

Horizontal Gun Movers

Customer Product Manual
Part 331284D



NORDSON CORPORATION • AMHERST, OHIO • USA

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Horizontal Gun Movers

1. 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.

All work conducted inside the spray booth or within 1 m (3 ft) of booth openings is considered within a Class 2, Division 1 or 2 Hazardous location and must comply with NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

- 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.

Grounding *(contd)*

- 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.

2. Description

[See Figures 1 and 2.](#)

The horizontal gun mover is a gun positioning platform that accommodates either a fixed gun stand or heavy duty vertical gun oscillator. Manual and automatic gun movers are available.

The gun mover is available in the following four configurations:

- 61 cm (24 in.) manual travel
- 61 cm (24 in.) automatic travel
- 76 cm (30 in.) automatic travel
- 92 cm (36 in.) automatic travel

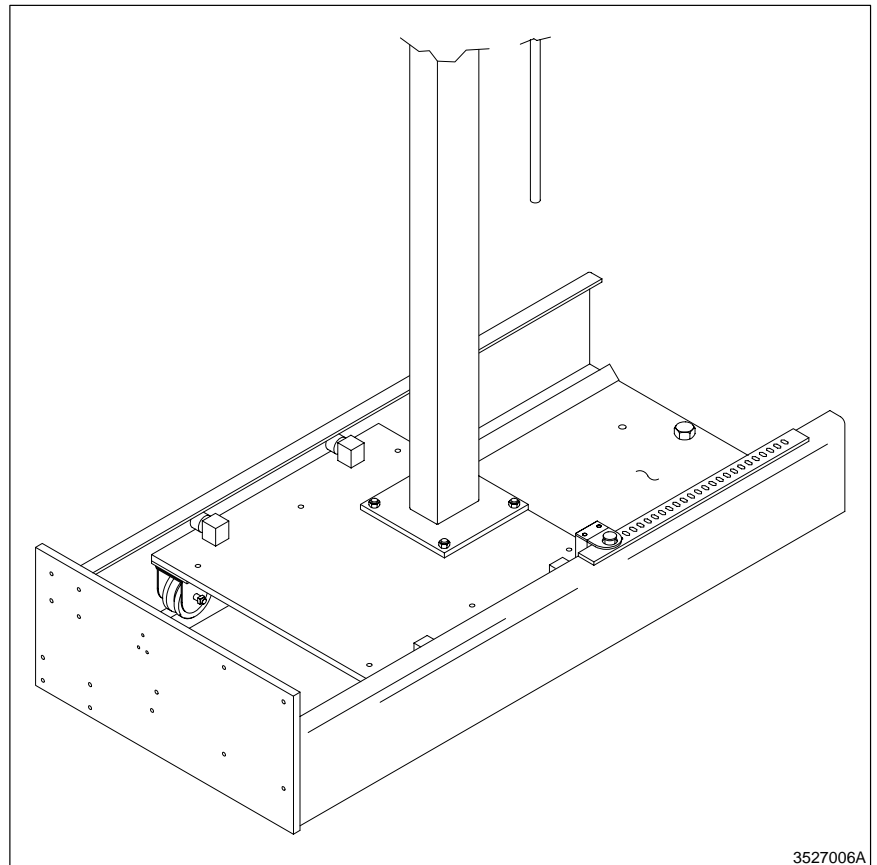


Fig. 1 Manual Horizontal Gun Mover (Shown with Fixed Gun Stand)

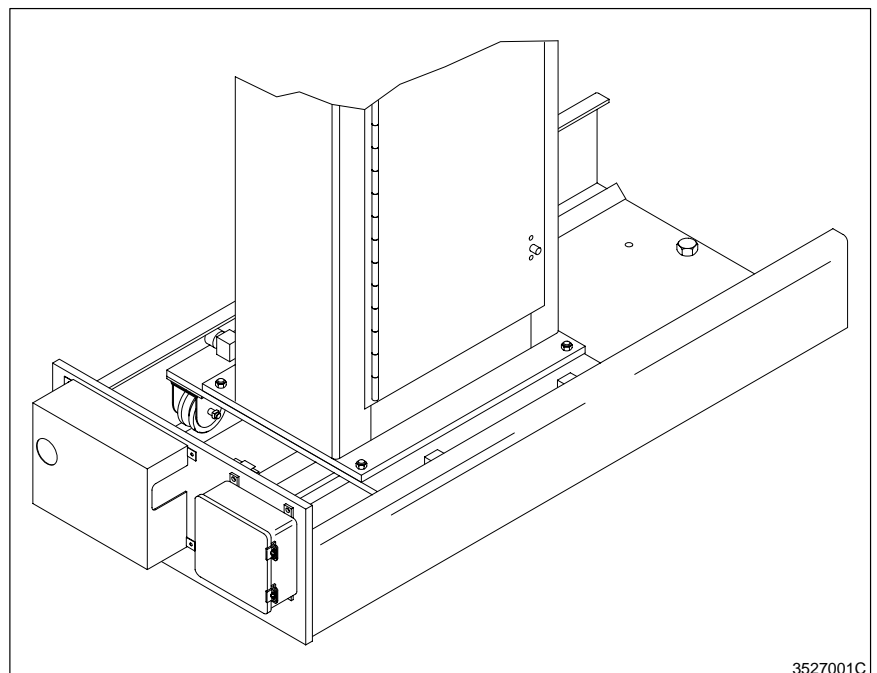


Fig. 2 Automatic Horizontal Gun Mover (Shown with Vertical Oscillator)

Automatic Gun Movers

Theory of Operation—Automatic Gun Movers

The PLC controls the automatic gun mover, which moves the guns toward and away from the parts during the powder coating process.

[See Figure 3.](#)

The solenoid valve (4) requires 24 Vdc to operate. A string pot transducer (1) tells the PLC the location of the oscillator plate.

A 0–10 Vdc signal from the PLC to the solenoid valve controls gun mover movement. The safety valve (3), which is in line with the solenoid valve, prevents unwanted movement in case the solenoid valve control signal from the PLC is lost.

Refer to Table 1 for a description of what movement occurs at different voltage levels.

Table 1 Movement from Voltage Signals

Signal	Movement
0 Vdc	Back (away from booth)
5 Vdc	Stopped in current position
10 Vdc	Forward (toward booth)

Specifications

Refer to Tables 1 and 2 for specifications for the horizontal gun mover.

[See Figure 4.](#)

NOTE: The specifications listed in Table 1 apply to manual and automatic gun movers.

Table 1 General Gun Mover Specifications

Parameter	Specification
Dimensions	24-in. Travel Gun Mover 158.1 x 72.4 x 30.5 cm (62.25 x 28.5 x 12 in.) 30-in. Travel Gun Mover 188.6 x 72.4 x 30.5 cm (74.25 x 28.5 x 12 in.) 36-in. Travel Gun Mover 188.6 x 72.4 x 30.5 cm (74.25 x 28.5 x 12 in.)
Rail Width	59.7 cm \pm 0.08 (23.5 in. \pm 0.031)
Maximum Payload	725.75 kg (1600 lb)

Table 2 Automatic Gun Mover Specifications

Parameter	Specification
Cycle Travel Time	3 seconds total, one direction only
Accuracy	PLC signal controlled to stop within 6 mm (0.25 in.)
Travel Speed	15–30.5 cm/s (6–12 in./s)
Control Voltage	Forward: 0–5 Vdc Backward: 5–10 Vdc
Power Requirements	24 Vdc from booth control cabinet analog card
Air Requirements	5.5–6.2 bar (80–90 psi) clean, dry plant air
Air Connection	12-mm quick-disconnect tube fitting

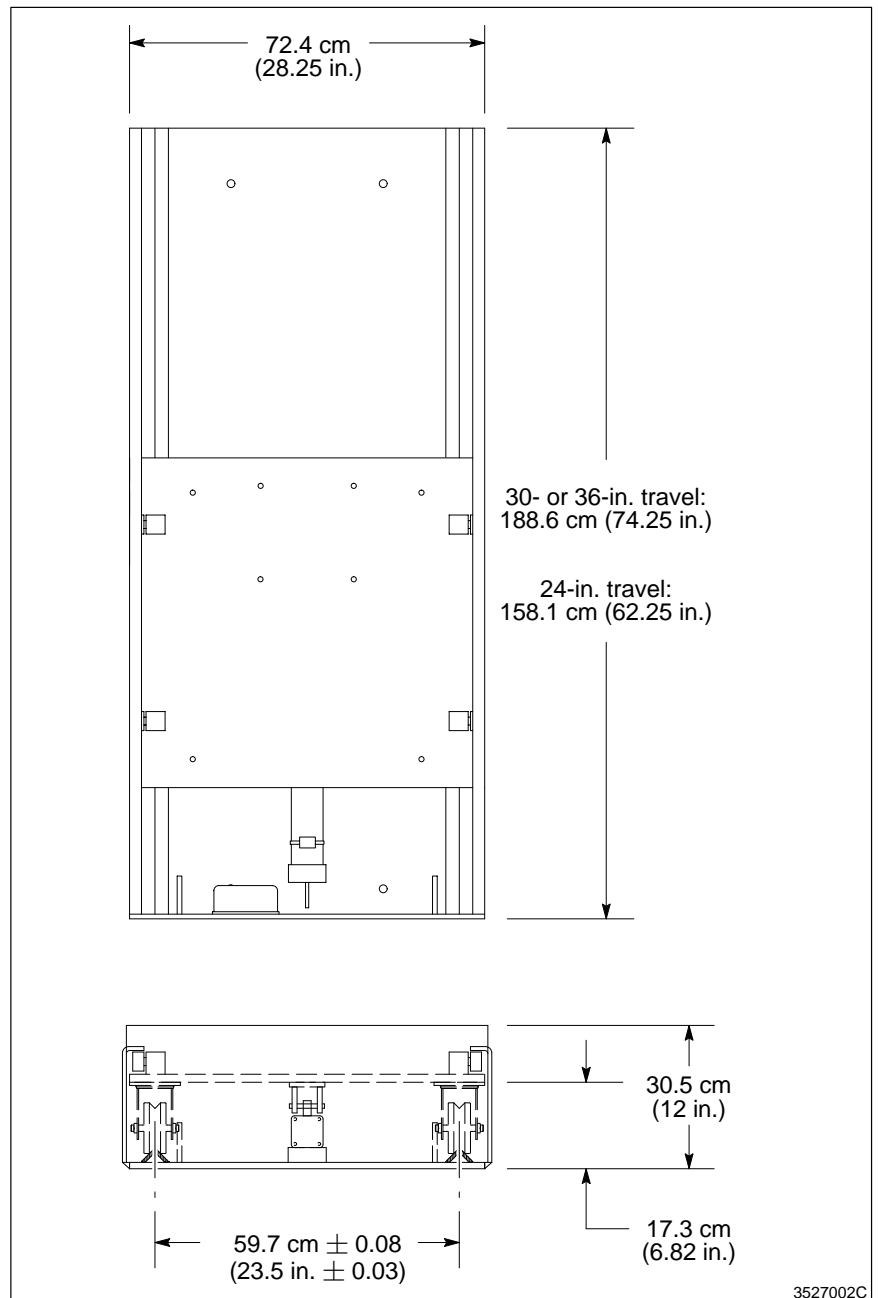


Fig. 4 Manual and Automatic Gun Mover Dimensions

3. *Installation*



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

Use the following steps for basic installation of the gun mover.

NOTE: A Nordson representative must connect automatic gun movers to the power supply and PLC.

1. Unpack the gun mover. Check for damage to the crate and the gun mover.
2. Make sure that all items listed on the packing slip are present.

NOTE: Contact the freight company and your Nordson representative about any loss or damage. Nordson Corporation will assist you in filing your claim and collecting for loss or damage. This willingness to assist you does not make Nordson Corporation responsible for collection of the claim or replacement of any loss.

3. Place the gun mover in the final installation site.
4. Use four customer-supplied $\frac{1}{2} \times 2\frac{1}{2}$ in. concrete anchor bolts and lock washers to secure the gun mover to the floor.
5. Connect the included grounding strap to the gun mover's metal frame. Connect the other end of the ground strap to the booth base.
6. If you are installing an automatic gun mover, perform these steps:
 - a. [See Figure 3.](#)

Connect the air line to the 12-mm main air connection on the air pressure regulator/filter (2).

- b. Contact your Nordson representative to perform final installation and adjustments.

4. Operation



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

Manual Gun Mover Positioning



WARNING: Make sure that all personnel and equipment are away from the gun mover and its components before starting the powder coating system. Make sure that nothing will interfere with gun mover or vertical oscillator movement. Failure to observe this warning could result in personal injury or death.



WARNING: Do not open access panels or make adjustments to the gun mover or vertical oscillator while the powder coating system is operating. Failure to observe this warning could result in equipment damage, personal injury, or death.

Use the following procedure to operate the manual horizontal gun mover.

See Figure 5.

1. Unlock the oscillator plate (5) by turning the locking knob (4) counterclockwise. The oscillator plate will move freely on the gun mover's horizontal rails.
2. Move the oscillator plate to the desired location.
3. Line up the locking knob with one of the holes on the locking plate.
4. Lock the oscillator plate by turning the locking knob clockwise. Turn the knob until it is hand tight.

Automatic Gun Mover Positioning



WARNING: Make sure that all personnel and equipment are away from the gun mover and its components before starting the powder coating system. Make sure that nothing will interfere with gun mover or vertical oscillator movement. Failure to observe this warning could result in personal injury or death.



WARNING: Do not open access panels or make adjustments to the gun mover or vertical oscillator while the powder coating system is operating. Failure to observe this warning could result in equipment damage, personal injury, or death.

Use the following procedures to operate the automatic horizontal gun mover. Contact your Nordson representative for further operating instructions for the gun mover and PLC.

NOTE: The gun mover will not operate if the PLC is turned off.

Startup

Use the following steps to start up the automatic gun mover.

1. Turn on the supply air.
2. Set the air pressure regulator to 6 bar (90 psi).
3. Adjust the movement as required through the PLC.

Shutdown

Use the following steps to shut down the automatic gun mover.

1. Stop gun mover movement at the PLC.
2. Turn off the supply air.

5. Maintenance



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



WARNING: Disconnect equipment from the line voltage before servicing the equipment. Failure to observe this warning may result in a severe shock.



WARNING: System or material pressurized. Relieve pressure before servicing equipment. Failure to observe this warning could result in equipment damage, personal injury, or death.



CAUTION: Accumulation of dust, dirt or overspray may cause excessive wear and premature component failure.

1. Clean the gun mover's internal components as necessary.
2. Check for overspray build up on the tracks and the casters. Clean the tracks and casters as necessary.

NOTE: If the gun mover is located in an inherently dirty environment or if the overspray build up is excessive, consider using a pressurizing unit. Contact your Nordson representative for more information on pressurizing units.

3. **Automatic Gun Movers Only:** Check the air pressure regulator/filter cartridge periodically and replace as necessary with a Nordson-approved, 5-micron cartridge. Refer to *Parts* for air filter cartridge ordering information.

6. Repair

Repairing the horizontal gun mover requires special training. Contact your Nordson representative for assistance.

7. Parts

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

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

- 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.

Manual Gun Mover Parts

See Figure 5.

Item	Part	Description	Quantity	Note
—	333512	Horizontal gun mover, manual, 24-in. travel	1	
1	-----	• Frame, base, gun mover	1	
2	-----	• Plate, stop, manual, gun mover	1	
3	-----	• Bracket, stop, manual, gun mover	1	
4	1010787	• Knob, hand, aluminum, with $\frac{3}{8}$ -16 stud	1	
5	-----	• Plate, base, oscillator assembly	1	
6	174605	• • Caster, V-groove, rigid, 4 in.	4	
7	-----	• • Cam, follower	4	

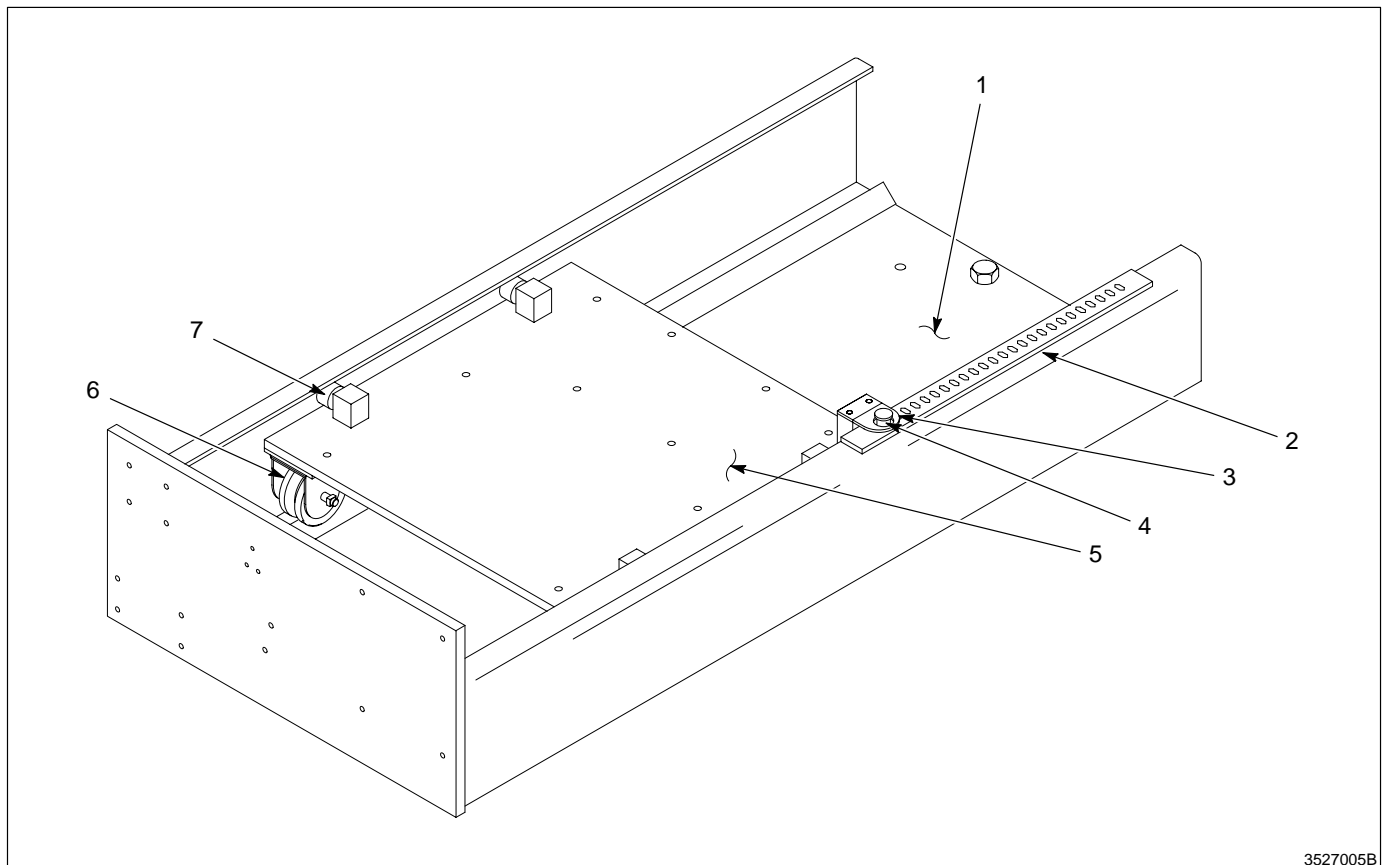
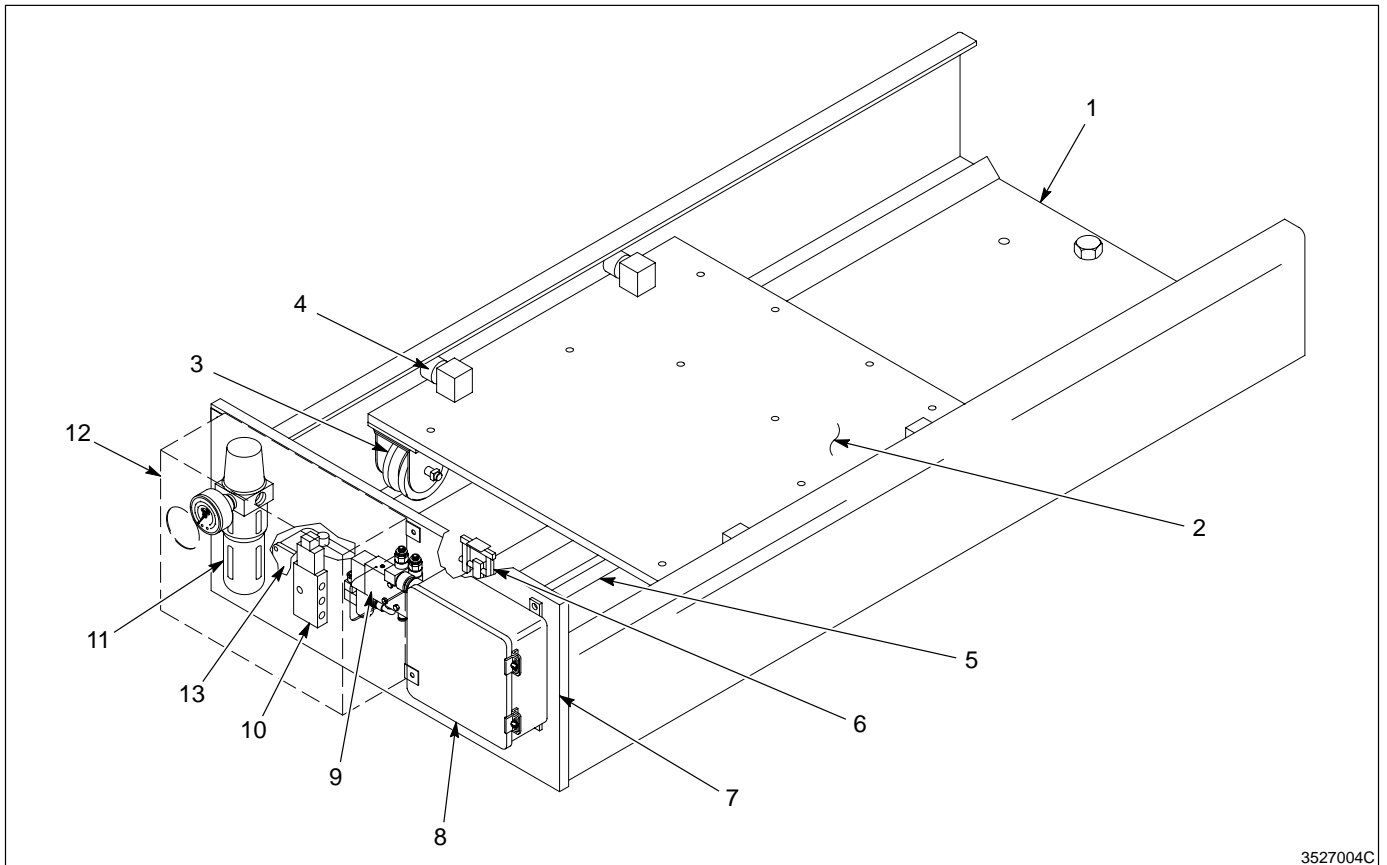


Fig. 5 Manual Gun Mover Parts

Automatic Gun Mover Parts[See Figure 6.](#)

Item	Part	Description	Quantity	Note
—	333509	Horizontal gun mover, automatic, 24-in. travel	1	
—	333510	Horizontal gun mover, automatic, 30-in. travel	1	
—	333511	Horizontal gun mover, automatic, 36-in. travel	1	
1	-----	• Frame, base, gun mover	1	
2	-----	• Plate, base, oscillator, assembly	1	
3	174605	• • Caster, V-groove, rigid, 4 in.	4	
4	-----	• • Cam, follower	4	
5	333649	• Cylinder, air, double acting, 24-in. stroke	1	
5	333655	• Cylinder, air, double acting, 30-in. stroke	1	
5	333514	• Cylinder, air, rodless, 36-in. stroke	1	
6	333656	• Switch, reed, proximity sensor	1	
7	333662	• Panel, assembly, air control, automatic	1	
8	-----	• • Box, junction	1	
9	333508	• • Valve, solenoid, 3-2 way, with needle valves	1	
10	333658	• • Valve, directional control, servo	1	
11	333660	• • Regulator, filter, 0–100 psi	1	
NS	1010751	• • • Filter, 5 micron	1	
12	-----	• • Cover, pneumatic panel assembly	1	
13	333659	• Transducer, string pot	1	
NS: Not Shown				



3527004C

Fig. 6 Automatic Gun Mover Parts

