VM3COP40.80 Pump Box Production Manual

Part List:

Part number	Qty	Description
9950051		Batteries 1,5V AA. Procell. Pack 10.
9950050	2	Batteries 1,5V AA. Procell.
9950053	1	Batteries, 1,5V AA. Procell. 3 pack.
0032310		Heat shrink tubing – black, 1.6mm, 25m reel.
9700031		Tubing – clear, 2.4mm. 5M roll.
7930346		Velcro, heavy duty (hook & fastener) – black 50mm x 5m.
7930339	1	Battery holder.
7930342	2	Battery holder – mounting nut.
7930340	2	Battery holder – mounting screw.
7930341	2	Battery holder – mounting washer.
7930345		Battery holder – mounting nut, M3, pack of 250.
7930343		Battery holder – mounting screw- countersunk M3 x 10mm, pack of 100.
7930344		Battery holder – mounting washer, pack of 250.
7930030		Battery lead, PP3. Pack of 10.
7930007	1	Battery lead.
7930032		Cable saddles. Pack of 50.
7930013	5	Cable saddle.
7930031		Cable ties, 71mm x 1.6mm. Pack of 100.
7930012	6	Cable tie, 71mm x 1.6mm.
7930333		Self-adhesive fixing clips, 19 x 19 x 6mm. Pack 50.
7930334	1	Self-adhesive fixing clip, 19 x 19 x 6mm.
7930014		Foam tape, grey, 12mm wide.
7930337		Grommets – 4mm, black. Pack 100.
7930338	2	Grommets – 4 mm, black
0032310		Heatshrink tubing - black 1.6mm 25m reel
	4	Heat shrink tubing – black, 1.6mm, 1 cm
7930321		Luer lock male with integral lock ring – 200 Series barb, 2.25mm, white nylon. Pack 100
7930323		Luer lock female threaded panel mount (1/4-28 UNF) – 200 Series barb, 2.25mm, white nylon. Pack 100
7930025		Luer lock ring – black. Pack 100
7930327		Luer lock – nut, white nylon. Pack 100
7930320	1	Luer lock male with integral lock ring – 200 Series barb, 2.25mm, white nylon.
7930322	1	Luer lock female threaded panel mount (1/4-28 UNF) – 200 Series barb, 2.25mm, white nylon.
7930324	1	Luer lock ring – black
7930326	1	Luer lock nut – white
9730078	1	Push switch – grey

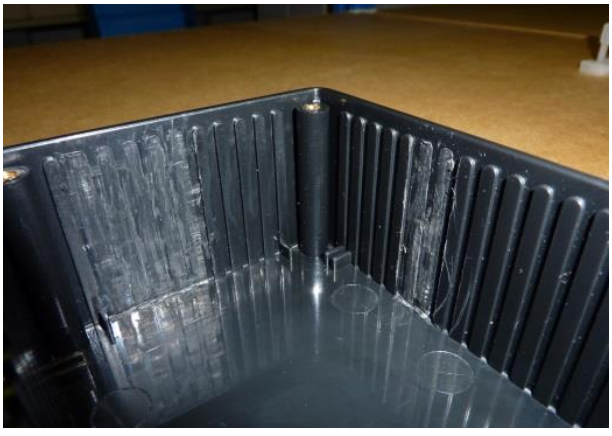
9701169	1	Pump
	2	Pump – mounting nut
	2	Pump – mounting screw
	2	Pump – mounting washer
7930350	4	Pump box bumper foot
7930351		Pump box bumper feet. Pack 56
7930292	1	Pump box label
7930348	1	Pump box un-machined – black
9701164	1	Pump box chassis plate – black
7930331		Aluminium Tubing, 3.97mm, 30 cm length
7930332	1	Aluminium Tubing, 3.97mm (Sampling probe quiver), 10 cm length
7930352		Sensor cable.
7930353	1	Sensor cable – cut
7930354	1	Sensor cable jack plug
CP-1253	1	Sensor holder
	2	Sensor holder – mounting nut
	2	Sensor holder – mounting screw
	2	Sensor holder – mounting washer
		Sensor holder – mounting nut, M2.5 pack of
		Sensor holder – mounting screw, M2.5 pack of
		Sensor holder – mounting washer, M2.5 pack of
7930330	1	Sensor input cap
7930336	1	Sensor input cap tubing connector – 2.4mm to 1.6mm, white
7930335		Sensor input cap tubing connector – 2.4mm to 1.6mm, white. Pack 100
9730037	1	Push switch sealing kit
		Push switch sealing kit. Pack 5

Production method:

1) The pump box case will need to be modified to accommodate some of the components (PN:7930348)

2) Using a chisel, remove guides 2 to 6 from the top end of the case. This is where the Luer lock connector will be placed.

3) Using a chisel, remove guides 6 and 7 from the side of the case. This is where the power button will be placed.



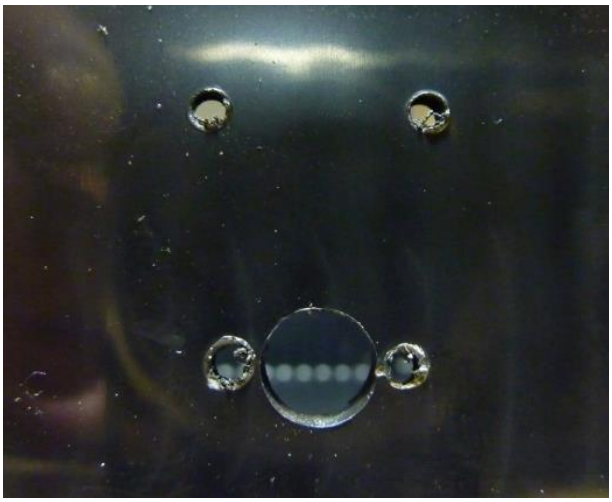
4) Place the drilling template over the front of the case.

5) Using a 3mm drill bit, drill through the three pilot holes.

6) Remove the drilling template.

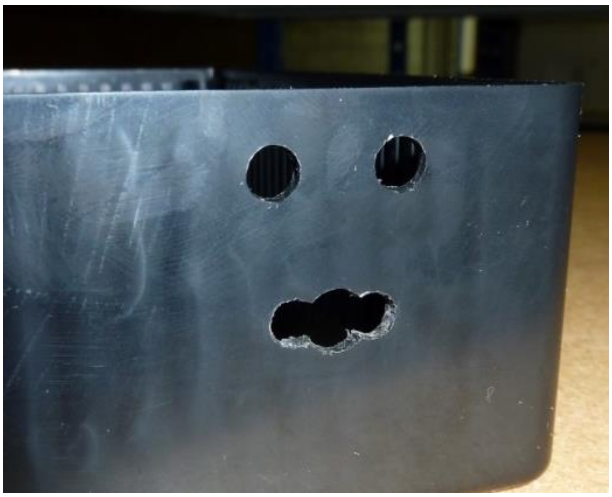
7) Using a reaming tool, enlarge the bottom hole till fit the Luer lock connector fits through.

8) Drill a pilot hole either side of the bottom hole.



9) Using a reaming tool, enlarge the top two holes to fit the grommets (PN:7930338).

10) Enlarge and shape the bottom hole to fit the Luer lock black ring (PN:7930324).



11) Place the power button locator on the side of the case.

12) Using a 3mm drill bit, drill a pilot hole.

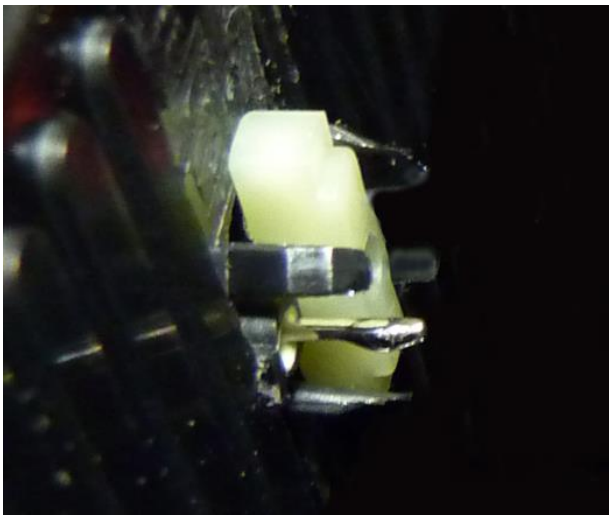
13) Enlarge the pilot hole to fit the power button. Cut in a small notch to act as a key for the power button.

14) Take the rubber ‘O’ ring from the push button sealing kit (PN:9730037) and insert in to push switch (PN:9730078).

15) Insert the push switch - grey (PN:9730078) into the machined hole.

16) Use the remaining sealing kit parts to hold the push switch in place.

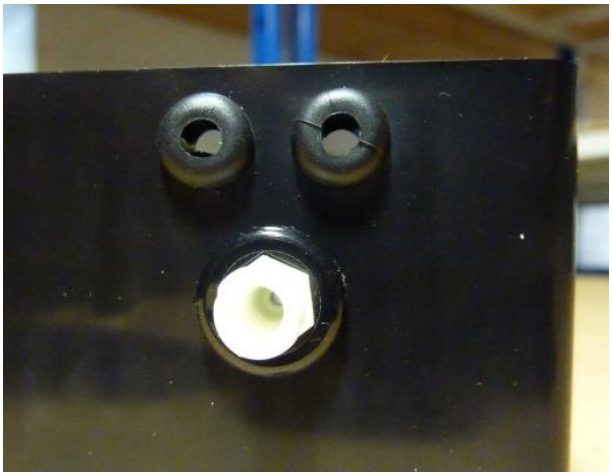
17) Apply solder to each of the switch contacts.



18) Insert the two grommets in the front of the case (PN:7930338).

19) With a small amount of UHU plastic adhesive, glue the black Luer lock ring in place (PN:7930324).

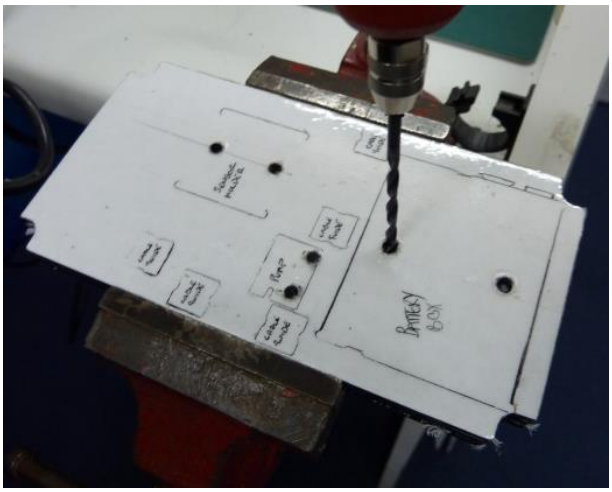
20) Insert the female Luer lock fitting (PN:7930322) and fix in place using the Luer nut (PN:7930326).



21) Place the template over the chassis plate.

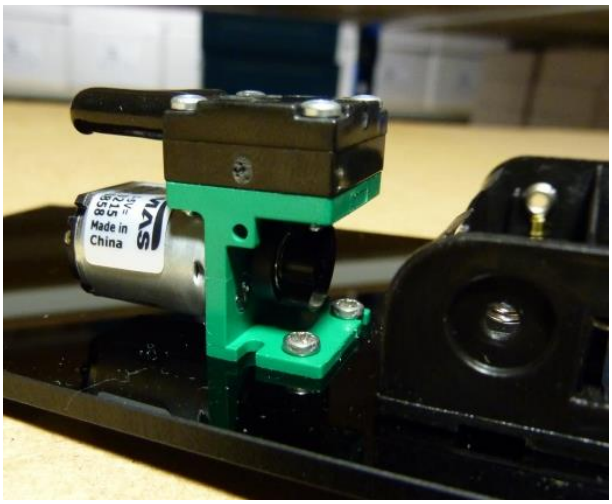
22) Drill through each of the holes.

- Use a 3mm drill bit for the battery box and sensor holder.
- Use a 2mm drill bit for the pump.

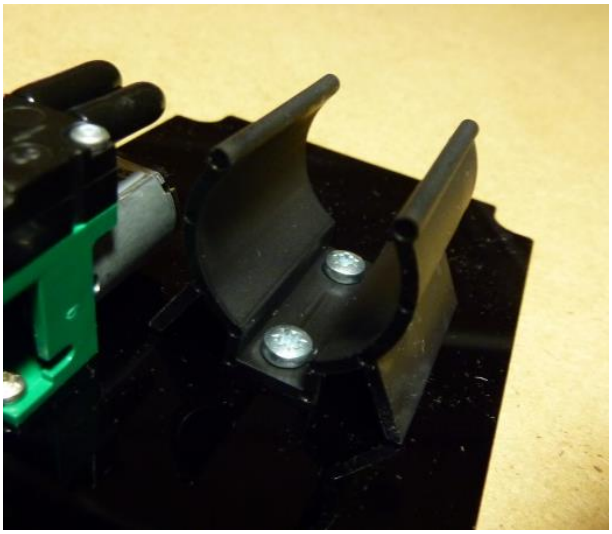


23) Using the flat head machine screws (PN*****)., with bolts on the underside(PN*****). , affix the battery box (PN7930339) to the chassis plate inset.

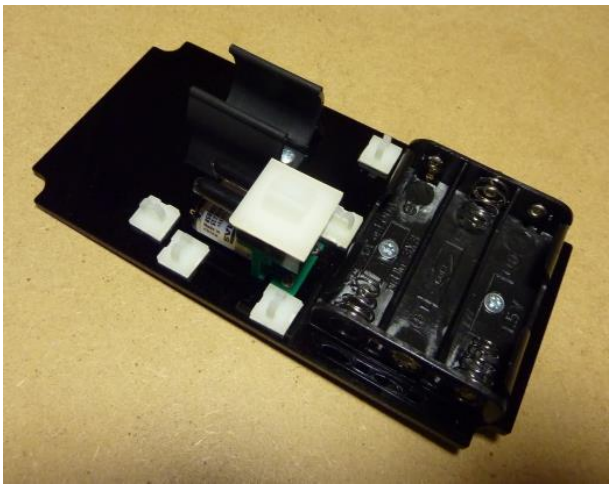
24) Using the pan head machine screws (PN*****), with bolts on the underside (PN*****)., affix the pump to the chassis plate insert.



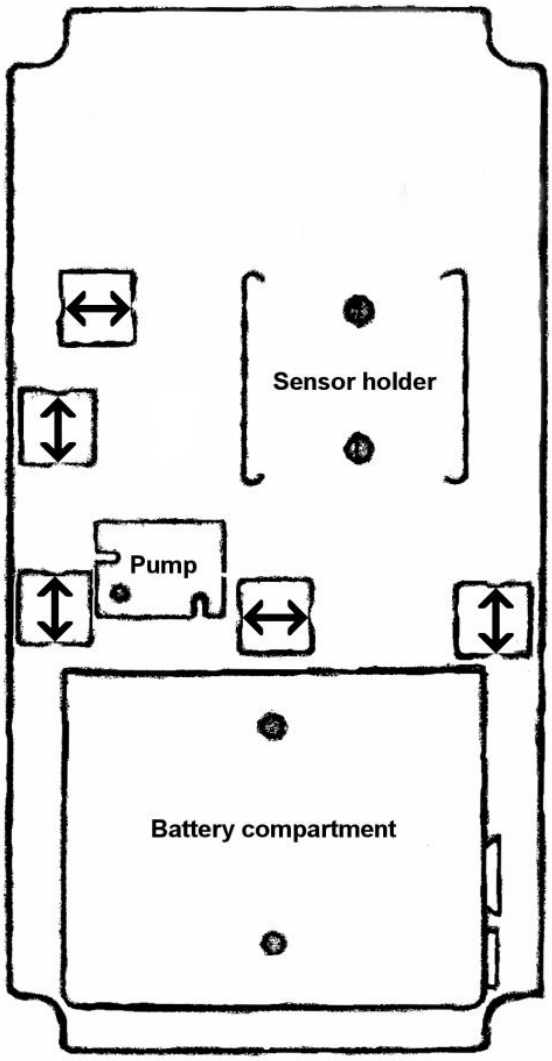
25) Using the pan head machine screws (PN*****)., with bolts on the underside (PN*****)., affix the sensor holder (PN:CP-1253) to the chassis plate insert.



26) Affix the adhesive cable saddles to the chassis plate inset (PN:7930013).

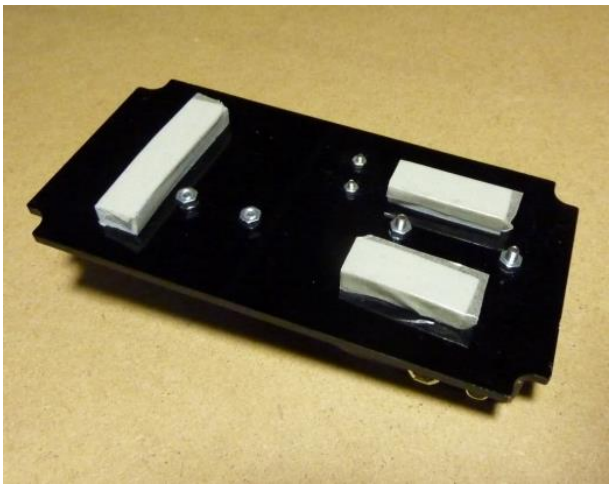


Note: The arrows denote the direction in which the cable saddles allow the cable to pass through.



27) On the underside of the chassis plate, affix three blocks of adhesive foam (PN:7930014).

28) Cover the adhesive foam in double sided tape (PN:7930014).

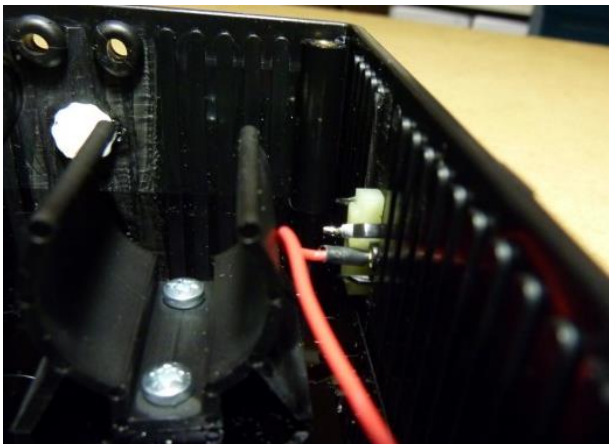


29) Connect the battery lead to the battery compartment (PN:7930007).

30) Insert the chassis plate into the case ensuring that the orientation is correct.

31) Solder the red battery lead to the power button.

32) Cover the connection with 10mm of 1.6mm heat shrink (PN:0032310).

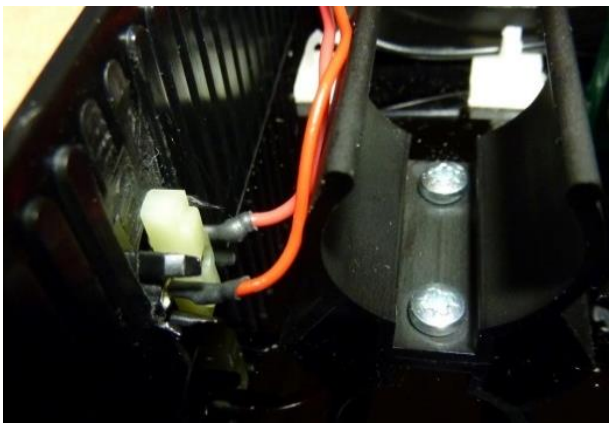


33) Solder the black battery lead to the pump. Ensure that the wire is soldered to the correct solder tab.

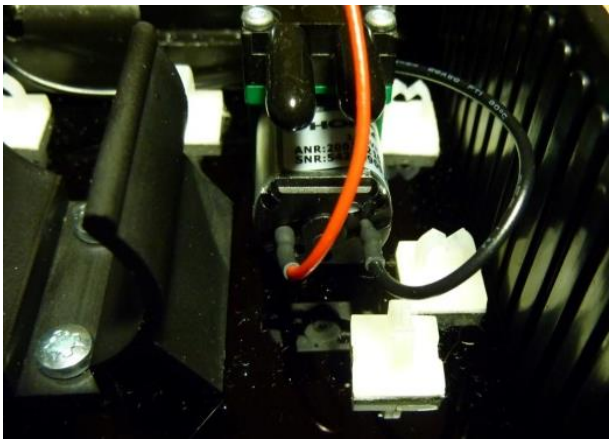
34) Cover the connection with 10mm of 1.6mm heat shrink (PN:0032310).

35) Solder the red wire to the power button.

36) Cover the connection with 10mm of 1.6mm heat shrink (PN:0032310).

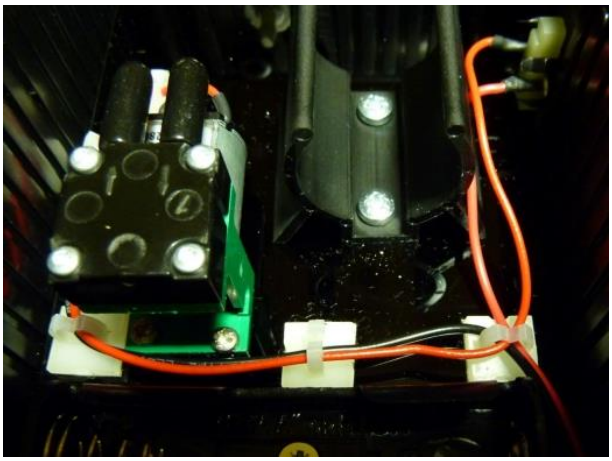


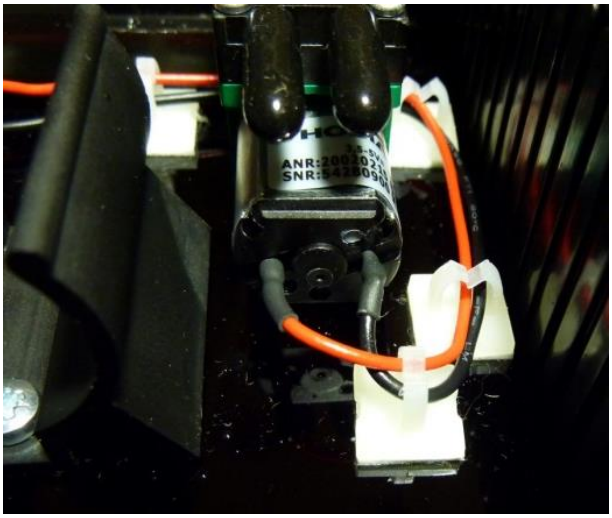
37) Solder the other end of the red wire to the pump. Ensure that the wire is soldered to the correct tab.



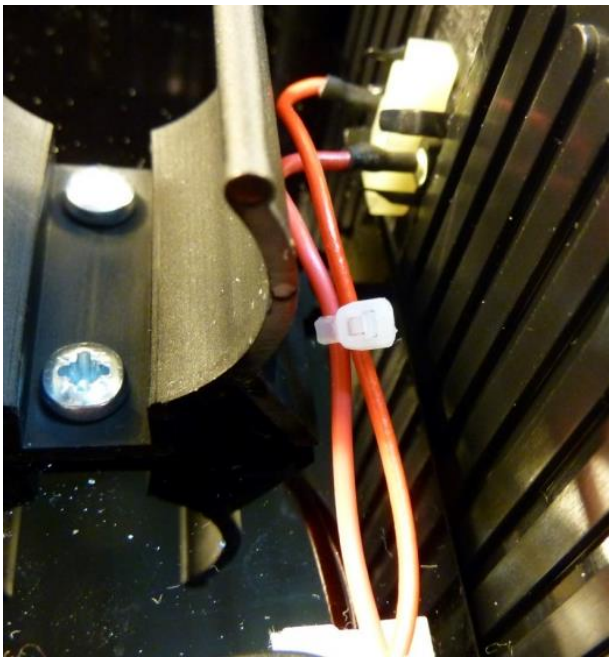
38) Cover the connection with 10mm of 1.6mm heat shrink (PN:0032310).

39) Place the wires into the cable saddles, as shown.





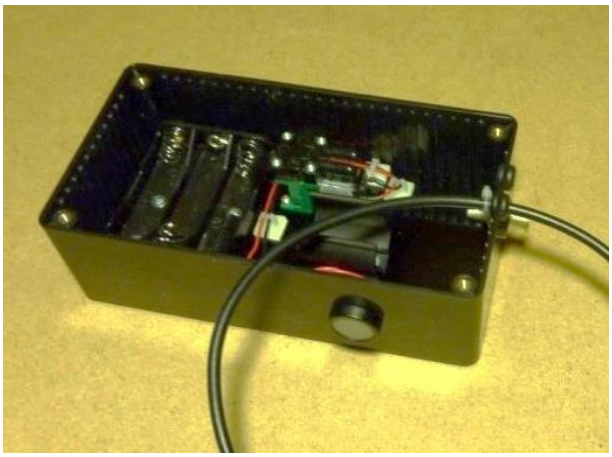
40) Affix a cable tie to the red wires as shown (PN:7930012).



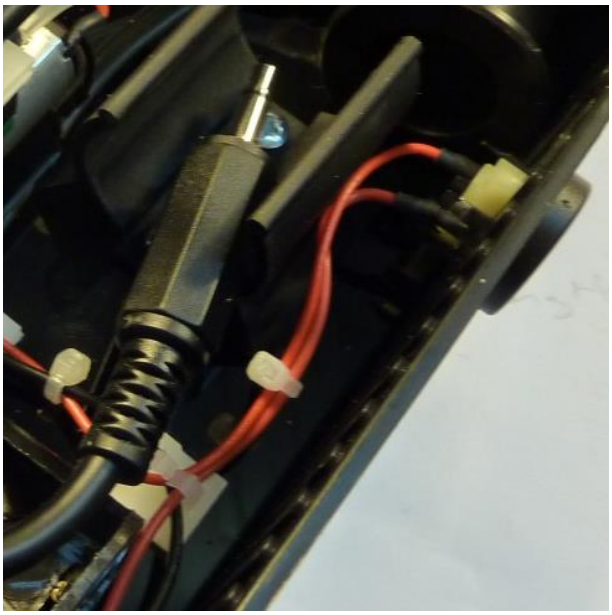
41) Cut the 3.5mm jack lead to 30cm (PN:7930353).

42) Push the 3.5mm jack lead through the hole with the grommet, leaving the moulded connector on the outside of the case.

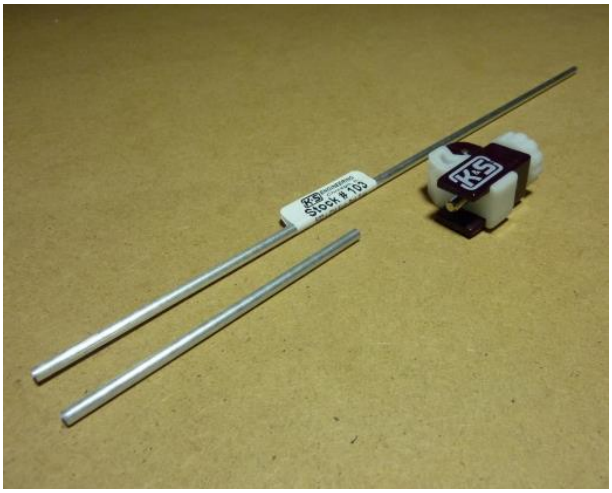
43) Leave 11cm of cable on the outside of the case and fix in place with a cable tie (PN:7930012) on the inside of the case.



44) Solder the 3.5mm jack connector to the sensor cable (PN:7930354).

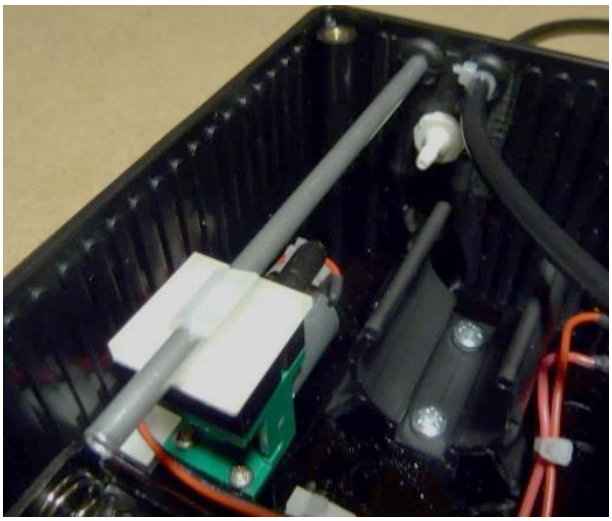


45) Using a small pipe cutter, cut the alloy tubing (PN:7930331) to 10cm, which produces (PN:7930332).



46) Attach the self-adhesive fixing clip to the top of the pump (PN:7930334).

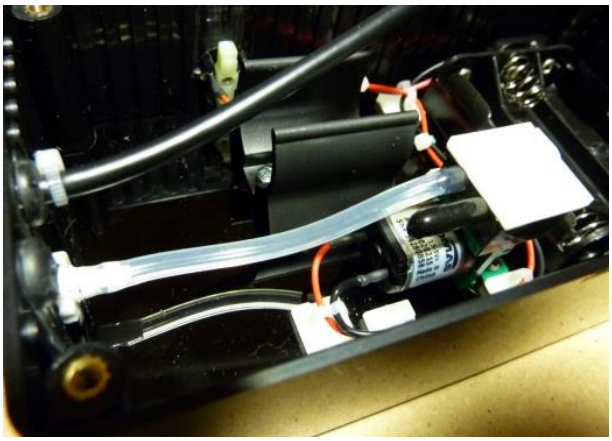
47) Place the alloy tubing (PN:7930332) through the remaining hole and the cable guide.



48) Cut a piece of clear tubing to 70mm.

49) Push the tubing over the Luer lock connector at the top of the case.

50) Remove the pump inlet cover and push the other end of the tubing over the pump inlet.

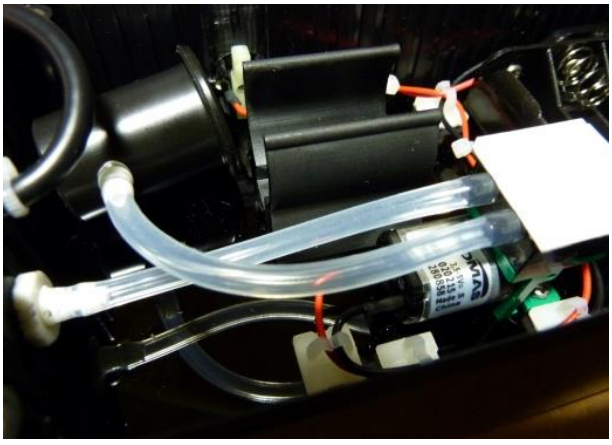


51) Push the Luer connector into the hole on the side of the gas sample chamber.

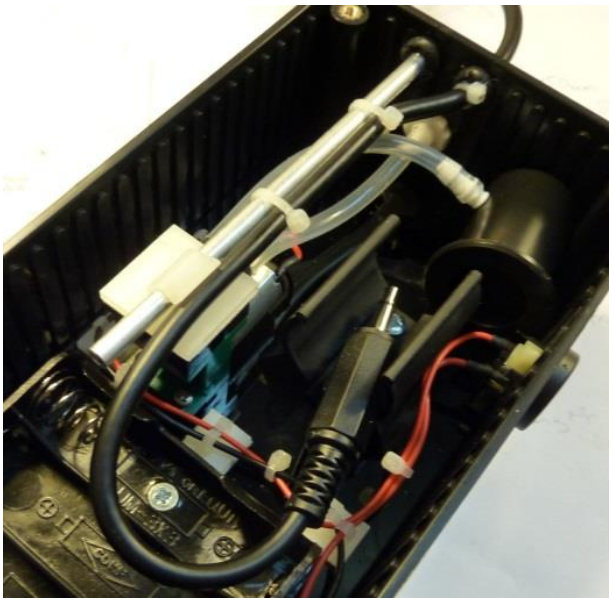
52) Cut a piece of clear tubing to 75mm.

53) Push the tubing over the Luer connector on the sample chamber.

54) Remove the pump outlet cover and push the other end of the tubing over the pump outlet.



55) Affix the 3.5mm jack lead to the alloy tubing using cable ties (PN:7930012).



56) Affix the serial number label to the chassis plate as shown.

57) The pump box is now ready for QA.