

Dura-Flo[®] Lowers

3A9259A

EN

Carbon Steel or Stainless Steel Lowers. For use on Graco pumps, sprayers and fluid handling systems. For professional use only. Not approved for use in explosive atmospheres or hazardous (classified) locations.

Dura-Flo XL 1000cc Lowers

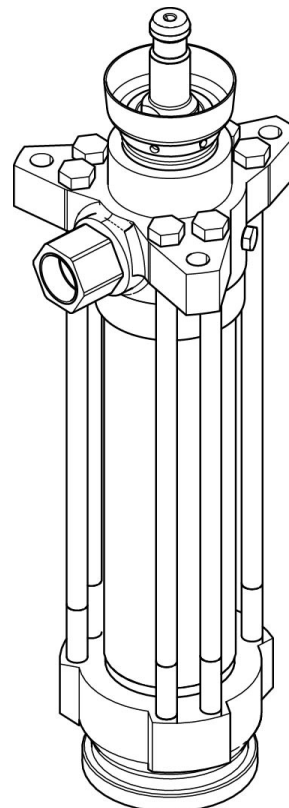
Dura-Flo XL 1400cc Lowers



Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Be familiar with the proper controls and usage of the equipment. Save these instructions.

See page 3 for model information, including maximum working pressure.



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Models

Severe-Duty: For wear and corrosion resistance in addition to low friction characteristics.

MaxLife®: MaxLife is a proprietary Graco hard coating for piston pump rods and cylinders. MaxLife provides a smooth and hard wear surface with no porosity while providing corrosion/chemical resistance.

1000cc Lowers











Lower Part	Body	Size	Rod Construction	Cylinder Construction	Ball Construction	Seat Construction	Piston Packings	Throat Packings	Maximum Fluid Working Pressure
25V502	CS	1000cc	SST with Severe Duty	SST with Severe Duty	SST	Tungsten Carbide	3 UHMWPE / 2 leather	3 UHMWPE / 2 leather	4500 psi (31 MPa, 310 bar)
25V506	CS	1000cc	SST with MaxLife	SST with MaxLife					

1400cc Lowers







Lower Part	Body	Size	Rod Construction	Cylinder Construction	Ball Construction	Seat Construction	Piston Packings	Throat Packings	Maximum Fluid Working Pressure
25V505	CS	1400cc	SST with Severe Duty	SST with Severe Duty	SST	Tungsten Carbide	3 UHMWPE / 2 leather	3 UHMWPE / 2 leather	3400 psi (23 MPa, 234 bar)
25V507	CS	1400cc	SST with MaxLife	SST with MaxLife					

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	
   	<p>FIRE AND EXPLOSION HAZARD</p> <p>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:</p> <ul style="list-style-type: none"> • 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.
    	<p>SKIN INJECTION HAZARD</p> <p>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.</p> <ul style="list-style-type: none"> • 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

 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> 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. 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.
 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> 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.
	<p>TOXIC FLUID OR FUMES HAZARD</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"> Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using. Route exhaust away from work area. If diaphragm ruptures, fluid may be exhausted into the air. Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>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:</p> <ul style="list-style-type: none"> 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.

Required Tools

- Set of socket wrenches
- Set of adjustable wrenches
- 24 in. adjustable wrench
- Torque wrench
- Rubber mallet
- Arbor press
- Soft wooden block (approx. 1 square foot in size)
- Large vise, with soft jaws
- Thread lubricant
- Anti-seize lubricant 222955
- Loctite® 2760™ or equivalent

1. Engage 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.
 - c. Clear the obstruction in the hose or tip.

Disassembly

Lay out all the removed parts in sequence, to ease reassembly. Clean all parts with a compatible solvent and inspect them for wear or damage. See **Recycling and Disposal**, page 9.

NOTE: Repair Kits are available to replace the throat (T) and piston (P) packings, and to replace the o-rings and cylinder seals. For the best results, use all the new parts in the kit. Kit parts are marked with an asterisk, for example (11*). These kits also can be used to convert the lower to different packing materials. Refer to pages 10-12.

1. Flush the pump, if possible. Stop the pump at the bottom of its stroke. Perform **Pressure Relief Procedure**, page 6.
2. Disconnect the lower from the motor. See your separate pump assembly manual.
3. Stand the lower upright in a large vise. Loosen, but do not remove, the packing nut (3). Remove the six long cap screws (20).
4. Lift the outlet housing (19) straight up off the lower. Be careful not to scratch the displacement rod (1) while removing the housing.
5. Lift the cylinder (7), displacement rod (1), and piston assembly off the intake housing (17).
6. Remove the seal (6), ball guide (14), intake ball (16), intake seat housing (15), and o-ring (27) from the intake housing (17). Inspect the ball (16) and the ball seat (A) on the housing (15) for wear or damage.
7. Remove the seal (6) from the bottom of the outlet housing (19). Unscrew the packing nut (3). Remove the glands and v-packings (T) from the housing. Do not remove the outlet fitting (4) and o-ring (5) unless they need replacement.
8. Stand the cylinder (7) upright on a wooden block. Using a rubber mallet or an arbor press, drive the displacement rod (1) and piston assembly down into the cylinder as far as possible, then place the cylinder on its side and continue to drive the rod out the bottom until the piston comes free. Pull the rod and piston from the cylinder, being careful not to scratch the rod or cylinder.
9. Put the flats of the piston seat housing (12) in a vise. Unscrew the rod (1) from the housing (12), leaving the ball guide (9) assembled to the rod. Be careful that the piston ball (10) doesn't fall as you separate the housing (12) and ball guide (9).
10. Remove the glands and v-packings (P) from the piston seat housing (12). Inspect the ball (10) and ball seat (B) on the housing (12) for wear or damage.
11. Inspect the outer surface of the displacement rod (1) and the inner surface of the cylinder (7) for scoring or wear; replace if damaged. If replacing the rod, remove the ball guide (9) (see step 12).
12. Place the flats of the ball guide (9) in a vise. Using a 24 in. adjustable wrench or 3/4 in. drive socket, unscrew the rod (1) from the ball guide.

NOTE: Do not remove the ball guide (9) from the displacement rod (1) unless either part needs replacement.

NOTICE

To reduce the possibility of costly damage to the rod (1) and cylinder (7), first place the cylinder on a soft block of wood. Always use a rubber mallet or an arbor press to drive the rod (1) out of the cylinder (7). Never use a hammer to drive the rod.

Reassembly

1. If the ball guide (9) was removed, place the flats of the displacement rod (1) in a vise. Apply anti-seize lubricant (Graco part number 222955) to the threads and mating faces of the rod and the ball guide. Screw the ball guide onto the rod, hand tight. Remove from the vise. See **Recycling and Disposal**, page 9.
2. Install the piston packings (P) on the piston (12) in the correct order for your lower, see **Dimensions**, page 13. Install the v-packings one at a time with the lips facing up.

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

3. Apply anti-seize lubricant 222955 to the threads and mating faces of the ball guide (9) and piston seat housing (12). Place the flats of the piston seat housing in a vise. Place the ball (10) on the piston seat. Screw the assembled rod (1) and ball guide (9) onto the piston assembly hand tight, then torque to 459-481 N•m (338-354 ft-lb).

NOTICE

To reduce the possibility of costly damage to the rod (1) and cylinder (7), first place the cylinder on a soft block of wood. Always use a rubber mallet or an arbor press to drive the rod (1) into the cylinder (7). Never use a hammer to drive the rod.

4. Use an arbor press to reinstall the rod (1) into the cylinder (7), as follows. (The cylinder is symmetrical, so either end may face up.) Lubricate the piston packings (P). With the piston end facing down, lower the rod into the cylinder. Start the piston into the cylinder as much as possible, then drive the rod and piston the rest of the way into the cylinder with the arbor press.
5. Lubricate the o-ring (27*) and seal (6*). Install the o-ring on the intake seat housing (15). Install the intake seat housing (15), intake ball (16), ball guide (14), and seal (6*) in the intake housing (17). Set the intake housing all the way into the vise.

6. Place the cylinder (7) on the intake housing (17). Tap on the top of the displacement rod (1) with a rubber mallet, to seat the cylinder.
7. Lubricate the throat packings (T). Install the throat packings (T) in the outlet housing (19) in the correct order for your lower, see **Dimensions**, page 13. Install the v-packings one at a time with the lips facing down.

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

8. Lubricate the threads of the packing nut (3), and loosely install it in the outlet housing (19).
9. Lubricate the seal (6*) and install it in the bottom of the outlet housing (19). Set the outlet housing on top of the cylinder (7). Apply thread lubricant to the six long cap screws (20). Install the cap screws through the outlet housing (19) and thread them loosely by hand into the intake housing (17). Tighten the cap screws oppositely and evenly, then torque to 244-264 N•m (180-195 ft-lb).

10. Install the plug (35). Torque the plug to 30-38 N•m (22-28 ft-lb).

NOTE: It is not ordinarily necessary to remove the outlet fitting (4) and o-ring (5*). However, if they were replaced because of damage, lubricate the o-ring and place it on the fitting. Screw the fitting into the outlet housing (19). Torque to 156-171 N•m (115-126 ft-lb).

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

Storage Maintenance

Replace leather packings every five years.

Lifetime Service Maintenance

Replace leather packings every five years or less based on use.

Recycling and Disposal

End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure**, page 6.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Deliver remaining product to a recycling facility.

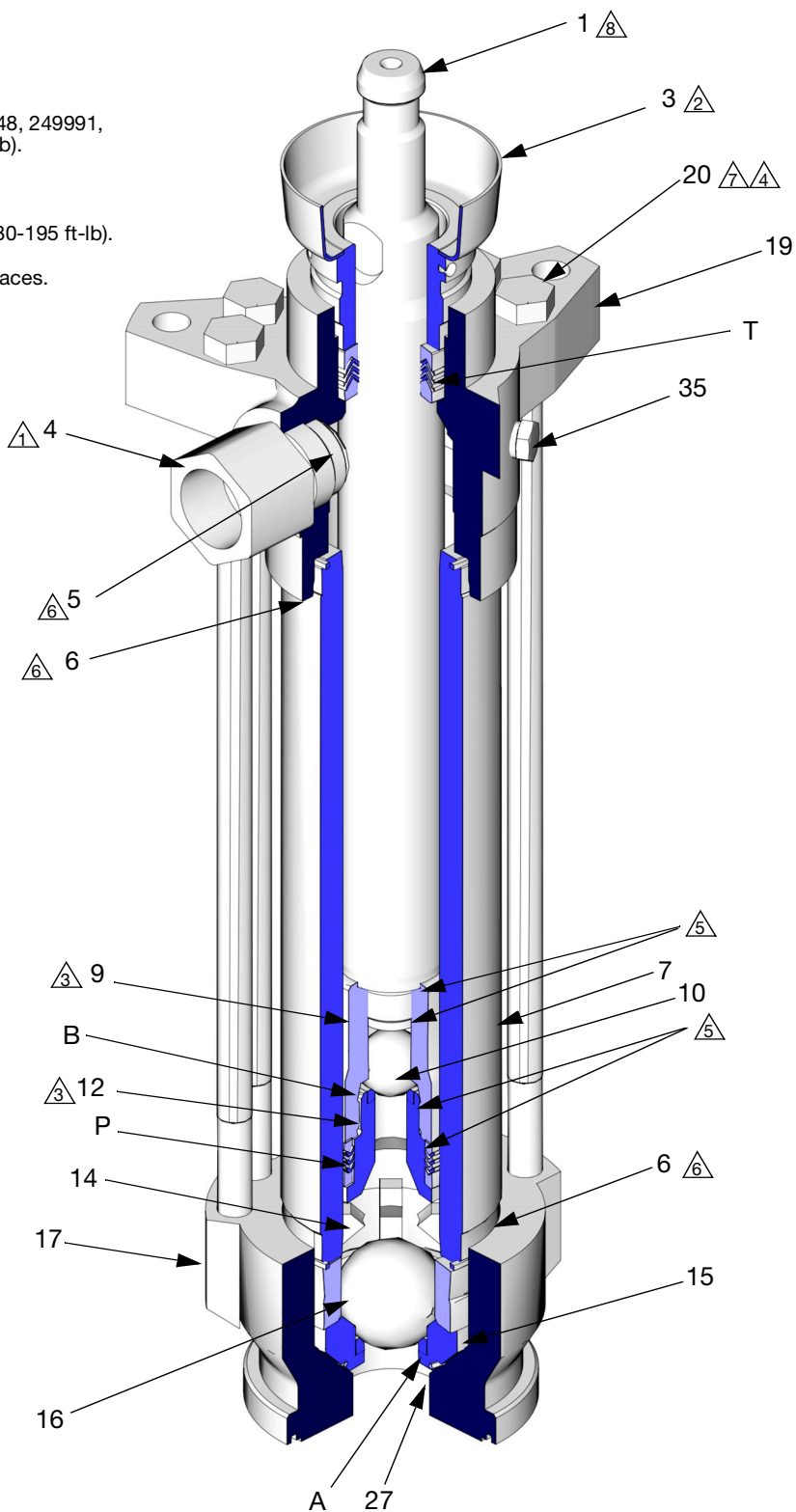
End of Life Disposal

If the pumping system is in a condition that it can no longer operate, the pump should be taken out of service and dismantled. Individual parts should be sorted by material and disposed of properly. Key construction materials can be found in the Materials of Construction Section.

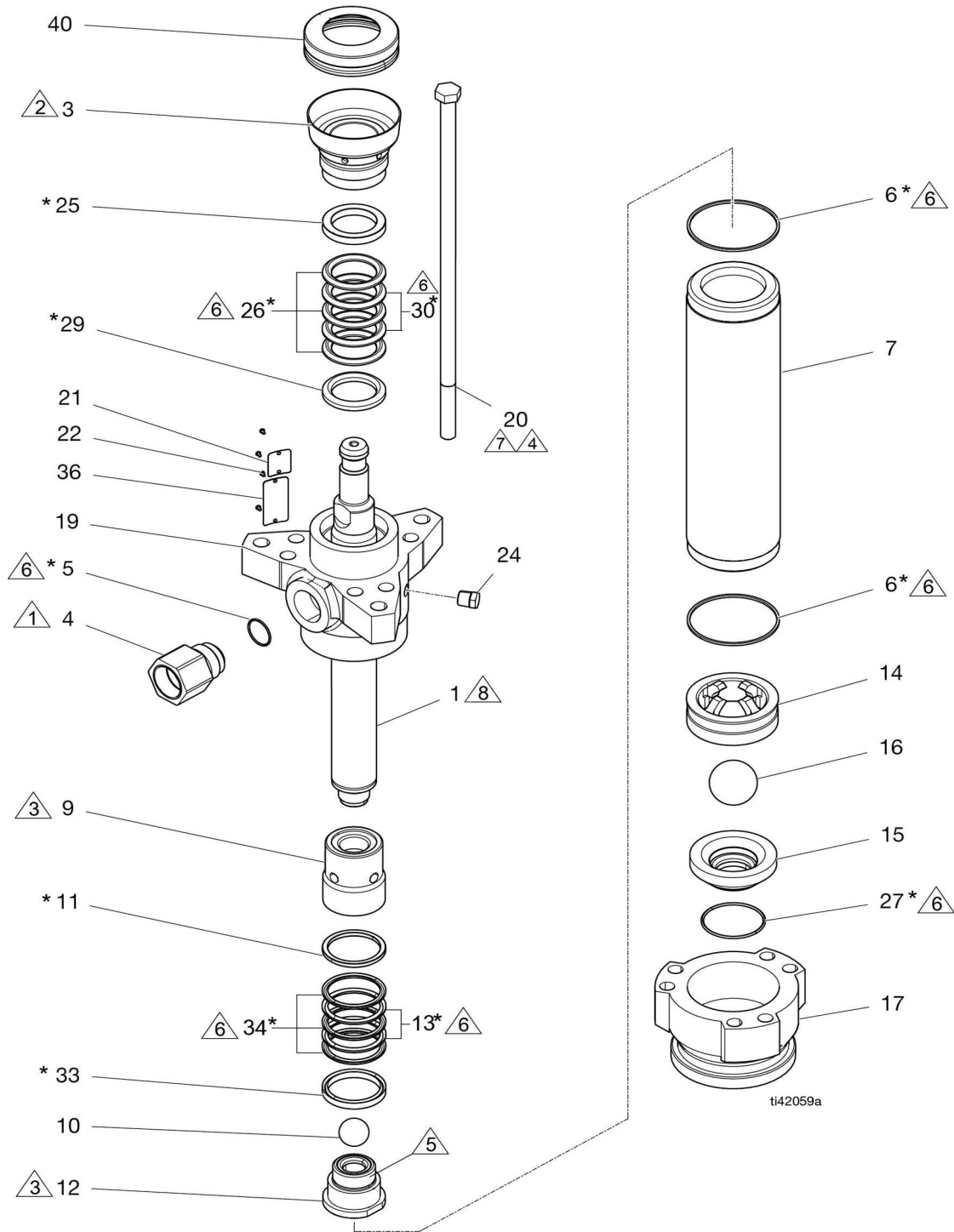
Cutaway View

- ① Torque to 156-171 N•m (115-126 ft-lb).
- ② Torque to 135-169 N•m (100-125 ft-lb). For 241648, 249991, and 15F298, limit torque to 27-40 N•m (20-30 ft-lb).
- ③ Torque to 459-481 N•m (338-354 ft-lb).
- ④ Torque oppositely and evenly to 244-264 N•m (180-195 ft-lb).
- ⑤ Apply anti-seize lubricant to threads and mating faces.
- ⑥ Lubricate.
- ⑦ Apply thread lubricant.
- ⑧ Use arbor press to drive into cylinder (7).

A	Ball Seat
B	Ball Seat
P	Piston Packings
T	Throat Packings
1	Displacement Rod
3	Packing Nut
4	Outlet Fitting
5	O-ring
6	Seal
7	Cylinder
9	Ball Guide
10	Ball
12	Piston
14	Ball Guide
15	Intake Seat Housing
16	Intake Ball
17	Intake Housing
19	Outlet Housing
20	Cap Screws
27	O-ring
35	Plug



Parts



1 Torque to 156-171 N•m (115-126 ft-lb).

2 Torque to 135-169 N•m (100-125 ft-lb). For 241648, 249991, and 15F298, limit torque to 27-40 N•m (20-30 ft-lb).

3 Torque to 459-481 N•m (338-354 ft-lb).

4 Torque oppositely and evenly to 244-264 N•m (180-195 ft-lb).

5 Apply anti-seize lubricant to threads and mating faces.

6 Lubricate.

7 Apply thread lubricant.

8 Use arbor press to drive into cylinder (7).

Dura-Flo Lowers

NOTE: See the parts drawing on page 11. Part numbers vary by lower. To find the part number used in your lower, read down the chart to find the desired ref. no., then read left to right to find the part number for your lower.

Ref.	Description	Lower Part No.				Qty.
		SevereDuty	MaxLife	SevereDuty	MaxLife	
		25V502 1000cc	25V506 1000cc	25V505 1400cc	25V507 1400cc	
1	ROD, displacement	17L297	17L298	25V545	25V543	1
3	NUT, packing	24U017	25U017	25U016	25U016	1
4	FITTING, outlet	26D953	26D953	26D953	26D953	1
5*	O-RING	109213	109213	109213	109213	1
6*	SEAL, acetal	184072	184072	184072	184072	2
7	CYLINDER, pump	17L296	25V559	25V546	25V544	1
9	GUIDE, ball	184283	184283	184297	184297	1
10	BALL, metallic	102973	102973	108001	108001	1
11*	GLAND, packing	184232	184232	109266	109266	1
12	VALVE, housing	222795	222795	222802	222802	1
13*	PACKING, vee, leather	184312	184312	184236	184236	2
14	GUIDE, ball	184282	184282	184282	184282	1
15	VALVE, housing	222794	222794	222838	222838	1
16	BALL, metallic	102974	102974	102974	102974	1
17	HOUSING, intake	184275	184275	184275	184275	1
19	HOUSING, outlet	184290	184290	184290	184290	1
20	BOLT, hex hd	128710	128710	128710	128710	6
21	PLATE	184446	184446	184450	184450	1
22	SCREW, drive	100508	100508	100508	100508	4
24	PLUG, pipe	110740	110740	110740	110740	1
25*	GLAND, packing	184181	184181	184185	184185	1
26*	PACKING, vee	109261	109261	109265	109265	3
27*	O-RING	102857	102857	102857	102857	1
29*	GLAND, packing	184231	184231	184235	184235	1
30*	PACKING, vee, leather	184311	184311	184316	184316	2
33*	GLAND, packing	184182	184182	184186	184186	1
34*	PACKING, vee	109262	109262	109266	109266	3
35▲	TAG, warning (not shown)	172479	172479	172479	172479	1
36▲	PLATE, warning	184473	184473	184473	184473	1
40	COVER, cup	25V498	25V498	25V498	25V498	1
▲ Replacement safety labels, tags, and cards are available at no cost.						

*Parts included in Repair Kit (purchase separately), see **Repair Kits** below.

UHMWPE and Leather Packings standard on all Lowers:

1000cc Lower Packing **Repair Kit: 222848**

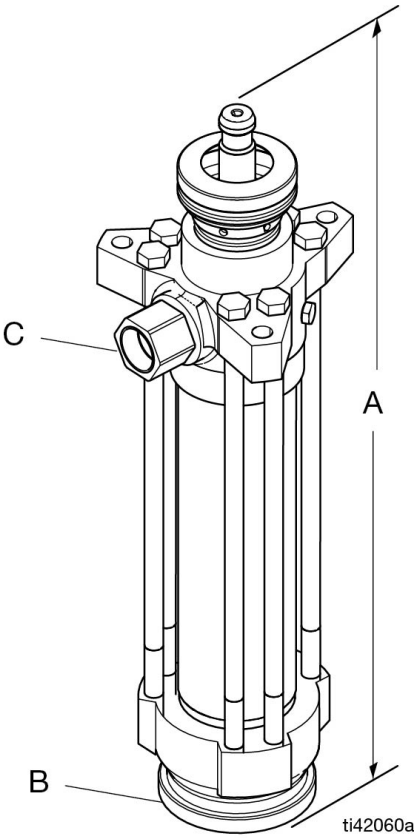
1400cc Lower Packing **Repair Kit: 222881**

See manual 311825 for additional packing options:

1000cc Packings equivalent to Dura-Flo 1800 series

1400cc Packings equivalent to Dura-Flo 2400 series

Dimensions



Lower Model	A	B	C	Weight
Dura-Flo 1000cc	533 mm (21 in.)	2 in. npt(f)	1-1/4 in. npt(m)	33 kg (72 lb)
Dura-Flo 1400cc	533 mm (21 in.)	2 in. npt(f)	1-1/4 in. npt(m)	33 kg (73 lb)

Technical Specifications

Dura-Flo Lowers		
	US	Metric
Maximum Fluid Working Pressure	See Models , page 3	
Lower Effective Area		
Dura-Flo 1000cc	2.79 in. ²	18 cm ²
Dura-Flo 1400cc	3.72 in. ²	24 cm ²
Stroke	11.25 in.	286 mm
Fluid Inlet Size	2 in. npt(f)	
Fluid Outlet Size	1-1/2 in. npt(m)	
Wetted Parts	<i>Carbon steel lowers:</i> Carbon steel, chrome, zinc, and electroless nickel plating, 304, 440, and 17-4 PH grades of stainless steel, tungsten carbide, ductile iron, acetal <i>Packing materials:</i> See Repair Kits , page 12.	
Storage Time	Indefinite as long as parts/components are replaced according to Storage Maintenance schedule and storage procedures specified in manual are followed.	
Lifetime	Lifetime varies with use, materials sprayed, storage methods, and maintenance. Life minimum is 25 years.	
All trademarks or registered trademarks are the property of their respective owners.		

Graco Date Code/ Serial Code	Month (First Character)	Year (2nd and 3rd Characters)	Series (4th Character)	Part Number (5th-10th)	Series (11th-16th)
Example Date Code: A16A	A = January	16 = 2016	A = serial control number		
Example Serial Code: L16A232749000102	L = December	16 = 2016	A = serial control number	6 digit alphanumeric part number	6 digit sequential serial number

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.

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.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor or call 1-800-690-2894 to identify the nearest distributor.

*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 3A9259

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