Parts and Maintenance Kits Manual

RV3, RV5, RV8 and RV12
Rotary Vane Pumps

A65X-YY-ZZZ

Pump Type X	Variant YY	Motor Description ZZZ
2 = RV3	01 to 99	903 = 220-240 V, 50/60 Hz, Single phase
3 = RV5		904 = 100/200 V, 50/60 Hz, Single phase
4 = RV8		905 = 200-230/380-460 V, 50/60 Hz, Three phase
5 = RV12		906 = 110-115/120 V, 50/60 Hz, Single phase
		965 = NEMA Bareshaft
		970 = ISO Bareshaft

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 down-loaded 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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Associated publications

Publication title	Publication number
RV Rotary Vane Pumps	A652-01-880
RV Pump Cartridge Kits	A653-01-840

dcs/7969/04/08

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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.

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.

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2 Parts list

Exploded views of a generic RV pump are shown in Figure 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 'Part No.' column, then the part is available as a spare and the entry defines the Item Number of the spare part.

Table 1 - Parts list

Item No.	Description	Fig	Quantity				Kit No.(s)	Part No.
			RV3	RV5	RV8	RV12		
101	H.V. stator: RV3	3	1	-	-	-	6	A652-01-700
101	H.V. stator: RV5	3	-	1	-	-	7	A653-01-700
101	H.V. stator: RV8	3	-	-	1	-	8	A654-01-700
101	H.V. stator: RV12	3	-	-	-	1	9	A655-01-700
102	H.V. rotor: RV3 and RV5	3	1	1	-	-	6, 7	A652-01-701
102	H.V. rotor: RV8	3	-	-	1	-	8	A654-01-701
102	H.V. rotor: RV12	3	-	-	-	1	9	A655-01-701
103	L.V. stator: RV3 and RV5	3	1	1	-	-	6, 7	A652-01-702 ▲
103	L.V. stator: RV8 and RV12	3	-	-	1	1	8, 9	A654-01-702 ▲
104	L.V. rotor: RV3 and RV5	3	1	1	-	-	6, 7	A652-01-703
104	L.V. rotor: RV8 and RV12	3	-	-	1	1	8, 9	A654-01-703
105	Oil pump stator	3	1	1	1	1	6 - 9, 20	▲
106	Oil pump rotor	3	1	1	1	1	6 - 9	A652-01-705
107	End plate	3	1	1	1	1	6 - 9	A652-01-704
108	Oldham coupling (H.V.-L.V.)	3	1	1	1	1	6 - 9	A652-01-026
109	Shaft-seal sleeve	3	1	1	1	1	6 - 9, 13	
110	Seal carrier	3	1	1	1	1	6 - 9, 12	
111	Reed valve	3	1	1	1	1, 1	6 - 9, 20	A652-01-029
115	Oil pump blade	3	1	1	1	1	2 - 9	
116	RV3 H.V. Blade	3	2				2, 6	
116	RV5 H.V. blade	3		2			3, 7	
116	RV8 H.V. blade	3			2		4, 8	
116	RV12 H.V. blade	3				2	5, 9	
117	L.V. blade: RV3 and RV5	3	2	2	-	-	2, 3, 6, 7	
117	L.V. blade: RV8 and RV12	3	-	-	2	2	4, 5, 8, 9	
118	Reed valve clamp	3	1	1	1	1	6 - 9	A210-35-129

Table 1 - Parts list (continued)

Item No.	Description	Fig	Quantity				Kit No.(s)	Part No.
			RV3	RV5	RV8	RV12		
119	Oldham coupling (L.V.-oil pump)	3	1	1	1	1	1, 6 - 9, 20	A259-08-127
120	Printed gasket (seal carrier)	3	1	1	1	1	1, 6 - 9, 12, 20	A271-60-008
123	Shaft seal (inner): 25 x 35 x 7	3	1	1	1	1	1, 6 - 9, 20	H021-09-066
124	Shaft seal (outer): 20 x 30 x 7	3	1	1	1	1	1, 6 - 9, 12, 20	H021-09-124
125	70 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 (cartridge)	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 and 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	A210-35-128
133	Baffle	3	1	1	1	1	6 - 9	A210-35-130
201	Air bleed assembly	1	1	1	1	1	1, 20	A652-01-005
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	
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	237-24-071
202-7	O-ring: 7.6 i.d. x 2.4 section	4	1	1	1	1	1, 6 - 10, 20	237-12-039
202-8	O-ring: 32.5 i.d. x 3.0 section	4	1	1	1	1	1, 6 - 10, 20	234-24-070
203	Gas ballast control assembly	1	1	1	1	1		A652-01-008
203-1	Gas ballast knob	1	1	1	1	1		
203-2	Filter	1	1	1	1	1		
203-3	O-ring: 14.6 i.d. x 2.4 section (gas ballast control	1	1	1	1	1	1, 6 - 9, 20	H021-20-036
203-4	O-ring: 21.5 i.d. x 3.0 section (gas ballast control)	1	1	1	1	1	1, 6 - 9, 20	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		
208	Top plate	1	1	1	1	1		A210-35-125
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	A265-01-036
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	A271-60-006
216	Printed gasket (top plate)	1	1	1	1	1	1, 6 - 9, 10, 20	A271-60-00

Table 1 - Parts list (continued)

Item No.	Description	Fig	Quantity				Kit No.(s)	Part No.
			RV3	RV5	RV8	RV12		
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	H021-22-055
220	O-ring: 21.5 i.d. x 3.0 section (mode selector)	1	1	1	1	1	1, 6 - 9, 20	237-24-073
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		
225	Screw: cap-head M6 x 40 (cartridge securing)	1	3	3	3	3		
226	Restrictor: M6	1	1	1	1	1		
301	Exhaust flange assembly	1	1	1	1	1		A652-01-007
301-1	Exhaust flange	1	1	1	1	1		
301-2	Exhaust pin	1	1	1	1	1		
301-3	Exhaust diaphragm	1	1	1	1	1		
302	Inlet filter assembly	1	1	1	1	1		A223-05-067
306	Baseplate	1	1	1	1	1		A210-35-126
308	Coupling hub	1	1	1	1	1		A210-35-128
309	Reed valve baffle	1	1	1	1	1		A210-35-130
310	Oil box	1	1	1	1	1		
311	Sight-glass bezel	1	1	1	1	1		
312	Coupling element	1	1	1	1	1	116-9	A210-71-077
313	Oil filler plug	1	2	2	2	2		A259-08-118
314	Printed gasket (oil box)	1	1	1	1	1	1, 6 - 9, 20	A271-60-005
315	Rubber foot	1	4	4	4	4		A265-01-041
316	Sight-glass	1	1	1	1	1		A292-01-018
318	Outlet cover	1	1	1	1	1		
319	O-ring: 28.2 i.d. x 3.53 section (outlet flange and filler plug)	1	3	3	3	3	1, 6 - 9, 20	H021-26-026
321	O-ring: 69.5 i.d. x 3.0 section (sight-glass)	1	1	1	1	1	1, 6 - 9, 20	237-24-072
322	Oil drain plug	1	1	1	1	1		
323	O-ring: 15.6 i.d. X 2.4 section (drain plug)	1	1	1	1	1		
325	Screw: cap-head M6 x 30 (coupling securing)	1	1	1	1	1		
326	Screw: cap-head M6 x 20 (baffle securing)	1	7	7	8	8		
327	Screw: cap-head M6 x 40 (oil box securing)	1	4	4	4	4		
331	Outlet label	1	1	1	1	1		
401	Motor assembly: RV3 and RV5 (1-phase)	1	1	1	-	-	14, 16	
401	Motor assembly: RV8 and RV12 (1-phase)	1	-	-	1	1	15, 17	
401	Motor assembly: RV3 and RV5 (3-phase)	2	1	1			18	

Table 1 - Parts list (continued)

Item No.	Description	Fig	Quantity				Kit No.(s)	Part No.
			RV3	RV5	RV8	RV12		
401	Motor assembly: RV8 and RV12 (3-phase)	2			1	1	19	
403	Oil box label	1	1	1	1	1		
405	Lifting handle	1	1	1	-	-		A259-08-125
408	Side panel (mode selector side)	1	1	1	1	1		A652-01-018
409	Ducting sheet	1	1	1	1	1		A652-01-019
410	Fan	1	1	1	1	1		A223-01-007
410	Fan (Nema motor)	1	1	1				A223-01-009
		1			1	1		A223-01-009
410	Fan (ISO motor)	1	1	1				A223-01-010
		1			1	1		A223-01-010
410	Fan (3-phase motor)	2	1	1	1	1		A223-01-010
411	Coupling element	1	1	1	1	1	1, 20	
412	Side panel (pump logo side): RV3	1	1	-	-	-		A652-01-017
412	Side panel (pump logo side): RV5	1	-	1	-	-		A653-01-017
412	Side panel (pump logo side): RV8	1	-	-	1	-		A654-01-017
412	Side panel (pump logo side): RV12	1	-	-	-	1		A655-01-017
413	Lifting plate	1	-	-	1	1		A654-01-023
414	Lifting plate cover	1	-	-	1	1		A259-08-141
420	Screw: cap-head M4 x 10 (side panel securing)	1	4	4	4	4		
421	Screw: cap-head M6 x 20 (motor securing)	1	4	4	4	4		
422	Screw: cap-head M6 x 12 (lifting plate securing)	1	2	2	2	2		
423	Screw: cap-head M6 x 40 (fan securing)	1	1	1	1	1		
452	Fan	1	1	1	1	1		A223-01-010
453	Motor plate	2	1	1	1	1		
454	Screw: cap-head M5 x 40 (fan securing)	2	1	1	1	1		
455	Screw: cap-head M6 x 20 (motor to motor plate securing)	2	1	1	1	1		
B	Motor top cover	1	1	1	1	1		
C	Shaft-seal spacer *	3	-	-	-	-	1, 12, 20	
D	Motor starting relay (Sinpac)	1	1	1	1	1	11	

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

▲ *On pumps with Serial number 9721 29 224 & earlier, all items marked thus (i.e. LV 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.*

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

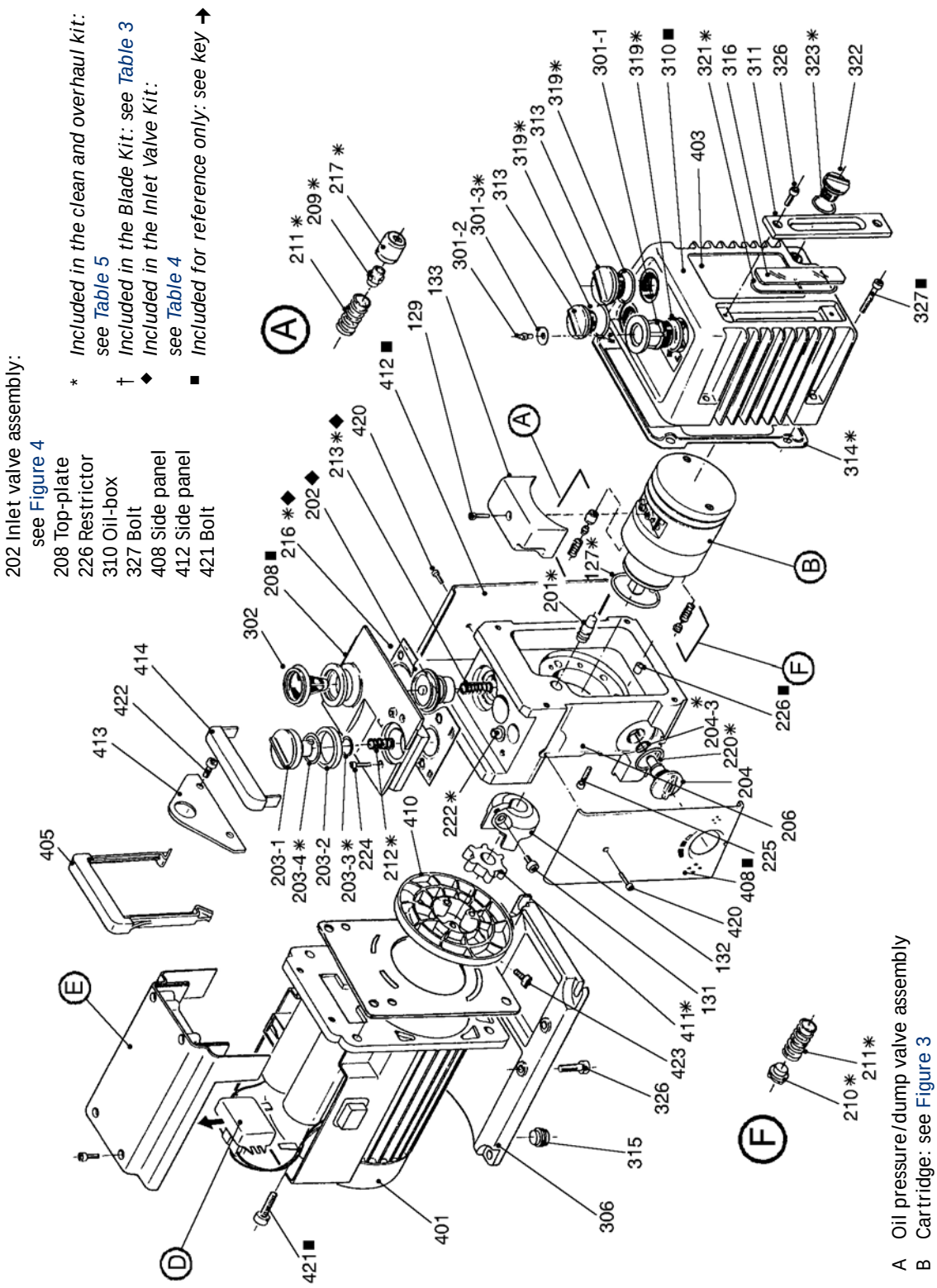


Figure 2 - Exploded view of 3-phase motor assembly

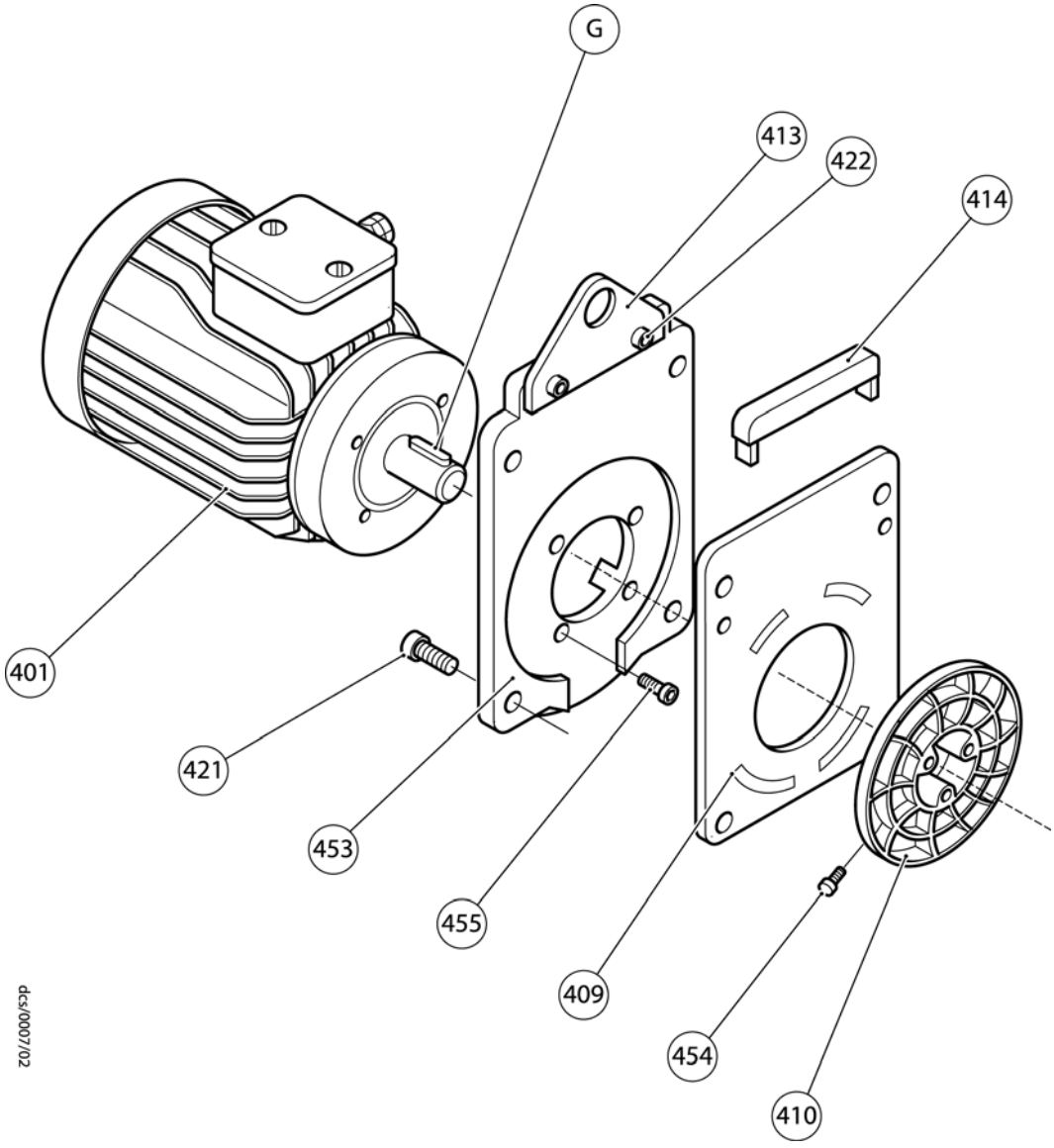
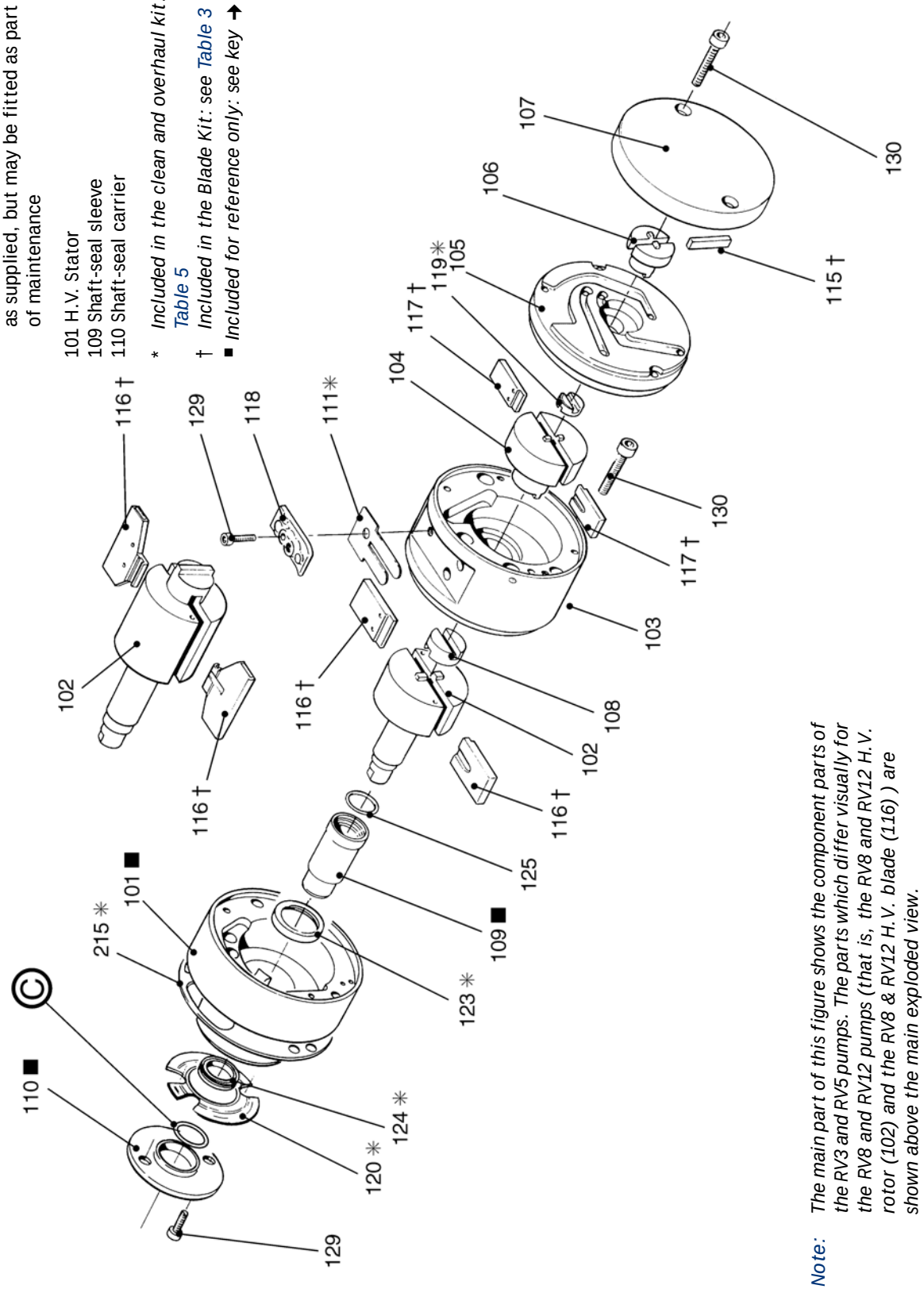
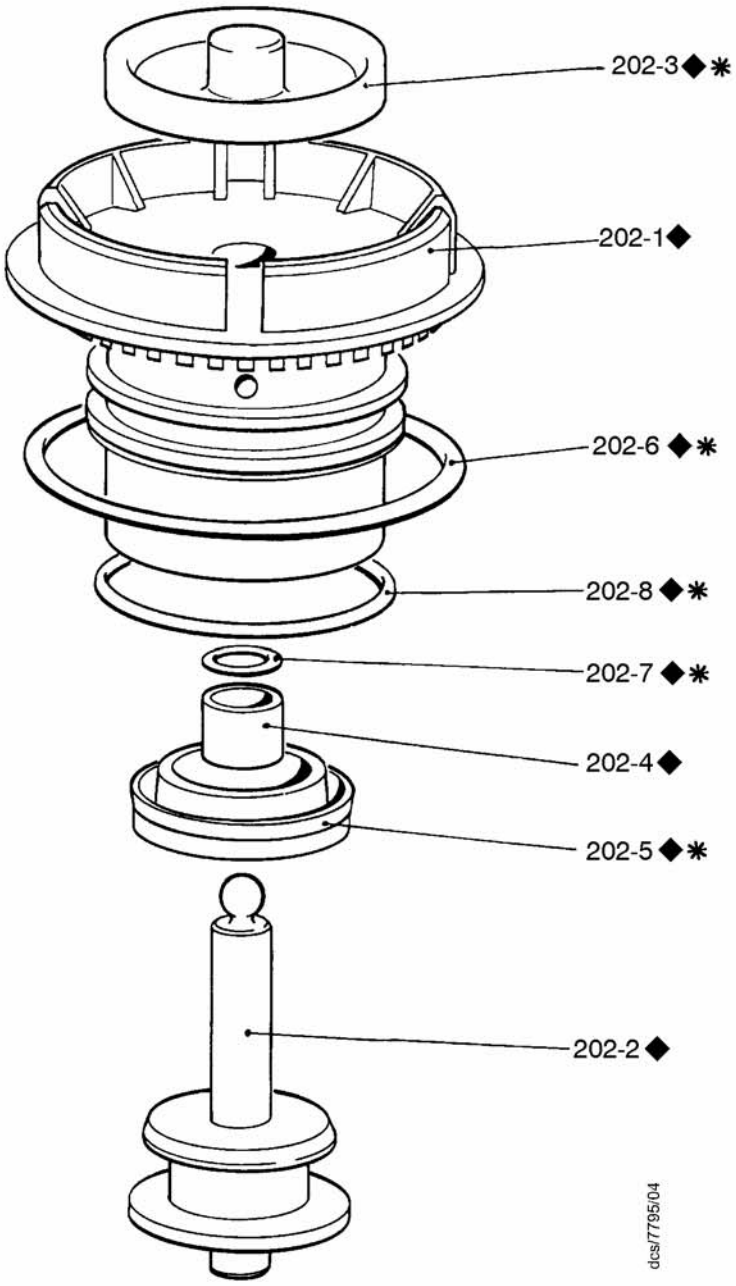


Figure 3 - Exploded view of the cartidge



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



3 Maintenance kits

When you maintain this Edwards product, we recommend you use only Edwards maintenance and service kits.

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

Table 2 - Maintenance kits

Table 2 Cross Reference	Description	Item Number	
		Hydrocarbon	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) 50/60 Hz, 250/300 W, 1 phase 110-120/220-240 V	A652-99-000	A652-99-000
15	RV8/RV12 Motor Kit (Europe/USA) 50/60 Hz, 450/550 W, 1 phase 110-120/220-240 V	A654-99-000	A654-99-000
16	RV3/RV5 Motor Kit (Japan) 50/60 Hz, 250/300 W, 1 phase 100/200 V	A652-98-000	A652-98-000
17	RV8/RV12 Motor Kit (Japan) 50/60 Hz, 450/550 W, 1 phase 100/200 V	A654-98-000	A654-98-000
18	RV3/RV5 Motor Kit (Europe/USA/Japan) 50/60 Hz, 250/300 W, 3 phase 200-230/380-460 V	A652-97-000	A652-97-000
19	RV8/RV12 Motor Kit (Europe/USA/Japan) 50/60 Hz, 450/550 W, 3 phase 200-230/380-460 V	A654-97-000	A654-97-000
20	Oil Pump Kit RV3/RV5/RV8/RV12	A652-01-805	A652-01-805
21	Clean and Overhaul Kit (Nitrile)	A652-01-137	

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.

Table 3 - Checklist of blade kit components

Qty	Description	Figure 3 reference	Check (✓)
1	Oil-pump blade	115	☐
2	H.V blade	116	☐
3	L.V blade	117	☐

Table 4 - Checklist of inlet-valve kit components

Qty	Description	Figure 3 reference	Check (✓)
1	Inlet-valve assembly (assembled); this comprises of the following components (shown in Figure 4):	202	☐
	Valve cover	202-1	
	Piston	202-2	
	Valve pad	202-3	
	Bush	202-4	
	'U' seal	202-5	
	O-ring: 49.5 x 3.0, nitrile	202-6	
	O-ring: 7.6 x 2.4, viton	202-7	
	O-ring: 32.5 x 3.0, nitrile	202-8	
1	Spring (inlet-valve)	213	☐
1	Printed gasket (top-plate)	216	☐

Table 5 - Checklist of clean and overhaul kit components

Bag Label	Qty	Description	Figure 1 to 3 reference	Check (✓)
Bag 1	1	Shaft-seal spacer	C	☐
	1	Air bleed assembly	201	☐
	1	Reed valve	111	☐
	1	Oldham coupling (L.V. Oil pump)	119	☐
	1	Printed gasket (seal carrier)	120	☐
	1	Shaft-seal (inner)*	123	☐
	1	Shaft-seal (outer)*	124	☐
	1	Gas ballast check-valve	210	☐
	2	Spring (dump valve and gas ballast check-valve)	211	☐
	1	Printed gasket (cartridge)	215	☐
	1	Dump valve*	217	☐
	1	Oil pressure valve	209	☐
	1	O-ring: 57.6 x 2.4 (cartridge/adaptor)*	127	☐
	1	Coupling element	411	☐

Table 5 - Checklist of clean and overhaul kit components (continued)

Bag Label	Qty	Description	Figure 1 to 3 reference	Check (✓)
Bag 2	1	Inlet valve 'U' sea *	202-5	☐
	1	O-ring: 49.5 x 3.0, nitrile (inlet valve)	202-6	☐
	1	O-ring: 7.6 x 2.4 (inlet valve)*	202-7	☐
	1	O-ring: 32.5 x 3.0 (inlet valve)	202-8	☐
	1	Spring (inlet valve)	213	☐
	1	Printed gasket (top-plate)	216	☐
Bag 3	1	O-ring: 42.5 x 3.0, nitrile (inlet connection)†	005	☐
	1	O-ring: 14.6 x2.4, nitrile (gas ballast control)	203-3	☐
	1	O-ring: 9.6 x 2.4 (mode selector)	204-3	☐
	1	Spring (gas ballast control)	212	☐
	2	O-rings: 21.5 x 3.0, nitrile (gas ballast insert and mode selector)	220	☐
	1	Exhaust diaphragm*	301-3	☐
	1	Printed gasket (oil-box)	314	☐
	3	O-rings: 28.2 x 3.53, nitrile (oil filler-plugs and Exhaust-flange)	319	☐
	1	O-ring: 69.5 x 3.0, nitrile (sight glass)	321	☐
	1	O-ring: 15.6 x 2.4, nitrile (oil drain plug)	323	☐
	1	O-ring: 21.5 x 3.0, nitrile (gas ballast control)	203-4	☐
	1	Shoulder washer	222	☐
	1	Inlet-valve pad‡	202-3	☐

* *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.*

† *If required.*

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

3.2 How to use the clean and overhaul kit

Refer to Figure 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 (102). 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 Figure 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 Step 1 to 9 of Section 3.2.
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 Step 11 to 14 of Section 3.2.
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 Figure 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.

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