

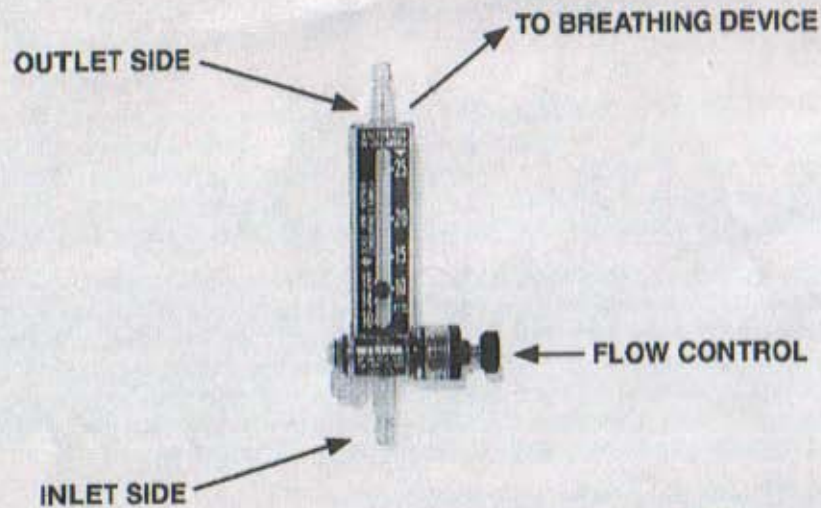
Nelson Oxygen Equipment

MODEL A-4 IN-LINE DUAL SCALE FLOWMETER

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2 YEAR LIMITED WARRANTY

PRECISE FLIGHT, INC., warrants the model A-4 In-Line Dual Scale Flowmeter for 2 years from the date of original retail purchase (installation) to be free of any manufacturing and material defects.

PRECISE FLIGHT, INC., will provide the necessary parts to repair the products contained in the kit at no charge to the customer for 2 years after purchase.

PRECISE FLIGHT, INC., will not be responsible for the installer's workmanship and/or effect on kit materials. Warranty service shall be obtained by contacting PRECISE FLIGHT, INC., prior to any warranty service being performed. The product will be repaired and returned to service as soon as reasonably possible. This warranty covers normal customer use and does not cover damage which occurs in shipment or failures which result from alteration, accident, abuse, installation, aircraft misuse, improper maintenance, undue exposure to weather or corrosive environments or handling deemed improper by PRECISE FLIGHT, INC. PRECISE FLIGHT, INC., reserves the right of continuous product development without obligation to install changes in previously manufactured products.

Notice: PRECISE FLIGHT, INC., will not be liable for any loss, injury, or damages to persons or property resulting from defects in the kit, nor shall Precise Flight, Inc. be liable for any direct, indirect, incidental, special or consequential damages of any kind incurred by the use of the kit, whether or not the kit shall prove to be as other than warranted. (Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.) This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Oxymizer® is a Registered Trademark of Chad Therapeutics, Inc.

Pilots flying above 12,500 feet for 30 minutes or longer or at 14,000 feet or above during the entire flight, must use supplemental oxygen. Passengers must use supplemental oxygen above 15,000 feet (FAR 23.1447). The FAA also recommends use of oxygen on all night flights above 5,000 feet.

The outstanding feature of the NELSON Oxygen Flowmeter is that for the first time ever, you can visually monitor the "Volume" of oxygen flow as it flows into your breathing device. The meters are equipped with a flow control needle valve which allows you to adjust the flow to correspond with the altitude your aircraft is flying at. This can provide the correct amount of supplemental oxygen and also conserve your oxygen supply. Savings with conventional constant flow systems, such as in Cessna aircraft can provide savings in excess of 150%. With the oxygen conserving nasal cannula devices, the savings are even more.

The NELSON Oxygen Flowmeter is a variable area flowmeter which is a tapered tube, vertically positioned, with the large end at the top. A round ball is placed inside the tube. The oxygen flow is from the bottom to the top so the ball will move upward and float at a point where the area is just large enough to pass the oxygen around the ball and through the meter. The floating position of the ball center alongside of the scale numbers, indicates the flow rate. It is important that the meter be held in a vertical position within 20 degrees when adjusting or reading the flow rate. At all other times the meter can dangle in any position without affecting the oxygen flow to the mask.

The flow rate calibration of a tapered tube flowmeter is drastically effected as the atmospheric pressure drops, as when it is used in an aircraft as it climbs to higher altitudes. This effect was taken into account when the NELSON flowmeters were designed and the flow rate scales were developed. NELSON AIRCRAFT CO. is the pioneer for specially calibrated flowmeters for aircraft use.

It is important that the oxygen flow should always be adjusted so that the floating ball has the same readout as the aircraft altimeter. The NELSON Flowmeters are individually calibrated so they are accurate when the scale indicated altitude and the aircraft altimeter are the same. The flowmeter cannot be preset at sea level or lower altitudes. One flowmeter is required with each breathing device.

Manually adjustable constant flow oxygen systems should be adjusted to a flow rate slightly higher than the maximum ceiling of the aircraft. The exact flow rate is then regulated by the needle valve in the flowmeter so that the center of the ball floats at a point which coincides with the aircraft altimeter. The flow rate should be checked and or adjusted if necessary at least 2-3 times an hour.

INSTALLATION OF THE NELSON DUAL SCALE A-4 FLOWMETER

The MODEL A-4 meter is supplied with a shorter length of tubing installed onto the outlet end of the meter. A longer length of tubing is installed onto the inlet (needle valve end) of the meter and it is firmly attached with an Oetiker hose clamp. An additional hose clamp is supplied to firmly attach the other end of the longer tubing on to the hose connector.

OXYMIZER INSTALLATION:

The Oxymizer as supplied by NELSON OXYGEN EQUIPMENT is outfitted with a male hose adapter at the "Y" adapter end of the dual hose assembly. The output hose from the NELSON A-4 flowmeter is simply attached to the hose adapter. No additional clamp is necessary.

CANNULA INSTALLATION:

The Cannula as supplied by NELSON OXYGEN EQUIPMENT is outfitted with a male hose adapter. The output hose from the NELSON A-4 flowmeter is simply attached onto the hose adapter. If a standard medical type cannula is used without a special male hose adapter, remove the output hose from the flowmeter and attach the cannula hose directly to the flowmeter. No additional clamp is necessary here.

FACE MASK INSTALLATION:

The Face Mask as supplied by NELSON OXYGEN EQUIPMENT has a male hose attach fitting at the lower side of the mask. The output hose from the NELSON A-4 flowmeter is simply slid onto the fitting. Most other face masks have a similar type of attach fitting. In the event that the mask hose is an integral part of the mask, remove the output hose from the flowmeter and attach the mask hose directly to the flowmeter. No additional clamp is necessary.

HOSE CONNECTOR INSTALLATION:

The intake end of the NELSON A-4 flowmeter (needle valve end) has approximately 45° of tubing attached to it. The free end of the tubing is where you attach the hose connector. Before installing the connector, place the enclosed Oetiker clamp assembly onto the tubing. The clamp is equipped with an internal thin steel sleeve which prevents the plastic tubing from extruding out into the ear gap when it is squeezed to tighten.

Heating about 1/2" of the tubing end by rotating it several inches above the flame of a burning match, heatgun, hairdryer, or submerging the end in boiling water for a few seconds will make the plastic pliable to stretch over the hose connector. Do not heat over 212 degrees. Wetting the hose connector with soapy water or saliva as a lubricant will help to insert the tubing onto the hose connector.

Position the clamp assembly in the middle of the end of the hose connector where the hose attaches. Squeeze the band ear closed with a pair of open end nippers or 6" sidecutting Dykes. No hose clamps are needed between the breathing device and flowmeter.

OPERATION OF THE NELSON A-4 FLOWMETER

The NELSON MODEL A-4 flowmeter is a dual scale meter for non-pressurized aircraft use. One scale is for use with face masks and standard cannula breathing devices. The other scale (limited to 18,000 feet) is used with the oxygen conserving nasal breathing devices (OXYMIZER).

The flow of oxygen is controlled with a precision needle valve assembly. Turning the needle valve clockwise will reduce the flow. Turning it counter-clockwise will increase the flow. To shut off the flow of oxygen to the flowmeter, disconnect the hose from the regulator. Always release pressure on needle valve seat during storage. **Do not use needle valve to shut off flow of oxygen. Damage to the flow meter will result.**

Cannula and Oxymizer breathing devices can easily be disconnected from the NELSON A-4 flowmeter hose while in flight so that a standard face mask can be connected. This is important since the FAA regulations (FAR 23.1477) require that if one should develop a cold with a nasal obstruction or congestion while breathing supplemental oxygen, a face mask must be used instead of the cannula-type breathing device. Pilots should refer to FAA regulations (FAR 23.1447) to see if any restrictions apply for their use of cannula type breathing devices in the operation of their aircraft.

USE WITH STANDARD BREATHING DEVICES: (RIGHT SCALE 10,000-25,000 FT.)

The right hand scale of the NELSON A-4 flowmeter is for use with either a face mask or standard cannula type breathing device. The standard type cannula does not have a reservoir or storage system built into the unit. The standard cannula is supplied as a separate item. The standard cannula requires the same amount of oxygen flow as a face mask.

The right hand scale is calibrated to supply the FAA recommended flow rate of 1 liter per minute for every 10,000 feet of altitude. For example, at 21,000 feet a flow rate of 2.1 liters per minute is required. If you were at 21,000 feet, the needle valve on the flowmeter is adjusted so that the ball is floating slightly above the 20,000 foot mark.

If you are using a cannula breathing device you **cannot**, by FAA regulations (FAR 23.1447), exceed 18,000 feet. If you go above 18,000 feet you are required to use a face mask.

USE WITH OXYGEN-conserving nasal devices (OXYMIZER). (LEFT SCALE 10,000- 18,000 FT.)

The lefthand scale of the NELSON A-4 flowmeter is designed for use **only with oxygen-conserving breathing devices**. The NELSON A-4 flowmeter is specifically designed to be used with the CHAD THERAPEUTICS OXYMIZER OR OXYMIZER PENDANT. The left hand scale (10,000-18,000 feet) on the NELSON A-4 is **not** to be used with any other type of breathing device. When in doubt as to which scale to use, always use the right hand scale. If there are any questions as to which scale to use, please contact NELSON OXYGEN EQUIPMENT.

The left hand scale is designed to provide approximately, .35 liters per minute at 10,000 feet, .57 liters per minute at 14,000 feet, and .95 liters per minute at 18,000 feet. Flight above 18,000 feet with any type of nasal breathing device is not allowed by FAA regulations (FAR 23.1447). If you were at 16,000 feet, the needle valve on the flowmeter is adjusted so that the ball is floating halfway between the 14,000 and 18,000 foot mark on the left hand scale.