

# MITOS P-PUMP REMOTE CHAMBER 400 USER INSTRUCTIONS




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## Mitos P-Pump product range

Product name	Product picture	Product description
Mitos P-Pump (Part No. 3200016)		The Mitos P-Pump provides pulseless liquid flow with a precise pressure driven pumping mechanism. It operates over a wide pressure range (0-10bar) with excellent response time and accuracy.
Mitos P-Pump Vessel Holder Kit ( Part No. 3200017)		This kit contains a selection of vessels to enable sample liquids to be introduced into the Mitos P-Pump. It also contains a selection of tubing and fittings to enable fluidic connection to be made between the Mitos P-Pump and a microfluidic system.
Flow Resistors, F1, F3, F10, F30, F100 (Part No. 3200028–3200032)		The Flow Resistor can be used to insert additional flow resistance into a system. It enables very low flow rates to be achieved when connecting the P-Pump to systems of low fluidic resistance.
Mitos P-Pump Starter Kit (Part No. 3200033)		This kit contains a selection of tubing and fittings to enable fluidic connection to be made between the Mitos P-Pump and a microfluidic system.
Pneumatic Connector Kit (Part No. 3200034)		This kit contains a selection of fittings and tubing to enable connection of your compressed air or gas supply to the Mitos P-Pump.

<p>Mitos P-Pump 3-way Chamber Lid (Part No. 3200044)</p>		<p>The Mitos P-Pump 3-way Chamber Lid can be used to pump 3 liquids simultaneously from the Mitos P-Pump. This provides a low cost method of delivering 3 reagents to a microfluidic system with pulseless pressure pump technology.</p>
<p>Mitos P-Pump 3-way Vessel Holder Kit (Part No. 3200045)</p>		<p>This Vessel Holder is designed to accommodate 3 micro tubes in the Mitos P-Pump. Included in the kit are compatible micro tubes with 1.5ml volume. When used in conjunction with the Mitos P-Pump 3-way Chamber Lid, it provides a low cost method of delivering 3 reagents to a microfluidic system with pulseless pressure pump technology.</p>
<p>Mitos P-Pump Remote Chamber 400 (Part No. 3200043)</p>		<p>The Remote Chamber enables greater input volumes up to 400 ml to be used with the Mitos P-Pump. Continuous pumping for long periods of time is therefore possible.</p>

## 1. Important Information



### Overpressure Warning

Do not connect a pressure supply over 10 bar gauge to the P-Pump Remote Chamber 400. This may result in failure of the P-Pump Remote Chamber 400 and injury to the user. A supply pressure of 11 bar gauge may be connected to the P-Pump that feeds the Remote Chamber.



### Glass Pressure Chamber Warning

If the glass pressure chamber is scratched or cracked, do not continue to use. This may result in failure of the P-Pump Remote Chamber 400 and injury to the user. Please contact Dolomite for replacement of the glass vessel.



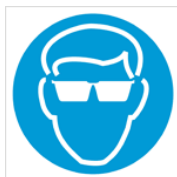
### Fluid Vessel Warning

Do not insert the fluid vessel supplied with cap on (or any other sealed container) into the chamber. This may result in failure of the P-Pump Remote Chamber 400 and injury to the user.



### General Advice on Use of Pressure Equipment

Care must be taken when the P-Pump and Remote Chamber are pressurised to ensure that the unit is not dropped or damaged in any way. Mounting holes have been provided to fix the unit to the bench.

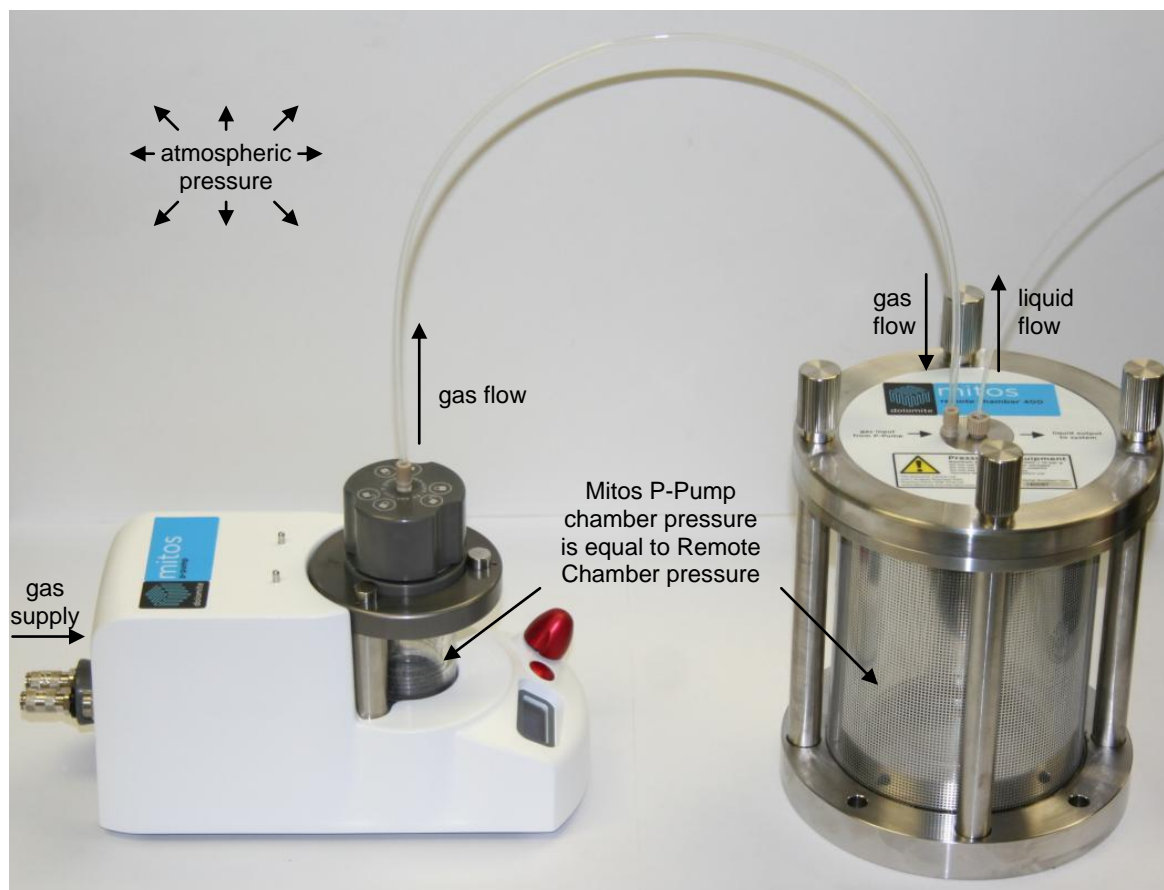


### Eye Protection

Safety glasses should be worn at all times when using the P-Pump. This is due to the use of pressurised equipment and is especially important when hazardous liquids are used.

## 2. System Set-up

### 2.1 Introduction



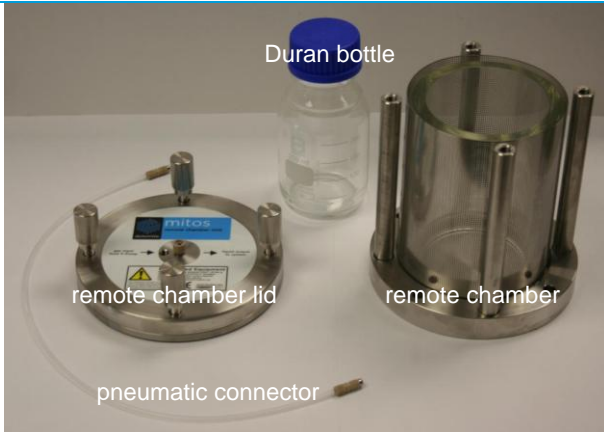



The MitoS P-Pump Remote Chamber is connected to the MitoS P-pump, which precisely controls the pressure inside both chambers. In this mode of operation, the liquid vessel is placed inside the MitoS P-Pump Remote Chamber.

The user sets the chamber pressure (gauge pressure) on the MitoS P-Pump, which determines the flow rate of liquid from the Remote Chamber. When the user vents (or when the MitoS P-Pump is switched off) the pressure inside both chambers returns to atmospheric and flow stops.

**Gauge pressure:** The pressure relative to atmospheric pressure (ambient air).

**Absolute pressure:** The pressure relative to absolute zero (perfect vacuum).

## 2.2 Using the Mitos P-Pump Remote Chamber

 <p>Duran bottle</p> <p>remote chamber lid</p> <p>remote chamber</p> <p>pneumatic connector</p>	<p>Check that you have the following components:</p> <ul style="list-style-type: none"> <li>• Remote chamber</li> <li>• Remote chamber lid with dip tube fitting</li> <li>• Pneumatic connector</li> <li>• 250ml Duran bottle</li> <li>• Mitos P-Pump (not included)</li> <li>• Compressed gas or air supply (not included)</li> </ul>
	<p><b>Step 1:</b></p> <p>Unscrew the 4 thumb screws in the remote chamber lid.</p>
	<p><b>Step 2:</b></p> <p>Remove lid from remote chamber.</p>
	<p><b>Step 3:</b></p> <p>Fill vessel with sample liquid.</p>

	<p><b>Step 4:</b></p> <p>Place liquid vessel inside remote chamber.</p>
	<p><b>DO NOT PLACE LID ON LIQUID VESSEL</b></p> <p>This is important to prevent pressure chamber failure and injury to the user.</p>
	<p><b>Step 5:</b></p> <p>Place lid on remote chamber and tighten the 4 thumb screws evenly.</p> <p>Do not completely tighten one thumb screw before tightening the others as this will result in uneven clamping force.</p> <p>Ensure that all thumb screws are fully tightened.</p>
	<p><b>Step 6:</b></p> <p>Check that dip tube fitting is unscrewed then insert dip tube through until it reaches the bottom of the liquid vessel.</p> <p>Tighten dip tube fitting to make a seal around the tube.</p> <p>Push tube into cleat on dip tube fitting to retain.</p>





**Step 7:**

Use the pneumatic connector supplied to connect the Remote Chamber to the MitoS P-Pump.



**Step 8:**

Set pressure on MitoS P-Pump (see MitoS P-Pump user instructions) to start pumping. **Note: MitoS P-Pump must be calibrated for the MitoS P-Pump Remote Chamber (section 3.2).**

To stop pumping, vent the chamber by pressing the back button on the MitoS P-Pump.

**Do not vent the chamber by unscrewing the lid or fittings.**

## 3. Mitos P-Pump Control

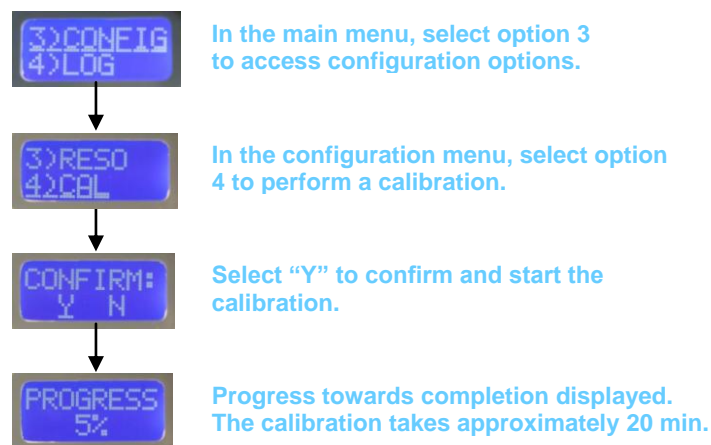
### 3.1 Introduction

When operating with the Mitos P-Pump Remote Chamber 400, it will take significantly more time for the chamber to reach the desired pressure due to the increased volume. However, the Mitos P-Pump will still be able to achieve very stable control of the pressure. The P-Pump is optimised to work with a small volume chamber, so it is necessary to calibrate to obtain the best performance with the remote chamber.

### 3.2 Calibration

A calibration should be performed with remote chamber connected to the Mitos P-Pump to adjust the control for the new chamber volume. The liquid outlet port should be blocked to prevent flow and a vessel filled with liquid should be placed inside the remote chamber. **It is important to calibrate with a full vessel of liquid inside the remote chamber for effective calibration.**

The 250 ml Duran bottle supplied can be used for this purpose. The calibration is started by selecting the correct option in the P-Pump menu.



The calibration settings will be saved and will only be overwritten by a recalibration. If the Remote Chamber is no longer required, then it will be necessary to recalibrate to readjust the calibration settings to work with the small volume chamber.



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