

Safety

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Introduction

Welcome to *Safety*, a learning module in Graco's basic concept and theory sales training curriculum. Your understanding of the information in this module provides the basis for further study of specific Graco products. Your ability to successfully promote and sell Graco's products depends in part on how well you learn the basics and then apply this knowledge to addressing your customers' needs for Graco equipment.

While this curriculum best fits the requirements of Graco and distributor sales people, it will also benefit anyone whose job function depends on knowledge of Graco's products.

Module Overview

In this module, you learn about the safe use of Graco products. The module begins by identifying the types of potential hazards associated with using Graco products. Next, it identifies the preventive measures necessary to reduce or eliminate each type of significant hazard. Then it provides instructions for what to do if or when near-miss accidents or actual injuries occur. Finally, this module explains the role of Graco and distributor sales representatives in modeling safe procedures for Graco customers.

How to Use this Module

The curriculum consists of a series of self-study modules. As the term self-study implies, you work through the materials on your own at a comfortable pace. Plan sufficient time (approximately 30 minutes) to complete at least one section of a module in a working session.

This module combines a variety of features to make the learning process convenient and productive:

- Learning objectives
- Text
- Charts, illustrations
- Progress checks
- Additional resources

Learning Objectives

Each section of material offers a set of learning objectives. Read the objectives and use them to guide you to the most important concepts. After you finish each section and before you complete the progress check, reread the learning objectives to confirm that you understand the key concepts.

Text

Definitions, examples, and explanations comprise the learning module text. Read it carefully and return for review if necessary.

Charts, Illustrations

An important element of any instruction is visualizing the concepts. This module contains graphics and illustrations to enhance the text material. Whenever appropriate, the module also contains charts that help you organize or summarize information.

Progress Checks

Progress checks are self-tests that provide reinforcement and confirm your understanding of important topics. After completing each major section of the module, return to review the objectives, and then work through each of the progress check items. Upon completion, check your answers against those provided. If you answered any incorrectly, return to the text and reread the pertinent information.

Additional Resources

This module may refer you to other documents or sources that expand on the concepts covered in the module. The reference will include the name of the source and how you can obtain it.

Characteristics of a Safe Work Environment

Learning Objectives

This introductory section describes the essential elements of a safe work environment. Once you understand the characteristics of a safe work environment, you can plan and execute actions to create and sustain one. After completing this section on safe work environments, you will be able to:

- Describe the elements of a safe work environment.
- Define the term *significant hazard*.
- Name the significant hazards potentially associated with using Graco products.

Using Instructions—Parts Lists (Instruction Manuals)

An effective way to become familiar with safety considerations and procedures is to review the Instruction Manuals for a number of Graco products. Graco publishes an Instruction Manual for each Graco product. These Instruction Manuals have the title **Instructions—Parts List** across the top, followed by a form number and a heading naming the Graco product the manual describes. The first three digits of the Instruction Manual form numbers are 306, 307, or 308.

Collect the Instruction Manuals for a variety of Graco products (by requesting them from a supervisor or by ordering them yourself). Then review each manual, paying particular attention to safety information. You will notice that the manuals use icons (small pictures) to represent the different types of hazards, such as fire and explosion, toxicity, injection, and others. The icons indicate the location of safety information. You will find safety information throughout the manuals and interspersed with operating and maintenance instructions. To learn more about safe use of Graco products, read a number of the manuals until you are familiar with the types of potential hazards and how to prevent them.

Whose Responsibility is Safety?

Safety is a shared responsibility. Responsibility for a safe work environment is shared by:

- Graco, as a manufacturer
- You, as a representative of Graco
- Distributors
- Graco and distributors' customers
- Equipment users

As the manufacturer, Graco is responsible for providing safe products to its customers. The company is also responsible for providing them with safety information. This is a responsibility you share as a representative of Graco and its products. As a representative of Graco, you must always model and point out safety devices and procedures when you demonstrate products at the customer site.

Graco's customers are, in turn, responsible for training their employees on the safe use of Graco equipment. Finally, the employees are responsible for always following safe operating procedures in order to keep themselves and others safe.

The objective for all of those involved in using Graco products is to create and maintain a safe work environment. This module explains how we can accomplish that objective.

What Is A Safe Work Environment?

A safe work environment is one that meets three primary criteria. In a safe work environment:

1. The company and its employees have identified any and all significant hazards in that setting.
2. Preventive measures are in place to address each significant hazard.
3. The company and its employees know how to respond if or when accidents or near-miss accidents occur.

Clearly, helping to create a safe work environment requires that you understand the meaning of the term *significant hazard*. A significant hazard is a situation in which there is a risk of serious injury or death if safe procedures are not followed or preventive measures are not in place.

Identifying Significant Hazards

As a representative of Graco products, an essential part of the service you provide Graco customers is to promote the safe use of Graco products. To perform this role, you need to understand the hazards associated with using Graco products. What are these significant hazards?

The significant hazards that may occur when using Graco products are:

- Fire and explosion
- Skin injection
- Pressure-related injuries
- Injury from moving parts
- Toxicity
- Electric shock

Figure 1 shows the typical symbols Graco uses in product literature to represent these potential hazards.



05334

Figure 1 Symbols representing potential significant hazards.

Progress Check

Directions: After answering the following questions, compare your answers with those provided in the answer key following this progress check. If you responded to any items incorrectly, return to the text and review the appropriate topics.

1. Which of the following are key characteristics of a safe work environment? (Select all that apply.)
 - a. Significant hazards have been identified.
 - b. The manufacturer is responsible for training the customer's employees.
 - c. Preventive measures are in place for each significant hazard.
 - d. There are no reports of accidents or near-miss accidents.

2. What is the correct definition of a *significant hazard*? (Select only one answer.)
 - a. A situation with a risk of serious injury or death if safe procedures are not followed or preventive measures are not in place.
 - b. A situation with a risk of serious injury or death whether or not safe procedures are followed and preventive measures are in place.
 - c. A situation with a risk of serious injury, but not death if safe procedures are not followed or preventive measures are not in place.
 - d. A situation with a risk of death, but not serious injury if safe procedures are not followed or preventive measures are not in place.

3. Which of the following are significant hazards potentially associated with Graco products? (Select all that apply.)
 - a. Electric shock
 - b. Skin injection
 - c. Fire and explosion
 - d. Pressure-related injuries
 - e. Injury from moving parts
 - f. Toxicity

Answers to the Progress Check

1. a and c. In a safe work environment, all significant hazards have been identified, preventive measures are in place for each hazard, and all accidents or near-miss accidents are reported. The company who purchases the manufacturer's products, not the manufacturer, is responsible for training employees on safe procedures.
2. a. *A significant hazard* is a situation with a risk of serious injury or death if safe procedures are not followed or preventive measures are not in place.
3. a, b, c, d, e, and f. The significant hazards potentially associated with using Graco products are:
 - Electric shock
 - Skin injection
 - Fire and explosion
 - Pressure-related injuries
 - Injury from moving parts
 - Toxicity

Understanding Significant Hazards in Using Graco Products

Learning Objectives

The first step in creating and maintaining a safe work environment is to understand the significant hazards associated with using Graco products. Once you know how hazardous situations come about, you can plan specific actions to prevent those situations from occurring. This section identifies the conditions leading to each of six significant hazards associated with using Graco products. After completing this section on significant hazards, you will be able to:

- Describe the conditions that create significant hazards potentially leading to *fire and explosion*.
- Describe the conditions that create significant hazards potentially leading to *skin injection*.
- Describe the conditions that create significant hazards potentially leading to overpressurization of equipment, unexpected pressure release, and *pressure-related injuries*.
- Describe the conditions that create significant hazards potentially leading to *moving part injuries*.
- Describe the conditions that create significant hazards potentially leading to *toxicity*.
- Describe the conditions that create significant hazards potentially leading to *electric shock*.

Fire and Explosion

Fires and explosions can only occur if there is an *ignition source* combined with flammable vapors and oxygen in the work environment. Therefore, the presence of ignition sources is an important work environment factor leading to a risk of fire and explosion. Ignition sources that can potentially lead to a fire or explosion are:

- Electrical switches or motors
- Open flames
- Static electricity discharge

The last item on this list, static electricity discharge, requires further explanation. Electrical discharge from an ungrounded object can occur when static electricity builds up. Static electricity may build up when fluids flow through pumps, hoses, and sprayers. Electrostatic spray guns also provide a charging source. In these situations, ungrounded objects can accumulate a charge and subsequently discharge.

Graco uses the symbols shown in Figure 2 in its product literature to call your attention to potential fire and explosion risk factors. Look over several Instruction Manuals now and review the sections where these symbols appear.



05335

Figure 2 Fire and explosion hazards.

Skin Injection

Spray equipment users often underestimate the seriousness of skin injection injury. You can help your customers take skin injection risks more seriously by pointing them out and explaining carefully how to prevent such injuries. The factors in the work environment that contribute to the risk of accidental skin injection are:

- A high-pressure fluid stream directed toward skin or clothing
- Removal of protective devices from equipment
- Unexpected release of fluid pressure
- Failure to use a spray gun trigger safety

Graco uses the symbols shown in Figure 3 to call your attention to potential skin injection risk factors. Look over the Instruction Manuals now and review the sections where these symbols appear.



05336

Figure 3 Skin injection hazards.

Overpressurization and Unexpected Pressure Release

Pressure-related injuries happen when equipment is overpressurized and a component ruptures. Component ruptures are most often caused by:

- Exceeding the safe working pressure of a component
- Continued use of damaged equipment

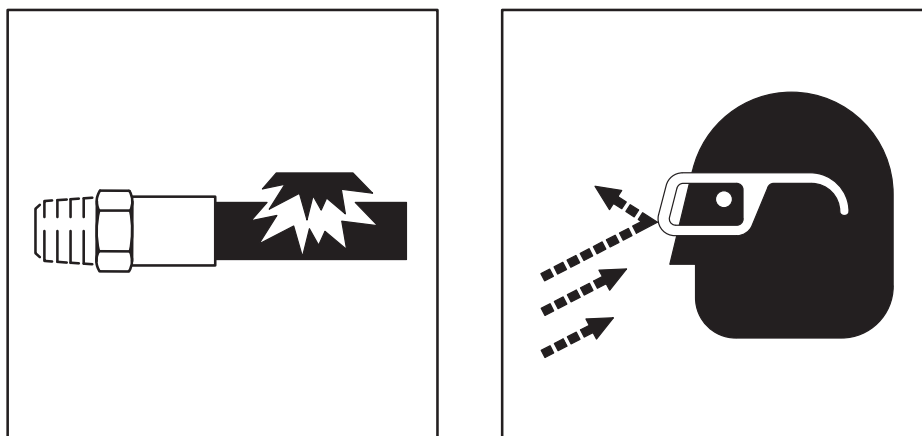
Pressure-related injuries can also occur when:

- The operator does not follow pressure-relief procedures.
- Equipment is worn or damaged.
- Parts have been replaced with improper replacements.
- Connections are not tight.
- Connections are incompatible.
- Connections are inappropriate for the pressure rating.

When equipment components rupture or an unexpected pressure release occurs, injuries are most often caused by:

- Spray in the face or eyes
- A whipping hose
- Projectiles

Figure 4 shows Graco's symbols for pointing out unexpected pressure-release risk factors in the work environment. Look over the Instruction Manuals now and review the sections where the symbols appear.



05337

Figure 4 Overpressurization and unexpected pressure-release hazards.

Moving Parts

Injury from moving parts most often occurs when there is:

- Unexpected movement of components (for example, air motor and pump displacement rods)
- Removal of equipment guards
- Failure to completely relieve fluid and air pressure when servicing equipment

Figure 5 shows Graco's symbols portraying moving part risk factors in the work environment. Look over the Instruction Manuals now and review the sections where these symbols appear.

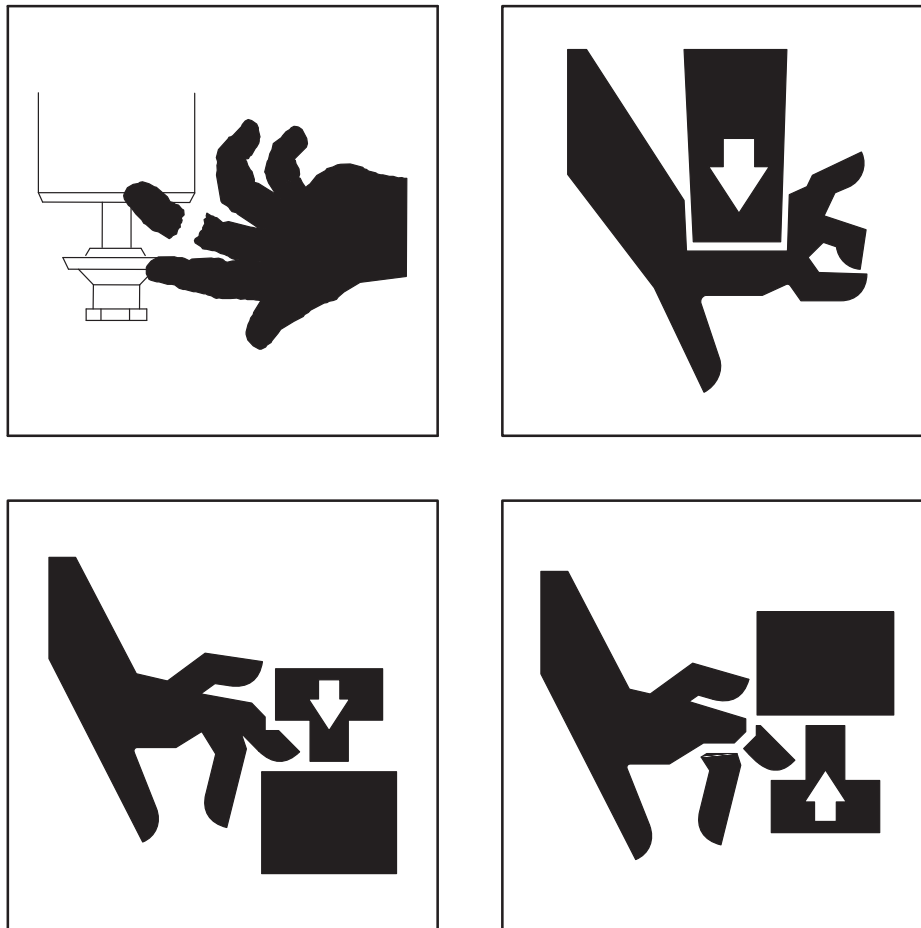


Figure 5 Moving part hazards.

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Toxicity

Toxicity is a potential risk when the work environment exposes employees to:

- Fumes from coating materials or fluids
- Gas engine exhaust fumes
- Toxic fluid that contacts the skin, nose, mouth, or eyes

Figure 6 shows the symbols that indicate toxicity risk factors. Review the sections of Graco's Instruction Manuals where these symbols appear.



05339

Figure 6 Toxicity hazards.

Electric Shock

The factors in the work environment that may potentially lead to electric shock are:

- Contact with electrically live or charged parts
- Improper grounding of equipment and other objects in the spray area

Figure 7 shows how Graco portrays electric shock risk factors to call them to your attention. Review the Instruction Manual sections where these symbols appear.



05340

Figure 7 Electric shock hazards.

Progress Check

Directions: After answering the following questions, compare your answers with those provided in the answer key following this progress check. If you responded to any items incorrectly, return to the text and review the appropriate topics.

1. Which of the following is a factor contributing to the risk of *fire and explosion* when using Graco products? (Select all that apply.)
 - a. Static electricity accumulation or electrostatic discharge.
 - b. Electrical switches or motors.
 - c. Open flames.
 - d. Flammable vapors from paints, other coating materials, or solvents.
 - e. Oxygen.
 - f. Equipment that is not properly grounded.

2. Which of the following is a factor contributing to the risk of *skin injection* when using Graco products? (Select all that apply.)
 - a. Open flames.
 - b. Static electricity accumulation or electrostatic discharge.
 - c. A high-pressure fluid stream directed toward skin or clothing.
 - d. Removal of protective devices from equipment.
 - e. Unexpected release of fluid pressure.
 - f. Failure to use a spray gun trigger safety.

3. Which of the following is a factor contributing to the risk of *overpressurization and unexpected pressure release* when using Graco products? (Select all that apply.)
 - a. Exceeding the safe working pressure of a component.
 - b. Static electricity accumulation or electrostatic discharge.
 - c. Continued use of damaged equipment.
 - d. Flammable vapors from paints, other coating materials, or solvents.
 - e. Unexpected release of fluids under pressure.

4. Which of the following is a factor contributing to the risk of injury from *moving parts* when using Graco products? (Select all that apply.)
 - a. Unexpected movement, often from pressure release.
 - b. Removal of equipment guards.
 - c. Failure to completely relieve fluid and air pressure when servicing equipment.
 - d. Flammable vapors from paints, other coating materials, or solvents.
 - e. Sudden release of fluids under pressure.

5. Which of the following is a factor contributing to the risk of *toxicity* when using Graco products? (Select all that apply.)
 - a. Fumes from coating materials or fluids.
 - b. Gas engine exhaust fumes.
 - c. Toxic fluid that contacts the skin, nose, mouth, or eyes.
 - d. Removal of protective devices from equipment.
 - e. Improper grounding of equipment.

6. Which of the following is a factor contributing to the risk of injury from *electric shock* when using Graco products? (Select all that apply.)
 - a. Contact with electrically live or charged parts.
 - b. Exceeding the safe working pressure of a component.
 - c. Removal of protective devices from equipment.
 - d. Improper grounding of equipment and other objects in the spray area.

Answers to the Progress Check

1. a, b, c, d, e, and f. The risk factors contributing to the hazard of *fire and explosion* are:
 - Static electricity accumulation or electrostatic discharge
 - Electrical switches or motors
 - Open flames
 - Flammable vapors from paints, other coating materials, or solvents
 - Oxygen
 - Equipment that is not properly grounded
2. c, d, e, and f. The risk factors contributing to the hazard of *skin injection* are:
 - A high-pressure fluid stream directed toward skin or clothing
 - Removal of protective devices from equipment
 - Unexpected release of fluid pressure
 - Failure to use a spray gun trigger safety
3. a, c, and e. The risk factors contributing to the hazard of *overpressurization and unexpected pressure release* are:
 - Exceeding the safe working pressure of a component
 - Continued use of damaged equipment
 - Unexpected release of fluids under pressure
4. a, b, and c. The risk factors contributing to the hazard of injury from *moving parts* are:
 - Unexpected movement, often from pressure release
 - Removal of equipment guards
 - Failure to completely relieve fluid and air pressure when servicing equipment
5. a, b, and c. The risk factors contributing to the hazard of *toxicity* are:
 - Fumes from coating materials or fluids
 - Gas engine fumes
 - Toxic fluid that contacts the skin, nose, mouth, or eyes
6. a and d. The risk factors contributing to the hazard of *electric shock* are:
 - Contact with electrically live or charged parts
 - Improper grounding of equipment and other objects in the spray area

Reducing the Risks of Significant Hazards

Learning Objectives

Once we know how hazardous situations happen, we can plan specific actions to prevent those situations from occurring. This section describes the actions we can take to prevent each of six significant hazards associated with using Graco products. After completing this section on reducing the risks of significant hazards, you will be able to:

- Describe the preventive actions for each significant hazard associated with using Graco products.
- Use Graco product literature as an ongoing resource for learning about and promoting the safe use of Graco products.

Preventing Fire and Explosion

To prevent fire and explosion:

- Install and use proper ventilation.
- Remove or extinguish all ignition sources, such as pilot lights, cigarettes, arcing motors, and others.
- Ground all people, objects and spraying equipment in the spray area to prevent electrostatic discharge.
- Use safe flushing procedures
- Do not use flammable fluids with electrostatic equipment that is designed for use only with nonflammable fluids.

The Instruction Manual for each Graco product identifies the particular preventive actions that pertain to that equipment. You and your customers should always consult the product safety information to learn about the safe use of each Graco product. Figure 8 shows an example of product-specific fire and explosion hazard prevention actions from a Graco Instruction Manual.


	<p>FIRE AND EXPLOSION HAZARD</p> <p>Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.</p> <ul style="list-style-type: none"> • Ground the equipment. Refer to Grounding on page 5. • The acetal pump contains stainless steel fibers and is conductive. Never use a polypropylene pump with flammable fluids. • If there is any static sparking or you feel an electric shock while using this equipment, stop pumping immediately. Do not use the equipment until you identify and correct the problem. • Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being pumped. • Pipe and dispose of the exhaust air safely, away from all sources of ignition. If the diaphragm fails, the fluid is exhausted along with the air. See Air Exhaust Ventilation on page 10. • Keep the work area free of debris, including solvent, rags, and gasoline. • Electrically disconnect all equipment in the work area. • Extinguish all open flames or pilot lights in the work area. • Do not smoke in the work area. • Do not turn on or off any light switch in the work area while operating or if fumes are present. • Do not operate a gasoline engine in the work area.
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Figure 8 Fire and explosion hazard prevention actions.

Preventing Skin Injection

To prevent skin injection injuries:

- Stay clear of high-pressure fluid streams and sprays.
- Never remove protective devices, such as spray gun tip guards.
- Use proper pressure-relief procedures.
- Use safe flushing practices.
- Never try to stop leaks with your hands or body.
- Always use the spray gun trigger safety.

Before an accident happens, become familiar with the important information provided on the Graco Skin Injection Response Wallet Card, (Graco part number 222-385). Refer to this card again if a skin injection accident happens. If skin injection does occur, obtain medical attention immediately.

Figure 9 shows an example of product-specific skin injection hazard prevention actions from a Graco Instruction Manual.



 WARNING	
	<p>SKIN INJECTION HAZARD</p> <p>Spray from the gun, hose leaks or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Splashing fluid in the eyes or on the skin can also cause serious injury.</p> <ul style="list-style-type: none">● If a skin injection occurs, get emergency medical care at once. Do not treat as a simple cut. Tell the doctor exactly what fluid was injected.● Give the doctor this information: Injection into the skin is a traumatic injury. Treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the blood stream. Consultation with a plastic surgeon or reconstructive hand surgeon may be advisable.● Do not point the spray gun at anyone or any part of the body.● Do not put hand or fingers over the spray tip.● Do not stop or deflect fluid leaks with your hand, body, glove or rag.● Do not “blow back” fluid; this is not an air spray system.● Always have the tip guard and the trigger guard on the spray gun when spraying.● Check the gun diffuser operation weekly. Refer to the gun manual.● Be sure the gun trigger safety operates before spraying the gun.● Lock the gun trigger safety when you stop spraying.● Follow the Pressure relief procedure on page 8 if the spray tip clogs and before cleaning, checking or servicing the equipment.● Tighten all fluid connections before each use.● Check the hoses, tubes and couplings daily. Replace worn or damaged parts immediately. Permanently coupled hoses cannot be repaired.● Handle and route hoses and tubes carefully. Keep hoses and tubes away from moving parts and hot surfaces. Do not use the hoses to pull equipment. Do not expose Graco hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).


Figure 9 Skin injection hazard prevention actions.


Preventing Pressure-Related Injuries

To prevent pressure-related injuries:

- Do not exceed the working pressure ratings (WPR) of components, paying special attention to high-pressure equipment.
- Use pressure-relief devices.
- Limit the air or hydraulic pressure to the motor so that the fluid pressure produced by the pump is less than the working pressure of all system components.
- Do not repair permanently coupled hoses.
- Use only genuine Graco service parts.
- Do not modify Graco (or any other) parts.
- Properly align spray tips to prevent back-spray.
- Do not use low-pressure fittings with high-pressure equipment.
- Use proper pressure-relief procedures.
- Do not use damaged or worn equipment.
- Check for proper connections and make sure they are tight before pressurizing the system.

See Figure 10 for an example of product-specific overpressurization (and unexpected pressure release) hazard prevention actions from a Graco Instruction Manual.

 **WARNING**



PRESSURIZED EQUIPMENT HAZARD

Spray from the gun, hose leaks or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Do not stop or deflect fluid leaks with your hand, body, glove or rag.
- Follow the **Pressure Relief Procedure** on page 7 when: you are instructed to relieve pressure; stop spraying; clean, check or servicing the equipment; and install or clean fluid nozzles.
- Never point the spray gun at anyone or at any part of the body.
- Never put hand or fingers over the spray nozzle.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes and couplings daily. Replace worn, damaged or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.
- Route hoses away from traffic areas, sharp edges, moving parts and hot surfaces.
- Do not use the hoses to pull equipment.

Figure 10 Pressure-release hazard prevention actions.

Preventing Injury from Moving Parts

To prevent injury from moving parts:

- Follow procedures for relieving fluid and air pressure whenever you stop equipment for service or repair.
- Never operate equipment with guards or other protective devices removed.
- Check regularly to ensure that safety devices are operating properly.
- Properly use bleed type shutoff valves.

Figure 11 shows product-specific moving part hazard prevention actions from a Graco Instruction Manual.

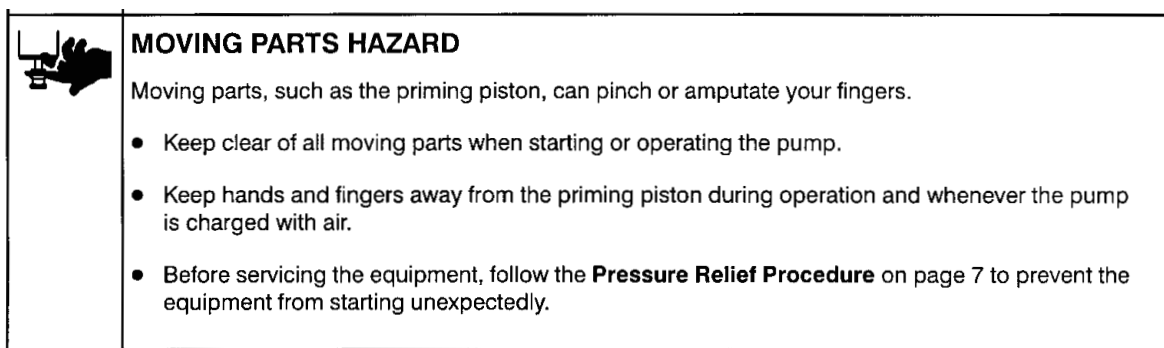


Figure 11 Moving part hazard prevention actions.

Preventing Toxicity

To prevent toxicity:

- Use personal protection equipment (PPE) to avoid contact with hazardous materials.
- Read all fluid (material) labels and material safety data sheets (MSDS).
- Follow the recommendations of fluid manufacturers.
- Never operate gas engines indoors.

Figure 12 is an example of product-specific toxicity hazard prevention actions from a Graco Instruction Manual.



 WARNING	
	<p>TOXIC FLUID HAZARD</p> <p>Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Know the specific hazards of the fluid you are using. • Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines. • Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer. • Pipe and dispose of the exhaust air safely, away from people, animals, and food handling areas. If the diaphragm fails, the fluid is exhausted along with the air. See Air Exhaust Ventilation on page 9. • To pump acids, always use a Kynar or a polypropylene pump. Take precautions to avoid acid or acid fumes from contacting the pump housing exterior. Stainless steel parts will be damaged by exposure to acid spills and fumes. Never use an acetal pump to pump acids.

Figure 12 Toxicity hazard prevention actions.

Preventing Electric Shock

To avoid electric shock injuries:

- Properly ground all objects in the system, including operators.
- Follow the procedures in electrostatic equipment Instruction Manuals to avoid shocks from electrostatically charged components.
- Never operate electric equipment when it is wet or when the surrounding area is wet.
- Use only grounded outlets and extension cords with ground wires.
- Use conductive grounded fluid hoses for high-pressure spraying.

See Figure 13 for an example of product-specific electric shock hazard prevention actions. Note that the preventive actions related to electric shock hazards rarely appear in a separate list in the Instruction Manuals. Rather, as in the example on the next page, they are listed with preventive actions related to other types of hazards.

WARNING



FIRE, EXPLOSION AND ELECTROSTATIC SHOCK HAZARD

Improper grounding, poor air ventilation, open flames or sparks can cause a hazardous condition and result in a fire, explosion or electrostatic shock and other serious injury.

- Electrostatic equipment must be used only by trained, qualified personnel who shall be understand with the requirements stated in this instruction manual and the electrostatic gun manual.
- Ground the equipment, the object being sprayed and all other electrically conductive objects in the spray area. Proper grounding dissipates static electricity generated in the equipment. See **Ground the system** on 6.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.
- When flushing or purging electrostatic equipment, use solvents with a flash point equal to or greater than that of the fluid being sprayed.
- To clean the exterior of the electrostatic equipment, use solvents with a flash point higher than 100° F (38° C).
- Remove all solvent from the system before reactivating the electrostatic spray gun.
- Use only non-sparking tools to clean residue from the booth and hangers.
- Spray only in a ventilated spray booth. Electrically interlock the gun air supply with the ventilators to prevent operation of the electrostatic power supply unless ventilating fans are running.
- Do not smoke in the spray area.
- Extinguish all open flames or pilot lights in the spray area.
- Do not turn on or off any light switch in the spray area.
- Electrically disconnect all equipment in the spray area.
- Keep the spray area free of debris, including solvent, rags and gasoline.
- Do not operate a gasoline engine in the spray area.

Figure 13 Electric shock hazard prevention actions.

General Preventive Actions for All Types of Hazards

Before using any equipment, carefully read and understand all safety information provided with the product. Provide users with training before they use the fluid or equipment.

Figure 14 shows an example of product-specific equipment misuse hazard prevention actions.



 WARNING	
 INSTRUCTIONS	<p>EQUIPMENT MISUSE HAZARD</p> <p>Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.</p> <ul style="list-style-type: none">● This equipment is for professional use only.● Read all instruction manuals, tags, and labels before operating the equipment.● Use the equipment only for its intended purpose. If you are not sure, call Graco Technical Assistance at 1-800-543-0339.● Do not alter or modify this equipment.● Check equipment daily. Repair or replace worn or damaged parts immediately.● Do not exceed the maximum working pressure of the lowest rated component in your system. This equipment has a 120 psi (8.4 bar) maximum working pressure at 120 psi (8.4 bar) maximum incoming air pressure.● Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.● Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminum equipment. Such use could result in a chemical reaction, with the possibility of explosion.● Do not use hoses to pull equipment.● Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 82°C (180°F) or below -40°C (-40°F).● Do not lift pressurized equipment.● Comply with all applicable local, state, and national fire, electrical, and safety regulations.

Figure 14 General equipment misuse hazard prevention actions.

Accident and Near-Miss Accident Reporting

Learning Objectives

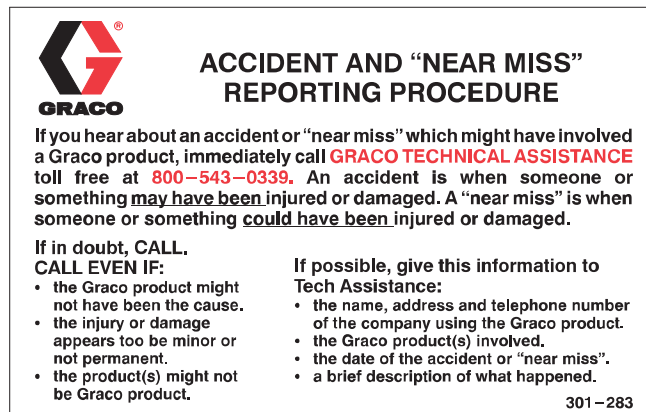
You have responsibility for reporting accidents and near-miss accidents. After completing this section on accident and near-miss accident reporting, you will be able to:

- Respond appropriately to accident and near-miss accident situations.

Preparing and Submitting Required Reports

All Graco employees and Distributors must report accidents and near-miss accidents to Graco at 1-800-543-0339. Be prepared for the possibility of an accident by having the Graco Accident Reporting Wallet Card on hand at all times. To order the Graco wallet card, order part number 301-283.

Figure 15 shows you what the Accident Reporting Wallet Card looks like.



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Figure 15 Graco Accident Reporting Wallet Card.

Preparing to Model Safe Procedures

Learning Objectives

Graco and Graco distributor sales representatives need to model safe procedures for customers. After completing this section on modeling safe procedures, you will be able to:

- Consistently incorporate safe procedures in product demonstrations.

The Instruction Manual for each Graco product provides specific instructions for how to safely use the equipment. These instructions tell you how to perform:

- Safe installation procedures
- Safe setup and shutdown procedures
- Safe operation procedures
- Safe equipment care, flushing, and cleaning procedures
- Safe service procedures

Before you demonstrate a Graco product for a customer, read and practice the safety procedures that are explained in the Instruction Manual. Then, as you demonstrate for the customer, point out the safety aspects of what you are doing and explain why the procedure must be done that way to be safe.

By preparing yourself in this way, you become a strong advocate for the safe use of Graco products, as well as provide important safety education to your customers.

Progress Check

Directions: After answering the following questions, compare your answers with those provided in the answer key following this progress check. If you responded to any items incorrectly, return to the text and review the appropriate topics.

1. What should you do to prevent *fire and explosion*? (Select all that apply.)
 - a. Install and use proper ventilation.
 - b. Remove or extinguish all ignition sources, such as pilot lights, cigarettes, arcing motors, and others.
 - c. Ground all objects to prevent electrostatic discharge.
 - d. Use safe flushing procedures.
2. What should you do to prevent *skin injection*? (Select all that apply.)
 - a. Stay clear of high-pressure fluid streams and sprays.
 - b. Use safe flushing procedures.
 - c. Never remove protective devices, such as spray gun tip guards.
 - d. Use proper pressure-relief procedures.
 - e. Never try to stop leaks with your hands or body.
 - f. Always use the trigger safety.
3. What should you do to prevent *overpressurization and unexpected pressure release*? (Select all that apply.)
 - a. Do not exceed the working pressure ratings (WPR) of components, paying special attention to high-pressure equipment.
 - b. Use pressure-relief devices.
 - c. Limit the air or hydraulic pressure to the motor so that the fluid pressure produced by the pump is less than the working pressure of all system components.
 - d. Do not repair conductive or high-pressure hoses.
 - e. Use only genuine Graco service parts.
 - f. Do not modify Graco (or any other) parts.
 - g. Properly align spray tips to prevent back-spray.
 - h. Do not use low-pressure fittings with high-pressure equipment.

4. What should you do to prevent injury from *moving parts*? (Select all that apply.)
 - a. Follow procedures for relieving fluid and air pressure whenever you stop equipment for service or repair.
 - b. Never operate equipment with guards removed.
 - c. Check regularly to ensure that safety devices are operating properly.
 - d. Properly use bleed type shutoff valves.
 - e. Do not repair conductive or high-pressure hoses.
 - f. Use safe flushing procedures.
5. What should you do to prevent *toxicity*? (Select all that apply.)
 - a. Use personal protection equipment (PPE) to avoid hazards associated with contact.
 - b. Read all fluid (material) labels and material safety data sheets (MSDS).
 - c. Follow the recommendations of fluid manufacturers.
 - d. Never operate gas engines indoors.
6. What should you do to prevent *electric shock*? (Select all that apply.)
 - a. Properly ground all objects in the spray booth.
 - b. Never operate gas engines indoors.
 - c. Follow procedures in instructions for electrostatic equipment.
 - d. Never operate electric equipment when it is wet or when the surrounding area is wet.
 - e. Use only grounded outlets and extension cords with ground wires.
 - f. Do not repair conductive or high-pressure hoses.
7. Who is required to report accidents and near-miss accidents to Graco? (Select all that apply.)
 - a. The injured party
 - b. Graco employees
 - c. The injured party's employer
 - d. Federal and state authorities
 - e. Graco Distributors and Distributor employees
 - f. The injured party's attorney
 - g. The person at fault

Answers to the Progress Check

1. a, b, c, and d. To prevent *fire and explosion*:
 - Install and use proper ventilation.
 - Remove or extinguish all ignition sources, such as pilot lights, cigarettes, arcing motors, and others.
 - Ground all objects to prevent electrostatic discharge.
 - Use safe flushing procedures.
2. a, b, c, d, e, and f. To prevent *skin injection*:
 - Stay clear of high-pressure fluid streams and sprays.
 - Use safe flushing procedures.
 - Never remove protective devices, such as spray gun tip guards.
 - Use proper pressure-relief procedures.
 - Never try to stop leaks with your hands or body.
 - Always use the trigger safety.
3. a, b, c, d, e, f, g, and h. To prevent *overpressurization and unexpected pressure release*:
 - Do not exceed the working pressure ratings (WPR) of components, paying special attention to high-pressure equipment.
 - Use pressure-relief devices.
 - Limit the air or hydraulic pressure to the motor so that the fluid pressure produced by the pump is less than the working pressure of all system components.
 - Do not repair conductive or high-pressure hoses.
 - Use only genuine Graco service parts.
 - Do not modify Graco (or any other) parts.
 - Properly align spray tips to prevent back-spray.
 - Do not use low-pressure fittings with high-pressure equipment.
4. a, b, c, and d. To prevent injury from *moving parts*:
 - Follow procedures for relieving fluid and air pressure whenever you stop equipment for service or repair.
 - Never operate equipment with guards removed.
 - Check regularly to ensure that safety devices are operating properly.
 - Properly use bleed type shutoff valves.

5. a, b, c, and d. To prevent *toxicity*:
 - Use personal protection equipment (PPE) to avoid hazards associated with contact.
 - Read all fluid (material) labels and material safety data sheets (MSDS).
 - Follow the recommendations of fluid manufacturers.
 - Never operate gas engines indoors.
6. a, c, d, e, and f. To prevent *electric shock*:
 - Properly ground all objects in the spray booth.
 - Follow procedures in instructions for electrostatic equipment.
 - Never operate electric equipment when it is wet or when the surrounding area is wet.
 - Use only grounded outlets and extension cords with ground wires.
 - Do not repair conductive or high-pressure hoses.
7. b and e. Graco employees and Graco Distributors (and Distributor employees) must report accidents and near-miss accidents to Graco at 1-800-543-0339.

Module Evaluation

The purpose of this Module Evaluation is to help the Graco Technical Communications department determine the usefulness and effectiveness of the module.

Instructions: Please complete the evaluation, tear it on the perforation, and return it Graco Technical Communications Department, P.O. Box 1441, Minneapolis, MN 55440-1441, USA.

1. *Based on the objectives, this module:*

- Significantly exceeded my expectations
- Exceeded my expectations
- Met my expectations
- Was below my expectations
- Was significantly below my expectations

2. *Why did you select the above rating?*

3. *How do you plan to use the module information in your job?*

4. *How do you think the module could be improved?*

I verify that I have successfully completed Module No. 321-034

Title: Safety

Signature _____

Date _____

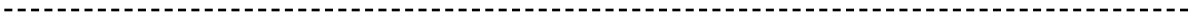


Graco

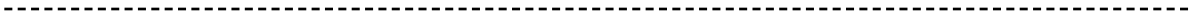
Technical Communications Dept.

P.O. Box 1441

Minneapolis, MN 55440-1441 U.S.A.



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This module was developed by the Graco Technical Communications Department with assistance from the following individuals:

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Michelle Hagman
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The Graco Concept and Theory Training program consists of the following topics:

Fluid Basics
Atomization
Electrostatic Spray Finishing
Safety
Airspray Technology
Fluid Types: Paints and Other Coatings
Fluid Types: Lubricants
Fluid Types: Sealants and Adhesives
Airless Atomization
Spraying Techniques
Transfer Efficiency
Fluid Movement
Fluid Controls
Pumps
Motors and Power Sources
Plural Component Paint Handling
Plural Component Sealant and Adhesive Handling
Paint Circulating Systems
Automatic Finishing
Lube Reels and Dispense Valves
Lube Metering Systems
Electronic Fluid Management Systems