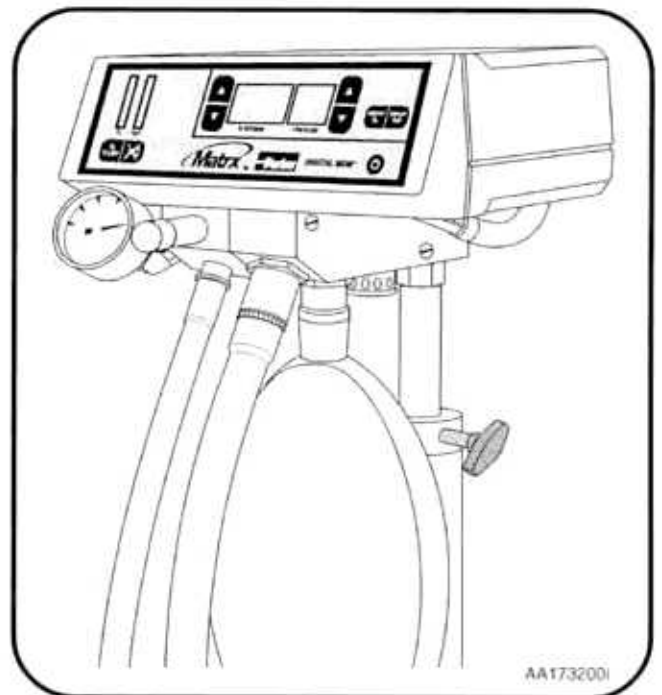


Matrix

by **Parker**

DIGITAL MDM®

Operations Manual



AA1732001

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
P. O. Box 907
Hatfield, PA 19440-0907 USA
Tel: 215-723-4000

Ref. 10545100 Rev. D



The CE symbol on this product indicates compliance with the Medical Device Directive of the European Community. A *Declaration of Conformity* in accordance with the Directive has been made and is on file. European Communities should contact the Authorized Representative listed below regarding any Medical Device Directive (MDD) inquiries. Direct inquiries may be made to the following addresses:

Porter Regulatory Affairs:	EU Authorized Representative:
Parker Hannifin Corporation Porter Instrument Division 245 Township Line Road P. O. Box 907 Hatfield, PA 19440-0907 USA Tel: 215-723-4000	Heatherside Carron Lane, Midhurst West Sussex GU29 9LE United Kingdom Tel: +44 (0) 1730-815811 Fax: +44 (0) 1730-815812



MEDICAL EQUIPMENT
WITH RESPECT TO ELECTRIC SHOCK,
FIRE AND MECHANICAL HAZARDS ONLY
IN ACCORDANCE WITH UL 2601-1, AND
CAN/CSA C22.2 NO. 601.1

<i>Symbol</i>	<i>Description</i>
	Alternating current
	Earth (ground)
	Attention, consult the accompanying documents
	Type B Equipment

SAFETY SUMMARY

WARNINGS

The Matrix DIGITAL MDM® mixer is a specialized medical device and should be operated **ONLY** by a professional trained in the use of nitrous oxide. Nitrous oxide and oxygen mixtures should only be administered by or under the supervision of a medical professional.

The Matrix DIGITAL MDM® mixer is designed for use with an oxygen supply assuring 100% medical oxygen concentration. The use of other oxygen sources (i.e., oxygen concentrators) could result in an unsafe condition to the patient.

Although this analgesia machine is designed to prevent the interchanging of the two gases, it is the responsibility of the user to determine that only oxygen flows into the oxygen connection and only nitrous oxide flows into the nitrous oxide connection located on the back of the analgesia head.

ELECTRICAL CONNECTIONS

Do not use an electrical cord with nicks, cuts, or other damage. Do not use the unit with an extension cord as it will be subject to electromagnetic interference (EMI).

BAG TEE REQUIREMENTS

A bag tee containing an air inlet valve is required for use with this unit. The bag tee is factory mounted on the unit or provided separately for remote mounting. Matrix Scavenging Nasal Inhalers provide the patient connection.



AA173400i

CAUTIONS

FACTORY SETTINGS

Do not change any internal factory set adjustments. The Matrix DIGITAL MDM® mixer is adjusted and calibrated for proper operation prior to shipment. Any change could alter the specified operation and accuracy.

FACILITY PIPING

The user **MUST** perform tests independent of the dealer or contractor to verify that all pipelines are connected correctly. If you are unfamiliar with piping systems, order Matrix manual 10311700. The user has the ultimate responsibility for properly connected pipelines essential to patient safety.

DIAMETER INDEXED SAFETY SYSTEM

Gas connections in the DIGITAL MDM® mixer are mechanically indexed using the Diameter Indexed Safety System (DISS). This feature helps to prevent the crossing of pipelines. Under no circumstances should these connections be altered.

DISCONNECT POWER

There are no user-serviceable parts inside this unit. A shock hazard exists if power is not disconnected prior to any internal servicing or maintenance. Always disconnect the power source before inspection or repair.



AA173500i

ALARM TEST

The user should test the alarm system for proper operation prior to each clinical use.

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Notes and Contact Information

Unit Serial Number

Date Purchased

Dealer Name

Dealer Phone Number

Notes:

Contact Information:



Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
P. O. Box 907
Hatfield, PA 19440-0907 USA
Tel: 215-723-4000

Introduction

CAUTION

Federal Law in the U.S.A. and Canada restricts this device to sale by or on the order of a licensed practitioner.

Intended Use

The DIGITAL MDM* mixer and accessories are analgesia gas mixing and delivery devices for use in medical procedures to relieve pain and anxiety. The devices permit the operator to adjust the percent of oxygen through a range of 100% to 30% (and thereby control the ratio of oxygen to nitrous oxide). The operator can also control the total volume of mixed gas up to 9.9 liters per minute. The DIGITAL MDM mixer is intended for use by trained medical personnel only.

User Responsibility

This product should not be repaired other than in accordance with written instructions provided by Matrx by Parker. 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 Matrx by Parker.

It is the user's responsibility to ensure that the correct gas, at the correct pressure, is supplied to the fittings at the rear of the unit. See Specifications, section 4.4.

The DIGITAL MDM mixer is designed to perform in accordance with the specifications when installed, operated, and maintained as instructed herein. This product must be checked periodically. Defective or worn parts must be replaced immediately. A DEFECTIVE PRODUCT MUST NOT BE USED!

Delivery Check Out

Examine the shipping carton for signs of external damage. Remove and check the contents of the carton against the packing list. The mixer head is wrapped in an antistatic bag when shipped from the factory. This bag should also contain an Operations Manual and power cord. Inspect for visible damage or missing parts. Notify your dealer immediately if damage is suspected or discovered and/or parts are missing.

Machine Diagnostics

The DIGITAL MDM mixer performs self checks at start up and during operation. If any errors are detected, the unit displays EE on the %O₂ display and an error code on the FLOW display. If an error code appears, remove the unit from patient service and call the Matrx by Parker Technical Service Department at 1-888-723-4001. *To aid in the diagnostics of the unit, make note of the final error code displayed.*

System Notes

Matrx by Parker recommends the use of a permanently mounted oxygen analyzer in the patient circuit to monitor the oxygen levels being administered to the patient. Additional monitoring should be employed particularly if the delivered oxygen and nitrous oxide is being used as background to intravenous or inhalant deep sedation and anesthesia. The American Society of Anesthesiology (ASA) encourages the use of an ECG, a Blood Pressure Monitor, and a Pulse Oximeter in these cases.

The manufacturer reserves the right to make technical improvements or modifications to equipment/products without notifications to the customers. Contact Matrx by Parker for current information.

The repair of the DIGITAL MDM mixer is to be performed only by service personnel authorized by Matrx by Parker. All field replaceable parts are listed in Section 5 and can be ordered by calling your local, authorized Matrx by Parker dealer. For a dealer near you, call Matrx by Parker Customer Service at 1-888-723-4001.

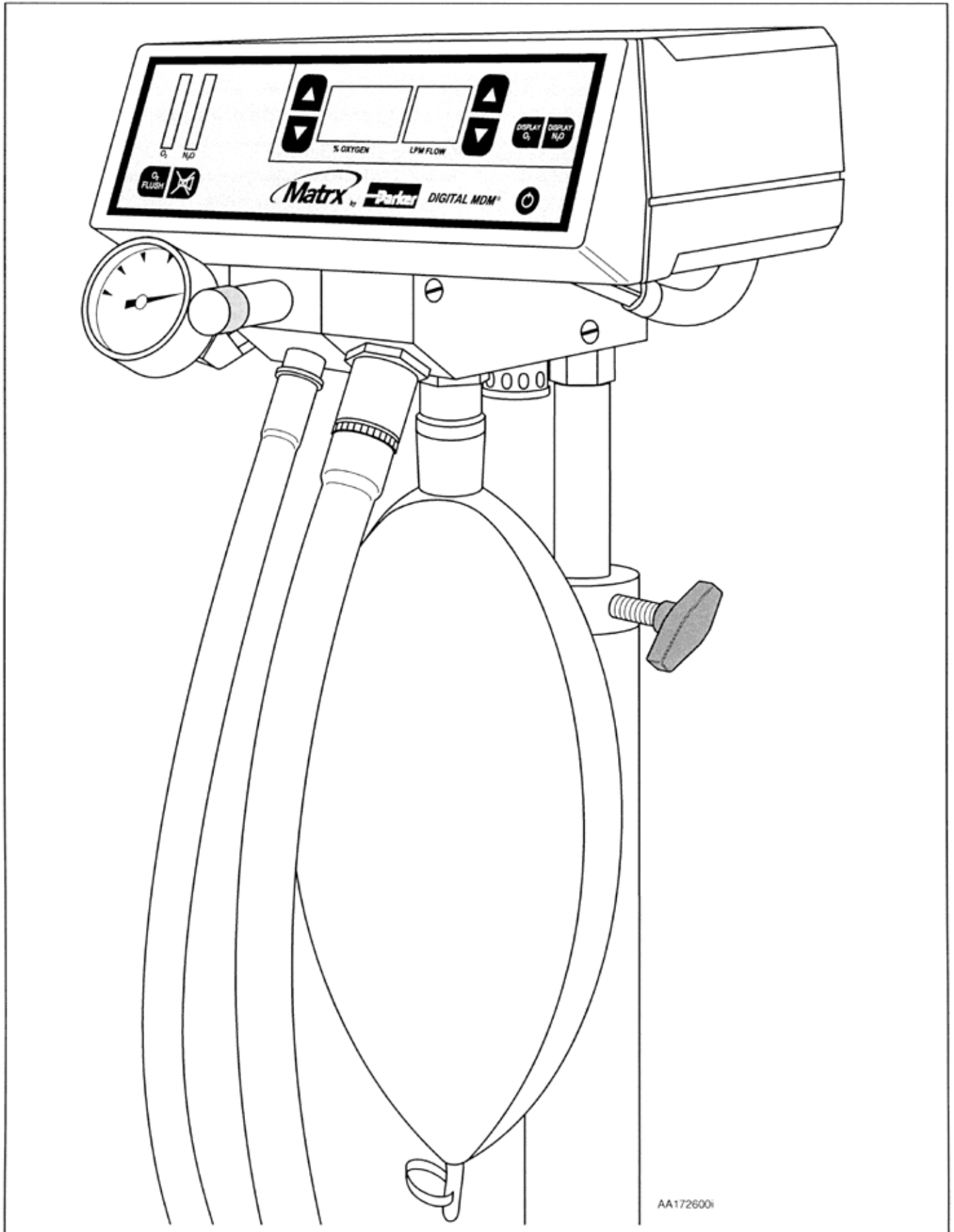


Figure 1. DIGITAL MDM® Mixer (figure shows the optional scavenger control valve).

Section 1 Description of Unit

1.1 Description

The DIGITAL MDM[®] mixer is shown in Figure 1. The device permits the operator to adjust the percent of oxygen through a range of 100% to 30% (and thereby control the ratio of oxygen to nitrous oxide). The operator can also control the total volume of mixed gas up to 9.9 liters per minute.

1.1.1 Mixture Control

The DIGITAL MDM mixer precisely mixes oxygen and nitrous oxide from local cylinders or pipeline gas systems, and delivers the electronically controlled mixture to the bag tee outlet.

1.1.2 Built-In Safety

A series of alarms (see Section 1.3) alert the user to any problem condition within the DIGITAL MDM mixer unit or in the gas supply.

1.2 Displays and Indicators

In the following, the location numbers refer to Figure 2.

Flow Display: The LPM FLOW display (4) normally displays the total gas flow rate. It also displays the individual nitrous oxide or oxygen flow rates when either the N₂O or O₂ flow display controls (6) are pressed. The gas flow being displayed is indicated in the flow indicator (5) by O₂, TOTAL or N₂O.

% OXYGEN Display: The % OXYGEN display (3) indicates the oxygen concentration set point in the total flow

Gas Flow Indicators: Gas flow is indicated by bar graph LEDs (1). A green bar graph represents O₂ while blue represents the N₂O flow. The number of lit bars give a graphical indication of the flow level of a particular gas.

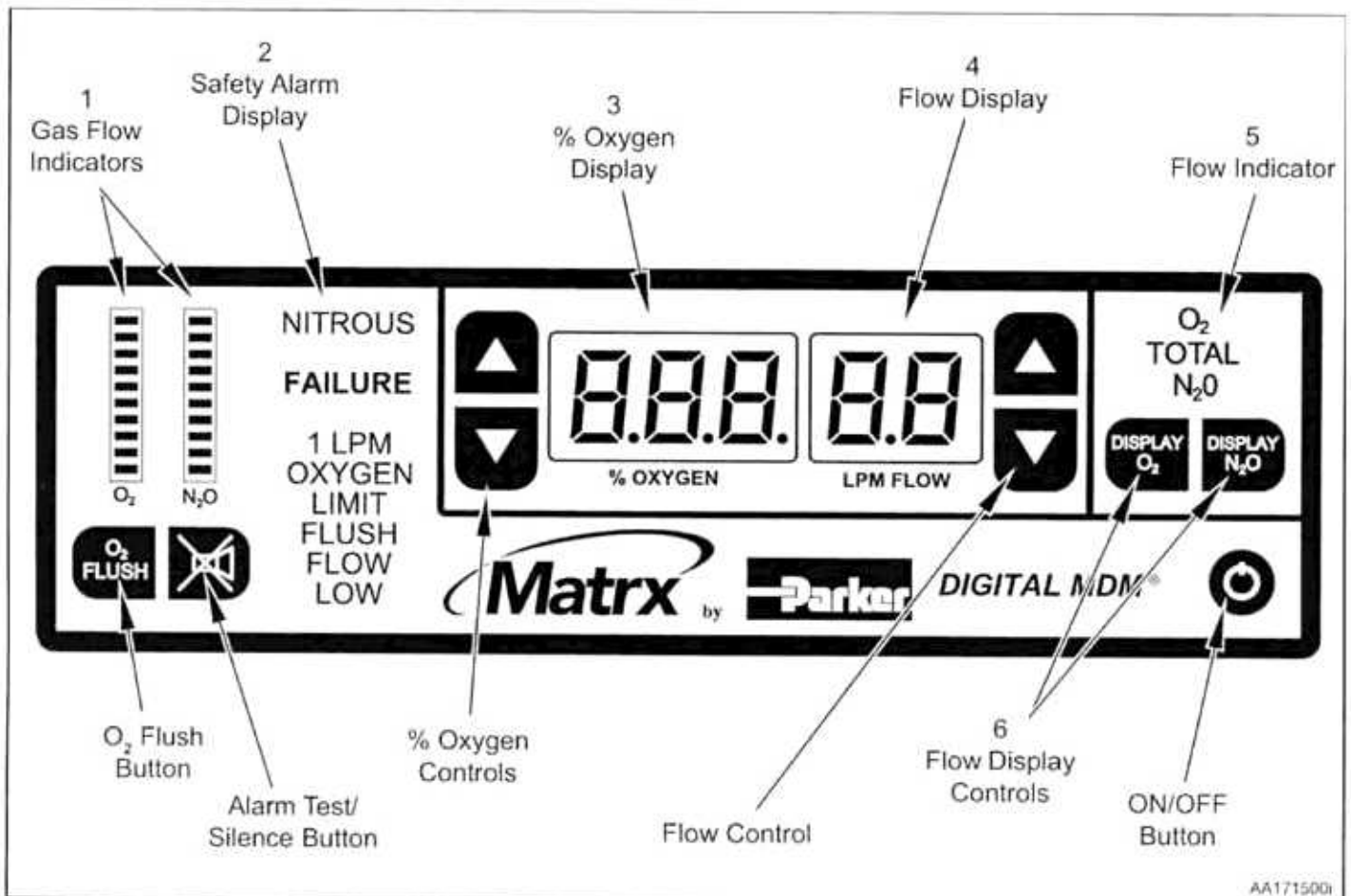


Figure 2. Matrix DIGITAL MDM[®] Mixer Front Panel (figure shows all LEDs illuminated).

1.3 Safety Alarm System

There are four alarm conditions on the DIGITAL MDM® mixer. They appear in the safety alarm display (see Figure 2, item 2) only when conditions warrant. Otherwise, they are not visible. The alarm conditions are:

OXYGEN FAILURE: This alarm (see Figure 3) indicates that the set oxygen (O_2) flow cannot be delivered. Check the oxygen supply. During an OXYGEN FAILURE alarm, the nitrous oxide delivery is automatically shut off. The LPM FLOW and % OXYGEN displays are off.

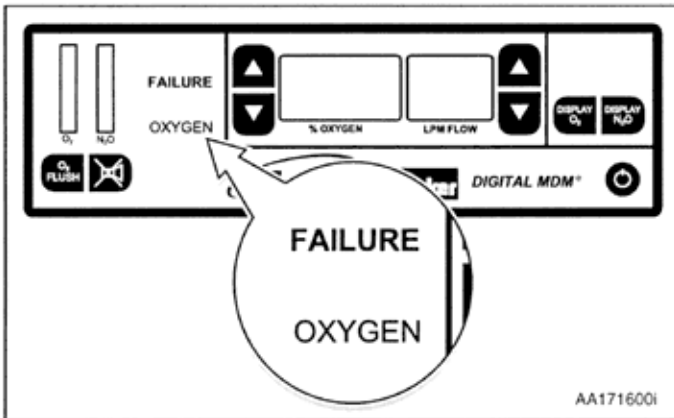


Figure 3. Oxygen Failure Alarm Condition.

NITROUS FAILURE: This alarm (see Figure 4) indicates that the set nitrous oxide (N_2O) flow cannot be delivered. Check the nitrous oxide supply. During a NITROUS FAILURE alarm, the LPM FLOW display indicates oxygen flow and the % OXYGEN display is off.

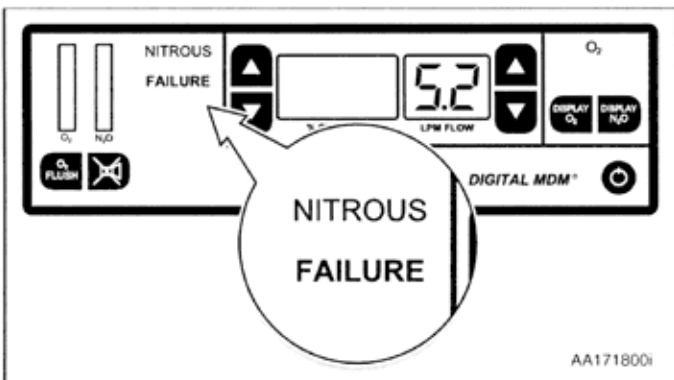


Figure 4. Nitrous Failure Alarm Condition.

Both the OXYGEN FAILURE and NITROUS FAILURE are self-canceling alarms. When the gas is restored, the unit returns to the flow rate and mixture ratio which were in effect before the alarm condition.

1 LPM OXYGEN LIMIT: This message (see Figure 5) is displayed when the oxygen flow rate reaches a value of 1 LPM (liter per minute); the unit will not allow the oxygen flow rate to go below this value. If the user attempts to lower the % OXYGEN while this message is displayed, the unit compensates by increasing the total flow rate.

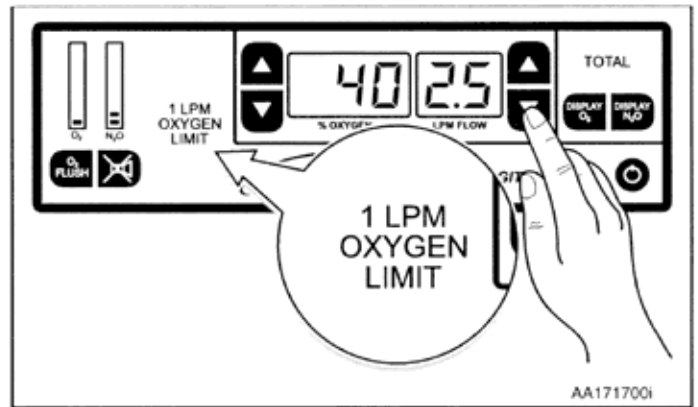


Figure 5. 1 LPM Oxygen Limit Alarm Condition.

FLUSH FLOW LOW: This message (see Figure 6) indicates that the oxygen flush flow rate is less than 10 LPM. Check the oxygen supply pressure.

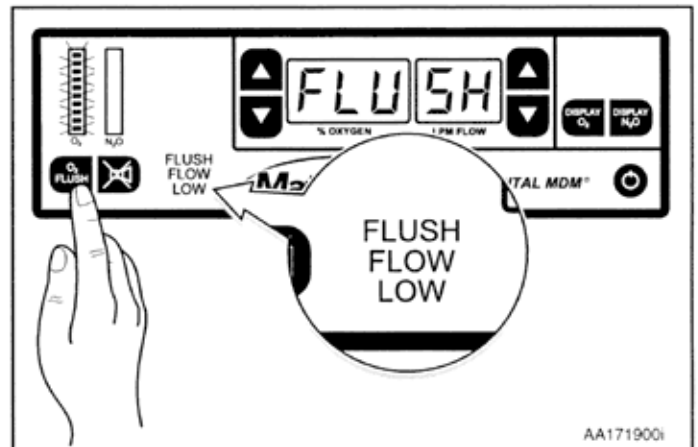


Figure 6. Flush Flow Low Alarm Condition.

IMPORTANT!

Operate key pad with finger pressure only. Do not use hard or sharp objects.
Failure to do so may result in DAMAGE to front panel.

1.4 Controls

On/Off Key: The ON/OFF key controls the operation of the unit. Momentarily depressing the ON/OFF key changes power state from OFF to ON or ON to OFF.

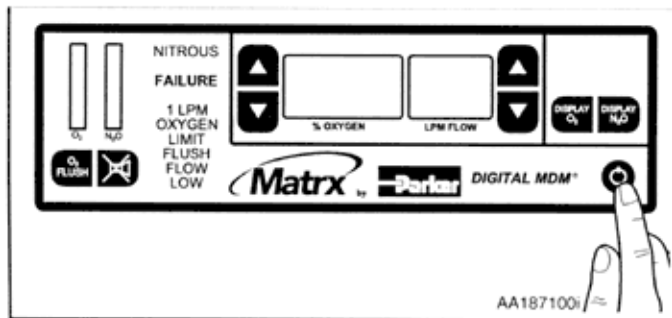


Figure 7. Turning the unit ON/OFF.

NOTE

If the power to the unit is interrupted and then restored, either by disconnecting/reconnecting the power cord or by local power failure, the unit will display OFF. The operator must press the ON/OFF key to restart the unit. The unit will then display default values of 100% oxygen at 5 LPM.

CAUTION

After turning the device off, or when the unit is not in use, all oxygen and nitrous oxide supply cylinder valves must be closed.

Flow Control: The LPM FLOW key pad [▲ or ▼] controls the total flow rate delivered by the unit. Pressing the appropriate key momentarily, as shown in Figure 8, increases or decreases the total flow rate by 0.1 LPM. By pressing and holding a key, the total flow rate indication changes slowly for the first two steps, then changes at a faster rate for the remainder of the time the key is held. An audible signal indicates that a limit has been reached.

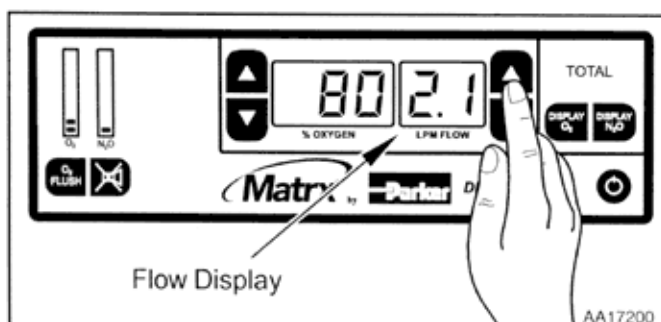


Figure 8. Increasing Flow Rate.

%O₂ Control: The % OXYGEN key pad [▲ or ▼] controls the percentage of oxygen delivered by the unit. Press the appropriate key momentarily, as shown in Figure 9, to increase or decrease the oxygen percentage one step (1% or 5%). Pressing and holding the key changes the oxygen percentage slowly for the first two steps, then faster for the remainder of the time the key is held. This varies the ratio of oxygen to nitrous oxide. An audible signal indicates that a limit has been reached.

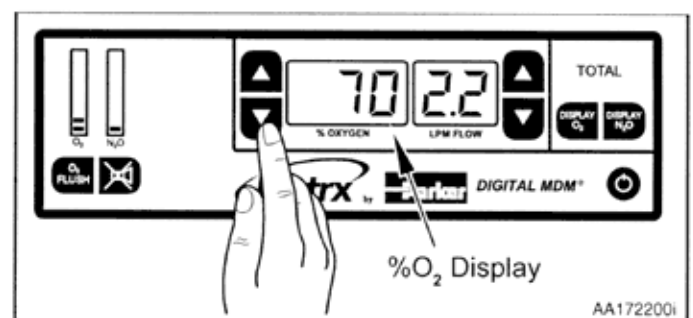


Figure 9. Decreasing Percentage of Oxygen.

Setting % OXYGEN Step Amount (1% or 5%): The DIGITAL MDM[®] mixer is shipped from the factory programmed to change 1% for each press of the % OXYGEN key pad [▲ or ▼]. The amount can be changed from 1% to 5% by using the DISPLAY N₂O and DISPLAY O₂ keys and the following procedure:

1. Press and hold the DISPLAY N₂O key.
2. While pressing the DISPLAY N₂O key, press the DISPLAY O₂ key until the audible alarm sounds.
3. Release both keys.

The audible signal indicates the change has occurred and is programmed in memory. The unit will remain in the new mode until this sequence is repeated. Unplugging or turning the unit off will not affect the programmed mode.

Flow Display Control: The key pad DISPLAY O₂ or DISPLAY N₂O select the gas flow rate displayed on the flow display. Press and hold the DISPLAY N₂O key, as shown in Figure 10, to display the nitrous oxide component of the total flow. Press and hold the DISPLAY O₂ key, as shown in Figure 11, to display the oxygen component of the total flow. If neither key is held, the LPM FLOW display indicates the total gas flow.

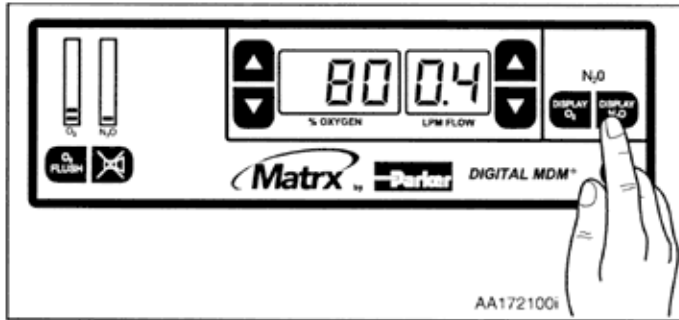


Figure 10. Nitrous Oxide Component Flow Rate Displayed.

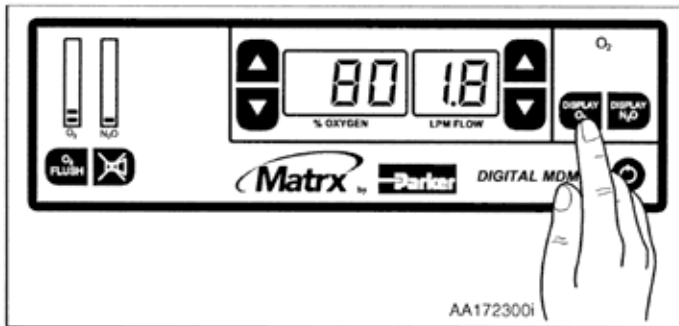


Figure 11. Oxygen Component Flow Rate Displayed.

Oxygen Flush Key: Pushing the O₂ FLUSH key, as shown in Figure 12, delivers 100% oxygen directly to the mixed gas outlet at the rear of the unit. This outlet is connected to the patient through the breathing tube connector (see Figure 14). While the key is pushed, 100% oxygen is delivered continuously at an approximate flow rate of 20 LPM. Releasing the key returns the unit to the flow rate and mixture ratio which were in effect prior to the flush.

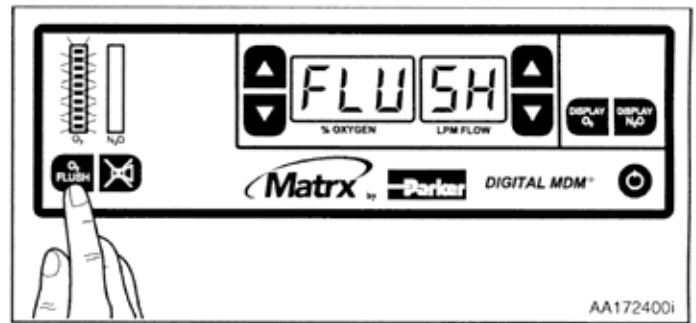


Figure 12. O₂ Flush Key.

Alarm Test/Silence Key: The alarm test/silence key serves two functions. When pressed as shown in Figure 13, all the displays, indicators and the audible alarm turns on. This key also silences the audible alarm when a NITROUS FAILURE condition exists. The audible alarm will be silent for about five minutes and then resume, unless the failure condition has been corrected.

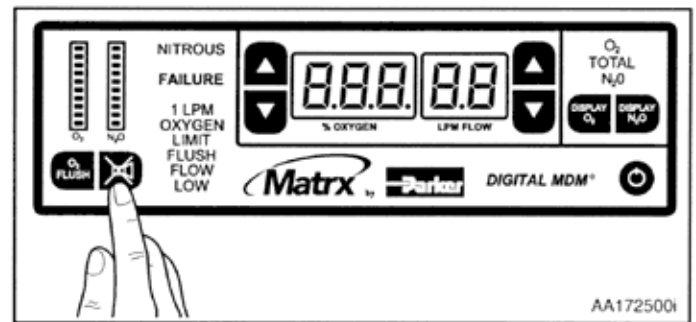


Figure 13. Alarm Test/Silence Key.

1.5 Machine Diagnostics

The DIGITAL MDM[®] mixer performs self checks at start up and during operation. If any errors are detected, the unit displays EE on the % OXYGEN display and an error code on the LPM FLOW display. If an error code appears, remove the unit from patient service and call the Matrix by Parker Technical Service Department at 1-888-723-4001 . *To aid in the diagnostics of the unit, make note of the final error code displayed .*

Section 2 General Installation

Refer to the specific installation instructions supplied with optional mountings.

2.1 Installation of Stand Mount

1. Thread the hex nut on the mounting stud until at least 3/4" of the thread is exposed above the nut on the stud (See Figure 14).
2. Thread the stud into the 5/8"-18 tapped hole in the column mount located on the bottom of the mixer. Thread in until the nut is reached.
3. Using an adjustable wrench or the appropriate box wrench, rotate the nut clockwise (looking toward the bottom of the mixer) firmly until it stops.
4. Slide the mounting stud into the post spacer, and then into the bore of the pole mount assembly. When the head is at desired working height, rotate the T Handle clockwise until it locks the mounting stud in place.
5. If the optional Scavenger Control Valve was purchased separately, align it with the 2 holes on the base of the mixer. Secure with the (2) #10-32 screws.

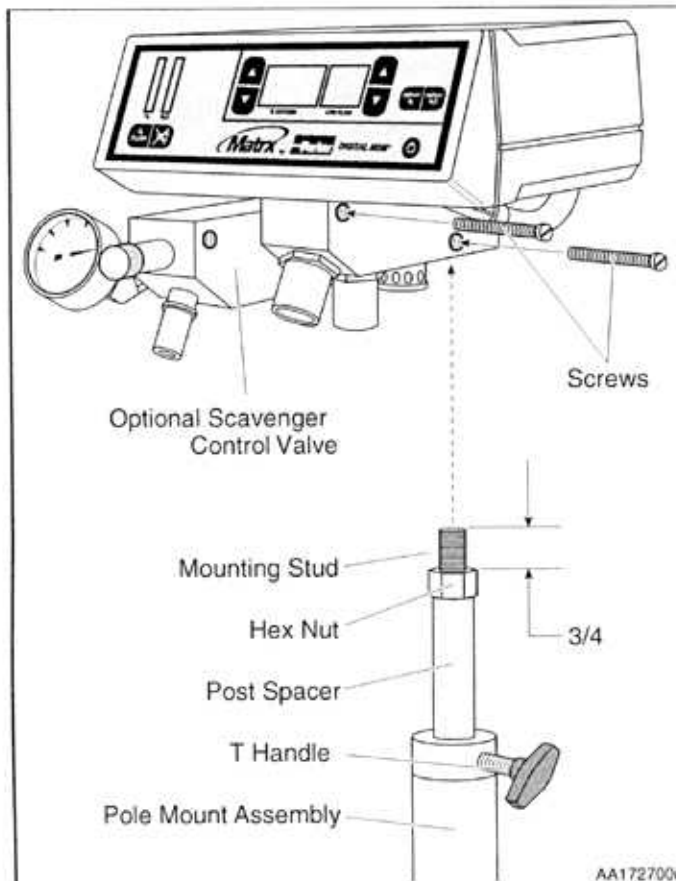


Figure 14. Installation of Stand Mount.

6. Following the instructions provided with the scavenging system, connect the Scavenger Control Valve to the vacuum system.

2.2 Installation of Rubber Goods

The assembly procedure for the DIGITAL MDM® mixer follows (see Figure 15):

1. Slide the breathing bag opening over the outside diameter of the bag mount.
2. Slide the 15mm fresh gas connector from the scavenger into the breathing tube connector.
3. If an accessory, such as the Scavenger Control Valve is used, connect it following the instructions supplied with it.

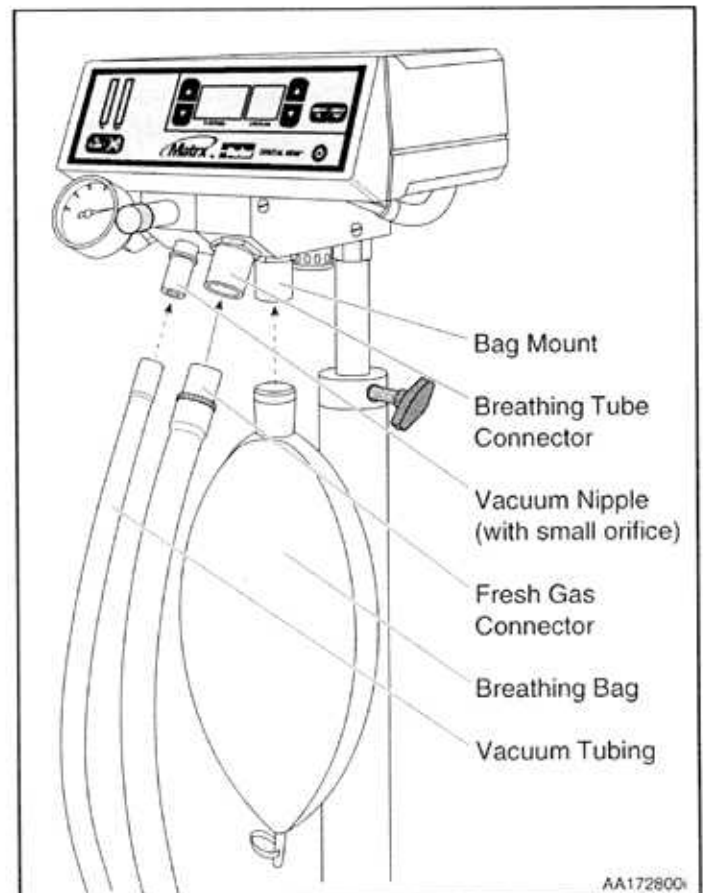


Figure 15. Installation of Rubber Goods.

2.3 Installation of Power Cord

Insert the power cord into the input connector on the rear of the unit (see Figure 16).

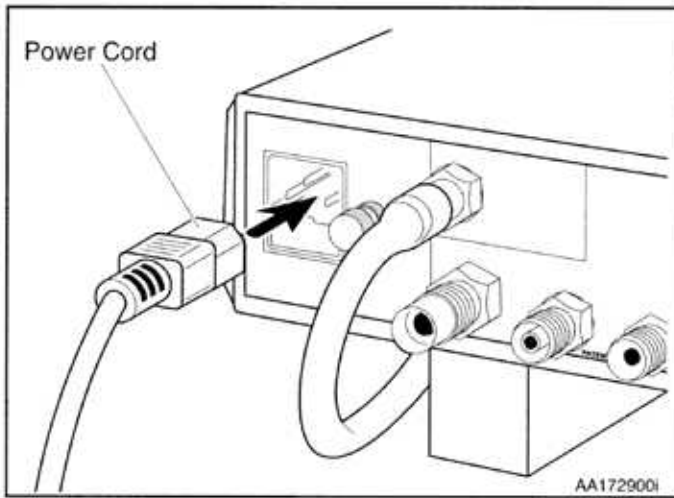


Figure 16. Installation of Power Cord.

2.4 Connection of Oxygen, Nitrous Oxide

For safety reasons, gas connections are color-coded and mechanically indexed using the Diameter Indexed Safety System (DISS) to prevent accidental cross connection. DISS female hexagon fittings are standard for both hoses.

1. Connect the DISS female hexagon fitting of the nitrous oxide hose to the male DISS, N₂O INLET, fitting on the back of the mixer head (see Figure 17). Hand tighten and then finish tightening with a 7/8" inch open end wrench (approximately 1/8 turn). *Do not overtighten.*
2. Connect the DISS female hexagon fitting of the oxygen hose to the male DISS, O₂ INLET, fitting on the rear of

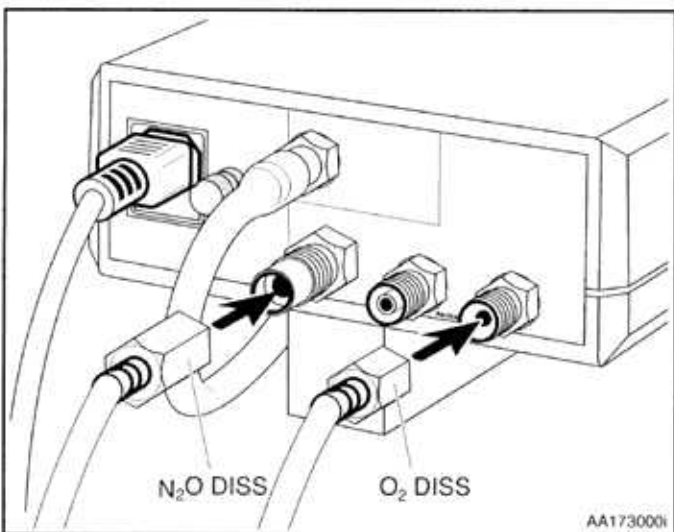


Figure 17. Oxygen and Nitrous Oxide Connections.

the unit. Hand tighten and then finish tightening with a 11/16" inch open end wrench (approximately 1/8 turn). *Do not overtighten.*

2.4.1 Hoses

Hoses are manufactured for connection to the gas source in various configurations:

- Quick Connect fittings are designed for rapid "no tool" connections with corresponding male/female fittings or outlet stations. Refer to the individual manufacturer's instructions for specific connection procedure.
- DISS to DISS hoses are designed primarily for portable systems. The gas source (male) DISS fittings are located on the regulators on the cylinder mount block provided with the portable units. Connect the DIGITAL MDM[®] mixer to the cylinder mount block using the appropriate nitrous oxide hose and the oxygen hose.

2.5 Demand Valve Resuscitator

An optional Demand Valve Resuscitator for emergency oxygen resuscitation is available from Matrix (PN 91505085) and connects directly to the O₂ outlet (Figure 18) on the rear of the unit.

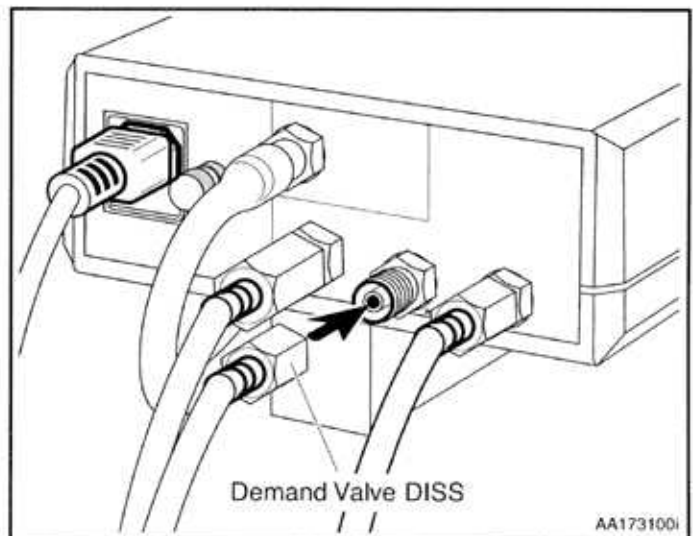


Figure 18. Connecting Demand Valve Resuscitator.

Section 3 Preparation for Use

CAUTION

Before using the DIGITAL MDM® mixer, check the operation of the unit by performing the following tests.

3.1 Performance Checks

These preliminary tests must be conducted to ensure that your analgesia mixer is performing correctly.

If the unit fails any one of the following performance checks, the unit must be returned for service.

Machine Turn-On Test: Press the ON/OFF key, as shown in Figure 19. After the device goes through an initialization routine, the % OXYGEN and LPM FLOW displays should indicate 100% and 5 LPM.

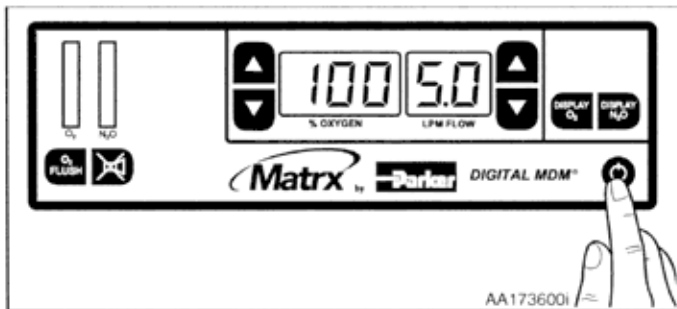


Figure 19. Machine Turn-On Test.

Alarm Indicator/Lamp Test: Press the alarm test/silence key, as shown in Figure 20, and observe that all the alarm readouts illuminate. The % OXYGEN and LPM FLOW displays should show 8.8.8. and 8.8 respectively. The alarm readouts should illuminate with the numerical displays. 10 bars on each gas should illuminate. The audible alarm should also sound.

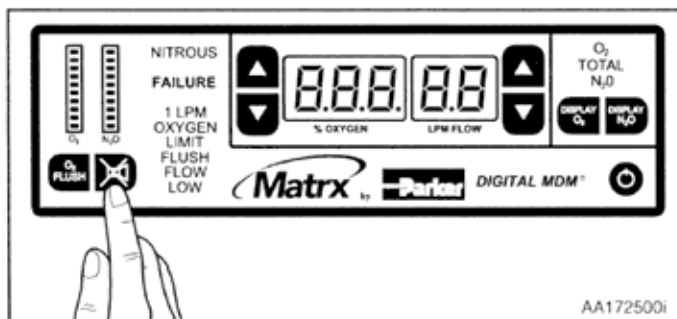


Figure 20. Alarm Indicator/Lamp Test.

Nitrous Failure Test: Set the LPM FLOW display to 9.9 LPM. Set the % OXYGEN display to 30%. Turn off the nitrous oxide gas supply to the unit. When the gas runs out, make sure each of the following occurs (see Figure 21):

- the NITROUS FAILURE alarm illuminates
- the audible alarm sounds
- the LPM FLOW display indicates the oxygen flow being delivered
- the % OXYGEN display is off
- the N₂O gas flow indicator is off
- the O₂ gas flow indicator shows at least 3 bars

Turn on the nitrous oxide gas supply. The unit should return to normal operation. (The alarm may continue to chime for up to 20 seconds after restoration of gas pressure.)

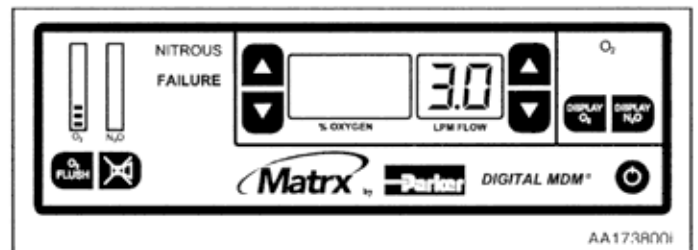


Figure 21. Nitrous Oxide Failure Test.

Oxygen Failure Test: Set the LPM FLOW display to 9.9 LPM. Set the % OXYGEN display to 50%. Turn off the oxygen gas supply to the unit. When the gas runs out, check for each of the following (see Figure 22):

- the OXYGEN FAILURE alarm illuminates
- the audible alarm sounds
- the flow indicators are off
- the LPM FLOW and % OXYGEN displays are off

Turn on the oxygen gas supply, and the unit should return to normal operation. (The alarm may continue to chime for up to 20 seconds after restoration of gas pressure.)



Figure 22. Oxygen Failure Test

Indicated Flow Delivery Test: Set the % OXYGEN display to 100%. Press the [▼] flow key and hold, as shown in Figure 23. The flow rate should decrease to 1.0 LPM. An audible alarm sounds at the lower limit while the key is held. Press the [▲] flow key and hold. The flow rate should increase to 9.9 LPM. An audible alarm will sound at the upper limit as long as the key is held.

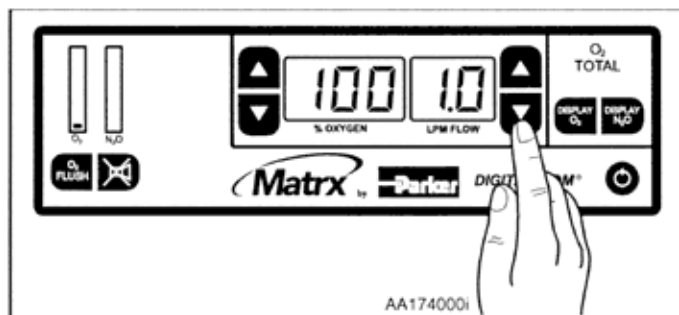


Figure 23. Indicated Flow Delivery Test.

Indicated Percentage (%) Delivery Test: Set the LPM FLOW display to 9.9 LPM. Press and hold the [▼] % OXYGEN key. The % OXYGEN display should decrease to 30%. The audible alarm sounds at the lower limit while the key is held. Press and hold the [▲] % OXYGEN key, as shown in Figure 24. The % OXYGEN display should increase to 100%. An audible alarm sounds at the upper limit while the key is held.

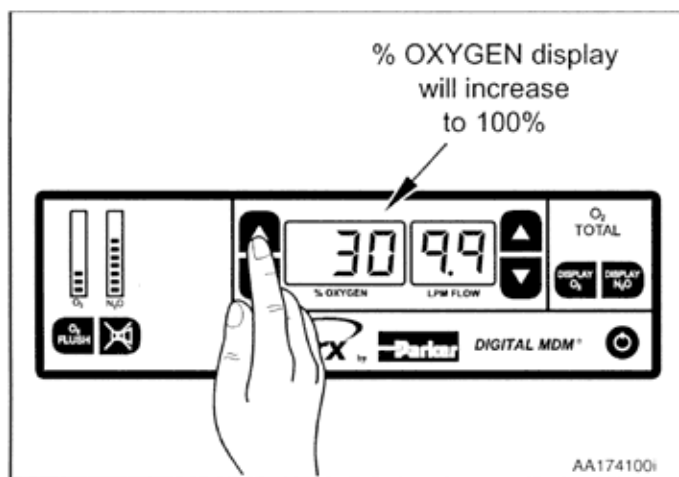


Figure 24. Indicated Percentage Delivery Test.

3.2 Maintenance

The DIGITAL MDM® mixer is a precision analgesia mixing unit. As with any medical instrument, it requires periodic inspection and maintenance.

The following routine maintenance procedures should be performed to ensure system integrity and trouble-free service.

- Inspect mixer, hoses, and connections daily for damage, wear, and leaks.
- Perform functional tests prior to each use. These tests are described in Performance Checks, Section 3.1
- While cleaning the outside of the unit, observe caution so that liquid does not get inside. Matrix by Parker recommends using a damp (wrung toward dry) cloth moistened with a mild soap or a plastic-safe cleaner. Do not spray directly on the case. A hard surface disinfectant may be applied in the same manner.

WARNING

Before cleaning the unit, disconnect the DIGITAL MDM mixer's power cord from the electrical power supply.

CAUTION

DO NOT submerge the unit—use a damp cloth.

3.3 Fuse Replacement in Domestic, 115–120 V

1. To replace a blown fuse, turn the unit off, disconnect power to the unit by unplugging the power cord from the wall, and then remove the power cord from the input connector on the rear of the unit.
2. Remove the fuse compartment, as shown in Figure 25.
3. Remove the blown fuse from its clip and replace with a 5mm x 20mm cartridge fuse, rated 2.5 amp, 250 volt, slo-blo (time delay), part number 63882537.

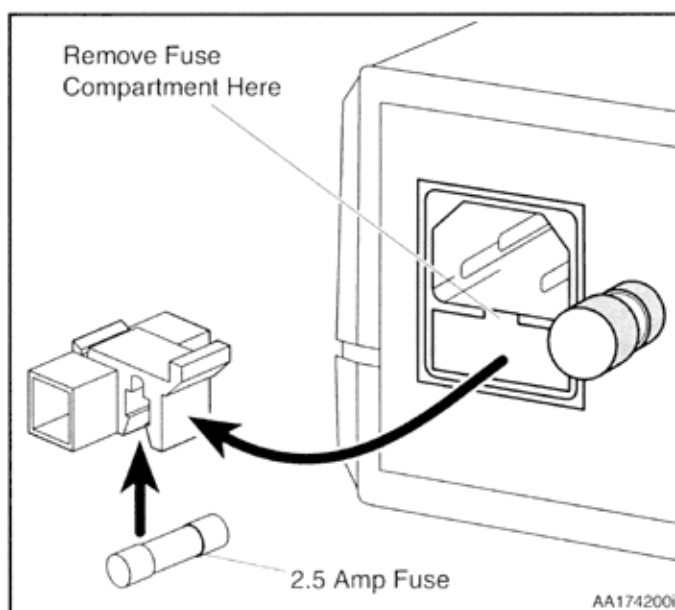


Figure 25. Domestic Fuse Replacement.

3.4 Fuse Replacement in International, 220–240 V

1. To replace a blown fuse, turn the unit off, disconnect power to the unit by unplugging the power cord from the wall, and then remove the power cord from the input connector on the rear of the unit.
2. Open the fuse compartment, as shown in Figure 26.
3. Remove each blown fuse from its clip and replace it with a 5mm x 20mm cartridge fuse, rated 2.5 amp, 250 volt, slo-blo (time delay), part number 63882537. Two fuses are required for the unit to operate.

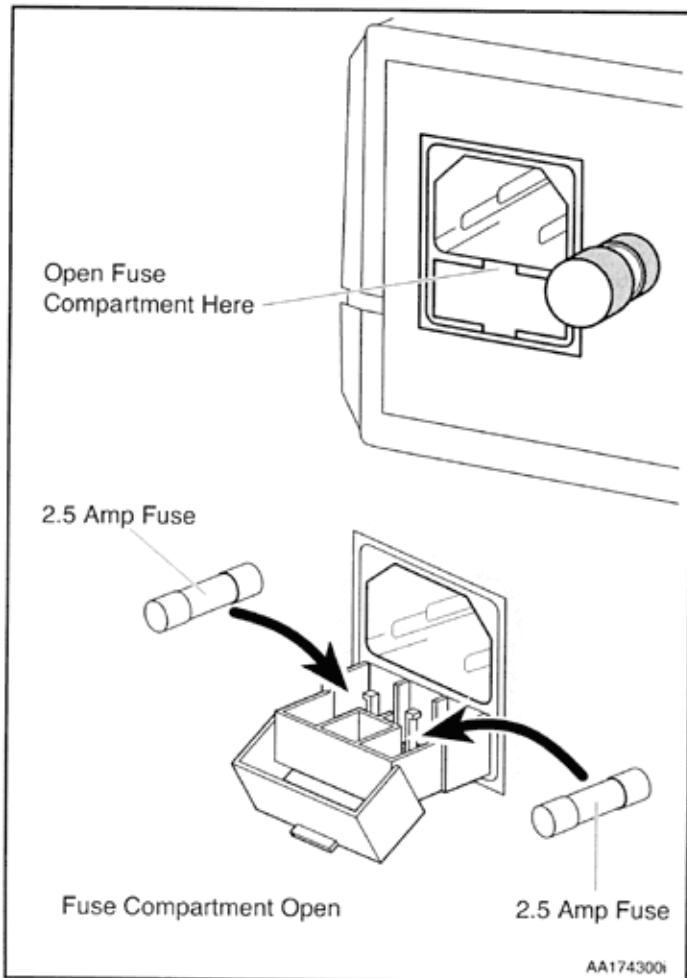


Figure 26. International Fuse Replacement.

CAUTION

Do not attempt to repair the unit or replace any parts other than those noted in the replacement parts section.

Section 4 Specifications

4.1 Physical

Dimensions: 8" W x 5.5" H x 10" D
 Weight: 6 lbs.

4.2 Fittings

Fresh Gas Outlet: 15mm ID x 22mm OD
 Nitrous Oxide Inlet: Male DISS CGA 1040
 Oxygen Inlet: Male DISS CGA 1240

4.3 Environmental

Storage Temperature: -10°F to 120°F
 (-17°C to 48°C)
 (Allow to stabilize to room temperature before operating.)
 Operating Temperature: 72°F nominal (22°C)
 Humidity: Ambient, noncondensing

4.4 Gas Supply

4.4.1 Oxygen Inlet

Pressure Requirements: 50 to 55 psi
 Flow Requirements: 30 LPM minimum flow

NOTE

A minimum oxygen flow of 120 LPM is required when using the optional Demand Valve Resuscitator.

4.4.2 Nitrous Oxide Inlet

Pressure Requirements: 50 to 55 psi
 Flow Requirements: 10 LPM minimum flow

4.5 Gas Delivery

Oxygen Flush: 10 to 30 LPM (20 LPM nominal @ 50 psi input)
 Minimum Nitrous Oxide Concentration: 00%
 Maximum Nitrous Oxide Concentration: 70%
 Minimum Oxygen Concentration: 30%
 Maximum Oxygen Concentration: 100%
 Flow Range @ 100% Oxygen: 1.0 to 9.9 LPM
 Flow Range @ Any % Mixture: up to 9.9 LPM†
 (†Low end flow limited by 1.0 LPM oxygen limit)

4.6 Electrical (Domestic 115–120 V)

Input Voltage Supply: 115 VAC nominal
 Input Line Frequency: 60Hz
 Circuit Protection: 2.5 amp time delay fuse (Matrx PN 63882537)

4.7 Electrical (International 220–240 V)

Input Line Frequency: 50–60Hz
 Circuit Protection: two, 2.5 amp time delay fuses (Matrx PN 63882537)

Performance and Accuracy

Controlled Variable	@ N ₂ O flow > 1.0 LPM 50 to 55 psi sources	@ N ₂ O flow < 1.0 LPM* 50 to 55 psi sources
Percent O ₂	± 5 percentage points	+20 -10 percentage points
Oxygen Flow Rate	From 1.0 to 9.9 LPM ± 0.5 LPM	From 1.0 to 9.9 LPM ± 0.5 LPM
Nitrous Oxide Flow Rate	From 1.0 to 7.0 LPM ± 0.5LPM	From 0.0 to 1.0 LPM +0.5 -0.9 LPM
Pure Oxygen Flush	20 LPM nominal @ 50psi input	20 LPM nominal @ 50psi input

* The measurable threshold of nitrous oxide flow for the DIGITAL MDM® mixer is 1 LPM. Below this point, the nitrous oxide flow delivered is a calculated flow.

Section 5 Replacement Parts

The following replacement parts may be obtained from Matrx by Parker:

Matrx Part No.	Description	
20150000	Power Cord (USA)	
10545100	Instruction Manual	
63882537	Fuse: 2.5 amp, 250 volt, slo-blo (time delay) 5 mm by 20 mm (Note: international 220-240) volt units require two fuses)	
91515192	Matrx scavenger	Adult
91515193	Matrx scavenger	Medium
91515194	Matrx scavenger	Pediatric
91316043	3 Liter breathing bag	
<hr/>		
	Hoses	
	Ohio Male Quick Connect	
92305126	Ohio Quick Connect male X DISS female	Oxygen
92305127	Ohio Quick Connect male X DISS female	Nitrous oxide
92515063	Ohio Quick Connect male X 1/4 NPT	Vacuum
	DISS (Diameter Indexed Safety System)	
92305110	DISS female X DISS female	Oxygen
92305111	DISS female X DISS female	Nitrous oxide
92305248	DISS female X DISS female	Vacuum
	DISS Hand-I-Twist	
92305288	DISS Hand-I-Twist female X DISS female	Oxygen
92305289	DISS Hand-I-Twist female X DISS female	Nitrous oxide
92515064	DISS Hand-I-Twist female X 1/4 NPT	Vacuum
	DISS X Ohio Female Quick Connect	
92305118	DISS female X Ohio QC female	Oxygen
92305119	DISS female X Ohio QC female	Nitrous oxide
92305353	DISS female X Ohio QC female	Vacuum