# Instruction Manual

## E2M0.7 and E2M1.5 Rotary Vacuum Pump Maintenance Kits

| Description | Item Number |
|---|---|
| Clean and Overhaul Kit | A371-01-131 |
| Blade Kit | A371-01-132 |
| E2M0.7 - 0.7$m^3$/hr | |
| E2M1.5 - 1.5$m^3$/hr | |

# 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.

Edwards Limited
Manor Royal
Crawley, West Sussex, UK
RH10 9LW
Tel: +(44) 1293 528844
Fax: +(44) 1293 533453

EDWARDS

WWW.EDWARDSVACUUM.COM

# Contents



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

# Illustrations



# Tables



mv/08/14

This page has been intentionally left blank.

# 1 Introduction

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

- Edwards recommends using all items in the Clean and Overhaul Kit when maintaining the pump, particularly all rubber components. The items supplied in the kit are listed in Table 1. These items are illustrated in Figure 1. Instructions for the use of the kit is given in Section 3. Kit items are grouped and packed in separate bags to aid identification.
- Order and use a Blade Kit together with a Clean and Overhaul Kit when replacing rotary pump blades. Renew all blade assembly items with those supplied in the Blade Kit. The items supplied in the kit are listed in Table 2. These items are illustrated in Figure 1. Instructions for the use of the kit are given in Section 5.

This page has been intentionally left blank.

# 2 Parts in the clean and overhaul kit

**Table 1 - Clean and overhaul kit items**

| Bag Pack Reference | Item No | Description | Quantity supplied | Size (mm) and feature (if applicable)<br>Length x diameter (x width)<br>* = inside diameter<br>(X) = number of coils in a spring<br>O-ring dimensions relate to I.D. x section |
|---|---|---|---|---|
| Bag 1 | 23 | Oil plug | 1 | 1/8 inch BSP |
| | | Oil plug | 1 | 1/4 inch BSP |
| | 71 | Gasket | 1 | |
| | | O-ring | 1 | 124.5 x 3.0 |
| | 81 | Dowty seal | 1 | |
| | | O-ring | 1 | 15.6 x 2.4 |
| | 88 | O-ring | 1 | 21.6 x 2.4 |
| | 110 | O-ring | 1 | 28.2 x 3.53 |
| | 111 | O-ring | 1 | 40.95 x 2.62 |
| | 112 | Gasket | 1 | |
| Bag 2 | 4 | Oil filter assembly | 1 | |
| | 5 | Inlet strain mesh | 1 | |
| | 41 | Felt pad | 1 | |
| | 50 | Drive member | 3 | |
| | 67 | Shaft spring | 1 | 19.0 x 6.2 (12) |
| | 68 | Oil supply spring | 1 | 28.0 x 13.3 (8)* |
| | 82 | Outer shaft Simrit seal | 1 | 16 x 30 x 7 (DRR is printed on the inside of seal) |
| | 83 | Inner shaft seal | 1 | 16 x 30 x 7 fluoroelastomer (DRW is printed on the inside of seal) |
| | 84 | Oil pump shaft seal | 1 | 16 x 30 x 7 (metal-cased) |
| | 89 | O-ring | 1 | 25.5 x 3.0 |
| | 90 | O-ring | 2 | 52.3 x 5.7 |
| Bag 3 | 44 | Gas ballast filter | 1 | |
| | 62 | Valve pad | 1 | |
| | 64 | Gas ballast valve | 1 | |
| | 65 | Gas ballast valve spring | 1 | 15.5 x 8.0 (7.5)* |
| | 66 | Spring | 1 | 17.0 x 8.5 (10) |
| | 69 | Gas ballast spring | 1 | 50 x 7 (24) |
| | 85 | Gas ballast O-ring | 1 | 6.6 x 2.4 |
| | 86 | O-ring | 4 | 7.9 x 2.6 (fluoroelastomer) |
| | 87 | Gas ballast O-ring | 1 | 12.6 x 2.4 |
| | 88 | O-ring | 2 | 21.6 x 2.4 |

**Table 1 - Clean and overhaul kit items (continued)**

| Bag Pack Reference | Item No | Description | Quantity supplied | Size (mm) and feature (if applicable)<br>Length x diameter (x width)<br>* = inside diameter<br>(X) = number of coils in a spring<br>O-ring dimensions relate to I.D. x section |
|---|---|---|---|---|
| | 63 | Distributor valve | 1 | |
| | 66 | Spring | 1 | 17.0 x 8.5 (10) |
| | 68 | Distributor springs | 1 | 28.0 x 13.3 (8)* |
| Bag 4 | 74 | Seal | 1 | Pre-1980's pumps |
| | 81 | O-ring | 1 | 11.0 x 1.78 |
| | (25) | O-ring | 1 | 15 x 5*, for E2M1.5 fittings pack |
| | - | O-ring | 1 | Plug seal for MS3 pump |

# Parts in the clean and overhaul kit

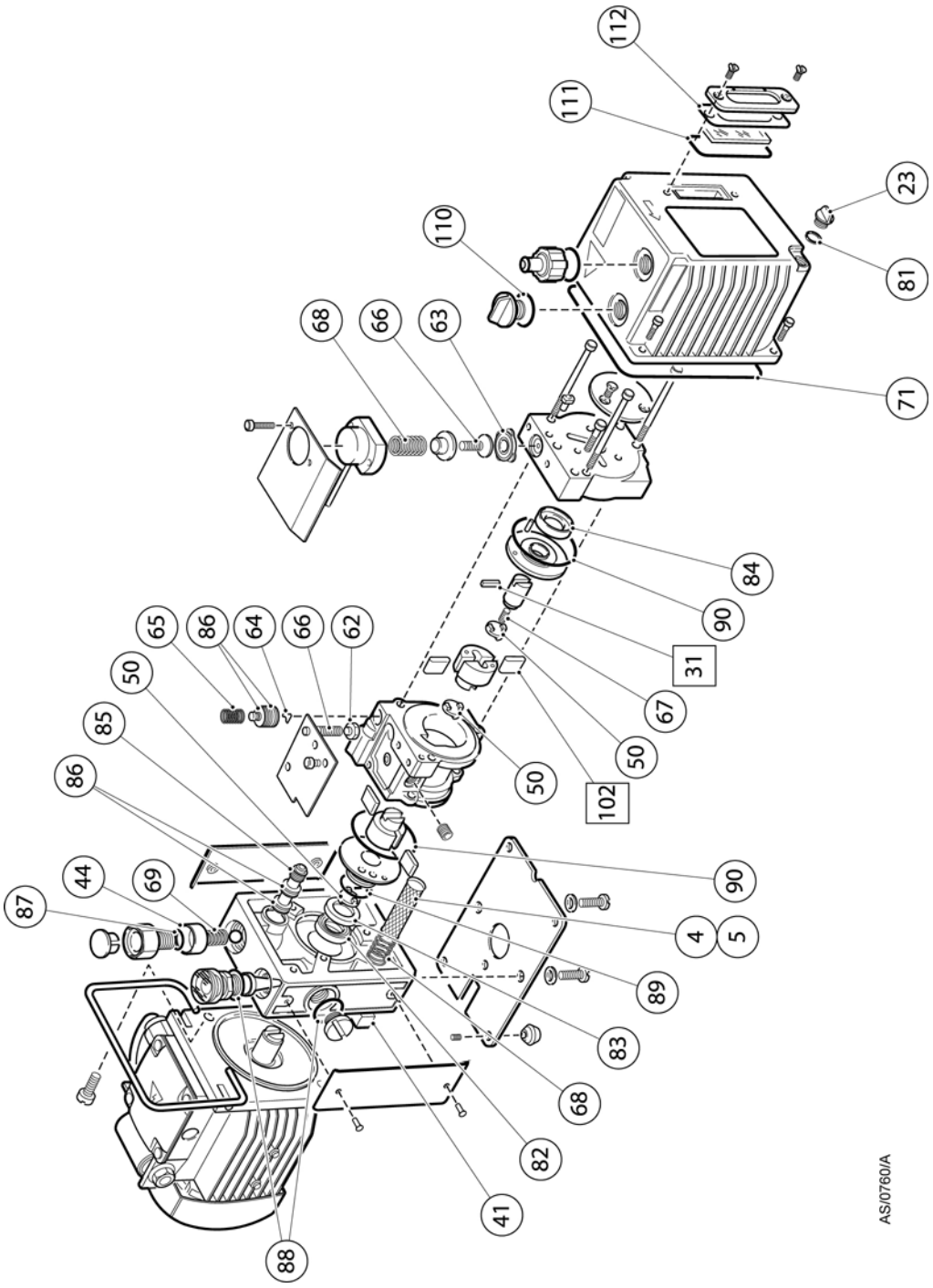


Figure 1 - E2M0.7 and E2M1.5 rotary pumps kit items

This page has been intentionally left blank.

# 3 How to use the clean and overhaul kit

Where appropriate, refer to the 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. Unscrew the bolts which secure the oil box and remove the oil box.
3. Remove any debris from inside the oil box. Clean all surfaces with a suitable cleaning fluid.
4. Dismantle the rotary pump and, referring to Figure 1, replace the relevant components with those in the Clean and Overhaul Kit. Clean all surfaces encountered during a service with a suitable cleaning fluid.
5. Inspect the rotary pump blade assembly for signs of wear. Ensure there is less than 0.09 mm clearance between each blade and its rotor slot. If the clearance is greater than 0.09mm, the blades must be replaced. Refer to Section 5 for instructions on the use of the Blade Kit.
6. Re-fit the oil box to the pump. Use the new oil box gasket or O-ring from the kit. Fill the rotary pump oil box with the correct quantity of new oil.
7. Connect the electrical supply and switch on the rotary pump. Check that the oil level in the sight glass at the end of the rotary pump drops by 3 to 5 mm when the pump is started. If this does not happen, refer to the rotary pump Instruction Manual.
8. Open the gas ballast valve and run the rotary pump for at least one hour.

# 4 Parts in the blade kits

**Table 2 - Blade kit items**

| Blade kit for E2M0.7 and E2M1.5 | | |
|---|---|---|
| **Item No.** | **Description** | **Quantity supplied** |
| 102 | Blade | 4 |
| 31 | Oil pump blade | 1 |

# 5 How to use the blade kits

In addition to the routine service steps (Section 3), if replacing the blade assembly items, use the new items from the appropriate kit as described below.

1. Follow the Step 1 to 5 in Section 3.
2. Fit new HV and LV blades.
3. Fit the oil pump blade.
4. Continue from Step 6 in Section 3.

This page has been intentionally left blank.

This page has been intentionally left blank.

This page has been intentionally left blank.

## Return the equipment or components for service

Before you send your equipment to us for service or for any other reason, you must send us a completed Declaration of Contamination of Vacuum Equipment and Components – Form HS2. The HS2 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.

We provide instructions for completing the form in the Declaration of Contamination of Vacuum equipment and Components – Procedure HS1.

If you are returning a vacuum pump, note the following:

- If a pump is configured to suit the application, make a record of the configuration before returning the pump. All replacement pumps will be supplied with default factory settings.
- Do not return a pump 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 www.edwardsvacuum.com/HSForms/, follow the procedure in HS1, fill in the electronic HS2 form, print it, sign it, and return the signed copy to Edwards.

***Note***: *If we do not receive a completed HS2 form, we will not accept the return of the equipment.*

P800-80-000 Issue T