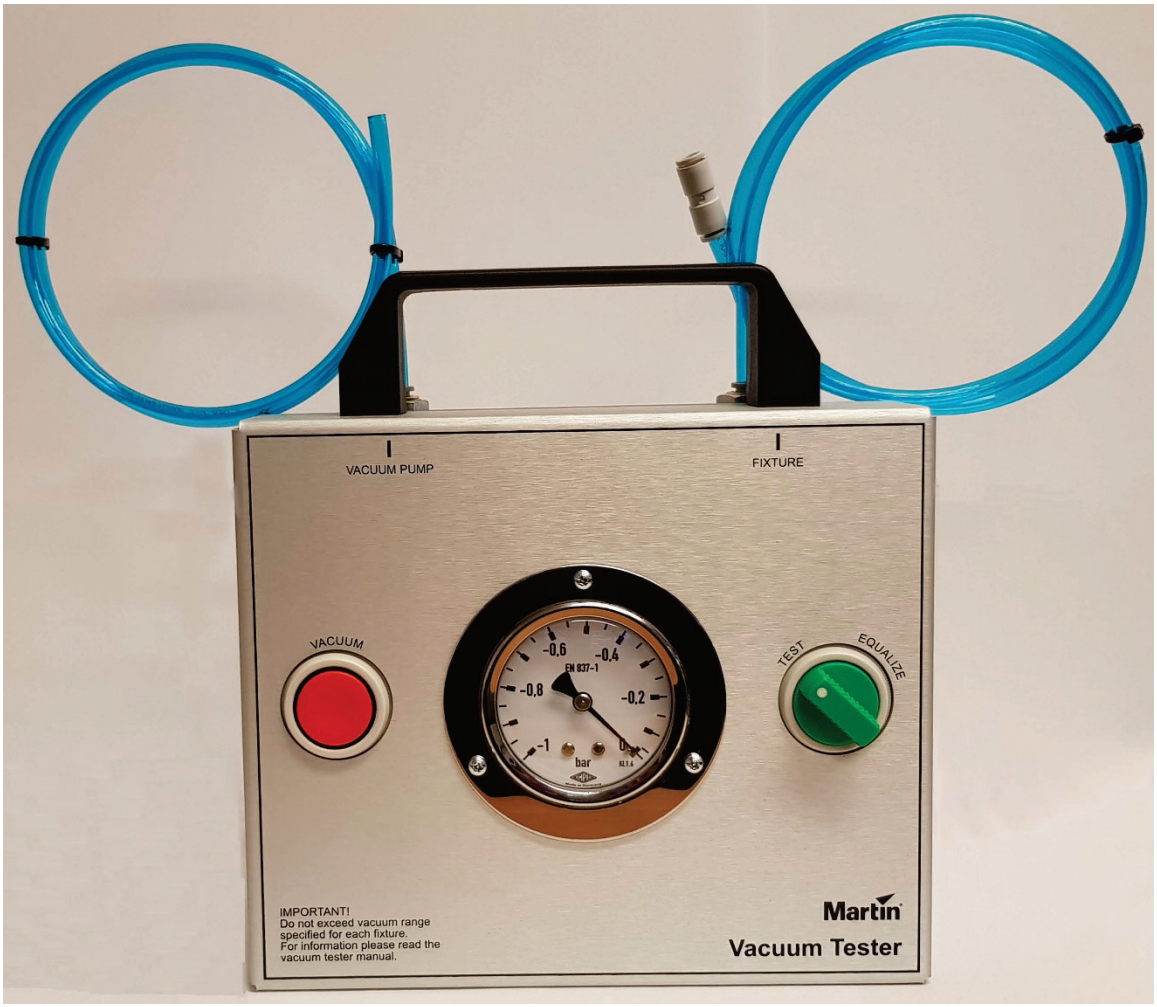
VACUUM TESTER USER MANUAL AND OPERATION GUIDE



91611580 Vacuum Test Equipment

Performing a vacuum test, revision I, Oct-2024

How to vacuum test

This document applies to the products mentioned in figure 8. These products are sealed to prevent entry of moisture.

A pressure relief valve (1) with a Gore-Tex™ membrane mounted in the product allows internal and external pressure to be equalized without allowing moisture to enter the product.

The valve will gradually purge moisture from the product. The vacuum tester also contains a pressure relief valve that purges any water droplets from the air that enters the product after completion of a test.

Make sure to install the product's covers, silicone seals and cable glands correctly after service to avoid moisture from being sucked into the product as it will affect the product performance and product life.

The vacuum tester from Martin™ by Harman allows you to check whether the product is correctly sealed.
Use the vacuum tester together with a vacuum pump.

The vacuum pump is not supplied.
For more information about the vacuum pump, see "Specifications for vacuum pumps" on page 7.

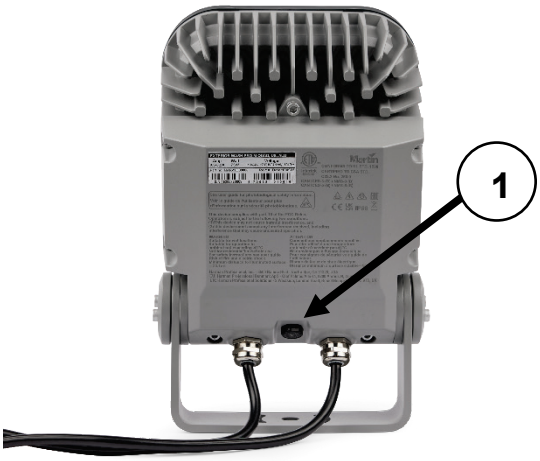


Figure 1: Pressure relief valve on Exterior Wash Pro Medium

Product overview

- 91611580 - Vacuum Test Equipment

1. Vacuum hose for connection to vacuum pump.
2. Vacuum hose for connection to product.
3. Suction cup.
4. **GREEN** Test / Equalize selector.
5. Manometer (Gives vacuum level readout).
6. **RED** Vacuum Activation button.

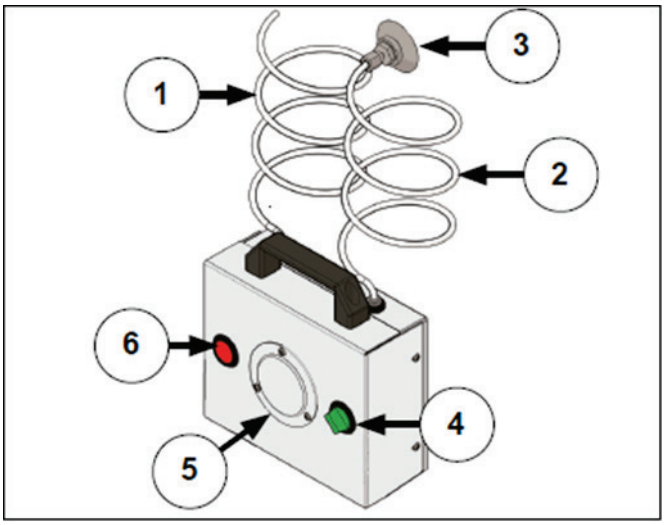


Figure 2: Vacuum tester

Pump adaptor

Two pump adaptors with O-Ring seals (1 and 2) and a suction cup (3) are supplied with the vacuum tester.
The two pump adaptors have different thread pitches:

1. M12x1, very fine (P/N 50503001)
2. M12x1.5, fine (P/N 50503002)

In the table below, you can see which pump adaptor to use with which product:

M12x1	M12x1.5
Exterior 400 Series	ELP CL/WW IP
Exterior 600 Series	ELP Par IP
Exterior 1200 Series	ERA 700 Performance IP
	Exterior 200 Series
	Exterior 400 IP
	Exterior Inground 400 LED
	Exterior Inground 200
	Exterior Wash 1XX/2XX/3XX Series
	Exterior Wash PRO Series
	Exterior Linear Series
	Exterior Linear PRO Series
	Exterior Projection 500/1000
	Extube 300/1200
	LC+
	P3 PowerPort 500 IP Series
	P3 PowerPort 1000 IP Series
	Tripix 300/1200
	VDO Atomic Bold Series
	VDO Atomic Dot Series

Make sure that you use the correct pump adaptor for the product that you are testing. Otherwise, the thread on the product/adaptor will become damaged.

NOTE! Only tighten the pump adaptors with your fingers. Do not use any tools to tighten the pump adaptors.

The suction cup is to be used with products that do not have an M12 type thread. The suction cup is also to be used during pressure tests.

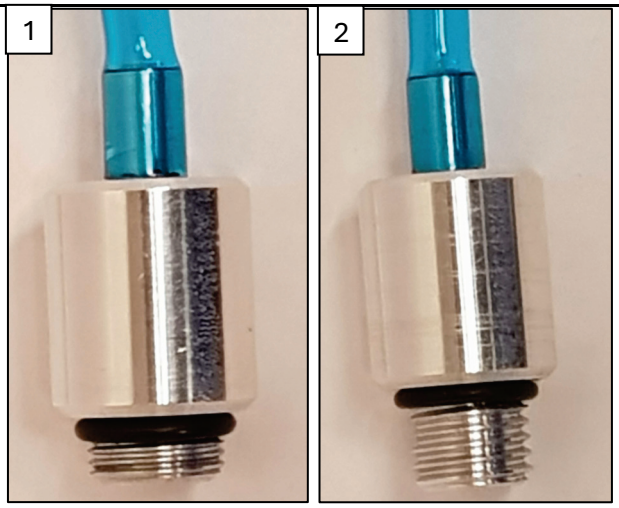


Figure 3: Pump adaptors

Figure 4: Suction cup

Test setup

Before you carry out the test, make sure that you have a suitable vacuum pump (1) with a fitting that fits a 6 mm outer diameter vacuum hose at your disposal.
See “Specifications for vacuum pumps” on page 7.

For maximum field flexibility, use a battery-powered pump.

1. The vacuum tester (2) is supplied with two vacuum hoses (4 and 5) with an external diameter of 6 mm that match the fittings on the vacuum tester (2) and the suction cup (3).
2. Connect the hose (4) to the fitting on the top of the vacuum tester (2) on the left-hand side and then connect to the vacuum pump (1).
3. Connect the hose (5) to the fitting on the top of the tester on the right-hand side and then to the suction cup (3) which was supplied with the vacuum tester.

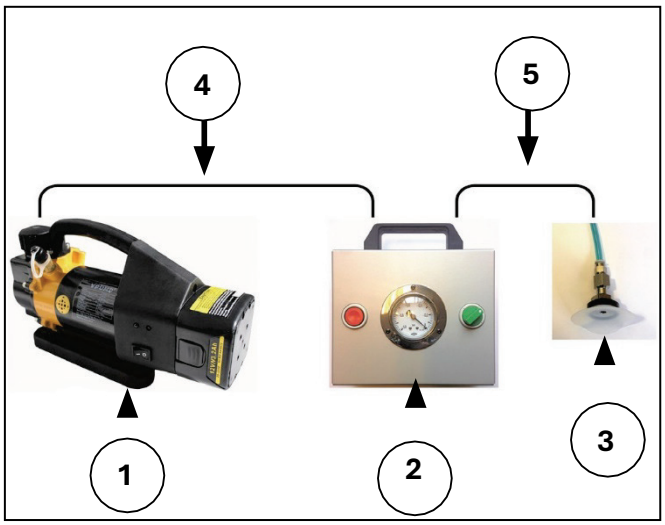


Figure 5: Test setup

Performing a pressure test

Before you use the vacuum tester on a product, perform a pressure test to make sure that there are no leaks in the equipment that might cause false readings:

1. Push the fitting on the end of the hose (1) on to the suction cup tube (2).
2. Turn the **GREEN** Test / Equalize selector (3) to the **TEST** position.
3. Turn **ON** the vacuum pump (4).
4. With one hand, press the suction cup (2) onto a flat clean sheet of glass (the front glass of a product may be suitable) or another perfectly smooth and hard surface.
5. With the other hand, press the **RED** Vacuum Activation button (5) and hold it down until the needle on the manometer (6) gives a readout of approximately **-0.8 bar**.
6. Release the **RED** Vacuum Activation button.

If you have applied too much vacuum:

7. Turn the **GREEN** Test / Equalize selector (3) briefly to **EQUALIZE** to allow air into the system. Then turn the selector back to **TEST**.
8. Press the **RED** Vacuum Activation button (5) again until you obtain approximately **-0.8 bar**.
9. Release the **RED** Vacuum Activation button (5).

Continue the test:

10. Watch the needle on the manometer (6) carefully and wait for approximately 30 seconds.
11. If the needle moves, there is a leak in the system.

    Check all connections and carry out the pressure test again.

    If the needle has not moved after 30 seconds, the system has passed the pressure test, and you can continue as mentioned below.
12. Turn **OFF** the vacuum pump (4).
13. Turn the **GREEN** Test / Equalize selector to the **EQUALIZE** position and wait for the manometer to return to zero before you remove the suction cup (2) from the surface.

NOTE! Do not try to remove the suction cup from the surface with a sharp object.

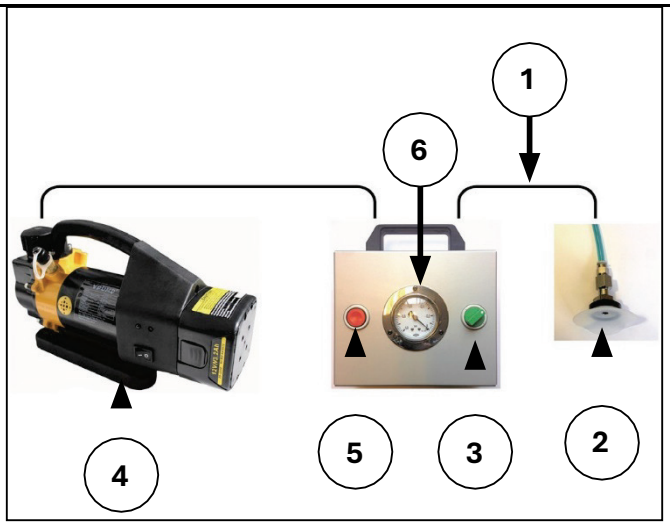


Figure 6: Checking for leaks in the equipment setup

Performing a vacuum test

Only perform a vacuum test in dry conditions.
Do not allow moisture to enter the product during the vacuum test.
Make sure that the sealing surfaces are clean and dry.

1. Push the fitting on the end of the hose (figure 6, 1) onto the correct pump adaptor for the product. See the table in “Pump Adaptor” on page 3.

2. Locate the pressure relief valve (1) on the product and remove it carefully.

3. Clean the valve surfaces carefully with water and dry it completely. If the valve is not in perfect condition, replace it.

4. With your fingers, fasten the pump adaptor into the threaded hole where the pressure relief valve was placed.

5. Turn the **GREEN** Test / Equalize selector (figure 6, 3) to the **TEST** position.

6. Turn **ON** the vacuum pump (figure 6, 4).

7. Press and hold the **RED** Vacuum Activation button (figure 6, 5) until the manometer (figure 6, 6) shows the correct vacuum level for the product.

   See the table in figure 8 for test values.

8. Release the **RED** Vacuum Activation button (figure 6, 5).

If you have applied too much vacuum:

9. Turn the **GREEN** Test / Equalize selector (figure 6, 3) gradually to the **EQUALIZE** position to allow air into the system.

10. Turn the **GREEN** Test / Equalize selector (figure 6, 3) back to the **TEST** position.

11. Press and hold the **RED** Vacuum Activation button (figure 6, 5) until you obtain the correct vacuum level.

12. Release the **RED** Vacuum Activation button (figure 6, 5).

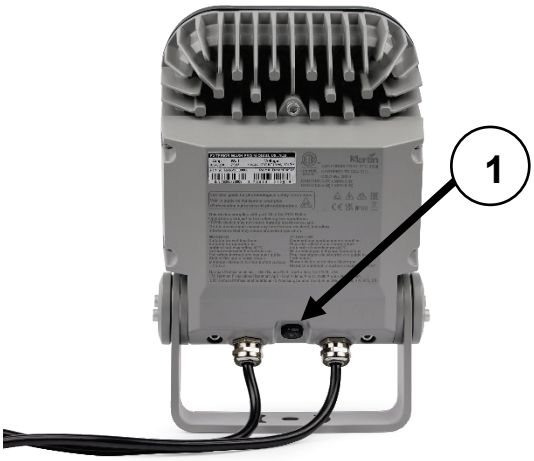


Figure 7: Pressure relief valve on Exterior Wash Pro Medium

Product	Vacuum level [bar]
ELP CL/WW IP	-0.3
ELP Par IP	-0.3
ERA 700 Performance IP	-0.3
Exterior 200 Series	-0.5
Exterior 400 Series	-0.5
Exterior 600 Series	-0.5
Exterior 1200 Series	-0.1
Exterior 400 IP	-0.5
Exterior Dot-HP	-0.5
Exterior Dot-HP PRO	-0.5
Exterior Inground 400 LED	-0.5
Exterior Inground 200 LED	-0.1
Exterior Wash 1XX/2XX/3XX Series	-0.5
Exterior Wash PRO Series	-0.5
Exterior Linear Series	-0.5
Exterior Linear PRO Series	-0.1
Exterior Projection 500/1000	-0.5
Extube 300/1200/Accessories	-0.1
LC+	-0.5
P3 PowerPort 500 IP Series	-0.7
P3 PowerPort 1000 IP Series	-0.5
Tripix 300/1200	-0.6
VDO Atomic Bold Series	-0.5
VDO Atomic Dot Series	-0.5

Figure 8: Vacuum Test Level

Continue the test:

1. Watch the needle on the manometer (1) carefully and wait for approximately **30 seconds**.

If the needle moves more than approx. **0.025 bar** (corresponding to half a division on the scale of the manometer), the product is not sealed correctly.

2. Check all covers and seals on the product according to the user manual or service documentation.
3. Make sure that all sealing surfaces are clean, dry and in perfect condition.
4. Tighten cover bolts to the correct torque according to the user manual or service documentation.
5. Make sure the pressure relief valve hole threads are clean and making a good seal on the vacuum tester pump adaptor.
6. When you have sealed the product, perform the vacuum test again. See “Performing a vacuum test” on page 5.

If the needle moves no more than approx. **0.025 bar** within **30 seconds**, the product is sealed correctly, and you can continue as mentioned below:

7. Turn **OFF** the vacuum pump (figure 6, 4).
8. Turn the **GREEN** Test / Equalize selector (figure 6, 3) to the **EQUALIZE** position and wait for the manometer needle to return to zero.
9. Unscrew the pump adaptor (figure 3) from the product and immediately mount the pressure relief valve (figure 7) to prevent water droplets from entering the product.

NOTE! The pump adaptors are designed to prevent leaks when you test the product. However, you can save some time by using the suction cup (figure 4, 3) instead of the connectors.

If the product is clean and there are no labels or obstructions close to the hole of the pressure relief valve, place the suction cup over the hole and perform the test.

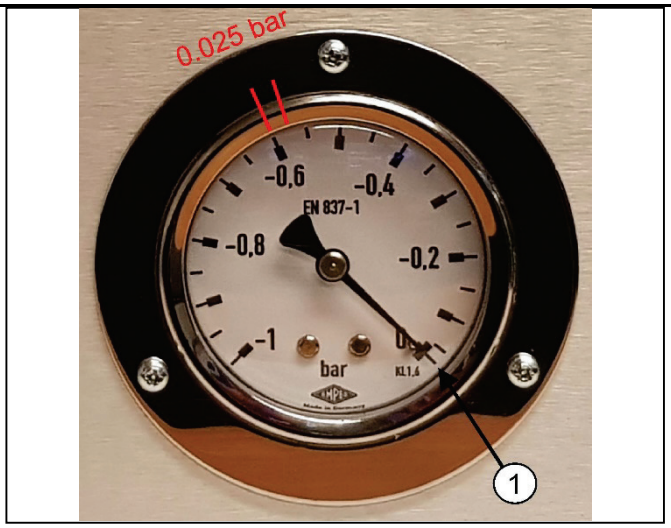


Figure 9: Manometer

Specifications for vacuum pumps

The vacuum pump must meet the following specifications:

- Pumping capacity: Minimum 30L per minute / 1 CFM. (Higher = faster)
- Maximum ultimate vacuum: < 50 Pa / 0.0005 bar (Lower Pa = better)

Example vacuum pumps mentioned below*.

*Due to manufacturer / market changes these may not be available in your region or may be discontinued but are for illustration purposes only. Models correct at time of publishing.

If your pump meets the above requirements, it does not matter what brand/model is used.

Figure 10: Battery-driven vacuum pump example

Battery-driven vacuum pump

- Makita DVP180Z
- HERCULES 20V Lithium-Ion Brushless Cordless 2-Stage Vacuum Pump
- Milwaukee M18 FUEL™ vacuum pump 5 CFM

Figure 11: Vacuum pump kit example

Mains-driven vacuum pump

- Mastercool 1.8 CFM Black Series Economy Vacuum Pump
- Rothenberger Roairvac 1.5 CFM Refrigerant Vac Pump
- VEVOR Vacuum Pump 6CFM 2 Stage Vacuum Pump
- BACOENG 3 CFM Single Stage Vacuum Pump

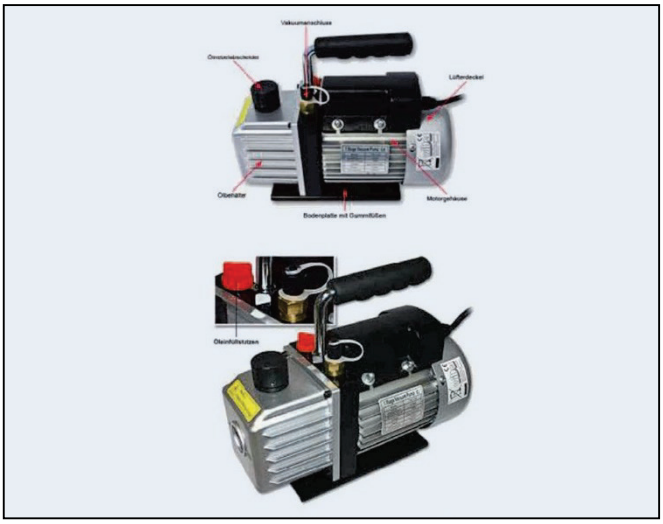


Figure 12: Mains-driven vacuum pump example

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