

Instructions–Parts List



HEAVY-DUTY STAINLESS STEEL

Drum Agitator

308609P

EN

Heavy-duty, back-gearred agitator for mixing and maintaining suspension of industrial coatings stored in 55-gallon drums. For professional use only.

100 psi (0.7 MPa, 7 bar) Maximum Air Input Pressure



Important Safety Instructions

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

*Model 238157, Series C

Back-Gearred, Air-Powered Agitator



II 1/2 G T6
ITS03ATEX11226

*Models 24C293, 24C522, Series B

Back-Gearred, Drum Mounted, Air-Powered Agitator



II 1/2 G T6
ITS03ATEX11226

*Model 231414, Series A

Siphon Agitator Package

*Model 231413, Series A

Non-Siphon Agitator Package



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Model 238250, Series A

Siphon Tube Kit

Model 240209, Series C

Back-Gearred, Air-Powered Siphon Agitator

Model 231414 shown

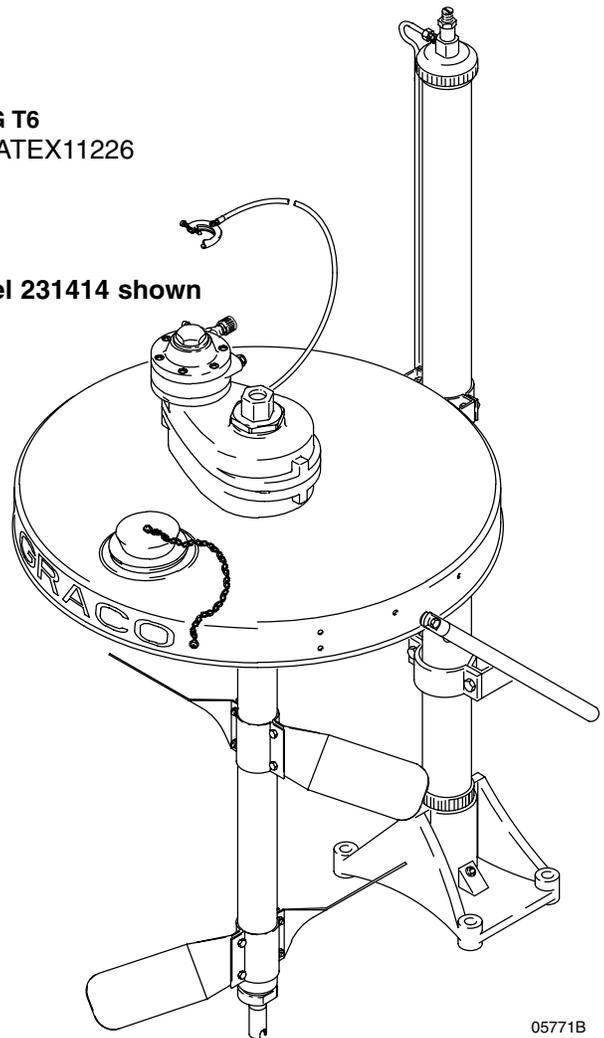


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Symbols

Warning Symbol



This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol



This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

WARNING



INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- 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 your Graco distributor.
- 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 **100 psi (0.7 MPa, 7 bar) maximum working pressure**.
- Use fluids and solvents that 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.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

WARNING



FIRE AND EXPLOSION HAZARD

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

- Ground all equipment. Refer to **Grounding** on page 4.
- If there is any static sparking or you feel an electric shock while using this equipment, **shut off the agitator immediately**. Do not use the equipment until you identify and correct the problem.
- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents, or fluids containing such solvents in aluminum pumps. Such use could result in a serious chemical reaction, with the possibility of explosion.
- Do not use kerosene or other flammable solvents or combustible gases to flush the unit.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being dispensed.
- Keep the dispensing area free of debris, including solvent, rags, and gasoline.
- Do not smoke in the dispensing area.
- Keep a fire extinguisher in the work area.



MOVING PARTS HAZARD

Moving parts, such as the rotating blades of the agitator, can pinch or amputate your fingers or other body parts and can cause splashing in the eyes or on the skin.

- Keep clear of all moving parts when starting or operating the agitator.
- Always shut off the agitator and disconnect the air line before you remove the agitator from the drum or check or repair any part of the agitator.



HAZARDOUS VAPORS

Hazardous fluids or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, swallowed, or inhaled. When flushing the air motor, keep your face away from the exhaust port.

Installation

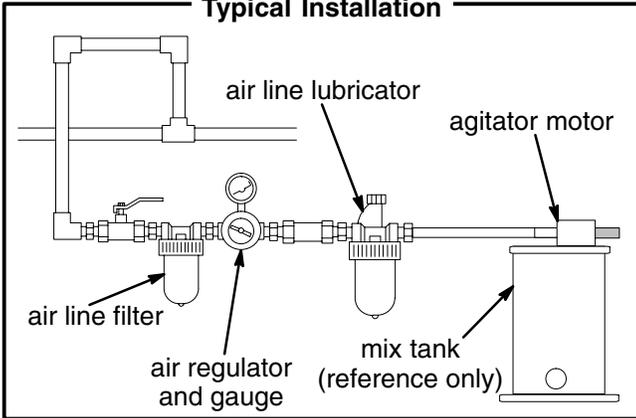
⚠ WARNING



FIRE AND EXPLOSION HAZARD

Always maintain a minimum of 1 in. clearance between rotating agitator parts and container to prevent sparks from contact.

Typical Installation



NOTE: Reference numbers and letters in parentheses refer to the callouts in the figures and in the **Parts Drawings**.

Grounding

Proper grounding is an essential part of maintaining a safe system.

To reduce the risk of static sparking, the mounting cover and all electrically conductive objects or devices in the dispensing area **must** be properly grounded. Check your local electrical code for detailed grounding instructions for your area and type of equipment.

To ground the agitator, connect one end of the ground wire (A) to the ground connector (B) on the agitator. See Fig.1. Connect the other end of the ground wire to a true earth ground.

For an additional ground wire and clamp, order Part No. 237569.

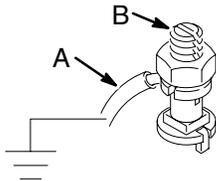


Fig. 1

Assembling and Positioning the Agitator

With an Elevator

Mount the drum cover as described in manual 306287. The elevator must be in the down position when you do any work on the elevator, agitator, or drum cover assembly. **Do not** go under the elevator when it is raised. Proceed to step 1 in **With or Without an Elevator**.

Without an Elevator

If your system does not have an elevator, you should install the Handles Kit to facilitate handling the drum cover and agitator. Two people are needed to safely lift and move the drum cover and agitator. *To order the Handles Kit, order Part No. 237524.*

Place two standard 55 U.S. gallon (45 Imperial gallon) barrels 14 in. (approximately 36 cm) apart, and center the drum cover on the barrels with the Graco logo centered and facing you, as shown in Fig. 2. Proceed to step 1 in **With or Without an Elevator**.

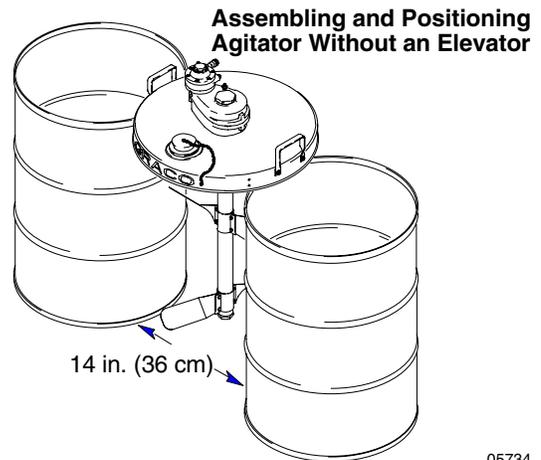


Fig. 2

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Installation

With or Without an Elevator

1. Slide the agitator shaft through the large hole in the center of the drum cover (29).
2. Rotate the agitator so that the air motor is to the left of the shaft, as shown in Fig. 2, which will align the three tapped holes in the bottom of the agitator with the three through holes in the drum cover.
3. Thread the three hex head screws (25) up through the drum cover and into the agitator, and torque them to 75 in-lb (8.4 N-m).
4. Assemble one pair of agitator blades (28) so that the four through holes in the blade halves are lined up (see **Parts Drawing** for blade orientation).
5. Push four cap screws (31) through the four holes in the blades, and start the lock nuts (32) onto the cap screws.
6. Slide the loose blade assembly up the shaft, and position it approximately 13 in. (33 cm) from the bottom of the shaft.
7. Tighten the four lock nuts (32) evenly to draw the blades together until they are tight on the shaft. Torque the locknuts to 50 to 55 in-lb (5.6 to 6.2 N-m). A gap will remain between the blade halves.
8. Repeat steps 4 and 5 with the second pair of agitator blades.
9. Position the second blade assembly near the bottom end of the shaft, but not on the bottom plug (20).
10. Rotate the lower blade assembly so that it is oriented 90 degrees relative to the upper blade assembly, and torque the lock nuts (32) to 50 to 55 in-lb (5.6 to 6.2 N•m). A gap will remain between the blade halves.

For in-drum heavy duty back geared agitator

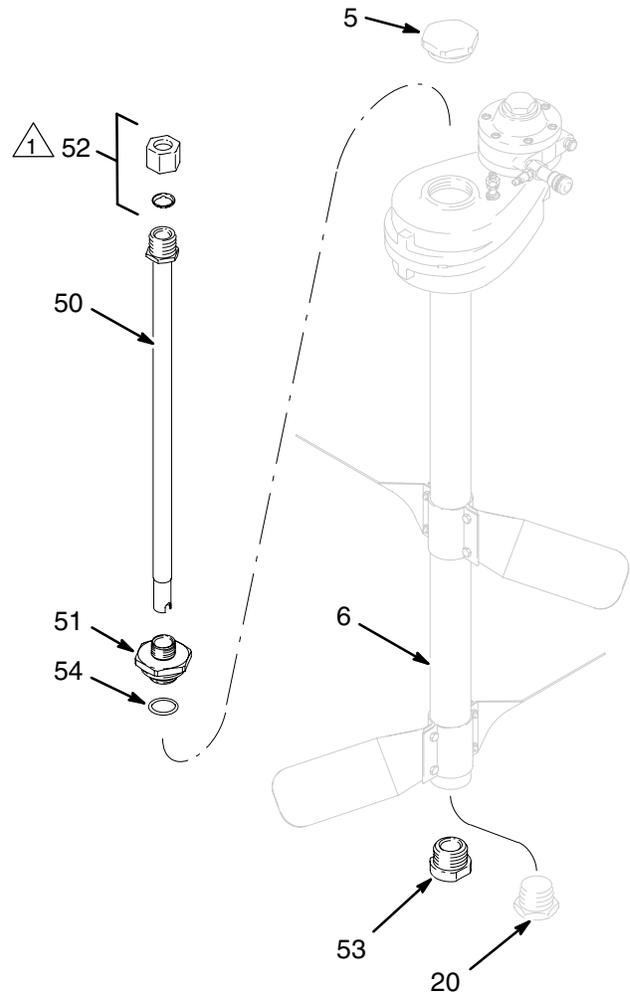
1. Determine which size adaptor nut (20) is needed. The adaptor nuts in the kit are double-sided meaning that each adaptor nut will cover two agitator shaft sizes. Select the size you need by placing the adaptors onto the built in agitator shaft in the drum. The one you should use is the smallest one that will fit. There should only be a small amount of slop between the adaptor nut and the shaft.
2. Thread the adaptor into the gearbox output shaft (6) with the side you are going to use pointed down. Tighten it down using the wrench flats.
3. Place the threaded bung adaptor (34) onto the gearbox and align the bolt holes.
4. Thread the three bolts (28) into the gear box and torque to 10 ft-lbs (13.5 N•m).
5. Align the adaptor nut to engage the built-in shaft in the 55-gallon drum.
6. Slowly screw the unit onto the threads on the center bung fitting of the 55-gallon drum.
7. Torque the unit to 45 ft-lb (61 N•m). Place the adaptor of the torque wrench on the top of the unit to torque.

Installation

Installing the Siphon Kit

See the Siphon Kit, Model 238250, **Parts List** on page 15.

1. Remove the top plug (5) and the bottom plug (20).
2. Replace the bottom plug (20) with the plain bearing (53), and tighten the bearing with a wrench.
3. Work the PTFE o-ring (54) onto the siphon tube retainer (51), and press it into the o-ring groove.
4. Replace the top plug (5) with the siphon tube retainer (51). Leave the retaining nut (52) on the siphon tube retainer, but make sure it is not tightened. Tighten the siphon tube retainer into the top of the agitator housing with a wrench.
5. Slide the siphon tube (50) down through the retaining nut (52), siphon tube retainer (51), and agitator shaft (6) until the siphon tube touches the bottom of the drum. Raise the siphon tube approximately 1/4 in. (approximately 6 mm) so that it does not touch the bottom of the drum. Hold the siphon tube at this height with one hand, and tighten the retaining nut with the other hand (hand-tight is enough to hold the siphon tube in place).



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CAUTION

Barrel Heights Vary.

Loosen the retaining nut on the siphon tube retainer before you raise the drum cover. If you do not loosen the retaining nut, the siphon tube may make contact with the bottom of the barrel when you lower the drum cover onto a new barrel, which could damage the siphon tube or the barrel.

1 Make sure the center tabs on the retaining nut ferrule point down.

Fig. 3

Installation

Return Tube Kit 238884 (Accessory)

Return Tube Kit 238884 is available as an accessory. The kit must be ordered separately. Refer to the sheet packed with the kit for installation instructions.

Air Requirements

For continuous use, the 3/4 HP (550 W) agitator air motor typically requires 3 to 4 cfm (0.09 to 0.12 m³/min) air supply.

Air Line Accessories

Attach a quick disconnect air line fitting and coupler, or attach a ball valve for main air shut-off to the air line. *To order the 1/8" npt(m) air line fitting, order Part No. 169969. To order the coupler, order Part No. 208536.*

Install an air line filter to remove harmful dirt and moisture from the air supply. To order an air line filter, order Part. No. 106148 *(3.8" npt, 20-micron element, 5 oz. Bowl, without gauge).*

 CAUTION
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Not lubricating the air motor will cause air motor failure.

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 **Lubricating the Air Motor** on page 10. *To order a 3/8" npt air line lubricator, order Part No. 214847.*

Operation

WARNING



MOVING PARTS HAZARD

To reduce the risk of serious injury, including cuts, amputation of fingers by the agitator blades, and splashing in the eyes or on the skin, always shut off the agitator (disconnect the air line from the agitator) before you raise, check, or repair the agitator.

Startup

1. Make sure the needle valve (23) is closed.
2. Turn on the air supply, and connect the air line coupler.
3. Using the needle valve (23) to adjust the agitator speed, gradually increase the speed until you can see through the inspection port movement in the surface of the liquid, but do not increase the agitator speed enough to create a vortex in the surface of the liquid. If the surface begins to vortex, decrease the agitator speed to prevent air entrainment.

NOTE: Always maintain moderate agitator speed, which is approximately 50 rpm of the agitator blades. Excessive agitator speed may cause vibration, foaming of fluid, and increased wear on parts. Always agitate fluid thoroughly before supplying it to the dispensing equipment. Continue agitating fluid while the dispensing equipment is being supplied.

Shutdown

To stop the agitator, close off the air supply with the needle valve (23), or disconnect the air line coupler.

CAUTION

Keep the agitator upright. Do not lay it on its side or upside down, or liquid may flow down the shaft and into the gear reducer area.

Service

Flushing the Air Motor

WARNING



FIRE AND EXPLOSION HAZARD

Do not use kerosene or other flammable solvents to flush the air motor. Flushing with flammable solvents could cause fire or explosion and result in serious injury or property damage.

WARNING



HAZARDOUS VAPORS

Hazardous fluids or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, swallowed, or inhaled. When flushing the air motor, keep your face away from the exhaust port, and wear the appropriate protective clothing, gloves, eyewear, and respirator.

If the air motor (1) is sluggish or inefficient, follow this procedure in a well ventilated area.

1. Disconnect the air line and muffler (22). See the **Parts Drawing** on page 14.
2. Add several teaspoons of non-flammable solvent, or spray the solvent directly into the male quick-disconnect coupler (24).

NOTE: The recommended solvent for air motors and lubricated pumps is Gast® Flushing Solvent (Part No. AH255 or AH255A) or Penetone Inhibisol® Safety Solvent.

3. Reconnect the air line, and slowly increase the air pressure until there is no trace of solvent in the exhaust air.
4. Reconnect the muffler (22).
5. Re-lubricate the motor with a squirt of lightweight oil into the male quick-disconnect coupler (24).

Lubricating the Air Motor

CAUTION

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 10–20 drops of SAE #10 light oil in the motor's air inlet. Run the agitator for about 30 seconds.

Additional Air Motor Service

If the air motor vanes need to be replaced, or if foreign material is present in the motor chamber, an experienced mechanic may remove the end plate opposite the drive shaft end of the air motor. *Do not pry with a screwdriver*; it will dent the surface of the plate and body and cause leaks. Use a puller tool, which will remove the end plate while maintaining the position of the shaft.

New vanes should have the edges with cut corners pointing toward the bottom of the vane slot.

To order an Air Motor Repair Kit, order Part No. 207335.

Service

Cleaning the Agitator Shaft and Seal

CAUTION

Keep the agitator upright. Do not lay it on its side or upside down, or liquid may flow down the shaft and into the gear reducer area.

If any material is on the shaft (6) within 1/2 in. (13 mm) of the housing (13), it must be removed to prevent damage to the bearing seal (14*). If the flexible lips on the bearing seal are torn or worn such that they do not make contact all the way around the shaft, the seal must be replaced. A worn seal may allow foreign material into the bearing and cause premature failure. See **Servicing the Gear Reducer** on page 11 for instructions on getting access to the seal and for the Bearing Replacement Kit Part No.

Cleaning an Agitator with a Siphon Kit

The procedure for flushing and cleaning the siphon tube (50) and agitator shaft (6) is as follows:

1. Raise the agitator out of the drum.
2. Remove the plain bearing (53) from the agitator shaft (6), and clean it.
3. Detach any attachments from the siphon tube, and flush the siphon tube.
4. Loosen the retaining nut (52), and slowly lift the siphon tube (50) out of the agitator.
5. Clean the inside and outside of the siphon tube (50), flush the inside of the agitator shaft (6), and clean the agitator blades (28) and the outside of the shaft.
6. Reassemble the siphon tube by doing the reverse of steps 2 through 4.

Servicing the Gear Reducer

You may want to have the Bearing Replacement Kit on hand before you begin this procedure. *To order a Bearing Replacement Kit, order Part No. 238251.*

Disassembling

The following procedure does not require that you remove the agitator from the drum of material:

1. If your agitator has a siphon kit, do steps 2 through 4 in **Cleaning an Agitator with a Siphon Kit** on page 11. If your agitator does not have a siphon kit, proceed to step 2 below.
2. Raise/support the drum cover above the drum high enough so that you can reach the underside of it.
3. Remove the three hex head screws (25) that hold the agitator to the drum cover.
4. Raise the agitator housing 4 to 6 in. (100 to 150 mm) above the drum cover, and support it at that height with blocks.
5. Tightly grip the agitator shaft with a clamp to prevent the shaft from falling into the drum.
6. Remove the two short bolts (11) and the two long bolts (19) that hold the upper housing (8) and the lower housing (13) together. Carefully lifting straight up, lift the upper housing off of the lower housing.
7. Turn the large gear (10) counter-clockwise to remove it from the agitator shaft, and lift the pinion/gear assembly (3, 16) out of the lower housing.
NOTE: Before you do step 8, check to be sure the agitator shaft is well secured. See step 5.
8. Turn the 50 mm nut (26) counter-clockwise to remove it from the agitator shaft.
9. Carefully lift the lower housing (13) off of the agitator shaft.

Service

Servicing the Gear Reducer, continued

Cleaning and Servicing

1. Clean any foreign material off of the outside of the upper and lower housings (8 and 13).

NOTE: Do not lose the two small thrust balls (4). One is in the upper housing (8), and one is in the lower housing (13).

2. Inspect the parts for any wear. If any of the parts are worn or damaged, replace them. The Bearing Replacement Kit contains replacement bearings and seals (items 2, 7, 9, 12, 14, and 15).

Reassembling

NOTE: See the **Parts Drawing** on page 14 for proper bearing and seal placement and orientation.

1. Reposition the lower housing (13) on the agitator shaft.

 CAUTION
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To prevent damage to the bearings and seals, avoid scraping them against the threaded agitator shaft while you are lowering the lower housing in place.

2. Thread the 50-mm nut (26) onto the agitator shaft by turning it clockwise, and tighten it hand tight.
3. Reposition the pinion/gear assembly (3, 16) in the lower housing, thread the large gear (10) onto the agitator shaft, and tighten the large gear hand tight.
4. Make sure the small thrust balls (4) are in place.
5. Carefully lowering it straight down, reposition the upper housing (8) on the lower housing (13).
6. Replace the two short bolts (11) and the two long bolts (19) that hold the upper housing (8) and the lower housing (13) together, and torque the bolts to 75 in-lb (8.5 N-m).
7. Remove the blocks that you have supporting the agitator housing, and reposition the agitator on the drum cover.
8. Thread the three hex head screws (25) up through the drum cover and into the agitator, and torque them to 75 in-lb (8.4 N-m).
9. If your agitator has a siphon kit, re-install it by doing the reverse of steps 2 through 4 in **Cleaning an Agitator with a Siphon Kit** on page 11.

Additional Agitator Service

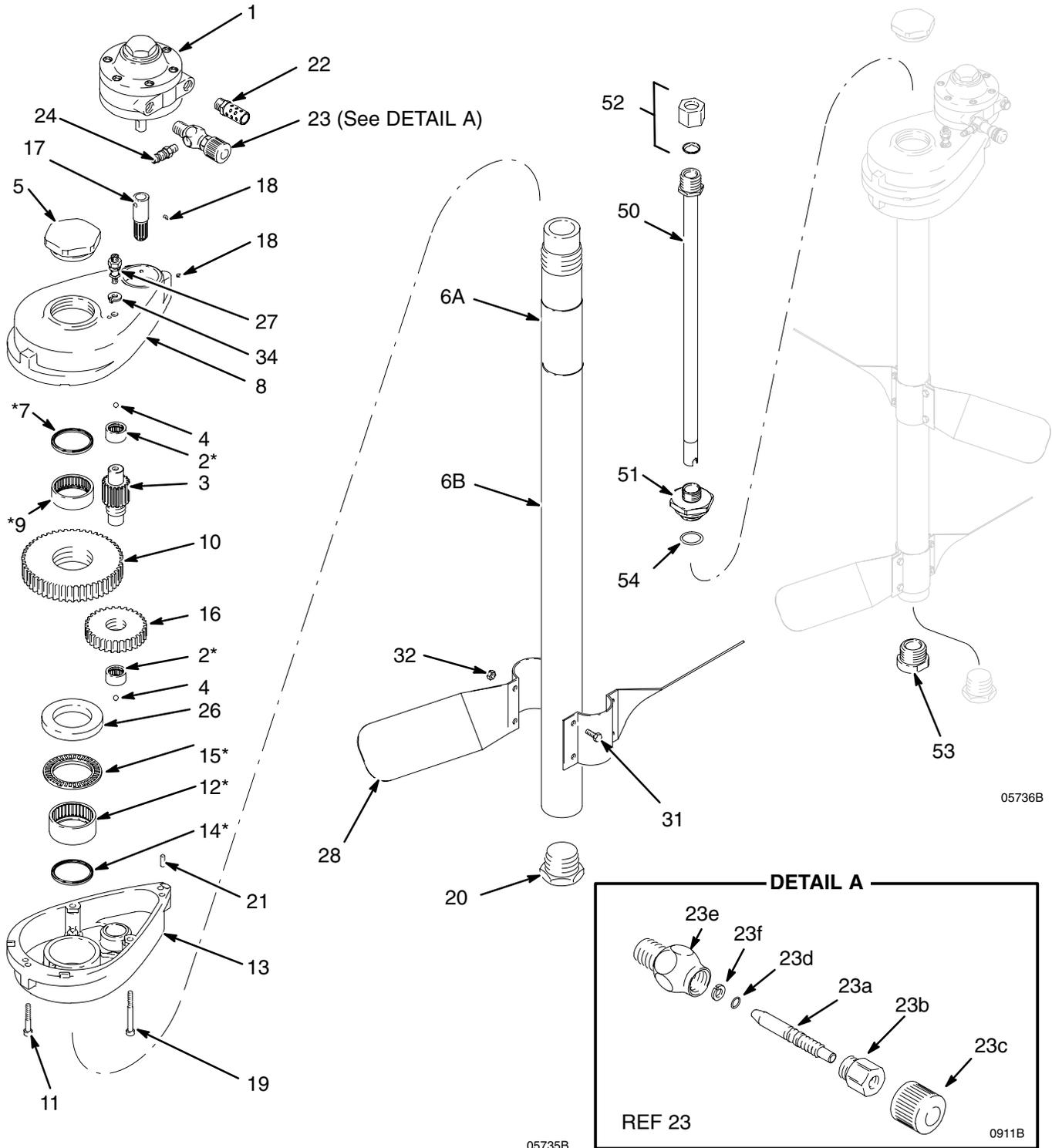
If the unit requires more than installation of a bearing replacement kit or gear replacement, it may be advisable to send the unit to a Graco distributor for repair or replacement.

Parts

Heavy-Duty Stainless Steel Agitator, Model 238157 (includes items 1–34)

Heavy-Duty Stainless Steel Agitator with Siphon Kit, Model 240209
(includes items 1–4, 6–19, 21–34, 50–54)

Siphon Kit, Model 238250 (includes items 50–54)



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Parts

Heavy-Duty Stainless Steel Agitator, Model 238157 (includes items 1–34)

Heavy-Duty Stainless Steel Agitator with Siphon Kit, Model 240209

(includes items 1–4, 6–19, 21–34, 50–54)

Ref No.	Part No.	Description	Qty.	Ref No.	Part No.	Description	Qty.
1†	101140	AIR MOTOR	1	23	206264	VALVE, needle <i>Includes items 23a to 23f</i>	1
2*	191004	BEARING, needle; 3/4"	2	23a	166529	.VALVE, needle	1
3	190988	GEAR, pinion #2	1	23b	166532	.NUT, packing	1
4	100069	BALL, thrust	2	23c	164698	.KNOB, adjusting	1
5	191003	PLUG, top	1	23d	157628	.O-RING, packing	1
6	24D311	KIT, agitator shaft <i>Includes items 6a and 6b</i>	1	23e	165722	.BODY, valve	1
6a	16A519	SHAFT, agitator	1	23f	166531	.WASHER	1
6b	16C238	SHAFT, agitator	1	24	169969	FITTING, air line, male	1
7*	113363	SEAL, bearing	1	25	113358	SCREW, hex head; for mounting to drum cover (<i>not shown</i>)	3
8	194389	HOUSING, upper	1	26	190976	NUT; 50 mm	1
9*	190980	BEARING, needle; 45mm	1	27	104029	LUG, grounding	1
10	190989	GEAR #2	1	28	190985	BLADE, agitator	4
11	113357	SCREW, cap, socket head	2	30▲	290152	LABEL, warning	1
12*	190978	BEARING, needle; 50mm	1	31	113413	SCREW, cap	8
13	194390	HOUSING, lower	1	32	113414	NUT, lock	8
14*	113359	SEAL, bearing	1	34	104582	WASHER, tab	1
15*	190979	BEARING, needle, thrust; 50mm	1				
16	190987	GEAR #1	1				
17	190986	GEAR, pinion #1	1				
18	108161	SET SCREW, cup pt; SST	3				
19	113356	SCREW, cap, socket head	2				
20	191002	PLUG, bottom	1				
21	105489	PIN, dowel	2				
22	113779	MUFFLER	1				

† *Air Motor Repair Kit, Part No. 207335, is available.*

* *Included in Bearing Replacement Kit 238251*

▲ *Extra warning labels are available at no charge.*

NOTE: Part No. 24C821 Agitator Drive Kit is available. The kit includes all of the above parts except items 6b, 20, 28, 31, and 32.

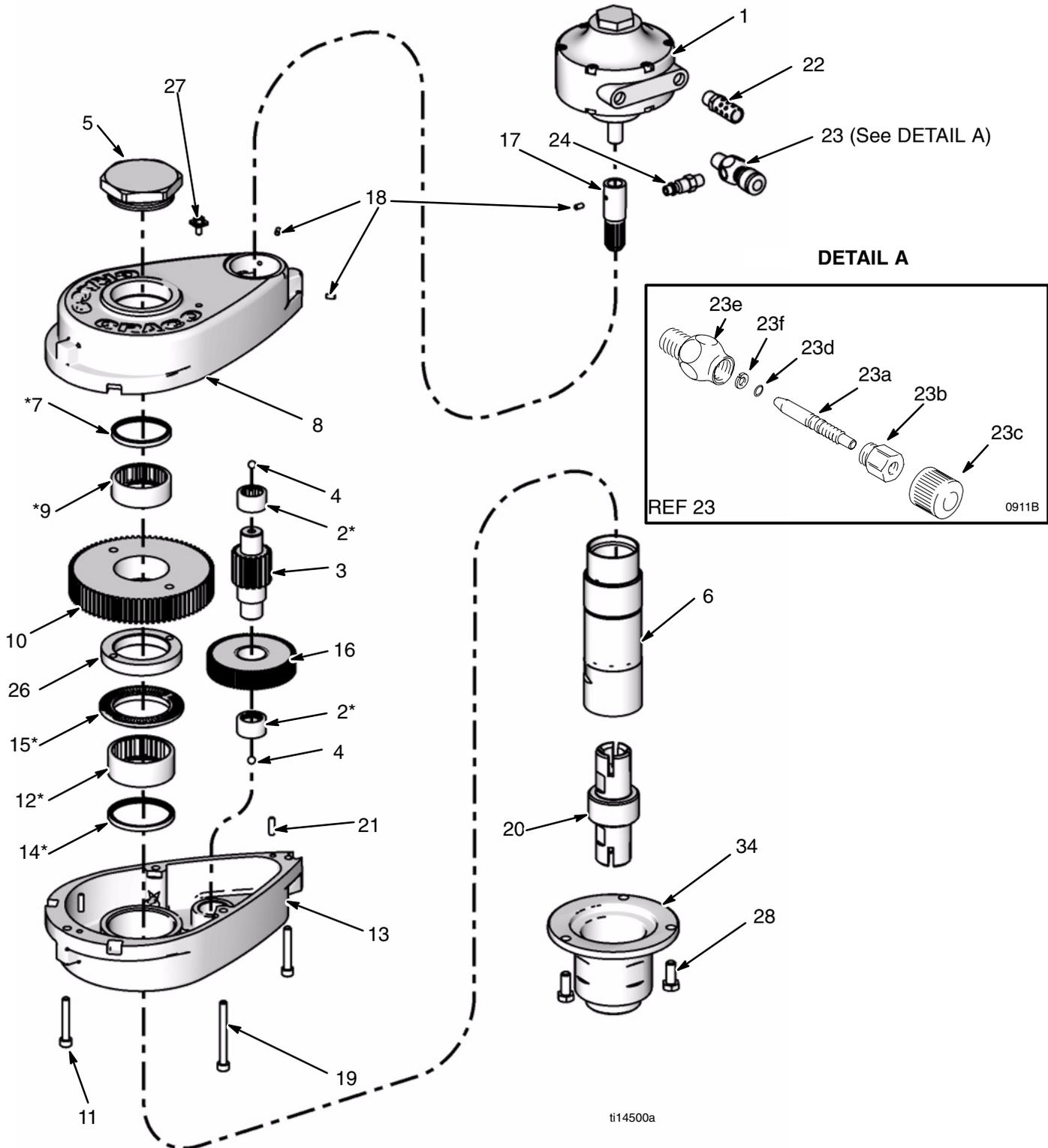
Siphon Kit, Model 238250

(includes items 50–54)

Ref No.	Part No.	Description	Qty.
50	238161	TUBE, siphon	1
51	190998	RETAINER, siphon tube	1
52	190999	NUT, retaining	1
53	191000	BEARING; plain	1
54	164557	O-RING; PTFE	1

Parts

Heavy-Duty Stainless Steel Agitator, Drum Mounted, Models 24C293 and 24C522
(for drums with built-in shaft and blades)



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Parts

Heavy-Duty Stainless Steel Agitator, Drum Mounted, Models 24C293 and 24C522

Ref No.	Part No.	Description	Qty.	Ref No.	Part No.	Description	Qty.
1†	101140	AIR MOTOR	1	23	206264	VALVE, needle <i>Includes items 23a to 23f</i>	1
2*	191004	BEARING, needle; 3/4"	2	23a	166529	.VALVE, needle	1
3	190988	GEAR, pinion #2	1	23b	166532	.NUT, packing	1
4	100069	BALL, thrust	2	23c	164698	.KNOB, adjusting	1
5	191003	PLUG, top	1	23d	157628	.O-RING, packing	1
6	16A519	SHAFT, agitator	1	23e	165722	.BODY, valve	1
7*	113363	SEAL, bearing	1	23f	166531	.WASHER	1
8	194389	HOUSING, upper	1	24	169969	FITTING, air line, male	1
9*	190980	BEARING, needle; 45mm	1	25	113358	SCREW, hex head; for mounting to drum cover (<i>not shown</i>)	3
10	190989	GEAR #2	1	26	190976	NUT; 50 mm	1
11	113357	SCREW, cap, socket head	2	27	116343	SCREW, grounding	1
12*	190978	BEARING, needle; 50mm	1	28	113358	SCREW, cap, hex	3
13	194390	HOUSING, lower	1	30▲	15A722	LABEL, warning (<i>not shown</i>)	1
14*	113359	SEAL, bearing	1	34♦	16A521	HOUSING, adapter (for 24C293)	1
15*	190979	BEARING, needle, thrust; 50mm	1	♦	16A754	HOUSING, adapter (for 24C522)	1
16	190987	GEAR #1	1				
17	190986	GEAR, pinion #1	1				
18	108161	SET SCREW, cup pt; SST	3				
19	113356	SCREW, cap, socket head	2				
20♦	16H554	ADAPTER, nut, double-sided (7/16 and 3/8)	1				
	16H555	ADAPTER, nut (1/2 and 5/8)	1				
21	105489	PIN, dowel	2				
22	113779	MUFFLER	1				

† *Air Motor Repair Kit, Part No. 207335, is available.*

* *Included in Bearing Replacement Kit 238251*

♦ *Included in Adapter Kit, 24D588*

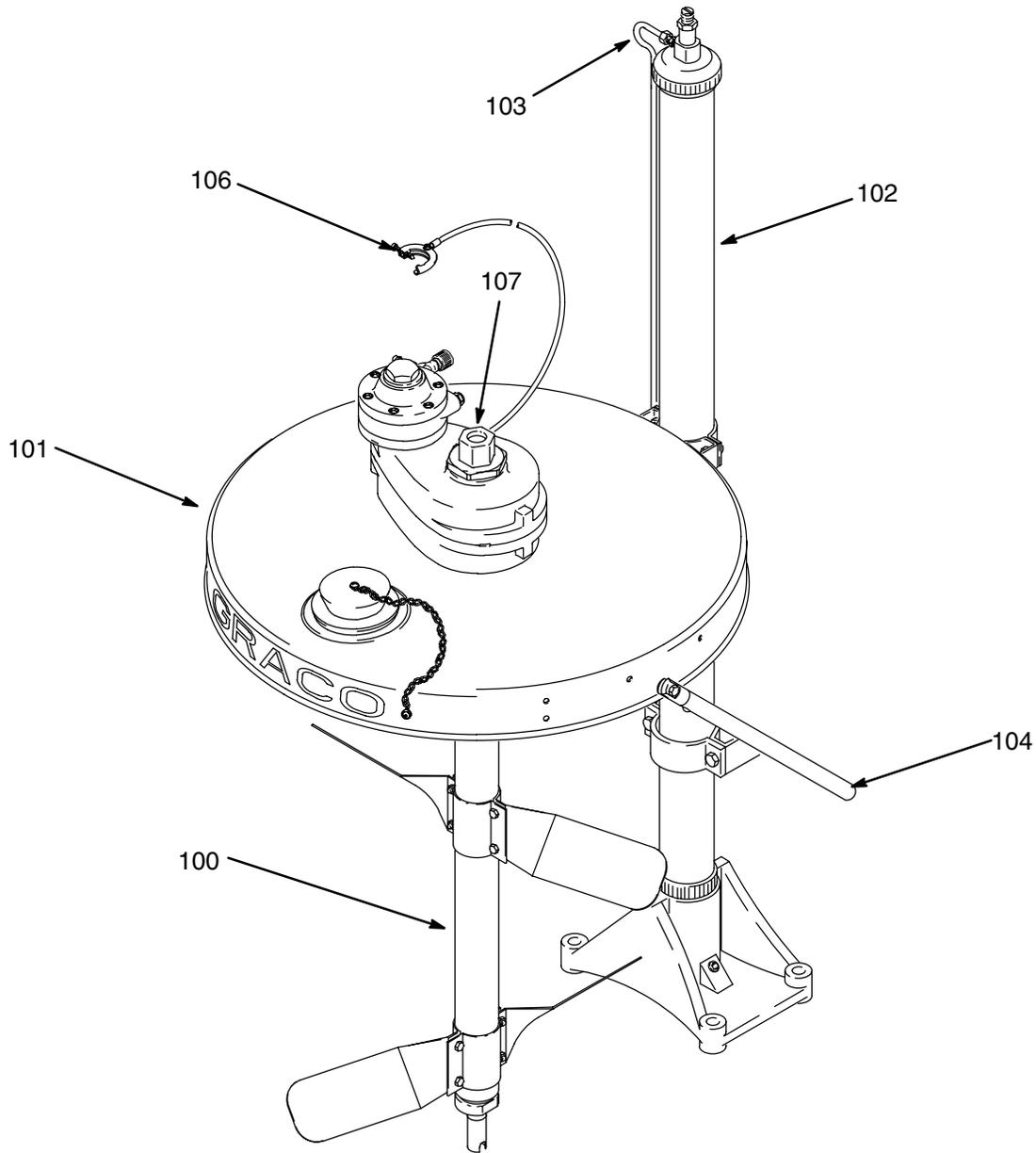
▲ *Extra warning labels are available at no charge.*

NOTE: Part No. 24C821 Agitator Drive Kit is available. The kit includes all of the above parts except items 20 and 34.

Parts

Non-Siphon Agitator Package, Model 231413

Siphon Agitator Package, Model 231414 (shown)



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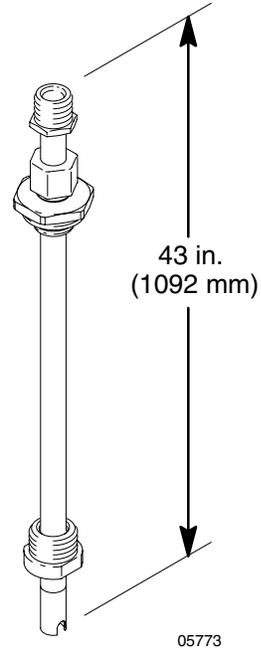
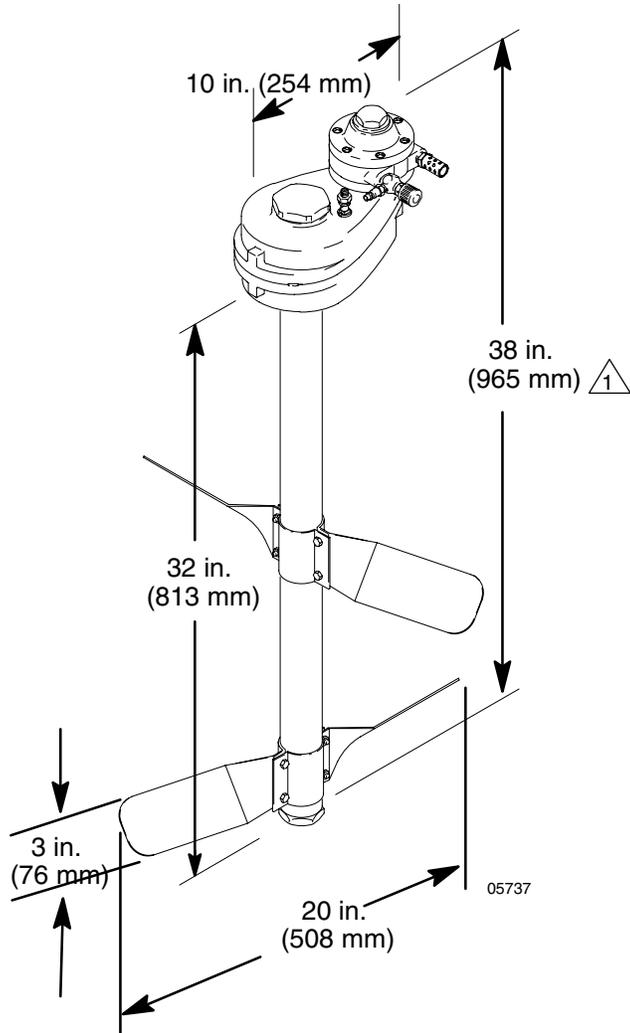
Ref No.	Part No.	Description	Qty.	Ref No.	Part No.	Description	Qty.
100	238157	AGITATOR; see page 14 for parts	1		238426	DESIGNATION PLATE KIT; Model 231414 (not shown)	1
101	238283	COVER, sst; see manual 308466	1				
102	204385	ELEVATOR; see manual 306287	1	106	237569	GROUND WIRE AND CLAMP	1
103	237579	AIR CONTROL KIT; see manual 306287	1	107	238250	SIPHON KIT; Model 231414 only; see page 14 for parts	1
104	237578	COVER SUPPORT KIT; see manual 306287	1				
105	238425	DESIGNATION PLATE KIT; Model 231413 (not shown)	1				
18	308609						

Dimensional Drawings

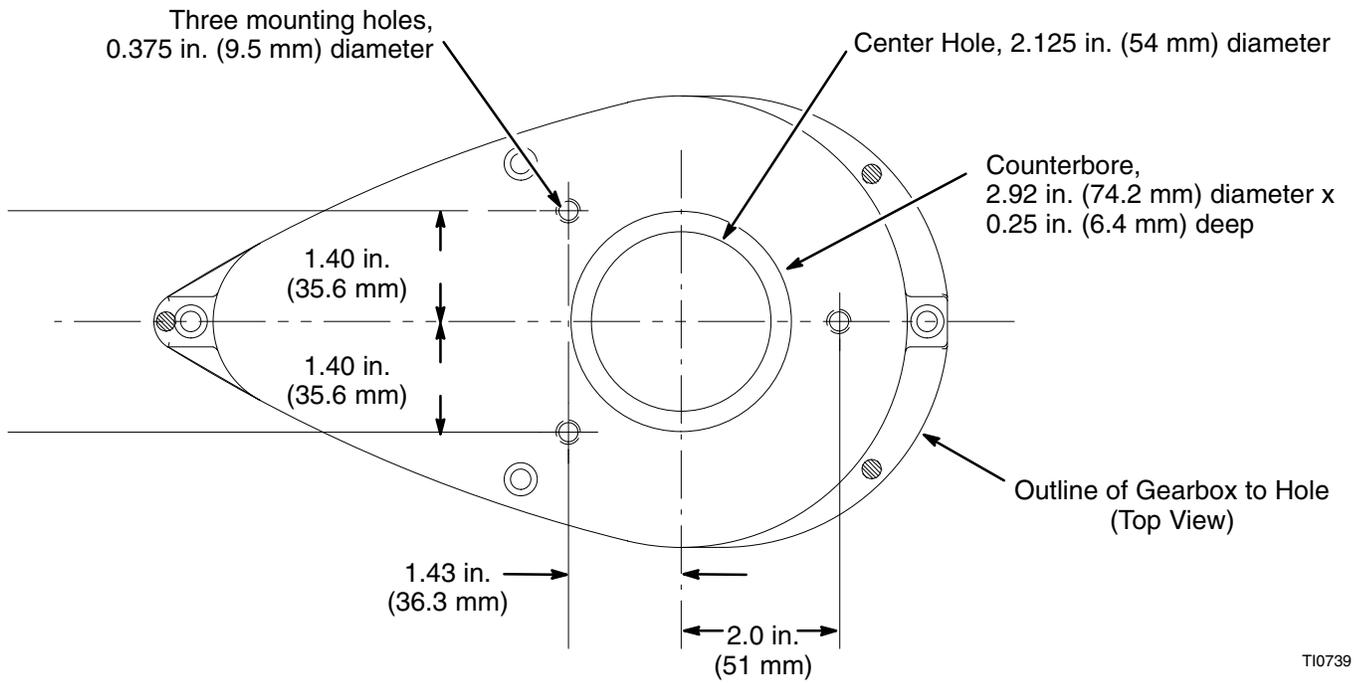
Heavy-Duty Stainless Steel Agitator,
Model 238157 (shown)

Siphon Kit, Model 238250

△₁ Height of Model 240209 is the same as the Siphon Kit (see right).



Mounting Hole Layout



T10739

Graco Standard Warranty

Graco warrants all equipment 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.

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Original instructions. This manual contains English. MM 308609

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