adhesives, coatings, sealants & equipment
for your manufacturing and technology applications

IDMHDV-130

Handheld Diaphragm Valve

User Manual

www.intertronics.co.uk/idmhdv-130

Station Field Industrial Estate
Banbury Road, Kidlington
Oxfordshire, England OX5 1JD
t 01865 842842
e orders@intertronics.co.uk
www.intertronics.co.uk

Thank you for purchasing the IDMHDV-130 Handheld Diaphragm Valve.

For optimum performance and results, please read this manual carefully. Ensure that all operators and personnel are adequately trained for use with this product.

This document is based on information available and correct at the time of publication. The statements, technical information and recommendations contained herein are based on knowledge we believe to be reliable but they are not to be construed in any manner as warrantees expressed or implied. The user shall determine the suitability of the product for his intended use and the user assumes all risk and liability whatsoever in connection therewith.

For any queries regarding this product, please contact Intertronics directly.

Table of Contents

Note: Throughout this manual, numbers denoted in brackets refer to the corresponding parts labelled in Diagram #IDMHDV-130

Theory of Operation

The IDMHDV-130 is an all-plastic handheld dispense valve that uses a unique rigid diaphragm design to act as a front closing valve to accurately dispense small dots and fine beads. This valve is designed for handheld applications, to take the place of traditional syringe dispensing or other manually applied fluids. The all-plastic construction allows adhesives such as cyanoacrylates and anaerobic materials to be dispensed through the valve along with a variety of other low to medium viscosity fluids. Applications can include potting and the dispensing of dots and beads.

The IDMHDV-130 body comprises:

1) Air section (aluminium top portion)
2) Fluid section (acetal body with PTFE diaphragm and polyethylene luer adapter)

Air Section

The air section is an aluminium body with a simple piston/cylinder combination using air to open the valve and a spring to close. A stroke adjustment bolt in the upper air body controls how far the piston and needle assembly can retract, thus regulating the rate of fluid flow along with a lock nut to hold it in place.

Note: Upon delivery, the stroke adjustment bolt is fully closed.

Fluid Section

The fluid section is made up of acetal with a rigid PTFE diaphragm connected to the air piston. Fluid dispenses as the point of the diaphragm is lifted out of the fluid section orifice then stops as it moves back into place. The stroke adjustment bolt of the air cylinder regulates the distance that the diaphragm tip can lift out of the fluid section orifice thus controlling rate of fluid flow. An M3 female thread is available in the fluid section to hold a grounding wire in place to remove any ESD charge.

Wetted parts on the IDMHDV-130 include:

- Acetal (ESD Safe)
- PTFE
- Polyethylene

Safety

Due to material contents being under pressure, eye protection is recommended for operators. Refer to the SDS for the material being dispensed for other precautions.

Set Up

To actuate the air section the IDMHDV-130 requires a dispensing controller, such as the **FISDC100** Automatic liquid dispenser. Contact Intertronics for more information. The valve should be operated with clean, dry air between 50-80psi. One #10-32 threaded air port is located on the air section of the valve to open the valve when air is applied. A spring is then used to return the valve to the closed position. A quick connect air fitting is typically supplied with the IDMHDV-130 to fit 5/32" tubing.

Fluid is supplied to the IDMHDV-130 through the 1/8" NPT port located on the acetal fluid section of the valve.

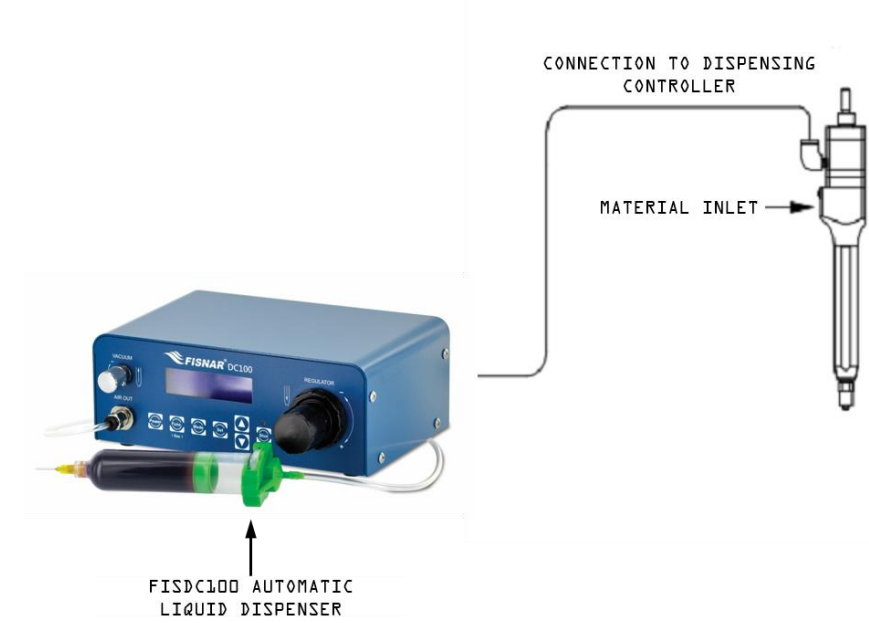
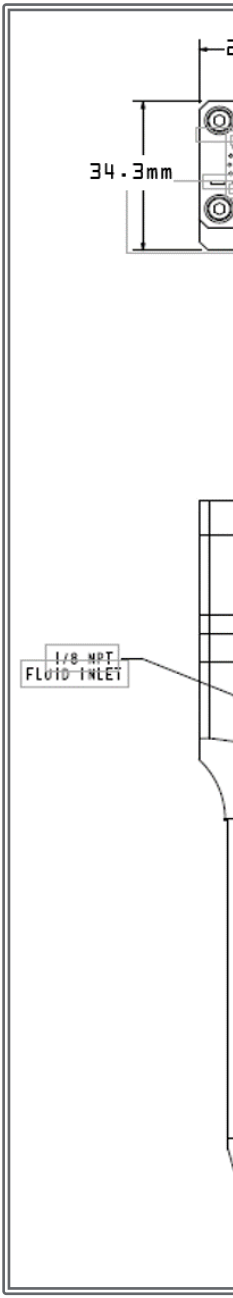


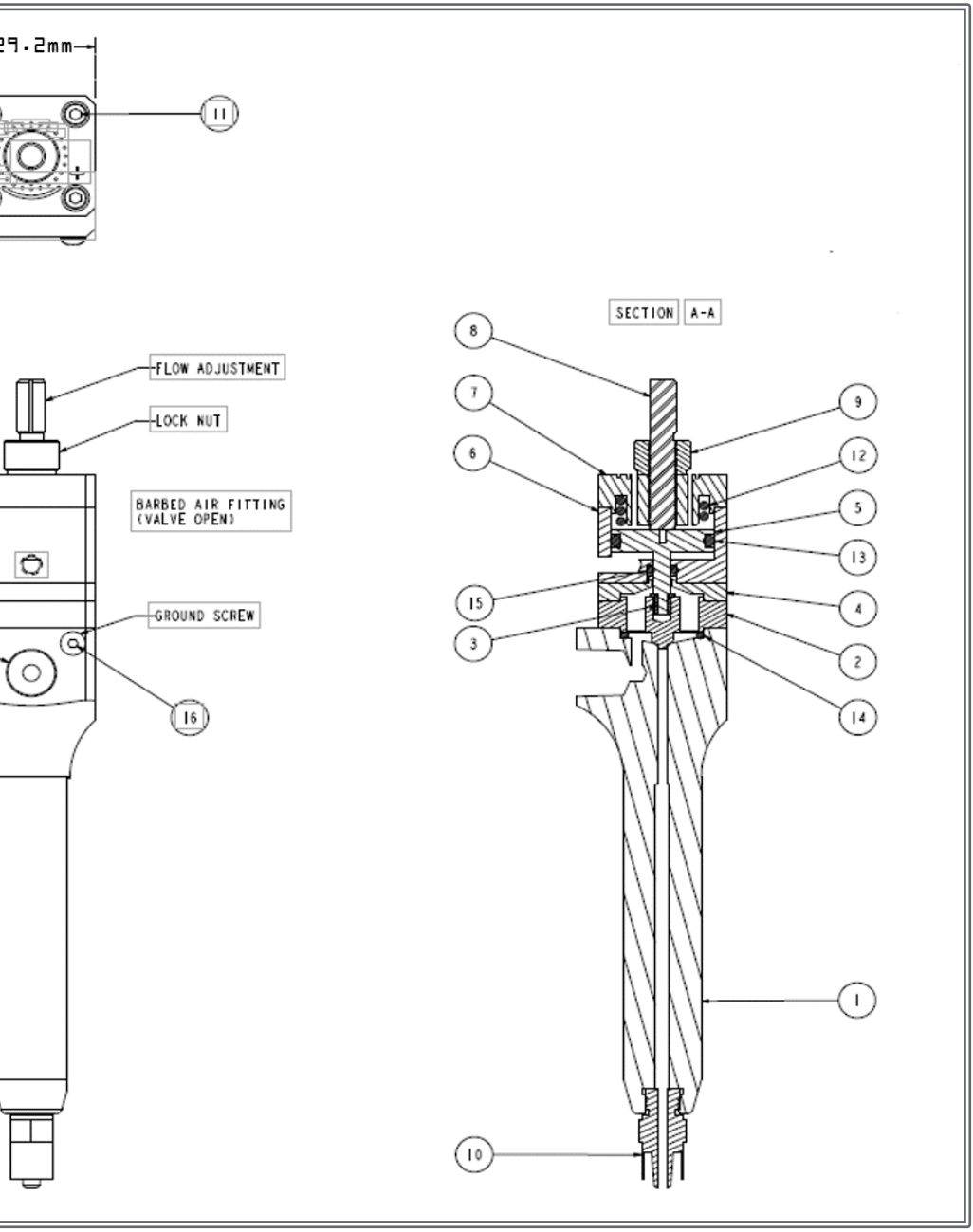
Diagram #IDMHDV-130



Note: Throughout this manual, numbers denoted in brackets refer to the corresponding parts labelled in Diagram IDMHDV-130

Item	Description	Part Number	Qty
1	Fluid Section, Wand	IDMHDV-130-214-12039	1
2	Diaphragm*	IDMHDV-130-114-9539	1
3	Expansion Insert	IDMHDV-130-95110A112	1
4	Cylinder End Cap	IDMHDV-130-214-11936	1
5	Piston	IDMHDV-130-214-10420	1
6	Air Cylinder	IDMHDV-130-214-11937	1
7	Cylinder Cap	IDMHDV-130-214-11964	1
8	Stroke Adjustment	IDMHDV-130-214-11981	1
9	Lock Nut	IDMHDV-130-214-11996	1
10	Nitrile O-Ring	IDMHDV-130-VLV-007B	1
11	Socket Head Cap Screw	IDMHDV-130-SH5-40x1.625	4
12	Spring	IDMHDV-130-01511	1
13	Nitrile O-Ring*	IDMHDV-130-VLV-116B	1
14	FFKM O-Ring*	IDMHDV-130-VLV-016K	1
15	Nitrile O-Ring*	IDMHDV-130-VLV-007B	1

* These parts are included in the **IDMHDV-130-SP Spare Parts Kit** (1 x Diaphragm (IDMHDV-130-114-9539), 1 x Nitrile O-Ring (IDMHDV-130-VLV-116B), 1 x FFKM O-Ring (IDMHDV-130-VLV-016K), 1x Nitrile O-Ring (IDMHDV-130-VLV-007B) and 1 x Plastic Luer adapter (IDMHDV-130-V300-UV)). Contact Intertronics to order.


29.2mm
11
FLOW ADJUSTMENT
LOCK NUT
BARBED AIR FITTING
(VALVE OPEN)
GROUND SCREW
16
SECTION A-A
8
7
6
9
12
5
13
15
4
3
2
14
1
10

Operation

1) Set up the valve as outlined in the **Setup** procedures (page 3).
2) Regulate the air pressure operating the valve between 50-80psi.
3) Making sure that the valve is not aimed toward anyone, cycle the valve several times. When the valve is cycling, the piston (5) can be heard hitting the stroke adjustment bolt (8). If the valve is not cycling properly, refer to the **Troubleshooting** section (page 8).
4) When the fluid delivery system is connected to the valve, pressurise the material to be dispensed.
5) Once again, cycle the valve open to purge. Fluid should begin to dispense from the tip of the valve. Elevate the valve with the tip pointing up in the air, then hold a purge cup underneath the tip and cycle the valve to open until all air is removed.
6) Check fluid connection for leaks. If the valve is leaking or dripping, refer to the **Troubleshooting** section (page 8).
7) Adjust the material pressure until the desired fluid flow is achieved.
8) Turn the stroke adjustment bolt (8) until the desired flow rate is achieved. Turning the adjustment clockwise will decrease the material flow rate and counter-clockwise will increase the material flow rate. If the stroke is turned all the way down, it will stop fluid flow entirely.
9) Once the stroke is set, tighten the lock nut (9) against the cylinder cap.

Note: refer to the **Troubleshooting** section (page 8) for any problems.

Routine Cleaning and Disassembly

Cleaning and rebuilding the valve will be required from time to time. A **spare parts kit (IDMHDV-130-SP)** is available with all the normal wear parts included (1 x Diaphragm (IDMHDV-130-114-9539), 1 x Nitrile O-Ring (IDMHDV-130-VLV-116B), 1 x FFKM O-Ring (IDMHDV-130-VLV-016K), 1x Nitrile O-Ring (IDMHDV-130-VLV-007B) and 1 x Plastic Luer adapter (IDMHDV-130-V300-UV)). Contact Intertronics to order.

1) Flush the valve thoroughly with an appropriate solvent before disassembly. (Refer to SDS of fluid for suggested solvent).
2) Remove fluid pressure from the system, and then remove all fluid delivery fittings, hoses, etc. from the valve. Remove operating air pressure from the valve.
3) Using a spanner, unthread and remove the luer adapter (10) from the fluid body (1).
4) Using a 3/32” Allen® key, evenly remove the four machine screws (11) from the cylinder cap (7).
5) Pull the fluid body (1) apart from the upper assembly and remove the 016 FFKM O-ring (14).

6) Remove the cylinder cap (7) and stroke adjustment assembly (8, 9) from the air cylinder (6) to remove the spring (12).
7) Insert a flat head screwdriver into the slot of the piston (5) to hold it in place then spin the diaphragm (2) counter-clockwise to unthread it from the piston.
8) Slide the cylinder end cap (4) off the piston.
9) Push the threaded end of the piston (5) into the air cylinder (6) to slide it through the back and remove.
10) Remove the 007 Nitrile O-ring (15) from the air cylinder and the 116 Nitrile O-ring (13) from the piston (5).
11) Clean all of the wetted parts thoroughly with an appropriate solvent.

Replace components with spares provided in the spare parts kit, if necessary.

General Assembly

All O-rings must be lubricated with a small amount of silicone grease.

1) Thread the lock nut (9) onto the stroke adjustment (8) with knurled side first.
2) Thread the stroke adjustment (8) into the cylinder cap (7).
3) Mount the 116 Nitrile O-ring (13) onto the piston (5).
4) Apply a small amount of silicone grease to the inside of the air cylinder (6) then drop in the piston (5).
5) Mount the 007 Nitrile O-ring onto the end of the piston (5) and slide it down into the groove of the air cylinder (6).
6) Place the cylinder end cap (4) onto the piston (5), lip side first and slide up to the air cylinder (6)
7) Using a square head screwdriver, hold the piston (5) in place and thread the diaphragm (2) on tightly.
8) If the diaphragm (2) does not square up with the air cylinder (6) use the square head screwdriver to turn the piston until it is aligned.
9) Place the 016 FFKM O-ring (14) into the groove of the fluid body (1).
10) Place the air cap & diaphragm assembly on top of the fluid body (1) and assemble with four machine screws (11) using a 3/32” Allen key to tighten them down evenly.
11) Thread the plastic luer adapter (4) into the bottom of the fluid section (3) and tighten using a spanner.

Note: Be sure not to over-tighten the luer adapter (4).

Troubleshooting

Problem	Possible Cause	Corrective Action
Valve does not cycle	• Air pressure to air section is too low • Stroke adjustment bolt is bottomed out • Material has cured in the valve • Valve was assembled w/o lubricating the O-ring seals	• Increase air pressure to between 50-80 psi • Back out stroke adjustment bolt by turning it counter-clockwise • Disassemble and clean valve • Disassemble valve, lubricate seals and re-assemble
Material leaks from valve tip	• Diaphragm is worn • Air bubble trapped in fluid body or in dispense needle	• Replace diaphragm • Flip valve upside down and cycle until air bubbles are removed
Valve leaks from mid-section	• Diaphragm is worn or damaged • O-Ring is worn or damaged	• Replace diaphragm • Replace O-ring
Valve does not dispense anything	• Fluid pressure is too low • Material has cured in fluid section • Stroke adjustment bolt is set too low	• Increase fluid pressure • Disassemble and clean valve • Back out stroke adjustment bolt by turning it counter-clockwise
Air bubbles in fluid	• Valve not properly purged • Problem with fluid delivery system • Stroke adjustment set back too far	• Flip valve upside down and cycle until air bubbles are removed • Diagnose and repair • Turn down stroke adjustment
Dispense rate too fast	• Fluid pressure set too high • Stroke adjust set too high • Dispense tip gauge too large	• Decrease fluid pressure • Turn stroke adjust clockwise • Replace dispense tip with smaller size
Dispense rate too slow	• Fluid pressure set too low • Stroke adjust set too low • Dispense tip gauge too small	• Increase fluid pressure • Turn stroke adjust counter-clockwise • Replace dispense tip with larger size

For assistance and enquiries, please contact one of our technical specialists:

01865 842842

sales@intertronics.co.uk

INTERTRONICS
12A Station Field Industrial Estate
Banbury Road
Kidlington
Oxfordshire
England
OX5 1JD

www.intertronics.co.uk

Version 1.1
February 2024

intertronics

adhesives, coatings, sealants & equipment
for your manufacturing and technology applications