Repair-Parts

Dura-Flo® Lower

3A9013A

EN

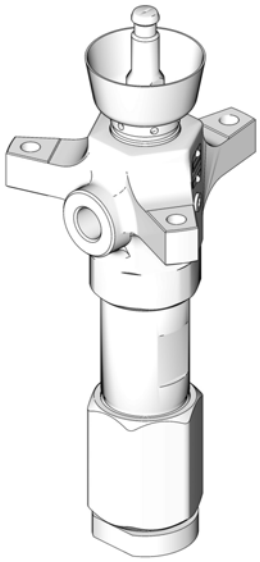
Stainless steel lower with severe-duty rod and cylinder used for spray or transfer of common industrial coatings and adhesives. For professional use only.

Dura-Flo 900 (220 cc) Lower with 1 leather and 4 PTFE packings

Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Save these instructions.

See page 2 for model information, including maximum working pressure.



TI8343a

Contents

Related Manuals

Manual in English	Description
308360	Dura-Flo 1200 Pumps Stainless Steel

Models

Lower Part No.	Series	Model	Packing Stacks	Maximum Fluid Working Pressure
273319	A	Dura-Flo 900 (220cc)	1 leather/4 PTFE backup	41 MPa (414 bar, 6000 psi)

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.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. 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 sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- 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.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static 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.

SKIN INJECTION HAZARD

High-pressure fluid from gun, 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.**

- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying 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

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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- 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.

MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

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 Safety Data Sheets (SDSs) 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.

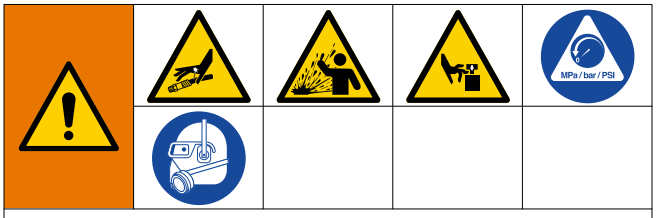
PERSONAL PROTECTIVE EQUIPMENT

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. 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.

Repair

Pressure Relief Procedure



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Engage the trigger lock.
2. Shutoff the pump:
   a. **For air-powered pumps,** close the bleed-type master air valve.
   b. **For hydraulic-powered pumps,** close the supply line shutoff valve first, then close the return line shutoff valve.
3. Disengage the trigger lock.
4. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.
5. Engage the trigger lock.
6. Open all fluid drain valves in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to spray again.
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
   a. VERY SLOWLY loosen the tip guard retaining nut or the hose end coupling to relieve pressure gradually.
   b. Loosen the nut or the coupling completely.
8. Clear the obstruction in the hose or tip.

Required Tools

- Set of adjustable wrenches
- Large pipe wrench
- 2-5/8 in. wrench
- Torque wrench
- Rubber mallet
- O-ring pick
- Large vise
- Thread lubricant
- Thread sealant

Disassemble the Pump Lower

Lay out all the removed parts in sequence, to ease reassembly.

NOTE: Packing Repair Kits are available. For the best results, use all the new parts in the kit. Kit parts are marked with an asterisk, for example (3*). These kits can also be used to convert the lower to different packing materials. See pages 12-17.

1. Flush the pump, if possible. Stop the pump at the bottom of its stroke. Relieve the pressure, page 5.
2. Disconnect the lower from the motor. See your separate pump assembly manual.
3. Place the lower lengthwise in a large vise, with the jaws on the outlet housing (7) as shown in FIG. 1, or on the cylinder (8) flats. Loosen, but do not remove, the packing nut (2).
4. Unscrew the intake valve (18). Be careful to catch the intake ball (17) as you remove the intake valve so it does not fall and suffer damage. Remove the seal (30). Inspect the ball and seat (D) for wear or damage.
5. Unscrew the intake housing (16). The lower assembly may separate at joint A or joint B.

NOTICE

To reduce the possibility of costly damage to the rod (1) and cylinder (8), always use a rubber mallet to drive the rod out of the cylinder. Never use a hammer to drive the rod.

- **If the assembly separates at joint A:**

  a. Hold the cylinder (8) flats with a wrench and unscrew the intake housing (16).

  b. *For Dura-Flo 900 and 1200 Lowers:* Using a rubber mallet, drive the rod (1) and piston assembly out of the outlet housing (7) and cylinder (8) until the piston comes free. Pull the rod and piston from the cylinder, being careful not to scratch the parts.

  c. *For Dura-Flo 600 and 750 Lowers:* Turn the cylinder (8) upside down and strike the top of the rod (1) on a plastic or wooden block until the piston comes free. Pull the rod and piston from the cylinder, being careful not to scratch the parts. See the Detail in FIG. 1.

  d. Using a wrench on the cylinder (8) flats, unscrew the cylinder from the outlet housing (7). Remove the cylinder seals (24). Shine a light into the cylinder to inspect the inner surface for scoring or wear. Now go to step 6.

- **If the assembly separates at joint B:**

  a. Unscrew the cylinder (8) and intake housing (16) from the outlet housing (7). Carefully pull the cylinder and intake housing straight out of the outlet housing. The displacement rod (1) and piston assembly will come out with these parts.

  b. Place the intake housing (16) in a vise. Using a wrench on the cylinder (8) flats, unscrew the cylinder. The rod (1) and piston assembly will remain in the cylinder.

  c. *For Dura-Flo 900 and 1200 Lowers:* Using a rubber mallet, drive the rod (1) and piston assembly out of the outlet housing (7) and cylinder (8) until the piston comes free. Pull the rod and piston from the cylinder, being careful not to scratch the parts.
  .

  d. Remove the cylinder seals (24). Shine a light into the cylinder to inspect the inner surface for scoring or wear. Now go to step 6.

6. Place the piston flats (15) in a vise. See FIG. 2.
7. Unscrew the piston ball guide (9) from the piston. Be careful to catch the piston ball (10) as you separate the parts, so it does not fall and suffer damage.
8. Examine the displacement rod (1) for scratches and other damage. **Only if the rod needs replacement,** unscrew it from the piston ball guide (9), using a wrench on the flats of the rod.
9. Remove the piston glands and v-packings (P). Inspect the ball (10), seat (E), and guides (F) on the ball guide for wear or damage.
10. See FIG. 4. Unscrew the packing nut (2). Remove the throat packings (T) from the outlet housing (7).
11. Clean all parts with a compatible solvent and inspect them for wear or damage.

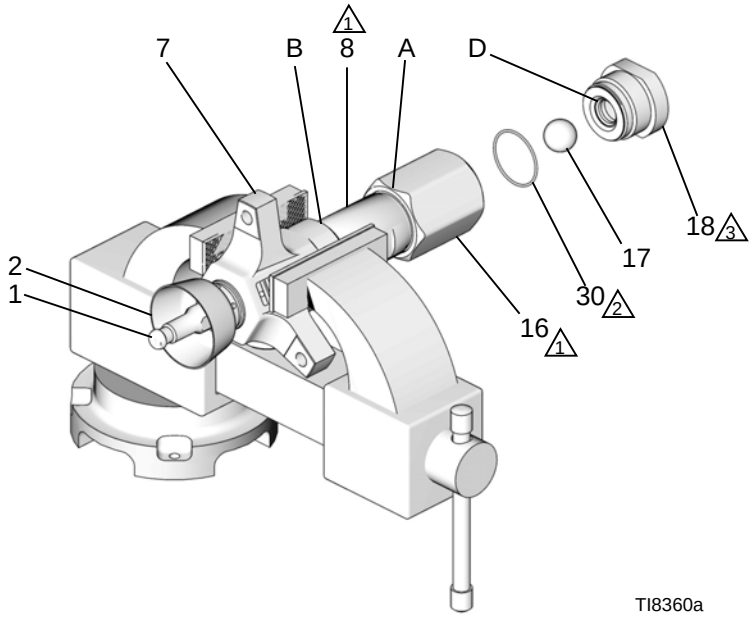

1 Torque to 325-353 N•m (240-260 ft-lb).
2 Lubricate.
3 Torque to 190-217 N•m (140-160 ft-lb).
7
B
8
A
D
18
3
17
30
2
16
1
2
1
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FIG. 1

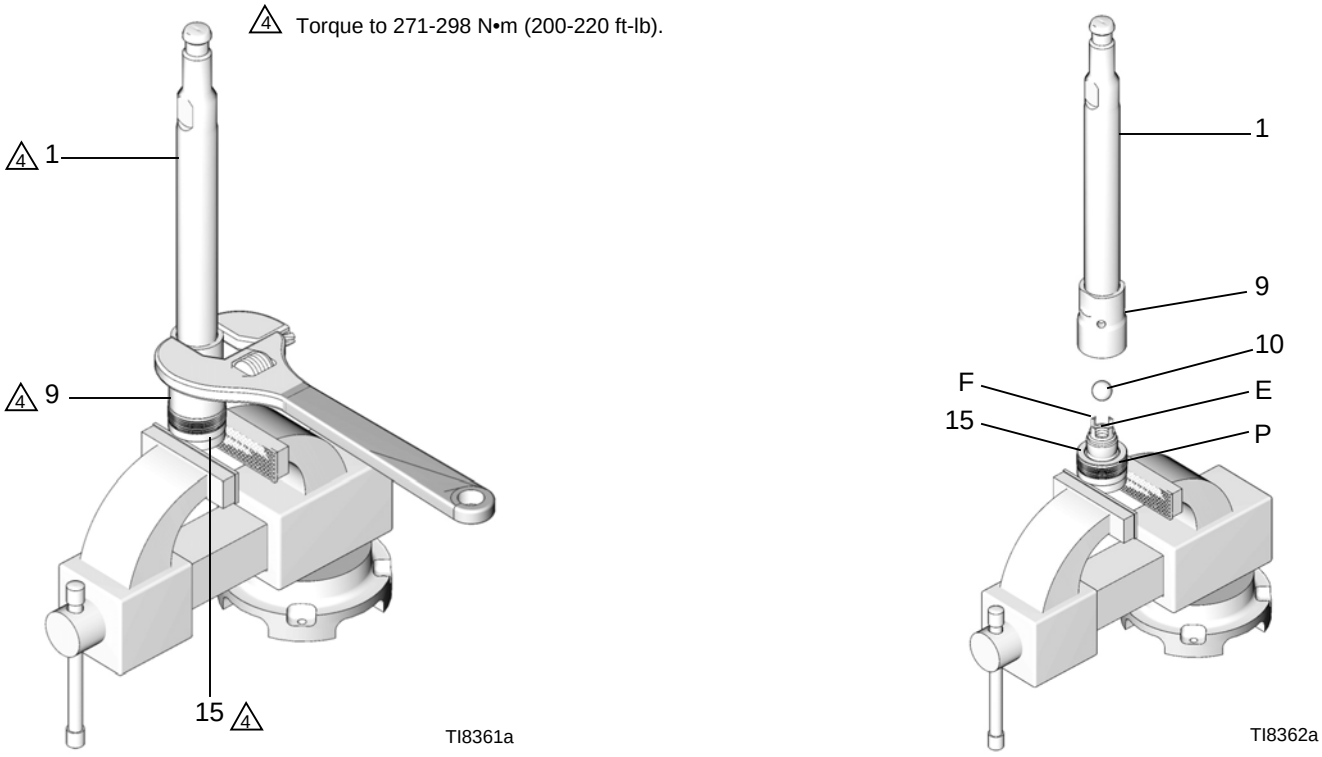

4 Torque to 271-298 N•m (200-220 ft-lb).
4 1
4 9
15 4
TI8361a
1
9
10
F
E
15
P
TI8362a

FIG. 2

Reassemble the Pump Lower

NOTICE

All rebuild kits are supplied with anti-seize. Failure to apply anti-seize during the reassembly process greatly increases the chances of galling.

1. If it was necessary to remove the piston ball guide (9) from the displacement rod (1), clean the threads of the rod and ball guide, and apply anti seize (19*) to threads. Screw the ball housing onto the rod, handtight. Place the flats of the ball guide in a vise and torque as noted in FIG. 4.

2. See FIG. 4. Install the piston packings on the piston (15) in the correct order for your lower, see **Repair Kits**, page 12. Install the v-packings (P) one at a time with the lips facing up.

NOTE: To convert the lower to a different packing material, see **Repair Kits**, pages 12.

3. See FIG. 2. Place the flats of the piston (15) in a vise. Place the ball (10*) on the piston seat (E). Screw the piston ball guide (9) onto the piston hand tight, then torque as noted.

4. See FIG. 4. Lubricate the throat packings (T). Install the throat packings in the outlet housing (7) in the correct order for your lower, see **Repair Kits**, pages 12-17. Install the v-packings (T) one at a time with the lips facing down.

NOTE: To convert the lower to a different packing material, see **Repair Kits**, pages 12-17.

5. Lubricate the threads of the packing nut (2), and loosely install it in the outlet housing (7).

NOTICE

To reduce the possibility of costly damage to the rod (1) and cylinder (8), always use a rubber mallet to drive the rod into the cylinder. Never use a hammer to drive the rod.

6. Lubricate the piston packings (P). Slide the displacement rod (1) and piston assembly down into the cylinder (8). The cylinder is symmetrical, so either end may face up. Use a rubber mallet to drive the rod into the cylinder, until the piston (15) is near the bottom of the cylinder.

7. Install the seal (24*) on the top of the cylinder (8). Lubricate the seal and the top threads of the cylinder.

8. Place the outlet housing (7) in a vise, see FIG. 1. Slide the rod (1) into the housing, apply anti seize (19*) to threads, then screw the cylinder (8) into the housing handtight. The threads will engage easily until the seal (24*) contacts the sealing surface of the outlet housing. The top of the rod will protrude from the packing nut (2).

9. See FIG. 4. Install the seal (24*) on the bottom of the cylinder (8). Lubricate the seal and apply anti seize (19*) to threads of the cylinder. **With the beveled ball stop surfaces (S) facing down,** screw the intake housing (16) onto the cylinder handtight. The threads will engage easily until the seal (24*) contacts the sealing surface of the intake housing.

10. See FIG. 3. Install the seal (30*) on the intake valve (18). Lubricate the seal and apply anti seize (19*) to threads of the intake valve. Place the intake ball (17*) in the intake housing (16), then screw the intake valve (18) into the intake housing handtight. The threads will engage easily until the seal (30*) contacts the sealing surface of the intake housing.

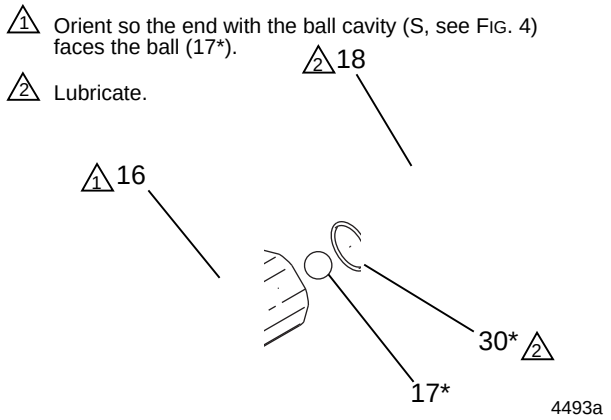


FIG. 3

11. Torque the intake housing (16) as noted in FIG. 4. This will torque both cylinder joints A and B.

12. Torque the intake valve (18) as noted in FIG. 4.

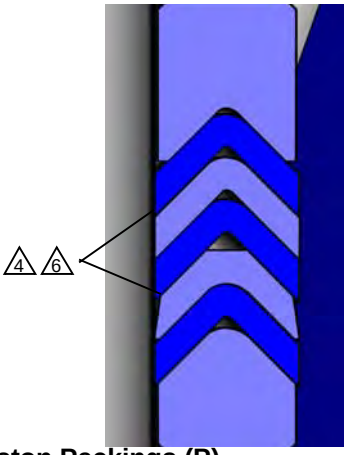
13. Torque the packing nut (2) as noted in FIG. 4.

14. Reconnect the lower to the motor as explained in your separate pump assembly manual.

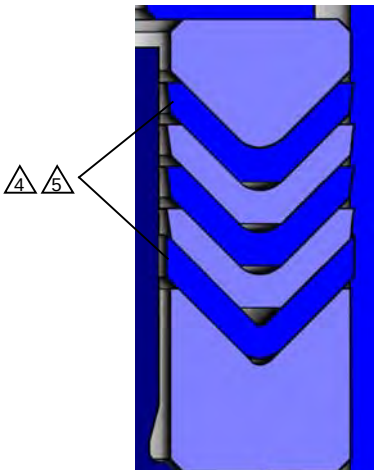
△2 Torque to 271-298 N•m (200-220 ft-lb).
△4 Lubricate.
△5 Lips must face up.
△6 Lips must face down.
△7 Torque to 190-217 N•m (140-160 ft-lb)

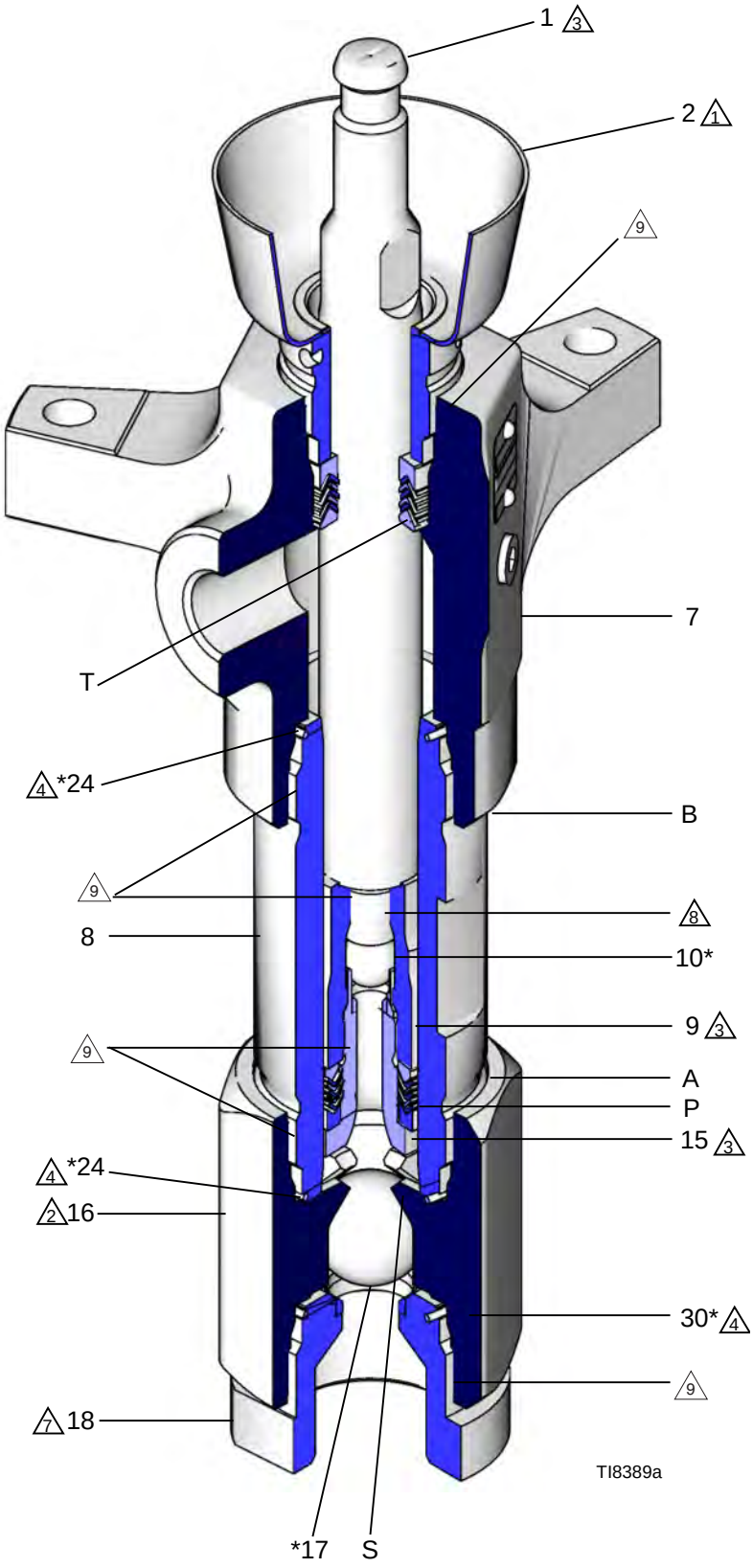
Packing Repair Kit
See **Packing Repair Kit 25U661**, page 14

Throat Packings (T)



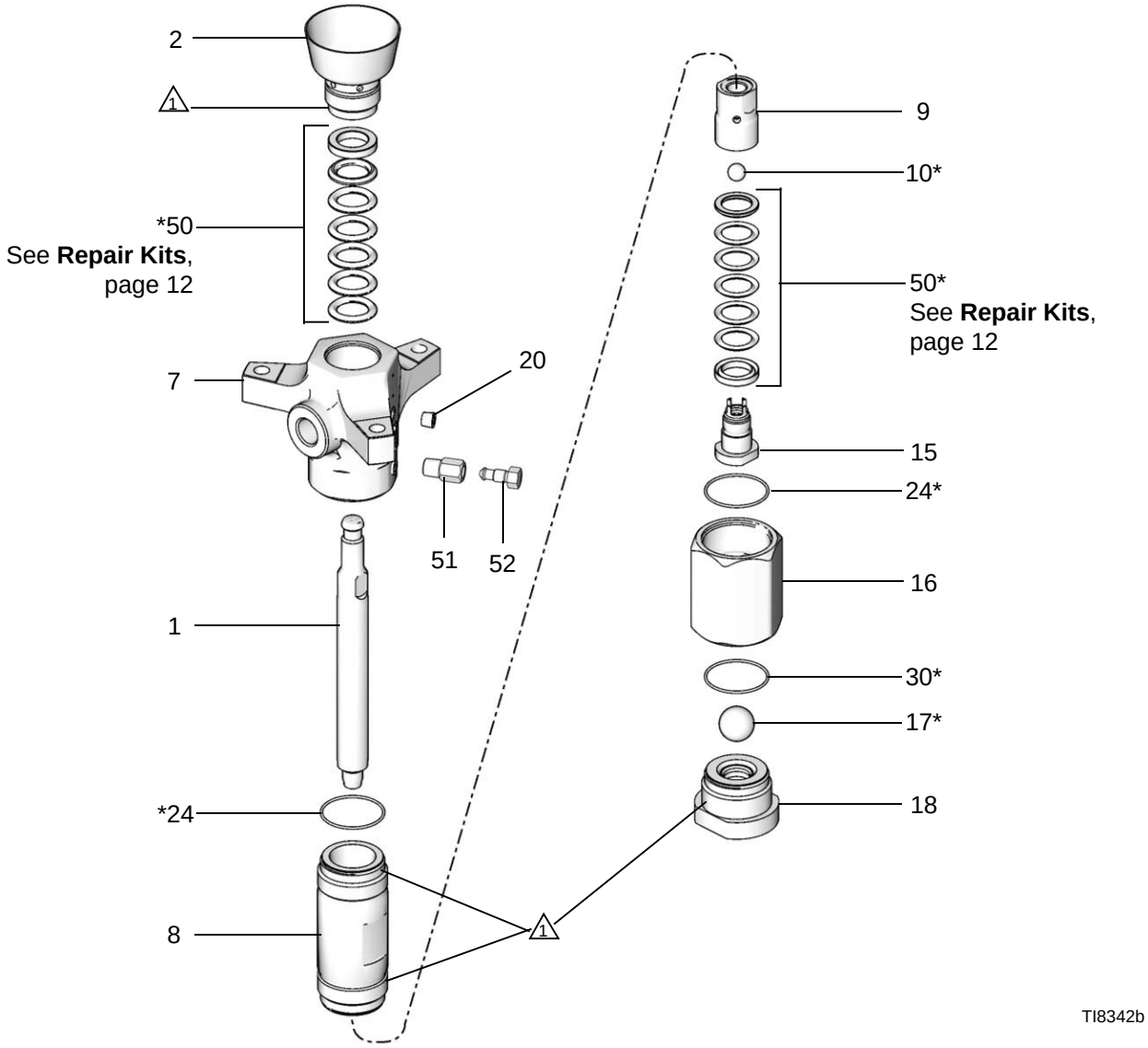
Piston Packings (P)





Parts

1 Apply anti-seize 123174.



Ref.	Description	Part No	Qty.
1	ROD, displacement; sst	189316	1
2	PACKING NUT/WET-CUP	236582	1
7	HOUSING, outlet	262516	1
8	CYLINDER	189383	1
9	GUIDE, ball, piston	189408	1
10*	BALL, piston; sst; 3/4 in. (19 mm)	101859	1
15	PISTON; carbide seat	236587	1
16	HOUSING, intake valve	189396	1
17*	BALL, intake; sst; 1.5 in. (38.1 mm)	108001	1
18	VALVE, intake; sst; carbide seat	236588	1
20	PLUG, pipe, socket hd; 3/8 npt; sst	101748	1
23▲	TAG, warning (not shown)	172479	1
24*	SEAL, cylinder; PTFE	109499	2
30*	SEAL, intake valve; PTFE	109499	1
50*	PACKINGS, see **Packing Repair Kit 25U661**	237172	1
51	HOUSING, valve	---	1
52	PLUG	---	1

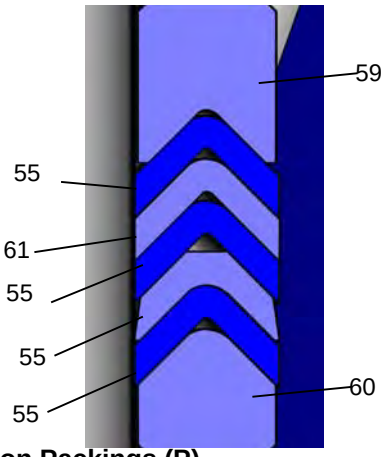
* *Parts included in Repair Kit (purchase separately). See page 12.*

▲ *Replacement safety labels, tags, and cards are available at no cost.*

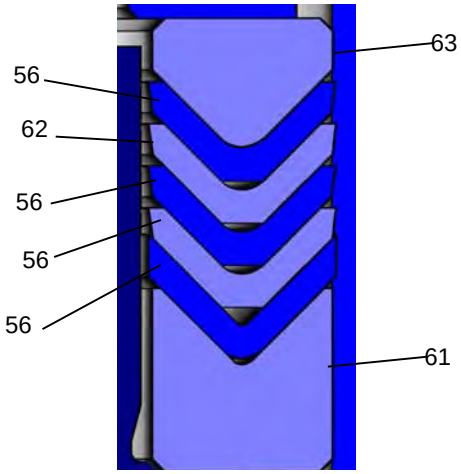
Packing Repair Kit 25U661

Ref.	Part No.	Description	Qty
10*	101859	BALL, piston; sst; 3/4 in. (19 mm)	1
17*	108001	BALL, intake; sst; 1.5 in. (38.1 mm)	1
24*	109499	SEAL, cylinder; PTFE	2
30*	109499	SEAL, intake valve; PTFE	1
55	109304	PACKING, V-CUP, PTFE	4
56	109305	PACKING, V-CUP, PTFE	4
58	123174	LUBRICANT, ANTI-SEIZE (not shown)	1
59	184175	GLAND, PACKING FEMALE	1
60	184224	GLAND, PACKING MALE	1
61	184304	PACKING, V-CUP, LEATHER	1
62	184305	PACKING, V-CUP, LEATHER	1
63	184225	GLAND, male, piston, sst	1
64	184175	GLAND, female, piston, sst	1

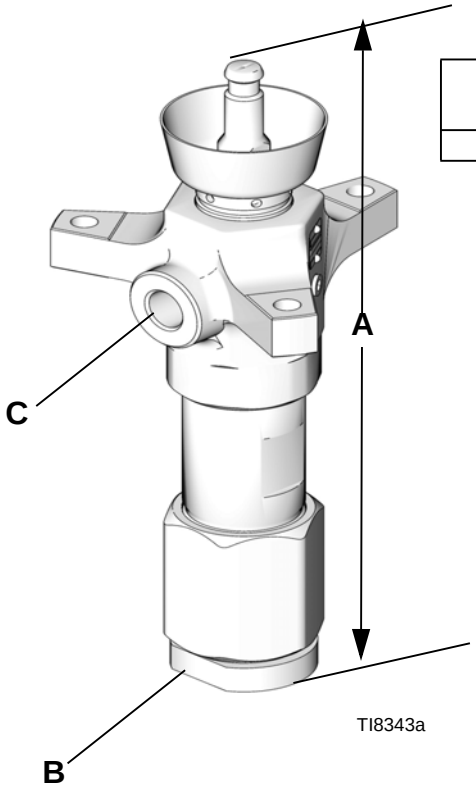
Throat Packings (T)



Piston Packings (P)



Dimensions



A mm (in.)	B	C	Weight kg (lb)
516 (20.3)	2 in. npt(f)	1 in. npt(f)	29 (63)

Technical Specifications

Dura-Flo Lowers		
	US	**Metric**
Maximum fluid working pressure	6000 psi	41 MPa, 414 bar
Wetted parts	304, 316, 440, and 17-4 PH grades of stainless steel, tungsten carbide, PTFE, glass-filled PTFE	
Packing materials	See **Repair Kits**, pages 12-17.	
Lower effective area		
Dura-Flo 900 (220 cc)	1.40 $in.^2$	9 cc^2
Notes		
All trademarks or registered trademarks are the property of their respective owners.		

California Proposition 65

CALIFORNIA RESIDENTS

⚠ **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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.

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