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RV3, RV5, RV8 and RV12

Rotary Vane Pumps

Parts and Maintenance Kits Manual

INSTRUCTION MANUAL

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Published: 1/3/2025

Associated publications

Publication title	Publication number	Link
RV Rotary Vane Pumps	A65201880	https://4vac.io/pqb2d1
RV Pump Cartridge Kits	A65301840	https://4vac.io/ylpfev

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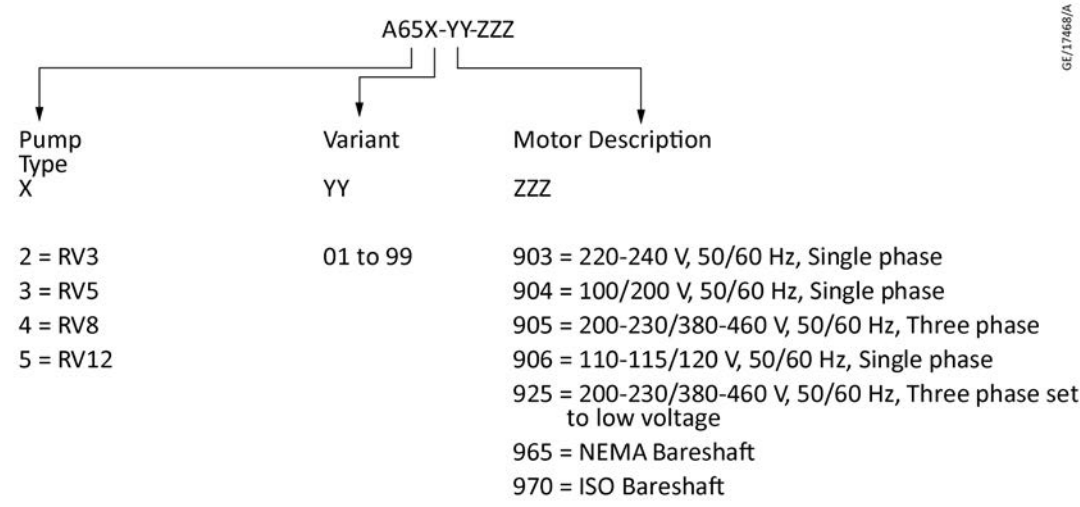
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You must use this product as described in this manual. Read the manual before you install, operate, or maintain the product. For manual enquiries, email manuals@edwardsvacuum.com.

Numbering matrix



GE/17468/A

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1. Safety and compliance

For safe operation from the start, read these instructions carefully before you install or commission the equipment and keep them safe for future use. Read all the safety instructions in this section and the rest of this manual carefully and make sure that you obey these instructions.

The instruction manual is an important safety document that we often deliver digitally. It is your responsibility to keep the instruction manual available and visible while working with the equipment. Please download the digital version of the instruction manual for use on your device or print it if a device will not be available.

1.1 Definition of Warnings and Cautions

Important safety information is highlighted as warning and caution instructions which are defined as follows. Different symbols are used according to the type of hazard.

WARNING:

If you do not obey a warning, there is a risk of injury or death.

CAUTION:

If you do not obey a caution, there is a risk of minor injury, damage to equipment, related equipment or process.

NOTICE:

Information about properties or instructions for an action which, if ignored, will cause damage to the equipment.

We reserve the right to change the design and the stated data. The illustrations are not binding.

1.2 Trained personnel

For the operation of this equipment “trained personnel” are:

- skilled workers with knowledge in the fields of mechanics, electrical engineering, pollution abatement and vacuum technology and
- personnel specially trained for the operation of vacuum pumps

1.3 Safety symbols

The safety symbols on the products show the areas where care and attention is necessary.

The safety symbols that we use on the product or in the product documentation have the following meanings:

	Warning/Caution Risk of injury and/or damage to equipment. An appropriate safety instruction must be followed or a potential hazard exists.
	Mandatory action symbol Failure to comply with this action may result in injury or damage to equipment.

2. Important safety Information

WARNING: OPERATION SAFETY



Risk of injury. 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.

WARNING: OPERATION SAFETY



Risk of injury. 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 us.

- 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 us.
- Before returning any equipment to us 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 our 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.

3. Introduction

3.1 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 [Parts list](#) on page 18, together with a list of the component parts and an indication of whether the component parts are available as spares.

[Maintenance kits](#) on page 12 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 [Maintenance kits](#) on page 12.

4. Maintenance kits

When you maintain this product, we recommend you use only our maintenance and service kits. The maintenance kits available for the RV pumps are listed in Table below:

Table 1 Maintenance kits

Kit reference no.	Description	Kit part no.	
		Hydrocarbon	PFPE variants
1	Clean and overhaul kit (standard)	A65201131	A65201131
2	RV3 blade kit	A65201130	A65201130
3	RV5 blade kit	A65301130	A65301130
4	RV8 blade kit	A65401130	A65401130
5	RV12 blade kit	A65501130	A65501130
6	RV3 cartridge kit	A65201032	A65209032
7	RV5 cartridge kit	A65301032	A65309032
8	RV8 cartridge kit	A65401032	A65409032
9	RV12 cartridge kit	A65501032	A65509032
10	Inlet-valve kit	A65201036	A65201036
11a	Motor starting relay kit (Europe/USA)	A07108732	A07108732
11b	Motor starting relay kit (Japan)	A07108733	A07108733
12	Outer shaft-seal kit	A65201134	A65201134
13	Rotor sleeve kit	A65201136	A65209136
14*	RV3/RV5 motor kit (Europe/USA) 50/60 Hz, 250/300 W, 1 phase 110-120/220-240 V	A65299000	A65299000
15*	RV8/RV12 motor kit (Europe/USA) 50/60 Hz, 450/550 W, 1 phase 110-120/220-240 V	A65499000	A65499000
16*	RV3/RV5 motor kit (Japan) 50/60 Hz, 250/300 W, 1 phase 100/200 V	A65298000	A65298000
17*	RV8/RV12 motor kit (Japan) 50/60 Hz, 450/550 W, 1 phase 100/200 V	A65498000	A65498000
18	RV3/RV5 motor kit (Europe/USA/Japan) 50/60 Hz, 250/300 W, 3 phase 200-230/380-460 V	A65297000	A65297000
19**	RV8/RV12 motor kit (Europe/USA/Japan) 50/60 Hz, 450/550 W, 3 phase 200-230/380-460 V	A65497000	A65497000
20	Oil pump kit RV3/RV5/RV8/RV12	A65201805	A65201805
21	Clean and overhaul kit (Nitrile)	A65201137	-

22	RV3/RV5/RV8 and RV12 Motor kit (Europe/USA) 50/60 Hz, 450/550 W, 1-phase 220-240/ 230-240 V	A65299500	A65299500
23	RV3/RV5/RV8 and RV12 Motor kit (Japan) 50/60 Hz, 450/ 550 W, 1-phase 100-200/ 200-210 V	A65298500	A65298500
24	RV voltage switch kit	NXC756001	NXC756001
25	RV 3-phase voltage switch set	A21001981	A21001981
26	Voltage label-200V-small pk 10	A20002776	A20002776
27	RV8/RV12 motor kit (Europe/USA/Japan) 50/60 Hz, 3 phase 200-230 V low voltage	A65497035	A65497035
28	RV8/RV12 motor kit (Europe/USA/Japan) 50/60 Hz, 3 phase 380-460 V high voltage	A65497034	A65497034
29	RV3/RV5 Coupling element	A21071778	A21071778
30	RV8/RV12 Coupling element	A21071779	A21071779
31	RV Pump Packing Set Arcel	A21001805	A21001805
32	RV Packing Carton Arcel	A21001806	A21001806

** As of the end of 2010 the four RV 1-phase motors (used in kits 14, 15, 16 and 17) have been made obsolete and replaced by two new motors (item no, 40 in [Parts list](#) on page 18). These are supplied in kits 22 and 23.*

*** As of the end of 2023 the four RV 3-phase motors (used in kit 19) have been made obsolete and replaced by two new motors (item no 40 in [Parts list](#) on page 18). These are supplied in kits 27 and 28.*

4.1 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 below Tables 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-"Checklist of clean and overhaul kit components" below. 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 2 Checklist of blade kit components

Item reference*	Description	Qty	Check (✓)
6	Oil-pump blade	1	☐
11	H.V blade	2	☐
7	L.V blade	3	☐

* Refer to [Figure: Exploded view of the cartridge](#) on page 27

Table 3 Checklist of inlet-valve kit components

Item reference*	Description	Qty	Check (✓)
5	Inlet-valve assembly (assembled); this comprises of the following components (refer to Figure: Exploded view of the inlet-valve assembly on page 29):	1	☐
2	▪ Valve cover	-	-
8	▪ Piston	-	-
1	▪ Valve pad	-	-
6	▪ Bush	-	-
7	▪ 'U' seal	-	-
3	▪ O-ring: 49.5 x 3.0, nitrile	-	-
5	▪ O-ring: 7.6 x 2.4, viton	-	-
4	▪ O-ring: 32.5 x 3.0, nitrile	-	-
59	Spring (inlet-valve)	1	☐
4	Printed gasket (top-plate)	1	☐

* Refer to [Figure: Exploded view of the cartridge](#) on page 27

Table 4 Checklist of clean and overhaul kit components

Item reference*	Bag label	Description	Qty	Check (✓)
19	Bag 1	Shaft-seal spacer	1	☐
58	-	Air bleed assembly	1	☐
23	-	Reed valve	1	☐
1	-	Oldham coupling (L.V. oil pump)	1	☐
16	-	Printed gasket (seal carrier)	1	☐
14	-	Shaft-seal (inner)**	1	☐
15	-	Shaft-seal (outer)**	1	☐
57	-	Gas ballast check-valve	1	☐

54	-	Spring (dump valve and gas ballast check-valve)	2	☐
20	-	Printed gasket (cartridge)	1	☐
56	-	Dump valve**	1	☐
55	-	Oil pressure valve	1	☐
-	-	O-ring: 57.6 x 2.4 (cartridge/adaptor)**	1	☐
7	Bag 2	Inlet valve 'U' sea**	1	☐
3	-	O-ring: 49.5 x 3.0, nitrile (inlet valve)	1	☐
5	-	O-ring: 7.6 x 2.4 (inlet valve)**	1	☐
4	-	O-ring: 32.5 x 3.0 (inlet valve)	1	☐
59	-	Spring (inlet valve)	1	☐
4	-	Printed gasket (top-plate)	1	☐
005	Bag 3	O-ring: 42.5 x 3.0, nitrile (inlet connection)†	1	☐
51	-	O-ring: 14.6 x 2.4, nitrile (gas ballast control)	1	☐
29	-	O-ring: 9.6 x 2.4 (mode selector)	1	☐
52	-	Spring (gas ballast control)	1	☐
30	-	O-rings: 21.5 x 3.0, nitrile (gas ballast insert and mode selector)	2	☐
11	-	Exhaust diaphragm**	1	☐
24	-	Printed gasket (oil-box)	1	☐
13	-	O-rings: 28.2 x 3.53, nitrile (oil filler-plugs and Exhaust-flange)	3	☐
23	-	O-ring: 69.5 x 3.0, nitrile (sight glass)	1	☐
19	-	O-ring: 15.6 x 2.4, nitrile (oil drain plug)	1	☐
49	-	O-ring: 21.5 x 3.0, nitrile (gas ballast control)	1	☐
53	-	Shoulder washer	1	☐
1	-	Inlet-valve pad‡	1	☐

* Refer to figures [Figure: Exploded view of the RV pump with 1-phase motor \(post 2010 configuration\)](#) on page 22, [Figure: Exploded view of 3-phase motor assembly](#) on page 24 & [Figure: Exploded view of the inlet-valve assembly](#) on page 29.

** 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).

4.2 How to use the clean and overhaul kit

Refer to the figures in [Parts list](#) on page 18 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 (21) which secure the oil-box (15) 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 (13) from the H.V. rotor (10). 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 (3)), remove the inlet flange and replace the O-ring (005) with the O-ring supplied.
5. Press the outer shaft-seal (15) out of the seal carrier (18). Press through the three 3 mm diameter holes (located around the bearing bore) in the outer surface of the H.V. stator (21) to remove the inner shaft-seal (14).
6. Inspect the shaft-seal sleeve (13) for signs of wear. If the shaft-seal sleeve is worn, place the shaft-seal spacer (C) in the seal carrier (18) 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 (1): refer to [Figure: Exploded view of the inlet-valve assembly](#) on page 29.
9. Remove and inspect the restrictor (27). 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 (58). If necessary, use a suitable cleaning solution to clean the orifice and the filter.
11. Reassemble the pump. When you refit the side panels (33, 7), 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 (24) supplied in the kit and refit the oil-box (15) 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.

4.3 How to use the blades kit

Refer to the figures in [Parts list](#) on page 18 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 [How to use the clean and overhaul kit](#) on page 16.
2. Dismantle the cartridge ([Figure: Exploded view of the cartridge](#) on page 27): ensure that you take note of the orientation of the blades (11, 7) 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 (11, 7) 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 (6) 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 [How to use the clean and overhaul kit](#) on page 16.
7. Dispose of the old components and used oil safely in accordance with all local and national safety and environmental requirements.

4.4 How to use the inlet-valve kit

Refer to the figures in [Parts list](#) on page 18 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 (33, 7). On the RV8 and RV12 pumps, remove the top-cover from the motor and loosen the motor securing bolts (41).
3. Undo and remove the four screws which secure the top-plate (3). Remove the top-plate and the top-plate printed gasket (4).
4. Use a suitable tool to firmly grip the rim of the valve cover (2), pull out the inlet-valve assembly (A) and remove the spring (59).
5. Fit the new spring and inlet-valve assembly supplied in the kit.
6. Fit the new top-plate printed gasket (4) supplied in the kit, then fit the top-plate (3) and secure it with the four screws removed in step 3.
7. On the RV8 and RV12 pumps, tighten the motor bolts (41) and refit the top-cover on the motor. On all pumps, refit the side panels (33, 7).
8. Dispose of the old components safely in accordance with all local and national safety and environmental requirements.

5. Parts list

Exploded views of a generic RV pump are shown in figures in this section. The component parts shown on the figures are listed in [Parts list](#) on page 18. When you read [Parts list](#) on page 18, take note of the following:

- The entries in the 'Kit no.(s)' column are cross references to the kits in [Maintenance kits](#) on page 12. 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.

5.1 Parts list

Table 5 Parts list - RV pump with 1-phase motor

Item no.	Description	Quantity				Kit no.(s)	Part no.
		RV3	RV5	RV8	RV12		
1	Gas ballast knob ¹	1	1	1	1	-	-
2	Inlet filter assembly	1	1	1	1	-	A22305067
3	Top plate [^]	1	1	1	1	-	A21035125
4	Printed gasket (top plate)* [#]	1	1	1	1	1, 6 - 9, 10, 20	A27160007
5	Inlet valve assembly [#]	1	1	1	1	10	-
6	Screw: cap-head M4 x 10 (side panel securing)	4	4	4	4	-	-
7	Side panel (pump logo side): RV3 [^]	1	-	-	-	-	A65201017
7	Side panel (pump logo side): RV5 [^]	-	1	-	-	-	A65301017
7	Side panel (pump logo side): RV8 [^]	-	-	1	-	-	A65401017
7	Side panel (pump logo side): RV12 [^]	-	-	-	1	-	A65501017
8	Screw: cap-head M6 x 20 (seal carrier securing)	4	4	4	4	6 - 9	-
9	Reed valve baffle	1	1	1	1	-	A21035130
10	Exhaust pin ³	1	1	1	1	-	-
11	Exhaust diaphragm ^{3*}	1	1	1	1	-	-
12	Oil filler plug	2	2	2	2	-	A25908118
13	O-ring: 28.2 i.d. x 3.53 section (outlet flange and filler plug)*	3	3	3	3	1, 6 - 9, 20	H02126026

A65201840_R - Parts list

14	Exhaust flange ³	1	1	1	1	-	-
15	Oil box [^]	1	1	1	1	-	-
16	Oil box label	1	1	1	1	-	-
17	Screw: cap-head M6 x 20 (baffle securing)	7	7	8	8	-	-
18	Oil drain plug	1	1	1	1	-	A25908119
19	O-ring: 15.6 i.d. X 2.4 section (drain plug)*	1	1	1	1	-	H02120037
20	Sight-glass bezel	1	1	1	1	-	-
21	Screw: cap-head M6 x 40 (oil box securing) [^]	4	4	4	4	-	-
22	Sight-glass	1	1	1	1	-	A29201018
23	O-ring: 69.5 i.d. x 3.0 section (sight-glass)*	1	1	1	1	1, 6 - 9, 20	H02122083
24	Printed gasket (oil box)*	1	1	1	1	1, 6 - 9, 20	A27160005
25	Cartridge: see Figure: Exploded view of the cartridge on page 27	-	-	-	-	-	-
26	O-ring: 57.6 i.d. X 2.4 section (cartridge)	1	1	1	1	116-9	H02122055
27	Restrictor: M6 [^]	1	1	1	1	-	-
28	Adaptor	1	1	1	1	-	A65201749
29	O-ring: 9.6 i.d. x 2.4 section (mode selector) ^{2*}	1	1	1	1	1, 6 - 9, 20	-
30	O-ring: 21.5 i.d. x 3.0 section (mode selector)*	1	1	1	1	1, 6 - 9, 20	23724073
31	Mode selector assembly	1	1	1	1	-	A65201009
32	Screw: cap-head M6 x 40 (cartridge securing)	3	3	3	3	-	-
33	Side panel (mode selector side) [^]	1	1	1	1	-	A65201018
34	Coupling hub	1	1	1	1	-	A21035128
35	Screw: cap-head M6 x 30 (coupling securing)	1	1	1	1	-	-
36	Coupling element*	1	1	-	-	22, 23, 29	A21071077
36	Coupling element	-	-	1	1	27, 28, 30	A21071161
37	Screw: cap-head M6 x 40 (fan securing)	1	1	1	1	-	-
38	Rubber foot	4	4	4	4	-	A26501041
39	Baseplate	1	1	1	1	-	A21035126

40	RV3/RV5/RV8 and RV12 Motor kit (Europe/USA) 50/60 Hz, 450/550 W, 1-phase 220-240/ 230-240 V	1	1	1	1	22	A65299500
40	RV3/RV5/RV8 and RV12 Motor kit (Japan) 50/60 Hz, 450/550 W, 1-phase 100-200/ 200-210 V	1	1	1	1	23	A65298500
40†	Motor assembly: RV3 and RV5 (1-phase)	1	1	-	-	14, 16	-
40†	Motor assembly: RV8 and RV12 (1-phase)	-	-	1	1	15, 17	-
40	Motor assembly: RV3 and RV5 (3-phase)	1	1	-	-	18	-
40	Motor assembly: RV8 and RV12 (3-phase)	-	-	1	1	19, 27, 28	-
41	Screw: cap-head M6 x 20 (motor securing)^	4	4	4	4	-	-
42	Motor starting relay	1	1	1	1	11a, 11b	-
43	Motor top cover	1	1	1	1	-	-
44	Lifting handle	1	1	-	-	-	A25908125
45	Lifting plate	-	-	1	1	-	A65401023
46	Screw: cap-head M6 x 12 (lifting plate securing)	2	2	2	2	-	-
47	Lifting plate cover	-	-	1	1	-	A25908141
48	Fan	1	1	1	1	-	A22301007
48	Fan (Nema motor)	1	1	-	-	-	A22301009
48	Fan (ISO motor)	1	1	-	-	-	A22301010
48	Fan (3-phase motor) Coupling element	1	1	1	1	-	A22301010
49	O-ring: 21.5 i.d. x 3.0 section (gas ballast control)*	1	1	1	1	1, 6 - 9, 20	23724073
50	Filter ¹	1	1	1	1	-	-
51	O-ring: 14.6 i.d. x 2.4 section (gas ballast control) ^{1*}	1	1	1	1	1, 6 - 9, 20	H02120036
52	Spring (gas ballast control)*	1	1	1	1	1, 6 - 9, 20	-
53	Shouldered washer (gas ballast)	1	1	1	1	1, 20	-
54	Spring (valve pad)*	2	2	2	2	1, 6 - 9, 20	-
55	Oil pressure valve*	1	1	1	1	1, 20	-
56	Dump valve*	1	1	1	1	1, 6 - 9, 20	-
57	Gas ballast check valve*	1	1	1	1	1, 6 - 9, 20	A26501036

58	Air bleed assembly*	1	1	1	1	1, 20	A65201005
59	Spring (inlet valve)**	1	1	1	1	1, 6 - 10, 20	-
60	Screw: cap-head M6 x 20 (top plate securing)	4	4	4	4	-	-
A	Gas ballast check valve as- sembly	-	-	-	-	-	-
B	Oil pressure/dump valve as- sembly	-	-	-	-	-	-

* Included in the clean and overhaul kit: see Table "Checklist of clean and overhaul kit components" of [Unpack and inspect](#) on page 13.

Included in the Inlet Valve Kit: see Table "Checklist of inlet-valve kit components" of [Unpack and inspect](#) on page 13

^ Included for reference only.

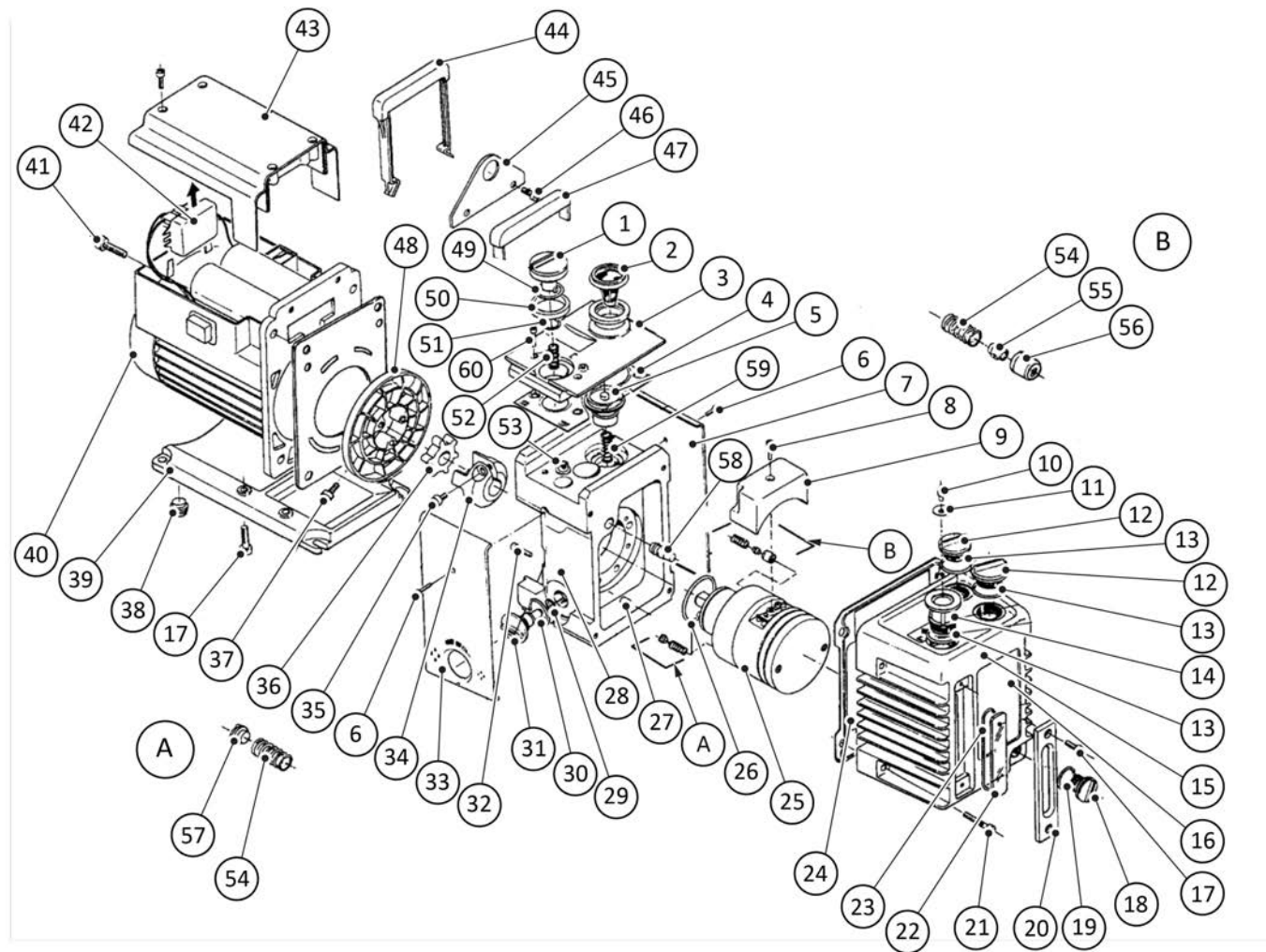
† As of the end of 2010, the four RV 1-phase motors (used in kits 14, 15, 16 and 17) have been made obsolete and replaced by two new motors (item 40). These new motors are suitable for use on all 1-phase RV3, RV5, RV8 and RV12 pumps.

¹ Part of "gas ballast control assembly" (A65201008)

² Part of "mode selector assembly" (A65201009)

³ Part of "exhaust flange assembly" (A65201007)

Figure 1 Exploded view of the RV pump with 1-phase motor (post 2010 configuration)



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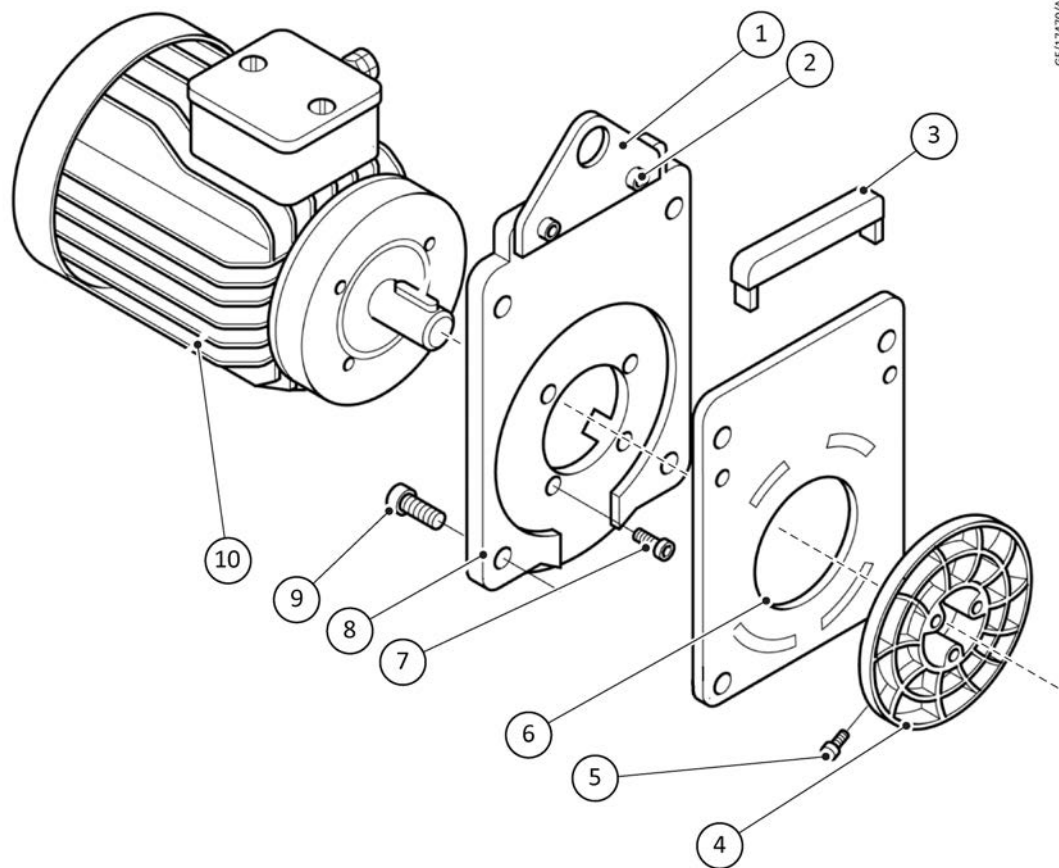
5.2 Parts list (contd.)

Table 6 Parts list (3-phase motor assembly)

Item no.	Description	Quantity				Kit no.(s)	Part no.
		RV3	RV5	RV8	RV12		
1	Lifting plate	-	-	1	1	-	A65401023
2	Screw: cap-head M6 x 12 (lifting plate securing)	2	2	2	2	-	-
3	Lifting plate cover	-	-	1	1	-	A25908141
4	Fan	1	1	1	1	-	A22301007
4	Fan (Nema motor)	1	1	1	1	-	A22301009
4	Fan (ISO motor)	1	1	1	1	-	A22301010
4	Fan (3-phase motor) Coupling element	1	1	1	1	-	A22301010
5	Screw: cap-head M5 x 40 (fan securing)	1	1	1	1	-	-
6	Ducting sheet	1	1	1	1	-	A65201019
7	Screw: cap-head M6 x 20 (motor to motor plate securing)	1	1	1	1	-	-
8	Motor plate	1	1	1	1	-	-
9	Screw: cap-head M6 x 20 (motor securing)	4	4	4	4	-	-
10	RV3/RV5/RV8 and RV12 Motor kit (Europe/USA) 50/60 Hz, 450/550 W, 1-phase 220-240/ 230-240 V	1	1	1	1	22	A65299500
10	RV3/RV5/RV8 and RV12 Motor kit (Japan) 50/60 Hz, 450/550 W, 1-phase 100-200/ 200-210 V	1	1	1	1	23	A65298500
10†	Motor assembly: RV3 and RV5 (1-phase)	1	1	-	-	14, 16	-
10†	Motor assembly: RV8 and RV12 (1-phase)	-	-	1	1	15, 17	-
10	Motor assembly: RV3 and RV5 (3-phase)	1	1	-	-	18	-
10	Motor assembly: RV8 and RV12 (3-phase)	-	-	1	1	19, 27, 28	-

† As of the end of 2010, the four RV 1-phase motors (used in kits 14, 15, 16 and 17) have been made obsolete and replaced by two new motors (item 11). These new motors are suitable for use on all 1-phase RV3, RV5, RV8 and RV12 pumps.

Figure 2 Exploded view of 3-phase motor assembly



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5.3 Parts list (contd.)

Table 7 Parts list (cartridge)

Item no.	Description	Quantity				Kit no.(s)	Part no.
		RV3	RV5	RV8	RV12		
1	Oldham coupling (L.V.-oil pump) ¹	1	1	1	1	1, 6 - 9, 20	A25908127
2	Oil pump stator	1	1	1	1	6 - 9, 20	*
3	Oil pump rotor	1	1	1	1	6-9	A65201720
4	End plate	1	1	1	1	6-9	A65201723
5	Screw: cap-head M6 x 40 (end cover securing and LV to HV securing)	4	4	4	4	6-9	-
6	Oil pump blade [#]	1	1	1	1	2-9	-
7	L.V. blade: RV3 and RV5 [#]	2	2	-	-	2, 3, 6, 7	-
7	L.V. blade: RV8 and RV12 [#]	-	-	2	2	4, 5, 8, 9	-
8	L.V. stator: RV3 and RV5	1	1	-	-	6, 7	A65201702*
8	L.V. stator: RV8 and RV12	-	-	1	1	8, 9	A65401702*
9	Oldham coupling (H.V.-L.V.)	1	1	1	1	6-9	A65201026
10	H.V. rotor: RV3 and RV5	1	1	-	-	6, 7	A65201701
10	H.V. rotor: RV8	-	-	1	-	8	A65401701
10	H.V. rotor: RV12	-	-	-	1	9	A65501701
11	RV3 H.V. Blade [#]	2	-	-	-	2, 6	-
11	RV5 H.V. blade [#]	-	2	-	-	3, 7	-
11	RV8 H.V. blade [#]	-	-	2	-	4, 8	-
11	RV12 H.V. blade [#]	-	-	-	2	5, 9	-
12	70 O-ring: 14.6 i.d. x 2.4 section (rotor sleeve)	1	1	1	1	6 - 9, 13	-
13	Shaft-seal sleeve [^]	1	1	1	1	6 - 9, 13	-
14	Shaft seal (inner): 25 x 35 x 7 ¹	1	1	1	1	1, 6 - 9, 20	H02109155
15	Shaft seal (outer): 20 x 30 x 7 ¹	1	1	1	1	1, 6 - 9, 12, 20	H02109154
16	Printed gasket (seal carrier) ¹	1	1	1	1	1, 6 - 9, 12, 20	A27160008
17	Screw: cap-head M6 x 20 (seal carrier securing)	4	4	4	4	6-9	-
18	Seal carrier [^]	1	1	1	1	6 - 9, 12	-
19 ²	Shaft-seal spacer	-	-	-	-	-	A27160006

20	Printed gasket (cartridge) ¹	1	1	1	1	1, 6 - 9, 20	A27160006
21	H.V. stator: RV3 [^]	1	-	-	-	6	A65201700
21	H.V. stator: RV5 [^]	-	1	-	-	7	A65301700
21	H.V. stator: RV8 [^]	-	-	1	-	8	A65401700
21	H.V. stator: RV12 [^]	-	-	-	1	9	A65501700
22	Reed valve clamp	1	1	1	1	6-9	A21035129
23	Reed valve	1	1	1	1, 1	6 - 9, 20	A65201029
24	L.V. rotor: RV3 and RV5 ¹	1	1	-	-	6, 7	A65201703
24	L.V. rotor: RV8 and RV12 ¹	-	-	1	1	8, 9	A65401703

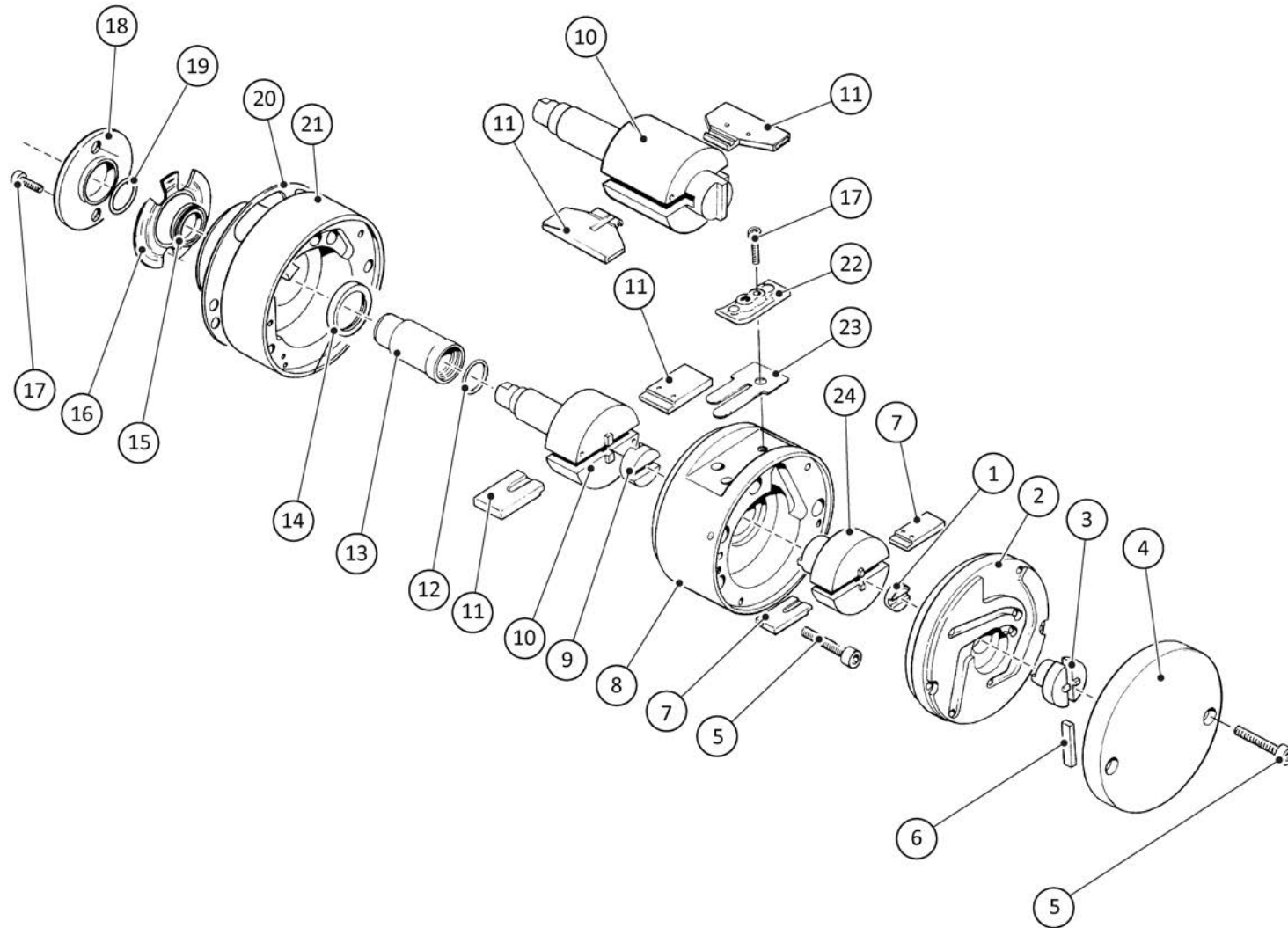
** On pumps with Serial number 9721 29 224 and earlier, all items marked thus (e.g. LV stator and oil pump), stator must be replaced at the same time. On pumps with later serial numbers, they may be replaced individually. If you fail to observe this practice, the pump will not operate.*

Included in the clean and overhaul kit: see Table "Checklist of blade kit components" of [Unpack and inspect](#) on page 13.

[^] Included for reference only.

¹ Included in the clean and overhaul kit: see Table "Checklist of clean and overhaul kit components" of [Unpack and inspect](#) on page 13.

² Not fitted to pumps as supplied, but may be fitted as part of maintenance.

Figure 3 Exploded view of the cartridge

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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 (10) and the RV8 and RV12 H.V. blade (11)) are shown above the main exploded view.

5.4 Parts list (contd.)

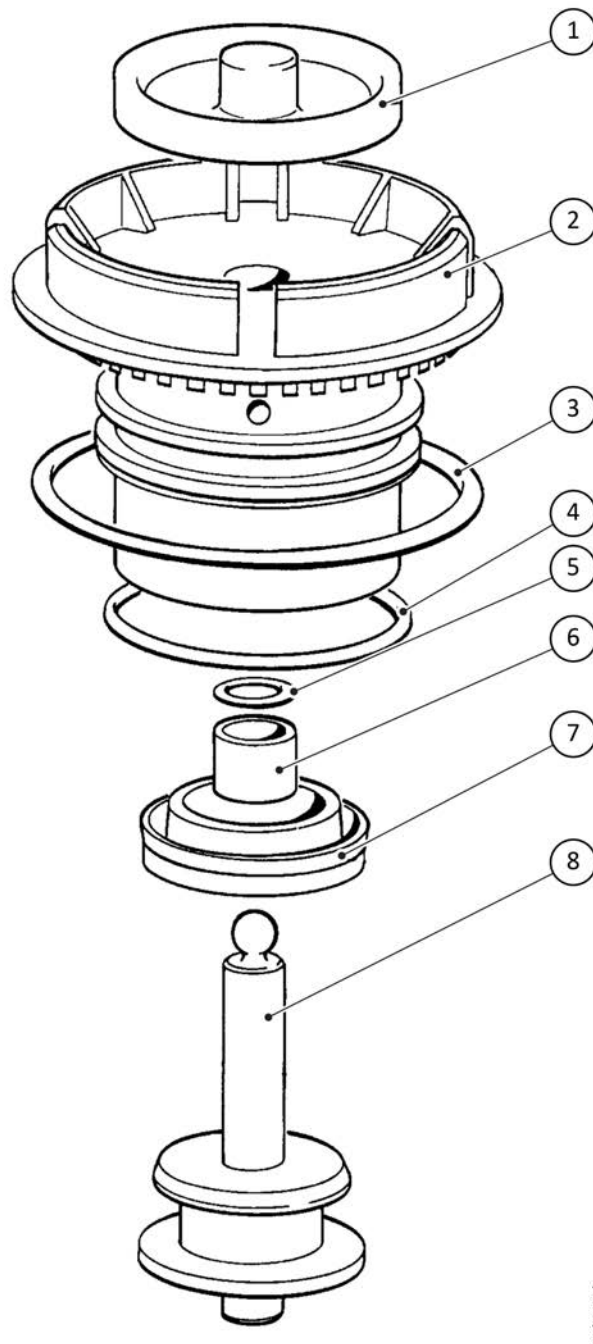
Table 8 Parts list (inlet-valve assembly)

Item no.	Description	Quantity				Kit no.(s)	Part no.
		RV3	RV5	RV8	RV12		
1	Valve pad* [#]	1	1	1	1	10	-
2	Valve cover*	1	1	1	1	10	-
3	O-ring: 49.5 i.d. x 3.0 section* [#]	1	1	1	1	1, 6 - 10, 20	23724071
4	O-ring: 32.5 i.d. x 3.0 section* [#]	1	1	1	1	1, 6 - 10, 20	23424070
5	O-ring: 7.6 i.d. x 2.4 section* [#]	1	1	1	1	1, 6 - 10, 20	23712039
6	Bush [#]	1	1	1	1	10	-
7	'U' seal* [#]	1	1	1	1	1, 6 - 10, 20	23712039
8	Piston [#]	1	1	1	1	10	-

* Included in the clean and overhaul kit: see Table "Checklist of clean and overhaul kit components" of [Unpack and inspect](#) on page 13.

[#] Included in the Inlet Valve Kit: see Table "Checklist of inlet-valve kit components" of [Unpack and inspect](#) on page 13

Figure 4 Exploded view of the inlet-valve assembly



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6. Service

6.1 Return the equipment or components for service

Before you send your equipment to us for service or for any other reason, you must complete a Declaration of Contamination Form. The form tells us if any substances found in the equipment are hazardous, which is important for the safety of our employees and all other people involved in the service of your equipment. The hazard information also lets us select the correct procedures to service your equipment.

If you are returning equipment note the following:

- If the equipment is configured to suit the application, make a record of the configuration before returning it. All replacement equipment will be supplied with default factory settings.
- Do not return equipment with accessories fitted. Remove all accessories and retain them for future use.
- The instruction in the returns procedure to drain all fluids does not apply to the lubricant in pump oil reservoirs.

Download the latest documents from edwardsvacuum.com/HSForms/, follow the procedure in HS1, fill in the electronic HS2 form, print it, sign it, and return the signed copy to us.

**NOTICE:**

If we do not receive a completed form, your equipment cannot be serviced.

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