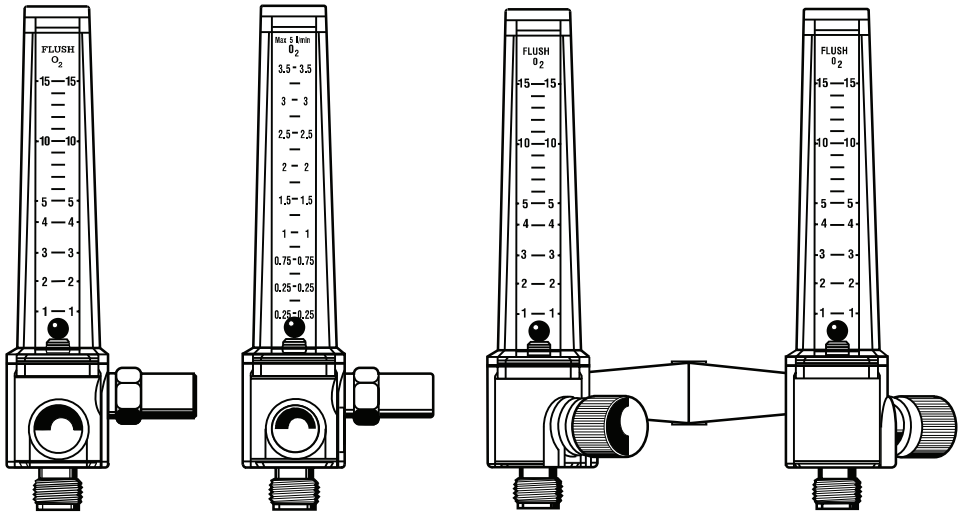
Ohio® Medical

(EN) Pressure Compensated Flowmeter
(NL) Tegendruk-Gecompenseerde Flowmeter
(FR) Débitmètre à compensation de pression
(DE) Durchflußmesser mit Druckkompensation
(IT) Flussometro a Compensazione di Pressione
(DA) Trykkompenserede flowmåler
(RU) С компенсацией давления расходомер
(ES) Flujómetro de Presión Compensada
(SV) Tryckkompenserad flödesmätare



0-15 L/min Lo-Flo 0-3.5 L/min

Rx Only

6700-0363-000 (Rev. 11) 02/2023

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Safety Instructions

This manual provides you with important information about the 6700 Series Pressure Compensated Flowmeter. To ensure the safe and proper use of this device, READ and UNDERSTAND all of the safety and operating instructions. IF YOU DO NOT UNDERSTAND THESE INSTRUCTIONS, OR HAVE ANY QUESTIONS, REFER TO SERVICE MANUAL, CONTACT YOUR SUPERVISOR, DEALER OR THE MANUFACTURER BEFORE ATTEMPTING TO USE THE DEVICE.

Intended Use

A compensated thorpe tube flowmeter is a device intended for medical purposes that is used to control and measure gas flow rate accurately. The device includes a vertically mounted tube with the outlet of the flowmeter calibrated to a reference pressure.

Receiving / Inspection

Remove product from package and inspect for damage. If product is damaged, DO NOT USE and contact your dealer or equipment provider.

User Responsibility

This Product will perform as described in this operating manual and accompanying labels and/or inserts, when assembled, operated, maintained and repaired in accordance with the instructions provided. This Product must be checked periodically. A defective Product should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, Ohio Medical recommends that a telephone or written request for service advice be made to the nearest Ohio Medical Regional Service Center. This Product or any of its parts should not be repaired other than in accordance with written instructions provided by Ohio Medical and by Ohio Medical trained personnel. The Product must not be altered without the prior written approval of Ohio Medical's Quality Assurance Department. The user of this Product shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, improper repair, damage, or alteration by anyone other than Ohio Medical.

Ohio Medical products have unit serial numbers with coded logic which indicates a product group code, the year of manufacture and a sequential unit number for identification.

AAA A 12345 This alpha character indicates the year of product manufacture and when the serial number was assigned; “Y” = 1995, “Z” = 1996, “A” = 1997, etc. “I” and “O” are not used.

Warnings - Possible injury to patient or operator

WARNINGS

⚠ **Never use any petroleum based lubricants in an Oxygen environment, as these materials are highly combustible in the presence of Oxygen. The only Oxygen service lubricants recommended for this equipment are Sentinel® OPG (6700-0067-200) or Vac Kote® 37951M (0220-0091-300).**

⚠ **Do not use a flowmeter with any cracked or damaged plastic components, gas leaks, loose fittings, or knobs or any missing components.** Supply gas pressure can cause parts to be expelled and injury may occur.

⚠ The flowmeter is only intended for the gas specified on the flowmeter label. **Do not use the flowmeter with any other gases. Inaccurate flow indications and patient injury may occur.**

⚠ **Do not allow oxygen or oxygen equipment to be exposed to fire, sparks, or electrical equipment which may provide a source of ignition. DO NOT SMOKE IN THE AREA WHERE OXYGEN IS IN USE.**

⚠ An Ohio Medical power outlet extension, twin “Y” adapter or extension adapter must be directly connected to the flowmeter manifold prior to connection to the supply gas.

⚠ **The Pre-Use Checkout Procedure must be performed before using this equipment on each patient. If the flowmeter fails any part of the Pre-Use Checkout Procedure, it must be removed from service and repaired by qualified service personnel.**

⚠ After patient use, oxygen therapy equipment may be contaminated. Handle in accordance with your hospital’s infection control policy.

⚠ Clean and disinfect all respiratory equipment before shipment or service to ensure transportation personnel and/or service personnel are not exposed to any hazardous contamination.

⚠ On models with a power outlet, the supply pressure at the flowmeter will decrease during periods of high flow from the power outlet. This will cause a decrease in flowmeter accuracy. The actual flow from the flowmeter outlet will be lower than indicated. For example, with 150 L/min flowing from the power outlet, the supply pressure drops from 50 psi to 46 psi and the actual flow from the flowmeter is then lower than indicated by up to 20%.

Precautions

⚠ Routine cleaning with certain disinfectants or liquid sterilizing agents may cause deterioration and cracking of the plastic components, ultimately leading to equipment failure and possible patient or operator injury. Therefore, periodic visual inspection of these parts is extremely important.

⚠ **The Lo-Flo 3.5 flowmeter is not to be used on patients requiring more than 3.5 L/min oxygen.**

⚠ The Lo-Flo 3.5 flowmeter is not for resuscitation. 5 L/min max.

⚠ **Do not connect flowmeter to supply pressures in excess of 72.5 psi (5 bar). Excess supply pressure can cause ports to be expelled and injury may occur.**

⚠ **Never mix adapters of different gases or vacuum. Cross connection can result in serious patient injury or damage to equipment.**

⚠ The flowmeter is calibrated using the gas supply pressure shown on the product at a temperature of 21°C (70°F). Varying pressure, temperature or both will reduce accuracy.

⚠ **When changing probes or connectors for service replacement, make sure never to mix adapters of different gases or vacuum.** Cross connection can result in serious patient injury or damage to the equipment.

⚠ After changing probes or connectors for service replacement, verify that there are no leaks.

⚠ Prior to any servicing, disconnect the flowmeter from the gas supply.

⚠ Make sure the inlet adapter is properly seated in the flowmeter should. If only the adapter threads are inside the shroud inlet hole, cracking and leakage may occur under pressure.

Caution - Possible damage to equipment

CAUTIONS

⚠ **Flowmeters should be kept in use or used on a rotating basis. Unused equipment may tend to deteriorate.**

⚠ **Do not use excessive force when closing the flow control knob. This may cause a decrease in valve life.**

⚠ **Do not steam autoclave or liquid sterilize the flowmeter. Severe impairment to the operation of the flowmeter will result.**

⚠ **Only competent individuals trained in the repair of this equipment should attempt to service it.**

⚠ Detailed information for more extensive repairs is included in the service manual for users having proper knowledge, tools and test equipment, and for service representatives trained by Ohio Medical.

⚠ Use of lubricants, solvents or cleaners other than recommended, may degrade plastic or rubber components.

⚠ Do not use any Loctite® (or any product which contains methacrylate ester) on any part of the flowmeter or connected fittings. Loctite may damage plastic components.

Definitions/Abbreviations

MAX = Maximum

= Do not use petroleum based lubricants on this equipment

= Read scale at the ball center line for L/min

FLUSH = > 15 - 90 L/min

L/min or LPM	liters per minute
°C	Degrees Celsius
°F	Degrees Fahrenheit
NPTF	National Pipe Thread Female (USA)

⚠ Warning, Caution and Attention, see "Instructions for Use"

SN Serial Number

Manufacturer

Flowmeter Identification

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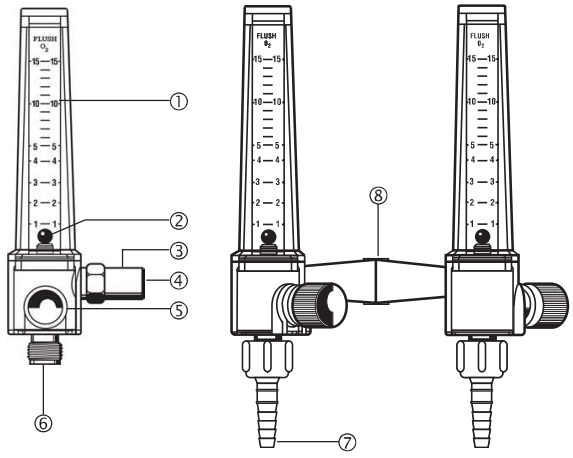
① Flowtube Scale
② Ball
③1/8" NPTF Inlet Extension
④ Probe/Adapter Port
⑤ Flow Control Knob
⑥ Fitting Port
⑦ Tubing Nipple (Nut & Gland)
⑧ “Y” Adapter



Environmental Specifications

Storage temperature range: -20°C (-4°F) to +60°C (+140°F)

The following tables show the effect of temperature extremes on operating accuracy at various flow rate settings. Data shows the additional percent offset at given readings:

Pressure Compensated Flowmeter (0-15 L/min range)

Flow rate	Temperature 0°C (32°F)	15°C (59°F)	21°C (69.8°F)	40°C (104°F)
1 L/min	6 %	4 %	0 %	13 %
3 L/min	6 %	3 %	0 %	4 %
5 L/min	4 %	1 %	0 %	3 %
10 L/min	5 %	0 %	0 %	4 %
15 L/min	5 %	1 %	0 %	4 %

Lo-Flo Flowmeter (0-3.5 L/min range)

Flow rate	Temperature 0°C (32°F)	15°C (59°F)	21°C (69.8°F)	40°C (104°F)
0.5 L/min	8 %	4 %	0 %	2 %
1 L/min	3 %	10 %	0 %	3 %
3 L/min	2 %	0 %	0 %	1 %

Equipment Setup

Connect the Pressure Compensated Flowmeter inlet adapter to an appropriate oxygen or air gas supply depending on model, at 4 Bar (60 Psig), 3.4 Bar (50 Psig) or 5 Bar (72.5 psig), as shown on the label.

CAUTION ⚠: Operating flowmeters at extreme temperatures (approaching 0 or 40°C [32 or 104ºF]) may cause an additional error of up to 15% of the indicated flow.

Ensure the flowmeter is securely attached to or locked into the gas outlet. The flowmeter must be positioned vertically to ensure maximum accuracy.

Setting the Flow Rate

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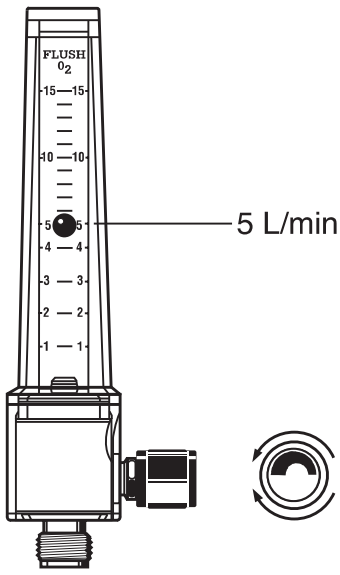
1. Rotate the flow control knob counter-clockwise to increase flow or clockwise to decrease flow. Flow rate in liters per minute is indicated by aligning the CENTER of the ball with the scale increments on the flowtube. Flow rates on the Twin Pressure Compensated Flowmeter are adjusted independently.
2. Flow rate may change with a change in downstream resistance (backpressure at the therapy device). This change may be compensated for, without accuracy loss, by re-adjusting the flow rate.



Pre-Use Checkout Procedure

The Pre-Use Checkout Procedure must be performed before using this equipment on each patient. DO NOT connect the flowmeter to the therapy device until this procedure is completed. All tests must be performed with the appropriate gas supply depending on model. There should be no leaks.

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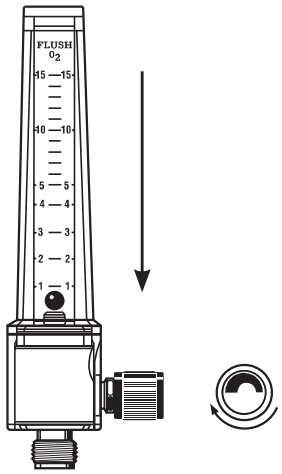
1. Rotate the flow control knob clockwise (decrease) to shut off the flow. The ball should rest at the bottom of the flow tube and not move.



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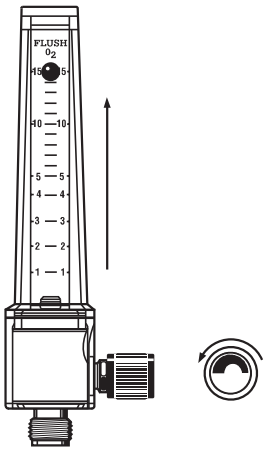
2. Rotate the flow control knob counter-clockwise (increase). The ball should rise immediately after rotation is begun, and rise smoothly and steadily with continued counter-clockwise rotation of the flow control knob. When a desired flow is set, the ball should maintain a steady position.
3. Rotate the flow control knob counter-clockwise (increase) until the ball reaches the top of the flowtube. Continue to rotate flow control knob counter-clockwise (increase). With the 0 - 15 L/min model, listen for and feel a large increase in delivered gas flow. With the Lo-Flo 3.5 model, there should be little change in sound and feel when the flow control knob is fully opened.
4. Rotate the flow control knob clockwise (decrease) to shut off the flow.



5. Power Outlet models only:

⚠ **WARNING: Tubing nipple connection to the power outlet is for the Pre-Use Checkout Procedure ONLY, NOT for therapy use.**

Attach an appropriate high-pressure hose to the power outlet fitting. Gas must flow freely through the hose. Gas will escape while connection is made. Gas must flow freely.

Remove the hose. Gas flow must stop and there should be no leaks.

Patient Setup

1. If not previously done, connect the Pressure Compensated Flowmeter adapter to the appropriate gas supply.
2. Make sure the Pre-Use Checkout Procedure has been performed.
3. Attach a therapy device or a tubing nipple to the fitting port of the flowmeter. Attach connective tubing.

Note: On power outlet models ONLY, gas will escape momentarily while the connection is made.

⚠ **WARNING. Power outlet models ONLY - Connect the high pressure hose to the therapy device before making the connection to the flowmeter power outlet.**

4. Check all connections for leaks and tighten them securely if required.
5. Rotate the flow control knob until the CENTER of the ball aligns with the desired flow rate on the flowtube.
6. Follow hospital protocol for therapy administration.

Troubleshooting

If the flowmeter does not operate and you have performed the Pre-Use Checkout Procedure, the following remedies may be used to correct the problem:

Problem	Possible Cause	Remedy
No gas flow is being delivered	Gas supply depleted	Replenish gas supply
	Adapter connection not made	Reconnect adapter
	Supply or gas outlet obstructed	Clear obstruction
	Outlet fitting obstructed	Replace fitting
Flow will not shut off	Flow Control Knob rotated counter-clockwise (increase)	Rotate Flow Control Knob CW (decrease) to shut off flow
Inaccurate or unstable flow indications	Improper supply pressure, gas or temperature	Correct gas supply conditions
	Non-vertical position	Mount vertically
	Leaks, sticking ball, static buildup	Refer to Service Manual

Important: If above action does not correct the problem or if other problems exist, refer to flowmeter service manual or refer servicing to qualified service personnel.

Cleaning

The flowmeter may be externally cleaned using a solution of water and a mild detergent.

WARNING

⚠ After patient use, respiratory therapy equipment may be contaminated. Handle in accordance with your hospital's infection control policy.

⚠ Routine cleaning with certain disinfectants or liquid sterilizing agents may cause deterioration and cracking of the plastic components, ultimately leading to equipment failure and possible patient or operator injury.

CAUTION

⚠ **Do not steam autoclave or liquid sterilize the flowmeter.** Severe impairment to the operation of the flowmeter will result.

Specifications*

Gas Supply:	Oxygen or air, as specified on the flowmeter label and flowtube
Calibration Pressure and Temperature:	50 psig (320 kPA) and 70°F (21°C), 414 kPa (60 psig) and 21°C (70°F), or 5 bar (72.5 psig) and 21°C (70°F) (as specified on the flowmeter label)
Maximum Pressure:	100 psig (690 kPa)

	0-15 L/min	**Lo-Flo 3.5**
Flow Increments	1/2 L/min increments from 1 to 5 1 L/min increments from 5 to 15	USA & CAN (50 psi), GR (5 bar) 1/8 L/min increments from 1/4 to 1, 1/2 L/min increments from 1 to 3.5 INTL (414 kPa) 1/4 L/min increments from 1/4 to 1 1/2 L/min increments from 1 to 3.5
Accuracy	± 1/2 L/min or ± 10% of reading (whichever is greater)	± 1/2 L/min above 0.5 L/min
	(At calibrated pressure and temperature in a vertical orientation)	
Minimum "Flush" Flow Rate	65 L/min with adequate supply with adequate supply	3.5 L/min
Maximum Flow Rate,	greater than 65 L/min	< 5 L/min
Power Outlet Flow Rate (Power Outlet Models Only)	Minimum 150 L/min with adequate supply flow	

* Specifications are nominal, subject to change without notice.