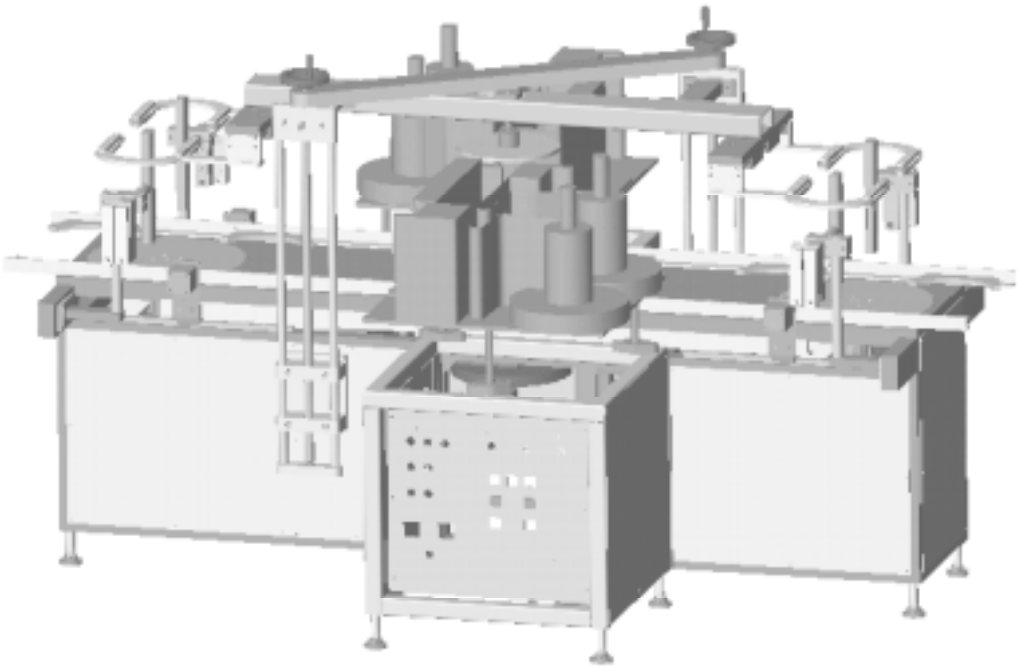
PAIL HEAT TRANSFER DECORATOR

OPERATION & SERVICE MANUAL



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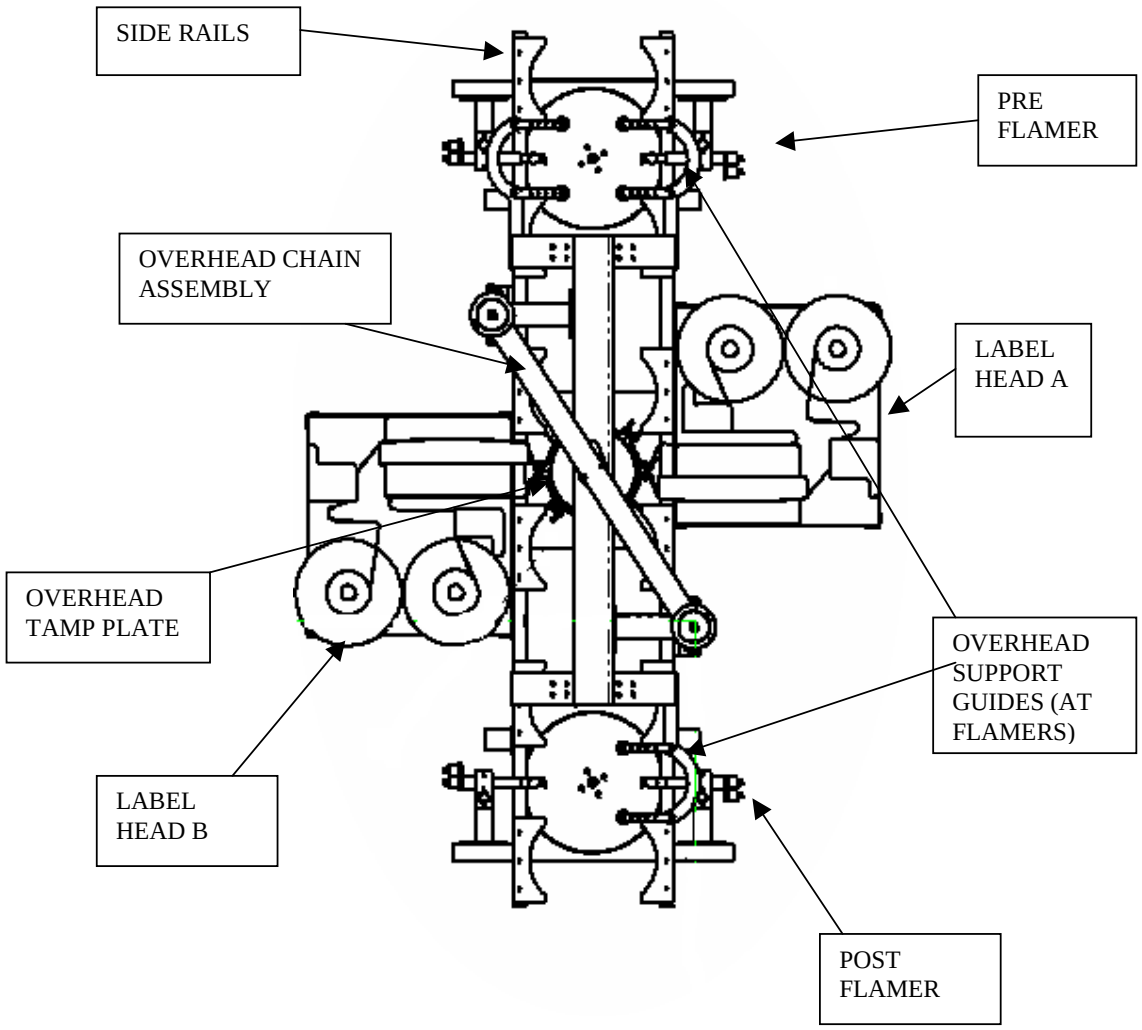
Introduction

The Pail Heat Transfer Decorator is a special type of labeller. Heat sensitive labels are used instead of self-adhesive labels and they require heat activation to be transferred onto mainly plastic products. This process offers advantages over silkscreen and self-adhesive methods in that it allows complex label designs (patterns and colours) with very high quality decoration.

The Pail HTD is dedicated to one size product (20L round). The machine indexes a product into the pre-flaming station for pre-treatment then to the labelling station for decoration then to the post-flaming station for final bonding. Overhead support guides are activated to hold the container in place during pre and post flaming while an overhead Tamp plate is activated to hold the product during labelling. The indexing is achieved via pneumatic rails on either side of the machine. At each station is a rotating base to provide surface coverage (for entire decorating and flaming).

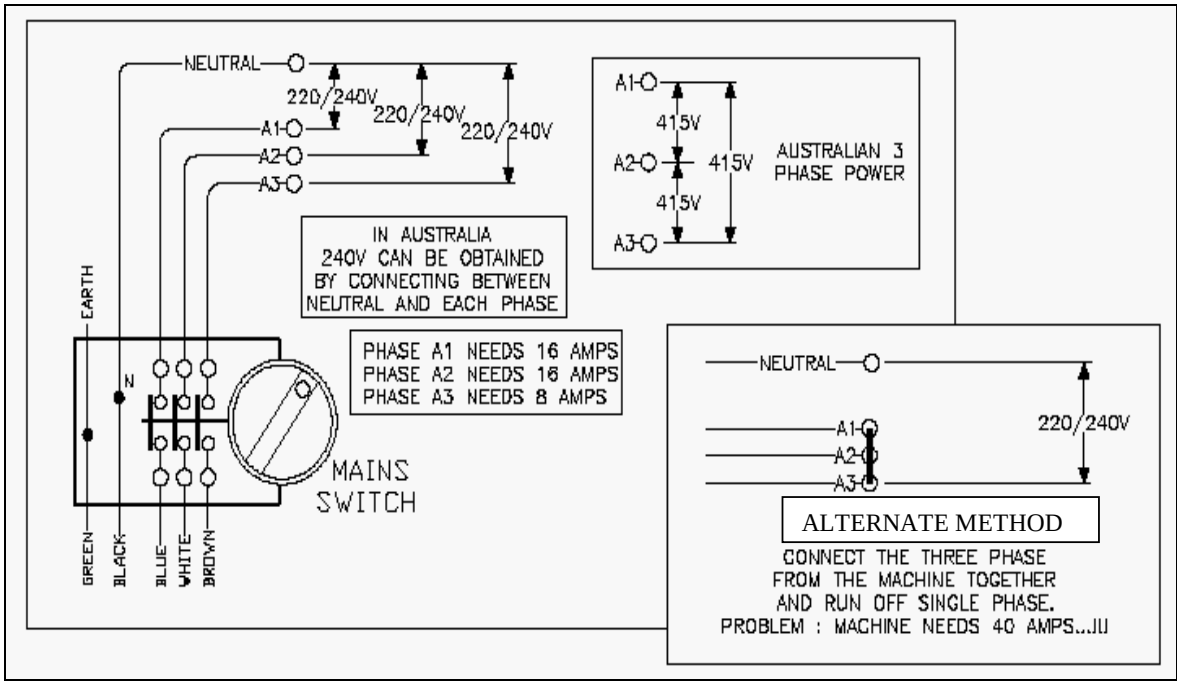


Before moving the machine into the intended area, ensure that both power and air supply outlets with sufficient capacities are available within close proximity.

The power supply outlet requirements are Three Phase 415 Volts and 20 Amps per Phase (See the Diagram Below). If this is not available, try the Alternate Method below. Connect the Three phases together and run 240 Volts off a single phase with reference to neutral.

The air supply outlet requirement is 100 psi (689 kPa or 6.89 atm).

Once having carefully moved the machine into the desired position, ensure that it is level from side to side and front to back. This is achieved by loosening the nut on each foot and by hand turning the thread until the foot reaches the floor, then tighten using appropriate tooling.



Operating Principles

As opposed to a standard Flat Sided HTD, the Pail HTD contains a PLC which is used to control all components and features that don't normally come with the Flat Sided HTD. In this case, it controls overall machine operation including product sequencing (indexing), monitoring and flamer operation. Cycle operation of the machine is as follows:

Step one - Pre Flaming:
Once a product is detected, the rails are then activated to come in and capture the product and index it forward to the pre-flaming station. The rails then release the product and return back to their initial state while the overhead support guides move into position to help stabilise the product while it is spinning on the rotator.

Step two:
Once pre-flaming is complete, the overhead support guides return to their initial state while the product is captured and indexed to the idle station between the pre-flamers and the label decorating heads.

Step three - Labelling:
When the rails return, the product is indexed forward to the decorating station, where the overhead Tamp plate is activated to clamp the product onto the rotating disk and the Container Trap fingers around the disk drop lowering the product firmly onto the disk. The label heads are activated via the label head sensor looking at the handle mark on the pail.

The two-stage Release Platen and the label web, which is waiting on the Pre-Heat Platen, starts moving at a prescribed distance after the "label head sensor" senses the handle mark on the product. This distance is set using the "Label Position" thumbwheel switches. Once the Label Position delay has expired, the Release Platen extends forward but is not quite touching the product. It has to wait for the Label Start delay to expire. Only then does the Platen extend fully to label the product.

Before being applied, the next label waits on the relatively cooler preheat platen. This prevents the label burning on the hotter release platen. When being applied, the label advances a distance equal to the combined distances of label to release platen roller plus one label length. The web is then rewound the distance of a label to the Release Platen roller plus ½". The webbing then creeps forward until the registration mark is detected by the "Label Registration Sensor" (typically ½"). The net effect is one label length of web advancement.

The value of "Label Pitch" is entered using the thumbwheel switches. This is the length of a label measured from one unique point on a label to that same point on an adjacent label.

Under the Web Tension Dancer arm, there are two proximity sensors which sense whether the web is becoming too tight or too loose. These sensors are only activated whilst the web is waiting on the Pre-Heat platen. They cause the second driver roller to either advance or back up to achieve the correct web tension.

Step four:
Once the labelling process is complete, the overhead Tamp Plate returns to its initial state while the product is captured and indexed to the idle station between the post flamers and the label decorating heads.

Step five - Post Flaming:
The rails are then activated to come in and capture the product and index it forward to the post-flaming station. The rails then release the product and return back to their initial state while the overhead support guides move into position to help stabilise the product while it is spinning on the rotator.

Step six:
After post flaming, the product rails capture the product and index forward to move the product to the final position. The rails release the product and return back to there initial state. The product is now fully labelled.

MODES OF OPERATION

Three modes of operation are possible: JOG, SEQUENCE and RUN. These modes can be selected via the three-position switch near the Post Flamer switch.

JOG MODE:

JOG mode allows the machine to operate one step at a time by pushing the JOG/SEQ button once for every step of the cycle (For 1 product). It is recommended that once a JOG cycle is started, it be completed all the way through.

SEQ MODE:

SEQ mode allows the machine to complete one whole cycle (from start to finish) by pushing the JOG/SEQ button once only (For 1 product).

RUN MODE:

RUN mode allows the machine to run continuously for a continuous supply of products. There are 2 ways to activate the machine into this mode. One way is via a Product sensor located before the Pre Flamer. The other is by turning the Manual Switch from OFF to ON.

Machine Settings Using The Thumbwheel Switches

Label Speed

This is the speed of label coming from the Label Spool on the Label Head. The number represents speed in metres per minute to one decimal place. This Setting controls the speed of the rotating disks.

The Thumbwheel settings described below apply to both Label Head A and Label Head B controls.

Label Position

The LABEL POSITION control is a 3 digit setting with the units being millimetres (note: 1inch = 25.4 mm). The setting alters the distance from when the label head sensor detects the product to when the Label Web on Head A begins to advance. Setting a higher number on this dial increases the distance delay and consequently moves the label back from the leading edge of the bottle. When this delay expires, the first stage of the Release Platen activation commences.

Label Pitch

This should be set to the distance in millimetres of label A pitch, ie. The distance from the start of one label (or registration mark) to the start of the next. A change in this setting will only take effect when both Head A motors are stationary.

Label Stretch

This represents the degree of required label stretch as a percentage of the width of the label on the web on Head A. A value of 100 indicates no shrinking or stretching is desired. A value less than 100 will cause the label to be narrower on the bottle than on the web. A value greater than 100 will cause the label to be wider on the bottle than on the web. The permitted range of values is from 050 to 200, though it is recommended to use values within a few percent of 100 to minimise label distortion.

Label Length

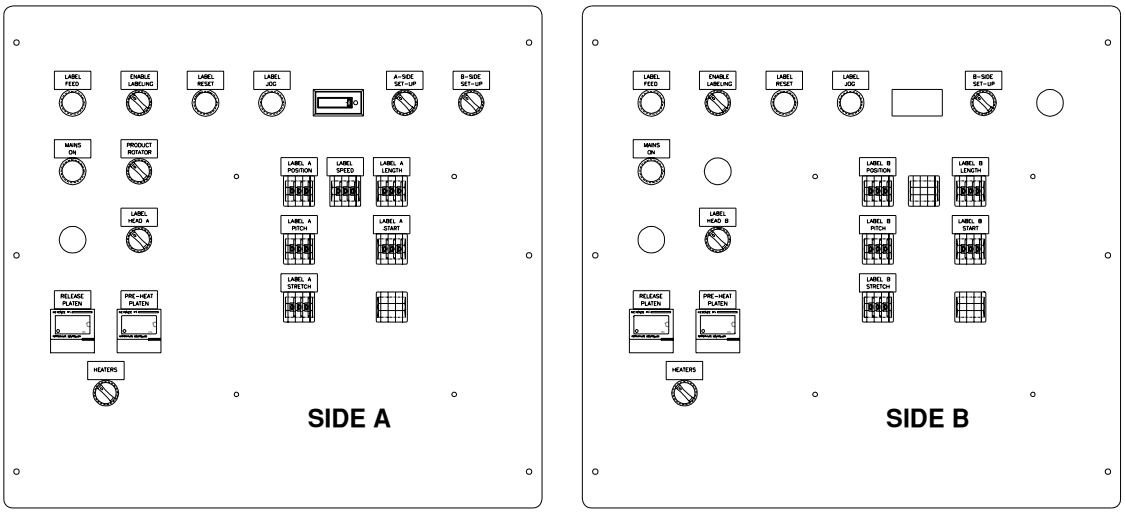
Label length is the distance (in millimetres) of label web travel, while the Release Platen is fully extended. This setting controls the length of the label (including wax) applied. It is during this period that labelling occurs. After this delay expires, the Release platen retracts back fully.

Label Start

Label start is the position delay (in millimetres) from when Label Position expires (label web starts moving) to when the Release Platen starts extending. This setting effectively controls the starting position of the label (amount of wax at the start of the label). When this delay expires, the second stage of the Release Platen activation commences (the Platen becomes fully extended).

Decorating Head Controls

Each Decorating Head has it's own set of Electrical, Mechanical, Pneumatic and Electronic Controls.



Machine Control Panels

Temperature Controls

Each Decorator head has it's own set of temperature Controllers for the Preheat and Release Platens. These are activated by the HEATER Switch. Initially the displays show "---", shortly after the temperature of each Platen is displayed by the digital read-out of each controller. Typical temperatures are:-

Preheat Platen	Release Platen
100 Deg. C.	200 Deg. C.

About 10 minutes should be allowed for the Platens to reach the preset temperature.

Adjustment can be made via the six control keys under the cover once the button in the left hand bottom corner on the LCD display is pressed and indicating active by a flashing symbol of "SV". Once adjusted, press the button once more to return to normal mode. (see TEMPERATURE CONTROLLERS Sheet)

Label Head A/B Switches (Clockwise ON)

There is a LABEL HEAD switch for each decorating head. This enables independent operation of each head.

PRODUCT ROTATORS Switch (Clockwise ON)

This switch is located on Control Panel side A, just above the LABEL HEAD A switch. Its function is to operate the product rotators at the pre flaming, post flaming & label decorating stations.

Warning: Product Rotators must be switched ON for machine to operate in RUN mode.

LABEL JOG Buttons

The button labelled JOG is for advancing the label web continuously. This is useful during threading and initial positioning of the web prior to decorating. The leading edge of the label should be approximately 1/5 inch (5mm) back from the edge of the Preheat Platen.

During set-up, the label should be advanced to the "initial position" and then the registration sensor positioned and adjusted so that it is sensing the registration mark in this position.

Note: A jog button is located at the front of each control panel.

LABEL FEED Buttons

The button labelled FEED on each head is used to cycle the decorating head through one label application. This is useful for testing label head operation and tracking of the web prior to decorating.

ENABLE LABELLING Switches (Clockwise ON)

There is an enable switch for each decorating head. The ENABLE switch is used to "gate out" the signal from the product sensor. In effect this switch disables the product sensor to the decorating head. The result being a product passing by the decorator head without label application occurring. This is useful during initial set-up phase.

A SIDE & B SIDE SETUP Switches

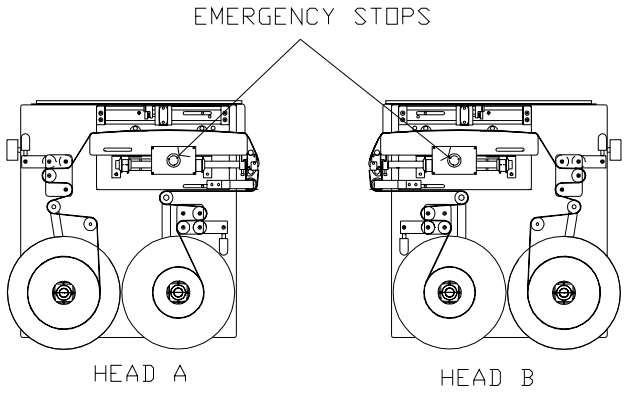
There is a Setup switch for each decorating head. The SETUP Switch activates the Release Platen to the required Head. It is used during the set-up stage to allow the Label Heads and Release Platen to be adjusted to suit each product. Check by placing a product on the rotating disk (when machine is not running) or by sequencing a product in JOG mode and push the SETUP button. Ideally, when the Platen is released, it should make contact with the product.

RESET Buttons

The RESET buttons are used to clear and restart the microprocessor every time the label head settings are changed.

Emergency Stop Buttons

There is one emergency stop button located above each Pre-Heat Platen. When either E-Stop is activated, power to the Decorating Heads is disabled and so to is the gas extinguishing the flamers. The machine will remain stopped until the E-Stop is released by turning it clockwise until it springs back out and either Reset button pressed (Green button).



Note: Enabling either E-Stop is equivalent to switching “off” MAIN LABEL HEAD POWER. The pilot flames should remain lit at all times during machine operation. However, they may be blown out, when the flamer gas supply is terminated, such as in the case of an Emergency stop.

An EMERGENCY RESET procedure must be followed;

Step 1: Turn the Main Label Power switch to the Decorating Heads off
Step 2: Switch Flamers off
Step 3: Release Emergency stop button(s) with a twisting motion
Step 4: Clear the fault condition
Step 5: Remove remaining product on the machine
Step 6: Turn the Power switches to the Decorating Heads on
Step 7: Reset the machine by momentarily depressing the closest reset button
Step 8: Press the Flamer Reset button to allow the gas flow to each set of flamers
Step 9: Ignite flamers
Step 10:Manually trigger each label head sensor to test each sensor

Note: If the problem appears to be a machine fault, stop the machine and contact the Service Technician.

Pre-Flamer & Post-Flamer Switches (Clockwise ON)

These switches are used to activate power to each set of flamers. They are located at the start and end of the side rails, below the corresponding flamer on the same side as Head A.

Ensure that both these switches are "off" before proceeding. Then after pressing FLAMER RESET, switch on the Pre-Flamers, ignite and adjust. Once the Pre-Flamers are set, switch on and adjust the Post-Flamers. This is to avoid an unwanted gas flow, which may (if the gas flow meter valves are open) result after pressing FLAMER RESET, while either switch is "on".

Pre-Flamer & Post Flamer Reset (Gas Enable)

The FLAMER RESET button, the FLAMER switch and the PRODUCT ROTATORS Switch must be ON for the flamers to work. The function of the FLAMER RESET button is to make gas available in the gas lines up to the individual line solenoids.

NOTE: Gas will not reach a flamer unless the corresponding "Flamer Switch" is enabled and the PRODUCT ROTATORS switch is ON.

Flamer Controls

Each side of the machine has it's own set of Flamer Controls which can be adjusted to obtain optimum label transfer.

To start, open the valve slowly to avoid possible damage. Rate of flow is read at the point of maximum horizontal width. The air and gas flow meter valves are turned clockwise to reduce the rate of flow and counter clockwise to increase the flow.

Once the burners are lit, they will need to be adjusted. This is achieved by increasing the gas and air in turn until an appropriate mixture is reached. The mixture is fine-tuned using tests discussed under AIR/GAS Flow Set-Up to obtain good adhesion and appearance of the label on the bottle.

Note: The flow rates for the Pre-Flamer and Post-Flamer burners may be different.

Typical flow rates are: -

Air	Gas
180 SCF/Hour	8 SCF/Hour

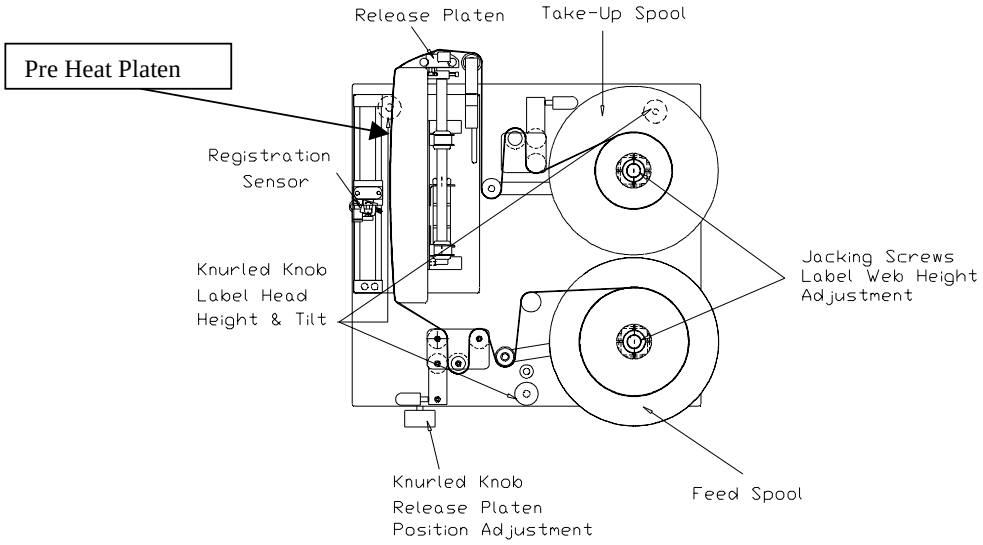
Flamers Auto

This switch is used to shut down the Flamers automatically, if there are no incoming products for a duration of 5 minutes. This will only work if the PRODUCT ROTATORS are activated.

PLC Reset

The PLC RESET button clears any errors that have arisen in the machine. Eg. If the Retract sensors have not been triggered within their specified time. (See PLC FAULTS section)

Note: The PLC Reset button will only work if the Pre Flamer & Post Flamer switches are OFF.



Label Head Adjustments

NOTE: Make sure the Label Head is unlocked before adjusting. Loosening the two screws underneath can do this. (The screws are located directly under the Platen).

Decorating Head Height and Tilt

The height and tilt of the decorating head are controlled by the 3 knurled knobs under each base plate. Two are placed at the front of the head and one in the central back position. Turning these knobs is self-explanatory as they are used to obtain the correct height and tilt of the head to match the angle of the container surface ensuring that the Release Platen is parallel to the surface being decorated.

Release Platen Position

The Release Platen Position adjustment is the knurled knob behind the Release Platen. Its function is to move the Release Platen in and out to obtain the optimum decorating position. It is best set so that the Release Platen "kisses" the surface of the inflated bottle to be decorated.

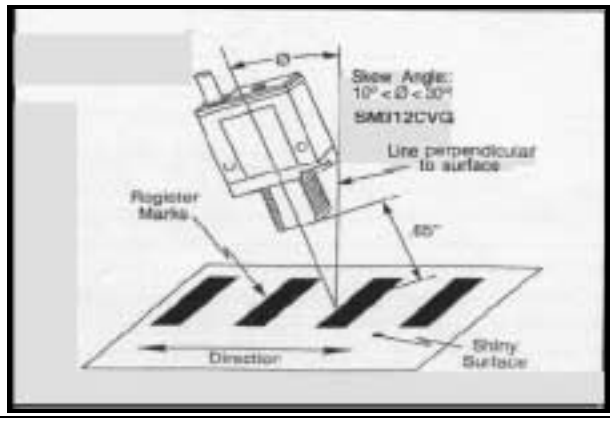
When a bottle is not being decorated and the Release Platen is withdrawn, contact between the web and Platen is minimised. The angle of the Release Platen is also set to take account of these factors and to ensure that contact between the bottle surface label web is at the silicon rubber roller only.

Label Web Feed and Take-Up Spool Heights

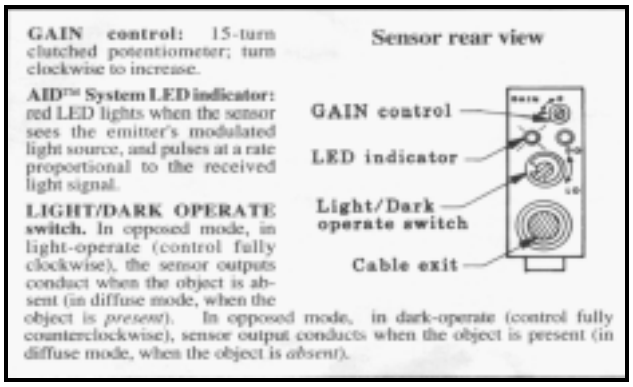
The heights of the Label Feed and Take-Up spools may be adjusted using the jacking screw in the center of each spool. The jacking screw is turned to raise or lower the height of the label web. This adjustment is used for fine height adjustment of the label on the bottle. Generally the take-Up Spool height is set about 5mm. Lower than the Feed Spool.

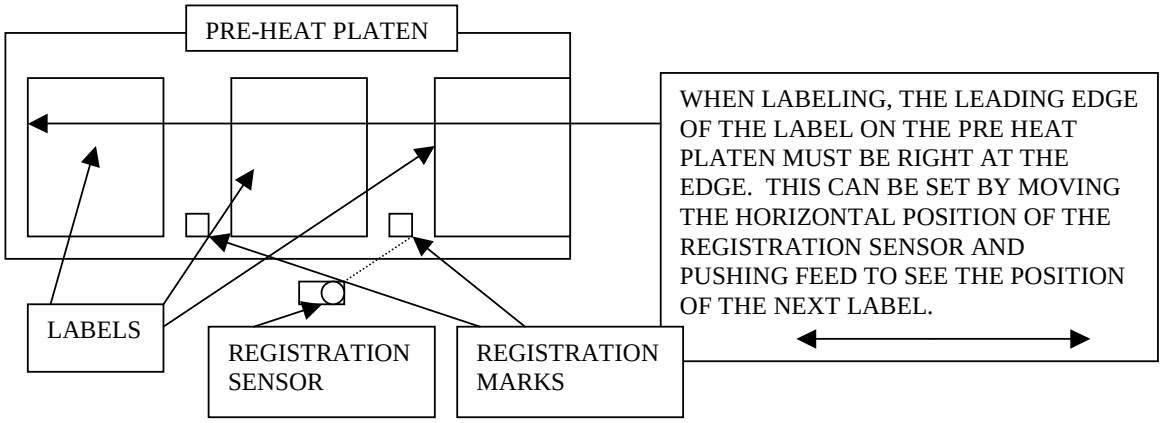
Label Registration Sensor Position

The Label Registration Sensor (Banner SM31CVG) can be adjusted back and forward as well as up and down to detect the appropriate registration mark on the label web or registration feature of the label. To set the position of the Label Registration sensor simply turn the appropriate axis screw thread to loosen, then slide to the desired position. The position of the sensor is ideally set so that the illuminated dot on the web encounters only one mark as it traverses the label when the web advances. Set it up so that the front surface of the sensor's lens is about 16 – 17 mm from the surface of the mark on the label web. It is also recommended that the sensor be mounted on a 10 to 30 degree angle due to the mirror like properties of a shiny surface.



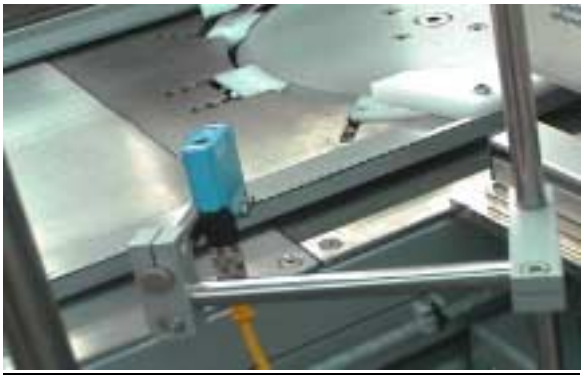
To adjust the settings on this sensor, remove the top cover from the back of the sensor (by unscrewing it) and adjust the Gain or the Light/Dark Operate switch.





Label Head Sensor

The Label Head sensor (Sensick WT 12-2 HGA) is located at the Labelling Station near Label Head A. It uses the principle of Background Suppression to detect the protruding mark on each side of the Pail, for the handles. To set up this sensor, place a product on the rotating disk and focus the sensor on the protruding handle mark. Make sure the light on the sensor is ON. If the light is not ON, adjust the Distance setting on the sensor. Now rotate the product so that the sensor is not focused on the handle mark. The light should be OFF. If its not OFF, again adjust the Distance setting on the sensor. It is recommended that this sensor be mounted on slight angle due to the glare from the shiny surface.



Blocked Flamer Sensors

At each Flamer, there is an optical sensor and reflector assembled. These are used to detect the presence of a product and also to detect a blocked flamer.

Note: Should a product get stuck in the flamer for too long, a Fault condition will occur and the machine will stop.

The sensor can be positioned by loosening the respective holding block, so that the leading edge of the product can be detected (the reflector associated with the sensor may also have to be moved to align with the light beam). In general only the height of the sensors need be altered so that each sensor is activated only once for a given product.

Note: The sensor light should be ON when there are no products in front of it. Make sure the reflector is set up properly.

There are a number of Pneumatic Controls on the Decorator in the form of pressure regulators.

Main Air Pressure Filter and Regulator

The Main Air Filter is located where the Plant air supply is connected to the Decorator. The pressure requirement is around 600 Kpa, a pressure which is sufficient to allow adequate air flow to the Flamers but may need to be set nearer to 700 Kpa if large burners are used and a high airflow is required.

Warning: Removing the Main Air Supply when the machine is operating will result in a yellow flame at the Flamers and a Fault Condition on the machine.

Over-Head Tamp Regulator

This regulator controls the air pressure to the Over-Head Tamp Plate and effects how hard the product is clamped during labelling. It is generally set in the range of 350 to 400 Kpa.

Release Platen Regulator

The Release Platen Regulator controls the pressure to the air cylinder driving the Release Platen in and out and is normally set in the range of 200 to 300 Kpa. This pressure effects how the Release Platen tracks the contours of the inflated product and how the label is applied to imperfect regions of the surface to be decorated.

Web Tension Regulator

The Web Tension Regulator controls the tension applied to the label web by the Dancer Arm, after the Release Platen and before the second web driver roller. As a rule of thumb this should be set to approximately 50 Kpa. For every 25mm of web width.

Filling Pressure Regulator

The Filling Pressure regulator is a precision low-pressure regulator feeding to an air receiver and is used to inflate the bottles during decorating. It is normally set in the range of 5 to 10 Kpa.

Rail Index & Rail Gripper Pressure Regulator

These Regulators control the pressure to the Side rails when they come in to grip the product and when they index forward to the next station. Typical values are around 500 Kpa. For both.

Flamer Gripper Pressure

This is used to control the air pressure to the Overhead Support Guides at the Flaming stations. Typically this is set to around 100 Kpa.

Product Raising Pressure

The Product Raising Pressure controls the Container Traps at the Labeling Station (the White Grippers around the Central Rotating disk). Typical value of around 500 Kpa.

Flamers

The function of the flamer is to pretreat the surface and enhance the subsequent adhesion of the Heat Transfer labels to the product. The action of the flame is to form active molecular sites on the outside surface of the plastic bottle where it has come in contact with the flame. This treatment will last for some hours or even days before the effect is lost entirely although it is recommended that decoration is performed as soon as is practically possible after flaming as the residual heat from the flame in the bottle will aid in the decoration process.

Optimum flaming is generally determined by empirical or trial and error methods with different materials requiring slightly different conditions. Never the less it is really not difficult to achieve good flaming if a few simple procedures are followed.

Once optimum or the desired flaming is achieved, the flamers settings need to be regularly checked and may require further adjustment to maintain the desired performance. It is also recommended that each flamer be tested after 2-3 hours of operation.

BEWARE: Always remember there is gas in use and take care at all times to avoid burns or at worst a gas explosion. Always turn the gas off at its source when carrying out alterations to gas or airlines. Even after the flamers have been turned off parts may remain hot for some time.

Flamer Components

Pilot lights

The flamers are lit by the pilot lights which must in turn be lit by the operator after enabling the gas. The size of the pilot flame can be adjusted by removing the nut with the screwdriver slot in it from the back of the pilot light then turning the needle valve that now becomes accessible inside the pilot body. Turning the needle valve clockwise decreases the gas flow and turning it anti clockwise increases the gas flow. The colour of the pilot can be adjusted with the mixer cylinder located in the pilot assembly. By rotating the mixer, a hole allowing air into the pilot line is adjusted.

Flow Meters

The Flow Meters are of the variable type, that is, as the float rises in the tube the diameter of the tube increases causing the air or gas velocity past the float to decrease. The float rises to a level where the drag from the air or gas just balances the pull of gravity on the float.

BEWARE: The flame from the pilot light can sometimes be difficult to see.

Burners

The burners, whilst looking simple, are quite expensive components and must be carefully manufactured to give good gas distribution and an even flame. Each of the burners is assembled to allow both horizontal and vertical adjustment. The flame height can then be set to best suit the surface of the bottle to be labelled. For safety reasons each burner is assembled with an adjustable guard.

The gas and air are mixed in the mixing tube at the back of the burner. Air enters through the rear-most port of the mixer and gas through the front port. This mixer/burner combination ensures good gas/air mixing.

Use of Air and Gas Flow Meters

Control of the flaming conditions is best achieved by using the gas and air flow meters to maintain a good consistent flame.

The flow meters are read by looking straight at the center of the float and taking the reading from the glass tube. The airflow reading ranges from 20 to 200 Standard Cubic Feet per Hour. The gas flow meters read from 1 to 10 Standard Cubic Feet per Hour but the readings must be corrected for the fact that the gas has a different density to that of air. The correct gas flows are given by:

Natural Gas flow = meter reading x .811

Propane Gas flow = meter reading x 1.26

For other gases multiply the meter reading by the reciprocal of the square root of the specific gravity of the gas.

Therefore, Actual gas flow, SCFH = Meter Reading x $\sqrt{1/P}$

Where P = Specific gravity of the gas.

Air/Gas Ratio

It has been established that the air/gas ratio is the most important and crucial factor in flame pre-treatment. The importance of control over this parameter cannot be overstressed and it is recommended that the air/gas flow be maintained at a pre-determined level. It is possible either to under or over treat polyolefin surfaces, causing poor print adhesion in both instances.

Good flaming can be achieved only if proper air/gas ratios are used. The following definitions and comments should be understood before attempting to adjust flaming conditions.

The THEORETICAL AIR/GAS RATIO is the volume of air required to exactly burn one unit volume of gas. For example:

Type of Gas	Theoretical Air/Gas Ratio
Natural Gas	10.6
Propane Gas	23.4

The percent theoretical air is the ratio of the air/gas ratio being used to the theoretical air/gas ratio. If the percent theoretical air is 100% then the mixture is neutral, that is, just enough air is being supplied to burn the gas. If the percent theoretical air is greater than 100% then excess air is being supplied and the flame will be lean or oxidising. An oxidising flame will have sharp, bright inner cones.
If the percent theoretical air is less than 100% then not enough air is being supplied and flame will be rich or reducing. The remaining air required for combustion will be drawn from the atmosphere. A rich or reducing flame will have soft, fuzzy inner cones and will not be so bright.

Preliminary Burner Adjustments

In adjusting flaming conditions the following should be observed.

Most suitable flames fall within the range of 110% to 140% theoretical air. The inner cones should be short, fairly sharp and bright. A cold burner will often have an inner flame from 12 to 20 mm long but this flame may "pull back in" of it's own accord to about 4 to 6 mm when the burner heats up.

If a cold burner will not ignite with the desired air and gas flow settings, make the mixture richer (more gas or less air) until ignition is achieved. When the burner is hot, readjust the air and gas flow readings to the proper settings.

The distance of the flame tips to the product being treated should be from about 10 to 25 mm with about 15 mm being typical.

Air/Gas Flow Set-Up

With the machine in RUN mode (without any products), enable the gas flow by depressing the "FLAMER RESET Button" and switch power on to the appropriate flamer pair. Open the air and gas values slowly and light the flamer. Adjust the air and gas in turn until the desired ratio is obtained.

A Water Immersion test should then be conducted to determine the flaming efficiency. In the Water Immersion test it is recommended that the bottle be immersed in clean cold water for a count of about 8 seconds. The bottle is then removed from the water and the time for which the water film remains intact on the flamed surface noted – this should be at least 7 seconds. If the desired water film adhesion is not obtained then the air/gas ratio should be varied and/or the distance of the flame tips from the bottle adjusted.

It is highly recommended that all flow rates and distances be noted during initial set-up to facilitate the achievement of good flaming.

Once a promising degree of flaming has been achieved, then proceed to decorate a product and conduct tests: Dry Tape test and Wet Rub test to determine the decoration efficiency, as it is the final decoration quality that is the important factor.

Dry Tape Test

Apply 3M No. 810 high tack Scotch Tape to decorated product(s) after it has cooled to room temperature. Peel off the tape with a fast, snappy motion and ensure that no portion of the label is removed.

Wet Rub Test

Soak decorated products(s) in room temperature for 20 minutes. Make sure the label is entirely submerged. Remove the product from the water, then rub and flex it with your thumbs. Check to see if any portion of the label is removed. A more severe test may be performed using cold or chilled water.

Wet Crease Test

Immediately followed by the water rub test, bend the product until sharp creases are formed. Rub the creases with your fingertip and note if any portion of the label is removed. This is a severe test normally used to ascertain if optimum operating conditions have been established.

Flamer Adjustments To Achieve Desired Label Performance

Before making any adjustments to the flamer, make certain the decorator is properly adjusted (pre and release platen temperature, platen pressure etc) and that good label transfer is being made. Also make sure that the products to be decorated are clean and free from surface contaminants.

A. To increase (decrease) both the amount of preflaming or postflaming; increase (decrease) both the air and gas flows keeping the theoretical air to gas ratio within the desired limits.

B. If the tape test is good but the wet rub test fails this usually means that there was too much preflaming. Reduce the degree of preflaming until a good wet rub test is achieved, but not so far as to lose the good tape test results.

C. If the wet rub test is good but the tape test fails;

First, re-post flame the container. If the tape test is then good or improved this usually means that postflaming was insufficient. Increase the degree of postflaming.

If re-postflaming does not improve the tape test, this usually indicates insufficient preflaming. Increase pre-flaming to get a good tape test, but not so far as to lose a good rub test result.

D. If tape test and wet rub test are both good, and some label loss is noted in the water crest test, increase or decrease pre-treatment level slightly as required to improve water crest test results.

E. When making any of the foregoing adjustments always note and record the gas and air flow meter readings before and after adjustment is made. This will help to correlate flame adjustments with changes in label performance.

F. Once bottles have been successfully decorated, record all equipment settings for future use and control purposes.

G. At this time it may be desirable to make a water retention test for the particular bottle being decorated. Run a bottle through the preflamer only. Then submerge the bottle in clean room temperature water for a few seconds, withdraw from the water and note the time in seconds required for the water film to begin to break up on the surface of the bottle.

The water retention time thus determined may then be used as a rough check only on the degree of pre-treatment required for the particular container being decorated. The shorter the retention time for any given bottle resin, the lower the degree of pre-treatment used.

H. Bear in mind that some resin types, such as PVC and Styrene require no preflaming.

Set-Up For A New Product

Step 1) Adjust the height of the Overhead Chain assembly using the hand-wheels.

Step 2) Thread the Decorating Heads with labels following the threading diagrams.

Note: Turning off the air pressure to the web tension dancer arm simplifies this task

Step 3) Set the Label Speed, Pitch, and Stretch factor.

Step 4) Jog the label so that the leading edge of the label is approximately in the initial position (see Jog).

Step 5) Set up and test the label registration sensor using the “FEED BUTTON” and by triggering the Label Head sensor (note: enable switch must be on – in the right hand position).

If operating correctly, net effect will be advancement of one full label.

Step 6) With the machine in JOG mode, JOG 3 times until a product is at the Label Decorating Station. Push the A or B SIDE SETUP switch to trigger the Release Platen forward. Now adjust the Label Head position, height and tilt so that the Label on the Platen is touching the product. Once this is complete, switch OFF the A & B SIDE SETUP switch and finish off the JOG cycle.

Other adjustments that may be necessary:

- Pre and post flamer positions
- Label Position thumbwheel switches
- Sensor heights so that they are activated only once for a given product
- Check flaming of the product
- Remember to release the A & B SIDE SETUP switch

Start-Up Procedure Outline

ASSUMING THAT BOTH THE AIR AND POWER SUPPLY ARE CONNECTED

1. INSURE ALL POWER SWITCHES ARE “OFF”

2. ENSURE EMERGENCY STOPS ARE DISENGAGED

3. TURN ON MAINS POWER

4. TURN ON HEATERS (HEATING ELEMENTS) ON EACH LABEL HEAD
(ALLOW 10 MINUTES TO REACH DESIRED TEMPERATURE)

5. TURN ON MAIN LABEL POWER

6. TURN ON PRODUCT ROTATORS SWITCH ON LABEL HEAD A

7. TURN ON GAS SUPPLY FROM THE GAS BOTTLE

8. DEPRESS THE “PRE & POST FLAMER RESET BUTTONS”

9. SWITCH ON THE FLAMERS – IGNITE AND ADJUST MIXTURE

8. TURN ON THE REQUIRED LABEL HEAD(S) SWITCH(ES)

9. ACTIVATE THE CORRESPONDING ENABLE LABELLING SWITCHES

10. PRESS THE RESET BUTTON TO RESTART THE MICROPROCESSOR

11. PUT THE MACHINE IN JOG MODE AND JOG A PRODUCT THROUGH ONE CYCLE TO CHECK HOW THE MACHINE IS OPERATING. IF ANY ADJUSTMENTS HAVE TO BE MADE, FINISH THE JOG CYCLE ALL THE WAY THROUGH AND MAKE THE APPROPRIATE CHANGES.

12. ONCE THE JOG MODE CYCLE HAS BEEN COMPLETED AND THE MACHINE IS OPERATING AS REQUIRED, CHANGE TO RUN MODE TO LABEL A CONTINUOUS SUPPLY OF PRODUCTS. TO CHANGE TO RUN MODE, REMEMBER TO TURN THE MANUAL SWITCH FROM OFF TO ON AND SWITCH ON THE PRODUCT ROTATORS.

Maintenance

To ensure the machine is kept operating at its optimum potential, and to reduce wear and tear it is recommended that the following simple maintenance steps are observed.

Daily routine maintenance

The following should be checked at the start of each day or shift.

- Clean label head assemblies of any label wax build-up. Use a clean cloth and mineral turpentine.
- Check that rollers including THE silicon roller turn freely.
- Replace spent backing paper with an empty label core. Never allow the take-up spool web to reach excessive levels.
- Check the label position on the product, adjusting the position and label head spool height as required.
- Make sure the sensors are clean and sensing the products accurately, that is, triggering in exactly the same place each time.
- Check the registration sensor is clean and sensing the labels accurately, that is, the labels should be stopping in exactly the same place each time.
- The air service unit condition should be checked regularly and drained of condensate.

Periodic routine maintenance

The following should be checked weekly or monthly depending upon how heavily the labeller is used.

- Check the rigidity of each label head assembly.
- Check the mechanical condition of the rollers and visually check the machine as a whole to ensure parts are not damaged or loose and rectify as necessary.
- Check the condition of the air/gas hoses and fittings for leaks etc.
- Visually check the electrical connections and wiring for signs of damage, overheating or loose connections.
- Tighten socket head, grub screws etc. when and if necessary.
- It is important to keep the holes in the burners free from particles that may give an uneven flame. This may be done with a fine wire, solvent or by gently tapping the burner to dislodge the particles.
- The flow meters tubes and floats may sometimes require cleaning if there is oil and/or water in the air supply or impurities in the gas that deposit on the float or inside of the tube. The symptoms of a dirty tube are quit noticeable and include a float that is stuck or moves sluggishly.
- Keep the machine clean.

Troubleshooting Guide

The following is a description of the Faults that may occur during machine operation.

Machine Fault

Machine will not start

Check the fuse and power supply. Ensure that neither of the **Emergency Stop** buttons is engaged.

Label Problem

Label not adhering to the product

Wind the release platen towards the product.

Label not releasing from the web

Increase the preheat or release platen pressure

Horizontal drag marks on label

Wind the release platen away from the product.

Vertical compression lines on label

Increase the **Label Stretch**.

Top or bottom half of the label not adhering to the product

Adjust the angle of the Release Platen i.e. Adjust the whole Label Head

Two labels are fed in one labelling operation

Reduce the **Label Pitch**.

The Label on the release platen side of the preheat platen is melting

Reduce the temperature of the release platen.

Label on the preheat platen is melting

Reduce the temperature of the preheat platen.

Label not stopping consistently

Check that the Label Registration sensor is detecting the label. The light on the label sensor should turn on and off, otherwise adjust the gain with a screwdriver.

Check that the **Label Pitch** is correct.

Edge of label on product looks broken

Check that the roller is pressing against the body of the product and not on the lip of the product.

Check that the label web is fully on the release platen roller.

PLC Faults

HOMING FAULT

The Side Rails, Overhead Tamp Plate and Overhead Support Guides all have Retract sensors to tell the PLC what position they are in. When the machine is turned on initially, the lights on these sensors must all be ON within a certain time limit, otherwise a fault condition arises and the PLC RESET button lights up. Make sure all Retract sensors are ON when machine has been started up.

Note: There is also a Rail Retract sensor underneath the central Rotating disk which can be seen inside the machine. This must also be ON when starting up.

AUTO FLAMERS

As discussed earlier, when the FLAMERS AUTO switch is ON and there are no products put through the machine for around 5 minutes, the Flamers will turn OFF automatically and the PLC RESET button will light up.

BLOCKED FLAMER

Should a product get stuck in a flamer for **15 SECONDS**, a fault condition will occur that will stop the machine and light up the PLC RESET button.

TIMING FAULT

All actions taken by the Side Rails, Overhead Tamp Plate and the Overhead Support Guides at the flamers are timed by the PLC. If these actions are not carried out within the specified time, a fault condition will arise and the PLC RESET button will light up. For example, when the product reaches the labelling station it has 8 seconds to complete labelling otherwise a fault occurs and the machine stops.

General timing fault conditions:

- Side rail fault (not activated within the time required)
- Overhead Tamp fault (not activated within the time required)
- Overhead Support Guides fault (not activated within the time required)
- Blocked flamer (product in the flamer for the time set)
- Indexing Cylinder fault (not activated within the time required)

NOTE: Timing Faults usually only occur when a product is stuck and hence the Side Rails or the Overhead guides don't retract on time. When the machine is operating as usual in RUN mode, all sequencing occurs within specified times.

SAFETY INSTRUCTIONS FOR PAIL HTD

- When working on the machine during operation, be wary of moving parts
- When working on the Label Heads, watch out for entrapment due to long hair, loose clothing, neckties, etc.
- Don't put the Air or Gas too high when lighting the Flamers otherwise a large flame will result
- Keep an eye on the Flamers during machine operation in case a product gets stuck. (It is recommended that a fire extinguisher be on hand in case of fire)
- Don't leave flammable liquids near the machine (especially after the Flamers have been lit)
- Avoid touching the Pre Heat & Release Platens because they get very hot

REMEMBER: When in doubt, always hit the EMERGENCY STOP button.

TEMPERATURE CONTROLLERS

Part Names

Front panel of the controller

1. **Temperature alarm indicator LED (AL)**

   Flashes when a measured temperature exceeds the upper limit or falls below the lower limit.

2. **Set temperature check LED (SV)**

   Flashes when a set temperature is displayed. The set temperature can be entered while the "SV" LED flashes.

3. **Display mode selection key**

   Used to select the display of a measured temperature or set temperature. The temperature appears in an easy-to-read digital display.

4. **Mode selection key** ↪ *For details, see "Mode Selection Key"*

5. **Operation status indicator LED**

   Flashes while the control signal is output and shows the operation status.

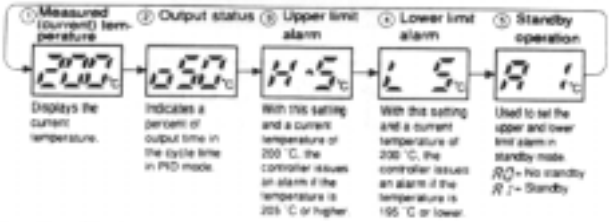
6. **Set value input keys**

   Used to enter a set temperature, upper/lower limit, and to enable/disable stand by operation.

Mode Selection Key

(I.D. Setting)
Pushing the key allows cyclic change of the display.

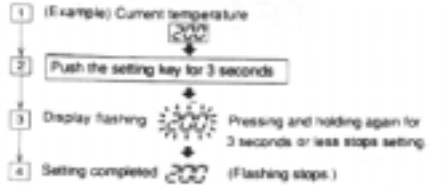
- To enter an upper or lower limit with the setting key, read the value displayed for each mode on the panel.



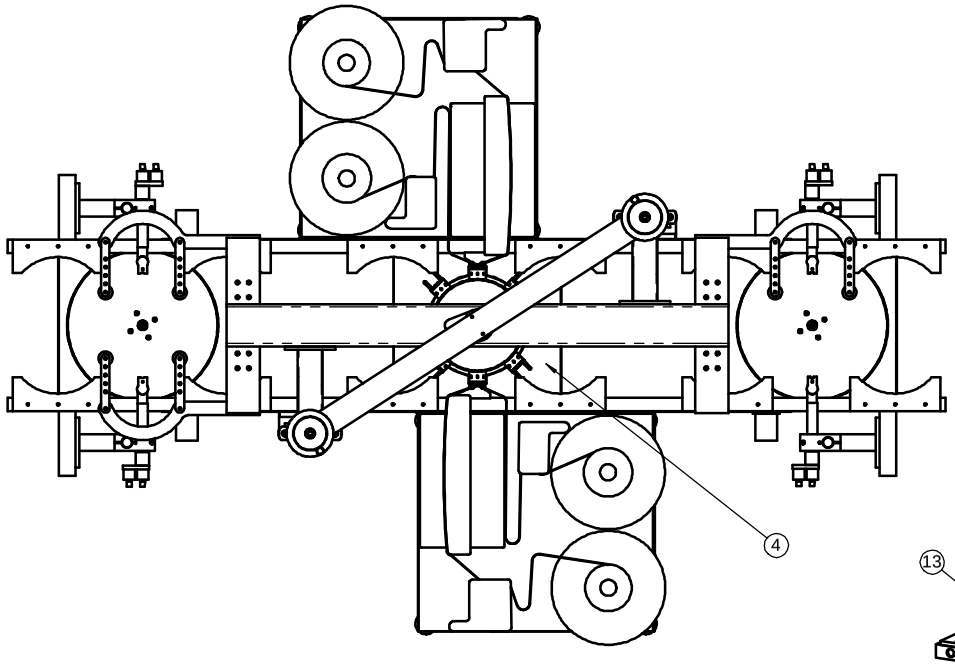
Note: Model TF1-10 enables cyclic selection of 1 and 3 only.

* Use of the display mode selection key of the controller panel allows display of a set temperature from other modes (2 to 5).

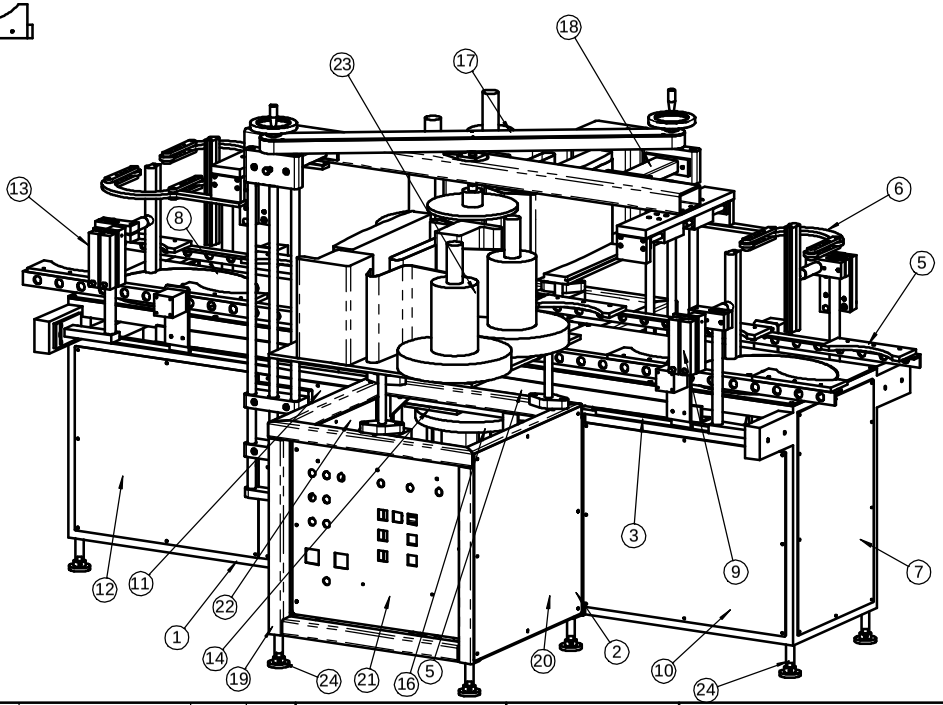
- Pressing and holding for 3 seconds enables it to function as the I.D. setting key.
- Pressing and holding for 3 seconds enables it to function as the I.D. auto setting key in any mode.



- Pressing and holding for 3 seconds, and then again for another 3 seconds, allows I.D manual setting (C1 to C15).
  ↪ *For details, see "Hints on Correct Use".*



NOTE:
HEAD PANELS ARE NOT UP-TO-DATE



Item	Part No.	Description	Qty/Size	Raw Mtl No.	Raw Mtl Qty
1	Z-19907-01-1	CENTER FRAME	1		
2	P-00896-01-1	MS PLATE 10MM	4	R-PLT-0003	620 X 50
3	V-MIS-0456	GUIDE RAIL ASSY SR20 W 2	4		
4	Z-29909-01-1	MANDREL & PLATE ASSEMBLY	1		
5	Z-89917-01-1	MOVING ANGLE ASSEMBLY	2		
6	Z-89921-01-1	OVERHEAD ASSEMBLY	1		
7	Z-29936-01-1	PANEL END CENTER FRAME	2		
8	Z-29937-01-1	TURNABLE TOP ASSEMBLY	2		
9	Z-19940-01-1	FLAMER RH ASSEMBLY	2		
10	Z-29945-01-1	PANEL 3 SIDE CENTER FRAME	2		
11	Z-29946-01-1	PANEL 2 SIDE CENTER FRAME	2		
12	Z-29947-01-1	PANEL 1 SIDE CENTER FRAME	2		
13	Z-19954-01-1	FLAMER LH ASSEMBLY	2		
14	Z-19949-01-1	VERTICAL BLOCK SUPPORT PLATE	3		
15	Z-19951-01-1	C AXIS MOTOR ASSEMBLY	1		
16	V-PLY-0019	PULLEY TIMING - 84XH100	1		
17	Z-8A038-01-1	OVERHEAD CHAIN ASSY	1		
18	T-00898-01-1	OVERHEAD SUPPORT ASSY.	2		
19	Z-10350-01-1	CONTROL BOX FRM. ASSY.	2		
20	Z-10490-01-1	SIDE C'BOX PANEL	2		
21	Z-10489-01-1	FRONT RIGHT PANEL	2		
22	Z-10418-01-1	PNEUMATIC PANEL	2		
23	Z-44960-01-1	THERIMAGE HEAD	2		
24	Z-19586-01-1	FOOT ASSY	12		

ISS No.	DETAILS OF CHANGE	DRAWN	DATE

TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR	ANGULAR
NO DEC PLC: ± 0.5	± 0.5°
1 DEC PLC: ± 0.1	MICROMETRES
2 DEC PLC: ± 0.02	CONCENTRICITY ± 0.02

1. BREAK SHARP EDGES
2. FINISH AS PER PROCEDURE 98039011.DOC

THIRD ANGLE PROJECTION

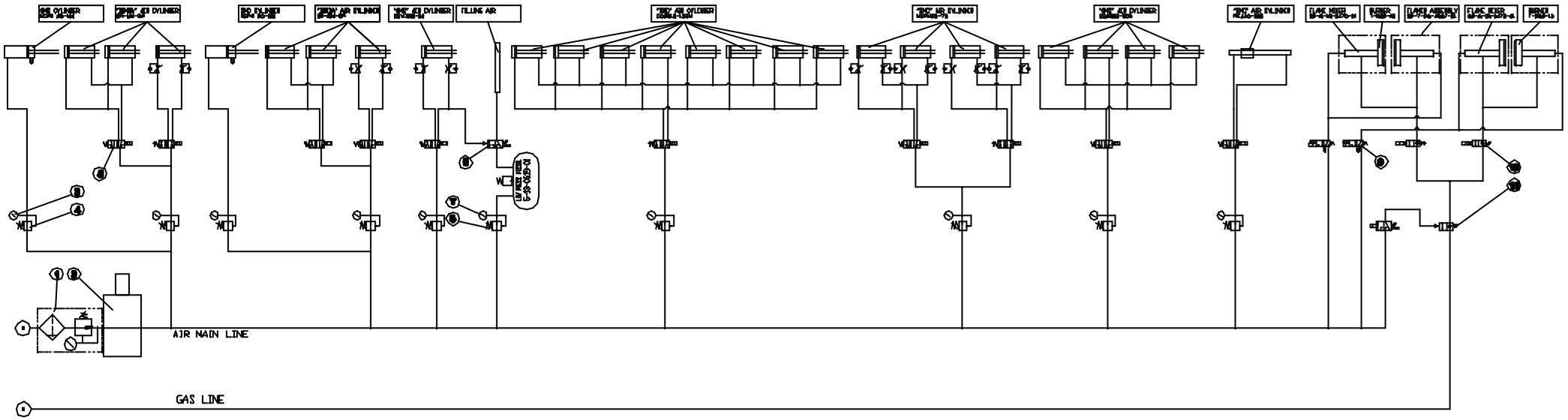
DIMENSIONS IN MILLIMETRES
SHEET SIZE - A3
SHEETS 1 OF 1

SCALE	1:15	
DRAWN	ZL	06-03-2001
CHECKED		

TRONICS
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
PAIL THER. ASSY.

DRG NO. T-00896-01-1 REV. 1



No.	PART No.	DESCRIPTION	QTY
6	V-PNU-0193	3/2 PILOT VALVE VPA-3145	1
5	V-PNU-0164	5/2 SOLENOID VALVE SY7140-5DZ	10
4	V-PNU-0080	REGULATOR AR2000-02	9
3	V-PNU-0210	GAUGE PR321 1000KPA (FLOYD)	9
2	V-PNU-0065	SOFT START VALVE AV4000-04-5DZ	1
1	V-PNU-0223	FILTER REGULATOR AW4000-02	1

No.	PART No.	DESCRIPTION	QTY
11	V-PNU-0226	2/2 PILOT VALVE VNB204A	1
10	V-PNU-0225	2/2 SOLENOID VALVE VX2220-03-7D	2
9	V-PNU-0234	3/2 SOLENOID VALVE VT307-7D-01-F	3
8	V-PNU-0246	LOW PRESSURE REGULATOR IR2000-02	1
7	V-PNU-0211	GAUGE PRS 2 1/2 50KPA (FLOYD)	1

No.	DETAIL OF CHANGE	DRAWN	DATE	CKD
1ST	WO-00073			

UNLESS OTHERWISE SPECIFIED
✓ DIMENSIONS
TOLERANCES
LINEAR: NO DEC PLS ± 1.0; 1 DEC PLS ± 0.5; 2 DEC PLS ± 0.1
ANGULAR ± 0.5°

DAS FILE No. T01735011
CAM FILE No.

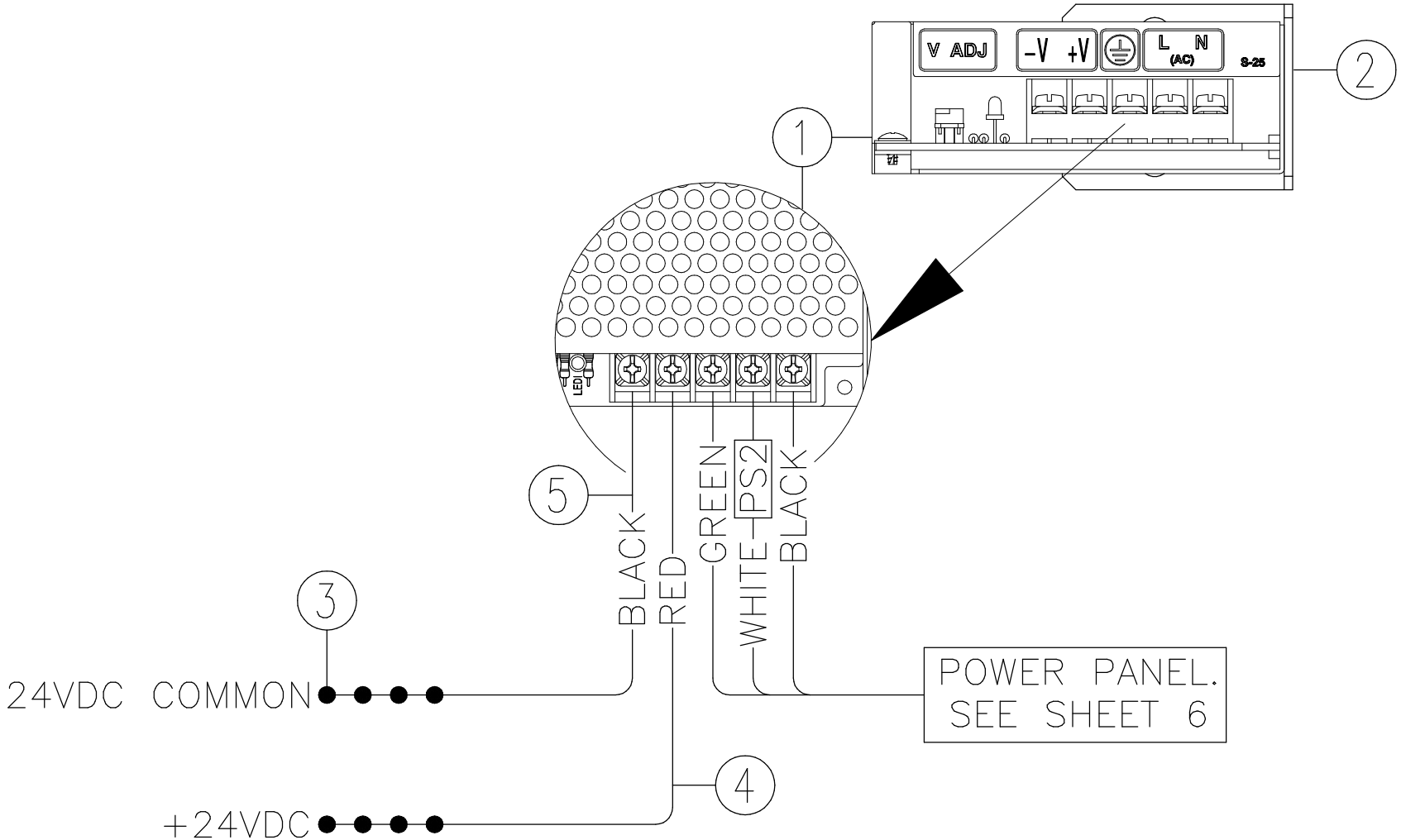
THIRD ANGLE PROJECTION
DIMENSIONS IN MILLIMETRES
BREAK SHARP EDGES
DO NOT SCALE IF IN DOUBT, ASK

SCALE
DRAWN M.D. 6.04.2001 Z.L.
CHECKED

TRONICS™
13 TEMPLE DRIVE, THOMASTOWN, VIC 3074
Phone (03) 464 2400 Fax (03) 464 2538

TITLE
PNEUMATIC DIAGRAM
USED ON: PAIL THERIMAGE

DRAWING No. T-01735-01-1



PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V-PSU-0008	S-25-24	POWER SUPPLY - 24VDC	1
2	V-PSU-0009	DINSML	BRACKET - SUITS V-PSU-0008	1
3		TERMINALS	SEE DRAWING Z-6A737-01-1	
4	R-WRE-0022	CW16RD	RED HOOK UP WIRE- 16/0.2mm	.5M
5	R-WRE-0001	CW16BK	BLACK HOOK UP WIRE- 16/0.2mm	.5M

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	UPDATED POWER SUPPLY MODEL	DRDI	30/4/2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 9 OF 24

SCALE NOT TO SCALE

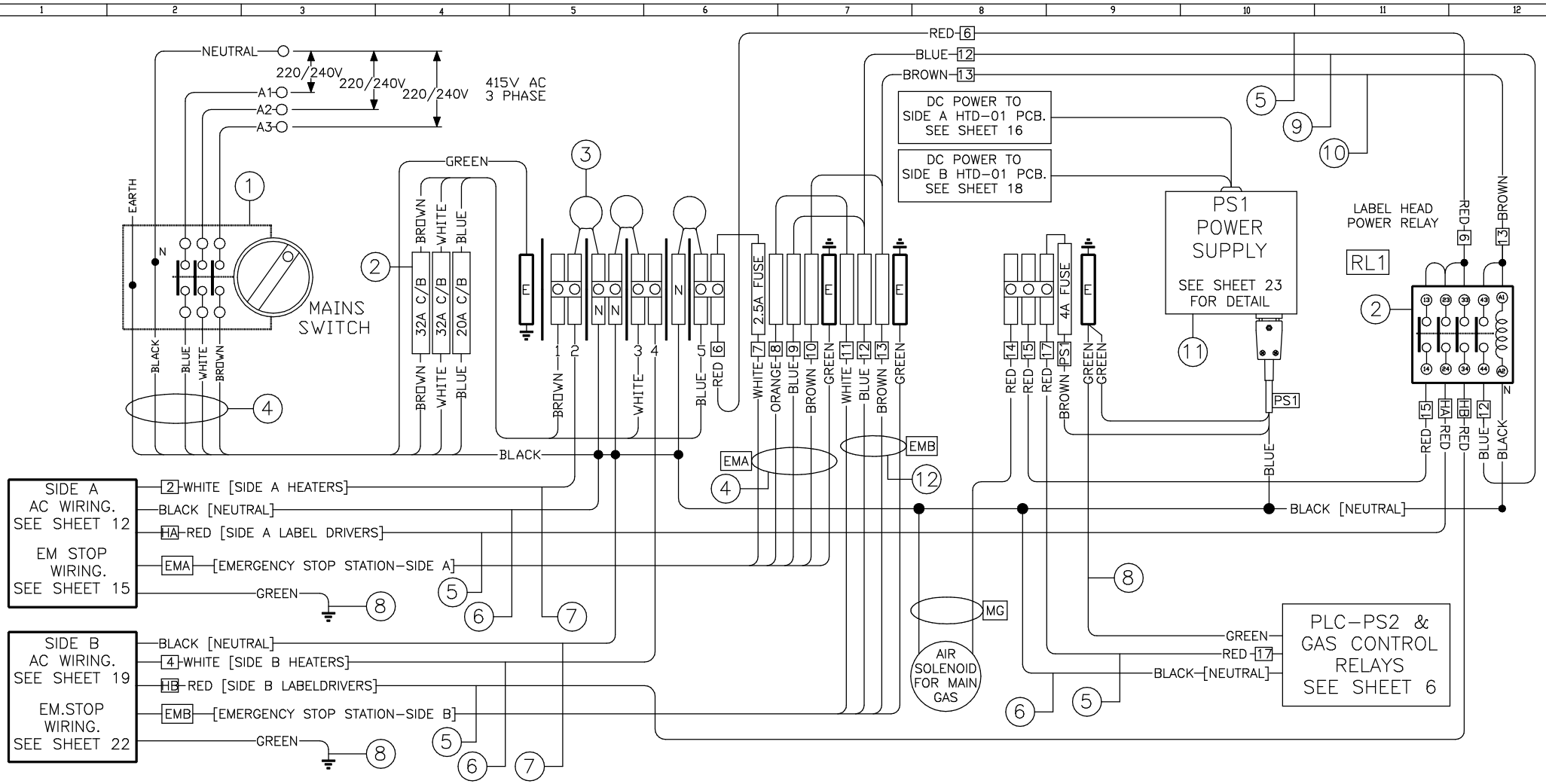
DRAWN BY DRDI 9/10

P**** 1998

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
24VDC POWER SUPPLY

DRG.No. Z-6A358-01-1 REV. 2



PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0080	GMD640006-712	MAINS SWITCH	1
2		TERMINAL STRIP	SEE DRAWING Z-6A372-01-1	
3	V-SEM-0099	S20K275	VARISTOR	3
4	R-CBL-0017	1sqmm	5 CORE CABLE	5M
5	R-WRE-0024	CW32RD	32/0.2mm RED HOOK UP	2M
6	R-WRE-0003	CW32BK	32/0.2mm BLACK HOOK UP	2M
7	R-WRE-0030	CW32WH	32/0.2mm WHITE HOOK UP	2M
8	R-WRE-0044	CW32GN/YL	32/0.2mm GREEN HOOK UP	2M
9	R-WRE-0007	CW32BL	32/0.2mm BLUE HOOK UP	2M
10	R-WRE-0009	CW323BN	32/0.2mm BROWN HOOK UP	2M
11		POWER SUPPLY	SEE DRAWING Z-6A372-01-1	
12	R-CBL-0014	OD432	4 CORE FLEX (32/0.2MM)	3M

ISS. No. | DETAILS OF CHANGE | DRAWN | DATE

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 4 OF 24

SCALE NOT TO SCALE

DRAWN BY DRDI 23/9

CHECKED P**** 1998

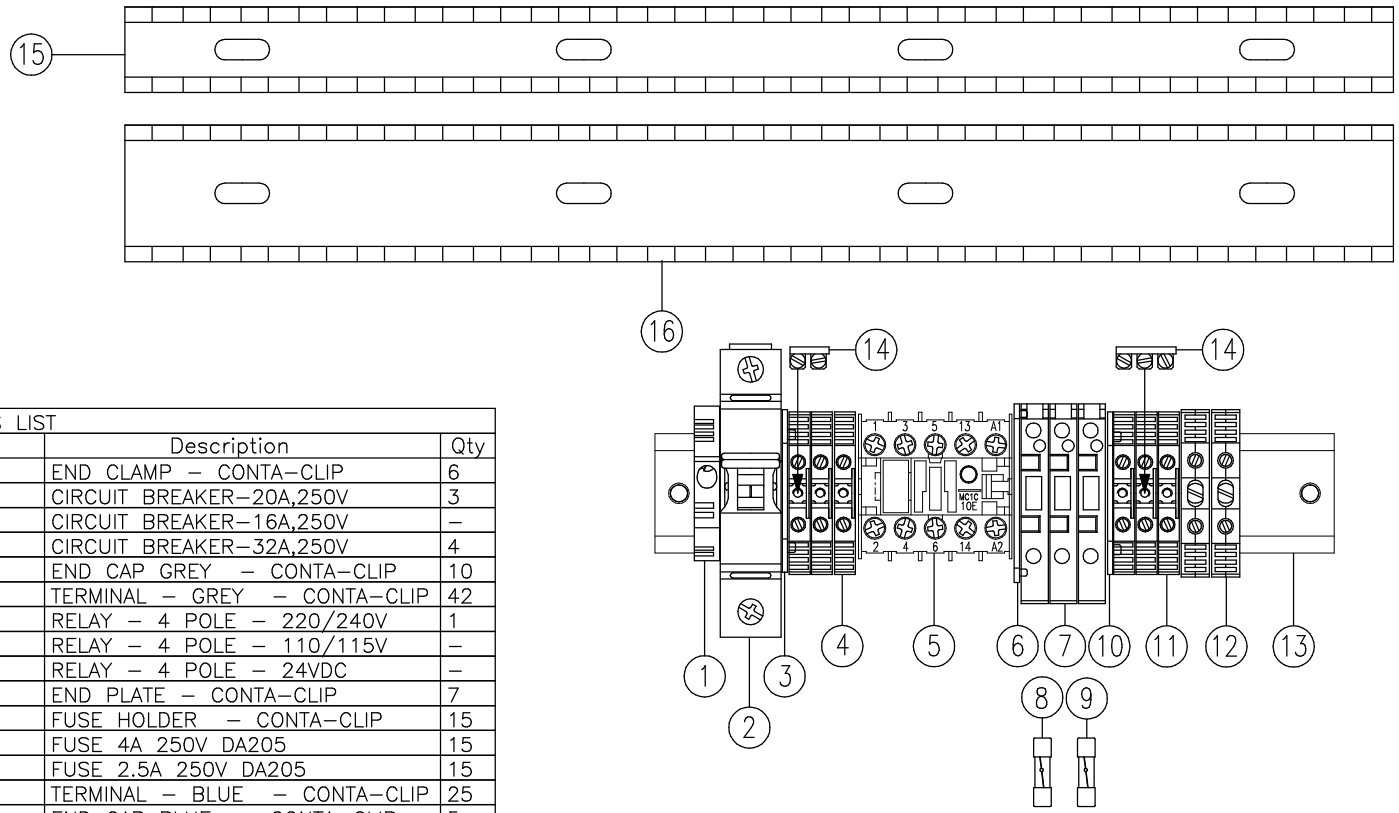
TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
MAIN AC PANEL

DRG.No. Z-6A353-01-1 REV. 2

STANDARD AC TERMINAL PARTS

QUANTITY OF PARTS WILL VARY TO SUIT MACHINE.
CHECK AC WIRING DIAGRAM FOR AMPERAGES.



PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V-TRM-0061	2005.2	END CLAMP - CONTA-CLIP	6
2	V-CBK-0002	GDE120C	CIRCUIT BREAKER-20A,250V	3
2ALT	V-CBK-0004	GDE116C	CIRCUIT BREAKER-16A,250V	-
2ALT	V-CBK-0005	GDE132C	CIRCUIT BREAKER-32A,250V	4
3	V-TRM-0063	2001.2	END CAP GREY - CONTA-CLIP	10
4	V-TRM-0067	1001.2	TERMINAL - GREY - CONTA-CLIP	42
5	V-REL-0026	MC1A310ATN	RELAY - 4 POLE - 220/240V	1
5ALT	V-REL-0025	MC1A310ATH	RELAY - 4 POLE - 110/115V	-
5ALT	V-REL-0033	MC1C310ATD	RELAY - 4 POLE - 24VDC	-
6	V-TRM-0060	2046.2	END PLATE - CONTA-CLIP	7
7	V-TRM-0065	2190.2	FUSE HOLDER - CONTA-CLIP	15
8	V-FUS-0009	1295 1774	FUSE 4A 250V DA205	15
9	V-FUS-0004	1295 1758	FUSE 2.5A 250V DA205	15
10	V-TRM-0064	1001.5 BLUE	TERMINAL - BLUE - CONTA-CLIP	25
11	V-TRM-0062	2001.5 BLUE	END CAP BLUE - CONTA-CLIP	5
12	V-TRM-0066	1437.2	TERMINAL - EARTH - CONTA-CLIP	6
13	V-TRM-0068	2094.4	DIN RAIL - 2MTR - CONTA-CLIP	.8M
14	V-TRM-0059	2743.2	BRIDGE - CONTA-CLIP	2
15	V-DUC-0023	OS2530	DUCT 25 X 30 PVC	1M
16	V-DUC-0022	OS4040	DUCT 40 X 40 PVC	2M

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2			
3			
4			
5			
6			
7			
8			
9			
A			
B			

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 24 OF 24

SCALE NOT TO SCALE

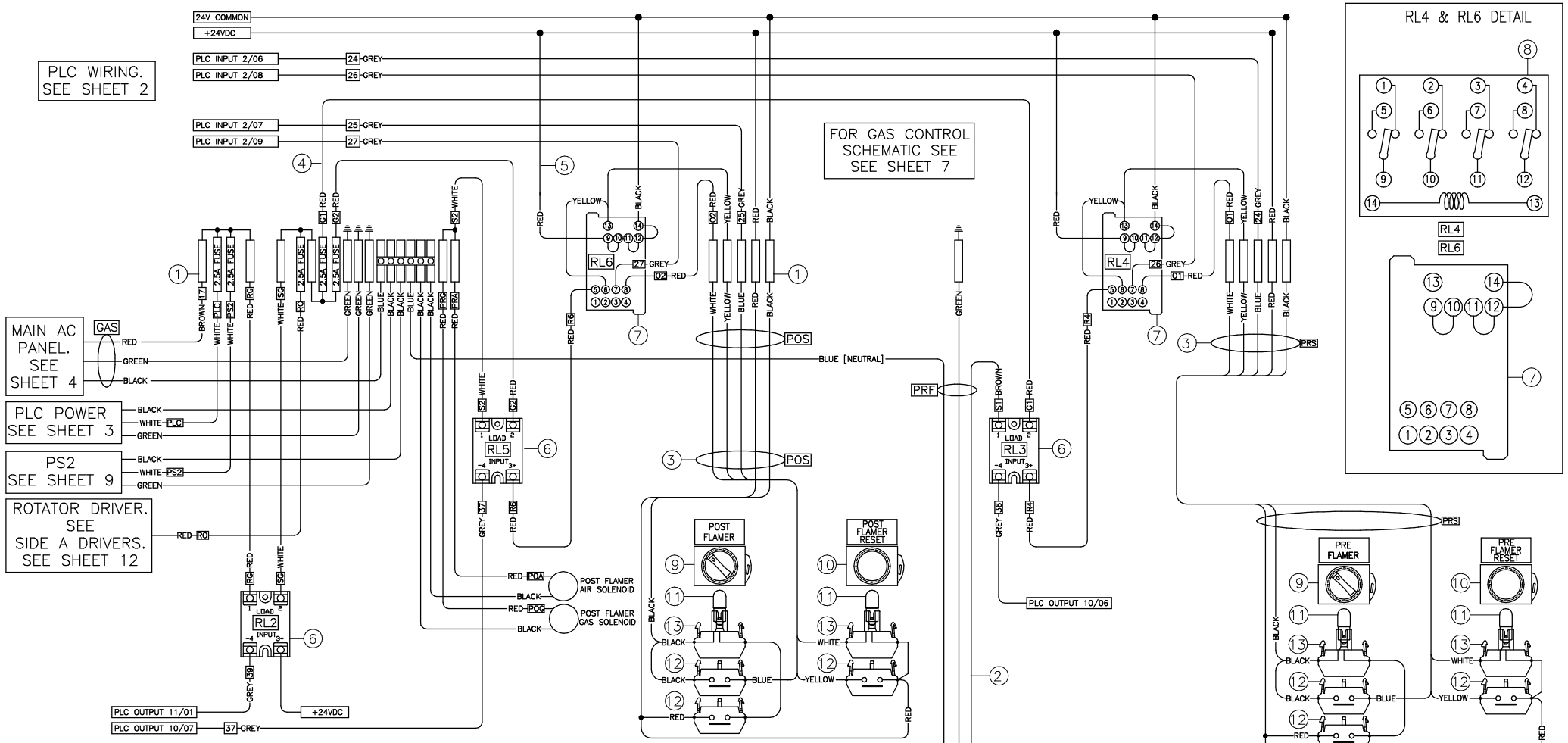
DRAWN BY DRD! 10/10

P**** 1998

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
AC COMPONENTS

DRG.No. Z-6A373-01-1 REV. 1



Item	Tronics No.	Manufactures No.	Description	Qty
1		TERMINALS	SEE DRAWING Z-6A373-01-1	
2	R-CBL-0012	OD332	3 CORE 1 SQmm FLEX (32/0.2MM)	3M
3	R-CBL-0018	MC14-6	CABLE 6 CORE	3M
4	R-WRE-0024	CW32RD	RED HOOK UP WIRE 32/0.2mm	2M
5	R-WRE-0003	CW32BK	BLACK HOOK UP WIRE 32/0.2mm	2M
6	R-WRE-0044	CW32GN/YL	GREEN HOOK UP WIRE 32/0.2mm	2M
7	R-WRE-0030	CW32WH	WHITE HOOK UP WIRE 32/0.2mm	2M
8	R-WRE-0022	CW16RD	RED HOOK UP WIRE 16/0.2mm	2M
9	R-WRE-0015	CW16GY	GREY HOOK UP WIRE 16/0.2mm	2M
10	R-WRE-0006	CW16BL	BLUE HOOK UP WIRE 16/0.2mm	2M
11	R-WRE-0033	CW16YE	YELLOW HOOK UP WIRE 16/0.2mm	2M
12	V-REL-0023	G3NA-210B	SOLID STATE RELAY- 10A	3
13	V-REL-0010	PYF14A-N	RELAY BASE	2
14	V-REL-0017	LY4N	RELAY - 4PDT	1
15	V-SWT-0087	P9CSLD0V	SWITCH - GE - ILL. GREEN KNOB	2
16	V-SWT-0085	P9CPLRGD	RED ILL. PUSH BUTTON	2
17	V-SWT-0098	BA9S242	GLOBE 24V	4
18	V-SWT-0084	P9B10VN	N/O BLOCK	6
19	V-SWT-0086	P9PDNV0	GLOBE HOLDER	4

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

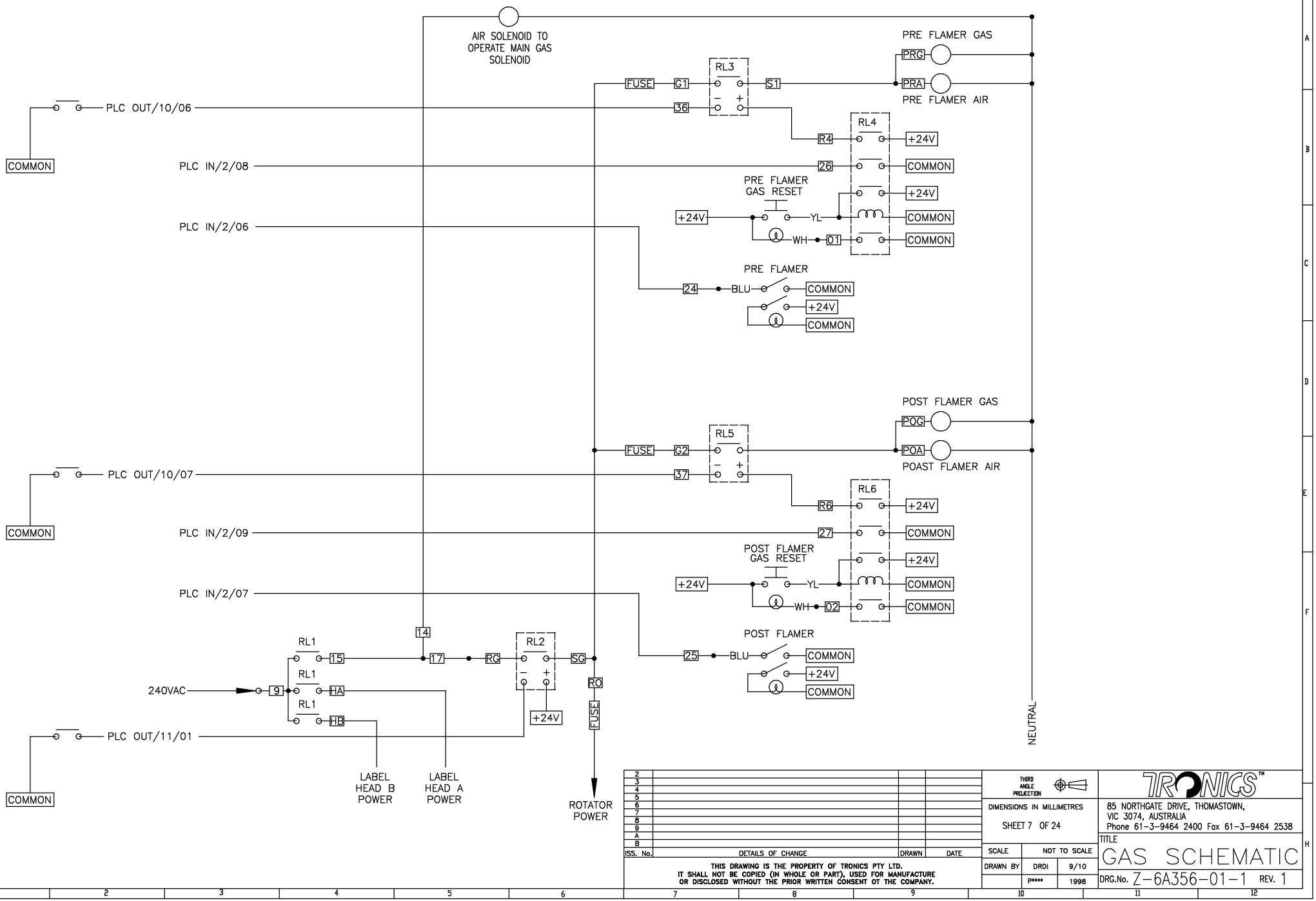
SHEET 6 OF 24

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	26/9
	P****	1998

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
FLAMER AIR/GAS CONTROL

DRG.No. Z-6A355-01-1 REV. 1



ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 7 OF 24

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	9/10
	P****	1998

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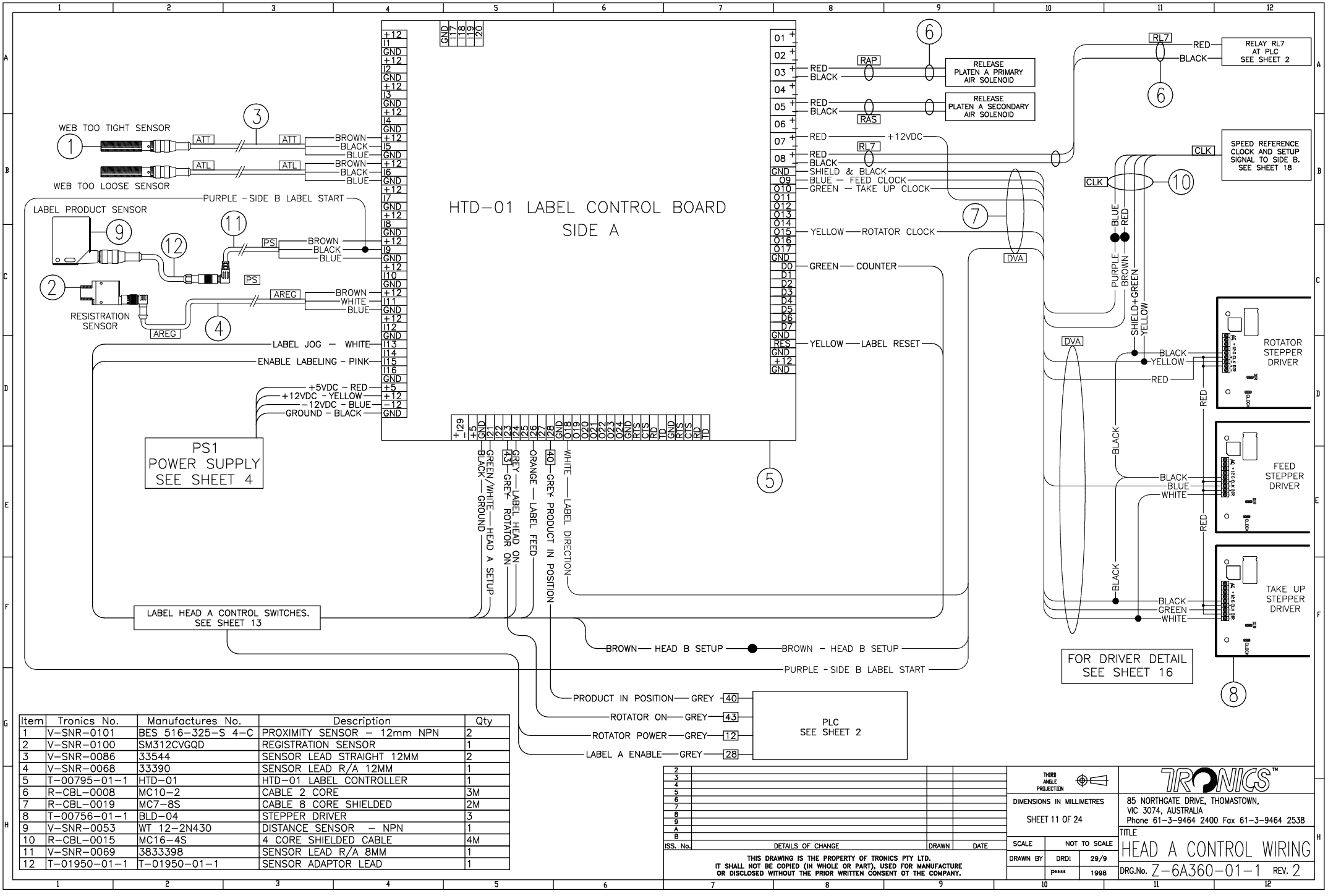
TITLE

GAS SCHEMATIC

DRG.No. Z-6A356-01-1 REV. 1



Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SNR-0101	BES 516-325-S 4-C	PROXIMITY SENSOR - 12mm NPN	2
2	V-SNR-0100	SM312CVGQD	REGISTRATION SENSOR	1
3	V-SNR-0086	33544	SENSOR LEAD STRAIGHT 12MM	2
4	V-SNR-0068	33390	SENSOR LEAD R/A 12MM	1
5	T-00795-01-1	HTD-01	HTD-01 LABEL CONTROLLER	1
6	R-CBL-0008	MC10-2	CABLE 2 CORE	3M
7	R-CBL-0019	MC7-8S	CABLE 8 CORE SHIELDED	2M
8	T-00756-01-1	BLD-04	STEPPER DRIVER	3
9	V-SNR-0053	WT 12-2N430	DISTANCE SENSOR - NPN	1
10	R-CBL-0015	MC16-4S	4 CORE SHIELDED CABLE	4M
11	V-SNR-0069	3833398	SENSOR LEAD R/A 8MM	1
12	T-01950-01-1	T-01950-01-1	SENSOR ADAPTOR LEAD	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 11 OF 24

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
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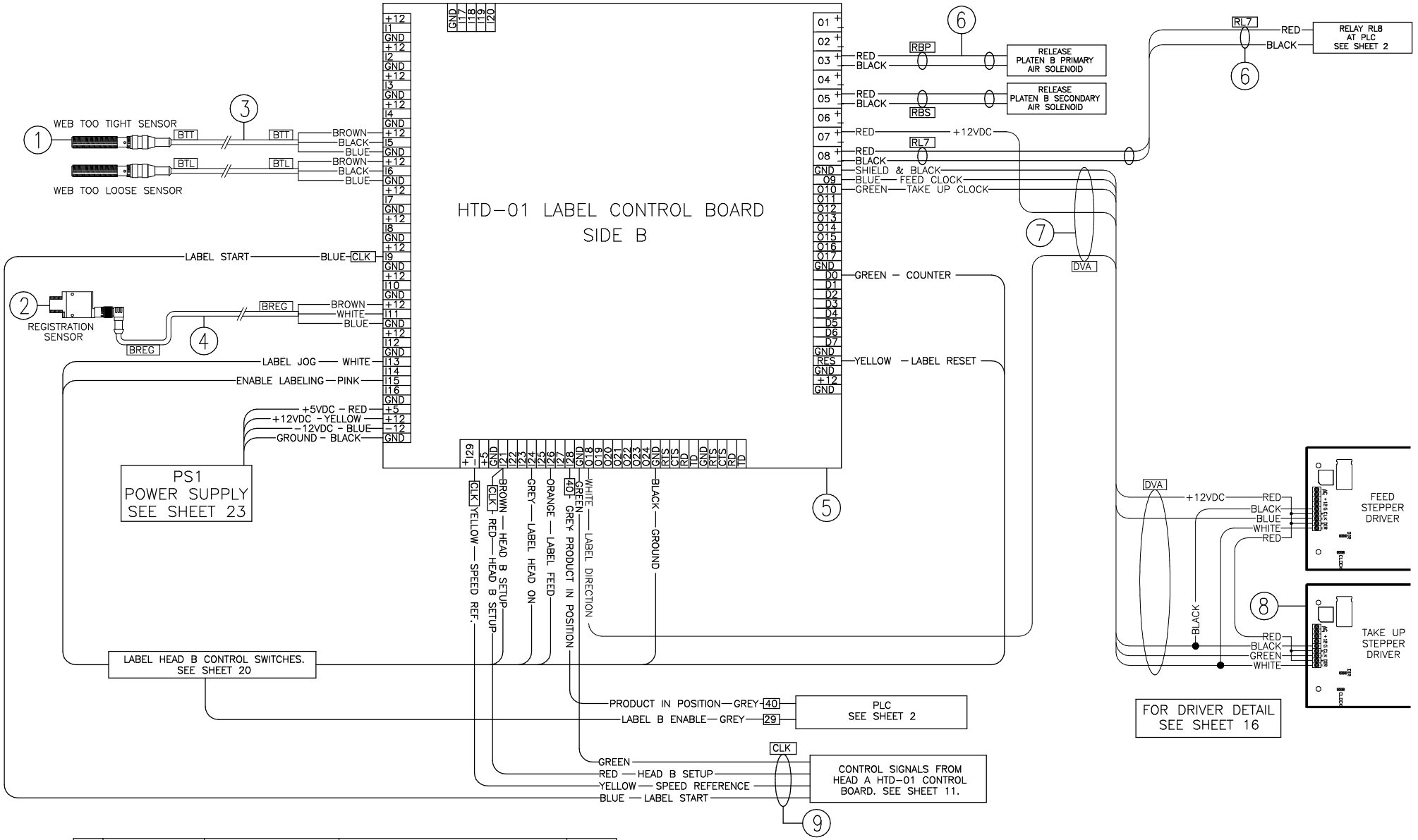
SCALE	NOT TO SCALE	
DRAWN BY	DRDI	29/9
	P****	1998

TITLE
HEAD A CONTROL WIRING

DRG.No. Z-6A360-01-1 REV. 2



Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SNR-0101	BES 516-325-S 4-C	PROXIMITY SENSOR - 12mm NPN	2
2	V-SNR-0100	SM312CVGQD	REGISTRATION SENSOR	1
3	V-SNR-0086	33544	SENSOR LEAD STRAIGHT 12MM	2
4	V-SNR-0068	33390	SENSOR LEAD R/A 12MM	1
5	T-00795-01-1	HTD-01	HTD-01 LABEL CONTROLLER	1
6	R-CBL-0008	MC10-2	CABLE 2 CORE	3M
7	R-CBL-0019	MC7-8S	CABLE 8 CORE SHIELDED	2M
8	T-00756-01-1	BLD-04	STEPPER DRIVER	2
9	R-CBL-0015	4 CORE CABLE	SEE DRAWING Z-6A360-01-1	

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	UPDATED DRIVER CLOCK & DIRECTION WIRING	DRDI	30/4/2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

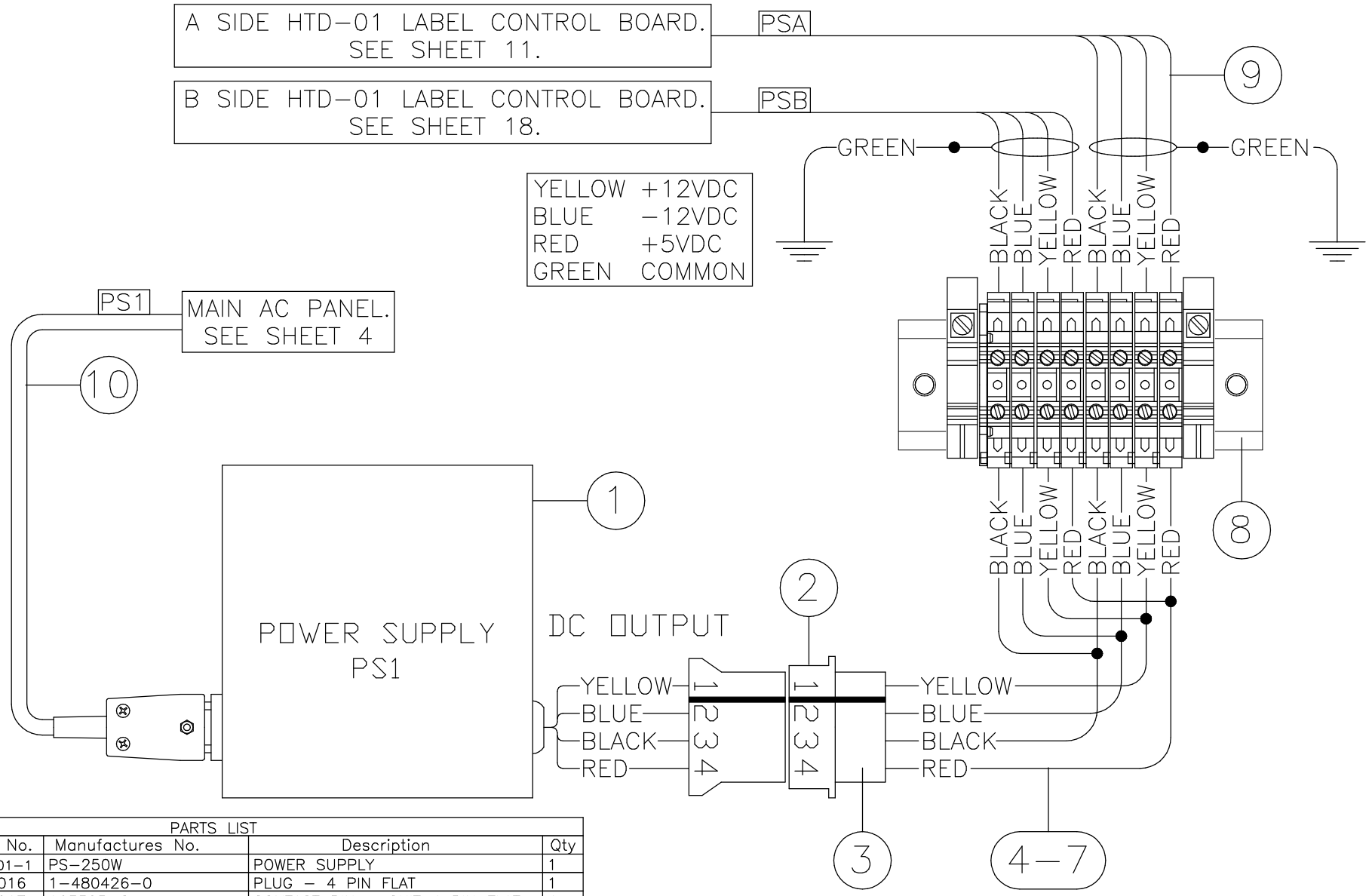
SHEET 18 OF 24

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	29/9
	P****	1998

TITLE
HEAD B CONTROL WIRING

DRG.No. Z-6A367-01-1 REV. 2



PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	T-00982-01-1	PS-250W	POWER SUPPLY	1
2	V-CTS-0016	1-480426-0	PLUG - 4 PIN FLAT	1
3	V-CTS-0017	163305-2	CONTACT PIN - SUIT 4 PIN FLAT	4
4	R-WRE-0022	CW16RD	RED HOOK UP WIRE - 16/0.2mm	2M
5	R-WRE-0001	CW16BK	BLACK HOOK UP WIRE- 16/0.2mm	2M
6	R-WRE-0006	CW16BL	BLUE HOOK UP WIRE - 16/0.2mm	2M
7	R-WRE-0033	CW16YE	YELLOW HOOK UP WIRE-16/0.2mm	2M
8		TERMINALS	SEE DRAWING Z-6A373-01-1	
9	V-CTS-0017	MC16-4S	SHIELDED 4 CORE CABLE	6M
10	V-CBL-0020	PEINT2MGY	LEAD WITH IEC PLUG	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 23 OF 24

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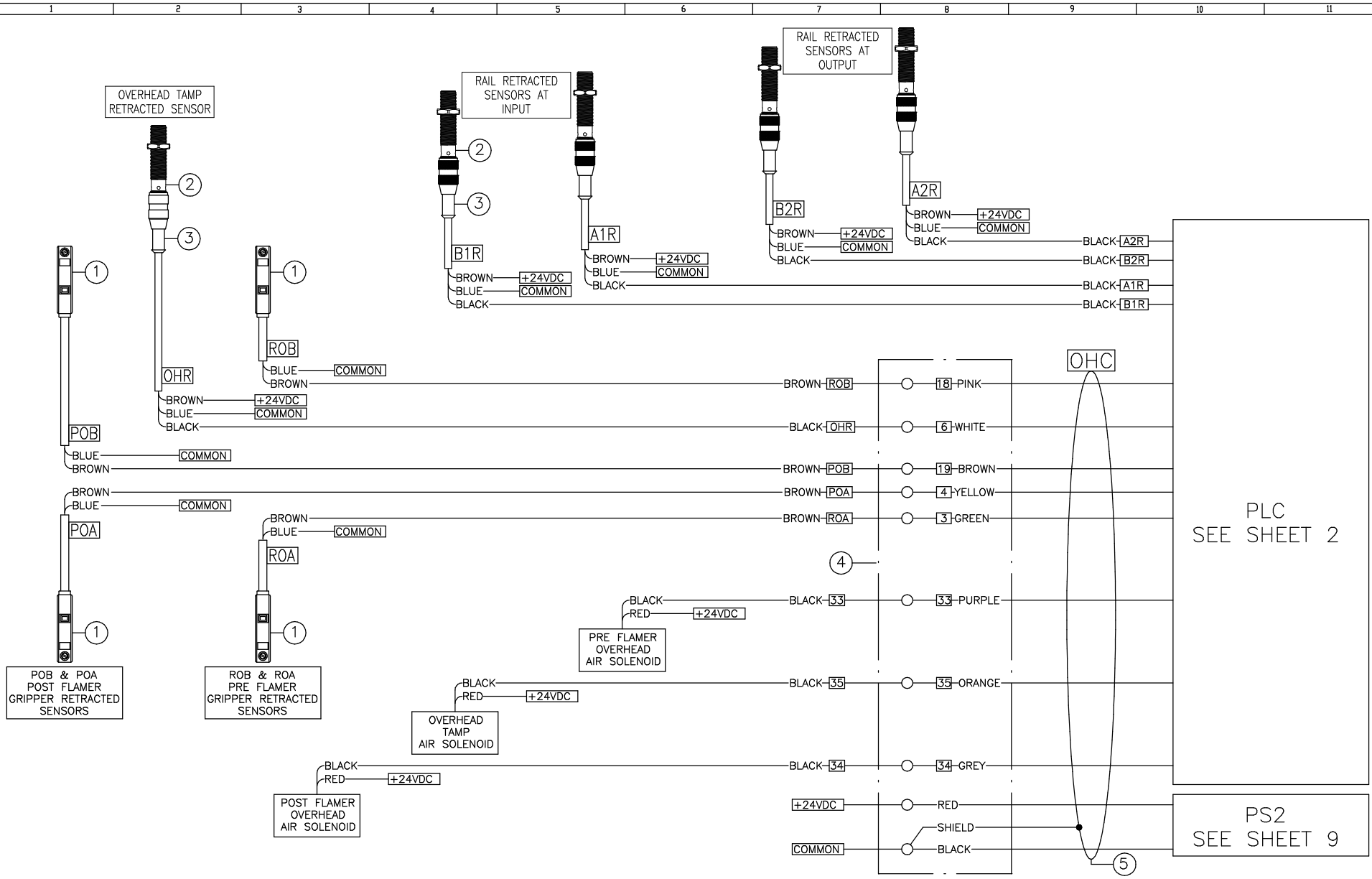
SCALE	NOT TO SCALE	
DRAWN BY	DRD!	10/10
	P****	1998

TITLE
HTD-01 POWER SUPPLY

DRG.No. Z-6A372-01-1 REV. 1



Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0030	D-Z73	REED SWITCH	4
2	V-SNR-0024	BES 516-329-S4-C	SENSOR PROXIMITY - 12MM NPN	5
3	V-SNR-0086	33544	SENSOR LEAD STRAIGHT 12MM	5
4	V-CAB-0002	0485 0853	JUNCTION BOX	1
5	R-CBL-0007	MC7-18S	18 CORE SHIELDED CABLE	3M

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 8 OF 24

SCALE NOT TO SCALE

DRAWN BY DRDI 9/10

P**** 1998

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VIC 3074, AUSTRALIA
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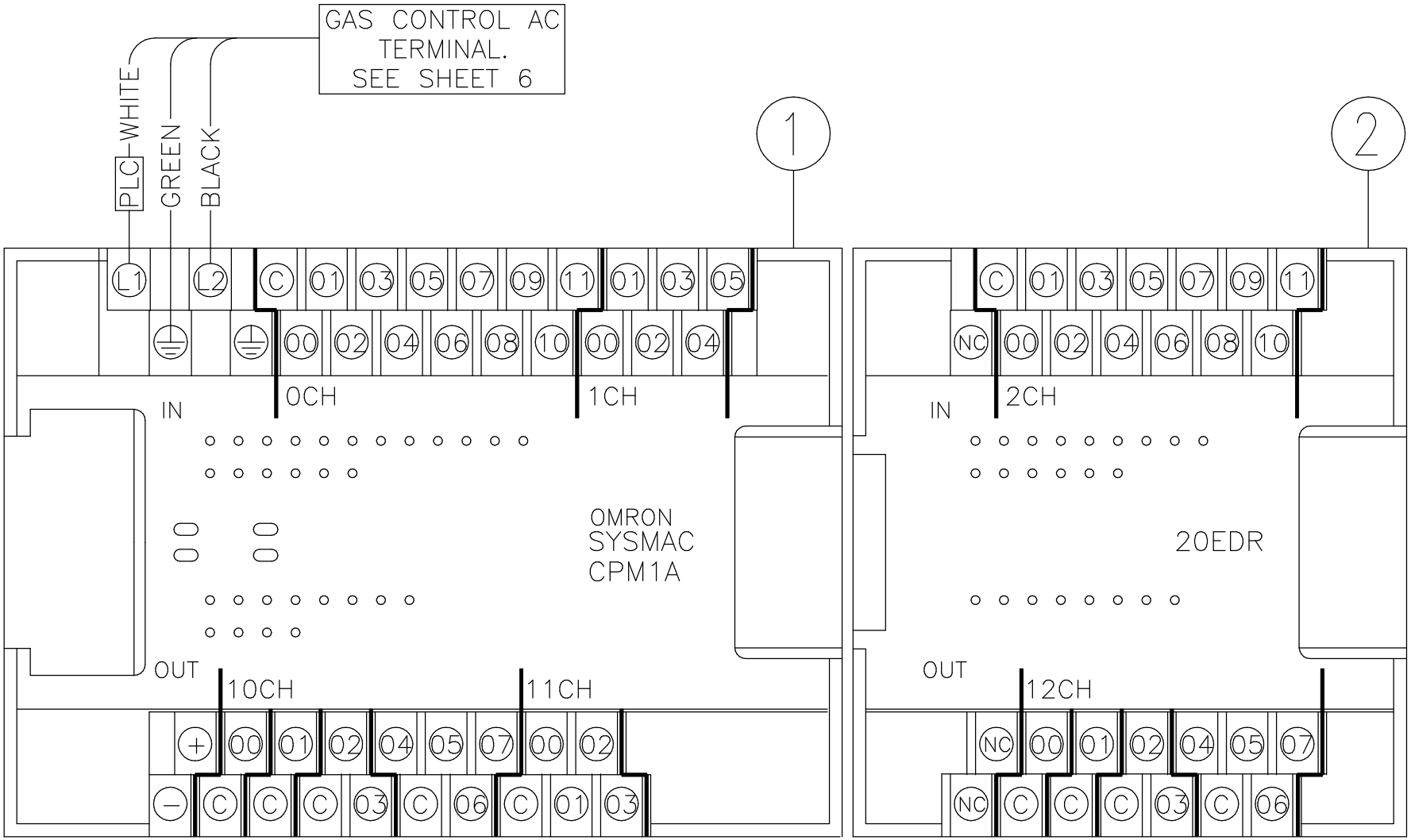
TITLE
OVERHEAD & RAIL SENSOR WIRING

DRG.No. Z-6A357-01-1 REV. 1



PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V-PLC-0017	CPM1A-30CDR-A	OMRON PLC - 18 IN/12 OUT	1
2	V-PLC-0022	20EDR	EXPANSION UNIT	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 3 OF 24

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	3/10
CHECKED	00073	1998

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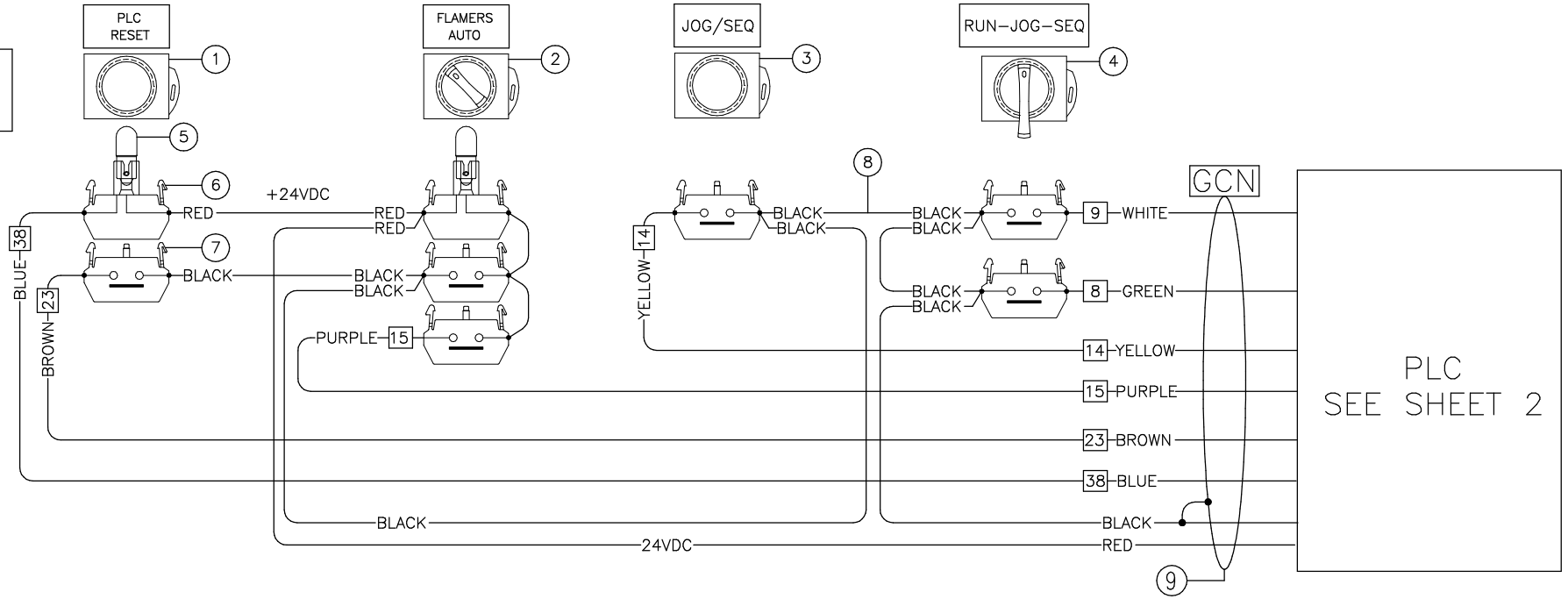
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
PLC AC

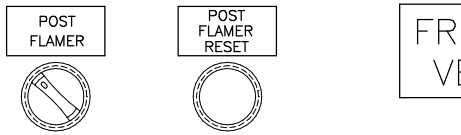
DRG.No. Z-6A352-01-1 REV. 1

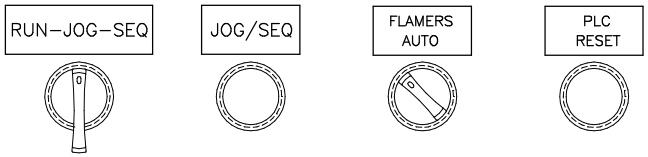
REAR VEIW



SEE SHEET 6 FOR FLAMER CONTROL SWITCH WIRING

FRONT VEIW





GAS/PLC SWITCH LAYOUT

PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V–SWT–0085	P9CPLRGD	RED ILL. PUSH BUTTON	1
2	V–SWT–0087	P9CSLD0V	ILL. GREEN KNOB	1
3	V–SWT–0100	P9CPNLG	BLUE PUSH BUTTON	1
4	V–SWT–0096	P9CSVZ0N	3 POSITION KNOB	1
5	V–SWT–0098	BA9S242	24V GLOBE	2
6	V–SWT–0086	P9PDNV0	GLOBE HOLDER	2
7	V–SWT–0084	P9B10VN	N/O SWITCH BLOCK	6
8	R–WRE–0037	CW7	7/0.2MM HOOK UP	.5M
9	R–CBL–0019	MC7–8S	CABLE 8 CORE SHIELDED	3M

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 5 OF 24

SCALE NOT TO SCALE

DRAWN BY DRDI 3/10

CHECKED P**** 1998

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VIC 3074, AUSTRALIA
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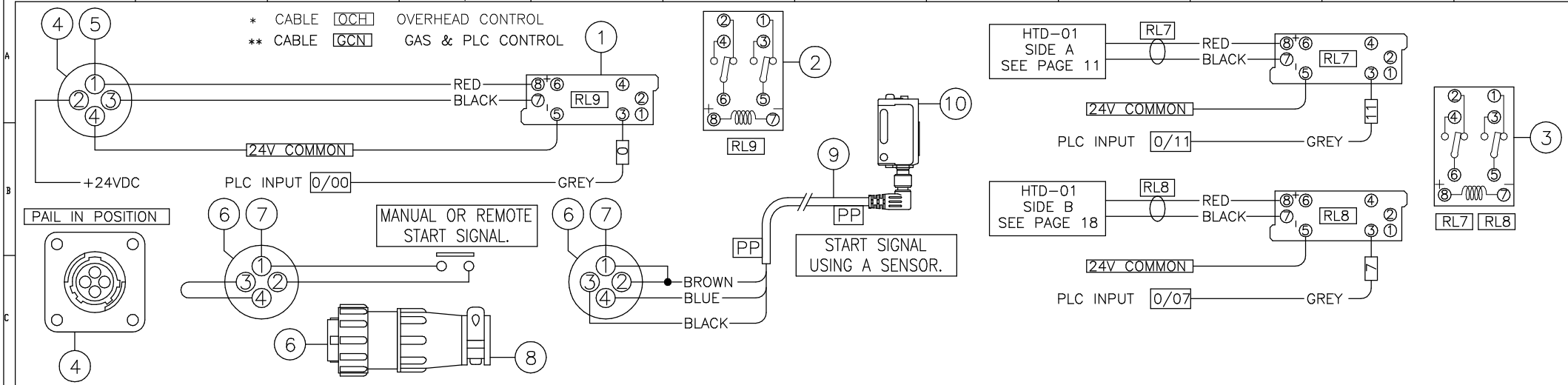
TITLE
PLC CONTROL SWITCHES

DRG.No. Z–6A354–01–1 REV. 1



	+24VDC	RED	+	COMMON	
	RL9 PAIL IN POSITION	GREY	0	00	0CH
	B1R B1 RAIL RETRACT SENSOR	BLACK	1	01	
	B2R B2 RAIL RETRACT SENSOR	BLACK	2	02	
*	ROA PRE FLAMER OVERHEAD RETRACT SENSOR	GREEN	3	03	
*	POA POST FLAMER OVERHEAD RETRACT SENSOR	YELLOW	4	04	
	A2R A2 RAIL RETRACT SENSOR	BLACK	5	05	
*	OHR OVERHEAD TAMP RETRACT SENSOR	WHITE	6	06	
	RL8 LABEL B ON/FINISHED	GREY	7	07	
	A1R A1 RAIL RETRACT SENSOR	BLACK	8	08	
**	RUN/JOG/SEQ SWITCH - RUN	WHITE	9	09	
**	RUN/JOG/SEQ SWITCH - SEQ	GREEN	10	10	
	RL7 LABEL A ON/FINISHED	GREY	11	11	
	PRODUCT ROTATOR SWITCH	GREY	12	00	1CH
	DS DOWN STREAM SENSOR	WHITE	13	01	
**	JOG/SEQ SWITCH	YELLOW	14	02	
**	FLAMERS AUTO SWITCH	PURPLE	15	03	
	RB PRE FLAMER BLOCKED SENSOR	WHITE	16	04	
	PB POST FLAMER BLOCKED SENSOR	WHITE	17	05	
	+24VDC	RED	+	COMMON	
*	ROB PRE FLAMER OVERHEAD RETRACT SENSOR	PINK	18	00	2CH
*	POB POST FLAMER OVERHEAD RETRACT SENSOR	BROWN	19	01	
	IR INDEXING CYLINDER RETRACT SENSOR	BLACK	20	02	
	IE INDEXING CYLINDER EXTEND SENSOR	BLACK	21	03	
	GT GATE SENSOR	WHITE	22	04	
**	PLC RESET SWITCH	BROWN	23	05	
	PRE FLAMER SWITCH	GREY	24	06	
	POST FLAMER SWITCH	GREY	25	07	
	RL4 PRE FLAMER RESET SIGNAL	GREY	26	08	
	RL6 POST FLAMER RESET SIGNAL	GREY	27	09	
	ENABLE LABELING SWITCH - HEAD A	GREY	28	10	
	ENABLE LABELING SWITCH - HEAD B	GREY	29	11	

COMMON	24V COMMON	BLACK				
00	30	BLACK	GATE 2 CONTROL	30	AIR SOLENOID	
COMMON	24V COMMON	BLACK				
01	31	BLACK	RAIL GRIP CONTROL	31	AIR SOLENOID	
COMMON	24V COMMON	BLACK				
02	32	BLACK	RAIL INDEX CONTROL	32	AIR SOLENOID	
03	33	PURPLE	PRE FLAMER OVEHEAD CLAMP	33	AIR SOLENOID	*
COMMON	24V COMMON	BLACK				
04	34	GREY	POST FLAMER OVEHEAD CLAMP	34	AIR SOLENOID	*
05	35	ORANGE	LABEL STATION OVERHEAD	35	AIR SOLENOID	*
06	36	GREY	PRE FLAMER CONTROL	36	RL3	
07	37	GREY	POST FLAMER CONTROL	37	RL5	
COMMON	24V COMMON	BLACK				
00	38	BLUE	FAULT INDICATION	38	INDICATOR	**
01	39	GREY	ROTATOR POWER CONTROL	39	RL2	
02	40	GREY	PRODUCT IN POSITION	40	HTD-01 : A & B	
03	41	BLACK	LABEL STATION TRAPS	41	AIR SOLENOID	
COMMON	24V COMMON	BLACK				
00	42	BLACK	MAIN AIR SUPPLY	42	AIR SOLENOID	
COMMON	24V COMMON	BLACK				
01	43	GREY	START ROTATOR CLOCK	43	HTD-01 : A	
COMMON	24V COMMON	BLACK				
02	44					
03	45					
COMMON	24V COMMON	BLACK				
04	46	BLACK	GATE 1 CONTROL	46	AIR SOLENOID	
05	47					
06	48					
07	49					

10CH 11CH 12CH

PARTS LIST

Item	Tronics No.	Manufactures No.	Description	Qty
1	V-REL-0009	PTF08A-E	RELAY BASE - SUIT LY2N	3
2	V-REL-0040	LY2N 24VDC	DPDT RELAY	1
3	V-REL-0015	LY2N 12VDC	DPDT RELAY	2
4	V-CTS-0020	206430-1	4 PIN PANEL MOUNT SOCKET	1
5	V-CTS-0014	66105-4	RECEPTACLE CONTACT	4
6	V-CTS-0011	206429-1	4 PIN PLUG PLUG	1
7	V-CTS-0013	66103-4	CONTACT PIN	4
8	V-CTS-0005	206062-3	CABLE CLAMP	1
9	V-SNR-0069	3833398	SENSOR LEAD R/A 8MM	1
10	V-SNR-0056	WL 160-N440	SENSOR - REFLEX - NPN	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	START AND READY RELAYS ADDED	DRD!	18/5 2000
3	READY RELAY REMOVED - GATE SENSOR ADDED	DRD!	25/6 2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

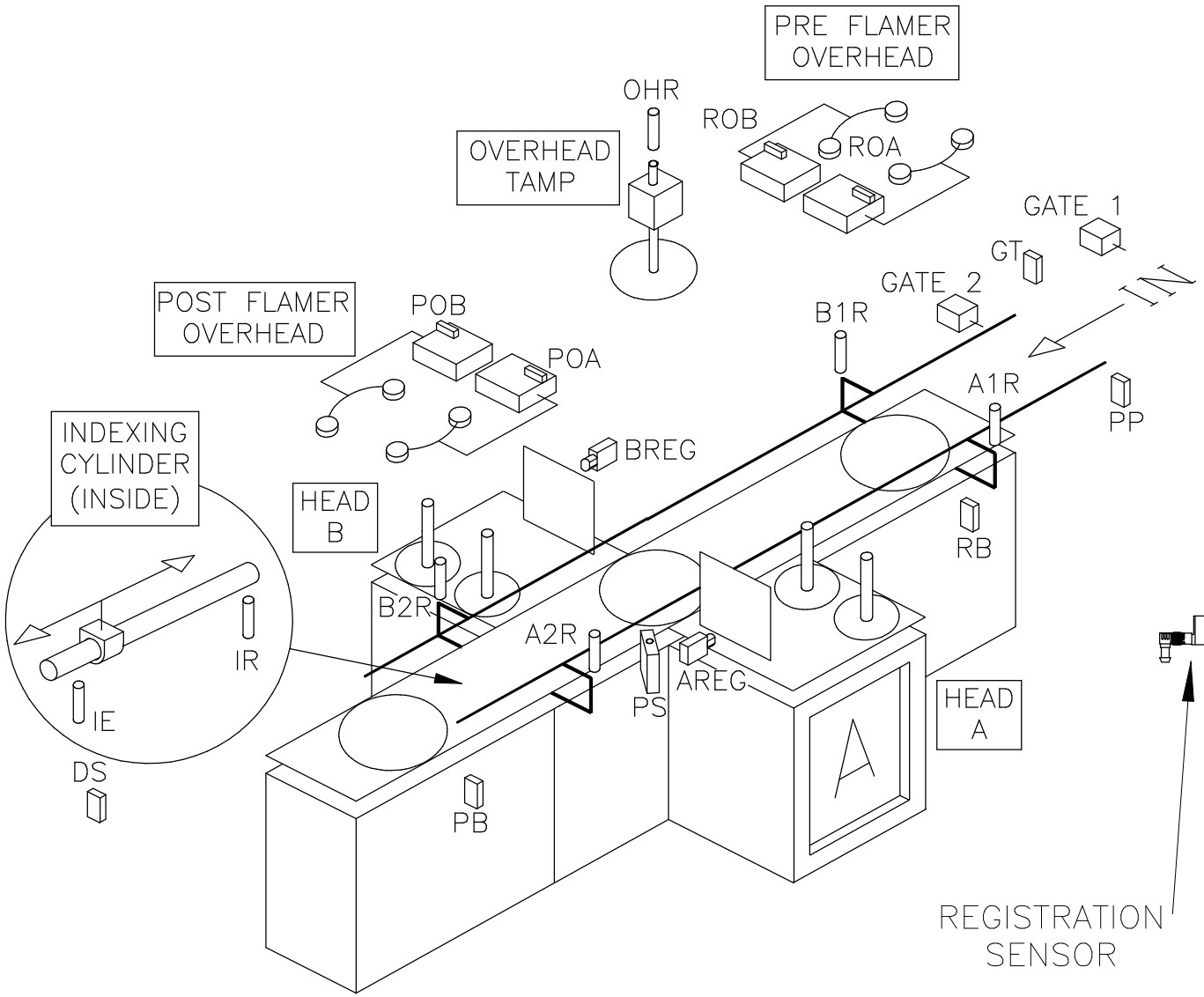
SHEET 2 OF 24

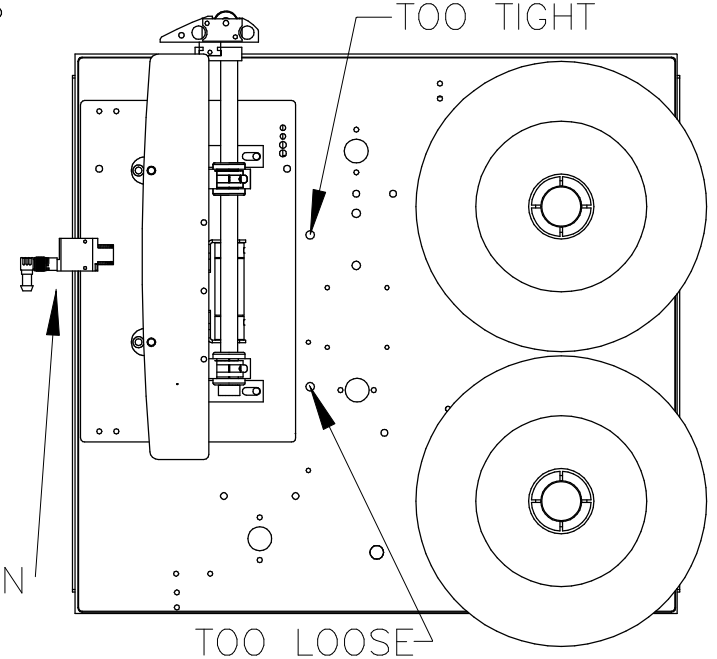
TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

SCALE	NOT TO SCALE	
DRAWN BY	DRD!	3/10
CHECKED	00073	1998

TITLE
PLC LOGIC WIRING

DRG.No. Z-6A351-01-1 REV. 3





DRAWING DESCRIPTION	SHEET	DWG NUMBER
SENSOR LAYOUT	1	Z-6A350-01-1
PLC LOGIC	2	Z-6A351-01-1
PLC AC	3	Z-6A352-01-1
AC PANEL	4	Z-6A353-01-1
GAS & PLC SWITCHES	5	Z-6A354-01-1
GAS CONTROL	6	Z-6A355-01-1
GAS SCHEMATIC	7	Z-6A356-01-1
OVERHEAD	8	Z-6A357-01-1
PS2 24V POWER SUPPLY	9	Z-6A358-01-1
SIDE A PANEL LAYOUT	10	Z-6A359-01-1
SIDE A HTD-01	11	Z-6A360-01-1
SIDE A AC	12	Z-6A361-01-1
SIDE A LV SWITCHES	13	Z-6A362-01-1
SIDE A HV SWITCHES	14	Z-6A363-01-1
SIDE A HEATERS & STOP	15	Z-6A364-01-1
STEPPER DRIVER LV DETAILS	16	Z-6A365-01-1
SIDE B PANEL LAYOUT	17	Z-6A366-01-1
SIDE B HTD-01	18	Z-6A367-01-1
SIDE B AC	19	Z-6A368-01-1
SIDE B LV SWITCHES	20	Z-6A369-01-1
SIDE B HV SWITCHES	21	Z-6A370-01-1
SIDE B HEATERS & STOP	22	Z-6A371-01-1
PS1 POWER SUPPLY	23	Z-6A372-01-1
TERMINAL COMPONENTS	24	Z-6A373-01-1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	INDEX UPDATE FOR DRAWING UPDATE	DRDI	2/2/00
3	INDEX UPDATE AND GATE MODIFICATION	DRDI	10/7/00

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

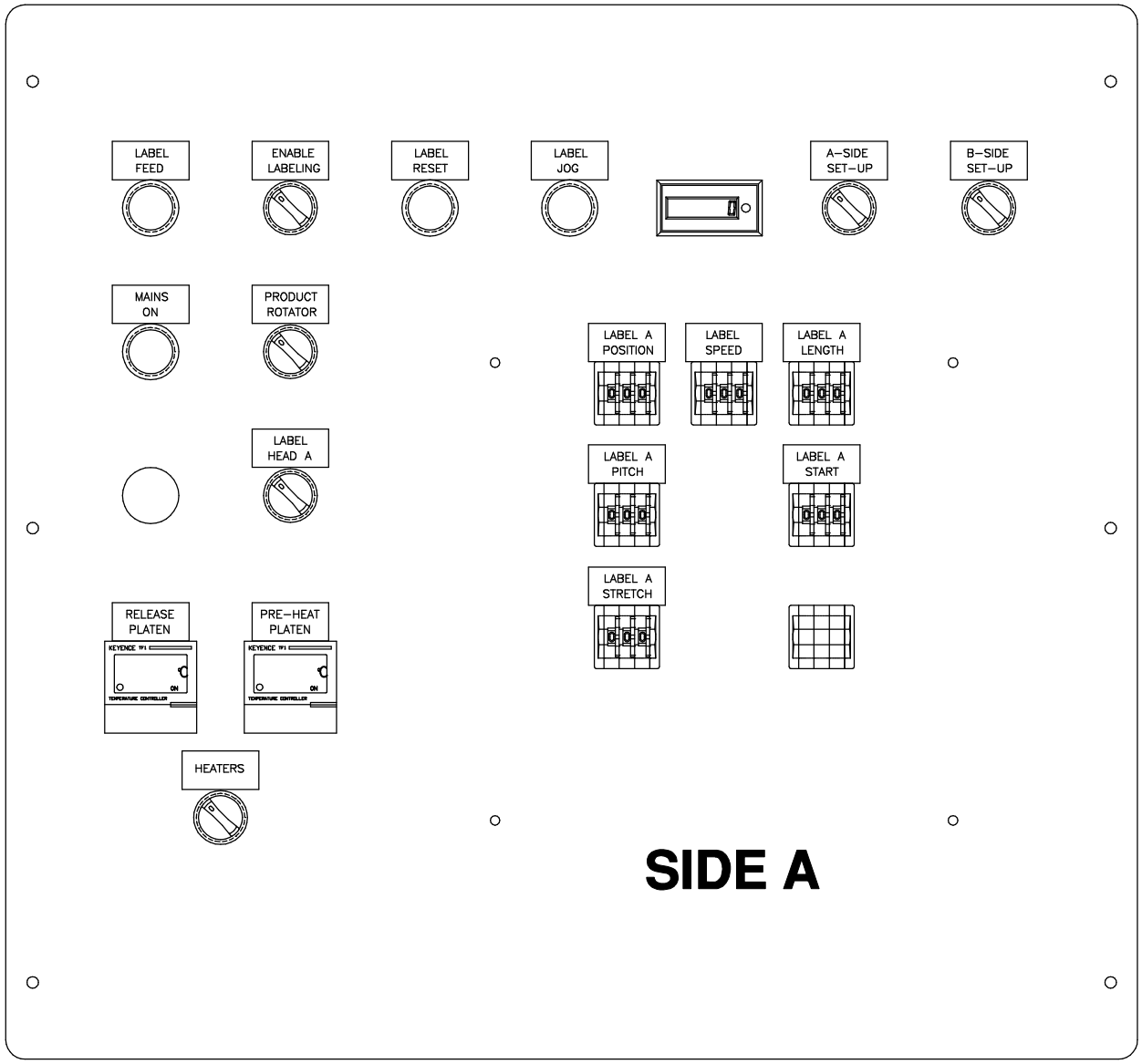
SHEET 1 OF 24

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

SCALE	NOT TO SCALE		
DRAWN BY	DRDI	9/10	
CHECKED	P****	1998	

TITLE
SENSOR OVERVIEW

DRG.No. Z-6A350-01-1 REV. 3



ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	UPDATED SWITCHES	DRDI	30/4/2001
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

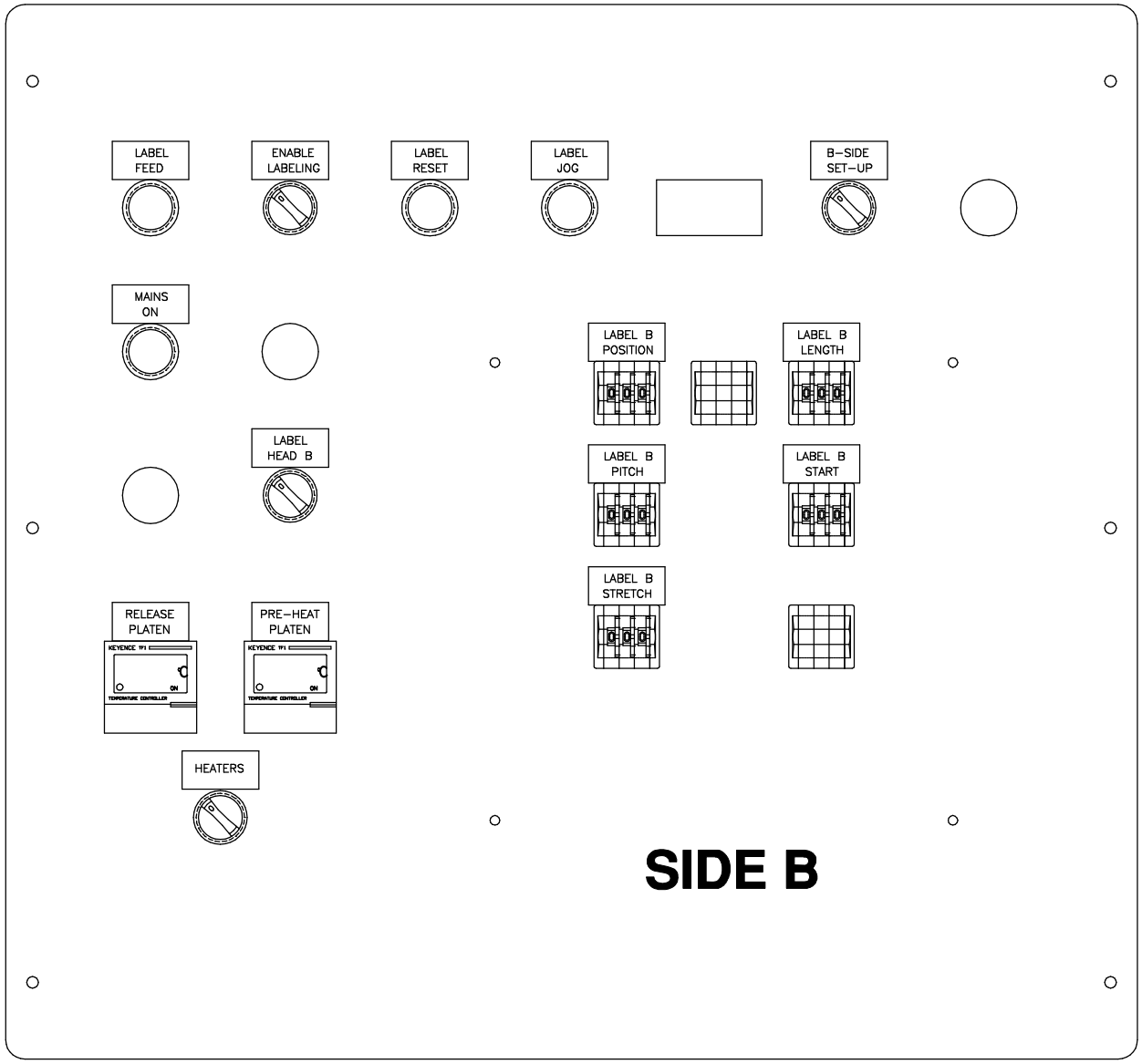
SHEET 10 OF 24

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61–3–9464 2400 Fax 61–3–9464 2538

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	2/10
	P****	1998

TITLE
SIDE A CONTROL PANEL

DRG.No. Z–6A359–01–1 REV. 2



ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	UPDATED SWITCHES	DRDI	30/4/2001
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

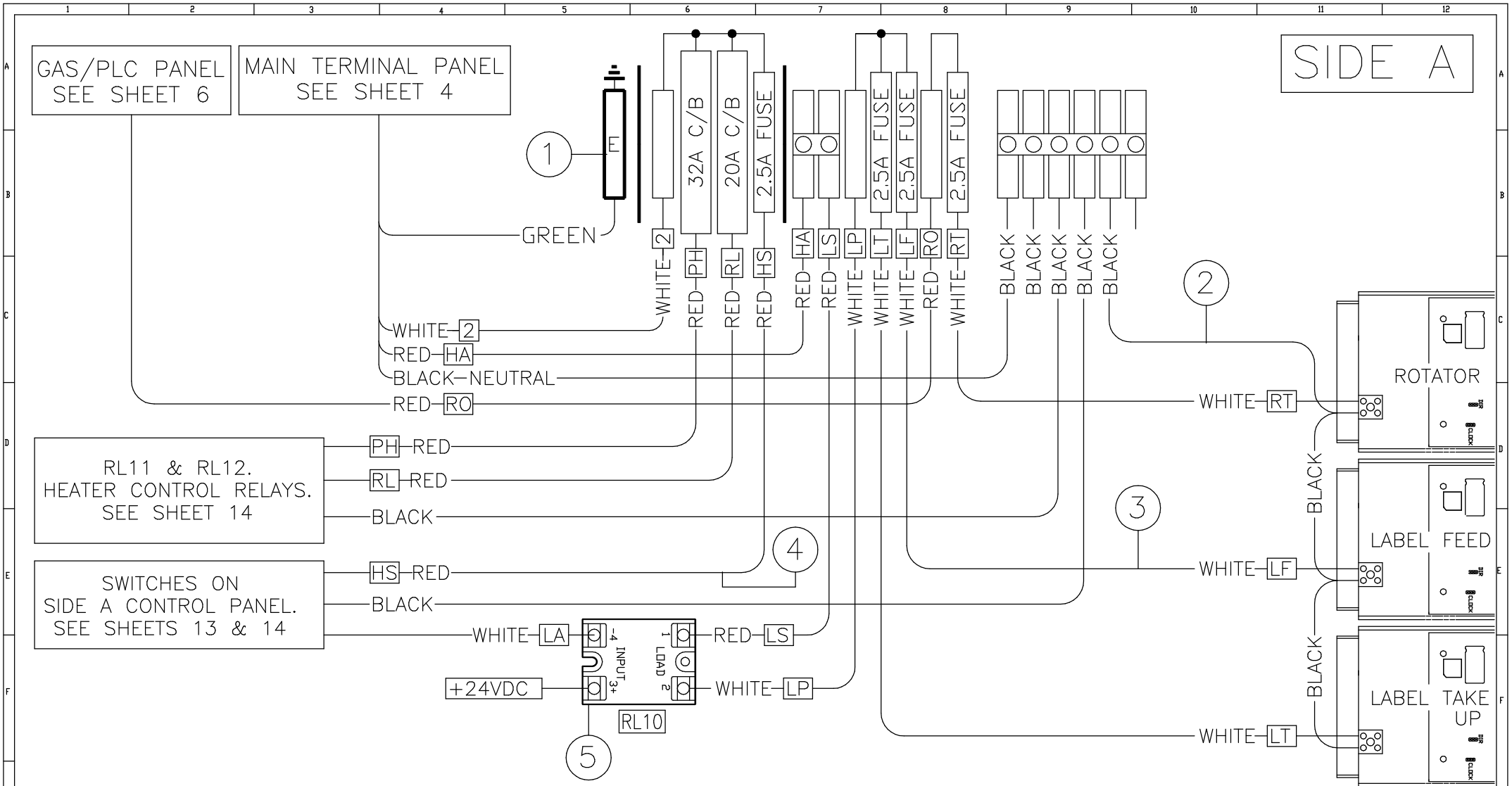
SHEET 17 OF 24

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	2/10
	P****	1998

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
SIDE B CONTROL PANEL

DRG.No. Z-6A366-01-1 REV. 2



Item	Tronics No.	Manufactures No.	Description	Qty
1		TERMINALS	SEE DRAWING Z-6A373-01-1	1
2	R-WRE-0003	CW32BK	32/0.2mm BLACK HOOK UP WIRE	4M
3	R-WRE-0030	CW32WH	32/0.2mm WHITE HOOK UP WIRE	3M
4	R-WRE-0024	CW32RD	32/0.2mm RED HOOK UP WIRE	2M
5	V-REL-0023	G3NA-210B	SOLID STATE RELAY - 10A	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	ADD LABEL HEAD SOLID STATE RELAY	DRDI	1/5/2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 12 OF 24

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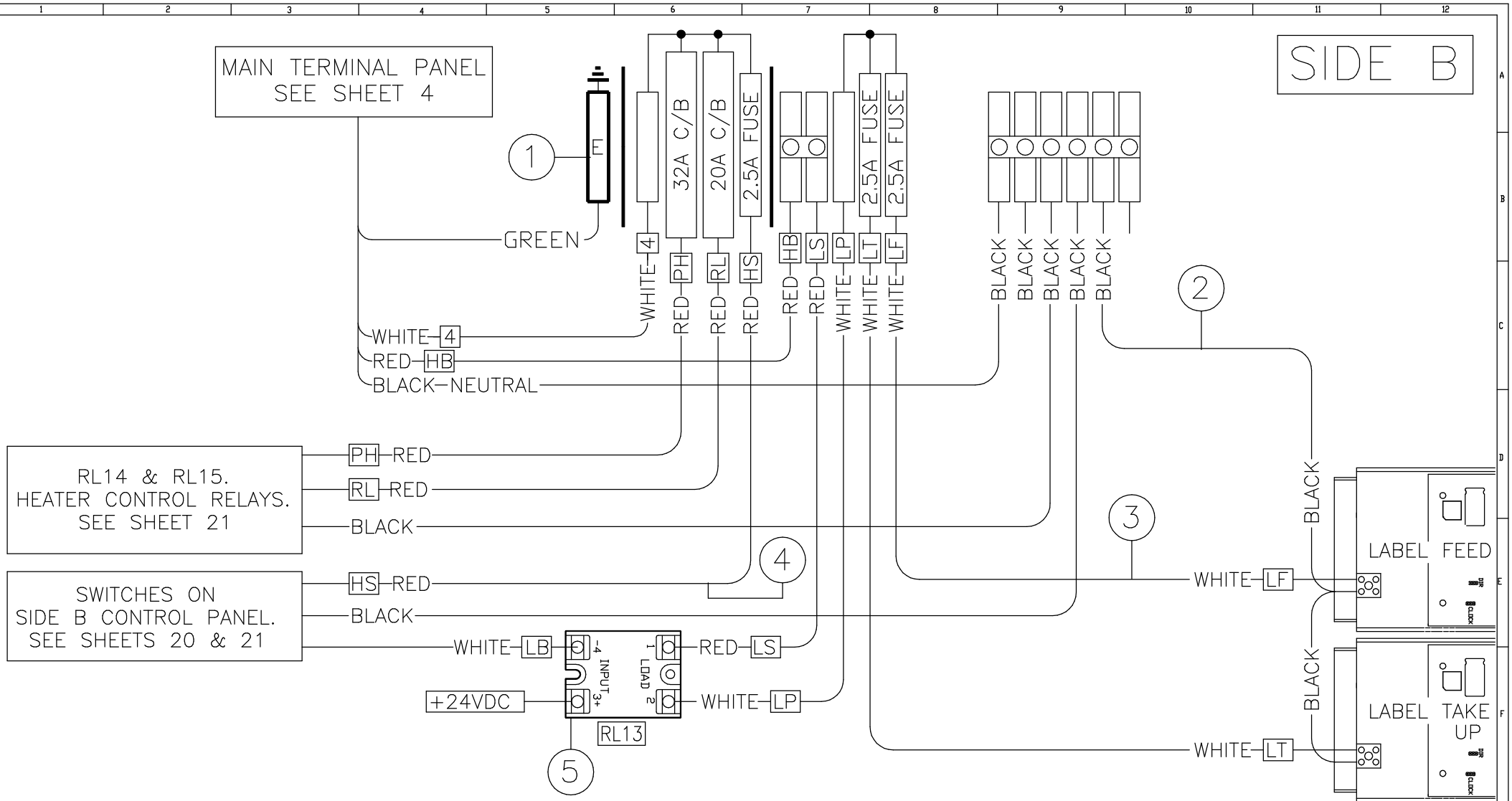
SCALE	NOT TO SCALE	
DRAWN BY	DRDI	2/10
	P****	1998

TITLE: SIDE A AC WIRING

DRG.No. Z-6A361-01-1 REV. 2



Item	Tronics No.	Manufactures No.	Description	Qty
1		TERMINALS	SEE DRAWING Z-6A373-01-1	1
2	R-WRE-0003	CW32BK	32/0.2mm BLACK HOOK UP WIRE	4M
3	R-WRE-0030	CW32WH	32/0.2mm WHITE HOOK UP WIRE	3M
4	R-WRE-0024	CW32RD	32/0.2mm RED HOOK UP WIRE	2M
5	V-REL-0023	G3NA-210B	SOLID STATE RELAY - 10A	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	ADD LABEL HEAD SOLID STATE RELAY	DRDI	1/5/2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 19 OF 24

SCALE NOT TO SCALE

DRAWN BY DRDI 2/10

P**** 1998

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VIC 3074, AUSTRALIA
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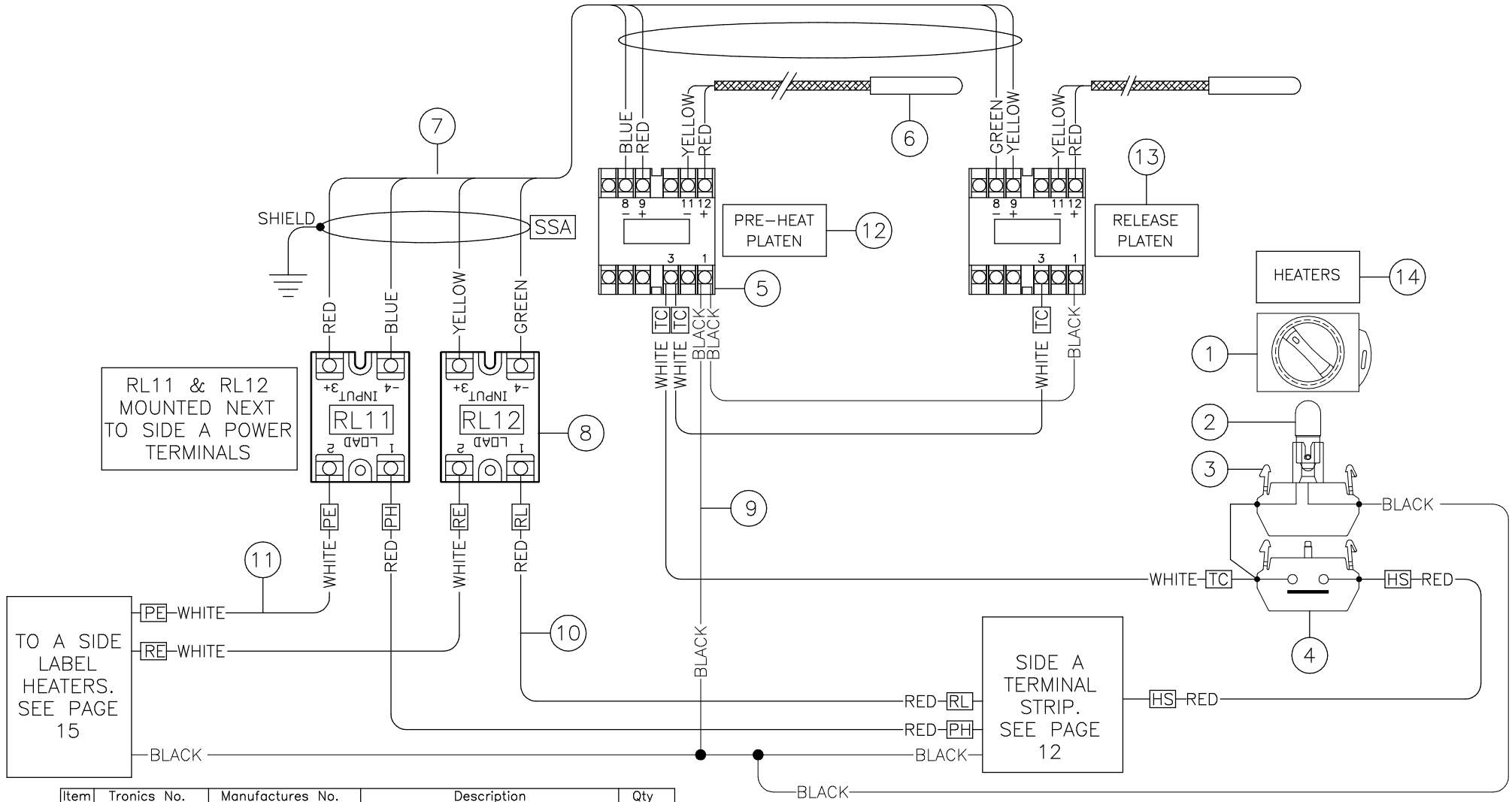
TITLE
SIDE B AC WIRING

DRG.No. Z-6A368-01-1 REV. 2



Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0087	P9CSLD0V	ILL. GREEN KNOB	1
2	V-SWT-0092	BA9S240	GLOBE 240V	1
3	V-SWT-0086	P9PDNV0	LAMP HOLDER	1
4	V-SWT-0084	P9B10VN	N/O BLOCK	1
5	V-HTR-0001	TF1-10	TEMPERATURE CONTROLLER	2
6	V-HTR-0012	J50STK	THERMOCOUPLE - 5MM X 30	2
7	R-CBL-0015	MC16-4S	SHIELDED 4 CORE CABLE	1Mtr
8	V-REL-0024	G3NA-240B	SOLID STATE RELAY - 40A	2
9	R-WRE-0003	CW32BK	BLACK HOOK UP WIRE - 32/0.2mm	1Mtr
10	R-WRE-0024	CW32RD	RED HOOK UP WIRE - 32/0.2mm	1Mtr
11	R-WRE-0030	CW32WH	WHITE HOOK UP WIRE - 32/0.2mm	1Mtr
12	V-LBL-0188	V-LBL-0188	LABEL TRAFALITE "PREHEAT PLATEN"	1
13	V-LBL-0302	V-LBL-0302	LABEL TRAFALITE "RELEASE PLATEN"	1
14	V-LBL-0112	V-LBL-0112	LABEL TRAFALITE "HEATERS"	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 14 OF 24

TRONICS™
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VIC 3074, AUSTRALIA
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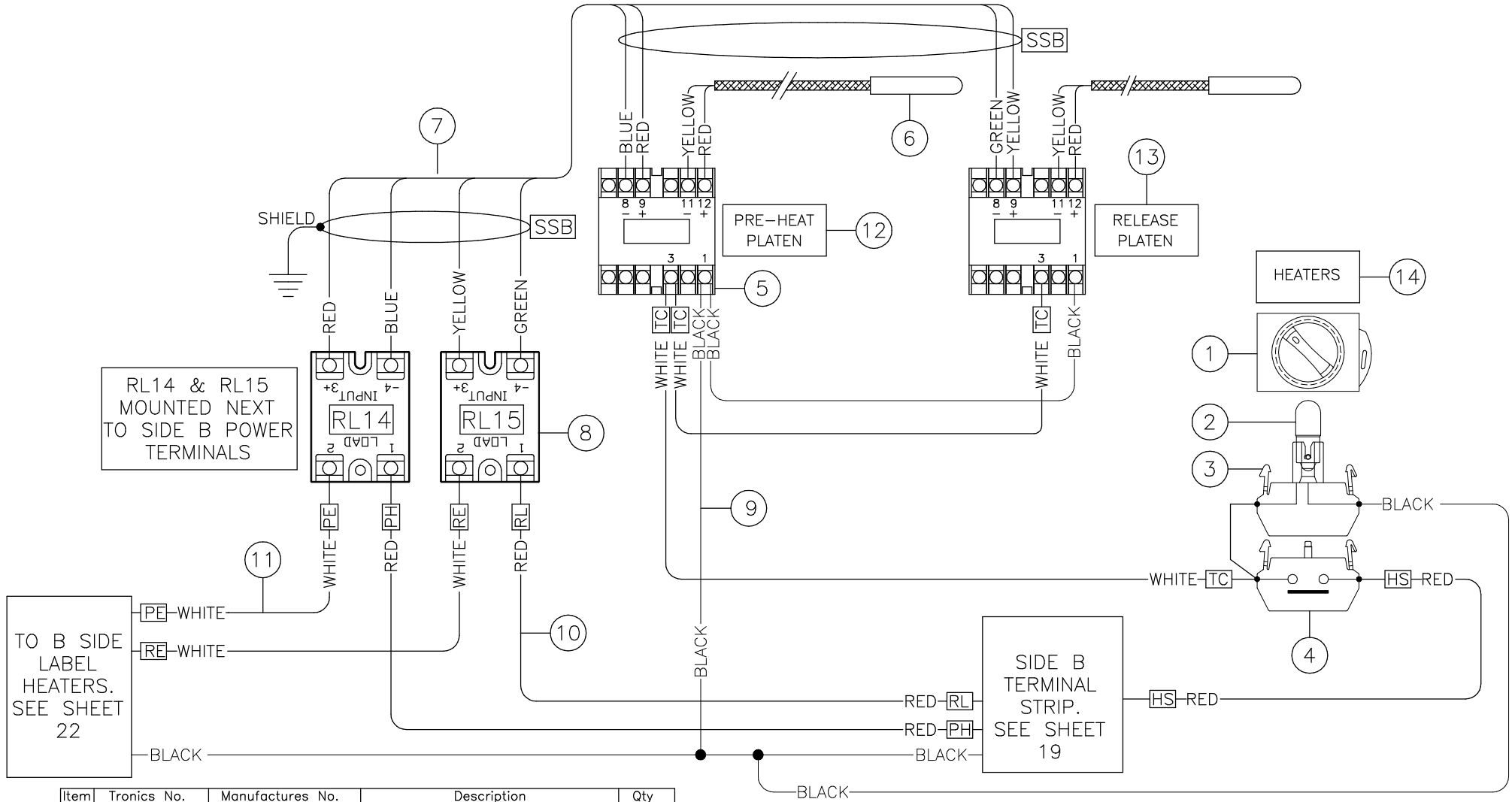
SCALE	NOT TO SCALE	
DRAWN BY	DRDI	1/10
	P****	1998

TITLE
SIDE A HEATER CONTROL

DRG.No. Z-6A363-01-1 REV. 2



Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0087	P9CSLD0V	ILL. GREEN KNOB	1
2	V-SWT-0092	BA9S240	GLOBE 240V	1
3	V-SWT-0086	P9PDNV0	LAMP HOLDER	1
4	V-SWT-0084	P9B10VN	N/O BLOCK	1
5	V-HTR-0001	TF1-10	TEMPERATURE CONTROLLER	2
6	V-HTR-0012	J50STK	THERMOCOUPLE - 5MM X 30	2
7	R-CBL-0015	MC16-4S	SHIELDED 4 CORE CABLE	1Mtr
8	V-REL-0024	G3NA-240B	SOLID STATE RELAY - 40A	2
9	R-WRE-0003	CW32BK	BLACK HOOK UP WIRE - 32/0.2mm	1Mtr
10	R-WRE-0024	CW32RD	RED HOOK UP WIRE - 32/0.2mm	1Mtr
11	R-WRE-0030	CW32WH	WHITE HOOK UP WIRE - 32/0.2mm	1Mtr
12	V-LBL-0188	V-LBL-0188	LABEL TRAFALITE "PREHEAT PLATEN"	1
13	V-LBL-0302	V-LBL-0302	LABEL TRAFALITE "RELEASE PLATEN"	1
14	V-LBL-0112	V-LBL-0112	LABEL TRAFALITE "HEATERS"	1

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 21 OF 24

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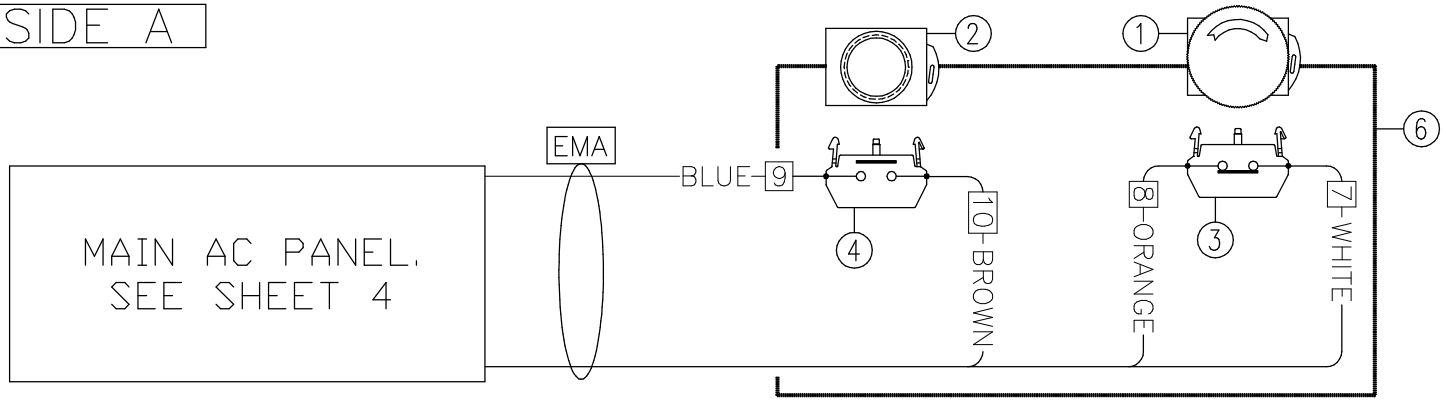
SCALE	NOT TO SCALE	
DRAWN BY	DRDI	1/10
	P****	1998

TITLE
SIDE B HEATER CONTROL

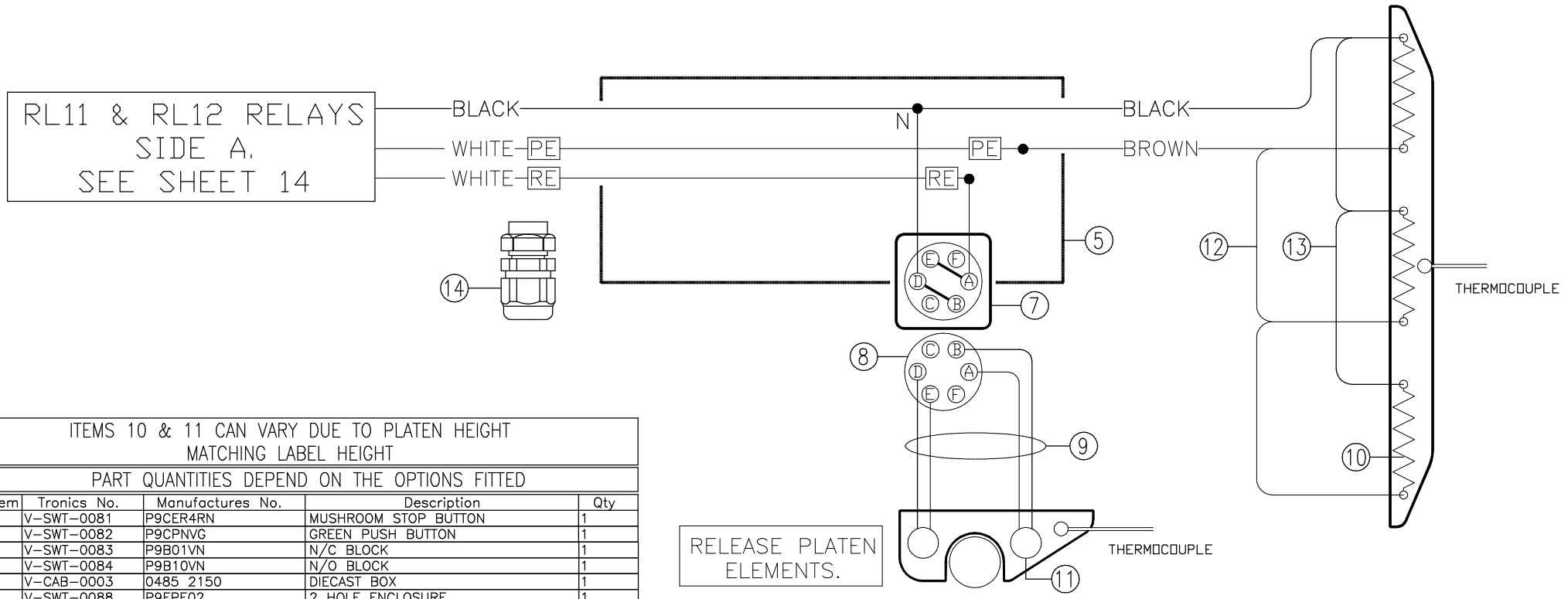
DRG.No. Z-6A370-01-1 REV. 2

SIDE A



FOR THERMOCOUPLE CONNECTIONS SEE PAGE 14

PREHEAT PLATEN ELEMENTS.



RELEASE PLATEN ELEMENTS.

ITEMS 10 & 11 CAN VARY DUE TO PLATEN HEIGHT MATCHING LABEL HEIGHT

PART QUANTITIES DEPEND ON THE OPTIONS FITTED

Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0081	P9CER4RN	MUSHROOM STOP BUTTON	1
2	V-SWT-0082	P9CPNVG	GREEN PUSH BUTTON	1
3	V-SWT-0083	P9B01VN	N/C BLOCK	1
4	V-SWT-0084	P9B10VN	N/O BLOCK	1
5	V-CAB-0003	0485 2150	DIECAST BOX	1
6	V-SWT-0088	P9EPE02	2 HOLE ENCLOSURE	1
7	V-SKT-0059	MS 3102R 14S-6S	6 PIN PANEL SOCKET	1
8	V-PLG-0017	MS 3106F 14S-6P	6 PIN PLUG	1
9	V-SLV-0005	8 MM	SLEEVING-SILICON (WHITE)	.5Mtr
10	V-HTR-0020	M41469-0	HEATING ELEMENT - 340 X 110	3
11	V-HTR-0019	M32890/2	HEATING ELEMENT - 13" X 5/8"	2
12	R-WRE-0045	CW32S	BROWN SILICONE HOOK UP WIRE	.3Mtr
13	R-WRE-0047	CW32BKS	BLACK SILICONE HOOK UP WIRE	.3Mtr
14	V-GRM-0007	CG20	20mm GLANDS	2

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 15 OF 24

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	7/10
	P****	1998

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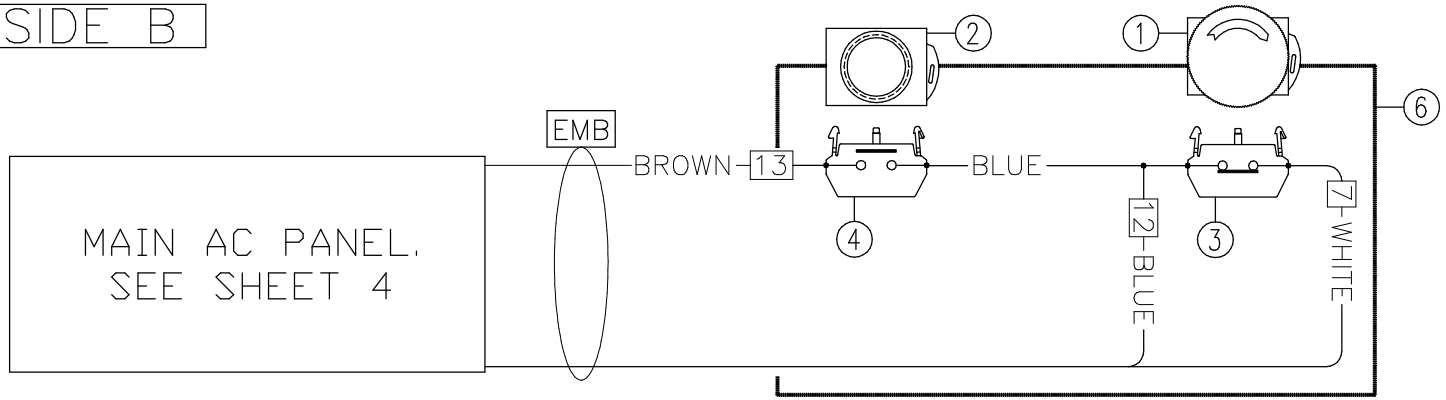
TITLE
SIDE A HEATERS

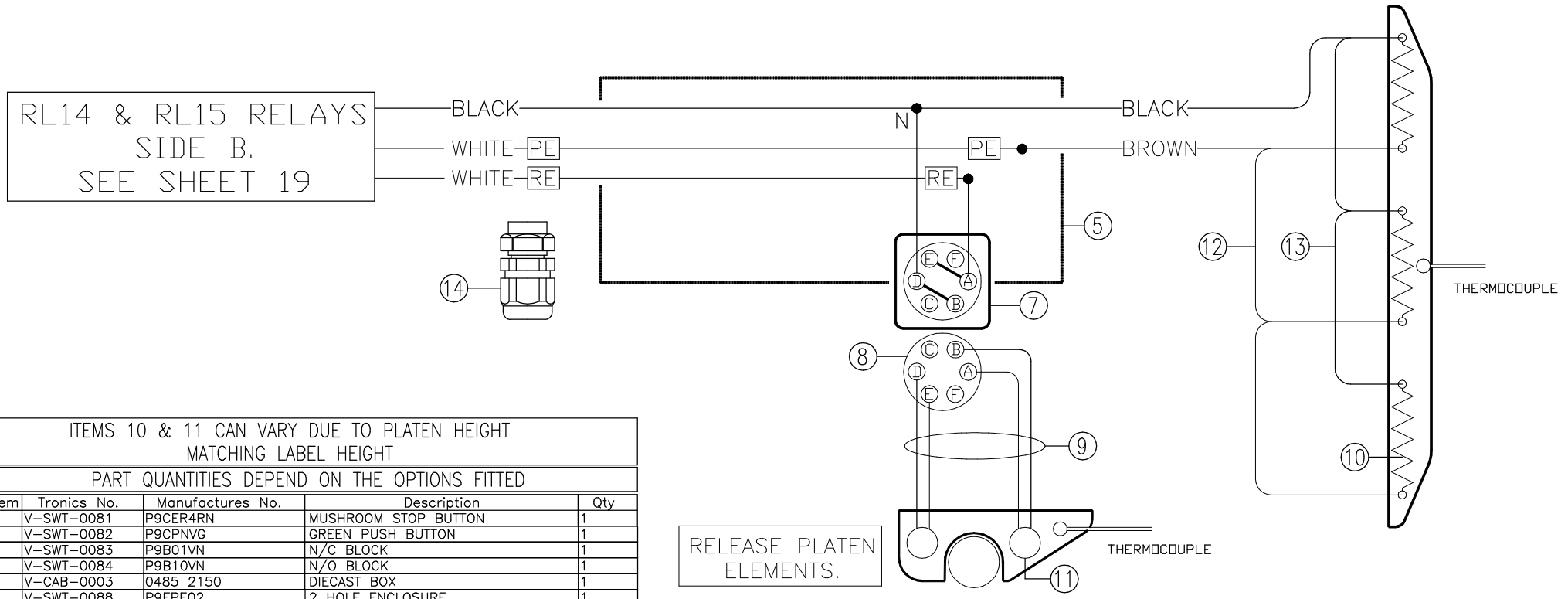
DRG.No. Z-6A364011 REV. 1

SIDE B



FOR THERMOCOUPLE CONNECTIONS SEE SHEET 21

PREHEAT PLATEN ELEMENTS.



RELEASE PLATEN ELEMENTS.

ITEMS 10 & 11 CAN VARY DUE TO PLATEN HEIGHT MATCHING LABEL HEIGHT

PART QUANTITIES DEPEND ON THE OPTIONS FITTED

Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0081	P9CER4RN	MUSHROOM STOP BUTTON	1
2	V-SWT-0082	P9CPNVG	GREEN PUSH BUTTON	1
3	V-SWT-0083	P9B01VN	N/C BLOCK	1
4	V-SWT-0084	P9B10VN	N/O BLOCK	1
5	V-CAB-0003	0485 2150	DIECAST BOX	1
6	V-SWT-0088	P9EPE02	2 HOLE ENCLOSURE	1
7	V-SKT-0059	MS 3102R 14S-6S	6 PIN PANEL SOCKET	1
8	V-PLG-0017	MS 3106F 14S-6P	6 PIN PLUG	1
9	V-SLV-0005	8 MM	SLEEVING-SILICON (WHITE)	.5Mtr
10	V-HTR-0020	M41469-0	HEATING ELEMENT - 340 X 110	3
11	V-HTR-0019	M32890/2	HEATING ELEMENT - 13" X 5/8"	2
12	R-WRE-0045	CW32S	BROWN SILICONE HOOK UP WIRE	.3Mtr
13	R-WRE-0047	CW32BKS	BLACK SILICONE HOOK UP WIRE	.3Mtr
14	V-GRM-0007	CG20	20mm GLANDS	2

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 22 OF 24

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	7/10
	P****	1998

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VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
SIDE B HEATERS

DRG.No. Z-6A371-01-1 REV. 1

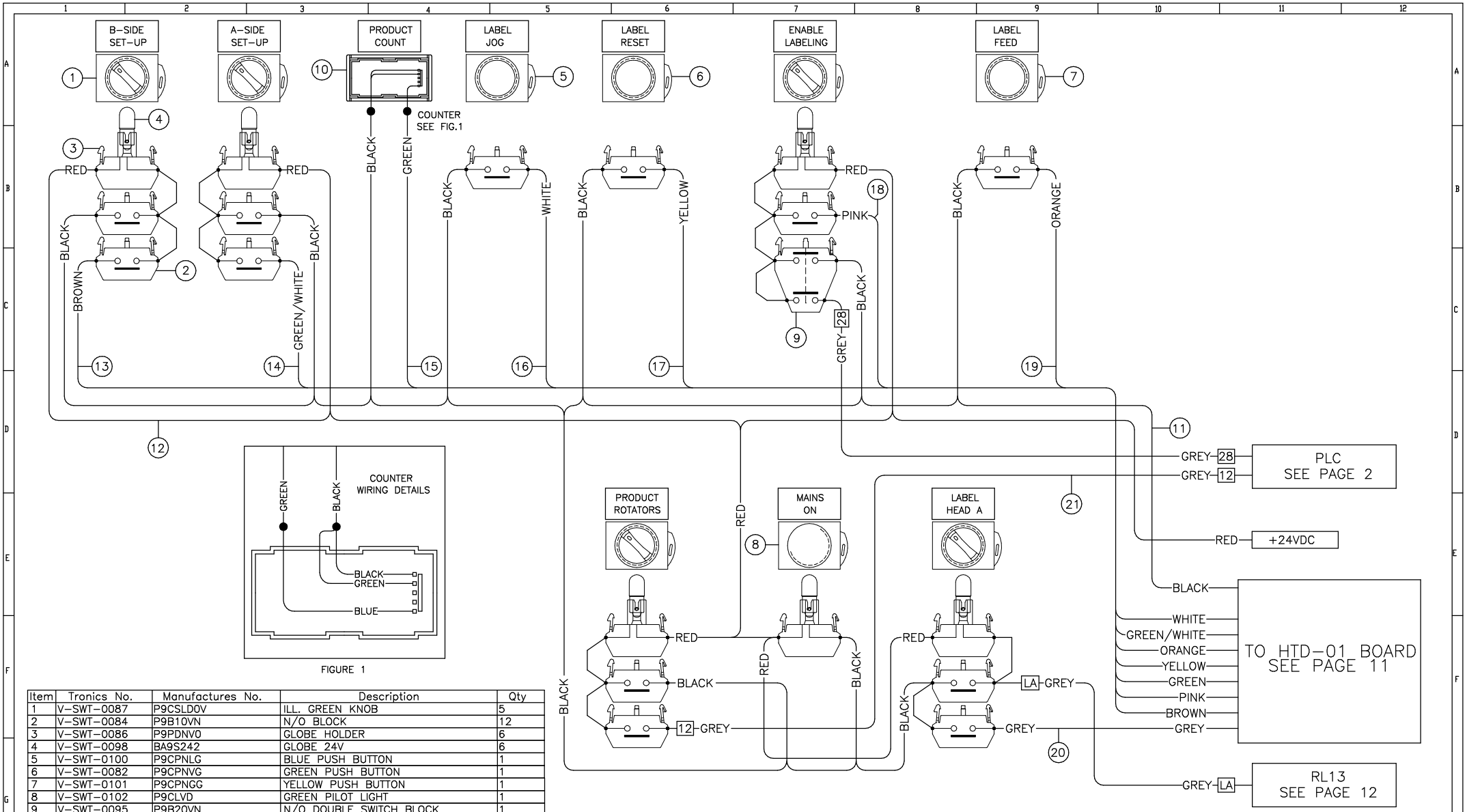


FIGURE 1

Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0087	P9CSLD0V	ILL. GREEN KNOB	5
2	V-SWT-0084	P9B10VN	N/O BLOCK	12
3	V-SWT-0086	P9PDNV0	GLOBE HOLDER	6
4	V-SWT-0098	BA9S242	GLOBE 24V	6
5	V-SWT-0100	P9CPNLG	BLUE PUSH BUTTON	1
6	V-SWT-0082	P9CPNVG	GREEN PUSH BUTTON	1
7	V-SWT-0101	P9CPNGG	YELLOW PUSH BUTTON	1
8	V-SWT-0102	P9CLVD	GREEN PILOT LIGHT	1
9	V-SWT-0095	P9B20VN	N/O DOUBLE SWITCH BLOCK	1
10	V-MIS-0135	7110 DIN	COUNTER	1
11	R-WRE-0005	CW7BK	BLACK HOOK UP WIRE 7/0.2mm	1 Mtr
12	R-WRE-0027	CW7RD	RED HOOK UP WIRE 7/0.2mm	1 Mtr
13	R-WRE-0011	CW7BN	BROWN HOOK UP WIRE 7/0.2mm	1 Mtr
14	R-WRE-0014	CW7GN/WH	GREEN/WHITE HOOK UP WIRE 7/0.2mm	1 Mtr
15	R-WRE-0013	CW7GN	GREEN HOOK UP WIRE 7/0.2mm	1 Mtr
16	R-WRE-0032	CW7WH	WHITE HOOK UP WIRE 7/0.2mm	1 Mtr
17	R-WRE-0034	CW7YE	YELLOW HOOK UP WIRE 7/0.2mm	1 Mtr
18	R-WRE-0021	CW7PK	PINK HOOK UP WIRE 7/0.2mm	1 Mtr
19	R-WRE-0019	CW7OG	ORANGE HOOK UP WIRE 7/0.2mm	1 Mtr
20	R-WRE-0016	CW7GY	GREY HOOK UP WIRE 7/0.2mm	1 Mtr
21	R-WRE-0015	CW16GY	GREY HOOK UP WIRE 16/0.2mm	3 Mtr

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	UPDATE LABEL HEAD SWITCH WIRING	DRDI	1/5/2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

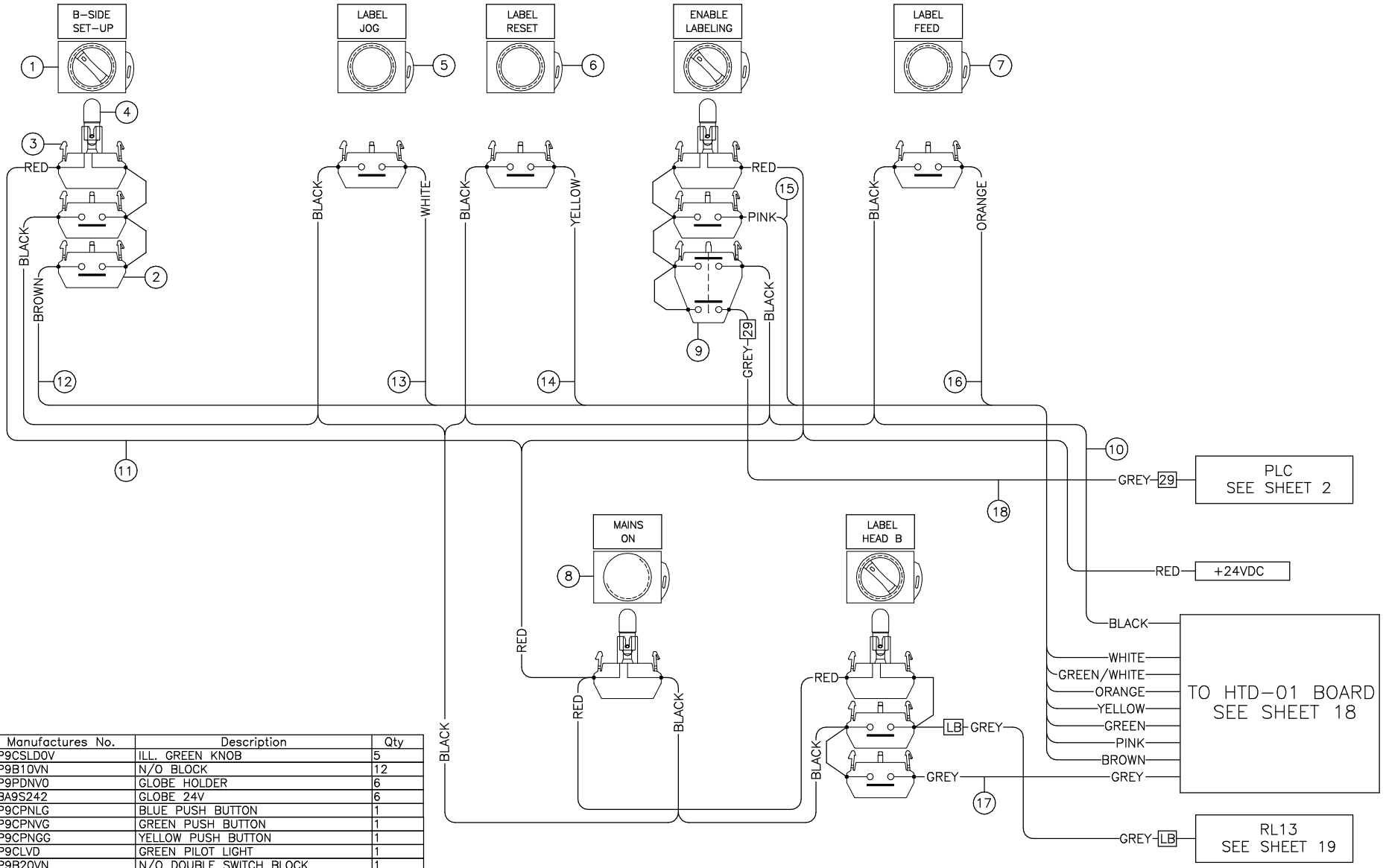
SHEET 13 OF 24

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	30/9
	P****	1998

TITLE
SIDE A SWITCH WIRING

DRG.No. Z-6A362-01-1 REV. 2



Item	Tronics No.	Manufactures No.	Description	Qty
1	V-SWT-0087	P9CSLD0V	ILL. GREEN KNOB	5
2	V-SWT-0084	P9B10VN	N/O BLOCK	12
3	V-SWT-0086	P9PDNV0	GLOBE HOLDER	6
4	V-SWT-0098	BA9S242	GLOBE 24V	6
5	V-SWT-0100	P9CPNLG	BLUE PUSH BUTTON	1
6	V-SWT-0082	P9CPNVG	GREEN PUSH BUTTON	1
7	V-SWT-0101	P9CPNGG	YELLOW PUSH BUTTON	1
8	V-SWT-0102	P9CLVD	GREEN PILOT LIGHT	1
9	V-SWT-0095	P9B20VN	N/O DOUBLE SWITCH BLOCK	1
10	R-WRE-0005	CW7BK	BLACK HOOK UP WIRE 7/0.2mm	1 Mtr
11	R-WRE-0027	CW7RD	RED HOOK UP WIRE 7/0.2mm	1 Mtr
12	R-WRE-0011	CW7BN	BROWN HOOK UP WIRE 7/0.2mm	1 Mtr
13	R-WRE-0032	CW7WH	WHITE HOOK UP WIRE 7/0.2mm	1 Mtr
14	R-WRE-0034	CW7YE	YELLOW HOOK UP WIRE 7/0.2mm	1 Mtr
15	R-WRE-0021	CW7PK	PINK HOOK UP WIRE 7/0.2mm	1 Mtr
16	R-WRE-0019	CW7OG	ORANGE HOOK UP WIRE 7/0.2mm	1 Mtr
17	R-WRE-0016	CW7GY	GREY HOOK UP WIRE 7/0.2mm	1 Mtr
18	R-WRE-0015	CW16GY	GREY HOOK UP WIRE 16/0.2mm	3 Mtr

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	UPDATE LABEL HEAD SWITCH WIRING	DRDI	1/5/2001

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 20 OF 24

TRONICS™
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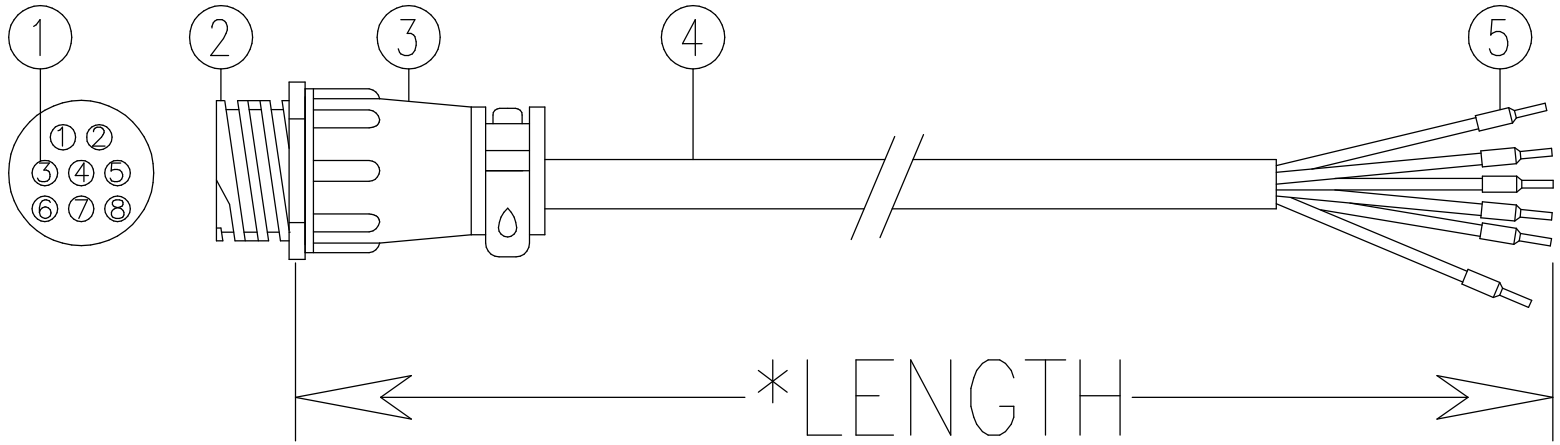
Phone 61-3-9464 2400 Fax 61-3-9464 2538

SCALE	NOT TO SCALE	
DRAWN BY	DRDI	30/9
	P****	1998

TITLE
SIDE B SWITCH WIRING

DRG.No. Z-6A369-01-1 REV. 2

3	BLACK
4	WHITE
5	GREEN
6	RED
7	YELLOW
8	BLUE



STEPPER DRIVER

CABLE LENGTHS FOR LEAKER	
MAIN CONVEYOR	1M

CABLE LENGTH FOR STANDALONE	
LABEL HEAD	3M
AUXILLARY DRIVER	3M

CABLE LENGTHS FOR SERIES 3	
MAIN CONVEYOR	5.5M
WRAP	5.5M
OVERHEAD	9M
HEAD A	4M
HEAD B	4M
ALIGNER A	3.5M
ALIGNER B	3.5M
SPACER or SCROLL	3.5M
TOTAL	38.5M

PARTS LIST

Item	Tronics No.	Manufactures No.	Description	Qty
1	V-CTS-0012	1-66504-0	RECEPTACLE CONTACT	8
2	V-CTS-0006	206433-2	8-PIN IN-LINE SOCKET	1
3	V-CTS-0005	206062-3	CABLE CLAMP	1
4	R-CBL-0018	MC14-6	6 CORE CABLE	*
5	V-CRP-0005	CE075	BLUE BOOTLACE	6

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 1 OF 1

SCALE NOT TO SCALE

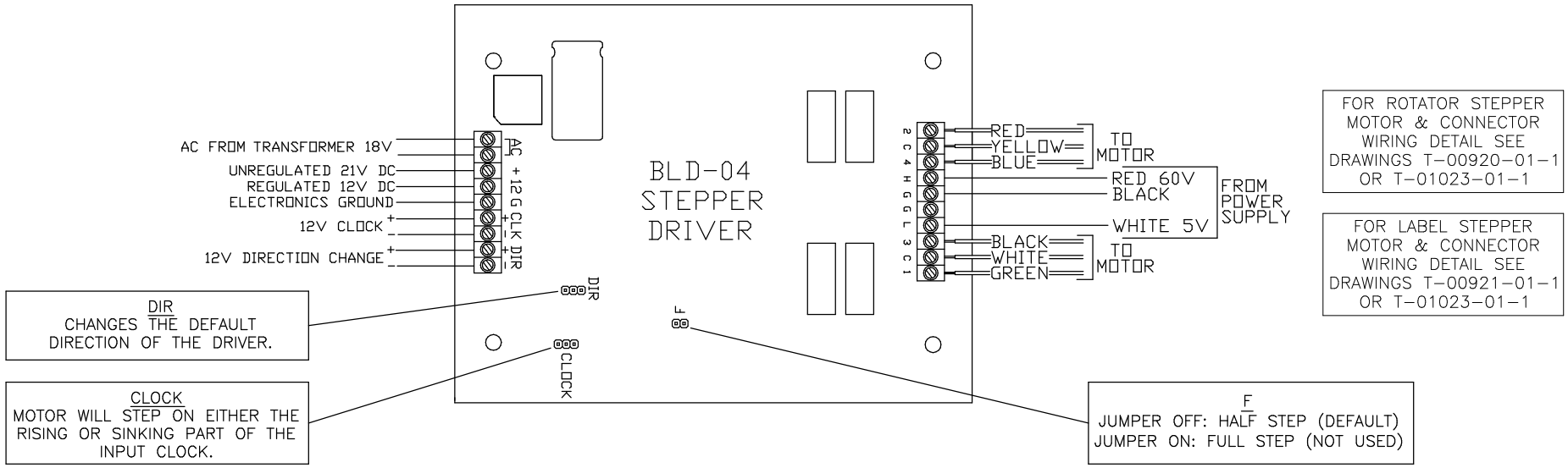
DRAWN BY DRDI 28/3

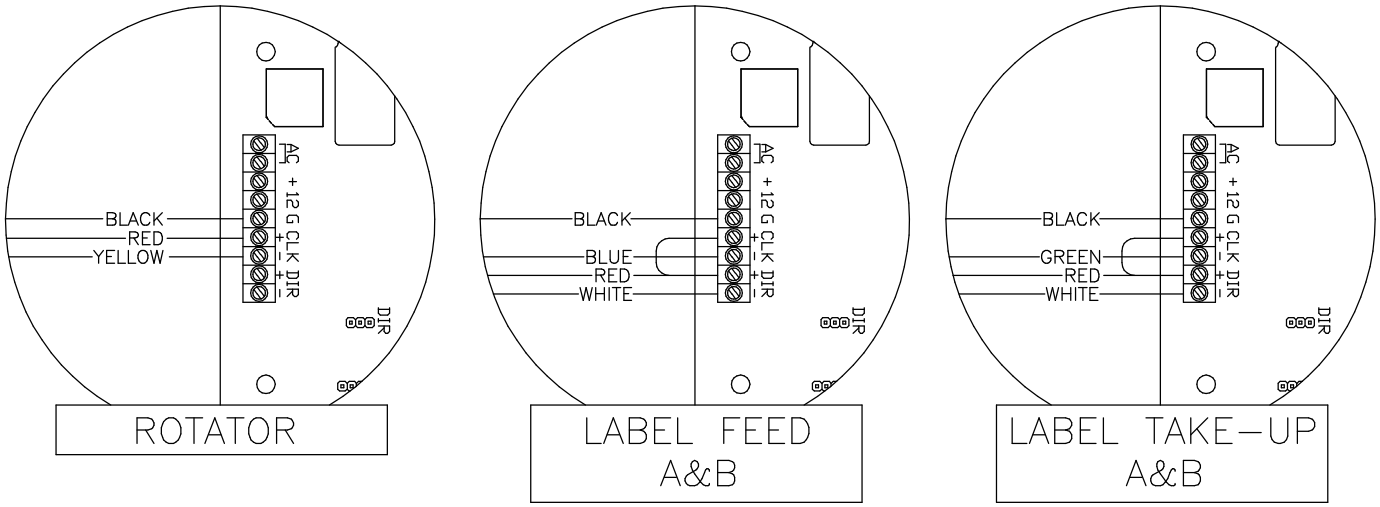
CHECKED P**** 2001

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

TITLE
STEPPER DRIVER MOTOR CABLE

DRG.No. T-01023-01-1 REV. 1





ISS. No.	DETAILS OF CHANGE	DRAWN	DATE
2	EXTERNAL 12VDC ADDED TO DRIVERS	DRDI	22/6/2001
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THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 16 OF 24

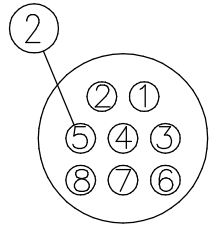
TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

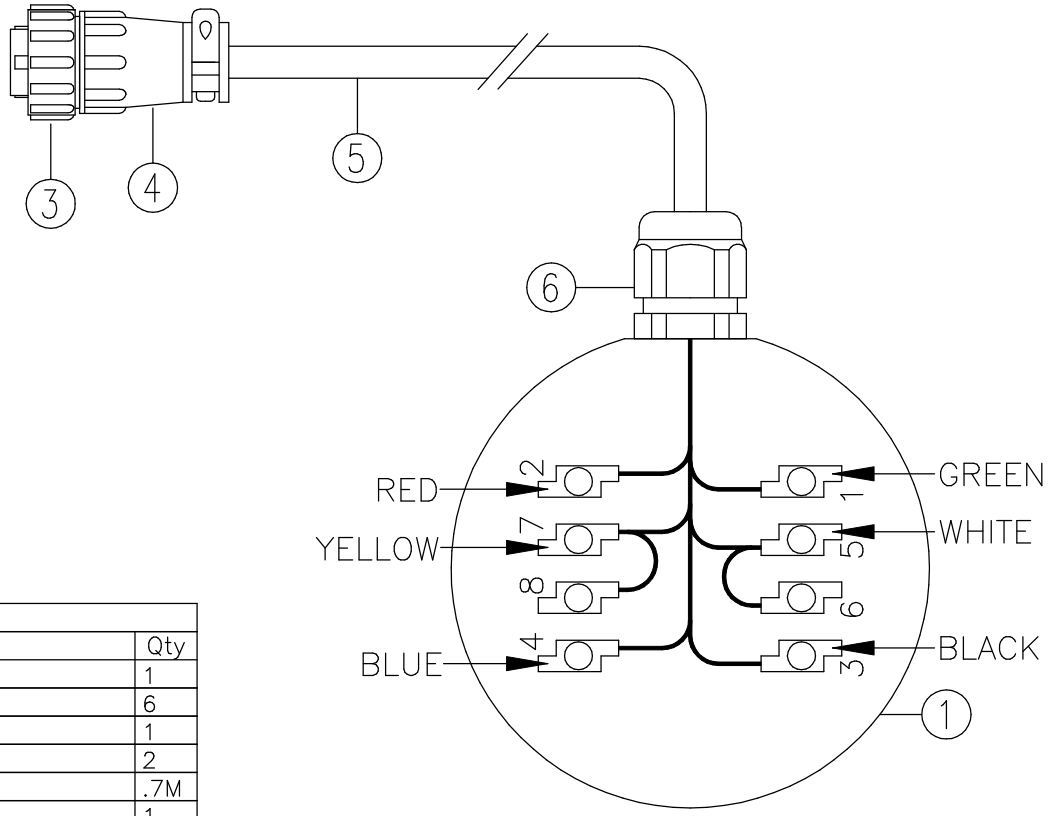
SCALE	NOT TO SCALE	
DRAWN BY	DRDI	10/10
	P****	1998

TITLE
STEPPER DRIVER CONNECTIONS

DRG.No. Z-6A365-01-1 REV. 2

3	BLACK
4	WHITE
5	GREEN
6	RED
7	YELLOW
8	BLUE





PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V-MTR-0003	103-8932-0240	MOTOR STEPPER	1
2	V-CTS-0015	1-66506-0	CONTACT PIN	6
3	V-CTS-0004	206434-1	PLUG - 8 PIN	1
4	V-CTS-0005	206062-3	CABLE CLAMP	2
5	R-CBL-0018	MC14-6	CABLE 6 CORE	.7M
6	V-GRM-0007	CG20	20MM GLAND	1

VARIANT	DETAILS
T-00962-02-1	ALTERNATIVE MOTOR - HN200 3438 0430 AXR08

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 1 OF 1

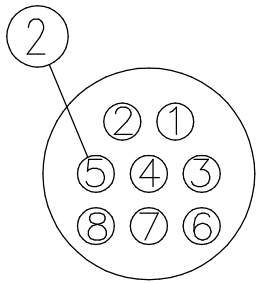
TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

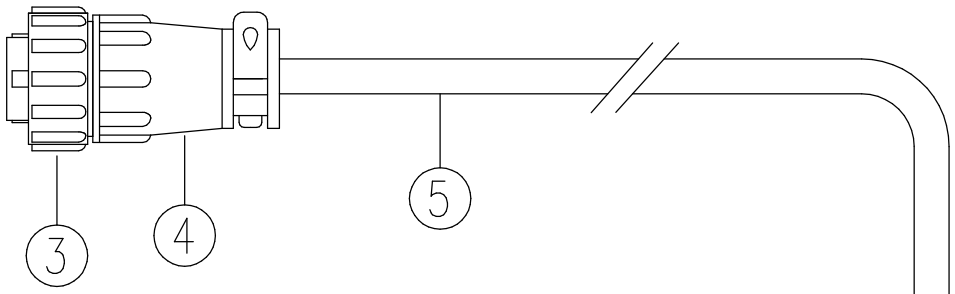
SCALE	NOT TO SCALE	
DRAWN BY	DRDI	8/3
CHECKED	P****	2001

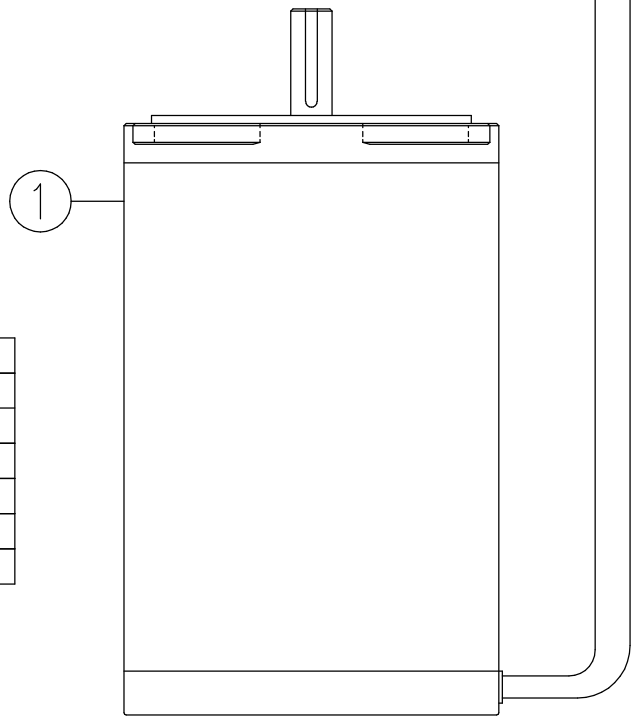
TITLE
WIRING THE 103-8932-0240

DRG.No. T-00920-01-1 REV. 1

3	BLACK
4	WHITE
5	GREEN
6	RED
7	YELLOW
8	BLUE







PARTS LIST				
Item	Tronics No.	Manufactures No.	Description	Qty
1	V-MTR-0009	103-845-0245	STEPPER MOTOR	1
2	V-CTS-0015	1-66506-0	CONTACT PIN	6
3	V-CTS-0004	206434-1	PLUG - 8 PIN	1
4	V-CTS-0005	206062-3	CABLE CLAMP	2
5	V-SLV-0003	3/90T 7MM	BLACK SLEEVING	.7M

VARIANT	DETAILS
T-00921-01-1	ALTERNATIVE MOTOR - HN200 3451 0640 AXR08

ISS. No.	DETAILS OF CHANGE	DRAWN	DATE

THIRD ANGLE PROJECTION

DIMENSIONS IN MILLIMETRES

SHEET 1 OF 1

TRONICS™
85 NORTHGATE DRIVE, THOMASTOWN,
VIC 3074, AUSTRALIA
Phone 61-3-9464 2400 Fax 61-3-9464 2538

SCALE	NOT TO SCALE		
DRAWN BY	DRDI	9/3	
CHECKED	P****	2001	

TITLE
WIRING THE 103-845-0245

DRG.No. T-00921-01-1 REV. 1

WL 160

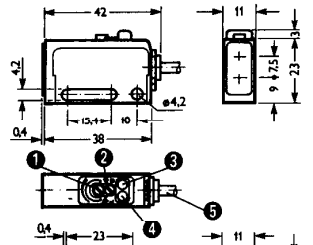
Photoelectric Proximity Switch

Operating instructions

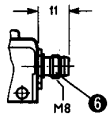
0530840

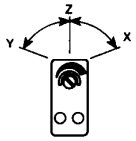
WL 160

WL 160 -P/N 132

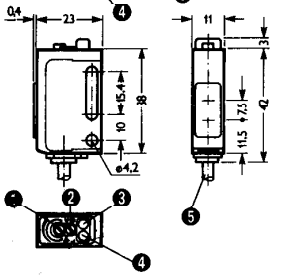


WL 160 -P/N 430

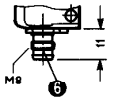




WL 160 -P/N 142



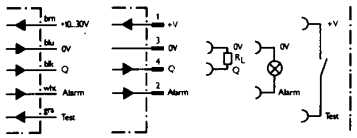
WL 160 -P/N 440



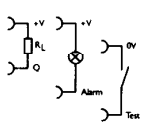
All dimensions in mm

WL 160

PNP



NPN



WL 160
-P/N 132 **-P/N 142** **-P/N 430** **-P/N 440**

brn	blu	blk	wht	gra
brown	blue	black	white	gray
braun	blau	schwarz	weiß	grau
marron	bleu	noir	blanc	gris
marrone	azzuro	nero	bianco	grigio
bruin	blouw	zwart	wit	grijs
marrón	azul	negro	blanco	gris
茶	青	黒	白	灰

Explanations

❶ Two turn sensitivity control, with dial indicator, to set the switching threshold.
❷ Light/Dark-switching selector. Light-switching: the output is "on" with light-path uninterrupted. Dark switching: the output is "on" with light-path interrupted.
❸ Red LED
Switching indicator; lit when the intensity of the received light exceeds the switching threshold (see diagram of functions).
❹ Green LED
Reserve indicator; lit when the operating reserve exceeds the switching threshold by more than 50% (see diagram of functions).
❺ 2 m Connecting Cable or
❻ M8 Plug
(Cable receptacles have to be ordered separately).

Alignment

Align the sender and reflector. A red light spot appears on the reflector. Pan the device in horizontal and vertical directions to find the points where ~~the red LED~~ switches on and off. Determine the mid-points and fix the unit. The green LED should also be on, i.e. switching reserve 50% or more. The switching threshold, i.e. sensitivity, has to be reduced for detection of transparent and small objects and for positioning tasks. It may also be necessary to use a slotted mask, with consequent reduction of maximum range, see table...

Alarm

The "Alarm" switching output gives early warning of dirt build up, mis alignment etc. which could eventually lead to system failure (see diagram of functions).

Test input

The light path between WL 160 and reflector must be uninterupted. The emitter is switched off by operation of the test input (see connection diagram). A change of the output state signals correct functioning. Caution: This function does not comply with Occupational Safety Regulations.

WL 160	-N	-P
Operating range RW with reflector P 250	0 ... 2 m	
Supply voltage V_S	DC 10 ... 30 V	
Max. output current (I_{OUT})	≦ 100 mA	
Switching frequency max. [1]	550/s	
Response time [2]	0,9 ms	
Enclosure type	IP 67	
Circuit protection [3]	A, B, C	
Ambient operating temperature T_A	– 25 ... + 55 °C	

1) With a light-dark time ratio of 1:1
2) With resistive load
3) A = V_S-input reverse-polarity protected
B = Output Q short-circuit protected
C = Interference pulse suppression
*) With polarizing filter

ENGLISH

Photoelectric Proximity Switch
with background suspression
Operating Instructions

SENSICK
WT 12-2 HGA

SICK
optic electronic

8 008 433.0398 HJS KE

Safety Specifications

- Read the operating instructions before starting operation.
- Connection, assembly, and settings only by competent technicians.
- Protect the device against moisture and soiling when operating.
- No safety component in accordance with EU machine guidelines.

Proper Use

The WT 12-2 HGA photoelectric proximity switch is an optoelectronic sensor and is used for detection of optical, non-contact detection of objects, animals, and people.

Starting Operation

1 L: light-switching; if light received, output (Q) switches.
D: dark-switching; if light interrupted, output (Q) switches;

2 With following connectors only:
Connect and secure cable receptacle tension-free.
Only for versions with connecting cable:
The following apply for connection in **B**: brn=brown, blu=blue, blk=black, wht=white.
Connect cables.

3 Mount photoelectric proximity switch to suitable holders (e.g. SICK mounting bracket).
Maintain direction in which object moves relative to sensor.
Connect photoelectric proximity switch to operating voltage (see type label).

4 Check application conditions such as scanning distance, size and reflectance of object to be detected as well as of background, and compare with characteristic in diagram. (x=scanning distance, y=transition range between set scanning distance and reliable background suppression(z) in % of scanning distance, Ro=reflectance of object, Rh=reflectance of background). Reflectance: 6%=black, 18%=gray, 90%=white (based on standard white to DIN 5033).

5 Adjustment of light reception:
Set scanning distance to max. Position object. Position light spot on object. Signal strength indicator should light up. If it does not light up, readjust and/or clean photoelectric proximity switch and/or check application conditions.

6 Setting scanning distance:
Remove object, signal strength indicator should go out (position A=max.). If it does not go out, turn switch towards min. until it goes out (e.g. position A). Set switch to min. Position object. Turn switch towards max. until signal strength indicator lights up (e.g. position B).
If position B<position A:
select middle setting (e.g. position C). Check complete functioning. Functioning OK, setting completed. Functioning not OK, check and readjust application conditions.
If position A<=position B:
influence of background is too great. Check and readjust application conditions.

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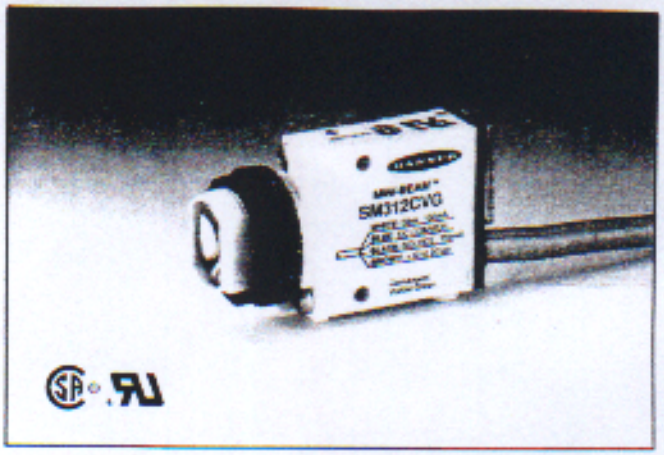
ba21 b

MINI-BEAM® SM312CVG

Self-contained DC Convergent Color Registration Sensor

BANNER
the photoelectric specialist

- **Convergent sensor: produces precise 0.1" diameter spot at a focus point .65" from the lens surface**
- **Ideal for color registration applications**
- **Modulated visible green light beam for ease of alignment and immunity to ambient light**
- **Switch-selectable for light or dark operate**
- **Highly repeatable sensing with 1-millisecond response**
- **Both sourcing and sinking outputs; continuous overload and short-circuit protected**
- **Includes Banner's *exclusive* AID™ alignment system**
- **Rugged, epoxy-encapsulated construction: meets NEMA standards 1, 2, 3, 3S, 4, 4X, 12, and 13**
- **10 to 30V dc operation with reverse polarity protection**
- **No false pulse on power-up**
- **Compact size: only 2.1" long x 1.2" high x .5" wide**



GENERAL DESCRIPTION

Model **SM312CVG** is a small, rugged, special-purpose convergent beam sensor with fast response, and is intended specifically for detecting color differences. It produces a well-defined 0.1" diameter visible green spot at a point .65" in front of the lens surface, and ignores all but highly reflective background objects beyond 2" from the lens. The sensing portion of the spot is only .04" in diameter at the focus point; as a result, color registration marks wider than .10" may be sensed within the sensor's 1-millisecond response window. Repeatability of sensing is better than .01" for objects approaching from the side, and the visible green spot at the focus point greatly simplifies alignment.

The SM312CVG is ideal for many color registration mark applications. An example is reading printed registration marks on packaging materials (as shown in the photo below). It will reliably detect *most* bold color differences, and is particularly effective in applications requiring detection of red-on-white and similar contrasts.

*US patent number 4356393

SM312CVG convergent sensors consist of a visible green LED light source, a sensitive phototransistor, an alignment indicator, and a custom-designed state-of-the-art CMOS integrated modulator/demodulator/amplifier circuit. Digital modulation and demodulation make the model SM312CVG highly immune to ambient light and electrical "noise".

Alignment and system performance monitoring are greatly simplified by Banner's exclusive "AID™" alignment system* which lights an easily-visible rear panel LED whenever the sensor sees a "light" condition, and superimposes an LED pulse rate that is proportional to the received light signal strength. This signal strength indicator is a valuable aid during installation and alignment in color sensing applications, where optical contrast (light-to-dark ratio) between colors is typically low. The AID™ system indicates optimum sensor alignment and sensitivity setting.

Two open-collector outputs are provided: a current sinking NPN output and a current sourcing PNP output, both rated at 150mA, continuous. The SM312CVG's low output leakage and saturation voltage make it ideal for interfacing to programmable controllers and other solid-state circuitry. The NPN (current sinking) output interfaces directly with Banner CL Series MAXI-AMP or MICRO-AMP logic modules to provide a complete control package. SM312CVGs are fully protected against power supply polarity reversal, false pulse on power-up, continuous overload or short circuit of outputs, and inductive load transients. The SM312CVG operates on 10 to 30V dc at less than 25mA, exclusive of load output current.

A convenient control on the back of the sensor allows a choice of either light- or dark-operate sensing mode. A rugged, clutched 15-turn slotted brass screw GAIN control potentiometer enables precise adjustment of system sensitivity.

SM312CVGs have a reinforced VALOX® housing and are rated NEMA 1, 2, 3, 3s, 4, 4X, 12, and 13. A 6-foot attached PVC cable is standard. Model **SM312CVGQD** has a quick disconnect fitting and requires QD cable model MBCC-415 (straight connector) or MBCC-415RA (right-angled); order cable separately.

SPECIFICATIONS, model SM312CVG

SUPPLY VOLTAGE: 10 to 30V dc (10% maximum ripple), at less than 25mA (exclusive of load).

OUTPUT CONFIGURATION: one current sourcing (PNP) and one current sinking (NPN) open-collector transistor.

OUTPUT RATING: 150mA max. each output at 25°C, derated to 100mA at 70°C (derate =1mA per °C). Output leakage less than 1 microamp (off-state). Output saturation voltage (PNP output) less than 1 volt at 10mA, less than 2 volts at 150mA. Output saturation voltage (NPN output) less than 200 millivolts at 10mA, less than 1 volt at 150mA.

OUTPUT PROTECTION: protected against false pulse on power-up, inductive load transients, power supply polarity reversal, and continuous overload or short-circuit of outputs.

RESPONSE TIME: sensors will respond to either a "light" or a "dark" signal of 1 millisecond or longer duration, 500Hz max., independent of signal strength. (NOTE: 100 millisecond delay on power-up: outputs are non-conducting during this time.)

REPEATABILITY of RESPONSE: 0.3 milliseconds, independent of signal strength.

LIGHT BEAM: visible green, 560nm. Spot size .10 inch (2,5 mm) diameter; actual sensing area size .04 inch (1,0 mm) diameter. Convergent beam, focus at .65 inch (16,5 mm) in front of lens surface.

CONSTRUCTION: reinforced VALOX® housing, totally encapsulated, o-ring sealing, acrylic lenses, stainless steel screws. Meets NEMA standards 1, 2, 3, 3S, 4, 4X, 12, and 13.

CABLE: PVC-jacketed 4-conductor cable (6' length) standard. Models are available with quick disconnect connector ("QD" model suffix); require MBCC-415 (straight connector) or MBCC-415RA (right-angled) cable (order separately).

ADJUSTMENTS: LIGHT/DARK OPERATE select switch, and 15-turn slotted brass screw GAIN (sensitivity) adjustment potentiometer (clutched at both ends of travel). Both controls located on rear panel of sensor and protected by a gasketed, clear acrylic cover.

INDICATOR LED: exclusive, patented Alignment Indicating Device system (AID™, US patent #4356393) lights a rear-panel mounted red LED indicator whenever the sensor sees a "light" condition, with a superimposed pulse rate proportional to the light signal strength (the stronger the signal, the faster the pulse rate).

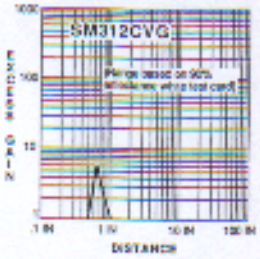
OPERATING TEMPERATURE RANGE: -20 to +70 degrees C (-4 to +158 degrees F).

WARNING These photoelectric presence sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can result in *either* an energized or a de-energized sensor output condition.

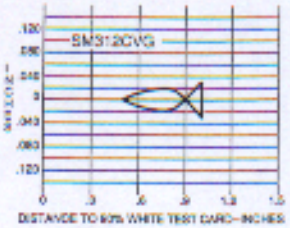
Never use these products as sensing devices for personnel protection. Their use as safety devices may create an unsafe condition which could lead to serious injury or death.

Only MACHINE-GUARD and PERIMETER-GUARD Systems, and other systems so designated, are designed to meet OSHA and ANSI machine safety standards for point-of-operation guarding devices. No other Banner sensors or controls are designed to meet these standards, and they must NOT be used as sensing devices for personnel protection.

EXCESS GAIN CURVE

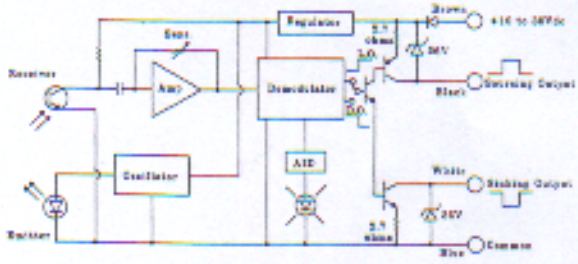


BEAM PATTERN



APPLICATION NOTE: the NPN (current sinking) output of the SM312CVG is directly compatible as an input to Banner logic modules, including all CL Series MAXI-AMP and non-amplified MICRO-AMP modules.

FUNCTIONAL SCHEMATIC, SM312CVG



Hookup Diagrams, SM312CVG Sensor

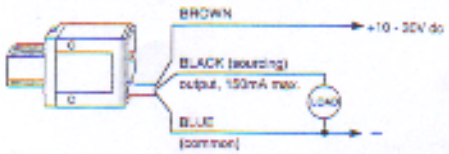
NOTE: maximum load capacity of each output is 150mA at 25°C, derated to 100mA at 70°C (see SPECIFICATIONS)

HOOKUP TO A DC LOAD
(using sinking output)

The diagram below shows hookup of a dc MINI-BEAM to a dc load using the sensor's *sinking* output, which is rated at 150mA maximum. The BLACK wire is not used.

HOOKUP TO A DC LOAD
(using sourcing output)

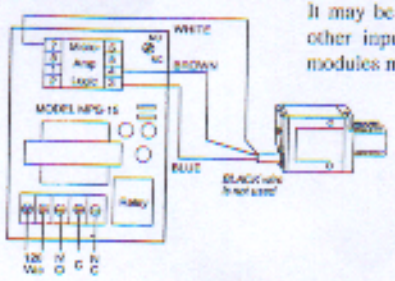
The diagram below shows hookup of a dc MINI-BEAM to a dc load using the sensor's *sourcing* output, which is rated at 150mA maximum. The WHITE wire is not used.



Hookup Diagrams (continued)

HOOKUP TO MICRO-AMP LOGIC (MPS-15 chassis)

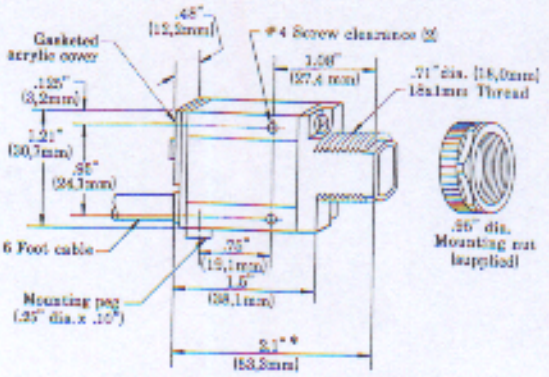
The current sinking output (white wire) of the SM312CVG is shown connected to the primary input (pin 7) of a MICRO-AMP logic module. It may be connected, instead, to the other inputs. The following logic modules may be used:



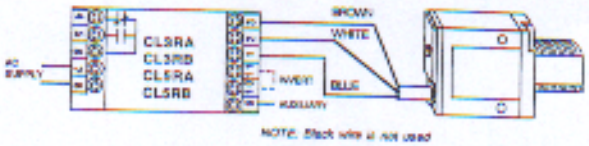
MA4-2	One shot
MA5	On/off delay
MA4G	4-input "AND"
MA4L	Latch

Additional logic may be added using model RS-8 socket.

DIMENSION DRAWING, SM312CVG



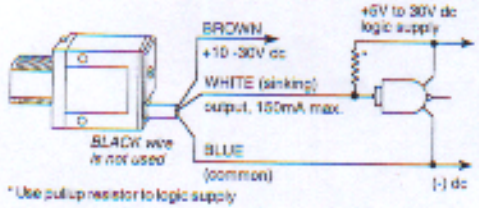
HOOKUP TO MAXI-AMP MODULE



The current sinking output (white wire) of the SM312CVG is shown connected to the input (pin 2) of a CL Series MAXI-AMP module. It may be connected, instead, to the auxiliary input of CL5 models. See the description of the auxiliary input function for CL5 models in the Banner product catalog or the CL Series MAXI-AMP brochure (P/N 03449).

HOOKUP TO LOGIC GATE (using sinking output)

The diagram below shows hookup of an SM312CVG to a logic gate. A logic zero (0 volts dc) is applied to the gate input when the MINI-BEAM output is energized. When de-energized, a logic one is applied. The logic supply negative must be common to the MINI-BEAM supply negative.



INSTALLATION AND ALIGNMENT

Most applications similar to registration control, which involve differentiating between two colors, operate with low optical contrast (i.e.- only a small difference in light level at the sensor's receiver between the light and dark conditions). As a result, secure mounting and proper alignment of the SM312CVG are particularly important. Besides this, it is also necessary to maintain the mechanical stability of the surface being sensed (e.g.- stabilizing web flutter at the sensing point). The convergent optics of the SM312CVG require that the distance from the sensor lens to the surface to be sensed be held constant, in order to consistently sense color difference.

Alignment of model SM312CVG is accomplished as follows:

1) *Loosely* mount the SM312CVG with the front surface of its lens about .65" (16,5 mm) from the surface of the material to be detected.

2) With power applied to the SM312CVG, position the material so that the green image of the light source is reflecting from the lighter of the two colors. Adjust the sensor position to obtain the fastest Alignment Indicating Device (AID) system LED pulse rate; then lock the sensor into that position by tightening the mounting hardware. NOTE: if the material to be sensed is shiny, the sensor may receive *too much* light if it is mounted directly perpendicular to the material's surface. Include a 10 to 30 degree "skew" angle when mounting the sensor to compensate for the mirror-like properties of a shiny surface.

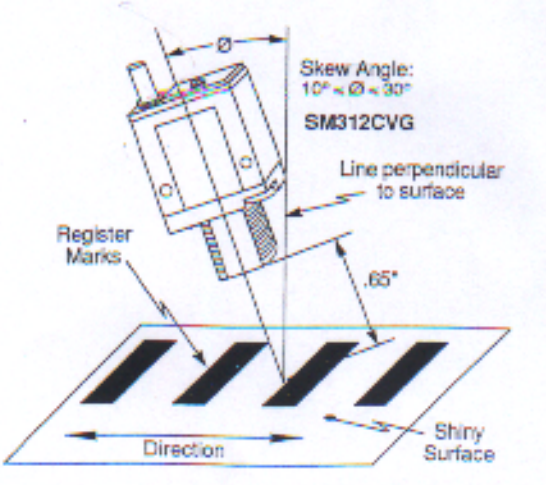
3) Present the darker of the two colors to the green image:

A) If the alignment indicator turns "off" when the dark color is in the green image, increase the GAIN (turn the control clockwise) until the alignment indicator *just turns "on"*. Reduce the GAIN control from that point until the alignment indicator *just turns "off"*, plus two more full turns.

B) If the alignment indicator stays "on" when the dark color is in the green image, decrease the GAIN (turn control counterclockwise) until the alignment indicator *just turns "off"*, plus two more full turns.

C) If the alignment indicator does not turn "on" even at maximum gain (15-turn control fully clockwise), set the control two full turns down from maximum. NOTE: if the GAIN control setting ends up near minimum, readjust the mounting to increase the skew angle.

4) Alternate the light and dark colors in front of the sensor and observe the alignment indicator to verify that the output reliably changes state from the light color to the dark color.



PAIL HEAT TRANSFER DECORATOR
SET-UP SHEET

This sheet is used to record individual machine settings for each unique product or label application. The setup sheet should be referred to for easy setup second time round.

Product Name:

Revision Date:

Label Speed	:	mm
Label A Position	:	mm
Label A Pitch	:	mm
Label A Stretch	:	mm
Label A Length	:	mm
Label A Start	:	mm
Label B Position	:	mm
Label B Pitch	:	mm
Label B Stretch	:	mm
Label B Length	:	mm
Label B Start	:	mm

Air Settings:

Main Air Supply		:	PSI
Side A	Filling Pressure	:	PSI
	Platen Pressure	:	KPa
	Web Tension	:	KPa
	Rail Index Pressure	:	KPa
	Overhead Pressure	:	KPa
Side B	Flamer Gripper Pressure:		PSI
	Rail Gripper Pressure:		KPa
	Web Tension	:	KPa
	Platen Pressure	:	KPa
	Product Raising Pressure:		KPa

Flamer Settings *(Pre-Flamer both sides)*	Air (A side)	:	Reading
	Gas (A side)	:	Reading
	Air (B side)	:	Reading
	Gas (B side)	:	Reading
Flamer Settings *(Post-Flamer both sides)*	Air (A side)	:	Reading
	Gas (A side)	:	Reading
	Air (B side)	:	Reading
	Gas (B side)	:	Reading

Temperature Settings:

Label Head A:	Release Platen	:	Degrees
	Preheat Platen	:	Degrees
Label Head B:	Release Platen	:	Degrees
	Preheat Platen	:	Degrees