TRIONIC 5

TECHNICAL SUPPLEMENT

TO OPERATING MANUAL

for units with WHITE control blocks upto year 2008

TRIDAC Ltd

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Ref. No. 86-1018 issue B

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INSTALLATION

1) INTRODUCTION.

This document is a supplement to the TRIONIC 5 OPERATING INSTRUCTIONS and provides information for the installation of the dental unit in the surgery. For information on how the unit functions, its controls, setting Turbine pressures etc., please refer to the Operating Instructions. part No. 86-1017.

The TRIONIC 5 Cart dental unit comes pre- assembled and fully tested, the only work required is fitting the floor box and connecting the services, the instructions for which are covered in this supplement.

2) SERVICES REQUIRED

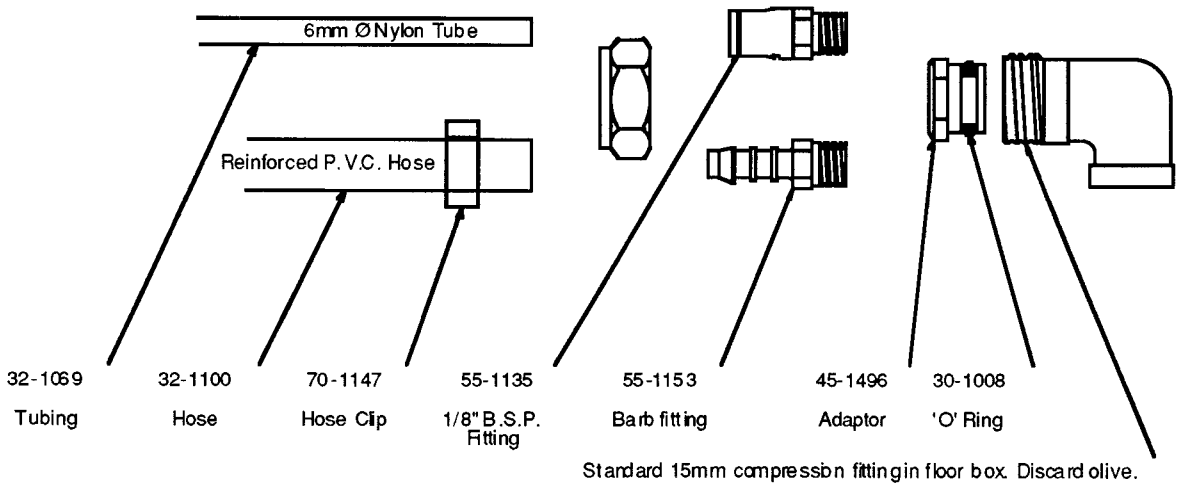
Electrical Supply :	230V ac 50Hz rated at 13 Amps.
Air Supply :	5.5 bar (80 p.s.i.) Minimum. 8.2 bar (120 p.s.i.) Maximum. 50 Litres / minute at above pressures.
Water Supply : (If applicable)	Only applicable where the Unit has been configured to use an external supply and it's connection does not contravene the water companies bylaws. 1.7 bar (25 p.s.i.) Minimum. 8.2 bar (120 p.s.i.) Maximum.

3) PREINSTALLATION :

Before proceeding with the installation, check that the Floor Box supplied is the most suitable for the surgery layout and with regards to the way the Unit will be used. Refer to figs 1 and 2 for Unit dimensions and choice of Floor Box.

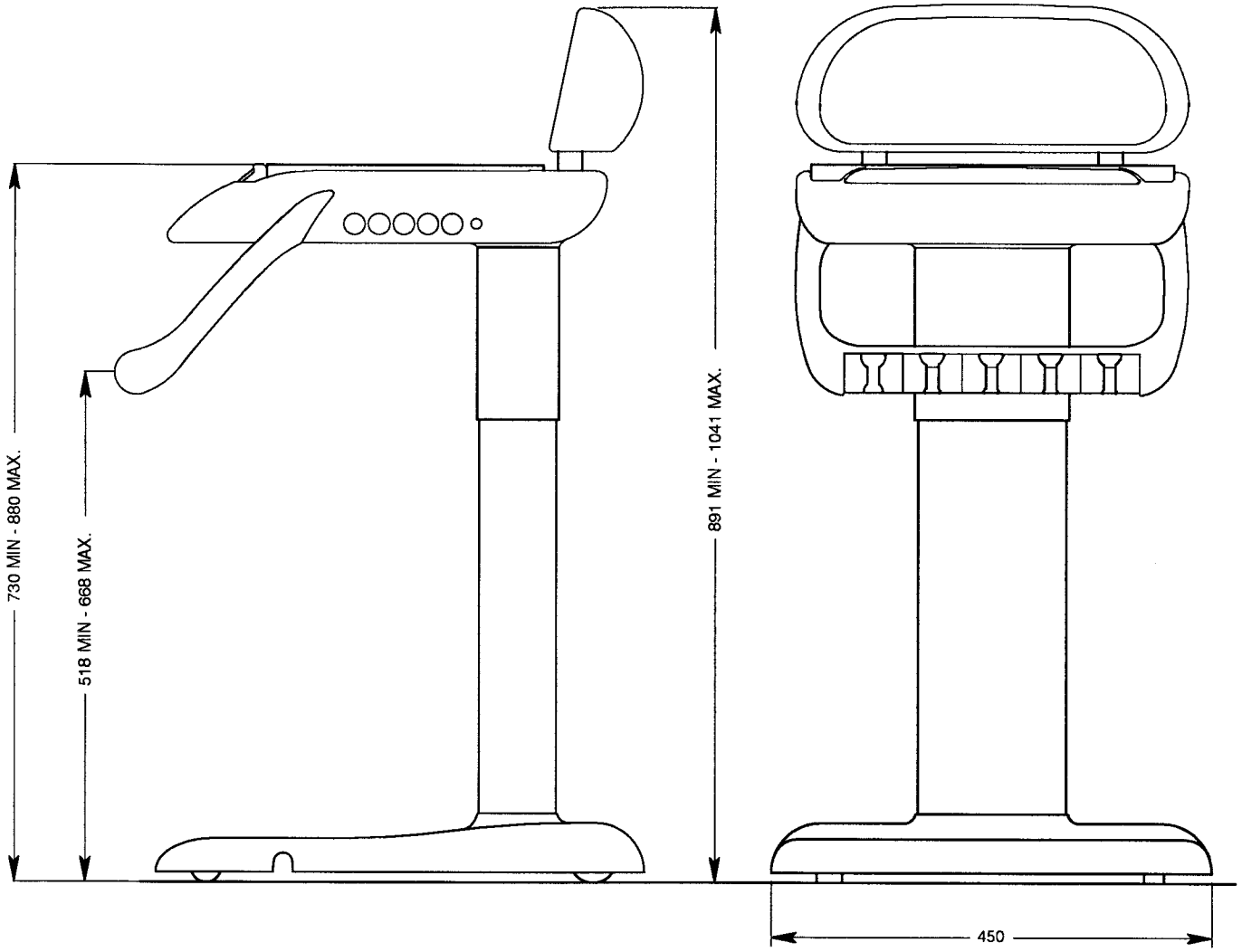
As can be seen from the diagrams, there is provision for connecting other equipment to the floor box, in the case of the standard box Part No. 22-1415 it will be necessary to cut a hole in the plastic cover of a suitable size when this is utilised. Depending on the equipment being connected you may need a suitable adaptor to hold the hose to either of the floor boxes.

All Tridac Floor Boxes have 15mm compression fitting for connecting the air and water services, if it would be more convenient, we have adaptors available to allow the use of other tubing types, as shown below. If you wish to adapt them to other sizes, the thread in the adaptor 45-1496 is 1/8" B.S.P.



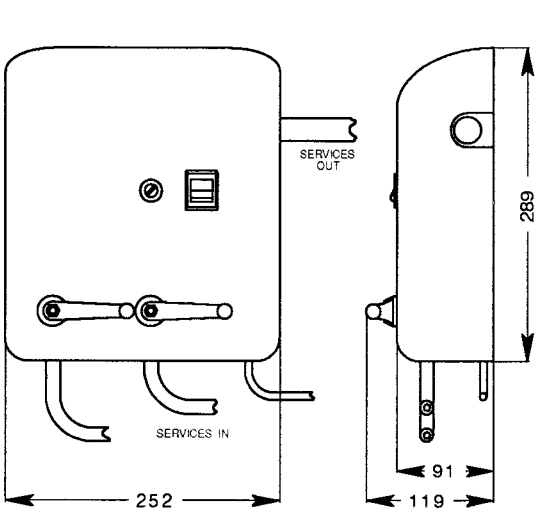
Standard 15mm compression fitting in floor box. Discard olive.

Fig. 1

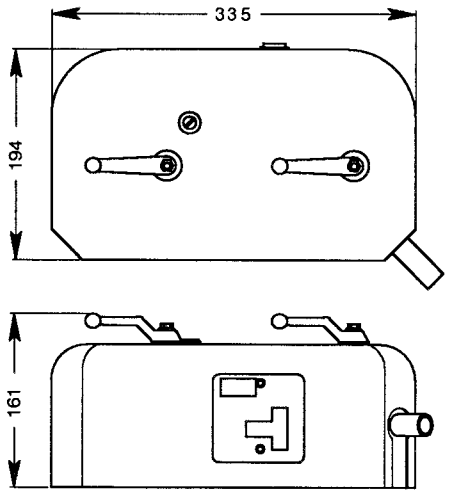


SIDE VIEW.
Shown with optional viewer.

FRONT VIEW.
Shown with optional viewer.



STANDARD WALL BOX.



STANDARD FLOOR BOX.

The TRIONIC 5 CART DENTAL UNIT has a choice of floor boxes for installation with a chair that does not have internal services.

The standard floor box shown below has been designed to keep the hoses close to the chair so as to keep them out of the way of patients and staff. It is this floor box that will be supplied as standard unless an alternative is specified.

When the cart is to be installed with the services to the side of the surgery rather than under the foot of the chair, order the cart with **wall connection box** part No. 22-1425

The alternative floor box shown at the bottom may be more suitable for some installations or where the unit and or aspirator/spittoon are to be changed from righthand to lefthand from time to time.

On these occasions the aspirator or spittoon service hose may need to have an increased length over the standard one supplied, if these are TRIDAC models please advise us of your requirements when ordering.

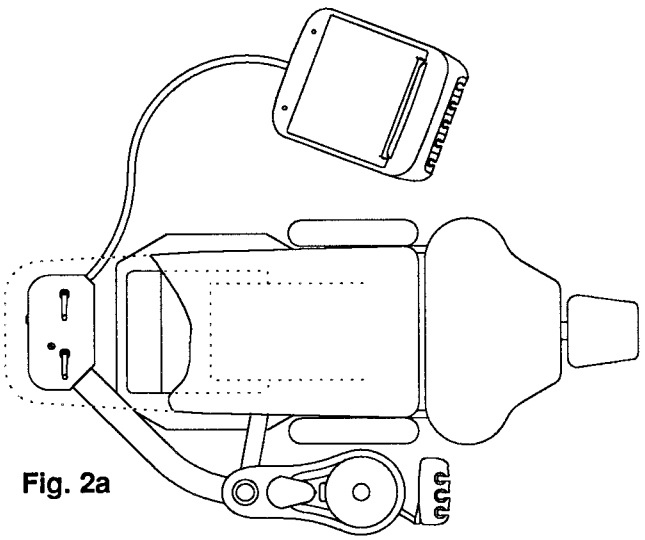


Fig. 2a

Standard TRIONIC 5 floor box. Part No. 22-1415

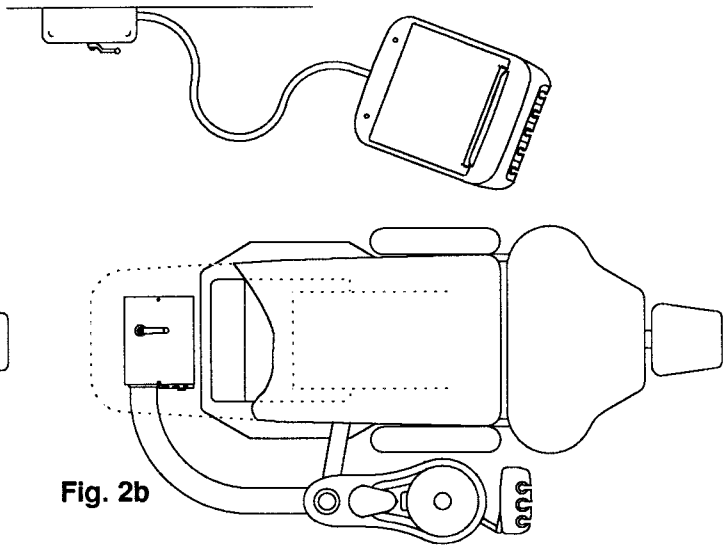


Fig. 2b

TRIONIC 5 Wall box. Part No. 22-1425

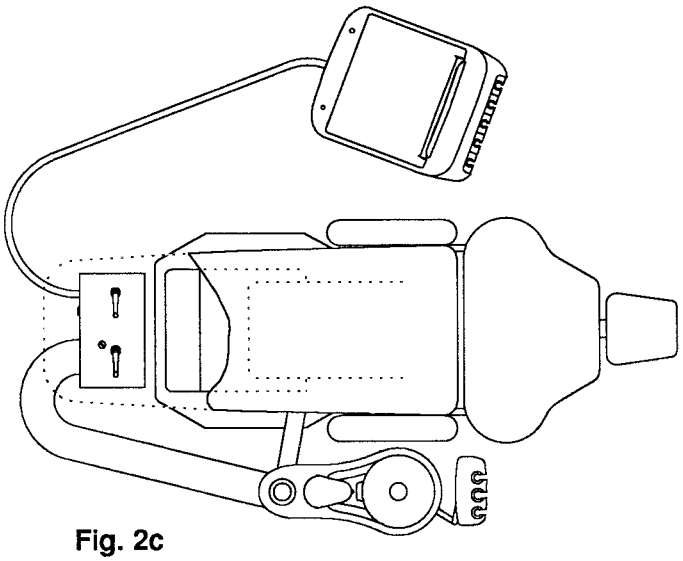


Fig. 2c

Alternative TRIONIC 5 floor box. Part No. 22-1406

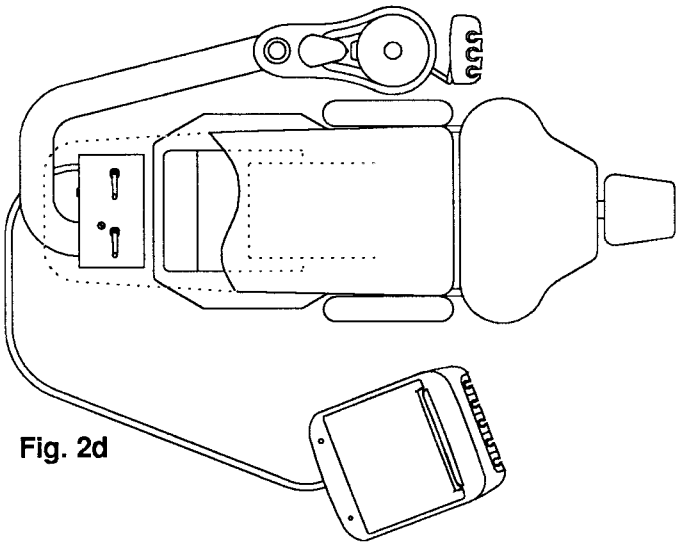


Fig. 2d

4) TIPS FOR UNPACKING.

To remove the CART from the packaging, remove straps and open the top flaps. Remove any loose items and the centre cardboard insert. Remove the two boxes down each side together with the cardboard packing piece under the base. Stand the packing box on end and wheel out the unit, it is a good idea to leave the packaging around the hoses and unit top until after the services have been attached under the base.

5) FLOOR BOX INSTALLATION

An appropriate full size floor plan is enclosed with each unit, use this to mark the position of the fixing points and services required for the particular installation.
Install the appropriate services as specified on the floor plan, fig.3.

Remove both handles from the floor box. Using a screwdriver, open the cover retaining latch by rotating 1/4 turn anti clockwise and lift off the cover. Loosen the nut holding the ball valve or valves to the brackets and remove. Make sure that the 15mm pipes are 90mm above the floor level and fit the valves in place, tighten the compression fittings fully when you have lined up the valves.

Place the floor box chassis over the valves and fix it to the floor with suitable screws, Pull the valves upwards into the slots in the brackets and tighten the nuts to secure them in position. Feed the mains supply cable through the cable clamp and connect to the mains input terminal block marked **240V ac INPUT**, if necessary, puncture the membrane in the grommets to pass the cable from one side to the other.

Feed the end of the service hose (without connector) through the hole in the floor box and snap the bush into place. Connect the green and yellow earth wire together with the red and white wires to the terminal block marked **24V ac OUTPUT** passing them through one of the grommets, refer to wiring diagram fig.5a and floor box layout fig.3.

Before connecting the yellow air tube to the elbow on the valve assembly make sure that the end of the tube is cut clean and square and is without scratches or scuff marks. To fit, press the tube firmly into the fitting a distance of approximately 15 millimetres. Do the same with the green water tube if it is being used, passing it either through the grommets or under the floor to reach the appropriate valve.

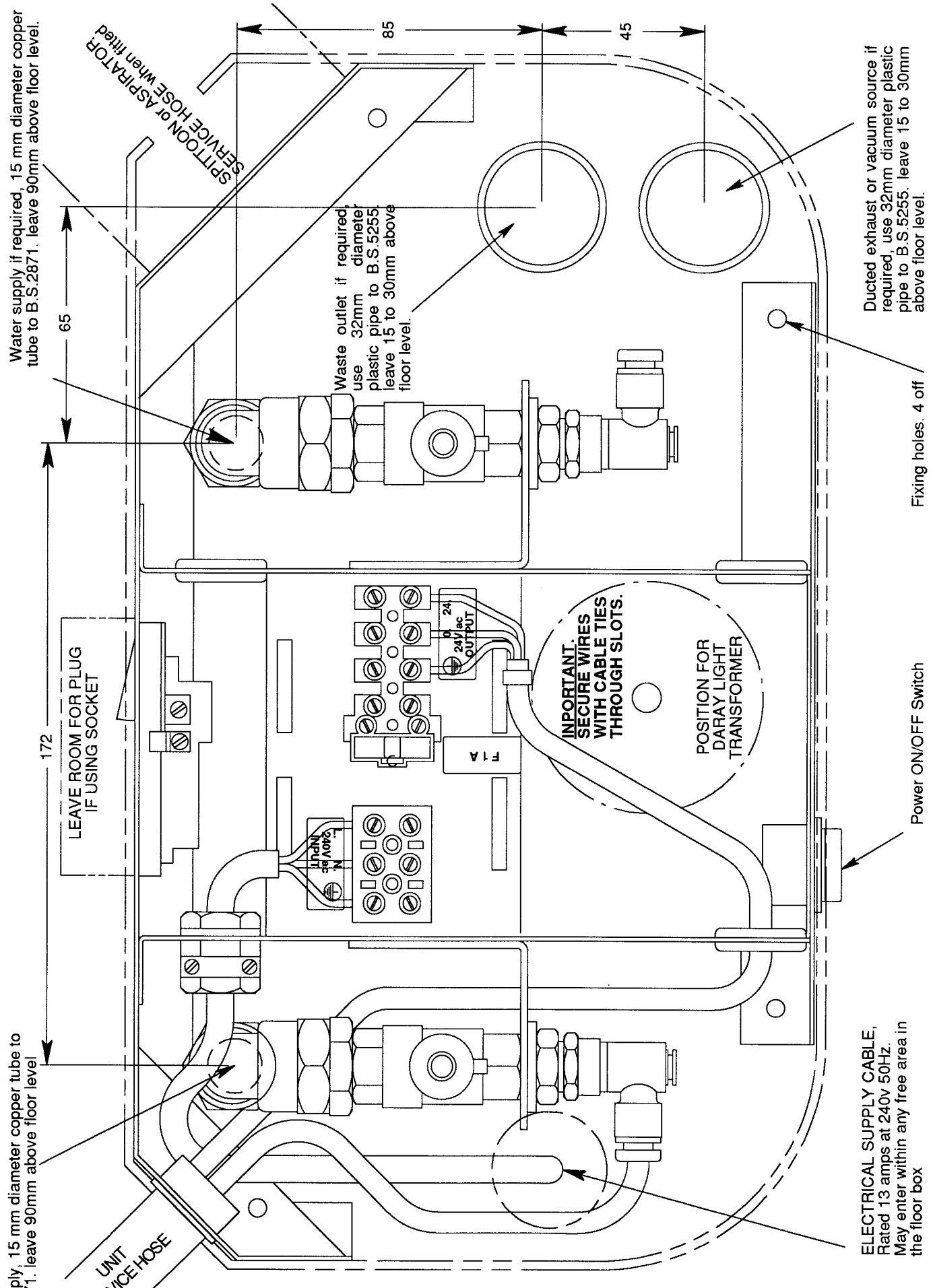
6) WALL BOX CONNECTION

Fix the control box to the wall or cabinet end panel utilising the three keyhole slots in the back panel, leave sufficient room below the box for the connections.

Make the AIR SUPPLY connection using the fittings supplied or by other means, to the 1/8 B.S.P. isolating valve. Connect the mains cable to a SWITCHED and FUSED CONNECTION UNIT, in compliance with relevant regulations.

Pass the service loom through the chassis and snap the bush into place. Connect the pipes as indicated in fig 4 and retain with the sleeves. The foot control coupling will be easier to connect pipes to if it is removed from the chassis, it is held in place by a snap-in bush.

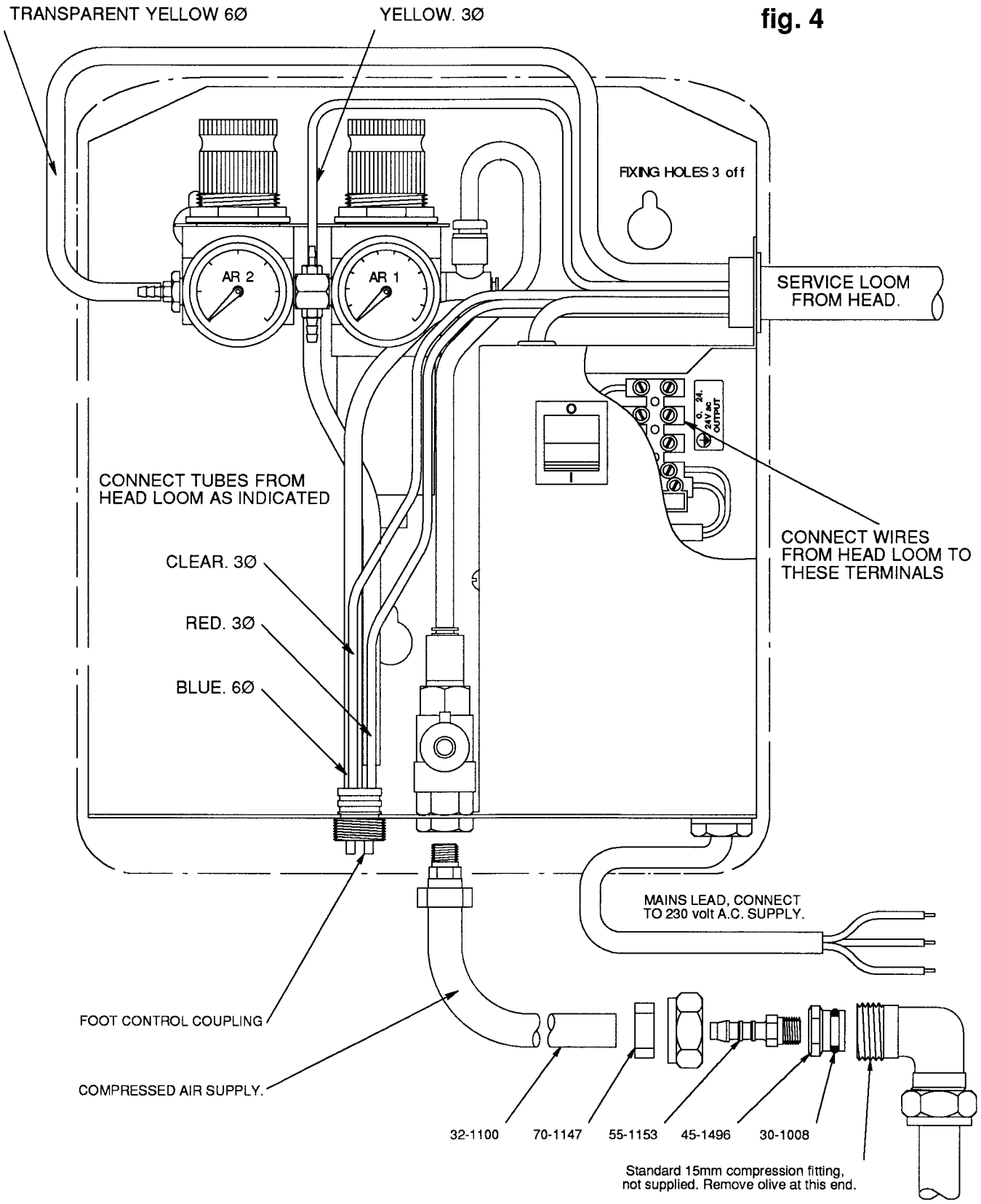
Feed the wires from the service loom through the grommet and into the transformer housing. Make a safe connection to the terminal block marked 24Vac output.



LAYOUT OF TRIONIC 5 FLOOR BOX Part No. 22-1415. Do not scale.
Use full size floor plan 85-1060, one is supplied with each floor box.

Fig. 3

T5 Module Control Box. Part No. 22-1407



WIRING DIAGRAM for TRIONIC 5 Floor Boxes P/No's 22-1406 & 22-1415.

TB1. Supply Input terminal block.
TB2. Connection & Output terminal block.
Fm1. Mains Input fuse.
Fm2. Transformer primary fuse.
SW1. Mains switch, double pole.
TRF1.Transformer.

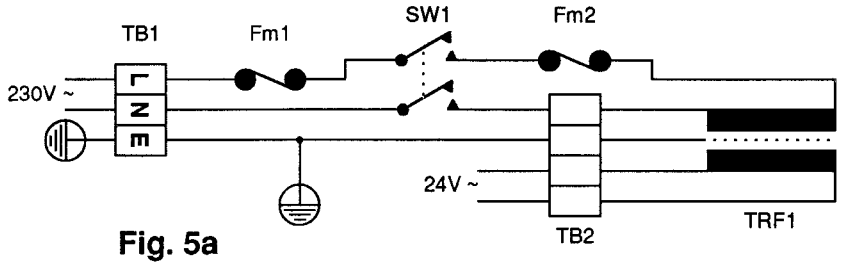


Fig. 5a

WIRING DIAGRAM for TRIONIC 5 Wall mounted Control Boxes P/No's 22-1407 & 22-1425.

TB1. Supply Input terminal block.
TB2. Connection & Output terminal block.
Fm2. Transformer primary fuse.
SW1. Mains switch, double pole.
TRF1. Transformer.

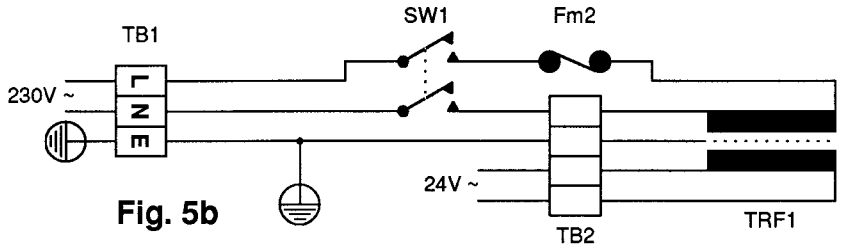


Fig. 5b

WIRING DIAGRAM for TRIONIC 5 / ECO19 Chair Services.

Valve Chassis, P/No's 22-1497 & 22-1506

TB1. Supply Input terminal block.
Fm1. Mains Input fuse.
Fm2. Solenoid fuse.
SW1. Mains switch, double pole.
S1. Air Isolating Solenoid.
S2. WaterAir Isolating Solenoid.

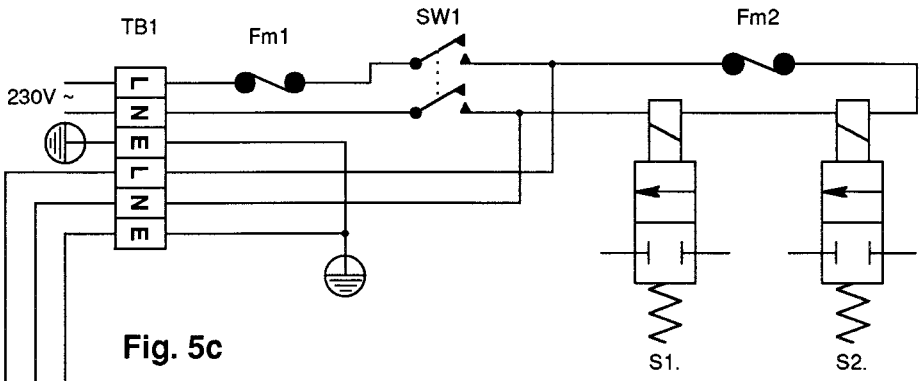


Fig. 5c

Distribution Chassis, P/No's 22-1498 & 22-1499

TB1. Supply Input terminal block.
TB2. Chair connection.
TB3. Auxiliary / Dental Light connection.
TB4. Spittoon connection, (includes two terminals for joining switch wires).
TB5. Drill Unit connection.
Fm1. Chair fuse.
Fm2. Auxiliary fuse.
Fm3. Transformer primary fuse.
TRF1. Transformer.

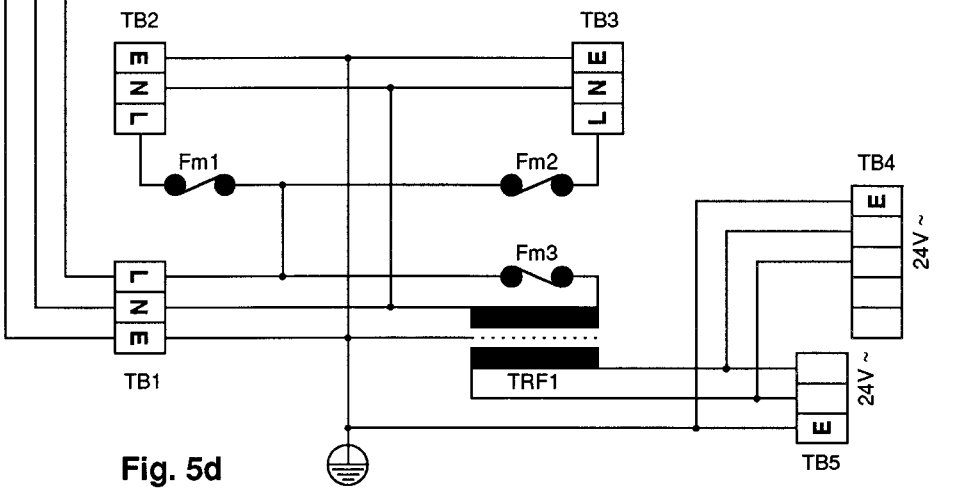


Fig. 5d

7) CONNECTIONS TO CART.

Raise the unit to its full height and remove the cover on the stand upright. Decide which side of the unit the foot control loom is to exit from and lay the unit down on the opposite side, use some protection on the floor to prevent damaging the paint work.

Remove the four screws holding the undercover in place and put to one side. Feed the end of the service loom up through the base into the upright and locate the outer sleeve in the slot in the casting as shown in fig.6.

Unpack the foot control, feed the coupling up through the base and screw onto the connection in the stand upright, see fig.7. Choose either the short, medium, or long route for the lead, see fig. 6, to give the most suitable working length of foot control. Take the lead out through the chosen exit and replace the undercover, securing with the four screws.

The unit may now be stood upright and yellow air tube connected to the lower right hand regulator, cutting back the length of tubing as necessary. If an external water supply is being provided, connect the green water tube to the upper regulator.

Plug the low voltage connector onto the connector pins located near the top left hand side of the upright, see fig.7, it is important that the cable is secured to the bracket with a cable-tie to prevent accidental disconnection in use.

8) CHAIR ATTACHED UNIT

The position of the services within the base of the chair are fairly critical, in that they need to be accessable for servicing. They also need to be able to accomodate the movement from the raising and lowering of the chair, our suggested layout is shown in figs. 8 and 9

In most cases, the chair will have been supplied from our factory, already fitted with the unit arm assembly, Lower Loom, Transformer Chassis and Regulator / Valve Chassis. If not, these will need to be fitted on site as follows:

Raise the chair and remove the upper and lower covers on the pantograph, then isolate the chair from the electric supply.

Pass the Lower Loom up through the chairs internal services hose, loop round and attach the connection chassis to the cross member by means of the double sided tape, note the label faces downwards.

Remove the lower hose retainer from the chair, replacing the two M6 cap head screws.
Fit the Valve Chassis to the chair, locating the retaining peg in the corner of the base and the keyhole slot on one of the M6 screws. Locate the foot control coupling from the loom into the slot at the rear of the chassis and retain in position by refitting the bung. Connect the other tubing from the loom to the chassis, solid yellow to the two barbs between the regulators and the translucent yellow to the barb on the end of the second regulator.

The Transformer Chassis hooks onto the cross member in the chair base and is retained by the second M6 cap screw. You will find it easier if you connect the wires from the Valve Chassis, loom and Chair to the terminals on board before fitting in place.

Feed the loom on the unit head, down through the tubular arm assembly and attach the head with the screws supplied.

Raise the height of the chair and remove the undercover on the pantograph section. Pass the loom through the hole in the unit mounting bracket, loop round and connect to the connection chassis making sure that the tube match colour for colour. See fig.10.

Pass the Foot Control hose through the hole in the base of the chair and screw onto the coupling as shown.

Replace the undercover on the pantograph after the unit has been tested.

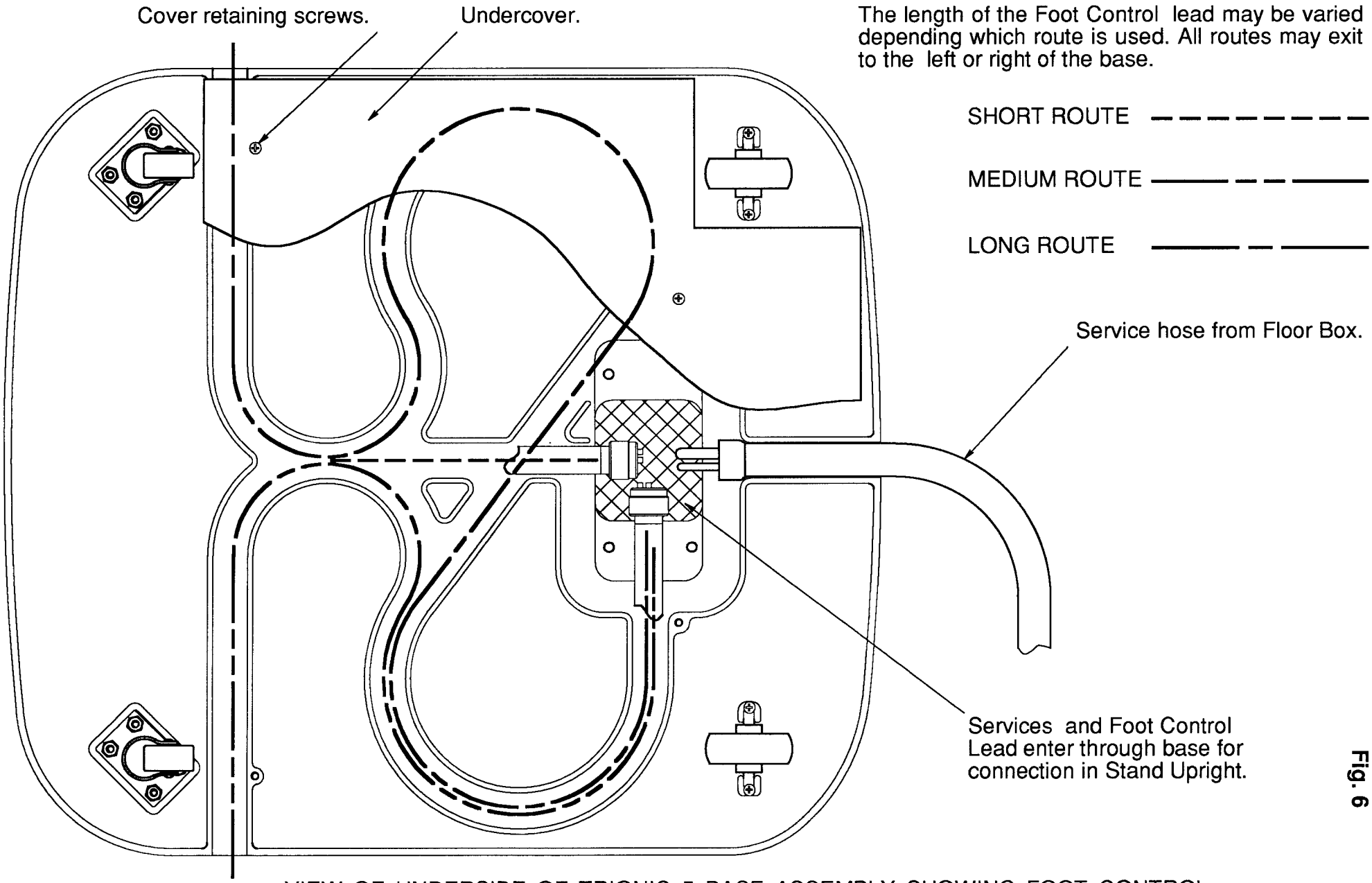


Fig. 6

VIEW OF UNDERSIDE OF TRIONIC 5 BASE ASSEMBLY SHOWING FOOT CONTROL AND SERVICE ENTRY POINTS. The undercover has been partially cut away for clarity.

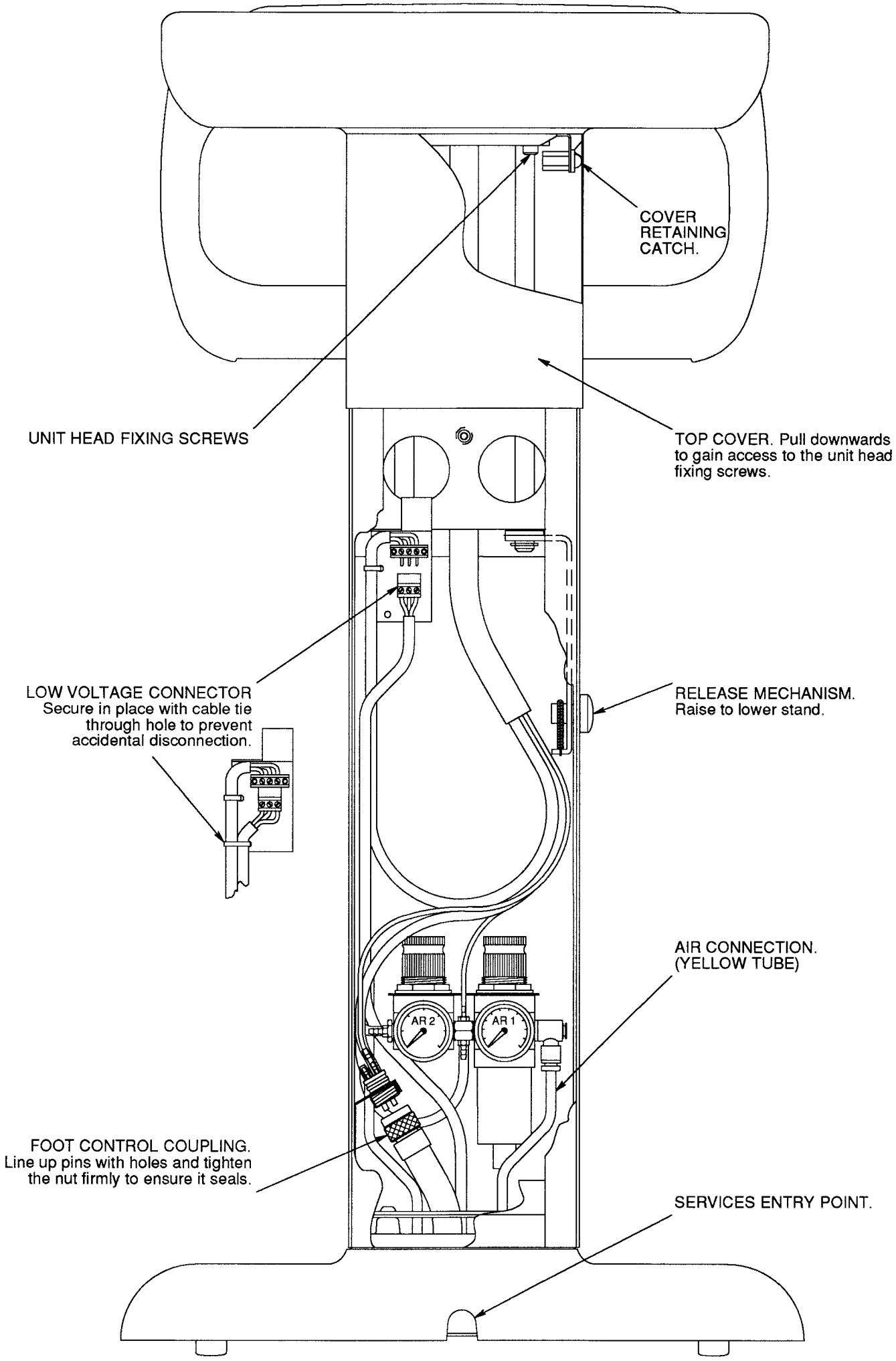
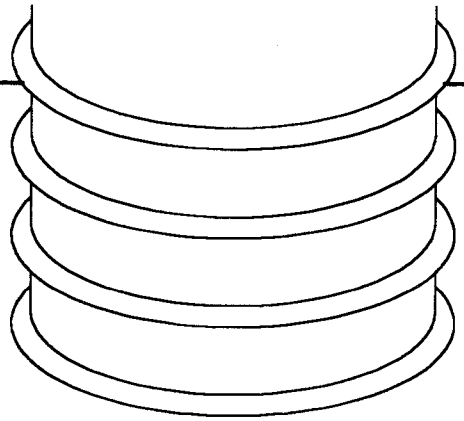

COVER
RETAINING
CATCH.
UNIT HEAD FIXING SCREWS
TOP COVER. Pull downwards
to gain access to the unit head
fixing screws.
LOW VOLTAGE CONNECTOR
Secure in place with cable tie
through hole to prevent
accidental disconnection.
RELEASE MECHANISM.
Raise to lower stand.
AR 2
AR 1
AIR CONNECTION.
(YELLOW TUBE)
FOOT CONTROL COUPLING.
Line up pins with holes and tighten
the nut firmly to ensure it seals.
SERVICES ENTRY POINT.

Fig. 4

PLAN SHOWING SERVICES AREA IN ECO 19 CHAIR.

DO NOT SCALE. A full size plan, P/No.85-1067 is supplied with the chair.



NOT ALL SERVICES SHOWN MAY BE REQUIRED, THIS WILL DEPEND ON THE EQUIPMENT BEING FITTED AND IT'S SPECIFICATION.

If you are unable to position the services as shown, please keep in mind the following :-

The waste and suction line, if applicable, should be positioned so that they loop round and no undo strain is put on the tubing as the chair is raised and lowered, also that they may need to be accessed at some time in the future for cleaning purposes.
The service valves also need access. They will need closing to service the incorporated screen filters.
The wiring could be positioned anywhere within the area

THE FITTINGS SUPPLIED WITH TRIDAC EQUIPMENT ARE SUITABLE FOR CONNECTING TO THE FOLLOWING SERVICE LINES :-
Waste and vacuum lines in 32mm plastic pipe to B.S.5255.
Air and water lines in 15mm copper tube to B.S.2871.
The electrical supply must be rated13amp at 240volts 50Hz

KEEP THIS AREA CLEAR FOR TRANSFORMER / DISTRIBUTION CHASSIS

1. Waste outlet, 32mm diameter plastic pipe to B.S.5255. leave at least 25mm above floor level.
2. Water supply, 15 mm diameter copper tube to B.S.2871. leave at least 75mm above floor level.
3. Air supply, 15 mm diameter copper tube to B.S.2871. leave at least 75mm above floor level.
4. Electrical supply, rated 13amp @ 240volts 50Hz. leave a 500mm length of cable.
5. Suction source if required, use 32mm diameter plastic pipe to B.S.5255. leave at least 25mm above floor level.

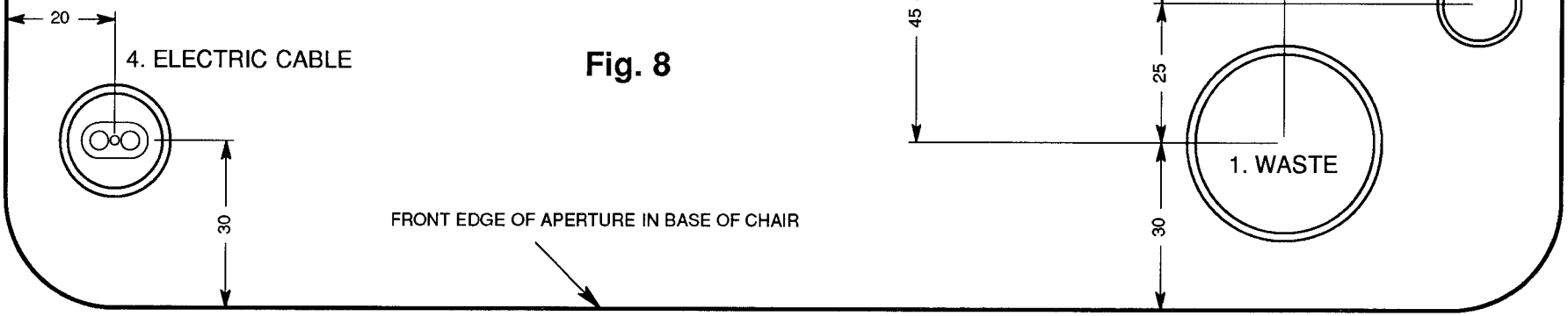
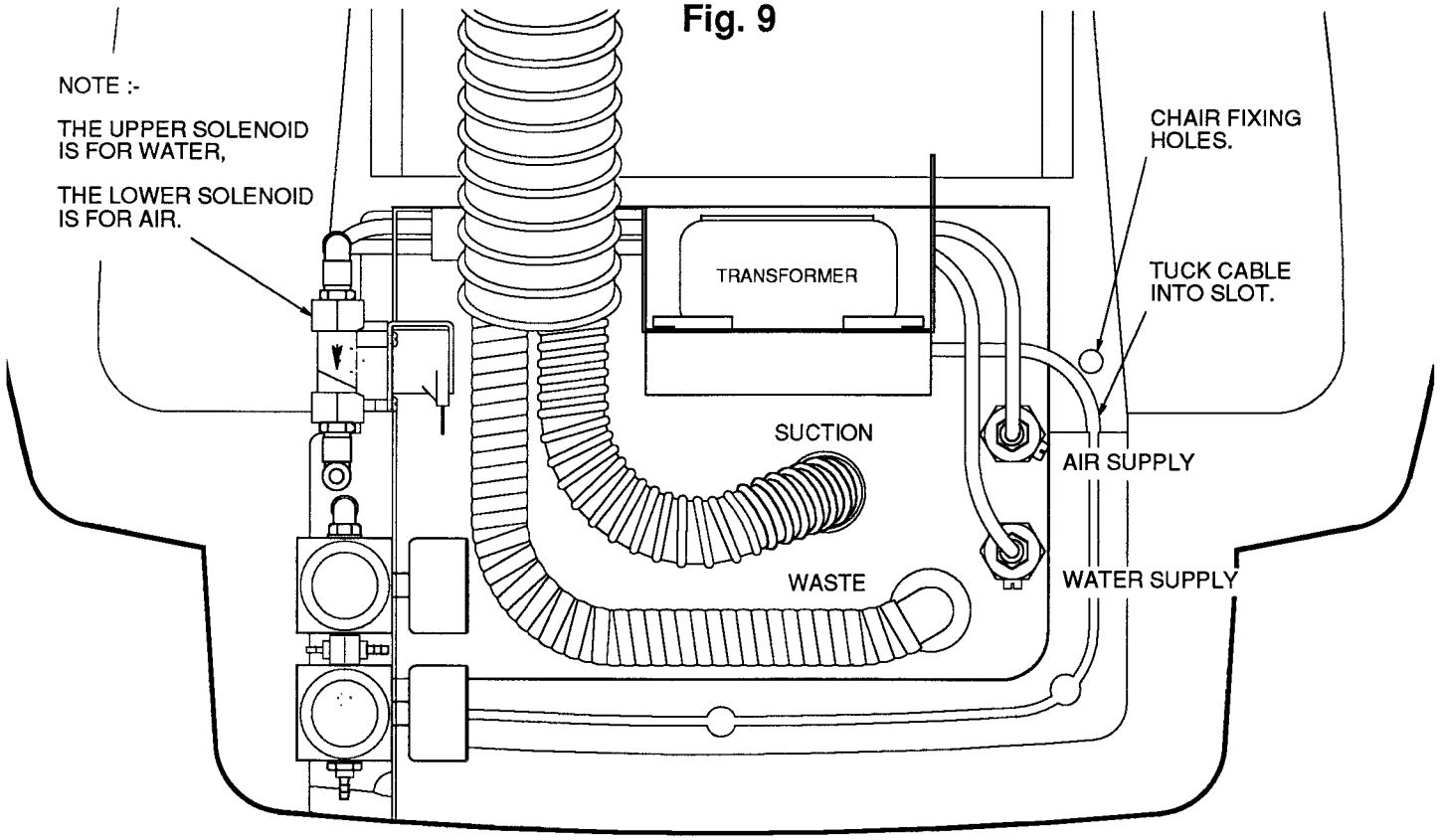
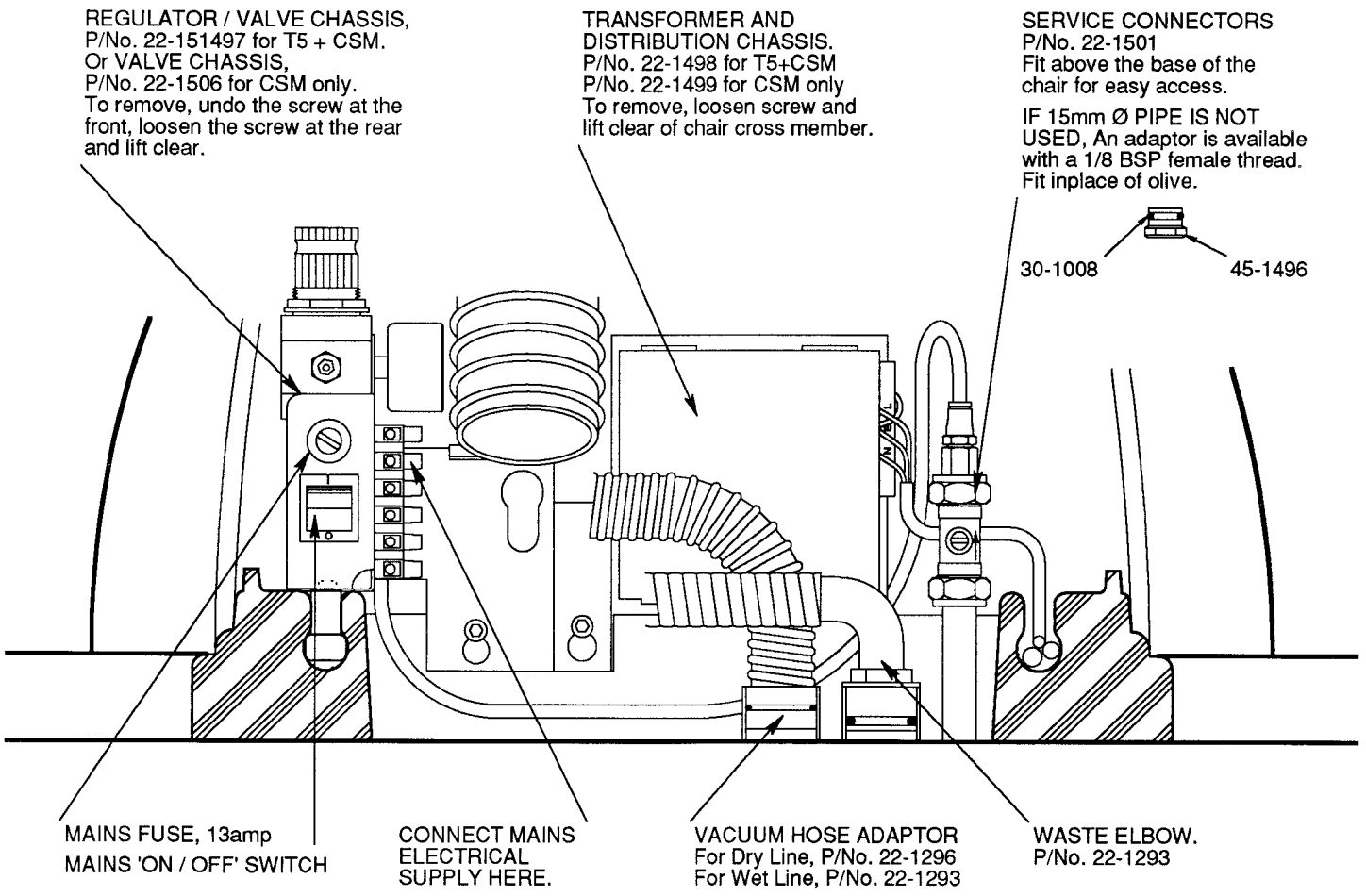


Fig. 8

SERVICES LAYOUT FOR ECO19 CHAIR

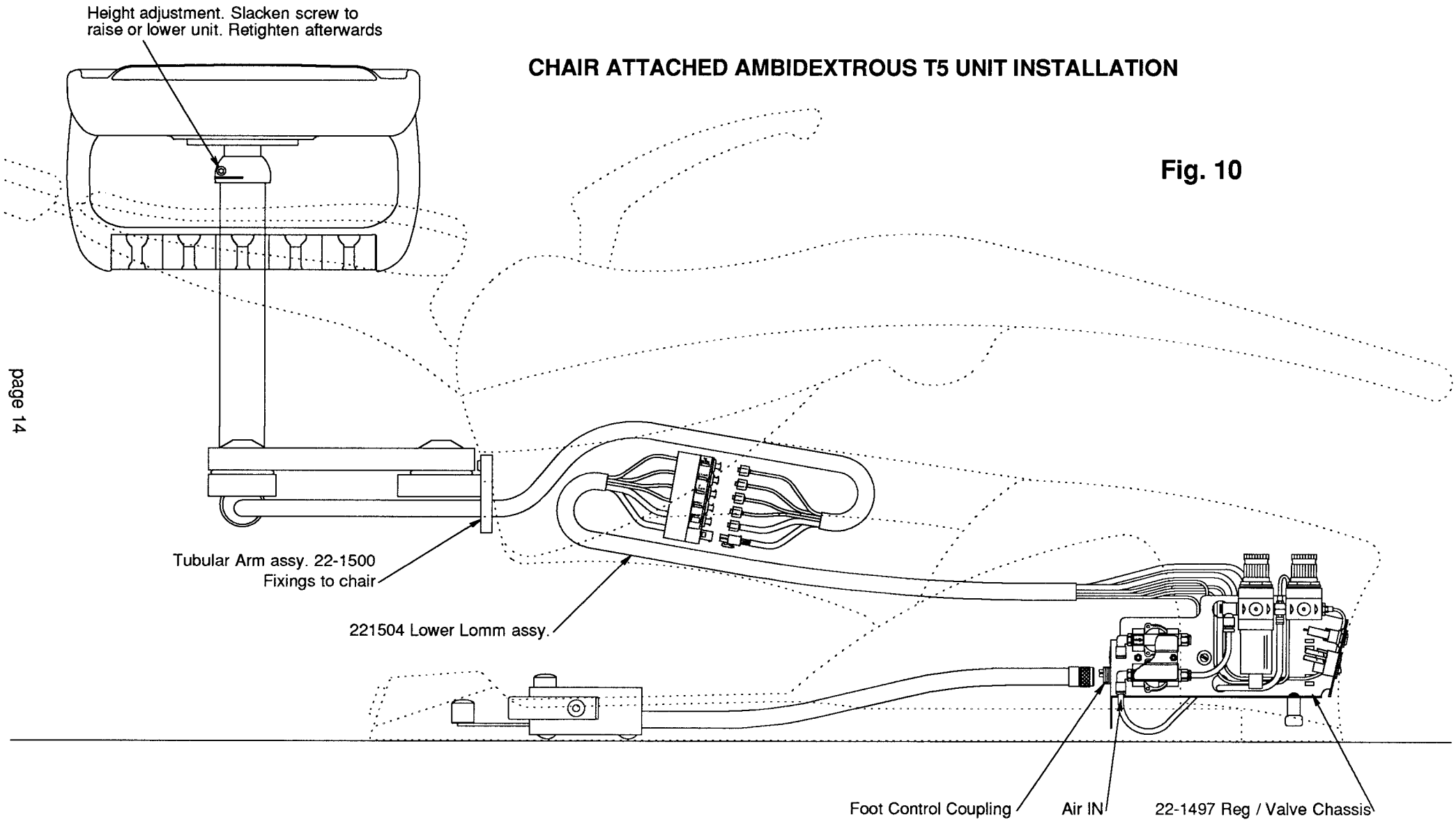
Fig. 9





CHAIR ATTACHED AMBIDEXTROUS T5 UNIT INSTALLATION

Fig. 10



9) COMMISSIONING THE UNIT.

Remove the remaining packaging from around the head of the unit and hang the hoses in their respective holders, do not attach any instruments at this time.

Fill both bottles with clean tap water and fit to unit. Turn on the air and water supply, if fitted, at the floor box and make a quick check for leaks before turning on the electricity supply.

There should be no need to adjust any of the regulators in the unit as these were set at the factory, the Turbine / Airmotor outlet pressures were set to suit the test handpieces at the factory and will therefore need checking and adjusting to suit the particular instruments that will be used by the operator. The pressures should be checked using an appropriate gauge located between the hose and the handpiece, the adjustment being carried out by means of the slotted screw on the top face of the corresponding control block, see fig.9 in the operating manual.

Press water source button **A** (item 6 on panel) to reset the internal circuitry and purge the air from all the water lines as described in the Operating Manual.

Check all the instruments and controls to ascertain that the unit is fully functional and that there are no air or water leaks before replacing the unit and floor box covers. Place the mat and instrument trays on the unit together with any loose parts such as autoclavable key, syringe nozzles etc.

If possible, instruct the operator on how the unit works and on the best practices for keeping the equipment in good working order.

PLEASE DON'T FORGET

Leave the Operating Manual and this Technical Supplement with the customer for future reference, thank you.

PROBLEM SOLVING

This section provides a detailed description of various faults and their symptoms, it is in addition to information supplied in the operating manual but should be read in conjunction with it.

a)Water Problems

IT IS ESSENTIAL that the high pressure air regulator at the input to the unit is set to specification (80 psi / 5.5 mbar) or there may be insufficient pressure to open the water valve.

Referring to the diagram that followings, the non-return ball valves (at B) are to prevent water taking a path back through other water control valves as shown by the dotted line. Without the ball, the flow of water for the spray would be affected by both the water control valves shown! A symptom of this is that you are unable to reduce the amount of water to the instrument even though you have closed the valve for that instrument.

Dripping Handpieces

Handpieces that run on or drip after stopping, but eventually do stop, is most likely due to air in the water lines. This could be because:-

i) The equipment has just been installed, and not yet flushed through.

ii) One or both bottles have run dry.

iii) Air that was naturally dissolved in the water, has been freed and formed into bubbles.
iv) The barb or tube on the underside of the bottle cap is not sealing. (Allowing the pressurising air in the bottle to enter the water system). This will cause air bubbles to reform soon after flushing the system.

The following is an explanation of what then happens:-

If a 'large' air bubble forms in the region of 'H' it gets compressed when spray water flows in at H. It can be pushed into cavity B - not further because of the one way valve. So it is unseen.

When the spray water goes off, the bubble from B can expand back into A and the tube at H. It can go backwards and forwards like this, so never gets flushed out.

So, it is better if flush button and spray are operated together when bleeding air from the system. That way, both tubes are filled with water. Bleeding should be done with a high flow (spray control valve open a lot) otherwise water can flow beside trapped air rather than pushing it out.

It is unlikely, but possible, that some air can get trapped at C, see second diagram.

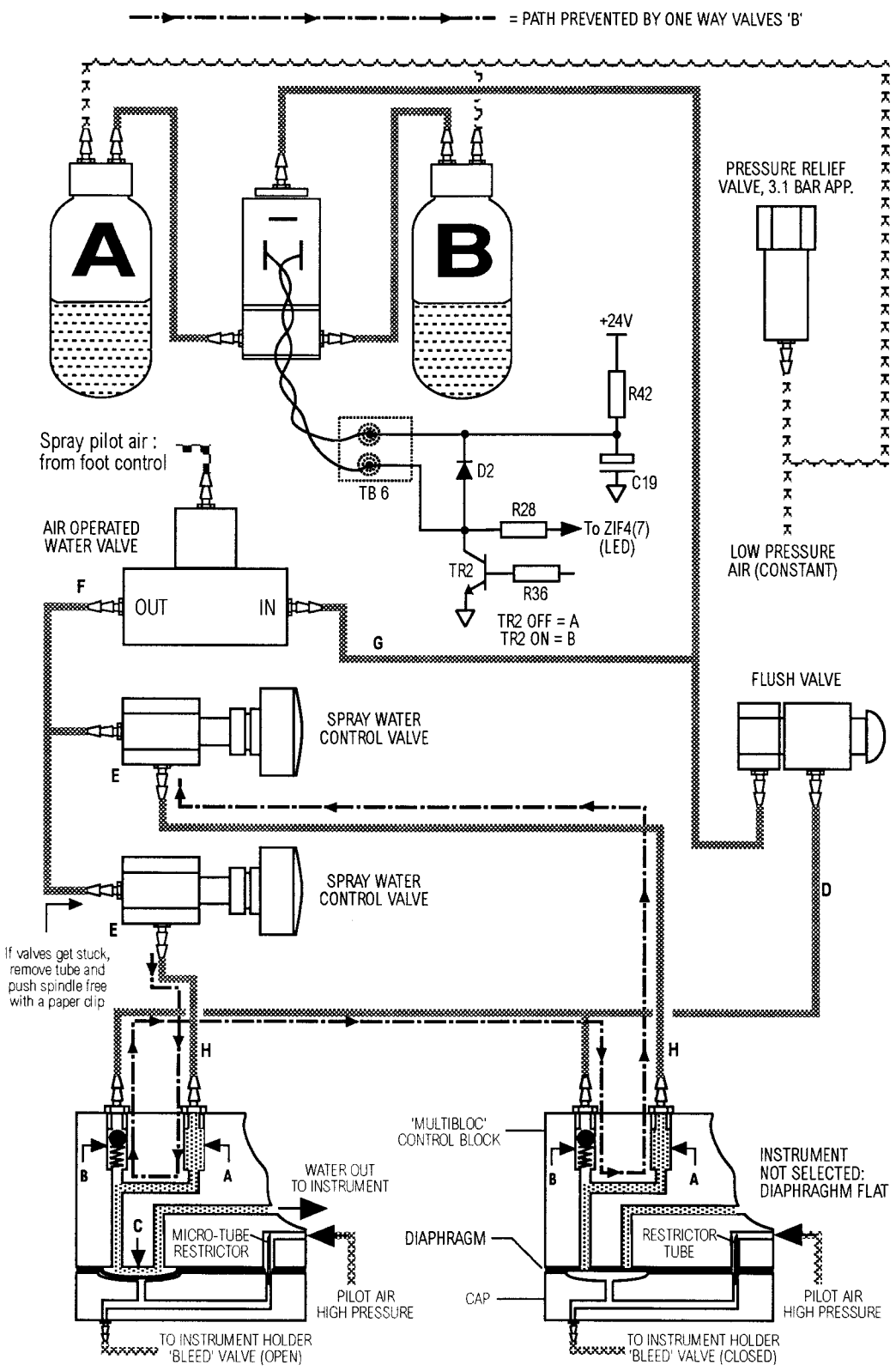
Because air compresses a lot, small cavities like B and C can hold a surprising amount of air when subjected to the water pressure. The difference in the volume that the air takes up is equal to the amount of water that is expelled after the instrument is stopped.

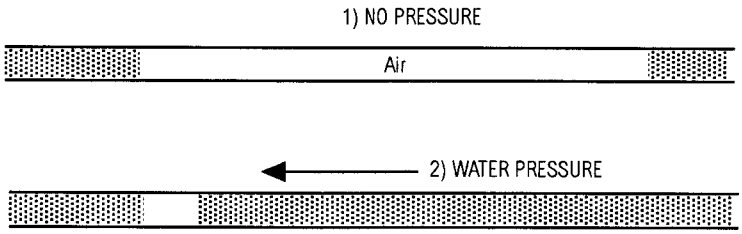
Other causes of dripping handpieces are:-

v) The air operated water valve (attached to the solenoid valve) is not shutting off properly. In this case the water will continue to drip non-stop.
This may be due to dirt on, or damage to the bottom valve seating. To test, remove the output tube from the barb and replace it with a spare piece of tube, operate the foot control with water selected. If the water sucks back from the end of the tube and then stops without any further movement, the valve is O.K. If water creeps along the tube, remove the bottom Circlip, cap and diaphragm, clean and re-assemble.

vi) If the flush valve leaks across input and output, it effectively bypasses the spray control valves by providing a direct supply of water. If water dribbles <u>continuously</u> from selected handpieces, this may be the cause. To test, try pinching off the output of the flush valve at D, if this solves the problem, clean out or replace the valve.

vii) The Multibloc diaphragm is not sealing around the restrictor tube, this allows air to enter the instrument hose, pushing the water out. It will stop when it has emptied the hose.
A delay in the water starting (due to having to refill the hose) is an indication that this is the cause.

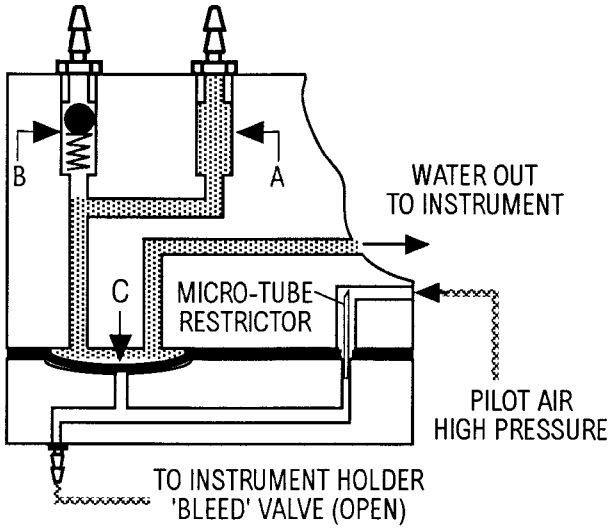

= PATH PREVENTED BY ONE WAY VALVES 'B'
A
B
PRESSURE RELIEF VALVE, 3.1 BAR APP.
+24V
R42
Spray pilot air : from foot control
TB 6
D2
C19
R28
To ZIF4(7) (LED)
AIR OPERATED WATER VALVE
TR2
R36
TR2 OFF = A
TR2 ON = B
F
OUT
IN
G
LOW PRESSURE AIR (CONSTANT)
FLUSH VALVE
SPRAY WATER CONTROL VALVE
E
SPRAY WATER CONTROL VALVE
E
D
If valves get stuck, remove tube and push spindle free with a paper clip
H
H
'MULTIBLOC' CONTROL BLOCK
B
A
B
A
WATER OUT TO INSTRUMENT
INSTRUMENT NOT SELECTED: DIAPHRAGHM FLAT
C
MICRO-TUBE RESTRICTOR
DIAPHRAGM
RESTRICTOR TUBE
CAP
PILOT AIR HIGH PRESSURE
PILOT AIR HIGH PRESSURE
TO INSTRUMENT HOLDER 'BLEED' VALVE (OPEN)
TO INSTRUMENT HOLDER 'BLEED' VALVE (CLOSED)



We found that as much air as 1) will compress like 2) under 3.5 bar water input pressure.

So, air can 'hide' in a cavity like B

Less likely; but if air is trapped under diaphragm, e.g. C, then replacing instruments while water is running (messy!) would ensure it cannot happen, because the diaphragm gets flattened by pilot air. Better (not so messy) press instrument holder valve in with finger, then release foot control and flush valve, before replacing instrument.



b)Spray controls

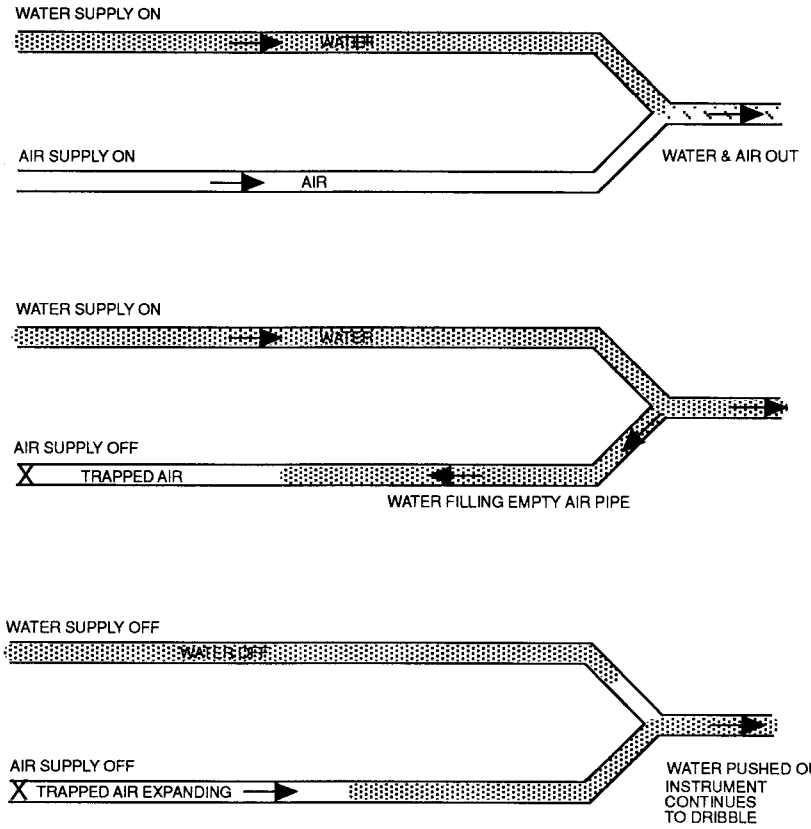
The Trionic has a separate spray air supply for instruments which do not 'bleed off' the drive air (low speed instruments virtually all come in this category). The spray air is taken from the pilot air at the top of the water valve. The amount of air to the instruments is controllable by the spray air valve on the side of the unit.

Proper use of the spray air valve will prevent problems with
i) Intermittent or absent spray on high speed turbines.
ii) Spray run-on on low speed instruments.

i) TOO MUCH spray air, on turbines which use it, can cause the pressure at the top of the pilot operated water valve to fall below the level needed to keep the valve open. Pulsing or slowly diminishing water spray are typical symptoms.

ii) When air and water are mixed in the hose or instrument, there must always be at least a small supply of air to the spray circuit :

DO NOT TURN SPRAY AIR VALVE COMPLETELY OFF, otherwise the situation below can arise.



c)Water Bottles

Default condition is Bottle A i.e. if power or solenoid fails, water is supplied by bottle A

Solenoid is **energised** for bottle B.

If bottle B does not get selected, yet light is displayed, select A, then B again. If there is no change, suspect stuck spindle in solenoid. DO NOT DISCONNECT SOLENOID WIRES WITH POWER ON.

d) TRIDAC SYRINGE

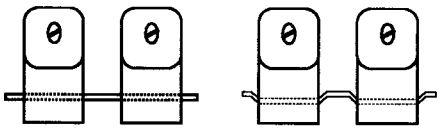
The most common reasons for water dribbling or wet air are:

i) Dirt under seating. Strip and clean, replacing 'O' rings if necessary.
Flush syringe through with water for a few minutes before reassembly.

ii) Syringe nozzle 'O' rings are worn : Replace

iii) The syringe has been dropped :

If it lands on the triggers it can bend the pin holding them in place, causing the triggers to be held down. Replace the pin, P/No. 70 1057. Ensure free play (T5 Operating guide section 9.1) Note: Adjusting screws are 'lock painted'. The paint may be freed with a drop of solvent e.g. Acetone.



The most common reasons for reduction or loss of water are :

i) Blocked nozzle

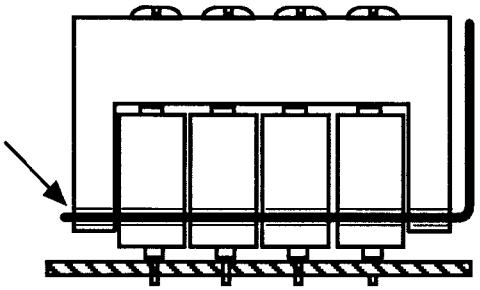
ii) Dirt trapped at seat of water regulating screw : Back off screw for a fuller spray (to open up gap between needle and seat), flush for a few minutes, then readjust to desired level.

e) CIRCUIT BOARDS

ALWAYS turn the power off when installing or removing circuit boards. ALWAYS check that the circuit boards, particularly the Bien Air micromotor converter are properly installed before applying power. It can work loose in transit.

Air-electric switches are constructed using a 'Clip On' actuator. This avoids having to pull tubes from barbs when removing circuit boards.

The wire clip picks up on the microswitch mounting holes to ensure that the distance between switch button and actuator is accurately maintained. ENSURE that the clip extends right through all switches and actuator body when replaced.



f) MICROMOTOR

Following trouble with contact reliability of Bien Air edge connector and possible working free of converter during use, Tridac now fit a different connector by hard wiring it to the Bien Air converter board.

The new connector makes improved contact and has a much higher retention force. Nevertheless it still needs checking on installation.

Reports of strange or suspicious micromotor behaviour may be concerned with this effect.

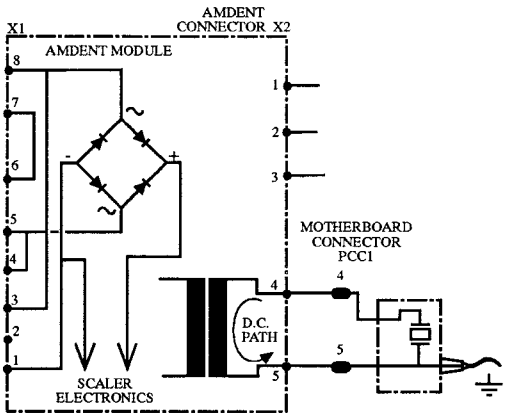
Starting speed

The starting speed of the standard MC3 micromotor is dictated by the Bien-Air converter. It drops out below approximately 3.0 Volts (analogue circuit). This corresponds to a starting speed of over 2000 r.p.m.

g) SCALER

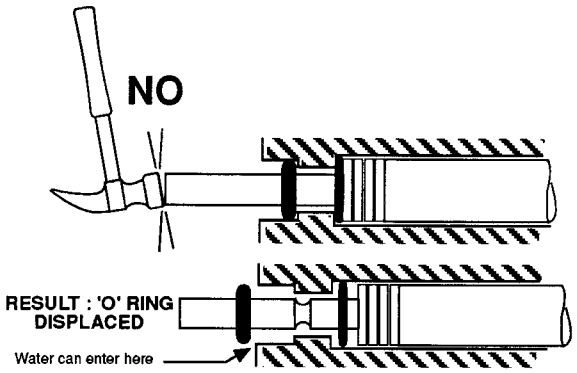
IT IS IMPORTANT NOT TO SWAP THE TWO HANDPIECE WIRES. THE POLARITY DOES MATTER
(See operating instructions, section 7.2)

When checking that the tip is earthed, remember the output of the Amdent module is fed from a high frequency transformer. With a D.C ohmeter, both handpiece wires can appear to be earthed because the transformer has a very low D.C. resistance of only about 0.5 Ohms.



Handpiece precaution

The ceramic transducer is supported by a compliant mounting - it oscillates around this point. The mounting is an 'O' ring, which also acts to seal water from entering the handpiece. DO NOT KNOCK or DROP the handpiece on its end or the 'O' ring can be displaced. A displaced 'O' ring will damp oscillation and let water into the ceramic stack.



A wet stack WILL USUALLY CAUSE PERMANENT DAMAGE.

SYMPTOM :- Handpiece getting hot near tip end (adjacent to stack)

CURE:-

SOMETIMES, drying out the transducer may help. Remove displaced 'O' ring, blow in warm air, leave in warm dry atmosphere for a few days. Pull transducer forward when refitting 'O' ring and ENSURE it fits into groove.

24 Volt isolation

The scaler MUST run from a 'Floating' power supply. This enables potential equalisation of the tip (earthing) and ensures that patient's will not experience electrical leakage currents through the gums. That is why a 24Volt/24Volt isolating transformer is included on the Trionic 5 motherboard. DO NOT connect any other components to this transformer.

Water Coolant

It is necessary for water to be selected at the foot control for the scaler to work. This prevents running without water which would produce overheating of the handpiece.

Scaler operation is initiated by :

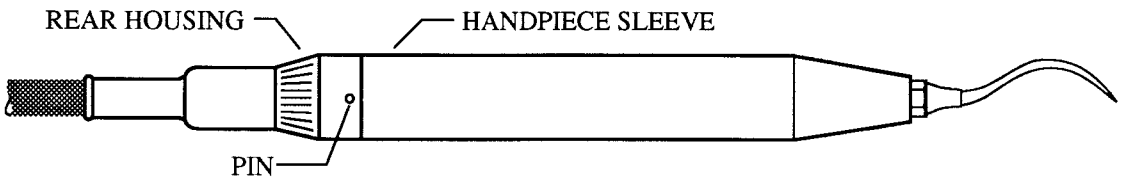
i) Lift the instrument from its holder. Pilot air to holder and first microswitch on scaler chassis, decay's to zero through the bleed valve, allowing microswitch to changes over.

ii) Operate foot control with water selected. Pilot spray air is switched to air op. water valve & 2nd microswitch on scaler chassis and starting scaler operation.

Note. On earlier versions this was not the case : the scaler start up switch was operated by drive air and so it could run with water spray off. It is therefore important that the scaler is properly seated in its holder and the instrument holder valve (bleed valve) properly functioning or the scaler could be running (dry) while another instrument is in use.

Tip attachment / detachment

DO NOT OVERTIGHTEN TIPS. During operation, ultrasonic action can cause further tightening which will result in great difficulty of removal.



Grip the handpiece sleeve when changing tips. It has flats inside which match to the nose of the inner handpiece, to prevent turning. Gripping the rear housing could result in sheer of the retaining pin.

h) AIR CIRCUITS

IT IS IMPORTANT TO SET THE PRESSURES OF THE T5 REGULATORS TO THE FACTORY VALUES :- H.P. AIR REGULATOR - 80 P.S.I. (5.5 mbar)
L.P. AIR REGULATOR - 40 P.S.I. (2.7 mbar)

The H.P. air affects a number of aspects, INCLUDING MICROMOTOR OPERATION. This is because the unit has been set up with 80 P.S.I. before setting the M/Motor cooling air and then trimming the air-electric converter to 24Volts out at max. foot control movement.

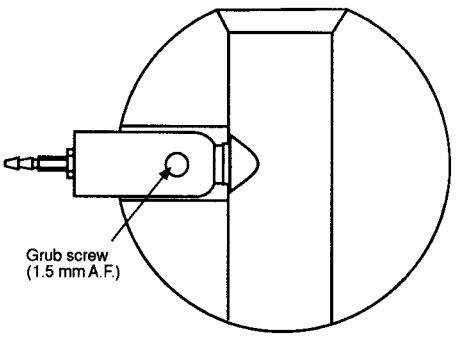
The max. speed trimmer of the converter affects all lower speeds. If there is not sufficient air, there may be insufficient voltage on low speed limit pos.1 to start the motor at all.

If 80 P.S.I. is not available, then AT LEAST 70 is required. Bien Air circuit must be re-trimmed accordingly. T5 regulator must be SET to 70 - not just left to give out whatever is coming in from compressor.

Adjust turbine handpiece and airmotor running pressures by fitting a handpiece gauge and using the CONTROL BLOCK REGULATOR SCREW.

Bleed Valves

Bleed valves can be moved forward in the instrument holders to compensate for wear. The grub screw is accessible from the end face of the instrument holder after the latter is removed. Note that grub screws can mark the case. They tend to pick up on this mark if slight adjustment is attempted. Rotate the body in the holder to present a fresh surface, do not OVERTIGHTEN the grub screw.

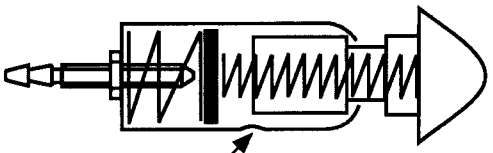


Bleed Valve cont.

They can also be adjusted. They work like this :-
The spring in the plunger pushes a rubber disc against a nozzle to blank off air input. The spring allows over travel. When the instrument is lifted, the plunger moves forward and the rear spring pushes the disc clear of the nozzle, allowing air to leak away.

Adjust by slackening the lock nut. With air on, and the plunger relaxed, screw in the nozzle until the air leak gets noisy. (Noise is caused because the disc is now close to the nozzle and the air is squeezing out). Now back off the nozzle by unscrewing by half a turn and nip up the nut.

The air should be shut off when the plunger has moved about half its travel, leaving plenty of over-travel.



The valve should be set in the holder to give a positive shut-off, but not so far forward as to cause tightness of the instrument or excessive force on the plunger and disc.

If the disc becomes over-worn, a new bleed valve will be required.

Foot control

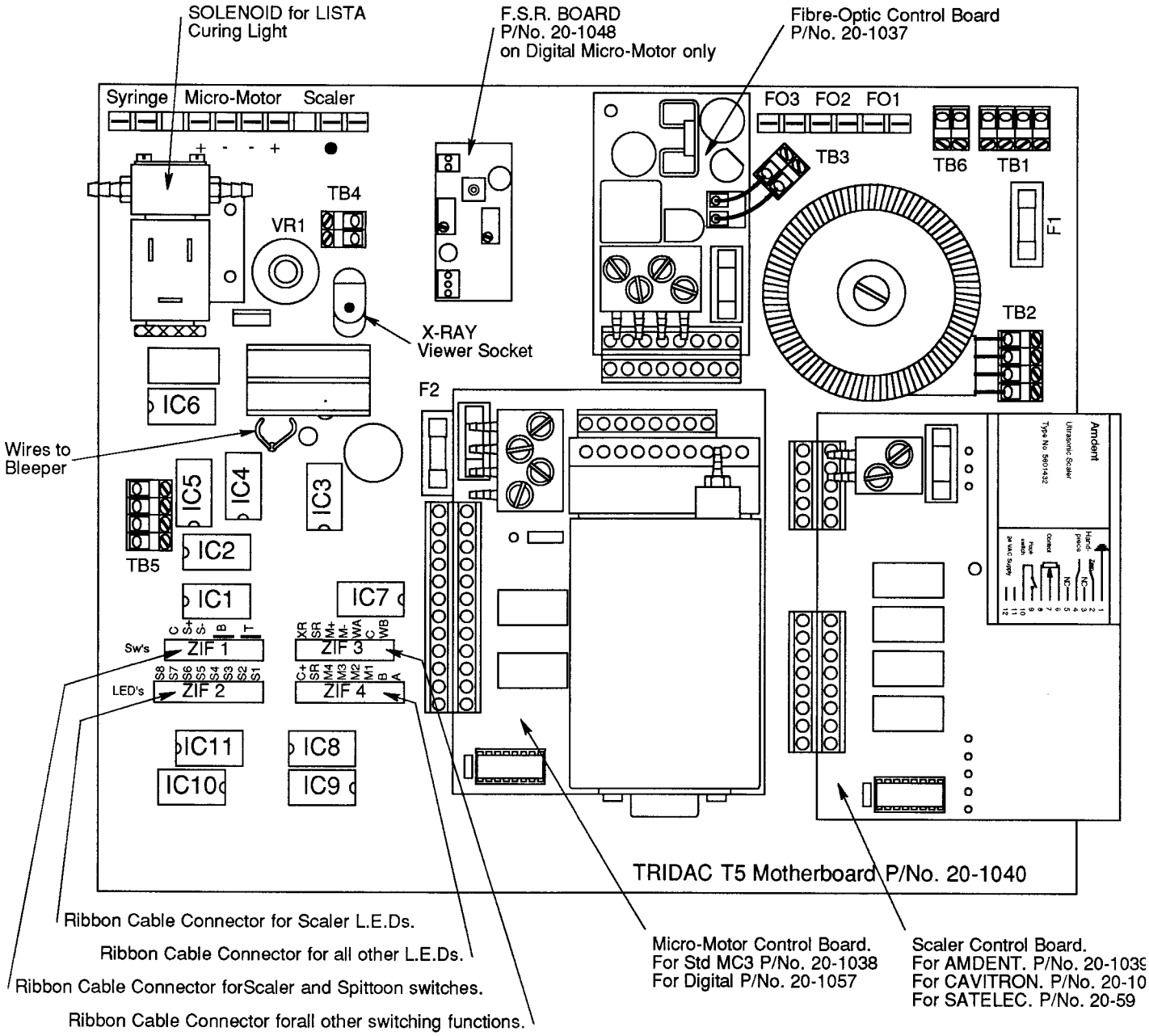
Run a turbine with a handpiece gauge fitted. Slacken lock nut on adjusting screw and adjust the regulator to give full pressure at about 90% of its movement.

Select water. Set adjuster screw for pilot valve to give spray start up early in lever movement, coincident with turbine just beginning to run. Now check valve by leaving foot control lever unoperated and opening valve by pushing with screwdriver. Release valve and exhaust should sound short and positive. A 'splashy' or long exhaust time should be corrected by backing off the adjusting screw a little more.

Move foot control lever in 'reverse' direction. The reverse pilot should operate early in the cycle (The reverse switches on the micromotor circuit board, if fitted, must operate BEFORE the micromotor starts. Check exhaust note as for water pilot and adjust accordingly.

Re-check foot control when reassembled. Fitting the cover can move the pivot pin and put adjustments out.

MAIN COMPONENT LAYOUT on MOTHERBOARD

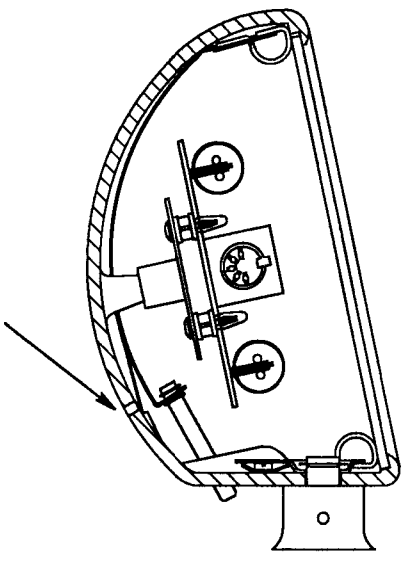


TUBE REPLACEMENT on X-Ray VIEWER

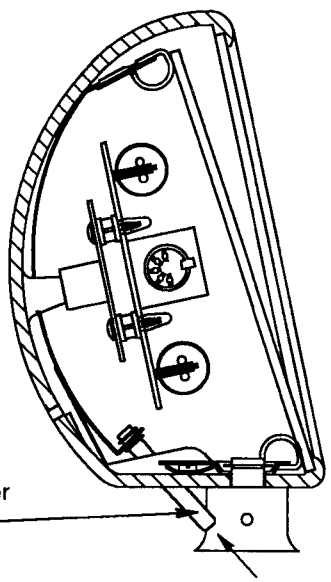
To remove the screen, push a small probe through the hole in the back of the viewer body.

This releases the retaining mechanism and allows the screen to be removed.

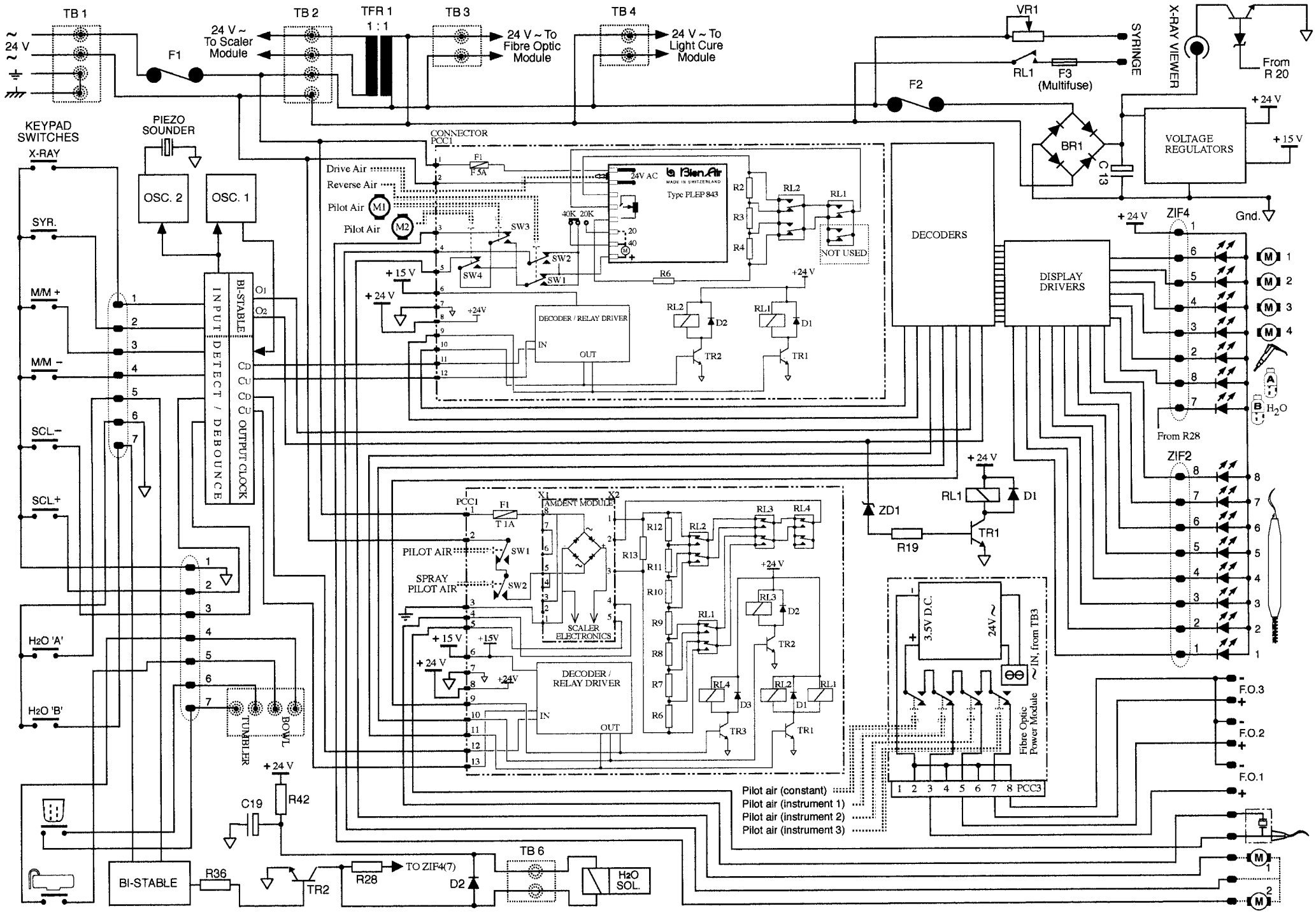
SPARE TUBES P/No. 10-1069



When replacing the screen, locate it in the aperture and push upwards on the plunger until it locks in position.



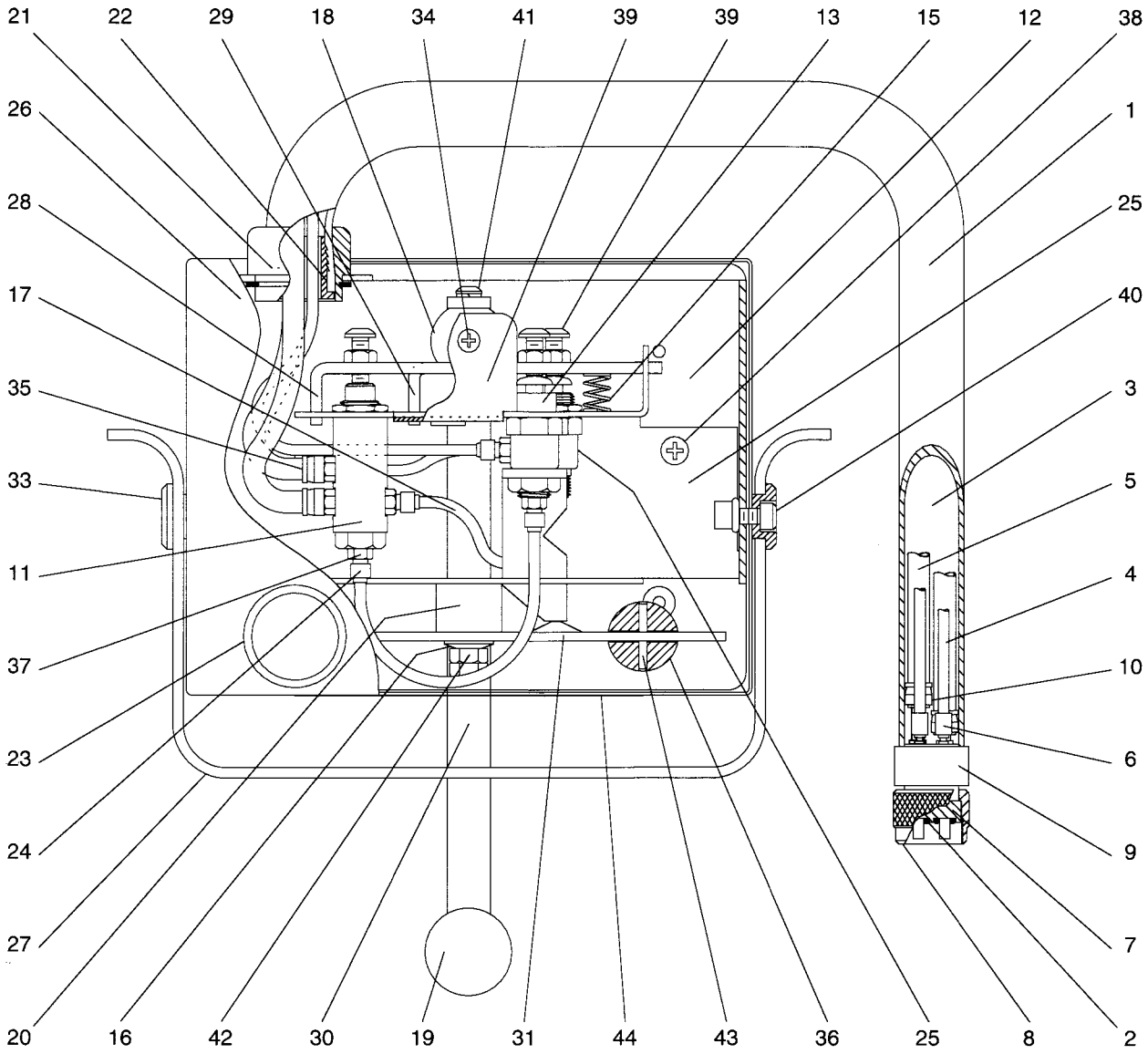
WIRING SCHEMATIC : TRIDAC TRIONIC 5 MOTHERBOARD P/No. 20 1040, with 20 1037 FIBRE OPTIC POWER SOURCE, 20 1038 MICROMOTOR CONTROL BOARD AND 20 1039 AMDENT SCALER CONTROL BOARD. ISS. 1 SEPT. 1998



USEFULL SPARES LIST for TRIONIC 5 DENTAL UNIT.

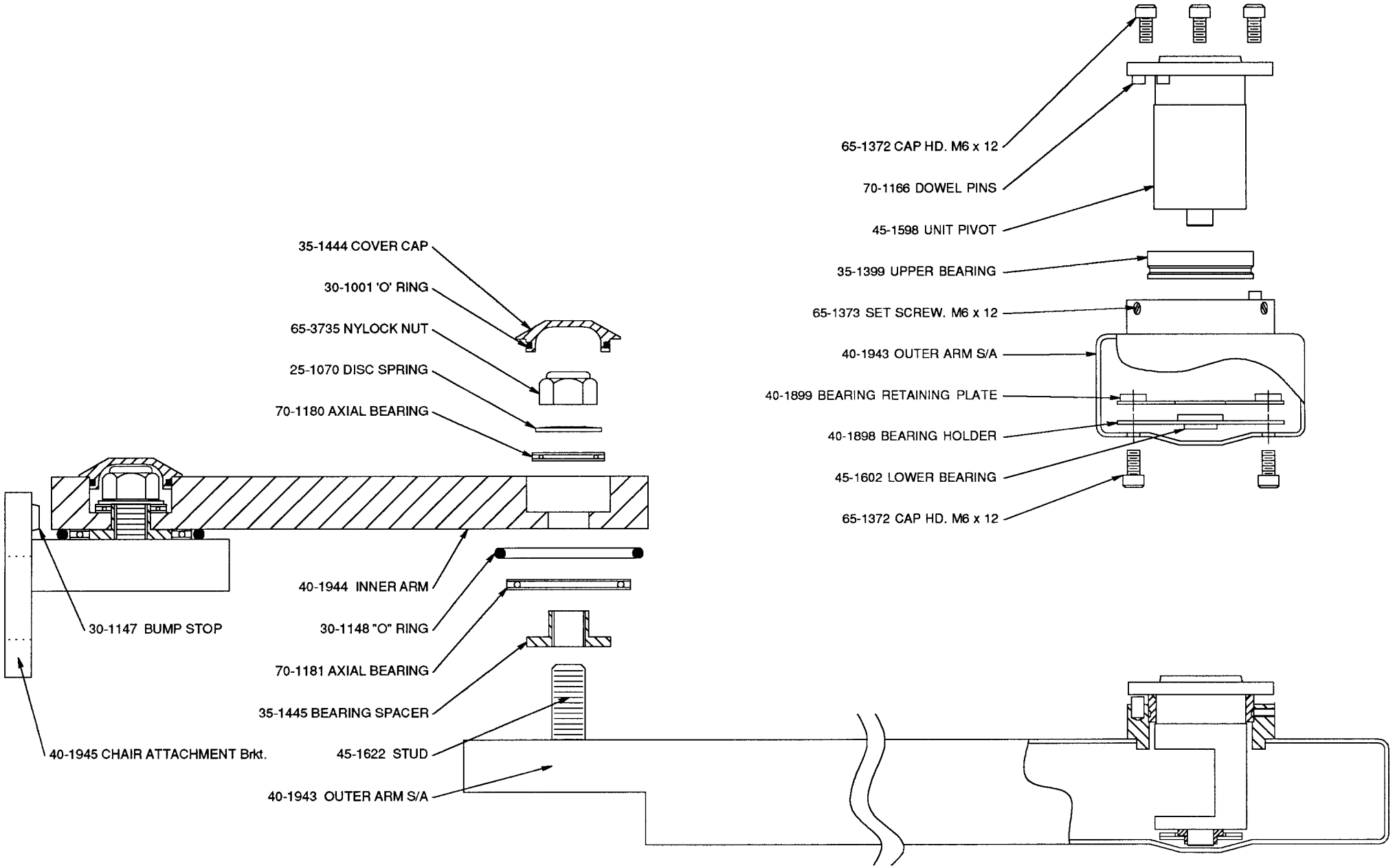
Part Number	Description	Comments
10 1028	FUSE, F5 (5 amp quick blow 20 x 5Ø	Motherboard fuse, F1 & Micromotor board
10 1135	FUSE, F1 (1amp. quick blow 20 x 5Ø	Motherboard fuse, F2
10 1186	FUSE, T500ma (ANTI-SURGE 20 x 5Ø	Fibre-Optic control board
10 1220	FUSE, T1.6 (1.6amp anti-surg 20 x 5Ø	Scaler control board
10 1290	MEMBRANE CONTROL PANEL	On front of unit
10 1309	FUSE. T1. (1amp anti surge 20 x 5Ø	Floor / wall box, Transformer Primary fuse
20 1040	T5 MOTHER BOARD P.C.B. ASSY.	
22 1199	BLEED VALVE ASSY	Instrument holders
22 1400	CONTROL VALVE, NEEDLE	Water and air controls on R/H side of unit
22 1417	CAP ASSY.	Water bottles
22 1458	SOLENOID + WATER VALVE ASSY	Easiest way to change in surgery
22 1466	SPRAY VALVE Assy	In foot control
22 1467	REVERSE VALVE Assy	In foot control
25 1062	SPRING .S/S	Control block non return valve
30 1009	'O' RING, B.S.806	Unit end of instrument hoses
30 1010	'O' RING, B.S.007	Between Mutibloc's
30 1058	DIAPHRAGM, PERFORATED.	Used in 22 1458 above
30 1061	DIAPHRAGM for MULTIBLOC	Control block
30 1086	'O'RING, B.S.022	Bottle cap seal
30 1097	DIAPHRAGM, SOLID.	Used in 22 1458 above
30 1140	VITON BALL 5/32"Ø	Control block non return valve
32 1075	POLY TUBE,1/8"O.D. CLEAR.	
32 1077	POLY TUBE 1/8"O.D. RED.	
32 1078	POLY TUBE 1/8"O.D. Trans.RED	
32 1079	POLY TUBE 1/8"O.D. GREEN	
35 1325	RETAINING SLEEVE. Small.	For use on 1/8" Ø tube
45 1540	HOSE RETAINER	For use on 1/4"Ø tube
50 1074	PUSH BUTTON VALVE	Water flush valve on R/H side of unit
55 1051	BRASS BARB CONNECTOR.	For 1/8" Ø tube - 10/32 thread
55 1051V	BARB CONNECTOR with seating	Control block non return valve
55 1055	BRASS BARB CONNECTOR.	For 1/4" Ø tube - 10/32 thread
55 1147	BARBED TEE	For 1/8" Ø tube
60 1097	NOZZLE ASSY	For TRIDAC MK 3 syringe
60 1113	M/WEST HOSE ASSY	
60 1114	F/O M/WEST HOSE ASSY.	
60 1122	HANDPIECE SLEEVE, Std.	For AMDENT Scaler
60 1131	BORDEN HOSE ASSY.	
60 1133	SCALER HANDPIECE AND HOSE ASSY	AMDENT
60 1150	SYRINGE HOSE ASSY.	For TRIDAC MK 3 heated syringe
60 1152	MC3 MOTOR HOSE ASSY.	
60 1157	SYRINGE HOSE ASSY. (D.C.I. Auto)	For D.C.I. Autoclavable syringe
60 1158	SYRINGE NOZZLE	For D.C.I. syringe
65 2013	10-32 NYLON WASHER	For sealing Barbs
70 1104	SYRINGE SERVICE KIT (TRIDAC MK3)	If fitted, or see 70 1190
70 1156	BOTTLE (500ml)	
70 1177	FILTER ELEMENT. Air.	For filter / regulator in upright of unit
70 1186	REPAIR KIT. (Diaphragm + filter element)	Water shut off valve In base of chair if fitted
70 1190	SYRINGE SERVICE KIT. (D.C.I. Autoclavable)	If fitted, or see 70 1104
70 1191	FILTER ELEMENT. (Water Shut off valve)	As used in 70 1186 above

BREAKDOWN OF PARTS FOR FOOT CONTROL ASSEMBLY. 22-1182

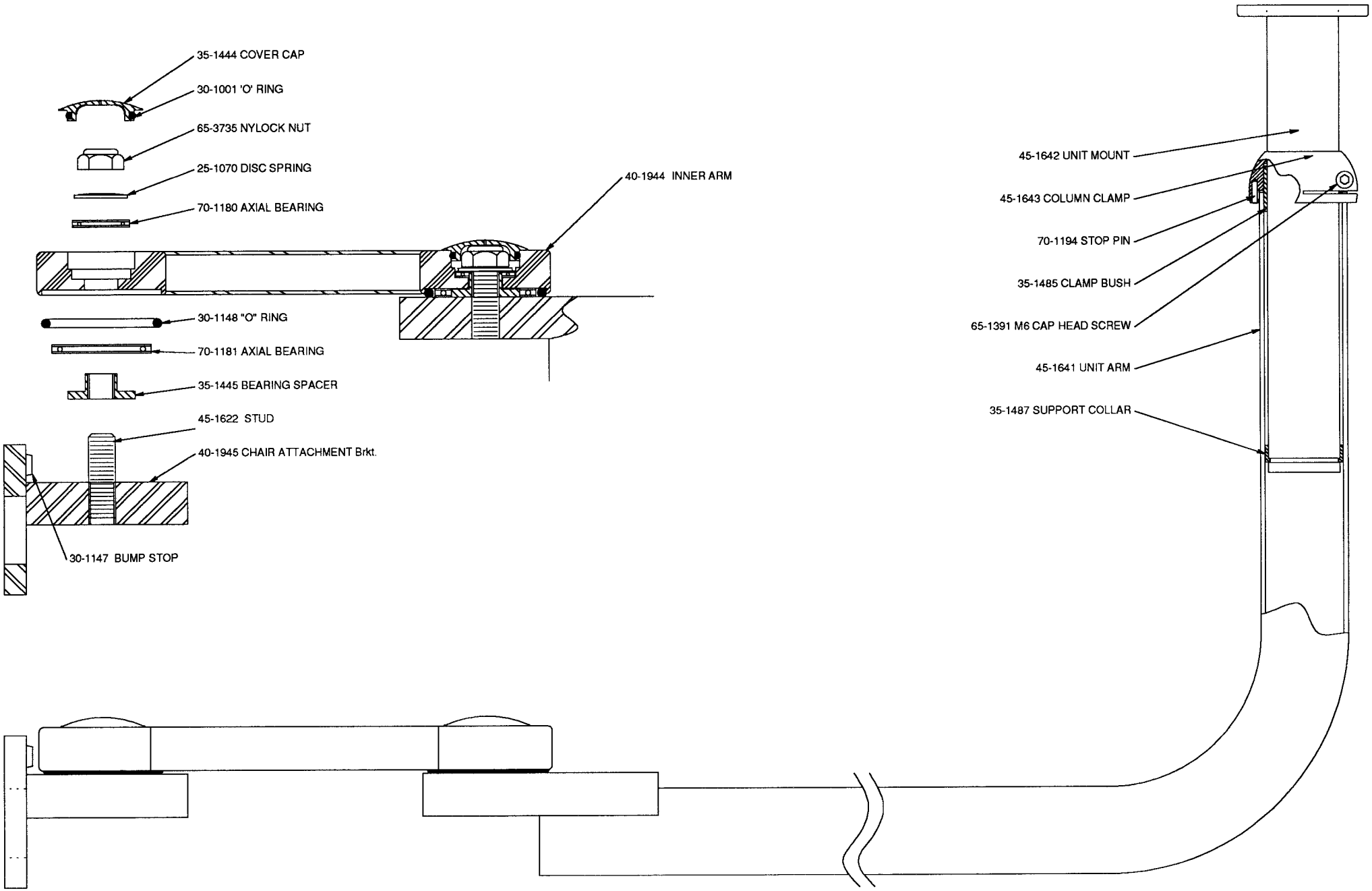


ITEM No.	COMPONENT No.	DESCRIPTION	QTY. USED
1	22-1238	Hose assembly, inc. Coupling	1
		Comprised of items 2 to 10 inclusive.	
2	30- 1068	'O' Ring	2
3	32-1017	Silicone Sleeve	7 ft.
4	32-1075	1/8" O.D. Polyurethane tube. Clear.	7.5 ft.
	32-1077	1/8" O.D. Polyurethane tube. Red.	7.5 ft.
5	32-1091	1/4" O.D. Polyurethane tube. Blue.	7.5 ft.
	32-1093	1/4" O.D. Polyurethane tube. Yellow.	7.5 ft.
6	35-1049	Retaining Sleeve.	2
7	45-1378	F/C Coupling.	1
8	45-1379	Connection Nut.	1
9	35-1511	Service Hose Retainer.	1
10	45-1540	Hose Retainer.	2
11	22-1120	Regulator assembly.	1
12	22-1465	Base sub assy.	1
13	22-1466	Spray Valve Assembly.	1
14	22-1467	Reverse Valve Assembly.	1
15	25-1030	Actuator Return Spring.	1
16	25-1039	Disc Spring.	2
17	32-1083	1/8" O.D. Polyurethane tube, Yellow.	1 ft.
18	35-1095	Cam. Multifunction.	1
19	35-1115	Roller.	1
	65-1506	2 B.A. x 1/2" Countersunk Screw.	1
20	35-1436	Spacer.	2
21	35-11519	Hose Retainer	1
	65-1026	Crescent Ring.	1
22	35-1387	Collar.	1
23	35-1423	Retaining Sleeve.	6
24	35-1454	Escutcheon.	2
25	40-1210	Valve plate.	1
26	40-1211	Outer Cover.	1
27	40-1213	Handle.	1
28	40-1214	Actuator Arm. Long.	1
29	40-1215	Actuator Arm. Short.	1
30	40-1216	Lever.	1
31	40-1587	Spray Selector Plate.	1
32	40-2025	Pivot support.	1
33	45-1267	Pivot Bush.	2
34	45-1269	Pivot Pin.	1
	65-1561	4 B.A. x 3/8" Csk.Screw.	1
	65-2506	1/4" Plain Washer.	2
35	45-1540	Hose Retainer.	2
36	45-1590	Spray Button.	2
37	55-1051	Small Barb.	6
	65-2013	Nylon Washer.	6
38	65-1300	M5 x 6 Pan Head Screw.	2
39	65-1324	M5 x 16 Pan Head Screw.	3
	65-2708	M5/2 B.A. Shakeproof Washer.	3
	65-3716	M5 Nut.	3
40	65-1326	M5 x 16 Cheese Head Screw.	2
41	65-1564	4 B.A. x 3/8" Pan Head Screw.	1
	65-2710	4 B.A. Shakeproof Washer.	1
42	65-3720	M6 Nut.	2
43	70-1100	5/32" Ø x 3/4" Spirol Pin.	2
44	75-1132	Operating Label.	1

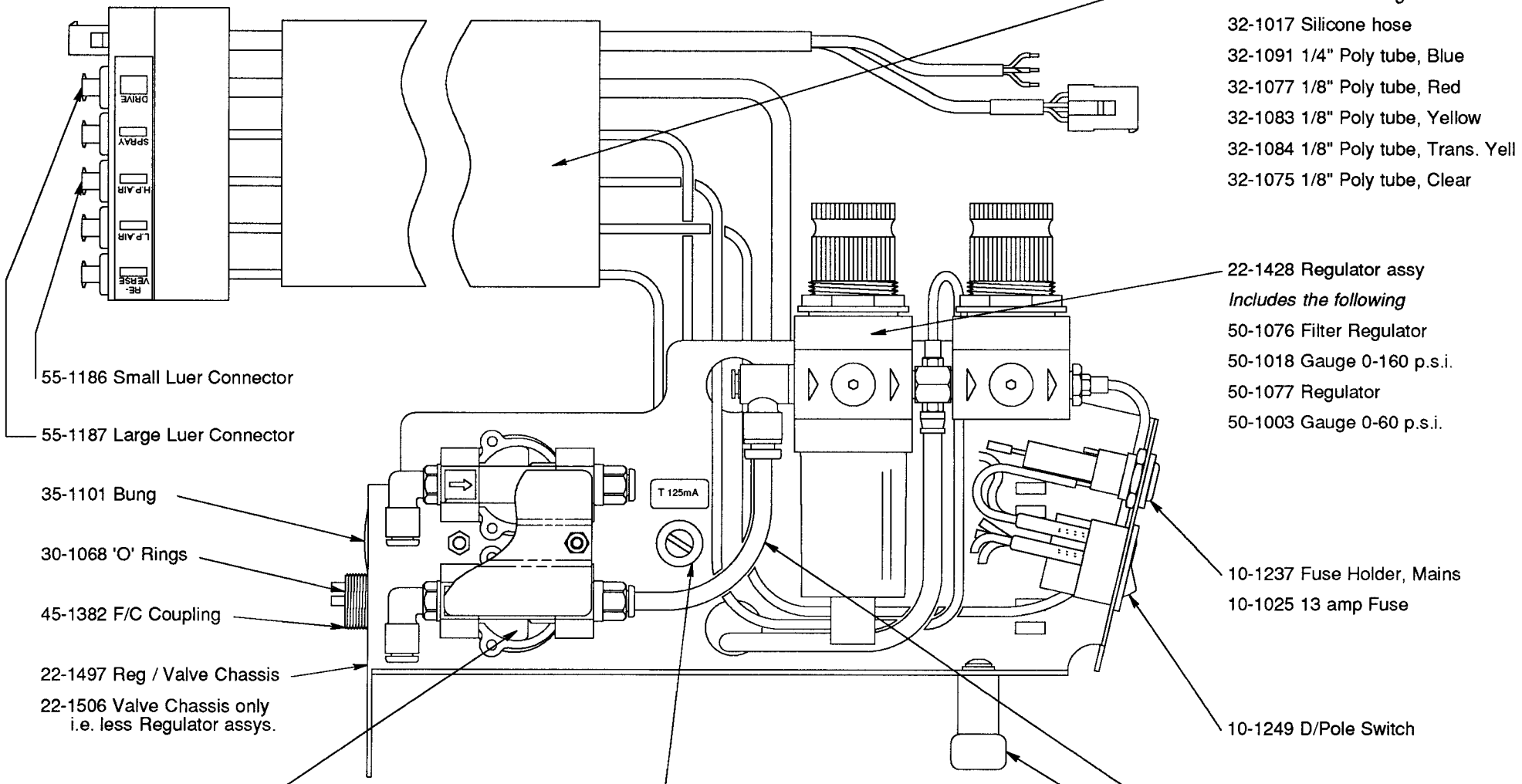
BREAKDOWN OF PARTS FOR ARM ASSEMBLY P/No.22-1420



BREAKDOWN OF PARTS FOR ARM ASSEMBLY P/No. 22-1500



PARTS BREAKDOWN FOR LOWER LOOM ASSY. P/No.22-1504 and REG / VALVE CHASSIS ASSY. P/No. 22-1497 (shown fitted together).



22-1504 Lower Loom Assy.
Includes the following
32-1017 Silicone hose
32-1091 1/4" Poly tube, Blue
32-1077 1/8" Poly tube, Red
32-1083 1/8" Poly tube, Yellow
32-1084 1/8" Poly tube, Trans. Yell
32-1075 1/8" Poly tube, Clear

22-1428 Regulator assy
Includes the following
50-1076 Filter Regulator
50-1018 Gauge 0-160 p.s.i.
50-1077 Regulator
50-1003 Gauge 0-60 p.s.i.

55-1186 Small Luer Connector

55-1187 Large Luer Connector

35-1101 Bung

30-1068 'O' Rings

45-1382 F/C Coupling

22-1497 Reg / Valve Chassis

22-1506 Valve Chassis only
i.e. less Regulator assys.

10-1237 Fuse Holder, Mains

10-1025 13 amp Fuse

10-1249 D/Pole Switch

50-1094 Solenoid

55-1135 Straight adaptor, 6mmØ

55-1136 Elbow adaptor, 6mmØ

10-1123 Fuse holder

10-1182 Fuse, T125mA

32-1069 Tube 6mmØ yellow

35-1428 Retainer

T5 DENTAL UNIT PIPE LAYOUT. sheet 3. Services and Foot Control.

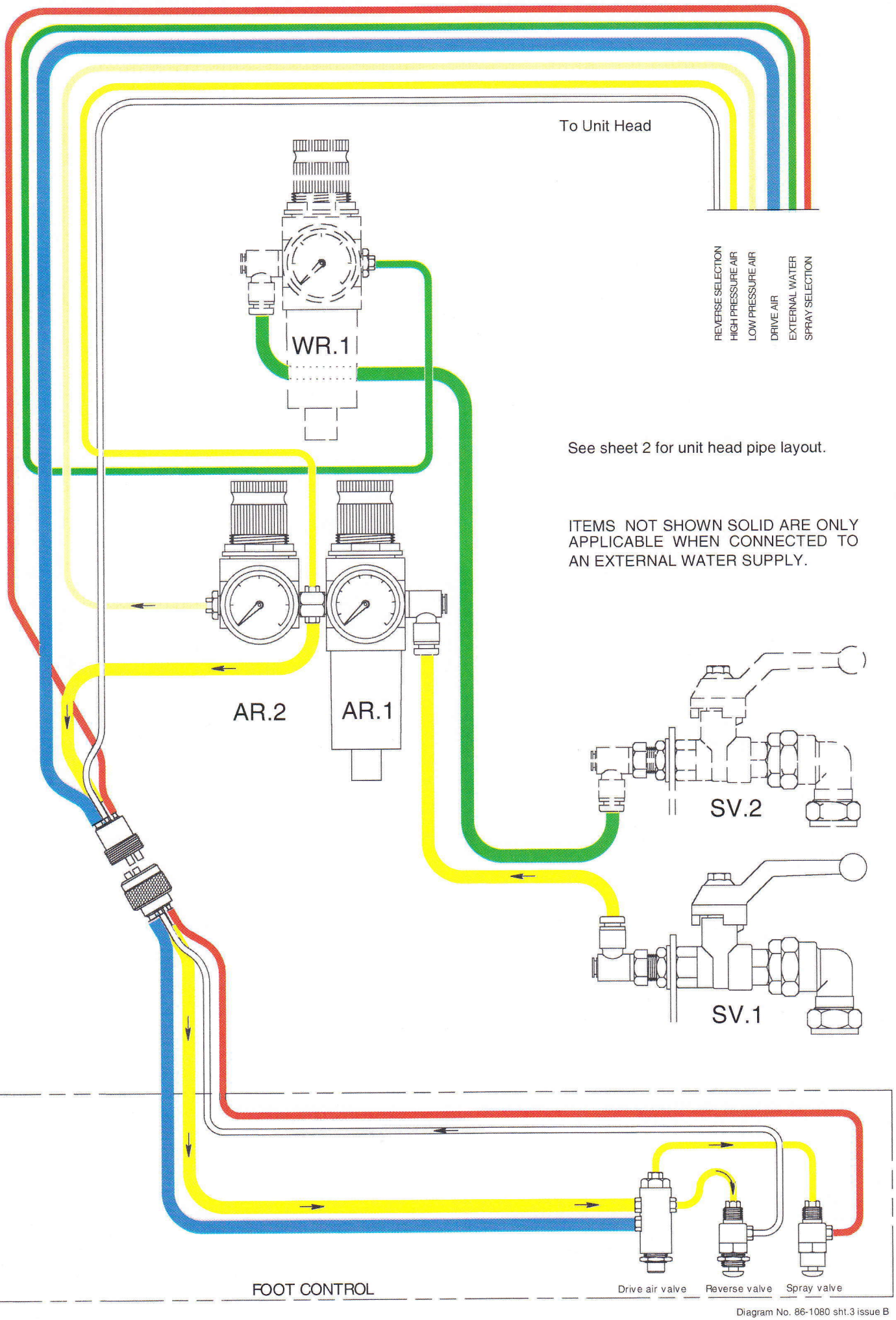
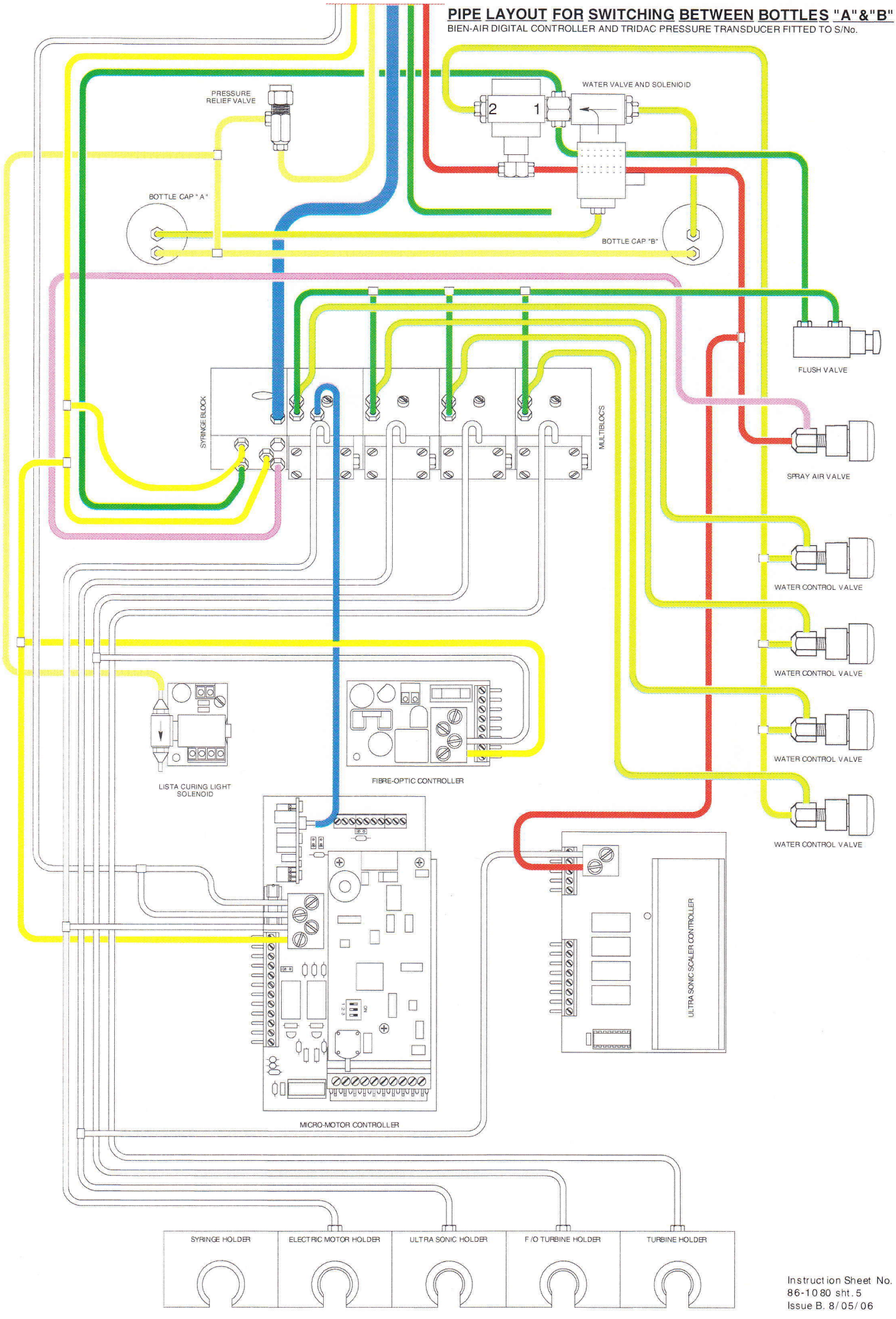


Diagram No. 86-1080 sht.3 issue B

PIPE LAYOUT FOR SWITCHING BETWEEN BOTTLES "A"&"B"

BIEN-AIR DIGITAL CONTROLLER AND TRIDAC PRESSURE TRANSDUCER FITTED TO S/No.



Instruction Sheet No.
86-1080 sht.5
Issue B. 8/05/06