

Tribomatic[®] Automatic Powder Spray Gun

Customer Product Manual
Part 104366A
Issued 12/05

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

This document is subject to change without notice.
Check <http://emanuals.nordson.com> for the latest version.



NORDSON CORPORATION • AMHERST, OHIO • USA

Table of Contents

<p>Safety 1</p> <p> Qualified Personnel 1</p> <p> Intended Use 1</p> <p> Regulations and Approvals 1</p> <p> Personal Safety 2</p> <p> Fire Safety 2</p> <p> Grounding 3</p> <p> Action in the Event of a Malfunction 3</p> <p> Disposal 3</p> <p>Description 4</p> <p> Theory of Operation 5</p> <p> Optional Accessories 5</p> <p>Installation 6</p> <p> Generation 3 Diffusers and Pumps 6</p>	<p>Daily Maintenance 7</p> <p>Troubleshooting 8</p> <p>Parts 9</p> <p> Using the Illustrated Parts List 9</p> <p> Gun Parts 10</p> <p> Diffusers 11</p> <p> Generation 3 Diffuser (Standard) 11</p> <p> Generation 4 Diffuser (Optional) 12</p> <p> Gun Holders 13</p> <p> Powder Feed Tubing 15</p> <p> Optional Spacers 15</p> <p> Spare Parts Kit 15</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
<http://www.nordson.com>.

Address all correspondence to:
 Nordson Corporation
 Attn: Customer Service
 555 Jackson Street
 Amherst, OH 44001

Notice

This is a Nordson Corporation publication which is protected by copyright. Original copyright date 1989. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Nordson Corporation. The information contained in this publication is subject to change without notice.

Trademarks

Nordson, the Nordson logo, and Tribomatic are registered trademarks of Nordson Corporation.

Tribomatic Automatic Powder Spray Gun

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.

All phases of equipment installation must comply with all federal, state, and local codes.

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.
- 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.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- 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.
- 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.

Grounding



WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class II Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions. For European grounding directives, review EN50177.

- All electrically conductive objects in the spray areas shall be electrically connected to ground with a resistance of not more than 1 megohm as measured with an instrument that applies at least 500 volts to the circuit being evaluated.
- Equipment to be grounded includes, but is not limited to, the floor of the spray area, operator platforms, hoppers, photoeye supports, and blow-off nozzles. Personnel working in the spray area must be grounded.
- There is a possible ignition potential from the charged human body. Personnel standing on a painted surface, such as an operator platform, or wearing non-conductive shoes, are not grounded. Personnel must wear shoes with conductive soles or use a ground strap to maintain a connection to ground when working with or around electrostatic equipment.
- Operators must maintain skin-to-handle contact between their hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If gloves must be worn, cut away the palm or fingers, wear electrically conductive gloves, or wear a grounding strap connected to the gun handle or other true earth ground.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments or cleaning powder spray guns.
- Connect all disconnected equipment, ground cables, and wires after servicing equipment.

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:

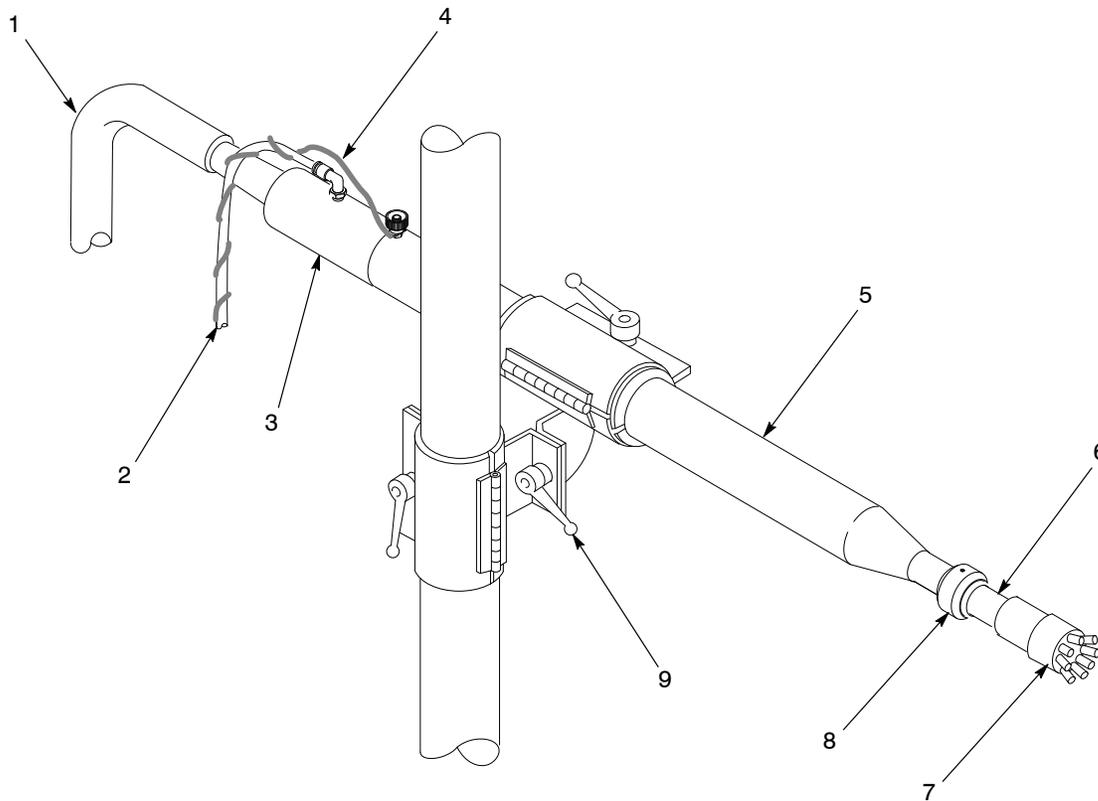
- Disconnect and lock out electrical power. Close pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the equipment.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Description

See Figure 1. The Tribomatic Automatic Powder Spray Gun uses friction to electrostatically charge powder particles as they are forced through the chargetube by compressed air.



1401656A

Figure 1 Tribomatic Automatic Powder Spray Gun

- | | | |
|-------------------------|----------------|----------------|
| 1. Powder feed hose* | 4. Ground wire | 7. Sprayhead* |
| 2. Diffuser air tubing* | 5. Chargetube | 8. Ring nut |
| 3. Diffuser | 6. Spacer | 9. Gun holder* |

Note: *These parts are not shipped with the gun. Order these parts separately.

Theory of Operation



WARNING: Do not operate the gun without the ground wire connected between the gun and a true earth ground. A potentially dangerous charge could build up in the gun unless it is properly grounded.

See Figure 1.

The gun consists of the diffuser (3), chargetube (5), and sprayhead (7). A mixture of powder and air is pumped from the feed hopper, through the feed hose (1) to the diffuser. Diffuser air breaks up the powder stream for efficient charging in the chargetube.

The powder and air mixture passes through a group of spiral tubes inside the chargetube. As the powder particles collide with the walls of the tubes, they pick up a positive charge by giving up electrons to the tubes. A negative charge is generated in the chargetube.

The negatively charged chargetube is grounded through the control module. The control module charge meter indicates how well the powder is being charged as it passes through the chargetube. The meter reading will vary depending on powder type and velocity through the chargetube.

Optional Accessories

A variety of different sprayheads and nozzles are available to direct the powder onto the workpiece. Refer to the *Tribomatic Optional Sprayheads and Nozzles* instruction sheet, part 1040999 for more information.

Special gun holders (9) are available to attach the gun to round or square, stationary or reciprocating bar mounts. Refer to *Gun Holders* at the end of this manual for more information.

Installation



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



WARNING: This equipment can be dangerous unless it is used in accordance with the rules laid down in this manual.

1. See Figure 1. Install a gun holder (9) on a vertical bar mount. Make sure to install the holder with the hinged side up to prevent the gun from falling when the clamp is opened.

NOTE: Gun holders are available for both 25-mm (1-in.) and 50-mm (2-in.) bar mounts in fixed or adjustable, right- or left-hand configurations.

2. Install the desired sprayhead (7) on the spacer (6) using a clockwise twisting motion. Refer to the *Tribomatic Optional Sprayheads and Nozzles* instruction sheet, part 1040999 for part numbers and installation instructions.

NOTE: The gun comes with an 82-mm straight spacer. An 182-mm straight spacer and a right-angle spacer are available. Refer to *Optional Spacers* in this manual for part numbers.

3. Install the gun in the holder and tighten the clamp.
4. Attach the ground wire (4) to the chargetube ground stud and tighten the knob.
5. Install the diffuser (3) on the gun and connect air tubing (2) to the diffuser air fitting. Connect powder feed hose (1) to the diffuser and powder pump. Use spiral wrap at hose connections to prevent hose kinking.

NOTE: For best results, the feed hose should be 4–6 m (13–20 ft.) long.

6. Adjust the gun-to-workpiece distance and vertical position.
7. Refer to the gun control module and master control module manuals for other connections.

Multiple-gun Tribomatic systems use multicouplings, which consolidate diffuser air tubing, ground wires, pump air tubing, and fluidizing air tubing to facilitate connections to the control cabinet or rack.

Generation 3 Diffusers and Pumps

If using a Tribomatic Generation 3 diffuser on your gun, you must also use a Generation 3 powder pump. The pump and diffuser are designed to work together. Do not use a Generation 3 diffuser with a standard Tribomatic pump.

Refer to the following instruction sheets for more information:

Title	Part Number
<i>Tribomatic Generation 3 Automatic Gun Diffuser</i>	108600
<i>Tribomatic Gun Generation 3 Pump Retrofit Kit</i>	108598

Daily Maintenance



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



WARNING: Do not operate the gun or blow air through the gun without the ground wire connected between the gun and a true earth ground. A potentially dangerous charge could build up in the gun unless it is properly grounded.

1. Disconnect the powder feed hose from the pump and diffuser. Blow out the hose with compressed air. Disassemble the diffuser and blow its parts clean. Blow out the chargetube and sprayhead.



CAUTION: Always disconnect the powder feed hose from the pump and the diffuser and ejector air tubing from the pump and diffuser before blowing the components out. Blowing powder backwards into the pump or control console can damage the pump or console.

2. Check all powder contact parts for wear and replace any worn parts. Do not use a knife or sharp object to clean parts. Scratches on the powder contact surfaces will result in powder buildup and impact fusion.
3. Make sure all equipment in the spray area, including powder spray gun, is connected to a true earth ground. Resistance from workpiece to ground, through hangers and conveyor, should not exceed one megohm. Keep conveyors, chains, rollers, and hangers clean. If you notice sparking, shut down the system immediately and reestablish ground.

Troubleshooting

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

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 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.

- 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.

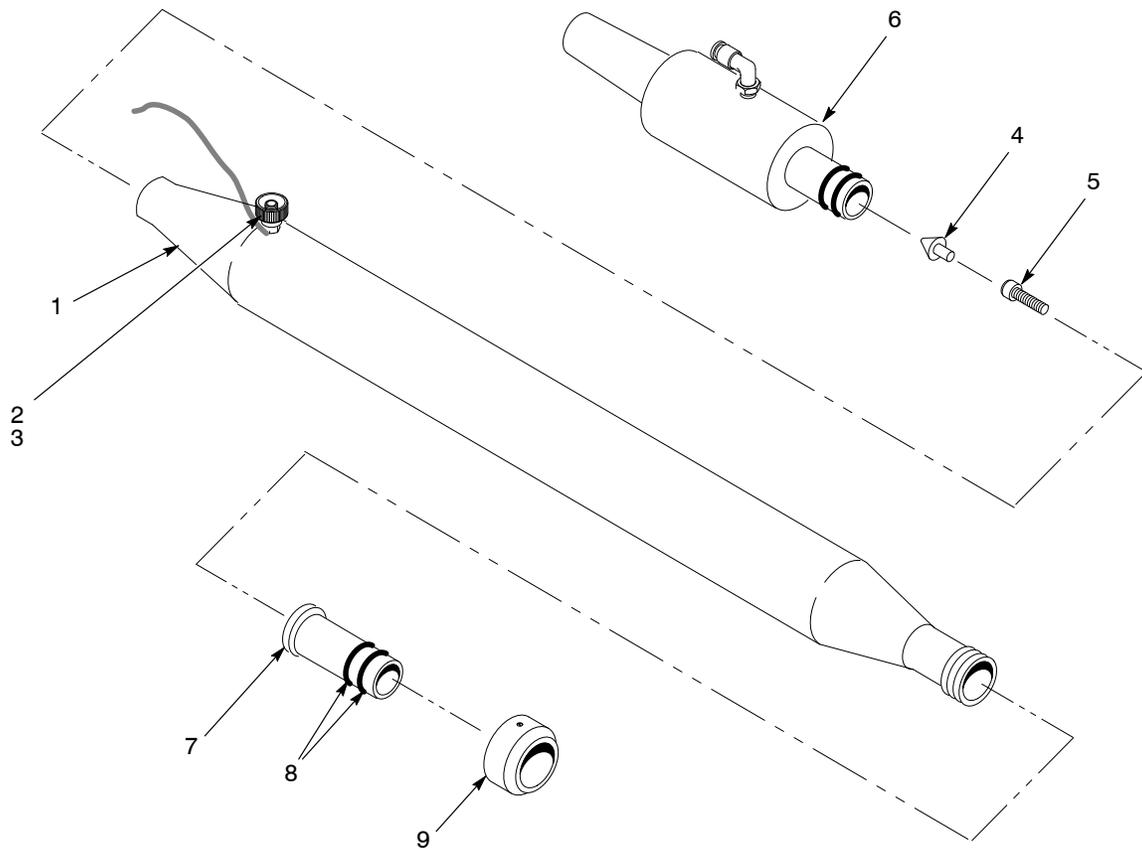
Item	Part	Description	Quantity	Note
—	0000000	Assembly	1	
1	000000	• Subassembly	2	A
2	000000	• • Part	1	

Gun Parts

See Figure 2.

Item	Part	Description	Quantity	Note
—	630121	KIT, Tribomatic gun	1	
1	630014	• CHARGETUBE, Tribomatic, 800 mm	1	
2	630073	• • KNOB, chargetube ground stud	1	
3	-----	• • STUD, ground	1	
4	-----	• • DISTRIBUTOR, gun	1	
5	630296	• • SCREW, socket head, M5 x 40 mm	1	
6	-----	• DIFFUSER	1	A
7	630011	• SPACER, complete, T1, 82 mm	1	B
8	630025	• • O-RING, diameter 25, 12 x 1.78, EPDM	2	
9	630013	• NUT, ring, spacer	1	

NOTE A: Refer to *Diffusers* for parts included in this assembly.
 B: Other spacers are available. Refer to *Optional Spacers* for part numbers.



1401657A

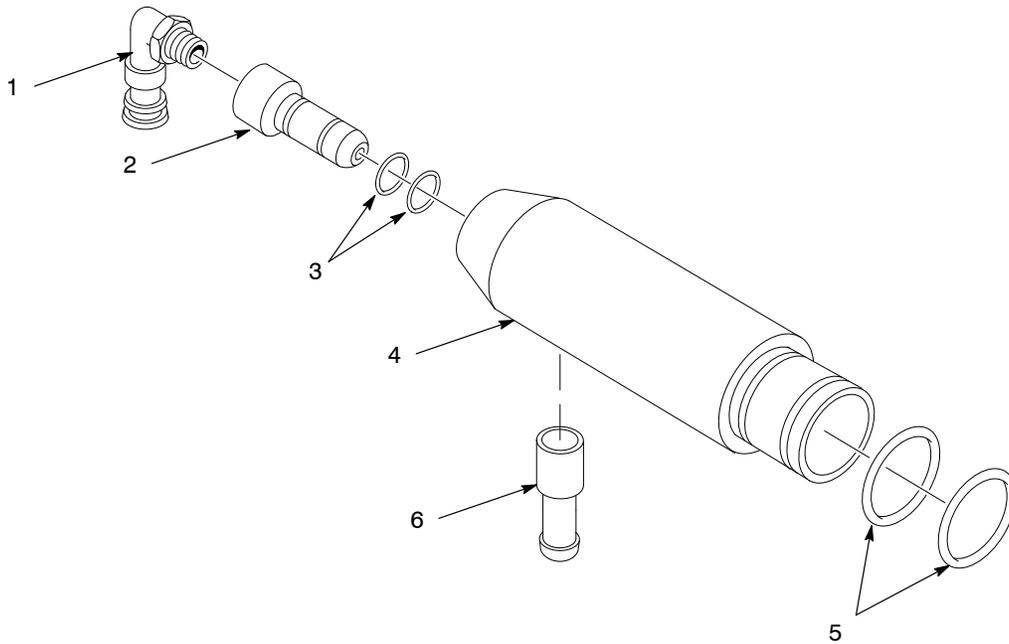
Figure 2 Gun Parts

Diffusers

Generation 3 Diffuser (Standard)

See Figure 3.

Item	Part	Description	Quantity	Note
—	635005	DIFFUSER, Generation 3, Tribomatic	1	
1	630035	• FITTING, air	1	
2	635007	• NOZZLE, diffuser, Generation 3	1	
3	940117	• O-RING, silicone, 0.312 x 0.438 x 0.063 in.	2	
4	635008	• HOUSING, diffuser, Generation 3	1	
5	630025	• O-RING, diameter 25, 12 x 1.78, EPDM	2	
6	635006	• CONNECTOR, diffuser, Generation 3	1	



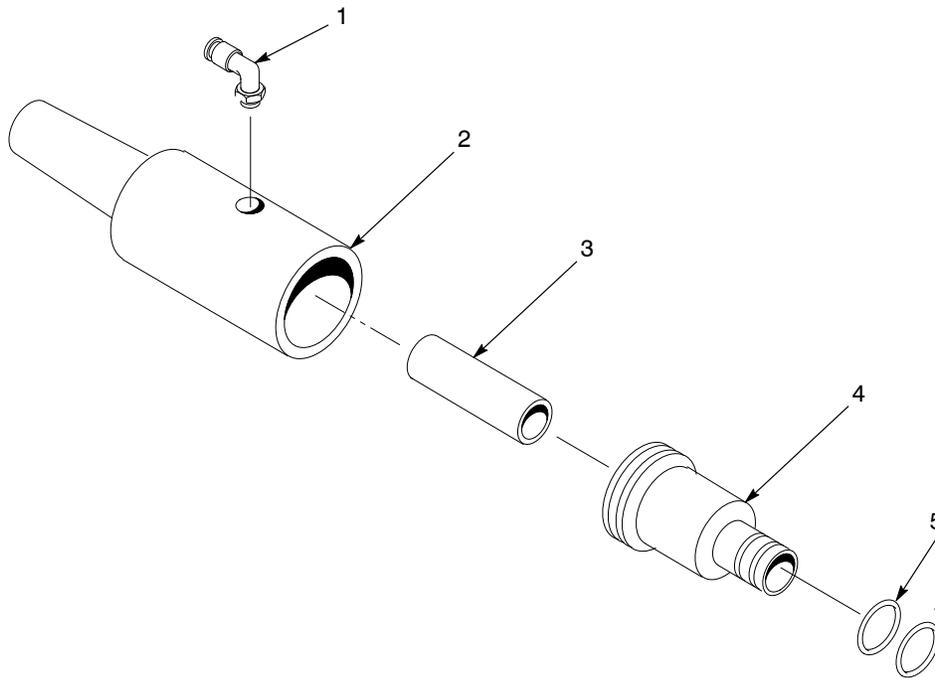
3717001A

Figure 3 Generation 3 Diffuser (Standard)

Generation 4 Diffuser (Optional)

See Figure 4.

Item	Part	Description	Quantity	Note
—	634040	DIFFUSER, gun, Tribomatic, Generation 4	1	
1	630033	• FITTING, air, diffuser	1	
2	-----	• HOUSING, diffuser, Generation 4, Tribomatic	1	
3	634042	• FILTER, diffuser, Generation 4	1	
4	634041	• CONNECTOR, diffuser, Generation 4, Tribomatic	1	
5	630025	• O-RING, diameter 25, 12 x 1.78, EPDM	2	



1401658A

Figure 4 Generation 4 Diffuser (Optional)

Gun Holders

See Figure 5.

Item	Part	Description	Quantity	Note
1	630020	HOLDER, gun, fixed (for 2-in. bar)	1	
NS	630621	• HANDLE, clamping, long	1	
NS	630380	• NUT, gun holder, M8	1	
NS	630639	• WASHER, flat, M6, plastic	1	
2	630022	HOLDER, gun, adapter	1	
3	630307	HOLDER, gun, fixed, 55 mm (for 2-in. bar)	1	
4	630309	• KNOB, gun holder, M8	1	
NS	630321	• HANDLE, clamping, long	1	
NS	630639	• WASHER, flat, M6, plastic	1	
5	630089	HOLDER, gun, left hand, adjustable, for 2-in. bar	1	
NS	630621	• HANDLE, clamping, long	2	
NS	630638	• HANDLE, clamping, short	1	
NS	630639	• WASHER, flat, M6, plastic	3	
6	630262	HOLDER, gun, left hand, adjustable, for 1-in. bar	1	
NS	630621	• HANDLE, clamping, long	2	
NS	630638	• HANDLE, clamping, short	1	
NS	630639	• WASHER, flat, M6, plastic	3	
7	630021	HOLDER, gun, right hand, adjustable, for 2-in. bar	1	
NS	630621	• HANDLE, clamping, long	2	
NS	630638	• HANDLE, clamping, short	1	
NS	630639	• WASHER, flat, M6, plastic	3	
8	630261	HOLDER, gun, right hand, adjustable, for 1-in. bar	1	
NS	630621	• HANDLE, clamping, long	2	
NS	630638	• HANDLE, clamping, short	1	
NS	630639	• WASHER, flat, M6, plastic	3	
9	630111	HOLDER, gun, Tribomatic	1	
NS	248963	• HANDLE, adjustment, $\frac{1}{4}$ -20 x 1.18 in.	1	
NS	984217	• NUT, hex, lock, $\frac{1}{4}$ -20 UNC	1	
10	249160	BAR, gun, mounting	1	
NS: Not Shown				

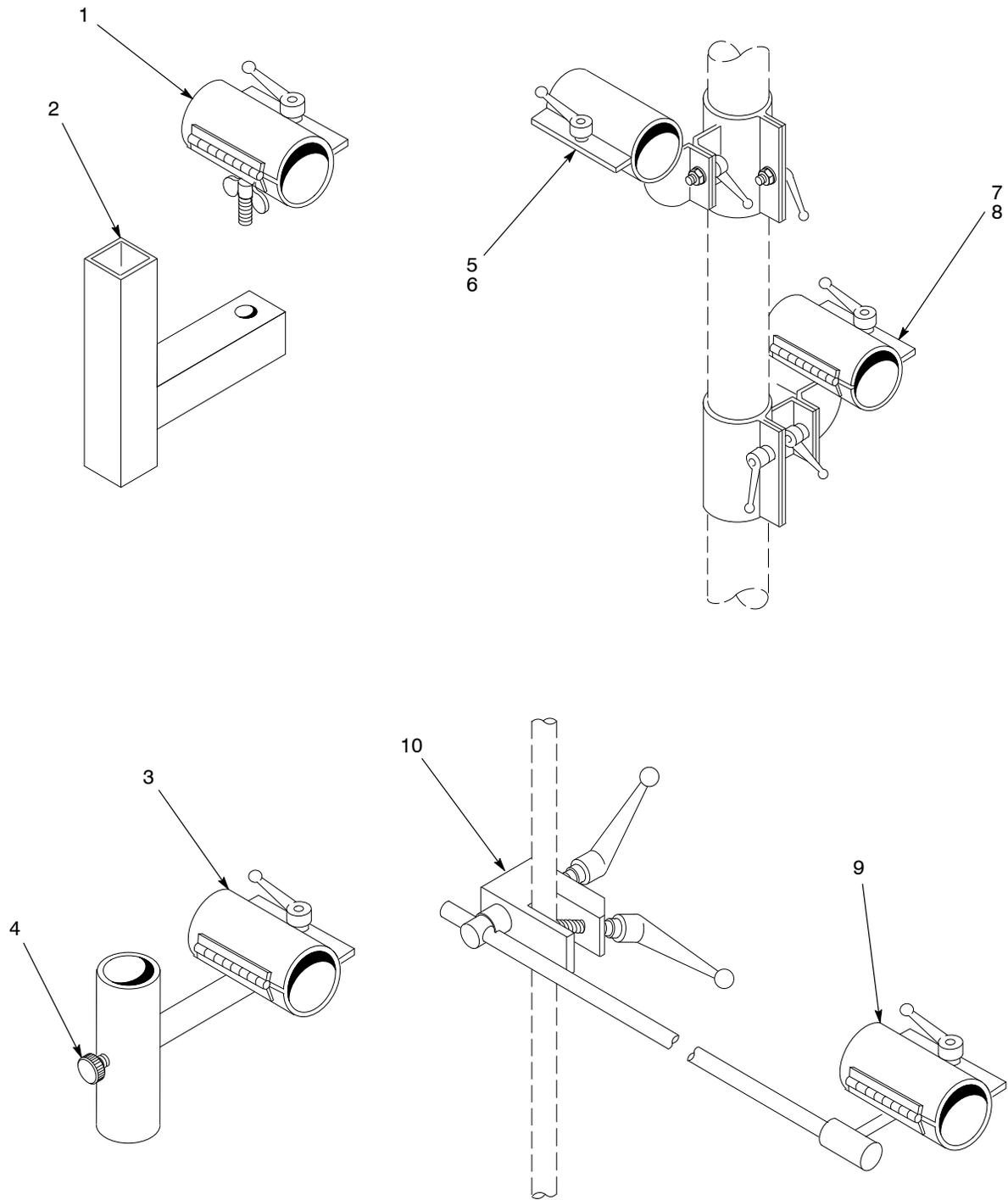


Figure 5 Gun Holders

1401659A

Powder Feed Tubing

Part	Description	Note
630061	TUBING, powder, feed, 12 mm (PVC)	
630237	TUBING, powder, feed, 10 mm (PVC)	
900549	TUBING, isoprene, low flow, $\frac{3}{8}$ in. (black rubber)	
900550	TUBING, isoprene, high flow, $\frac{1}{2}$ in. (black rubber)	

Optional Spacers

Use either of these spacers in place of the spacer that was shipped with the gun.

Part	Description	Note
630012	SPACER, 182-mm long	
630251	SPACER, right angle	

Spare Parts Kit

This kit contains spare parts for one gun and pump.

Item	Part	Description	Quantity	Note
—	630220	KIT, spare parts, gun	1	
NS	630033	• FITTING, air, diffuser	1	A
NS	630041	• RETAINER, throat	1	B
NS	630036	• Nozzle, venturi	1	B
NS	630072	• CONNECTOR, terminal	2	
NS	630025	• O-RING, diameter 25, 12 x 1.78, EPDM	8	
NS	630038	• THROAT, venturi	10	B
NS	-----	• STUD, ground	1	
NS	630073	• KNOB, ground stud	1	
NS	630035	• FITTING, air	1	B
NOTE A: Used on Generation 2 diffusers only.				
B: Used on Tribomatic powder pump.				
NS: Not Shown				

