



Pall Corporation

UR229

UR229 Series

service instructions



EN

UR229 Service Instructions

ENGLISH

M&ESIUR229ENa

1 Specifications

Housing materials:

Head, Valve Body, and Cover:	Ductile iron
Tube:	Steel
Shell:	Steel, with corrosive resistant plating
Check Valve:	Steel
Ball valve:	Stainless steel, carbon steel and nonmetallic

Maximum operating pressure:

110 bar g (1600 psig)

Proof pressure:

165.5 barg (2400 psig)

Minimum burst pressure:

441 barg (6400 psig)

Element collapse:

UR219 element 10 bar (150 psid) differential minimum

Operating temperature range:

43 °C to 121 °C (-45 °F to 250 °F) with Nitrile seals for petroleum fluids
 -29 °C to 121 °C (-20 °F to 250 °F) with fluorocarbon seals for specified synthetic fluid
 -43 to 121 °C (-45 to 250 °F) with ethylene propylene seals in phosphate ester.

Bypass valve setting options:

1.7 ± 0.3 bar (25 ± 5 psid) cracking pressure
 3.4 ± 0.3 bar (50 ± 5 psid) cracking pressure
 4.5 ± 0.3 bar (65 ± 5 psid) cracking pressure
 Non bypass

Seals:

Nitrile, fluorocarbon or ethylene propylene

CAUTION:

Maximum surge flow should not exceed 1.3 times normal flow.

The actual operating conditions should be checked by the user to ensure that the element, housing, and all seals are compatible with the fluid and application, and are within local safety codes. Please contact Pall Corporation or approved distributor if further information is required.

2 Receipt of equipment

The filter housing, and any optional equipment, are packed individually for assembly by the customer. Unpack carefully and ensure optional items are not mislaid in the packaging that will be discarded.

3 General sources of information

- 3.1 For dimensions, operating parameters, assembly/element part number, ordering information, notes, performance data, and specifications refer to datasheet.
- 3.2 Where under reasonably foreseeable conditions, including external fires, the allowable limits could be exceeded, suitable protective devices must be installed by the customer within the connecting fluid system.

4 Installation of housing

- 4.1 The filter can be installed in any attitude, but for ease of servicing, it is recommended that it be installed vertically with the filter tube and cover pointing upwards for UR229C version and downwards for UR229H version.
- 4.2 The minimum clearance required for element removal of is as follows:
 - 4.2.1 UR229C series (cover service): 429mm (16.9in) for length 08, 563mm (22.2in) for length 13, 734mm (28.9in) for length 20 and 1242mm (48.9in) for length 40.
- 4.3 Threaded differential pressure devices, when fitted, must be torque tightened to 40-43 ft/lb or 54-58 Nm. All visual indicators must be clearly visible.

NOTE: Head has a machined port for a differential pressure warning device. The port may be sealed with a port plug kit. Never place the port plug kit in this port without first installing uniform size -014 O-ring in lower O-ring groove, otherwise a small bypass flow will result, allowing contaminant downstream of the filter element.

- 4.4 Mount the filter assembly using the four .50-13x.75 deep threaded holes in the valve body assembly.

NOTE: Piping supports should be provided as close as is practicable to the port connections in order to minimize external loads. This filter assembly must NOT be electrically isolated from the users earthing system. This filter assembly must be earthed by connecting the users earthing system to one of the inlet/outlet connections.

CAUTION:

Reverse flow through filter element will cause damage.

- 4.5 Lines or hoses can be connected to the following housing inlet and outlet port options.

Port Type	Port Size
A20	1.625 - 12
C20	1.25 BSPF
D20	1.25 Dia. w/4x.438-14 Mounting Holes
F20	1.25 Dia. w/4xM10x1.5-6H Mounting Holes

NOTE: Painting of the filter housing is optional. The coating on the filter housing is a suitable painting base. Cover the differential pressure warning device and nameplate if painting the housing.

- 4.6 Commission filter assembly as follows:

WARNING:

USE FITTINGS OR ADAPTORS COMPATIBLE WITH PORTS SUPPLIED AS SHOWN BY PART NUMBER ON NAMEPLATE AND NOTED IN DATA SHEETS: USE OF INCORRECT FITTINGS OR ADAPTORS CAN CAUSE FILTER HOUSING OR MANIFOLD FAILURE RESULTING IN LOSS OF PRESSURE AND POSSIBLE SYSTEM FAILURE OR PERSONAL INJURY.

- (a) Ensure that plugs are closed.
- (b) Open left hand bleed plug one and one half turns.
- (c) Position change-over valve to direct flow through left hand housing.

- (d) Jog system and fill filter until all air bleeds through the plug, then tighten plug. Pressurize system fully and check for leaks; if leaks occur shut down, depressurize, and repair leak before proceeding. Refer to section 5.2.
- (e) Depressurize the system.
- (f) Open right hand bleed plug a minimum of one and one half turns.
- (g) Position change-over valve to allow flow through right hand housing. Jog system and fill filter until all air bleeds through the plug, then tighten plug.
- (h) Fully pressurize and check for leaks, if leaks occur shut down, depressurize, and repair leak before proceeding. Refer to section 5.2.
- (i) On completion of commissioning, position change-over valve to select on-line side of housing.

CAUTION:

Failure to bleed the filter housing adequately will increase the dissolved air content of the system fluid which will shorten fluid life and may cause other problems in the system.

5 Routine maintenance

- 5.1 **Pall** filters do not normally require special attention except for periodic monitoring of the differential pressure warning device. Schedule replacement of filter element every six months or sooner, and have ample supply of spare elements available.
- 5.2 If external leakage is noted, replace O-ring at leak. If leakage persists, check sealing surfaces for scratches or cracks; replace any defective parts.
- 5.3 Differential pressure devices actuate when the element needs changing or because of high fluid viscosity in 'cold start' conditions. If 'cold start' conditions exist, see Section 6.2 and 6.3.
- 5.4 A dirty system can quickly plug a new filter element, especially with **Pall** high efficiency filter media. It may require one or two initial element changes to stabilize element life. If element life is short or differential pressure is excessive, filter may be undersized; refer to the sizing and selection section of the product literature or contact your local Pall representative.

6 Differential pressure devices (optional)

Reference should be made to product literature for dimensions, operating parameters, part numbering, ordering information and specifications.

- 6.1 Differential pressure devices actuate when the element needs changing or because of high fluid viscosity in 'cold start' conditions.
- 6.2 If a visual indicator is fitted and actuates during 'cold start' (red button extends 5mm, 3/16"), reset by depressing the button when the normal operating temperature is reached. If indicator actuates after resetting at normal operating temperature, replace the element

NOTE: Option 'P' visual indicator has thermal lockout and manual reset. No signal below 0°C (32°F), signal above 29°C (80°F).

- 6.3 If the electrical switch actuates (e.g. red light comes on) during cold start, continue operating until the signal (red light) goes out as system warms to normal operating temperature. This feature can be used as 'warm up' indication in operating procedures. If the warning signal (red light) remains or appears when system is warm, replace the filter element.

- 6.4 Use of both positive indication (green light) and negative indication (red light for dirty element) is recommended to effectively monitor filter element life.

Electrical connections and ratings for all differential pressure switch options:

110 VAC	=	4A (inductive), 4A (resistive)
220 VAC	=	4A (inductive), 4A (resistive)
28 VDC	=	3A (inductive), 5A (resistive)
48 VDC	=	1A (inductive), 1.5A (resistive)
125 VDC	=	0.25A (inductive), 0.5A (resistive)

Maximum inrush - 24 amps.

Underwriter's lab. Inc. listed ratings of pressure switch (Microswitch) options are:

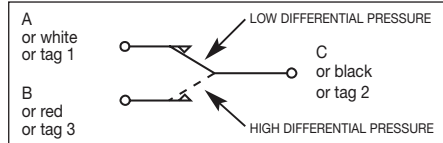
4 amps at 250 VAC
0.25 amp resistive at 220 VDC
0.50 amp resistive at 110 VDC

Electrical differential pressure switch operation:

When preset differential pressure is exceeded continuity switches from 'C' - 'A' to 'C' - 'B'.

When differential pressure decreases below the pre-set value continuity returns to 'C' - 'A'.

Figure 1 - Switch Circuit Diagram



7 Filter element servicing

During servicing the external surfaces of the filter assembly must be cleaned to remove any dust deposits. Servicing must be conducted using suitable tools that do not present a hazard. Do not service when a potentially explosive atmosphere is present.

CAUTION:

Filter elements should be replaced upon indication or at specified intervals, six months maximum. Failure to change the element will cause the filter to go into bypass.

Refer to Pall Product Literature for item numbers for applicable replacement element series. Remove and replace element as follows:

WARNING:

FAILURE TO DEPRESSURISE THE FILTER BEFORE SERVICING ELEMENT COULD RESULT IN EXPLOSIVE LOSS OF FLUID, DAMAGE TO EQUIPMENT AND POSSIBLE PERSONAL INJURY.

- 7.1 Open the bleed plug (5) on the off-line housing cover a minimum of one and one half turns. Open commutator valve (2) three full turns to equalize pressure between the off-line housing and the on-line housing. Close the commutator valve (2) when a bubble free stream of oil flows from the bleed plug. Tighten the bleed plug.
- 7.2 Pull the latching pin and rotate change over valve handle (7) 180° to bring off-line housing on-line. Insert latching pin to prevent accidental handle movement.

NOTE: Pointed end of change-over valve handle (7) indicates the filter housing on-line.

- 7.3 The off-line housing is now isolated from the system by the changeover valve. Depressurize the housing by slowly venting through the bleed plug (5). Remove drain plug (8) on the filter head and drain fluid into a suitable container. Discard fluid in accordance with local Health and Safety regulations. Close drain plugs (5 and 8).

NOTE: During element replacement some small internal leakage may be noted from the on-line filter housing. If a large amount of leakage occurs, the ball valve seals may require adjustment or the check valve seals need servicing. Check for closure of commutator valve before disassembling of unit for repairs.

- 7.4 Manually remove the cover (4) from tube (3). Remove element (10) and carefully inspect the surface for significant visible contamination. Normally no dirt should show but visible dirt or particles can be an early warning of system component breakdown and can indicate potential system failure. Discard both the element and its O-ring in accordance with local Health and Safety Procedures. The filter element is NOT CLEANABLE. Any attempt to clean the filter can cause degradation of the filter medium and allow contaminated fluid to pass through the filter.
- 7.5 Inspect filter cover (4) and tube (3) for possible damage or malfunction and replace if damage is observed. Remove any accumulated dirt from the filter tube and cover interior, being careful to prevent contaminant from entering the outlet and flowing downstream. DO NOT run the system without a filter element (10) installed. Inspect the O-rings on the cover (4) for damage and replace if necessary. Use the correct replacement filter element (10) part number called for on assembly nameplate.
- 7.6 Lubricate element O-ring seal with clean system fluid and push filter element (10) straight into filter housing. Ensure that the O-ring end of the element points towards the head. Ensure the cover (4) and tube (3) threads are clean and dry. Lightly lubricate cover seal with clean system fluid. HAND TIGHTEN cover or tube and cover until it bottoms out.
- 7.7 Use a torque wrench and tighten cover and tube assembly to 10-14 FT LBS (13-19 Nm). Do Not Over Tighten.

WARNING:
FAILURE TO REPLACE DAMAGED PARTS IN THE FILTER ASSEMBLY CAN CAUSE COMPONENTS IN THE HYDRAULIC SYSTEM TO FAIL OR DEGRADE IN THEIR PERFORMANCE.

- 7.8 Open the bleed plug (5) on the off-line housing cover one and one half turns. Open commutator valve (2) three full turns to equalize pressure between the offline housing and the on-line housing. Close the commutator valve when a bubble free stream of oil flows from the bleed plug. Tighten the bleed plug.
- 7.9 After element change ENSURE VISUAL DIFFERENTIAL PRESSURE WARNING DEVICE IS RESET BY PUSHING IN THE BUTTON; electrical devices are reset automatically. When system reaches normal operating temperature, check that the electrical switch has not actuated and/or that visual warning button remains depressed. If visual indicator actuates due to a cold start condition, reset indicator as per Section 6. Filter housing is now ready for change-over when required.

8 Ball Valve Servicing

Refer to Service Parts List (Section 11 and 12) for item numbers for seal kits and Pall product literature for replacement part.

- 8.1 Completely shut down system and depressurize system by opening bleed plug (5). Remove drain plug (8) after depressurizing.

WARNING:
FAILURE TO DEPRESSURISE THE SYSTEM BEFORE SERVICING UNIT COULD RESULT IN EXPLOSIVE LOSS OF FLUID, DAMAGE TO EQUIPMENT AND POSSIBLE PERSONAL INJURY

- 8.2 With the ball valve handle shaft facing the operator and the handle pointer pointing to the right side, remove the right hand Head Assembly.
- 8.3 Remove in the following order:
 - (a) Remove Filter Element (10) per section 7.
 - (b) Remove 4 socket head cap screws (6), loosen 1 hex head bolt (6.1) and remove the head assembly.
 - (c) Unscrew retainer seat (14) and O-ring (16) (see Fig. 5).
 - (d) Remove outer ball seat (17)
 - (e) Remove ball (19) (Note ball orientation when removing)
 - (f) Remove inner ball seat (17)
 - (g) Remove handle from valve shaft (7)
 - (h) Remove valve shaft (28)
- 8.4 Replace all O-rings, nylon bar in retainer, ball seats and valve shaft washer (30). Use appropriate kit per type of seal. See Ball Valve Seal Kit list.

NOTE: Lubricate all o-rings before installation.

- 8.5 Install in the following order;
 - (a) Valve shaft (28) and handle (7), ensure the pointer on the valve handle points to the disassembled side.
 - (b) Inner ball seat (17) and O-ring (18).
 - (c) Orient the ball such that the groove aligns with the key on the stem of the handle, install ball (19).
 - (d) Outer ball seat (17) and O-ring (18),
 - (e) Install Retainer Seat Valve (14), Tighten Retainer Seat Valve into valve body so that ball cannot move, then back Retainer off by 1/8 to 1/4 turn to allow for rotation of ball. (Resistance to ball rotation must be present. Free rotation is not acceptable).

- (f) Install O-rings (13, 20) into grooves in head.
 - (g) Clean all threads before applying Loctite 243 medium strength to Socket Head Cap Screws (6) and hex bolt (6.1), install and torque to 50-55 LB-FT.
 - (j) Install Filter Element (10) per Section 7.
- 8.6 Lubricate o-rings and install bleed and drain plugs (5 and 8) and torque to 10-14 LB-FT.
- 8.7 Commission filter assembly per Section 4.5.

9 Check Valve Servicing

NOTE: Service Check Valve at the same time as Ball Valve service.

WARNING:
FAILURE TO DEPRESSURISE THE SYSTEM BEFORE SERVICING UNIT COULD RESULT IN EXPLOSIVE LOSS OF FLUID, DAMAGE TO EQUIPMENT AND POSSIBLE PERSONAL INJURY.

- 9.1 Completely shut down system and depressurize system by opening bleed plugs (5) and remove drain plugs (8) after depressurizing.
- 9.2 With the ball valve handle shaft facing the operator, remove the right hand Head Assembly.
 - (a) Remove Filter Element (10) per section 7.
 - (b) Remove 4 Socket Head Cap Screws (6) and loosen 1 hex head bolt. Remove head (1).
- 9.3 Remove Check Valve assembly by pulling straight out. (11).
- 9.4 Restrain one of the valve seats and unscrew the opposite end (see Fig. 8), (DO NOT DAMAGE SEAL AREA AND DO NOT HOLD ONTO THE SHAFT).
- 9.5 Remove the poppets.

WARNING:
THIS ASSEMBLY IS SPRING LOADED. ENSURE ASSEMBLY IS PROPERLY RESTRAINED DURING DISASSEMBLY TO PREVENT POTENTIAL FOR DAMAGE TO PARTS OR POSSIBLE PERSONAL INJURY.

NOTE: Lubricate all seals before installation. The open end of the U-cup seal must point toward the center of the Check Valve Assembly. (see Fig. 2)

- 9.6 Replace O-rings and U-cup seals. Use appropriate kit per type of seal. See Check Valve Seal Kit list. (Section 13)

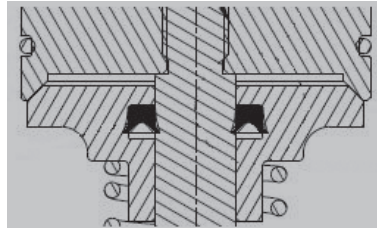
NOTE: Poppets and seats are matched sets. Do not interchange seats and poppets. See Fig. 3 for proper part configuration.

- 9.7 Assemble (per Figure 3.)

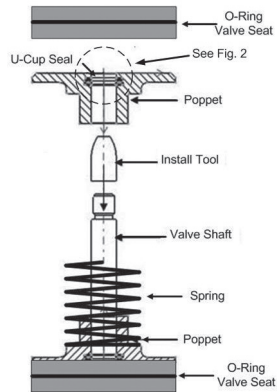
NOTE: Use seal installation tool to install new seals and poppets onto the valve shaft. Failure to use this tool will damage the U-cup seals.

- 9.8 Clean all threads before applying removable Loctite 243 to shaft threads and attach removed seat.
- 9.9 Install Check Valve Assy. (11).

- 9.10 Install head. Clean all threads before applying Loctite 243 medium strength to Socket Head Cap Screws (6) and hex bolt (6.1), install and torque to 50-55 LB-FT.
- 9.11 Install Filter Element (10) per Section 7.
- 9.12 Lubricate o-rings and install bleed and drain plugs (5 and 8) and torque to 10-14 LB-FT.
- 9.13 Commission filter assembly per Section 4.7.



U-Cup Orientation
Figure 2



Check Valve Configuration
Figure 3

10 Warranty, Limitation of Liability and Remedies

THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WITH RESPECT TO ANY OF THE PRODUCTS, NOR IS THERE ANY OTHER WARRANTY EXPRESS OR IMPLIED, EXCEPT AS PROVIDED FOR HEREIN.

For a period of twelve months from the date of delivery from Seller or three thousand hours of use, whichever occurs first (the "Warranty Period"), Seller warrants that products manufactured by Seller when properly installed and maintained, and operated at ratings, specifications and design conditions, will be free from defects in material and workmanship. By way of explanation and not limitation, the Seller does not warrant the service life of the filter element as this is beyond the Seller's control and depends upon the condition of the system into which the filter is installed. Seller's liability under any warranty is limited solely (in Seller's discretion) to replacing (FOB original ship point), repairing or issuing credit for products that become defective during the Warranty Period. Purchaser shall notify Seller promptly in writing of any claims and provide Seller with an opportunity to inspect and test the product claimed to be defective. Buyer shall provide Seller with a copy of the original invoice for the product, and prepay all freight charges to return any products to Seller's factory, or other facility designated by Seller. All claims must be accompanied by full particulars, including system operating conditions, if applicable. Seller shall not be liable for any product altered outside of the Seller's factory except by Seller or Seller's authorized distributor, and then, as to the latter, only for products which have been assembled by the distributor in accordance with Seller's written instructions. Nor shall Seller be liable for a product subjected to misuse, abuse, improper installation, application, operation, maintenance or repair, alteration, accident or negligence in use, storage transportation, or handling. In no event will Seller be liable for any damages, incidental, consequential or otherwise, whether arising out of or in connection with the manufacture, packaging, delivery, storage, use, misuse, or non use of any of its products or any other cause whatsoever. Seller shall not be liable for any product altered outside of the Seller's factory except by Seller or Seller's authorized distributor, and then, as to the latter, only for products which have been assembled by the distributor in accordance with Seller's written instructions. Nor shall Seller be liable for a product subjected to misuse, abuse, improper installation, application, operation, maintenance or repair, alteration, accident or negligence in use, storage transportation or handling. In no event will Seller be liable for any damages, incidental, consequential or otherwise, whether arising out of or in connection with the manufacture, packaging, delivery, storage, use, misuse, or non use of any of its products or any other cause whatsoever.

11 Parts List

Fig.	List	Description	Quantity
4	1	Head MC	2
	2	Needle Commuter Valve	1
	3	Tube	2
	4	Cover MC Cap Service	2
	5	Plug, Bleed Hex HD Cover	2
	6	Screw, Cap, SOC HD	8
	6a	Bolt Hex HD	2
	7	Handle MC	1
5	8	Plug, Bleed (Head) A14	2
	9	Tube/Cover Assy.	2
6	10	Filter Element Assy.	UR219*** See product literature
	11	Check Valve Assy.	1
	12	Ball Valve Assy.	1
7	13	O-Ring -147	2
	14	Retainer Seat, Ball Valve	1
	15	Bar, Nylon .125 Dia x .141 Lg	1
	16	O-Ring -033	1
	17	Seat, Ball Valve	2
	18	O-Ring -130	2
	19	Ball, MC	1
	20	O-Ring -134	2
8	21	O-Ring - 029	2
	22	Seat, Valve	2
	23	Poppet	2
	24	Seal, U-Cup	2
	25	Shaft, Valve	1
	26	Spring, Compression	1
	27	Installation Tool, U-Cup	1

12 Filter Assembly Seal Kit List

Item	Description	Catalog Number	Quantity
1	Nitrile	1386269	1
2	Fluorocarbon	1386270	1
3	Ethylene Propylene	1386271	1

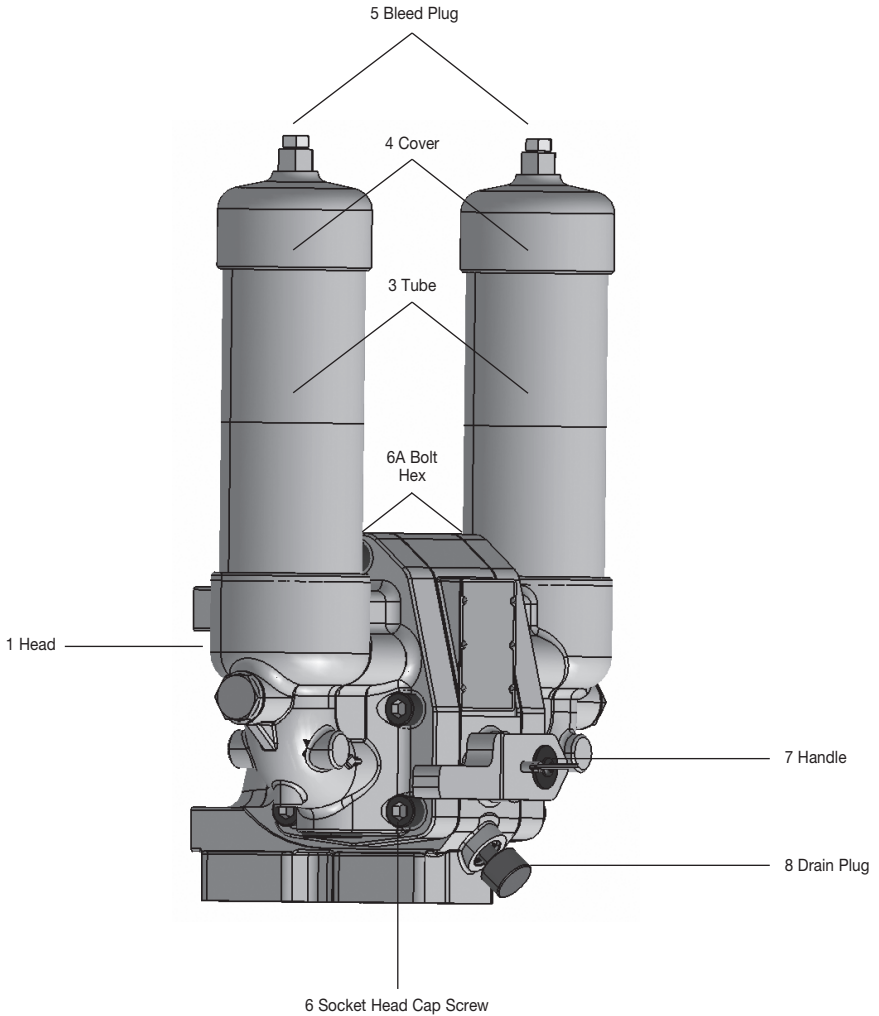
13 Ball Valve Seal Kit

Item	Description	Catalog Number	Quantity
1	Nitrile	1395024	1
2	Fluorocarbon	1395025	1
3	Ethylene Propylene	1395026	1

14 Check Valve Seal Kit

Item	Description	Catalog Number	Quantity
1	Nitrile	1395027	1
2	Fluorocarbon	1395028	1
3	Ethylene Propylene	1395029	1

Figure 4: UR229



UR229C/UR229H

DUPLEX FILTER ASSEMBLY

UR229C/UR229H Series

service instructions

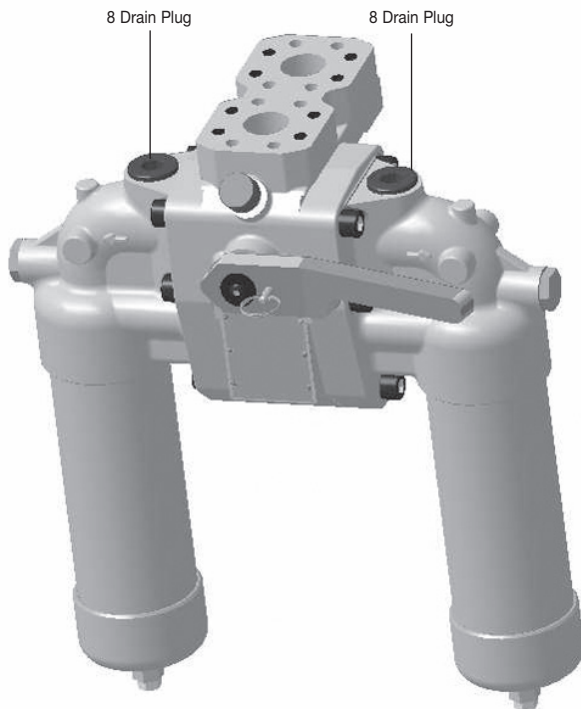


Figure 6

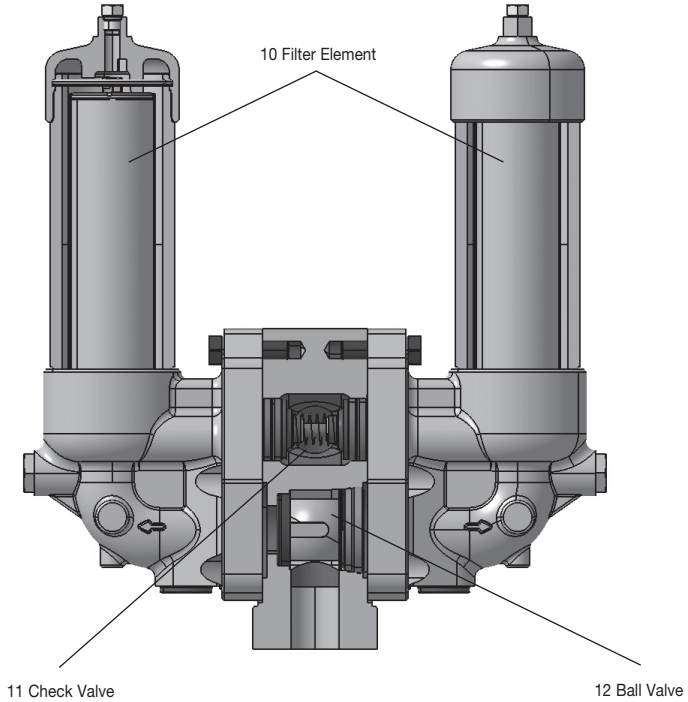
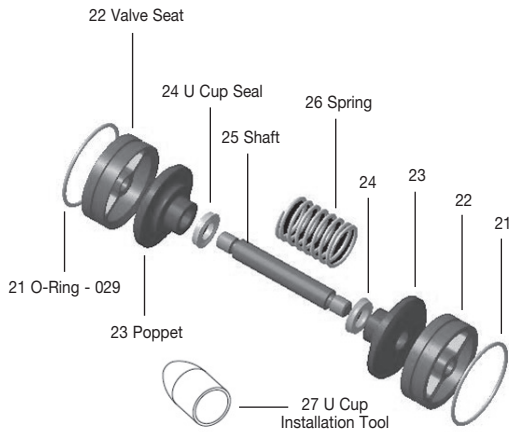
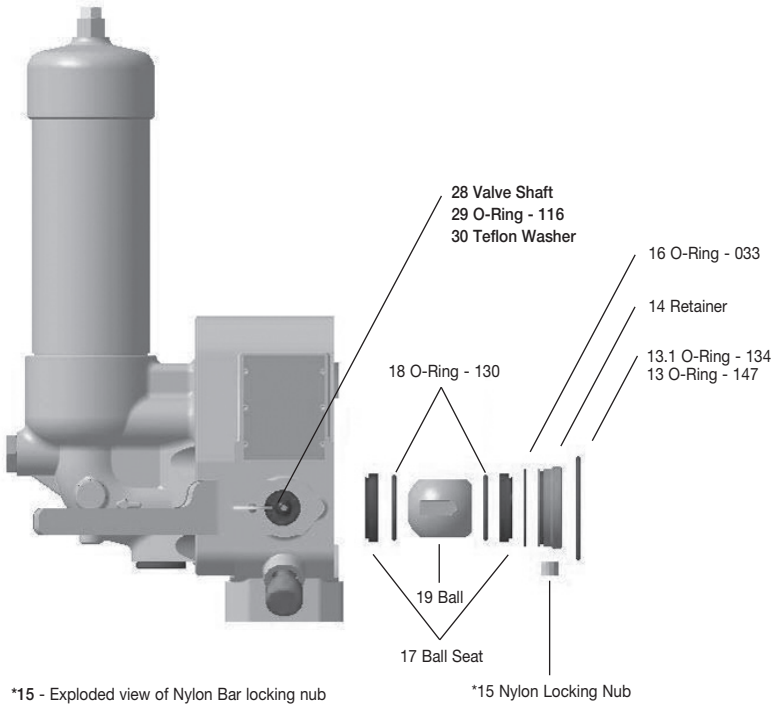


Figure 7



UR229

DUPLEX FILTER ASSEMBLY

UR229 Series

service instructions



Pall Corporation

Pall Machinery and Equipment

25 Harbor Park Drive

Port Washington NY 11050

+1 516 484 3600 telephone

+1 800 289 7255 toll free US

Portsmouth - UK

+44 (0)23 9233 8000 telephone

+44 (0)23 9233 8811 fax

www.pall.com/contact



**Better Lives.
Better Planet.SM**

Visit us on the Web at www.pall.com

Pall Corporation has offices and plants throughout the world. For Pall representatives in your area, please go to www.pall.com/contact

Because of technological developments related to the products, systems, and/or services described herein, the data and procedures are subject to change without notice. Please consult your Pall representative or visit www.pall.com to verify that this information remains valid.

© Copyright 2018, Pall Corporation. Pall and  are trademarks of Pall Corporation.

® Indicates a trademark registered in the USA. Better Lives. Better Planet. and Filtration. Separation. Solution.SM are service marks of Pall Corporation.