

AIR DRIVEN

# Expanding Blade Mixer

313643F  
ENG

Expanding blade bung-mounted agitator for maintaining suspension and even mixing in industrial paints and coatings. For professional use only.

Not approved for use in European explosive atmosphere locations.

## Model 24C728, Series B

Low Viscosity, up to 1000 centipoise

## Model 24C729, Series B

High Viscosity, up to 2000 centipoise

100 psi (0.7 MPa, 7 bar) Maximum Working Pressure

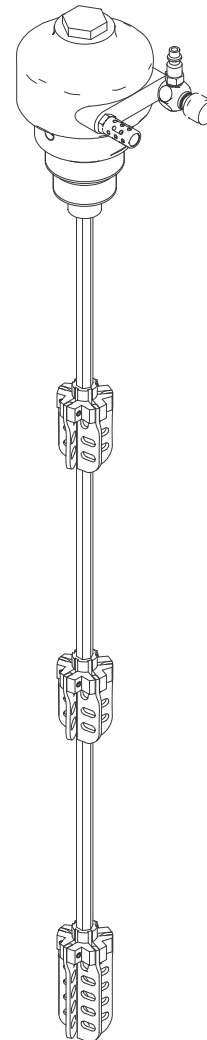


### Important Safety Instructions

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

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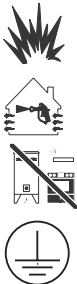





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# Warnings

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 symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 <b>WARNING</b>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li> <li>• Use only grounded hoses.</li> <li>• If there is static sparking or you feel a shock, <b>stop operation immediately</b>. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>
	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Data</b> in all equipment manuals.</li> <li>• Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the <b>Pressure Relief Procedure</b> in this manual when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul>
	<p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> in this manual. Disconnect power or air supply.</li> </ul>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDS's to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>



# Installation

**NOTE:** Reference numbers and letters in parentheses in the text refer to the callouts in the figures and in the parts drawing.

## Grounding



The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

See FIG. 1. Loosen the grounding screw (GS). Insert one end of a 12 ga. minimum ground wire behind the grounding screw and tighten the screw securely. Connect ground clamp to a true earth ground. A ground wire and clamp, Part 238909, is available from Graco.

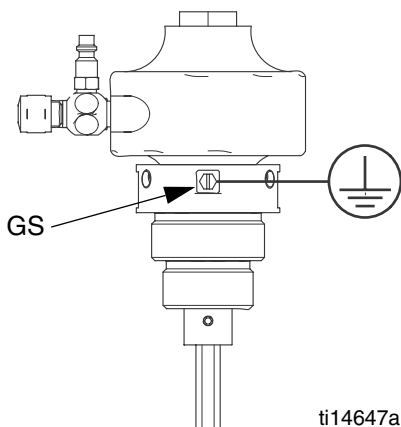
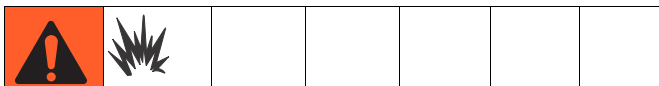


FIG. 1. Ground Screw

## Air Requirements



To help prevent component rupture, do not exceed 100 psi (0.7 MPa, 7 bar) maximum air working pressure.

Typical air requirements for continuous use at 400 rpm and 100 psi (0.7 MPa, 7 bar) inlet pressure:

- low viscosity air motor -- 12 scfm (0.34 m<sup>3</sup>/min)
- high viscosity air motor -- 22 scfm (0.62 m<sup>3</sup>/min)

## Air Line Accessories

Install the following accessories in the order shown in FIG. 2, using adapters as necessary.

**Bleed-type master air valve (A):** to isolate the air line components for servicing.

**Air filter (B):** removes harmful dirt and moisture from the compressed air supply. Order part 106148 for 3/8 npt or 106149 for 1/2 npt.

**Air regulator and gauge (C):** to control air motor and agitator speed.

**Air line lubricator (D):** Downstream from the filter, install an air line lubricator for automatic air motor lubrication. Set the lubricator feed rate at 1 drop of oil per minute for high speed or continuous duty usage. Do not overfeed oil or exhaust air may become contaminated. To manually lubricate the air motor, see **Lubricate the Air Motor**, page 6. A 3/8 in. npt air line lubricator, Part 214847, is available from Graco.

**NOTICE**  
Not lubricating the air motor will cause air motor failure.

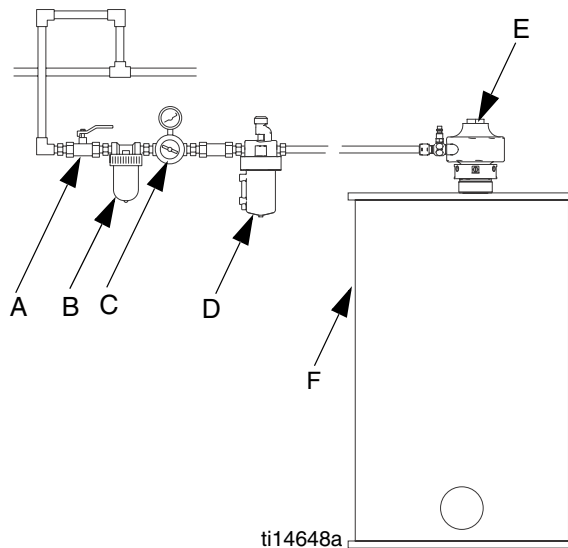




FIG. 2. Typical Installation

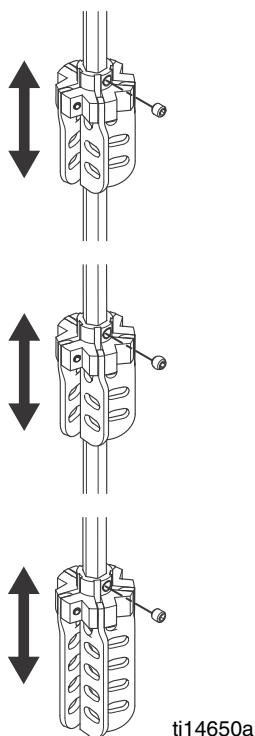
**Key:**

- A Bleed-type master air valve
- B Air filter
- C Air regulator and gauge
- D Air line lubricator
- E Agitator motor
- F Mix tank (reference only)

## Install the Agitator

						
<p>Always maintain a minimum of 1 in. (25.4 mm) clearance between rotating agitator parts and container to prevent sparks from contact.</p>						

1. Due to variability in drum heights the lowest set of blades may contact the bottom of the drum. If the bung adapter will not fully seat, or if resistance is felt when installing the agitator, move the blades up the shaft. To move the blades, loosen the setscrew on the hub and slide the assembly up or down to the desired position. The setscrew must always remain on the top, with the blades hanging down, so the blades will pass into and out of the bung hole.





**FIG. 3. Adjust Location of Hub/Blade Assemblies**

2. To install the agitator on the container cover, drop the folding blade sections through the drum bung hole, then screw the bung adapter into the bung hole. See **Dimensions**, page 9.

NOTICE						
<p>Keep the agitator tightly mounted to the drum bung to prevent damage to the threads from vibration.</p> <p>When using a modified drum, check that there is no interference between the base of the drum and the shaft of the agitator to prevent blade or shaft damage and to avoid sparks from contact (see Warning under <b>Install the Agitator</b>).</p>						

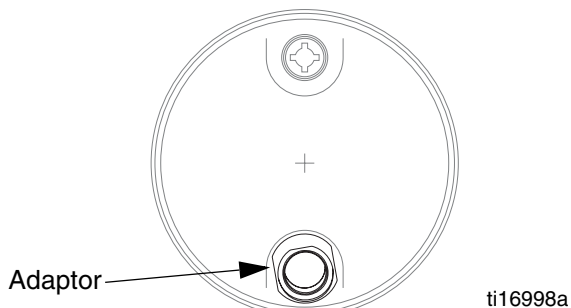
3. Position the air motor so the air line can be attached easily to the needle valve's 1/8 npt inlet, without obstructing any other system components.
4. Attach an air line quick disconnect valve or ball valve for main air shutoff. Order Part 208536, Coupler, and Part 169969, fitting.
5. Attach the air line between the needle valve's 1/8 npt inlet and the 1/8 npt air supply manifold outlet.

						
<p>To avoid personal injury, never operate the agitator outside of a drum.</p>						

### Angled Adaptor

If the agitator is used on a drum with an off-center bung and the blades would contact the side of the drum, the angled adaptor must be used to avoid this contact.

1. Thread the locking ring onto the angled adaptor by hand, as far as it will go.
2. Thread the angled adaptor into the bung until it bottoms out, then back it out until the widest portion on of the adaptor top is pointing just to the left of the center of the drum (Fig. 4).
3. Turn down the locking ring until it contacts the drum. Use an appropriately sized pipe wrench or adjustable wrench to tighten the adaptor down until the widest portion of the adaptor top is in line with the drum.



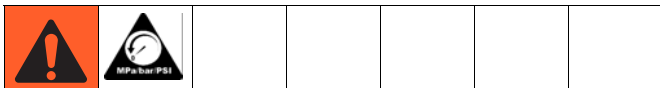
**FIG. 4. Angled Adaptor**

# Operation



- To stop the agitator, close the air valve in the air supply line (if you have one), or close the agitator needle valve (11).

## Pressure Relief Procedure



- Turn off the air regulator and close main air shutoff valve.
- Disconnect the air line from the motor air inlet.

## Operate the Agitator

- Fill the fluid supply container.
- Start the agitator and run it slowly.
- Use the needle valve (11) to regulate the agitator speed. Set the agitator at a speed that minimizes vibration.

**NOTE:** If an air shutoff valve is installed in the supply line and used to stop the agitator, the same agitator speed will be set each time the agitator is used. Part numbers for Graco air shutoff valves are listed below:

Part	Air Shutoff Valve Description
208390	1/4 npt(m) x 1/4 npt(m)
208391	3/8 npt(m) x 3/8 npt (f)
208392	3/8 npt(f) x 1/4 npt(m)
208393	3/8 npt(m) x 3/8 npt (m)

- Operate the agitator continuously while supplying paints or other fluids to the system.

### NOTICE

**Do not** operate the agitator at a high speed for a long period of time. Excessive agitator speed can cause foaming of fluid (making the fluid unusable), vibration, and increased wear on parts. Always agitate the fluid only enough to maintain even mixing.

## Check Fluid Viscosity

If the agitator is in a closed drum, remove the agitator to check fluid viscosity or siphon some fluid from the 3/4 npt drum port.

# Maintenance

## Lubricate the Air Motor

### NOTICE

Not lubricating the air motor will cause air motor failure.

If an air line lubricator is not installed, the air motor must be manually lubricated every 8 hours. Lubricate the agitator air motor by placing 10 to 20 drops of SAE #10 lightweight oil in the motor's air inlet. Run the agitator for about 30 seconds.

# Repair



## Flush the Air Motor

If the motor is sluggish or inefficient, flush it with non-flammable solvent in a well-ventilated area.

1. Follow the **Pressure Relief Procedure**. See page 6.
2. Add several teaspoons of solvent, or spray the solvent directly into the motor.
3. Rotate the shaft by hand in both directions for a few minutes.
4. Reconnect the air line and slowly apply pressure until there is no trace of solvent in the exhaust air.
5. Lubricate the motor with a squirt of lightweight oil in the chamber.

## Service

### Air Motor

1. To remove the air motor for service, use a 3/16 hex to remove the three setscrews (9) on the bung adapter (4).
  2. Lower the adapter (4) on the shaft (2) so coupler (3) is accessible.
  3. Use a 1/8 hex to remove the top two setscrews (8) on the coupler (3).
  4. Lift the air motor (1) straight up off the coupler (3).
- If the air motor (1) requires more than installation of a service kit, it is usually quickest and easiest to send it to the Graco distributor for repair or replacement.
  - If the air motor blades need replacing or foreign material is present in the motor chamber, an experienced mechanic may remove the end plate opposite the drive shaft end. *Do not pry with a screwdriver.* It will dent the surface of the plate and body, causing leaks. Use a puller tool, which will remove the end plate while maintaining the position of the shaft.

### Shaft and Agitator Blades

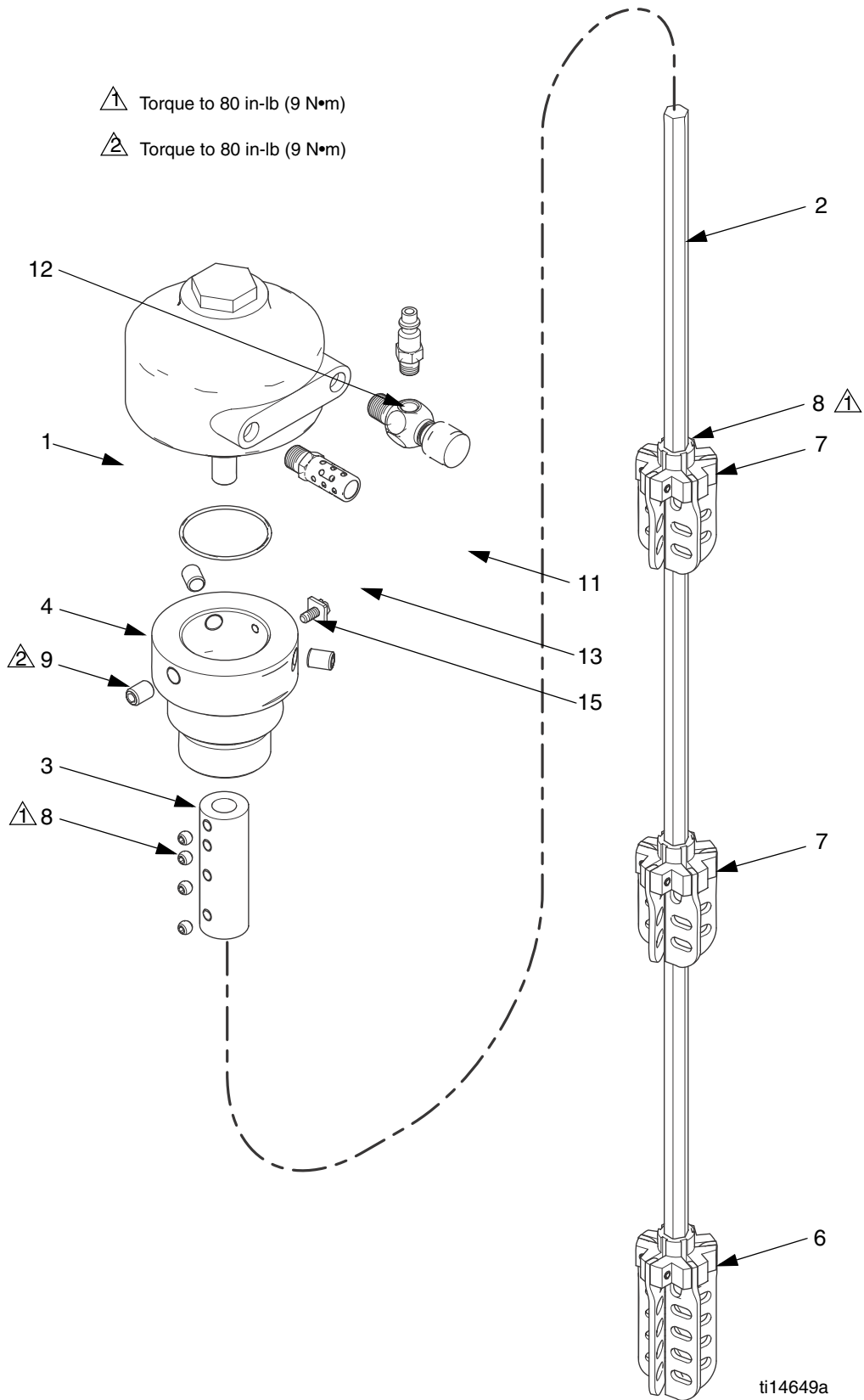
1. Remove the shaft (2) from the drum. Clean with a compatible solvent and inspect the shaft (2) and blades (6, 7) for wear or damage.
2. If parts need replacing, follow steps 1-4 under **Air Motor** to remove the air motor.
3. Use the 1/8 hex to remove the other two setscrews (8) on the coupler.
4. Slide the shaft off (2).
5. If needed, use a 3 mm (1/8 in.) hex to remove the setscrew (8) on the hub assembly (6 or 7). Slide the hub/blade assembly off of the shaft.
6. To install a new hub/blade assembly, slide it onto the shaft. The setscrew must always remain on the top, with the blades hanging down, so the blades will pass into and out of the bung hole.

**NOTE:** Air Motor Repair Kits are available. Order Part 207335 for Model 24C728 (low viscosity) or Part 224954 for Model 24C729 (high viscosity).

### Reassembly

1. Slide the shaft (2) into the coupler (3). Use a 1/8 hex to tighten the setscrews (8). Torque to 80 in-lb (9 N•m).
2. Raise the bung adapter (4) on the shaft (2) to reconnect to the air motor. Use a 3/16 hex to tighten the three setscrews (9) on the bung adapter. Torque to 80 in-lb (9 N•m).

# Parts





**Part No/Description**

Ref. No.	Part No.	Description	Qty.
1*		MOTOR, air	1
	16A871	Low Viscosity (Model 24C728)	
	111310	High Viscosity (Model 24C729)	
2	16A867	SHAFT, drive	1
3	24D686	COUPLER, agitator; includes 4 set-screws (Item 8)	1
4	24D687	ADAPTER, bung, double; includes 3 setscrews (Item 9) and ground screw (Item 15)	1
6	24C861	HUB, assembly, with 3.5 in. blades; includes setscrew (Item 8)	1
7	24C860	HUB, assembly, with 2.5 in. blades; includes setscrew (Item 8)	2
8	102207	SETSCREW, 1/4-20, sst (included with Items 3, 6, and 7)	7
9	101679	SETSCREW, 3/8-24, sst (included with Item 4)	3
11	206264	VALVE, needle	1
12	169969	FITTING, air line	1
13	113779	MUFFLER	1
15	116343	GROUND SCREW	1
16	113082	O-RING	1
17	16H294	ADAPTOR, angled (not shown)	1
18	16H295	RING, locking (not shown)	1

\* Air Motor Repair Kits may be purchased separately. Order Kit 207335 for Model 24C728 (low viscosity) or Kit 224954 for Model 24C729 (high viscosity).

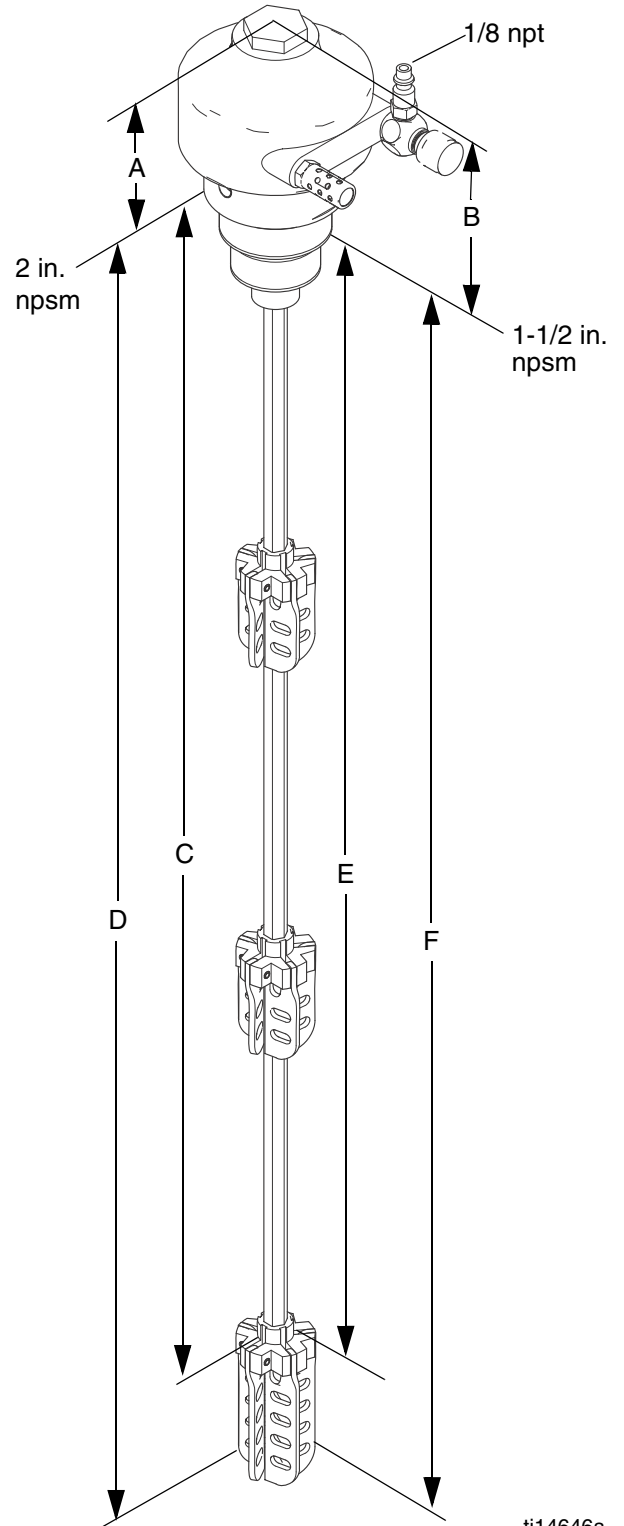
**Dimensions**

**2 in. Bung Adapter**

Dimension	Model 24C728 (low viscosity)	Model 24C729 (high viscosity)
A	4.2 in. (107 mm)	5.1 in. (130 mm)
C (Minimum)	29.8 in. (757 mm)	29.8 in. (757 mm)
D (Maximum)	32.8 in. (832 mm)	32.8 in. (832 mm)

**1-1/2 in. Bung Adapter**

Dimension	Model 24C728 (low viscosity)	Model 24C729 (high viscosity)
B	5.2 in. (132 mm)	6.1 in. (155 mm)
E (Minimum)	28.8 in. (730 mm)	28.8 in. (730 mm)
F (Maximum)	31.8 in. (807 mm)	31.8 in. (807 mm)



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## Technical Data

Maximum working pressure	100 psi (0.70 MPa, 7.0 bar)
Maximum recommended agitator speed	500 rpm
Air consumption at 400 rpm with 100 psi (0.7 MPa, 7 bar) air inlet pressure	
Model 24C728 (low viscosity)	12 scfm (0.34 m <sup>3</sup> /min)
Model 24C729 (high viscosity)	22 scfm (0.62 m <sup>3</sup> /min)
Noise Level at 100 psi (0.7 MPa, 7 bar), maximum load*	
Model 24C728 (low viscosity)	
Pressure	72.32 dB
Power	80 dB
Model 24C729 (high viscosity)	
Pressure	75.74 dB
Power	82.32 dB
Wetted Parts	303, 18-8, and 304 stainless steel
Bung adapter thread sizes	1 1/2-11.5 npsm and 2-11.5 npsm
Weight	
Model 24C728 (low viscosity)	9.6 lb (4.4 kg)
Model 24C729 (high viscosity)	13.1 lb (5.9 kg)

\* Tested in water to ISO 9614-2.



# 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.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

## **FOR GRACO CANADA CUSTOMERS**

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

# Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

*All written and visual data contained in this document reflects the latest product information available at the time of publication.  
Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 313643

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