

Mobile Powder Spray 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.

Introduction

Versa-Spray II IPS, Tribomatic II, or Sure Coat mobile manual powder spray systems consist of the following equipment mounted on a two-wheel dolly:

- manual electrostatic powder spray gun
- control unit
- one or two powder pumps
- vibratory box feeder
- pickup tube with fluidizing adapter

This instruction sheet covers system installation, box feeder operation, and replacement parts for the dolly, vibratory box feeder, pickup tube, and parts unique to the mobile system. The other components of the system are covered in separate instruction sheets or manuals.

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 spray 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.

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



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.

Assembly

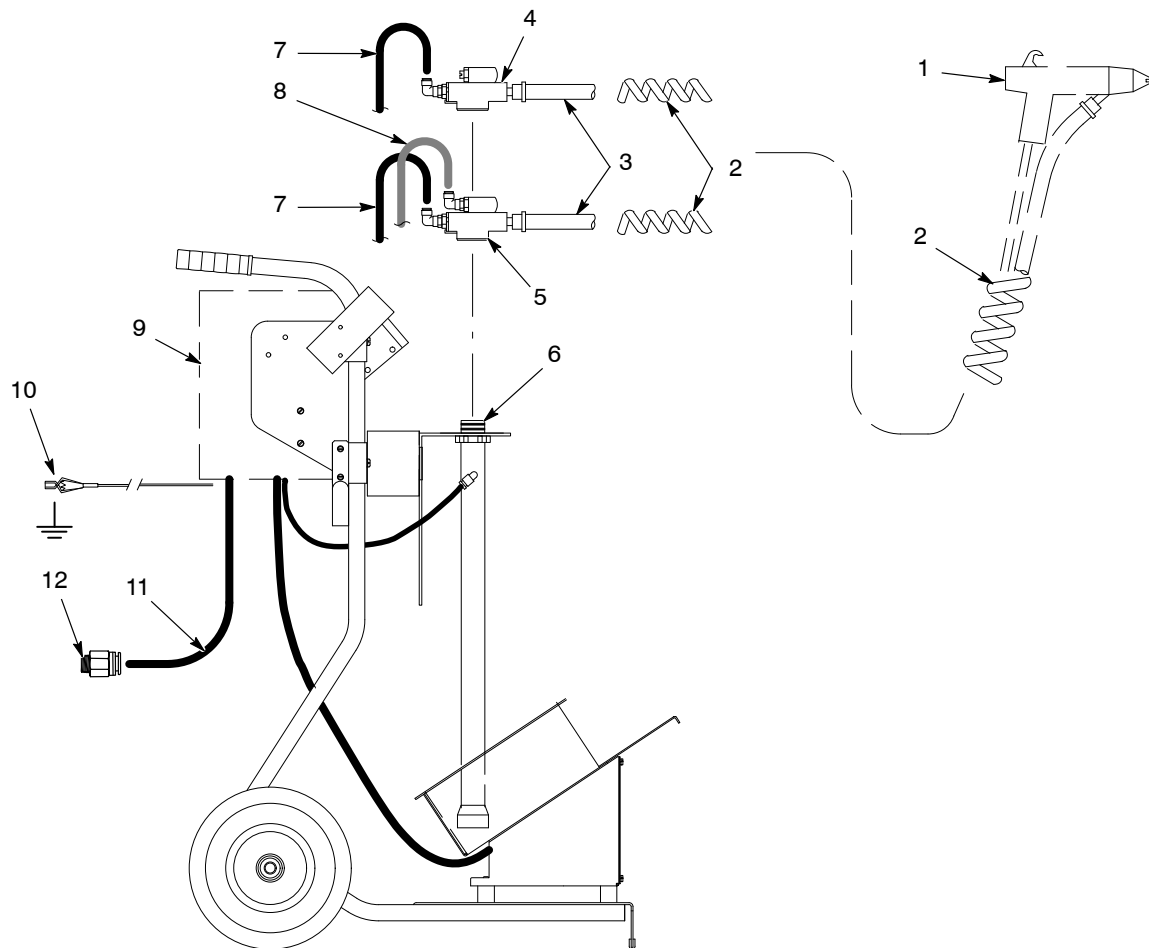
The system is shipped with the vibratory box feeder, control unit, pump adapter, air tubing, and ground cable installed.

See Figure 1.

Table 1 Assembly Procedures

Component	Procedure
Powder Pump	<ol style="list-style-type: none"> 1. Install the pump (4 or 5) on the pickup tube (6). 2. Make the following connections for the appropriate spray gun: <ul style="list-style-type: none"> • Versa-Spray II IPS and Sure Coat Spray guns: powder feed tubing (3) to the pump (5) outlet atomizing (blue) air tubing (8) to the pump fitting marked A flow rate (black) air tubing (7) to the pump fitting marked F • Tribomatic spray guns: powder feed tubing (3) to the pump (4) outlet flow rate (black) air tubing (7) to the pump fitting marked F
Spray Gun	<ol style="list-style-type: none"> 1. Connect the powder feed tubing to the spray gun (1) inlet adapter. Use a clamp to secure the tubing to the inlet. 2. Make other connections between the spray gun and the control unit (9) as described in your spray gun and control unit manuals.
Dolly Ground Cable	Connect the dolly ground cable (10) attached to the control unit to a true earth ground.

Component	Procedure
Supply Air	Connect 10-mm tubing (11) from a source of clean, dry air to the control unit IN port. If necessary, use the $\frac{3}{8}$ -in. tube x $\frac{1}{4}$ -in. NPT male connector (12) 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).
Spiral-Cut Tubing	<ol style="list-style-type: none"> 1. Cut the spiral-cut tubing (2) into short pieces about 10-cm (4-in.) long. 2. Use the tubing to bundle together the air tubing, cable, and powder feed tubing from the spray gun to the dolly. Install one piece near the gun handle, and the others at regular intervals to prevent strain and kinking. Install one piece on the powder feed tubing at the pump outlet.



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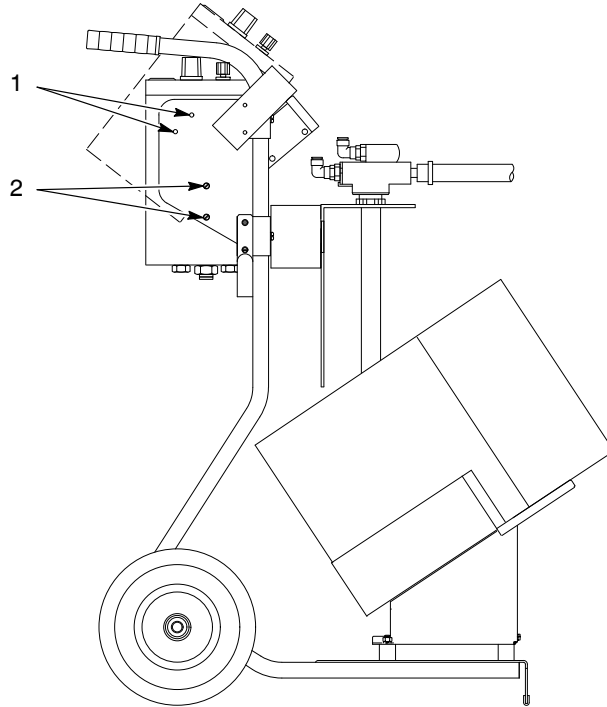
Figure 1 Assembly

- | | | |
|-----------------------|-----------------------------------|-----------------------------|
| 1. Spray gun | 5. Versa-Spray IPS/Sure Coat pump | 9. Control unit |
| 2. Spiral-cut tubing | 6. Pickup tube | 10. Dolly ground cable |
| 3. Powder feed tubing | 7. Flow rate air tubing | 11. 10-mm supply air tubing |
| 4. Tribomatic pump | 8. Atomizing air tubing | 12. Male connector |

Optional Control Unit Position

See Figure 2.

Versa Spray II IPS and Tribomatic systems are shipped with the control unit attached to the dolly bracket in a vertical position. To move the control unit to a tilted position (shown by the dashed-line profile), remove the four mounting screws (2), tilt the control unit, and move the screws to the top set of holes (1) in the bracket to secure the unit.



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Figure 2 Optional Versa-Spray IPS and Tribomatic Control Unit Position

1. Tilt position holes

2. Mounting screws

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.

Use the following procedures to install a box of powder and operate the vibratory box feeder. Refer to the other system component manuals for further operation instructions.

Powder Box Installation

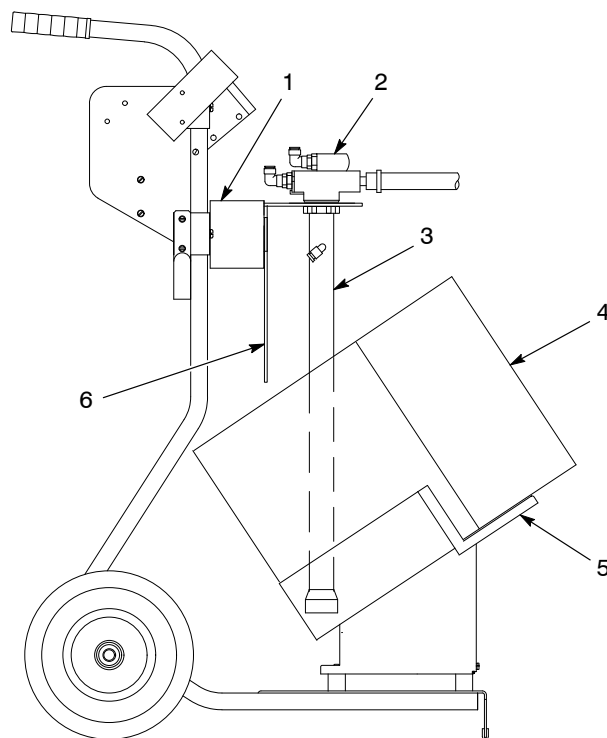
NOTE: The vibratory box feeder can accommodate boxes of powder from 11–25 kg (25–55 lb). The electric box feeder is powered through a junction box by the same source of power as the control unit. The pneumatic box feeder is operated by air from one of the auxiliary outputs on the control unit.

See Figure 3.

1. Lift the powder pump, pickup tube, and mounting bracket (2, 3, and 6) assembly 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, 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.



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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. 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 clamp (10) 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, shut off the vibrator motor.

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

NOTE: The pump and mounting bracket 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 spray 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

For parts or technical support, call the Nordson Finishing Customer Support Center at (800) 433-9319, or contact your Nordson representative.

One-Piece Dolly Frame

See Figure 4.

Item	Part	Description	Quantity	Note
—	-----	DOLLY, IPS/Tribo/Sure Coat, box feeder	1	
1	231991	• BRACKET, cabinet, dolly, IPS	1	A
2	982499	• SCREW, pan head, slotted, M6 x 12, zinc	4	
3	983128	• WASHER, lock, internal, M6, zinc	4	
4	1004373	• CAP, push, $\frac{5}{8}$ -in. shaft	2	
5	983090	• WASHER, flat, e, 0.656 x 1.356 x 0.095 in.	2	
6	901601	• WHEEL, 10 x 2.75 in.	2	
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, dolly	1	B
16	134575	WIRE, ground	1	
17	982499	SCREW, pan head, slotted, M6 x 12	2	
18	983128	WASHER, lock, M, internal, M6	2	
NOTE A: This part is not used with Sure Coat systems.				
B: Refer to <i>Electric Box Feeder</i> for a breakdown of the parts in this assembly.				
AR: As Required				

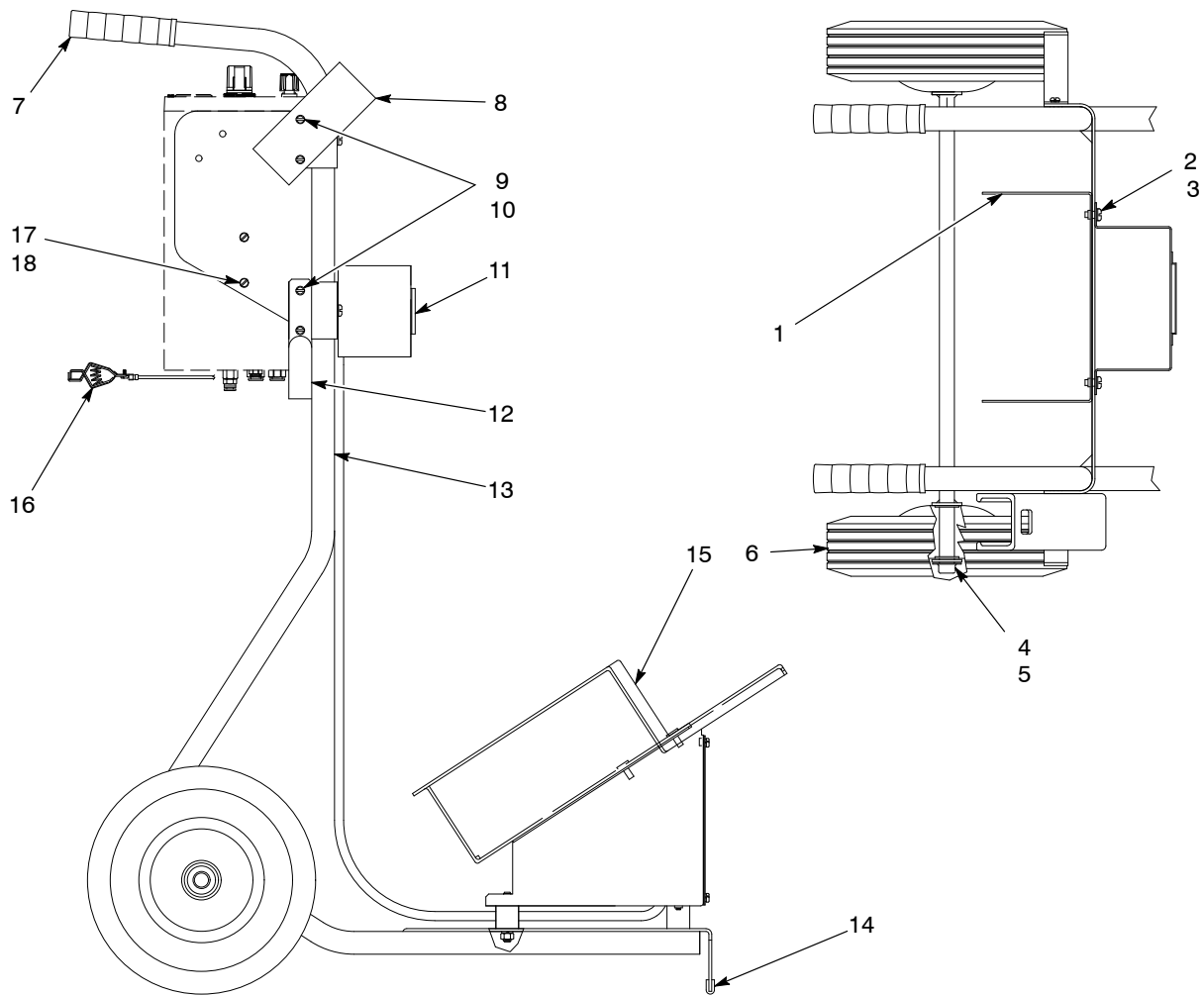
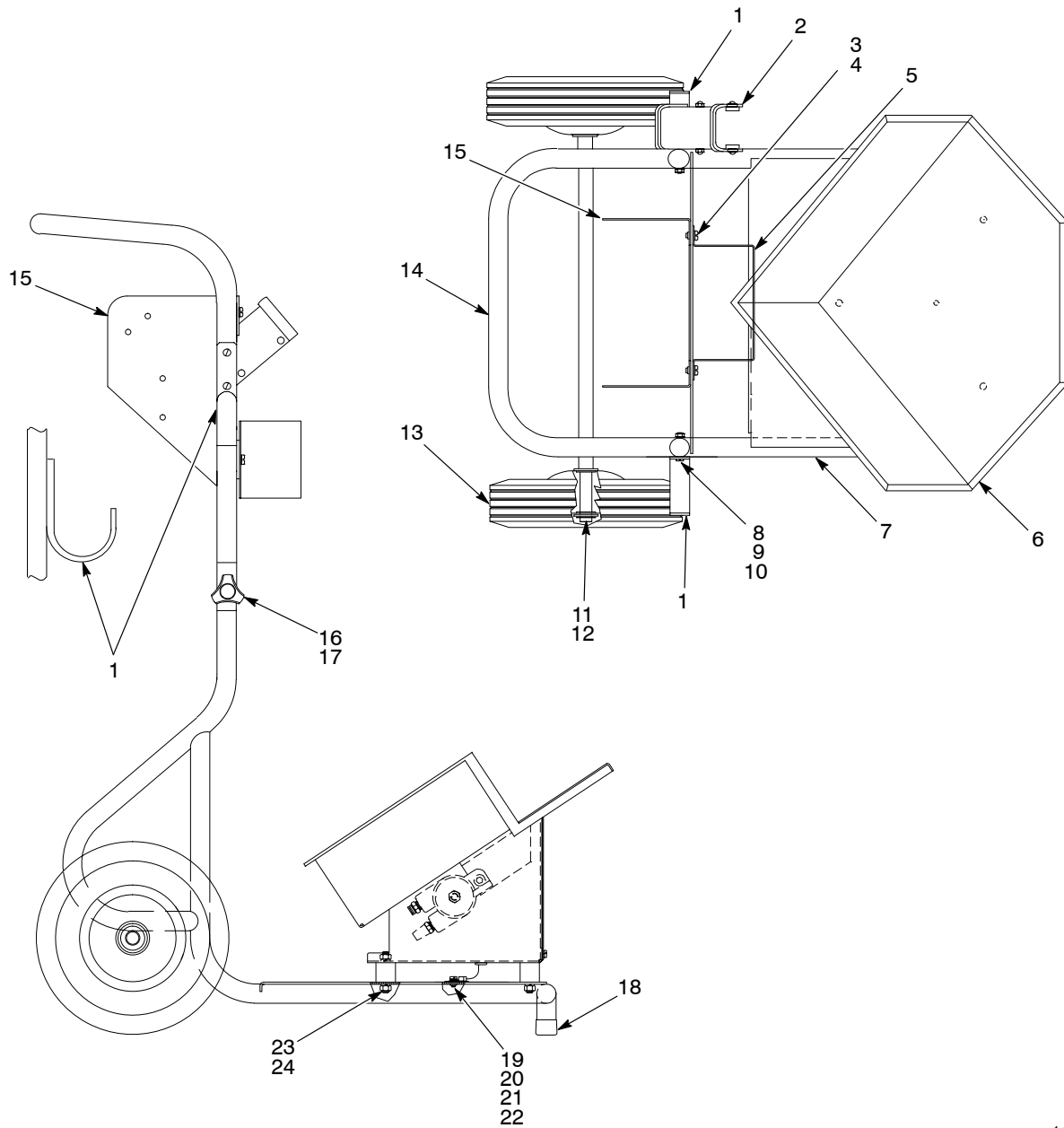


Figure 4 One-Piece Dolly Frame

Two-Piece Dolly Frame

See Figure 5.

Item	Part	Description	Quantity	Note
—	-----	DOLLY, two piece, IPS/Tribo, box feeder	1	
1	164578	• BRACKET, cable/hose	2	
2	231989	• BRACKET, gun, dolly system	1	
3	982499	• SCREW, pan head, M6 x 12	8	
4	983128	• WASHER, lock, internal, M6	8	
5	164588	• BRACKET, pickup tube	1	
6	-----	• FEEDER, box, universal dolly	1	A
7	-----	• FRAME, lower, dolly	1	
8	982244	• SCREW, pan head, M5 x 35	6	
9	983127	• WASHER, lock, internal, M5	6	
10	984706	• NUT, hex, M5	6	
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	231991	• BRACKET, cabinet, dolly, IPS	1	B
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>Pneumatic Box Feeder</i> for a breakdown of the parts included in this assembly.				
B: Not used on Sure Coat systems.				



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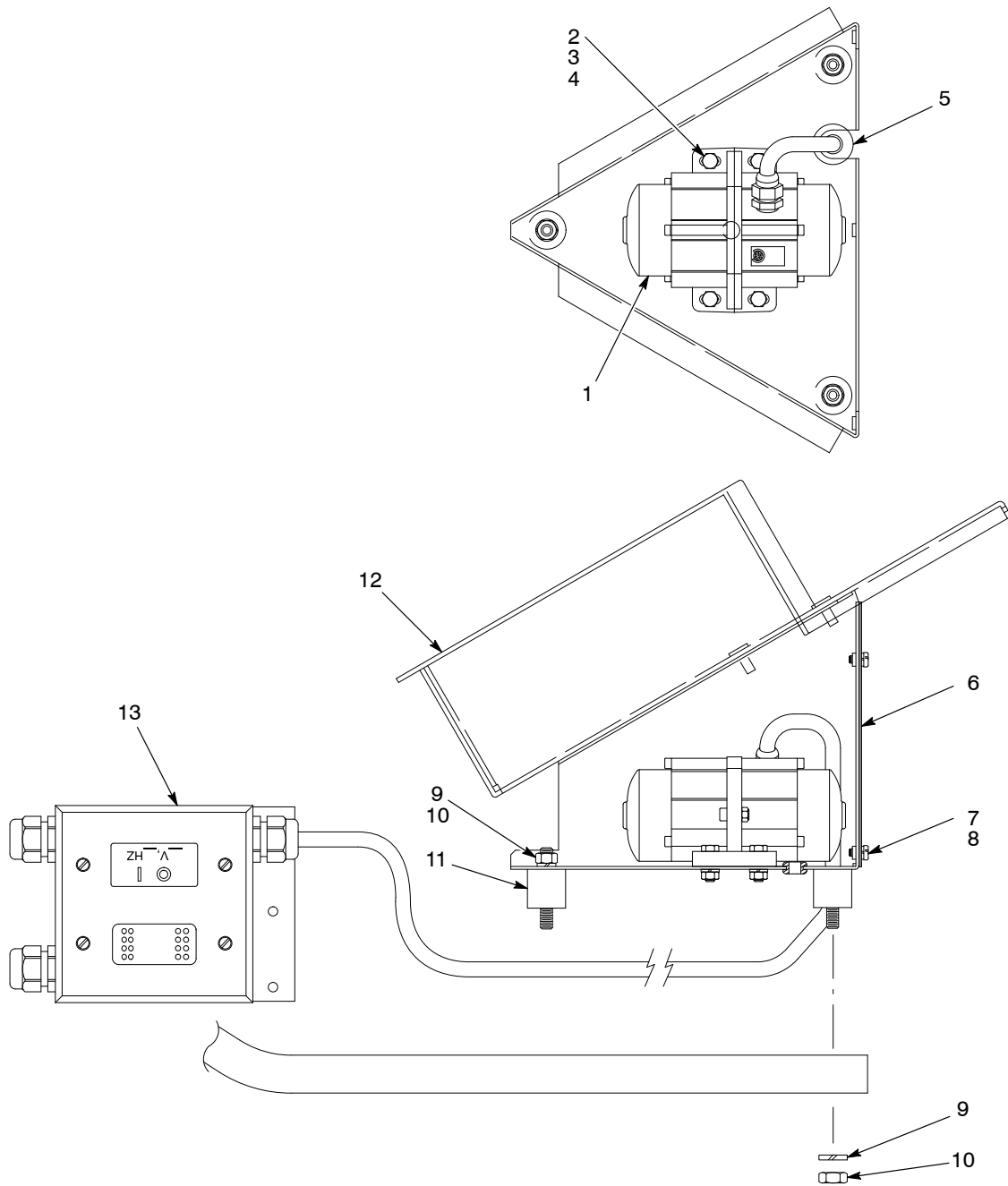
Figure 5 Two-Piece Dolly

Vibratory Box Feeder

Electric 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	152273	• 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				



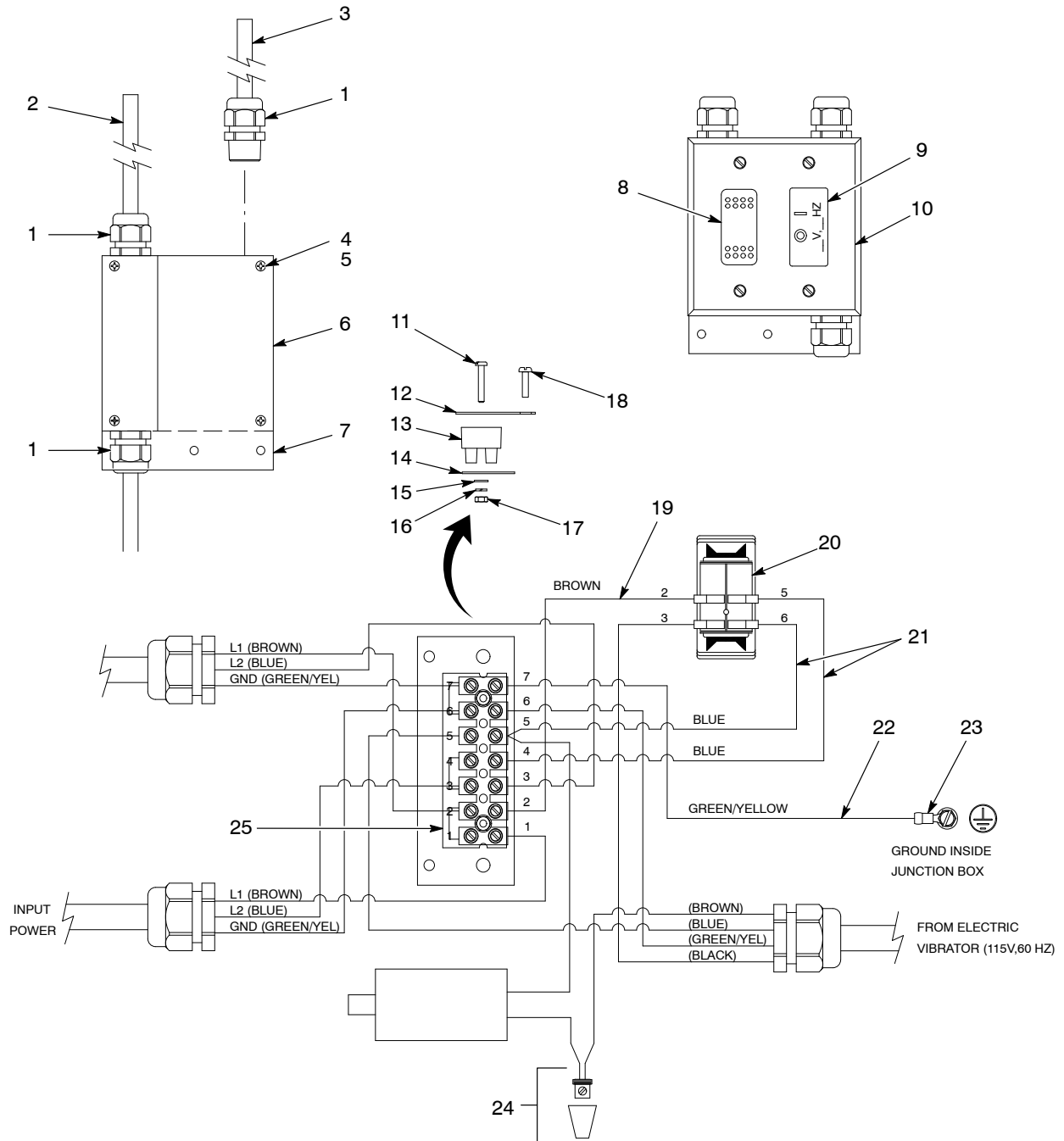
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Figure 6 Electric Vibratory Box Feeder

Electric 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 0.50 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 in.	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				

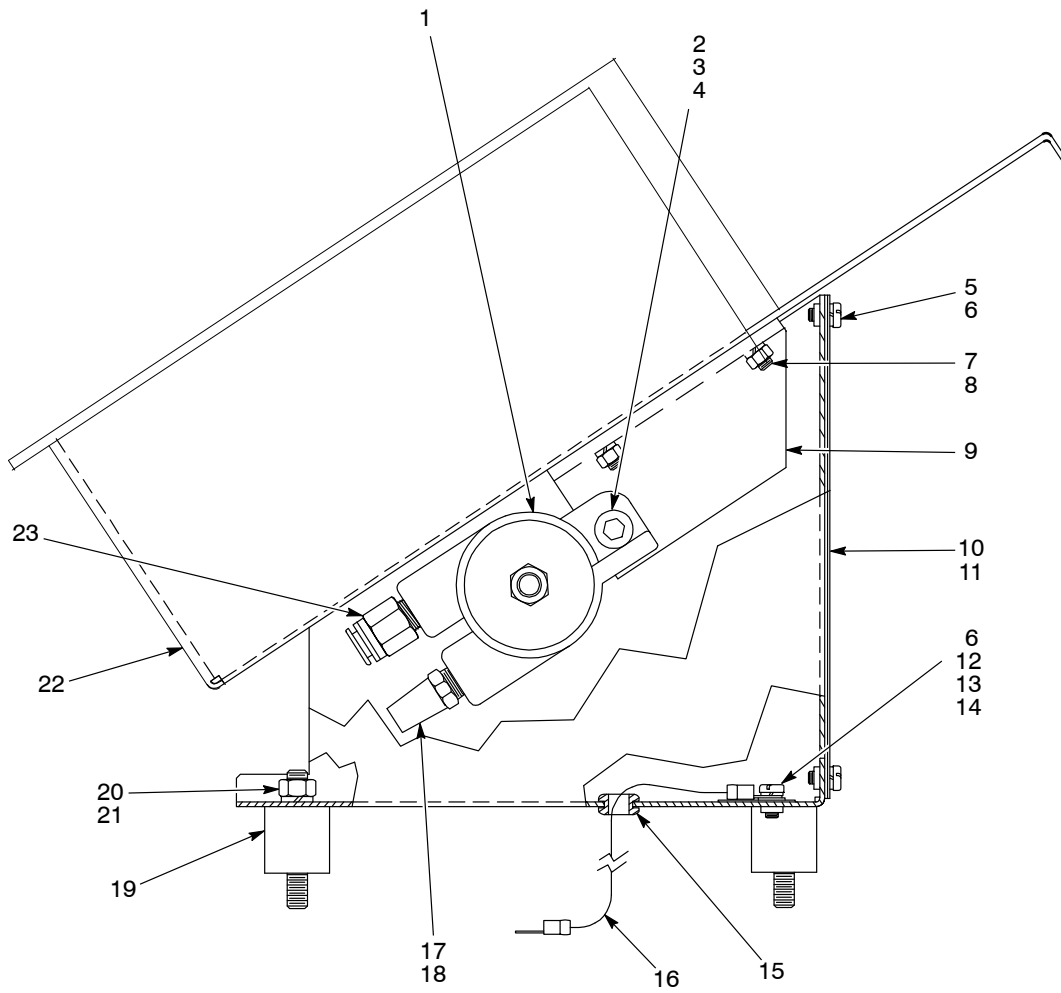


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Pneumatic Box Feeder

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

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 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	

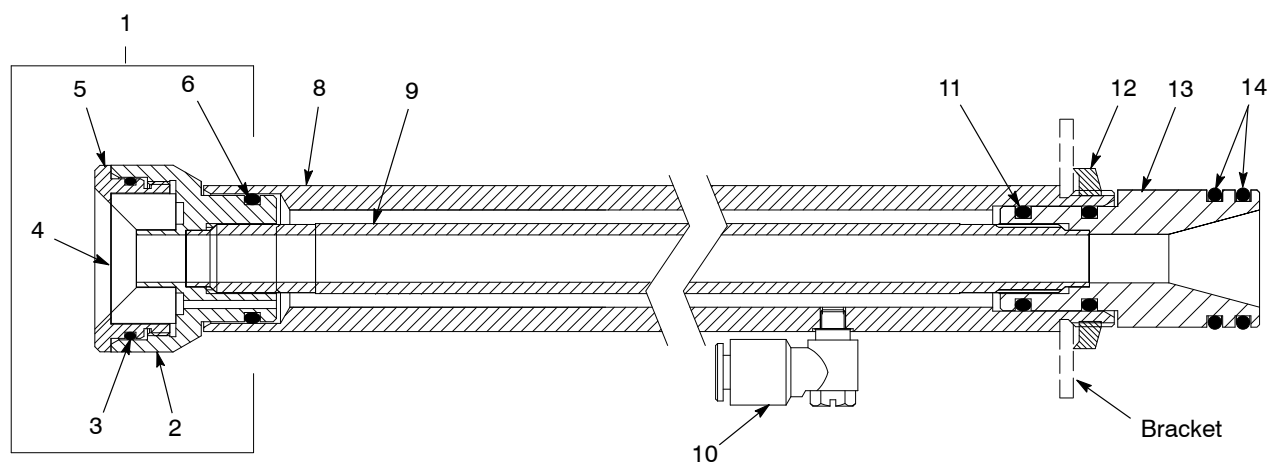


Figure 9 Threaded Fluidizing Pick-Up Tube Parts

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).

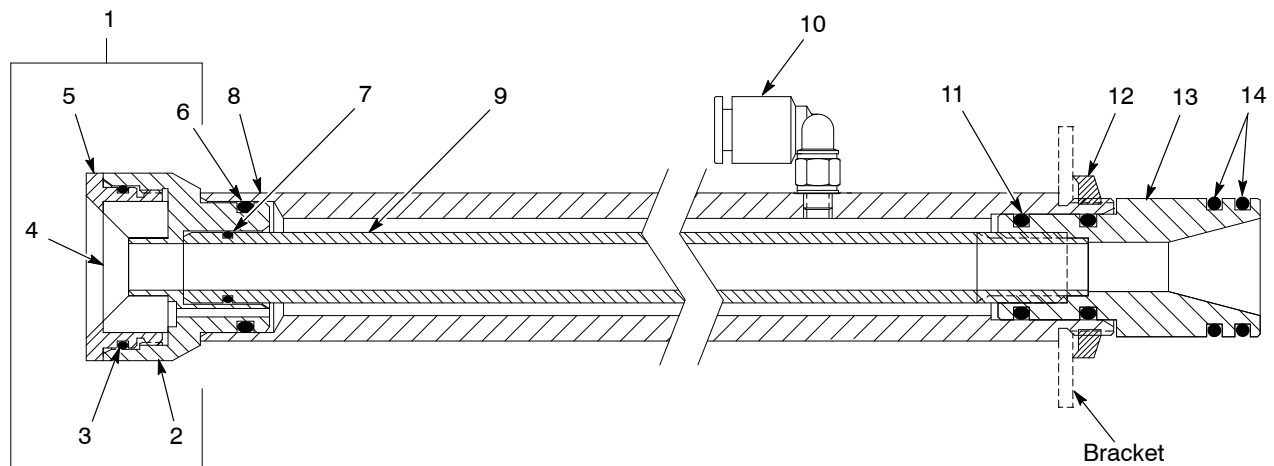


Figure 10 O-Ring Fit Fluidizing Pick-Up Tube Parts

Tubing, Connectors, and Restrictors

See Figure 11. These parts used on systems with fluidizing pickup tubes.

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	972157	CONNECTOR, female, 6-mm tube x 1/8-in. universal	AR	
4	972243	ORIFICE, 0.026 in., 1/8 x 1/8-in. NPT	AR	
5	972141	CONNECTOR, male, 6-mm tube x 1/8-in. universal	AR	
6	972244	ORIFICE, 0.010 in., 1/8 x 1/8-in. NPT	AR	
7	973117	NIPPLE, steel, schedule 40, 1/4 in., 1.50-in. long	AR	C
7	973002	NIPPLE, steel, schedule 40, 1/8-in., 1.50 in. long	AR	C
8	973260	TEE, pipe, hydraulic, 1/4 in., steel	AR	C
8	973250	TEE, pipe, hydraulic, 1/8-in., steel	AR	C
9	973372	BUSHING, pipe, hydraulic, 1/4 x 1/8 in., steel	AR	C
10	972126	ELBOW, male, 6-mm tube x 1/8-in. universal	AR	
11	-----	PICKUP TUBE, fluidizing	AR	A
12	288822	CONNECTOR, orifice, 4-mm tube x 1/4-in. universal thread, 0.012-in. diameter	AR	B, C
12	1071556	CONNECTOR, orifice, 4-mm tube x 1/8-in. universal, 0.012-in. diameter	AR	B, C

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

B: Included with the control unit.

C: Control unit gun air port thread size changed in 2006 to 1/8-in. threads. If replacing connector, tee, or nipple order appropriate sizes for your system. Bushing item 9 not used with 1/8-in. threads.

AR: As Required

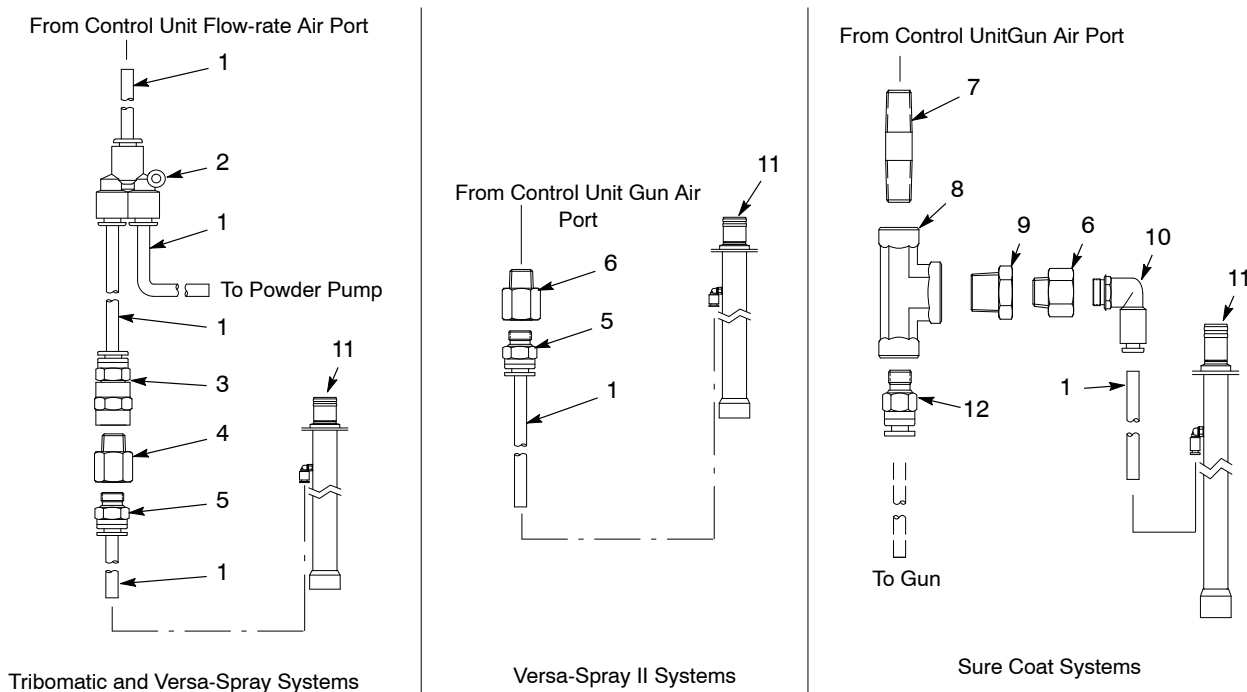
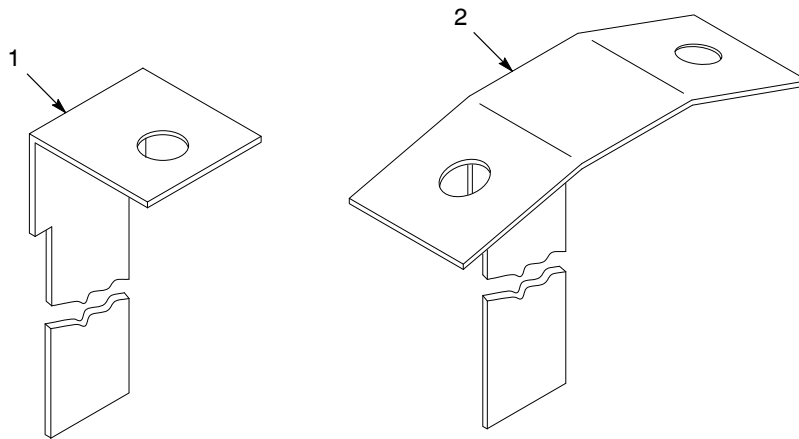


Figure 11 Tubing, Connectors, and Restrictors for Fluidizing Pickup Tube Connections

Pump Mounting Brackets

See Figure 12.

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, black	

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