Ether-Tec
6 Sheet Advertising Unit

Ether-Tec
International

Owners Manual

ISSUE 1, SEPTEMBER 2005

Contents

1.   Product Range

1.1 Features

Optical Enhancements: The Ether-Tec range of 6-sheet illuminated advertising units boast superb illumination. This is achieved by a combination of the following: Close to daylight lamps run on high frequency control gear. Ether-Tec 'Radiant Lenses' attached to all lamps for stripe reduced illumination. Diffuser panels comprising translucent reflective film laminated to solid plastic substrate. All other internal parts finished white to ensure maximum light retained within the system.

Electrical Guarantee: A 3-year guarantee is provided for lamps and control gear, provided they are returned.

Illumin sensor: Solid state night/day PEC switching on/off of lighting circuit.

Solid Core: Fully welded steel cores ensure structural integrity and adherence to wind loading calculations. Common cores may be clad to create a vast range of end product aesthetics and applications.

Easy Glazing Change: Glazing is retained by a two-part door and retainer. The retainer can be removed and replaced in minutes. Glazing may be BS6206 toughened glass or transparent PETg.

Drop on Door: Gravity held door hinging. Door removed in seconds.

Full Width Lock: Adbox door secured along the full width of the bottom channel.

Drop Down Diffuser: Panel secured by gravity. Panel may be lifted to a lower position for posting.

Scope: Double sided, single sided, static and scrolling options are available. The 'Ether6' range are smaller, static only units. The 'Conv6' range are larger and may be scrolling or static. A number of base plinths are available to create Disability Discrimination Act compliant products (DDA) where street furniture is in the direct path of the public. Alternatively, a narrow base creating a 'lollipop' shaped product is available.

Bespoke Design: The common cores may have bespoke items designed and attached to create unique end product aesthetics. This may include plinths and claddings and use of colour, LED messaging, tapping rails for airports or retail parks.

3.   Method of Operation

3.1. Door Opening / Closing

Fig. 3.1.1. Door Opening

The door key for adboxes is a T-key comprising a 5mm hex plus allen key head, 150mm long. CENTRO Solent and Transit static units may require a longer key due to the depth of the side cladding.

Open door by inserting key into lock access hole and turning outwards towards glass until door releases (approx 20° turn). Note that depending on which side is accessed, the key will be turned one way or the other. DO NOT USE EXCESSIVE TURNING FORCE OR TURN THE WRONG DIRECTION. If the lock proves difficult to turn, apply a slight inward pressure on the adbox glazing at the bottom – this should free up the lock.

When the lock is released, pull the key out, open the door and secure open using a specified CCUK door prop. Ensure pole sits firmly against outer door extrusion – NOT on the movable lock piece. The pole is placed preferably in the centre.

The door is closed by simply pushing until the full width lock mechanism latches shut.

Ensure that the side claddings do not foul the operation of the door. If this is the case, please report to Central Purchasing.

3.2. Posting Static Faces

Open and secure door open as described in section 3.1. The diffuser may be lifted off and hung in a lower position, if desired, to allow access to the poster clips. When handling the diffuser, be careful to grip the aluminium frame and the plastic. The plastic is given a generous thermal expansion gap within the diffuser frame. With mis-handling, it is possible that the plastic can come out of the frame. Be careful not to drop the diffuser for the same reason. Be additionally careful when handling diffusers in that there are brackets protruding at the tops which hold the frame onto the adbox.

Fig. 3.2.1. Diffuser drop down

Posters are retained using clips utilising a 'ball mechanism'. Post as follows: push balls up to top of clip, offer poster under clip to top of diffuser frame, push balls down to secure poster. Removing posters is achieved by the reverse process.
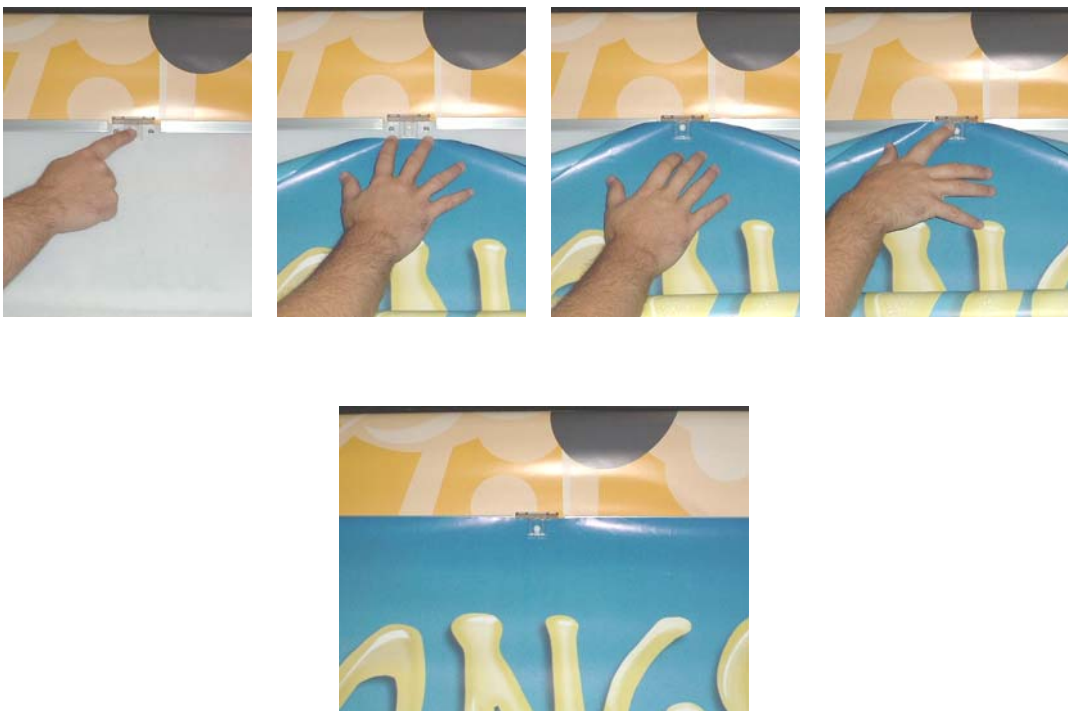

Fig. 3.2.2. Posting with Ball Clips

Ensure that poster is hung as high as possible on diffuser. Ensure poster is hung symmetrically about centre of diffuser.

3.3. Posting Scrolling Faces

Posters for Scrollers will normally be prepared specially. Their preparation is not the responsibility of Ether-Tec. However, these notes are offered as guidance for the operation with the OPEN 6-sheet Scroller cartridge fitted to Ether-Tec Conv6 units. Full training in the use of the Scrollers should be undertaken however. Please refer to OPEN scroller manual for more detail.

Check that posters have been prepared properly. They should be zipped together using the 2-part plastic zip. Correct orientation of 'A' and 'B' type zips is essential (see figure 3.3.1). Joins between posters should be additionally reinforced with clear adhesive tape on both sides. A metal tag should be positioned on the reverse side of each poster, centre, left hand side. Failure for posters to be prepared in this manner will mean they will not scroll properly, if at all.
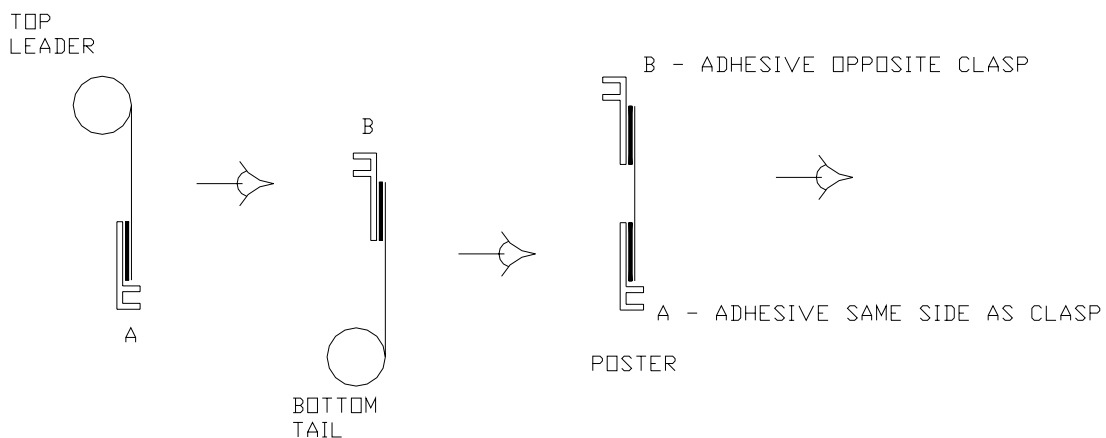

Fig. 3.3.1. Scroller Leaders and Poster Preparation

Posting a Scroller is done as follows: open unit door. This will stop automatic Scroller action. Use the up/down buttons to gather the existing poster to the bottom roller. However, do not scroll so far down as to rip off the feeder sheet. Carefully remove the clear adhesive tape between top poster and top leader. Separate top poster and top leader, leaving top leader fixed to Scroller. Disengage Scroller tension and gather up posters off bottom roller by hand. Separate bottom poster from bottom tail, leaving bottom tail fixed to Scroller. Get new posters. The assumption is that they have been rolled presenting the top of the top poster. Attach the top of the top poster to the top leader. This is made easier by exerting pressure by placing both edges on the bottom roller. Secure ends with clear adhesive. Engage tension again. Use the 'up' button to gather the new posters on the top roller. Attach the bottom of the bottom poster to the bottom tail, ensuring ends are secured with clear adhesive tape. Ensure posters are located within the retaining side guides. Use the up/down buttons to move the display to approximately the middle of a poster. Close door. The Scroller should now initialise and then scroll as normal.

4. Maintenance

4.1. Qualified Personnel

It is the customer's responsibility to ensure that suitably qualified and competent personnel are employed to carry out maintenance work on Ether-Tec units. It is the customer's responsibility to observe the risk assessment included in this manual. It is in the customer's interest to generate and adhere to their own additional risk assessments for any work to be undertaken. It is the customer's responsibility to ensure that any maintenance or operations carried out on street furniture complies with relevant byelaws.

For electrical work, to include initial installation, connection and any subsequent maintenance, personnel must hold at least a valid and up to date City and Guilds 2831 Institute of Electronic Engineers (IEE) 16th Edition Certificate (BS7671).

It is recommended that the troubleshooting procedures outlined in section 5 are consulted before maintenance is carried out, to avoid unnecessary work.

4.2. Door Removal and Glazing Change

All units employs a drop door which drops onto the hinge piece which is secured to the superstructure. PTFE covered bolts are used to retain the door and prevent from lifting off the hinge when in place. SECURITY BOLTS MUST BE PRESENT AND TIGHT BUT NOT OVERTIGHT ON INSTALLED UNITS. IF SECURITY BOLTS ARE NOT PRESENT/DONE UP, THERE IS A RISK THAT THE DOOR CAN BE REMOVED. To remove a door, the screws must be loosened – this is best done with a 4mm allen key bit on a flexible arm driver. Then, as a 2 person operation, the door may be lifted off the hinge.

Different generations of adbox door will be observed to have slight variations in the nature of door security bolts, as outlined in figure 4.2.1. However, the purpose is identical.

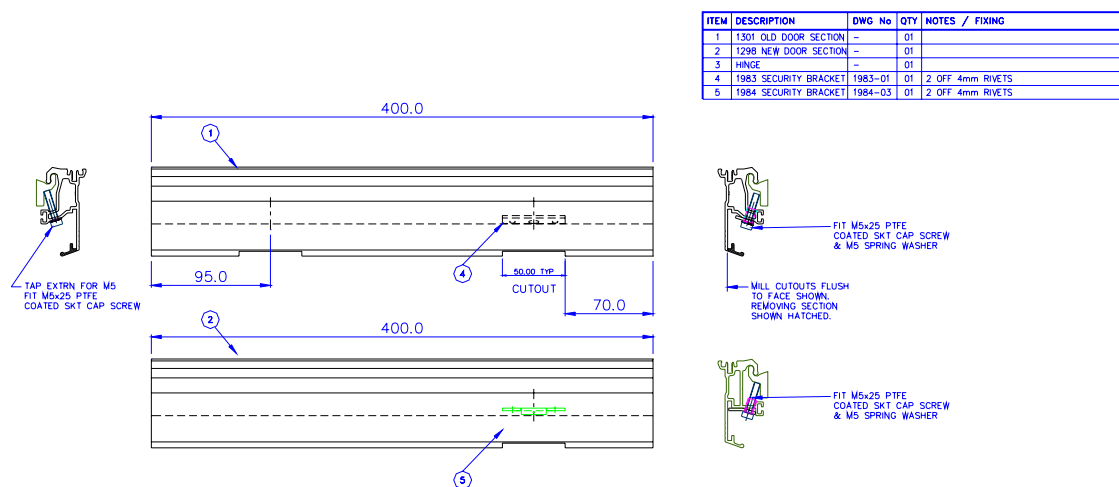| ITEM	DESCRIPTION	DWG No	QTY	NOTES / FIXING
1	1301 OLD DOOR SECTION	–	01	
2	1298 NEW DOOR SECTION	–	01	
3	HINGE	–	01	
4	1983 SECURITY BRACKET	1983-01	01	2 OFF 4mm RIVETS
5	1984 SECURITY BRACKET	1984-03	01	2 OFF 4mm RIVETS

Fig. 4.2.1. Generations of Door Security

Procedure for New Door Fitting (see figure 4.2.2): Ensure the PTFE bolt is 'unscrewed' such that the part of the door that goes over the hinge is free. Hang door onto superstructure (2 person operation). With door open, screw bolt as far as it will go without over tightening (use torque setting with electronic tools). The door will now open and close freely but cannot be lifted off.

Fig. 4.2.2. Door Security

Glazing change procedure WEAR EYE PROTECTION: lay door flat with outer face of glazing facing upwards. Unscrew the small countersunk screws which join the glazing retainer strip to the door. Use a piece of wood and mallet to gently tap the glazing retainer strips off. Remove old glazing / glass beads and ensure door and retainers are clean and free from debris. Ensure foam tape is present on door and glass retainer strips. Position new glazing on door. Fix glazing retainer strips back on by tapping gently with a mallet. Fix countersunk screws back into retainers and door.
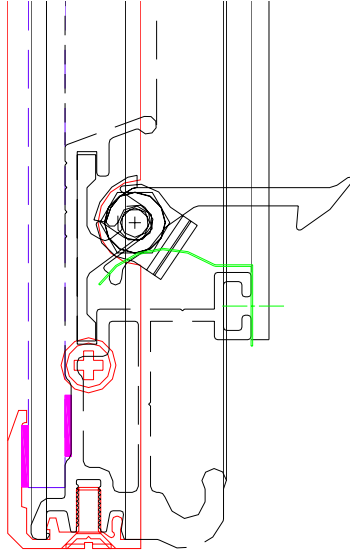
Fig. 4.2.3. Section of Door Showing Glazing Retainer

Fig. 4.2.4. Glazing Retainer Removal and Replacement

4.3. Gas Struts

Following a 2004 directive, gas struts appeared on some units to assist with door opening, thus dispensing the need for a door prop. In general, the current situation is that double sided units (perpendicular to road) will have gas struts. Single sided units (parallel to road) will not have gas struts.

Poster Changing: The method of door opening is as described in section 3.1. Upon releasing the lock and removing the key, pulling the door slightly will then cause the struts to take the weight and open the door to a nominal angle of 30° to vertical.

Door Removal / Fitting: The gas struts need to be removed prior to door removal. This is an easy process, done as follows, as a 2-person operation: Open door in usual manner and let struts take weight of door to open position. First operative to hold / take weight of opened door. Second operative to go under door. Second operative to flip down clevis retainer and push out clevis pin holding strut to superstructure. At this point, the strut will be released from the superstructure and be hanging on the door. TAKE CARE OF EYES. Second operative to unscrew strut from door (no need to remove clevis pin & head from door). Repeat for other gas strut.

Door may now be removed as described (release security screws etc.) in section 3.2. To refit the door, hang as previously described then refit struts by following the reverse procedure as described above. Note that the barrel of the strut faces upwards and is connected to the door.

BEFORE FITTING A GAS STRUT, IT MUST BE PRIMED BY COMPRESSING AND RELEASING 3 TIMES PRIOR TO FITTING.

Fig. 4.3.1. Gas Strut Operations

When refitting struts, please ensure that they have the correct force, according to table 4.3.1. below.

	Strut Force / N	**Label colour**
Ether6 glass	170	Yellow
Ether6 PETg	100	White
Conv6 glass	190	Yellow
Conv6 PETg	120	White
Universal **	210	White

Table 4.3.1.   Gas Strut Specifications

** As of September 2005, all new production of units will move towards a 'universal' gas strut – a single strut for all specifications. The nature of the fitting of the strut has some differences to what is described above. It is possible to retrofit the new fixing method, as detailed below in section 4.4.

4.4. Universal Gas Strut Retrofit

A new method of fitting gas struts has been devised which offers a greater door opening angle (35° nominally) and greatly enhanced door security. The method of fixture ensures the strut acts to force the door onto the hinge. This is currently favoured for new production. It is offered as an optional retrofit, to be carried out at the customer's expense.

4.6. Door Spring Retrofit

This section is offered as an optional enhancement, to be carried out at the customer's cost, to enhance the action of the locking mechanism on any door. This is achieved with the fitting of leaf springs under the moving lock piece.

Parts needed for fit:

- Power drill (with battery if on site);
- 2mm drill bits;
- 2 off springs;
- 4 off no.6 x 3/8" pan head screws
- Screwdriver as appropriate

It is advised that power is turned off to the adbox when carrying out this fit.
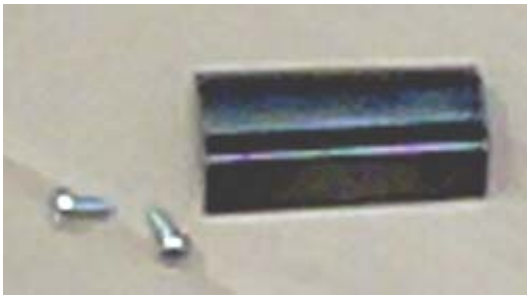

Figure 4.6.1.   Single door spring and two screws

Open door of 6-sheet adbox and secure open, if fitting to a door on an adbox. Measure approximately 250mm (+/- 50mm) from the edge of the door. Drill a 2mm hole through the door extrusion bottom section, (in the channel taken up with water seal on the sides and top).
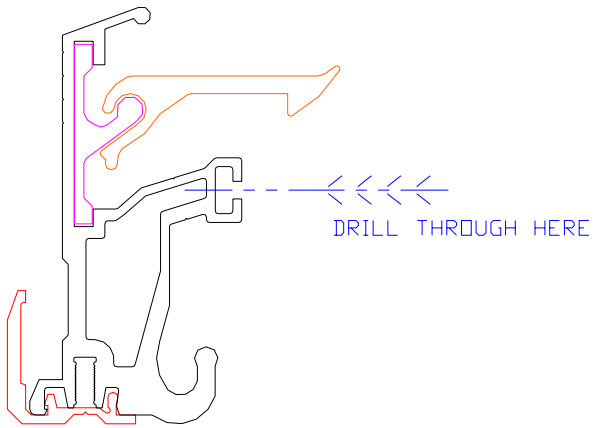

Figure 4.6.2.   Drilling first hole in Door

Figure 4.6.3.   CAD section showing drilling position

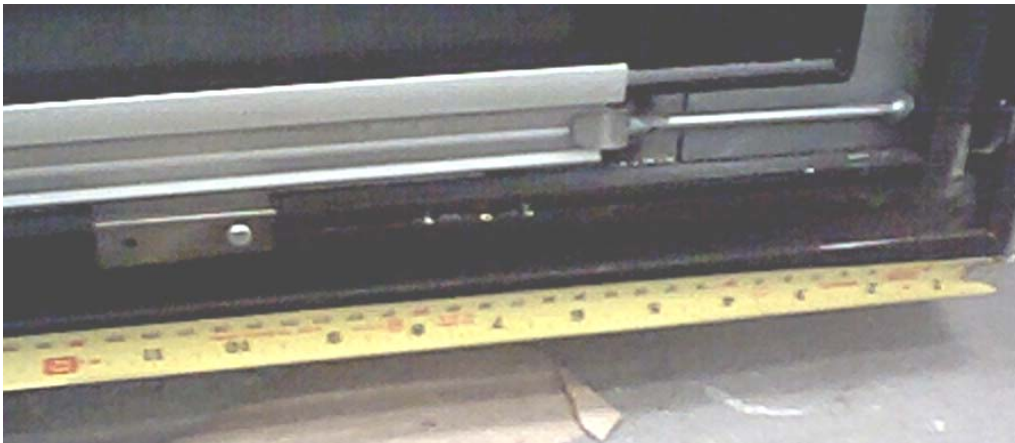Place spring in position and screw in and tighten one no.6 screw.

Figure 4.6.4.   Spring in Position, First screw tightened

Drill out other hole with 2mm bit.

Figure 4.6.5.　Drilling out second hole
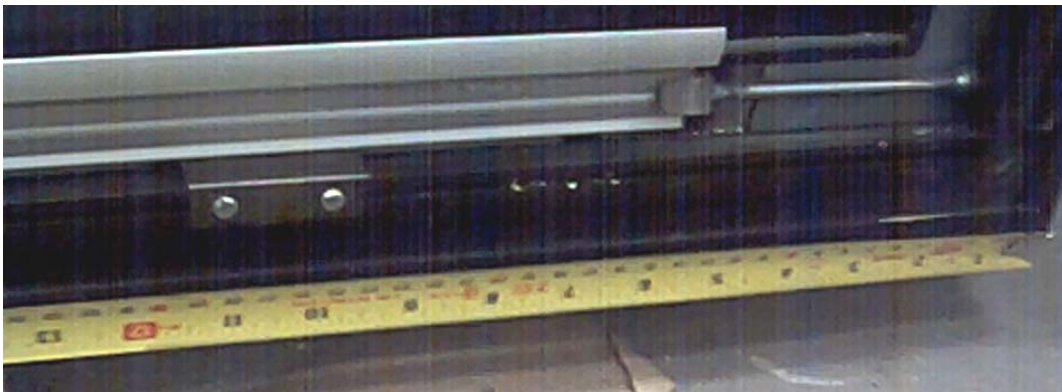
Tighten second no.6 screw.

Figure 4.6.6.　One spring installed – open/latched position
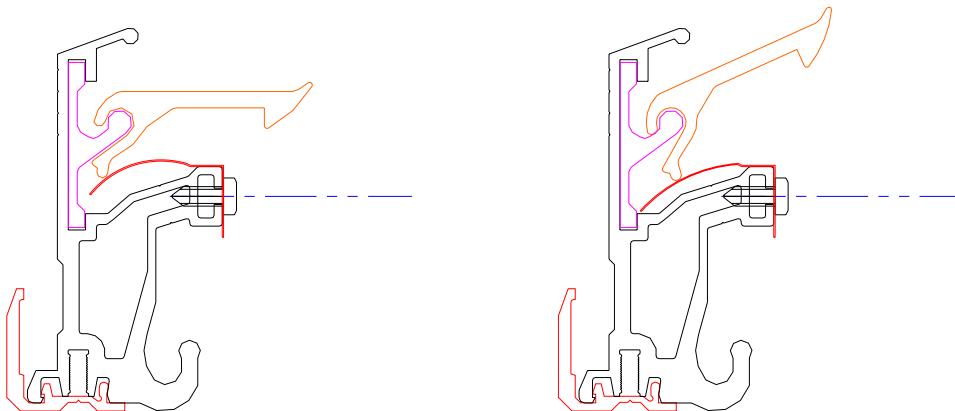
Figure 4.6.7.   Closed position

Figure 4.6.8.   CAD sections showing spring closed and open/latched

Repeat instructions for other side of door, to fit second spring. Close door / return power to adbox.

4.7. Lamp Replacement

To replace lamps, first isolate power to the unit by switching off RCD/RCBo. This may be done in a number of ways depending on the nature of the unit. This will be covered in more detail in section 4.8. The door then needs to be opened and secured open. The diffuser panel needs to be removed from the unit and stowed safely.

Ether6 static boxes are fitted with 4x36W T8 lamps laid horizontally. End caps are the push fit type. Lamps are held to the unit by metal terriclips on the superstructure. When removing a lamp, pull lamp out of terriclip near the terriclip to avoid risk of shearing the lamp and breaking the glass. Conv6 boxes with OPEN scrollers are fitted with 4x58W T8 lamps laid vertically. End caps are the twist type which also serve to hold the lamps. A quarter turn of the lamp in either direction is required to loosen the lamp that can then be slid out. Radiant lenses will need to be removed for lamp changes. This is done by pulling the lens off – pull lens in vicinity of the transparent clips to avoid damage to lens or lamp.

Ensure that replacement lamps of the same nature and colour temperature (6000-6500K) are used. Ensure that radiant lenses are replaced and are in the correct orientation (see section 2.3.).

When new lamps are fitted, close doors and return power to the unit. Cover PEC sensor to ensure that lamps switch on.

It is reinforced that Ether-Tec offer a 3 year guarantee on new lamps. Should lamps fail prematurely, they will be replaced free of charge so long as they are returned to Ether-Tec.

4.8. Lamp Control Gear Replacement

It is essential that this work is carried out be a suitably qualified and competent person (see section 4.1.). To replace lamp control gear, it is essential that power is isolated to the unit first. DO NOT ASSUME THAT A UNIT WITH LAMPS OFF DURING DAYLIGHT DUE TO THE PEC SENSOR ACTING, IS SAFE. The door will need to be open and secured. The diffuser will need to be removed and stowed safely.

Depending on the nature of the unit, power isolation is achieved by one of the following ways:

- Turn off RCD/RCBo for adbox circuit in bus shelter electrics enclosure (safest, surest method)

- Turn off RCBo in adbox plinth (for units with bases)

- Turn off RCBo in adbox itself (e.g. Solent, wall mounted units, some scrollers) – open door and remove diffuser first.

Access to the adbox base plinth is via a standard 8mm triangular key (max outer diameter 12.5mm). This applies to all Ether-Tec plinths that contain electrics. Two locks hold a cover plate on. Turn left hand lock through 90° clockwise to open. Turn right hand lock through 90° counter clockwise to open. Lift cover off to reveal electrics. Reverse the procedure to replace cover.

Fig. 4.8.1. Plinth Access

On initial electrical connection to the RCBo in the plinth, ensure an Earth connection is made to the floating Earth lead provided, which is connected to a vacant metal stud.

Ether6 static units: lamps are controlled with a single 436 high frequency ballast. The ballast is located on a flat metal plate about halfway up a side channel. Earthing is via studs on the white superstructure.

Conv6 units with OPEN scrollers: lamps are controlled with two 258 high frequency ballasts. The ballasts are located under a cover plate on the right hand side looking at the scrolling poster. Earthing is via a wire connected to a stud on the white superstructure routed into the scroller cartridge.

For Ether6 static units, the lamp wiring loom is routed up each side channel of the superstructure. The loom passes through the white superstructure top channel, held from falling into the units with nylon tie clips and the metal braces which run on the top channel. For OPEN scrollers, the lamp wiring loom is integral to the scroller cartridge assembly.

Ensure all lamp loom connections are preserved when changing a ballast / gear tray. Ensure mains connections are made correctly to the ballast. Ensure the Earth connection to the superstructure is connected when finished.

Detailed wiring schematics for different adboxes are shown in the appendix.

It is reinforced that Ether-Tec offer a 3 year guarantee on new high frequency ballasts, supplied by Ether-Tec. Should gear fail prematurely, it will be replaced free of charge so long as it is returned to Ether-Tec. In this case, it is desirable for the lighting loom to be attached.

4.9. OPEN Scroller Assembly

These notes refer to the assembly of the single scrolling cartridge from OPEN industries. The scroller has its own mains feed accessed by the three wires at the bottom of the left hand side. Scrolling is required to be on constantly. Lighting wiring will comprise 4x58W T8 lamps run on 2x 258 ballasts. Lighting is required to only be on when dark. Assembly configurations will be one of the following:

- 2 ballasts & looms only $\Rightarrow$ lighting and scrolling fed by separate supplies; lighting feed must be protected and switched for dark only operation; scrolling feed must be protected and constant

- 2 ballasts & looms, RCBo, optical sensor $\Rightarrow$ one unprotected mains feed may power box direct to box RCBo; box wiring separates feed to lighting and scrolling
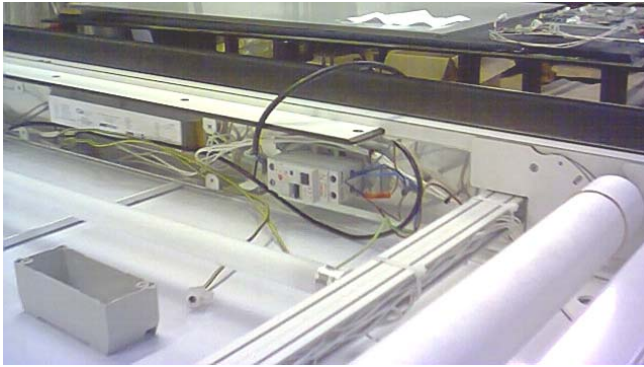

Fig. 4.9.1. OPEN Wiring Under Construction

Remove cover plate from blank right hand cartridge side. Fit ballasts to cartridge using M4 screws in the tapped holes. Fit twist end caps such that wires poke out of static/rear side (lamps will be inserted on scroller side). Ensure wiring is tidy and well secured to cartridge with nylon tie clips as appropriate. Ensure lamp wiring is hidden away from the scrolling face. Ensure wiring cannot interfere with moving parts.

Where a box requires an RCBo, this will be located on the cartridge, on the right hand side, outside the covered ballast area, accessible for use.

!!! There are currently no fixings for RCBos – drill 2 off holes in the space and fit RCBo cover with 2x self tapping screws!!! This will be amended for subsequent issues

Illumin sensors will be housed in the adbox superstructure and wired to the lighting circuit in the usual manner. The illumin cable will need to be routed into the cartridge right hand side, so it may be connected to the RCBo.

Fig. 4.9.2. OPEN Wiring Complete (with RCBo)

Lay cartridge sides and rectangular lamp bars on padded bench. Ensure lamp bars are such that plastic strip with holes for lamp end caps face inwards. Ensure cartridge side with scrolling electronics and motors is on left hand side and blank cartridge side (for lighting ballasts) is on right hand side (routing on cartridge sides will be on rear). Use the supplied M6 countersunk screws with the supplied M8 large diameter washers to screw the lamp bars to the cartridge sides (4 off). The csk screws should finish approx flush with the top of the was.

!!! Door metal sensor needs to be loosened and screwed in such that no more than 14mm sensor protrudes!!! This will be built into subsequent issues.

Ensure piece of foil is fitted to inside of conv6 doors.

Roller fitting is as follows. First hang timing belt around gear box pulley. Move roller near to sign, hang other end of timing belt around roller pulley and secure roller into position by pushing into the sprung loaded housings. Given that a roller has a pulley on one side, which goes on the left hand side, distinction of top and bottom rollers should be self-evident. This is also given that the scrolling paper falls on the outside.

A detailed method of distinction is as follows: The top 'leader' roller has an 'A' zip extrusion attached (adhesive same side as clasp). The bottom 'tail' roller has a 'B' zip extrusion attached (adhesive opposite side as clasp). See figure 3.3.1.

Mains cable feeds for scroller and for lighting need to be carefully routed through sign box at the moment the cartridge is dropped into the sign unit. Cables must not interfere with moving regions.

Ensure Earth connection is made to stud on box superstructure.

The cartridge is dropped onto brackets fixed onto the adbox. Ensure 2x large diameter M6 washers are used per bracket (8 total), either side of the cartridge material, securing with M6 nuts.

Make all appropriate wiring connections and replace cover over ballasts on right hand side.

Basic Testing: The completed unit should be tested for the lighting working and for the scrolling mechanism to be working. Lighting should be tested in the normal manner by powering up ballasts and checking that lamps fire and that where appropriate, sensors switch lamps on and off.

Rollers will have been fitted as described. Do not remove the retaining elastic bands. Follow the instructions as below:

1. Power up the unit with the door open.

2. Check the top switch is out (manual).

3. Try the roller up and roller down switch to check they operate the top and bottom rollers in manual mode.

4. Press the neutral switch and observe the top roller release tension. Press again and observe the top roller start to move very slowly.

Detailed testing: This procedure is only carried out if specified. Otherwise, the basic testing procedure should be used only.

Lighting should be tested as outlined.

A pre-assembled top and bottom rollers with 3 posters should be fitted to the cartridge. Then follow the instructions as below:

1. Ensure the posters are fed through the poster guard on the left hand side.

2. Power up the unit with the door open.

3. Check the top switch is out (manual).

4. Try the roller up and roller down switch to check they operate the top and bottom rollers in manual mode.

5. Press the neutral switch and observe the top roller release tension. Press again and observe the top roller tension the poster.

6. Press the top switch in for auto.

7. Close the sign unit door (or place some metal near door sensor). Observe posters scrolling through initialisation and then enter normal scrolling mode.

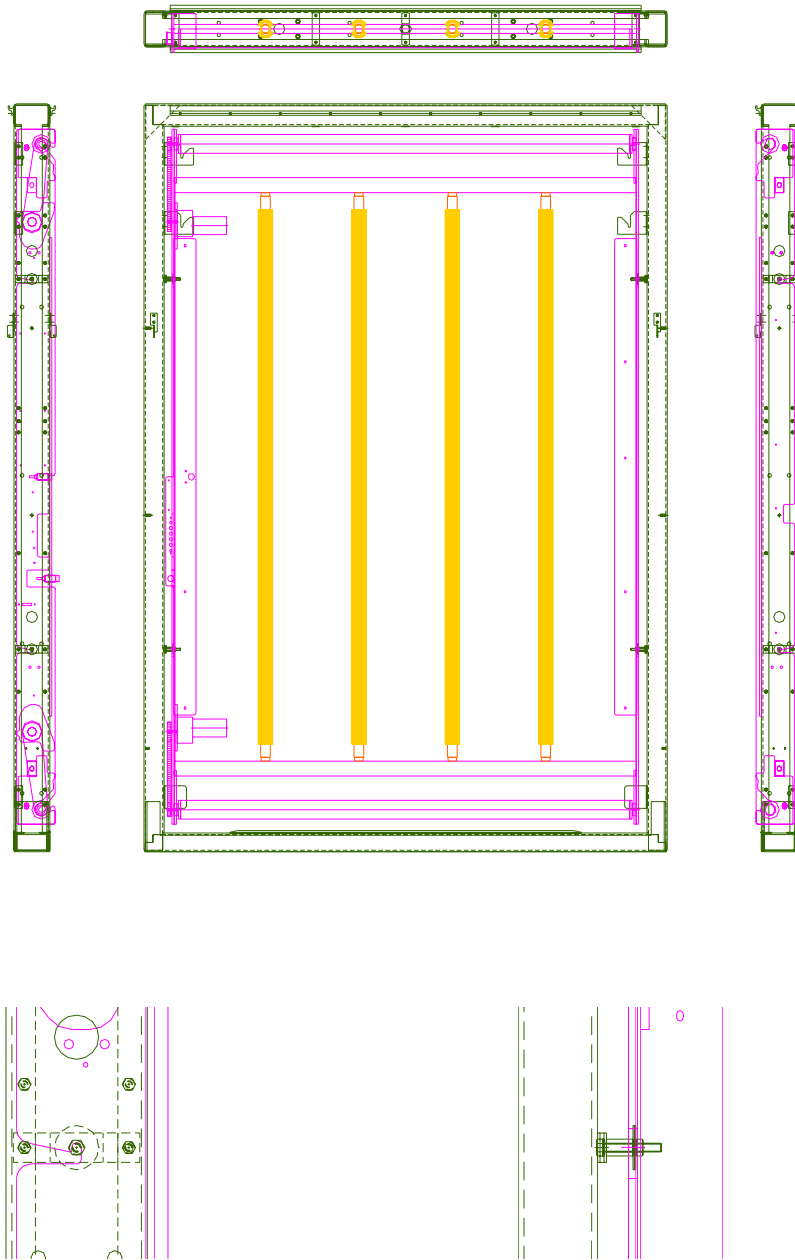8. Open door (or remove metal from near door sensor) and observe scroller go back into manual mode.

Fig. 4.9.3. CAD Showing OPEN Cartridge in Conv6 Adbox