

Xtreme™ Lowers

311762M

EN

High volume lowers for protective coatings. For professional use only.

See page 3 for model information, see page 29 for maximum working pressure.



Important Safety Instructions

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

Patents:

U.S. 6,925,926

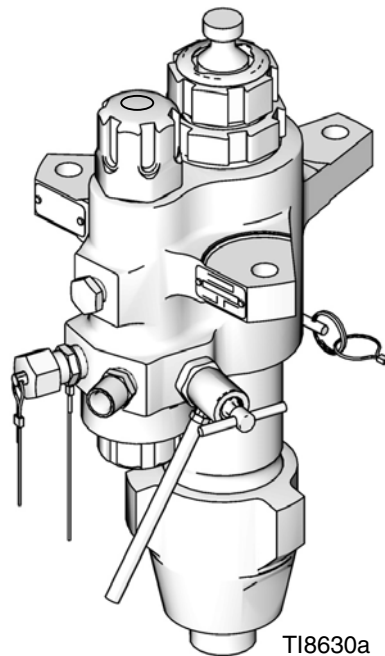
U.S. 7,025,087

Taiwan 185733

Japan 4081437

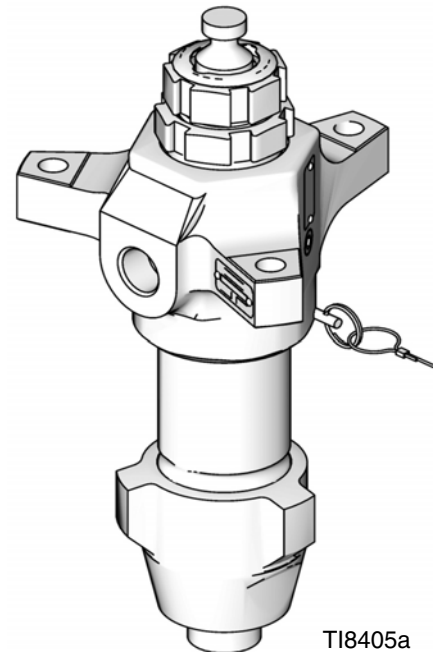
Chinese ZL02812436.7

Other patents pending



T18630a

Model L220C2 Lower with Built-in Filter



T18405a

Model L220C1 Lower without Filter

Contents

Related Manuals 2

Models 3

Warnings 4

Component Identification 6

Repair 7

 Disassembly 7

 Service Built-in Filter 14

Parts 16

 XP70 Sprayer Lower Models

 36cc, 48cc, 58cc, 85cc, 115cc, and 145cc . 16

 Xtreme Lowers Models

 85cc 115cc, 145cc, 180cc, 220cc, 250cc, and

 290cc 18

Repair Kits 23

 Xtreme Seals™ Repair Kits 23

 Tuff-Stack™ Repair Kits 24

Kits 25

Dimensions 27

Outlet Housing Mounting Hole Layout 28

Technical Data 29

Graco Standard Warranty 30

Graco Information 30

Series Change

Series A pumps used thin cross-section o-rings on the filter caps. Series B pumps use thick, medium, and thin cross-section o-rings. The filter caps changed to accept the new o-rings. See page 26 for details.

Series A and B filter pumps used short strainers and supports on sizes 36cc through 115cc. Series C pumps use the long strainers and supports in all pump sizes. The top filter cap changed to accommodate the long filters in all outlet housings. See page 26 for details.

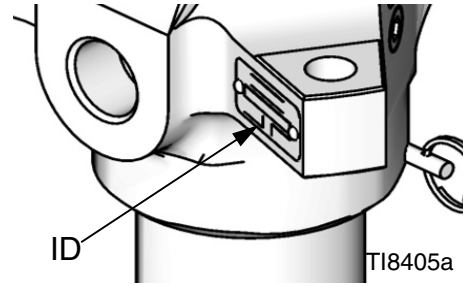
Related Manuals

Component Manuals in English:


Manual	Description
311164	Xtreme Packages Instructions and Parts
3A0420	XP70 Sprayer Operation
311238	NXT Air Motor Instructions and Parts
311239	Air Control Modules for NXT Air Motors Instructions and Parts
Series A Xtreme Lower Repair Kits	
406633	Xtreme 85cc Lower, Repair-Parts
406634	Xtreme 115cc Lower, Repair-Parts
406515	Xtreme 145cc Lower, Repair-Parts
406516	Xtreme 180cc Lower, Repair-Parts
406517	Xtreme 220cc Lower, Repair-Parts
406518	Xtreme 250cc Lower, Repair-Parts
406519	Xtreme 290cc Lower, Repair-Parts
Series B Xtreme Lower Repair Kits	
406882	Filter Seal and Cap Conversion Kit, Instructions-Parts
406879	XP70 Xtreme 36cc Lower, Repair-Parts
406880	XP70 Xtreme 48cc Lower, Repair-Parts
406881	XP70 Xtreme 58cc Lower, Repair-Parts
406888	Xtreme 85cc Lower, Repair-Parts
406889	Xtreme 115cc Lower, Repair-Parts
406890	Xtreme 145cc Lower, Repair-Parts
406891	Xtreme 180c Lower, Repair-Parts
406892	Xtreme 220cc Lower, Repair-Parts
406893	Xtreme 250cc Lower, Repair-Parts
406894	Xtreme 290cc Lower, Repair-Parts

Models

Check the identification plate (ID) on your lower 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**, starting on page 16.

 For maximum fluid working pressures, see **Technical Data** section starting on page 29.

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)	36★	C	Carbon Steel	0☼	✓		✓
	48★			1		✓	
	58★			2	✓	✓	
	85★			3			✓
	115★			4	✓		✓
	145						
	14A★						
	180						
	18A★						
	220						
	22A★						
	250						
	290						
	29A★						





★ Models with a 5.9 in. bolt pattern; see page 28.






☼ XP70 proportioner models with inlet spring and no purge valve.

 Not all options are available in all sizes.

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.

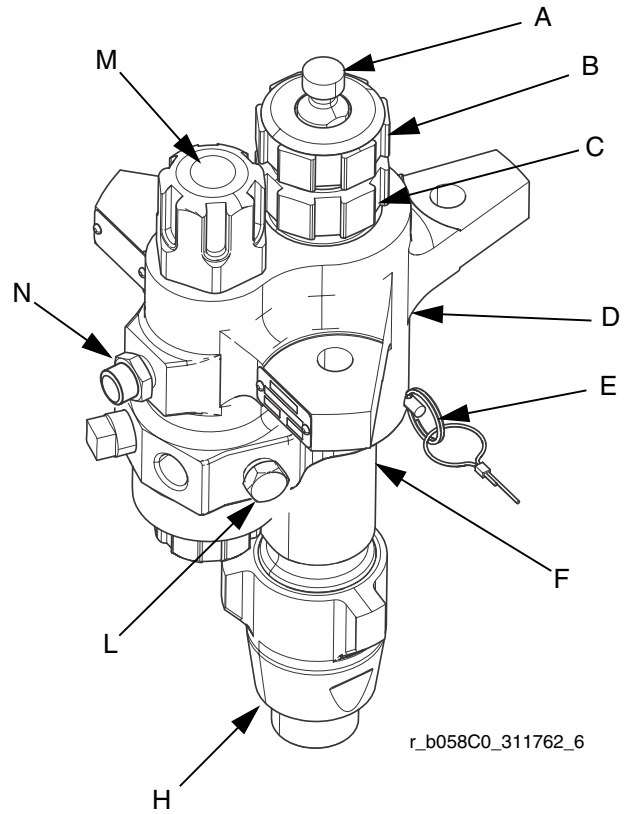
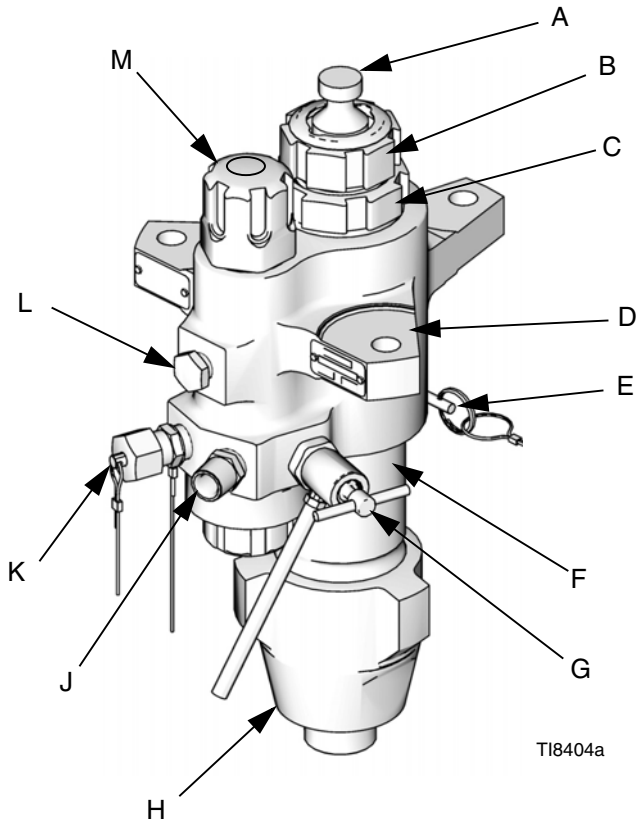
 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot 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

(Shown with Built-in Filter)

XP70 Sprayer Xtreme Lowers



Key:

- A Displacement Rod
- B Packing Nut
- C Throat Cartridge
- D Outlet Housing
- E Locking Pin
- F Cylinder
- G Drain/Purge Valve (not on XP Lowers)

- H Inlet Housing
- J Fluid Outlet
- K Optional Fluid Outlet (for second spray gun; not on XP70 Lowers)
- L Pipe Plug (non-filtered outlet)
- M Fluid Filter
- N Over Pressure Rupture Disc (for 36cc, 48cc, and 58 cc only)


Repair

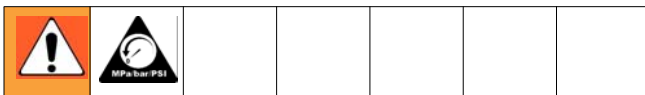
Required Tools

- 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

Disassembly

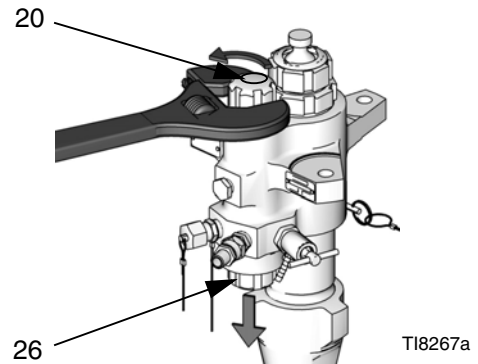
Layout all removed parts in sequence to ease reassembly. Clean all parts with a compatible solvent and inspect them for wear or damage.

 Repair kits are available to replace the throat (3) and piston (4) 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 the Packing Kits sections.

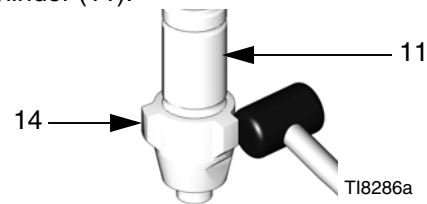


1. Relieve pressure. See your Xtreme Packages manual (311164) for instructions.
2. Disconnect lower from motor as illustrated in your Xtreme Packages manual (311164). Or, if you have a cart mounted system, tip cart up to service lower on cart.

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 14.



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



5. Press inlet ball (16) out from bottom of inlet housing (14) (take care not to damage seat (18) to remove entire inlet ball guide assembly).

- a. *For Xtreme Lowers:* Remove inlet ball, bottom o-ring (27*), and seat. Then remove remaining o-rings from top and bottom grooves of inlet ball guide (15).

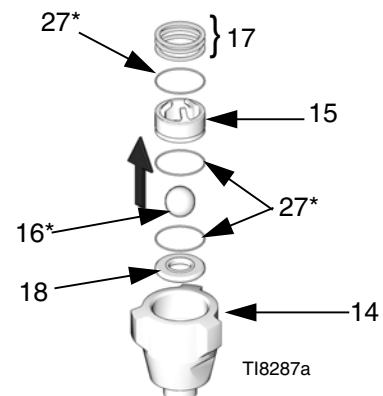


FIG. 1:

- b. For 36, 48, 58, 85, 115 XP70 Lowers: Remove spring, inlet ball, bottom o-ring, and shims. Then remove remaining o-rings from top and bottom grooves of inlet ball guide (15).

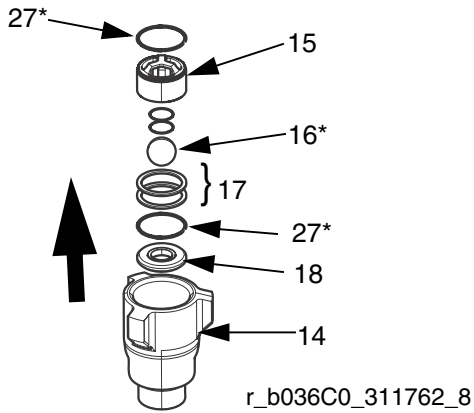


FIG. 2

- c. For 145 XP70 Lowers: Remove inlet ball, bottom o-ring, and shim. Then remove remaining o-rings from top and bottom grooves of inlet ball guide (15).

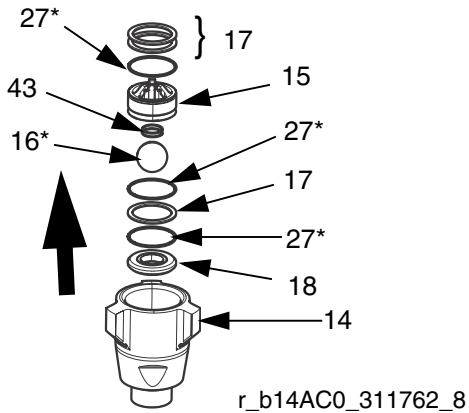
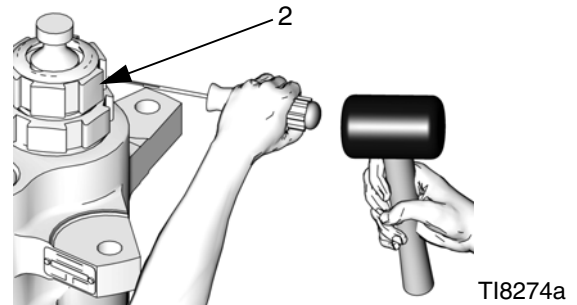
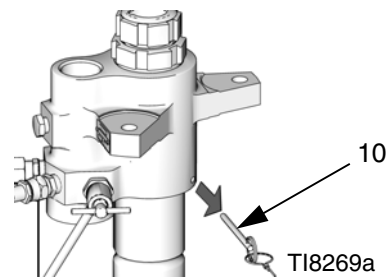


FIG. 3

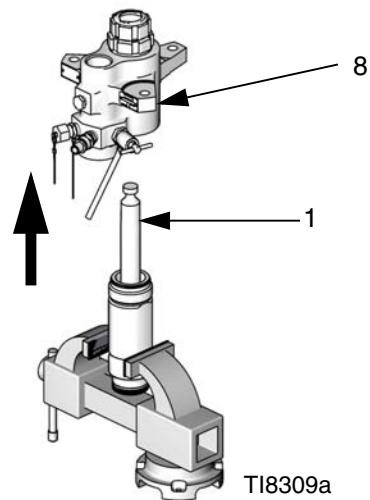
6. Stand lower upright in large vise. Using a rubber mallet, loosen, but do not remove packing nut (2).



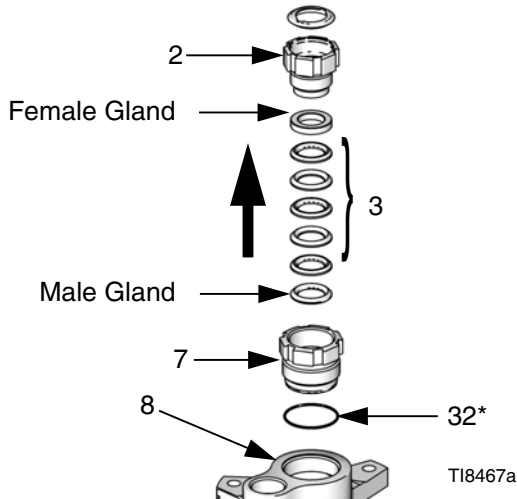
7. Remove locking pin (10) from lower cylinder (11).



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



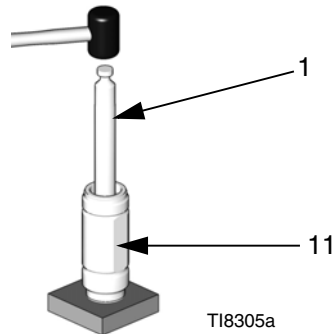
9. Remove cartridge assembly. Remove o-ring (27* or 29*) from bottom of outlet housing (8), and then unscrew packing nut (2) from packing cartridge (7). Remove female gland, male gland, and v-packings (3) from packing cartridge (7).



NOTICE

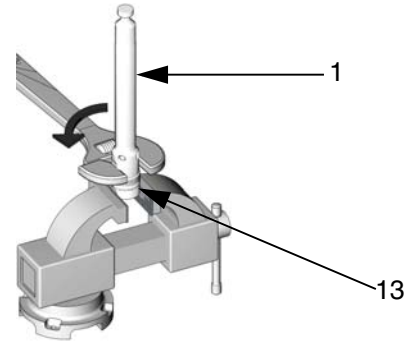
To reduce the possibility of costly damage to displacement rod (1) and lower cylinder (11), first place lower cylinder on a soft block of wood. Always use a rubber mallet or an arbor press to drive the displacement rod out of the lower cylinder. Never use a hammer to drive the rod out. Damage to the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



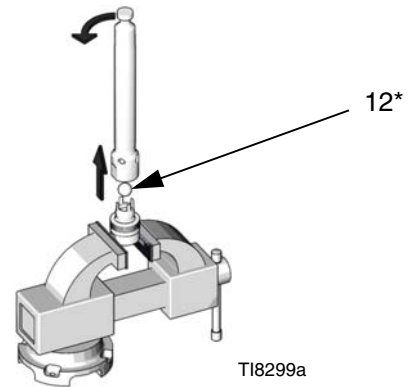
11. Inspect outer surface of displacement rod (1) and inner surface of lower cylinder (11) for scoring or wear; replace if damaged.

12. Put flats of piston valve (13) in a vise. Use a wrench to loosen displacement rod (1) from piston valve.



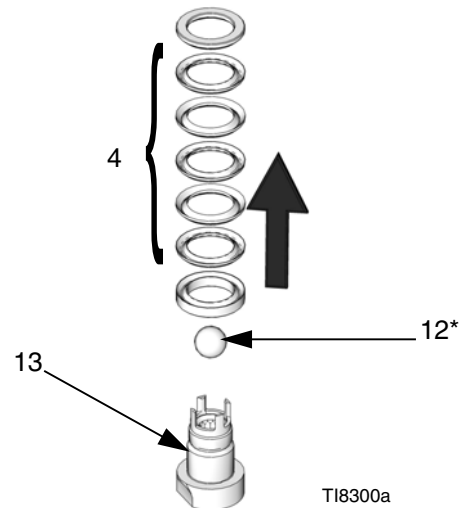
T18298a

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



T18299a

14. Remove glands and v-packings (4) from piston valve (13). Inspect piston ball (12*) and piston valve for wear or damage.

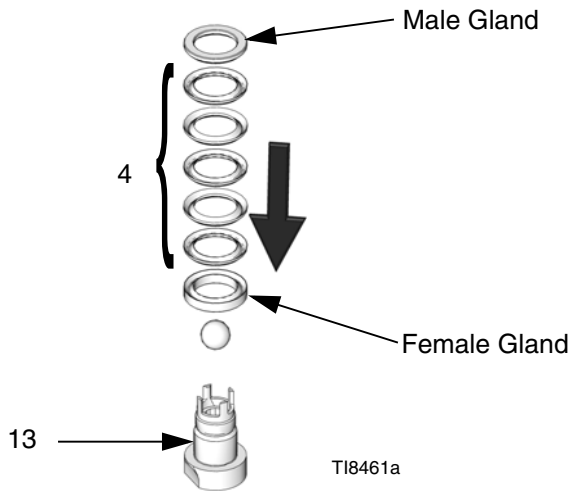



T18300a

15. Clean all parts with a compatible solvent.

Reassembly

1. Replace female gland on piston valve (13). Install the five v-packings (4) one at a time with lips facing up. Refer to the Packing Kits sections for the correct packing order for your lower. Install the male gland.



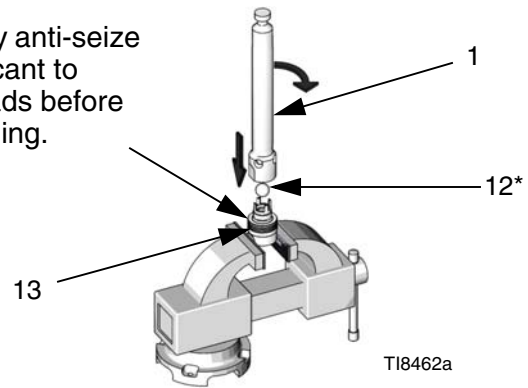
 To convert the lower to a different packing material, see the Packing Kits sections.

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


2. Ensure there are no burrs or debris on mating threads of displacement rod (1) and piston valve (13). Apply anti-seize lubricant to threads and mating surfaces of displacement rod and piston valve.

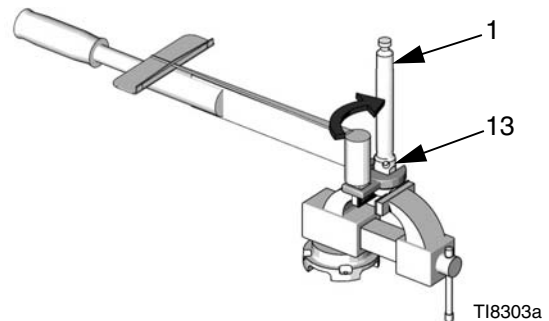
3. Place flats of piston valve in a vise. Place piston ball (12*) on piston valve.

Apply anti-seize lubricant to threads before torquing.



4. Screw displacement rod (1) onto piston valve (13), and hand tight. Then torque per table on page 13.

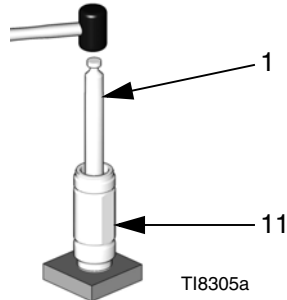
 Orient crowfoot of torque wrench at a 90° angle to ensure accurate torque values.




NOTICE

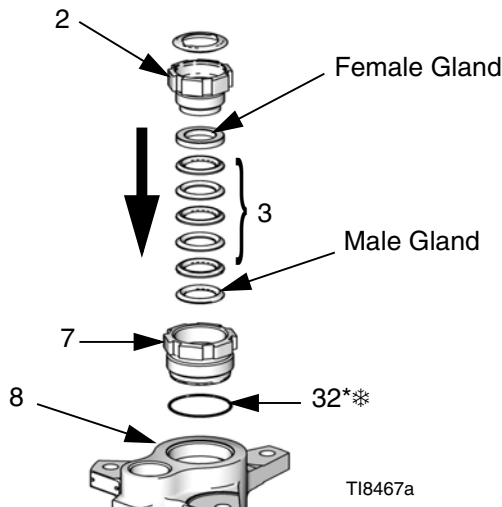
To reduce the possibility of costly damage to displacement rod (1) and lower cylinder (11), first place lower cylinder on a soft block of wood. Always use a rubber mallet or an arbor press to drive the displacement rod into the lower cylinder. Never use a hammer to drive the rod.

- To reinstall displacement rod (1) into lower cylinder (11), first lubricate piston packings (4). 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.



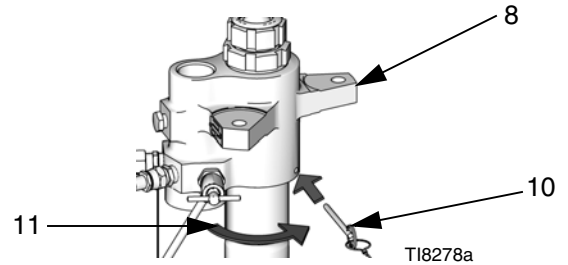
- Lubricate inside of packing cartridge (7), outside threads of packing nut (2), and throat packings (3). Install packing cartridge into housing. Place male gland in packing cartridge. Install the five v-packings one at a time with lips facing down. Refer to the Packing Kits sections for the correct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

 To convert lower to a different packing material, see Packing Kits sections. For best results, soak leather packings in oil before reassembly.



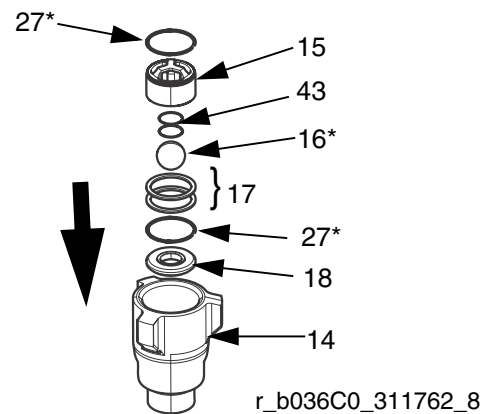
*Blue o-ring for 220cc, 250cc, 290cc lowers.

- Screw lower cylinder (11) onto 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.

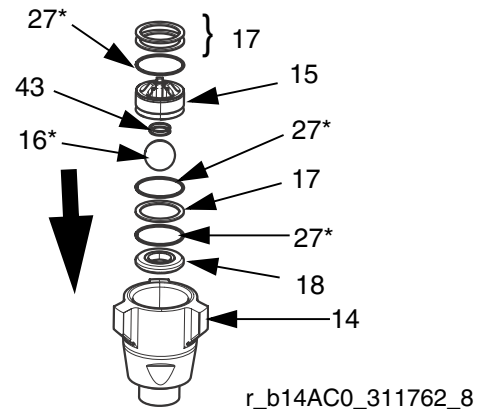


- Assemble inlet housing.

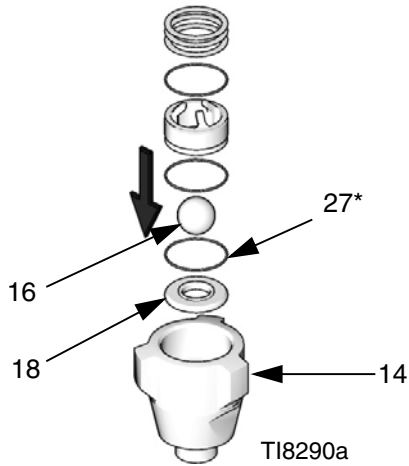
- For 36, 48, 58, 85, 115 XP Lowers: Install seat (18), two shims (17), inlet ball (16), spring (43), and one o-ring (27) into inlet housing (14).




- For 145 XP Lowers: Install seat (18), shim (17), inlet ball (16), spring (43), and one o-ring (27) into inlet housing (14).



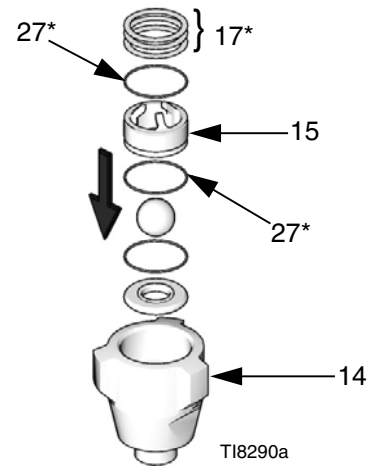
- c. For Xtreme Lowers: Install inlet seat (18), inlet ball (16), and one o-ring (27*) into inlet housing (14).



9. Lubricate and install o-rings (27*) in top and bottom grooves of inlet ball guide (15). Press inlet ball guide into inlet housing (14) and install shims (17).

 Shims (three maximum) can be assembled either for short ball travel or long ball travel. See FIG. 4 for an example of each.

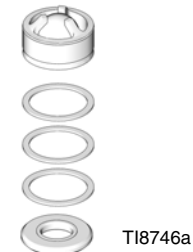
10. Thread inlet housing (14) onto lower cylinder (11). Torque to 140-150 ft-lb (189-203 N•m).



Shortest Ball Travel ◆



Longest Ball Travel ❖ ❖ ❖



◆ Factory set configuration for optimum pump change over.

❖ Shims can be configured to change ball travel length. Use longer ball travel length for higher viscosity fluids.

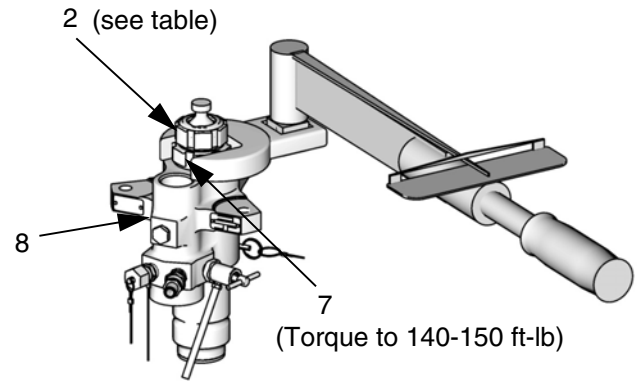
❖ Optional inlet ball spring kit available. Use to improve change over rate with longer ball travel configurations. See **Kits**, page 25, for more information.

FIG. 4: Shim Configuration for lowers without inlet spring

11. Using torque wrench, torque packing cartridge (7) to outlet housing (8). Torque to 140-150 ft-lb (189-203 N•m).
12. Insert packings in correct orientation; see **Parts**, page 16. Install packing nut (2) and torque to the value in the table below.

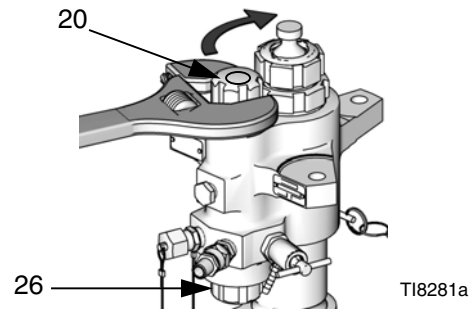
Required Torque

Pump	Throat Packing (2)	Piston Valve (13)	
L036C0 L048C0 L058C0	75 ft-lb (101 N•m)	85 ft-lb (115 N•m)	
L085C0 L085C3 L085C4	125 ft-lb (169 N•m)	115-135 ft-lb (155-182 N•m)	
L085C1 L085C2	25-30 ft-lb (34-41 N•m)		
L115C0 L115C3 L115C4	125 (169)		
L115C1 L115C2	25-30 (34-41)		
L145C3 L145C4	125 (169)		
L145C1 L145C2 L14AC1	25-30 (34-41)		
L180C1 L180C3 L18AC1	25-30 (34-41)		
L180C2 L180C4	125 (169)		
L220C1 L220C3 L22AC1	25-30 (34-41)		190-210 ft-lb (258-285N•m)
L220C2 L220C4	125 (169)		
L250C1 L250C3	25-30 (34-41)		
L250C2 L250C4 L25AC4	125 (169)		
L290C1 L290C3 L29AC1	25-30 (34-41)		
L290C2 L290C4	125 (169)		



TI8279a

13. For lowers with built-in filter, see **Service Built-in Filter**, page 14, if filter needs service. Then reinstall both top filter cap (20) and bottom filter cap (26).



14. 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.

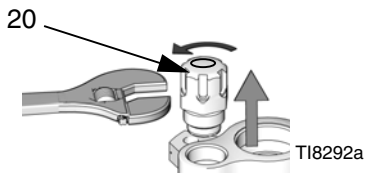
NOTICE

To prevent leaking, do not use the series A o-rings with the series B filter caps. Filter seals and caps were changed in mid 2010 to series B for improved sealing. Series B filter seals and caps can be used in older displacement pumps with a conversion kit. See **Filter Caps and O-rings Series Changes**, page 26.

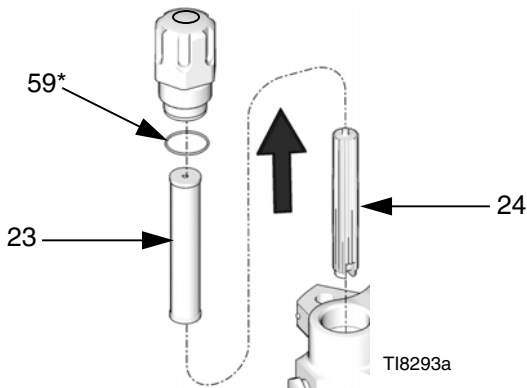
Disassembly

To remove and clean the built-in filter:

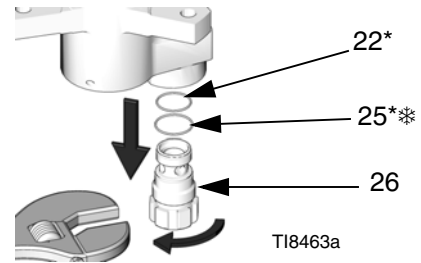
1. Relieve fluid pressure.
 - a. Turn off sprayer motor and any feed pumps.
 - b. Drain all fluid pressure from sprayer. See sprayer manual for detailed instructions.
2. Use wrench to loosen and remove top filter cap (20).




3. Remove o-ring (59*), strainer (23), and filter support (24).



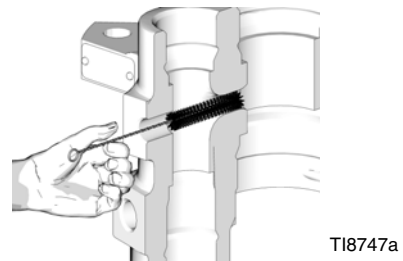
4. Use wrench to loosen and remove bottom filter cap (26). Remove o-rings (22*, 25*).



5. Replace o-rings (22*, 25*), strainer (23), and filter support (24).


 O-rings take a set at high pressures. Always replace the o-rings once the filter caps have been removed.

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

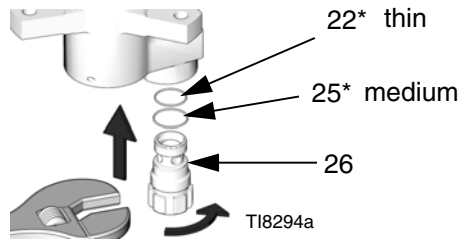


Reassembly

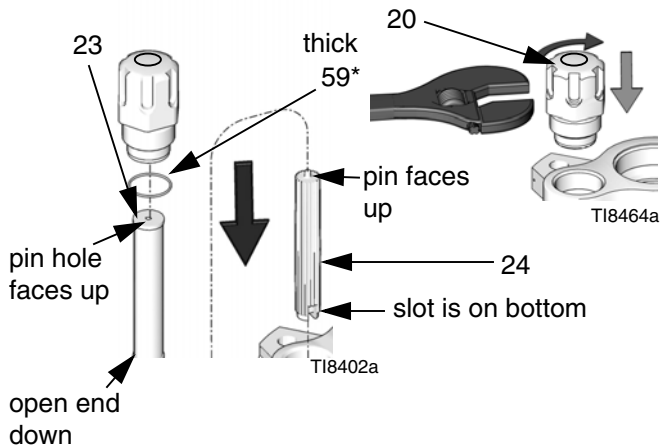
To reassemble the built-in filter:

 Lubricate all o-rings with petroleum jelly before installation.

1. Install o-rings (22*, 25*) 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).



2. Reassemble o-ring (59*) onto top filter cap (20). Install strainer (23), and filter support (24) in top filter cap. Then use wrench to install and tighten top filter cap. Torque to 40-60 ft-lb (52-82 N•m).

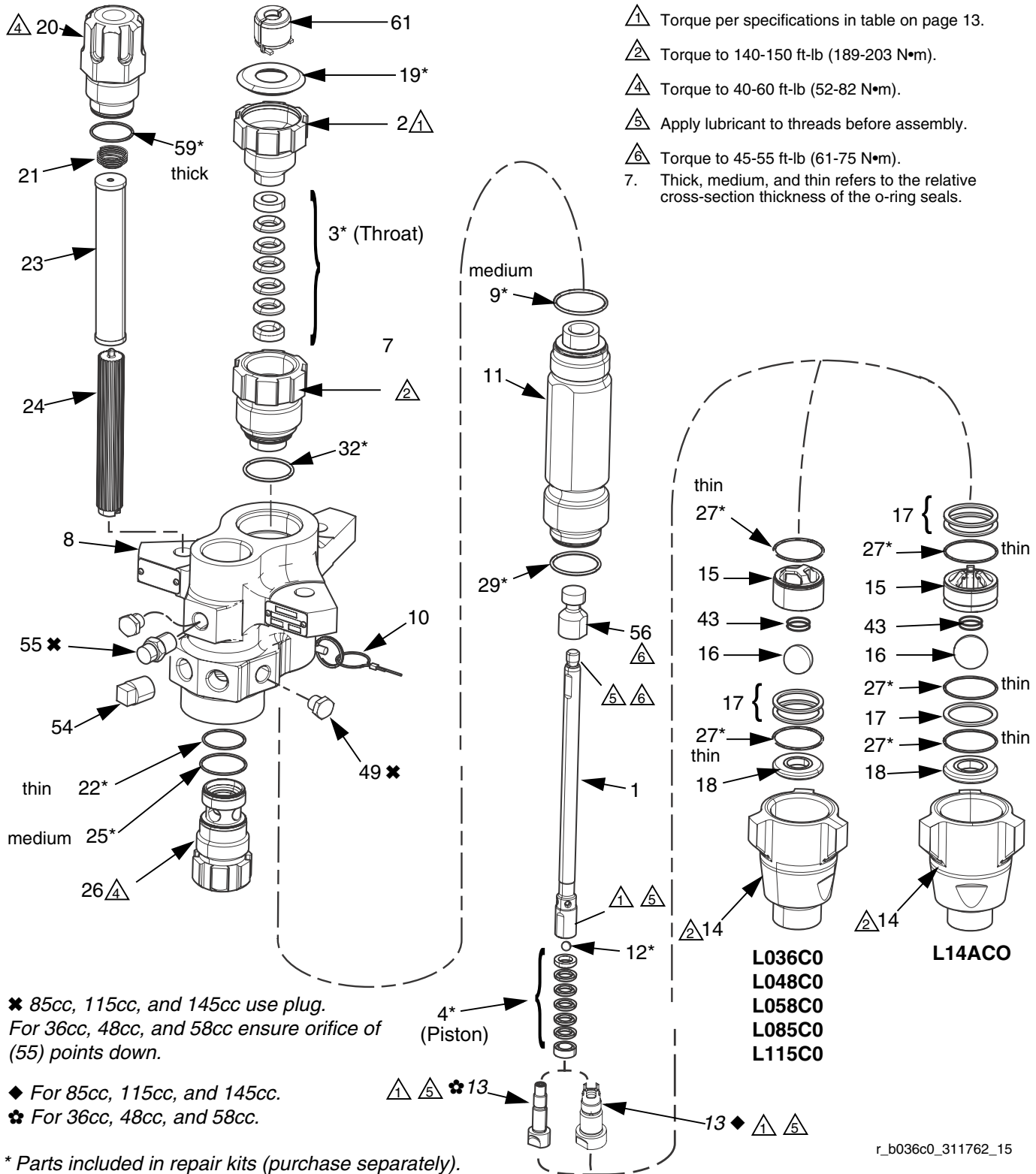


NOTE: 36cc through 115cc Xtreme pump lowers no longer use the short filter screens (23) or supports (24). See page 26 for details.

Parts

XP70 Sprayer Lower Models

36cc, 48cc, 58cc, 85cc, 115cc, and 145cc



35cc, 48cc, 58cc, 85cc, 115cc, and 145cc Models

Ref.	Descriptions	36cc	48cc	58cc	85cc	115cc	145cc	Qty.
		L036C0	L048C0	L058C0	L085C0	L115C0	L14AC0	
1	ROD, displacement	16D458	16D459	16D460	24B819	24B820	24B821	1
2	NUT, packing	16D468	16D468	16D468	15K029	15K029	15K030	1
3*	PACKINGS, stack; throat	See Repair Kits on page 23.						1
4*	PACKINGS, stack; piston	See Repair Kits on page 23.						1
7	CARTRIDGE, packing, throat	16D467	16D467	16D467	15F660	15F661	197325	1
8	HOUSING, outlet	15F659	15F659	15F659	15F659	15F659	16E151	1
9*	O-RING, top cylinder; PTFE, medium (10 pack)	288067	288067	288067	288067	288067	244892	1
10	PIN, self-locking	244826	244826	244826	244826	244826	244826	1
11	CYLINDER, lower	16D469	16D470	16D471	15F682	15F656	197315	1
12	BALL, piston (pack of 3)	262485	262485	262485	288065	288065	253029	1
13	VALVE, piston	16D464	16D464	16D464	24B818	24B817	24B826	1
14	HOUSING, inlet	15F667	15F667	15F667	15F667	15F667	197303	1
15	GUIDE, ball, inlet	16D472	16D472	16D472	16D472	16D472	198646	1
16*	BALL, inlet (pack of 3)	244899	244899	244899	244899	244899	245128	1
17	SHIM, inlet, ball guide (pack of 9)	288064 (2)	288064 (2)	288064 (2)	288064 (2)	288064 (2)	244855 (3)	
18	SEAT, inlet	15F665	15F665	15F665	15F665	15F665	196358	1
19*	PLUG, throat seal (pack of 10)	247393	247393	247393	247393	247393	247394	1
20 †	CAP, filter, top	16M461	16M461	16M461	16M461	16M461	16M461	1
21	SPRING, compression	171941	171941	171941	171941	171941	171941	1
22* †	O-RING, filter; thin, PTFE (10 pack)	244895	244895	244895	244895	244895	244895	1
23	STRAINER, 30 mesh screen; see page 25 for more options	224458	224458	224458	224458	224458	224458	1
24	SUPPORT, filter	186075	186075	186075	186075	186075	186075	1
25* †	O-RING, filter; medium, PTFE (10 pack)	262484	262484	262484	262484	262484	262484	1
26 †	CAP, filter	16M462	16M462	16M462	16M462	16M462	16M462	1
27*	O-RING; foot valve, PTFE, thin (pack of 10)	288068 (2)	288068 (2)	288068 (2)	288068 (4)	288068 (4)	244890 (5)	(x)
29*	O-RING; cylinder bottom, PTFE (pack of 10) 256512 medium, 288068 thin	262512	262512	262512	288068	288068	288068	1
30▲	TAG, warning	172479	172479	172479	172479	172479	172479	1
32*	O-RING, PTFE, throat cartridge (10 pack) 256512 medium, 288068 thin	262512	262512	262512	288068	288068	288068	1
43	SPRING, foot valve	124007	124007	124007	124007	124007	116801	1
49	PLUG, pipe; 3/8 npt	198292	198292	198292	198292	198292	198292	1
54	PLUG, pipe; 1/2 in.	100737	100737	100737	100737	100737	100737	1
55	HOUSING, rupture disc assy	258962	258962	258962	198292	198292	198292	1
56	ADAPTER, rod	15Y399	15Y399	15Y399				1
59* †	O-RING, filter; thick, PTFE (10 pack)	262483	262483	262483	262483	262483	262483	1
61	COUPLER, assembly	247167	247167	247167	247167	247167	244819	1

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


* Parts included in repair kits (purchase separately).


† See page 26 to verify correct part numbers.


Part numbers listed are for bulk quantities. Individual quantities are included in repair kits. See **Repair Kits** on page 23.


Xtreme Lowers Models

85cc 115cc, 145cc, 180cc, 220cc, 250cc, and 290cc

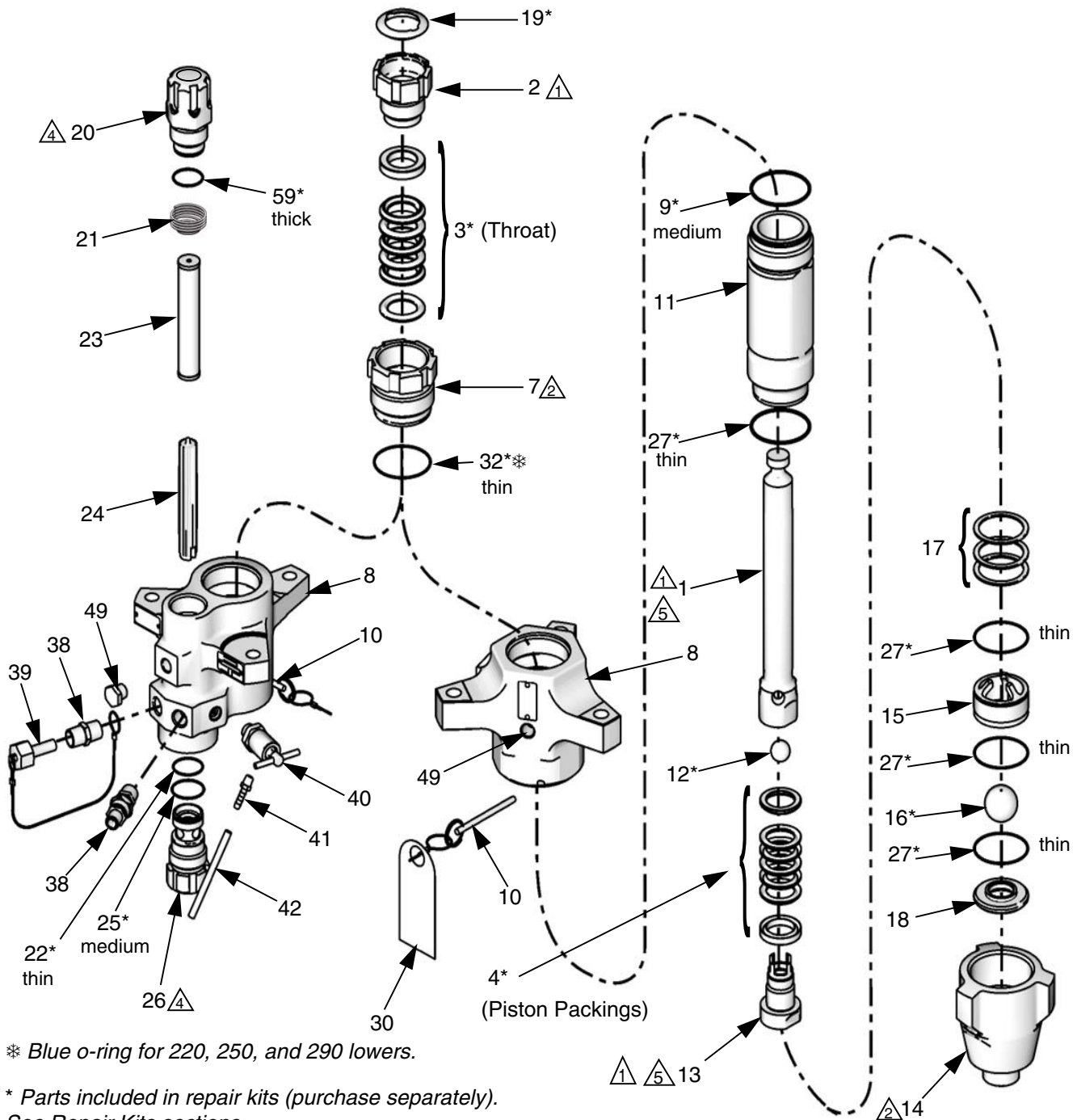
 Torque per table on page 13.

 Torque to 140-150 ft-lb (189-203 N•m).

 Torque to 40-60 ft-lb (52-82 N•m).

 Apply lubricant to threads before assembly.

7. Thick, medium, and thin refers to the relative cross-section thickness of the o-ring seals.



T18403a

85cc and 115cc Models

Ref.	Descriptions	85cc		115cc		Qty.
		L085C1 L085C3	L085C2 L085C4	L115C1 L115C3	L115C2 L115C4	
1	ROD, displacement	24B819	24B819	24B820	24B820	1
2	NUT, packing	15K029	15K029	15K029	15K029	1
3*	PACKINGS, stack; throat	See Repair Kits on page 23.				1
4*	PACKINGS, stack; piston	See Repair Kits on page 23.				1
7	CARTRIDGE, packing, throat	15F660	15F660	15F661	15F661	1
8	HOUSING, outlet	15F654	15F659	15F654	15F659	1
9* †	O-RING, top cylinder; PTFE, medium (pack of 10)	288067	288067	288067	288067	1
10	PIN, self-locking	244826	244826	244826	244826	1
11	CYLINDER, lower	15F682	15F682	15F656	15F656	1
12*	BALL, piston; (pack of 3)	288065	288065	288065	288065	1
13	VALVE, piston	24B818	24B818	24B817	24B817	1
14	HOUSING, inlet	15F667	15F667	15F667	15F667	1
15	GUIDE, ball, inlet	15F664	15F664	15F664	15F664	1
16*	BALL, inlet; (pack of 3)	244899	244899	244899	244899	1
17	SHIM, inlet, ball guide (pack of 9)	288064	288064	288064	288064	3
18	SEAT, inlet	15F665	15F665	15F665	15F665	1
19*	PLUG, throat seal (pack of 10)	247393	247393	247393	247393	1
20 †	CAP, filter, top		16M461		16M461	1
21	SPRING, compression		171941		171941	1
22* †	O-RING, filter; thin, PTFE (10 pack)		244895		244895	1
23	STRAINER, 60 mesh screen; see page 25 for more options		224459		224459	1
24	SUPPORT, filter		186075		186075	1
25* †	O-RING, filter; medium, PTFE (10 pack)		262484		262484	1
26 †	CAP, filter, lower		16M462		16M462	1
27*	O-RING; foot valve and cylinder bottom, PTFE, thin (pack of 10)	288068	288068	288068	288068	4
30▲	TAG, warning	172479	172479	172479	172479	1
32*	O-RING, PTFE, throat cartridge, thin (10 pack)	288068	288068	288068	288068	1
38	FITTING, nipple, outlet 1/2 in.		158491		158491	2
39	PLUG, packless; 1/2 in.		244517		244517	1
40	VALVE, pressure dump		245143		245143	1
41	FITTING, barbed, plated		116746		116746	1
42	TUBE, nylon		116750		116750	1
49	PLUG, pipe	101754	198292	101754	198292	1
59 †	O-RING, filter; thick, PTFE (10 pack)		262483		262483	1

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

* Parts included in repair kits (purchase separately).

† See page 26 to verify correct part numbers.

Part numbers listed are for bulk quantities. Individual quantities are included in repair kits. See **Repair Kits** on page 23.

145cc and 180cc Models

Ref.	Descriptions	145cc			180cc			Qty.
		L145C1 L145C3	L145C2 L145C4	L14AC1	L180C1 L180C3	L180C2 L180C4	L18AC1	
1	ROD, displacement	24B821	24B821	24B821	24B822	24B822	24B822	1
2	NUT, packing	15K030	15K030	15K030	15K030	15K030	15K030	1
3*	PACKINGS, stack; throat	See Repair Kits on page 23.						1
4*	PACKINGS, stack; piston	See Repair Kits on page 23.						1
7	CARTRIDGE, packing, throat	197325	197325	197325	197326	197326	197326	1
8	HOUSING, outlet	197334	197336	15J673	197334	197336	15J673	1
9* †	O-RING, top cylinder; PTFE, medium (pack of 10)	244892	244892	244892	244892	244892	244892	1
10	PIN, self-locking	244826	244826	244826	244826	244826	244826	1
11	CYLINDER, lower	197315	197315	197315	197316	197316	197316	1
12*	BALL, piston; (pack of 3)	253029	253029	253029	253029	253029	253029	1
13	VALVE, piston	24B826	24B826	24B826	24B827	24B827	24B827	1
14	HOUSING, inlet	197303	197303	197303	197303	197303	197303	1
15	GUIDE, ball, inlet	197307	197307	197307	197307	197307	197307	1
16*	BALL, inlet; (pack of 3)	245128	245128	245128	245128	245128	245128	1
17	SHIM, inlet, ball guide (pack of 9)	244855	244855	244855	244855	244855	244855	3
18	SEAT, inlet	196358	196358	196358	196358	196358	196358	1
19*	PLUG, throat seal (pack of 10)	247394	247394	247394	247394	247394	247394	1
20 †	CAP, filter, top		16M461			16M461		1
21	SPRING, compression		171941			171941		1
22*	O-RING, filter; thin, PTFE (10 pack)		244895			244895		1
23	STRAINER, 60 mesh screen; (2 pack) see page 25 for more options		224459			224459		1
24	SUPPORT, filter		186075			186075		1
25* †	O-RING, filter; medium, PTFE (10 pack)		262484			262484		1
26 †	CAP, filter		16M462			16M462		1
27*	O-RING; foot valve and cylinder bottom, PTFE, thin (pack of 10)	244890	244890	244890	244890	244890	244890	4
30▲	TAG, warning	172479	172479	172479	172479	172479	172479	1
32*	O-RING, PTFE, throat cartridge, thin (10 pack)	244890	244890	244890	244890	244890	244890	1
38	FITTING, nipple, outlet 1/2 in.		158491			158491		1
39	PLUG, packless; 1/2 in.		244517			244517		1
40	VALVE, pressure dump		245143			245143		1
41	FITTING, barbed, plated		116746			116746		1
42	TUBE, nylon		116750			116750		1
49	PLUG, pipe	101754	198292	101754	101754	198292	101754	1
59 †	O-RING, filter; thick, PTFE (10 pack)		262483			262483		1

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

* Parts included in repair kits (purchase separately).

† See page 26 to verify correct part numbers.

Part numbers listed are for bulk quantities. Individual quantities are included in repair kits. See **Repair Kits** on page 23.

220cc and 250cc Models

Ref.	Descriptions	220cc			250cc		Qty.
		L220C1 L220C3	L220C2 L220C4	L22AC1	L250C1 L250C3	L250C2 L250C4	
1	ROD, displacement	24B823	24B823	24B823	24B824	24B824	1
2	NUT, packing	15K031	15K031	15K031	15K031	15K031	1
3*	PACKINGS, stack; throat	See Repair Kits on page 23.					1
4*	PACKINGS, stack; packing	See Repair Kits on page 23.					1
7	CARTRIDGE, packing, throat	197327	197327	197327	197328	197328	1
8	HOUSING, outlet	197335	197337	15H722	197335	197337	1
9†	O-RING, top cylinder; PTFE, medium (pack of 10)	244893	244893	244893	244893	244893	1
10	PIN, self-locking	244826	244826	244826	244826	244826	1
11	CYLINDER, lower	197317	197317	197317	197318	197318	1
12	BALL, piston; (pack of 3)	244898	244898	244898	244898	244898	1
13	VALVE, piston	24B828	24B828	24B828	24B829	24B829	1
14	HOUSING, inlet	197304	197304	197304	197304	197304	1
15	GUIDE, ball, inlet	197308	197308	197308	197308	197308	1
16*	BALL, inlet; (pack of 3)	253030	253030	253030	253030	253030	1
17	SHIM, inlet, ball guide (pack of 9)	244856	244856	244856	244856	244856	3
18	SEAT, inlet	197344	197344	197344	197344	197344	1
19*	PLUG, throat seal (pack of 10)	247395	247395	247395	247395	247395	1
20†	CAP, filter, top		16M461			16M461	1
21	SPRING, compression		171941			171941	1
22*†	O-RING, filter; thin, PTFE (10 pack)		244895			244895	1
23	STRAINER, 60 mesh screen (2 pack); see page 25 for more options		224459			224459	1
24	SUPPORT, filter		186075			186075	1
25*†	O-RING, filter; medium, PTFE (10 pack)		262484			262484	1
26†	CAP, filter		16M462			16M462	1
27*†	O-RING; foot valve and cylinder bottom, PTFE, thin (pack of 10)	244894	244894	244894	244894	244894	4
30▲	TAG, warning	172479	172479	172479	172479	172479	1
32*†	O-RING, PTFE, throat cartridge, blue, thin(10 pack)	244891	244891	244891	244891	244891	1
38	FITTING, nipple, outlet 1/2 in.		158491			158491	1
39	PLUG, packless; 1/2 in.		244517			244517	1
40	VALVE, pressure dump		245143			245143	1
41	FITTING, barbed, plated		116746			116746	1
42	TUBE, nylon		116750			116750	1
49	PLUG, pipe	101754	198292	101754	101754	198292	1
59*†	O-RING, filter; thick, PTFE (10 pack)		262483			262483	1

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

* Parts included in repair kits (purchase separately).

† See page 26 to verify correct part numbers.

Part numbers listed are for bulk quantities. Individual quantities are included in repair kits. See **Repair Kits** on page 23.

290cc Models

Ref.	Descriptions	290cc			Qty.
		L290C1 L290C3	L290C2 L290C4	L29AC1	
1	ROD, displacement	24B825	24B825	24B825	1
2	NUT, packing	15K031	15K031	15K031	1
3*	PACKINGS, stack. throat	See Repair Kits , page 23.			1
4*	PACKINGS, stack; piston	See Repair Kits , page 23.			1
7	CARTRIDGE, packing, throat	197327	197327	197327	1
8	HOUSING, outlet	197335	197337	15H722	1
9* †	O-RING, top cylinder; PTFE, medium (pack of 10)	244893	244893	244893	1
10	PIN, self-locking	244826	244826	244826	1
11	CYLINDER, lower	197319	197319	197319	1
12	BALL, piston; (pack of 3)	244899	244899	244899	1
13	VALVE, piston	24B830	24B830	24B830	1
14	HOUSING, inlet	197304	197304	197304	1
15	GUIDE, ball, inlet	197308	197308	197308	1
16*	BALL, inlet; (pack of 3)	253030	253030	253030	1
17	SHIM, inlet, ball guide (pack of 9)	244856	244856	244856	3
18	SEAT, inlet	197344	197344	197344	1
19*	PLUG, throat seal (pack of 10)	247395	247395	247395	1
20 †	CAP, filter, top		16M461		1
21	SPRING, compression		171941		1
22* †	O-RING, filter; thin, PTFE (10 pack)		244895		1
23	STRAINER, 60 mesh screen; (2 pack) see page 25 for more options		224459		1
24	SUPPORT, filter		186075		1
25* †	O-RING, filter; medium, PTFE (10 pack)		262484		1
26 †	CAP, filter		16M462		1
27*	O-RING; foot valve and cylinder bottom, PTFE, thin (pack of 10)	244894	244894	244894	4
30▲	TAG, warning	172479	172479	172479	1
32*	O-RING, PTFE, throat cartridge, blue, thin (10 pack)	244891	244891	244891	1
38	FITTING, nipple, outlet 1/2 in.		158491		1
39	PLUG, packless; 1/2 in.		244517		1
40	VALVE, pressure dump		245143		1
41	FITTING, barbed, plated		116746		1
42	TUBE, nylon		116750		1
49	PLUG, pipe	101754	198292	101754	1
59* †	O-RING, filter; thick, PTFE (10 pack)		262483		1

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

* Parts included in repair kits (purchase separately).

† See page 26 to verify correct part numbers.

Part numbers listed are for bulk quantities. Individual quantities are included in repair kits. See **Repair Kits** on page 23.

Repair Kits

Xtreme Seals™ Repair Kits

These kits are for models L___ C1 and L___ C2 and some 5.9 in.bolt pattern models. Kits also include items 9, 12, 16, 19, 22, 25, 27, 32, and 59. See parts list for your lower model.

★ Kit also includes item 59.

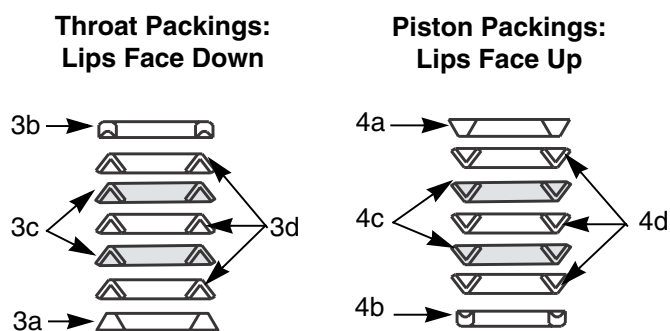
Throat Packing (3) Detail

Ref.	Description	Qty.
3a	GLAND, packing, male (4 pack)	1
3b	GLAND, packing, female (4 pack)1	1
3c	V-PACKING, leather (10 pack)	2
3d	V-PACKING, Xtreme (10 pack)	3

Piston Packing (4) Detail

Ref.	Description	Qty.
4a	GLAND, packing, male (4 pack)	1
4b	GLAND, packing, female (4 pack)1	1
4c	V-PACKING, leather (10 pack)	2
4d	V-PACKING, Xtreme (10 pack)	3

Lower Size	Kit (Verify series, page 26)		Descriptions, Reference Numbers, and Quantity							
	Series A	Series B★	Throat Packing (3)				Piston Packing (4)			
			3a (male)	3b (female)	3c (leather)	3d (plastic)	4a	4b	4c	4d
85cc	288054	24F973	288070	288069	288078	288077	288072	288071	288081	288080
115cc	288058	24F972	288074	288073	288076	288075	288074	288073	288076	288075
145cc	244850	24F971	244881	244875	244869	244863	244881	244875	244869	244863
180cc	244851	24F969	244882	244876	244870	244864	244882	244876	244870	244864
220cc	244852	24F967	244883	244877	244871	244865	244884	244878	244872	244866
250cc	244853	24F965	245232	245233	245230	245231	245232	245233	245230	245231
290cc	244854	24F963	244885	244879	244873	244867	244886	244880	244874	244868
Qty:			1	1	2	3	1	1	2	3



Lubricate packings; soak leather packings in oil for one hour before assembly.

FIG. 5: Xtreme Seals™ Repair Kits

Tuff-Stack™ Repair Kits

These kits are for models L___C0, L___C3, L___C4, and some 5.9 in.bolt pattern models. Kits also include items 9, 12, 16, 19, 22, 25, 27, 32, and 59. See parts list for your lower model.

★ Kit also includes item 59.

Throat Packing (3) Detail

Ref.	Description	Qty.
3a	GLAND, packing, male (4 pack)	1
3b	GLAND, packing, female (4 pack)1	1
3e	V-PACKING, Tuff-Stack (10 pack)	5

Piston Packing (4) Detail

Ref.	Description	Qty.
4a	GLAND, packing, male (4 pack)	1
4b	GLAND, packing, female (4 pack)1	1
4e	V-PACKING, Tuff-Stack (10 pack)	5

Lower Size	Kit (Verify series, page 26)		Descriptions, Reference Numbers, and Quantity					
			Throat Packings (3)			Piston Packings (4)		
	Series A	Series B★	3a	3b	3e	4a	4b	4e
36cc		262504	262487	262486	262490	262489	262488	262491
48cc		262505	262493	262492	262496	262495	262494	262497
58cc		262506	262499	262498	262502	262501	262500	262503
85cc	288056	262507	288070	288069	288079	288072	288071	288082
115cc	288060	262508	288074	288073	288066	288074	288073	288066
145cc	244900	262510	244881	244875	244857	244881	244875	244857
180cc	244901	24F970	244882	244876	244858	244882	244876	244858
220cc	244902	24F968	244883	244877	244859	244884	244878	244860
250cc	244903	24F966	245232	246530	245229	245232	246530	245229
290cc	244904	24F964	244885	244879	244861	244886	244880	244862
Qty:			1	1	5	1	1	5

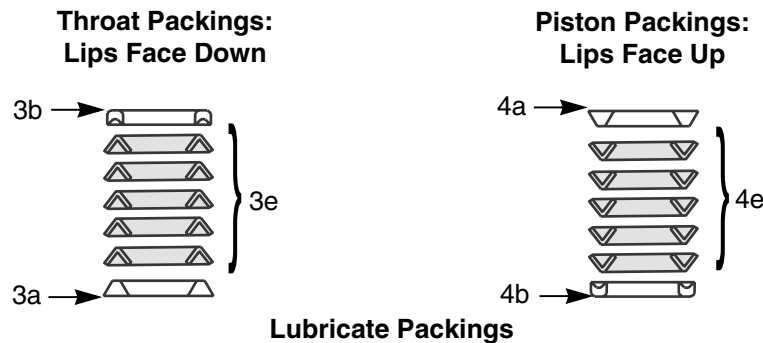



FIG. 6: Tuff-Stack™ Seals Repair Kits

Kits


Inlet Ball Spring Kits

Use to improve change over rates in longer ball travel configurations. Order kit that corresponds with your lower model. See manual 406527.

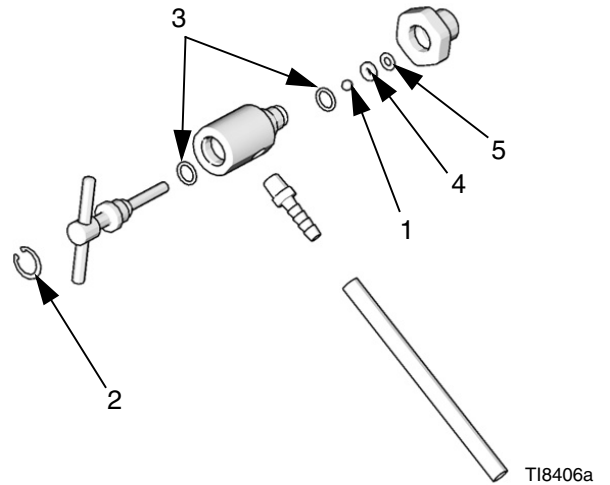
 All XP70 Xtreme pumps include inlet springs.

Kit	Lower Models
245190	145cc, 180cc sizes
245191	220cc, 250cc, 290cc sizes

Fluid Drain Valve Repair Kit 245145


 Not for use with XP lowers.

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



Replacement Strainers (Ref. 23)

For models with built-in filters, Series A and B pumps used short strainers 236495 in pump sizes 36-115cc. All Xtreme pumps now use the long strainers listed below. See page 26 for conversion kit.

 Standard Xtreme filter pumps come with 60 mesh
 XP70 Xtreme filter pumps comes with 30 mesh.


Lower Size	2 Pack		
	30 mesh	60 mesh	100 mesh
All	224458	224459	224468

25 Pack		
30 mesh	60 mesh	100 mesh
238436	238438	238440

Filter Caps and O-rings Series Changes

Series A filter seals and caps were changed in mid 2010 for improved sealing. Series B filter seals and caps can be used in older displacement pumps with a conversion kit. See **Conversion Kit, 24F975**. Do not use the series A o-rings with the series B filter caps or series B o-rings with series A caps.

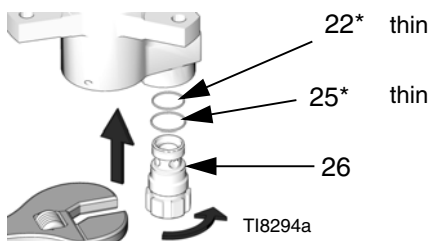
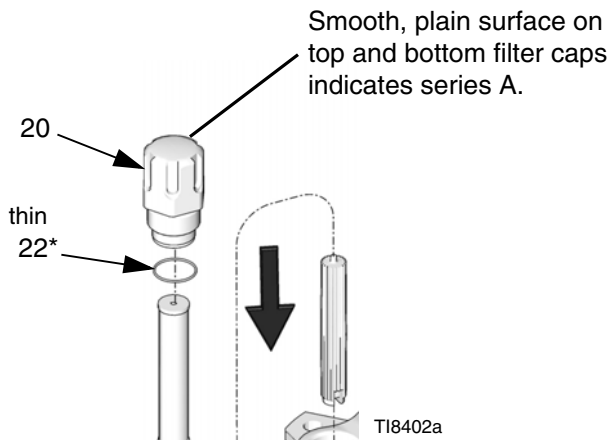
Series B and later pumps use a combination of thick, medium, and thin cross-section o-rings. The filter caps changed to accept the new o-rings.

 Non filter models can use either series A or series B repair kits.

Series C filter caps allow the use of long filter screens and supports on all Xtreme pumps including 36cc through 115cc pumps. Short filters are no longer used because they are hard to service and could be installed incorrectly. New filter caps are also electroless nickel plated for better corrosion resistance.

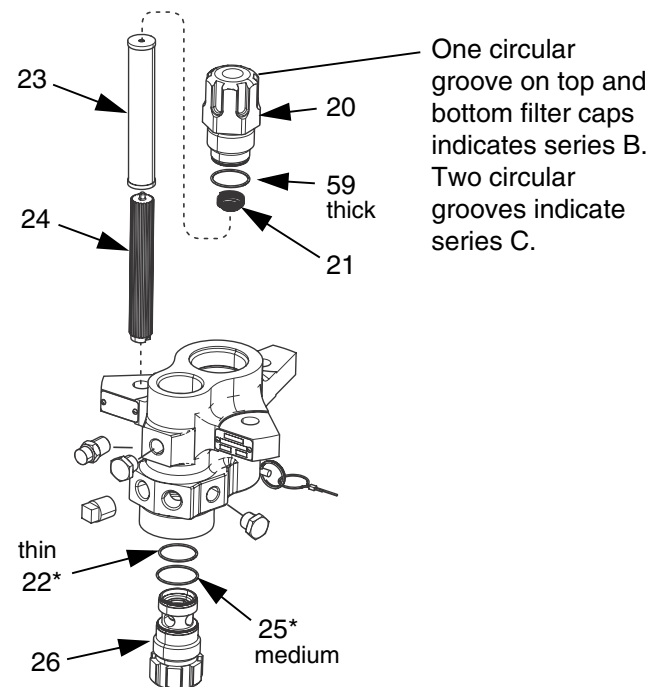
Series A

Ref. Part	Description	Qty.
20 ---	CAP, filter, top	1
22 24B732	O-RING, mid; white, thin (pack of 10)	2
25 24B733	O-RING, bottom; black, thin (pack of 10)	1
26 ---	CAP, filter	1



Series B Seals and Series C Long Filters

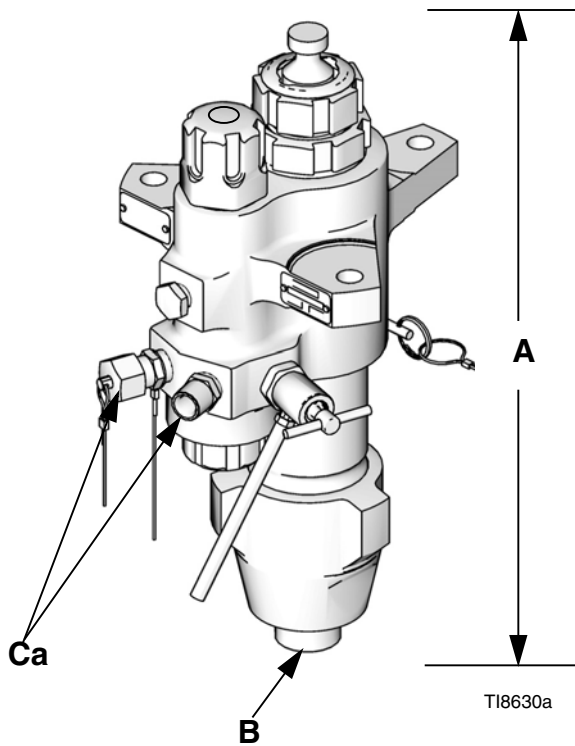
Ref. Part	Description	Qty.
20 16M461	CAP, filter, top; all pumps	1
21 171941	SPRING	1
22 244895	O-RING; white, thin (pack of 10)	1
23a 224458	STRAINER, 30 mesh, long	1
23b 224459	STRAINER, 60 mesh, long	1
24 186075	SUPPORT, long, filter	1
25 262484	O-RING; white, medium (pack of 10)	1
26 16M462	CAP, filter	1
59 262483	O-RING, PTFE; white, thick (pack of 10)	1



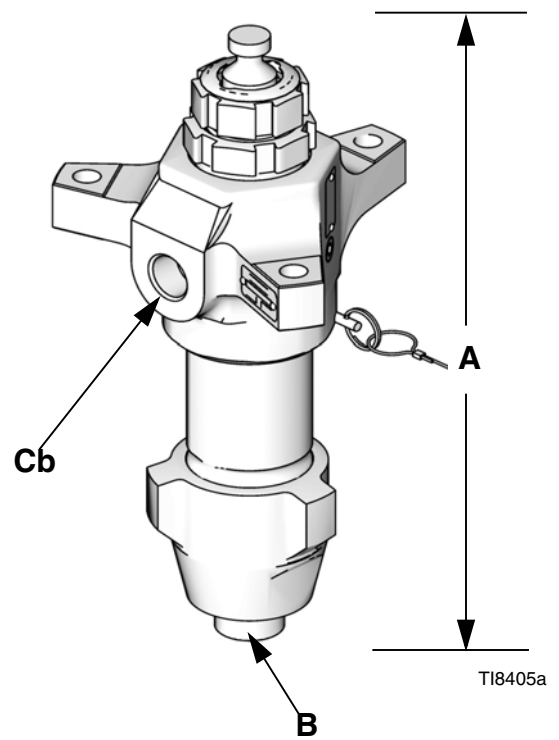
Conversion Kit, 24F975

Contains all parts on the right side above. Use to install series B filter caps and o-rings on series A lower models. See manual 406882. Also converts series A or B short filter pumps to use the long filters. A choice of 30 and 60 mesh screens is included.

Dimensions



Lowers with Built-in Filters



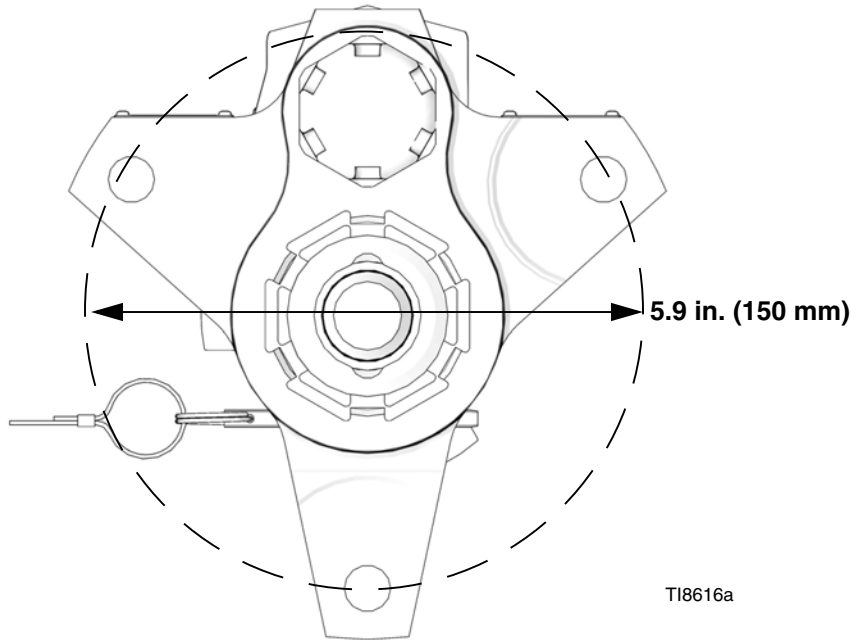
Lowers without Built-in Filters

Lower Dimensions

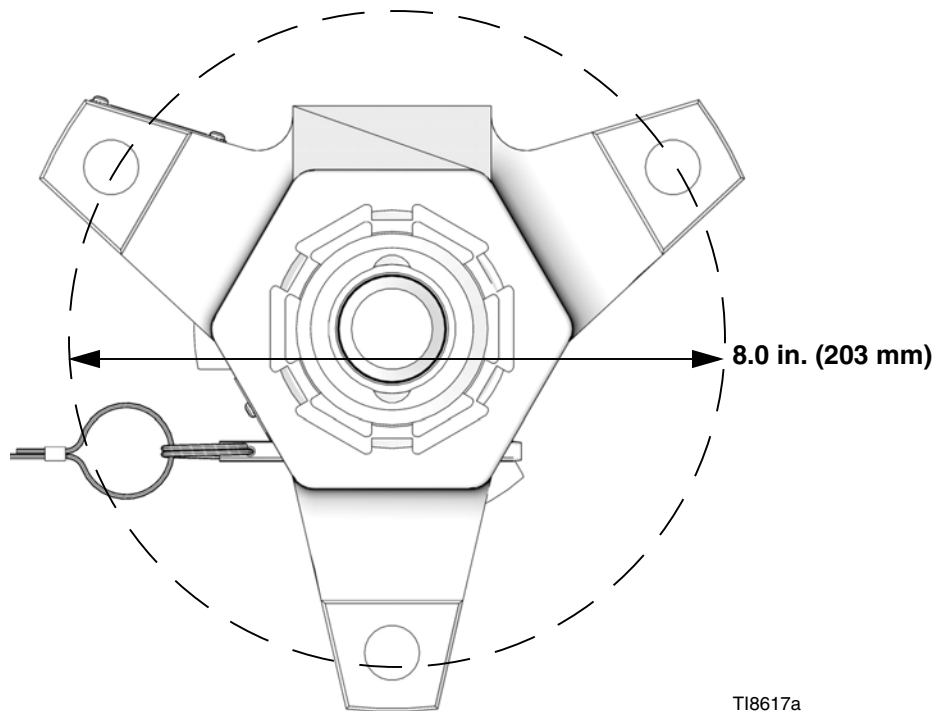
Lower	A (Height) in. (mm)	B (Inlet) in. npt(m)	Ca (Outlet) in. npt(m)	Cb (Outlet) in. npt(f)	Weight lbs (kg)	
					Without Filter	With Filter
36cc	17.0 (432)	1-1/4	2x1/2	NA	NA	36 (16.3)
48cc	17.0 (432)	1-1/4	2x1/2	NA	NA	36 (16.3)
58cc	17.0 (432)	1-1/4	2x1/2	NA	NA	36 (16.3)
85cc	17.0 (432)	1-1/4	2x1/2	1/2	28 (12.7)	36 (16.3)
115cc	17.0 (432)	1-1/4	2x1/2	1/2	28 (12.7)	36 (16.3)
145cc	17.0 (432)	1-1/4	2x1/2	3/4	38 (17.3)	48 (21.8)
14Acc	17.0 (432)	1-1/4	2x1/2	3/4	38 (17.3)	48 (21.8)
180cc	17.0 (432)	1-1/4	2x1/2	3/4	38 (17.3)	48 (21.8)
18Acc	17.0 (432)	1-1/4	2x1/2	3/4	38 (17.3)	48 (21.8)
220cc	17.0 (432)	1-1/4	2x1/2	1	42 (19.1)	52 (23.6)
22Acc	17.0 (432)	1-1/4	2x1/2	1	42 (19.1)	52 (23.6)
250cc	17.0 (432)	1-1/4	2x1/2	1	42 (19.1)	52 (23.6)
290cc	17.0 (432)	1-1/4	2x1/2	1	43 (19.5)	53 (24.1)
29Acc	17.0 (432)	1-1/4	2x1/2	1	43 (19.5)	53 (24.1)

Outlet Housing Mounting Hole Layout

5.9 in. (150 mm) Outlet Housing (example) Shown
Applies to 36, 48, 58, 85, 115, 14A, 18A, 22A, and 29Acc Lowers



8.0 in. (203 mm) Outlet Housing (example) Shown
Applies to 145, 180, 220, 250, and 290cc Lowers



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
 Stroke length (nominal) 4.75 in. (12.06 cm)

Lower	Max. Fluid Working Pressure	Nominal Displacement per Cycle	Effective Area	
			in ²	cm ²
36cc	7250 psi (50 MPa, 500 bar)	36cc	.2325	1.500
48cc	7250 psi (50 MPa, 500 bar)	48cc	.3100	2.000
58cc	7250 psi (50 MPa, 500 bar)	58cc	.3715	2.397
85cc	7250 psi (50 MPa, 500 bar)	85cc	.5542	3.575
115cc	7250 psi (50 MPa, 500 bar)	115cc	.7430	4.793
145cc	7400 psi (51 MPa, 511 bar)	145cc	.9300	6.000
180cc	7400 psi (51 MPa, 511 bar)	180cc	1.1624	7.500
220cc	6000 psi (41.4 MPa, 414 bar)	220cc	1.395	9.000
250cc	5600 psi (38.6 MPa, 386 bar)	250cc	1.620	10.452
290cc	5600 psi (38.6 MPa, 386 bar)	290cc	1.860	12.000

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