

Instructions

E2M175S and E2M275S Rotary Pump Service Kits

Description	Item Number
Clean and Overhaul Kit	A366-01-131
Blade Kit for E2M175S	A366-01-134
Blade Kit for E2M275S	A367-01-134

UNITED KINGDOM

Manor Royal
Crawley
West Sussex, RH10 9LW
Tel:
Office +44 1293 528844
Sales & Service 08459 21 22 23
Fax:
Office +44 1293 533453
Sales & Service +44 1293 534149

AMERICAS

301 Ballardvale Street
Wilmington, MA 01887
Tel +1 978 658 5410
Fax +1 978 658 7969
Toll Free (USA only):
Tel +1 800 848 9800

CANADA

5860 Chedworth Way
Mississauga, Ontario
Canada, L5R 0A2
Tel +1 800 387 4076
Fax +1 905 501 1225

BRAZIL

Rua Bernardo Wrona, 222
02710-060, Sao Paulo, SP
Brasil
Tel +55 11 3952 5000
Fax +55 11 3965 2766

ITALY

Via Carpaccio 35
20090 Trezzano sul Naviglio
Milan
Office +39 02 48 4471
Sales +39 02 48 447242
Service +39 02 48 447217
Fax +39 02 48 401638

BELGIUM

Bergensesteenweg 709
B 1600 Sint-Pieters-Leeuw
Tel + 32 2 3630030
Fax + 32 2 3630064

GERMANY

Ammerthalstraße 36
85551 Kirchheim
Munich
Tel:
Sales 0 800 000 14 56
Service 0 800 000 14 57
Fax:
Office +49 89 99191899
Sales & Service +49 89 99191888

FRANCE

125 Avenue Louis Roche
92238 Gennevilliers, Cedex
Paris
Tel:
Office +33 147 98 24 01
Sales +33 141 21 12 56
Service +33 141 21 12 45
Fax:
Office +33 147 98 44 54
Sales & Service +33 141 21 12 38

INDIA

203 Surya Kiran Building
19 Kasturba Gandhi Marg
New Delhi - 110 001
India
Tel +91 11 4151 0065
Fax +91 11 4151 0245

ISRAEL

5 Habarzel Boulevard
Gat 2000 Industrial Zone
Qiryat Gat 82000
Tel +972 8 681 0633
Fax +972 8 681 0640

CHINA

23 Fu Te Road(N)
Wai Gao Qiao Free Trade Zone
Pudong, Shanghai
200131, China
Tel +86 21 5866 9618
Fax +86 21 5866 9993

JAPAN

1078-1, Yoshihashi
Yachiyo-shi, Chiba
Japan, 276-8523
Tel +81 47 458 8831
Fax +81 47 458 8835

SINGAPORE

42 Loyang Drive
Loyang Industrial Estate
Singapore 508962
Tel +65 6546 8408
Fax +65 6546 8407

TAIWAN

No. 434 Chung-Hwa Road
Toufen Town, Miaoli County
351 Taiwan
Tel +886 37 611422
Fax +886 37 611401

KOREA

Daewoo Engineering Building
5th Floor
9-3 Sunae-dong
Bundang-gu, Sungnam City
Kyungki-do, Korea
Tel +82 31 716 7070
Fax +82 31 738 1001

AUSTRALIA

1688 Ipswich Road
Rocklea Qld, 4106
Australia
Tel: +61 4 0199 1193
Fax: +61 2 9886 9249

PLEASE CONTACT ANY OF THE ABOVE FOR DETAILS OF OTHER SALES AND SERVICE CENTERS IN YOUR AREAS.

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WWW.EDWARDSVACUUM.COM
INFO@EDWARDSVACUUM.COM



WWW.EDWARDSVACUUM.COM

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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1 Introduction

These instructions apply to both the Clean and Overhaul Kit and the Blade Kits, which are supplied separately:

- We recommend that you use all the items in the Clean and Overhaul Kit, particularly all rubber components, when you service the pump. The items supplied in the kit are listed in Table 1. These items are shown in Figures 1 to 7. Instructions for the use of the kit are given in Section 3.
- Use a Blade Kit together with a Clean and Overhaul Kit when you replace the rotary pump blades. You must replace all the blade assembly items with those supplied in the appropriate Blade Kit. The items supplied in the Blade Kits are listed in Table 2 for the E2M175S and in Table 3 for the E2M275S. These items are shown in Figures 6 and 7. Instructions for the use of the Blade Kits are given in Section 3.

2 Kit Parts

2.1 Parts in the Clean and Overhaul Kit

Table 1 - Clean and Overhaul Kit items

Illustration Item	Description	Quantity supplied	Size (mm) and feature (if applicable) Length x diameter (x width) ∅ = inside diameter (X) - number of coils in a spring
5 *	Piston ring	1	
13 *	O-ring	1	0146-24 Viton™
14 *	O-ring	1	0171
15 *	O-ring	1	0181
16 *	O-ring	1	0331
17 *	Split pin	1	1/16 inch diameter x 1 inch long Stainless Steel
15	Valve pad	1	
37	Piston face	1	
47	Shaft seal sleeve	1	
53	Felt ballast filter	2	
58	Dowty seal	1	1/2 inch BSP
65	Ballast valve	1	
77	Distributor gasket	1	
78	Diaphragm	1	
79	LV exhaust valve rubber	1	
80	Filter head gasket	1	
81	Ballast gasket	1	
82	Ballast gasket	1	
83	Valve body gasket	1	
84	Exhaust gasket	1	
85	End plate gasket	1	
87	Body gasket	1	

Table 1 - Clean and Overhaul Kit items

Illustration Item	Description	Quantity supplied	Size (mm) and feature (if applicable) Length x diameter (x width) ∅ = inside diameter (X) - number of coils in a spring
109	Dowty seal	1	1/8 inch BSP
110	Dowty seal	6	1/4 inch BSP
111	Dowty seal	1	1 inch BSP
113	Oil seal	1	Viton™
114	Oil seal	3	Viton™
117	O-ring	1	111
118	O-ring	2	0210
119	O-ring	1	0213
120	O-ring	2	0216
121	O-ring	1	0239
122	O-ring	2	0335
123	O-ring	1	0340
124	O-ring	1	0448
125	O-ring	1	4A
126	O-ring	3	0056-24
180	Exhaust valve rubber	1	E2M1755 only
180	Exhaust valve rubber	1	E2M2755 only
181	Lid gasket	1	E2M1755 only
181	Lid gasket	1	E2M2755 only
182	Knitmesh gasket	1	E1M1755 only
182	Knitmesh gasket	1	E2M2755 only
207	Body nut	1	
231	Exhaust warning label	1	

* Inlet valve assembly item: see Figure 2.

2.2 Parts in the Blade Kits

Table 2 - E2M175S Blade Kit items

Illustration Item	Description	Quantity supplied
239	HV blade	2
237	LV blade	2
238	Oil pump blade	1

Table 3 - E2M275S Blade Kit items

Illustration Item	Description	Quantity supplied
239	HV blade	2
237	LV blade	2
238	Oil pump blade	1

Figure 1 - Kit items for main oil box sub-assembly

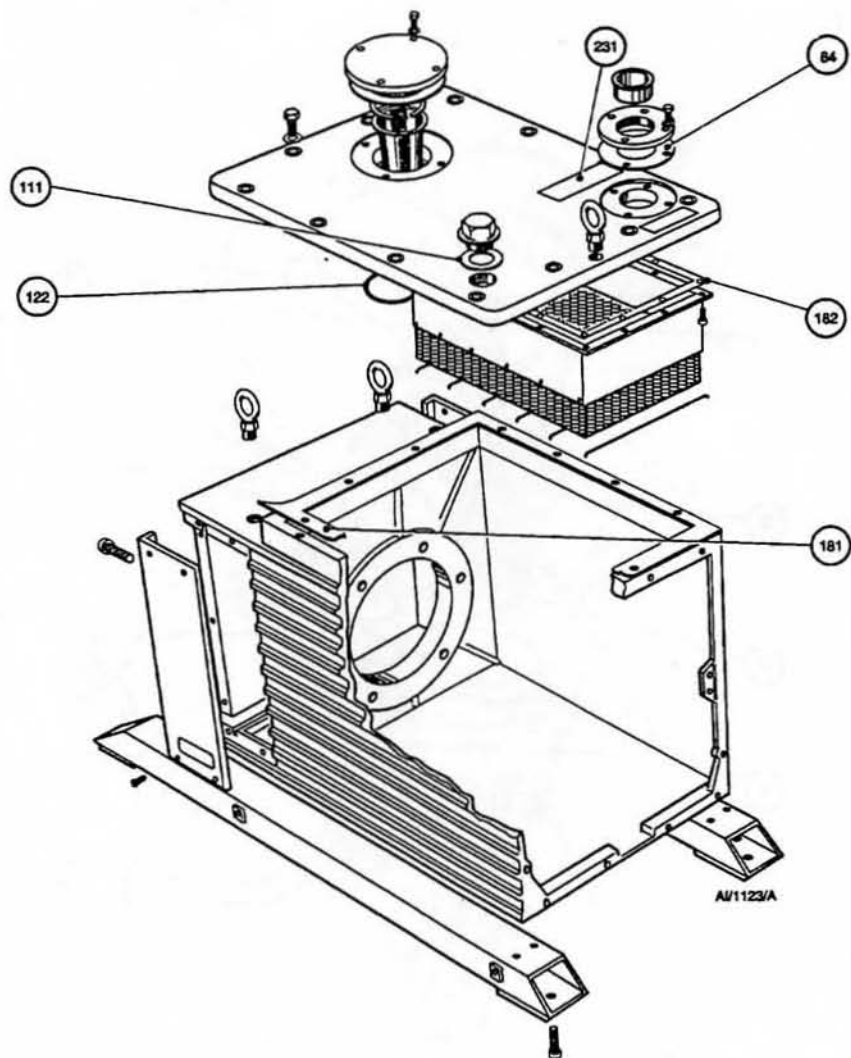


Figure 2 - Kit items for inlet valve sub-assembly

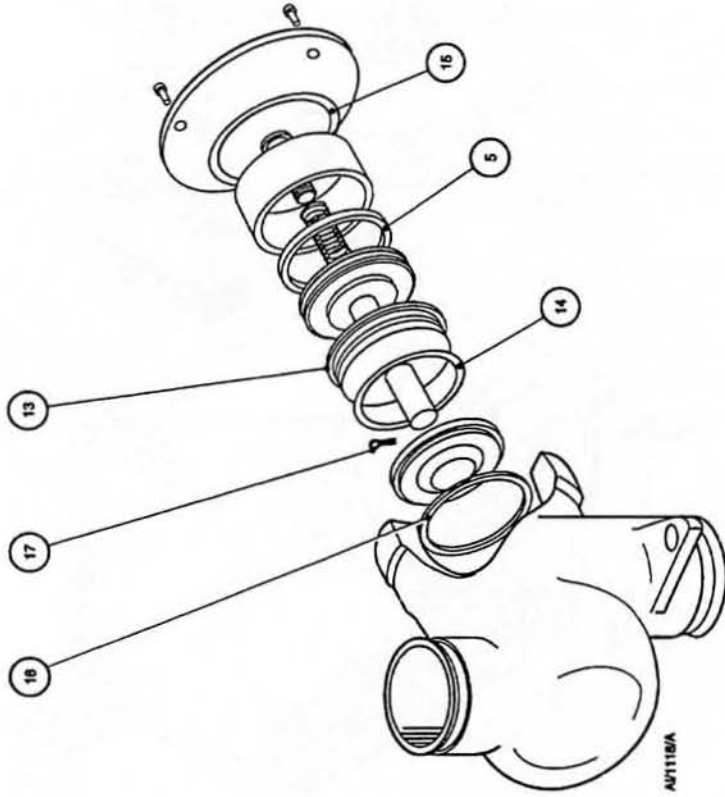


Figure 3 - Kit items for oil box end-plate and oil filter sub-assembly

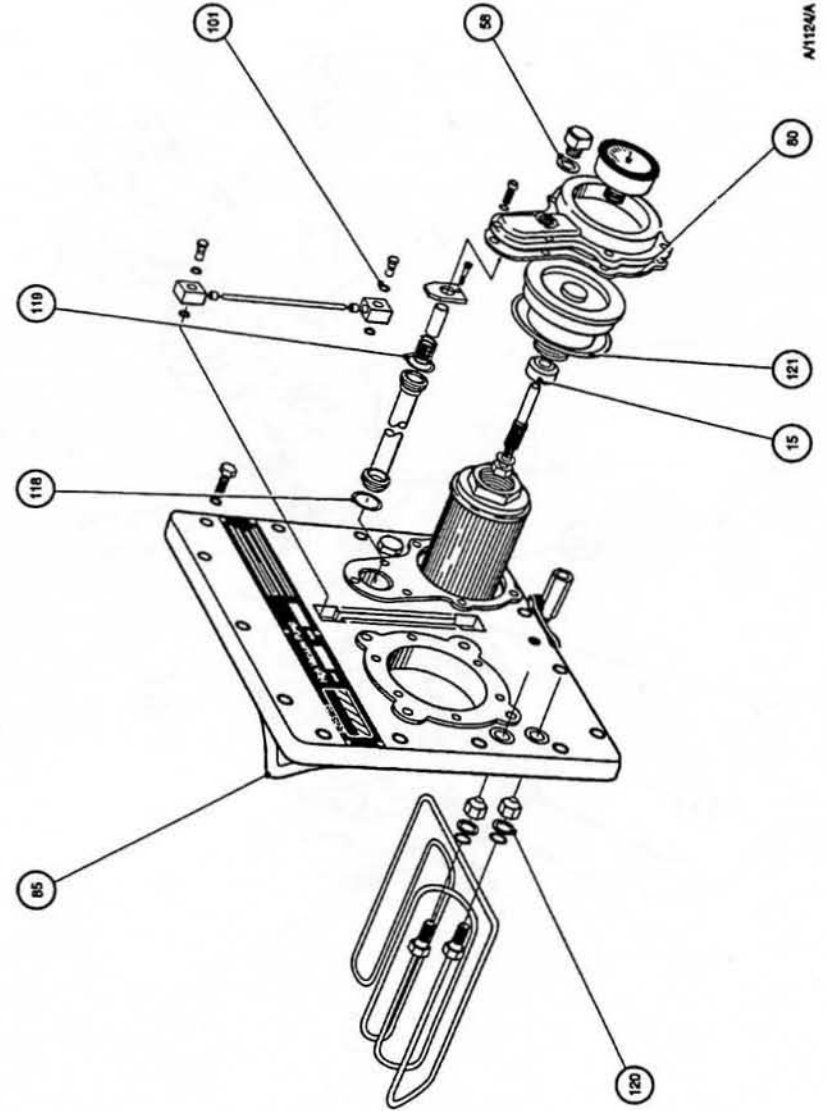


Figure 4 - Kit items for gas ballast valve sub-assembly

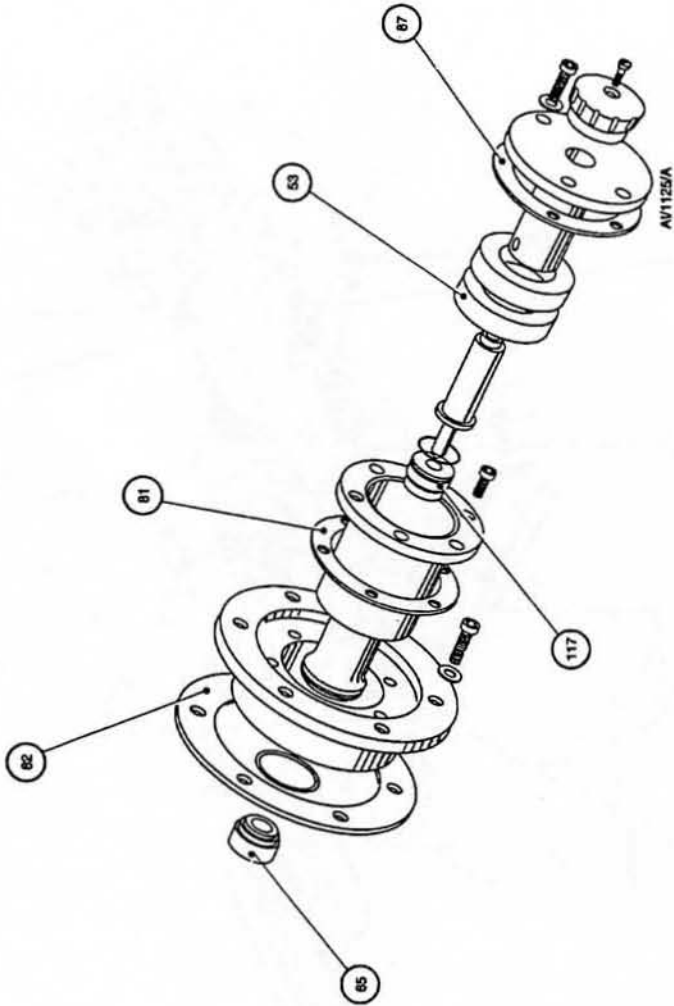
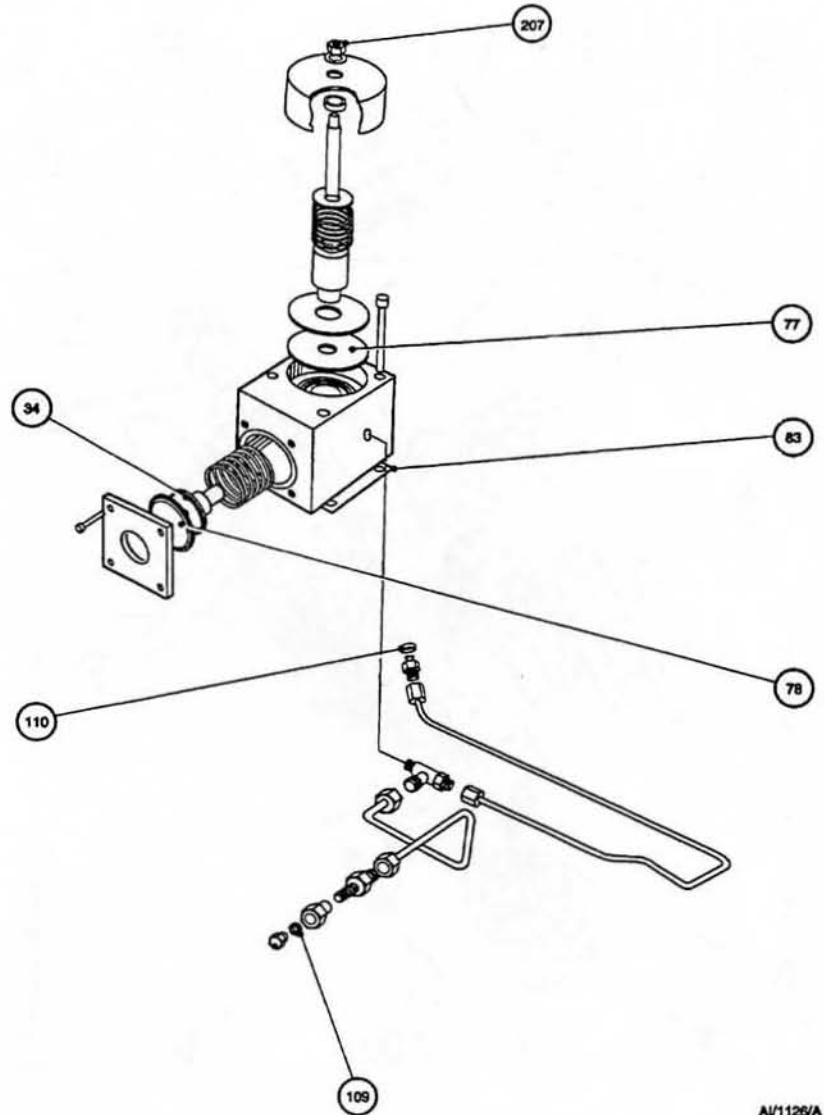


Figure 5 - Kit items for oil distributor sub-assembly



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Figure 6 - Kit items for HV stator sub-assembly

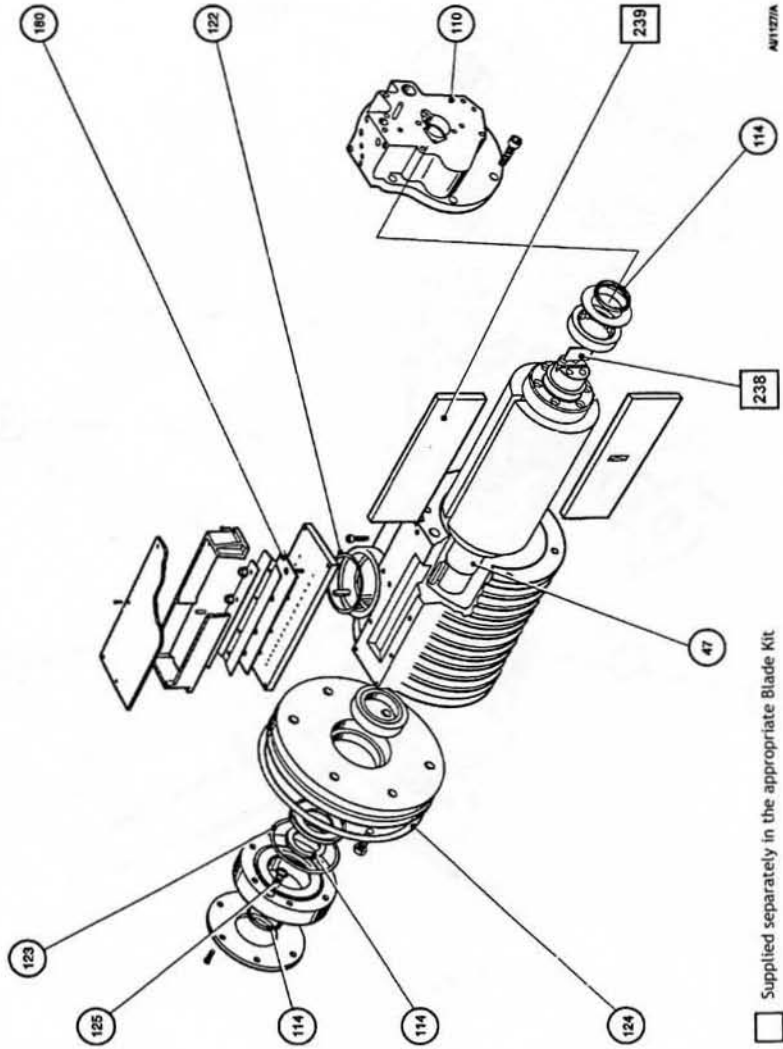
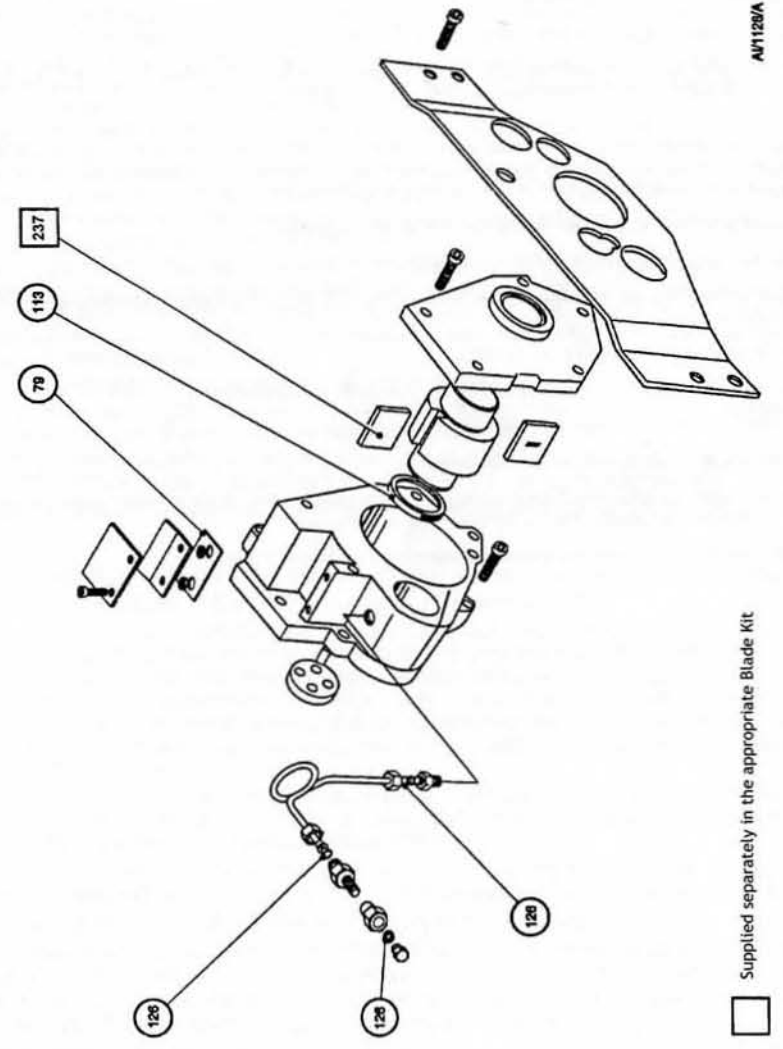


Figure 7 - Kit items for LV stator sub-assembly



3 How to use the Kits

Where appropriate, refer to the pump instruction manual for information about routine maintenance of the pumps.

1. Disconnect the rotary pump from the electrical supply and allow it to cool.
2. Drain the oil from the rotary pump.
3. Dismantle the pump and, referring to Figures 1 to 7 as appropriate, replace the components with those in the Clean and Overhaul Kit. Clean all exposed surfaces with a suitable cleaning fluid.
4. Inspect the rotary pump blade assembly for signs of wear. Ensure there is less than 0.15 mm clearance between each blade and its rotor slot: if the clearance is greater than 0.15 mm, you must replace the blades if you wish to obtain good vacuum performance. Seal the used blades in a plastic bag and dispose of the blades in accordance with all local and national safety and environmental requirements.
5. Reassemble the pump using the appropriate new gaskets supplied.
6. Fill the rotary pump oil box with the correct quantity of new oil.
7. The Clean and Overhaul Kit contains an exhaust warning label (item 231). If such a label is not already fitted to the pump:
 - Remove the backing strip from the label.
 - Attach the label to the top of the oil box lid, close to the exhaust outlet: see Figure 1.
8. Connect the electrical supply and switch on the rotary pump:
 - Check the direction of rotation of the pump.
 - Check that the oil level in the sight glass on the pump end-plate falls by 3 to 5 mm when you start the pump. If this does not happen, refer to the pump instruction manual.
9. Open the gas ballast valve and operate the rotary pump for at least 1 hour.

Return of Edwards Equipment - Procedure

INTRODUCTION

Before returning your equipment, you must warn Edwards if substances you used (and produced) in the equipment can be hazardous. This information is fundamental to the safety of our Service Centre employees and will determine the procedures employed to service your equipment.

Complete the Declaration (HS2) and send it to Edwards before you dispatch the equipment. It is important to note that this declaration is for Edwards internal use only, and has no relationship to local, national or international transportation safety or environmental requirements. As the person offering the equipment for shipment, it is your responsibility to ensure compliance with applicable laws.

GUIDELINES

- Equipment is 'uncontaminated' if it has not been used, or if it has only been used with substances that are not hazardous. Your equipment is 'contaminated' if it has been used with any substances classified as hazardous under EU Directive 67/548/EEC (as amended) or OSHA Occupational Safety (29 CFR 1910).
- If your equipment has been used with radioactive substances, biological or infectious agents, mercury, polychlorinated biphenyls (PCB's), dioxins or sodium azide, you must decontaminate it before you return it to Edwards. You must send independent proof of decontamination (for example a certificate of analysis) to Edwards with the Declaration (HS2). Phone Edwards for advice.
- If your equipment is contaminated, you must either:
 - Remove all traces of contamination (to the satisfaction of laws governing the transportation of dangerous/hazardous substances).
 - Or, properly classify the hazard, mark, manifest and ship the equipment in accordance with applicable laws governing the shipment of hazardous materials.

Note: Some contaminated equipment may not be suitable for airfreight.

PROCEDURE

1. Contact Edwards and obtain a Return Authorisation Number for your equipment.
2. Complete the Return of Edwards Equipment - Declaration (HS2).
3. If the equipment is contaminated, you must contact your transporter to ensure that you properly classify the hazard, mark, manifest and ship the equipment, in accordance with applicable laws governing the shipment of contaminated/hazardous materials. As the person offering the equipment for shipment, it is your responsibility to ensure compliance with applicable law. **Note: Equipment contaminated with some hazardous materials, such as semiconductor by-products, may not be suitable for airfreight - contact your transporter for advice.**
4. Remove all traces of hazardous gases: pass an inert gas through the equipment and any accessories that will be returned to Edwards. Where possible, drain all fluids and lubricants from the equipment and its accessories.
5. Seal up all of the equipment's inlets and outlets (including those where accessories were attached) with blanking flanges or, for uncontaminated product, with heavy gauge tape.
6. Seal equipment in a thick polythene/polyethylene bag or sheet.
7. If the equipment is large, strap the equipment and its accessories to a wooden pallet. If the equipment is too small to be strapped to a pallet, pack it in a suitable strong box.
8. E-mail via scan, fax or post a copy of the original with signature of the Declaration (HS2) to Edwards. The Declaration must arrive before the equipment.
9. Give a copy of the Declaration (HS2) to the transporter. You must tell your transporter if the equipment is contaminated.
10. Seal the original Declaration in a suitable envelope: attach the envelope securely to the outside of the equipment package, in a clear weatherproof bag. **WRITE YOUR RETURN AUTHORISATION NUMBER CLEARLY ON THE OUTSIDE OF THE ENVELOPE OR ON THE OUTSIDE OF THE EQUIPMENT PACKAGE.**