

MD2 Cold Spray Gun and Joint Fill Kit

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EN

For use with Reactor® E-8p and Reactor® E-10 Proportioners. For professional use only.

Part No. 255325 Cold Spray Gun

For spraying 1:1 mix ratio materials, including epoxies, polyurethane foam, and polyurea coatings.

Part No. 24P765 Joint Fill Kit

For dispensing 1:1 mix ratio materials, including self-leveling joint fillers.

Part No. 24P766 Combination Kit

Includes parts for cold spray and joint fill.

2000 psi (13.8 MPa, 138 bar) Maximum Working Pressure

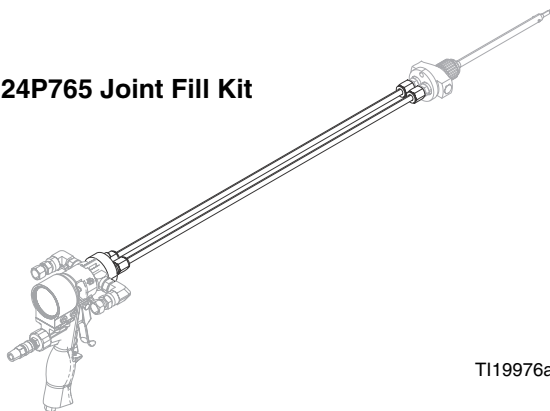
120 psi (0.84 MPa, 8.4 bar) Maximum Air Input Pressure



Important Safety Instructions

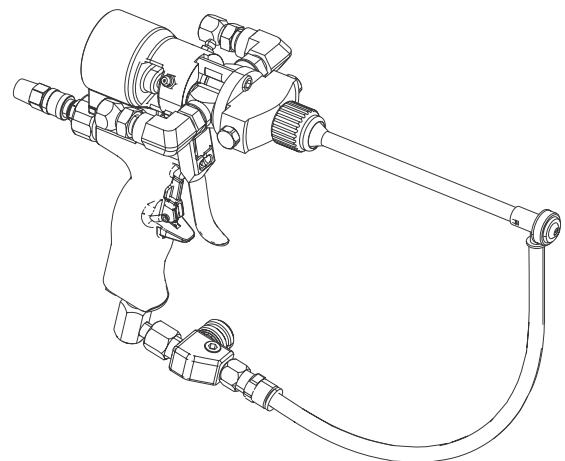
Read all warnings and instructions in this manual. Save these instructions.

24P765 Joint Fill Kit



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255325 Cold Spray Gun



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Contents

Related Manuals	2
Warnings	3
Important Isocyanate (ISO) Information	5
MD2 Valve	7
Trigger Lock	7
Installation	7
Maintenance	12
Parts	14
Accessories	16
Technical Data	17
Graco Standard Warranty	18

Related Manuals

Refer to the following manuals for additional information.

Reactor E-8p Proportioner	
Part No.	Description
3A1602	Instruction-Parts Manual (English)
Reactor E-10 Proportioner	
Part No.	Description
311075	Instruction-Parts Manual (English)
MD2 Valve	
Part No.	Description
312185	Instruction-Parts Manual (English)

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
	TOXIC FLUID OR FUMES HAZARD Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed. • Read MSDSs to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines. • Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.
	PERSONAL PROTECTIVE EQUIPMENT Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to: • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer
  	SKIN INJECTION HAZARD High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment. • Engage trigger lock when not dispensing. • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately



WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

Important Isocyanate (ISO) Information

Isocyanates (ISO) are catalysts used in two component materials.

Isocyanate Conditions



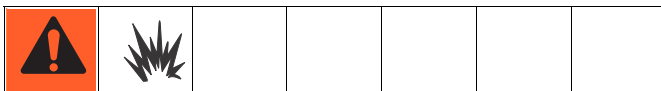
Spraying or dispensing materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

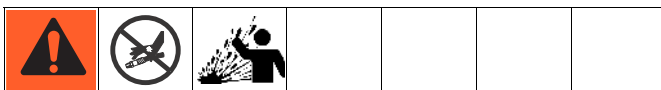
To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.

Material Self-ignition



Some materials may become self-igniting if applied too thick. Read material manufacturer's warnings and material MSDS.

Keep Components A and B Separate



Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:

- **Never** interchange component A and component B wetted parts.
- Never use solvent on one side if it has been contaminated from the other side.

Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure; forming small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

Foam Resins with 245 fa Blowing Agents

Some foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

Changing Materials

NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

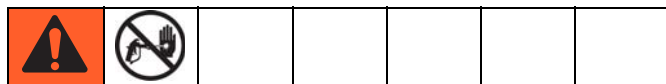
- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side

MD2 Valve

Part No. 255183 MD2 Valve is included with the kits. See the supplied MD2 Valve manual for dispense valve operation, maintenance, repair, and parts information.

NOTE: Manuals are also available at www.graco.com

Trigger Lock



Lock the valve trigger lock by turning the latch to a right angle with the gun body.

Unlock the valve trigger lock by turning the latch parallel with the gun body.

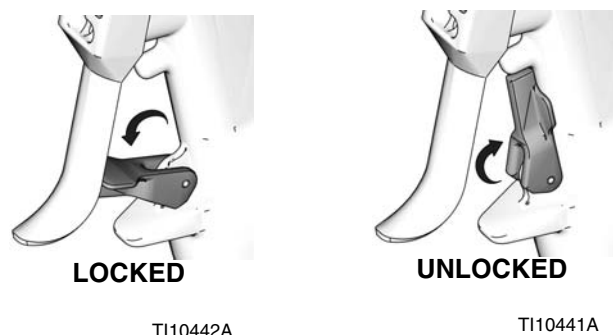


FIG. 1

Installation



Relieve pressure

Relieve all system pressure before installing the kit. See supplied MD2 dispense valve manual.

Assemble Cold Spray Gun

Assemble the kit as shown in the parts drawings. See page 14 for 255325 Cold Spray Gun.

Optional Hose Position

The fluid inlets and air quick disconnect fittings point to the rear. If desired, these positions can be adjusted.

Adjust Fluid Inlets

1. Loosen nut of SAE o-ring boss fitting.
2. Adjust elbow to desired position.
3. Hold elbow in place with a wrench. Use a second wrench to tighten the lock nut securely. Torque to 125-135 in-lb (14-15 N•m).

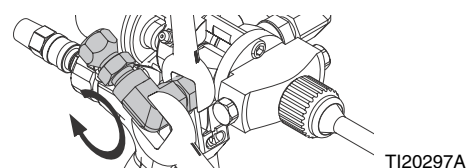


FIG. 2

Move Air Inlet Fitting To Bottom of Handle

1. Remove quick disconnect (D) from the handle (8) and replace with supplied plug (24). Apply thread sealant and torque to 125-135 in-lb (14-15 N•m).
2. Remove air control valve (17) and elbow (21). The elbow will not be used.

NOTE: It may be necessary to remove the muffler (M) before and after fittings have been removed or installed. Reassemble the muffler before operating the gun.

3. Install nipple (35), tee (33), and quick disconnect fitting (D) as shown. Apply thread sealant and torque to 125-135 in-lb (14-15 N•m).
4. Install air control valve (17) in tee (33). Apply thread sealant and torque to 125-135 in-lb (14-15 N•m).

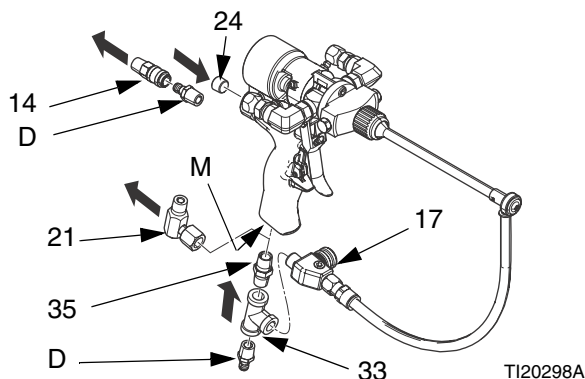
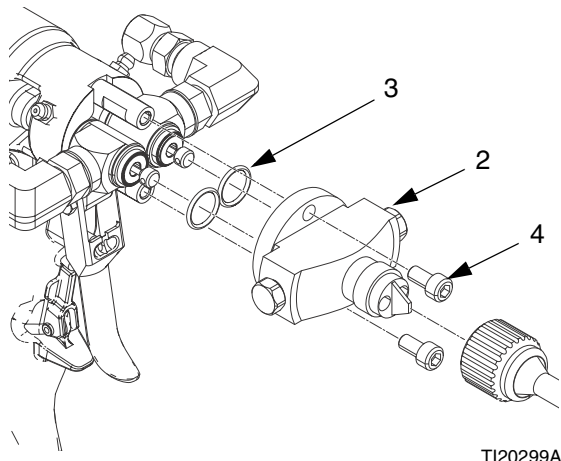


FIG. 3

Convert to Joint Fill Gun

Use Joint Fill Kit 24P765 to convert a Cold Spray Gun to a Joint-Fill Gun.

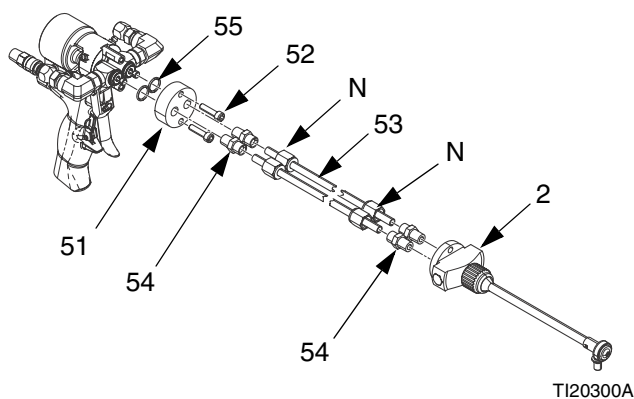
1. Remove screws (4) and nose piece manifold (2).



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FIG. 4

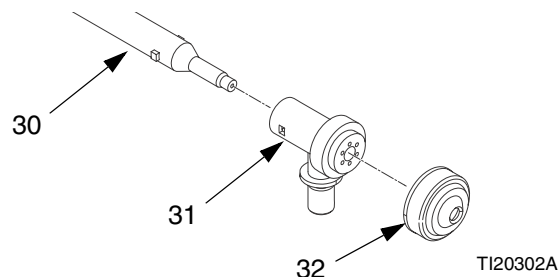
2. Inspect o-rings (3) and replace with new o-rings (55) if necessary. Lubricate o-rings with Fusion grease (29). Install extension adapter (51) with supplied fasteners (52). Lubricate threads and torque fasteners evenly to 15-20 in-lbs (1.7-2.3 N•m).



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FIG. 5

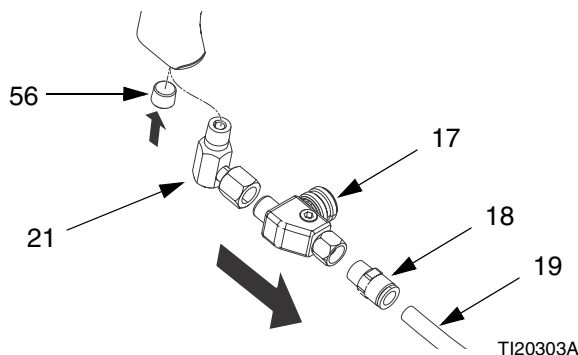
3. Install four compression fittings (54) and manifolds (2, 22). Apply sealant and torque to 125-135 in-lbs (14-15 N•m).
4. Install extension tubes (53) on each fitting. Evenly tighten all four ends (N) until hand-tight. Use a wrench and torque each fitting one 1/2 turn.
5. Remove the spray adapter (31) and cap (32) from the mixer (30).



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FIG. 6

6. Remove air control valve (17), elbow (21), tube fitting (18), and tube (19) from the bottom of the gun handle and replace with plug (56). Apply thread sealant and torque to 125-135 in-lbs (14-15 N•m).

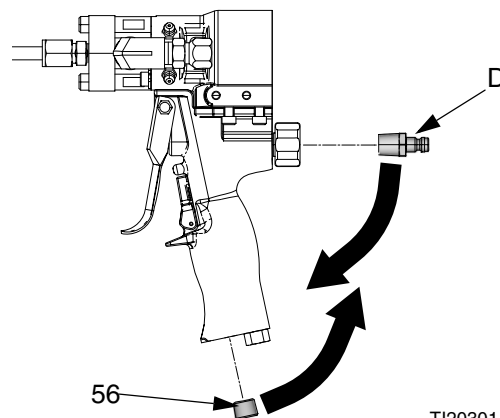


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FIG. 7

Optional Air Hose Inlet

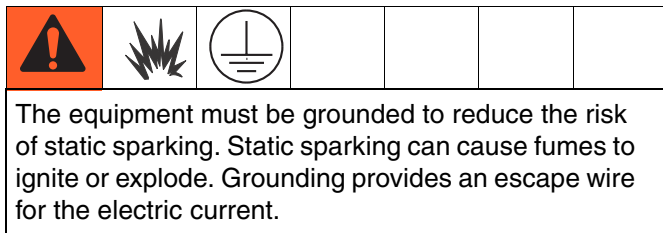
1. Reverse positions of the plug (56) and quick disconnect (D).
2. Apply thread sealant and torque to 125-135 in-lbs (14-15 N•m).



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FIG. 8

Grounding System



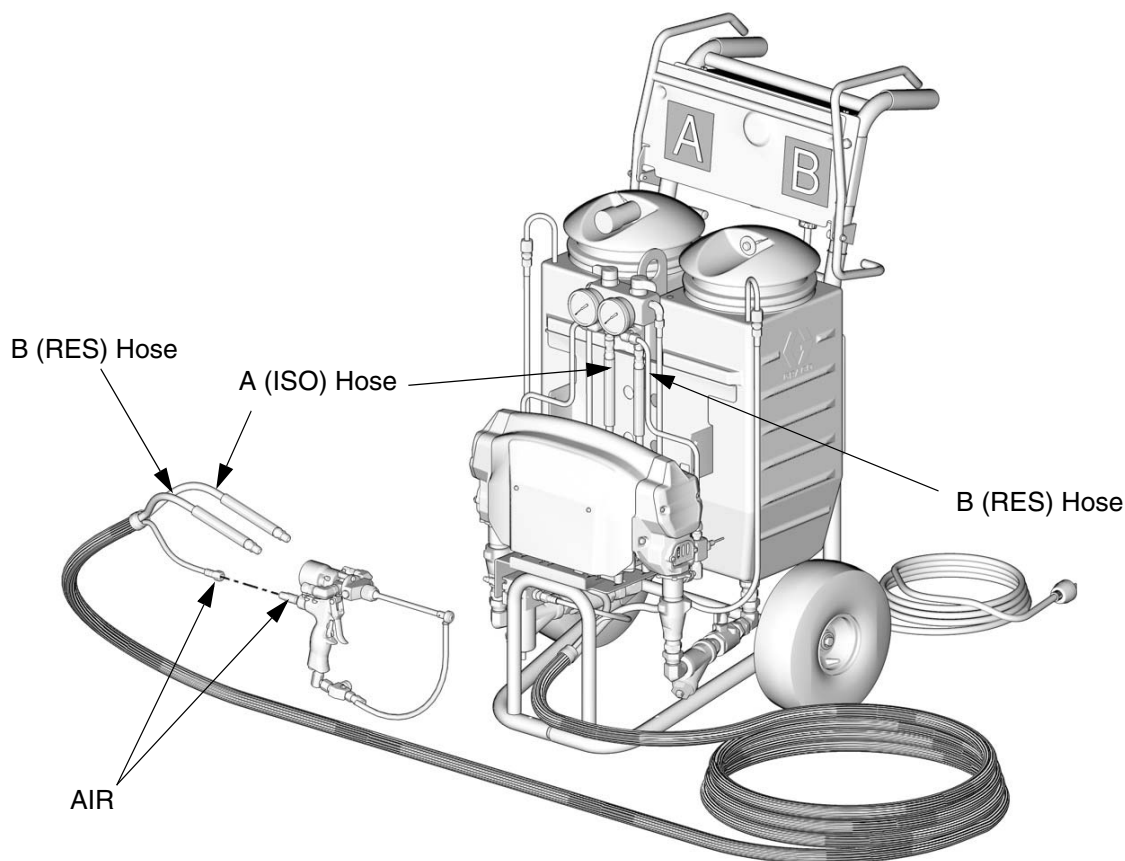
Ground the gun through connection to a properly grounded fluid hose and pump. See system manual and MD2 dispense valve manual for further information.

Connect fluid hoses

See FIG. 9 and Reactor E-10 manual. Connect the gun fluid supply hoses to the A and B inputs of gun. Hoses are color coded: red for component A (ISO), blue for component B (RES). Red (ISO) usually is connected to the left side of the valve (as viewed from the operator's position at the back of the gun).

Connect gun air hose

Connect the gun air hose to the gun air input.



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FIG. 9. 255325 Cold Spray Gun, shown installed on a Reactor E-10 Plural Component Proportioner

Install restrictors

Four restrictors (5) are supplied with the gun, in three sizes: one 0.024 in. (0.61 mm), two 0.032 in. (0.81 mm), and one 0.040 in. (1.02 mm). Other sizes are available, see FIG. 10, page 11.

Restrictors create back pressure and make up for viscosity differences between A and B.

- a. Assemble o-rings (6) and screens (7) on restrictors (5). See detail in FIG. 10.
- b. Screw selected restrictors (5) into manifold (2).

NOTE: Restrictors can be damaged if they are overtightened. Torque to 40-50 in-lb (4.5-5.6 N•m).

Pressure balance the gun

Balancing the back pressure:

- controls ratio lead-lag when the gun opens
 - holds pressure in the hose, providing a very smooth flow
 - minimizes oozing from mixer.
- a. Dispense into a waste container without a mixer installed. Note pressure gauge readings.
 - b. See FIG. 10. Change restrictors as necessary to achieve desired back pressure and balance. You should be able to achieve your desired flow rate between 200-2000 psi (1.4-14 MPa, 14-140 bar). A and B pressures should balance within 25%.

Install disposable mixer (30)

Coat manifold threads with grease to prevent material curing on threads. Install mixer (30) and secure with nut (13). Gun is ready to dispense. See page 14 for 255325 Cold Spray Gun, and page 15 for 24P765 Joint Fill Gun

Spraying (255325 Kit only)

- Install clean spray adapter (31) and cap (32) on end of mixer (30). See page 14.
- Open air adjustment valve (17) part way.
- Test spray on cardboard. Adjust spray pattern with valve (17). Increase air to make smaller spray droplets; too much air causes overspray and misting. Typical pattern width is 4-6 in. (100-150 mm) at 18 in. (457 mm) from tip.
- Control flow rate by adjusting fluid pressure or changing restrictor size.
- To apply a stipple texture as the final coat, turn air low and broadcast spray over surface.

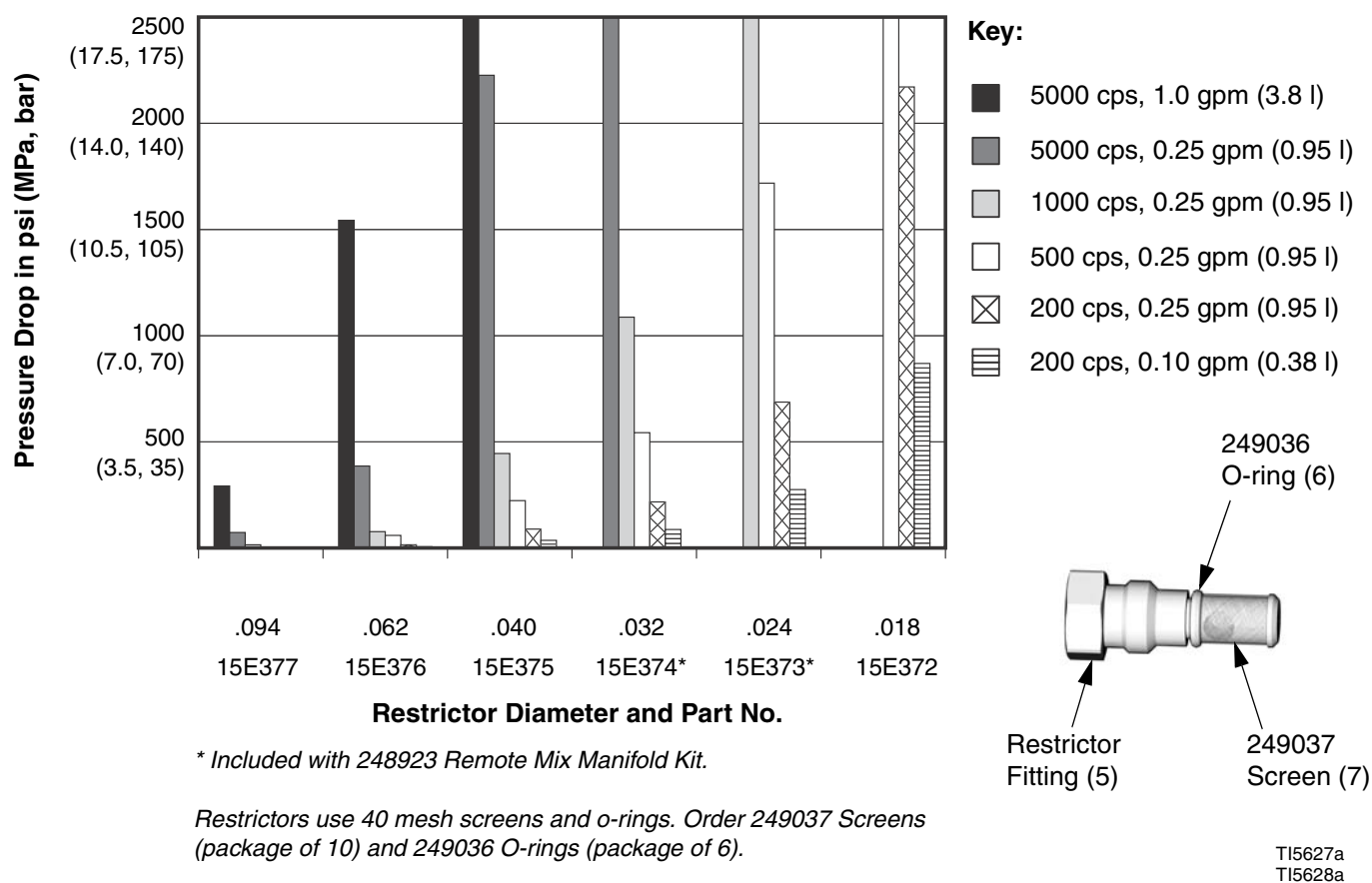


FIG. 10. Typical Restrictor Pressure Drops

Maintenance

Daily Shutdown

NOTE: For brief shutdowns, leave the cured mixer in place until it is time to use a fresh mixer.



When you finish using the MD2 valve, clean the outlet manifold (2) and protect it from drying or crystallization, as follows:

1. Remove and properly dispose of the mixer (30).
2. Dispense one shot of material into a waste container to clear any crossover in the manifold (2).
3. Partially fill orifices of block with ISO pump oil or ISO pump grease (see **Accessories**, page 16).
4. Install night cap on manifold outlet to protect it from air and moisture.

Preventive Maintenance

There is a grease-filled secondary seal/bearing area on each valve shaft. Every 10,000 cycles, or once each month, flush new grease across this area. Each fluid stream has two grease fittings. A grease gun is provided with each valve.

1. Remove the grease fitting from one side of the valve.
2. Pump Part No. 115982 Grease across the valve from the remaining fitting, until fresh grease comes out the other side.
3. Reinstall the grease fitting.
4. Repeat for the other shaft fittings.

Routine Cleaning

Replace the restrictor screens (7) regularly.

Clean the outlet manifold (2) regularly, using drill bits (see the following list).

Drill Bit Sizes for Cleaning

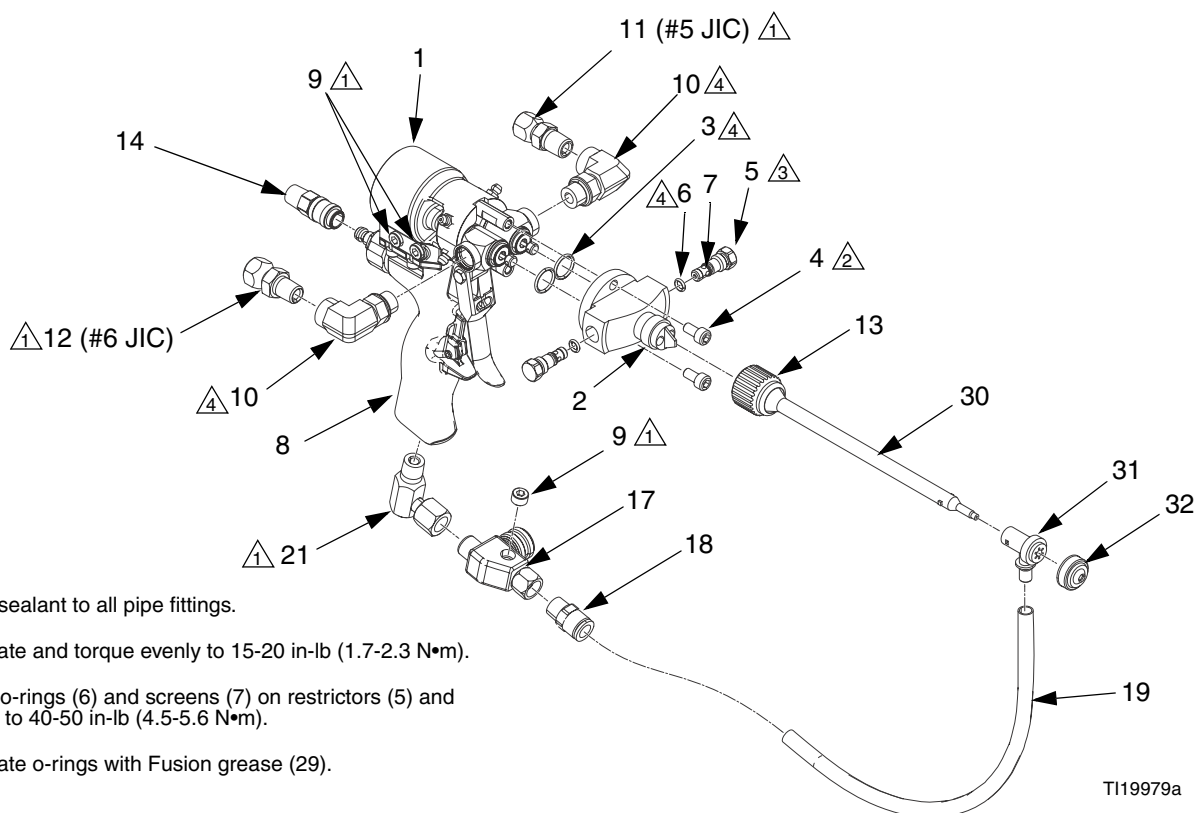
Manifold fluid outlet:	1/4 in. (6 mm) diameter
Manifold inner passage:	1/8 in. (3 mm) diameter
Restrictor Sizes:	
0.018 in.	#77 (0.45 mm)
0.024 in.	#73 (0.61 mm)
0.032 in.	#67 (0.81 mm)
0.040 in.	#60 (1.01 mm)
0.062 in.	1/16 in. (1.59 mm)
0.094 in.	3/32 in. (2.38 mm)

NOTE: Use Accessory Part No. 117661 Drill Bit Vise with dual reversible chucks to hold small drill bits.

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Parts

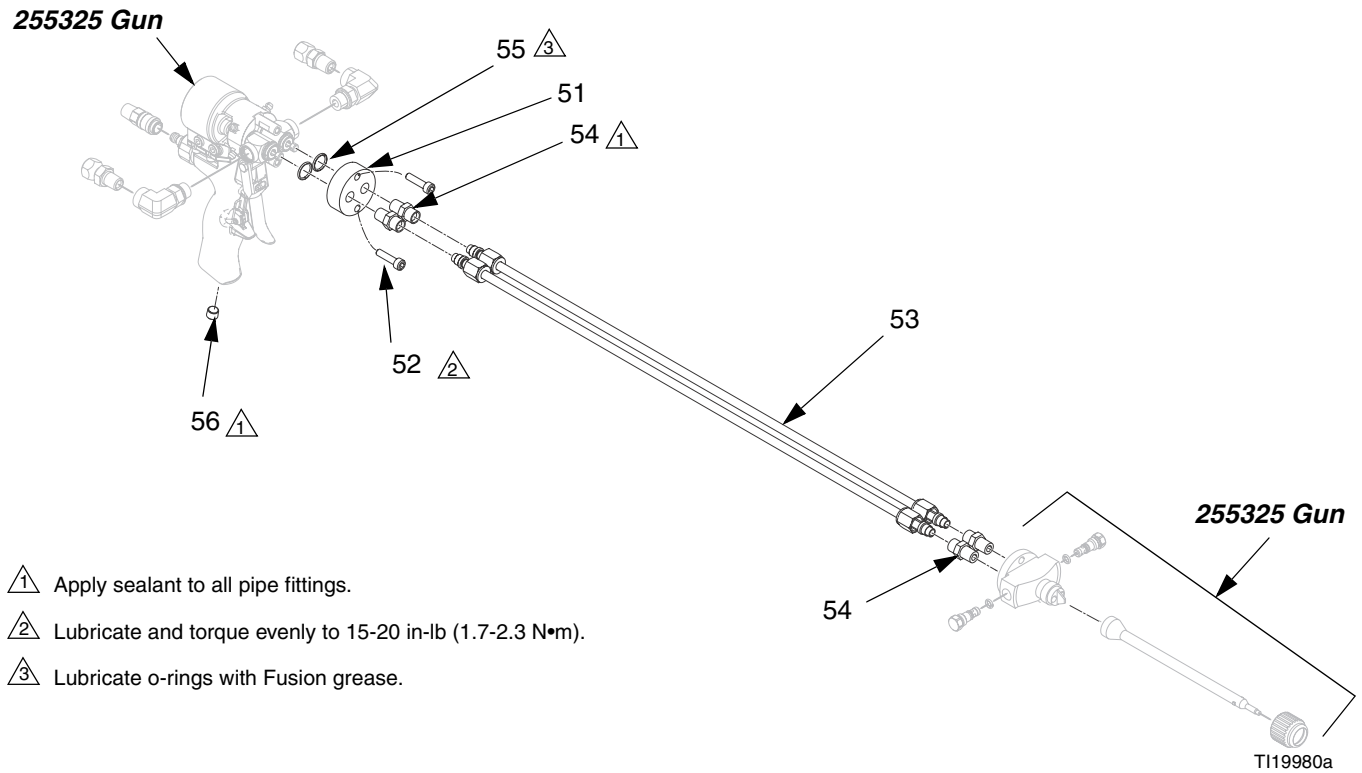
Part No. 255325 Cold Spray Gun



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Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1	255183	VALVE, MD2; see MD2 manual	1	18	120389	FITTING, tube; 1/4 npt(m) x 3/8 in. (10 mm) OD tube	1
2	16T648	TIP, nosepiece, manifold	1	19	24R148	TUBE, polyurethane; 1/4 in. (6 mm) ID x 3/8 in. (10 mm) OD x 12 in. (305 mm)	1
3	117517	O-RING	2	21	155541	ELBOW, swivel; 90°; 1/4 npt(m) x 1/4 npsm(f)	1
4	107530	SCREW, cap, high strength	2	24✖	100721	PLUG	1
5	15E374	RESTRICTOR, manifold; .032 (standard size)	2	27	115982	GREASE; not shown	1
	15E373	RESTRICTOR, manifold; .024	1	28	118665	TUBE, grease; not shown	1
	15E375	RESTRICTOR, manifold; .040	1	29	117792	GUN, Fusion grease; not shown	1
6	249036	KIT, o-ring, restrictor; package of 6	1	30	120042	MIXER, disposable; 1/4 in. (6 mm) ID x 3/8 in. (10 mm) x 24 element; package of 50	1
7	249037	KIT, filter screen, 40 mesh; package of 10	1	31	120043	ADAPTER, spray, package of 5	1
8	255206	HANDLE, pneumatic; see MD2 manual	1	32	120044	CAP, air spray, package of 5	1
9	104765	PLUG	3	33✖	104984	FITTING, female, tee	1
10	126796	ELBOW, swivel, 90°; SAE	2	35✖	156971	NIPPLE	1
11	117595	UNION, inlet, swivel, A side; 1/4 npt(m) x #5 JIC	1	✖ Not Shown. Only used for optional hose adjustment. See page 7 for installation instructions.			
12	117506	UNION, inlet, swivel, B side; 1/4 npt(m) x #6 JIC	1				
13	15K688	NUT, mixer	1				
14	117510	COUPLER	1				
17	234388	VALVE, spray air control	1				

Part No. 24P765 Joint Fill Kit



- △1 Apply sealant to all pipe fittings.
- △2 Lubricate and torque evenly to 15-20 in-lb (1.7-2.3 N•m).
- △3 Lubricate o-rings with Fusion grease.

Ref.

No.	Part No.	Description	Qty.
51	16T746	MANIFOLD, extension	1
52	126797	SCREW, cap, socket-hd; high strength	4
53	15G421	TUBE, extension; includes nuts and ferrules; 5/16 in. (8 mm) OD x 48 in. (1219 mm)	2
54	119984	FITTING, compression; without nut or ferrule; 1/8 npt(m) x 5/16 in. (8 mm) OD tube	4
55	117517	O-RING	2
56	100721	PLUG	1

24P766 Combination Kit includes the 255325 Cold Spray Gun and 24P765 Joint Fill Kit.

Accessories

210500 Gun Inlet Fluid Filter

1/4 npsm(m) x 1/4 npsm(f). Comes with 100 mesh element.

Filter Elements for 210500 Filter

238561 100 mesh. Package of 3.

238563 60 mesh. Package of 3.

249765 Restrictor Kit

Includes one each of restrictor sizes 0.018, 0.024, 0.032, 0.040, 0.062, and 0.094, one plug with no restriction, package of 10 screens, and package of 6 o-rings.

15E370 Plug

Fits restrictor port, but with no restriction. Uses 249036 O-ring Kit.

249036 Restrictor O-ring Kit

Package of 6.

249037 Restrictor Screen Kit

40 mesh. Package of 10.

119386 Drill Bit Kit

For cleaning restrictors. Includes size #61 to #80 drill bits.

217374 ISO Pump Oil

1 pint (0.5 liter) container.

106565 ISO Pump Grease

14.6 oz (0.4 kg) cartridge

Standard Disposable Mixer (for use with or without spray adapter)

120042 1/4 in. (6 mm) ID x 3/8 in. (10 mm) OD x 24 element; package of 50.

Alternate Disposable Mixers (plain outlet; not for spray adapter)

512014 1/4 in. (6 mm) ID x 3/8 in. (10 mm) OD x 32 element.

512016 3/8 in. (10 mm) ID x 1/2 in. (13 mm) OD x 24 element.

512017 3/8 in. (10 mm) ID x 1/2 in. (13 mm) OD x 30 element.

512289 1/2 in. (13 mm) ID x 5/8 in. (16 mm) OD x 30 element.

551979 1/2 in. (13 mm) ID x 5/8 in. (16 mm) OD x 36 element.

512291 Retainer Nut for 1/2 in. (13 mm) OD and smaller mixers.

512292 Retainer Nut for 5/8 in. (16 mm) OD mixers.

249633 Hose Kit

35 ft (10.7 m) hose bundle with static dissipation. Includes two fluid hoses, color-coded red and blue, and one air hose. All hoses are 1/4 in. (6 mm) ID. Red hose is moisture-proof construction.

Technical Data

MD2 Cold Spray Gun and Joint Fill Kit		
	US	Metric
Maximum fluid working pressure	2000 psi	13.8 MPa, 138 bar
Air pressure operating range	120 psi	0.84 MPa, 8.4 bar
Wetted Parts	stainless steel, chemically resistant o-rings, UHMWPE, PEEK, aluminum	

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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Original instructions. This manual contains English. MM 3A2910

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