



Linde  
Healthcare

Medical Equipment



## About Linde plc.

Linde plc is a leading industrial gases and engineering company with 2018 pro forma sales of USD 28 billion (EUR 24 billion). The company employs approximately 80,000 people globally and serves customers in more than 100 countries worldwide. Linde plc delivers innovative and sustainable solutions to its customers and creates long-term value for all stakeholders. The company is making our world more productive by providing products, technologies and services that help customers improve their economic and environmental performance in a connected world. For more information about the company, please visit [www.linde.com](http://www.linde.com)

## Linde Malaysia. Integrated solutions from production to patient.

Linde Malaysia, a member of Linde plc, has been present in Malaysia since 1960. A leading industrial gas supplier in Malaysia with close to 60 years of experience in the industry, it combines local knowledge with global expertise and resources in the areas of technology, research and development, gas applications, engineering and best operating practices. We work closely with regulators, hospital administrators and healthcare professionals to achieve and maintain the highest standards in healthcare.

Linde Malaysia is the specialist in the provision of total gas solutions to a variety of industries. It manufactures and distribute industrial, specialty and medical gases and provide a range of related services including installation of gas equipment, pipelines and associated engineering services.

We offer turnkey solutions for gases supply, related equipment and services. We strive to provide innovative and customised solutions that successfully meet the needs of our customers, with commitment to creating sustainable value for all our customers and partnering their businesses for long-term growth

We provide comprehensive and integrated medical gases solutions which include:

- High quality medical gases that meet the requirements of the European Pharmacopoeia (EP)
- High quality specialty gases used in various departments within hospitals
- Medical engineering services.
- Training programmes for healthcare professionals, engineers and facility management personnel, customised for different needs and levels of proficiency.
- Inventory management service including both liquid storage facility and cylinder stock management.

For more information about the company, please visit [www.linde.com.my](http://www.linde.com.my)

# Demand Valve Delivery System.

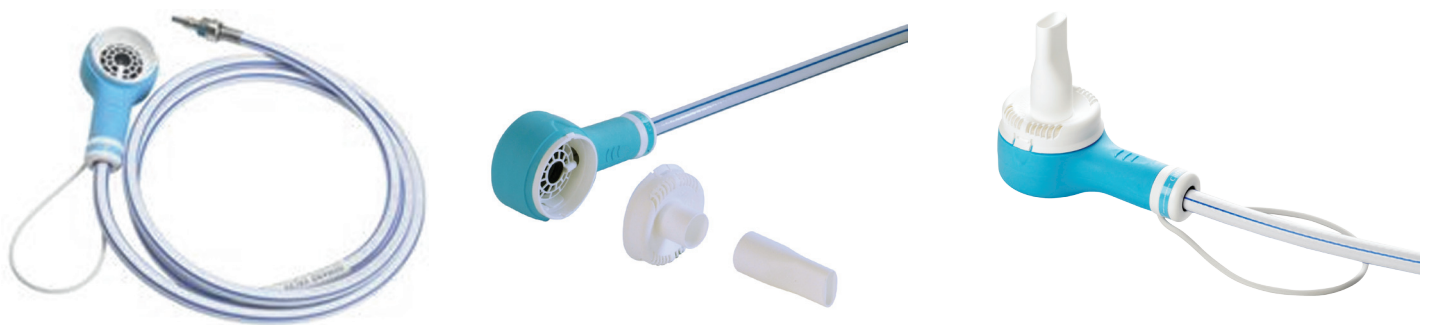
The unique design of the Ultraflow™ Demand Valve delivers exceptionally high peak flow rates with low respiratory effort, minimising the work of breathing and resulting in improved patient compliance.

The Ultraflow™ Demand Valve is intended for the self-administration of Medical Oxygen or Entonox® (O<sub>2</sub>/N<sub>2</sub>O gas mixtures). Each Ultraflow™ Demand Valve benefits from a precision engineered and exceptionally hard ruby valve seat. This unique design eliminates wear and ensures a leak free seal, eliminating the recurrent cost of routine maintenance.

Unlike a conventional breathing system filter, the Ultraflow™ Exhalation Valve directs exhaled gas away from the delivery device through a one-way valve, eliminating the risk of handset contamination. It also prevents the inhaled gas being diluted by ambient air. The unique one-way valve eliminates filter media resistance during exhalation, resulting in less patient effort throughout the entire breathing cycle.

- Features
- Very low resistance
  - Compact & lightweight design
  - Patented exhalation valve
  - Single patient use exhalation valve with filter
  - Only approved polymers is in contact with the high pressure gas (as per ISO 15001)

- Benefits
- Reduced patient effort. Improved patient comfort
  - Prevents expired breath entering the headset
  - Prevent cross contamination
  - The use of halogen free polymers significantly reduces the risk of patient exposure to toxic or explosive elements, should the regulator be exposed to high temperatures
  - Minimal ongoing maintenance cost



SPECIFICATION	MEDICAL OXYGEN DEMAND VALVE	ENTONOX <sup>®</sup> DEMAND VALVE
Ordering Number	14786	14787
		
Description	Demand Valve Medical Oxygen With BS 5682 Connector & 3.0m Hose	Demand Valve Medical Analgesic With BS 5682 Connector & 3.0m Hose
Gas Compatibility	Oxygen	Entonox <sup>®</sup> (50% N <sub>2</sub> O/50% O <sub>2</sub> mixtures)
Hose Length	3 meters	
Inspiratory Resistance	<1.5 kPa (0.22 psi) at 200 l/min <0.25 kPa (0.036 psi) at 10 l/min	
Input Pressure Range	310 - 600 kPa	
Supply Flow	>120 l/min	
Demand Valve Peak Flow	>200 l/min	
Service Interval	5 years	
Intended Life	10 years	
Warranty	5 years	
Applied standards	<p>EN ISO 5356-1:2004 - Anaesthetic and respiratory equipment. Conical connectors. Cones and sockets</p> <p>EN ISO 5359 :2008 Low-pressure hose assemblies for use with medical gases (partially replaced by BS EN 15908:2010 Anaesthetic and respiratory equipment. Non-interchangeable screw-threaded (NIST) low-pressure connectors for medical gases)</p> <p>EN ISO 15001:2010 - Anaesthetic and respiratory equipment - Compatibility with oxygen BS 4272-2 - Anaesthetic and analgesic machines.</p> <p>Specification for intermittent (demand) flow analgesic machines for use with 50/50% (V/V) nitrous oxide and oxygen EN 14971 - Medical devices- Application of risk management EN 980 - Graphical symbols for use in the labeling of medical devices EN 1041 - Information supplied by the manufacturer with medical devices</p>	
Regulatory	<p>FDA: Class II</p> <p>CE: Medical Device Directive 93/42/EEC- Active Medical Device - Class IIa</p> <p>Medical Device Act 2012 (Malaysia) : Class B</p>	
Manufacturer	BPR Medical, UK	

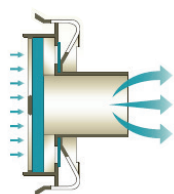
## Exhalation Valve and Mouth Piece.

The Exhalation Valve is a patented single patient use accessory for use with Ultraflow Demand Valves. Each exhalation valve incorporates an ultralow resistance one-way valve and a viral filter, directing exhaled gas away from the Ultraflow handset either to atmosphere or to an AGSS. The unique design prevents cross-contamination of handsets between patients whilst providing unparalleled flow performance.

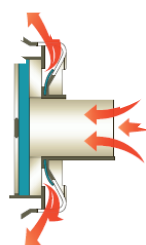
**Features** The Ultraflow™ Exhalation Valve is a single patient use filter used with Ultraflow Demand Valves for the self-administration of Entonox® (O<sub>2</sub>/N<sub>2</sub>O mixtures) or Medical Oxygen.

**Benefits**


- Cutting edge medical filtration media, incorporating a high efficiency electrostatic viral filter that prevents exhaled breath entering the handset
- Prevent cross contamination
- Unique ultra-low resistance one-way valve
- Exhalation Valve is sealed securely to the handset with two snap fit clips, which when lifted, release the exhalation valve quickly and simply for disposal



**Inhalation**  
During inhalation gas flows through an electrostatic with exceptionally low resistance to flow. The ultra-low resistance one-way valve is closed during inhalation.



**Exhalation**  
The one-way valve opens at the onset of exhalation; gas is directed to atmosphere through side vents. With the optional diverter, exhaled gas is conveniently piped away to an Anaesthetic Gas Scavenging System (AGSS).

SPECIFICATION	EXHALATION VALVE & MOUTH PIECE
Ordering Number	14790
	
Description	Exhalation Valve & Mouth Piece, Single Use Per patient
Gas Compatibility	Medical Oxygen or Entonox® (O <sub>2</sub> /N <sub>2</sub> O mixtures)
Peak Flow	>250 liter per minute
Filtration	High efficiency electrostatic viral filtration media
Intended Life	30 days after first use by the same patient
Shelf Life	5 years
Inlet Connection	Proprietary interface
Delivery Connection	22 mm male conical to EN ISO 5356-1:2004
Regulatory	ECRI source code 17169 GMDN Code 17169 MDD class IIa Medical Device Act 2012 (Malaysia) : Class B
Packaging	100pcs (single wrap) per box
Manufacturer	BPR Medical, UK

# Pressure Regulators.




Continuous improvements have fine tuned the design of our pressure regulators to deliver a stable outlet pressure from full all the way through to near empty cylinder pressure, across the widest flow range.

Pressure Regulators reduce gas cylinder pressure to a lower and stable pressure for provision of medical gases to respiratory devices. All sealing materials in contact with cylinder pressure are halogen-free and each model has been tested for resistance to auto-ignition.

Medical pressure regulators provide a safe, convenient way of connecting high-pressure gas cylinders to flowmeters, ventilators and other equipment.

Patient safety is our number one priority, so all our pressure regulators are free of halogenated elastomers and polymers in contact with the high-pressure gas.

- State-of-the-art piston design
- Illuminous pressure gauge faces for improved visibility in poor light conditions
- Independently auto-ignition tested to ensure maximum safety
- A wide range of inlet and outlet connection types available
- Halogen-free high-pressure components

SPECIFICATION	ENTONOX®	Medical AIR	Medical Oxygen PIV	Medical Oxygen BNV
Ordering Number	14794	12624	12623	14719
				
Description	Pressure Regulator, O2/N2O, Pin Index	Pressure Regulator, Med Air, Pin Index	Pressure Regulator, Oxygen, Pin Index	Pressure Regulator, Oxygen, Bull Nose (No.3)
Gas Compatibility	Entonox®	Medical Air	Medical Oxygen	
Inlet Connection	Pin Index ISO 407			BS 341-1 No.3
Outlet Connection	BS 5682			
Inlet Pressure	0.9 to 20 MPa (9 to 200 bar)			
Standard Discharge	40 sl/min			
Maximum Flow	80 l/min			
Inlet Filtration	40 µm			
Over Pressure Valve Set Point	600 kPa			
Service Interval	4 years			
Intended Life	12 years			
Warranty	1 years			
Regulatory	EC: MDD Class IIb Medical Device Medical Device Act 2012 (Malaysia) : Class B			
Manufacturer	BPR Medical, UK			

# Microdial Flowmeters.

Dialflow Meters enable rapid selection of repeatable flow rates. Each unit has 12 discrete settings, making it quick and simple to adapt gas flow delivery to a patient's needs.

The consistent reliability of the Dialflow Meter is a result of rigorous design, precision engineering and the care of our people. Each unit has 11 accurate and repeatable flow settings, making it simple to adapt the oxygen flow to provide the optimum care for your patients.



Developed in partnership with neonatologists, Microdial Flowmeters deliver incredibly accurate and repeatable micro step changes in oxygen flow. These steps enable the smoothest transition to air when weaning infants from a dependency to Thanks to a built-in precision pressure regulator, you will have confidence the flow will remains consistent, irrespective of spikes in inlet pressure.

- Flow rates as low as 10 cc per minute (0.01 L/min)
- Supply pressure independent
- Accurate, repeatable micro flow control
- Clean, safe, durable

## Technical Description

Medical oxygen is routinely provided to premature babies to compensate for hypoxemia, often caused by the under development of their lungs at the point of birth. Extremely premature babies may suffer from Respiratory Distress Syndrome (RDS) and ventilation may be employed as a lifesaving intervention, however the use of mechanical ventilation can lead to chronic lung disease, often referred to as bronchopulmonary dysplasia (BPD). Babies with BPD may require weaning from oxygen dependency over several weeks or months. Effective weaning requires the controlled reduction of FiO<sub>2</sub> levels.

The BPR Medical range of Microdial Flowmeters provides a simple and cost-effective means of accurately controlling the flow of oxygen to neonates requiring extremely low flows (< 0.1 l/min) of medical oxygen. Flowmeters are connected to a low-pressure medical oxygen source. The user may select one of eleven predetermined flow settings to provide the required level of oxygen for the neonate concerned. Each model provides a different range of flow settings for different circumstances.


SPECIFICATION	MICRODIAL FLOWMETER RANGE E	MICRODIAL FLOWMETER RANGE A
Ordering Number	14799	14800
		
Description	Microdial Flowmeter, Max 1LPM With BS 5682 Connector / Barb Outlet	Microdial Flowmeter, Max 3LPM With BS 5682 Connector / Barb Outlet
Flow Range	0 to 1 liter per minute	0 to 3 liter per minute
Inlet Connection	No BS 5682	
Outlet Connection	Barb to EN 13544-2 (6 mm nominal tube)	
Inlet Pressure	400 kPa (58 psi)	
Input Pressure Range	345 - 500 kPa	
Inlet filtration	40 µm	
Orifice Plate Filtration	5 µm	
Service Interval	2 Years	
Intended Life	12 Years	
Warranty	1 Year	
Applied Standards	EN ISO 15001 - Anaesthetic and Respiratory Equipment- Compatibility with Oxygen EN ISO 15002 - Flow-metering devices for connection to terminal units of medical gas pipeline systems EN ISO 10524-4 - Pressure regulators for use with medical gases. Part 4: Low-pressure regulators	
Regulatory	EC: MDD Class IIa Medical Device	
Manufacturer	BPR Medical, UK	

# Dialflow Regulator.

Dialflow features a range of meters and flow and pressure regulators that enable you to provide medical gas safely and accurately, providing the very best patient care. As with all our ranges, our Dialflow products go through stringent testing to ensure market-leading performance, safety and reliability.

Our Dialflow Regulators provide all the benefits of Microdial and Dialflow Meters without the need for a regulated gas supply. Benefiting from a built in state-of-the-art piston style pressure regulator, Dialflow Regulators deliver accurate flow rates from full to near empty gas cylinders.

- Accurate, repeatable standard and micro flow control
- A range of international cylinder connections to suit most gas cylinder valves
- Combination units with pressure and flow ports
- Halogen-free high pressure components

SPECIFICATION	DIALFLOW REGULATOR
Ordering Number	14797
	
Description	Dialflow Regulator, Max 15LPM, Pin Index / Barb Outlet
Inlet Connection	Pin Index ISO 407
Outlet Connection	Barb to EN 13544-2 (6 mm nominal tube)
Auxilliary Port	None
Flow Range	D (0 to 15 liter per minute)
Inlet Pressure	0.9 to 20 MPa (9 to 200 bar)
Standard Discharge (Q1)	40 sl/min
Inlet filtration	40 µm
Orifice Plate Filtration	5 µm
Accuracy at nominal pressure	+/- 10 % of setting at 1 l/min and above. +/- 20 % of setting below 1 l/min
Over pressure valve set point	600 kPa
Service Interval	2 years
Intended Life	12 years
Warranty	1 years
Applied Standards	EN ISO 10524-1: Pressure regulators for use with medical gases EN ISO 15001: 2010 - Anaesthetic and respiratory equipment- compatibility with oxygen
Regulatory	EC: MDD Class IIa Medical Device Medical Device Act 2012 (Malaysia) : Class B
Manufacturer	BPR Medical, UK