

# Global Vacuum PRODUCTS

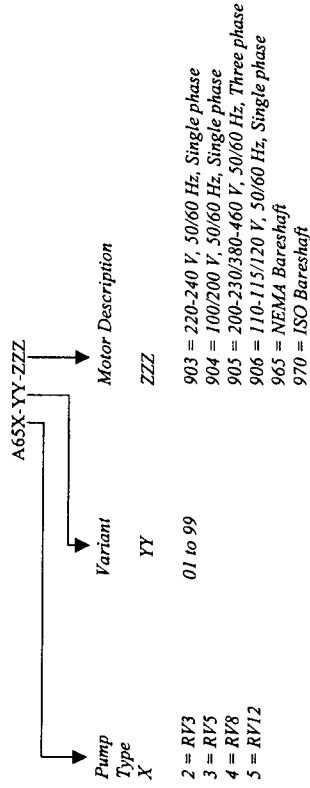
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*A Kelly Vacuum Technologies Company*

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## Parts and Maintenance Kits Manual

### *RV3, RV5, RV8 and RV12 Rotary Vane Pumps*



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## 1 INTRODUCTION

### 1.1 Scope of this manual

This manual provides information about the component parts of the Edwards RV3, RV5, RV8 and RV12 Rotary Vane Pumps, together with the installation instructions for the clean and overhaul kits, the blade kits and the inlet valve kit for the pumps. You must use the kits as specified in this manual.

Exploded views of a generic RV pump are shown in Section 2, together with a list of the component parts and an indication of whether the component parts are available as spares.

Section 3 lists the maintenance kits available for the RV pumps.

Use a Clean and Overhaul Kit to replace the springs, seals and elastomer components in the pumps.

Use a Blade Kit and a Clean and Overhaul Kit when you replace the blades in the pump.

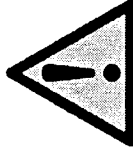
Use an Inlet Valve Kit to replace the inlet valve assembly in the pump.

We recommend that when you use a kit, you use all the components in the kit.

The contents of the kits and how to install them are defined in Section 3.

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### 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 these pumps 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 above 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 the vapours. Health and safety data sheets for fluorinated materials used in the pump are available on request: contact your supplier or Edwards.

## 2 PARTS LIST

Exploded views of a generic RV pump are shown in Figures 1 to 4. The component parts shown on the figures are listed in Table 1. When you read Table 1, take note of the following:

- Where a G.A. item is in the form 'XXX-Y', this specifies that the part is a component of a sub-assembly (that is, the inlet valve, exhaust flange or ballast knob sub-assemblies). In these cases, XXX specifies the sub-assembly (and may be shown on Figure 1) and Y specifies the specific component of the sub-assembly.

- The entries in the 'Kit No.(s)' column are cross references to the kits in Table 2. If a part has an entry in this column, then the component part is included in the referenced maintenance kit(s).
- If a part has an entry in the 'Item Number' column, then the part is available as a spare and the entry defines the Item Number of the spare part.

Description	Fig	Quantity				Kit No.(s)	Part No.
		RV3	RV5	RV8	RV12		
H.V. stator: RV3	3	1	-	-	-	A652-01-700	
H.V. stator: RV5	3	-	1	-	-	A653-01-700	
H.V. stator: RV8	3	-	-	1	-	A654-01-700	
H.V. stator: RV12	3	-	-	-	1	A655-01-700	
H.V. rotor: RV3 & RV5	3	1	1	-	-	A652-01-701	
H.V. rotor: RV8	3	-	-	1	-	A654-01-701	
H.V. rotor: RV12	3	-	-	-	1	A655-01-701	
L.V. stator: RV3 & RV5	3	1	1	-	-	A652-01-702 ▲	
L.V. stator: RV8 & RV12	3	-	-	1	1	A654-01-702 ▲	
L.V. rotor: RV3 & RV5	3	1	1	-	-	A652-01-703	
L.V. rotor: RV8 & RV12	3	-	-	1	1	A654-01-703	
Oil pump stator	3	1	1	1	1	6-9, 20	
Oil pump rotor	3	1	1	1	1	6-9	
End plate	3	1	1	1	1	6-9	
Oldham coupling (H.V.-L.V.)	3	1	1	1	1	6-9	
Shaft-seal sleeve	3	1	1	1	1	6-9, 13	
Seal carrier	3	1	1	1	1	6-9, 12	
Reed valve	3	1	1	1	1, 1	6-9, 20	
Oil pump blade	3	1	1	1	1	2-9	
RV3 H.V. Blade	3	2	-	-	-	2, 6	
RV5 H.V. blade	3	-	2	-	-	3, 7	
RV8 H.V. blade	3	-	-	2	-	4, 8	
RV12 H.V. blade	3	-	-	-	2	5, 9	
L.V. blade: RV3 & RV5	3	2	2	-	-	2, 3, 6, 7	
L.V. blade: RV8 & RV12	3	-	-	2	2	4, 5, 8, 9	
Reed valve clamp	3	1	1	1	1	6-9	
Oldham coupling (L.V.-oil pump)	3	1	1	1	1	1, 6-9, 20	
Printed gasket (seal carrier)	3	1	1	1	1	1, 6-9, 12, 20	
Shaft seal (inner): 25 x 35 x 7	3	1	1	1	1	H021-09-066	
Shaft seal (outer): 20 x 30 x 7	3	1	1	1	1	H021-09-124	

On pumps with Serial number 9721 29 224 & earlier, all items marked thus (i.e. L.V. stator & oil pump), stator must be replaced at the same time. On pumps with later serial numbers, they may be replaced individually. If you fail to observe this practice, the pump will not operate.

Table 1 - Parts list

Item No	Description	Fig	Quantity				Kit No.(s)	Part No.
			RV3	RV5	RV8	RV12		
125	'O' ring: 14.6 i.d. x 2.4 section (rotor sleeve)	3	1	1	1	1	6-9, 13	
127	'O' ring: 57.6 i.d. X 2.4 section (carrier)	1	1	1	1	1	1, 6-9, 20	
129	Screw: cap-head M6 x 20 (seal carrier securing)	3	4	4	4	4	6-9	
130	Screw: cap-head M6 x 40 (end cover securing & LV to HV securing)	3	4	4	4	4	6-9	
131	M6 x 30 cap screw (coupling)	3	1	1	1	1	6-9	
132	Coupling hub	3	1	1	1	1	6-9	
133	Baffle	3	1	1	1	1	6-9	
201	Air bleed assembly	1	1	1	1	1	1, 20	
202	Inlet valve assembly	1	1	1	1	1	10	
202-1	Valve cover	4	1	1	1	1	10	
202-2	Piston	4	1	1	1	1	10	
202-3	Valve pad	4	1	1	1	1	10, 20	
202-4	Bush	4	1	1	1	1	10	
202-5	'U' seal	4	1	1	1	1	1, 6-10, 20	
202-6	'O' ring: 49.5 i.d. x 3.0 section	4	1	1	1	1	1, 6-10, 20	
202-7	'O' ring: 7.6 i.d. x 2.4 section	4	1	1	1	1	1, 6-10, 20	
202-8	'O' ring: 32.5 i.d. x 3.0 section	4	1	1	1	1	1, 6-10, 20	
203	Gas ballast control assembly	1	1	1	1	1	234-24-070	
203-1	Gas ballast knob	1	1	1	1	1	A652-01-008	
203-2	Filter	1	1	1	1	1	H021-20-036	
203-3	'O' ring: 14.6 i.d. x 2.4 section (gas ballast control)	1	1	1	1	1	1, 6-9, 20	
203-4	'O' ring: 21.5 i.d. x 3.0 section (gas ballast control)	1	1	1	1	1	237-24-073	
204	Mode selector assembly	1	1	1	1	1	A652-01-009	
204-3	'O' ring: 9.6 i.d. x 2.4 section (mode selector)	1	1	1	1	1	1, 6-9, 20	
205	Adaptor	1	1	1	1	1	A210-35-125	
208	Top plate	1	1	1	1	1	A265-01-036	
209	Oil pressure valve	1	1	1	1	1	1, 20	
210	Gas ballast check valve	1	1	1	1	1	1, 6-9, 20	
211	Spring (valve pad)	1	2	2	2	2	1, 6-9, 20	
212	Spring (gas ballast control)	1	1	1	1	1	1, 6-9, 20	
213	Spring (inlet valve)	1	1	1	1	1	1, 6-10, 20	
215	Printed gasket (cartridge)	3	1	1	1	1	1, 6-9, 20	
216	Printed gasket (top plate)	1	1	1	1	1	1, 6-9, 10, 20	
217	Dump valve	1	1	1	1	1	1, 6-9, 20	
219	'O' ring: 57.6 i.d. X 2.4 section (cartridge)	1	1	1	1	1	116-9	
220	'O' ring: 21.5 i.d. x 3.0 section (mode selector)	1	1	1	1	1	1, 6-9, 20	
222	Shouldered washer (gas ballast)	1	1	1	1	1	1, 20	
224	Screw: cap-head M6 x 20 (top plate securing)	1	4	4	4	4	4	
225	Screw: cap-head M6 x 40 (cartridge securing)	1	3	3	3	3	3	
226	Restrictor: M6	1	1	1	1	1	1	
301-1	Exhaust flange assembly	1	1	1	1	1	A652-01-007	
301-2	Exhaust pin	1	1	1	1	1		
301-3	Exhaust diaphragm	1	1	1	1	1		

Table 1 - Parts List (continued)

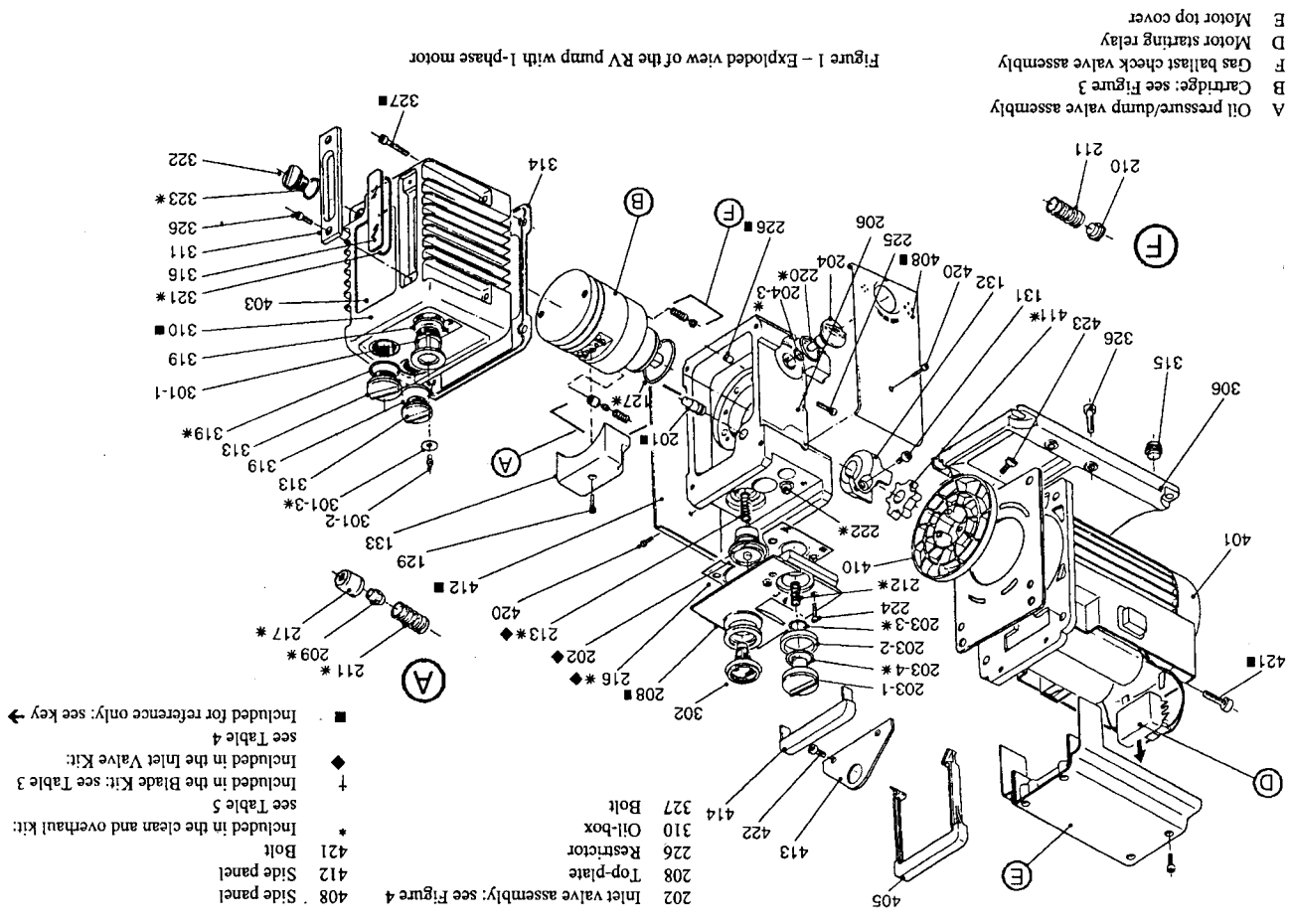
Description	Fig	Quantity				Kit No.(s)	Part No.
		RV3	RV5	RV8	RV12		
Inlet filler assembly	1	1	1	1	1	A223-05-067	
Baseplate	1	1	1	1	1	A210-35-126	
Coupling hub	1	1	1	1	1	A210-35-128	
Reed valve baffle	1	1	1	1	1	A210-35-130	
Oil box	1	1	1	1	1		
Sight-glass bezel	1	1	1	1	1	A210-71-077	
Coupling element	1	1	1	1	1	A259-08-118	
Oil filler plug	1	2	2	2	2	A271-60-005	
Printed gasket (oil box)	1	1	1	1	1	1, 6 - 9, 20	
Rubber foot	1	4	4	4	4	A265-01-041	
Sight-glass	1	1	1	1	1	A292-01-018	
Outlet cover	1	1	1	1	1		
'O' ring: 28.2 i.d. x 3.53 section (outlet flange & filler plug)	1	3	3	3	3	H021-26-026	
'O' ring: 69.5 i.d. x 3.0 section (sight-glass)	1	1	1	1	1	237-24-072	
Oil drain plug	1	1	1	1	1		
'O' ring: 15.6 i.d. X 2.4 section (drain plug)	1	1	1	1	1		
Screw: cap-head M6 x 30 (coupling securing)	1	1	1	1	1		
Screw: cap-head M6 x 20 (baffle securing)	1	7	7	8	8		
Screw: cap-head M6 x 40 (oil box securing)	1	4	4	4	4		
Outlet label	1	1	1	1	1		
Motor assembly: RV3 & RV5 (1-phase)	1	1	1	1	1		
Motor assembly: RV8 & RV12 (1-phase)	1	1	1	1	1	14, 16	
Motor assembly: RV3 & RV5 (3-phase)	2	1	1	1	1	15, 17	
Motor assembly: RV8 & RV12 (3-phase)	2	1	1	1	1	18	
Oil box label	1	1	1	1	1	19	
Lifting handle	1	1	1	1	1		
Side panel (mode selector side)	1	1	1	1	1	A259-08-125	
Ducting sheet	1	1	1	1	1	A652-01-018	
Fan	1	1	1	1	1	A652-01-019	
Fan (Nema motor)	1	1	1	1	1	A223-01-007	
Fan (ISO motor)	1	1	1	1	1	A223-01-009	
Fan (3-phase motor)	1	1	1	1	1	A223-01-009	
Coupling element	1	1	1	1	1	A223-01-010	
Side panel (pump logo side): RV3	1	1	1	1	1	A223-01-010	
Side panel (pump logo side): RV5	1	1	1	1	1	A223-01-010	
Side panel (pump logo side): RV8	1	1	1	1	1	A223-01-010	
Side panel (pump logo side): RV12	1	1	1	1	1	A223-01-010	
Lifting plate	1	1	1	1	1	A652-01-017	
Lifting plate cover	1	1	1	1	1	A653-01-017	
Screw: cap-head M4 x 10 (side panel securing)	1	4	4	4	4	A654-01-017	
Screw: cap-head M6 x 20 (motor securing)	1	4	4	4	4	A655-01-017	
Screw: cap-head M6 x 12 (lifting plate securing)	1	2	2	2	2	A654-01-023	
						A259-08-141	

Table 1 - Parts List (continued)

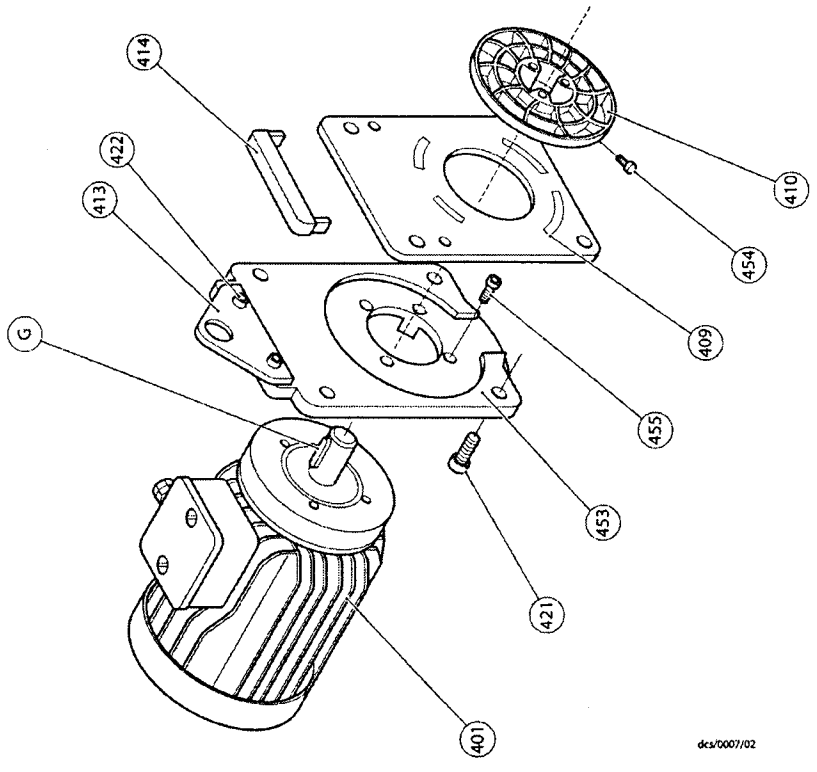
Item No	Description	Fig	Quantity	Kit No.(s)	Part No.
423	Screw: cap-head M6 x 40 (fan securing)	1	1		
452	Fan	1	1		
453	Motor plate	2	1		
454	Screw: cap-head M5 x 40 (fan securing)	2	1		
455	Screw: cap-head M6 x 20 (motor to motor plate securing)	2	1		
B	Motor top cover	1	1		
C	Shaft-seal spacer *	3	-		
D	Motor starting relay (Sinpac)	1	1		
				1, 12, 20	
				11	

Table 1 - Parts List (continued)

\* Not fitted to pumps as supplied, but may be fitted as part of maintenance.



**Figure 1 - Exploded view of the RV pump with 1-phase motor**



**Figure 2 - Exploded view of 3-phase motor assembly**

- C Shaft-seal spacer: not fitted to pumps as supplied, but may be fitted as part of maintenance
- 101 H.V. Stator
- 109 Shaft-seal sleeve
- 110 Shaft-seal carrier
- \* Included in the clean and overhaul kit: see Table 5
- † Included in the Blade Kit: see Table 3
- Included for reference only: see key →

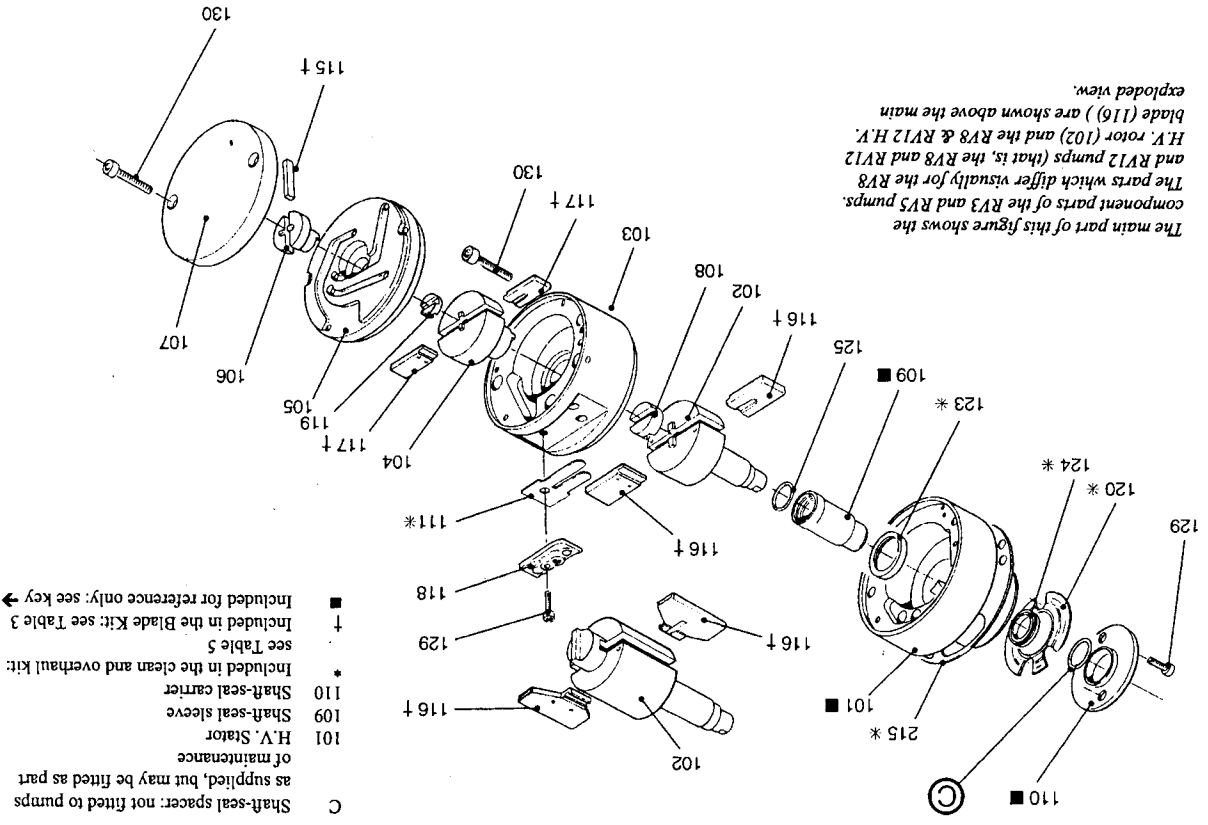


Figure 3 - Exploded view of the cartridge

Note: The main part of this figure shows the component parts of the RV3 and RV5 pumps. The parts which differ visually for the RV8 and RV12 pumps (that is, the RV8 and RV12 H.V. rotor (102) and the RV8 & RV12 H.V. blade (116)) are shown above the main exploded view.

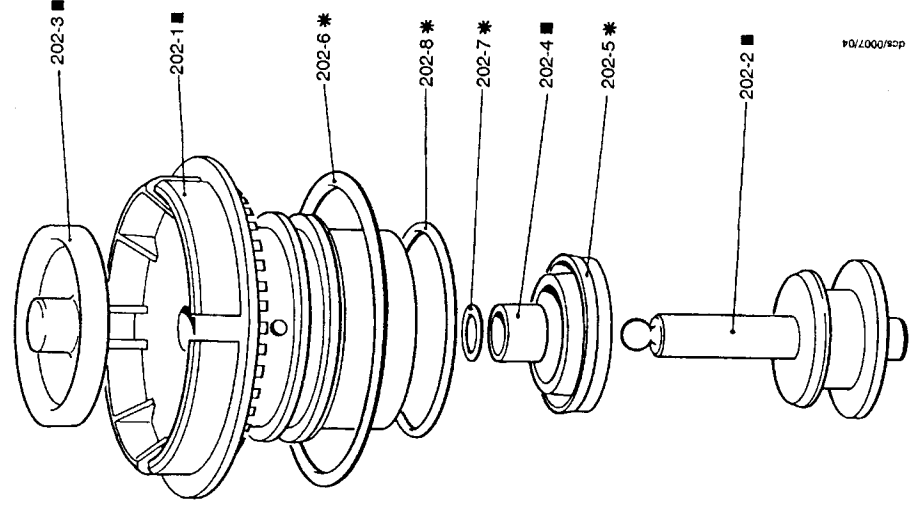


Figure 4 - Exploded view of the inlet-valve assembly

## MAINTENANCE KITS

The maintenance kits available for the RV pumps are listed in Table 2 below:

Table 2 Cross Reference	Description	Item Number	
		Hydrocarbon Variants	PFPE Variants
1	Clean and Overhaul Kit (standard)	A652-01-131	A652-01-131
2	RV3 Blade Kit	A652-01-130	A652-01-130
3	RV5 Blade Kit	A653-01-130	A653-01-130
4	RV8 Blade Kit	A654-01-130	A654-01-130
5	RV12 Blade Kit	A655-01-130	A655-01-130
6	RV3 Cartridge Kit	A652-01-032	A652-09-032
7	RV5 Cartridge Kit	A653-01-032	A653-09-032
8	RV8 Cartridge Kit	A654-01-032	A654-09-032
9	RV12 Cartridge Kit	A655-01-032	A655-09-032
10	Inlet-Valve Kit	A652-01-036	A652-01-036
11	Motor Starting Relay Kit	A505-74-000	A505-74-000
12	Outer Shaft-Seal Kit	A652-01-134	A652-01-134
13	Rotor Sleeve Kit	A652-01-136	A652-09-136
14	RV3/RV5 Motor Kit (Europe/USA)	A652-99-000	A652-99-000
15	50/60 Hz, 250/300 W, 1 phase 110-120/220-240V RV8/RV12 Motor Kit (Europe/USA)	A654-99-000	A654-99-000
16	50/60 Hz, 450/550 W, 1 phase 110-120/220-240V RV3/RV5 Motor Kit (Japan)	A652-98-000	A652-98-000
17	50/60 Hz, 250/300 W, 1 phase 100/200V RV8/RV12 Motor Kit (Japan)	A654-98-000	A654-98-000
18	50/60 Hz, 450/550 W, 1 phase 100/200V RV3/RV5 Motor Kit (Europe/USA/Japan)	A652-97-000	A652-97-000
19	50/60 Hz, 250/300 W, 3 phase 200-230/380-460V RV8/RV12 Motor Kit (Europe/USA/Japan)	A654-97-000	A654-97-000
20	50/60 Hz, 450/550 W, 3 phase 200-230/380-460V Oil Pump Kit RV3/RV5/RV8/RV12	A652-01-805	A652-01-805
21	Clean and Overhaul Kit (Nitrile)	A652-01-137	A652-01-137

Table 2 – Maintenance Kits

### 3.1 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 3, 4 or 5 as appropriate. Note that the Clean and Overhaul Kit components are packed in three separate bags, labelled bag 1, 2 and 3; the contents of the bags are shown in Table 5. 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 required for use.

Qty	Description	Figure 3 reference	Check (✓)
1	Oil-pump blade	115	<input type="checkbox"/>
2	H.V. blade	116	<input type="checkbox"/>
2	L.V. blade	117	<input type="checkbox"/>

Table 3 – Checklist of Blade Kit components

Qty	Description	Figure 3 reference	Check (✓)
1	Inlet-valve assembly (assembled); this comprises of the following components (shown in Figure 4): Valve cover Piston Valve pad Bush 'U' seal 'O' ring: 49.5 x 3.0, nitrile 'O' ring: 7.6 x 2.4, viton 'O' ring: 32.5 x 3.0, nitrile	202	<input type="checkbox"/>
1	Spring (inlet-valve)	213	<input type="checkbox"/>
1	Printed gasket (top-plate)	216	<input type="checkbox"/>

Table 4 – Checklist of Inlet-Valve Kit Components

Bag Label	Qty	Description	Figures 1 to 3 reference	Check (✓)	
Bag 1	1	Shaft-seal spacer	C	<input type="checkbox"/>	
	1	Air bleed assembly	201	<input type="checkbox"/>	
	1	Reed valve	111	<input type="checkbox"/>	
	1	Oldham coupling (L.V. Oil pump)	119	<input type="checkbox"/>	
	1	Printed gasket (seal carrier)	120	<input type="checkbox"/>	
	1	Shaft-seal (inner)?	123	<input type="checkbox"/>	
	1	Shaft-seal (outer)?	124	<input type="checkbox"/>	
	1	Gas ballast check-valve	210	<input type="checkbox"/>	
	2	Spring (dump 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 (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 (inlet valve)?	202-7	<input type="checkbox"/>
1		'O' ring: 32.5 x 3.0 (inlet valve)	202-8	<input type="checkbox"/>	
1		Spring (inlet valve)	213	<input type="checkbox"/>	
1		Printed gasket (top-plate)	216	<input type="checkbox"/>	

\* If required.

? The components (or elastomer parts of these components) will be made from viton in the standard Clean and Overhaul Kit and from nitrile in the Nitrile Clean and Overhaul Kit.

s Only supplied in the Clean and Overhaul Kit (Nitrile).

Table 5 - Checklist of Clean and Overhaul Kit components

Bag Label	Qty	Description	Figures 1 to 3 reference	Check (✓)
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: 9.6 x 2.4 (mode selector)	204-3	<input type="checkbox"/>
	1	Spring (gas ballast control)	212	<input type="checkbox"/>
	2	'O' rings: 21.5 x 3.0, nitrile (gas ballast insert and mode selector)	220	<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"/>
	1	'O' ring: 21.5 x 3.0, nitrile (gas ballast control)	203-4	<input type="checkbox"/>
	1	Shoulder washer	222	<input type="checkbox"/>
	1	Inlet-valve pads	202-3	<input type="checkbox"/>

\* If required.

? The components (or elastomer parts of these components) will be made from viton in the standard Clean and Overhaul Kit and from nitrile in the Nitrile Clean and Overhaul Kit.

s Only supplied in the Clean and Overhaul Kit (Nitrile).

Table 5 - Checklist of Clean and Overhaul Kit components (continued)



### 3.2 How to use the Clean and Overhaul Kit

Refer to Figures 1 to 4 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 (310) 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; we recommend that you do not remove the shaft-seal sleeve (109) from the H.V. rotor (101). Use a suitable cleaning solution to clean all of 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. Press the outer shaft-seal (124) out of the seal carrier (110). Press through the three 3 mm diameter holes (located around the bearing bore) in the outer surface of the H.V. stator (101) to remove the inner shaft-seal (123).
6. Inspect the shaft-seal sleeve (109) for signs of wear. If the shaft-seal sleeve is worn, place the shaft-seal spacer (C) in the seal carrier (110) before you fit the replacement outer shaft-seal.
7. Use the components supplied in the Clean and Overhaul Kit to replace the corresponding components in the pump. Ensure that the components are clean before you fit them; before you fit elastomer components, wipe them with a clean lint-free cloth and lightly lubricate them with the oil which you use in your pump.
8. If you have a Clean and Overhaul Kit (Nitrile), replace the inlet-valve pad (202-3); refer to Figure 4.
9. Remove and inspect the restrictor (226). If necessary, use a suitable cleaning solution to clean the restrictor orifice.
10. 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.
11. 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.
12. Use the oil-box printed gasket (314) supplied in the kit and refit the oil-box (310) to the pump. Fill the pump with the correct quantity of new oil, then fit an oil mist filter to the pump-outlet and connect the outlet of the oil mist filter to a suitable exhaust-extraction system.
13. 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.
14. Refer to the RV pump instruction manual for normal operation of the pump.
15. Dispose of the old components and used oil safely in accordance with all local and national safety and environmental requirements.

### 3.3

#### How to use the Blades Kit

Refer to Figures 1 to 4 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. Dismantle the pump, clean the pump components and replace the pump components with the components supplied in the Clean and Overhaul Kit as described in Steps 1 to 9 of Section 3.1.
2. Dismantle the cartridge (Figure 3); ensure that you take note of the orientation of the blades (116, 117) in the cartridge.
3. Use a suitable cleaning solution to clean all the surfaces of the components in the Blade Kit and the surfaces of the dismantled cartridge which you will reuse.
4. Replace the H.V. and L.V. blades in the cartridge (116, 117) with the new blades supplied in the Blade Kit; ensure that you fit the blades in the correct orientation (as noted in Step 2).
5. Replace the oil-pump blade (115) with the new blade supplied in the Blade Kit and reassemble the cartridge.
6. Reassemble and commission the pump as described in Steps 11 to 14 of Section 3.1.
7. Dispose of the old components and used oil safely in accordance with all local and national safety and environmental requirements.

### 3.4

#### How to use the Inlet-Valve Kit

Refer to Figures 1 to 4 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. Remove the side panels (408, 412). On the RV8 and RV12 pumps, remove the top-cover from the motor and loosen the motor securing bolts (421).
3. Undo and remove the four screws which secure the top-plate (208). Remove the top-plate and the top-plate printed gasket (216).
4. Use a suitable tool to firmly grip the rim of the valve cover (202-1), pull out the inlet-valve assembly (A) and remove the spring (213).
5. Fit the new spring and inlet-valve assembly supplied in the kit.
6. Fit the new top-plate printed gasket (216) supplied in the kit, then fit the top-plate (208) and secure it with the four screws removed in Step 3.
7. On the RV8 and RV12 pumps, tighten the motor bolts (421) and refit the top-cover on the motor. On all pumps, refit the side panels (408, 412).
8. Dispose of the old components safely in accordance with all local and national safety and environmental requirements.