

Xtreme Lowers

311762A

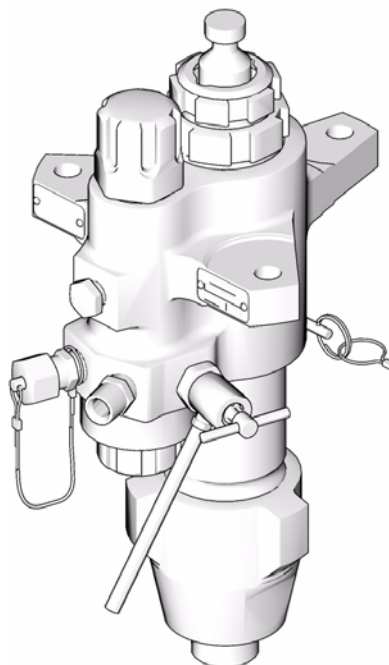
High volume lowers for protective coatings.

See page 3 for model information, see page 25 for maximum working pressure.



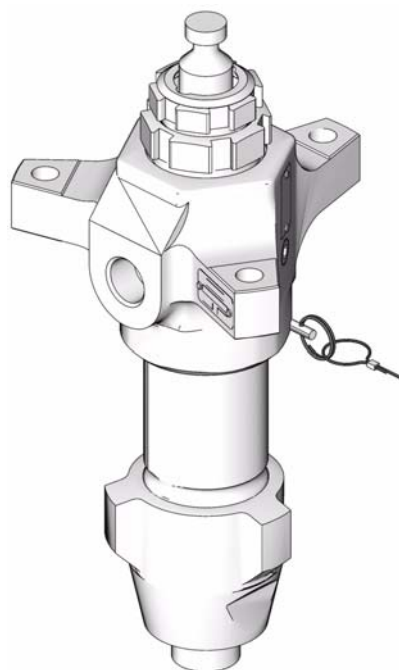
Important Safety Instructions

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



T18630a

Model L220C2 Lower with Built-in Filter



T18405a

Model L220C1 Lower without Filter

PROVEN QUALITY. LEADING TECHNOLOGY.

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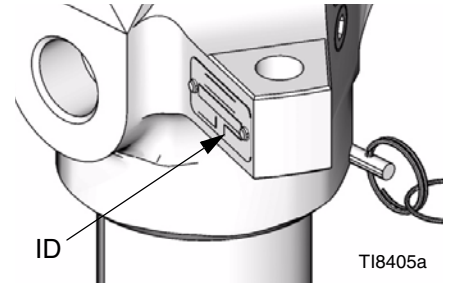
Related Manuals

Component Manuals in U.S. English:


Manual	Description
311164	Xtreme Packages Instructions and Parts
311328	NXT Air Motor Instructions and Parts
311329	Air Control Modules for NXT Air Motors Instructions and Parts

Models

Check your lower's identification plate (ID) for the 6-digit part number of your lower. Use the following matrix to define the construction of your lower, based on the six digits. For example, Lower Part Number **L180C1** represents the lower (**L**), output volume (**180**), carbon steel construction (**C**), and no filter with Xtreme Seal™ packing stack (**1**).



To order replacement parts, see **Parts** section starting on page 14. The digits in the matrix do not correspond to the Ref. Numbers in the Parts drawings and lists.





 For maximum fluid working pressures, see **Technical Data** section starting on page 25.






L	180	C		1			
First Digit	Second, Third, and Fourth Digits	Fifth Digit		Sixth Digit			
	Lower Volume (cc)		Material		Integrated Filter	Xtreme Seal™ Packings	Tuff Stack™ Packings
L (lower)	115	C	Carbon Steel	1		✓	
	145			2	✓	✓	
	14A★			3			✓
	180			4	✓		✓
	18A★						
	220						
	22A★						
	250						
	290						
	29A★						

★ Models with a 5.9 in. bolt pattern; see page 24.

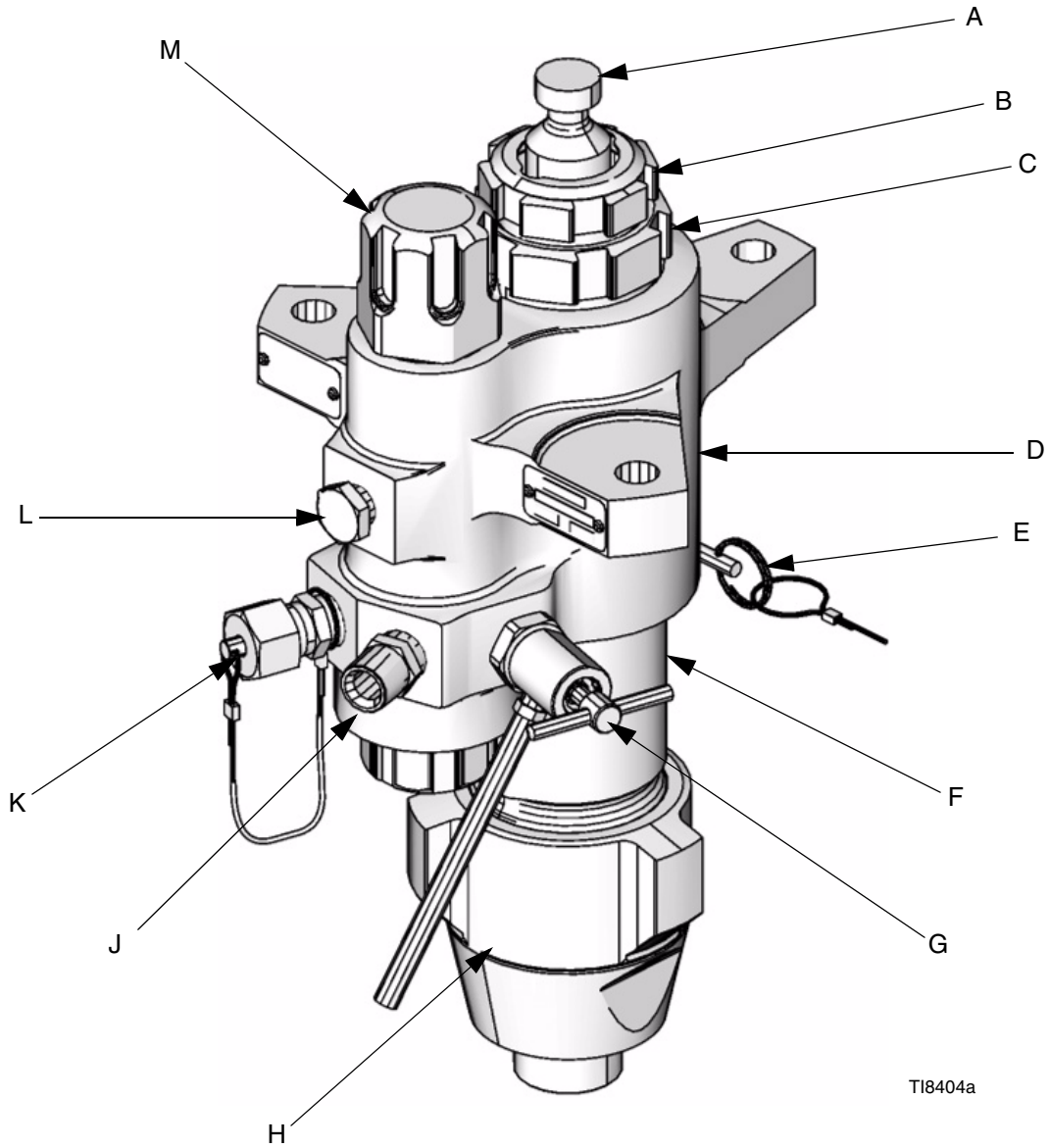
Warnings

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	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. 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 arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. • If there is static sparking or you feel a shock, stop operation immediately. 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 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.</p> <ul style="list-style-type: none"> • 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. • Do not spray without tip guard and trigger guard installed. • Engage trigger lock when not spraying. • Follow Pressure Relief Procedure in manual 311164, when you stop spraying and before cleaning, checking, or servicing equipment.
	<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 Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • 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.

 WARNING	
 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch 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. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure in manual 311164. Disconnect power or air supply.
	<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 MSDS's to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines. • Always wear impervious gloves when spraying or cleaning equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection

Component Identification



T18404a

Key:

- | | | | |
|---|------------------|---|--|
| A | Displacement Rod | G | Drain/Purge Valve |
| B | Packing Nut | H | Inlet Housing |
| C | Throat Cartridge | J | Fluid Outlet |
| D | Outlet Housing | K | Optional Fluid Outlet (for second spray gun) |
| E | Locking Pin | L | Pipe Plug |
| F | Cylinder | M | Fluid Filter |


Repair

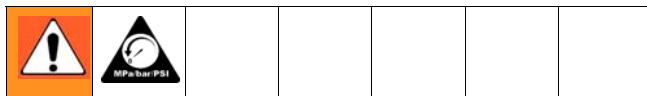
Required Tools

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

Disassembly

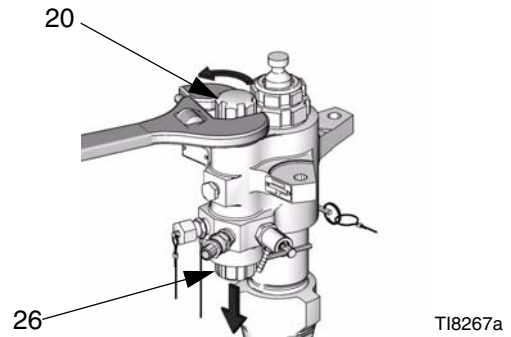
Layout all removed parts in sequence to ease reassembly. Clean all parts with a compatible solvent and inspect them for wear or damage.

 Repair kits are available to replace the throat (T) and piston (P) packings, and to replace the o-rings and cylinder seals. For best results, use all new parts in the kit. Kit parts are marked with an asterisk, for example (25*). These kits can also be used to convert the lower to different packing materials. See **Packing Kits**, page 21.

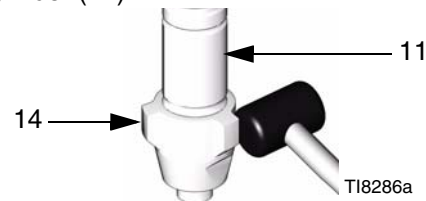


1. Relieve pressure. See your Xtreme Packages manual (311164) for instructions.
2. Disconnect lower from motor as illustrated in your Xtreme Packages manual (311164). Or, if you have a cart mounted system, tip cart up to service lower on cart.

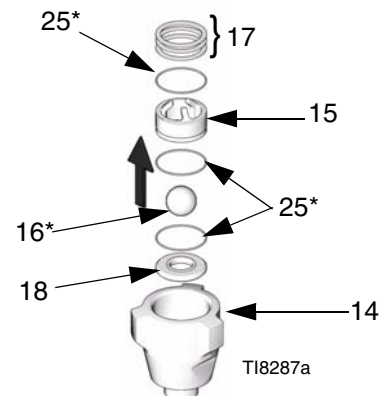
3. For lowers with built-in filters, loosen and remove both top filter cap (20) and bottom filter cap (26). See **Service Built-in Filter**, page 13.



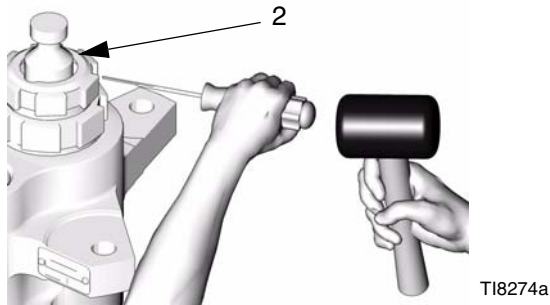
4. Loosen and remove inlet housing (14) from lower cylinder (11).



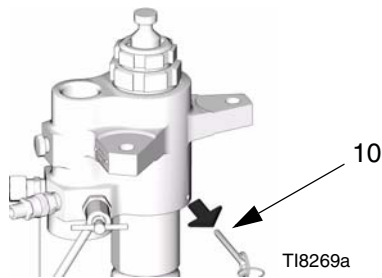
5. Remove shims (17), o-rings (25*), inlet ball guide (15), inlet ball (16*), and seat (18) from inlet housing (14). Inspect all parts for wear or damage.



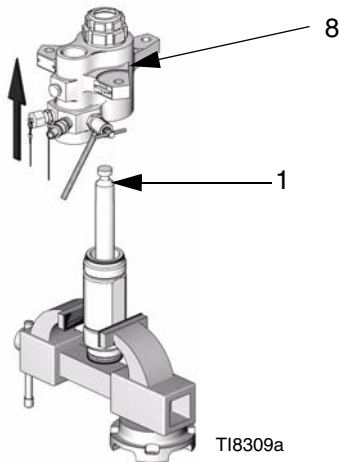
6. Stand lower upright in large vise. Using a rubber mallet, loosen, but do not remove packing nut (2).



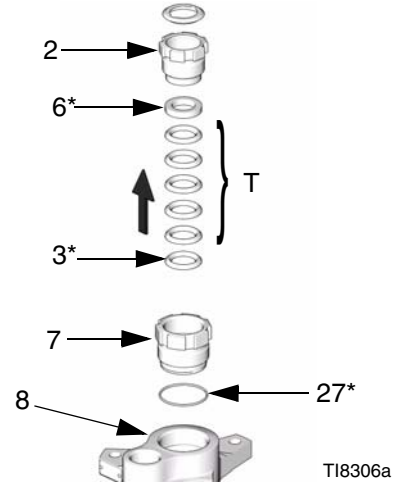
7. Remove locking pin (10) from lower cylinder (11).



8. Unscrew and lift outlet housing (8) straight up off cylinder. Be careful not to scratch displacement rod (1).



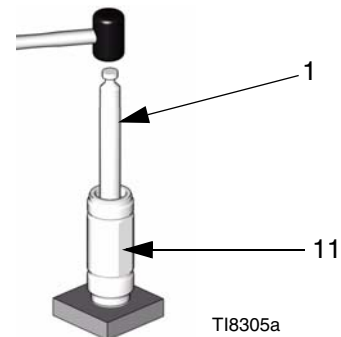
9. Remove cartridge assembly. Remove o-ring (27*) from bottom of outlet housing (8), and then unscrew packing nut (2) from packing cartridge (7). Remove female gland (6*), male gland (3*), and v-packings (T) from packing cartridge (7).



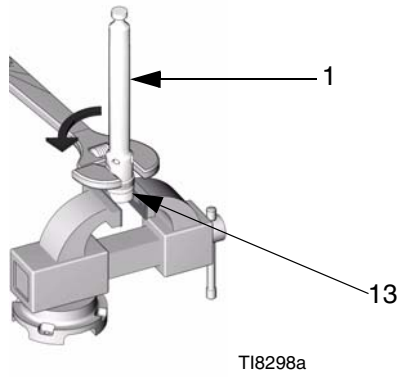
CAUTION

To reduce the possibility of costly damage to displacement rod (1) and lower cylinder (11), first place lower cylinder on a soft block of wood. Always use a rubber mallet or an arbor press to drive the displacement rod out of the lower cylinder. Never use a hammer to drive the rod out. Damage to the rod end will shorten pump life.

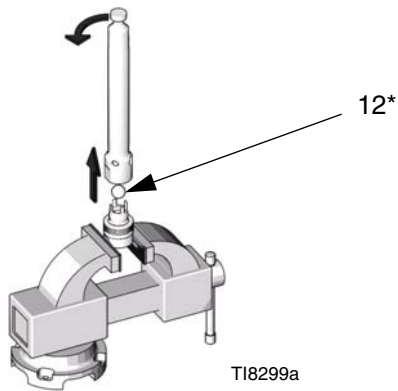
10. Stand lower cylinder (11) upright on a wooden block. Using a rubber mallet or an arbor press, drive displacement rod (1) and piston assembly (P) down in the cylinder as far as possible. Then place the cylinder on its side and continue to drive rod out of the bottom until the piston comes free. Pull the rod and piston from the cylinder, being careful not to scratch the rod or cylinder.



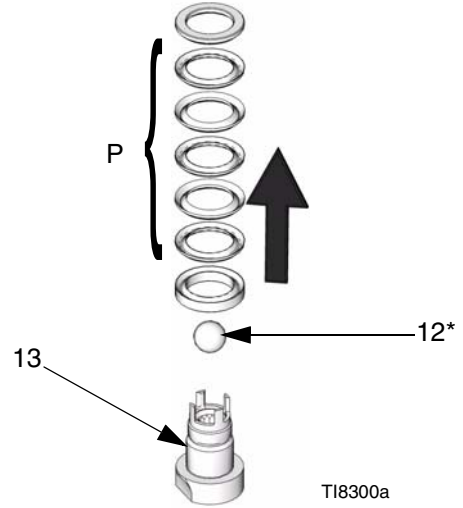
- 11. Inspect outer surface of displacement rod (1) and inner surface of lower cylinder (11) for scoring or wear; replace if damaged.
- 12. Put flats of piston valve (13) in a vise. Use a wrench to loosen displacement rod (1) from piston valve.



- 13. Remove displacement rod from piston valve. Be careful that piston ball (12*) does not fall as you separate piston valve and rod.



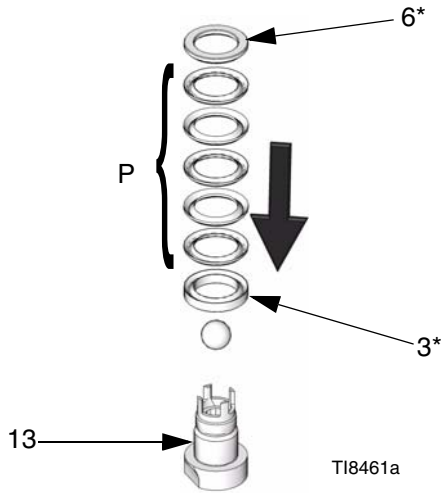
- 14. Remove glands and v-packings (P) from piston valve (13). Inspect piston ball (12*) and piston valve for wear or damage.




- 15. Clean all parts with a compatible solvent.

Reassembly

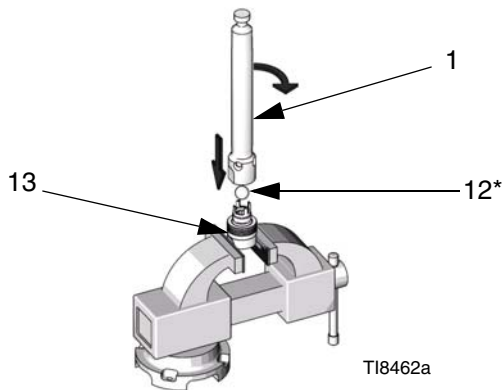
1. Replace female gland (3*) on piston valve (13). Install the five v-packings (P) one at a time with lips facing up. Refer to **Packing Kits**, page 21 for the correct packing order for your lower. Install the male gland (6*).



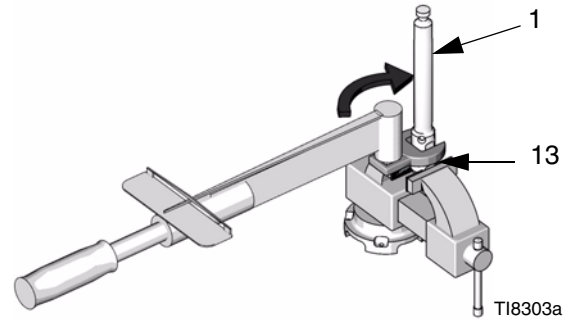
 To convert the lower to a different packing material, see **Packing Kits**, page 21.

For best results, soak leather packings in oil before reassembly.

2. Apply anti-seize lubricant to threads and mating surfaces of displacement rod (1) and piston valve (13). Place flats of piston valve in a vise. Place piston ball (12*) on piston valve.



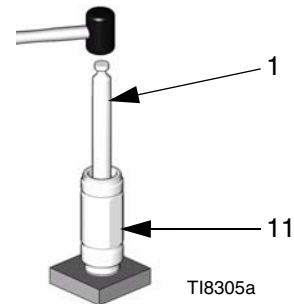
3. Screw displacement rod (1) onto piston valve (13), hand tight, and then torque to 190-210 ft-lb (258-285N•m).




CAUTION

To reduce the possibility of costly damage to displacement rod (1) and lower cylinder (11), first place lower cylinder on a soft block of wood. Always use a rubber mallet or an arbor press to drive the displacement rod into the lower cylinder. Never use a hammer to drive the rod.

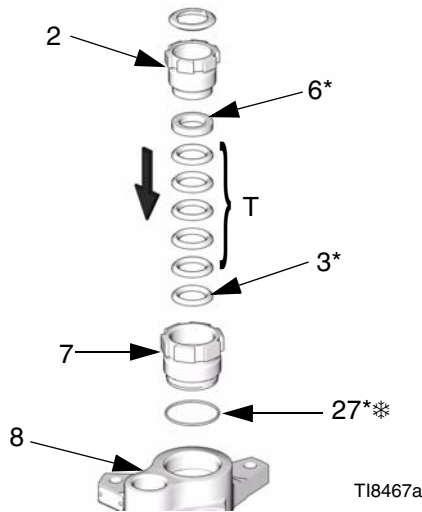
4. To reinstall displacement rod (1) into lower cylinder (11), first lubricate piston packings (P). Then, with piston end facing down, lower rod into cylinder. Start piston into cylinder as much as possible, then drive rod and piston the rest of the way into the cylinder with an arbor press or rubber mallet.



- Lubricate inside of packing cartridge (7), outside threads of packing nut (2), and throat packings (T). Install packing cartridge into housing. Place male gland (3*) in packing cartridge. Install the five v-packings one at a time with lips facing down. Refer to **Packing Kits** (page 21) for the correct packing order for your lower. Install female gland (6*). Then, reassemble packing nut (2), but do not tighten.

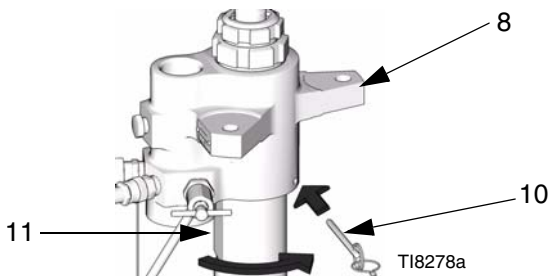
 To convert lower to a different packing material, see **Packing Kits**, page 21.

For best results, soak leather packings in oil before reassembly.




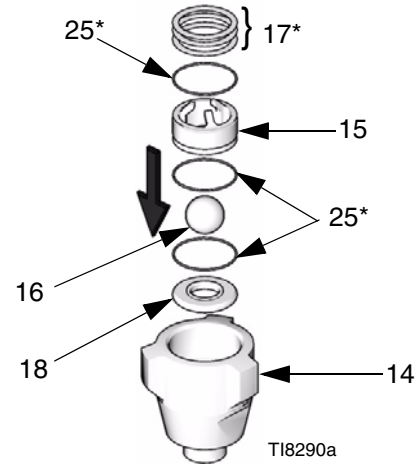
*Blue o-ring for 220cc, 250cc, 290cc lowers.

- Screw lower cylinder (11) on to outlet housing (8) until it bottoms out. Use a wrench to tighten lower cylinder. Back off as little as possible until hole in housing lines up with flat on cylinder. Insert locking pin (10) into cylinder.



- Lubricate o-rings (25*) and reinstall. Install inlet seat (18), inlet ball (16*), inlet ball guide (15), and shims (17) into inlet housing.

 Shims can be assembled either for short ball travel or long ball travel. See illustrations below for example of each.



Shortest Ball Travel



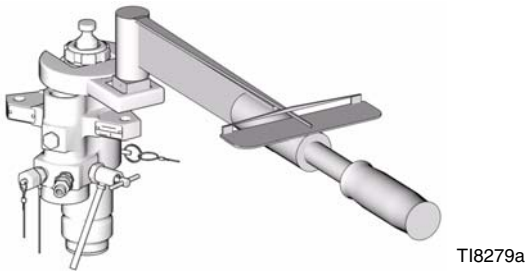
Longest Ball Travel



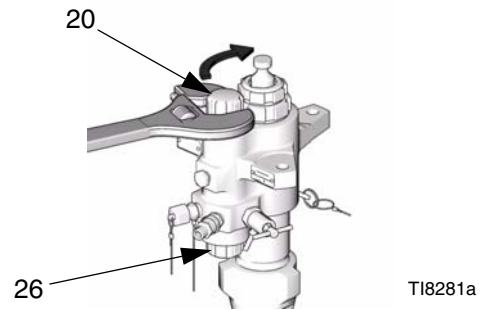
- Thread inlet housing (14) onto lower cylinder (11). Torque to 140-150 ft-lb (189-203 N•m).

Repair

9. Using torque wrench, torque packing cartridge to outlet housing. Torque to 25-30 ft-lb (34-41 N•m).



10. For lowers with built-in filter, see **Service Built-in Filter**, page 13, if filter needs service. Then reinstall both top filter cap (20) and bottom filter cap (26).



11. Reconnect lower to air motor. See Xtreme Packages manual (311164).

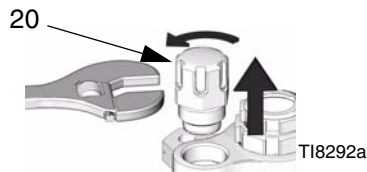
Service Built-in Filter

Select models have a built-in filter in the lower housing.

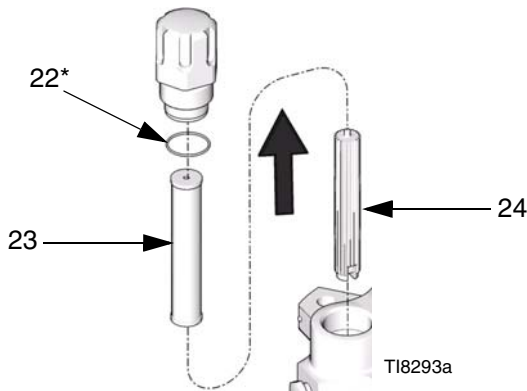
Disassembly

To remove and clean the built-in filter:

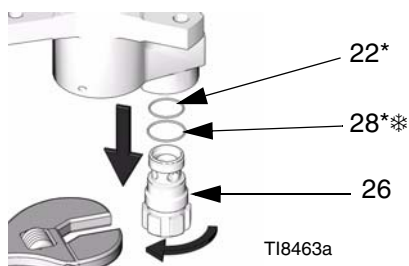
1. Use wrench to loosen and remove top filter cap (20).



2. Remove o-ring (22*), strainer (23), and filter support (24).



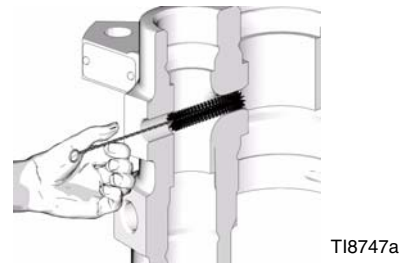
3. Use wrench to loosen and remove bottom filter cap (26). Remove o-rings (22*, 28*).



*Blue o-ring


4. Inspect o-rings (22*, 28*), strainer (23), and filter support (24). Replace if necessary.

5. Remove pipe plug (49), and use brush or drill to clean port as necessary.

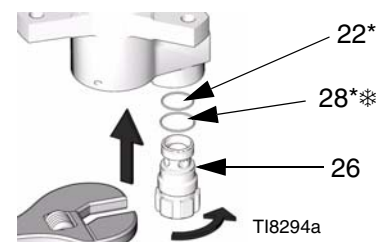


Reassembly

To reassemble the built-in filter:

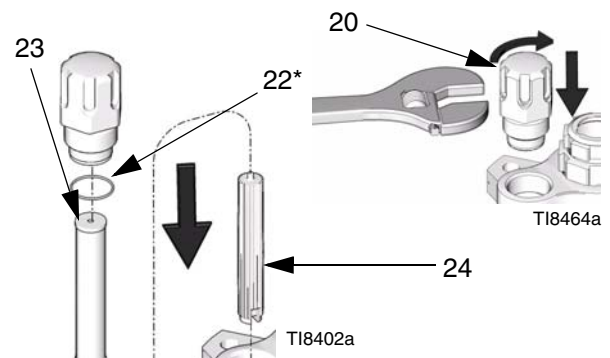
 Lubricate all o-rings with petroleum jelly before installation.

1. Install o-rings (22*, 28*) onto bottom filter cap (26). Then use wrench to reassemble and tighten bottom filter cap. Torque to 40-60 ft-lb (52-82 N•m).

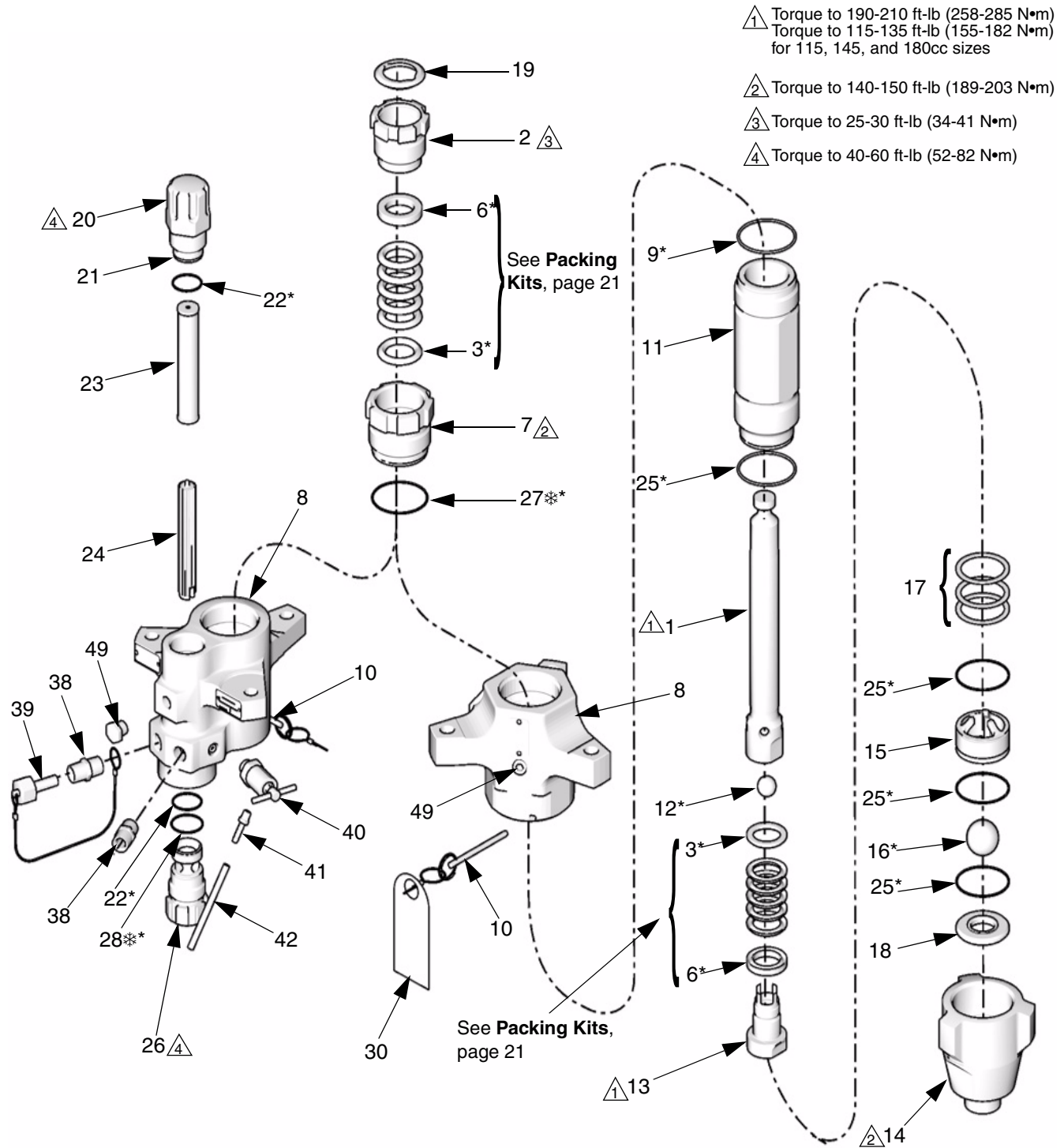


*Blue o-ring

2. Reassemble o-ring (22*) onto top filter cap. Install strainer (23), and filter support (24) in top filter cap (20). Then use wrench to install and tighten top filter cap. Torque to 40-60 ft-lb (52-82 N•m).



Parts



* Parts included in packing kits (purchase separately).
 See Packing Kits, page 21.

* 27 is a blue o-ring for 220cc, 250cc, and 290cc lowers only. 28 is a blue o-ring.

T18403a

115cc Lowers

Models L115C1, L115C2, L115C3, L115C4

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
				23†		STRAINER, 60 mesh screen	
					236496	Pack of 2	
					238446	Pack of 25	
1	15J092	ROD, displacement	1	24†	188420	SUPPORT, filter	1
2	15F662	NUT, packing	1	25*	244896	O-RING, PTFE (pack of 10)	
3*	288074	GLAND, packing, male (pack of 4)		26†	197339	CAP, filter, bottom	1
4*✿	288066	V-PACKING, PTFE (pack of 10) Models L115C3, L115C4;		27*	288068	O-RING; PTFE (pack of 10)	
5*✿	288076	V-PACKING, leather (pack of 10) Models L115C1, L115C2		28*	244896	O-RING; PTFE, filter bottom, blue (pack of 10)	
6*	288073	GLAND, female (pack of 4)		30▲	172479	TAG, warning	1
7	15F661	CARTRIDGE, packing	1	35✿*	288075	V-PACKING, UHMWPE, (pack of 10), Models L115C1, L115C2	
8		HOUSING, outlet		38†	158491	FITTING, nipple	2
	15F654	Standard; models L115C1, L115C3	1	39†	244517	PLUG, packless, 0.5 in.	1
	15F659	With built-in filter; models L115C2, L115C4	1	40†	245143	VALVE, pressure, dump	1
9*	288067	O-RING, PTFE, top cylinder (pack of 10)		41†	116746	FITTING, barbed, plated	1
10	244826	PIN, self-locking	1	42†	116750	TUBE, nylon	1
11	15F656	CYLINDER, lower	1	49		PLUG, pipe	
12*	288065	BALL, piston; 9/16 in. (14 mm) diameter (pack of 3)			101754	Models L115C1, L115C3	1
13	15F657	VALVE, piston	1		198292	Models L115C2, L115C4	1
14	15F667	HOUSING, inlet	1	▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.			
15	15F664	GUIDE, ball, inlet	1	† For models L115C2 and L115C4 only.			
16*	244899	BALL, inlet; 1 in. (25 mm) diameter (pack of 3)		✿ Not shown.			
17	288064	SHIM, inlet, ball guide (pack of 9)		* Parts included in packing kit (purchase separately). See Packing Kits, page 21.			
18	15F665	SEAT, 1 in. ball	1				
19	288063	PLUG, throat seal (pack of 10)					
20†	15F859	CAP, filter, top	1				
21†	171941	SPRING, compression	1				
22*†	244895	O-RING, PTFE, filter (pack of 10)					

145cc Lowers

Models L145C1, L145C2, L145C3, L145C4, L14AC1,

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
				23▲		STRAINER, 60 mesh screen	
					224459	Pack of 2	
					238438	Pack of 25	
1	15J093	ROD, displacement	1	24†	186075	SUPPORT, filter	1
2	197330	NUT, packing	1	25*	244890	O-RING; PTFE, bottom cylinder (pack of 10)	
3*	244881	GLAND, male (pack of 4)		26†	197339	CAP, filter, bottom	1
4*✿	244857	V-PACKING, PTFE (pack of 10)		27*	244890	O-RING; PTFE (pack of 10)	
5*✿	244869	V-PACKING, leather (pack of 10)		28*†	244896	O-RING; PTFE, filter bottom, blue (pack of 10)	
6*	244875	GLAND, female (pack of 4)		30▲	172479	TAG, warning	1
7	197325	CARTRIDGE, packing	1	35*✿	244863	V-PACKING, UHMWPE (pack of 10)	
8		HOUSING, outlet		38†	158491	FITTING, nipple	2
	197334	Standard; models L145C1, L145C3	1	39†	244517	PLUG, packless, 0.5 in.	1
	197336	With built-in filter; models L145C2, L145C4	1	40†	245143	VALVE, pressure, dump	1
	15J673	Standard; model L14AC1	1	41†	116746	FITTING, barbed, plated	1
9*	244892	O-RING, PTFE, top cylinder (pack of 10)		42†	116750	TUBE, nylon	1
10	244826	PIN, self-locking	1	49		PLUG, pipe	
11	197315	CYLINDER, lower	1		101754	Models L145C1, L145C3	1
12*	253029	BALL, piston; 9/16 in. (14 mm) diameter (pack of 3)			198292	Models L145C2, L145C4	1
13	197309	VALVE, piston	1				
14	197303	HOUSING, inlet	1				
15	197307	GUIDE, ball, inlet	1				
16*	253031	BALL, inlet; 1.25 in. diameter (pack of 3)					
17	244855	SHIM, inlet, ball guide (pack of 9)					
18	196358	SEAT, 1 in. ball	1				
19	244996	PLUG, throat seal (pack of 10)					
20†	197338	CAP, filter, top	1				
21†	171941	SPRING, compression	1				
22*†	244895	O-RING; PTFE, filter (pack of 10)					

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

† For models L145C2 and L145C4 only.

✿ Not shown.

* Parts included in packing kit (purchase separately).
See Packing Kits, page 21.

180cc Lowers

Models L180C1, L180C2, L180C3, L180C4, L18AC1

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
				23†		STRAINER, mesh, screen, 60	
					224459	Pack of 2	
					238438	Pack of 25	
1	15J094	ROD, displacement	1	24†	186075	SUPPORT, filter	1
2	197330	NUT, packing	1	25*	244890	O-RING, PTFE, bottom cylinder	
3*	244882	GLAND, male (pack of 4)				(pack of 10)	
4*✿	244858	V-PACKING, PTFE (pack of 10)		26†	197339	CAP, filter, bottom	1
5*✿	244870	V-PACKING, leather (pack of 10)		27*	244890	O-RING, PTFE (pack of 10)	
6*	244876	GLAND, female		28*†	244896	O-RING, PTFE filter bottom, blue	
		(pack of 4)				(pack of 10)	
7	197326	CARTRIDGE, packing	1	30▲	172479	TAG, warning	1
8		HOUSING, outlet		35*✿	244864	V-PACKING, UHMWPE	
	197334	Standard; models L180C1, L180C3	1			(pack of 10)	
	197336	With built-in filter; models L180C2, L180C4	1	38†	158491	FITTING, nipple	2
	15J673	Standard; model L18AC1	1	39†	244517	PLUG, packless, 0.5 in.	1
9*	244892	O-RING, PTFE, top cylinder		40†	245143	VALVE, pressure, dump	1
		(pack of 10)		41†	116746	FITTING, barbed, plated	1
10	244826	PIN, self-locking	1	42†	116750	TUBE, nylon	1
11	197316	CYLINDER, lower	1	49		PLUG, pipe	
12*	253029	BALL, piston; 9/16 in. (14 mm) diameter (pack of 3)			101754	Models L180C1, L180C3	1
					198292	Models L180C2, L180C4	1
13	197310	VALVE, piston	1				
14	197303	HOUSING, inlet	1				
15	197307	GUIDE, ball, inlet	1				
16*	253031	BALL, inlet; 1.25 in. diameter (pack of 3)					
17	244855	SHIM, inlet, ball guide (pack of 3)	1				
18	196358	SEAT, inlet	1				
19	244996	PLUG, throat seal (pack of 10)					
20†	197338	CAP, filter, top	1				
21†	171941	SPRING, compression	1				
22*†	244895	O-RING, PTFE, filter (pack of 10)					

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

† For models L180C2 and L180C4 only.

✿ Not shown.

* Parts included in packing kit (purchase separately). See **Packing Kits**, page 21.

220cc Lowers

Models L220C1, L220C2, L220C3, L220C4, L22AC1

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.	
				23†		STRAINER, 60 mesh screen		
					224459	Pack of 2		
					238438	Pack of 25		
1	15J095	ROD, displacement	1	24†	186075	SUPPORT, filter	1	
2	197331	NUT, packing	1	25*	244894	O-RING, PTFE, bottom cylinder (pack of 10)		
3*	✓244883	GLAND, male (pack of 4)			26†	197339	CAP, filter, bottom	1
	✖244884			27*	244891	O-RING, PTFE (pack of 10)		
4*✖	✓244859	V-PACKING, PTFE (pack of 10)		28*†	244896	O-RING, PTFE, filter bottom, blue (pack of 10)		
	✖244860			30▲	172479	TAG, warning	1	
5*✖	✓244871	V-PACKING, leather (pack of 10)		35*✖	✓244865	V-PACKING, UHMWPE (pack of 10)		
	✖244872				✖244866			
6*	✓244877	GLAND, female (pack of 4)		38†	158491	FITTING, nipple	2	
	✖244878			39†	244517	PLUG, packless, 0.5 in.	1	
7	197327	CARTRIDGE, packing	1	40†	245143	VALVE, pressure, dump	1	
8		HOUSING, outlet		41†	116746	FITTING, barbed, plated	1	
	197335	Standard; models L220C1, L220C3	1	42†	116750	TUBE, nylon	1	
	197337	With built-in filter; models L220C2, L220C4	1	49		PLUG, pipe		
	15H722	Standard, 5.9 in. bolt pattern; model L22AC1 only	1		101754	Models L220C1, L220C3	1	
9*	244893	O-RING, top cylinder, PTFE (pack of 10)			198292	Models L220C2, L220C4	1	
10	244826	PIN, self-locking	1					
11	197317	CYLINDER, lower	1					
12*	244898	BALL, piston; 9/16 in. (14 mm) diameter (pack of 3)						
13	197311	VALVE, piston	1					
14	197304	HOUSING, inlet	1					
15	197308	GUIDE, ball, inlet	1					
16*	253030	BALL, inlet; 1.5 in. diameter (pack of 3)						
17	244856	SHIM, inlet, ball guide (pack of 9)						
18	197344	SEAT, inlet	1					
19	244999	PLUG, throat seal (pack of 10)						
20†	197338	CAP, filter, top	1					
21†	171941	SPRING, compression	1					
22*†	244895	O-RING, PTFE, filter (pack of 10)						

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

† For models L220C2 and L220C4 only.

✓ Throat packings.
✖ Piston packings.

✖ Not shown.

* Parts included in packing kit (purchase separately).
See **Packing Kits**, page 21.

250cc Lowers

Models L250C1, L250C2, L250C3, L250C4

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
				23†		STRAINER, 60 mesh screen	
					224459	Pack of 2	
					238438	Pack of 25	
1	15J096	ROD, displacement	1	24†	186075	SUPPORT, filter	1
2	197331	NUT, packing	1	25*	244894	O-RING, PTFE, bottom cylinder	
3*	245232	GLAND, male (pack of 4)				(pack of 10)	
4*✿	245229	V-PACKING, PTFE (pack of 10)		26†	197339	CAP, filter, bottom	1
5*✿	245230	V-PACKING, leather (pack of 10)		27*	244891	O-RING, PTFE (pack of 10)	
6*		GLAND, female (pack of 4)		28*†	244896	O-RING, PTFE, filter, bottom, blue	
	245233	MODELS, L250C1, L250C2				(pack of 10)	
	246530	MODELS L250C3, L250C4		30▲	172479	TAG, warning	1
7	197328	CARTRIDGE, packing	1	35*✿	245231	V-PACKING, UHMWPE	
8		HOUSING, outlet				(pack of 10)	
	197335	Standard; models L250C1, L250C3	1	38†	158491	FITTING, nipple	2
	197337	With built-in filter; models L250C2, L250C4	1	39†	244517	PLUG, packless, 0.5 in.	1
	15H722	Standard, 5.9 in. bolt pattern; model L29AC1 only	1	40†	245143	VALVE, pressure, dump	1
9*	244893	O-RING, PTFE, top cylinder		41†	116746	FITTING, barbed, plated	1
		(pack of 10)		42†	116750	TUBE, nylon	1
10	244826	PIN, self-locking	1	49		PLUG, pipe	
11	197318	CYLINDER, lower	1		101754	Models L250C1, L250C3	1
12*	244898	BALL, piston; 9/16 in. (14 mm) diameter (pack of 3)			198292	Models L250C2, L250C4	1
13	197312	VALVE, piston	1	▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.			
14	197304	HOUSING, inlet	1	† For models L250C2 and L250C4 only.			
15	197308	GUIDE, ball, inlet	1	✿ Not shown.			
16*	253030	BALL, inlet; 1.5 in.diameter (pack of 3)		* Parts included in packing kit (purchase separately). See Packing Kits, page 21.			
17	244856	SHIM, inlet, ball guide (pack of 9)					
18	197344	SEAT, inlet	1				
19	244999	PLUG, throat seal (pack of 10)					
20†	197338	CAP, filter, top	1				
21†	171941	SPRING, compression	1				
22*†	244895	O-RING, PTFE, filter (pack of 10)					

290cc Lowers

Models L290C1, L290C2, L290C3, L290C4, L29AC1

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
				23†		STRAINER, 60 mesh screen	
					224459	Pack of 2	
					238438	Pack of 25	
1	15J097	ROD, displacement	1	24†	186075	SUPPORT, filter	1
2	197331	NUT, packing	1	25*	244894	O-RING, PTFE, bottom cylinder (pack of 10)	
3*	✓244885	GLAND, male (pack of 4)					
	✖244886			26†	197339	CAP, filter, bottom	1
4*✖	✓244861	V-PACKING, PTFE (pack of 10)		27*	244891	O-RING, PTFE (pack of 10)	
	✖244862			28*†	244896	O-RING, PTFE, filter bottom, blue (pack of 10)	
5*✖	✓244873	V-PACKING, leather (pack of 10)		30▲	172479	TAG, warning	1
	✖244874			35*✖	✓244867	V-PACKING, UHMWPE (pack of 10)	
6*	✓244879	GLAND, female (pack of 4)			✖244868		
	✖244880			38†	158491	FITTING, nipple	2
7	197327	CARTRIDGE, packing	1	39†	244517	PLUG, packless, 0.5 in.	1
8		HOUSING, outlet		40†	245143	VALVE, pressure, dump	1
	197335	Standard, models L290C1, L290C3	1	41†	116746	FITTING, barbed, plated	1
	197337	With built-in filter; models L290C2, L290C4	1	42†	116750	TUBE, nylon	1
	15H722	Standard, 5.9 in. bolt pattern, model L29AC1 only		49		PLUG, pipe	
9*	244893	O-RING, PTFE, top cylinder (pack of 10)			101754	Models L290C1, L290C3	1
10	244826	PIN, self-locking	1		198292	Models L290C2, L290C4	1
11	197319	CYLINDER, lower	1				
12*	244899	BALL, piston; 9/16 in. (14 mm) diameter (pack of 3)					
13	197313	VALVE, piston	1				
14	197304	HOUSING, inlet	1				
15	197308	GUIDE, ball, inlet	1				
16*	253030	BALL, inlet; 1.5 in. diameter (pack of 3)					
17	244856	SHIM, inlet, ball guide (pack of 9)					
18	197344	SEAT, inlet	1				
19	244999	PLUG, throat seal (pack of 10)					
20†	197338	CAP, filter, top	1				
21†	171941	SPRING, compression	1				
22*†	244895	O-RING, PTFE, filter (pack of 10)					

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

† For models L290C2 and L290C4 only.

✓ Throat packings.
✖ Piston packings.

✖ Not shown.

* Parts included in packing kit (purchase separately).
See Packing Kits, page 21.

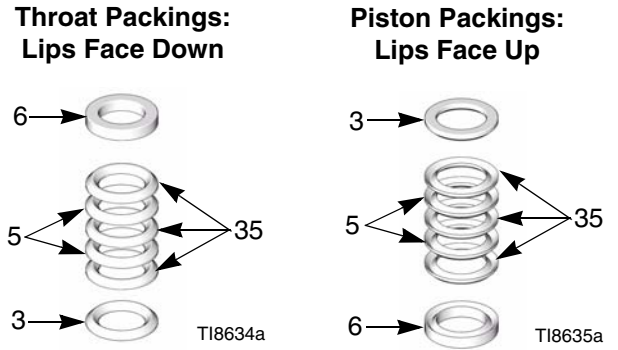
Packing Kits

Xtreme Seal™ Repair Kits

Kit 288058 for 115 cc Lowers
 Kit 244850 for 145 cc (600) Lowers
 Kit 244851 for 180 cc (750) Lowers
 Kit 244853 for 250 cc (1045) Lowers

Ref.	Description	Qty.
3	GLAND, packing, male	2
5	V-PACKING, leather	4
6	GLAND, packing, female	2
35	V-PACKING, UHMWPE	6

Kit also includes items 9, 12, 16, 22, 25, 27, 28 (see **Parts**, starting on page 14).



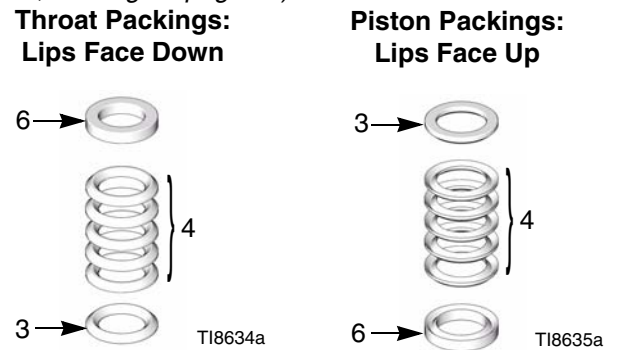
Lubricate Packings

Tuff Stack™ Repair Kits

Kit 288060 for 115 cc Lowers
 Kit 244900 for 145 cc (600) Lowers
 Kit 244901 for 180 cc (750) Lowers
 Kit 244903 for 250 cc (1045) Lowers

Ref.	Description	Qty.
3	GLAND, packing, male	2
4	V-PACKING, PTFE	10
6	GLAND, packing, female	2

Kit also includes items 9, 12, 16, 22, 25, 27, 28 (see **Parts**, starting on page 14).



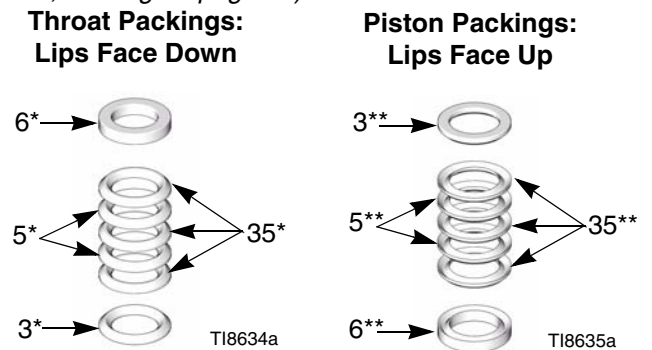
Lubricate Packings

Xtreme Seal™ Repair Kits

Kit 244852 for 220 cc (900) Lowers
 Kit 244854 for 290 cc (1200) Lowers

Ref.	Description	Qty.
3*	GLAND, packing, male	1
3**	GLAND, packing, male	1
5*	V-PACKING, leather	2
5**	V-PACKING, leather	2
6*	GLAND, packing, female	1
6**	GLAND, packing, female	1
35*	V-PACKING, UHMWPE	3
35**	V-PACKING, UHMWPE	3

Kit also includes items 9, 12, 16, 22, 25, 27, 28 (see **Parts**, starting on page 14).



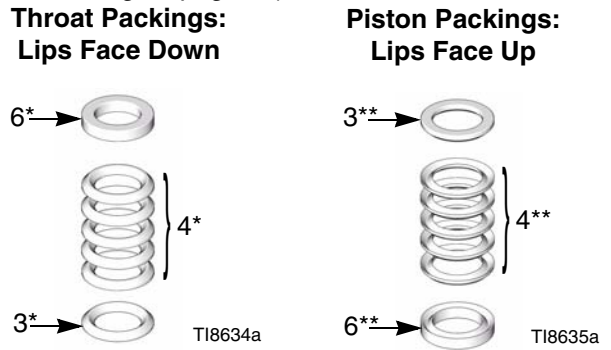
Lubricate Packings

Tuff Stack™ Repair Kits

Kit 244902 for 220 cc (900) Lowers
 Kit 244904 for 290 cc (1200) Lowers

Ref.	Description	Qty.
3*	GLAND, packing, male	1
3**	GLAND, packing, male	1
4*	V-PACKING, PTFE	5
4**	V-PACKING, PTFE	5
6*	GLAND, packing, female	1
6**	GLAND, packing, female	1

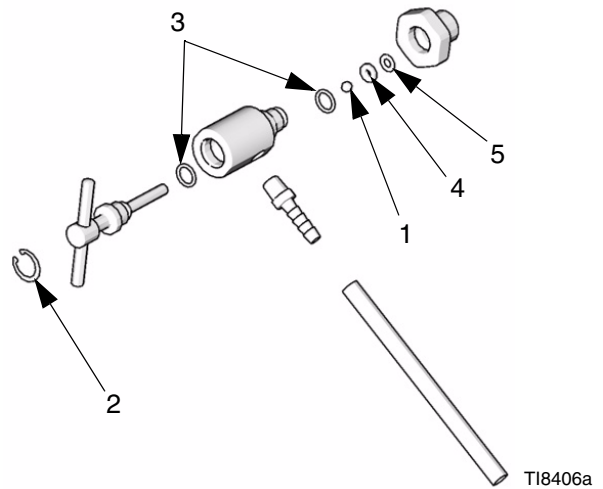
Kit also includes items 9, 12, 16, 22, 25, 27, 28 (see **Parts**, starting on page 14).



Lubricate Packings

Fluid Drain Valve Repair Kit 245145

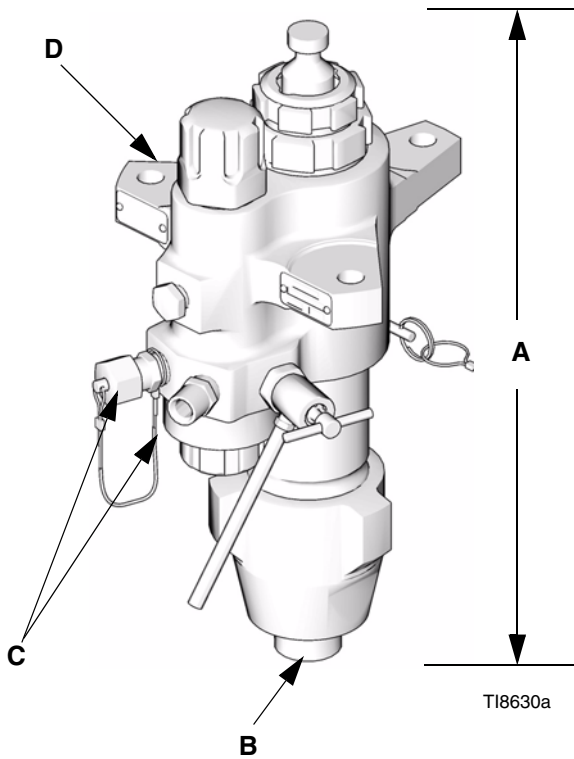
Ref.	Description	Qty.
1	BALL, carbide	1
2	RING, retaining	1
3	O-RING, PTFE	2
4	SEAT, valve	1
5	GASKET	1



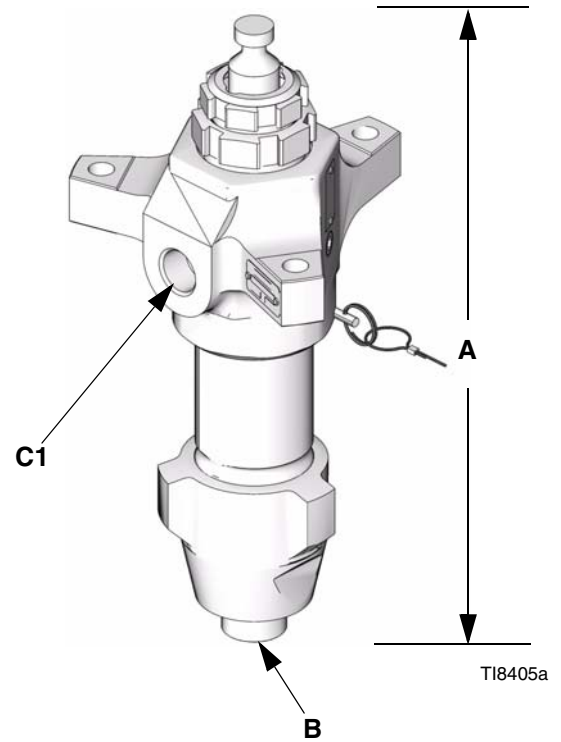
Strainers

Lower Size	2 Pack			25 Pack		
	30 mesh	60 mesh	100 mesh	30 mesh	60 mesh	100 mesh
115cc	236495	236496	236497	238444	238446	238448
145cc	244458	224459	224468	238436	238438	238440
180cc						
220cc						
250cc						
290cc						


Dimensions



Lowers with Built-in Filters



Lowers without Built-in Filters

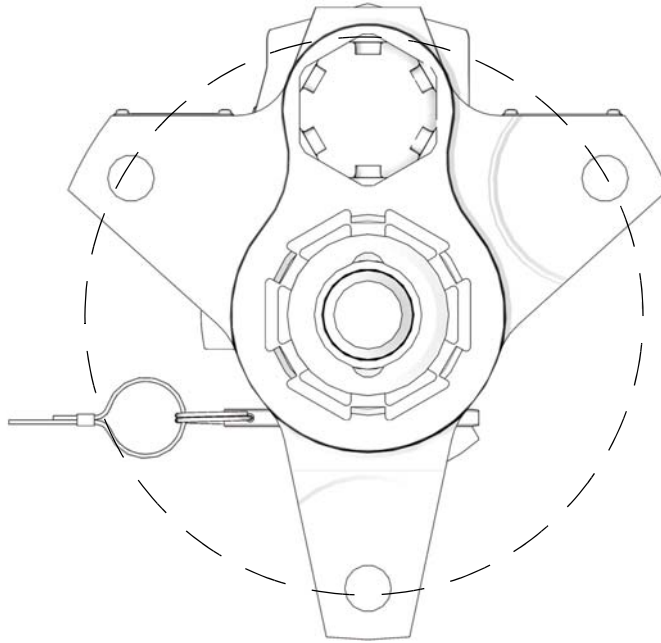
 For outlet housing mounting hole layout, see page 24.

Lower Dimensions

Lower	A in. (mm)	B in. npt(m)	C in. npt(m)	C1 in. npt(f)	D in. (mm)	Weight lbs (kg)	
						Without Filter	With Filter
115cc	17.0 (432)	1-1/4	2x1/2	1/2	5.9 (150)	28 (12.7)	36 (16.3)
145cc	17.0 (432)	1-1/4	2x1/2	3/4	8.0 (203)	38 (17.3)	48 (21.8)
14Acc	17.0 (432)	1-1/4	2x1/2	3/4	5.9 (150)	38 (17.3)	48 (21.8)
180cc	17.0 (432)	1-1/4	2x1/2	3/4	8.0 (203)	38 (17.3)	48 (21.8)
18Acc	17.0 (432)	1-1/4	2x1/2	3/4	5.9 (150)	38 (17.3)	48 (21.8)
220cc	17.0 (432)	1-1/4	2x1/2	1	8.0 (203)	42 (19.1)	52 (23.6)
22Acc	17.0 (432)	1-1/4	2x1/2	1	5.9 (150)	42 (19.1)	52 (23.6)
250cc	17.0 (432)	1-1/4	2x1/2	1	8.0 (203)	42 (19.1)	52 (23.6)
290cc	17.0 (432)	1-1/4	2x1/2	1	8.0 (203)	43 (19.5)	53 (24.1)
29Acc	17.0 (432)	1-1/4	2x1/2	1	5.9 (150)	43 (19.5)	53 (24.1)

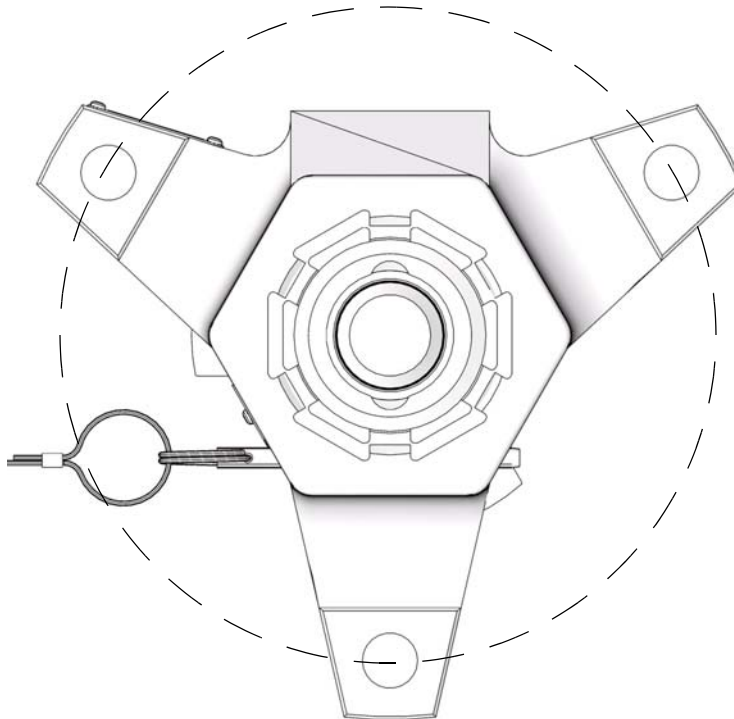
Outlet Housing Mounting Hole Layout

5.9 in. Outlet Housing (example) Shown



T18616a

8.0 in. Outlet Housing (example) Shown



T18617a

Technical Data

All lower models have the same maximum operating temperature and wetted parts.

Maximum operating temperature 180° F (82° C)
 Wetted parts Carbon Steel; Alloy Steel; 304, 440 and 17-4 PH Grades
 of Stainless Steel; Zinc and Nickel Plating; Ductile Iron;
 Tungsten Carbide; PTFE; Leather

Lower	Max. Fluid Working Pressure	Displacement per Cycle
115cc	6000 psi (41.4 MPa, 414 bar)	115cc
145cc	7400 psi (51 MPa, 511 bar)	145cc
180cc	7400 psi (51 MPa, 511 bar)	180cc
220cc	6000 psi (41.4 MPa, 414 bar)	220cc
250cc	5600 psi (38.6 MPa, 386 bar)	250cc
290cc	5600 psi (38.6 MPa, 386 bar)	290cc

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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.

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

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MM 311762A

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