

Instruction Manual

RV Pump Cartridge Kits

Description	Hydrocarbon Item Number	PFPE Item Number
RV3 Pump Cartridge Kit	A652-01-032	A652-09-032
RV5 Pump Cartridge Kit	A653-01-032	A653-09-032
RV8 Pump Cartridge Kit	A654-01-032	A654-09-032
RV12 Pump Cartridge Kit	A655-01-032	A655-09-032



Important safety Information

- Vacuum pumps are potentially dangerous if incorrectly used, repaired or maintained, so please approach the repair or maintenance with caution.
- Any incorrectly fitted spare parts could damage your pump and could be potentially dangerous.
- Never allow unqualified personnel to attempt to remove or replace any part of the pump.
- If you have any doubts about the servicing procedures or the products capabilities please contact Edwards.
- Before returning any equipment to Edwards for repair please follow the Edwards HS1 procedure and complete an HS2 declaration form to warn of any substances used or produced in the equipment that can be dangerous. The procedure and forms are included with the pump instruction manuals and can be downloaded together with Edwards local contact details from www.edwardsvacuum.com
- Always conform to service schedules unless adverse conditions necessitate more frequent servicing.
- Report any defect before an accident or consequential damage can occur.
- Observe local and country specific regulations, norms and guidelines.
- Never allow anyone to remove large or heavy components without adequate lifting equipment.
- Before maintenance work is begun, ensure the pump is switched off and isolated from the mains.
- The pump may have been exposed to processes which use hazardous substances or produces by-products which are dangerous to human health and safety, for example, chemically active, biologically active or radioactive substances.
- Before working on a pump, ensure that the correct personal protective equipment is available and being used. Always wear safety goggles. Wear a breather mask with positive air pressure and take other precautions if you believe the pump may be contaminated with hazardous substances and dusts.
- When applying sealants and lubricants, prevent contact with the skin by wearing suitable gloves.
- Seals may contain fluoroelastomer, which when properly handled is not dangerous but which may produce a toxic and corrosive residue (hydrogen fluoride or hydrofluoric acid) in the event of excessive heat or fire depending on the circumstances of degradation and other materials involved.
- On completion of maintenance, check the pump functions correctly and that all guards and protection devices are fitted and working correctly and that the pump is electrically safe.
- If the pump is used for handling hazardous substances check the pump for leak-tightness before use.
- Dispose of waste oil and any process by-products in accordance with local and national safety and environmental requirements. It is usually illegal to dispose of waste oil into drains or water courses, or to bury it.

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For return of equipment, complete the HS Forms at the end of this manual.

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1 Introduction

1.1 Scope of this manual

This manual provides installation instructions for the Cartridge Kits for the Edwards RV Rotary Pumps. You must use the Cartridge Kits as specified in this manual.

Use a Cartridge Kit to replace the cartridge, springs, seals and fluoroelastomer components in an RV rotary pump. We recommend that you use all of the components in the Cartridge Kit when you service the pump.

The contents of the kit are defined in [Section 2](#). [Section 3](#) describes how to install the kit components in the pump.

1.2 Safety



WARNING

Do not touch or inhale the thermal breakdown products of fluorinated materials which may be present if the pump has been heated to 210 °C and above. These breakdown products are very dangerous. Some of the seals in the pump are made from fluorinated materials.

The dynamic seals and O-rings used in this pump are made from fluorinated materials. Fluorinated materials are safe in normal use but can decompose into very dangerous materials (which may include hydrofluoric acid) if they are heated to 210 °C and above.

The pump may have overheated if it was misused or if it was in a fire. If the pump has overheated, take extreme care to avoid skin contact with any part of the pump and to avoid inhalation of vapours from the pump. Health and Safety Data sheets for fluorinated materials used in the pump are available on request: contact your supplier or Edwards.

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2 Unpack and inspect

Remove all the packing materials and protective covers and check the components of the kit.

If any component is damaged, notify your supplier and the carrier in writing within three days; state the Item Number of the kit together with your order number and the supplier's invoice number. Retain the packing materials for inspection. Do not use the kit if it is damaged.

Check that your kit contains the components listed in Table 1. Note that, except for the cartridge, the kit components are packed in three separate bags, labelled bag 1, 2 and 3; the contents of the bags are shown in Table 1. If any component is missing, notify your supplier in writing within three days.

If the kit is not to be used immediately, replace the protective covers and repack the components of the kit in the packing materials. Store the kit in cool, dry conditions until it is required for use.

Table 1 - Checklist of cartridge kit components

Bag label	Qty	Description	Figure 1-3 reference	Check (✓)
-	1	Cartridge	A	<input type="checkbox"/>
Bag 1	1	Gas ballast check-valve	210	<input type="checkbox"/>
	2	Spring (valve and gas ballast check-valve)	211	<input type="checkbox"/>
	1	Printed gasket (cartridge)	215	<input type="checkbox"/>
	1	Dump valve	217	<input type="checkbox"/>
	1	Oil pressure valve	209	<input type="checkbox"/>
	1	O-ring: 57.6 x 2.4, viton (cartridge/adaptor)	127	<input type="checkbox"/>
	1	Coupling element	411	<input type="checkbox"/>
Bag 2	1	Inlet-valve 'U' seal	202-5	<input type="checkbox"/>
	1	O-ring: 49.5 x 3.0, nitrile (inlet-valve)	202-6	<input type="checkbox"/>
	1	O-ring: 7.6 x 2.4, viton (inlet-valve)	202-7	<input type="checkbox"/>
	1	O-ring: 32.5 x 3.0, nitrile (inlet-valve)	202-8	<input type="checkbox"/>
	1	Spring (inlet-valve)	213	<input type="checkbox"/>
	1	Printed gasket (top-plate)	216	<input type="checkbox"/>
Bag 3	1	O-ring: 42.5 x 3.0, nitrile (inlet connection)*	005	<input type="checkbox"/>
	1	O-ring: 14.6 x 2.4, nitrile (gas ballast control)	203-3	<input type="checkbox"/>
	1	O-ring: 21.5 x 3.0, nitrile (gas ballast control)	203-4	<input type="checkbox"/>
	1	O-ring: 9.6 x 2.4, viton (mode selector)	204-3	<input type="checkbox"/>
	1	Spring (gas ballast control)	212	<input type="checkbox"/>
	3	O-rings: 21.5 x 3.0, nitrile (gas ballast insert* and mode selector)	220	<input type="checkbox"/>
	1	Shoulder washer	222	<input type="checkbox"/>
	1	Exhaust diaphragm	301-3	<input type="checkbox"/>
	1	Printed gasket (oil-box)	314	<input type="checkbox"/>
	3	O-rings: 28.2 x 3.53, nitrile (oil filler-plugs and exhaust-flange)	319	<input type="checkbox"/>
	1	O-ring: 69.5 x 3.0, nitrile (sight-glass)	321	<input type="checkbox"/>
	1	O-ring: 15.6 x 2.4, nitrile (oil drain-plug)	323	<input type="checkbox"/>

* If required.

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3 How to use the cartridge kit

Refer to [Figure 1 to 3](#) which show exploded views of the RV pump and use the following procedure to install the components of the kit. Where necessary, refer to the RV pump instruction manual.

1. Switch off the RV pump, disconnect it from the electrical supply and allow the pump to cool.
2. Drain the oil from the pump. Undo and remove the bolts (327) which secure the oil-box (305) and remove the oil-box from the pump. Remove any debris from the inside of the oil-box, then clean all surfaces of the oil-box with a suitable cleaning solution.
3. Dismantle the pump; note that you do not need to dismantle the cartridge. Use a suitable cleaning solution to clean all the surfaces of the components that you will reuse.
4. If the pump has a detachable stainless steel inlet-flange (instead of the integral top-plate (208)), remove the inlet-flange and replace the O-ring (005) with the O-ring supplied.
5. If the end-plate (107) on the old cartridge has a vent-valve:
 - Remove the end-plate from the old cartridge
 - Fit the old end-plate (107) to the new cartridge.
6. Use the components supplied in the Cartridge Kit to replace the corresponding components in the pump. Ensure that the components are clean before you fit them. Before you fit fluoroelastomer components, wipe them with a clean lint-free cloth and lightly lubricate them with the oil you use in your pump.
7. Remove and inspect the restrictor (226). If necessary, use a suitable cleaning solution to clean the restrictor orifice.
8. Remove and inspect the filter (if fitted) from the air bleed assembly (201). If necessary, use a suitable cleaning solution to clean the orifice and the filter.
9. Reassemble the pump. When you refit the side panels (408, 412), ensure that you do not over-tighten the securing screws. If the side panels are damaged, you must replace them before you operate the pump.
10. Use the oil-box printed gasket (314) supplied in the kit and refit the oil-box (305) to the pump. Fill the pump with the correct quantity of new oil.
11. Fit an oil mist filter to the pump-outlet and connect the outlet of the oil mist filter to a suitable exhaust-extraction system.
12. Connect the pump to the electrical supply, then look at the oil-level in the sight-glass and switch on the pump; check that the oil-level drops by 3 to 5 mm when you switch on the pump. If the oil-level does not drop, refer to the pump instruction manual.
13. Refer to the RV pump instruction manual for normal operation of the pump.
14. Dispose of the old components and used oil safely in accordance with all local and national safety and environmental requirements.

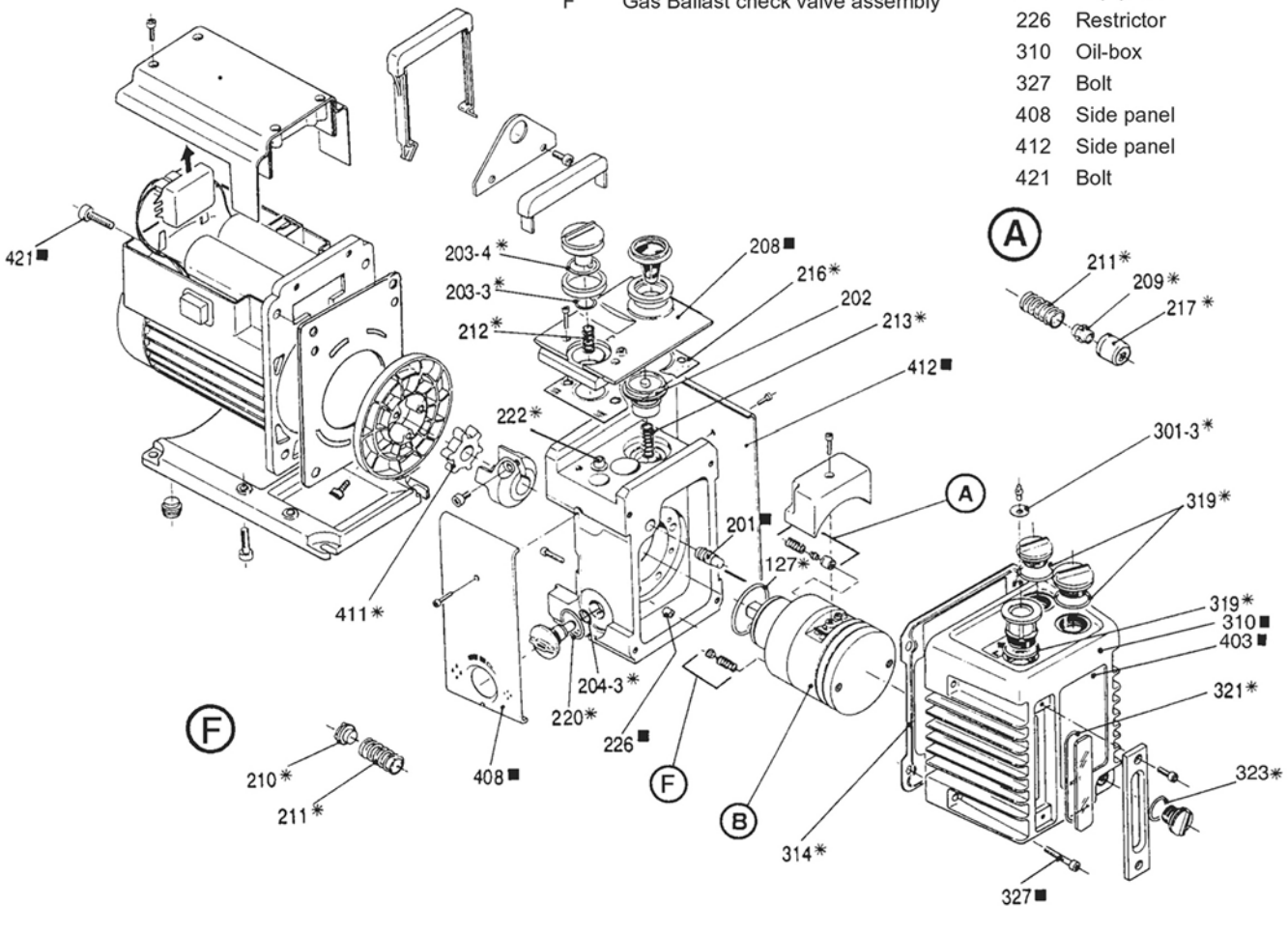
How to use the cartridge kit

Figure 1 - Exploded view of the RV pump

- * Included in the Cartridge Kit: see Table 1
- Included for reference only: see key ⊗

- A Oil pressure/dump valve assembly
- B Cartridge: see Figure 2
- F Gas Ballast check valve assembly

- 201 Air bleed assembly
- 202 Inlet-valve assembly: see Figure 3
- 208 Top-plate
- 226 Restrictor
- 310 Oil-box
- 327 Bolt
- 408 Side panel
- 412 Side panel
- 421 Bolt



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Figure 2 - Exploded view of the cartridge

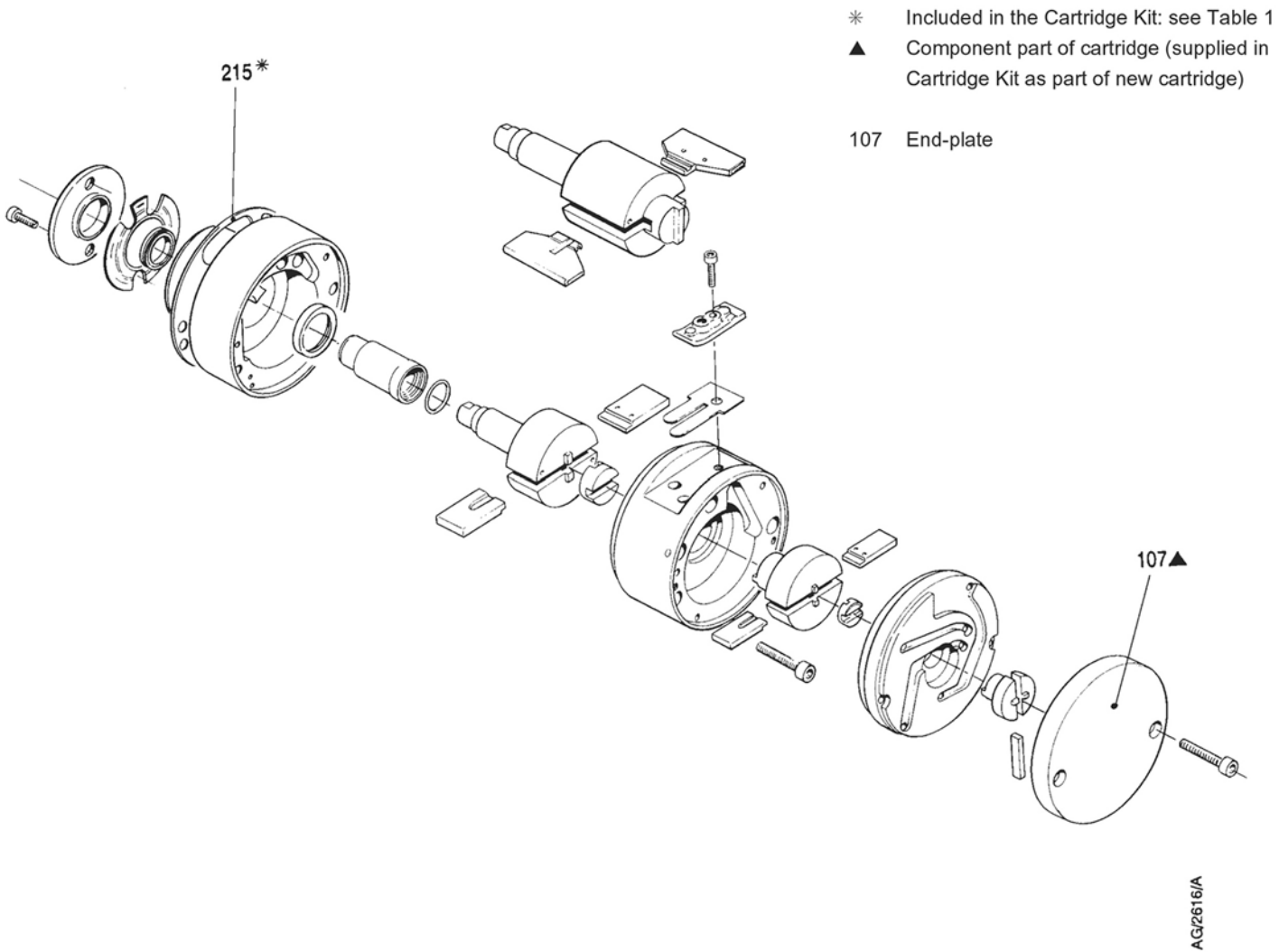
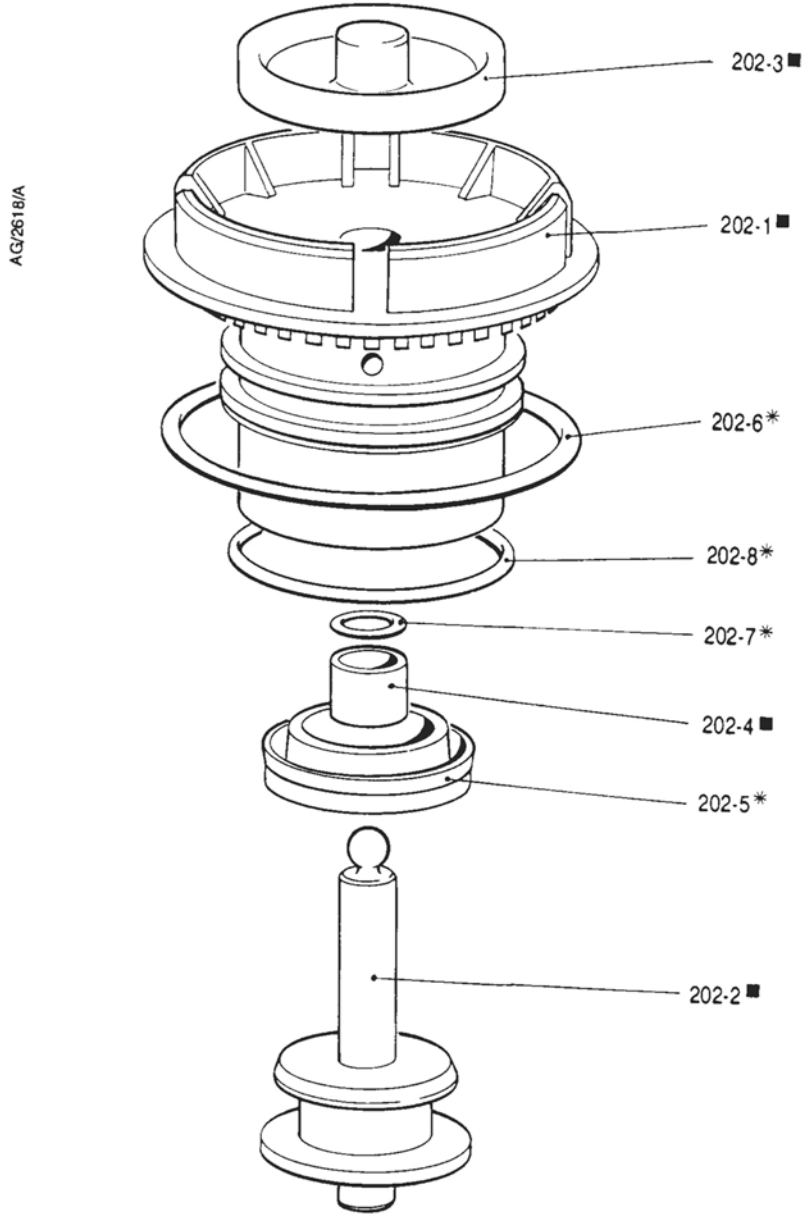


Figure 3 - Exploded view of inlet-valve assembly



- * Included in the Cartridge Kit: see Table 1
- Included for reference only: see key below

- 202-1 Valve cover
- 202-2 Piston
- 202-3 Valve pad
- 202-4 Bush