

FLOWSTAR E-STAND

NITROUS OXIDE/OXYGEN DELIVERY SYSTEM

Part Number: NES4400



USER'S MANUAL

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CONGRATULATIONS

Congratulations on the purchase of your new FlowStar E-Stand. The system is designed for reliable and simple operation in the modern dental facility. The system allows for simplistic interfacing with Air Techniques' **FlowStar Analog** Flowmeter as a mobile nitrous oxide (N₂O) and oxygen (O₂) delivery system.

IMPORTANT INFORMATION / INTENDED USE

Please read the instructions for use carefully before first operating the device in order to protect you and your patients from any incorrect operation. These instructions for use contain instructions on control tests which should be carried out by the user before the device is first put into operation and at regular intervals. The control tests are necessary to ensure the correct functioning of the device and its safety functions. **Keep these instructions for use so you can consult them later.**

The intended use of the **FlowStar E-Stand** is to monitor, control, and deliver Oxygen and Nitrous Oxide gasses through a self-contained portable system.

The **FlowStar E-Stand** is designed to work in conjunction with Air Techniques' **FlowStar Analog** flowmeter*, as well as two O₂ and two N₂O E-Cylinders. The use of the **FlowStar Double Nasal Hood Scavenger** is recommended to complete the system.

***Note:** **FlowStar Analog** purchased separately.

SAFETY SUMMARY

Use of the **FlowStar E-Stand** not in conformance with the instructions specified in this manual may result in permanent failure of the unit.

ATTENTION USERS:

Markings: The following terms or symbols are used on the equipment or in this manual to denote information of special importance:



Alerts users to important operating and maintenance instructions. Read carefully to avoid any problems.



Identifies the name of the manufacturer.

PURPOSE OF THIS MANUAL

This manual provides installation, operation and maintenance instructions for the support of the **FlowStar E-Stand**. Review and follow the guidelines included in this user manual to ensure that the system provides the highest level of service.

PRODUCT DESCRIPTION

The **FlowStar E-Stand** is comprised of the major components listed below. See Figure 1 for diagram of component locations. The general product specifications are listed in Figure 2.

- 1) **GAS BLOCK:** Aggregate of components to connect and secure up to four (two N₂O, two O₂) E sized cylinders. Block is comprised of four ports equip with indexed pins and internal check valves. Each side possesses a mounted pressure gauge for real time readouts.
- 2) **EXTENDABLE MOUNTING POST:** Telescoping post with embedded 5/8"-18 male stud to allow connection and height adjustment of **FlowStar Analog** system.
- 3) **SAFETY STRAPS:** Color coded straps rigidly secure pressure cylinders to prevent unwanted movement.
- 4) **WHEELED BASE:** Five legs with mounted caster wheels provide the unit with both stability and mobility. Two of the five caster wheels possess locking capabilities to eliminate undesired shifting of unit.
- 5) **DISS PRESSURE HOSES:** Two pressure hoses equipped with DISS compliant threads and color coordination encourage precise and quick connection to **FlowStar Analog** system.

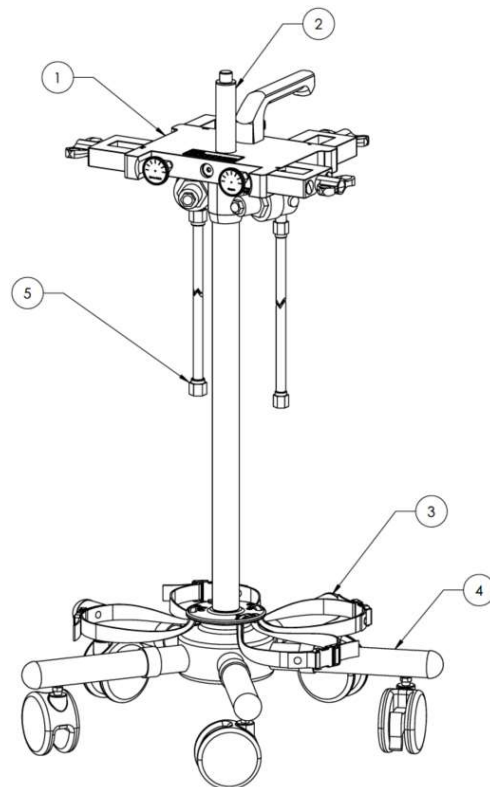


Figure 1: FlowStar E-Stand Major Components

Figure 2: FlowStar E-Stand General Specifications

SPECIFICATION	NOMINAL	LOW VALUE	HIGH VALUE	UNITS
UNEXTENDED HEIGHT*	1120	N/A	N/A	mm
EXTENDED HEIGHT*	1380	N/A	N/A	mm
DIAMETER	600	N/A	N/A	mm
WEIGHT	35	N/A	N/A	lbs.
OPERATING TEMPERATURE	N/A	41	104	°F
OPERATING HUMIDITY	N/A	0	90	%
*Notes: Measured with FlowStar Analog Installed				

UNBOXING AND ASSEMBLY/INSTALLATION

The **FlowStar E-Stand** is delivered almost entirely assembled, but some setup is required. Read the instructions below to ensure correct assembly procedures are followed.

Instruction for proper assembly:

- 1) Unpack all components of the mobile stand and lay them out together then set packaging aside.

- 2) Attach the **FlowStar Analog** to the stud on to the inner portion of the extendable mounting post by screwing the unit clockwise until fully seated on the attached plastic washer. (See Figure 3)
- 3) Firmly connect the gas hoses to their respective DISS threads at the outlets of each pressure regulator. (See Figure 4)
 - a. Connect the blue colored hose to the N₂O regulator.
 - b. Connect the green colored hose to the O₂ regulator.
- 4) Route the hoses towards the back of the unit (away from the pressure gauges) and firmly connect them to their respective DISS threads at the inlets of the Flowmeter. (See Figure 4)
 - a. Connect the blue colored hose to the N₂O regulator.
 - b. Connect the green colored hose to the O₂ regulator.



Figure 3: Attaching the FlowStar Analog



Figure 4: Attaching the Gas Hoses

OPERATING INFORMATION

Before first use: Ensure that the device is set up correctly. All hoses should be firmly connected to their respective ports and the **FlowStar Analog** should be secure to the extendable mounting post.

The **FlowStar E-Stand** is designed for use with E-Sized cylinders. Read the instructions below to ensure proper gas cylinder connection. (See Figure 5)

Instructions for Proper Cylinder Attachment:

- 1) Select one cylinder, O₂ or N₂O, to connect to the Gas Block. Ensure all plastic wrap is removed from the top of the gas cylinder.
- 2) Loosen the T-handle screw of the corresponding connection port by rotating it counter clockwise.
- 3) Lift the gas cylinder to the selected connection on the Gas Block. Insert the gas cylinder on the Pin index connection on the block, ensuring cylinder washers are in place for each port. The pins slide into the cylinder while pushing the cylinder into place carefully. If the pins on the Gas Block do not align with the holes on the cylinder, the wrong gas was selected.
- 4) Tighten the T-Handle screw by rotating it clockwise so that the gas cylinder is securely positioned and tight to the Gas Block check valve washer.

- 5) Once the gas cylinder is aligned and secured, buckle the safety strap around the cylinder and tighten it to prevent the cylinder from swinging.
- 6) Repeat this method for remaining cylinder ports on the Gas Block until all ports are occupied.

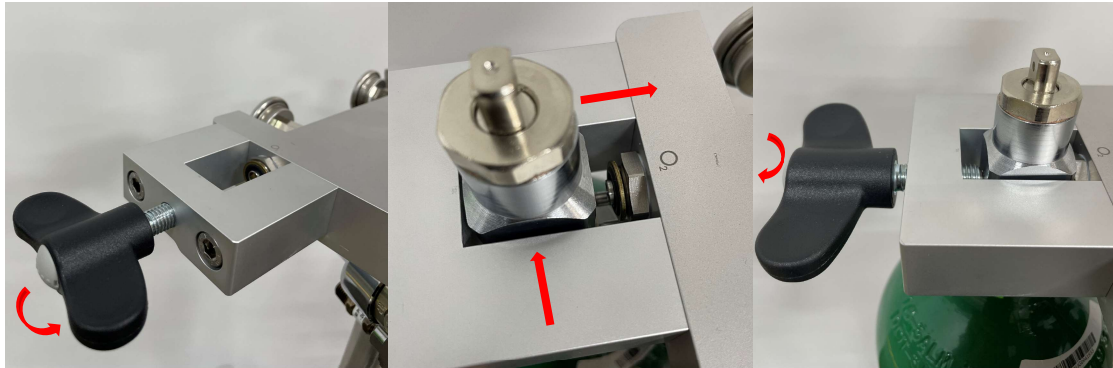


Figure 5: Attaching Gas Cylinders

For safety reasons it is necessary to check that the device is working properly. Open each valve slowly, otherwise the pressure regulator or the flowmeter could be damaged. If the gas cylinder is not positioned properly, or the cylinder sealing washer is not seated correctly, a leakage will occur when the cylinder valve is opened by the user. This will result in an audible noise. In this case close the cylinder valve quickly. Check the positioning of the cylinder and the sealing washer for damage, and do not open the valve again until you are sure that the cylinder is positioned properly.

Another method to check the tightness of the system is to monitor the pressure gauge. With the flowmeter in the off position, if the pressure drops within 1 minute, there are leaks. In this case, please contact Air Techniques or your authorized dental dealer service department.

Notes and Best Practices for E-Cylinder Usage.

- Make sure that two cylinders of each gas are connected and make sure that one cylinder of each is always filled.
- Always use the safety straps to prevent the gas cylinders from swinging and damaging the yoke block.
- Label the cylinders, whether it is full or in use.
- The pressure gauges gives the user information about the gas cylinder status, keep the gas cylinder pressure readings in mind.
- An empty gas cylinder can only be replaced by replacing it with a new full gas cylinder.
- When the N₂O cylinder, which is in use, runs empty, the device will deliver 100% of oxygen.
- If the O₂ cylinder used runs empty, the FlowStar Analog (sold separately) switches off the delivery of nitrous oxide. (Failsafe)
- **Caution:** If a gas cylinder valve stem is abnormally tight, do not try to adjust the packing nut of the cylinder, return the cylinder to supplier.

The height of the Flowmeter can be adjusted at any point during operation. Read the instructions below to ensure proper adjustment.

Instructions for Extending and Retracting the Flowmeter:

- 1) Loosen star knob by turning counter clockwise. (See Figure 6)
- 2) Slowly adjust flowmeter to desired height (up or down), supporting the weight at all times.
- 3) Tighten star knob by turning clockwise to set position.

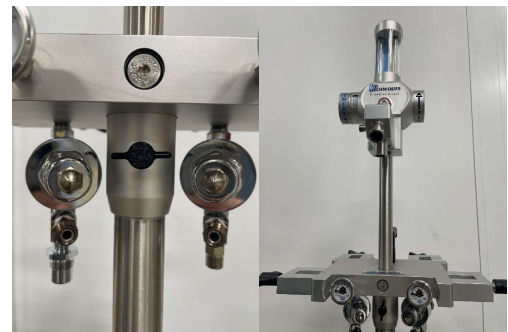


Figure 6. Flowmeter Height Adjustment

Instructions for Movement and Wheel Locking:

- 1) Roll unit into desired location using mobility handle. (See Figure 7)
- 2) To lock caster wheels, use foot or hand to toggle lock switch to the down position.
- 3) To unlock caster wheels, use foot or hand to toggle lock switch to the up position.

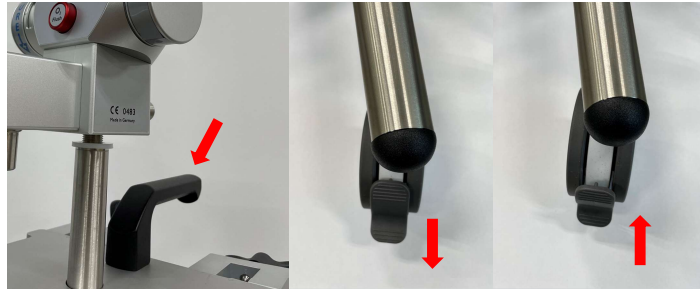


Figure 7. Movement and Locking

REGULAR MAINTENANCE OF GAS CYLINDERS

Gas cylinders must be replaced when empty. Follow the below guidelines for determining when it is time to replace a cylinder.

- **Oxygen O₂ Cylinder:** The pressure gauge shows the true amount of gas which is left inside the cylinder. For example, a gas cylinder was filled with 2200 PSIG. A reading of 2200 PSIG indicates that a oxygen cylinder is completely full. A reading of 1000 PSIG indicates an oxygen cylinder is roughly 35% full and is nearing replacement.
- **Nitrous Oxide N₂O Cylinder:** It is a liquid gas. It will vaporize inside the cylinder and the pressure will not drop until the liquid is depleted. In this case the pressure gauge will remain at 750 PSIG. Not until the gas cylinder is almost fully depleted will the pressure on the gauge start to drop.

GENERAL SAFETY INFORMATION

This section provides the user with warnings and precautions that must be followed to use the **FlowStar E-Stand** properly. A **Warning!** alerts the user to a possible hazard to other people. A **Caution:** alerts the user to the possibility that the equipment could be damaged.

Warning ⚠ Related to the following Instructions, for more information, please read the instruction of use of the FlowStar Analog Mixer Flowmeter 50% and FlowStar Analog Mixer Flowmeter 70%.

Warning ⚠ Be aware that modified or new installations of the gas hoses have to be connected properly. Otherwise the patient's safety is seriously in danger. The case of new or modified installations, the user is responsible for ensuring that the different gas hoses are not crossed.

Warning ⚠ Before using the flowmeter with the gas cylinders, verify the pin index encoding.

Warning ⚠ The connectors on the pressure regulators and the flowmeter are encoded for a specific type of gas. Do not change these encoded connections otherwise it is not

guaranteed that the correct gas hose will be connected to the inlets of the flowmeter.

Warning ⚠ The mobile stand is designed for the use by medical staff which is trained in the application of nitrous oxide-oxygen delivery and in use of the flow metering device.

Warning ⚠ It is not allowed to use the mobile stand for the administration of a general anesthesia or to use it with another anesthesia administration device.

Warning ⚠ Leaking N₂O hoses or connections may lead to contamination of the room and affect the treating personnel. Inspect and maintain the system, especially hoses, connections and fittings. All leaks must be repaired immediately.

Warning ⚠ The medical staff can be exposed to N₂O during the sedation. To lower

the exposure of the personnel, the maintenance of the system, ventilation and work practices are important. Therefore, use the Air Techniques Scavenging system to control the concentration in the patient treatment area.

Warning ⚠ The device can only be used with dry medical gases. Moisture or other particles will contaminate the system. Do not clean the yoke connection, especially the waasher and the check valve entrance, with disinfectant. Do not grease any part of this system to avoid fire potential. The user must prevent gas cylinders with dirty and dusty valves from being connected to the E-block.

Warning ⚠ Open gas cylinder valves slowly, otherwise the pressure reducer or the O₂-N₂O flowmeter could be damaged.

Caution ⚠ Please close the gas cylinder valves after use. In the event of a leak, the ambient air is contaminated.

Caution ⚠ Nitrous oxide and oxygen are non-flammable oxidizers.

Caution ⚠ Do not attempt to repair, alter or calibrate this device. Unauthorized repair, alteration or misuse of this system or oxygen-nitrous oxide flowmeter is likely to adversely affect the performance and will void the warranty.

Caution ⚠ If both cylinders of one type of gas are opened, they will be used up at the same time. In this case, a supposedly full cylinder is in use.

Warning ⚠ Use only the proper gas cylinders. Do not connect this system to any other gas supply system. Checking any new or changed central gas supplies are absolutely essential for patient safety. Per NFPA 99

UNIT MAINTENANCE/REPLACEMENT PARTS

Please read the following guidelines for regular and preventative maintenance.

Weekly Maintenance – Cleaning the Unit:

Avoid spraying disinfectant directly onto the gas leading parts or the cylinder connections. Use a single-use towel and spray an approved disinfectant for healthcare patient environment on it. Clean the device surfaces. Prevent an accumulation of the disinfectant onto the surface of the device. Please note the Instruction for use of the disinfectant manufacturer.

The introduction of moisture, dirt or other contaminants into the system can cause the device to malfunction.

The yoke connection, in particular the washer and the inlet of the check valve, should not be cleaned with disinfectants.

Preventative Maintenance – Replacing the Seals:

Yoke sealing washers will wear out over time but wear will increase with increased usage of the product. Replace washers as needed when a leak is found, or at a minimum, once a year.

Replacement Parts:

ORDER NUMBER	PART DESCRIPTION
N20001-10	CYLINDER SEALING WASHERS (PACK OF 10)
N20017	CYLINDER WRENCH WITH STRAP
N20025	CASTER AND LEG ASSEMBLY
N20050	T-HANDLE SCREW
30916	POST ADJUSTMENT THUMB SCREW
K2560-1	O2 CYLINDER SAFETY STRAP
K2560-2	N2O CYLINDER SAFETY STRAP
N20030	REPLACEMENT CHECK VALVE ASSEMBLY, E-BLOCK
N20026	MOBILITY HANDLE
NHO00-3	O2 DISS PRESSURE HOSE (3 FT)
NHN00-3	N2O DISS PRESSURE HOSE (3 FT)
N20060	O2 CYLINDER PRESSURE GAUGE
N20070	N2O CYLINDER PRESSURE GAUGE

WARRANTY INFORMATION

The FlowStar E-Stand is warranted to be free from defects in material and workmanship from the date of installation for a period of twelve (12) months. Any item returned to our factory through an Air Techniques Authorized Dealer, will be repaired or replaced at our option at no charge provided that our inspection shall indicate it to have been defective. Dealer labor, shipping and handling charges are not covered by this warranty. This warranty does not apply to damage due to shipping, misuse, careless handling or repairs by other than authorized service personnel. Warranty is void if equipment is installed or serviced by other than dealer service personnel authorized by Air Techniques. Air Techniques, Inc. is not liable for indirect or consequential damages or loss of any nature in connection with this equipment. This warranty is in lieu of all other warranties expressed or implied. No representative or person is authorized to assume for us any liability in connection with the sale of our equipment.

Quickly and easily register your new FlowStar E-Stand on-line. Just have your product model and serial numbers available. Then go to the Air Techniques website, www.airtechniques.com, click the **register a product** link and complete the registration form. This on-line registration ensures a record for the warranty period and helps Air Techniques keep you informed of product updates and other valuable information.

For over 50 years, Air Techniques has been a leading innovator and manufacturer of dental products. Our priority is ensuring complete satisfaction by manufacturing reliable products and providing excellent customer and technical support. Whether the need is digital imaging, utility room equipment or merchandise, Air Techniques can provide the solution via our network of authorized professional dealers. Proudly designed, tested and manufactured in the U.S., our products are helping dental professionals take their practices to the next level.

Air Techniques' family of quality products for the dental professional include:

- **Digital Imaging**
 - Digital Radiography
 - Intraoral Camera
 - Caries Detection Aid
 - Intraoral X-ray
 - Panoramic X-ray
- **Utility Room**
 - Dry Vacuums
 - Wet Vacuums
 - Air Compressors
 - Amalgam Separator
 - Utility Accessories
 - Utility Packages
- **Merchandise**
 - Surface Disinfectant
 - Enzymatic Cleaner
 - Hand Sanitizer and Lotion
 - Waterline Cleaner
 - Evacuation System Cleaner
 - Imaging Accessories
 - Chemistry
 - Processor Accessories

www.airtechniques.com



Manufactured by: Air Techniques, Inc
1295 Walt Whitman Road | Melville, New York 11747- 3062, USA
Phone: +1-800-247-8324 | Fax: +1-888-247-8481



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