

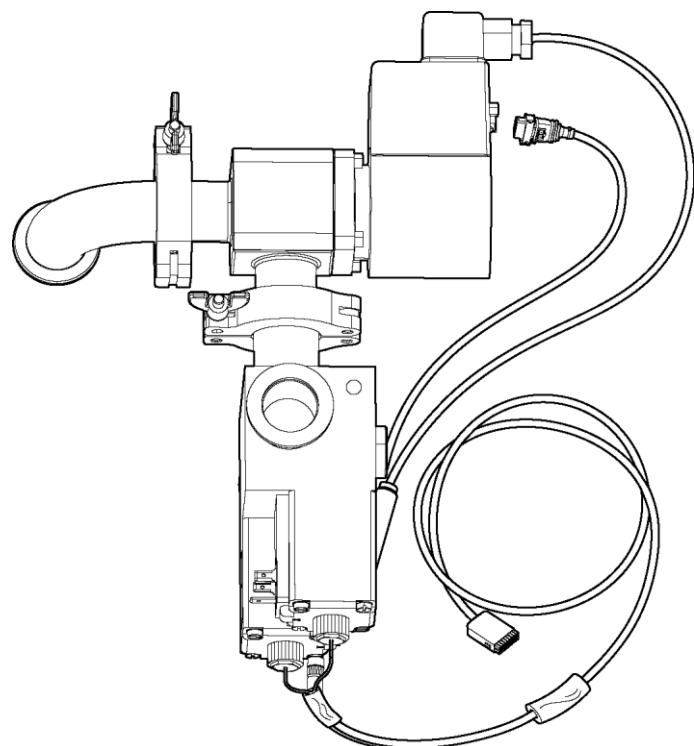
EDWARDS

Partial Flow System For Leak Detectors

INSTRUCTION MANUAL



edwardsvacuum.com



Official Distributor in Australia



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Vacuum and Thin Film Technology

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Why Choose Ezzi Vision?

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Disclaimer

The content of this manual may change from time to time without notice. We accept no liability for any errors that may appear in this manual nor do we make any expressed or implied warranties regarding the content. As far as practical we have ensured that the products have been designed and constructed to be safe and without risks when properly installed and used in accordance with their operating instructions.

We accept no liability for loss of profit, loss of market or any other indirect or consequential loss whatsoever.

Product warranty and limit of liability are dealt with in our standard terms and conditions of sale or negotiated contract under which this document is supplied.

You must use this product as described in this manual. Read the manual before you install, operate, or maintain the product.



EC Declaration of Incorporation

(Translation of original Declaration of Incorporation)

The manufacturer:

Edwards Ltd
Innovation Drive
Burgess Hill
West Sussex
RH15 9TW
UK

herewith declares that the following product:

Product designation: Partial Flow System ELD500

Part number: D13550403, D13550403

complies with the following fundamental requirements of the **Machinery Directive (2006/42/EC)**:
Annex I, Paragraph 1.1.2, 1.1.3, 1.1.5, 1.3, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.5, 1.3.7, 1.3.9, 1.5, 1.5.1, 1.5.15, 1.5.2, 1.5.4, 1.6.3, 1.7, 1.7.2, 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2, 1.7.4.3

In addition, partially fulfilled essential health and safety requirements:
1.3.8, 1.5.6, 1.6, 1.6.1 I 1.6.5

The following harmonised standards have been applied:

EN ISO 12100:2010

The incomplete machine may only be put into operation after it has been determined that the machine into which the incomplete machine shall be installed complies with the regulations laid down in the EC Machinery Directive (2006/42/EC).

The manufacturer commits himself to make the special documentation on the incomplete machine electronically available to national authorities upon request.

The special engineering documentation belonging to the machine was compiled in accordance with Annex VII Part B.

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Lutin, June 10th, 2020

Lutin, June 10th, 2020

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1. Safety and compliance

1.1 Definition of Warnings and Cautions

NOTICE:

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 equipment must only be operated and maintained by trained personnel in the proper condition and as described in this instruction manual.

Obey local and state requirements and regulations. If you have any questions about safety, operation or maintenance of the device, please contact our nearest subsidiary.

Important safety information is highlighted as warning and caution instructions. Obey these instructions.

WARNING:



If you do not obey a warning, there is a risk of injury or death. Different symbols are used according to the type of hazard.

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 pump or the system.

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

Keep the instructions for future use.

1.2 Safety symbols

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

The safety symbols that follow are used on the product or in the product documentation.

	<p>Warning/Caution</p> <p>An appropriate safety instruction must be followed or caution to a potential hazard exists.</p>
	<p>Warning - Dangerous voltage</p> <p>Identifies possible hazards from dangerous voltages.</p>

2. Important safety information

We do not assume any responsibility and warranty if the operator or third parties:

- disregard this document
- use the product for purposes other than those for which it was intended
- carry out interventions of any kind on the product (conversions, modifications, etc.).

2.1 Operation safety

- Operate the device only if it is in perfect technical condition and has no damage.
- Only operate the device properly in accordance with this instruction manual, in a safety and risk conscious manner.
- Follow the regulations and observe their compliance:
 - Intended use
 - Universally valid safety and accident prevention regulations
 - Additional device related provisions and regulations
- Obey all national and local rules and safety regulations.
- Only use original parts or parts approved by the manufacturer.
- Keep this instruction manual available on site.

2.2 Personnel qualifications

Only personnel who have received training from us are authorised to work with or on the device.

Make sure that authorised personnel have read and understood the instruction manual and all other applicable documents.

3. Introduction

The partial flow system guarantees safe and proper operation when used correctly and in accordance with the instructions contained in this operating manual. The partial flow system is operated in connection with a leak detector. In the partial flow operation, the test object is evacuated in addition through an auxiliary pump.

The measuring instrument was built according to the state-of-the-art and the recognised safety regulations. An improper use may result in risk to life and limb on the part of the user or third parties, or damage to the unit or other property may occur.

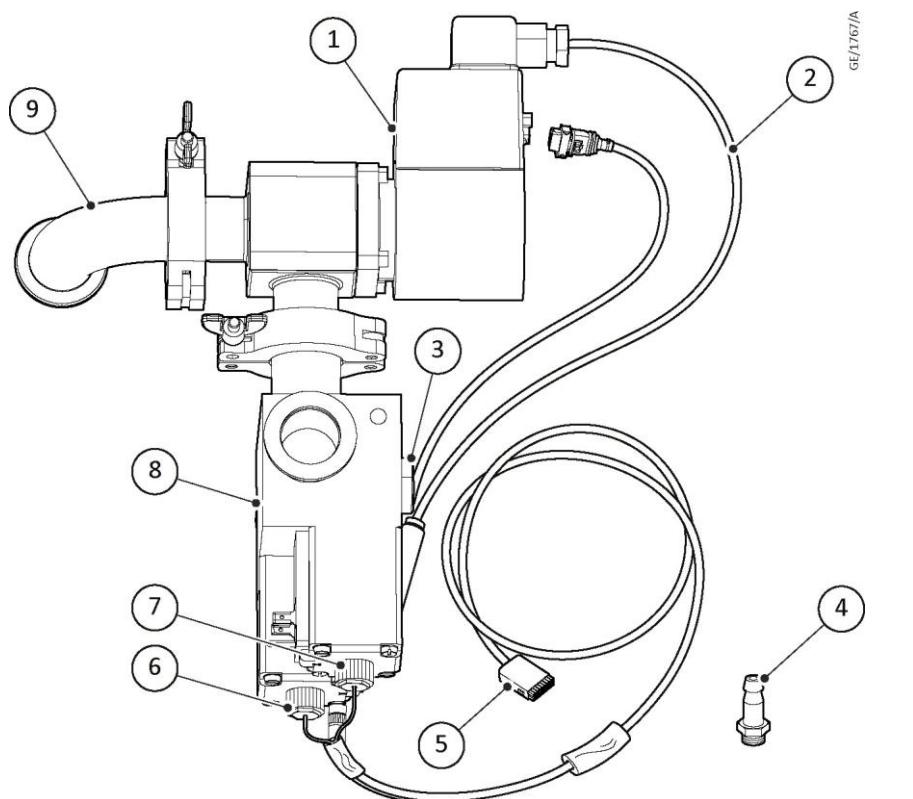
4. Transportation and storage

Table 1 Components of partial flow system

Item	Quantity
Partial flow system (pre-assembled)	1
▪ Partial flow valve block	1
▪ Sintered metal filter	1
▪ Hose nozzle	1
▪ Elbow 90 degrees Inox, DN 25 ISO-KF	1
▪ Cable Partial flow option	1
▪ Angle solenoid valve (200 - 240 V) or Angle solenoid valve (100 - 120 V)	-
Centering ring DN 25 ISO-KF	3
Clamping ring DN 20/-25 KF	3
Corrugated hose HF DN 25 KF	1
Power cable EU	1
Power cable US	1
Operating manual	1

 **Note:**

Check the delivery contents after you receive the product to make sure that it is complete.

Figure 1 Components of partial flow system

- | | |
|--|-----------------------------|
| 1. Angle valve | 2. Mains cable (110/230 V) |
| 3. Sintered metal filter [‡] | 4. Hose nozzle [†] |
| 5. Connection plug for the leak detector to the 24 V supply for valves | 6. Valve connection V9 |
| 8. Partial flow valve block | 7. Valve connection V10 |
| 9. Elbow 90° | |

† Ventilated with a ventilation gas, the hose nozzle is used.

‡ If the ambient air is used for ventilation, the sintered metal filter is used.

The vacuum hose and the small flange connections are not shown.

4.1 Unpack and inspect

- Remove all packing materials and check the partial flow system. If the partial flow system is damaged, notify the supplier and the carrier in writing within three days. Write the item number of the pump together with the order number and the supplier's invoice number. Retain all packing materials for inspection. Do not use the pump if it is damaged.
- Store the original transport container and packaging material in a safe place. It may be useful if products need to be returned.
- Check the delivery for completeness and subject all parts to a comprehensive visual inspection.

5. Technical data

Table 2 Performance data

Partial current set 230 V	
230 V	10 W (700 W for about 100 ms)
24 V	24 W (for 2 valves)
Partial current set 110 V	
110 V	10 W (700 W for about 100 ms)
24 V	24 W (for 2 valves)

6. Installation

WARNING: ELECTRICAL HAZARD



Risk of shock. Do not loosen the connection between the angle valve and the power cable as shown in the [Figure: General view](#). The 110/230 V mains cable must not be connected elsewhere.

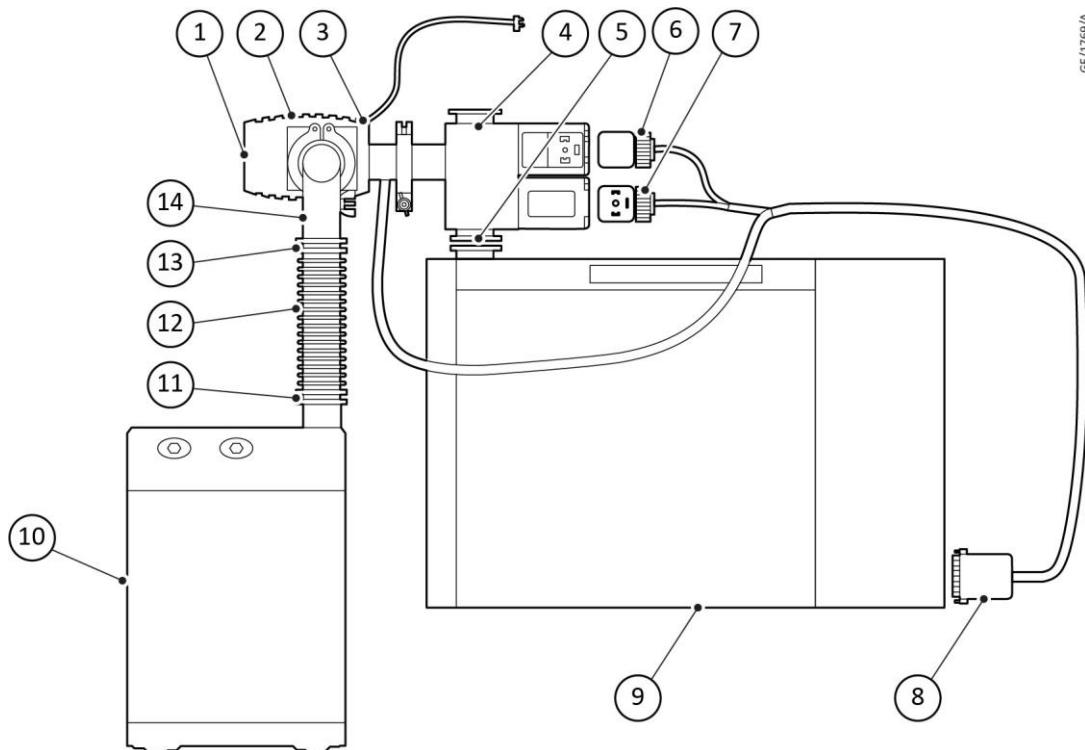
CAUTION: HEAVY OBJECT



Risk of injury and damage to equipment. Due to its weight, the device can fall to the floor during assembly or incorrect assembly and cause foot injuries.

In partial flow operation, the test object is evacuated with another pump. As an alternative to the partial flow system, you can connect an external auxiliary pump through a T-piece. In this case, the leak detector is not ready to measure from 1000 mbar.

Figure 2 General view



GE/1769/A

- | | |
|---------------------------------------|-----------------------------------|
| 1. LEDs | 2. Angle valve |
| 3. Power plug angle valve (110/230 V) | 4. Partial flow valve block |
| 5. Test port | 6. Connector plug valve V9 (24 V) |
| 7. Connector plug valve V10 (24 V) | 8. 8-pin connector |
| 9. Leak detector | 10. Partial flow pump |
| 11. Connection flange | 12. Vacuum hose |
| 13. Connection flange | 14. Elbow 90° |

6.1 Connect the partial flow system to a leak detector

The partial flow system is intended to connect with an ELD500 series leak detector. To connect the system:

1. Install the partial flow block to the test port of the leak detector with the flange.
 - The metal filter on the back is to the rear and the elbow to the left.
2. Connect the vacuum hose to the elbow and the partial flow pump.
 - The required small flange parts and the vacuum hose are included with the partial flow system .
3. Connect the 8-pin connector with a leak detector.

 **Note:**

When you connect the partial flow system, make sure that you can easily reach the mains plug and unplug it if necessary.

6.2 Settings of the partial flow system

The settings of the partial flow system are made in the operating menu of the connected leak detector. Switch the ELD500 off and disconnect the connected test objects from the test port. Connect the partial flow valve block to the test port of the ELD500. When doing so, the metal filter on the rear must point backwards and the lateral vacuum flange must point to the left.

To exclude the effects of any interference:

- The right-angle valve DN 25 KF must be flanged to the side port of the partial flow valve block so that the second flange points to the front and the LEDs of the valve point to the left.
- The partial flow pump is connected through the vacuum hose and the pipe bend/ elbow to the DN 25 KF right-angle valve.

Provide the electrical connection through connection cable as follows:

1. Tighten the round connection plug with the cable coupling of the right angle valve.
2. Connect the plug to connector plug valve V9.
3. Connect the plug to connector plug valve V10.
4. Connect plug to the 8-way socket (OPTION) on the face of the ELD500.
5. Switch on the partial flow pump.
6. Switch on the ELD500.
7. Select through the software menu of the ELD500:
 - Line 2: the "partial flow" operating mode
 - Line 10: "Evactime 1" 5 seconds or higher
 - Line 29: the nominal pumping speed of the partial flow pump.
8. Connect the test sample to the partial flow valve block.

 **Note:**

The designation is glued on the corresponding cable plugs and valves.

7. Operation

The partial flow system is an accessory for a leak detector. Read the corresponding section in the operating manual of the leak detector for commissioning.

With activated partial flow, the leak detector has up to four additional measurement ranges in addition to the usual measurement ranges (GROSS, FINE and PRECISION). These are:

GLIMPSE

The test specimen is evacuated through the partial flow pump (valve V8 is open) and the leak detector measures through the orifice in the partial flow valve block. The switching pressure P-GROSS can be adjusted, refer to the operating instructions of your leak detector.

P-GROSS

P-GROSS stands for "Partial GROSS". The measuring range is same as the GROSS measurement range, but the test specimen is additionally evacuated through the partial flow pump (valves V8 and V10 are open).

P-FINE

P-FINE stands for "Partial FINE". The measuring range is same as the FINE measurement range, but the test specimen is additionally evacuated through the partial flow pump (valves V8 and V10 are open).

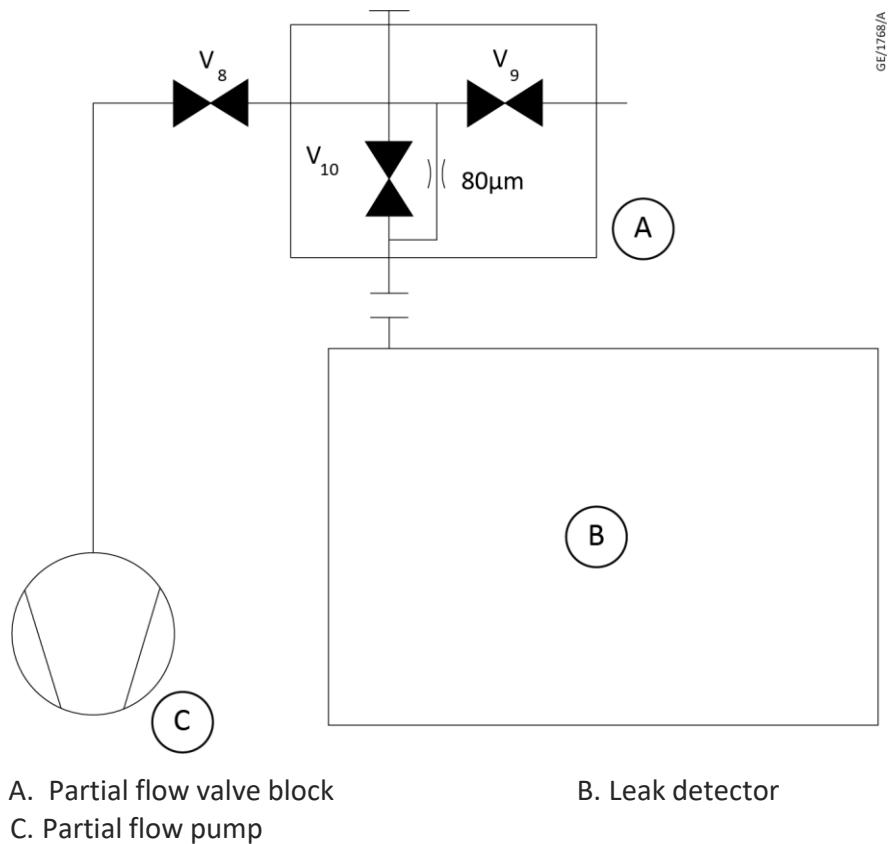
P-PRECISION

P-PRECISION stands for "Partial PRECISION". The measuring range is same as the PRECISION measurement range, but the test specimen is additionally evacuated through the partial flow pump (valves V8 and V10 are open).

Note:

The valves V8, V9 and V10 mentioned in this manual are called V8ext, V9ext and V10ext for the ELD500 series devices. This is to avoid confusion with internal valves of these series.

Figure 3 Schematic diagram



7.1 Operating instruction

Evacuate

Press the start button on the leak detector, to open the valves V8 and V10. This will evacuate the test object with both the external partial flow pump and the internal backing pump.

If the inlet pressure falls below the pressure switching limit after vacuum range GROSS within the set quick pump time, the leak detector switches to P-GROSS.

If it is not possible to sufficiently evacuate the test specimen within the set quick pump time, the valve V10 is closed again and the leak detector switches to the vacuum range

GLIMPSE

Measuring in the vacuum range GLIMPSE

In the GLIMPSE vacuum range, only the valve V8 is open on the partial flow system, that is the test specimen is evacuated through the partial flow pump. The leak detector measures through the orifice in the partial flow valve block. This makes it possible to measure a leak rate from an inlet pressure of 1000 mbar. If the pressure P1 subsequently falls below a certain value, the leak detector switches to P-GROSS.

Measurements in the vacuum ranges P-GROSS, P-FINE, P-PRECISION/GROSS, FINE, PRECISION

Depending on the inlet pressure, the leak detector tries to switch to the most sensitive measurement range. The valve V8 remains open for the time being, that is the test object is evacuated with both the external partial flow pump and the internal backing pump (vacuum ranges P-GROSS, P-FINE, P-PRECISION). The further behaviour of the bypass valve V8 can be configured in the leak detector. If this option is set to "automatic", the valve V8 is then closed automatically if the inlet pressure is sufficiently low (vacuum ranges GROSS, FINE, PRECISION).

Stop/vent

Press the STOP button on the leak detector that will activate the ventilation function, the test specimen is ventilated through the valve V9. Due to the large cross-section of valve V9, ventilation can be faster if the internal flood valve of the leak detector was ventilating.

8. Decommissioning

The device may be contaminated by the process or environmental factors. In this case, it must be decontaminated. We offer this service at a fixed price. You can send us your request.

Health and environmental damage

The contaminated parts can be dangerous for your health and environment. Before you do the work, check if the parts are contaminated. Obey the regulations and take the necessary precautions when you touch the contaminated parts.

Separate clean components according to their materials, and dispose of these accordingly. We offer this service. Further details are available on request.

9. Accessories and spare parts

Table 3 Accessories and spare parts

Description	Item number
Partial flow valve block	200 28 856
Cable set partial flow	200 99 010
Valve V9	200 000 516
Valve V10	200 000 517

10. Service

10.1 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 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 HS2 form, your equipment cannot be serviced.

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