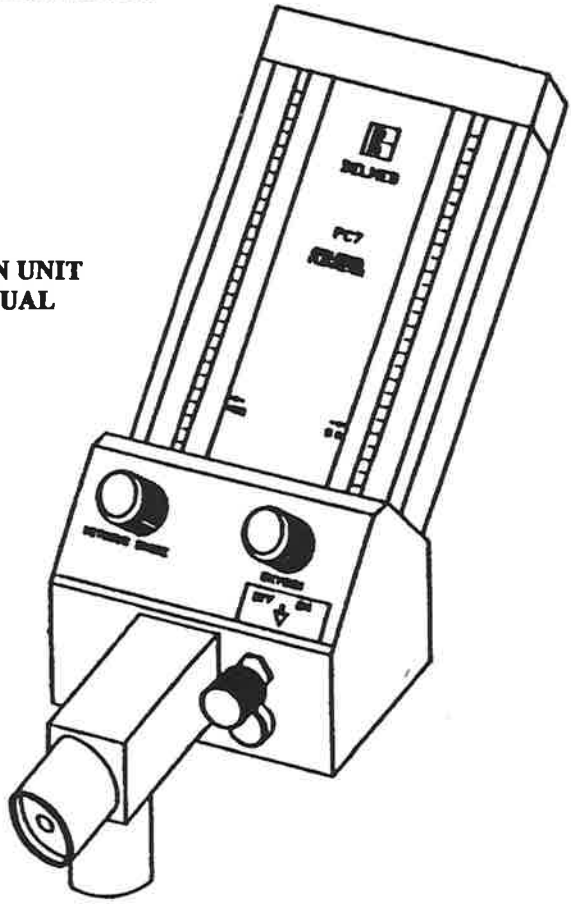
BELMED INC.
887 Delta Rd. • Red Lion PA 17356

# PC7 O2/N2O SEDATION UNIT
# INSTRUCTION MANUAL



# INDEX

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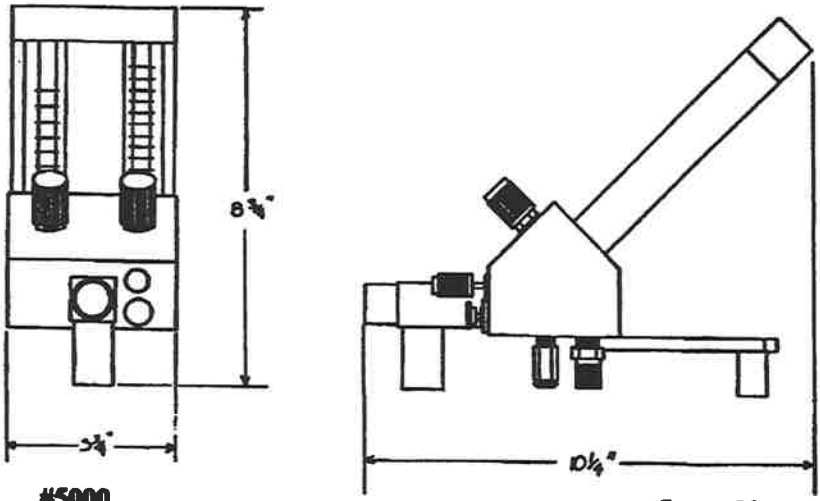



#5000

*figure 23*

**FLOWMETER HEAD OVERALL DIMENSIONS**

BELMED INC.

PC7194

## PC7 02/N20 SEDATION UNIT

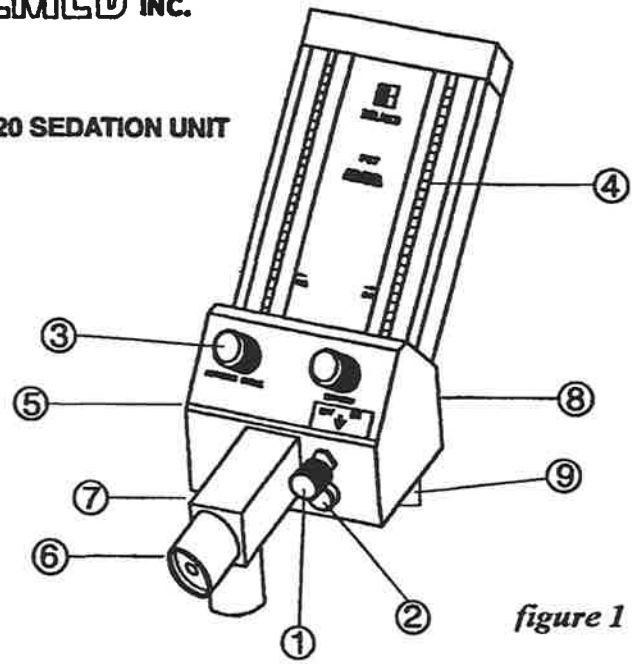



*figure 1*

**1. ON OFF CONTROL.** PROVIDES A 3 LITER MINIMUM 02 FLOW WHEN UNIT IS TURNED ON.

**2. OXYGEN FLUSH.** PROVIDES RAPID FLOW OF OXYGEN DIRECTLY INTO PATIENT BREATHING CIRCUIT.

**3. MICROMETER NEEDLE VALVES.** ALLOW QUICK, RESPONSIVE FLOW ADJUSTMENTS. NEEDLE VALVE DESIGN PREVENTS SEAT DAMAGE.

**4. FLOWMETER TUBES FOR 02 AND N20** ARE CALIBRATED IN LITERS PER MINUTE AT 1/2 LITER INCREMENTS. A MINIMUM OF 30% 02 IS ACHIEVED BY LIMITING FLOWS TO A MINIMUM OF 3 LITERS FOR 02 AND A MAXIMUM OF 7 LITERS FOR N20.

**5. OXYGEN FAIL-SAFE.** AUTOMATICALLY AND PROPORTIONALLY REDUCES N20 IN THE EVENT 02 IS REDUCED OR SHUT OFF.

**6. NRB CHECK VALVE.** PREVENTS THE REBREATHING OF EXPIRED GASES AND GUARDS AGAINST C02 BUILD-UP.

**7. EMERGENCY AIR VALVE.** ENTRAINS AMBIENT AIR INTO THE BREATHING CIRCUIT IN THE EVENT FLOW FROM THE MACHINE IS LOST FOR ANY REASON.

**8. SOLID GAS CONTROL BLOCK.** DESIGNED TO ELIMINATE INTERNAL GAS LEAKS.

**9. 02 QUICK CONNECT.** PROVIDES CONNECTION OF AUXILIARY RESUSCITATION EQUIPMENT.

# TEST PROCEDURE

## Function test

**Note: Failure of the following tests will require unit to be returned for service. These tests must be conducted periodically to insure proper operation. *Refer to figure 1.***

**Test: Connect unit to a 50psi gas source. Check to make sure needle valves (3) are turned off. Gently turn both valves clockwise until resistance is felt.**

**(A) Minimum oxygen: Turn on unit by pushing and turning on/off knob (1). A 3 liter flow of oxygen should be produced through O2 tube (4).**

**(B) Oxygen flush: Depress O2 flush button (2) to determine a rapid flow of oxygen into breathing circuit. Flow should stop when button is released.**

**(C) Maximum nitrous: Turn N2O needle valve wide open (3). N2O flow should not exceed 7 LPM.**

**(D) Fail safe test: Establish a 7 LPM N2O flow and 3 LPM O2 flow. Disconnect O2 supply source or squeeze O2 hose shut with your hand to interrupt O2 supply. Both O2 and N2O flows should stop flowing.**

**(E) Air intake valve: Attach breathing bag and corrugated breathing tube to proper ports of tee. Unit should be turned off and bag flattened. Inhale through breathing tube. Room air must enter through air intake (7) located on bottom of breathing circuit tee.**

**(F) NRB valve: Connect corrugated tube to front of tee (6) and attempt to exhale through tube. Valve should close preventing exhaled air from going into tube.**

## Maintenance

1. **Ascertain a proper gas supply pressure of 50psi.**
2. **Inspect machine hoses and connections for damage, wear and leaks daily.**
3. **Perform functional tests periodically**
4. **Keep unit clean. Unit and accessories may be cleaned with activated dialdehyde (cidex) manufactured by Arbrouk, inc. Follow manufacturers directions for use.**

**Service: All service and repair must be accomplished at Belmed, Inc. Have your dealer return unit to our facility.**

**Important: Traceability/warranty registration**

**Medical device legislation of 1976 mandates traceability of this equipment. Please fill out and return warranty card.**

## OPERATION

1. **Turn unit on (100% O2) and set the oxygen flow rate to equal total gas flow (minute volume) to be administered to patient. Maintain breathing bag about 2/3 full.**
2. **Apply nasal hood to patient.**
3. **Gradually introduce nitrous oxide flow rate while proportionally decreasing oxygen flow rate (maintaining total gas flow) until determined patient ratio is reached.**
4. **If oxygen is required, press oxygen flush button.**
5. **To remove patient from conscious sedation, return to 100% oxygen flow rate established at beginning of procedure.**
6. **When procedure is complete, remove inhaler from patient, and shut off machine.**

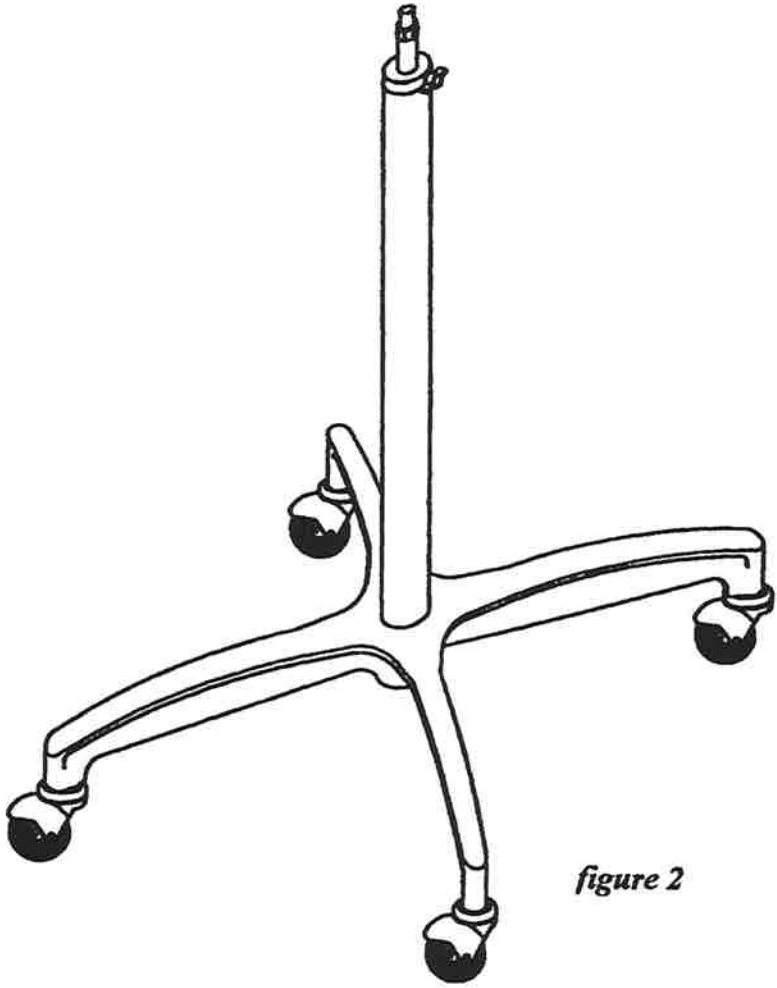
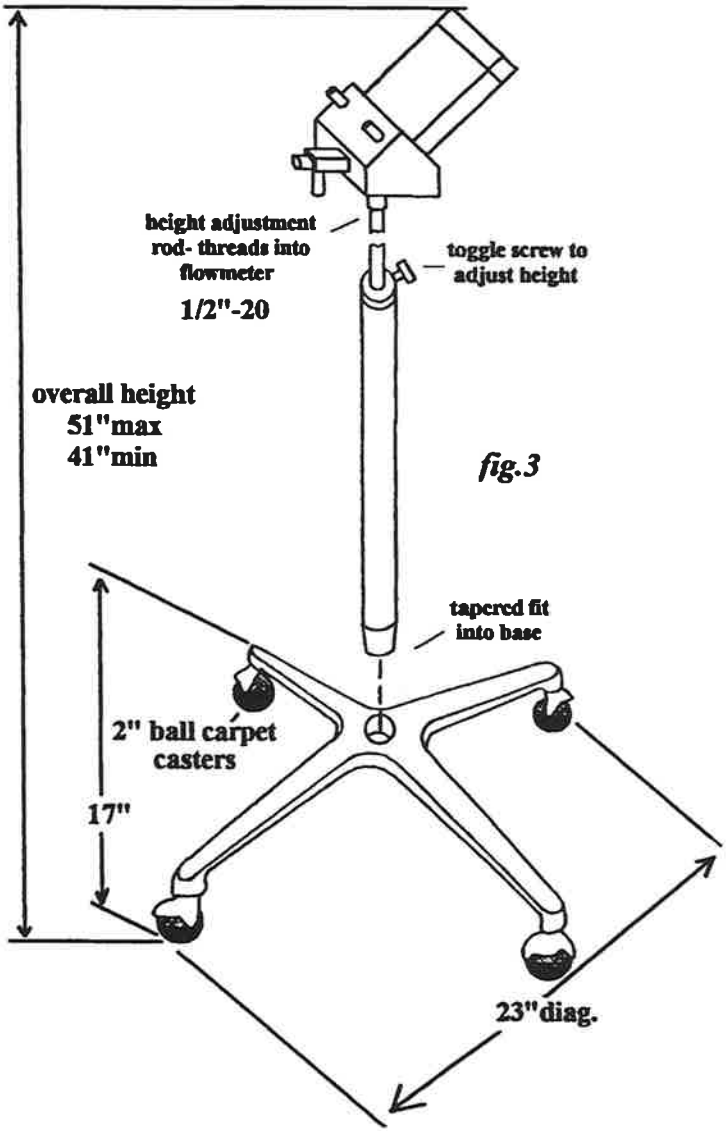


*figure 2*

**#5010- MOBILE STAND**




**MOBILE STAND DETAIL**

# INSTALLATION INSTRUCTIONS
## #5002 FLOWMETER, MOBILE STAND

**Mobile stand assembly: Remove packing from base and column. Push tapered end of column into base (*fig. 3*).**

**Flowmeter attachment: Remove ½in. dia. Height adjustment rod from column. Hand tighten threaded end of rod into adapter located on bottom of flowmeter. Lock rod into flowmeter adapter by tightening nut with ¾in. open end wrench while holding rod. Replace rod into column and tighten toggle screw at desired height (*fig. 4*).**

**Rubber goods: Connect breathing bag to bottom of bag tee. Connect corrugated breathing tube to front of tee. Connect nasal inhaler to other end of breathing tube (*fig. 6-7, pg. 11-12*).**

**Connect gas supply hoses to DISS fittings located on bottom of flowmeter (*fig. 5* ).**

**Test machine- see page 4.**

**Note: if optional O2 resuscitator is purchased with machine, plug hose end into female quick connect located on bottom of machine. Depress button to determine O2 flows through resuscitator. For demand flow test, breathe through face mask (*see pg. 21*).**

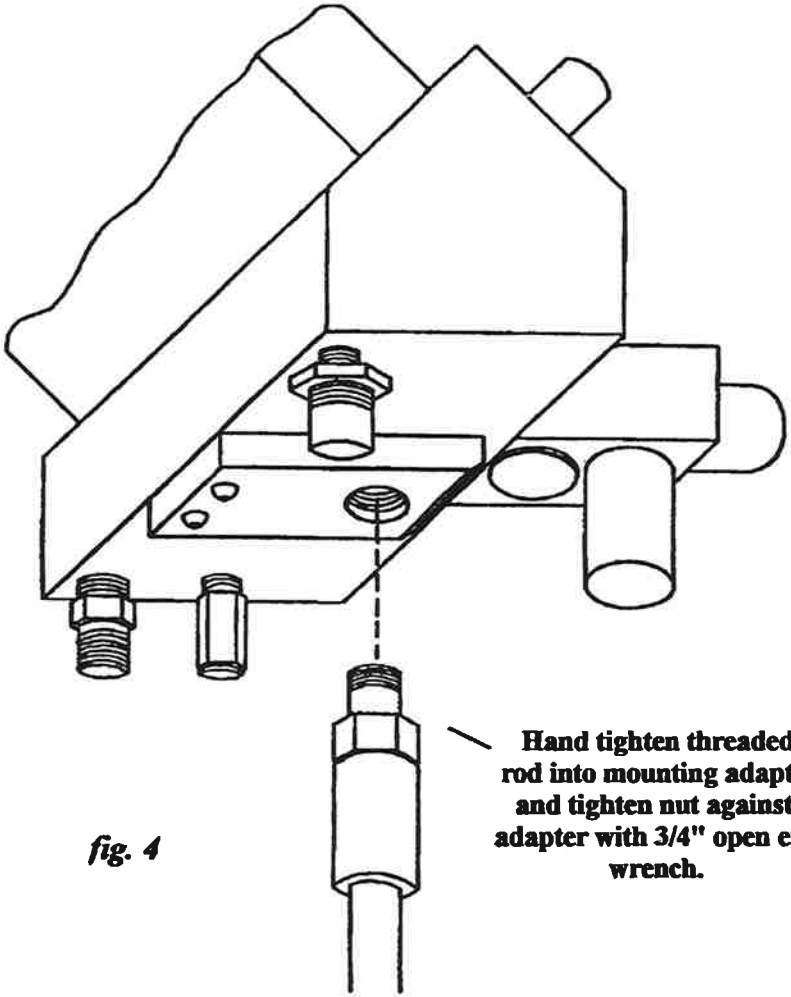



*fig. 4*

**FLOWMETER CONNECTION TO MOBILE STAND**

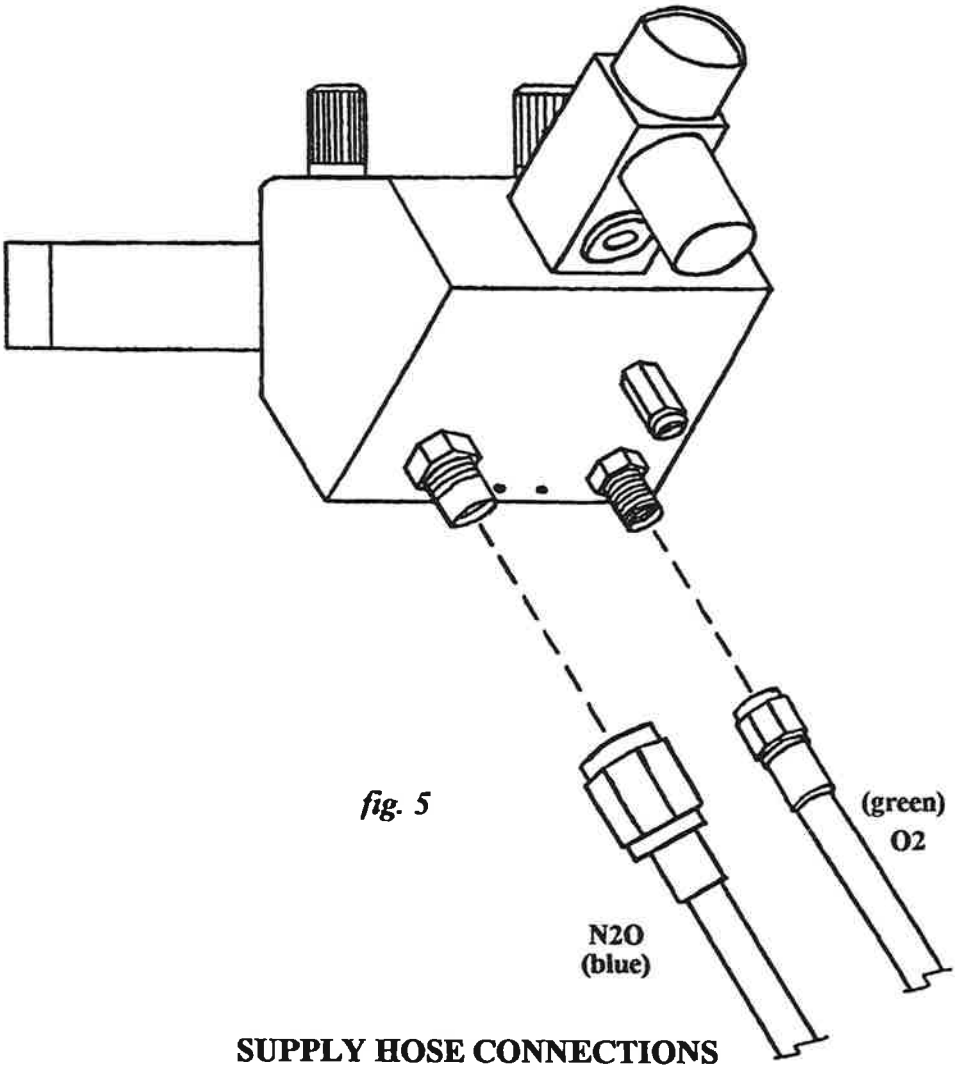



*fig. 5*

**SUPPLY HOSE CONNECTIONS**

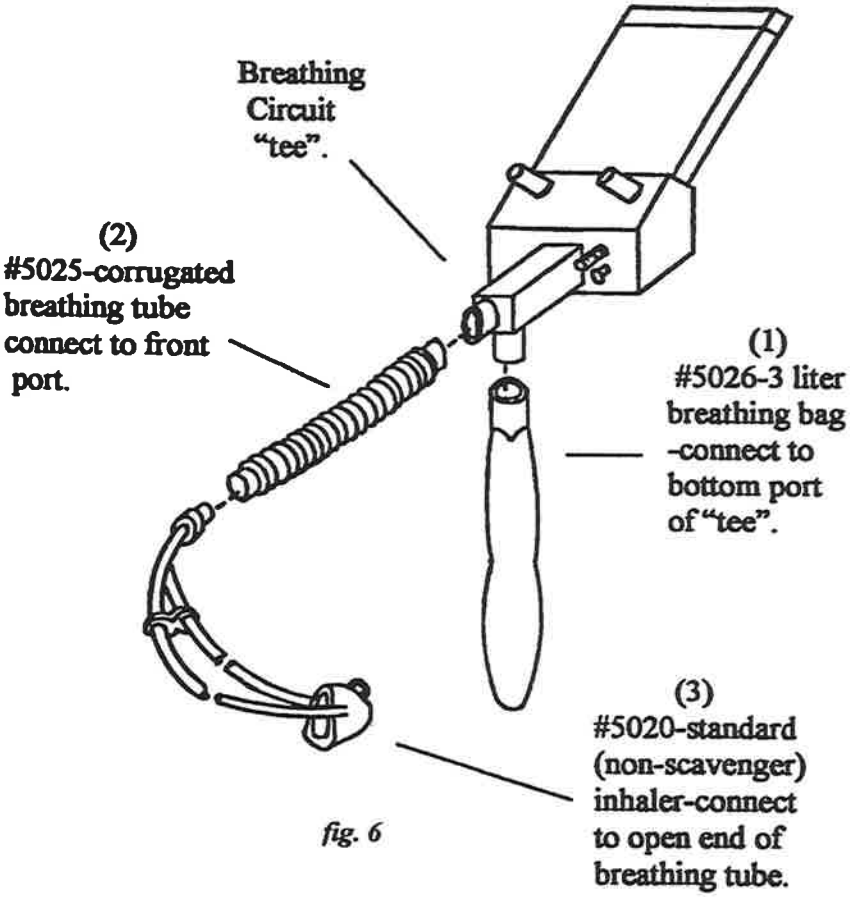



*fig. 6*

**CONNECTION OF NON-SCAVENGING RUBBER GOODS TO FLOWMETER**

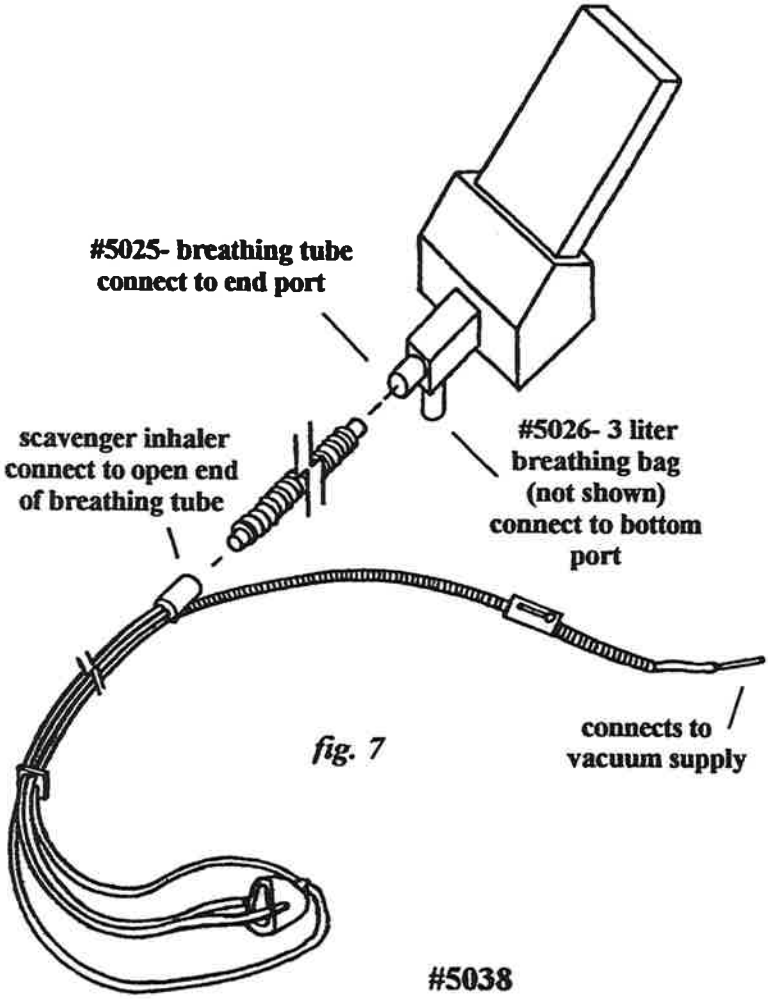



*fig. 7*

**SCAVENGER RUBBER GOODS ASSEMBLY**

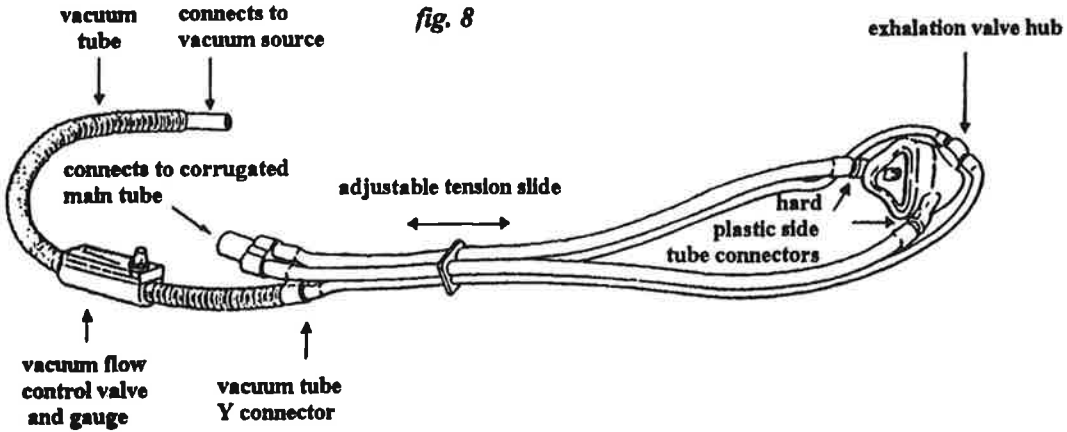
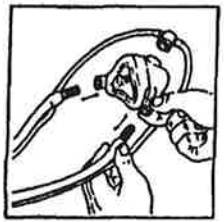


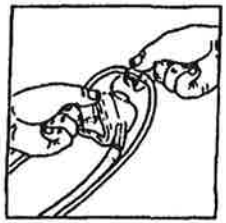

*fig. 8*

**#5038**

**SCAVENGER DETAIL**



1. To change hoods after each patient: Disconnect hood from exhalation valve hub and from white side tube connectors (leaving white side tube connectors in side tube).



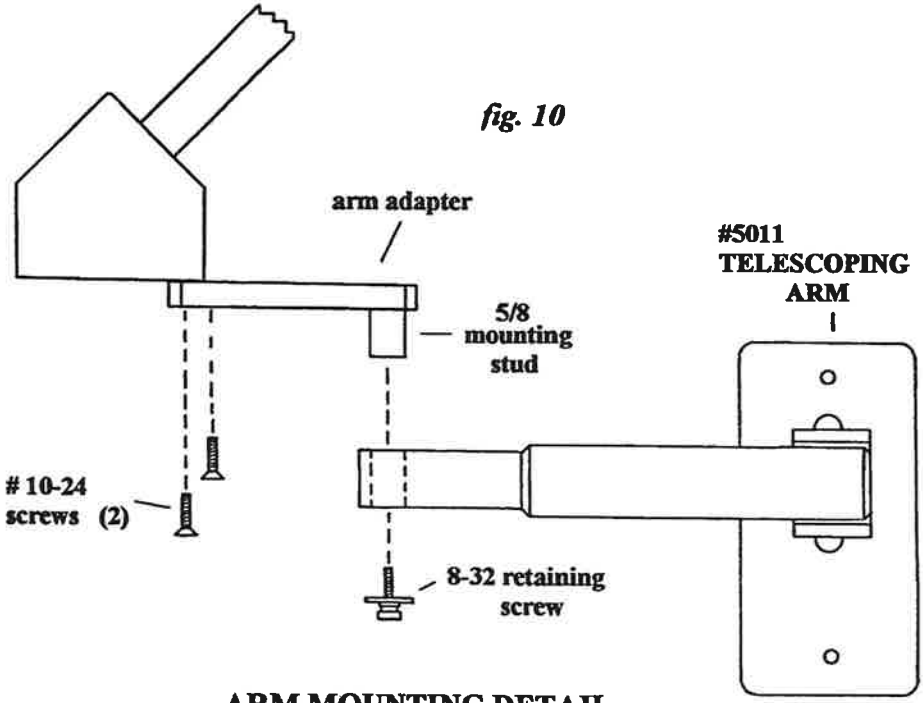
2. Attach a fresh hood by placing one or two fingers inside top of hood. Gently push exhalation valve hub into exhalation assembly until ring snaps into groove. If you push too far, valve will be closed off. Then insert white side tube connectors into hood, being sure small tubes are beneath larger tubes for proper fit.

3. To begin vacuum flow, turn black knob on vacuum gauge very slowly to the left or right until the arrow points straight up and the ball rises to the top of gauge. to adjust flow, turn knob either to the left or right until the ball drops into the yellow reference area. This control can also be used as the vacuum shutoff; simply turn the black knob very slowly until the ball falls to the bottom of the gauge.

*fig. 9*

## SCAVENGER USE

*fig. 10*




**ARM MOUNTING DETAIL**

# INSTALLATION INSTRUCTIONS
## #5003 FLOWMETER, TELESCOPING WALL ARM

**Arm bracket: Attach telescoping arm to wall stud or other similar firm support with lag screws *(fig. 11, pg. 17)*.**

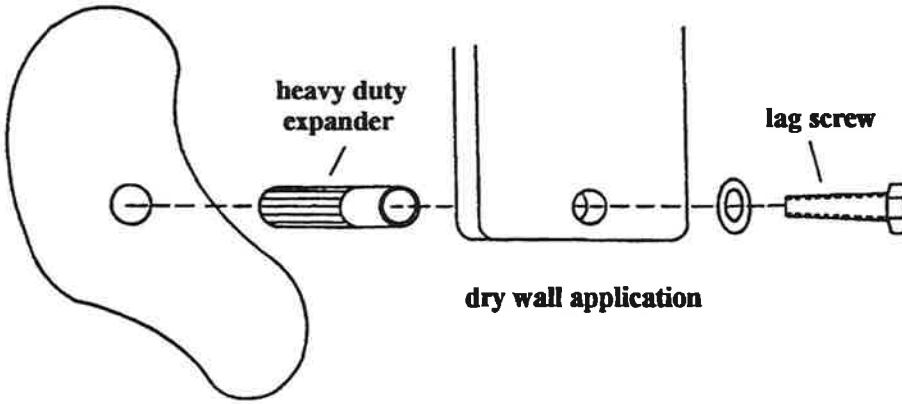
**Flowmeter attachment: Remove screw and washer assembly from stud on flowmeter mount and attach flowmeter to arm bracket by inserting stud into hole located on arm. Replace screw and washer assembly into stud. Telescoping arm will extend flowmeter approximately a max. of 24in. from mounting surface *(fig. 10, 12)*.**

**Rubber goods: Connect breathing bag to bottom of bag tee. Connect corrugated breathing tube to front end of tee. Connect nasal inhaler to other end of breathing tube *(fig. 6, 7-pg. 11-12)*.**

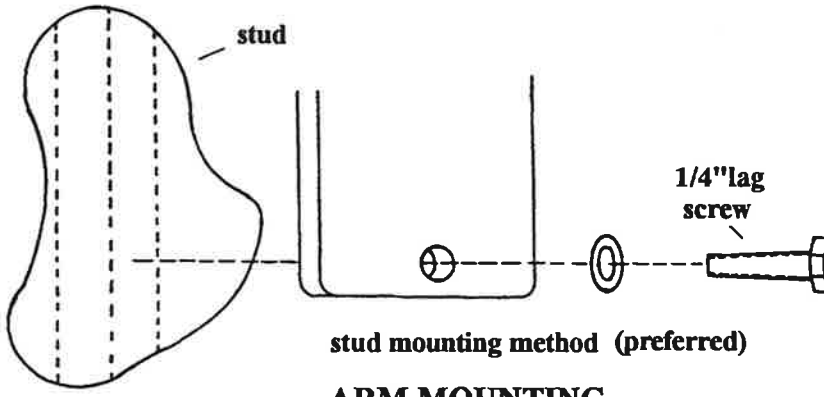
**Connect gas supply hoses to DISS fittings located on bottom of flowmeter *(fig. 5)*.**

**Test machine- see page 4.**

**Note if optional O2 resuscitator is purchased with machine, plug hose end into female quick connect located on bottom of machine. Depress button to determine O2 flows through resuscitator. For demand flow test, breathe through face mask *(pg. 21)*.**



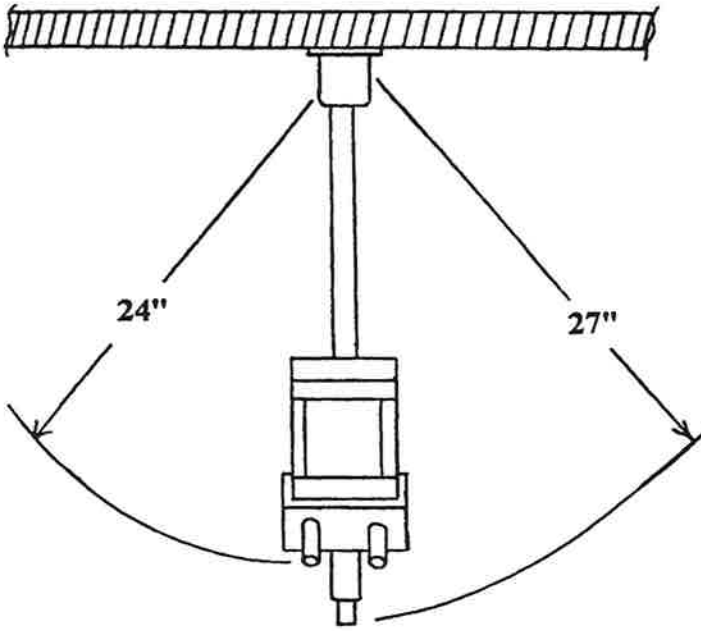

dry wall application




stud mounting method (preferred)

**ARM MOUNTING**

*fig. 11*




**TOP VIEW OF TELESCOPING ARM SYSTEM**

**Extends controls up to approximately 24" from wall surface.**

*fig. 12*

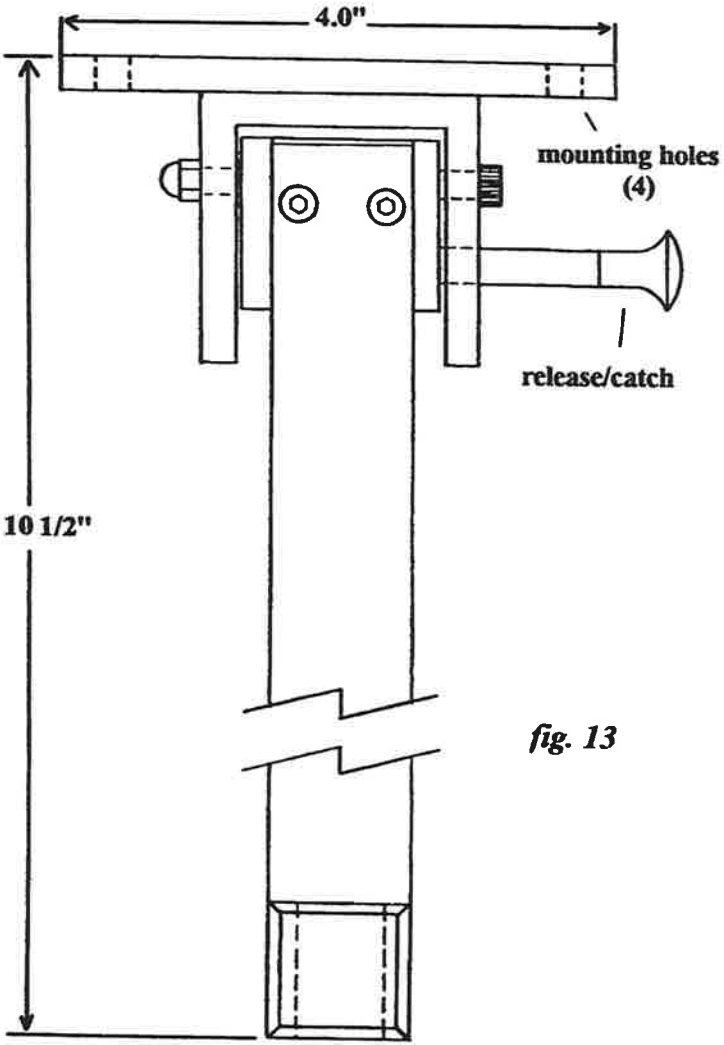
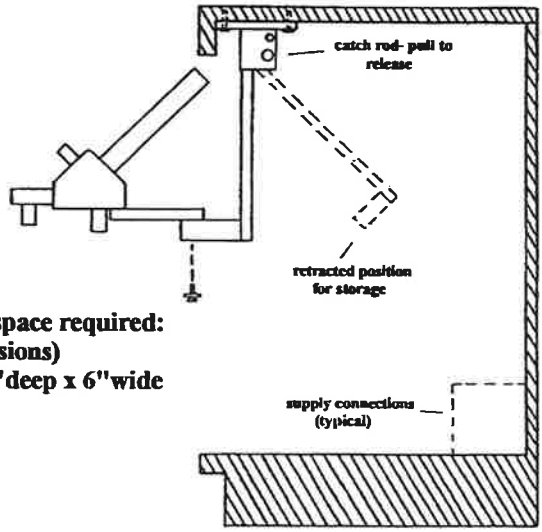



*fig. 13*

**#5012- CABINET BRACKET**

## #5012 CABINET HINGE BRACKET INSTALLATION

**Mount bracket as shown to roof of cabinet with 4 lag type screws up to 1/4" diameter that is suitable for type cabinet construction and insures that bracket will not loosen. Note: If material in top of cabinet is too thin to securely attach bracket, it may be necessary to first attach a piece of 1"x 6" board to cabinet and attach cabinet bracket to board.**




**Free cabinet space required:**
**(inside dimensions)**
**22"high x 12"deep x 6"wide**

*fig. 14*

CABINET BRACKET DETAIL

**Operation: To release bracket for use, from it's retracted position, hold flowmeter with one hand and release catch located on upper right of bracket by pulling knob to right. Allow flowmeter to gently come forward and release pull knob. Catch will release itself when the use position is reached. To stow unit, pull knob to release catch and push unit back, release knob. Unit will latch itself when stowed position is reached.**

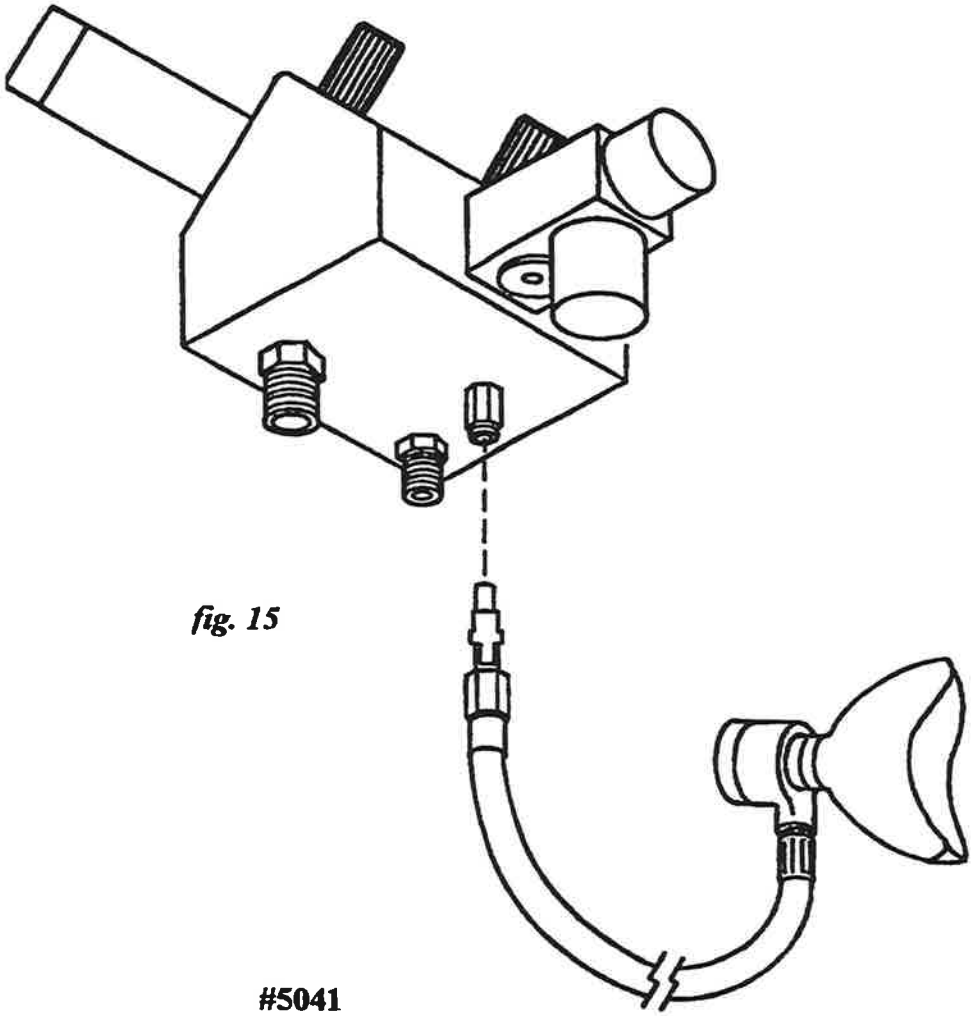


*fig. 15*

**#5041**

**OPTIONAL O2 DEMAND VALVE**
**RESUSCITATOR QUICK CONNECT**

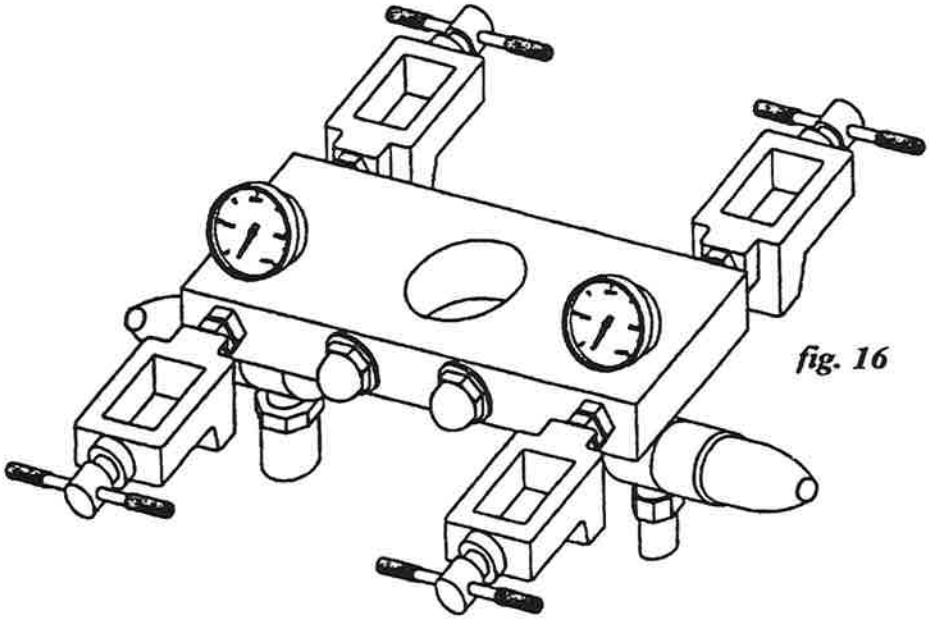


*fig. 16*

**#5014 - 4 CYLINDER YOKE BLOCK**

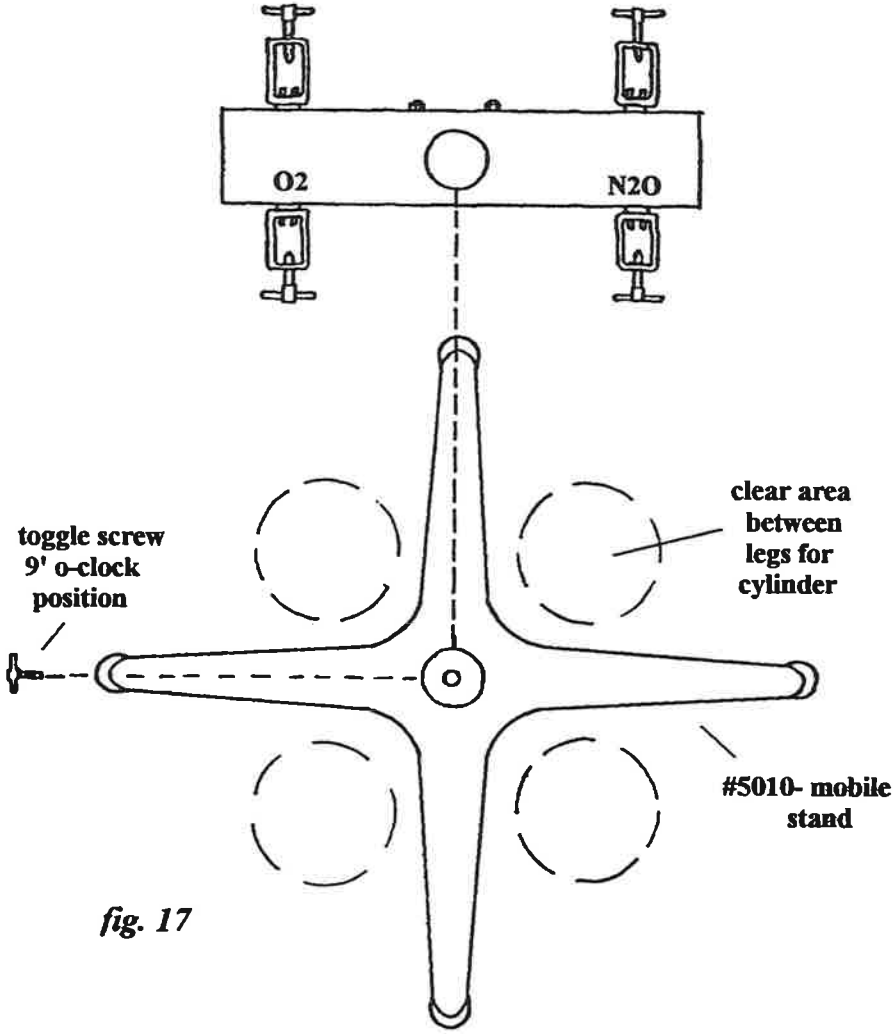



*fig. 17*

**#5014- 4 CYLINDER YOKE BLOCK MOUNTING ARRANGEMENT**

# INSTALLATION INSTRUCTIONS

## ATTATCHMENT OF #5014 – SMALL CYLINDER YOKE BLOCK FOR 4 CYLINDERS

**Slide yoke block onto column from tapered end of column to a point 2in. from top of column to top of block. Turn yoke block so that toggle screw in top of column is centered over N2O side of block. Tighten the two cap nuts on front of yoke block (*fig. 17*).**

**Attachment to base: Align yoke parallel over two legs of base to allow clearance for cylinders between base legs. Push tapered end of column into center hole of base (*fig. 17*).**

**Flowmeter attachment: Screw ½in. height adjustment rod into adapter located on bottom of flowmeter head until it bottoms against flowmeter. Hold adjustment rod with hand while tightening nut on adjustment rod with ¾in. open end wrench. Slide adjustment rod into opening in top of column. Tighten toggle at desired height (*pg. 9*).**

**Attach hoses from DISS fittings on yoke block to DISS fittings on bottom of flowmeter head (*pg. 31*).**

**Attach rubber goods: Connect breathing bag to bottom of bag tee, corrugated breathing hose to front of tee and nasal inhaler to other end of breathing tube (*pg. 11-12*).**

**Attach cylinder wrench with chain to yoke block so that it will reach to all cylinders. Cylinder plug may be attached to yoke block or stored away as desired.**

**Attach cylinders into yoke blocks, making sure that appropriate cylinders match gasses of yoke (*pg. 31*).**

**Test machine for proper operation. (See page 4)**

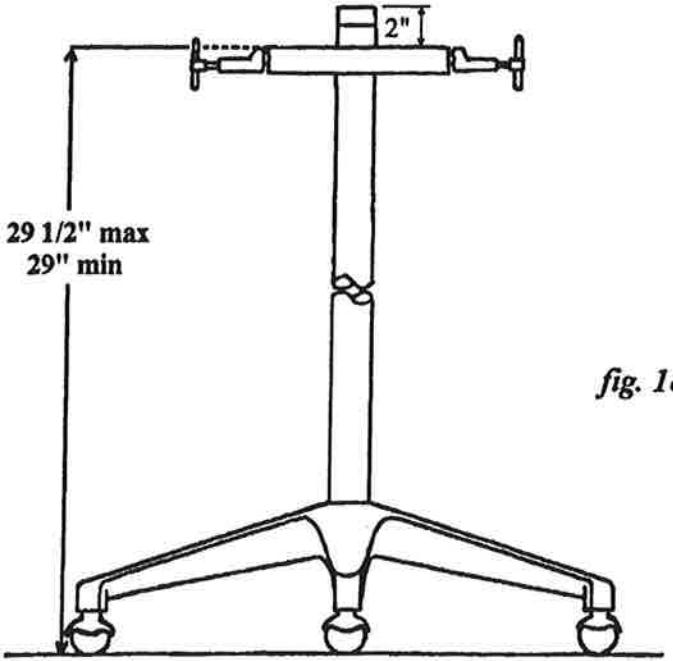
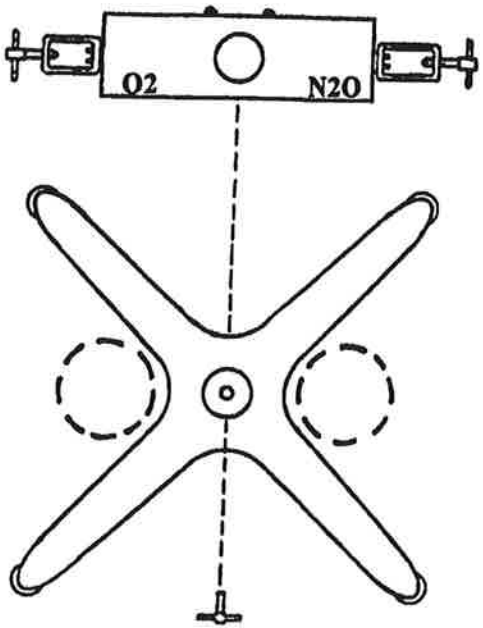



*fig. 18*




**(B) Clamp yoke block 2" down from top of pole.**

**(A) Locate yoke block over base to allow clearance for cylinders between legs.**

**#5013- 2 CYLINDER YOKE BLOCK MOUNTING ARRANGEMENT**

# INSTALLATION INSTRUCTIONS

## #5013 – SMALL CYLINDER YOKE BLOCK FOR TWO CYLINDERS

**Slide yoke block onto end of column from bottom (tapered) end of column to a point 2 inches from top of column to top of yoke block. Turn yoke block so that toggle screw in top of column is at 6' o-clock position as shown in fig. 18. Tighten the two cap nuts on front of yoke block.**

**Column yoke attachment to base: Align O2 and N2O yokes between legs of base to allow for cylinder clearance and push tapered end of column into center hole in base (*fig 18- A*).**

**Flowmeter attachment to mobile stand: Screw ½in. adjustment rod into adapter located on bottom of flowmeter until hand tight. Hold adjustment rod with one hand while tightening nut on adjustment rod with ⅝in. open end wrench. Insert adjustment rod into ½in. diameter opening in top of column. Tighten toggle at desired height (*pg. 9*).**

**Attach O2 and N2O hoses to DISS fittings on yoke block and DISS fittings on bottom of flowmeter head (*pg. 31*).**

**Attach rubber goods to flowmeter: Connect breathing bag to bottom of bag tee, connect corrugated tube to front of tee and connect nasal inhaler to other end of corrugated breathing tube (*pg. 11-12*).**

**Attach cylinder wrench w/chain to yoke block so it will reach to both cylinders.**

**Attach small cylinders into yokes making sure appropriate cylinders match bases of yoke (see pg. 28-29).**

**Test machine for proper operation –(see pg. 4).**

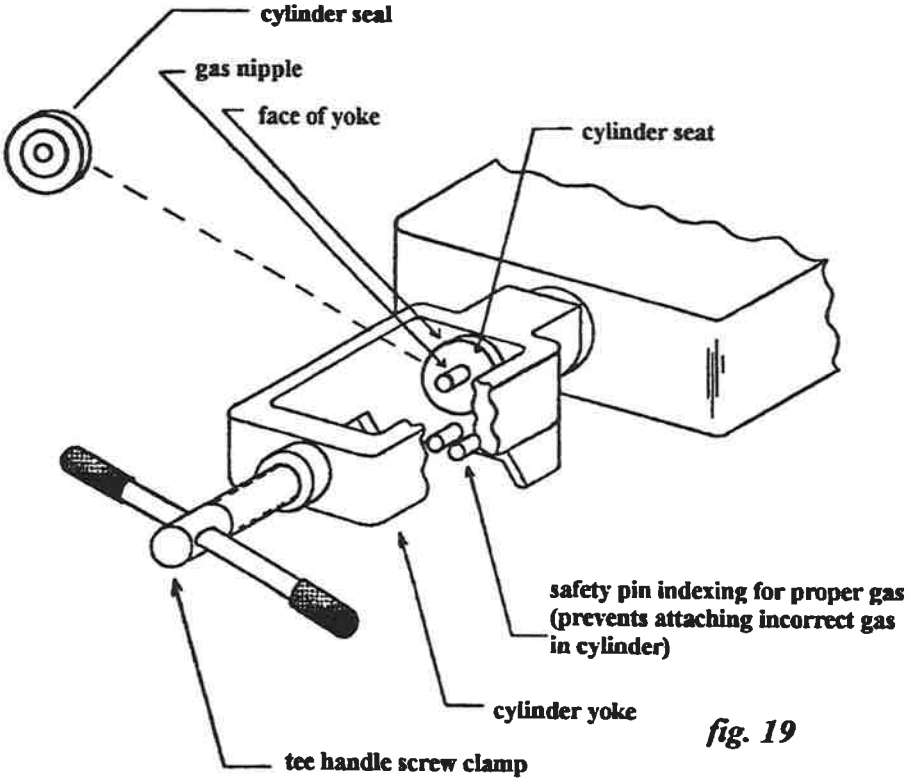



*fig. 19*

**YOKE DETAIL**

# SMALL CYLINDER YOKE BLOCK PROCEDURE

**Introduce "E" or "D" small cylinder into yoke, making sure that the gas and yoke are the same. Note the two index pin holes are facing in, towards yoke block; mate the pins in yoke to holes in cylinder valve and push against seal in yoke.**

**Tighten cylinder into yoke by turning yoke tee handle clockwise. Complete this procedure with any additional cylinders if necessary.**

**Using cylinder wrench supplied with yoke block, attach to oblong shaped tip located on top of cylinder valve. Turn ½ turn counter-clockwise (left) to open (a clockwise turn to right will close cylinder valve).**

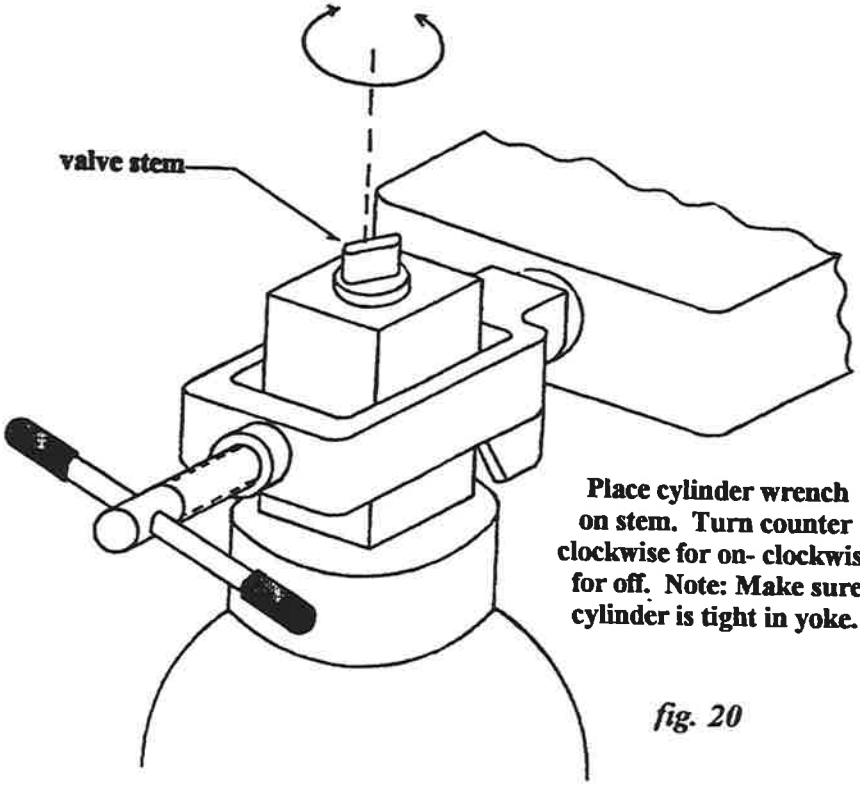
**Flowmeter is now ready to operate. Always turn cylinder valves off when not using machine.**

**Replace O2 cylinders when gauge pressure is 200 psi (full cylinder pressure is approximately 2000 psi).**

**Replace N2O cylinders when gauge pressure is 500 psi (full N2O cylinder pressure is 750 psi).**

**A plug is supplied to be used in yoke in place of one cylinder; in the event only one cylinder of gas is used.**

**Note: Refer to figs. 19 through 22.**




**Place cylinder wrench on stem. Turn counter clockwise for on- clockwise for off. Note: Make sure cylinder is tight in yoke.**

*fig. 20*

**SMALL CYLINDER ON/OFF**

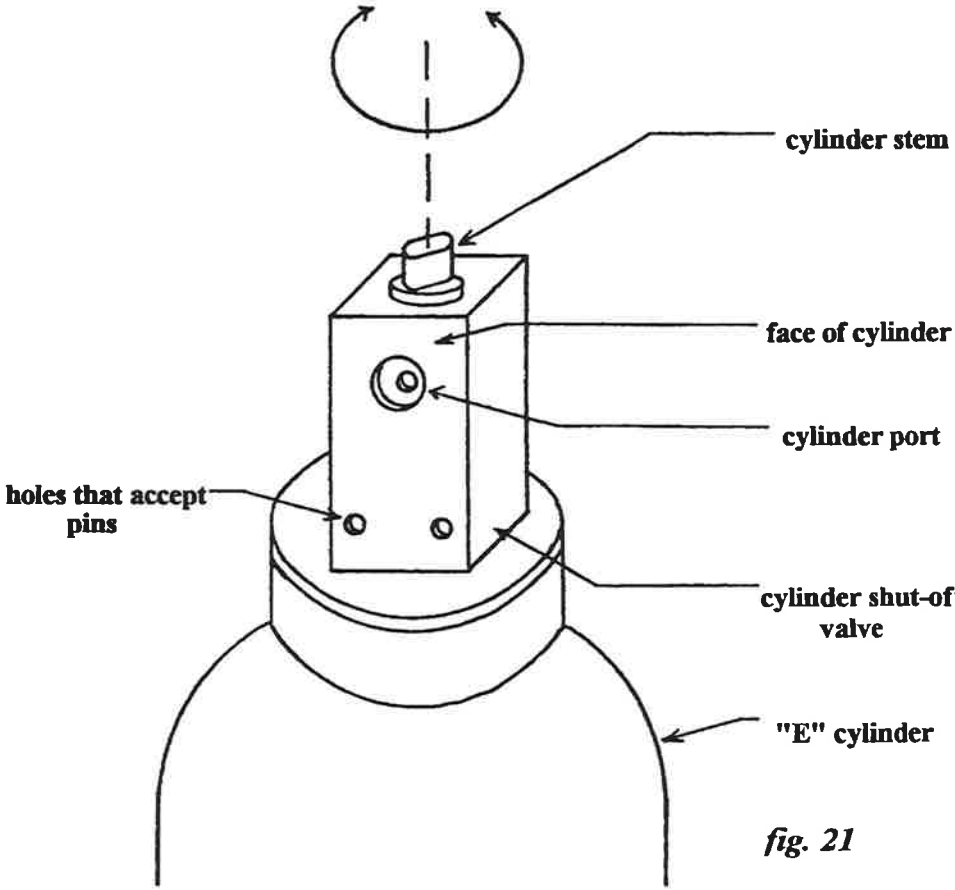



*fig. 21*

**SMALL CYLINDER DETAIL**

**2 CYLINDER YOKE BLOCK SHOWN**

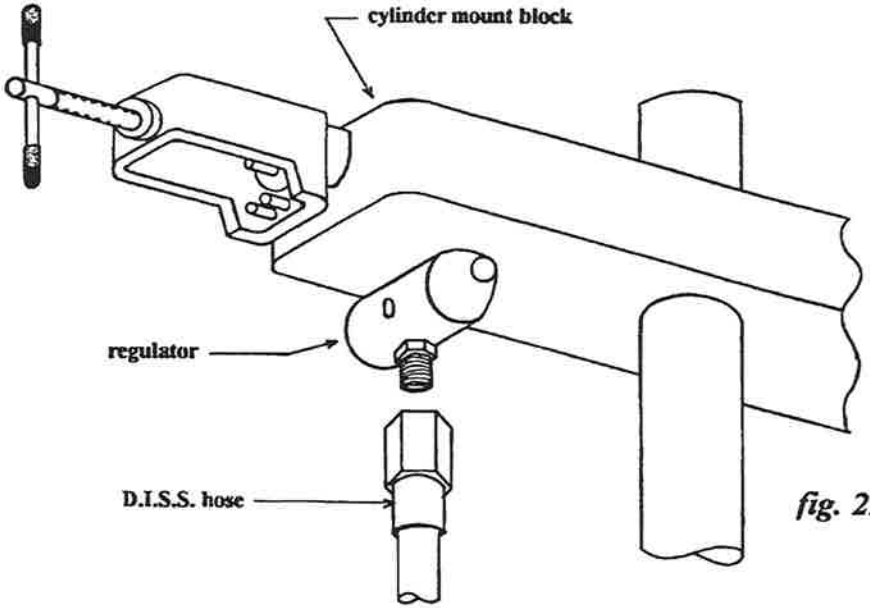
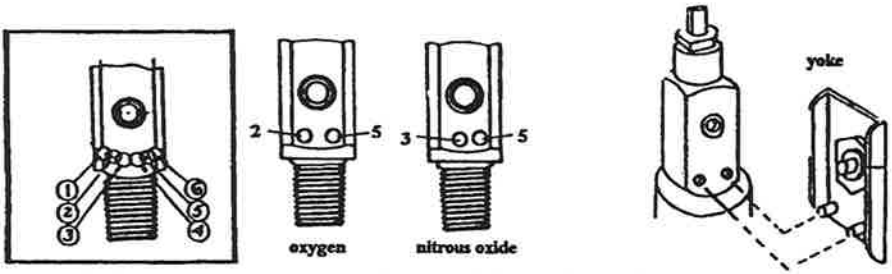



*fig. 22*

**HOSE CONNECTION TO YOKE BLOCK**

## PIN SAFETY SYSTEM




**Small cylinder non-interchangeability is accomplished with the Pin Index System. This system uses two positioning holes on the cylinder valve and two corresponding pins on the yoke. The yoke is located on the regulator or machine.**

## PURCHASE RECORD

| MODEL NO. | SERIAL NO. | PURCH. DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

## YOKE BLOCK LEAK TEST

START TEST WITH NO PRESSURE IN SYSTEM, GAUGE ON YOKE BLOCK AT ZERO AND FLOWMETER TURNED OFF. MAKE SURE SUPPLIED CYLINDER SEALS ARE IN PLACE AND CYLINDERS ARE TIGHT IN YOKES. QUICKLY OPEN CYLINDER VALVE MOMENTARILY AND THEN CLOSE CYLINDER VALVE, TRAPPING GAS IN LINES. OBSERVE GAUGE PRESSURE FOR LINE BEING TESTED. GAUGE PRESSURE SHOULD REMAIN CONSTANT WITH NO PRESSURE DROP. IF GAUGE PRESSURE DROPS, RECHECK ALL CONNECTIONS FOR TIGHTNESS. TO ISOLATE LEAKS, WE RECOMMEND OXYGEN SAFE LIQUID LEAK DETECTOR AVAILABLE FROM A PLUMBING SUPPLY HARDWARE STORE SUCH AS ACE. USE AS DIRECTED ON ALL CONNECTIONS, FITTINGS, ETC. RELIEVE SYSTEM PRESSURE AND REPEAT PROCEDURE WITH OTHER CYLINDER(S).

**CYLINDER SEALS**: ARE A SPECIAL METAL/NEOPRENE RUBBER COMPOSITION DESIGNED TO OBTAIN A POSITIVE SEAL QUICKLY AND EASILY. SEALS ARE PERMANENT AND REUSABLE AND SHOULD LAST MANY YEARS. **DO NOT USE PLASTIC SEALS SUPPLIED WITH CYLINDERS FROM YOUR GAS COMPANY.** A SET OF FOUR REPLACEMENT SEALS CAN BE OBTAINED THROUGH YOUR DEALER. BELMED PART NUMBER 5014-35.

## WARRANTY

Definition of a Warranty Return: A product or part covered by the Belmed, Inc. warranty, that fails while the terms of the warranty are in effect.

THIS WARRANTY IS GIVEN IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

No statement or claim about the product by any employee, agent, representative or dealer of Belmed, Inc. shall constitute a warranty by Belmed, Inc. or give rise to any liability or obligation of Belmed, Inc.

Subject to the next sentence Belmed, Inc. warrants that each product or part shall be free from defects in workmanship and materials, under normal use and with appropriate maintenance, for one (1) year from the date of delivery to customer. For plastic, rubber and disposable parts or items Belmed, Inc. warrants only that each such part and item shall be free from defects in workmanship and materials at the time of delivery to the customer.

Belmed, Inc.'s obligation for breach of this warranty, or for negligence or otherwise, shall be strictly and exclusively limited to Belmed Inc.'s choice of repair or replacement of the product or part. This warranty shall be void for any product on which the serial number has been altered, defaced or removed.

Belmed, Inc. shall not be liable for any damage, injury or loss arising out of the use of the product, whether as a result of a defect in the product or otherwise, if, prior to such damage, injury or loss, the product was (1) damaged, misused, or misapplied; (2) repaired, altered or modified by persons other than Belmed, Inc. (3) not installed in strict compliance with applicable codes and ordinances; or (4) not installed by Belmed, Inc. or an authorized Belmed, Inc. dealer.

UNDER NO CIRCUMSTANCES SHALL BELMED, INC. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES AS THOSE TERMS ARE DEFINED IN THE UNIFORM COMMERCIAL CODE.

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