GEW UV DRYING SYSTEM

e-Brick (EC)

INSTALLATION & OPERATING MANUAL

…engineering UV

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Table of Contents

Figures

Tables

Document Issue Status

Issue	Date	ECN	Edited	Checked	Approved	Notes
0.1	15 Dec 2006		BPB			First release
1.0	16 January 2007	0605	BPB			

EC DECLARATION OF INCORPORATION

We hereby declare that the following machinery is intended to be incorporated into other machinery and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with essential health and safety requirements of the MACHINERY DIRECTIVE 98/37/EEC the LOW VOLTAGE DIRECTIVE 73/23/EEC and ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 89/336/EEC.

Machinery Description	**Manufacturer**
UV DRYER, TYPE ***VCP, ECP, HCP, XC***	GEW (EC) Limited REDHILL Surrey RH1 5NB United Kingdom
UV DRYER, TYPE ***NUVA, NUVAplus***	
CONTROL CABINET, TYPE ***e-Brick*** 3.6kW, 9kW, 12kW, 22kW and derivatives	
CONTROL CABINET, TYPE ***p-Brick***	
CONTROL CABINET, TYPE ***HV***	

This equipment has been designed and manufactured in accordance with the following European standards:

EN12100-1:2003	Safety of Machinery – Basic terminology, methodology
EN12100-2:2003	Safety of Machinery – Technical principles
EN1050:1997	Safety of Machinery – Principles of risk assessment
EN954-1:1997	Safety of Machinery Safety related parts of control systems
EN60204-1:1998	Safety of Machinery – Electrical equipment of machines
EN61010-1:2001	Safety requirements for electrical equipment for measurement, control and laboratory use
EN61000-6-4:2001	Electromagnetic Compatibility – Emission Standard for industrial environments
EN61000-6-2:2001	Electromagnetic Compatibility – Immunity for industrial environments
EN60529:1992	Degrees of protection provided by enclosures
PrEN1010-1	Safety of Machinery – Safety requirements for the design and construction of printing and paper converting machines

An operating manual and other technical data has been supplied with the equipment. A technical construction file for this machinery is retained at GEW (EC) Limited.

NAME: Mr. M. C. Rae B.Eng.; C.Eng; M.I.MECH.E.; POSITION: Managing Director.

Being the responsible person appointed by the manufacturer established in the EC and employed by: GEW (EC) Limited, Kings Mill Lane, South Nutfield, REDHILL, Surrey RH1 5NB, England

1. Product Description

The UV drying systems manufactured by GEW (EC) Limited are designed for the instantaneous drying of inks, varnishes and adhesives that are sensitive to ultra violet (UV) light.

A typical web colour printing press comprises several printing stations in line, each station applying ink of a different colour. The ink printed on the first station must be thoroughly dry before entering the second station to avoid contaminating the press. A drying unit containing a high power UV lamp is located between print stations. The web passes through a ‘web slot' in the drier and travels past the lamp. UV drying is effectively instantaneous, allowing the press to be run at high speed. An extra drying unit may be located at the end of the web for drying varnish applied after the final printing.

The ***e-Brick*** is a highly integrated power supply designed specifically for powering UV lamps in drying systems. The ***e-Brick*** features integrated controls and all necessary hardware to control the UV system including lamp cooling, safety interlock features, and a press interface allowing the UV curing to be controlled automatically.

The ***e-Brick*** power supply is a component part of a GEW UV drying system. A complete system would also include GEW UV dryer(s) e.g. ***VCP***, custom cabling, fan cooling, ducting and a human machine interface (HMI) to control the operation of the system. Systems vary in complexity and the scope of supply differs depending on the application; all systems require commissioning by trained personnel.

This manual should be referred to alongside the user manuals and installation information for the other components in the system.

This user manual has been prepared in accordance with the guidelines set out in EN12100 and EN60204.

1.1. Related documentation

1.1.1. GEW Product manuals

Document	Title
	VCP user manual
	ECP user manual
	NUVA+ user manual
	e-Brick HMI Software Operating Manual

1.1.2. European (EN) Standards

Standard	Title
EN12100-1:2003	Safety of Machinery – Basic terminology, methodology
EN12100-2:2003	Safety of Machinery – Technical principles
EN1050:1997	Safety of Machinery – Principles of risk assessment
EN12198-1:2000	Safety of Machinery – Assessment and reduction of risks arising from radiation emitted by machinery
EN12198-2:2002	Safety of Machinery – Assessment and reduction of risks arising from radiation emitted by machinery
EN12198-3:2002	Safety of Machinery – Assessment and reduction of risks arising from radiation emitted by machinery
EN954-1:1997	Safety of Machinery – Safety related parts of control systems
EN60204-1:1998	Safety of Machinery – Electrical equipment of machines
EN61010-1:2001	Safety requirements for electrical equipment for measurement, control and laboratory use
EN61000-6-4:2001	Electromagnetic Compatibility – Emission Standard for industrial environments
EN61000-6-2:2001	Electromagnetic Compatibility – Immunity for industrial environments
EN60529:1992	Degrees of protection provided by enclosures
PrEN1010-1	Safety of Machinery – Safety requirements for the design and construction of printing and paper converting machines

1.1.3. British Standards

Reference	Title
BS7671:2001	Requirements for Electrical Installations IEE Wiring Regulations Sixteenth Edition

1.1.4. Guidance notes

Reference	Title
URN04/1106	UK Government Department of Trade and Industry Product Standards: Electrical Equipment (implementing the Low Voltage Directive)
URN95/650	UK Government Department of Trade and Industry Product Standards: Machinery

1.1.5. Symbols used

The following markings are used on GEW ***e-Brick*** products and system components:

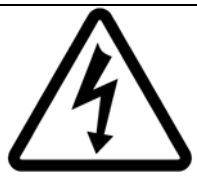
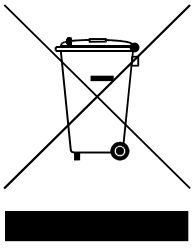
Symbol	Reference	Description
	ISO7000 – 0434	Caution, risk of danger. Note: Documentation must be consulted in all cases where this symbol is marked
		Caution, risk of electric shock
	IEC 60417 – 5019	Protective Conductor Terminal
	IEC 60417 - 5041	Caution, hot surface
3~		Three phase alternating current
~	IEC 60417 - 5032	Alternating current
	EN50419	Equipment should not be disposed of in normal waste stream

Table 1: Glossary of symbols used

2. Transport, Handling, Storage

2.1. Storage

The standard packaging comprises a sealed polythene bag with silica gel pack to protect against condensation due to temperature variation; the ***e-Brick*** is fitted with preformed protective end caps and placed in a tri-wall cardboard container which provides transit and storage protection. A number of ***e-Brick*** packages may be palletised for ease of handling during shipment.

22kW products are packed in a sealed polythene bag with silica gel pack then secured to a pallet with a shock protection layer.

During transportation and prior to installation the ***e-Brick*** shall be stored in its protective packaging.

The recommended storage temperature range is –25°C to +55°C with up to 24h at 70°C.

2.2. Dimensions

See following tables for dimensions of the ***e-Brick*** product variants, and standard packaging:

Standard packaging

***e-Brick* variant**	**Length (mm)**	**Width (mm)**	**Height (mm)**	**Weight (kg)**
3.6kW	535	440	440	15
9kW	760	440	440	26
12kW	1010	440	440	37

e-Brick product

***e-Brick* variant**	**Length (mm)**	**Width (mm)**	**Height (mm)**	**Weight (kg)**
3.6kW	400	280	275	12
9kW	625	280	275	22.5
12kW	875	280	275	33
22kW	875	560	275	85

2.3. Handling

Warning! ***e-Brick*** units can be heavy (>25kg) so should be handled with care to avoid injury. Observe your company's manual handling limits and, if necessary, use lifting equipment. Refer to section 5.8 for details of recommended Personal Protective Equipment.

The ***e-Brick*** features T-slots allowing handles to be fitted or the attachment of lifting eyes when required, see Figure 1. Ensure that handles are aligned with the Centre of Gravity of the unit; this is clearly marked on the side of the housing.

Note! Illustrations show 9kW ***e-Brick***, 22kW products have four carry handles; always use all handles when lifting the product.

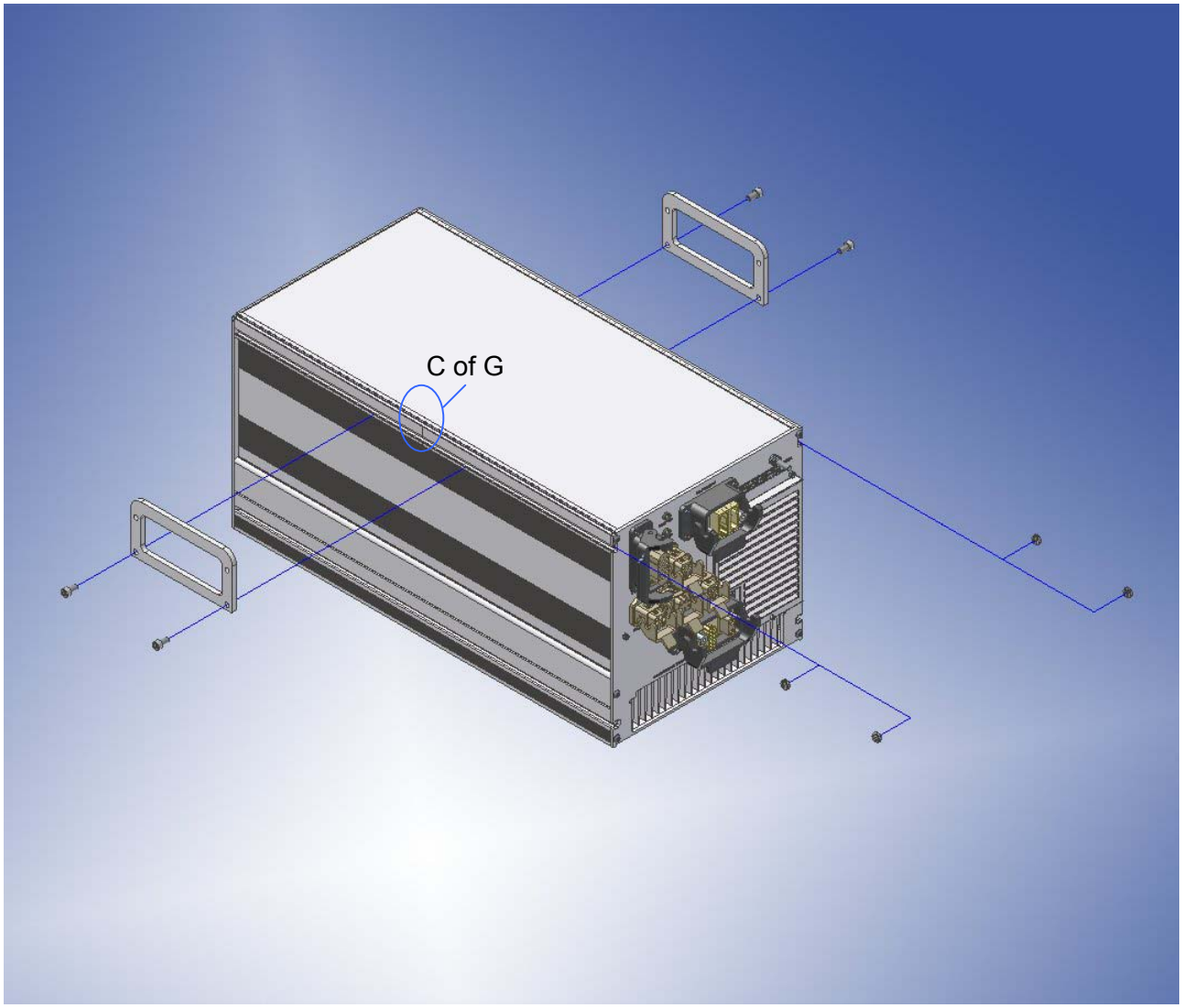


Figure 1: T-slot detail showing carry handles

3. Installation & Commissioning

During installation and throughout the working life of the UV system, observe the following:

- Avoid knocking or banging the ***e-Brick*** or UV dryers
- Always keep service cables and ducting away from busy areas such as walkways, and away from potential hazards such as forklifts
- When moving the equipment, never strain cables or unscrew quick release plugs
- Apply power to the system only when all connections have been made and tested.

Note! Illustrations show the 9kW ***e-Brick***, 12 and 22kW products are installed in a similar manner but their additional size and mass must be taken in to account.

3.1. Fixing / anchoring

Depending on the application the ***e-Brick*** can be freestanding or permanently mounted inside a cabinet, e.g. an individual print station.

3.1.1. Freestanding applications

For freestanding use, the shelf or surface should be stable and capable of bearing the full weight of the ***e-Brick(s)*** and associated cabling. Units may be stacked a maximum of four high using the location features on the top and base of the housing. To ensure stability the carry handles act as fishplates to lock the units together, see Figure 2.

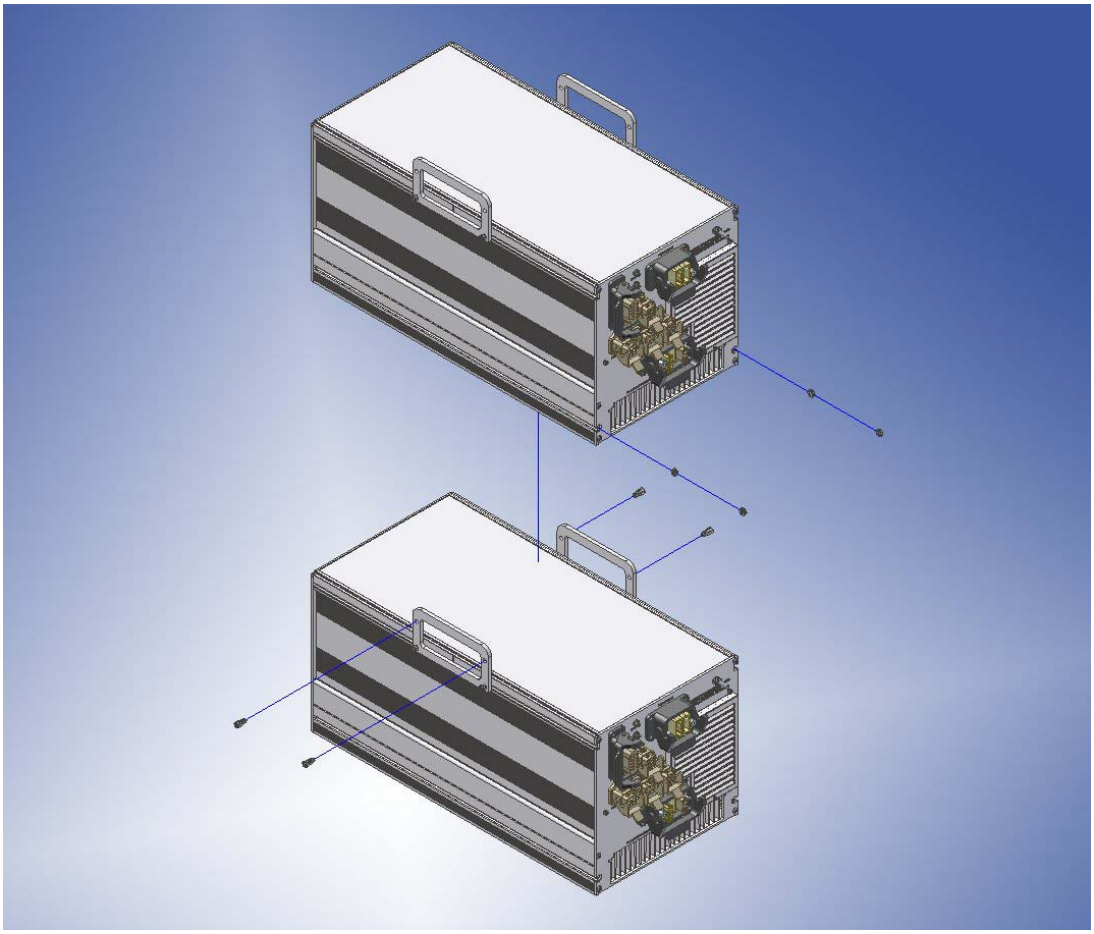


Figure 2: Stacking

3.1.2. Fitment of optional feet

To position an ***e-Brick*** stack off the ground, four of the 'handle' components (GEW part 24974) may be attached to the housing using the T-slots on the base of the unit.

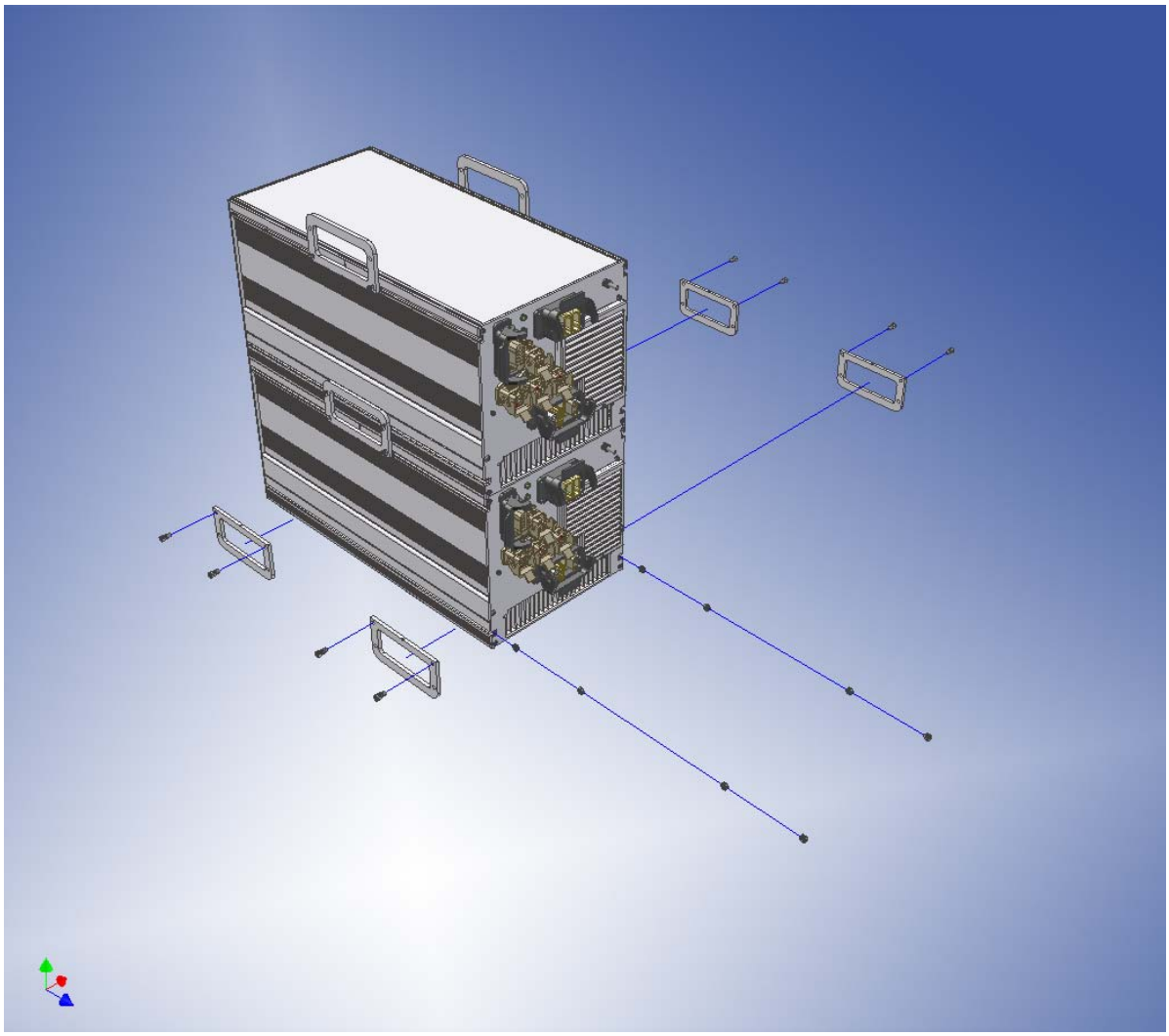


Figure 3: Fitment of optional feet

3.1.3. Permanent Mounting

For permanent mounting, brackets must be attached to the housing using the T-slots on the base of the unit. Ensure that the mounting surface (e.g. cabinet door, print station side panel) is sufficiently strong to support the weight of the ***e-Brick*** and attached cabling; four fixing points are recommended, see Figure 4.

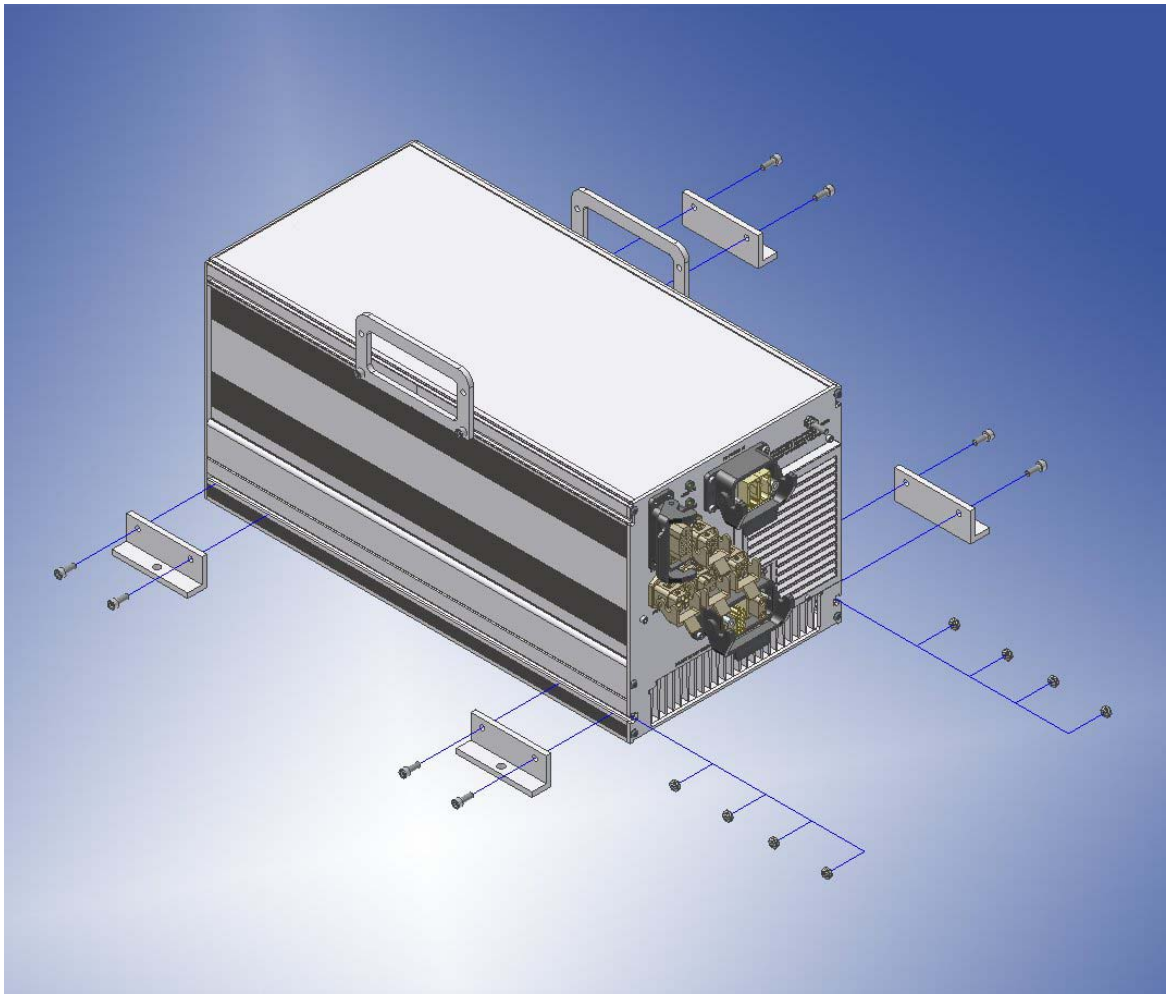


Figure 4: Cabinet mounting

Note: the fixing brackets shown in Figure 4 are for illustration purposes only; specific brackets or fixings will be determined by the application. If necessary, please contact GEW for advice and engineering support.

3.2. Space needed for use and maintenance

The ***e-Brick*** requires little maintenance following installation but clearance is required to allow adequate cooling of the internal electronics.

Allow the following clearances (see Figure 5):

>500mm from the air intake
>300mm from the exhaust outlet
>25mm from sides

If the ***e-Brick*** will be mounted in an enclosure rather than in free air, it is essential that adequate ventilation is provided. Refer to Table 2 for the rated power dissipation for each product variant; this figure should be taken in to account when calculating overall system cooling requirements.

e-Brick **variant**	**Power dissipation (W)**
3.6kW	300
9kW	475
12kW	900
22kW	1500

Table 2: Power dissipation

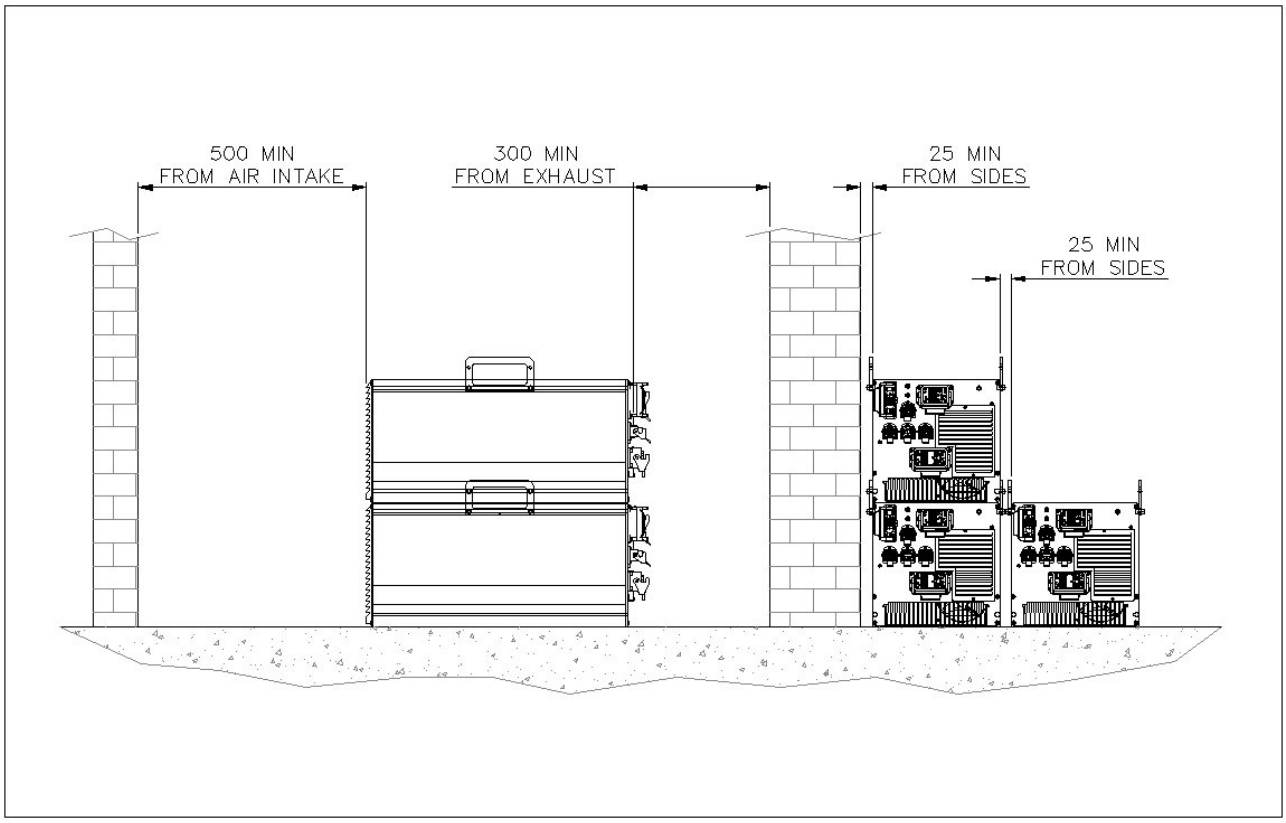


Figure 5: Installation clearances

3.3. Environmental conditions

3.3.1. Temperature

Operating temperature range is +5°C to +40°C

3.3.2. Humidity

Relative Humidity (RH) <50% at +40°C, non-condensing

3.3.3. Altitude

To a maximum of 1000m above mean sea level

3.3.4. Contaminants

Filters are provided to protect the ***e-Brick*** against moisture and dust ingress to IP32 in accordance with EN60529.

3.3.5. Vibration, shock and bump

It is recommended that the ***e-Brick*** should be installed in a location where vibration is minimized and there is minimal risk of shock or bump forces. If vibration is excessive for a given installation, anti-shock mountings may be required.

3.3.6. Electromagnetic compatibility

The ***e-Brick*** is designed to comply with the relevant EMC legislation for industrial installations:

EN61000-6-4:2001	EMC – Emission Standard for industrial environments
EN61000-6-2:2001	EMC – Immunity for industrial environments

3.4. Connection to power supply

Warning! A qualified electrician must make the connection to the mains supply.

The 9/12/22kW ***e-Brick*** requires a 3-Phase mains supply with a Protective Earth connection (3P+E); note that no neutral connection is made.

The 3.6kW ***e-Brick*** requires a single-phase mains supply with a Protective Earth connection.

All variants require:

1) Permanently installed wiring fed by a suitably rated Miniature Circuit Breaker (MCB) to protect each phase of the incoming mains supply cable and allow isolation of an individual ***e-Brick***. For North America and Canada Moulded Case Circuit Breakers (MCCB) shall be used for branch circuit protection.

2) A suitably rated supply disconnection device to allow isolation of the mains supply to the ***e-Brick*** installation. It is recommended that this shall be easily accessible by the operator.

3.4.1. Essential electrical installation data

Refer to Table 3 for peak mains supply current, suggested minimum supply cable cross sectional area and MCB ratings for ***e-Brick*** product variants. These recommendations are in accordance with BS7671:2001 Table 4D2A reference method 11.

e-Brick **variant**	**Current / phase (A)**	**Supply cable size (mm^2)**	**MCB rating (A)**
3.6kW	20	4	20
9kW	20	4	25
12kW	25	4	25
22kW	57	16	63

Table 3: Supply connection specification

Advice! Every ***e-Brick*** system is supplied with an electrical wiring diagram containing system specific installation information.

Advice! Electrical installation standards vary worldwide and local regulations shall be observed.

3.4.2. Residual current devices

The internal EMC filters of the ***e-Brick*** are designed with a maximum earth leakage of 20mA; this should be taken in to account when specifying residual current protection devices.

3.5. General recommendations

If you experience difficulties in setting up this product, contact GEW at the address given at the front of this manual. If in doubt, ask! We are always ready to help.

3.5.1. Installation

e-Brick systems should be installed by GEW service technicians or, alternatively, by GEW factory trained personnel. To validate the system warranty, a system specific code must be entered on completion of installation and commissioning. When a system has not been commissioned by GEW, a message will appear on the HMI every 20 hours reminding the customer that the system is not under warranty:

"SYSTEM NOT UNDER WARRANTY. PLEASE CONTACT GEW, TEL: +44 (0)1737 824510"

To validate the warranty, enter the password supplied by GEW service.

3.5.2. Modifications

Each GEW UV system is engineered to meet the requirements of a given installation. Any change in requirements may require re-commissioning or modification of the system; always refer to GEW for advice before attempting to modify the UV system.

3.5.3. Markings and tamper evident seals

GEW products are clearly marked with safety warnings to draw attention to specific hazards. Due to the hazardous voltages within the ***e-Brick***, security screws are used to secure the housing; in addition, tamper evident seals (see Figure 6) are fitted to indicate that covers have been removed. If these seals are broken or damaged the GEW warranty will be void.

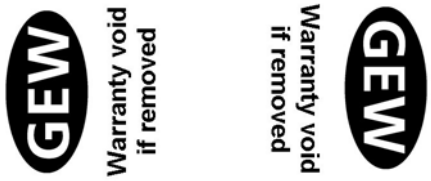


Figure 6: Tamper evident seal

3.5.4. Location of equipment

The user should ensure that no electrical controls are obstructed. Always site equipment to allow reasonable access for servicing.

The installer should ensure that clearances around the equipment fall within the safety regulations for use of electrical equipment. Impact from vehicles such as forklift trucks must be prevented, typically by installing a protective crash barrier. *This is the responsibility of the customer.*

Loose cables between distribution panels, the printing machine and the UV dryers must be protected by galvanized trunking. *This is the responsibility of the customer.*

3.6. Waste removal & disposal

Refer to Table 4 for information on recycling ***e-Brick*** packaging materials.

Standard Packaging	Material	Recycle method
Cardboard outer container	Corrugated tri-wall cardboard	Cardboard recycling facilities exist in most areas
Moulded end cap	“Stratocell” Polyethylene foam	May be recycled where facilities exist Alternatively, dispose of in normal industrial waste stream
Plastic bag	Polythene	May be recycled where facilities exist
Silica gel sachet	Silica gel / paper sachet	Dispose of in normal industrial waste stream
Pallet	Timber	GEW pallets are suitable for reuse. Alternatively, recycling facilities exist in most areas

Table 4: Recycling standard packaging

4. Product information

4.1. Description of the *e-Brick*

The ***e-Brick*** is a highly integrated power supply designed specifically for powering GEW UV lamps in drying systems. The ***e-Brick*** features integrated controls and all necessary hardware to control the UV system including lamp cooling, safety interlock features, and a press interface allowing the UV curing to be controlled automatically.

4.2. Applications

The ***e-Brick*** is specifically designed for powering GEW UV dryers and, in certain applications, IR dryers; contact GEW for details of compatible UV and IR dryers.

Warning! System efficiency and safety may be compromised and/or the ***e-Brick*** may be damaged by the use of non-genuine GEW UV lamps or dryers.

4.3. Prohibited usages

All applications, other than those specifically detailed in 4.2 above are prohibited.

Please contact GEW for engineering support for all other applications.

4.4. Safety features

Warning! To avoid accident or injury, do not attempt to bypass any safety function.

The ***e-Brick*** is designed to be safe in normal operation and to 'fail safe' in the event of adverse operating conditions or internal failure. The following safety features are included:

4.4.1. Internal fuses

Warning! Fuses are not user serviceable; GEW authorised personnel should carry out replacement.

Mains input:

Model	**Rating**	**GEW**
9/12kW	25A 38mm*10mm ceramic fuses, size HRC	25621
22kW	63A MCB and Residual Current Device (RCD) [User accessible on rear panel of product]	25160 25161
3.6kW	20A 38mm*10mm ceramic fuses, size HRC	27469

Internal supplies:

Model	Rating	GEW
HV DC (3.6/9/12kW)	2A Anti Surge TR5 (PCB mounted)	27266
HV DC (22kW)	600V 2A 31.75mm *6.35mm Rapid (F) ceramic fuse	27265
LV DC	4A PolySwitch thermal fuse (PCB mounted)	N/a
Shutter motor	1A PolySwitch thermal fuse (PCB mounted)	N/a

4.4.2. Indicators

The ***e-Brick*** has three LED indicators on the rear panel, “24V” is green when the internal 24V supply is on, “K1” is green when the main contactor in the ***e-Brick*** is enabled; the third LED, “OK”, is green in normal operation but red when a fault occurs.

4.4.3. System Emergency stop

The ***e-Brick*** can only be enabled if the system emergency stop (E-stop) contacts on the Press connector [P1] are closed, enabling the internal safety relay. The internal controls monitor the E-stop status using auxiliary contacts on the safety relay; as a safety measure, the relay can still disable the supply in the event of a control failure.

Warning! Refer to 5.4 for essential safety information relating to E-stop usage.

4.4.4. Contactor

The 3phase power to the main converter in the ***e-Brick*** is switched on using an internal contactor. By design, the contactor coil can only be energised when the press E-stop is enabled and a second relay is switched on. The second relay is switched on by the embedded controller and is enabled from the HMI screen.

4.4.5. Temperature & cooling

Fan failure detection	Generates warning to HMI
Internal temperature warning	Generates warning to HMI
Over temperature trip	Automatic shutdown of ***e-Brick***

4.4.6. Output protection

Voltage limit	Output voltage is limited to a specified maximum
Current limit	Output current is limited to specified maximum
Short circuit protection	Output circuitry will tolerate an indefinite short circuit

Warning! Under no circumstances should either lamp output terminal be electrically connected to chassis ground; this will invalidate the ***e-Brick*** warranty and is likely to result in severe damage to the ***e-Brick***.

4.5. General Data

4.5.1. Electrical supply

The 9/12/22kW ***e-Brick*** requires a 3-Phase mains supply with a Protective Earth connection (3P+E); note that no neutral connection is made. The 3.6kW ***e-Brick*** requires a single-phase mains supply with a Protective Earth connection. Refer to Table 5 for operating Voltage range and peak supply current per phase.

Power factor is typically 0.9 for all ***e-Brick*** variants so no additional power factor correction is required.

e-Brick **variant**	**Nominal Supply Voltage (V)**	**Supply Voltage (V)**	**Peak current / phase (A)**	**Supply Frequency**	**Maximum Power**
3.6kW	240V	216-264V	20	50-60Hz	<4kW
9kW	415V	374-528V	25	50-60Hz	<9.6kW
12kW	415V	374-528V	25	50-60Hz	<13.1kW
22kW	415V	374-528V	57	50-60Hz	<24kW

Table 5: Electrical supply data

Advice! The actual current consumption of the ***e-Brick*** is dependent on the supply voltage and the power level demanded by the installation. Please contact GEW service for the actual running current for any specific UV system configuration.

4.5.2. Performance Ratings

Refer to GEW for ***e-Brick*** performance data; performance is maintained for the full operating voltage range detailed in Table 5

e-Brick **variant**	**Output voltage (V)**	**Output current (A)**	**Efficiency (%)**
3.6kW	Refer to GEW		
9kW			
12kW			
22kW			

Table 6: Performance data

4.5.3. Noise & Vibration

The ***e-Brick*** contains fans to cool the power electronics, these generate some noise but this is likely to be insignificant in the context of the environment the product is installed in.

e-Brick **variant**	**Fans**	**Noise level (dBA @ 1m)****
3.6kW	2	60.8dBA
9kW	2	60.8dBA
12kW	4	68.2dBA
22kW	6	71.7dBA

** Measured in open environment at 1m from air intake: ambient noise level ~48dBA

4.5.4. Radiation

In normal use, the ***e-Brick*** generates electromagnetic radiation within allowable limits; refer to 3.3.6 for relevant standards.

Warning! The ***e-Brick*** forms part of a GEW UV drying system, providing essential safety functions. The UV dryer in the system presents some risk of exposure to UV radiation; this risk is minimised by application specific shielding. Refer to the relevant UV dryer user guides and system installation manuals for further information.

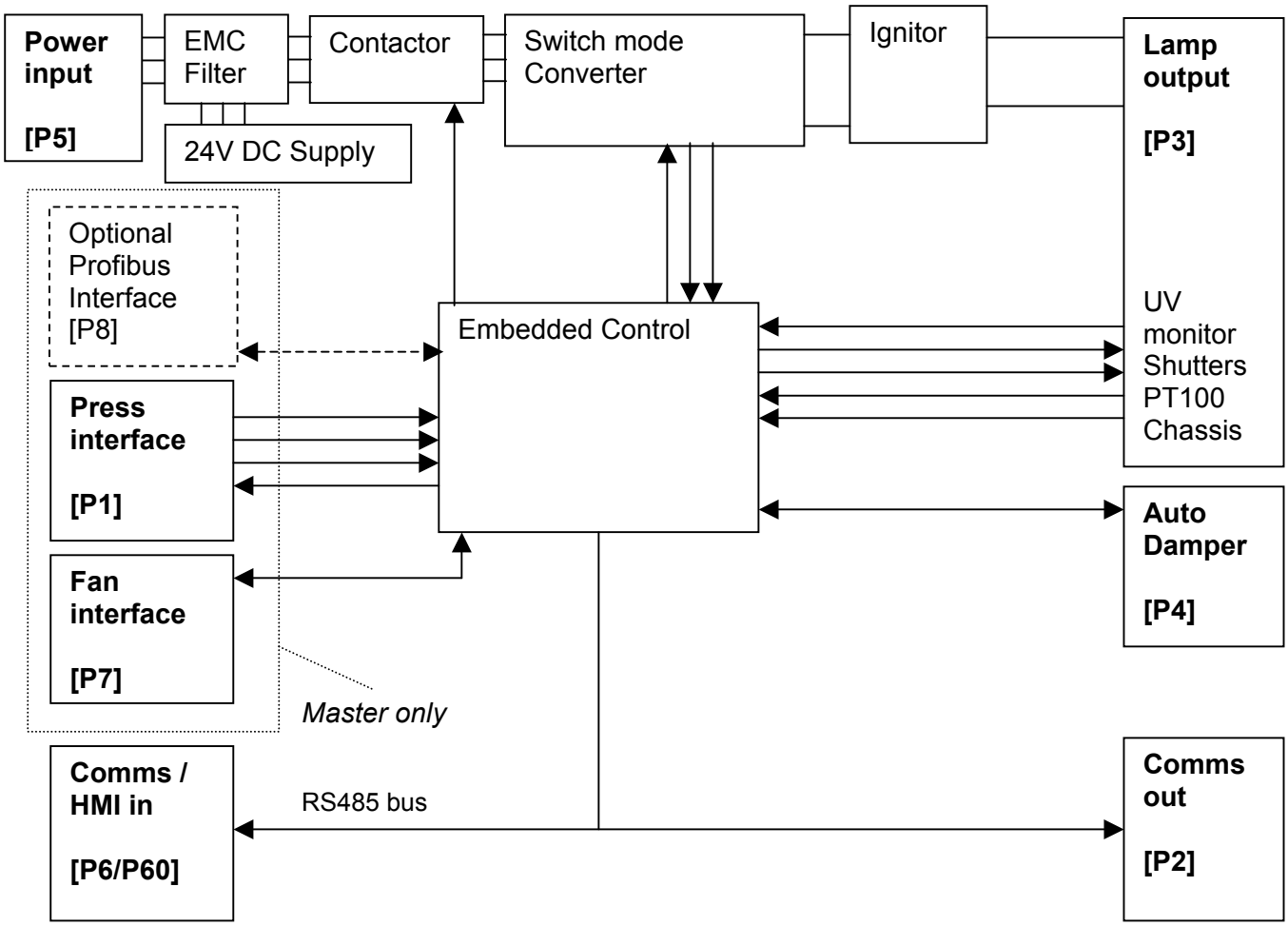
4.5.5. Gases, Vapours, Dust

The ***e-Brick*** power supply does not generate any gases, vapours or dust. Refer to 3.3.4 for recommended operating environment and exposure limits for contaminants.

Note that UV dryers will generate some Ozone (O_3) that is extracted to atmosphere by the cooling system. Refer to the relevant UV dryer user guides and system installation manuals for further information.

4.6. Electrical Data

4.6.1. Block diagram



4.6.2. Interface details

Refer to sections 4.6.3.1 to 4.6.3.9 for connection details for P1 to P8 on the ***e-Brick***; Figure 7 shows the positions of the connectors on the rear panel for the 3.6/9/12kW products.

Connectors are arranged differently for the 22kW ***e-Brick***, refer to Figure 7(a). P1, P2, P4, P6, P7, P8 are identical; P5 (Power input) and P3 (Lamp output) are functionally identical but have larger connectors and terminal inserts to handle higher voltages and currents.

Please note the following:

Note! These connections apply to ***e-Brick*** products with embedded control electronics 29328/29355 (3.6kW), 28496/28497 (9kW), 28524/28525 (12kW) and 9/12/22kW derivatives.

Refer to e-brick user manual rev2.1 for 26365 & 26366 (12kW), 26367, 26368 & 26391 (9kW), 25158 & 26790 (22kW) and derivatives of these models.

Refer to issue 1.0 of this manual for connection details of 23326 & 23329 (12kW), 24101, 24104 & 26376 (9kW).

Warning! Where *'Volt free' outputs* are specified, the maximum contact rating of the internal relay contact is provided in the tables below; if this rating is exceeded contact damage may occur and the GEW warranty will be void.

Warning! To ensure isolation of the ***e-Brick*** from external systems, where a *'Volt free' contact input* is specified the externally connected equipment should be interfaced by a relay capable of switching 24Vdc at <0.5A. Applying voltages to these inputs may cause serious damage to the ***e-Brick*** and invalidate the GEW warranty.

4.6.3. SELV ports

The ***e-Brick*** internal 24V power supply is classified as Safety Extra Low Voltage (SELV) in accordance with clause 2.3 of EN60950. The ***e-Brick*** is designed for connection of GEW approved equipment only to ports P1-P8. With the exception of lamp output terminals [P3A-B] and mains input terminals [P5A (3.6/9/12kW) or P5 A-C (22kW)] interfaces are SELV; it is recommended that connections are only made to equipment that complies with the SELV safety classification. Certain ports may exceed SELV voltages (30VDC 60Vrms) within the specified ratings shown in 4.6.3.1 to 4.6.3.9.

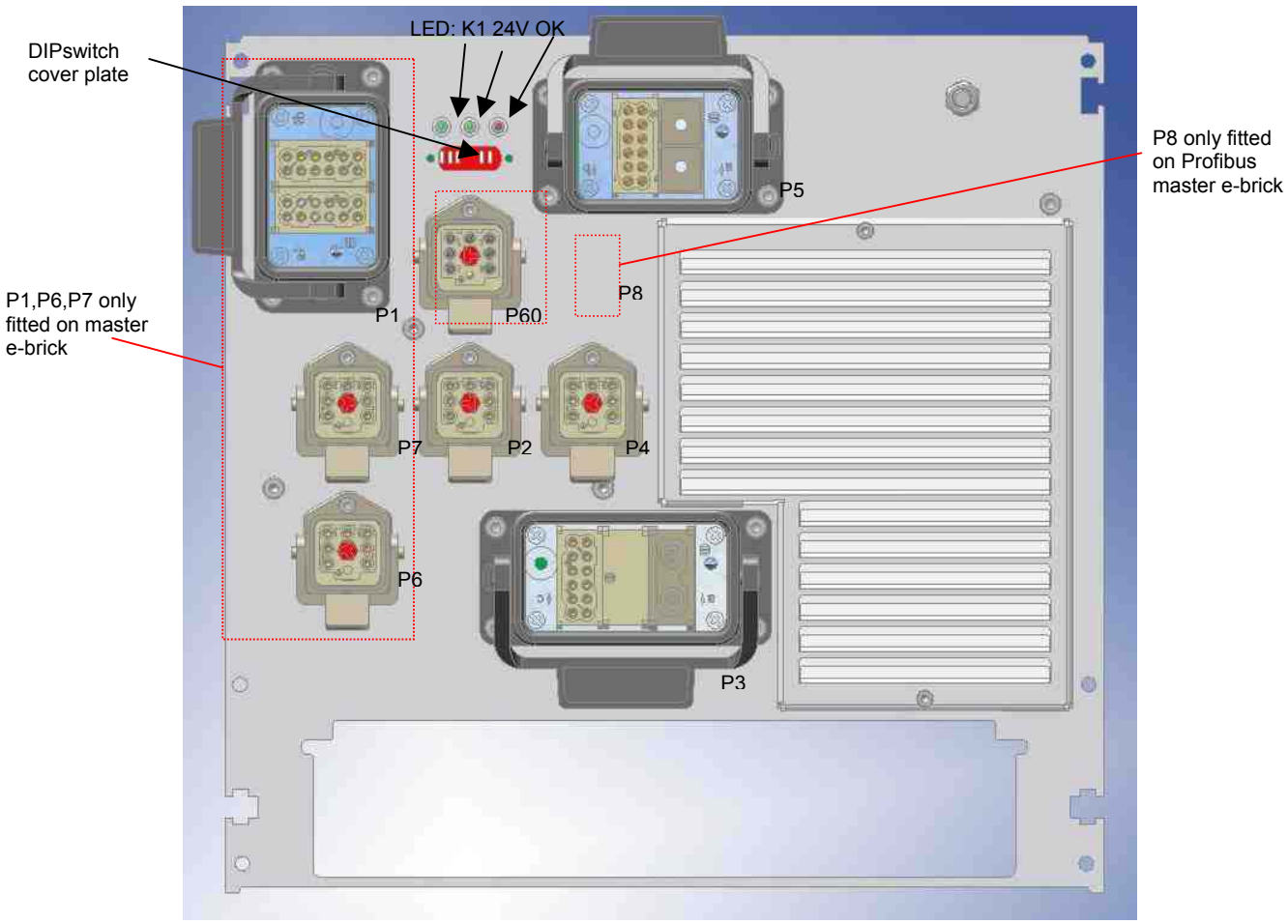


Figure 7: Rear panel connection details

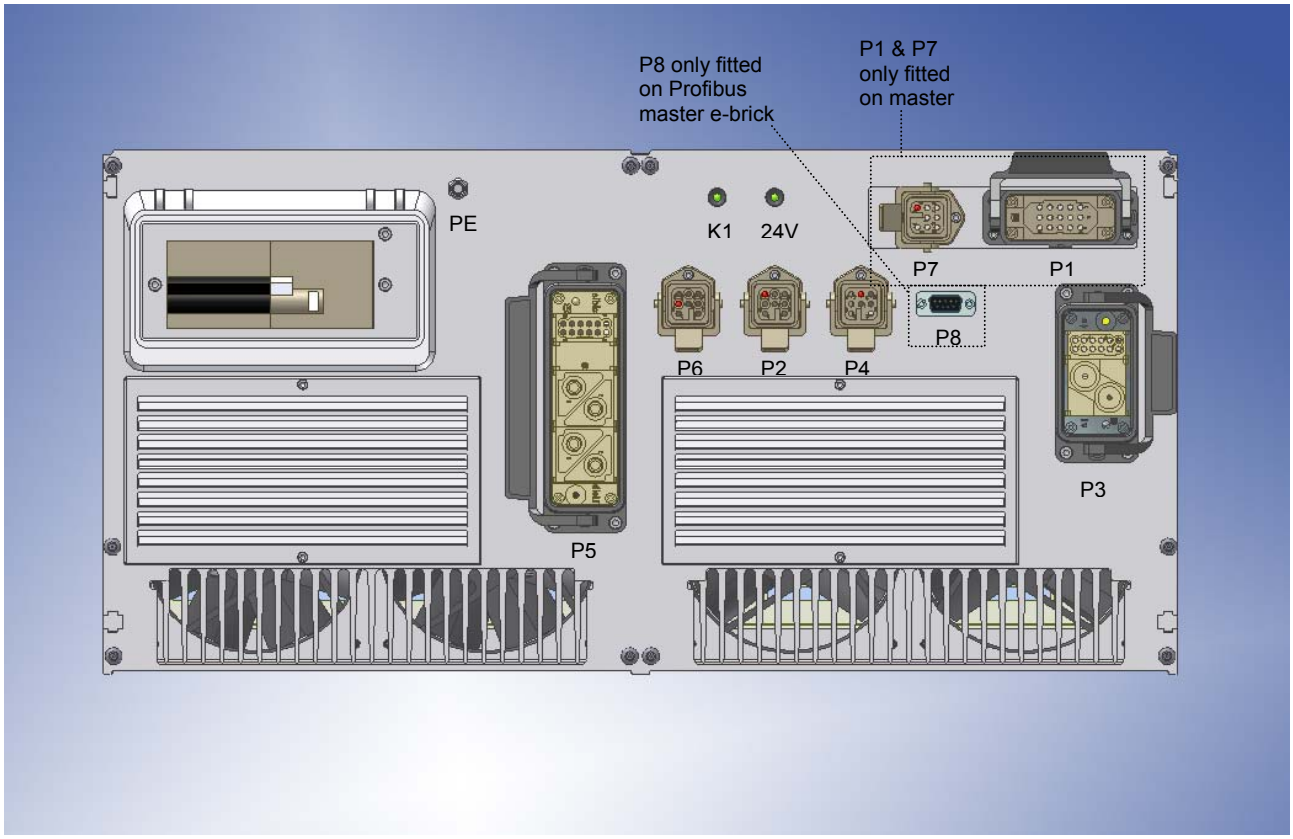


Figure 7(a): Rear panel (22kW Master) connection details

4.6.3.1. P1: Press interface

Pin connection	Signal name	Rating / connection
A1	Station_ready	'Volt free' relay output to press. Contact rating 1A @ 24Vdc / 120Vac
A7	Station_ready_rtn	
A4	Fan_start	24VDC relay output to drive fan contactor coil [also available on P7]
A10	Fan_start_rtn	
B1	E-stop	'Volt free' contact input from press
B2	E-stop_rtn	
A5	Fan_healthy	'Volt free' contact input from press [Also available on P7]
A11	Fan_healthy_rtn	
A6	Speed	0-10V speed signal from press (ISO)
A12	Speed_rtn	0V reference for press speed signal (ISO)
A2	Ready	'Volt free' relay output to press. Contact rating 1A @ 24Vdc / 120Vac
A8	Ready_rtn	
A3	Fault	'Volt free' relay output to press. Contact rating 1A @ 24Vdc / 120Vac
A9	Fault_rtn	
B3	HMI_Comms_rtn	0V for communications
B4	Ext_CAN_rtn	0V (ISO) for Canbus interface
B5	HMI_Comms_Tx	RS232 to HMI or RS485+
B6	HMI_Comms_Rx	RS232 from HMI or RS485-
B7	Ext_CAN+	CANbus interface for customer
B8	Ext_CAN-	CANbus interface for customer
B9	Aux 24V	200mA maximum (thermally fused output)
B10	Impression	'Volt free' contact input from press
B11	Impression_rtn	
B12	0V	0V reference for ***e-Brick***

4.6.3.2. P2: Communications port (out)

P2: Communications port (Master & Slave)

Pin connection	Signal name	Rating / connection
1	gCAN+	GEW CANbus
2	gCAN-	GEW CANbus
3	E-stop	'Volt free' safety relay output to E-stop input on next slave ***e-Brick***. Contact rating 1A 120Vac / 3A 24Vdc
4	E-stop_rtn	
5	GEW_RS232_TxD	Factory use only
6	GEW_RS232_RxD	
7	gCAN_rtn	GEW CANbus
E		

4.6.3.3. P3:Lamp output

Pin connection		Signal name	Rating / connection
3.6/9/12kW	**22kW**		
A1	A1	Lamp+	Lamp+ and Lamp- NOT SELV
A2	B1	Lamp-	
C1	C1	Shutter_Motor-	
C2	C2	Shutter_Motor+	
C3	C3	+24V	
C4	C4	Safety_switch	
C5	C5	Over_temp_switch	
C6	C6	Shutter_open	
C7	C7	Shutter_closed	
C8	C8	Chassis_in	
C9	C9	PT100	
C10	C10	PT100_rtn	
C11	C11	PhotoD+	
C12	C12	PhotoD-	**Warning!** No user accessible signals!
B1			
B2			All signals relate to the GEW UV dryer. For safety reasons, connection shall only be made using GEW lamp cables
B3			
B4			
B5			
B6			
B7			
B8			
B9		PT100	
B10		PT100_rtn	
B11		PhotoD+	
B12		PhotoD-	

4.6.3.4. P4: Autodamper interface

Pin connection	Signal name	Rating / connection
1	+24V	Auto damper +24V supply
2	0V	Auto damper 0V return
3	Control_voltage_0	0-10V output to damper
4	Damper_feedback_0	0-10V feedback from damper
5	Flow_OK	'Volt free' contact input from flow switch (water cooled applications only)
6	Control_voltage_1	0-10V output to damper
7	Damper_feedback_1	0-10V feedback from damper
E		

4.6.3.5. P5: Power input

Pin connection			Signal name	Rating / connection
9/12kW	**3.6kW**	**22kW**		
A1	A1	A1	L1	Mains supply input, for ratings see Table 5 L1-L3 & N connections NOT SELV
A2		B1	L2	
A3		C1	L3	
	A2		N	
Frame	Frame	Frame	PE	
B1	B1	F1	Fan_healthy	Volt free' contact input from press [Also available on P7]
B2	B2	F2	Fan_healthy_rtn	
B3	B3	F3	Auxiliary_n/o	'Volt free' auxiliary n/o contact output. Contact rating 1A @ 24Vdc / 120Vac
B4	B4	F4	Auxiliary_n/o_rtn	
B5	B5	F5	Auxiliary_n/c	'Volt free' auxiliary n/c contact output. Contact rating 1A @ 24Vdc / 120Vac
B6	B6	F6	Auxiliary_n/c_rtn	
B7	B7	F7	Chiller_OK	'Volt free' contact input from chiller
B8	B8	F8	Chiller_OK_rtn	

4.6.3.6. Protective Earth terminal

An M6 stud is provided on the rear of the ***e-Brick*** housing to permit Protective Earth (PE) bonding during installation. Note that the mains supply earth is through P5.

4.6.3.7. P6(P60): Communication port (in)

P6: HMI (Master)

Pin connection	Signal name (Master)	Rating / connection
1	24V	24V output to HMI
2	0V	0V output to HMI
3	HMI_Comms_Tx	RS232 to HMI or RS485+
4	HMI_Comms_Rx	RS232 from HMI or RS485-
5	Ext_CAN+	CANbus interface for customer
6	Ext_CAN-	CANbus interface for customer
7	HMI_Comms_rtn	0V for communications
E		

P60: Communications port (Slave, in)

Pin connection	Signal name (Slave)	Rating / connection
1	gCAN+	GEW CANbus
2	gCAN-	GEW CANbus
3	E-stop	'Volt free' contact input from E-stop output on previous master / slave ***e-Brick***.
4	E-stop_rtn	
5	N/c	
6	N/c	
7	gCAN_rtn	GEW CANbus
E		

4.6.3.8. P7: System fan interface

Pin connection	Signal name	Rating / connection
1	Fan_healthy	'Volt free' contact input from fan overload auxiliary [Also available on P1,P5]
2	Fan_healthy_rtn	
3	Fan_start out	24VDC relay output to drive fan contactor coil. [Also available on P1,P5]
7	Fan_start_rtn	
4	N/c	
5	Frame_safety_switch	'Volt free' contact input from optional frame safety switch
6	Frame_safety_switch_rtn	
E		

4.6.3.9. P8: Profibus interface

Where an ***e-Brick*** is supplied with an internal Profibus interface, connection to the external system is made by a standard 9 way 'D' type connector (not shown in Figure 7).

Pin connection	Signal name (Slave)	Rating / connection
1	MON_RS232_Tx	Factory use only
2	MON_RS232_Rx	
7	MON_RS232_0V	
3	Profibus_B	Profibus network
4	Profibus_RTS	
5	Profibus_GND	
6	Profibus_5V	
8	Profibus_A	
9	N/c	
Housing	Profibus_cable_shield	

4.7. Conformity

Equipment	Electronic Power Supply
Models:	***e-Brick 3.6kW*** / ***e-Brick 9kW***
	e-Brick 12kW / ***e-Brick 22kW***

In accordance with the following Directives:

73/23/EEC	The Low Voltage Directive
89/336/EEC	The Electromagnetic Compatibility Directive
98/37/EEC	The Machinery Directive

has been designed and manufactured to the following specifications:

EN12100-1:2003	Safety of Machinery – Basic terminology, methodology
EN12100-2:2003	Safety of Machinery – Technical principles
EN1050:1997	Safety of Machinery – Principles of risk assessment
EN954-1:1997	Safety of Machinery Safety related parts of control systems
EN60204-1:1998	Safety of Machinery – Electrical equipment of machines
EN61010-1:2001	Safety requirements for electrical equipment for measurement, control and laboratory use
EN61000-6-4:2001	Electromagnetic Compatibility – Emission Standard for industrial environments
EN61000-6-2:2001	Electromagnetic Compatibility – Immunity for industrial environments
EN60529:1992	Degrees of protection provided by enclosures
PrEN1010-1	Safety of Machinery – Safety requirements for the design and construction of printing and paper converting machines

5. Product application

5.1. Intended use of the *e-Brick*

The ***e-Brick*** is specifically designed for powering GEW UV dryers and, in certain applications, IR dryers; contact GEW for details of compatible UV and IR dryers.

The ***e-Brick*** power supply is a component part of a GEW UV drying system. A complete system would also include GEW UV dryer(s) e.g. ***VCP***, custom cabling, fan cooling, ducting and a human machine interface (HMI) to control the operation of the system. Systems vary in complexity and the scope of supply differs depending on the application. This manual should be referred to alongside the user manuals and installation information for the other components in the system.

5.2. Manual controls

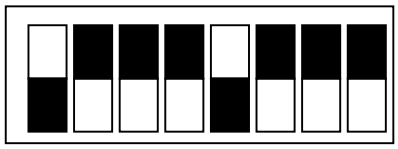
The ***e-Brick*** has no manual controls; operation is controlled by the GEW system HMI. In some applications an RS485 based serial data protocol may be implemented on the customers HMI.

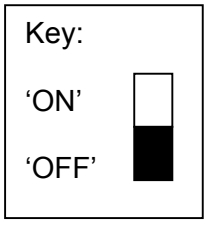
5.2.1. Configuration switches

The ***e-Brick*** has eight configuration 'DIP' switches accessible by removing a cover plate on the rear of the product. These switches are factory set and should not require further adjustment:

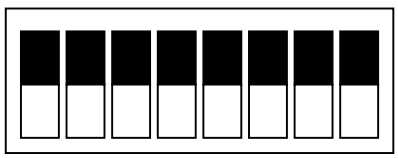
DIP Switch	Function	Default Setting		
		Master	**Slave**	**Last Slave**
1	Master (ON) / Slave (OFF)	ON	OFF	OFF
2	**HMI RS485 (ON) / RS232 (OFF)	OFF	OFF	OFF
3	**HMI RS485 terminator (ON)	OFF	OFF	OFF
4	**HMI CANbus terminator (ON)	OFF	OFF	OFF
5	***e-Brick*** network terminator (ON)	ON	OFF	ON
6	**GEW Service only (ON)	OFF	OFF	OFF
7	**Select 2 lamps (ON)	OFF	OFF	OFF
8	****p-Brick*** (ON)	OFF	OFF	OFF

Master settings

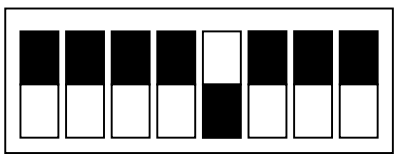




Slave settings



Last slave (furthest slave from master ***e-Brick***)



**GEW application specific

5.3. Setting and adjustment

The ***e-Brick*** requires no setting or adjustment after installation; all functions are controlled by the GEW system HMI. A number of HMI software packages are available; refer to the relevant software manual for full details. A typical HMI setting screen is shown in Figure 8.

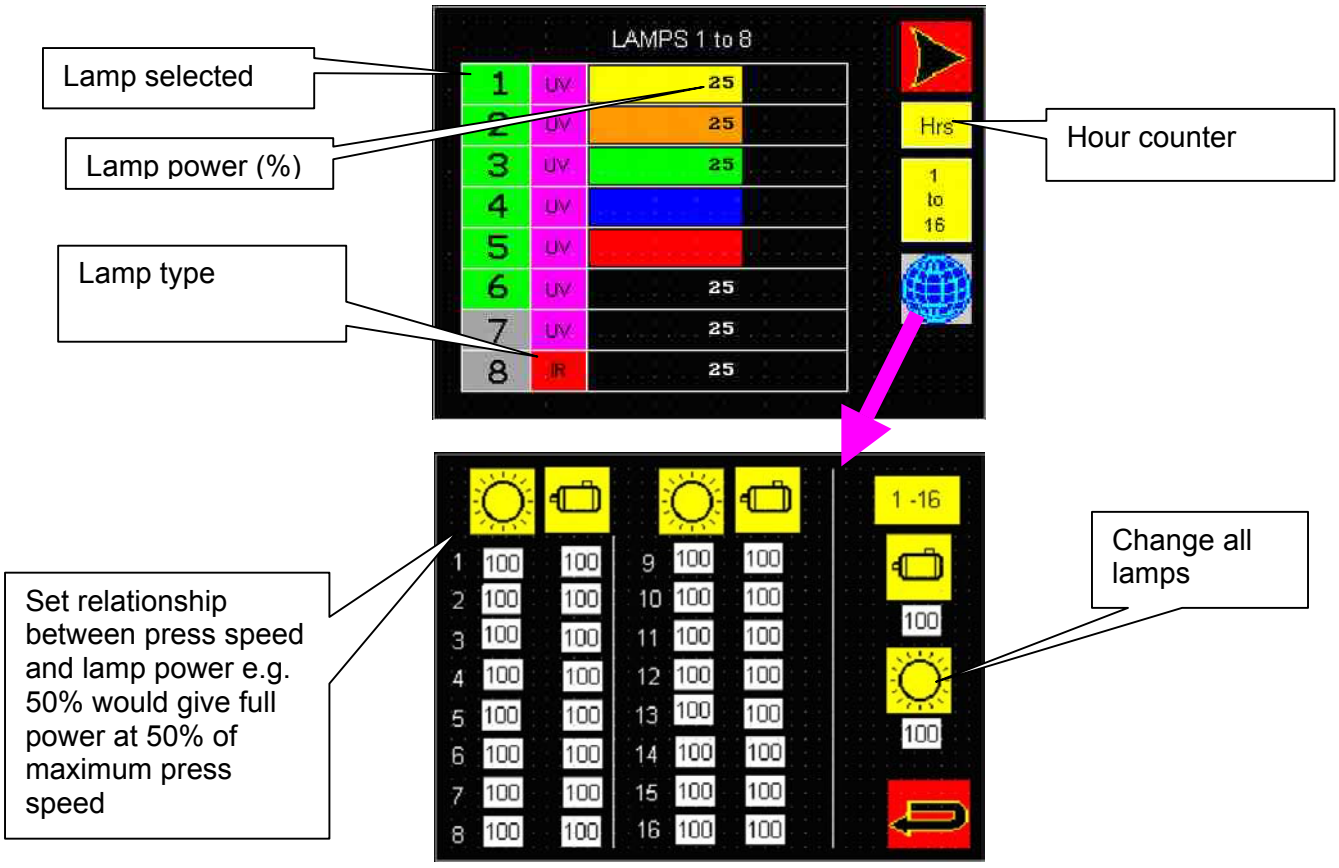


Figure 8: Typical HMI settings screens

Using these screens the user is able to select a lamp, set the required power level, set the power ramping, and monitor lamp service hours.

Warning! During commissioning, application specific parameters may be entered by the installation technician. In normal use, and to maintain the system warranty, preset parameters shall not be altered without referring to GEW.

5.4. Stop functions including emergency stop

The ***e-Brick***, or an ***e-Brick*** based system, may be 'stopped' in three of ways:

Stop method	Initiation	*e-Brick* Response
System Emergency stop (E-stop)	External system opens E-stop contact inputs to master ***e-Brick***	• Automatic breaking of ***e-Brick*** E-stop loop to deselect all slave lamps • Lamps will be switched off instantaneously • System cooling correctly controlled • System communications will remain functional allowing quicker restart
Electrical isolation	Switching off individual ***e-Brick*** MCB or system electrical isolator	• Lamp(s) will be switched off instantaneously • If master ***e-Brick*** is isolated in this way there will be no system cooling control, refer to warning below! • On restarting, lamps will be deselected by default and shutters closed automatically
Software shutdown	HMI	• Lamps will be switched off instantaneously • System cooling correctly controlled • System communications will remain functional allowing quicker restart

Warning! To avoid lamp damage due to overheating, or potential fire hazard in the web, do not stop the system by simply isolating the power. It is strongly recommended that power is maintained to the ***e-Brick*** when an system E-stop event occurs; this will ensure that the shutters operate correctly and lamps are properly cooled.

Advice! Depending on lamp temperature, the stop method, and the duration of the stop, it may take a few minutes to restart an ***e-Brick*** system. The embedded control software will only allow the ***e-Brick*** to run when all safety interlocks are in place and lamp temperatures are within acceptable limits.

5.5. Sequence of operation

For safety reasons, the embedded control software will prevent an ***e-Brick*** system from running until all safety interlocks are in place and lamp temperatures are within acceptable limits. Following installation and commissioning by GEW, the system shall be operated in accordance with the relevant HMI software manual.

5.6. Risk Reduction

The GEW engineering team has considered safety of the equipment at every stage of the design process. However, certain hazards remain because of the nature of the application. To avoid accident or injury, operators should be aware of the hazards associated with UV drying systems.

5.6.1. Remaining risks, Hazard reduction and safeguards

The remaining hazards are associated with Ozone, Mercury, Ultra-Violet Radiation (UVR), moving parts, high temperatures, and high voltages.

5.6.1.1. Ozone (O_3)

Warning! The UV lamp generates Ozone; the gas is normally ducted to atmosphere along with the exhaust air. Alternatively, air may be safely discharged to the factory via an Ozone filter.

Ozone irritates the lungs; if a pungent smell of Ozone is detected check the ducting for air tightness. Ensure that the ducting is correctly installed and in place at all times. If ozone filters are fitted, ensure they are changed according to the maintenance schedules set out in the installation manual.

5.6.1.2. Mercury (Hg)

Warning! UV lamps contain small quantities of Mercury, which is a toxic substance must be handled carefully. Always wash hands thoroughly after handling UV lamps. Dispose of broken lamps safely by the following means:

Wear heavy rubber gloves at all times:

- Cover the mercury and broken glass with sand.
- Collect the waste mixture with dustpan and brush, and transfer it to a cardboard box or other expendable container.
- To protect the refuse operator, put the container in a thick plastic bag.
  Dispose of the bagged container with the normal industrial waste, or in accordance with local arrangements for disposal of mercury.

5.6.1.3. Ultra-Violet Radiation (UVR)

Warning! Ultra violet radiation (UVR) is harmful to skin and eyes. UV dryers have adequate shielding fitted to prevent accidental exposure of the operator to UVR, but it is essential to take care when operating the UV drying system. UVR is present in the ranges UV-A, UV-B, UV-C and UV-V.

Observe the following:

- Ensure that the shielding is kept in place at all times and is properly adjusted
- Do not look directly into the lamp head while the lamp is on
- Avoid prolonged exposure of your hands in the area along the light shields
- Wear protective clothing and eye protection if prolonged exposure is unavoidable

5.6.1.4. Moving parts

Warning! Cooling fans are supplied with inlet and outlet ports uncovered; take care when fitting ducting to these ports. Fans should never be run with ports uncovered; this may cause injury by ejecting loose objects at high speed or trapping the hands.

5.6.1.5. High temperatures

Warning! Hot surfaces and electrical energy can cause fires to break out. High temperatures occur inside the UV dryer. Allow the dryer to cool from full power for five minutes before attempting to remove or open any lamp head, then proceed with caution.

Operators should always be vigilant. NEVER use flammable solvents near the UV dryers when the lamps are in operation. If a fire should break out, follow the procedure posted for the building.

Only fire extinguishers of the dry powder type should be used on this equipment.

5.6.1.6. High voltages

Warning! UV lamps operate at high voltages, typically 450V to 1400V depending on lamp type; additionally when striking the lamps, ignitor circuitry will generate pulses in excess of 2kV. These voltages present a possible danger of electric shock or fire.

Do not mount other equipment so that it could interfere with the safe operation of the system. When testing or troubleshooting, all safety interlocks shall be in place and cables left intact.

5.6.2. Misuse and prohibited usages

The ***e-Brick*** is designed solely intended for powering specific GEW UV and IR dryers. All other applications are prohibited, unless prior written consent has been obtained from GEW.

5.7. Fault identification and repair

Warning! There are no user serviceable parts inside the ***e-Brick***; do not remove covers under <u>any</u> circumstances. Please note that if factory security seals are broken, the warranty is void. Refer to GEW or your local agent for service.

5.8. Personal Protective Equipment

Due to their weight, it is advisable to wear safety shoes when installing ***e-Brick*** products.

Warning! Other protective equipment may be required while installing an ***e-Brick*** system. If necessary, consult your local Health and Safety representative for advice.

5.9. Training required

Although designed for ease of installation, GEW systems should be installed and commissioned by GEW service technicians. Alternatively some customers and OEMs have their own GEW trained personnel. Please contact GEW Customer Service for information on installation training for your GEW UV system.

6. Maintenance information

Warning! There are no user serviceable parts inside the ***e-Brick***; do not remove covers under any circumstances. Please note that if factory security seals are broken, the warranty is void. Refer to GEW or your local agent for service.

6.1. Safety inspections

The ***e-Brick*** forms part of a UV drying system which requires inspection operations in accordance with the schedule in section 10.

6.2. Functional Testing

The ***e-Brick*** forms part of a UV drying system which requires functional testing in accordance with the schedule in section 10.

6.3. Specialist inspection & repair

For attention of GEW (EC) Limited service department:

Warning ! Danger of electric shock or death

Observe the following during service operations:

- Isolate the unit from the mains before attempting maintenance, removing covers, cables, or light shielding
- Ensure that the internal capacitors have been discharged by leaving the system switched off for 5 minutes before carrying out any maintenance.
- Isolation transformers shall be used at all times when working on live equipment. Alternatively a mains supply with appropriate earth leakage protection (30mA RCD) may be used.
- Use only approved, calibrated test equipment
- Use only approved components during maintenance
- Always replace security seals after service operations

6.3.1. Firmware update

GEW service technicians may update the embedded software in an ***e-Brick*** system using a PC with suitable software and a data interface cable (GEW part 28628).

6.3.2. Safety devices

Refer to section 4.4 for details of the safety devices designed in to the ***e-Brick***.

Advice! If any safety feature is compromised or failure suspected, always refer to GEW for service.

6.4. Routine (operator) maintenance

The ***e-Brick*** forms part of a UV drying system which requires preventative maintenance operations in accordance with the schedule in section 10.

6.4.1. Air filter cleaning / replacement

Warning! Isolate power before changing or checking filters

The only components of the ***e-Brick*** requiring regular maintenance are the air filters. Filters shall be checked in accordance with the system maintenance schedule in section 10; always follow the procedures in section 9.

Advice! Record filter checks and changes for reference in the event of a warranty claim; see section 10.1 for a suggested format.

6.5. Fault finding guidelines

Advice! All faults that may be corrected by the operator are indicated by the HMI. In the event of a fault occurring that cannot be cleared by the operator, please refer to GEW or your local agent for service.

Warning! There are no user serviceable parts inside the ***e-Brick***; do not remove covers under any circumstances. Please note that if factory security seals are broken, the warranty is void.

Should any fault occur, the alarm pop up appears on the HMI and the fault code is recorded on the fault screen (**Figure 9**). Icons are defined in sections 6.5.1 and 6.5.2 below.

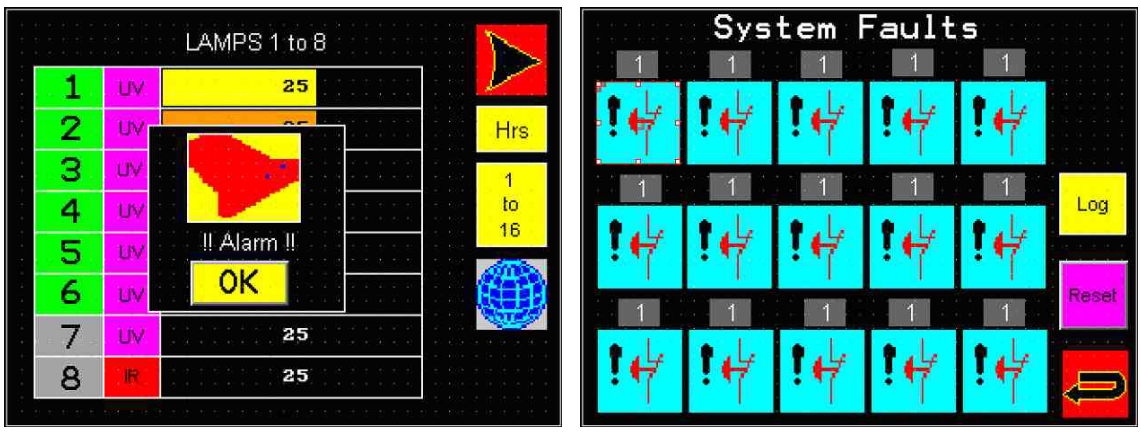
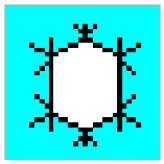
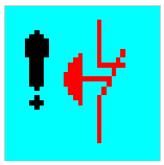
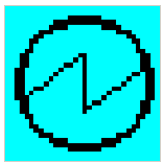
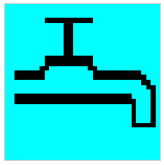


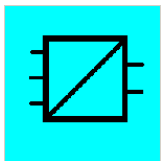
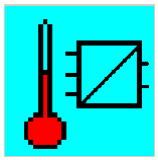
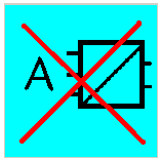
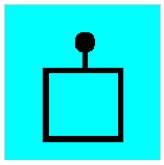
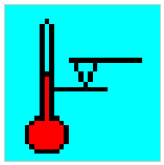
Figure 9: Typical ‘Alarm Warning’ and 'Fault History' screens

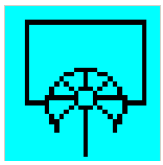
6.5.1. General faults

	**Water cooling unit (chiller) failure** The cooling unit has failed while the printing machine is running. • Check chiller MCB and reset if necessary • Ensure that the chiller is switched on • The chiller may have developed a fault; check the control panel to see if a fault is reported • Refer to the chiller manual for further fault finding suggestions
	**Emergency stop failure** The operator may have triggered an emergency stop of the printing machine • Check external emergency stop (e-stop) circuitry and switches • Check panel circuit breakers in external equipment • Check e-stop links between ***e-Brick*** units are intact (communications cables linking master-slave / slave/slave carry the ***e-Brick*** e-stop links)
	**Fan failure** The fan fails to operate when a lamp is started. • Check the electrical supply to the fan • Check the MCB supplying power to the fan, reset if necessary • Check the thermal overload device on the fan. If the switch has been tripped, reset it by pressing “1” button on the switch housing, then reset the fault on the touch screen On systems where an external air handling unit is used in place of the GEW system fan, this fault may show if the cooling air pressure does not reach a predetermined threshold within 90s of starting the cooling system
	**System Safety Switch** • Check the functionality of the system safety switch • Check integrity of wiring and connectors for the system safety switch

6.5.2. Individual faults

	**Burn in failure** The lamp ‘burns in’ until it reaches a certain operating voltage and running temperature. If the lamp does not reach this voltage within 4 minutes, or achieve temperature within 10 minutes then the lamp will trip and the burn in failure will appear. This type of failure usually occurs if the lamp is overcooled. • Check that orange damper unit is operating correctly • Check the supply voltage is within the operating voltage range of the ***e-Brick*** and fan as specified on the rating plate
	**Flow switch failure** Cooling water supply to the lamp head has failed. • Check that water cooling is on • Check that all the hoses are connected to lampheads and cooler • Ensure that all valves are set to the open position • The water flow through the switch may be insufficient, check water hoses for kinks and blockages

	**PSU failure** A fault has been detected within the ***e-Brick***. • Check 3 phase supply is on and that all three phases are available • Check 24V LED is illuminated, if not then internal 24Vdc may be faulty • Check K1 LED illuminates when lamp is selected • Ensure that the lamp cable is connected • Ensure that other cables are undamaged and correctly connected
	**PSU over temperature** The ***e-Brick*** has reported a high internal temperature. • Let the PSU cool down before re-striking • Check that the cooling fans are running • Check filters • If the ***e-Brick*** is mounted in a cabinet, check for air blockages and that adequate cooling capacity has been allowed.
	**PSU drive fault** A fault has been detected within the ***e-Brick*** control circuitry • Switch off power to the affected ***e-Brick*** • Restore power and attempt to restart lamp • If fault continues to appear, call GEW for service
	**Lamp failure** No current flow was detected through the lamp. **Warning!** When resolving a lamp failure it is important to let the lamp cool before attempting to restart the system. • Check all electrical connections relating to the lamp. • Check the physical state of the lamp; change the lamp if it has operated for >1000h. Instructions for changing the lamp are given in the lamp head user manual. If a new lamp fails, call GEW for advice. • Let the lamp cool down before re-striking.
	**Safety switch failure** On systems with lamp heads mounted on hinged brackets, this alarm will indicate that the lamp head has been hinged open. • Check that the lamp is firmly seated in the outer casing • Check that the lamp head is closed (hinged head) • If this fault occurs with the lamp head hinged closed then check the alignment of the interlock arm with the interlock switch at the front of the lamp head.
	**Lamp over temperature** The lamp head overheats. Overheating may be caused by problems in the lamp head. **Advice!** Let the lamp cool down before re-striking. • Check that the fan is running and that its rotation is correct • Check that the damper operates normally, check for air blockage • Check flexible ducting for obstructions • Check electrical connections between the ***e-Brick*** and the lamp head • Check the lamp chassis is fully inserted in the lamp head; ensure that the plug to the lamp head is fully engaged



Shutter failure
Shutter failure while the printing machine is running.

- Check electrical connections between the ***e-Brick*** and the lamp head
- Check the shutter mechanism for ink build-up. If necessary, clean with isopropyl alcohol
- Check micro switches
- Check for mechanical jam

A Shutter test can be performed while the lamps are off but selected on the HMI:

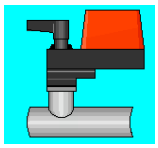
Press the shutter test icon  to the left of the HMI. This will drive the shutter to the fully open position. Press the icon once more to close the shutters. If a fault occurs, it will be displayed on the fault screen.

Electric shutter test

- Press the shutter test icon. Check that shutters open, check that open switch is activated
- Press the shutter test icon. Check that shutters close, check that close switch is activated

Pneumatic shutter test

- Press the shutter test icon. A hiss of air should be heard with the selected lamps, the shutters should then click open and remain open. Check that shutters open and that the micro switch is released.
- Press the shutter test icon. A hiss of air should be heard with the selected lamps, the shutters should then close. Check shutters position and that the micro switch is activated.
- Check inside the interface box to confirm that the tubes carrying compressed air to the lamp head are intact.

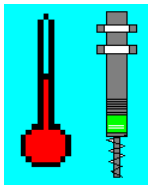


Damper Failure

A fault (warning) is logged if the damper cable is not connected or the damper is more than 10% out from the requested position for more than 30 seconds.

- Check electrical connections between the ***e-Brick*** and the damper
- Check that the damper operates normally, check for air blockage
- Check flexible ducting for obstructions

Note! The system will still run with this warning present



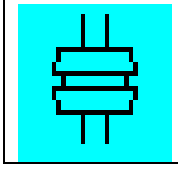
PT100 Thermocouple failure

A fault (warning) is logged if the lamp cable is not connected, if the PT100 fails or if the temperature reaches its top range.

- Check electrical connections between the ***e-Brick*** and the lamp head
- Check the lamp chassis is fully inserted in the lamp head; ensure that the plug to the lamp head is fully engaged
- Replace PT100 if failure is suspected

Note! The system will still run with this warning present

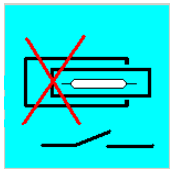
Warning! Prolonged running with a PT100 warning may cause serious damage to lamps or lamp head components.



Communication Failure

If a communication failure is detected with an ***e-Brick*** slave a warning is displayed on the HMI.

- Check 'Fault' screen to identify which ***e-Brick*** has failed to communicate
- Check electrical connections to the affected slave

	• Check 24V LED is illuminated, if not then internal 24Vdc may be faulty • Check K1 LED illuminates when lamp is selected • If no fault found, try restarting system and reselecting lamps • If necessary, deselecting affected slave ***e-Brick*** will allow system to run
	**Chassis Fault** This error message occurs if the ***e-Brick*** does not sense the lamp cassette in the chassis. • Check electrical connections between the ***e-Brick*** and the lamp head • Check the lamp chassis is fully inserted in the lamp head; ensure that the plug to the lamp head is fully engaged • If no fault found, try reinserting the affected chassis, restart the system and reselecting lamps
Other warnings.	Some applications may have additional fault codes; refer to the specific software users manual for explanations of other fault codes.

6.6. Parts list

6.6.1. Recommended spares

Item	GEW part number	Notes
Intake filter medium	10485	Filter insert
Exhaust filter medium	24504	Filter insert (3.6/9/12kW)
Exhaust filter medium	25392	Filter insert (22kW)

7. End of life information

GEW products are designed for reliability and will, with regular preventive maintenance, provide a long service life. However, in future the host press system and ancillary equipment, such as the UV system, may become surplus to requirement and will need to be dismantled or disposed of.

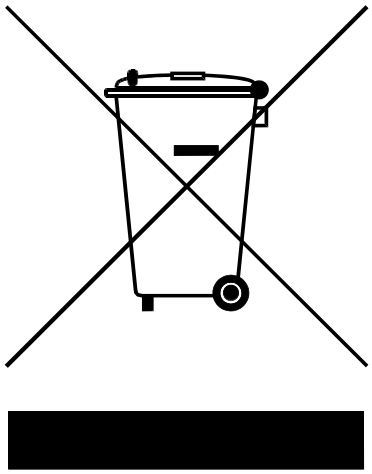
7.1. De-commissioning, dismantling and disposal

Warning! Isolate power before dismantling the UV system.

Warning! Before dismantling a UV system refer to section 5.6 on hazards.

Having isolated the mains power, the equipment may be dismantled by unplugging connectors and unbolting fixings from the host equipment.

As with any complex engineered product the ***e-Brick*** contains a number of materials requiring different disposal or recycling methods. In accordance with the European Waste Electrical and Electronic Equipment (WEEE) Directive these materials must be recovered by an approved recycling facility.



Please contact your local authority for details of the nearest licensed recycling facility. Where necessary, and only with prior written consent, equipment may be returned to GEW for recycling.

8. Emergency information

8.1. Fire fighting

Warning! Only fire extinguishers of the dry powder type should be used on this equipment.

8.2. Potential hazards

The ***e-Brick*** is a component of a UV drying system which, although designed for safety, presents some remaining hazards associated with Ozone, Mercury, Ultra-Violet Radiation (UVR), moving parts, high temperatures, and high voltages.

As a component of the UV drying system, the specific hazards associated with the ***e-Brick*** are high internal voltages, high output voltages to the lamp head, and high internal temperatures resulting from normal heating of electronic components.

9. Maintenance procedures

9.1. Unskilled

The ***e-Brick*** forms part of a UV drying system which requires preventative maintenance operations in accordance with the schedule in section 10.

Maintenance of the ***e-Brick*** is limited to visual inspection of associated cabling for damage and replacement of air filters.

9.1.1. Visual inspection

Examine all cables associated with the UV drying system and confirm that cables, conduit and connectors are in good condition. Cables should be neatly routed and protected from damage at all times.

Warning! Damaged cables must be repaired or replaced at the earliest opportunity to maintain system performance and safety

9.1.2. Intake filter change

Warning! Isolate power before changing or checking filters.

No tools are required when changing the intake filter; the cover of the filter housing is simply unclipped and the old filter medium removed and replaced. The procedure is illustrated in Figure 10 for a 9kW ***e-Brick***; the same procedure applies to the filters for 12/22kW units.

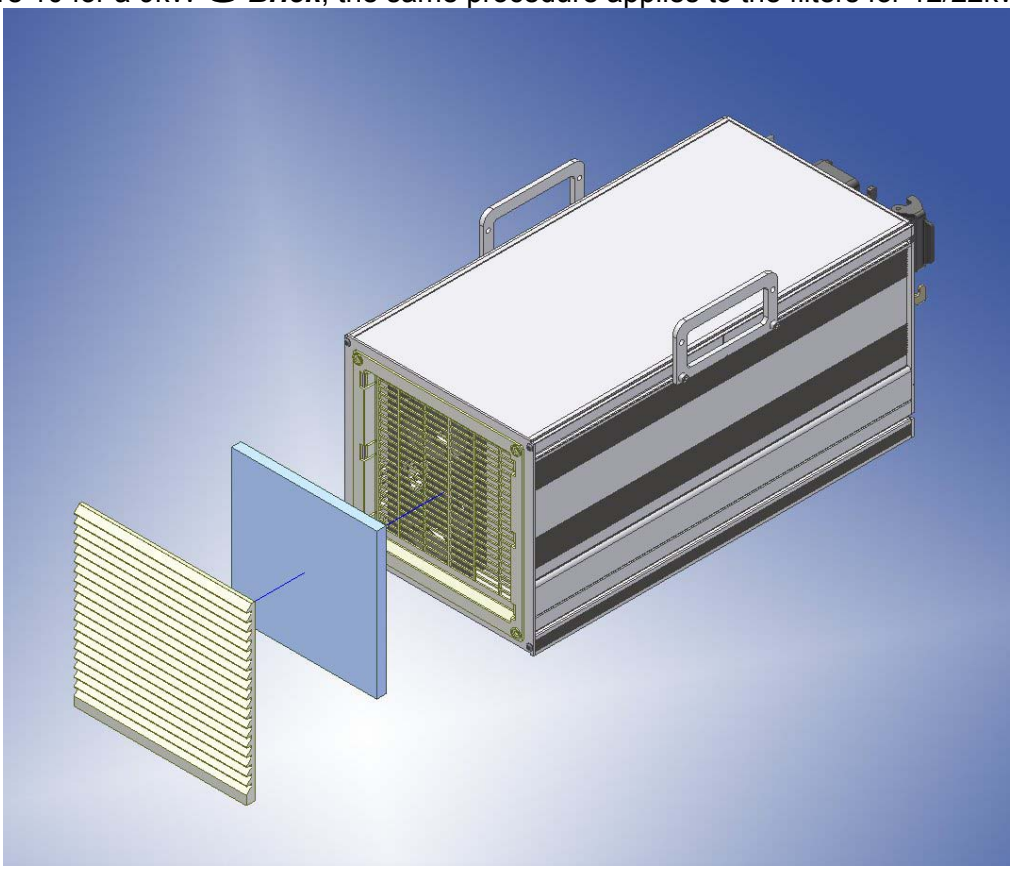


Figure 10: Intake air filter change procedure

9.1.3. Exhaust filter change

Warning! Isolate power before changing or checking filters.

A coarse filter medium is used in the exhaust port; this is unlikely to need changing unless it is contaminated in some way. The procedure is illustrated in Figure 11 for the 9kW and 12kW products. A similar procedure is followed for the two rectangular exhaust filters on the 22kW ***e-Brick***.

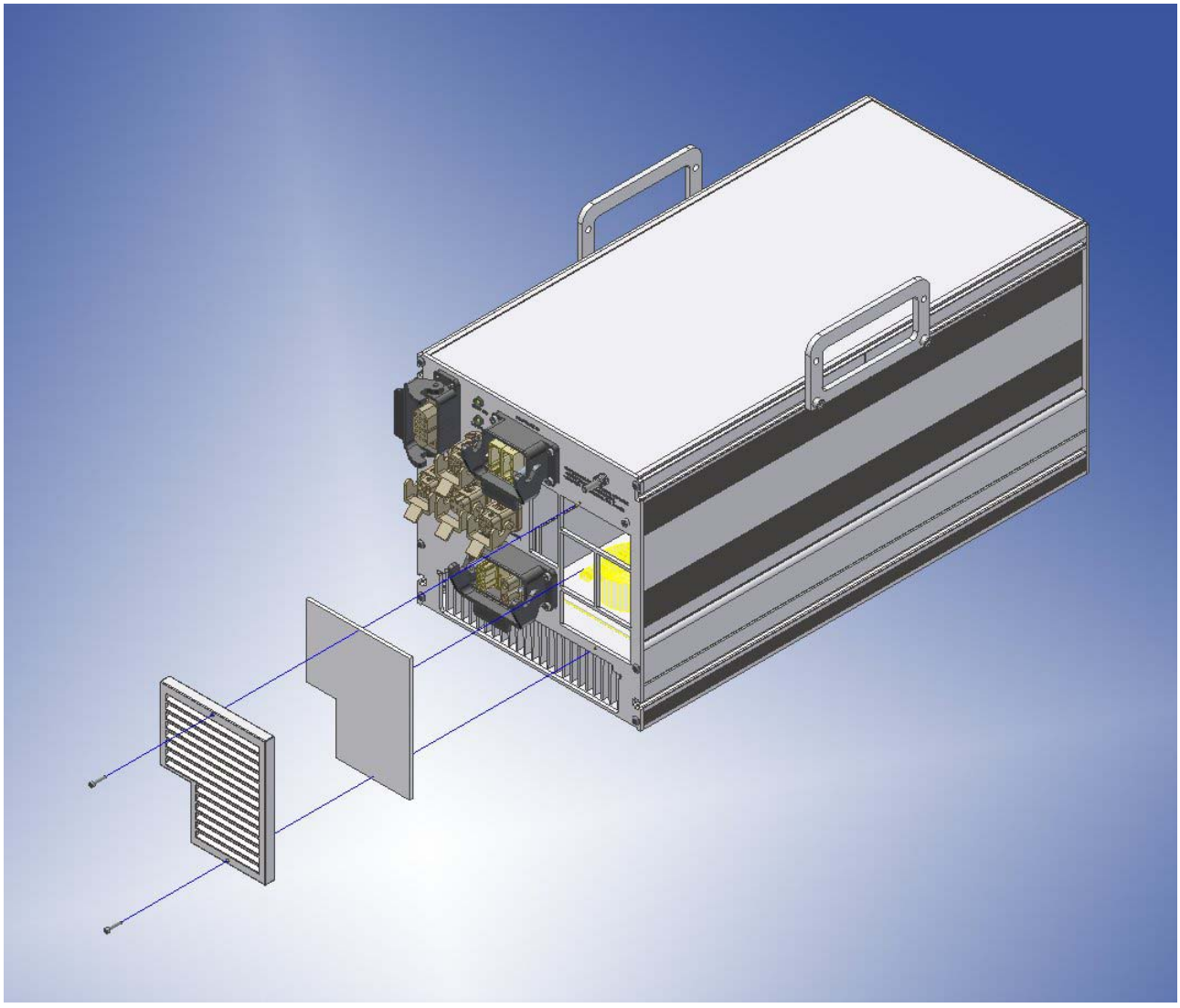


Figure 11: Exhaust air filter change procedure

9.2. Skilled

All other maintenance operations are considered skilled and shall be carried out by GEW service technicians or engineering personnel.

10. UV System Maintenance Schedule

Advice! To ensure consistent performance, GEW UV drying systems should be inspected at the intervals shown in the following schedule; more frequent checks may be necessary depending on operating conditions. *Evidence of carrying out recommended maintenance procedures is required to validate claims under the GEW warranty (a suitable template is available from GEW for use by customers).*

Maintenance Item	Check	Clean	Replace	Frequency (hours)
General				
Drain air regulator (pneumatic shutters only)	X			40
Straighten flexiduct	X			40
Check air filters on Lamphead / Heatsink / Cabinet grilles & apertures	X			500
Check reflector cassette for dust build-up	X			500
Check and replace all air inlet filter media	X		X	1000
Check integrity of all cables, connectors and ducting	X			1000
Check all connectors for evidence of contact wear or damage	X			2000
UV Lamp				
Remove lamp chassis from lamphead, clean as required: • Cold filter (where fitted) • UV lamp & reflector (use Isopropyl alcohol) • Heat sink base & shutter	X	 X X X		100
Check drying performance, replace UV lamp if necessary **	X		X	1,000
** When fitting a new lamp, examine the dichroic reflector (if fitted) and arrange for renewal if required.	X		X	4000
Check cables to lamp/terminals	X			2000
Lubricate shutter pivots (PTFE/silicone lubricant)	X	X		2000
Powerbrick and HV upright cabinets				
Clean or replace cabinet filter	X	X	X	500
Clean out dust		X		500
Check terminals, tighten if necessary; report any terminal damage	X			4000
Check cabinet cooling fan	X			4000
e-Brick				
Check filters	X			40
Clean or replace intake and exhaust filters		X	X	500
If necessary, wipe down exterior surfaces of enclosure with a lint free cloth slightly dampened with water or Isopropyl Alcoho (IPA).		X		500
System cooling fan & Ozone filter (where applicable)				
Check duct inlet	X			40
Check for vibration	X			4000
Inspect Ozone filter; replace filter panels when the granules (coloured purple when new) have turned brown.	X		X	4000
Water Chiller (where fitted)				
Drain and refill using the recommended amount of anticorrosion additive; see chiller manual for specific details.	X		X	5000

10.1. Filter service record

System installation date: [___ / ___ / ___]
Record continued from previous sheet: [_____]

Hours run	Filter type		Checked	Replaced	Operator
	Intake	Exhaust			
e.g. 40	X	X	X		ANO
40					
80					
120					
160					
200					
240					
280					
320					
360					
400					
440					
480					
520					
560					
600					
640					
680					
720					
760					
800					
840					
880					
920					
960					
1000					
1040					
1080					
1120					
1160					
1200					
1240					
1280					
1320					
1360					
1400					
1440					
1480					
1520					
1560					
1600					
1640					
1680					
1720					
1760					
1800					

Print additional copies of this sheet as required

11. Product Warranty Statement

11.1. General

GEW products are manufactured to the highest standards of mechanical and electrical reliability. We support all our products with a comprehensive warranty. We treat all warranty issues seriously and will respond promptly to their resolution.

11.2. Installation and Commissioning

It is essential that products are installed and commissioned correctly. Warranty is valid only when an installation is performed by:

- GEW engineers themselves
- An engineer from an approved GEW agent or distributor
- A certified GEW installer

Please check with GEW if you have any doubts about who is installing your system.

11.3. Warranty Validation Certificate (WVC)

Each new system once commissioned is issued with a WVC, this is dated and validates the warranty start date and system specific details. Until this certificate is issued the warranty is not activated. The warranty applies to the specific system at a specific location. It is not transferable to other locations.

11.4. Warranty terms

The following applies unless different terms and conditions of warranty have been agreed and confirmed in writing.

Included:

a) All new products are covered by a 12 month parts and labour warranty from the date on the WVC.
b) Faulty parts will be replaced without charge
c) Full technical support and help from our service hotline.

Excluded:

a) Curing performance of the equipment (unless agreed in writing in advance).
b) Products installed by unapproved personnel
c) Products modified or adjusted in any way.
d) Products moved or relocated to other locations after issue of the original WVC.
e) Parts subject to fair wear and tear.
f) All glass components
g) Damage to power supplies and control by the use of non GEW spare lamps.
h) Damage caused by products not maintained according to our instruction manual.
i) Any consequential loss howsoever caused.

11.5. Making a Claim

In the event of a problem becoming apparent contact the company who supplied the product, with a description of your claim. They will either deal with the problem themselves or contact GEW for assistance. In either event, if you do not get a prompt response, please contact us and we will help.

11.6. Purchase of spare parts

All spare parts are subject to a 12 month return to base warranty, this applies only to the part itself. GEW keeps thousands of parts on stock to ensure a fast efficient response to any request for a spare part. We will ship any part to any destination. For identification of parts refer to the CD with your system. Our web site has more information www.gewuv.com
GEW are dedicated to helping customers operate their systems at the lowest possible cost. We offer discounts on lamps, parts and service rates.

GEW UV DRYING SYSTEM

e-Brick (EC)

TOUCHSCREEN (TS8006 / EC) SOFTWARE OPERATING MANUAL

…engineering UV

GEW (EC) Limited
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Spares & Service telephone: +44 (0)1737 824510

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Table of Contents

Figures

Document Issue Status

Issue	Date	S/w	ECN	Edited	Checked	Approved
1.0	29 Nov 2006	EC 1.0.0 HMI 1.0.0		BPB	BJC	

1. Scope

This document describes the user interface for the ***e-Brick*** with a GEW TS8006 Colour LCD TouchScreen.

2. Product Description

The UV drying systems manufactured by GEW (EC) Limited are designed for the instantaneous drying of inks, varnishes and adhesives that are sensitive to ultra violet (UV) light.

A typical web colour printing press comprises several printing stations in line, each station applying ink of a different colour. The ink printed on the first station must be thoroughly dry before entering the second station to avoid contaminating the press. A drying unit containing a high power UV lamp is located between print stations. The web passes through a 'web slot' in the drier and travels past the lamp. UV drying is effectively instantaneous, allowing the press to be run at high speed. An extra drying unit may be located at the end of the web for drying varnish applied after the final printing.

The ***e-Brick*** is a highly integrated power supply designed specifically for powering UV lamps in drying systems. The ***e-Brick*** features integrated controls and all necessary hardware to control the UV system including lamp cooling, safety interlock features, and a press interface allowing the UV curing to be controlled automatically.

The ***e-Brick*** power supply is a component part of a GEW UV drying system. A complete system would also include GEW UV dryer(s) e.g. ***VCP***, custom cabling, fan cooling, ducting and a human machine interface (HMI) to control the operation of the system. Systems vary in complexity and the scope of supply differs depending on the application; all systems require commissioning by trained personnel.

This manual should be referred to alongside the user manuals and installation information for the other components in the system.

2.1. Related documentation

2.1.1. GEW Product manuals

Document	Title
	VCP user manual
	ECP user manual
	NUVA+ user manual
	TouchScreen HMI Software manual

2.1.2. European (EN) Standards

Standard	Title
EN12100-1:2003	Safety of Machinery – Basic terminology, methodology
EN12100-2:2003	Safety of Machinery – Technical principles
EN1050:1997	Safety of Machinery – Principles of risk assessment
EN954-1:1997	Safety of Machinery – Safety related parts of control systems
EN60204-1:1998	Safety of Machinery – Electrical equipment of machines

3. Human Machine Interface

The ***e-Brick*** Human Machine Interface (HMI) has been designed for maximum ease of use. A single HMI screen enables monitoring and controlling of up to 16 lamps in a system.

For a graphical overview of the HMI structure, please refer to section 3.6.

3.1. Firmware update

GEW service technicians may update the embedded software in an ***e-Brick*** system using a PC with suitable software and a standard USB cable.

3.2. Safety features

The HMI forms part of the safety features of the ***e-Brick*** UV drying system and should only be operated by suitably trained personnel.

Advice! If any safety feature is compromised or failure suspected, always refer to GEW for service.

3.3. Output power curve for *e-Brick* system

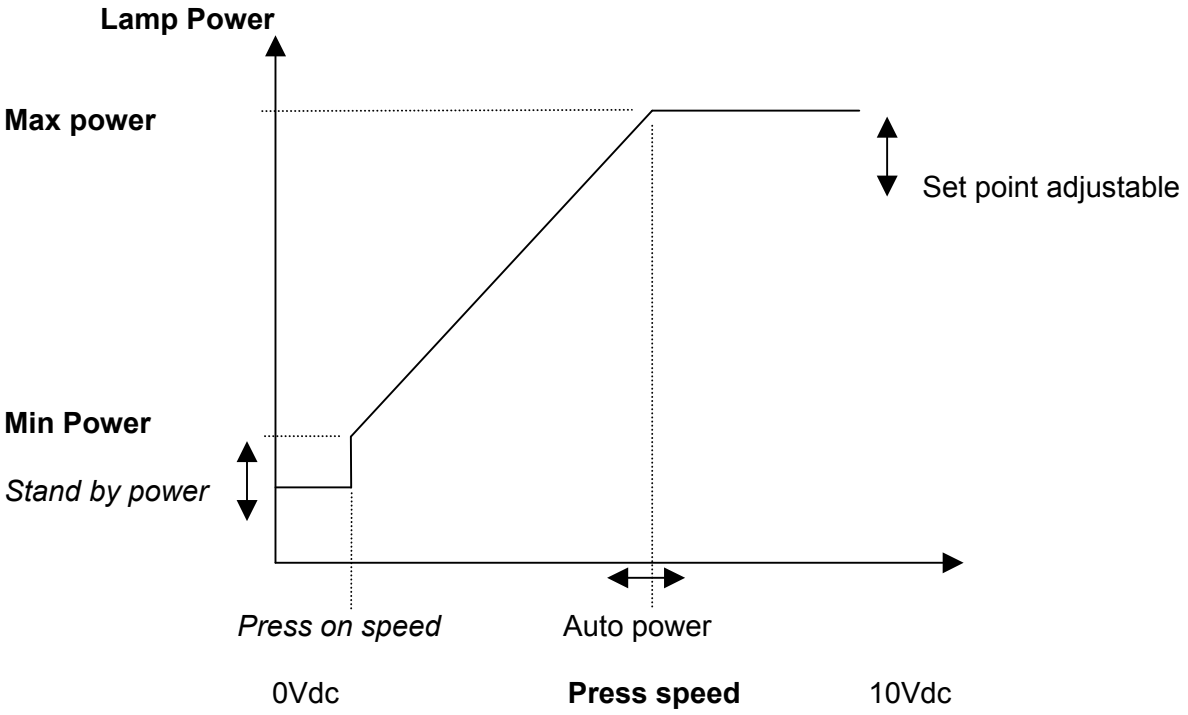


Figure 1: Lamp output power curve

The lamp output power is adjusted by 4 parameters:

Max power (0-100%) This sets the maximum power supported by the lamp. The value is a % of the maximum power output of the ***e-Brick***. For a 9kW ***e-Brick***, a value of 80% limits the maximum power to 7.2kW.

Min power (Standby-100%) This sets the minimum power applied to the lamp when the shutters open. The value is a % of the maximum power output of the ***e-Brick***. If max power were set at 7.2kW, a value of 30% sets the minimum power to 2.16kW.

Burn in level (0-100%) This is the power applied to the lamp when striking up. This factory set value is a % of the maximum lamp power. For example 60% would represent 60% of the max power value; if max power were 7.2kW and burn in 60%, burn in power would be 4.3kW.

Stand-by power (0-100%) This is the power of the lamp when the shutters are closed. This factory set value is a % of the max power value. For example 10% would represent 10% of the max power value; if max power were 7.2kW and standby power 10%, standby power would be 720W.

Press on speed (0-100%) This is the speed at which the lamp power starts ramping up. The value is a % of the (0-10Vdc) press speed signal; for example 10% would represent 1Vdc.

Refer to Figure 1 for a graphical view of these parameters.

Notes:

- 'Press on' speed value is set to 0 for most systems. This function is available to the press operator for greater flexibility.

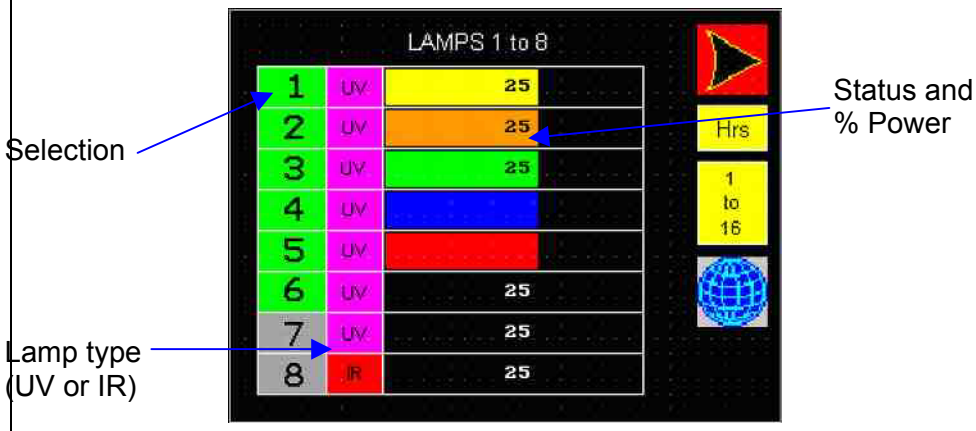
- The maximum power of each lamp can be limited by adjusting the set point parameter for each lamp - see set power level screen.

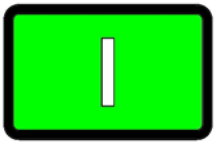
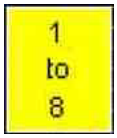
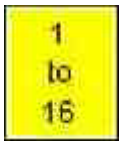
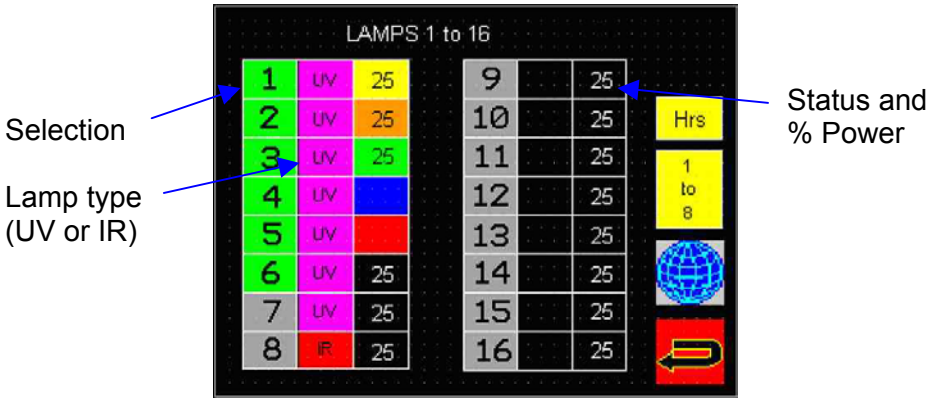
The ramp can be adjusted individually by using the speed parameter for each lamp - see set power level screen.

Advice! ***e-Brick*** power output is linear with no preset power steps.

3.4. Using the HMI

3.4.1. Starting up the UV system

Initialisation 	When switching on the printing machine, the operator should: • Ensure three-phase (or, if applicable, single phase) supply is available. • Switch on the mains isolators for each e-Brick or print station cabinet. • Most e-Brick systems will have electric shutters but, for dryers with pneumatic shutters, switch on the compressed air supply. After initialising (30s delay), the touch screen should display the GEW logo. Press anywhere on the logo to display lamp information:  The first column indicates lamp selection: • transparent = lamp deselected • solid green = lamp selected The second column indicates the detected lamp type • UV lamp cassette • IR lamp cassette The third column is a bargraph display of the lamp power (%) and current status. • transparent = lamp off • flashing yellow = burn in (Voltage) • flashing amber = burn in (temperature) • flashing green = ready with shutter closed • solid green = lamp on with shutter opened • solid blue = cooling • solid red = faulty lamp
Select lamps	Select the required lamps, or accept the existing selection, as described in 3.4.2.
Preset power levels	Preset the power levels of the selected lamps globally, or individually, as described in 3.4.3.
Lamp hours 	Lamp hours for each lamp are displayed by pressing the [H] icon on the lamp information screens. Two hour counts are maintained: total system hours run and a resettable hour count for each lamp. The hours run can be reset by pressing the hours figure. A message “reset lamp hour” will then appear as shown. The operator has to confirm by pressing “Y” to clear the figure. Press “N” to cancel.

Start the lamps 	When the required lamps have been selected, and their power levels have been preset, press the green button  to start them. The exhaust fans will start up and a coloured bar will be displayed for each lamp; the colour of the bars is significant: • transparent = lamp off • flashing yellow = burn in (Voltage) • flashing amber = burn in (temperature) • flashing green = ready with shutter closed • solid green = lamp on with shutter opened • solid blue = cooling • solid red = faulty lamp
Start running	Start the printing machine, the lamp shutters will open and lamp power will be controlled in accordance with the preset parameters.
Monitor the lamps  	To monitor the state of all lamps on a single screen, touch the '1 to 16' icon to display the monitor screen:  The screen shows a numbered icon for each available lamp; the colour of the icons is significant. The first column indicates lamp selection: • transparent = lamp deselected • solid green = lamp selected The second column indicates the detected lamp type • UV lamp cassette • IR lamp cassette The third column displays the lamp power (%) and current status: • transparent = lamp off • flashing yellow = burn in (voltage) • flashing amber = burn in (temperature) • flashing green = ready with shutter closed • solid green = lamp on with shutter opened • solid blue = cooling • solid red = faulty lamp To return to the lamp-selection screen, touch  or '1 to 8' on the monitor screen. Note that the  button will turn off all the lamps.
Screen Saver	To prolong the life of the LCD screen and backlight, the HMI will display a 'Screen Saver' message if it is not touched for ten minutes and, shortly afterwards, a blank screen. Touching the screen, or any key, will restore the display immediately.

3.4.2. Selecting lamps

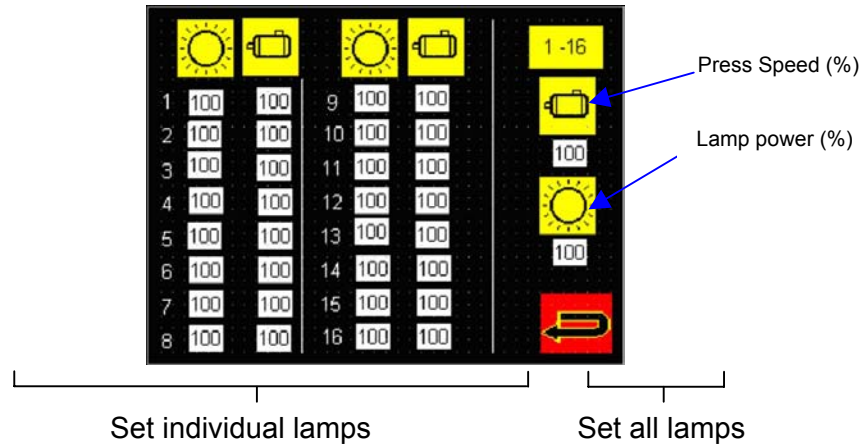
(This is only true when the system is in “local” mode, as described in 3.4.5)

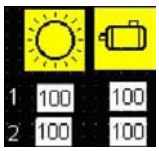
Advice! During start up, the UV System recalls its last working state and, to save time, will automatically select those lamps by default. Note that it is not possible to select or deselect a lamp when the press is running.
Interchanging an UV⇔ IR lamp will automatically deselect this lamp.

Lamp type 	Most systems are UV lamp heads only. A number (1 to 16) identifies each UV lamp head. In case of an UV and IR system, “IR” following the station number identifies an IR lamp head. The selection between UV and IR type is done automatically when the lamp chassis is fitted to the casing.
Select & deselect 	The buttons on the lamp-selection screen show the available lamp number on a coloured background: • white = lamp deselected • green = lamp selected Select a lamp: press the appropriate lamp number; the background changes to green to indicate a successful selection. Deselect a lamp: touch the appropriate lamp number for two seconds, release it and the background changes colour. The delay helps to avoid unintentional deselection of lamps.

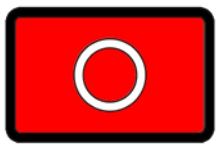
3.4.3. Setting power levels

(This is only true when the system is in “local” mode, as described in 3.4.5)

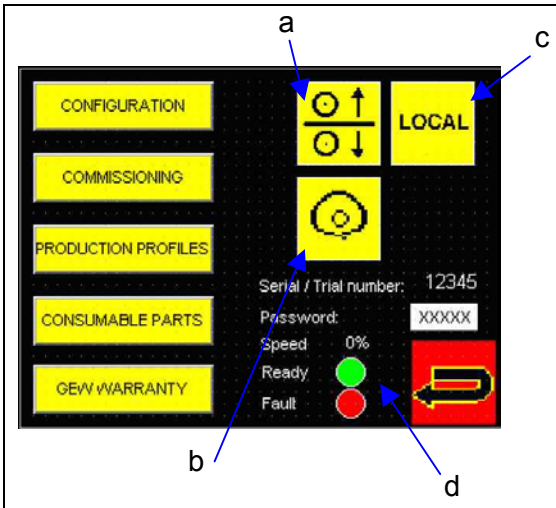
Global Settings 	Power levels may be set globally (same level for every selected lamp) or individually. To set a global or individual lamp power level, first press the globe button:  The right section of the panel is used to set the global relationship between the power of the lamps and the speed of the printing machine; the left side is used to set individual lamps. Touch any value to change it - having entered a new power or speed level, confirm it with the enter key on the pop up keypad.

Lamp power controls  	Whether power level is set globally or individually, the controls look the same. In each display, the left-hand control (sun icon) is for pre-setting the maximum lamp power. The right-hand control (motor icon) sets the relationship between the speed of the printing machine and lamp power. Refer to '*Set speed/power relation'* paragraph below for a full explanation.
Preset lamp power	Lamp power is indicated by a percentage, simply press the value and type in a new one using the numeric keypad. When the printing machine is started up, the actual power levels rise to their preset values either immediately or progressively depending on the selection of manual or automatic mode.
Set speed / power relation  'Manual'  'Automatic'	Two operating modes are available, manual or automatic. A red icon with a crossed out motor symbol indicates manual mode. A yellow motor icon indicates automatic mode. Touching the icon toggles between the two modes. In manual mode, preset power is reached as soon as the printing machine is started (impression on). In automatic mode, power is applied progressively once the printing machine is running. Full preset power to the lamps is achieved when the speed reaches the percentage shown under the yellow icon. Thus if the percentage is specified as 50% then full power to the lamps will be achieved when the speed of the printing machine has reached half full speed. This percentage value can be adjusted using the numeric keypad that appears when the value is touched on the screen. Set the new percentage; then press the enter key on the keypad to confirm the value.

3.4.4. Switching off

	Lamps may be switched off globally or individually. To switch lamps off globally, press the red button  . To switch off a lamp individually, simply deselect it; touch and hold the appropriate lamp number (on lamp selection screen) for two seconds then release it. The background then changes colour to indicate deselection. The delay helps to avoid unintentional deselection of lamps. **Warning!** When the final lamp has been switched off, the fan(s) will continue to run on for five minutes, allowing the lamp heads to cool down. **Advice!** When the fans have stopped running, switch off the mains isolator to each control unit; then switch off the mains supply.

3.4.5. Configuration, Shutter test, Lamp change function



Customer access to:
Production Profiles, Consumable parts list for system and GEW Warranty validation screens

Service technician access to:
Configuration and Commissioning screens

Shutter multi-function key (to left of touch screen)

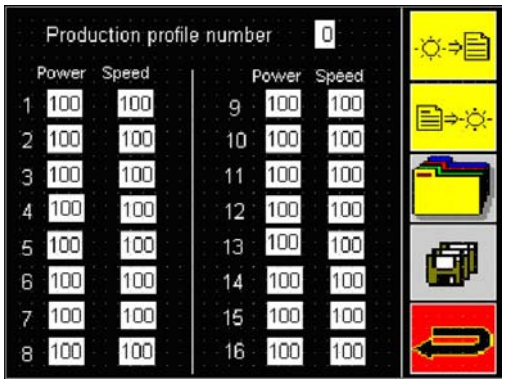
Four symbols are displayed under the index page:

a. This icon displays the impression status.
b. This icon shows the shutter status (shutter symbol changes from open to closed).
c. This button toggles between “local” and “remote” mode. In local, the GEW screen drives the system, while in “remote” it is the manufacturer screen that controls the system; this feature may not be available on all systems.
d. These icons show the press interface ‘Ready’ and ‘Fault’ signal status; Speed shows the current (0-10V) press speed signal as a percentage.

Shutter multi-function key

This key performs two functions. When the system is not running this key will open (close) all shutters. If the system is running this button operates the shutter of all de-selected lamps, allowing a quick change of lamp without stopping the press.

3.4.6. Production profiles



This screen is used to store and retrieve up to 10 production profiles.

- The operator can create and select profiles
- Lamp power and auto power ramp settings are listed for each station
- Profiles can be downloaded or uploaded to / from the UV system

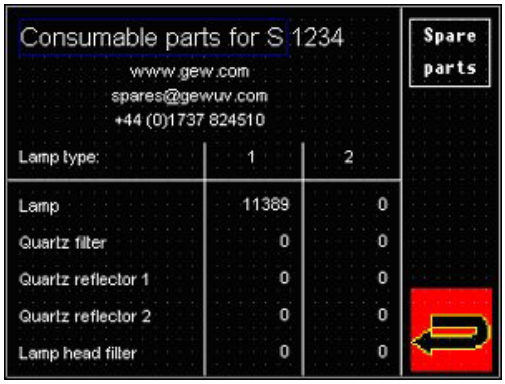
Upload

Download

Select stored/create new profile

Save profile

3.4.7. Consumable parts



This screen shows the GEW part numbers for consumable parts on the system to assist the customer when ordering spare parts.

3.4.8. GEW Warranty

When a system is not commissioned by GEW, a pop up message appears every 20 hours reminding the customer that the system is not under warranty.

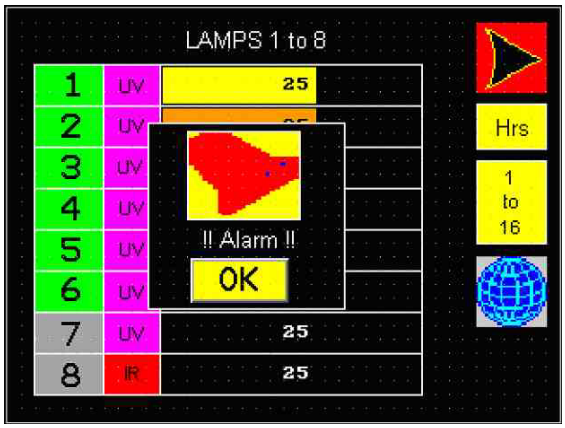
- To validate the warranty, enter the password supplied by GEW service.
- Touch the screen to clear the pop up message for a further 20h. **Note!** The GEW warranty shall not apply until the system has been correctly commissioned.

3.5. Fault finding guidelines

Advice! All faults that may be corrected by the operator are indicated by the HMI. In the event of a fault occurring that cannot be cleared by the operator, please refer to GEW or your local agent for service.

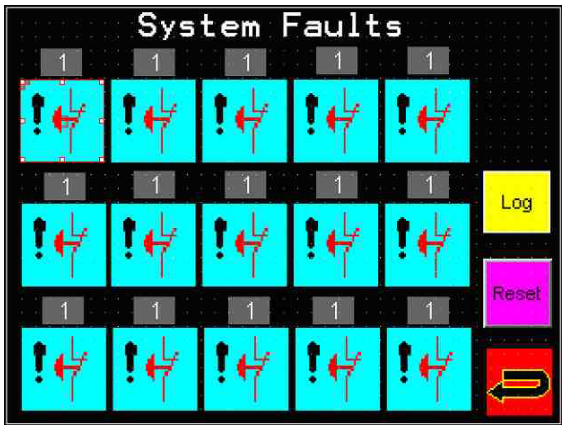
Warning! There are no user serviceable parts inside the ***e-Brick***; do not remove covers under any circumstances. Please note that if factory security seals are broken, the warranty is void.

Should any fault occur, the alarm pop up appears on the HMI and the fault code is recorded on the fault screen.



The system will still run with a fault, however the operator must deselect the faulty lamp on the HMI.

Press  to access the 'faults' screen, which displays icons for the faults that have occurred for each lamp. Icons are defined in sections 3.5.1 and 3.5.3 below.



If the fault can be rectified without further diagnosis, for example an overheated lamp that has now cooled down, pressing the 

icon will clear the fault. After clearing a fault press the  icon to return to the main screen to restart the system.

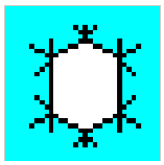
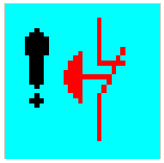
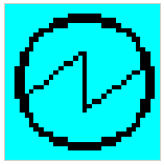
Advice! Always check Fault Screen before resetting any undiagnosed fault.

The 'Log' icon allows a time-coded list of faults to be displayed; this may be of assistance during fault finding.

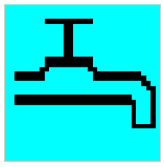
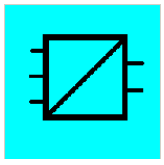
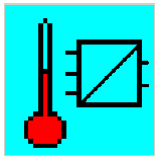
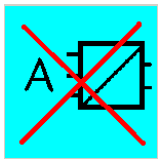
3.5.1. Warning indicators

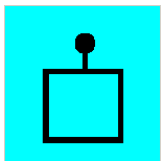
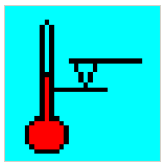
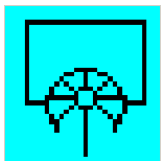
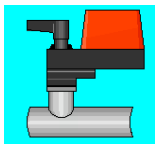
The ***e-Brick*** has three indicator LEDs, one for the internal 24V supply status, a second to show the main contactor (K1) status, and a third to indicate fault status. If the K1 LED fails to light when the lamp is selected and no other fault is present, please refer to GEW for service support.

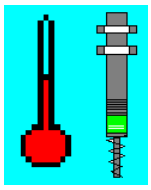
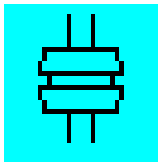
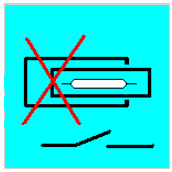
3.5.2. General faults

	**Water cooling unit (chiller) failure** The cooling unit has failed while the printing machine is running. • Check chiller MCB and reset if necessary • Ensure that the chiller is switched on • The chiller may have developed a fault; check the control panel to see if a fault is reported • Refer to the chiller manual for further fault finding suggestions
	**Emergency stop failure** The operator may have triggered an emergency stop of the printing machine • Check external emergency stop (e-stop) circuitry and switches • Check panel circuit breakers in external equipment • Check e-stop links between ***e-Brick*** units are intact (communications cables linking master-slave / slave/slave carry the ***e-Brick*** e-stop links)
	**Fan failure** The fan fails to operate when a lamp is started. • Check the electrical supply to the fan • Check the MCB supplying power to the fan, reset if necessary • Check the thermal overload device on the fan. If the switch has been tripped, reset it by pressing “1” button on the switch housing, then reset the fault on the touch screen On systems where an external air handling unit is used in place of the GEW system fan, this fault may show if the cooling air pressure does not reach a predetermined threshold within 90s of starting the cooling system
	**System Safety Switch** • Check the functionality of the system safety switch • Check integrity of wiring and connectors for the system safety switch

3.5.3. Individual faults

	**Burn in failure** The lamp 'burns in' until it reaches a certain operating voltage and running temperature. If the lamp does not reach this voltage within 4 minutes, or achieve temperature within 10 minutes then the lamp will trip and the burn in failure will appear. This type of failure usually occurs if the lamp is overcooled. • Check that orange damper unit is operating correctly • Check the supply voltage is within the operating voltage range of the ***e-Brick*** and fan as specified on the rating plate
	**Flow switch failure** Cooling water supply to the lamp head has failed. • Check that water cooling is on • Check that all the hoses are connected to lampheads and cooler • Ensure that all valves are set to the open position • The water flow through the switch may be insufficient, check water hoses for kinks and blockages
	**PSU failure** A fault has been detected within the ***e-Brick***. • Check 3 phase supply is on and that all three phases are available • Check 24V LED is illuminated, if not then internal 24Vdc may be faulty • Check K1 LED illuminates when lamp is selected • Ensure that the lamp cable is connected • Ensure that other cables are undamaged and correctly connected
	**PSU over temperature** The ***e-Brick*** has reported a high internal temperature. • Let the PSU cool down before re-striking • Check that the cooling fans are running • Check filters • If the ***e-Brick*** is mounted in a cabinet, check for air blockages and that adequate cooling capacity has been allowed.
	**PSU drive fault** A fault has been detected within the ***e-Brick*** control circuitry • Switch off power to the affected ***e-Brick*** • Restore power and attempt to restart lamp • If fault continues to appear, call GEW for service
	**Lamp failure** No current flow was detected through the lamp. **Warning!** When resolving a lamp failure it is important to let the lamp cool before attempting to restart the system. • Check all electrical connections relating to the lamp. • Check the physical state of the lamp; change the lamp if it has operated for >1000h. Instructions for changing the lamp are given in the lamp head user manual. If a new lamp fails, call GEW for advice. • Let the lamp cool down before re-striking.

	**Safety switch failure** On systems with lamp heads mounted on hinged brackets, this alarm will indicate that the lamp head has been hinged open. • Check that the lamp is firmly seated in the outer casing • Check that the lamp head is closed (hinged head) • If this fault occurs with the lamp head hinged closed then check the alignment of the interlock arm with the interlock switch at the front of the lamp head.
	**Lamp over temperature** The lamp head overheats. Overheating may be caused by problems in the lamp head. **Advice!** Let the lamp cool down before re-striking. • Check that the fan is running and that its rotation is correct • Check that the damper operates normally, check for air blockage • Check flexible ducting for obstructions • Check electrical connections between the ***e-Brick*** and the lamp head • Check the lamp chassis is fully inserted in the lamp head; ensure that the plug to the lamp head is fully engaged
	**Shutter failure** Shutter failure while the printing machine is running. • Check electrical connections between the ***e-Brick*** and the lamp head • Check the shutter mechanism for ink build-up. If necessary, clean with isopropyl alcohol • Check micro switches • Check for mechanical jam A Shutter test can be performed while the lamps are off but selected on the HMI: Press the shutter test icon  to the left of the HMI. This will drive the shutter to the fully open position. Press the icon once more to close the shutters. If a fault occurs, it will be displayed on the fault screen. *Electric shutter test* • Press the shutter test icon. Check that shutters open, check that open switch is activated • Press the shutter test icon. Check that shutters close, check that close switch is activated *Pneumatic shutter test* • Press the shutter test icon. A hiss of air should be heard with the selected lamps, the shutters should then click open and remain open. Check that shutters open and that the micro switch is released. • Press the shutter test icon. A hiss of air should be heard with the selected lamps, the shutters should then close. Check shutters position and that the micro switch is activated. • Check inside the interface box to confirm that the tubes carrying compressed air to the lamp head are intact.
	**Damper Failure** A fault (warning) is logged if the damper cable is not connected or the damper is more than 10% out from the requested position for more than 30 seconds. • Check electrical connections between the ***e-Brick*** and the damper • Check that the damper operates normally, check for air blockage • Check flexible ducting for obstructions **Note!** The system will still run with this warning present

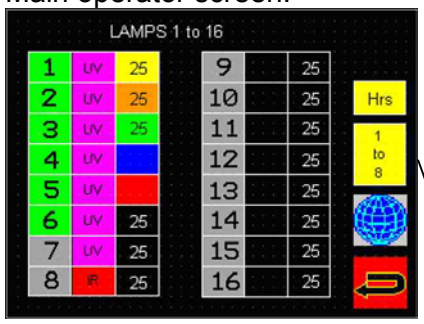
	**PT100 Thermocouple failure** A fault (warning) is logged if the lamp cable is not connected, if the PT100 fails or if the temperature reaches its top range. • Check electrical connections between the ***e-Brick*** and the lamp head • Check the lamp chassis is fully inserted in the lamp head; ensure that the plug to the lamp head is fully engaged • Replace PT100 if failure is suspected **Note!** The system will still run with this warning present **Warning!** Prolonged running with a PT100 warning may cause serious damage to lamps or lamp head components.
	**Communication Failure** If a communication failure is detected with an ***e-Brick*** slave more information is now available on the HMI. • Check 'Fault' screen to identify which ***e-Brick*** has failed to communicate • Check electrical connections to the affected slave • Check 24V LED is illuminated, if not then internal 24Vdc may be faulty • Check K1 LED illuminates when lamp is selected • If no fault found, try restarting system and reselecting lamps • If necessary, deselecting affected slave ***e-Brick*** will allow system to run
	**Chassis Fault** This error message occurs if the ***e-Brick*** does not sense the lamp cassette in the chassis. • Check electrical connections between the ***e-Brick*** and the lamp head • Check the lamp chassis is fully inserted in the lamp head; ensure that the plug to the lamp head is fully engaged • If no fault found, try reinserting the affected chassis, restart the system and reselecting lamps
Other warnings.	Some applications may have additional fault codes; refer to the specific software users manual for explanations of other fault codes.

3.6. HMI Flow chart

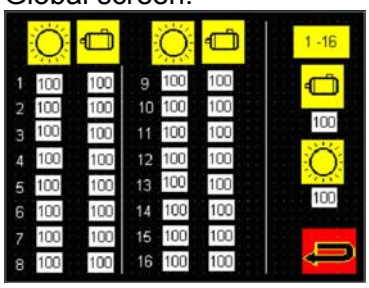
General operation screens:

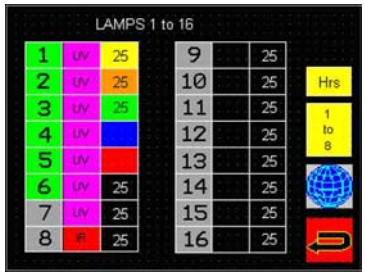
Start up screen:

Main operator screen:



Global screen:



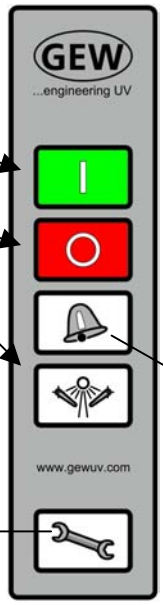


Start

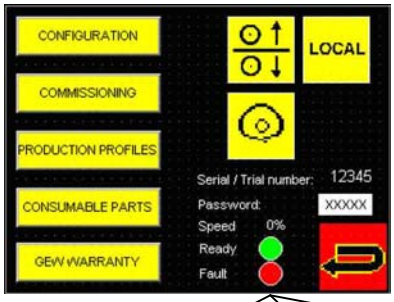
Stop

Shutter

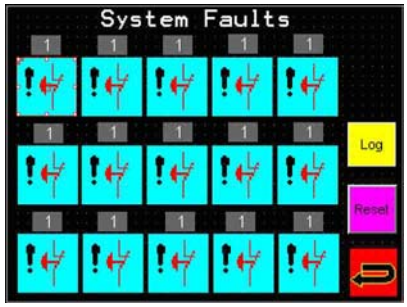
Multi-key



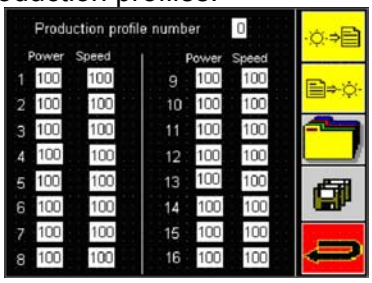
Configuration menu:



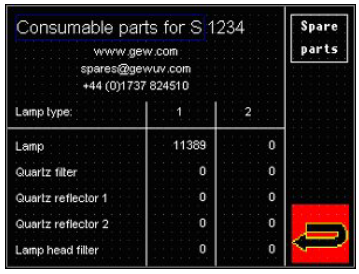
Alarm screen:



Production profiles:



Consumable parts:



Validate warranty:

REPLACING THE UV LAMP

e-Systems

This chapter explains how to fit a new UV lamp, including the removal and disposal of the old UV lamp.

TOOLS

Set of hexagon allen keys and an 8mm socket required.

PREPARATION

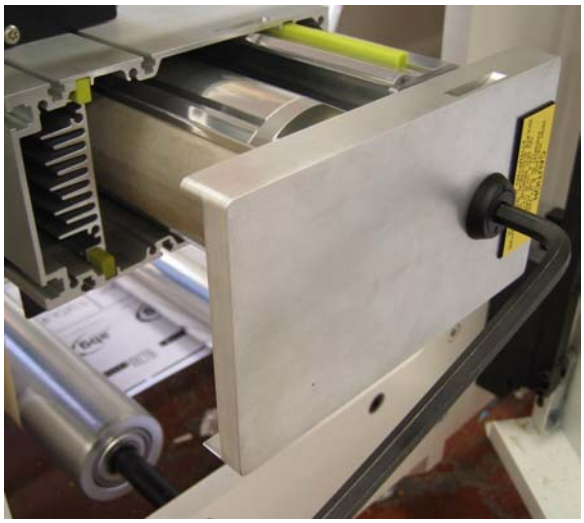
Deselect the required lamp number on the touch screen for the lamp you wish to change. Allow the lamp to cool down and press the lamp change button on the touch screen so this turns red.

 This will open the shutter on all deselected lamps 

REMOVE CHASSIS

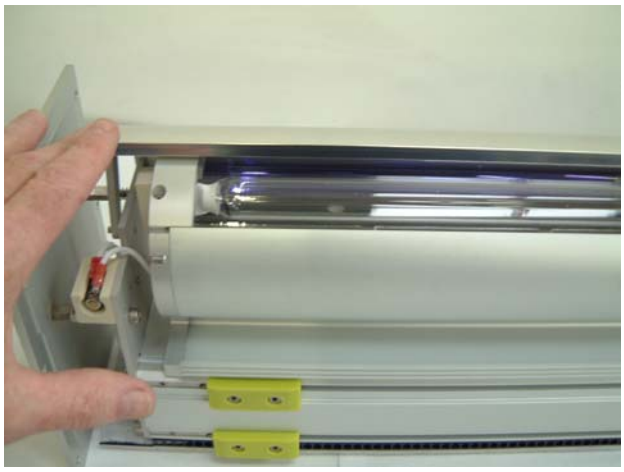
VCP, ***eCP***, ***hCP***

Pull out the lamp chassis assembly by unlocking the chassis door with the allen key supplied.



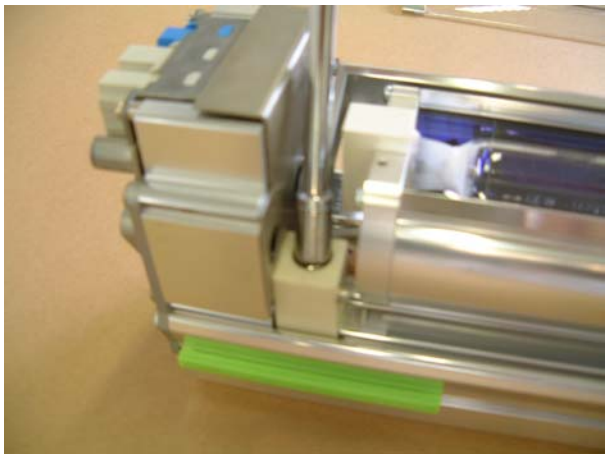
NUVAplus

Remove the 4 cap head bolts to remove the chassis reflector cassette from the outer casing. If the shutter is in the closed position gently push open.

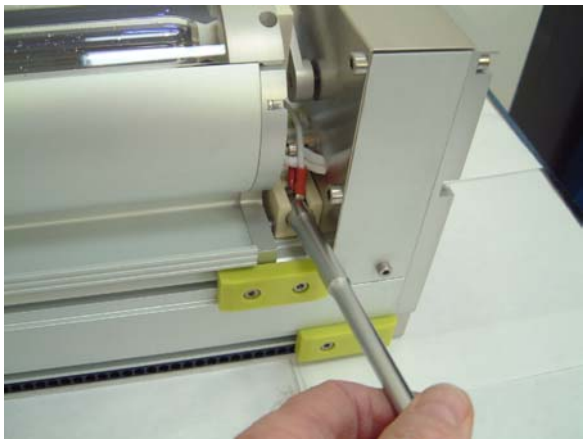


With a 8 mm socket driver remove the M5 nuts and M5 washers securing the lamp lead at both sides. You will notice that the main H.T. leads remain secure when you undo the lamp leads.

VCP, ***eCP***, ***hCP***



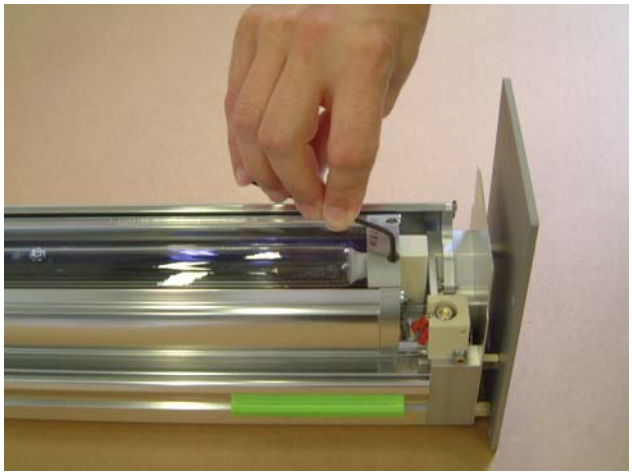
NUVAplus



REMOVE COLD FILTER

Remove the 4 x hexagon cap head bolts, two at each end of the reflector assembly

VCP, ***eCP***, ***hCP***



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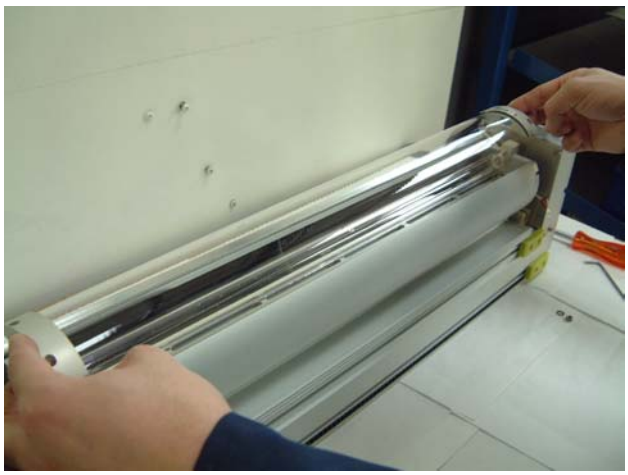
This releases the two clamp blocks that hold the cold filter (the long glass segment with U-shaped cross section). Lift both clamp blocks and cold filter together, pressing inwards to prevent the cold filter from falling out. Set this sub-assembly aside with care and if necessary, wipe clean the cold filter with a lint-free cloth moistened with isopropyl alcohol.

VCP, ***eCP***, ***hCP***

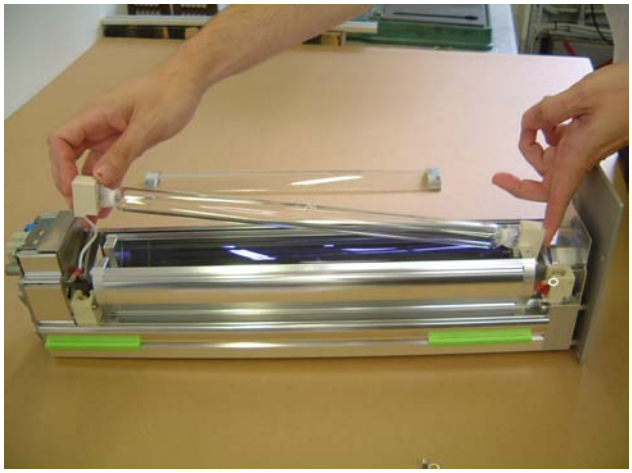
NUVAplus



REMOVE OLD LAMP

Holding the lamp by the ends the lamp can now be lifted out.

VCP, ***eCP***, ***hCP***



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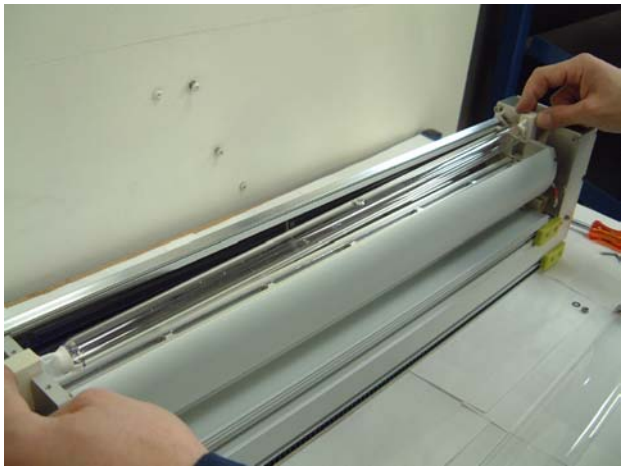

Ensure safe disposal of the old lamp.

CLEAN REFLECTOR

The reflector assembly can be cleaned whilst the lamp is removed. Clean with a soft cloth dampened with isopropyl alcohol (IPA).

FIT NEW LAMP

Replacing a lamp is a reversal of the procedure above.

Unwrap a new lamp from its container, holding it by its ceramic end caps. Fit the lamp carefully into the reflector assembly. The lamp has a slender neck at each end; take particular care not to knock the lamp. If you touch the surface of the UV lamp, clean the area with the wipe provided with the replacement lamp.

Ensuring an unobstructed path, refit the lamp cables, replace the cold filter and clamp block sub-assembly, securing it with the 4 x hexagonal cap-head bolts. Before fully tightening, check the lamp for freedom of movement, it should have a loose fit when the screws are tight.

Insert the lamp chassis assembly into the lamphead body and re-tighten the locking assembly.