

# TRIONIC 5

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## TECHNICAL SUPPLEMENT TO TRIONIC 5 UNIT

 **TRIDAC Ltd**

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# INSTALLATION

## 1) INTRODUCTION.

This document is a technical supplement for the TRIONIC 5 DENTAL UNIT and provides information on the installation, service and repair of the dental unit. For information on how the unit functions, its controls, setting Turbine pressures etc., please refer to the Operating Manual. part No. 86-1017 issue 4.

The TRIONIC 5 dental unit comes preassembled and fully tested, the only work required is fitting to the chair or installing the floor / wall 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. 6.9 bar (100 p.s.i.) Maximum. 50 Litres / minute at above pressures.

## 3) PREINSTALLATION :

NOTE: The mains supply to the equipment must be provided via a double pole **isolating** switch conforming to BS1363-4 or IEC 61058-1 for creepage distance and air clearances for a mains transient voltage of 4kV. The most convenient location of this would be on the wall adjacent to the exit door.

**When the TRIONIC 5 UNIT is supplied as a CONTOUR package, serviceconnections are provided and are pre installed in the base of the chair.**

If not supplied as a CONTOUR package, check that the Serviceconnections supplied are 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.

All Tridac service connections have 15mm compression fittings 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 fig. 4 If you wish to adapt them to other sizes, the thread in the adaptor 45-1496 is 1/8" B.S.P.

The control panel on the T5 unit incorporates buttons for operation of a Tridac CSM spittoon, all functions of the ECO.Next/ECO19 chair together with operating light. When the unit is installed remote from the chair, using a wall or floor box, an additional cable kit will be required (P/No. 22-1540) to enable their use. All cables have attached connectors that only need plugging together.

The cart is supplied as standard with a flying lead and a quick connect fitting for the air supply. This method allows connection to existing floor boxes, wall outlets or within a cabinet. Other methods of connection are available as options and shown below.

The floor box shown, P/No. 22-1415, has been designed to take other equipment such as spittoons, and keep the hoses close to the chair keeping them out of the way of patients and staff. This floor box will only be supplied if specifically ordered.

When the cart is to be installed with the services to the side of the surgery rather than under the foot of the chair, the cart can be ordered with a wall connection box part No. 22-1425 as an option.

## INSTALLATION OPTIONS

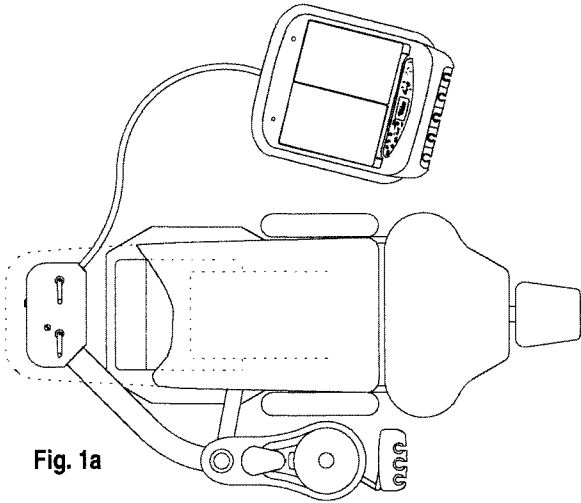


Fig. 1a

TRIONIC 5 CART with optional floor box.  
Part No. 22-1415

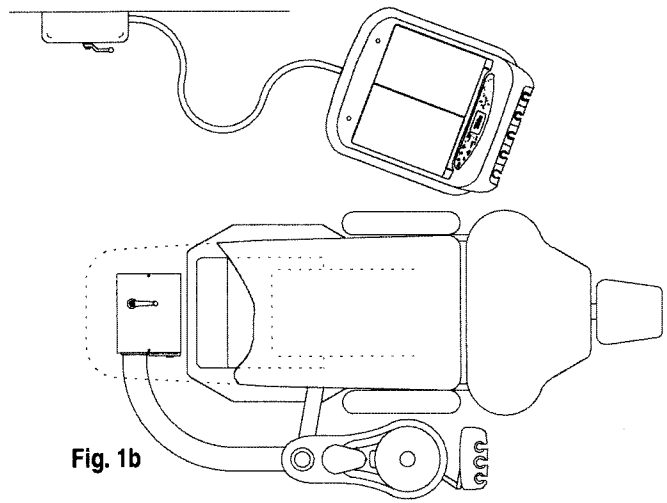


Fig. 1b

TRIONIC 5 CART with optional Wall box.  
Part No. 22-1425

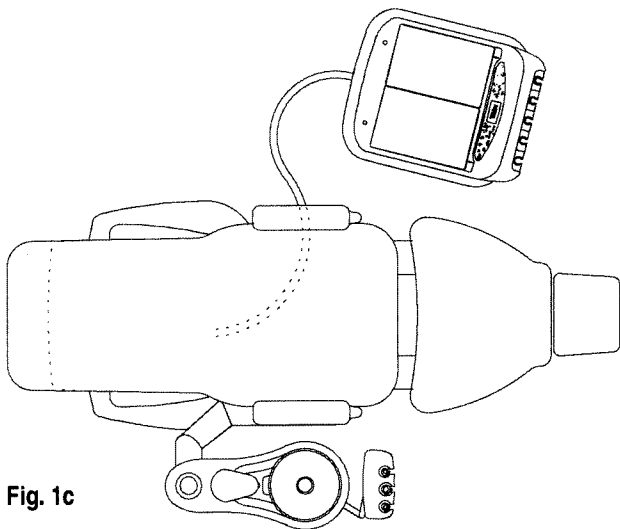


Fig. 1c

TRIONIC 5 CART installed with ECO.Next/ECO19 Chair

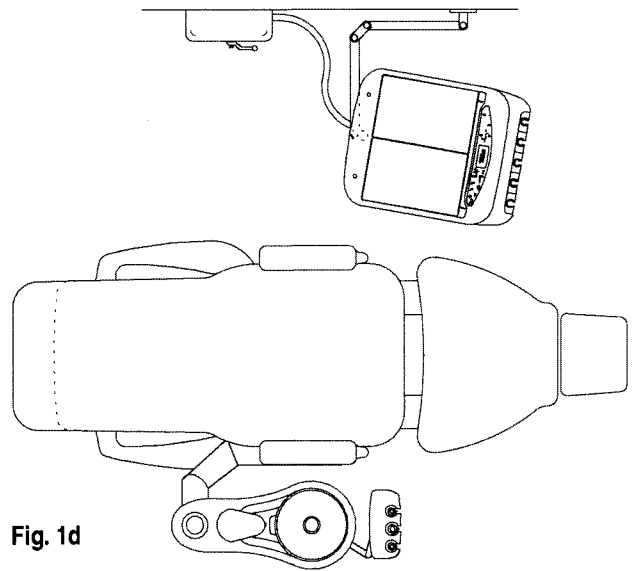


Fig. 1d

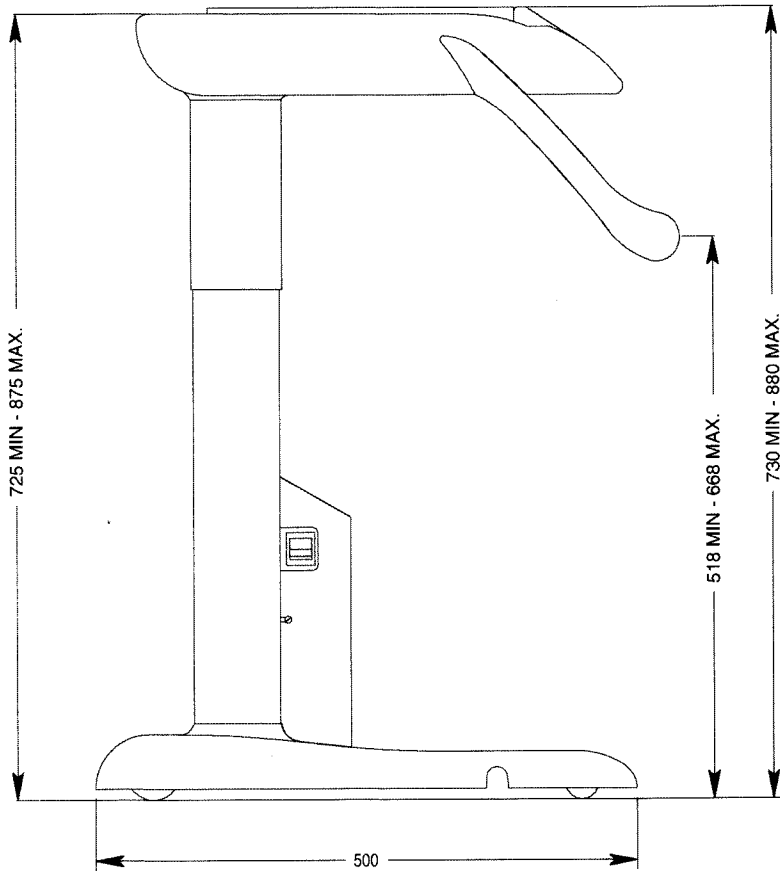
TRIONIC 5 MODULE installed with any Chair

### 4) TIPS FOR UNPACKING.

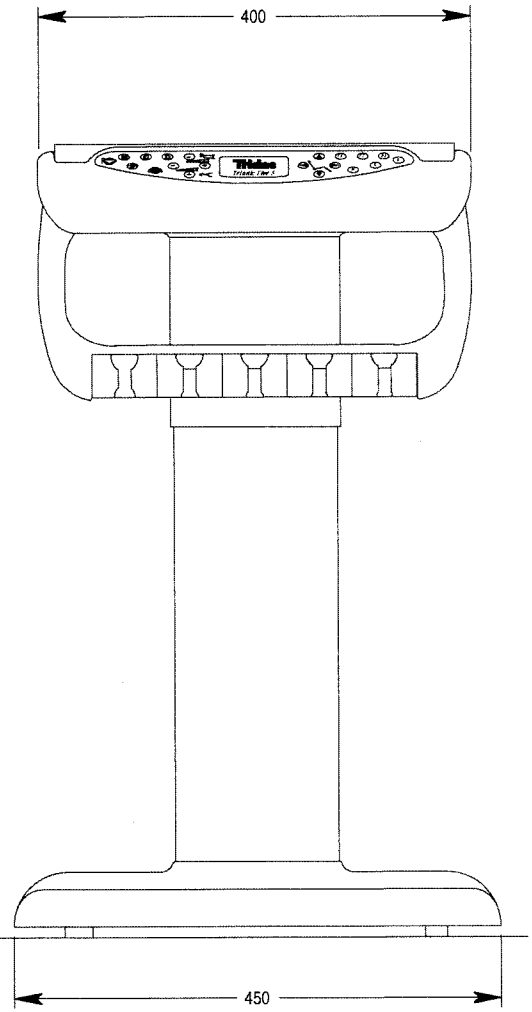
To remove the CART from the packaging, remove straps and open the top flaps. Remove any loose items and the centre cardboard insert. Remove the two boxes down each side together with the cardboard packing piece under the base. Stand the packing box on end and wheel out the unit, it is a good idea to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

# UNIT DIMENSIONS

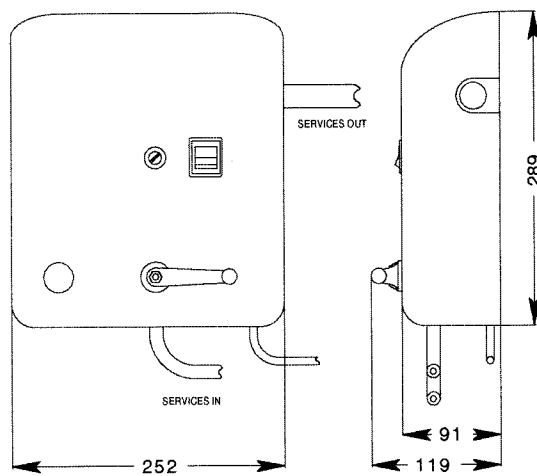
Fig. 2



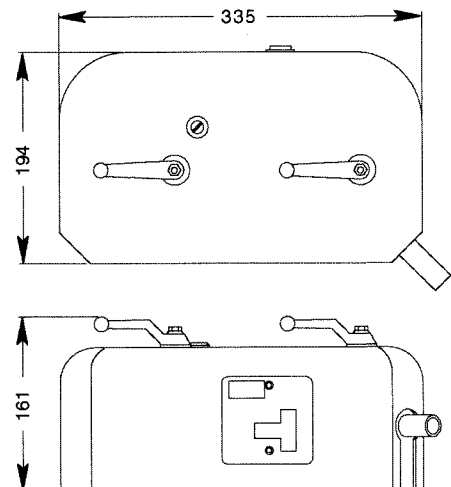
SIDE VIEW.  
Shown with optional viewer.



FRONT VIEW.  
Shown with optional viewer.

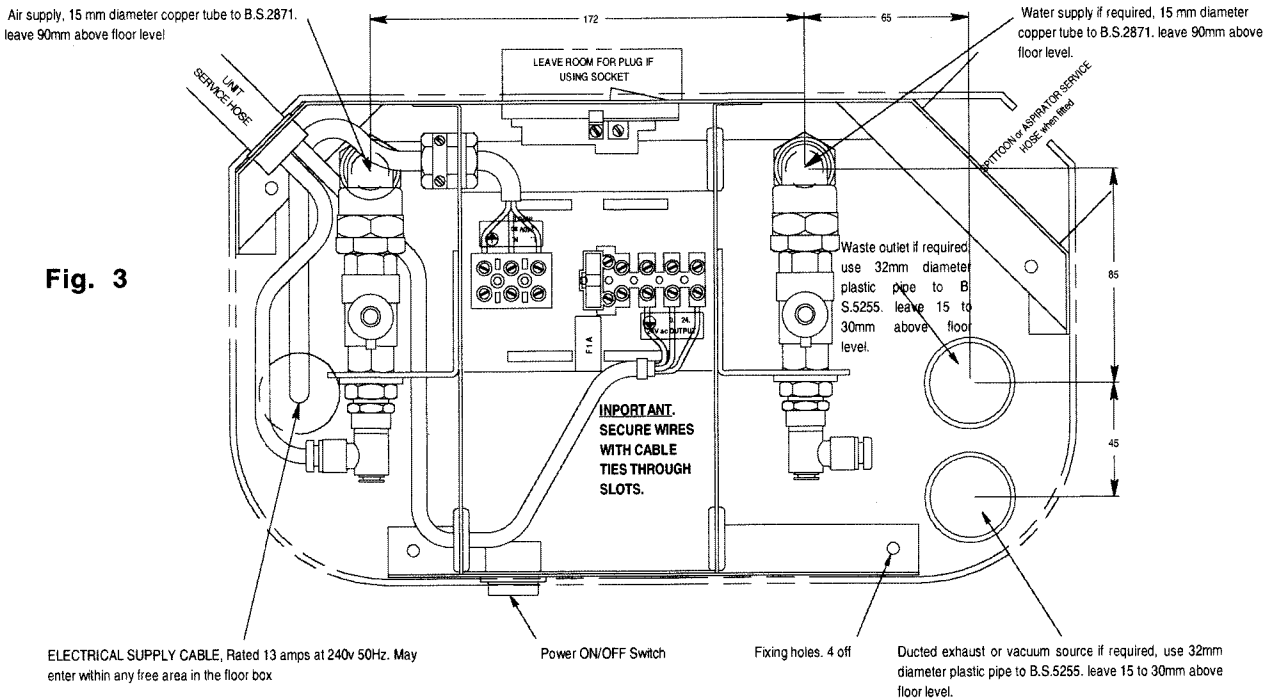


STANDARD WALL BOX.

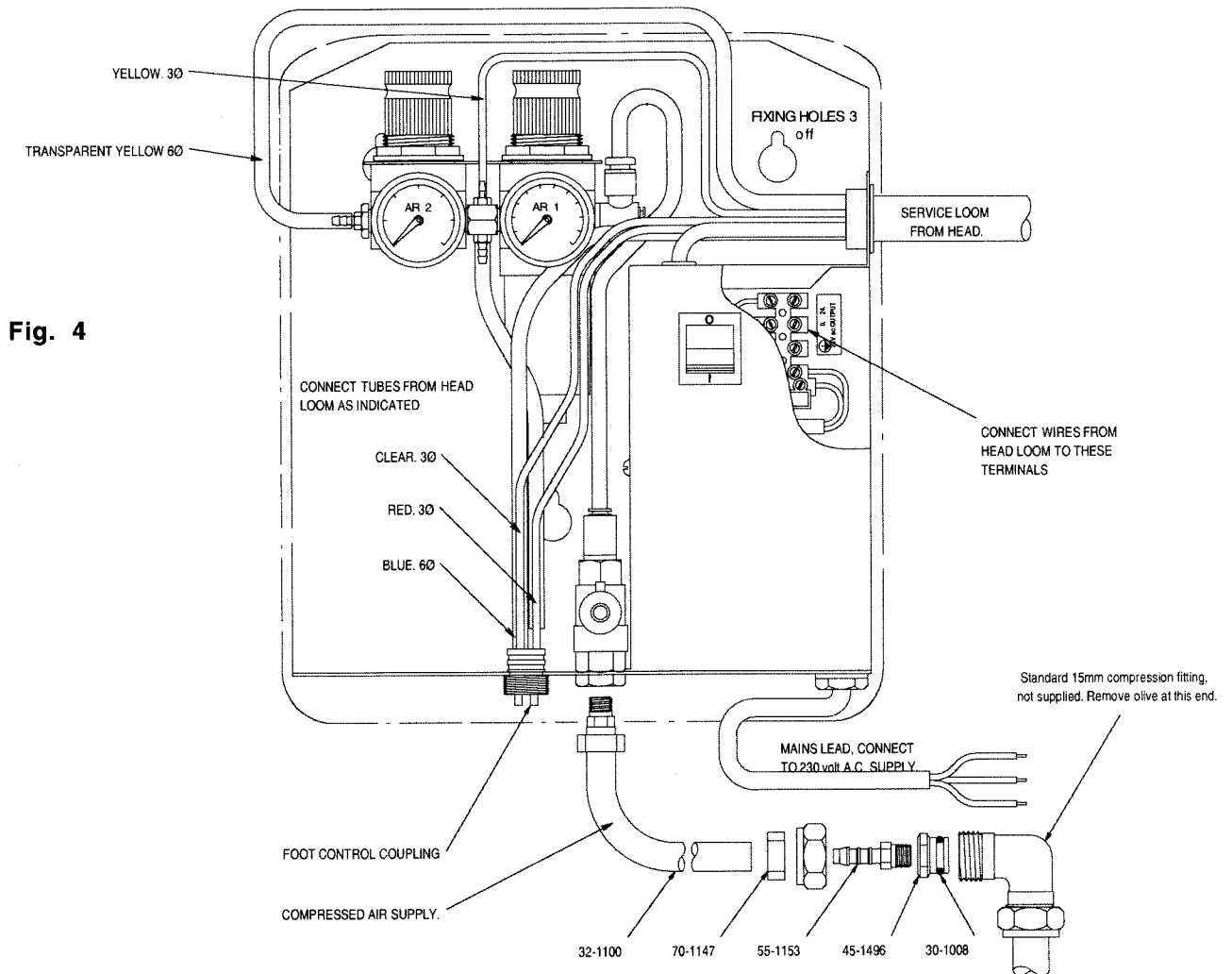


STANDARD FLOOR BOX.

## FLOOR BOX LAYOUT



## WALL BOX LAYOUT



# MAINS WIRING CONNECTIONS

## 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.

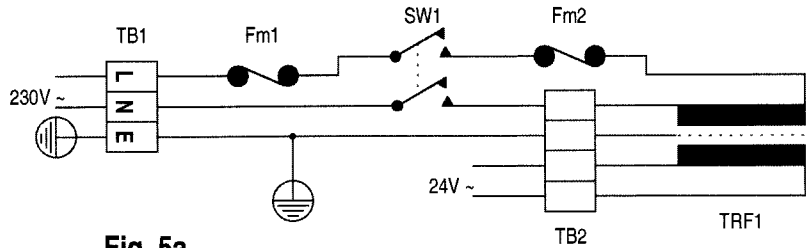


Fig. 5a

## 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.

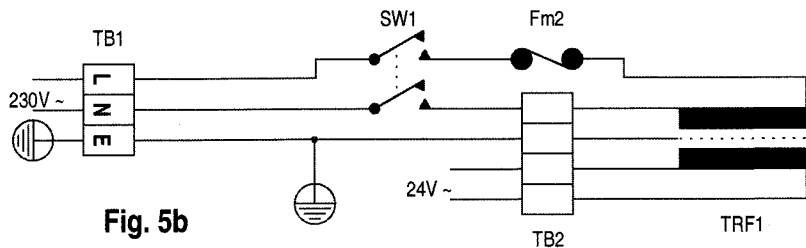


Fig. 5b

## WIRING DIAGRAM for TRIONIC 5 / ECO19 Chair Services.

### Reg/Valve Chassis, P/No's 22-1497 & 22-1537

- 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.

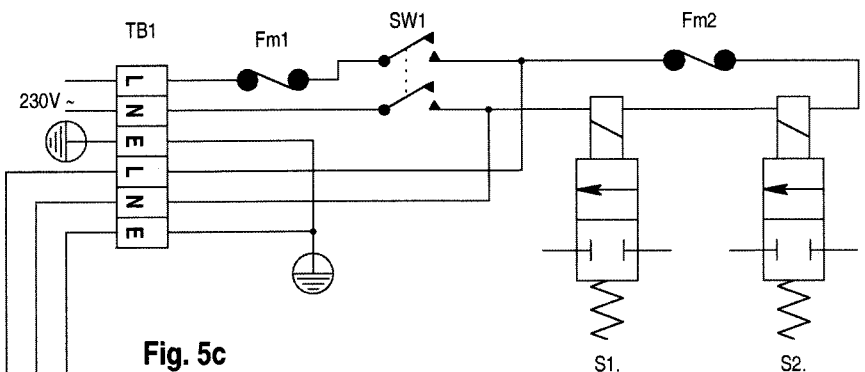


Fig. 5c

### 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.

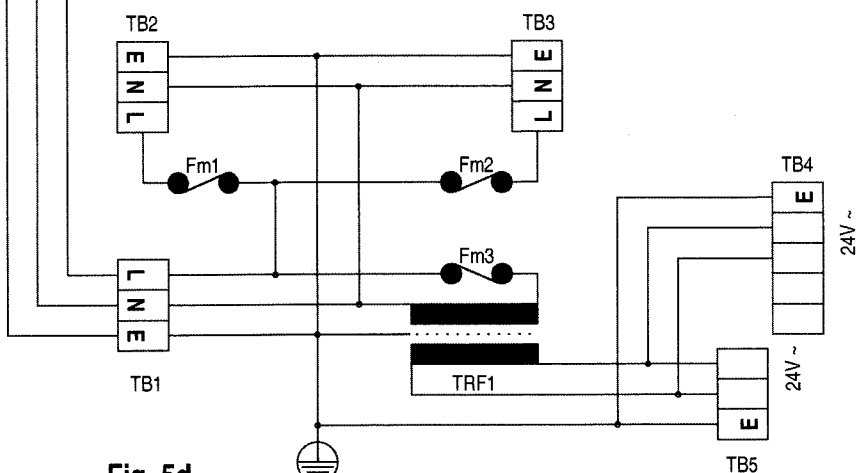


Fig. 5d

## 5) FLOOR BOX INSTALLATION FOR CART

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.

## 6) WALL BOX CONNECTION for MODULE

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. Feed the mains supply cable through the cable clamp and connect to the mains input terminal block marked **240V ac INPUT** 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.

## 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.

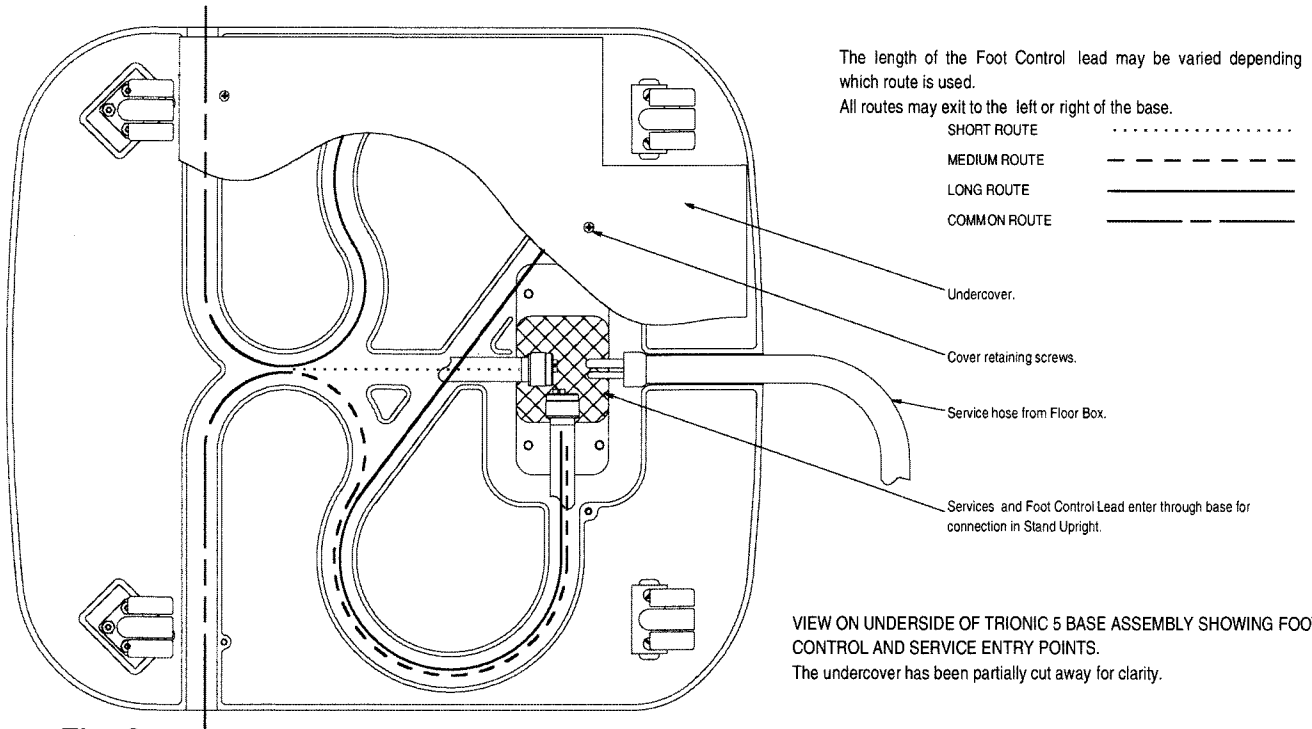
Unpack the foot control, feed the coupling up through the base and screw onto the connection in the stand upright, see fig.7. Choose either the short, medium, or long route for the lead, see fig. 6, to give the most suitable working length of foot control. Take the lead out through the chosen exit and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

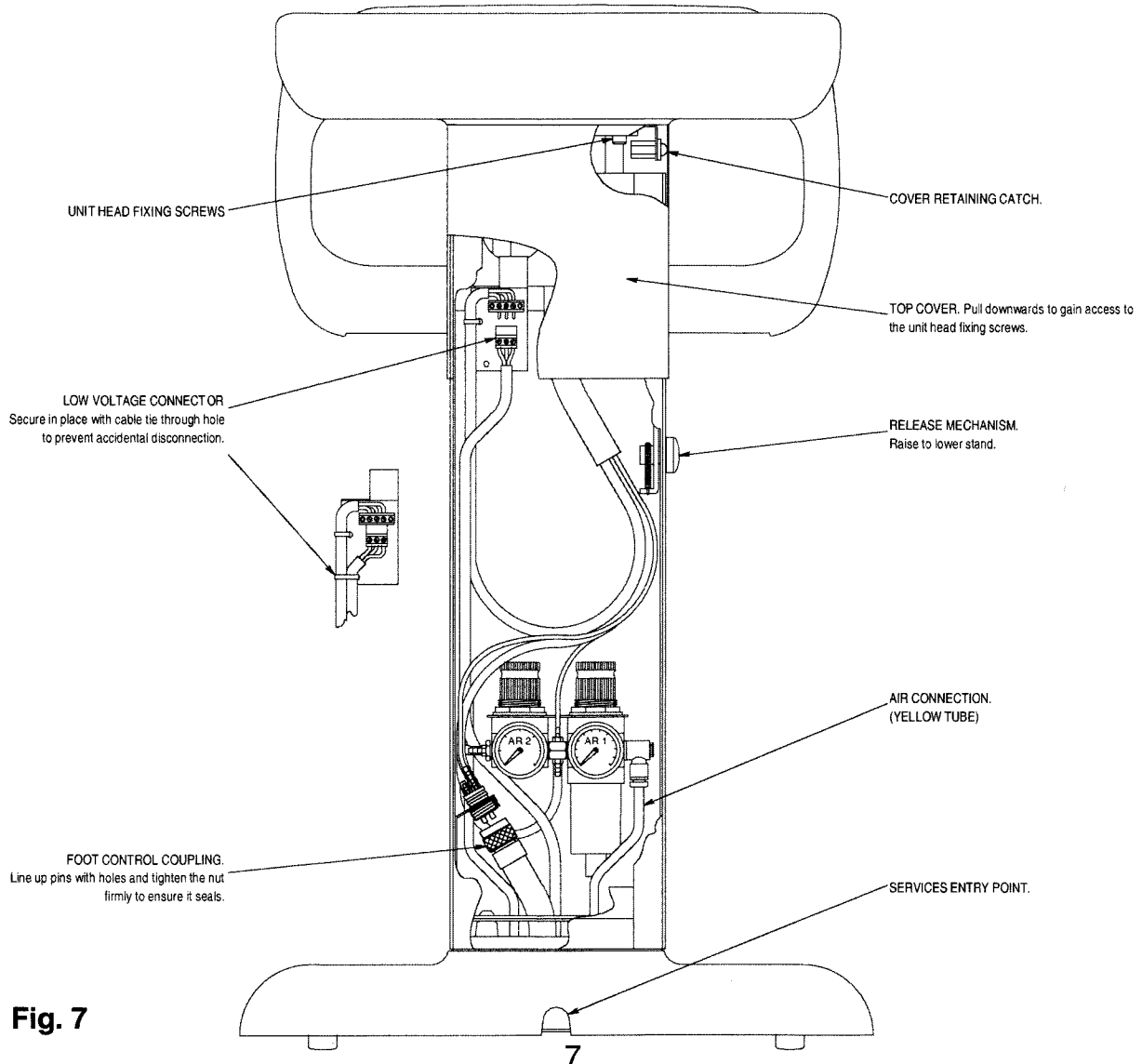
Plug the low voltage connector onto the connector pins located near the top left hand side of the upright, see fig.7, it is important that the cable is secured to the bracket with a cable-tie to prevent accidental disconnection in use.



# CART CONNECTIONS



**Fig. 6**



**Fig. 7**

## 8) CHAIR ATTACHED UNIT

The position of the services within the base of the chair are fairly critical, in that they need to be accessible for servicing. They also need to be able to accommodate 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.

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

Make a safe and compliant connection of the mains supply cable to the mains terminal block located on the front left hand side of the chair.

The double pole ON/OFF switch built into the base of the chair will isolate the whole unit, chair, T5, spittoon and light if fitted. DO NOT connect the Air or Water at this time.

With the electric now connected, raise the height of the chair and remove the undercover on the pantograph section. Now disconnect the electrical supply before continuing.

Pass the loom through the hole in the unit mounting bracket, loop round and connect to the connection chassis making sure that the tubes match colour for colour and the plugs and sockets for the wiring are attached and secure. 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.

If a spittoon is to be fitted to the chair, this should be done before continuing.

The AIR and WATER connection tubes, YELLOW and GREEN respectively, that are supplied with the chair, have isolation valves attached to them. It is important that these are used as they incorporate screen filters to protect the shut off solenoids. The tubing may be reduced in length if required. To remove it from it's fitting, push both the collar and tube into the fitting at the same time, then whilst holding the collar in, pull out the tube. Reduce the tube to the required length making sure that the end of the tube is cut clean and square and is without scuff marks. To fit, press the tube firmly into the fitting a distance of approximately 15 millimetres.

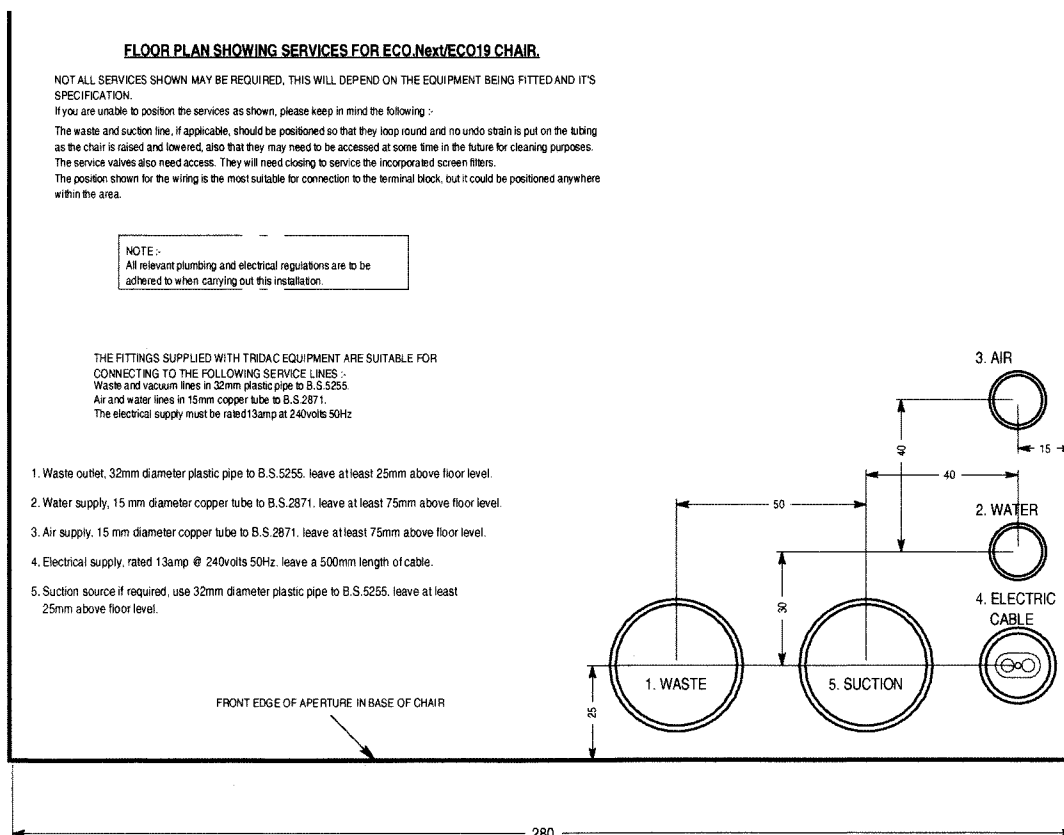
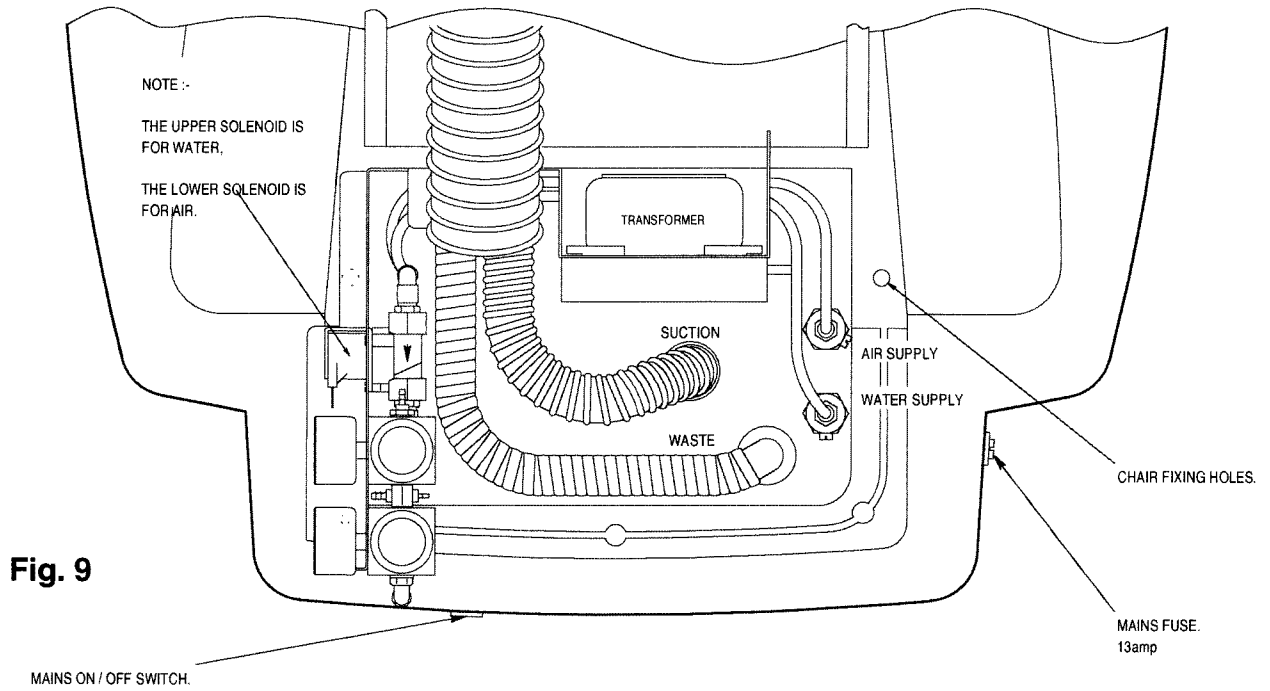
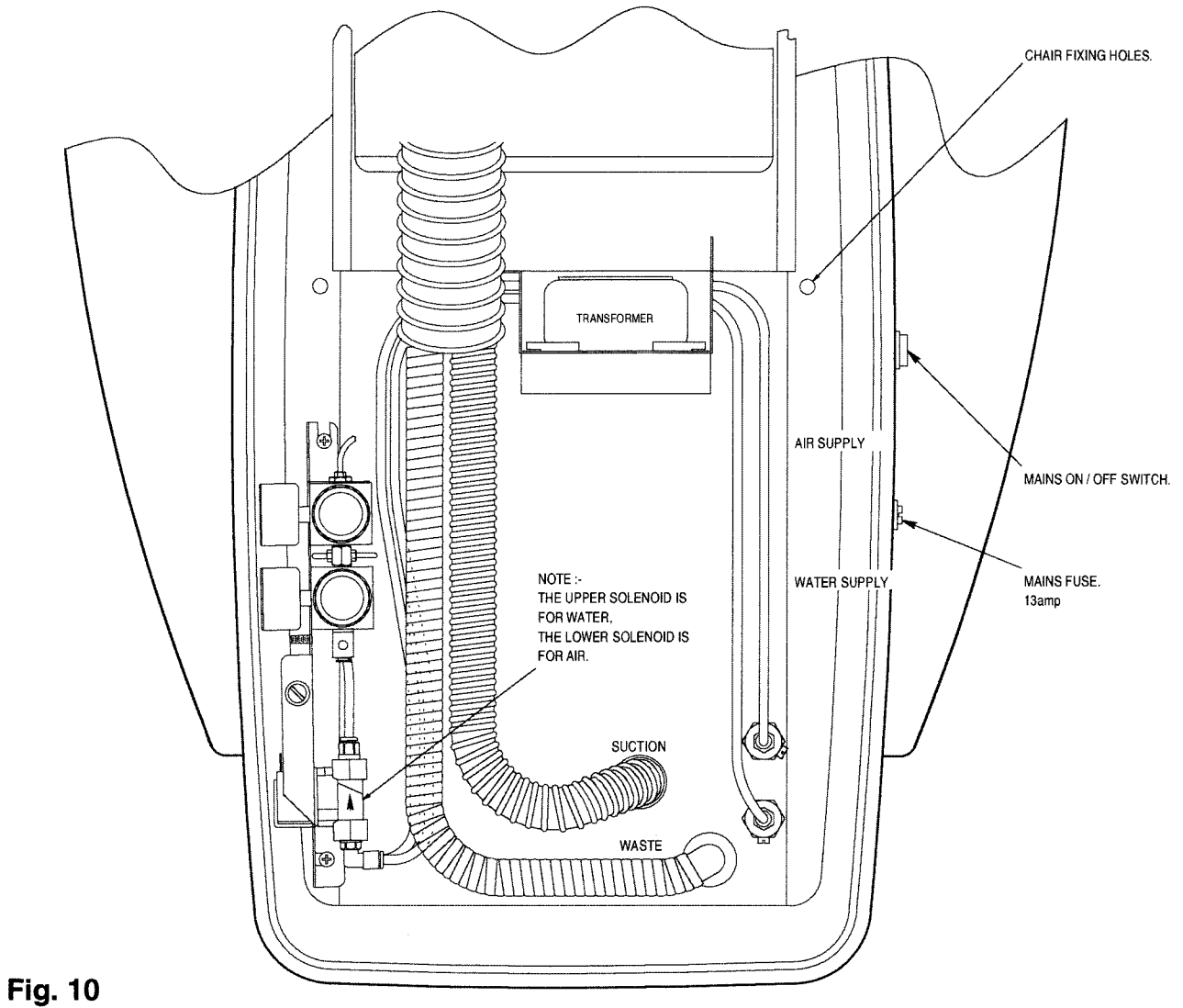


Fig. 8

## SERVICES LAYOUT FOR ECO19 CHAIR

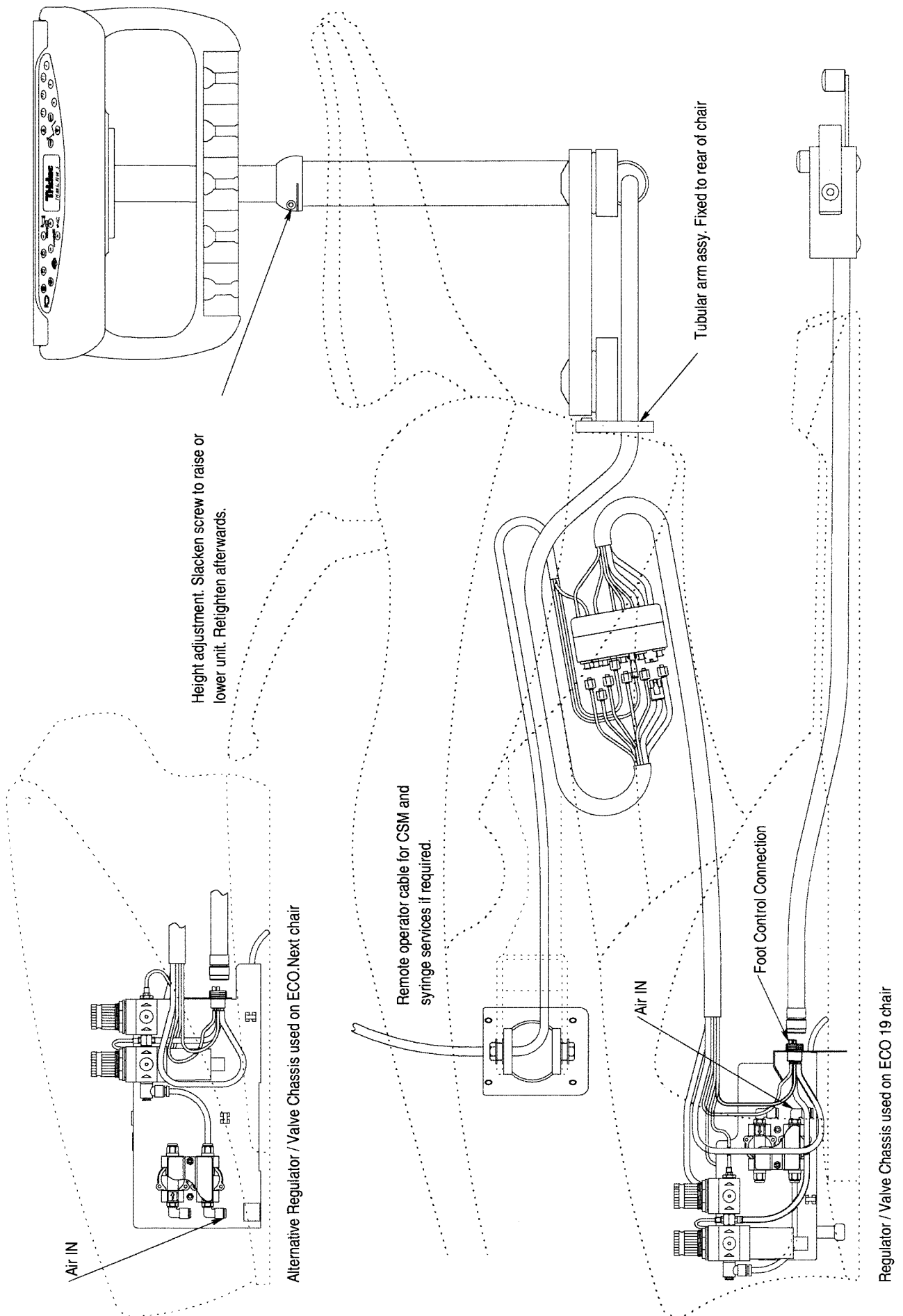


## SERVICES LAYOUT FOR ECO.next CHAIR



# UNIT CONNECTIONS TO ECO CHAIRS

Fig. 11



## 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 electricity supply at the chair or services box, and make a quick check for air or water leaks.

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**

YOU MUST leave the Operating Manual 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.

IT IS ESSENTIAL that the compressor supplying the unit is able to continuously provide air with a minimum pressure of 5.5 mbar at all times or there may be insufficient supply to run some instruments at their optimum setting. This could also have an affect on the opening of the water valve.

NOTE: The regulator at the input to the unit is set to specification (80 psi / 5.5 mbar)

### **Water System**

The unit has been configured to Switch between bottle A and bottle B at will, this provides the user with continuous uninterrupted use as each bottle can be replenished while still using the other. Alternatively, one of the bottles may be filled with a suitable medicant for root work or for flushing the instrument hoses after use.

The reservoir bottles are screwed into special 'caps' housed in the unit head. These caps are fitted with a restrictor valve, so that the bottles may be removed, even when pressurised by the air supply. Escape of air is limited to a small hiss.

The hiss will be heard to die away as the bottle is refitted, giving assurance of a seal, Do Not over tighten.

Note that air pressure building up in the bottle makes it easier to handle, so slowly refitting is an advantage.

## Description of circuit

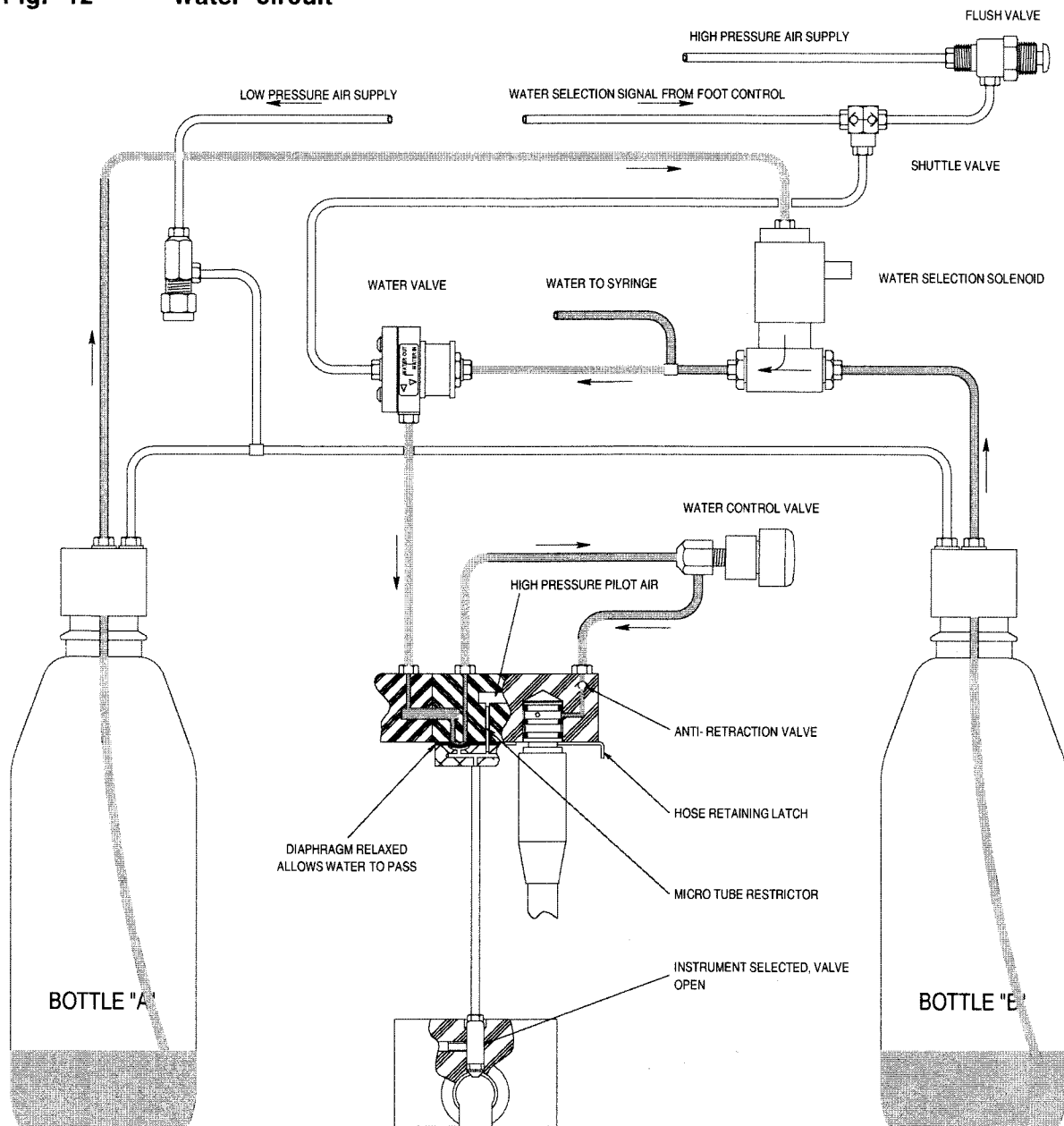
Regulated air pressure is fed to both bottles at the same time thus providing water to the selection solenoid. With bottle A selected on the control panel, the solenoid is NOT energised and the water flows from bottle A to the water valve and syringe outlet. When bottle B is selected on the control panel, the solenoid is energised and allows the water from bottle B to pass to the water valve and syringe outlet.

Selecting water on the foot control sends a high pressure air signal to the water valve causing it to open, this water is then fed to all the control block via the connection block on the end. Removing an instrument from it's holder causes the diaphragm on that control block to relax allowing the water to pass through the flow control valve and anti retraction valve before reaching the selected instrument.

Pressing the flush valve on the side of the unit, sends a high pressure air signal to the water valve, via a shuttle valve, this opens it as described above, allowing water through to the instrument. This flush system, allows only the instruments selected to be flushed and without having to use of the foot control.

The diagram below shows the layout of all the components in the water circuit.

**Fig. 12 Water circuit**



## **a)Water Problems**

### **Dripping Handpieces**

**Symptom:-** Handpieces that run on or drip after stopping, but eventually do stop.

The most likely cause will be 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, causing air to get into the system.
- iii) Air that was naturally dissolved in the water, has been freed and formed into bubbles. This is only likely after a period of non use, i.e. weekend or holiday.
- iv) The DCI syringe connector faulty or not engaged fully, allowing air to get into the system.
- v) 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.

**Symptom:-** Handpieces that run on or drip after stopping, and continue to drip non-stop.

- vi) The air operated water valve (located to the left of the solenoid valve) is not shutting off properly.  
This may be due to dirt on, or damage to the 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 input fitting complete with barb, then remove the spring and ball, clean and re-assemble.

**Symptom:-** Handpieces that drip even after they are replaced in their holder.

- vii) The Multibloc diaphragm is not sealing fully across the middle, this allows the high pressure control air to enter the water channel to 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.  
Smearing a little silicone grease in the middle of the diaphragm, on the cap side, may help to seal it. Take care to do up the screws evenly and firmly but DO NOT over tighten them.

### **Other water problems.**

**Symptom:-** No water at handpiece.

- viii) Selected bottle is empty. Refill or select other bottle.
- ix) Water not selected on foot control. Operate appropriate button or lever on foot control.
- x) Control valve on side of unit closed. Turn anti-clockwise to increase.
- xi) Spray air valve on control block open too far. Too much air may prevent the water from exiting the handpiece, see spray air controls, i) below. Turn clockwise to reduce.
- xii) Tube in water bottle sucked onto the inside face. Only likely when the tube has been replaced. Cut notch or hole in the end of tube.

## **b) Spray Air controls**

The Trionic has separate spray air supply for each instrument which is needed for all instruments that do not 'bleed off' the drive air (virtually all low speed instruments come into this category). The spray air is taken from the pilot air to the water valve. The amount of air to the instruments is controllable by the spray air valve built into each control block.

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) Most turbines DO NOT need any spray air at all, as the water is made into a spray but the drive air. Pulsing or slowly diminishing water spray are typical symptoms of too much spray air.

ii) When air and water are mixed in the hose or instrument, as with a Micromotor, having at least a small supply of air to the spray circuit will prevent run-on or dripping.

## **c) WATER BOTTLES**

### **Selection Solenoid**

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 the light is displayed, select A, then B again. If there is no change, suspect a stuck plunger in the solenoid.

**DO NOT DISCONNECT THE SOLENOID WIRES WITH THE POWER ON.**

A sticking plunger can be caused, either by particles in the valve or scale build up on the plunger. To disassemble, turn power off to the unit, exhaust all air pressure and remove the solenoid from its retaining clip. Remove the tube and barb at the top of the solenoid, i.e. coil end. Unscrew retaining nut holding coil in place and then unscrew the hexagon part from the main body.

Inside is the plunger and spring, clean all the parts, inside and out. Remove any scale build up on the plunger, this can be done by rubbing on a piece of ordinary plain paper. Re-assemble making sure that the spring and plunger are the right way round and that it moves freely within its housing before reattaching to the main body. No sealant is required if the 'O' ring is still in place.

## **d) SYRINGES**

### **DCI Syringe**

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

- i) Dirt under seating. Strip and clean, replacing the valves if necessary.  
Flush syringe through with water for a few minutes before reassembly.
- ii) The small nozzle 'O' ring is worn or nozzle damaged: Replace.

The DCI syringe fitted, is of the detachable, autoclavable type and incorporates shut off valves in the connector. They consist of 'O' rings sliding across a face and can give rise to problems, such as leaks and air getting into the water. If this happens, you may notice air bubbles in the water bottles.

## **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**

##### **MX2 Basic**

The MX2 Basic is a brushless electric micromotor that requires little maintenance.

The Bien-Air control board is built into a special plug in P.C.B. that allows the user to set four preset maximum speeds which are indicated by LED's on the front panel. Any failure to select these will most likely be due to a breakdown or poor connection between the motor controller and the control panel. Check all connections and the condition of the control panel ribbon cable, look for signs of creasing or water damage.

If a fault is suspected in the control panel, disconnect the two 7 way ribbon cables, i.e. the switching ones, and using a continuity meter, check that the circuit is made between the 'C' on the left hand ribbon and the M+ and M- on the right hand ribbon, when the respective switch is pressed.

Conversely, making a momentary connection between these points on the sockets will bypass the control panel and test the circuit board for operation. The motor should increase or decrease in speed, assuming that the motor is selected and the foot control is set to maximum.

The foot control varies the speed of the motor by means of air pressure on the Bien-air transducer. If there is insufficient pressure, the motor will not obtain its maximum speed of 40,000rpm. The correct pressure was set at the factory and should only need adjusting if someone has altered it. To check, fit a suitable pressure gauge to the output on the micromotor control block, this is the small BLUE tube that goes to the P.C.B. With the motor selected and handpiece attached, operate the foot control to give maximum speed. This should give a reading of 4 bar, if adjustment is required, regulate by means of the slotted screw for the cooling air.

#### **g) SCALER. NSK Varios 170**

##### **IT IS IMPORTANT NOT TO SWAP THE TWO HANDPIECE WIRES. THE POLARITY DOES MATTER**

(See operating instructions, section 7.2)

The NSK control board is built onto a special plug in P.C.B. that allows the user to set eight preset power settings which are indicated by LED's on the front panel. Any failure to select these will most likely be due to a breakdown or poor connection between the scaler controller and the control panel. Check all connections and the condition of the control panel ribbon cable, look for signs of creasing or water damage.

If a fault is suspected in the control panel, disconnect the two 7 way ribbon cables, i.e. the switching ones, and using a continuity meter, check that the circuit is made between the 'C' and the S+ and S- on the left hand ribbon, when the respective switch is pressed.

Conversely, making a momentary connection between these points on the sockets will bypass the control panel and test the circuit board for operation. The scaler should increase or decrease in power accordingly, assuming that the scaler and foot control are selected.

##### **Handpiece precaution**

DO NOT KNOCK or DROP the handpiece on its end

##### **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.

**Note.** On some units, when requested, the scaler start up is switched by drive air so that it can run with water spray off. In these cases it is important that the scaler is properly seated in its holder and the instrument holder (bleed) valve is functioning properly or the scaler could be running (dry) while another instrument is in use.

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 change 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.

### **Tip attachment / detachment**

To prevent damage to the thread during use, tighten the tips **FIRMLY** with the tool provided. **DO NOT OVER TIGHTEN**, as during operation, ultrasonic action can cause further tightening which will result in great difficulty of removal.

### **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 maximum speed.

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 only slight adjustment is attempted. Rotate the body in the holder to present a fresh surface, do not **OVER TIGHTEN** the grub screw.

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 adjustments

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.

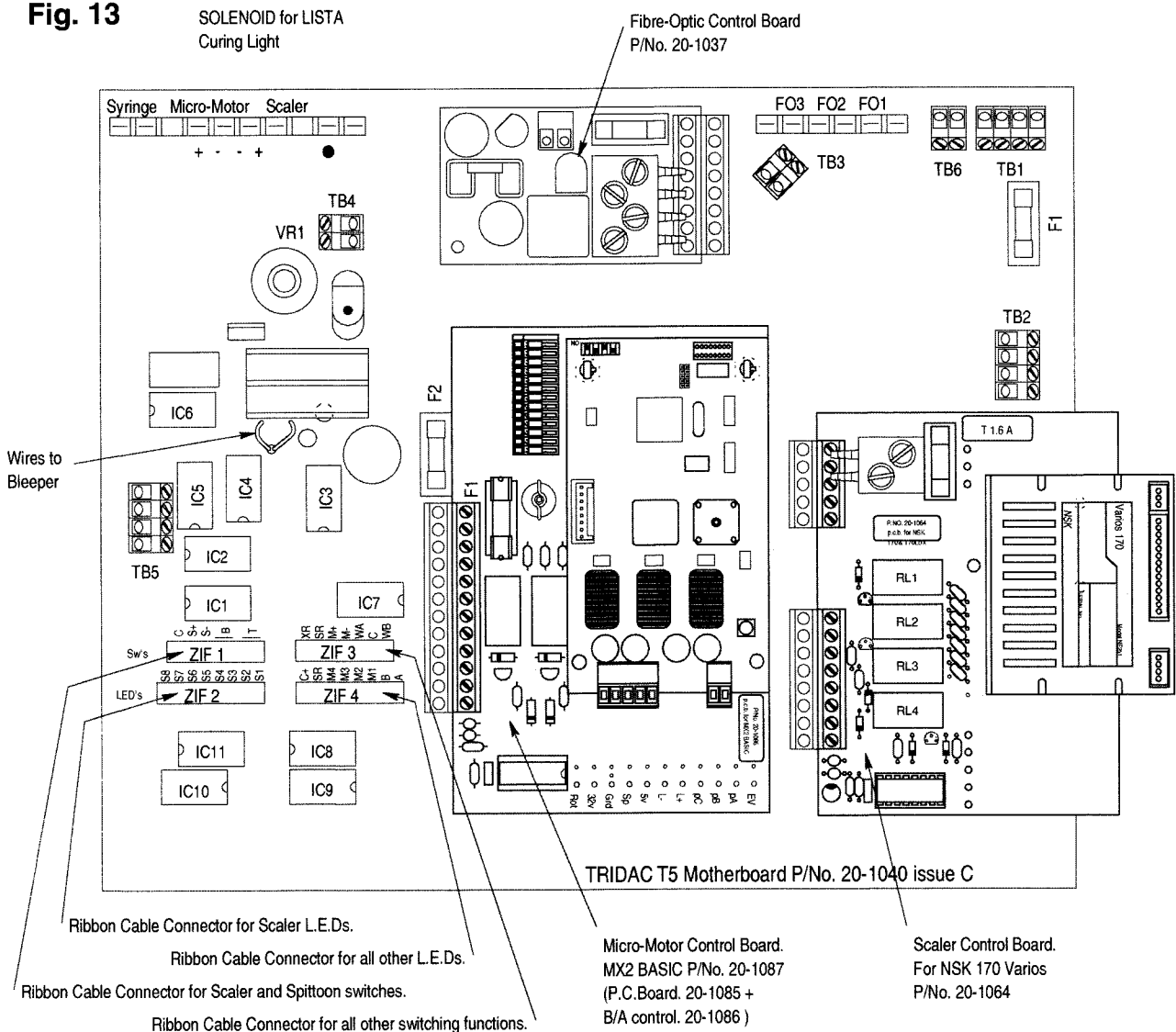
Select water. Set adjuster screw for pilot valve to give spray start up early in lever movement, coincident with turbine just beginning to run. Now check valve by leaving foot control lever not operated and open the valve by pushing with a screwdriver. Release valve and exhaust should sound short and 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.

### P.C.B. COMPONENT LAYOUT

**Fig. 13**



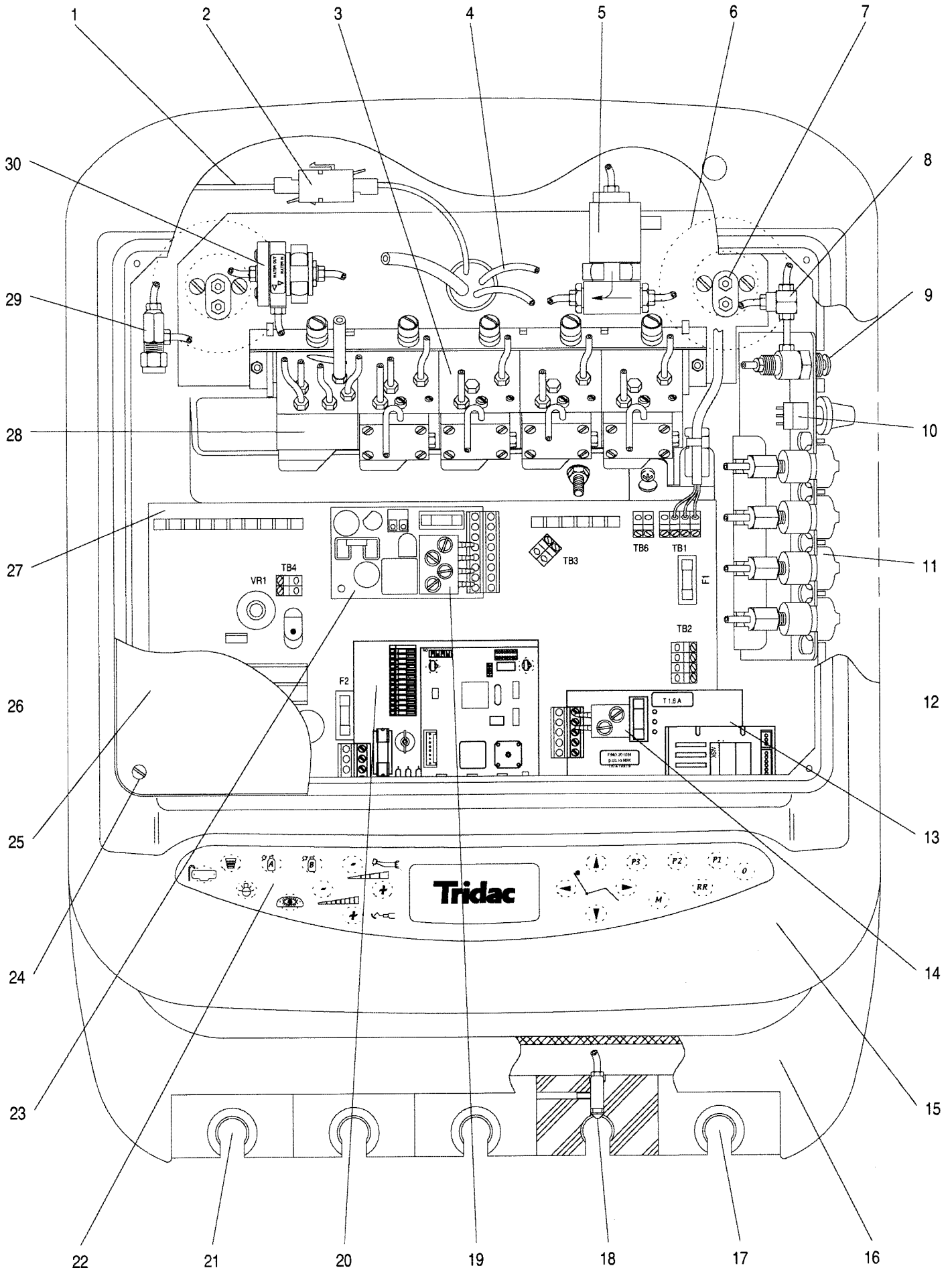
## SPARE PARTS

### LISTED BELOW ARE THE MORE FREQUENTLY REQUESTED SPARE PARTS AND ACCESSORIES

For a more detailed breakdown of the Trionic 5 unit assemblies see the following pages

Item	Part Number	Description/Comment
Mains input fuse (floor type services box).	10 1025	13 Amp. 250 volts 1" x 1/4" Ceramic, BS 1362
Mains input fuse (wall type control box)	10 1309	T 1 A L. 250 v 20 mm x 5 mm, IEC 60127-2 sht 3
Transformer primary fuse	Ditto	Ditto
Motherboard fuse F1	10 1245	T 5 AL. 250 v 20 mm x 5 mm IEC 60127-2
Motherboard fuse F2	10 1220	T 1.6 AL. 250 v 20 mm x 5 mm IEC 60127-2
Micromotor board fuse F1	10 1245	T 5 AL. 250 v 20 mm x 5 mm IEC 60127-2
Scaler board fuse F1	10 1220	T 1.6 AL. 250 v 20 mm x 5 mm IEC 60127-2
Fibre optic board fuse F1	10 1186	T 500 mA L. 250 v 20 mm x 5 mm IEC 60127-2
Instrument holder valve	22 1199	Air 'bleed valve'
Diaphragm	30 1061	Under Cap on Control Block.
'O' Ring	30 1086	Fitted in Bottle Cap
Mat	30 1142	Under Instrument Trays
Adjuster Key	45 1587	Autoclavable, Spray Water Valves
Borden Fitting Instrument Hose	60 1131	3 Hole Grey Silicone
Syringe Hose	60 1157	DCI Syringe
Syringe Nozzle	60 1158	DCI Syringe, Metal
MidWest Fitting Hose	60 1175	Grey Silicone
Fibre-Optic MidWest Hose	60 1176	Grey Silicone
NSK Varios 170 std	60-1181	Grey Silicone
NSK Various 170 Lux	60-1182	Grey Silicone
MX2 Micromotor Hose	60 1183	Grey Silicone
MCX Micromotor hose	60 1184	Grey Silicone
Water Bottle 1/2 Ltr.	70 1156	DO NOT use other types
Syringe Service Kit	70 1190	DCI Syringe, Incl. 'O' rings, valves and tool

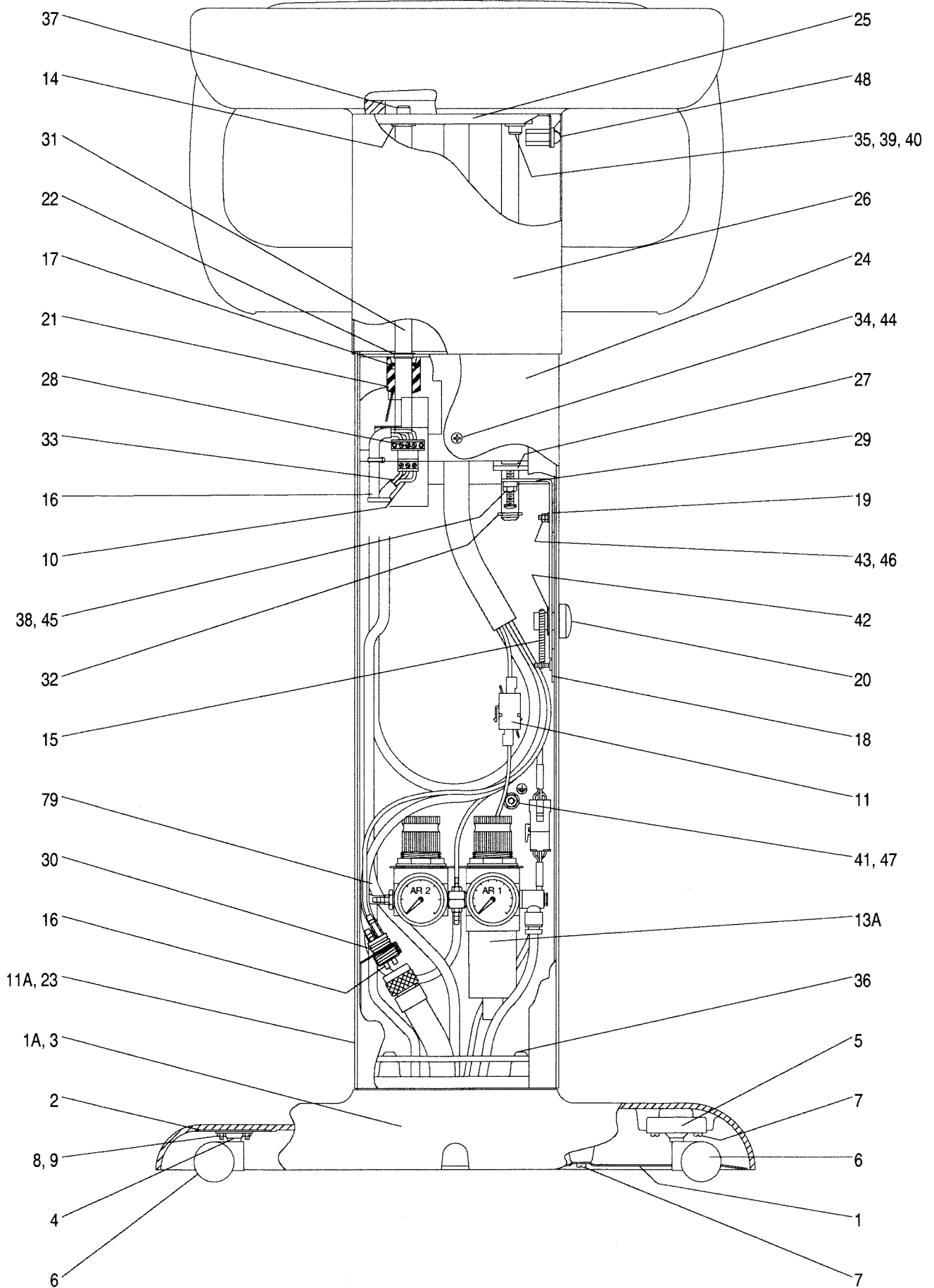
# PARTS BREAKDOWN FOR HEAD ASSY. 22-1401



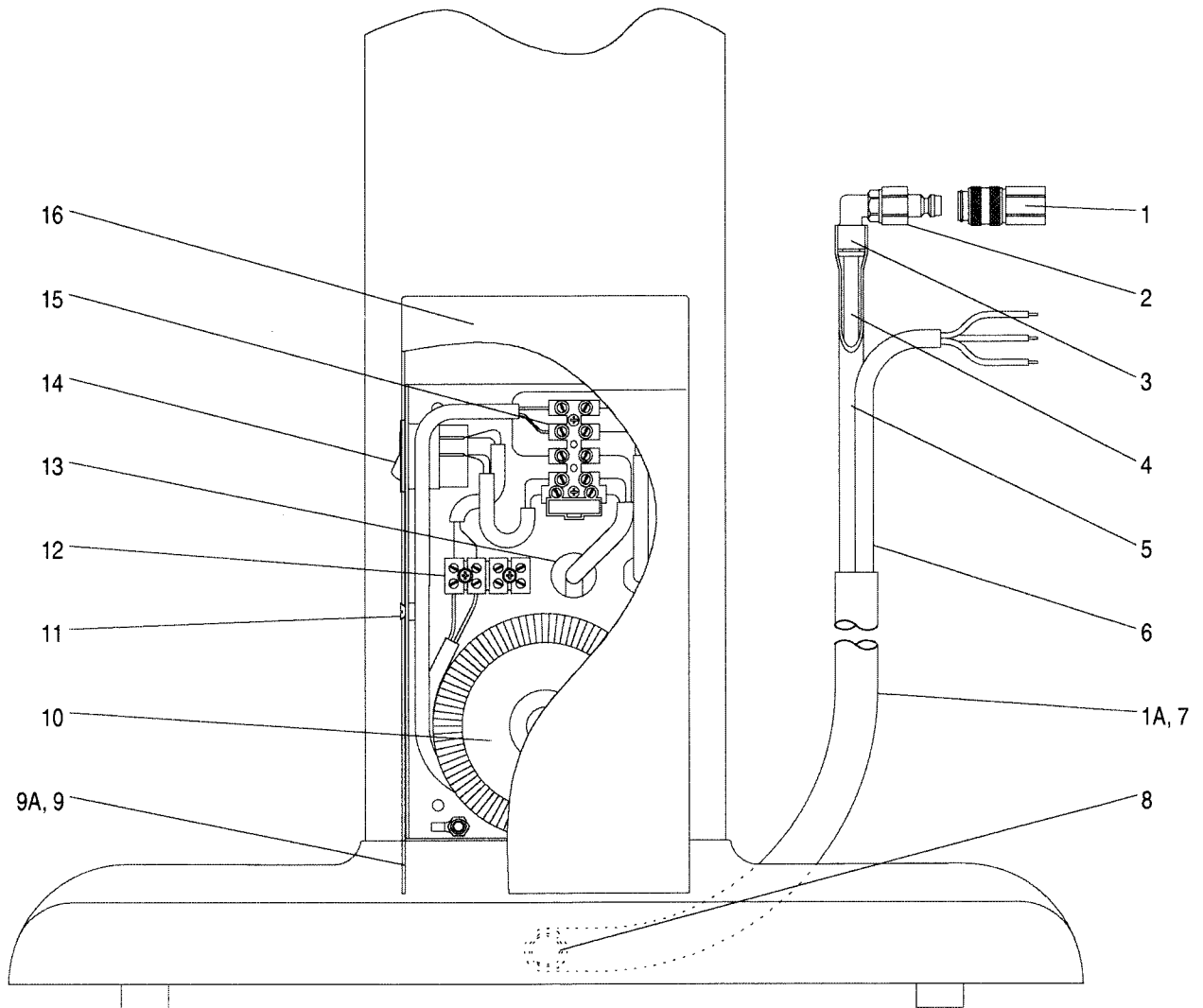
## LEGEND FOR HEAD, BASE AND CART UPRIGHT ASSEMBLIES

Item	Part No.	Description	Item	Part No.	Description
	<b>22-1401</b>	<b>Head assembly</b>	<b>10A</b>	<b>22-1404</b>	<b>Upright assembly</b>
1	10-1361	Extension Cable (Chair Control)		<b>Comprising ALL of the following</b>	
2	10-1356	RJ 45 socket	10	10-1296	3 Pin connector
3	22-1530	Multi block assy	11	10-1356	RJ45 connector
4	22-1409	Module loom assy	12	15-1057	Cable tie
	22-1412	Cart upright loom assy			
	22-1503	Chair upper loom assy	<b>13A</b>	<b>22-1428</b>	<b>Regulator assembly</b>
5	22-1534	Solenoid assy		<b>Comprising of</b>	
6	70-1156	Water bottle		50-1003	L.P. Gauge
7	22-1417	Bottle cap assy		50-1018	H.P. Gauge
	30-1086	'O' Ring seal		50-1076	H.P. Regulator
8	22-1532	Shuttle valve assy		50-1077	L.P. Regulator
9	50-1027	Flush valve		55-1050	Str. adaptor
10	10-1353	Potentiometer		55-1051	Small barb
11	22-1400	Needle valve		55-1055	Large barb
12	N/A			55-1154	Elbow
13	20-1064	NSK Varios 170 P.C.B.		55-1155	Connector
14	22-1410	2 Way air switch		65-2013	Sealing washer
15	45-1577	Head casting	14	25-1054	Disc spring
16	45-1576	Holder casting	15	25-1065	Return spring
17	22-1398	Turbine holder assy	16	30-1068	'O' Ring
	35-1366	Turbine holder	17	30-1094	'O' Ring
	22-1398	MCX/MX2 Holder assy	18	35-1335	Shouldered washer
	35-1366	MCX/MX2 Holder	19	35-1336	Special washer
	22-1398	NSK Varios 170 holder assy	20	35-1381	Release knob
	35-1366	NSK Varios 170 holder	21	35-1382	Damper
18	22-1199	Bleed valve	22	35-1398	Bearing bush
19	22-1411	4 Way air switch	23	40-1855	Upright housing
			24	40-1856	Back cover
<b>20</b>	<b>20-1087</b>	<b>MX2 PCB. and Controller</b>	25	40-1857	Top plate
		<b>Comprising of</b>	26	40-1858	Top cover
	20-1085	MX2 basic P.C.B. (Tridac)	27	40-1859	Locking plate
	20-1086	MX2 Control board (Bien-Air)	28	40-1873	Terminal block carrier
21	35-1365	D.C.I. syringe holder	29	40-1885	Release lever
22	10-1354	Control panel	30	45-1382	Foot control coupling
23	20-1037	Fibre-optic controller	31	45-1586	Support rod
24	65-1172	M3 Cover screw	32	65-1019	Retaining clip
25	40-1863	Cover plate	33	65-1110	M2 Screw
	30-1142	Tray mat	34	65-1321	M5 csk. screw
26	N/A		35	65-1360	M6 x 16 Pan hd screw
27	20-1040	Mother board P.C.B.	36	65-1391	M6 x 20 Cap hd screw
28	22-1531	Clamp block assy	37	65-1430	M8 x 25 Cap hd screw
29	22-1472	Pressure relief valve	38	65-1520	2 B.A. x 3/4 screw
30	22-1533	Water valve assy	39	65-2506	M6 Washer
			40	65-2702	M6 spring washer
			41	65-2709	M5 Shakeproof washer
			42	65-2719	Push ON fastener
<b>1A</b>	<b>22-1403</b>	<b>Base assembly</b>	43	65-2739	M4 Nylon washer
		<b>Comprising of</b>	44	65-2745	M5 Retainer
1	40-1871	Under cover	45	65-3010	2 B.A. nut
2	40-1872	Caster adaptor plate	46	65-3710	M4 nut
3	45-1578	Base casting	47	65-3715	M5 Brass nut
4	45-1653	Flat Caster plate	48	70-1004	Catch
5	45-1654	'U' Caster plate	<b>49</b>	<b>22-1412</b>	<b>Cart upright loom</b>
6	50-1095	Caster		<b>Comprising of</b>	
7	65-1272	M4 x 10 Screw		32-1075	1/8" Ø Clear tube
8	65-2710	M4 Washer		32-1077	1/8" Ø Red tube
9	65-3710	M4 Nut		32-1083	1/8" Ø Yellow tube
				32-1084	1/8" Ø Translucent Yellow
				32-1091	1/4" Ø Blue tube
				32-1093	1/4" Ø Yellow tube
				35-1423	Small retaining sleeve
				45-1540	Large retaining sleeve

**PARTS BREAKDOWN FOR CART BASE. 22-1403 AND UPRIGHT 22-1404 ASSEMBLIES**



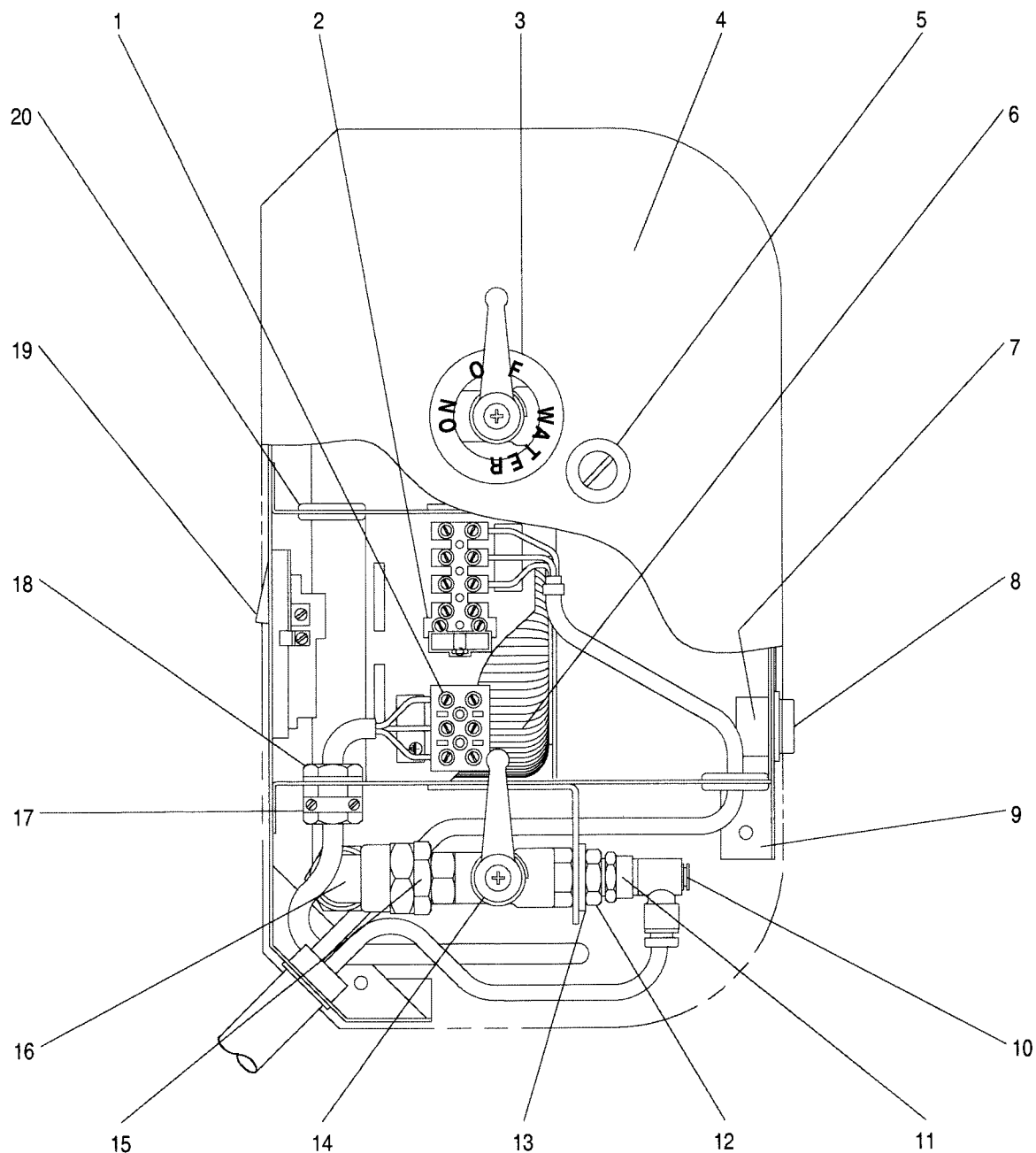
## PARTS BREAKDOWN FOR TRANSFORMER HOUSING AND LOOM ASSY.



ITEM No.	PART No.	DESCRIPTION	ITEM No.	PART No.	DESCRIPTION
1A	22-1488	Loom assembly <i>Comprising items 1 to 8 incl.</i>	9A	22-1487	Transformer housing assy. <i>Comprising of items 9 to 18 incl.</i>
1	55-1204	Quick connector, Female	9	40-1997	Housing chassis
2	55-1203	Quick connector, Male	10	10-1310	Transformer
3	55-1136	Elbow. 6mmØ / 1/8" B.S.P.	11	65-1216	Retaining screw. M3.5
4	32-1069	6mm O.D. Nylon tube. Yellow	12	10-1167	Terminal block
5	32-1070	Silicone hose. 10mmØ	13	15-1106	Strain relief bush
6	15-1151	Mains Cable	14	10-1249	Double pole rocker switch
7	32-1017	Silicone hose. 15mm I.D.	15	10-1247	Fused terminal block
8	35-1387	Retaining collar		10-1309	Fuse. (20mm) T1a
			16	40-1998	Housing cover

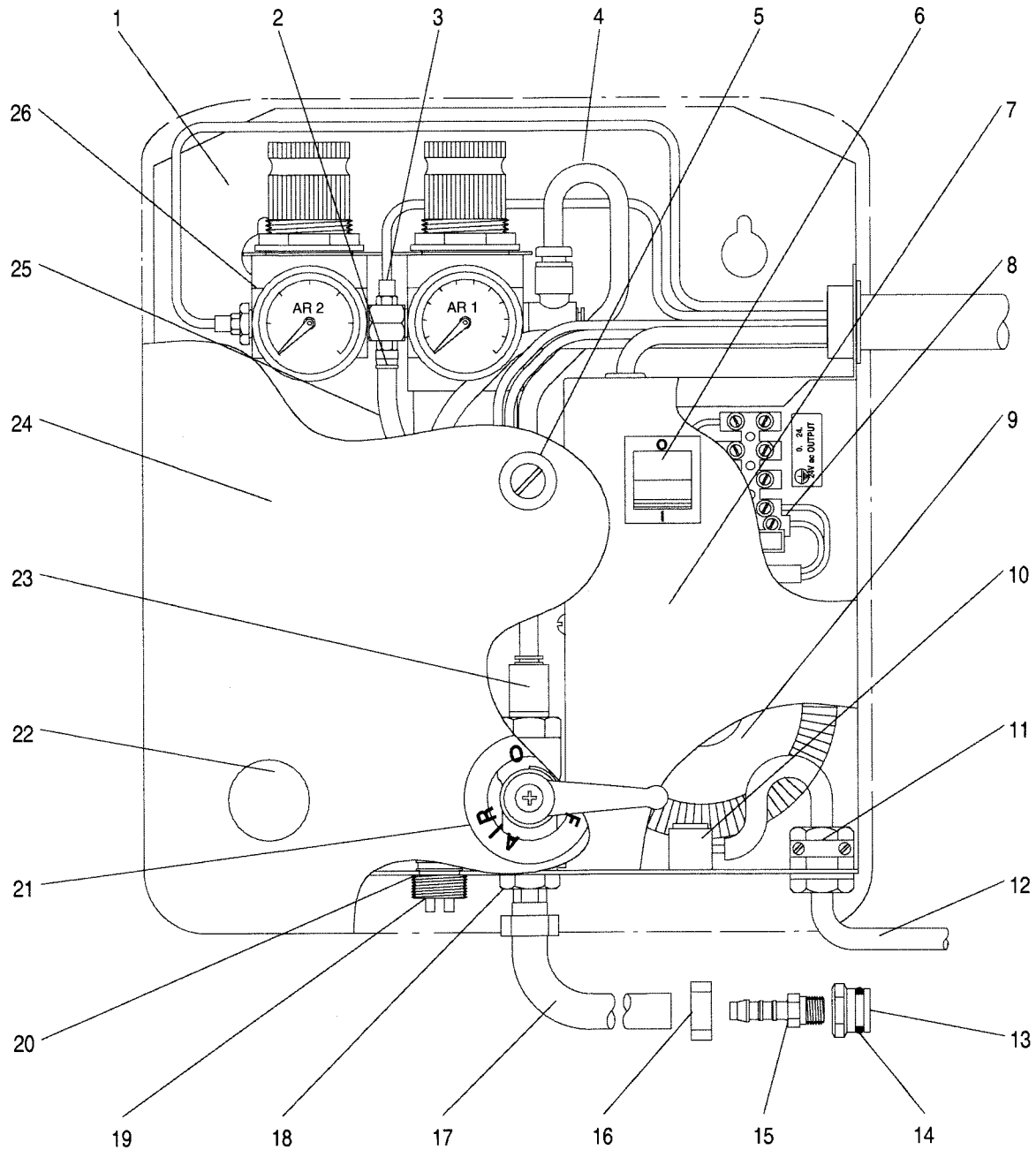


## PARTS BREAKDOWN FOR FLOOR BOX 22-1415



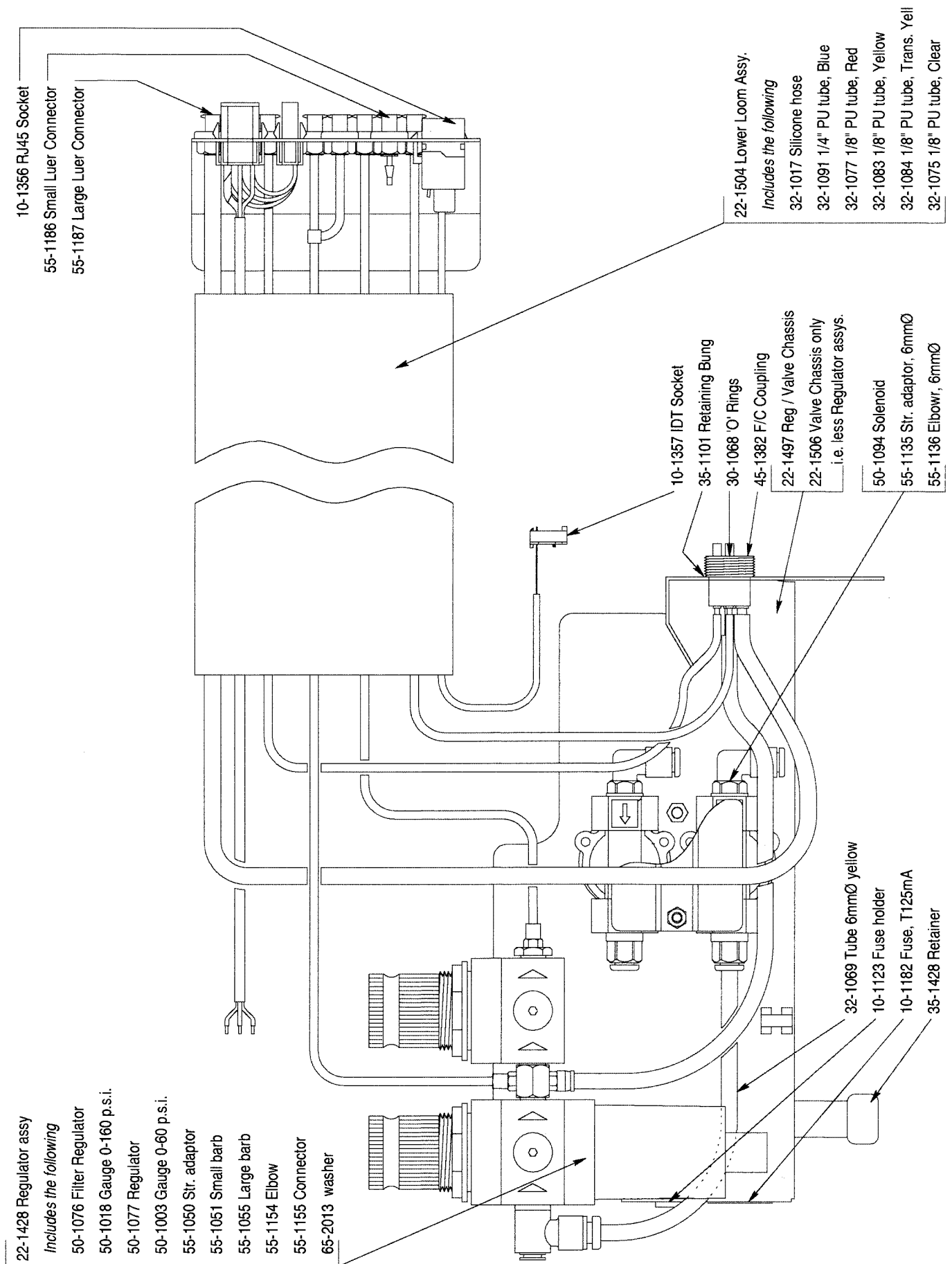
ITEM No.	PART No.	DESCRIPTION	ITEM No.	PART No.	DESCRIPTION
1	10-1241	Terminal block	10	55-1136	6mm Elbow
2	10-1247	Fused terminal block	11	45-1387	Valve connector
	10-1309	Fuse. (20mm) T1a	12	65-1013	1/4" B.S.P. Nut
3	75-1096	WATER ON-OFF Label	13	65-2520	Washer
	75-1097	AIR ON-OFF Label	14	50-1036	Ball valve
4	35-1391	Floor box cover	15	55-1060	1/2" to 1/4" B.S.P. Reducer
5	70-1159	Retaining latch	16	55-1039	15mm Elbow
6	10-1310	Transformer	17	10-1275	Cable clamp
7	10-1249	Double pole rocker switch	18	10-1276	Retaining nut
8	10-1237	Fuse holder	19	10-1281	Socket outlet
	10-1025	Mains Fuse. 13a		10-1067	Mains fuse. 5a
9	40-1882	Control box chassis	20	30-1075	Grommet

## PARTS BREAKDOWN FOR CONTROL BOX 22-1407

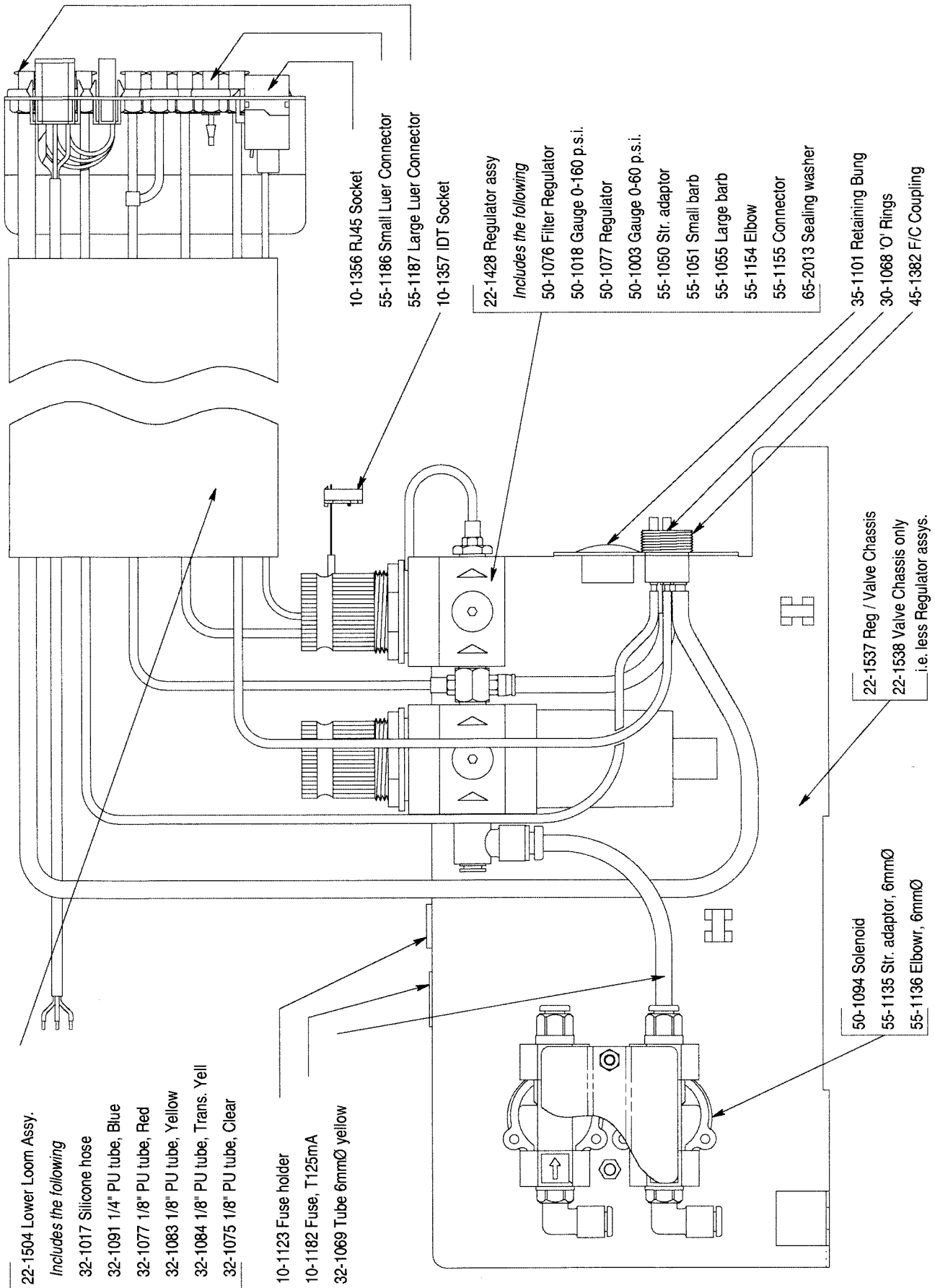


ITEM No.	PART No.	DESCRIPTION	ITEM No.	PART No.	DESCRIPTION
1	40-1864	Control box cover	13	45-1496	15mm Adaptor
2	45-1540	Hose retainer	14	30-1008	'O' Ring
3	35-1423	Retaining sleeve	15	55-1153	Barbed connector
4	32-1069	6mm O.D. Nylon tube. Yellow	16	70-1147	'O' Clip
5	70-1159	Retaining latch	17	32-1100	Reinforced hose
6	10-1249	Double pole rocker switch	18	55-1149	1/4" B.S.P. Reducer
7	40-1865	Transformer cover	19	30-1068	'O' Ring
8	10-1247	Fused terminal block	20	35-1106	Blanking plug
	10-1309	Fuse. (20mm) T1a	21	75-1097	AIR ON-OFF Label
9	10-1310	Transformer	22	35-1206	Blanking plug
10	10-1167	Terminal block	23	50-1036	Ball valve
11	10-1275	Cable clamp		55-1142	6mm Elbow
	10-1276	Retaining nut	24	35-1372	Control box cover
12	15-1151	Mains Cable	25	32-1093	1/4" O.D. PU tube. Yellow
			26	22-1428	Air regulator assy

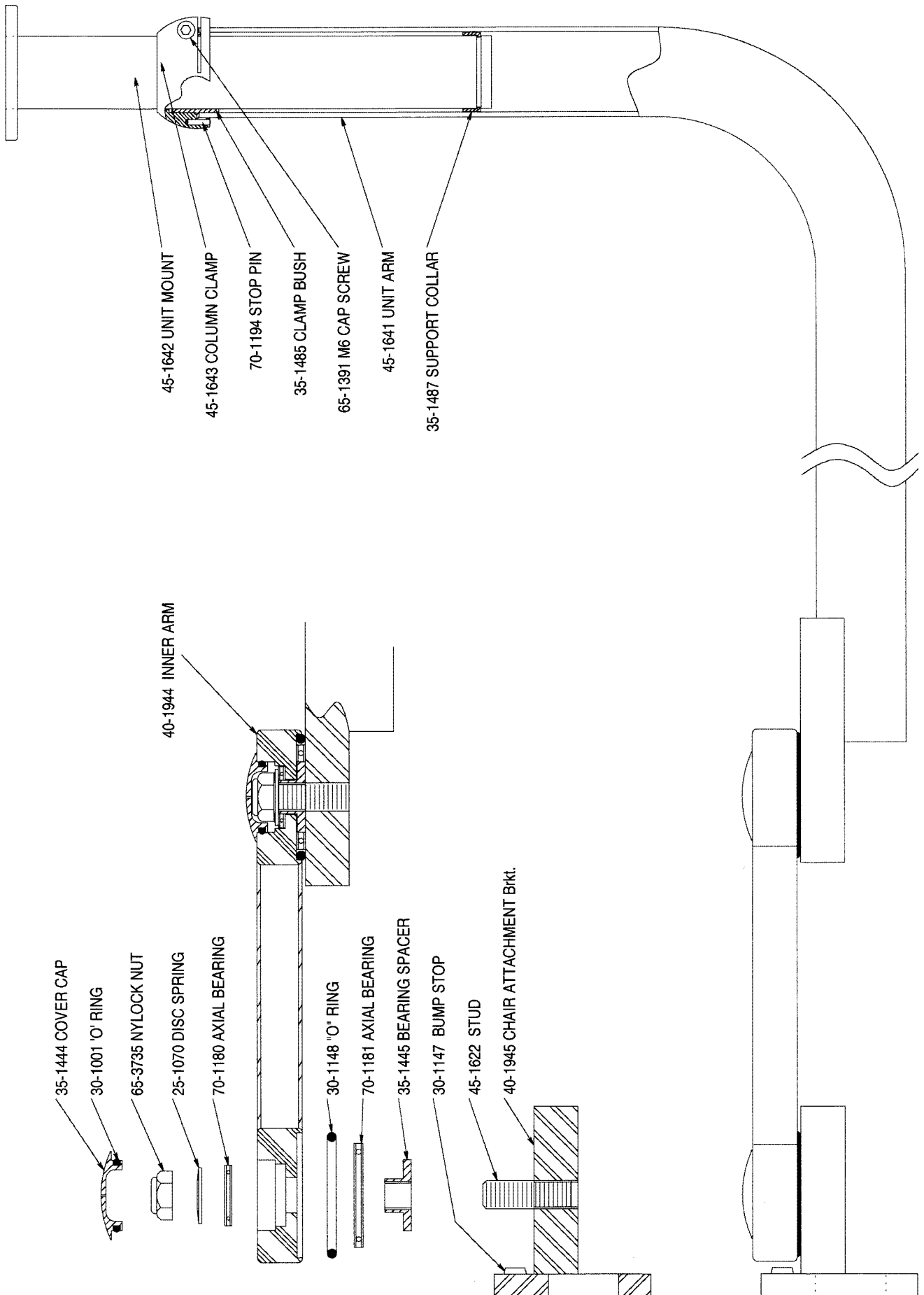
**PARTS BREAKDOWN FOR LOWER LOOM ASSY. P/No.22-1504 and  
REG / VALVE CHASSIS ASSY. P/No. 22-1497 FITTED TO ECO 19 CHAIR).**



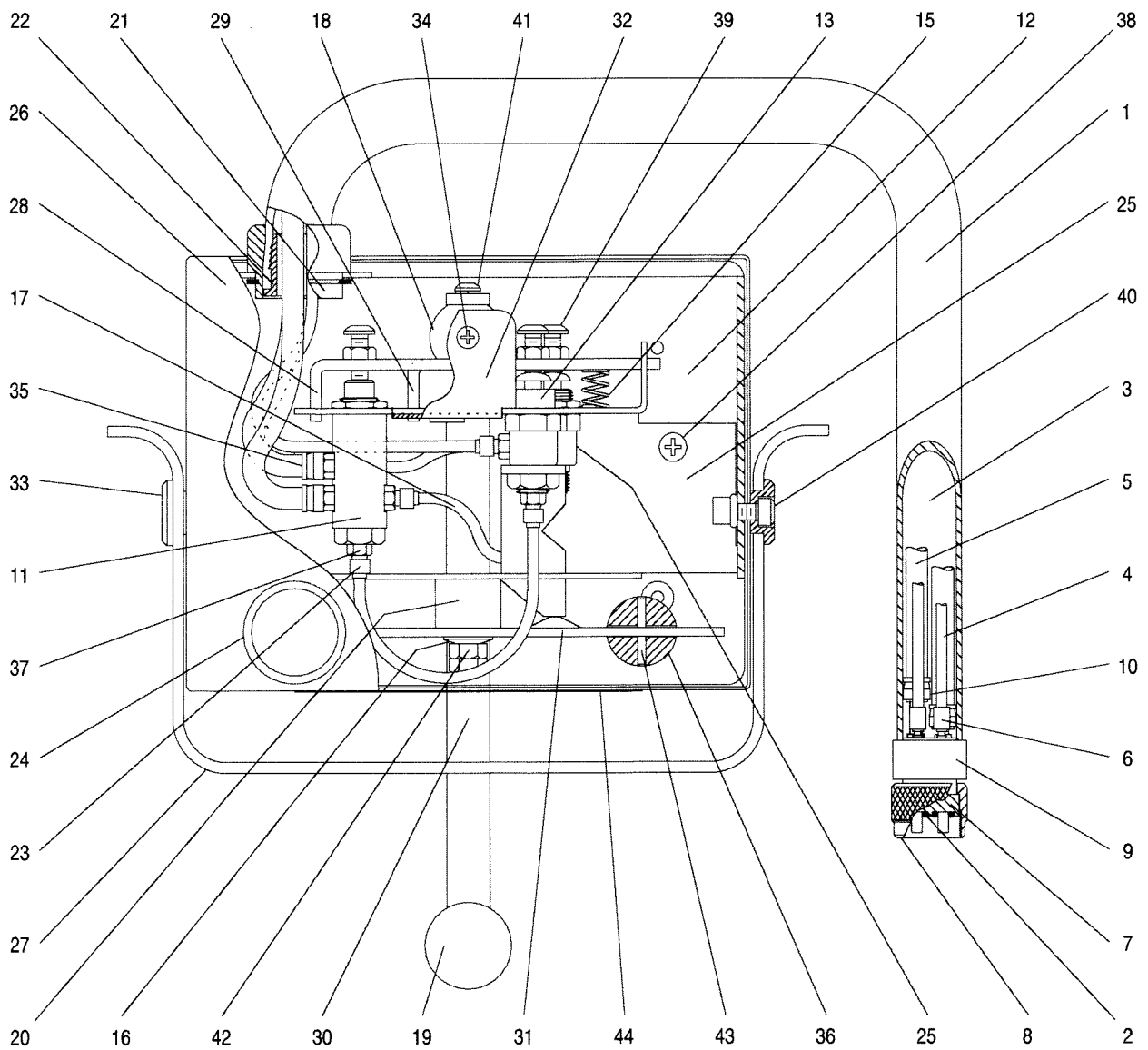
**PARTS BREAKDOWN FOR LOWER LOOM ASSY. P/No.22-1504 and  
REG / VALVE CHASSIS ASSY. P/No. 22-1537 FITTED TO ECO.Next CHAIR).**



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

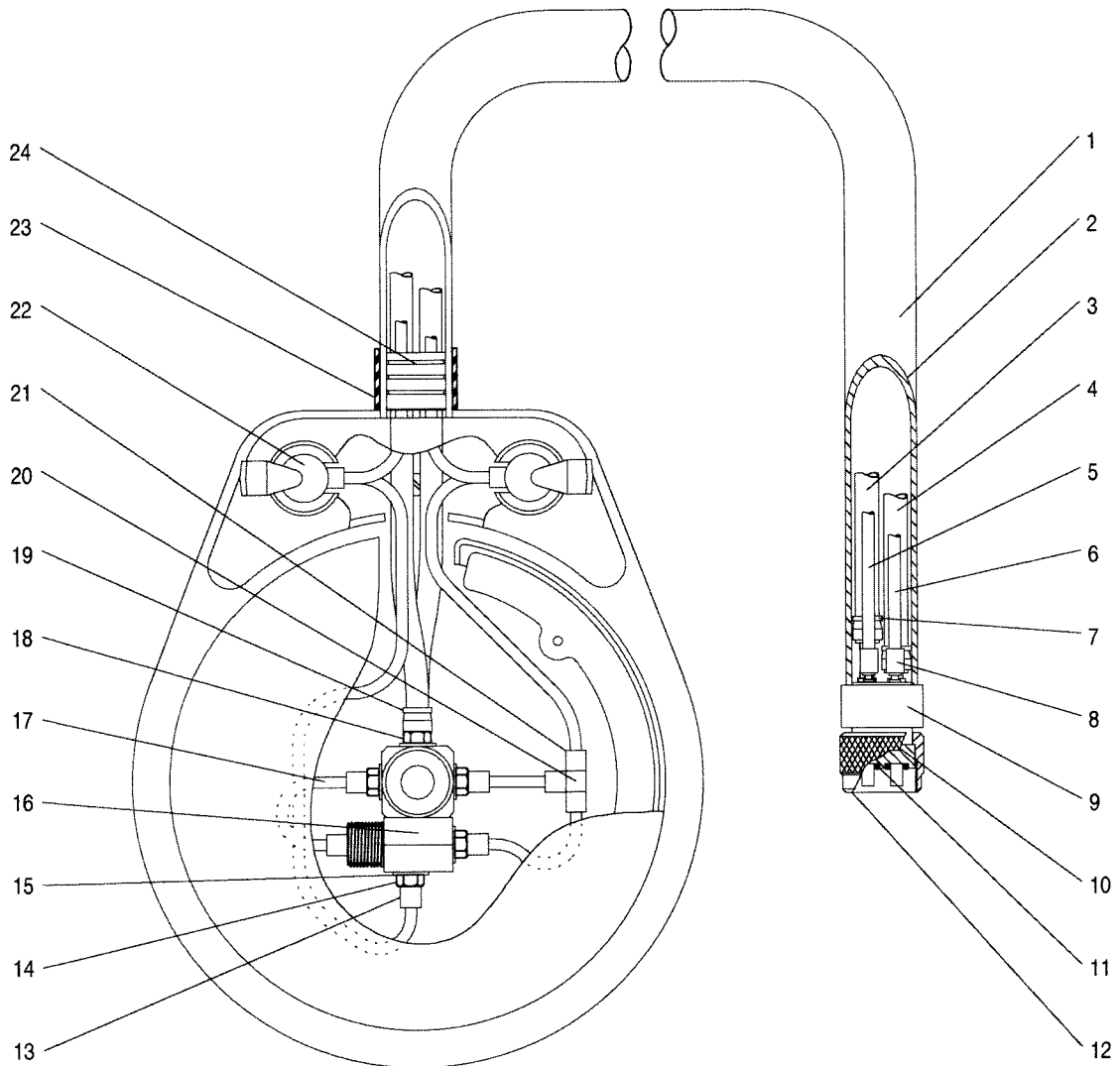


## PARTS BREAKDOWN FOR LEVER FOOT CONTROL. 22-1182



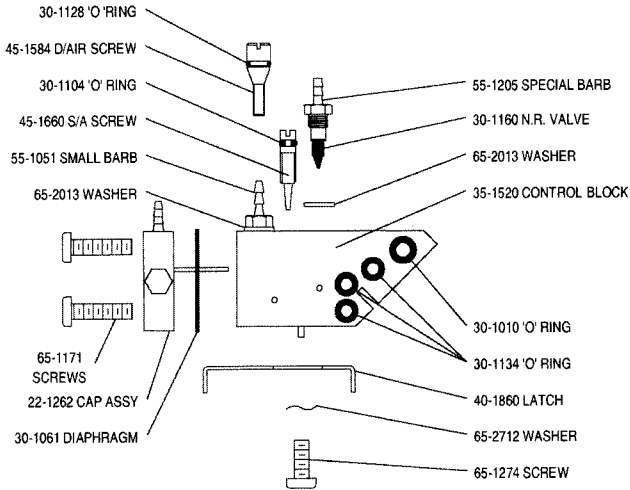
ITEM No.	PART No.	DESCRIPTION	ITEM No.	PART No.	DESCRIPTION	ITEM No.	PART No.	DESCRIPTION
1	22-1238	Hose assembly, inc. Coupling. <i>Comprised of items 2 to 10 inclusive.</i>	17	32-1083	1/8" O.D. PU tube, Yellow.	33	45-1267	Pivot Bush.
2	30-1068	'O' Ring	18	35-1095	Cam. Multifunction.	34	45-1269	Pivot Pin.
3	32-1017	Silicone Sleeve	19	35-1115	Roller.	65-1214		M3.5 x 10 Csk.Screw.
4	32-1075	1/8" O.D. PU tube. Clear.	65-1506		2 B.A. x 1/2" Csk Screw.	65-2506		M6 / 1/4" Plain Washer.
5	32-1077	1/8" O.D. PU tube. Red.	20	35-1436	Spacer.	35	45-1540	Hose Retainer.
6	32-1091	1/4" O.D. PU tube. Blue.	21	35-1519	Hose Retainer	36	45-1590	Spray Button.
7	32-1093	1/4" O.D. PU tube. Yellow.	65-1026		Crescent Ring.	37	55-1051	Small Barb.
8	35-1049	Retaining Sleeve.	22	35-1522	Locking bushr.	65-2013		Nylon Washer.
9	45-1378	F/C Coupling.	23	35-1423	Retaining Sleeve.	38	65-1300	M5 x 6 Pan Head Screw.
10	45-1379	Connection Nut.	24	35-1454	Escutcheon.	39	65-1324	M5 x 16 Pan Head Screw.
11	35-1511	Service Hose Retainer.	25	40-1210	Valve plate.	65-2708		M5 / 2 B.A. Shakeproof Washer.
12	45-1540	Hose Retainer.	26	40-1211	Outer Cover.	65-3716		M5 Nut.
13	22-1120	Regulator assembly.	27	40-1213	Handle.	40	65-1326	M5 x 16 Cheese Head Screw.
14	22-1465	Base sub assy.	28	40-1214	Actuator Arm. Long.	41	65-1272	M4 x 10 Pan Head Screw.
15	22-1466	Spray Valve Assembly.	29	40-1215	Actuator Arm. Short.	65-2710		M4/4 B.A. Shakeproof Washer.
16	22-1467	Reverse Valve Assembly.	30	40-1216	Lever.	42	65-3720	M6 Nut.
17	25-1030	Actuator Return Spring.	31	40-1587	Spray Selector Plate.	43	70-1100	5/32" Ø x 3/4" Spirol Pin.
18	25-1039	Disc Spring.	32	40-2025	Pivot support.	44	75-1132	Operating Label.

**PARTS BREAKDOWN OF DISC FOOT CONTROL.**  
**Part No. 22-1515 with Relay Valve\* for Units upto S/No. 728**  
**Part No. 22-1550 without Relay Valve for Units from S/No. 729**

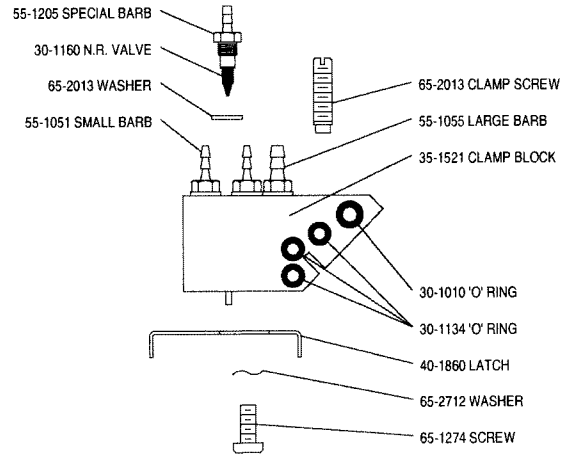


ITEM No.	PART No.	DESCRIPTION	ITEM No.	PART No.	DESCRIPTION
1	22-1238	Hose assembly, inc. Coupling <b><i>Comprised of items 2 to 12 inclusive.</i></b>	13	35-1423	Retaining Sleeve
2	32-1017	Silicone Sleeve	14	55-1051	Small Barb
3	32-1093	1/4" O.D. Polyurethane tube. Yellow	15	65-2013	Sealing Washer
4	32-1091	1/4" O.D. Polyurethane tube. Blue	16*	50-1103	Relay Valve
5	32-1075	1/8" O.D. Polyurethane tube. Clear	17	32-1083	1/8" O.D. Polyurethane tube. Yellow
6	32-1077	1/8" O.D. Polyurethane tube. Red	18	55-1055	Large Barb
7	45-1540	Hose Retainer	19	45-1540	Hose Retainer
8	35-1049	Retaining Sleeve	20	55-1147	Barbed Tee
9	35-1511	Service hose Retainer	21	35-1423	Retaining Sleeve
10	45-1378	F/C Coupling	22	50-1104	Toggle Valve
11	30-1068	'O' Ring	23	35-1511	Service Hose Retainer
12	45-1379	Connection nut	24	45-1659	Hose Adaptor

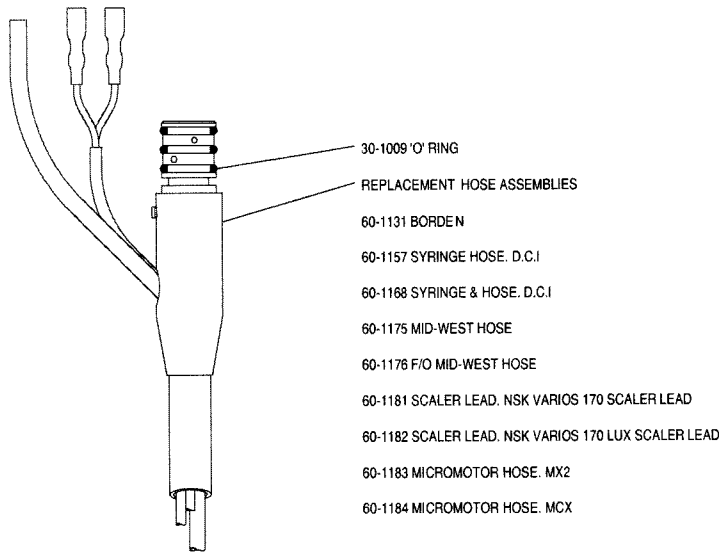
## PARTS BREAKDOWN OF VARIOUS ASSEMBLIES



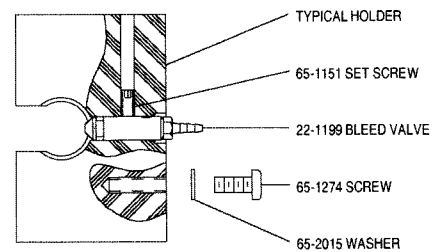
**MULTI BLOCK ASSEMBLY 22-1530**



**CLAMP BLOCK ASSEMBLY 22-1531**



**INSTRUMENT HOSES**

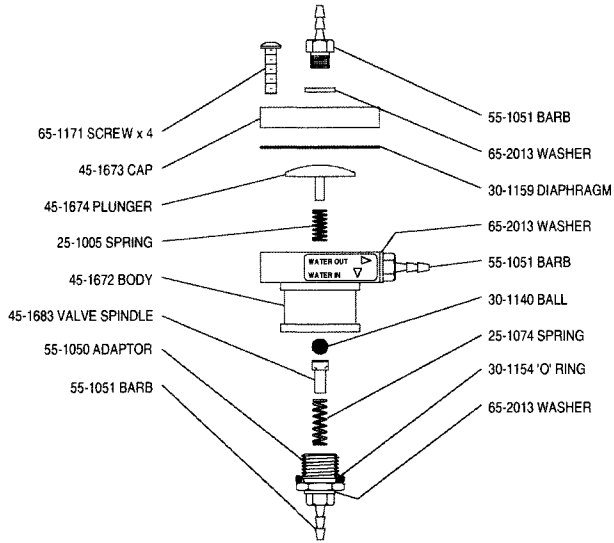


**INSTRUMENT HOLDERS**

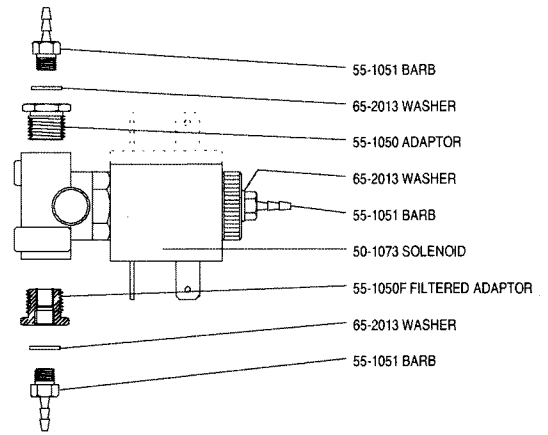


**PARTS BREAKDOWN OF VARIOUS ASSEMBLIES**

**INSTRUMENT HOSES**

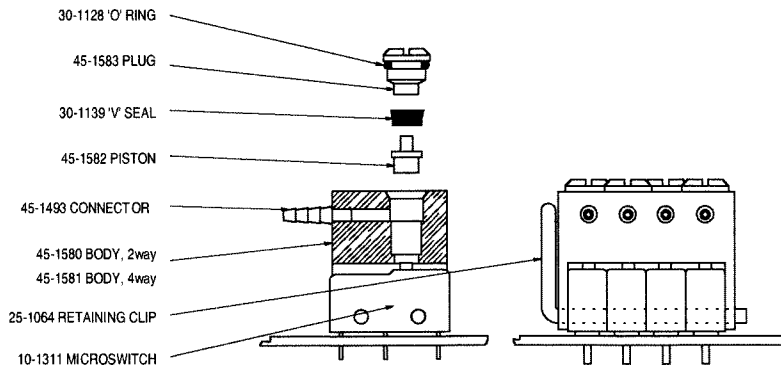


**INSTRUMENT HOLDERS**



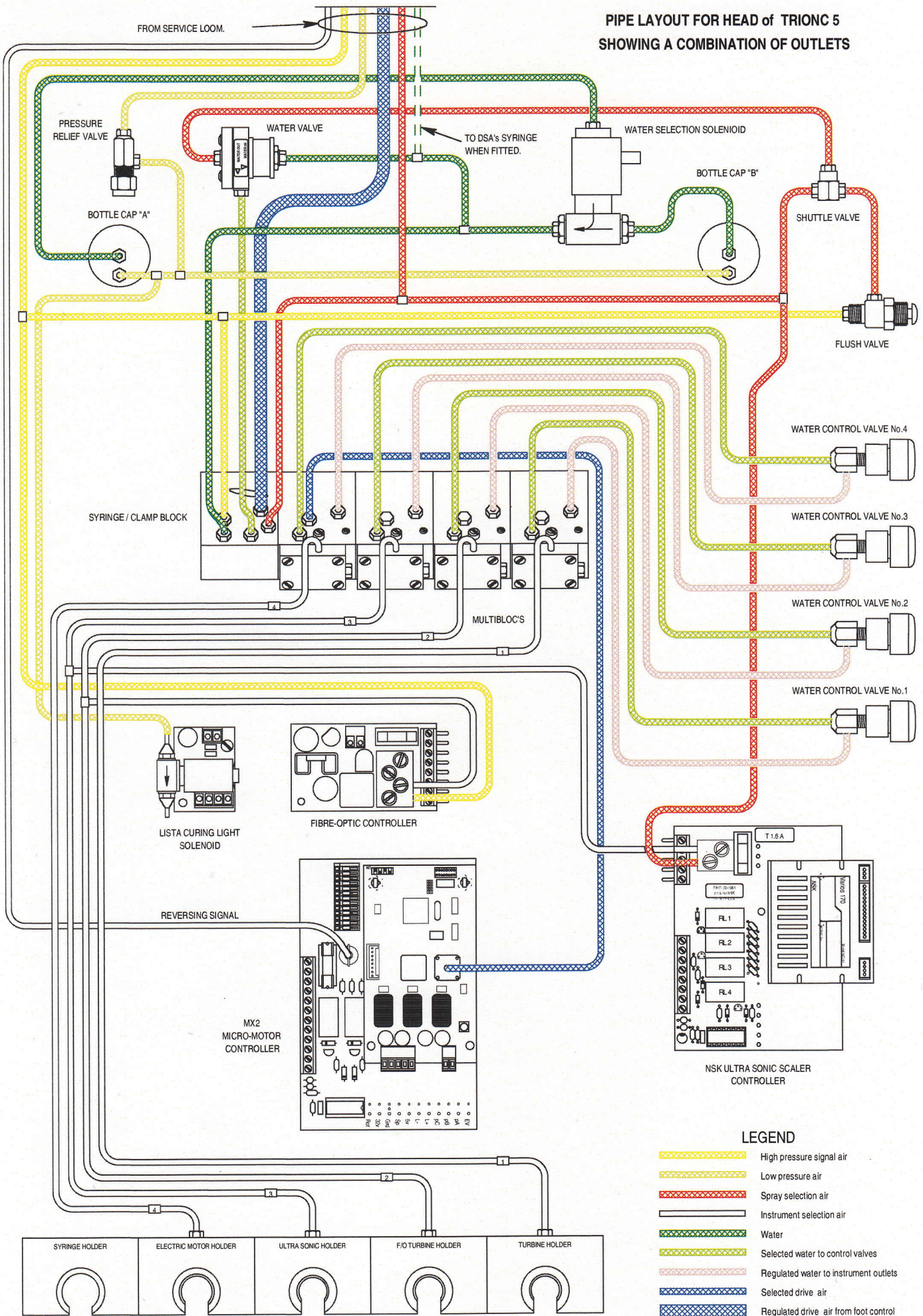
**WATER VALVE ASSEMBLY 22-1533**

**SOLENOID VALVE ASSEMBLY 22-1534**



**AIR SWITCH ASSEMBLIES. 2 way 22-1410 (4 way 22-1411)**

**PIPE LAYOUT FOR HEAD of TRIONC 5  
SHOWING A COMBINATION OF OUTLETS**



**LEGEND**

- High pressure signal air
- Low pressure air
- Spray selection air
- Instrument selection air
- Water
- Selected water to control valves
- Regulated water to instrument outlets
- Selected drive air
- Regulated drive air from foot control

# T5 DENTAL UNIT PIPE LAYOUT. CHAIR SERVICES and FOOT CONTROL.

