

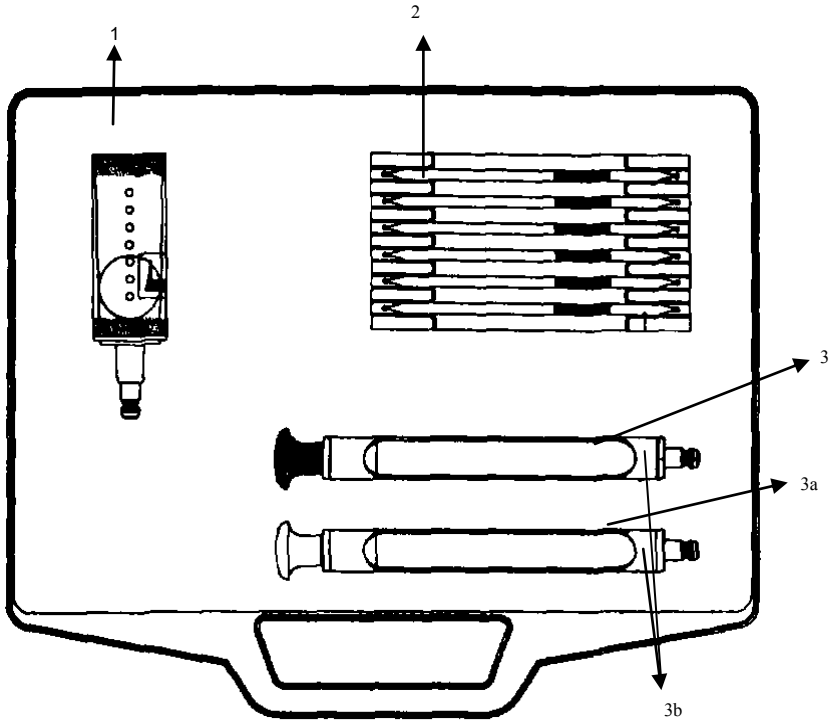
BREATHE SAFE

Operation Manual MPV-525 RESPIRATORY AIR QUALITY TESTING KIT



BREATHE SAFE

Respiratory Air Quality Check



No	Description	Part No
1	Air Flow Indicator	MPV-42
2	Detector Tubes (6 assorted supplied in kit)	
	Set of tubes (x2) (2 of each MPV-35,36,37,38)	MPV-340
	Carbon monoxide (CO)	MPV-35-K10*
	Carbon dioxide (CO ²)	MPV-36-K10*
	Oil mist	MPV-37-K10*
	Water vapour (H ² O)	MPV-38-K10*

No	Description	Part No
3	Black Tube Holder	MPV-40
3a	White Tube Holder	
3b	Tip Breaker	

* Available as packs of 10

Instructions For Use

The **DeVilbiss Breathe Safe** is designed to test the quality of air supplied to respiratory equipment. To ensure that this air is breathable quality. It must be filtered between the compressor and the respirator waistbelt. The DeVilbiss Breathe Safe should test air after this filtration point.

Setting Up Equipment

Ensure that the compressed air system is drained of fluid before commencing tests. Connect Air Visor or Half Mask waistbelt as usual.

Air Flow Test

Connect Air Flow Meter (1) by QD plug to the waistbelt. Adjust pressure as for normal visor or Half Mask use. The Indicator Ball will rise and measurements of air flow can be read from its lowest point. The apparatus should be held upright to obtain an accurate result. Ensure that air flow is not lower than 180 l/min. With the Air Flow Meter still connected, reduce the pressure at the wall regulator until the Indicator Ball floats at 140 l/min. The Air Flow Meter can now be disconnected and the waistbelt is ready to test for contaminants .

Testing for Contaminants

The DeVilbiss Breathe Safe indicates the presence of H²O, CO², CO and oil mist (tests should be carried out in this sequence). For each contaminant, there is a Detector Tube (2) which is inserted in to a Tube Holder (3) during testing. The white Tube Holder is used for H²O, CO and CO² Detector Tubes. The black Tube Holder is used for oil mist Detector Tubes only.

Break off the ends of the required Detector Tube with the Tip Breaker (3b) located on the back of the Tube Holder. A “scissor” type action should ensure a clean break. This should be carried out over a receptacle to catch the discarded glass. Pull back the knob of the appropriate Tube Holder and insert the Detector Tube. Ensure that the arrow on the Detector tube is pointing towards the knob in the direction of air flow.

Connect Tube Holder by QD plug to Airvisor waistbelt and wait the required time for the test.* The presence of a contaminant will produce a colour change* in the Detector Tube Crystals. This will rise up the Detector Tube to measure the level of contamination.

After Testing

Measure the contamination level if any colour change is observed. Check if contamination level is above or below the exposure limits set out by BS4275 or En132 as applicable *. All results should be recorded on the card provided. The Detector Tube can now be discarded and the next test carried out.

It is recommended that the DeVilbiss Breathe Safe be used monthly and when alterations are made to the compressor system.

Calibration

The equipment should be returned annually to DeVilbiss Spray Finishing Products for calibration.

- Refer to Information Chart
- **Please Note**

CO, CO² and Oil Mist—Exposure limits are cited from BS4275. Users should check that no other national or industrial standards should take precedent.

H²O—Water is not a specified respiratory hazard. The manufacturing process limits should dictate maximum water content otherwise the advised limit is derived from 85% RH where the temperature is 0-40°C in accordance with BS4275. There should be no condensed water in the system.

Information Chart

Test	Tube Holder	Duration	Colour Change	Limit
Water Vapour	White	1 minute 15 seconds	Green to purple	2500 mg/m ³
Carbon Monoxide	White	3 minutes	Yellow to dark brown	5 ppm
Carbon Dioxide	White	5 minutes	Yellowish orange to pale orange	500 ppm
Oil Mist	Black	20 minutes	Pink to very pale blue	0.5 mg/m ³

How to Apply the Water Vapour Formula

Step 1

Conduct breathe safe test to establish the water content as supplied to the mask. This represents the water content at atmospheric pressure (Dt).

Step 2

Identify maximum working pressure of compressor (Pw).

Step 3

Apply values Dt and Pw to formula to give Dw (Dew point value) This is expressed as a water vapour value that is in mg/m³.

Step 4

Identify the likely lowest temperature of input air to the compressor (ambient air temperature at the intake).

Step 5

Using Table 1, reference the water vapour value (Dw) and read across to the next column to find its associated dew point temperature. The calculated dew point temperature should be at least 5°C below the likely lowest temperature. Where the lowest temperature is not known the calculated dew point reading should not exceed -11°C.

Step 6

In the event that the calculated dew point value is not 5°C below the likely lowest temperature or exceeds -11°C when the lowest temperature is not known, consideration to lowering the water content within the compressor system should be given to avoid freezing of pipes and possible failure of the compressor system.

Example

Breathe Safe reading: 300mg/m³

Max working pressure: 10 bar

$$Dw = Dt \times Pw$$

$$Dw = 300 \times 10$$

$$Dw = 3000 \text{ mg/m}^3$$

3000mg/m³ = -6°C Dew point (As referenced from Table 1)

Based on annex C of BS6754 : 1986

Dew Point °C	Water Density Mg/m ³	Dew Point °C	Water Density Mg/m ³	Dew Point °C	Water Density Mg/m ³
-100	0.01756	-50	38.21	0	4487
-99	0.02139	-49	43.01	1	5196
-98	0.02599	-48	48.37	2	5563
-97	0.03150	-47	54.33	3	5952
-96	0.03812	-46	60.98	4	6364
-95	0.04002	-45	68.36	5	6802
-94	0.05544	-44	76.56	6	7265
-93	0.06668	-43	85.65	7	7756
-92	0.07996	-42	95.70	8	8275
-91	0.09574	-41	106.9	9	8824
-90	0.1144	-40	119.2	10	9405
-89	0.1365	-39	139.2	11	10020
-88	0.1624	-38	148.0	12	10670
-87	0.1930	-37	164.6	13	11350
-86	0.2289	-36	182.0	14	12080
-85	0.2710	-35	203.2	15	12840
-84	0.3203	-34	225.4	16	13640
-83	0.3778	-33	249.4	17	14490
-82	0.4449	-32	276.7	18	15380
-81	0.5230	-31	306.1	19	16320
-80	0.6138	-30	338.5	20	17310
-79	0.7191	-29	373.9	21	18350
-78	0.8413	-28	412.7	22	19440
-77	0.9824	-27	455.1	23	20590
-76	1.145	-26	501.5	24	21800
-75	1.331	-25	552.1	25	23070
-74	1.550	-24	607.5	26	24400
-73	1.799	-23	667.8	27	25790
-72	2.085	-22	733.6	28	27260
-71	2.414	-21	805.3	29	28790
-70	2.789	-20	883.5	30	30400
-69	3.218	-19	967.8	31	32080
-68	3.708	-18	1060	32	33850
-67	4.267	-17	1160	33	35700
-66	4.903	-16	1269	34	37630
-65	5.627	-15	1367	35	39650
-64	6.449	-14	1515	36	41760
-63	7.381	-13	1653	37	43970
-62	8.438	-12	1803	38	46280
-61	9.633	-11	1964	39	48640
-60	10.98	-10	2139	40	51210
-59	12.51	-9	2328	41	53830
-58	14.23	-8	2532	42	56570
-57	16.16	-7	2752	43	59430
-56	18.34	-6	2990	44	62410
-55	20.78	-5	3246	45	65520
-54	23.53	-4	3521	46	68750
-53	26.60	-3	3817	47	72120
-52	30.05	-2	4136	48	75630
-51	33.90	-1	4479	49	79280

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