</p>						
Dolly Ground Cable	Connect the dolly ground cable (8) to a true earth ground.						
Power Cord	<p>NOTE: This procedure only applies to systems with electric box feeders.</p> <p>Required voltage is either 115 V, 60 Hz, or 220 V, 50 Hz. Check the label on the junction box (13), next to the On/Off switch, for the correct voltage. Do not connect the power cord to the wrong voltage.</p> <p>The 3-lead power cord (12) is unterminated. Connect the power cord leads as follows to a three-pronged plug or power supply terminals:</p> <table> <tr> <td>Brown:</td> <td>L1</td> </tr> <tr> <td>Blue:</td> <td>L2</td> </tr> <tr> <td>Green/Yellow</td> <td>GND</td> </tr> </table>	Brown:	L1	Blue:	L2	Green/Yellow	GND
Brown:	L1						
Blue:	L2						
Green/Yellow	GND						
Spiral-Cut Tubing	<ol style="list-style-type: none"> 1. Cut the spiral-cut tubing (1) into short pieces about 10-cm (4-in.) long. 2. Wrap the spiral-cut tubing around the powder feed tubing at the pump outlet and where necessary to prevent the tubing from kinking. If your system is a gun feed system, use the spiral-cut tubing to bundle the powder feed tubing with the gun cables and tubing. 						

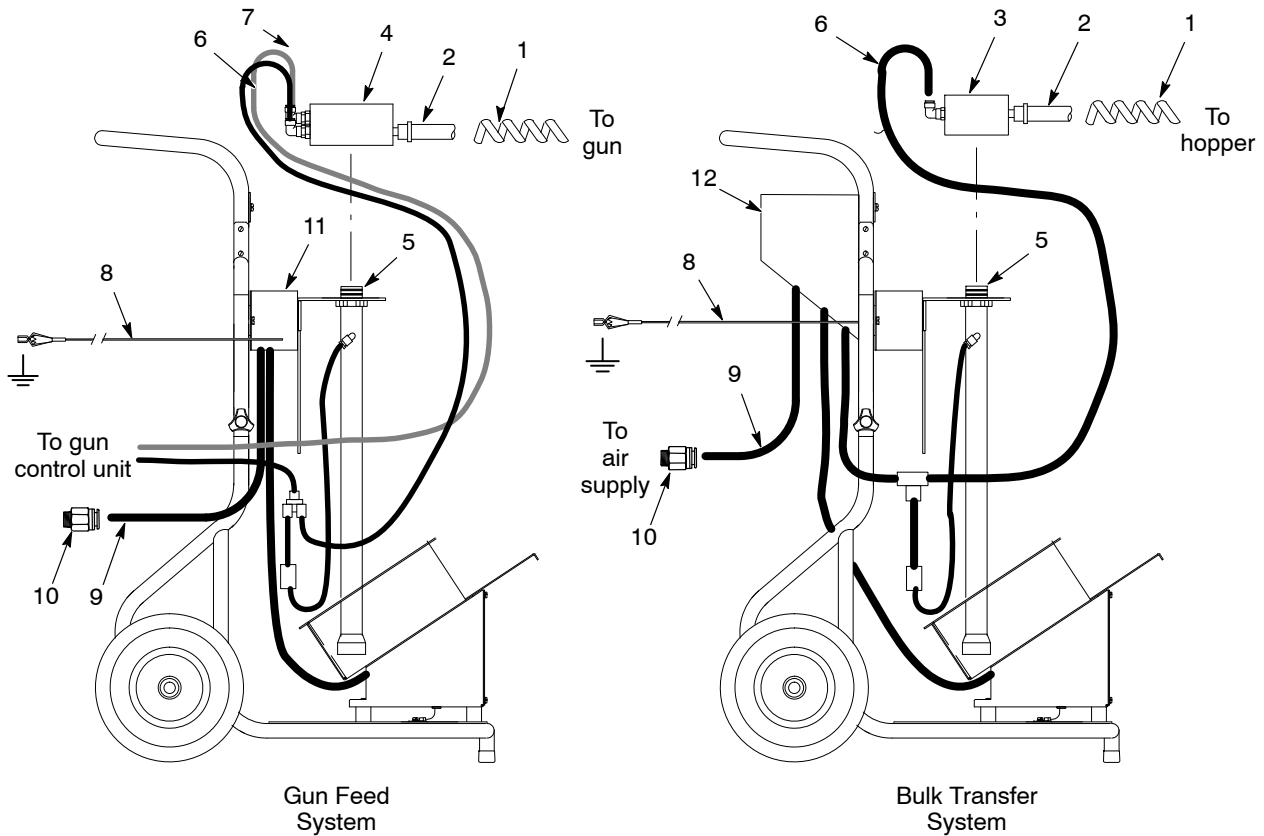
Installation *(contd)*



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Figure 1 Installation—Systems with Electric Box Feeders

- | | | |
|-----------------------|----------------------------|-----------------------------------|
| 1. Spiral-cut tubing | 6. Flow rate air tubing | 10. Male connector |
| 2. Powder feed tubing | 7. Atomizing air tubing | 11. Single gauge/regulator module |
| 3. Transfer pump | 8. Dolly ground cable | 12. Power cord (to power supply) |
| 4. Powder feed pump | 9. 10-mm supply air tubing | 13. Junction box |
| 5. Pickup tube | | |



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Figure 2 Installation—Discontinued Systems with Pneumatic Box Feeders

- | | | |
|-----------------------|-------------------------|-----------------------------------|
| 1. Spiral-cut tubing | 5. Pickup tube | 9. 10-mm supply air tubing |
| 2. Powder feed tubing | 6. Flow rate tubing | 10. Male connector |
| 3. Transfer pump | 7. Atomizing air tubing | 11. Single gauge/regulator module |
| 4. Powder feed pump | 8. Dolly ground cable | 12. Dual gauge/regulator module |

Upgrading Pneumatic Box Feeders

Use these instructions to upgrade your system from a pneumatic box feeder to an electric box feeder. You must order one of the *Electric Vibratory Box Feeder* kits listed in the *Parts* section. Kits are available for 115 V, 60 Hz or 220 V, 50 Hz.

1. Disconnect the air tubing from the pneumatic motor and the gauge/regulator module.
2. See Figure 8. Disconnect the ground wire (16) from the dolly frame.
3. See Figure 5. Remove the nuts and lock washers (13 and 14) securing the vibration isolators to the dolly frame.
4. Lift the entire pneumatic box feeder off the dolly frame.
5. If necessary, relocate either a gun mounting bracket or hose bracket (J-bracket) (5) mounted on the side of the dolly frame close to the handle bend, to expose two mounting holes for the electric vibrator junction box.
6. See Figure 6. Install the electric box feeder on the dolly frame as shown.
7. Mount the junction box on the dolly frame, using the holes exposed in step 5.
8. Connect the power cable to a power supply as described in Table 1, Installation Procedures.

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

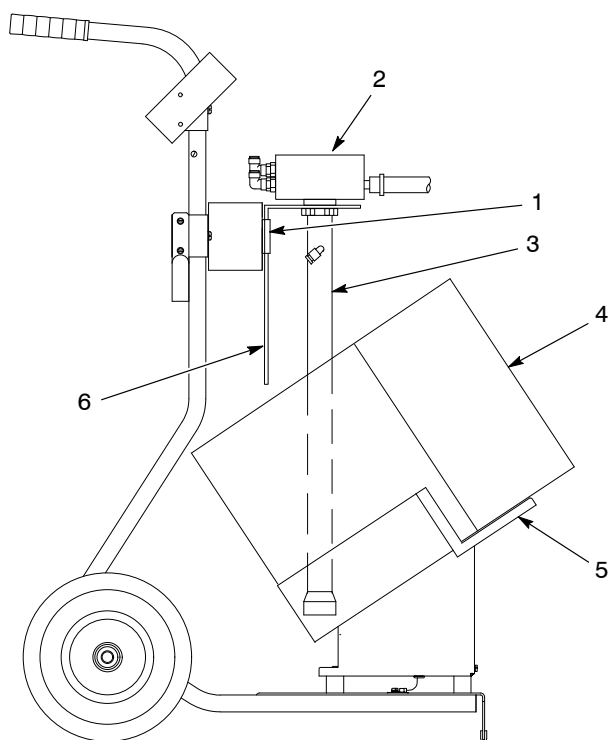
NOTE: The vibratory box feeder can accommodate boxes of powder from 11–25 kg (25–55 lb).

See Figure 3.

1. Lift the powder pump, pickup tube, and pump mounting bracket assembly (2, 3, and 6) clear of the guide (1) and set it aside.
2. Place a box of powder (4) on the box feeder (5). 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 and insert 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.



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Figure 3 Powder Box Installation

- | | |
|----------------|--------------------------|
| 1. Guide | 4. Powder box |
| 2. Powder pump | 5. Box feeder |
| 3. Pickup tube | 6. Pump mounting bracket |

Startup

1. Turn on the main system power and booth exhaust fan.
2. Make sure that the dolly ground wire 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 on the junction box power switch.
 - **Pneumatic Vibrator Motors:** 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: Shut off the vibrator motor if you will not be spraying powder for more than five minutes.

5. Set pump operating air pressures:
 - **Bulk Transfer System:** Set the transfer pump operating air pressure at the single gauge/regulator module. Refer to the pump manual for the recommended operating pressure.
 - **Gun Feed System:** Set flow rate and atomizing air pressures at the gun control unit. Triggering the spray gun starts air flow to the pump.

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. Keep the powder box sealed when not coating parts.

Shutdown

1. Shut off the transfer pump by adjusting the regulator to zero pressure.
2. Turn off the vibrator motor.
 - **Electric Box Feeder:** Turn the power switch on the junction box to the off position.
 - **Pneumatic Box Feeder:** Set the vibrator motor regulator to zero pressure, or turn off the air supply to the system.
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

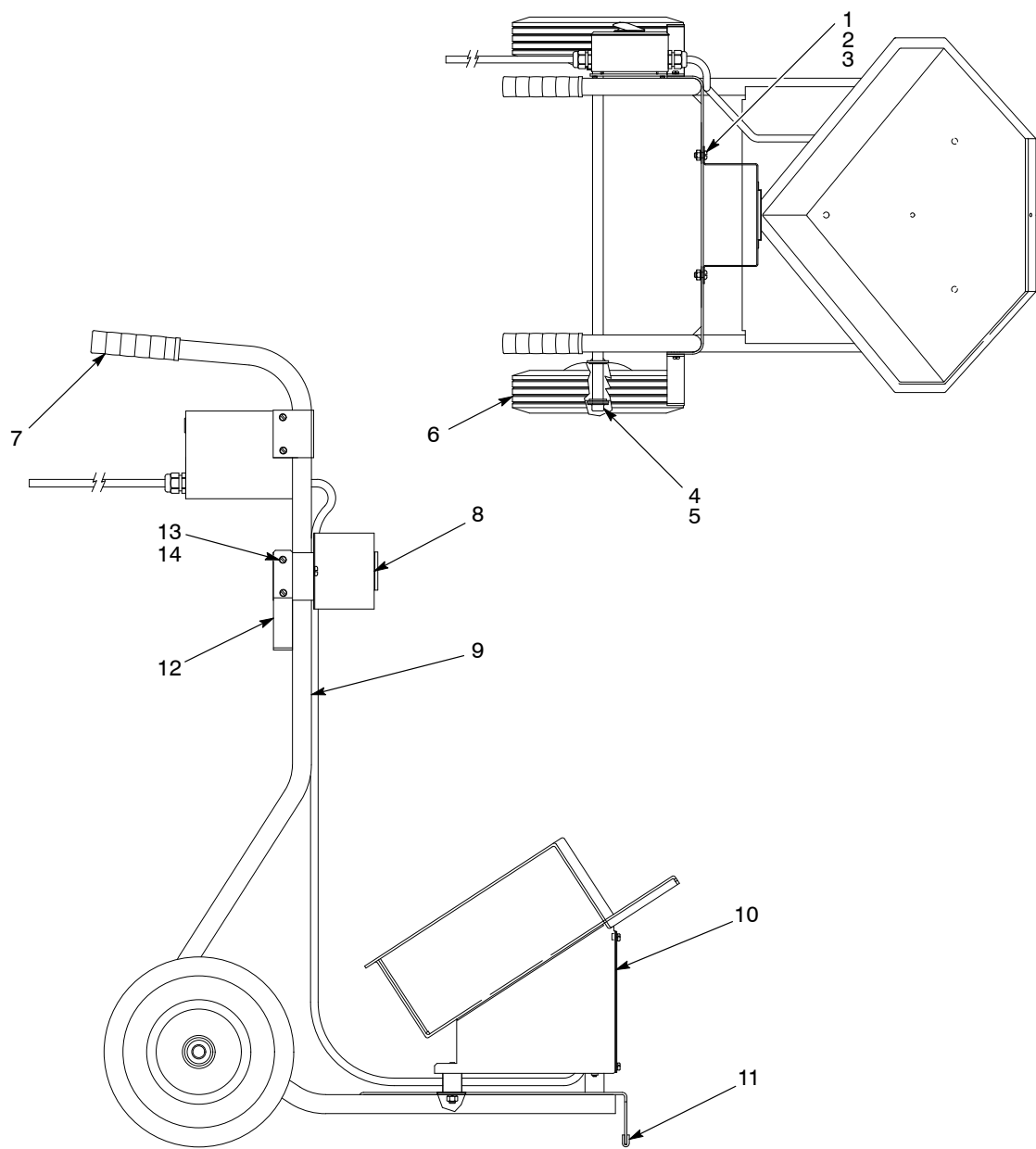
To order parts, call the Nordson Customer Service Center or your Nordson representative.

Refer to the following pages to order replacement parts for the mobile powder feed system.

Dolly**One-Piece Dolly**

See Figure 4.

Item	Part	Description	Quantity	Note
—	-----	DOLLY, box feeder, no controls, one piece	1	
1	982499	• SCREW, pan head, slotted, M6 x 12, zinc	2	
2	983128	• WASHER, lock, internal, M6, zinc	2	
3	984703	• NUT, hex, M6, steel, zinc	2	
4	1004373	• CAP, push, 0.625-in. shaft	2	
5	983090	• WASHER, flat, e, 0.656 x 1.312 x 0.095 in.	2	
6	901601	• WHEEL, 10 x 2.75 in.	2	
7	1004372	• GRIP, handlebar, 1-in. tube	2	
8	164588	• BRACKET, pickup tube	1	
9	1004268	• FRAME, universal dolly	1	
10	-----	• BOX FEEDER, electric vibratory	1	A
11	246388	• GASKET	AR	
12	164578	• BRACKET, hose/cable	2	
13	126336	• SCREW, pan head, slotted, M5 x 12, zinc	4	
14	983127	• WASHER, lock, internal, M5, zinc	4	
NOTE A: Refer to <i>Electric Vibratory Box Feeder</i> for a breakdown of the parts included in this assembly.				
AR: As Required				



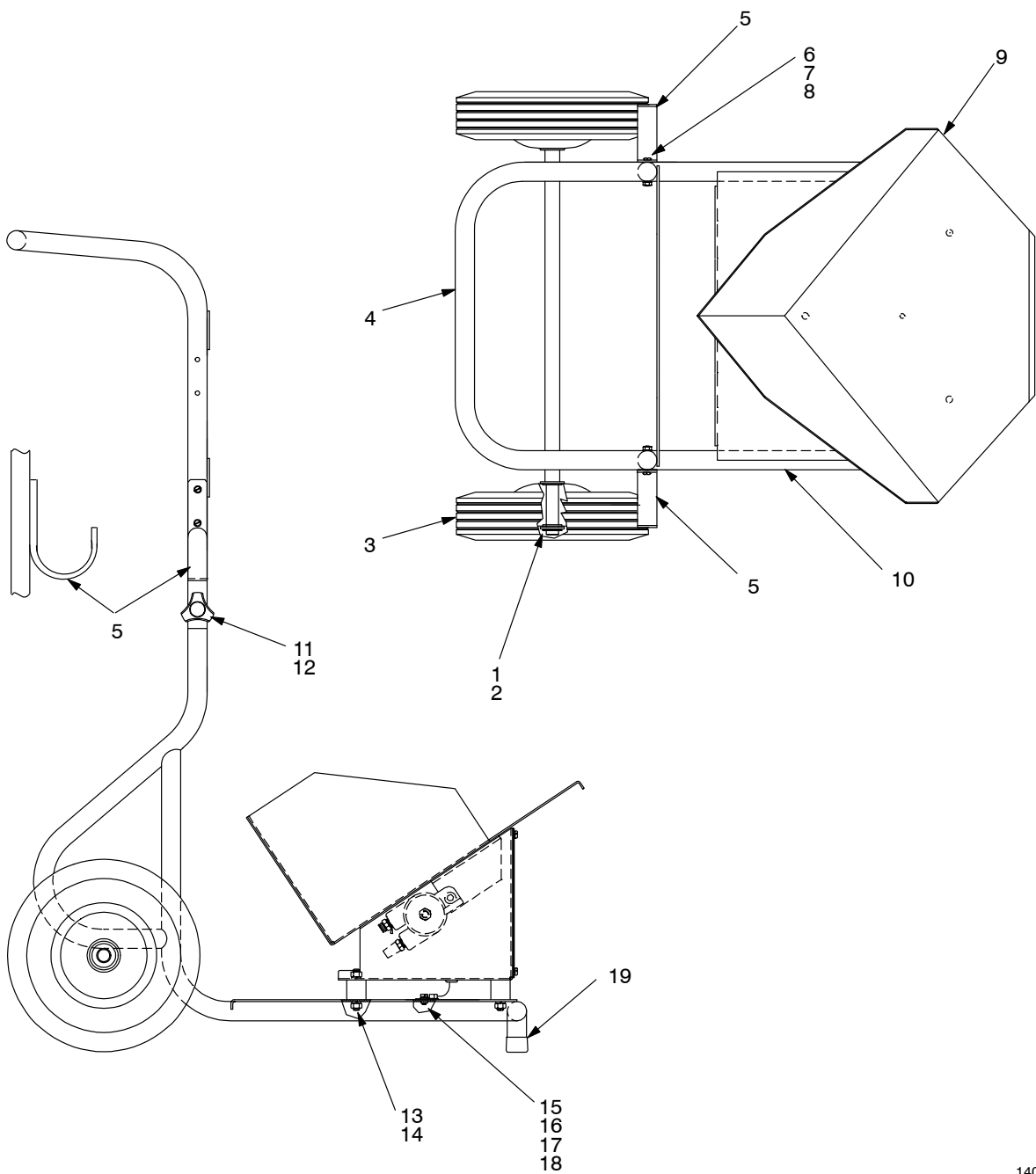
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Figure 4 One-Piece Dolly

Two-Piece Dolly (Discontinued)

See Figure 5.

Item	Part	Description	Quantity	Note
—	-----	DOLLY, box feeder, no controls, two piece	1	
1	986111	• RING, retaining, external, 62, inverted	2	
2	983090	• WASHER, flat	4	
3	901601	• WHEEL, 10 x 2.75 in.	2	
4	-----	• FRAME, upper, universal dolly	1	
5	164578	• BRACKET, cable/hose	2	
6	982244	• SCREW, pan head, M5 x 35	4	
7	983127	• WASHER, lock, internal, M5	4	
8	984706	• NUT, hex, M5	4	
9	-----	• BOX FEEDER	1	A
10	-----	• FRAME, lower, universal dolly	1	
11	133415	• KNOB, mount	2	
12	983414	• WASHER, flat, narrow, M8	2	
13	983150	• WASHER, lock, split, 0.313 in.	3	
14	984140	• NUT, hex, $\frac{5}{16}$ -18	3	
15	982136	• SCREW, pan head, M5 x 16, brass	1	
16	983401	• WASHER, lock, M5	1	
17	983021	• WASHER, flat, 0.206 x 0.406 in.	1	
18	240674	• TAG, ground	1	
19	152235	• CAP, tube-bearing, 1.00 in.	1	
NOTE A: Refer to <i>Vibratory Box Feeder</i> for a breakdown of the parts in this assembly.				



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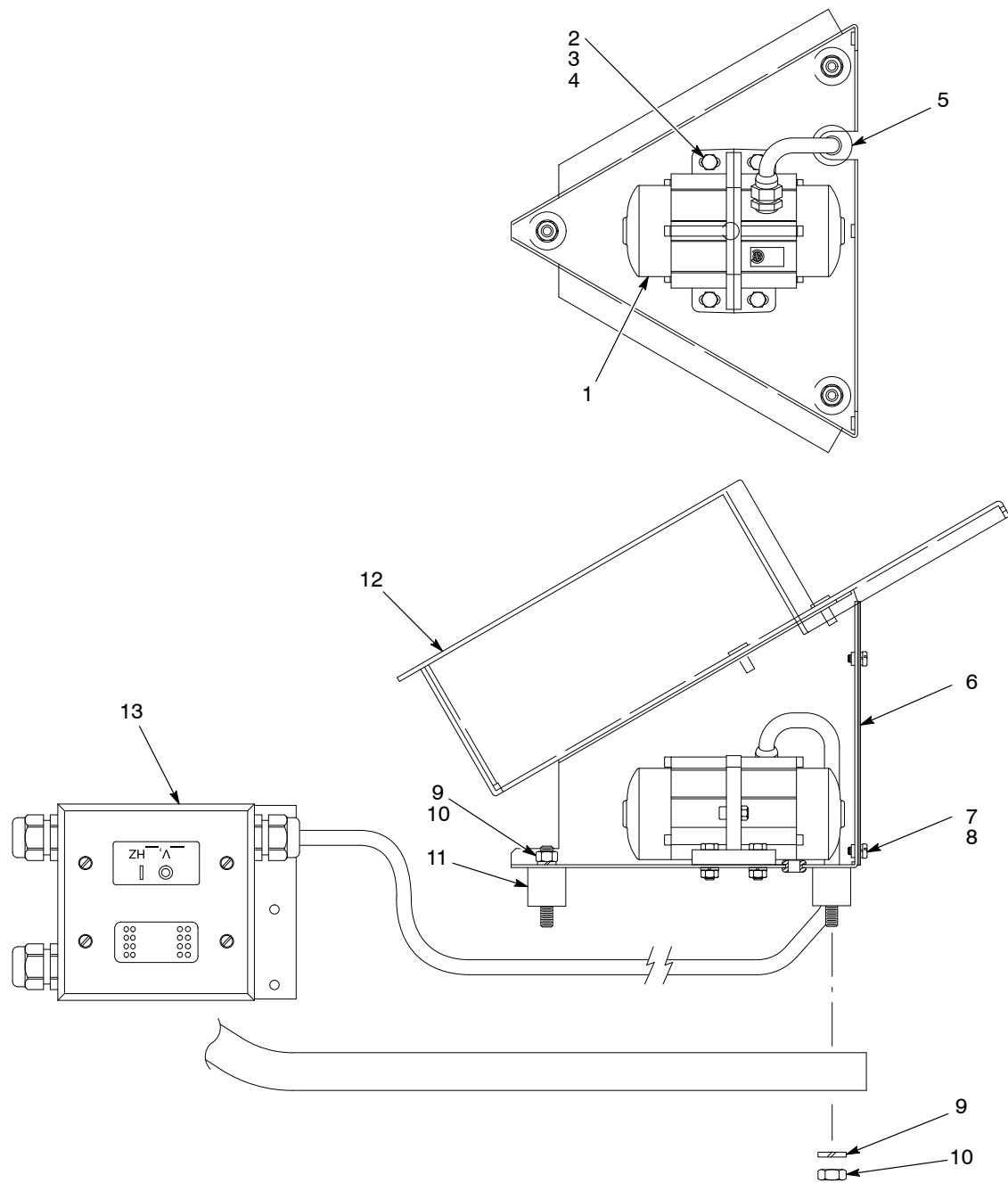
Figure 5 Two-Piece Dolly (Discontinued)

Vibratory Box Feeder

Electric Vibratory Box Feeder

See Figure 6.

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				



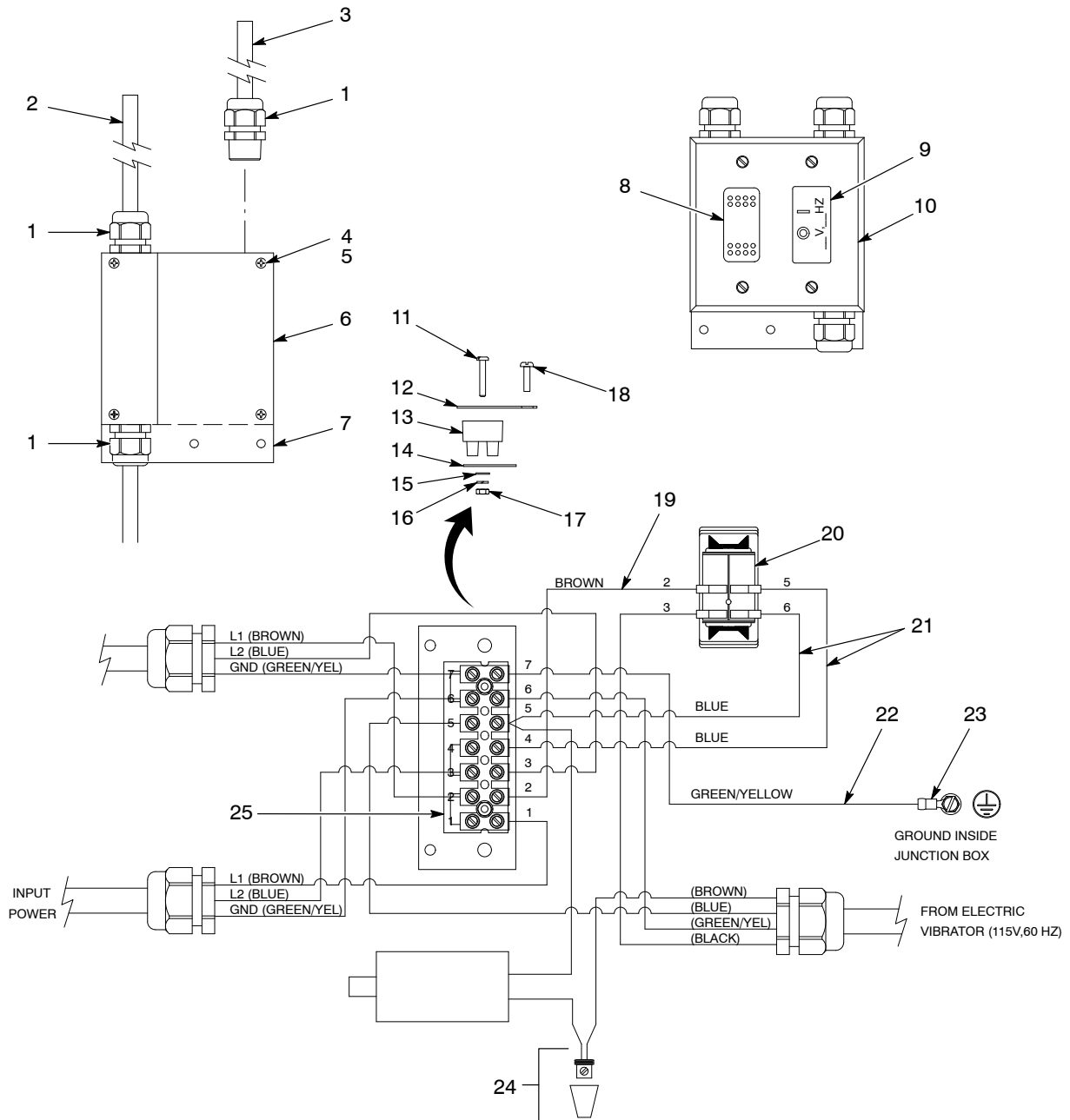
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Figure 6 Electric Vibratory Box Feeder

Electric Vibratory Box Feeder Junction Box

See Figure 7.

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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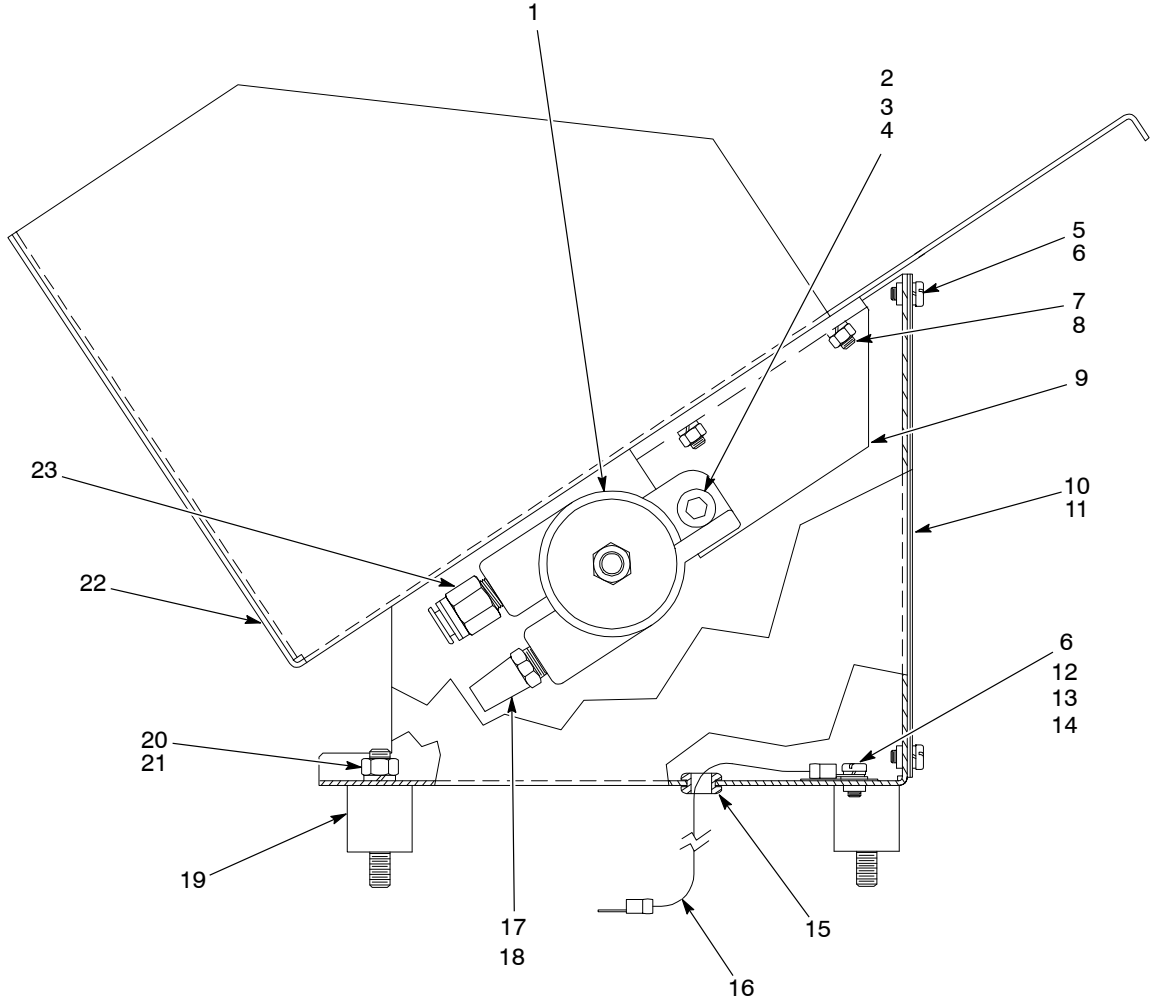
Figure 7 Junction Box

Pneumatic Vibratory Box Feeder (Discontinued)

NOTE: To upgrade to an electric vibratory box feeder, remove the entire assembly shown in this parts list and replace it with one of the kits listed in *Electric Vibratory Box Feeder*.

See Figure 8.

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 8 Pneumatic Vibratory Box Feeder (Discontinued)

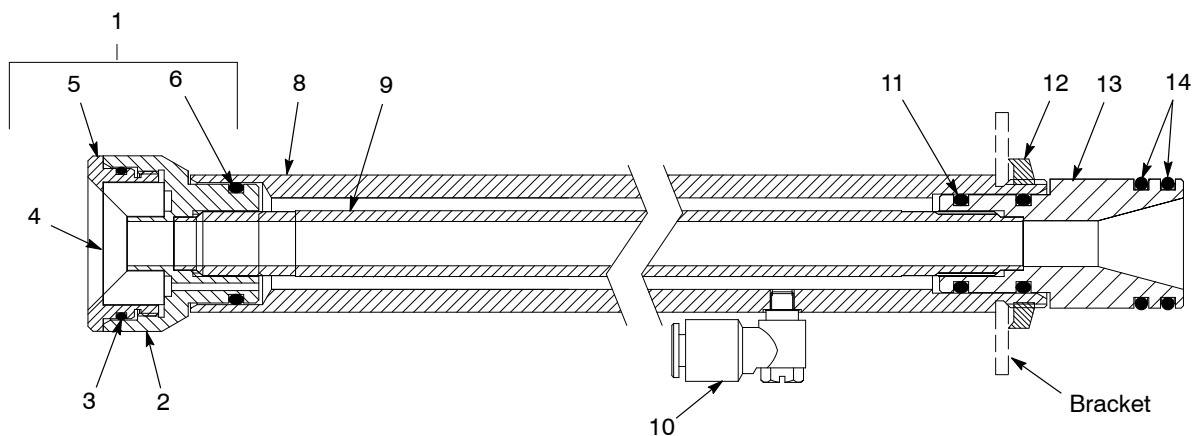
Fluidizing Pickup Tube

Threaded Adapter Pickup Tube

See Figure 9.

This pickup tube's insert adapter (2) threads onto the inner pickup tube (9). The threaded adapter stays securely on the pickup tube when you pull it 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 9 Threaded Fluidizing Pick-Up Tube Parts

O-Ring Fit Adapter Pickup Tube

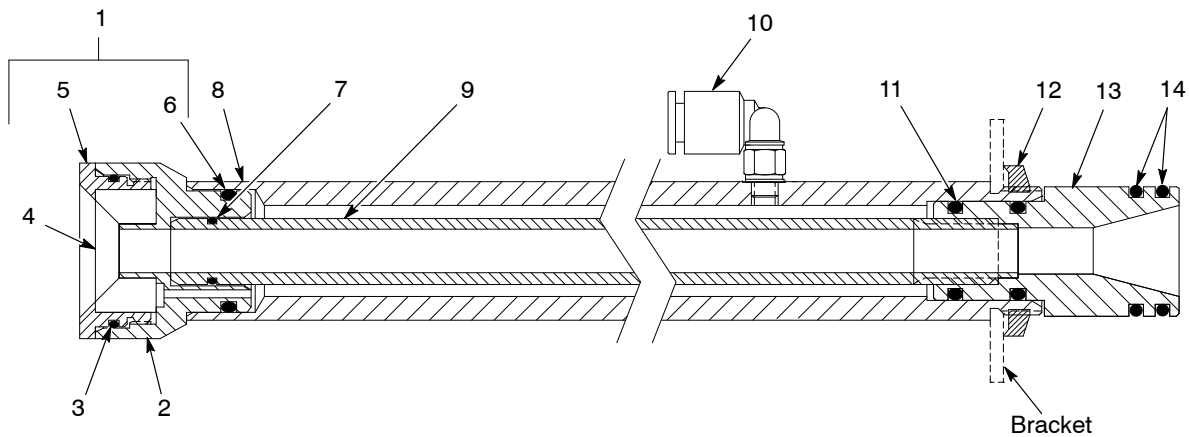
See Figure 10.

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 10 O-Ring Fit Fluidizing Pick-Up Tube Parts

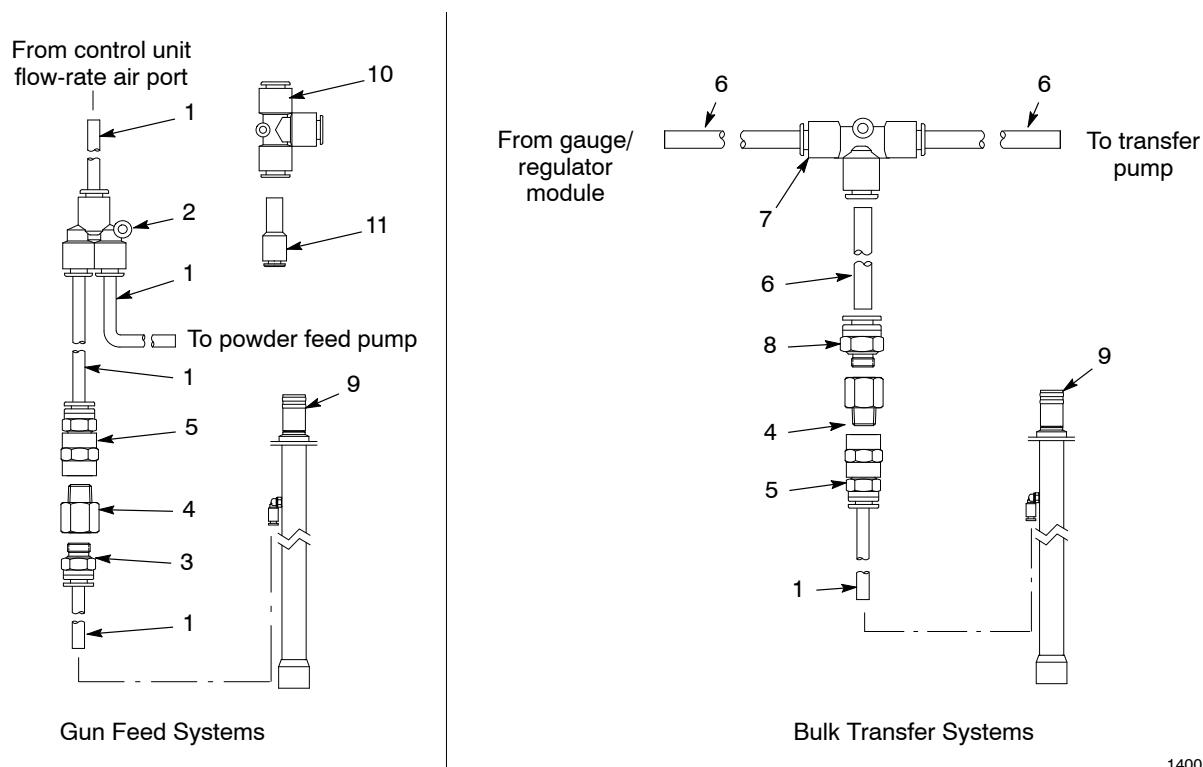
Tubing, Connectors, and Restrictors

See Figure 11. These parts are used on systems with fluidizing adapters.

Item	Part	Description	Quantity	Note
1	900586	TUBING, polyurethane, 6-mm OD, blue	AR	
2	972287	UNION, 6-mm tube x 6-mm tube	AR	
3	972141	CONNECTOR, male, 6-mm tube x 1/8-in. universal thread	AR	
4	972243	ORIFICE, 0.026 in., 1/8 x 1/8-in. NPT	AR	
5	972157	CONNECTOR, female, 6-mm tube x 1/8-in. universal thread	AR	
6	900593	TUBING, polyethylene, 10-mm OD, blue	AR	
7	971115	TEE, union, 10-mm tube x 10-mm tube	AR	
8	971123	CONNECTOR, male, 10-mm x 1/8-in. universal thread	AR	
9	-----	PICKUP TUBE, fluidizing	AR	A
10	972313	TEE, union, 8-mm tube x 8-mm tube	AR	
11	972286	REDUCER, 8-mm stem, 6-mm tube	AR	

NOTE A: Refer to *Fluidizing Pickup Tube* for a breakdown of the parts in this assembly.

AR: As Required



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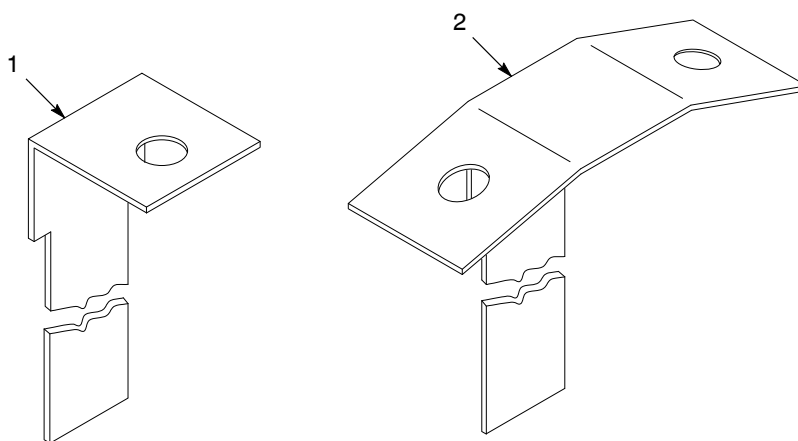
Figure 11 Tubing, Connectors, and Restrictors for Fluidizing Adapter Connections

Pump Mounting Brackets

See Figure 12.

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 12 Pump Mounting Brackets

Air Tubing

Order air tubing in increments of one foot.

Part	Description	Note
900586	TUBING, polyurethane, 6-mm OD, blue	
900741	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	

Issued 5/06

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