



CybaSMART

SERVICE MANUAL

A large, bold, black outline of a five-pointed star is positioned to the right of the "SERVICE MANUAL" text, partially overlapping the horizontal line above it.

ELECTRONIC CONTROL SYSTEM FOR
AUTOBALER

Full service data available at:
<http://www.starlogixs.com.au>

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Replacing a CybaSMART Touch pad

- 1) Disconnect the power supply to the controller.
- 2) Remove motor cable, D-connectors and Mic. Plug.
- 3) Remove the controller from the baler by removing two screws at the top and two screws at the bottom of the unit.
- 4) Remove the back cover from the controller.
- 5) Using a small blade flat screwdriver push the black locking lever on the flanges on the back of the key switch and emergency stop across and remove upwards. Note : do not remove the contact blocks or wiring.
- 6) Remove the two castle nuts on the key switch and emergency stop.
- 7) Remove the key switch and emergency stop controls from the front of the controller.
- 8) Remove the touch pad wire from CN3 of the PCB module.
- 9) Peel the old touch pad off the yellow metal panel.
- 10) Remove any residue from the old touch pad that may be left on the metal panel.
- 11) Remove all backing paper from the new touch pad.
- 12) Carefully remove the serial number from the old touch pad and fit under the clear window of the new pad.
- 13) Fit the touch pad wire through the slot in the metal panel and PCB module. Align touch pad carefully and stick in place.
Caution:
 - a) Do not bend the touch pad or press the switches before it is attached to the metal panel, as this can damage the pad.
 - b) Ensure that the touch pad wire is not folded or caught under the sticker. Do not kink, fold or pull on the wire as it can be easily damaged.
- 14) Refit key switch and emergency stop and tighten castle nuts firmly.
- 15) Refit both flanges, ensuring they are firmly locked in place. Fit touch pad wire to CN3 on PCB module ensuring touch pad connector mates with all pins in CN3. Do not twist the touch pad wire.
- 16) Refit back panel to the controller. Ensure all screws are fitted and the foam seal is not damaged.
- 17) Refit controller to the baler and fit all cables. Test baler function.

Replacing a CybaSMART PCB Module

- 1) Disconnect power supply to Controller.
- 2) Remove motor cable, D-Connectors & Mic Plug.
- 3) Remove Controller from the baler by removing two screws at top and two screws at bottom of the unit.
- 4) Remove the back cover from the Controller.
- 5) Remove the 10 wires from the PCB Module.
 - Take careful note of the points they are attached to, and ensure they are replaced in the same positions on the new PCB Module.
 - Also hold the PCB Module down when pulling up on the wire connectors. Do not pull directly on the wires - use pliers to grip the end of the connector.
- 6) Remove the touch pad wire connector by pulling gently up on the black connector.
- 7) Remove the 4 D-connector nuts on the bottom of the panel.
- 8) Remove the two M3 x 6mm screws on the side of the panel and remove the old PCB- Module. Be careful to guide the Touch pad wire tail through slot in the PCB Module. Do not apply force to the Touch pad wire tail.
- 9) Guide the touch pad wire tail back up through the slot in the new PCB Module and fit the Module into place.

Note: sometimes the PCB Module maybe supplied with the D-Connector nuts fitted. Remove these before fitting the Module.
- 10) Align the PCB Module correctly and fit the two M3 x 6mm screws ensuring the flat washer are also fitted. Do not tighten these screws at this stage.

Note: never use a screw longer than 6mm as they will protrude inside and collide with component on the PCB module. This will damage the new PCB module.
- 11) Fit the four D-connector nuts and firm up. Do not excessively tighten as they are brass and may snap or strip the threads.
- 12) Tighten the two M3x6mm screws
- 13) Carefully fit the touch pad connector ensuring it is correctly aligned so that it mates with all CN3 pins on the PCB module. There should be no twists in the touch pad cable. Do not pull on the touch pad wire as it is easily damaged.
- 14) Fit the 10 wires in the positions as noted in point 5). Double check these wire positions on the CybaSMART wiring layout diagram.
- 15) Refit back panel. Ensure all screws are fitted and the foam seal is not damaged.
- 16) Refit controller to the baler and fit all cables. Test baler function.

Note:

Ensure the two pink wires are zip-tied to the bottom side of the large round black capacitor on the PCB Module. This ensures that the wires do not block the beam to the eye detector on the PCB.

Incorrect placement of these wires can cause the baler to keep cycling.

Replacing a CybaSMART Power Block

- 1) Disconnect power supply to the controller.
- 2) Remove motor cable, D-Connectors and Mic Plug.
- 3) Remove controller from the baler by removing two screws at the top and two screws at the bottom of the unit.
- 4) Remove the back cover from the controller.
- 5) Remove the M5 x 12mm screw securing the Earth Tail. Ensure both washers are put in a safe place as they must be refitted.
- 6) Remove the nuts near the overload relay and transformer using a M8 ring spanner.
Note: these screws have another M5 nut under the power bracket, so the screw should not turn. Leave the screws fastened to the yellow controller metal panel.
- 7) Rotate the power block out of the panel to allow access to the top of the contractor and overload relay.
Note: the cap may have to be removed from the motor socket and the flange removed from the back of the emergency stop. Using a small blade flat screwdriver push the black locking lever on the flange across and remove upwards. Do not remove the contact blocks or wiring.
- 8) Remove the two wires connected to A2 on the contactor and 96NC on the overload relay. Also remove the three wires connected between the contactor and isolating switch (cam switch). Disconnect these wires at the contactor only.
- 9) Remove the earth wire connected to PE near the transformer.
- 10) Remove the old power block and replace it with a new unit. Orient the new unit in the controller, again, so the top of the contactor and overload relay can be accessed.
- 11) Refit main earth to bolt marked PE on the power block bracket. Ensure a M5 shakeproof washer is fitted first, then the wire terminal followed by a M5 spring washer and nut. Torque firmly.
Note: this procedure must be followed as this is the main earth for the baler. **This is a safety critical procedure !**
- 12) Refit the three wires from the isolating switch to the contactor. Ensure red transformer wires are also connected to 1L1 and 3L2 contactor terminals.
- 13) Refit wires to contactor A2 and overload relay 96NC terminals.
- 14) Fit power block back into place in controller. Reconnect earth tail ensuring that the wire terminal is fitted to the M5 x 12mm screw, then an M5 shakeproof washer. The screw is then passed through the hole in the yellow panel and the power block bracket. Fit a M5 spring washer and nut. Do not tighten.
- 15) Fit two M5 nuts near transformer and overload relay and tighten firmly.
- 16) Torque screw holding earth tail firmly.
- 17) Refit flange to the back of the emergency stop and check it is firmly clipped in place.
- 18) Refit unused motor socket.

- 19) Refit back panel to the controller. Ensure all screws are fitted and the foam seal is not damaged.
- 20) Refit controller to the baler and fit all cables. Test baler function.

CybaSMART Sensors

Pressure Switch

The hydraulic pressure switch is pre-adjusted and field adjustment is NOT recommended.

There are no mechanical sensors to detect the end of stroke of the main cylinders. The controller detects these positions by monitoring the hydraulic pressure switch state and combining this with the direction the cylinders are being driven, thus detecting end of cylinder stroke and if the cylinder is retracted or extended.

Electrically the pressure switch is normally open, and closes when the set-point pressure is reached. One side of the pressure switch is connected to ground, and the other to the sense wire. Circuitry in the controller holds the sense wire to +5V, but when the pressure switch closes the sense wire is pulled to ground.

The CybaSMART controllers then apply a latched 1 second delay to the sense wire signal. This means the sense wire must pull to ground and remain there continuously for 1 second for the controller to recognize the condition as a pressure switch driven to the set-point pressure. This eliminates false signals from hydraulic pressure spikes.

The controller reports on pressure switch faults. See section in Owners Manual.

The Full Bale Switch (see Rev5.x code)

The full bale limit switch is situated on the front left hand corner of the baler, and detects if the left hand cylinder is fully retracted when the pressure switch closes.

If the pressure switch closes before the cylinder fully retracts, then material in the bale is carrying the full load that the baler is capable of applying. Because this has occurred before the cylinder has fully retracted then the bale is full. Thus if the pressure switch closes before the full bale switch closes during compaction then the bale is full.

It is assumed that material under the left hand and right hand pressing finger sets is evenly distributed in the pressing chamber, so only one finger set is monitored by the full bale switch.

Electrically the full bale switch is normally open, and closes when the cylinder fully retracts. One side of the switch is connected to ground and the other side to

a sense wire. Circuitry in the controller holds the sense wire to +5V, but when the full bale switch closes the sense wire is pulled to ground.

The Infra-Red Detection System

The infra-red detection system detects material in the pressing hopper, and if the controller is active and the bale not full, will cause the baler to cycle until the beam is cleared (ie. No material in the pressing hopper).

It is a transmitter type system with the IR transmitter located on the back of the baler and the receiver inside the controller.

The transmitter emits a relatively narrow beam of invisible infra-red light, so it must be well aligned with the receiver inside the controller. Miss-alignment will cause the light beam to miss the receiver which is equivalent to blocking the beam. Thus the baler will continually cycle.

Scratched or dirty lenses will also reduce the light beam intensity, and in extreme cases can attenuate beam strength to the point where the receiver can not respond to the low light level and issues a beam blocked signal. Again the baler will continually cycle.

On rare occasions the diodes in the eye transmitter on the back of the baler will become dull. Again this may cause the baler to continually cycle. The eye transmitter would have to be replaced.

Safety Door Switch

The CybaSMART controller is designed to operate with an Omron D40B-1B3 magnetically encoded switch, and no other device should be used. The controller incorporates a category III safety system, and the door switch must be compatible with a safety relay system on the PCB module.

Ensure that the magnet and switch units in the door switch can not collide. The two units should be well aligned in all three planes when the door is shut and the emergency bar not pressed. Omron recommends a magnet to switch gap of 2 to 4mm maximum.

The D40B-1B3 switch contains two contacts and if both contacts do not operate correctly the safety relay system will lock-out baler function. The door open LED will remain lit if the door is open or if the safety relay locks-out functions.

Thermal Sensor

Some models of baler are fitted with a thermal sensor. This unit is usually attached to the aluminum hydraulic manifold block, and monitors oil temperature.

The sensor is a thermally activated switch that is normally open, and closes when the temperature exceeds 70 degrees C. When the temperature falls back below 65 degrees C the sensor automatically resets.

The sensor is connected to the larger 25 pin D-connector on the bottom of the controller.

Over temperature will halt all baler functions and the controller will display “Hot”.

Options Connector

See pin-out diagram.

This plug is provided to allow peripheral devices to be added. Examples would be:

- remote keypads
- remote full bale indication
- dry contacts to control feed conveyors
- extra infra-red sensors

Always seek advice before using the plug. It is recommended that only devices supplied of specified by the manufacturer are used.

Un-loader Switches

See section on revision 5.x code.

Some balers now have an un-loader limit switch fitted to one or both hydraulic cylinders to monitor the extents of stroke. The switch is intended to stop the baler before it pressurizes the hydraulic system at the top and bottom, thus reducing stress and cyclical fatigue on the baler structure.

A single switch is used, and to allow this the switch is not monitored for the first two seconds of the stroke. This allows time for the switch to be opened, then the controller monitors the switch for closure at the other end of the stroke. The full bale is now sensed when the pressure switch fires in the down stroke and the Un-loader switch has not closed.

Category III Safety System

The CybaSMART Controller incorporates a category III safety system compliant with AS 4024.1. To ensure continued compliant function of the safety system service personnel should not substitute or modify the following components:

- 1) PCB Module
- 2) Omron D40B-1BS Door Switch

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SPARES

Eye Transmitter Assembly

<u>Code</u>	<u>Description</u>	<u>Manuf.</u>	<u>Manuf. Part Number</u>
CS-IR	IR Transmitter	SL	
CS-B	IR Tapered Block	SL	
CS-Box	IR Cover Box	Jaycar	HB-6075
CS-Perspex	IR Clear Perspex	SL	

Power Block

<u>Code</u>	<u>Description</u>	<u>Manuf.</u>	<u>Manuf. Part Number</u>
CS-TR1	415 –24 V Transformer	SL	
CS-PBRKT	Power Bracket	SL	
CS-CNTCT	Contactora	GE	CL00A310TD
CS-OR	Overload Relay	GE	RT1N
CS-MS	Motor Socket	AMP	T3111000 (C16-1 3+PE)

Wiring

<u>Code</u>	<u>Description</u>	<u>Manuf.</u>	<u>Manuf. Part Number</u>
CS-MC	Motor Cable	SL	
CS-WL	Wiring Loom	SL	
CS-CAP	Motor Socket Cap	AMP	C16-1 Cap

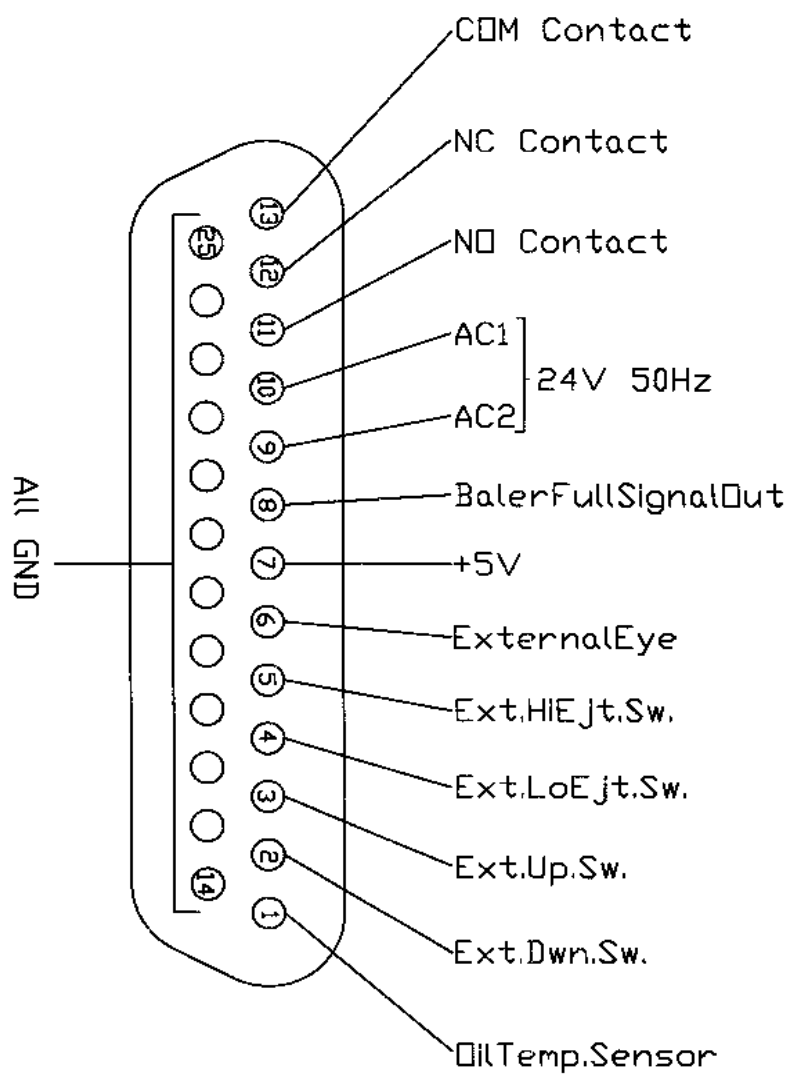
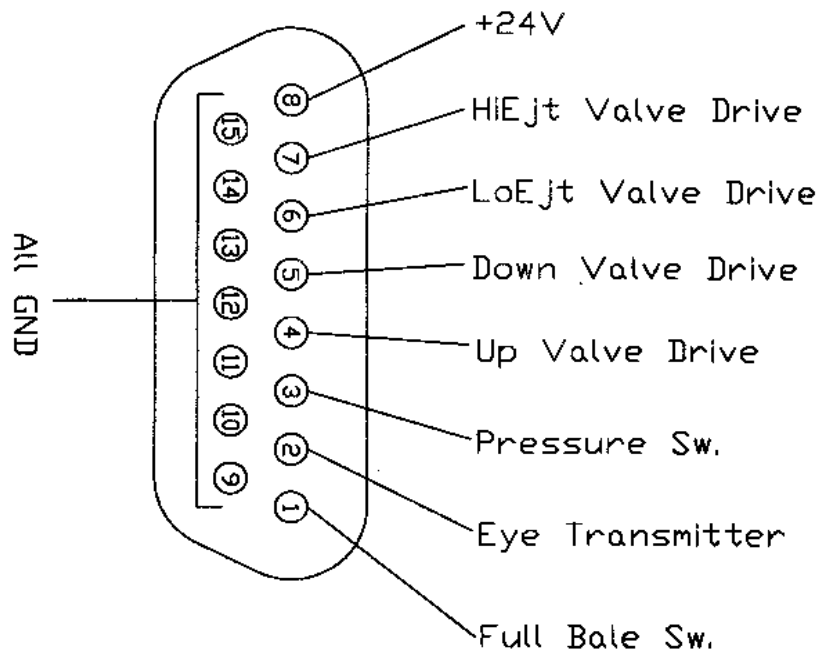
Control Panel

<u>Code</u>	<u>Description</u>	<u>Manuf.</u>	<u>Manuf. Part Number</u>
CS-PCB	PCB Module	SL	
CS-IS	Isolating Switch	GE	D/640006
CS-CB0	N/O Contact Block	GE	P9B10VN
CS-CB1	N/C Contact Block	GE	P9B01VN
CS-FLNG	5 Way Flange	GE	P9ACFS5
CS-ES	Emergency Stop	GE	P9CER4RN
CS-KS	Key Switch	GE	P9XSCD0A95
CS-SK	Spare Keys	GE	077C3095
CS-TP1	Touch Pad	SL	
CS-FH1	Fuse Holder	Jaycar	SZ-2020
CS-DNUT	D-Connector Nut	Jaycar	PM-0852
CS-MIC	4 Pin Mic Panel Plug	Jaycar	PP-2010
CS-GLND	20mm Gland Nut	Alstom	AG20BK
CS-BEEP	Beeper	Kingstate	KPE657
CS-FUSE	4A Fuse	Jaycar	SF-2198

Sensors

<u>Code</u>	<u>Description</u>	<u>Manuf.</u>	<u>Manuf. Part Number</u>
CS-DS	Door Switch	OMRON	D40DB-1B3
CS-FS	Full Bale Switch	OMRON	Z15GQ21B
CS-TS	70oC Thermal Switch	Jaycar	ST-3833
CS-DP	Door Switch Plug-	Jaycar	PS-2012
CSD15	15 Way D-Connector Shell	Jaycar	PM-0828
CS-D25	25 Way D-Connector Shell	Jaycar	PM-0848

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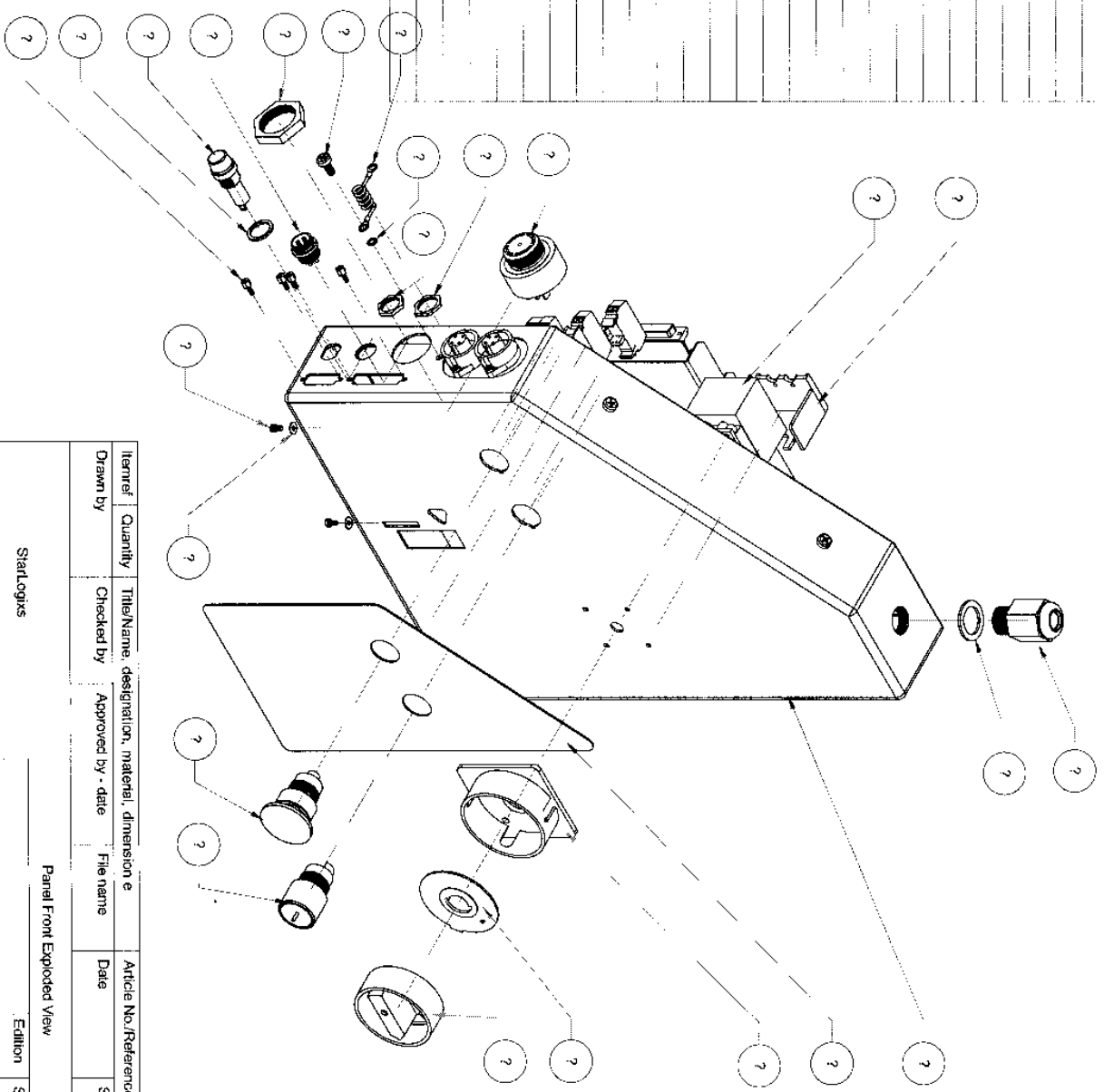


CybaSMART Connector Pin-Out

(Viewed from the bottom of the controller)

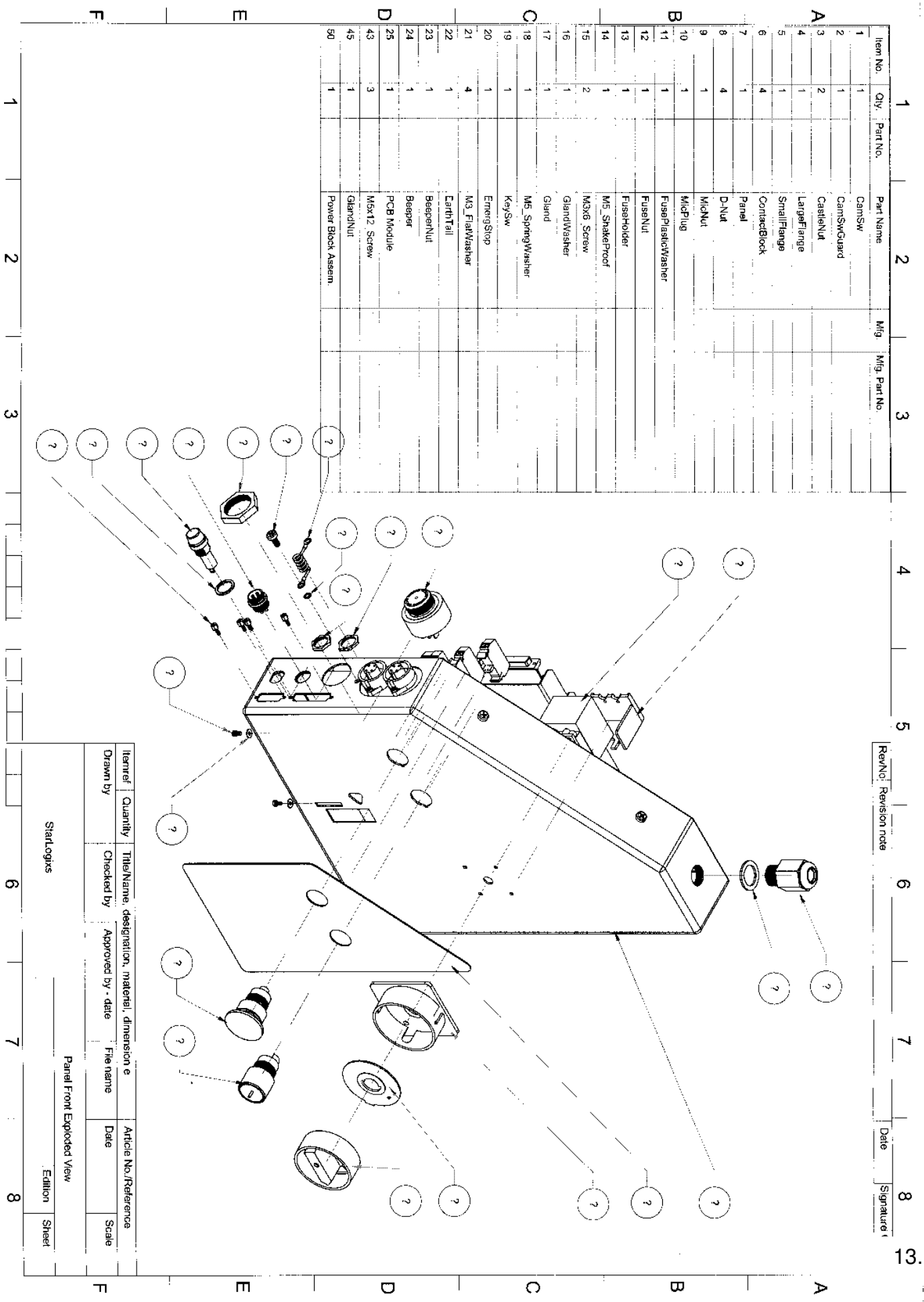
RevNo	Revision note	Date	Signature
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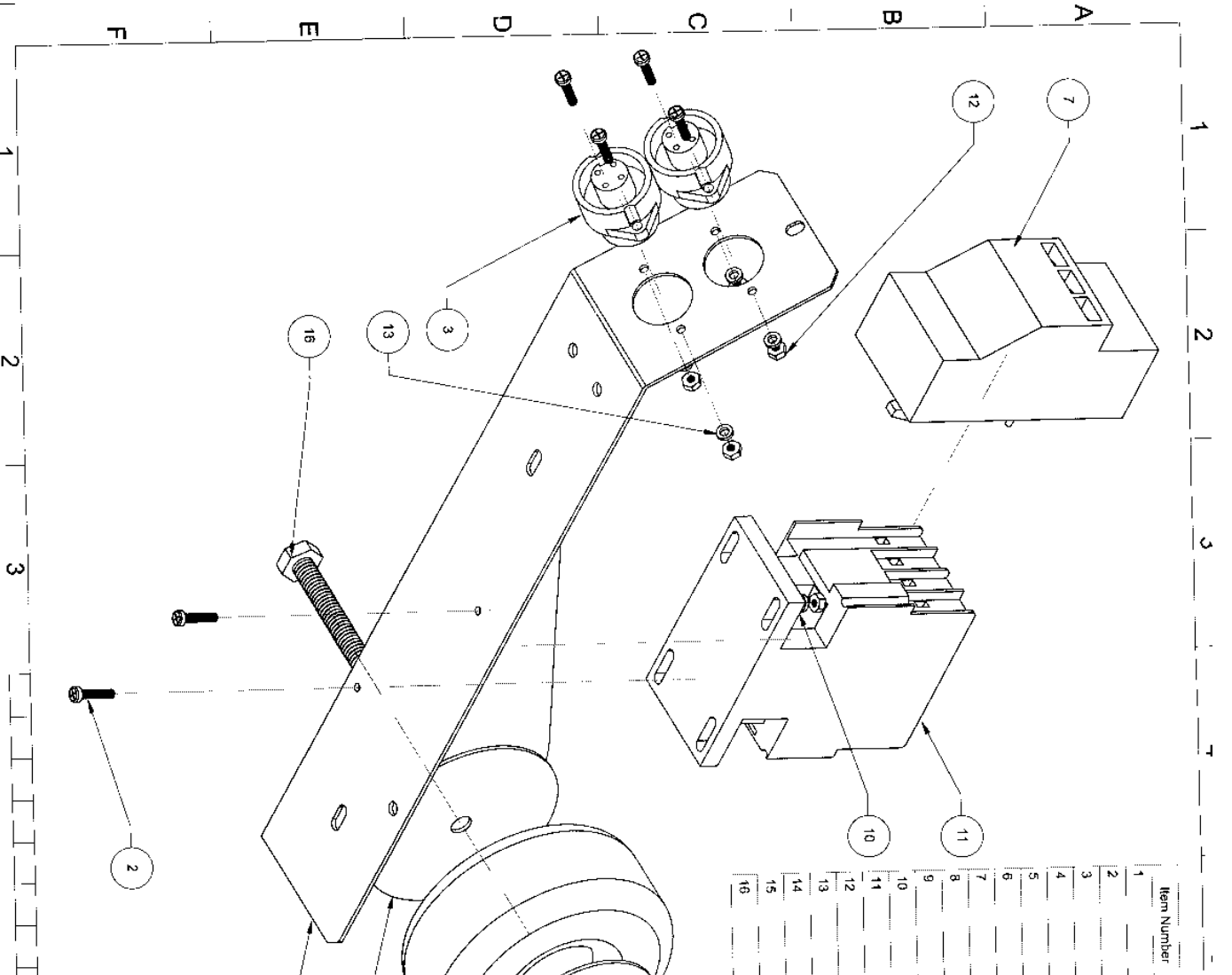
Item No	Qty	Part No.	Part Name	Mfg	Mfg Part No
1	1		CamSw		
2	1		CamSwGuard		
3	2		CastleNut		
4	1		LargeFlange		
5	1		SmallFlange		
6	4		ContactBlock		
7	1		Panel		
8	4		D-Nut		
9	1		MidNut		
10	1		MidPlug		
11	1		FuseFlashWasher		
12	1		FuseNut		
13	1		FuseHolder		
14	1		M5_ShakeProof		
15	2		M3x6_Screw		
16	1		GlandWasher		
17	1		Gland		
18	1		M5_SpringWasher		
19	1		KeySw		
20	1		EmergencyStop		
21	4		M3_FlatWasher		
22	1		EarthTrail		
23	1		BeeperNut		
24	1		Beeper		
25	1		PCB Module		
43	3		M5x12_Screw		
45	1		GlandNut		
90	1		Power Block Assem		



Itemref	Quantity	Title/Name, designation, material, dimension e	Article No./Reference
Drawn by	Checked by	Approved by - date	Date
		File name	Scale

Panel Front Exploded View
 StatLogixs
 Edition Sheet





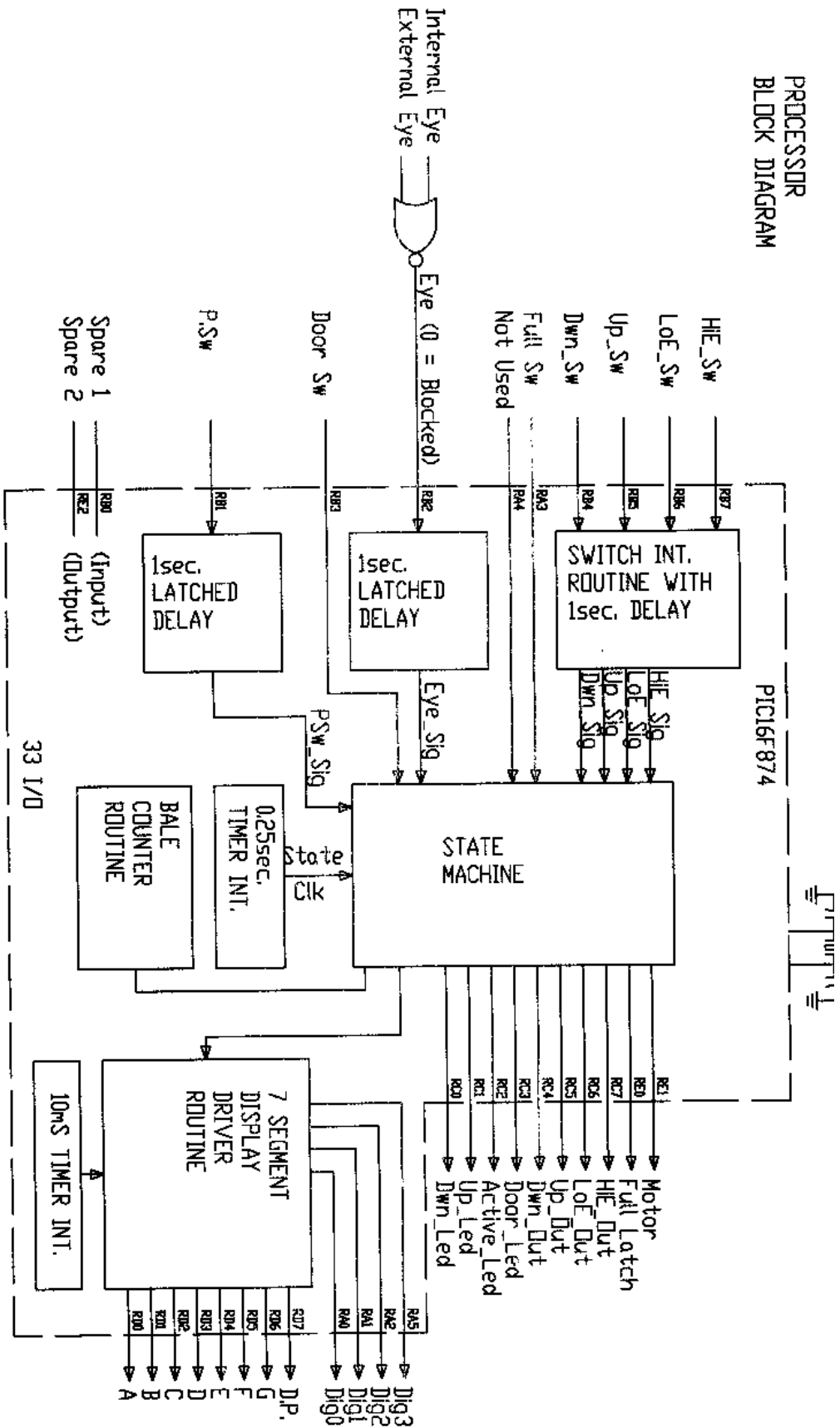
Item Number	Quantity	Starogis's Part No	Part Name	Manufact	Manufactures Part No
1	1		M8 Flat Washer		
2	6		M3x16 Screw		
3	2		Motor Socket	Amphenol	T3111000 (C16-1-3+PE)
4	1	CS-TR1	Transformer Back Washer	SL	
5	1	CS-TR1	Transformer	SL	
6	1	CS-PPBRKT	Power Bracket	SL	
7	1		Overhead	GE	RTIN
8	1	CS-TR1	Transformer Cup Washer	SL	
9	1		M8 Nut		
10	2		M3 Flat Washer		
11	1		Contact	GE	CL00A310TD
12	1		M3 Nut		
13	6		M3 Spring Washer		
14	1	CS-TR1	Transformer Front Rubber	SL	
15	1		M8 Spring Washer		
16	1		M8x50 Bolt		

Item#	Quantity	Title/Name, designation, material, dimension e	Article No./Reference
Drawn by	Checked by	Approved by - date	Date
Starogis		File name	Scale
Power Block Exploded View			Sheet

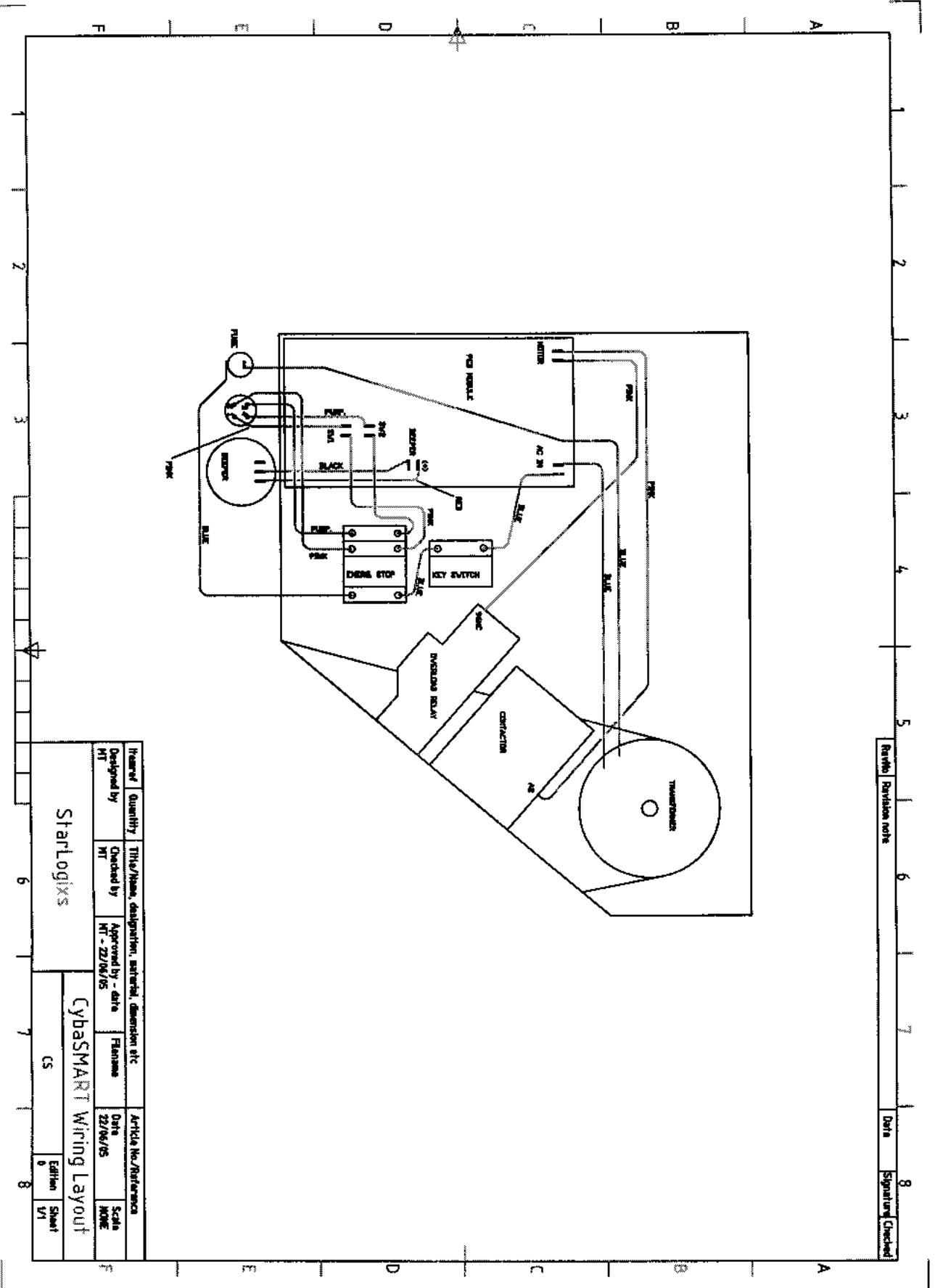
1 2 3 4 5 6 7 8

A B C D E F

PROCESSOR
BLOCK DIAGRAM



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Filename			Scale NOH
Processor Block Diagram			Sheet 1/1
Starlogixs			CS
Edition			0

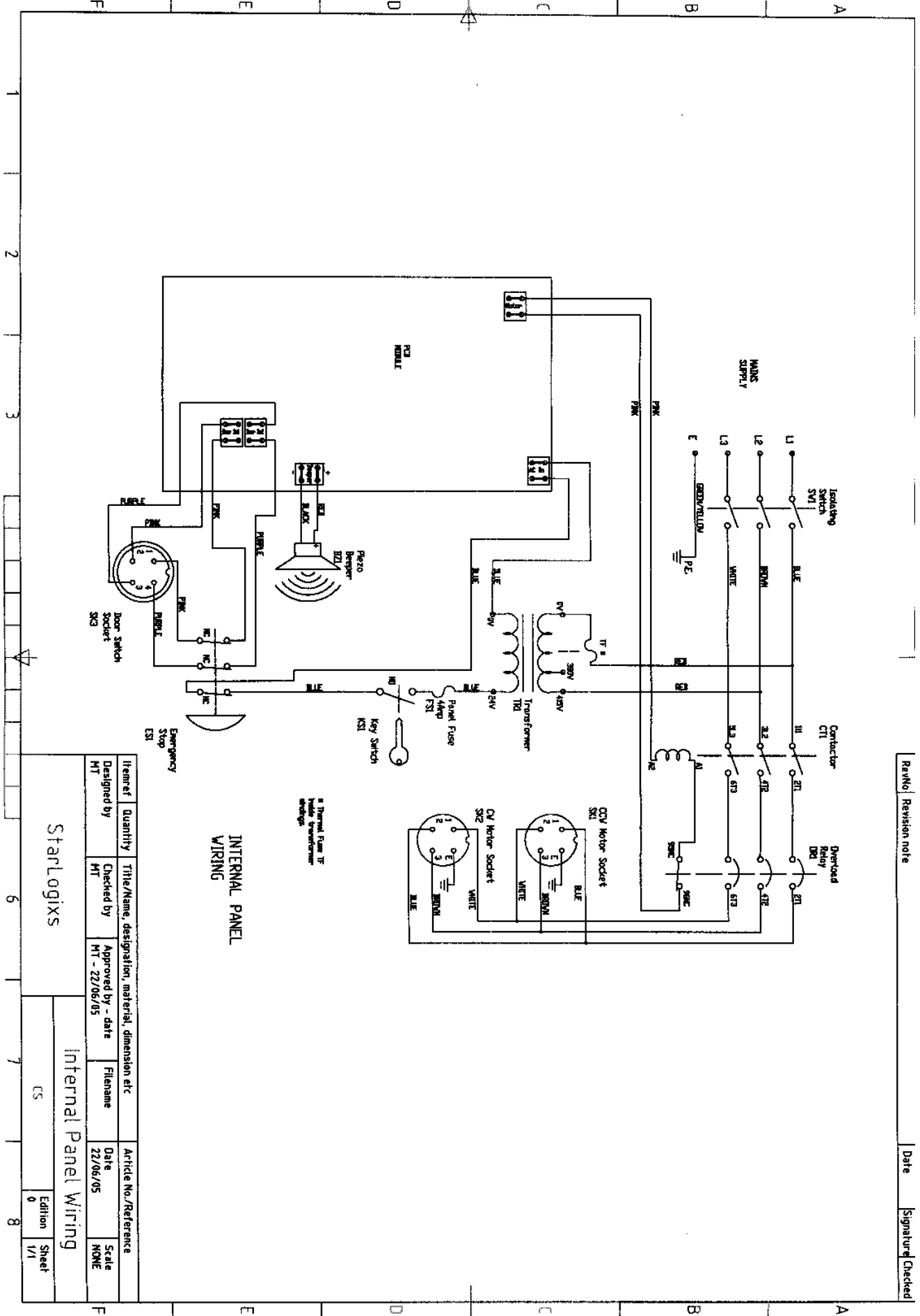


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Starlogix		Scale NONE	
Starlogix		Edition 0	
Starlogix		Sheet VI	

CybaSMART Wiring Layout

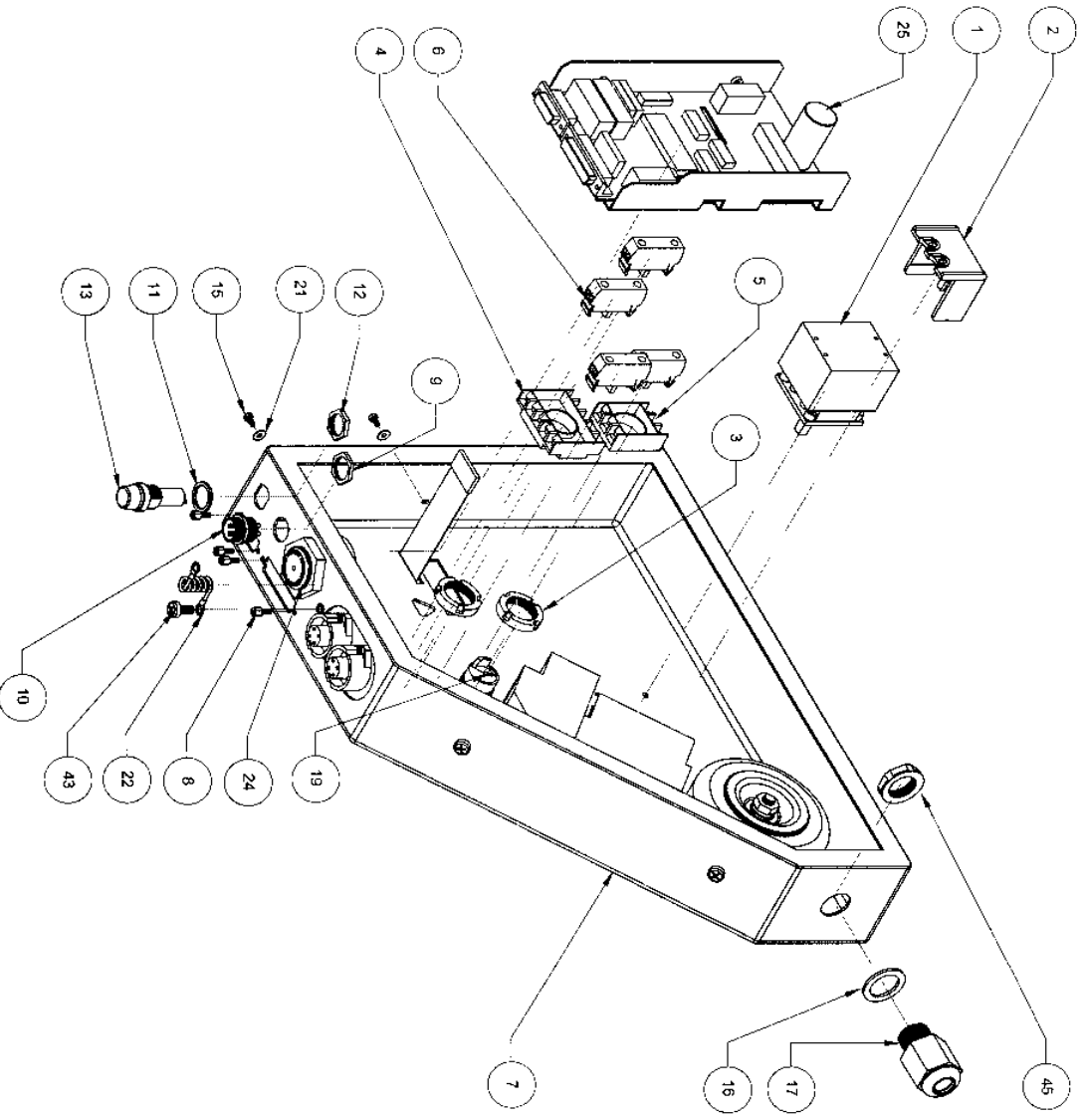
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Rev/No: Revision note Date Signature/Checked

Item ref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
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Starlogixs		Internal Panel Wiring	Scale NONE
		CS	Edition 0
			Sheet 1/1

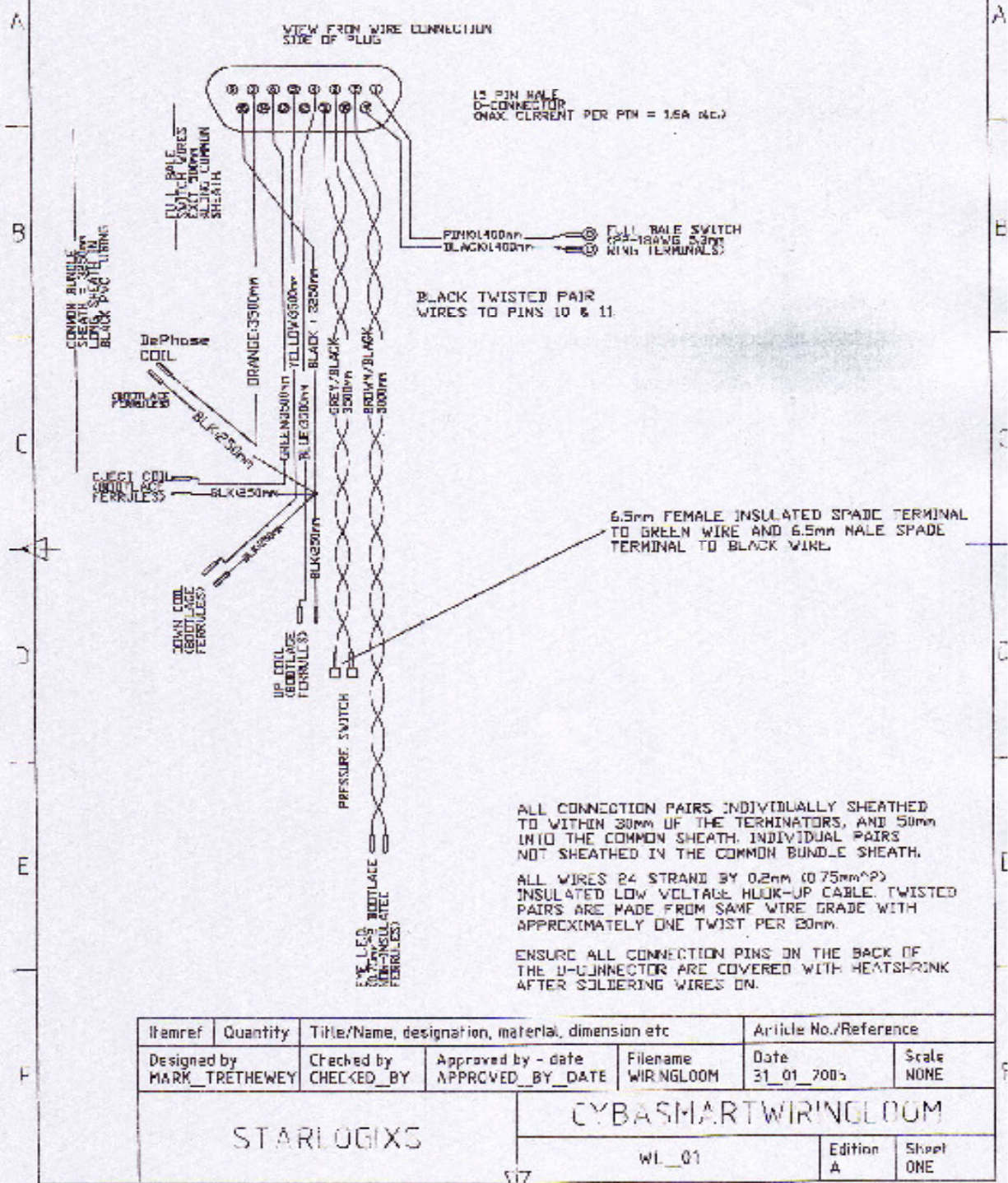
Item No.	Qty.	Part No.	Part Name	Mfg.	Mfg. Part No.
1	1		CamsW		
2	1		CamsWGuard		
3	2		CastlNut		
4	1		LargeFlange		
5	1		SmallFlange		
6	4		ConnectBlock		
7	1		Panel		
8	4		D-Nut		
9	1		MicroNut		
10	1		MicroPlug		
11	1		FusePlastWasher		
12	1		FuseNut		
13	1		FuseHolder		
14	1		M5_ShakeProof		
15	2		M3x6_Screw		
16	1		GlandWasher		
17	1		Gland		
18	1		M5_SprungWasher		
19	1		KeySw		
20	1		EmergStop		
21	4		M3_FlatWasher		
22	1		EarntTail		
23	1		BeepNut		
24	1		Beeper		
25	1		PCB Module		
43	3		M5x12_Screw		
45	1		GlandNut		
50	1		Power Block Assem.		



RevNo	Revision note	Date	Signature	Checked
6				
7				
8				

Itemref	Quantity	Title/Name, designation, material, dimension e	Article No./Reference
Drawn by			
Checked by			
Approved by - date		File name	Date
Panel Back Exploded View			Scale
Startlogix			Edition Sheet

Rev 4	Revised - increased wire lengths	23-1-06	Signature	Checked
Rev 3	Added De-Phusing wires	27-2-07		



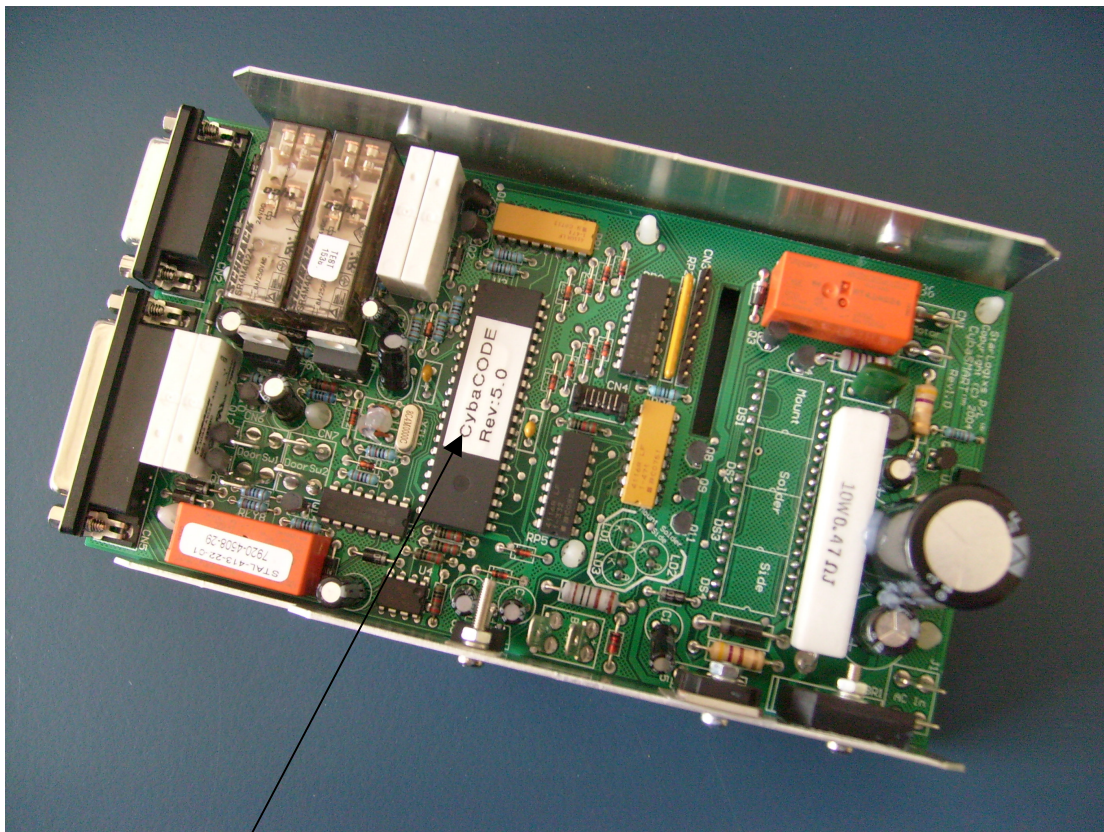
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STARLOGIXS				CYBASHARTWIRNGLOOM		
				WI_01	Edition A	Sheet ONE

CybaCODE Revision 5.X Functional Changes for Unloaders

Dated: 17th February 2009 : Updated 25th February 2010

Author: Mark Trethewey

CAUTION: No physical changes have been made to the circuit board module in the CybaSMART CS series of controllers. It is not clear what controller serial numbers may be effected as there are plans to retro-fit these boards to existing units in some circumstances. The only way to identify the circuit board module is to check the code version sticker on the microprocessor. Any code version starting with 5 (eg. 5.0 or 5.1 etc) will be subject to these details, and circuit board modules with other code versions are not compatible. It is also not possible to fit a 5 series coded module into units with different code series without making substantial modifications to the baler.



Code Version Sticker

Modified to remove the full bale switch and use that input to monitor a unloader limit switch system. The full bale now detected if in the down state the pressure switch fires before the unloader switch is operated. System designed to terminate an up or down stroke if either the unloader switch or pressure switch operates. Unloader limit switch wired to close at end of travel.

Revision 2.1 Code

Revision 3.2 Code can not read an un-loader switch and entirely relies on the pressure switch to fire at the end of the cylinder stroke. It does not include any features to lock-out additional cycles after a full bale is detected.

Revision 3.2 Code

Revision 3.2 Code can not read an un-loader switch and entirely relies on the pressure switch to fire at the end of the cylinder stroke. It does include the FUL3 feature to lock-out further cycling when the bale is full.

Revision 5.0 Code

The revision 5.1 code is subject to all the details of the CybaCODE Rev 5.X functional changes – as above. In Rev5.0 code the full bale system allows three cycles after the bale is detected as full, these being annunciated by the FUL1, FUL2 and FUL3 messages. Further cycles are locked out when the Ful3 message is displayed.

Revision 5.1 Code

The revision 5.1 code is subject to all the details of the CybaCODE Rev 5.X functional changes – as above. However Rev5.1 specifically also changes the function of the full bale over-ride system. In Rev5.0 code the full bale system allowed three cycles after the bale was detected as full, these being annunciated by the FUL1, FUL2 and FUL3 messages. In Rev5.1 this has been changed to allow only one cycle after the bale is detected as full. The message displayed is simply FULL, with further cycles being locked out when this message is displayed.

Revision 5.2 Code

The revision 5.2 code is subject to all the details of the CybaCODE Rev 5.X functional changes – as above. However Rev5.2 specifically removes the function of the full bale over-ride system. That is no Ful1, Ful2 or Ful3 message will be displayed, and no lock-out of cycling will occur after a full bale is sensed.

CybaSMART Controller Scheduled Replacement of Parts

Part	12 months	24 months	36 months	48 months	60 months
Motor Contactor	o	o	o	o	o
Emergency Stop		o		o	
Emergency Stop Contact Blocks		o		o	
Un-loader Switches		o		o	
Eye Transmitter			o		
PCB Module				o	

CybaSMART Controller Visual Inspection and Action on Every Service

- Check touch pad for signs of damage or wear. Check the tactile feel of each touch pad. Replace if any issues are found.
- Check key switch for function and replace if it does not work correctly, or has a key broken off in it.
- Check mains power plug and cable for scuffing, cuts, cracks or damage. Replace as necessary.
- Check emergency stop for damage and function. Replace as necessary.
- Check isolating switch for damage and function. Replace as necessary.
- Inspect controller enclosure for damage. Consult the manufacturer on appropriate action if damage found.



CybaSMART

OPERATORS MANUAL

A large, bold, black outline of a five-pointed star is positioned to the right of the "OPERATORS MANUAL" text, partially overlapping the "T" in "SMART".

ELECTRONIC CONTROL SYSTEM FOR AUTOBALER

FULL SERVICE DATA AVAILABLE AT:
www.starlogixs.com.au/shoppingcart/CybaSMART/CSService.pdf

This manual suitable for Rev2.1, Rev3.2 and Rev5.x firmware versions.

IMPORTANT SAFETY NOTICE



- Your StarLogixs CybaSMART Controller provides vital safety features in your baler. If the Controller has been damaged always have it checked by a person qualified for electrical maintenance before operating the baler.
- Check all power leads and plugs for damage. If damage is found switch off and disconnect from supply, and have repaired by a person qualified for electrical maintenance.
- The 'door closed' sensors are critical to the safe operation of the baler. If they are damaged or the mechanism driving them is damaged never attempt to use the baler before calling an approved service agent.

The Controller has lethal voltages inside.

- **NEVER OPEN OR ATTEMPT TO SERVICE.**
- **NEVER REMOVE OR ATTEMPT TO REMOVE THE BACK COVER.**
- **NO USER SERVICEABLE PARTS OR ADJUSTMENTS INSIDE.**
- **DO NOT DIRECTLY EXPOSE CONTROLLER TO RAIN OR HIGH PRESSURE WATER JETS.**
- **SHOULD YOU LEAVE YOUR AUTOBALER UNATTENDED FOR A PERIOD OF TIME, IT IS STRONGLY RECOMMENDED THAT YOU SWITCH THE POWER OFF AND REMOVE THE KEY.**
- **ANY UN-AUTHORISED ACCESS INTO THE CONTROLLER WILL VOID WARRANTY.**

Note to Serviceman

Always obtain the latest version of service manual from www.starlogixs.com.au (phone for password) before attempting to service the control system. Do not substitute items noted in the service manual as critical components in the category III safety systems.

1.0 Declaration of Conformity

The CybaSMART ® Controller is designed to control AutoBaler® baling presses and conforms with the following standards:

AS/NZS20641:1997
(EC/CISPR11:1992)
AS4024.1:1996
(Category III)



N10728

And is manufactured under Australian Communications Authority
C-Tick approval number:

Also safety door switches comply to:

EN954-1
EN/IEC60204-1
EN/IEC60947-5-3
UL508, CSA C22.2 No. 14
EN1088 conformance

And the safety monitoring relays comply to: EN50205.

M A C H I N E M O D E L : _____

SERIAL NUMBER: _____

Conforms to the above mentioned standards.

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2.0 Suggested Conditions of Use

2.1 Qualified Operators

Operator:

Qualified to operate the control unit in all normal day to day functions of the baler.

Person Qualified for Electrical Maintenance

Must be trained by the manufacturer or hold appropriate trade qualifications for the service of mains electrical equipment and safety related electronic equipment.

Safety Manager:

The Safety Manager is the person in charge, liable for protection and prevention from working risks. The safety manager will make sure that all persons operating with the machine receives all instructions concerning their jobs, as herewith contained, including and beginning from installation and machine starting.

Manufacturer:

It is necessary to contact StarLogixs for any operation not expressly covered in the present manual and assigned to any of the professionally qualified operators as listed above.

2.2 Description of the Controller

The CybaSMART® Controller is an electronic industrial control system purpose designed to control and automate AUTOBALER® cardboard baling machines. In particular the controller functions provides all the sensing and monitoring functions of the Category III safety system, and must be serviced and maintained in accordance with the recommendations in the service manual.

Also the controller houses mains voltages and should only be serviced by qualified persons. It should be maintained in accordance with relevant electrical safety standards.

2.3 Situation of Normality

It is absolutely necessary that the controller is used in the conditions suggested by the present manual of use and maintenance. It is not allowed to misuse the controller or its safety devices nor to use the machine in abnormal conditions.

We wish to point out below some suggestions, to be carefully considered by the operator in order to avoid abnormal conditions of use.

- Do not operate the controller if it is not properly attached to the baler.
- Do not operate the controller if door sensors, emergency stops or other electrical components are damaged, or not functioning.
- It is strictly prohibited that persons other than the operator approach the machine.
- The controller shall not be installed and shall not operate in an explosive environment.
- The controller shall never be washed with jets of water or flammable liquids.
- Cleaning and maintenance operations shall be performed by qualified persons.
- The operator shall always perform periodical safety checks, as required by safety rules.
- The controller should be protected from direct exposure to rain and sunlight.

2.4 Protection

Emergency Stop- immediately stops machine operation by disconnecting power supply in the controller, and also interrupting the door switch sensor connection.

Door Sensor- immediately holds all automatic operations and movement of the pressing fingers and stops the baler electric motor, when the door is opened or the emergency bar is pressed.

3.0 Installation - Qualified Person : Safety Manager

Before proceeding with the preparation of the machine for its installation and starting it is necessary to make a careful visual inspection of the controller for any damage that may have occurred in transit. In particular check:

- Door Sensor
- Emergency Stop
- Mains Power Cable
- Mains Plug
- Controller Mounting and Earth Wire

4.0 Getting Started

4.1. Electrical Connection

Ensure that the power socket is correctly rated and is provided with an effective earth before plugging the controller in.

4.2 Control of Protection Devices: Qualified Person: Safety Manager

Check that pressing emergency stop causes controller Power LED to go out and machine to immediately stop. Also check that opening top baler door or pressing the emergency bar causes the Door Open LED to light. The baler pressing fingers should not move when the door is open.

The operator shall not disable or attempt to disable any of the safety features of the controller.

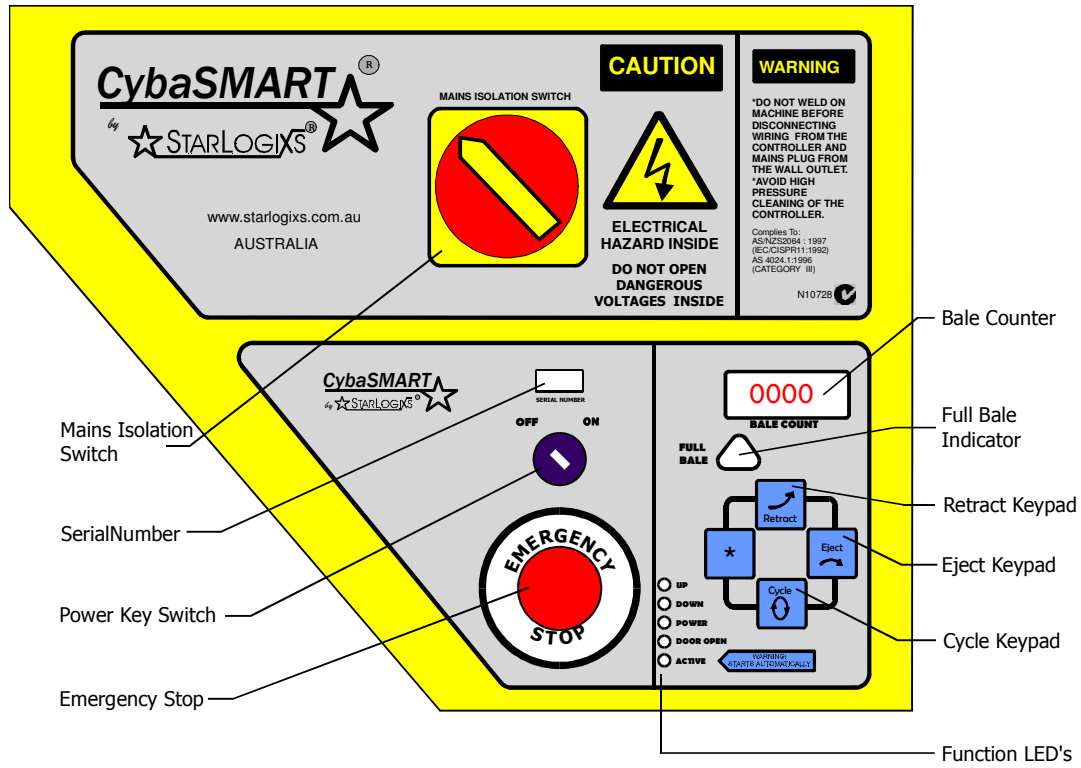
The Person Qualified for Electrical Maintenance shall not open the controller before disconnecting from the mains supply. Maintenance personnel should at all times be in control of the mains plug when working inside the controller.

At the completion of any work they should locate, assemble and check that all safety systems are functioning correctly.

The Safety Manager shall make sure the Operator and Persons Qualified for Electrical Maintenance have received all necessary information according to the present manual and electrical service manuals as maybe appropriate, and in particular will make sure that all safety systems and protection devices are correctly assembled and working and also that they have not been mishandled.

Note: The pressing fingers will not move with the top door open and the eject function will be disabled if the top door is shut.

4.3 Location of Main Features on Controller



4.4 Operation of Controller

1. Ensure Mains Isolation Switch and power outlet is on.
2. Switch on Power Key Switch and rotate the Emergency Stop to release. The power LED should illuminate and the bale counter display should show the bale count.
3. Close the Retract Keypad and hold it for about 0.5 seconds and the UP Led will illuminate, the electric motor will start, and after a 4 second delay the pressing fingers will move upwards to their retracted position and stay there.
4. After filling pressing compartment and hopper with material, press and hold the Cycle Keypad for 0.5 seconds. The ACTIVE Led will commence flashing indicating the baler has entered its automatic mode. The DOWN Led will illuminate and the pressing fingers will move downward compressing material. If the hopper sensor detects material in the baler hopper the machine will automatically cycle until the hopper is cleared. Alternatively the operator can manually initiate another cycle by pressing the Cycle Keypad.
5. The baler will continue to operate automatically until a full bale condition is detected. The last pressing cycle is completed and an audible beeper and Full Bale Indicator are activated. The hopper sensor will stop causing the baler to cycle, but the operator can start further cycles by pressing the Cycle Keypad. This will allow material already in the hopper to be compressed.
6. After tying-off the bale (see baler manual) the top baler door must be shut. Pressing the Retract Keypad (and holding it for 0.5 sec) will cause the UP Led to illuminate and the pressing fingers to move upwards to their retracted position, and stay there. If this does not occur check door is shut properly (DOOR OPEN Led should not be illuminated.)
7. Open top and bottom baler doors and hold Eject Keypad to power eject finished bale (refer to baler manual for details). The bale counter will increment by one each time a bale is ejected. The UP and DOWN Led will illuminate while the EJECT Keypad is pressed.

Note: The pressing fingers will not move with the top door open and the eject function will be disabled if the top door is shut.

4.5 Motor Operation

The CybaSMART Controller intelligently controls the electric motor for maximum energy efficiency. If the baler completes an operation and no new functions are required in the next 16 seconds the motor is stopped.

If the motor has stopped and a press function is required the motor automatically starts, but the baler functions are suspended for 4 seconds allowing the motor to start under no load and stabilise at its running speed.

The Category III safety system in the Controller immediately stops the electric motor when the baler top door is opened.

During Eject operation the motor only runs while the Eject Keypad is pressed.

The CybaSMART Controller has two motor sockets on its lower face. When the motor cable is plugged into one socket the motor will rotate one way and when it is plugged into the other socket the motor rotation direction will be reversed.

SAFETY WARNING

- **ALWAYS SWITCH OFF MAINS ISOLATION SWITCH BEFORE CHANGING THE MOTOR CABLE FROM ONE SOCKET TO THE OTHER.**
- **ALWAYS FIT THE SOCKET CAP TO THE UN-USED MOTOR SOCKET.**

4.6 Overriding the Full Bale Condition

The CybaSMART Controller incorporates a feature that allows the full bale state to be overridden by pressing the Cycle button. This feature allows the operator to "finish off" the bale prior to tying off and ejection.

However, if an operator continues to use this feature to add more material, a dangerous situation can occur. The excess material produces pressure on the top baler door, and when the door is unlatched it can spring open and potentially strike the operator.

CybaSMART Controllers now include a safety feature that only allows the fully bale state to be overridden three times. The first time the controller display will show FUL 1, the FUL 2 and finally FUL 3 on the third time. After this the bale must be ejected to clear this condition. No further cycles can occur when FUL 3 is displayed.

CAUTION:

If the display shows FUL 3 and the Retract button is pressed the baler pressing fingers will retract upwards, but can not be made to travel back downward. The material in the baler will have to be removed without tying off the bale correctly, and will probably have to be repressed.

4.7. Fault Reporting

The CybaSMART Controller can detect some basic system faults and will indicate them on the bale counter using the following codes:

P.S.-0 : pressure switch will not close. This is a primary hydraulic sensor and the baler will not operate correctly if this unit is faulty. Sensor is not serviceable -call your service provider.

P.S.-1 : pressure switch jammed closed. As for P.S.-0.

CYC : excessive cycling. The controller monitors the number of automatically initiated cycles that occur concurrently, and if more than 127 cycles then the controller will stop the baler and exit its automatic mode. Opening the baler top door or switching the power off resets the cycle counter. Pressing the Cycle Keypad will restart the baler.

Most common cause is a faulty hopper sensor. Check the front and back lenses are clean before calling for service.

HOT : hydraulic oil too hot. Some baler models have an oil temperature sensor and an over temperature indication from the sensor produces this warning and forces the baler out of automatic mode.

Side Mesh Guard Switches: On some balers an optional pair of switches are fitted to monitor if the side mesh guards are correctly closed. If they are not properly closed the baler will not operate and the message **OPEN** will appear on the controller display.

4.8 Controller Functionality Check-

Qualified Person: Person Qualified for Electrical Maintenance

- A) Emergency bar causes the DOOR OPEN Led to illuminate.
- B) With power on and baler door shut pressing and holding the Cycle Keypad for 0.5 seconds should cause the pressing fingers to travel to the bottom of their stroke and stay there if there is no material blocking the hopper sensor. When the pressing fingers reach the end of their travel you should be able to hear the hydraulic system load-up and about 0.5 seconds later the DOWN Led should go out, but the ACTIVE Led should keep blinking. Blocking the beam of hopper sensor should then cause the UP led to illuminate and the pressing fingers to move to their fully UP position where the UP Led goes out and the DOWN Led illuminates and the pressing fingers move back to their down position.
- C) Pressing and holding the Retract Keypad for 0.5 seconds cause the UP Led to illuminate (however the ACTIVE Led should now be off) and the pressing fingers will move to their fully up position. When the fingers reach the limit of their upward travel you should be able to hear the hydraulic system load-up and about 0.5 seconds later the UP Led should go out.
- D) When the baler door is open the DOOR OPEN Led should illuminate and pressing the CYCLE or RETRACT Keypads should have no response and the pressing fingers should not move. The baler electric motor should not run with the door open unless the Eject Keypad is continuously held. Holding the Eject Keypad should cause the UP and Down Leds to illuminate and the power bale ejection system should be energised.

4.9 Fuse Replacement

There is a panel fuse located on the bottom of the controller. When the cap is unscrewed a glass fuse is accessible. Always replace this with a 4A Fast Blow 32mm glass fuse. If fuse blows again there is a fault either in the controller or around the baler wiring and the fault must be cleared before again replacing the fuse.

Fitting an incorrectly rated fuse may damage the controller and will void warranty.

4.10 Code Versions

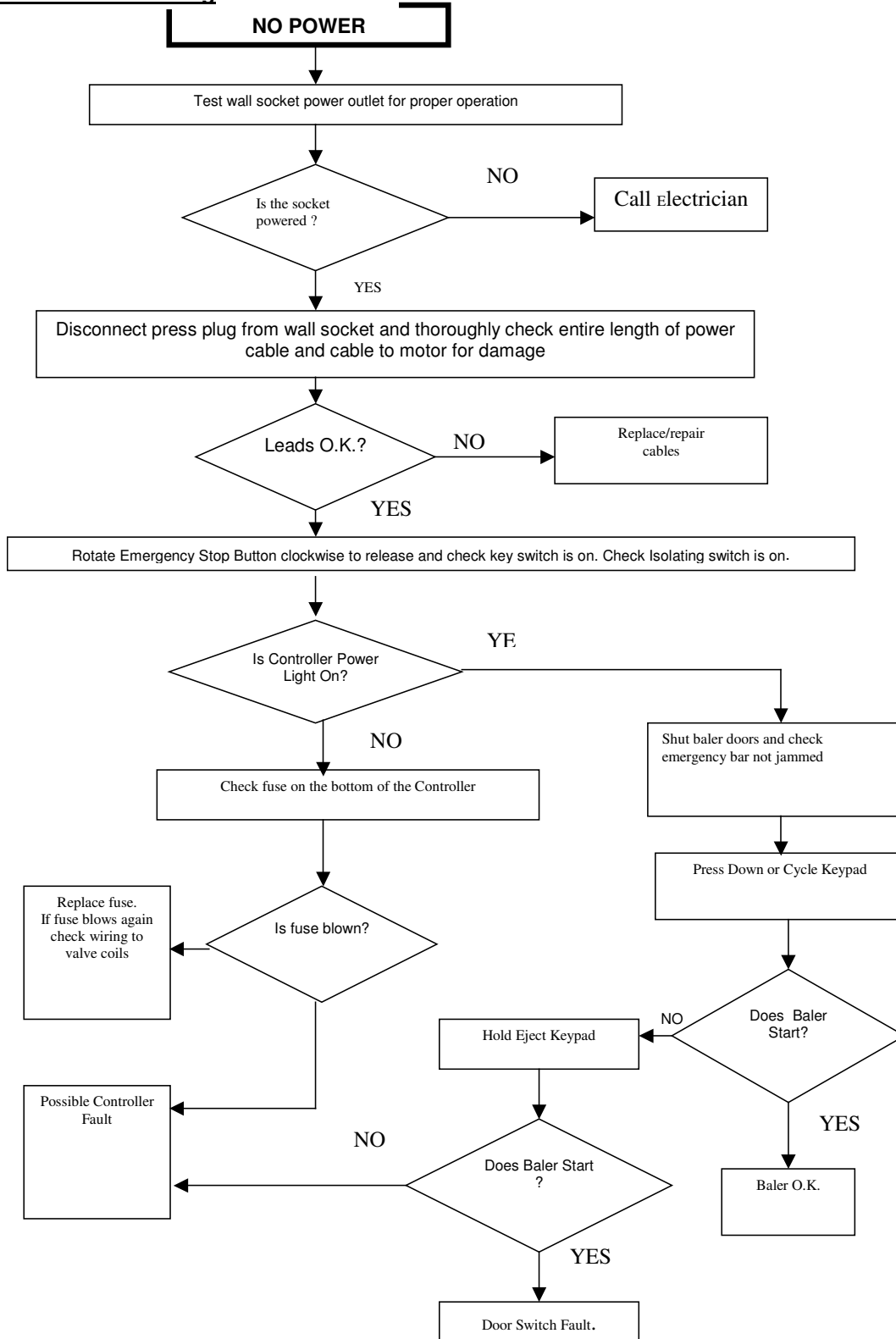
A new version of the firmware code was introduced in 2010 that requires different sensors on the baler. Most previous versions of code were backwardly compatible—that is, a newer controller or circuit board would fit into an older baler and work correctly. The latest firmware is NOT backwardly compatible.

The older backwardly compatible code versions would start with version numbers of 2 or 3. That is CybaCODE version 2.1 or CybaCODE version 3.2 for example. The new code will start with a version number of 5. For example CybaCODE version 5.1.

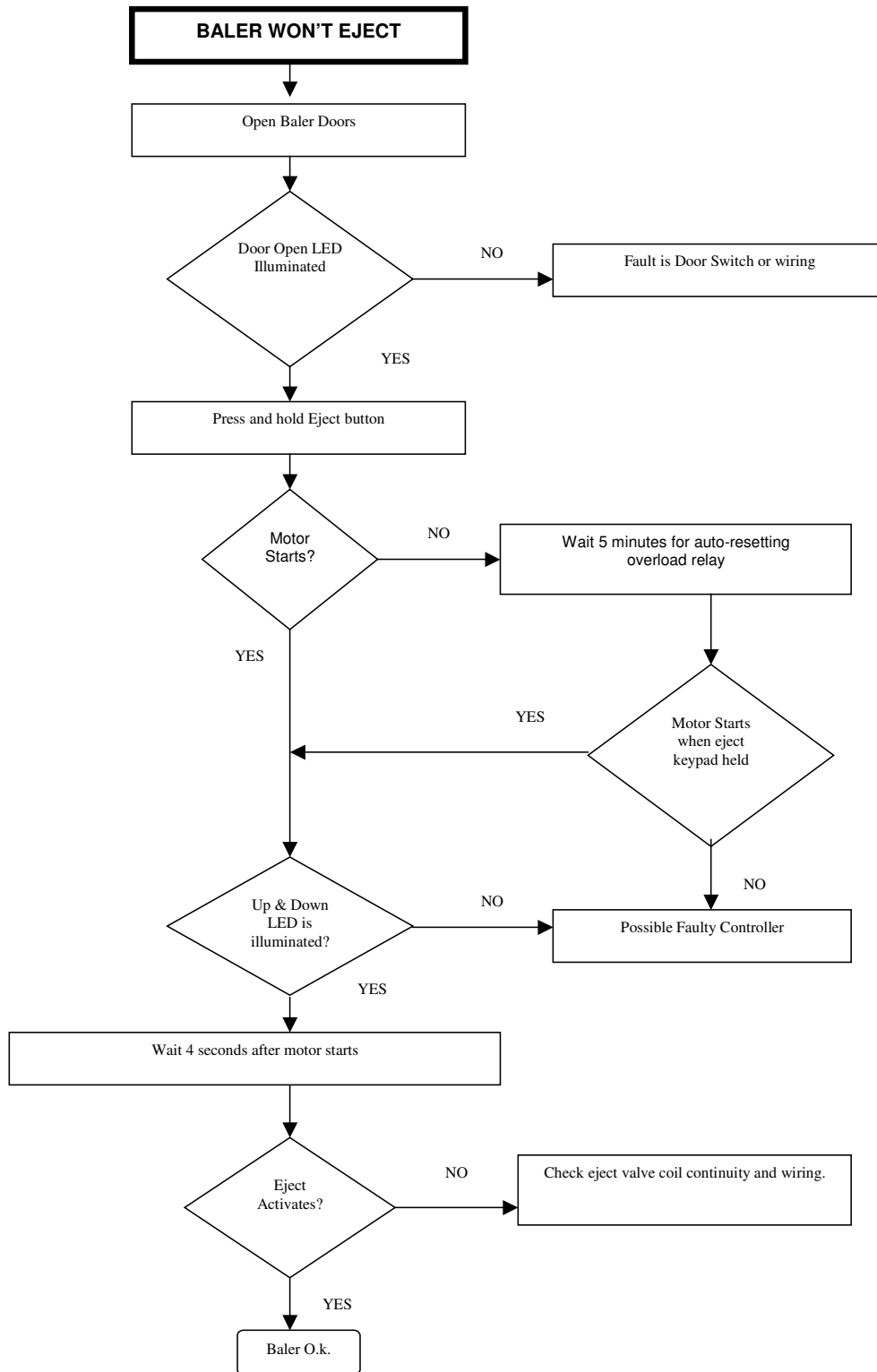
Version 5 codes depend on a 'unloader' sensor to indicate the top and bottom extents of the pressing finger stroke. This feature greatly reduces the cyclical loading and fatigue on the baler structure, thus extending the life of the machine.

See the service manual for more details.

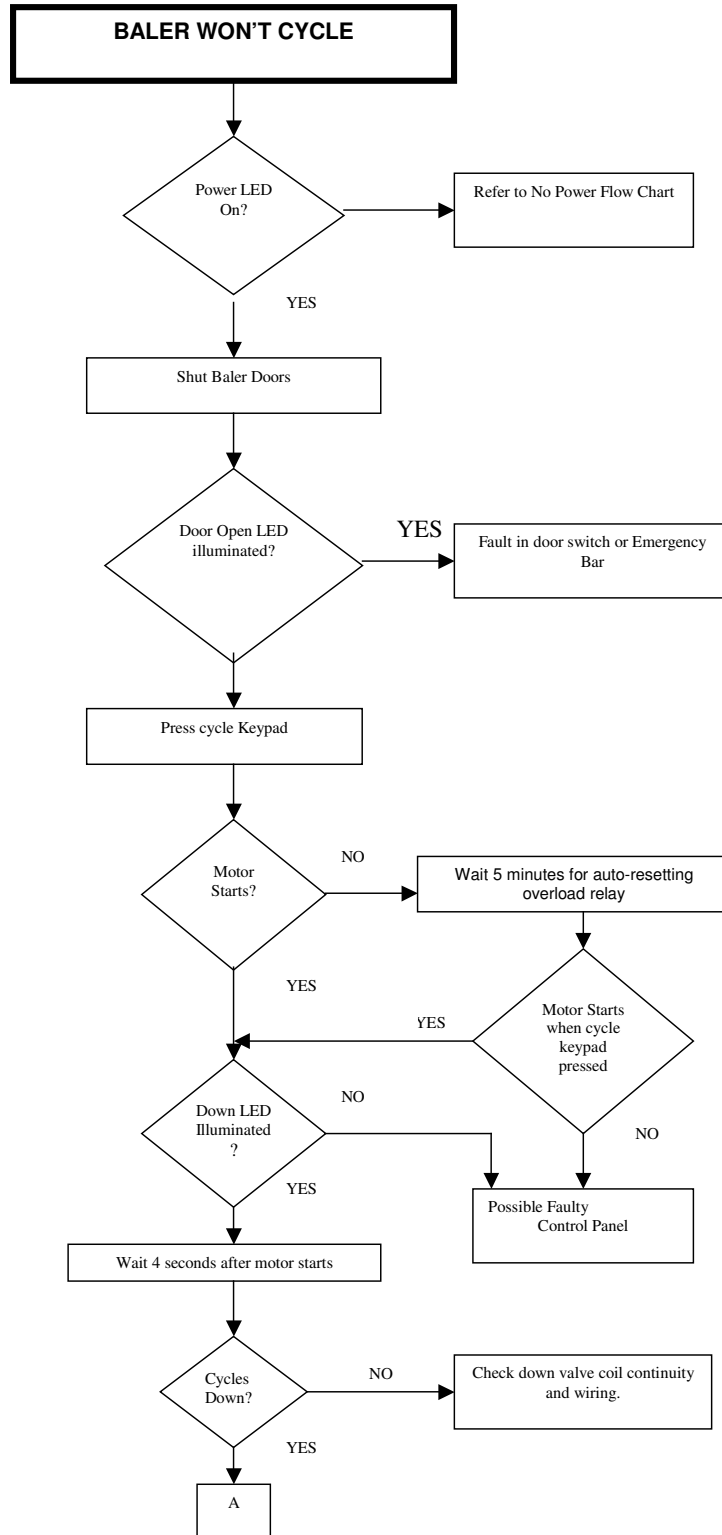
5.0 Trouble-Shooting



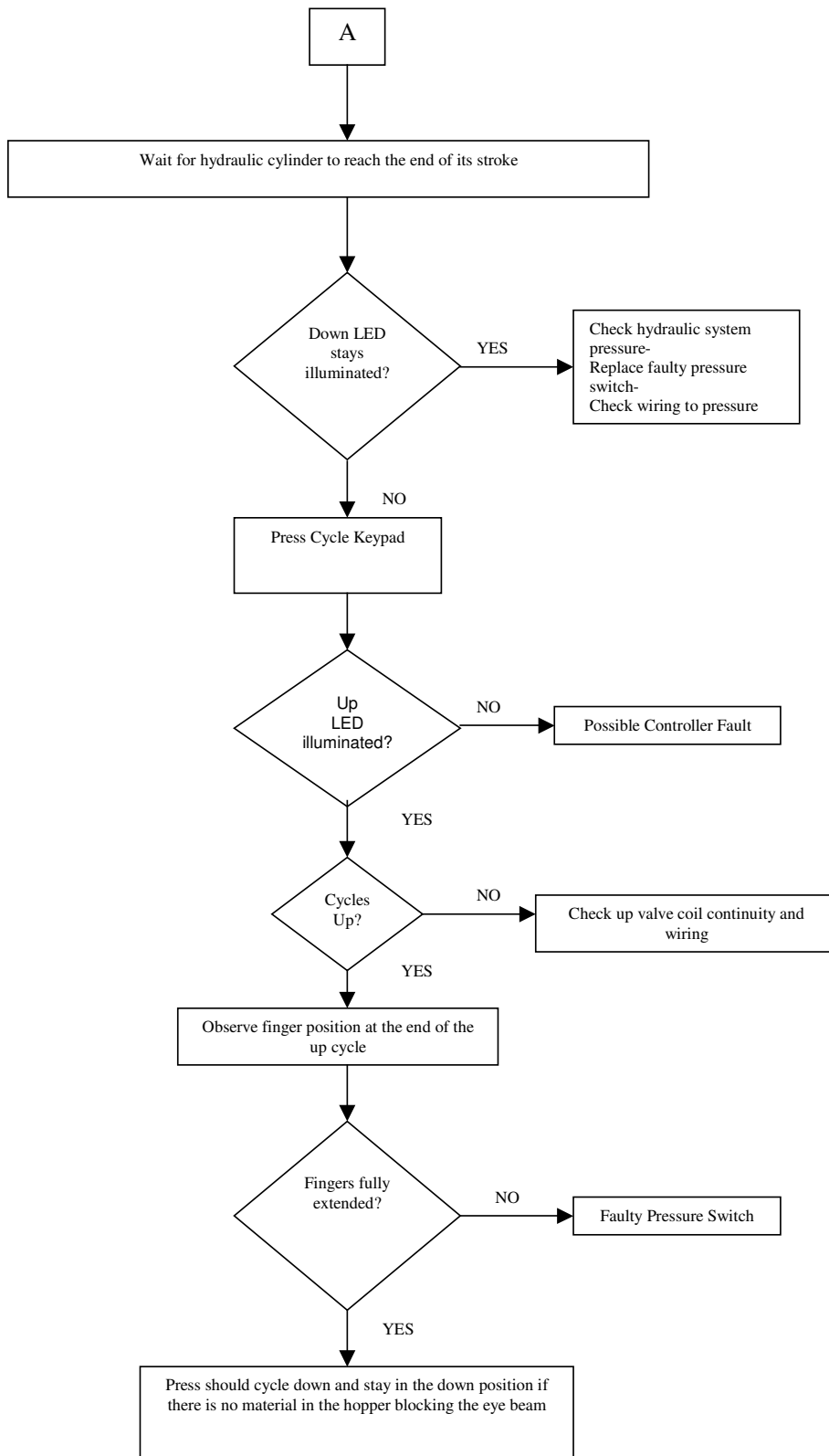
5.0 Trouble-Shooting



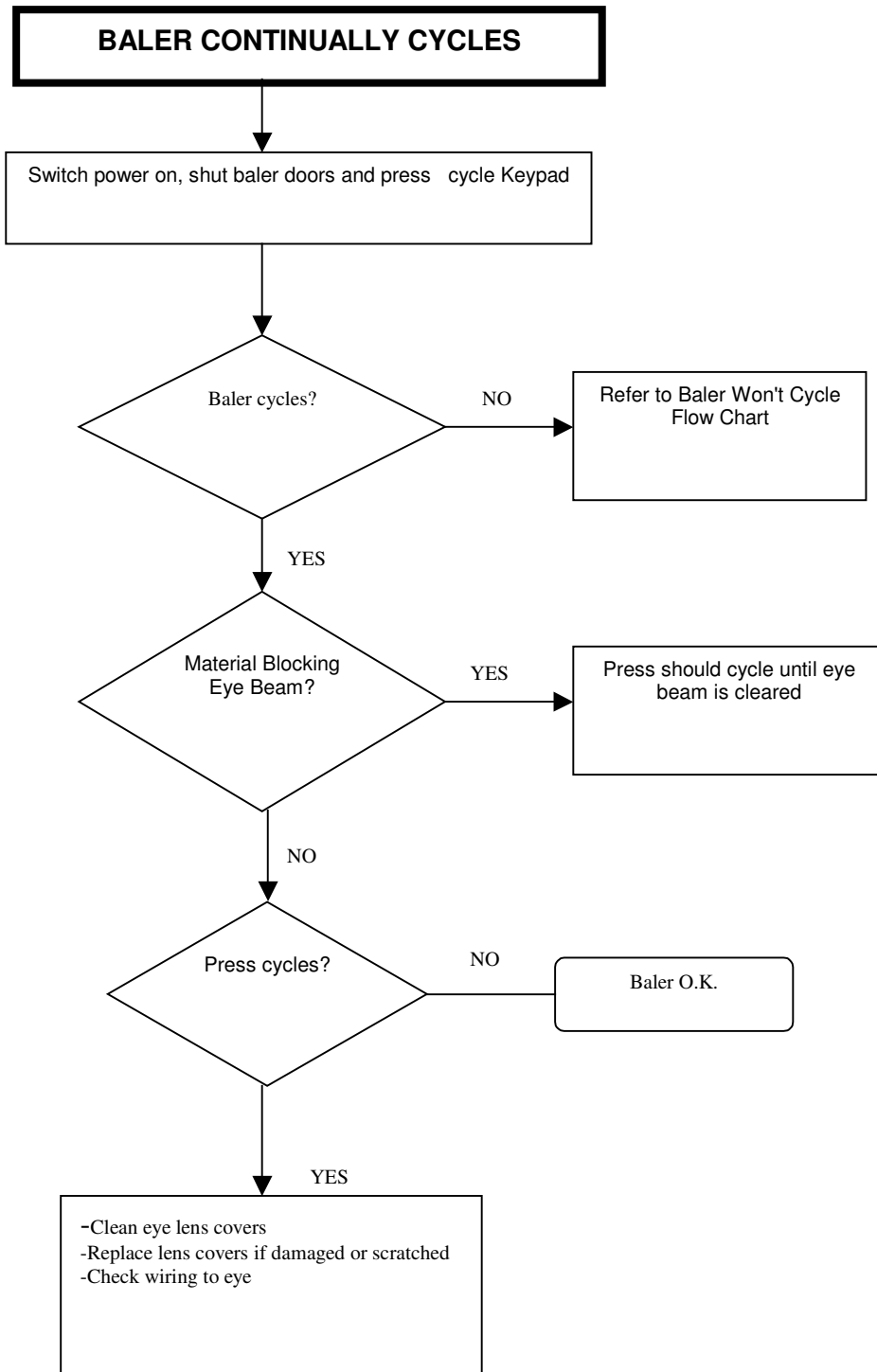
5.0 Trouble-Shooting



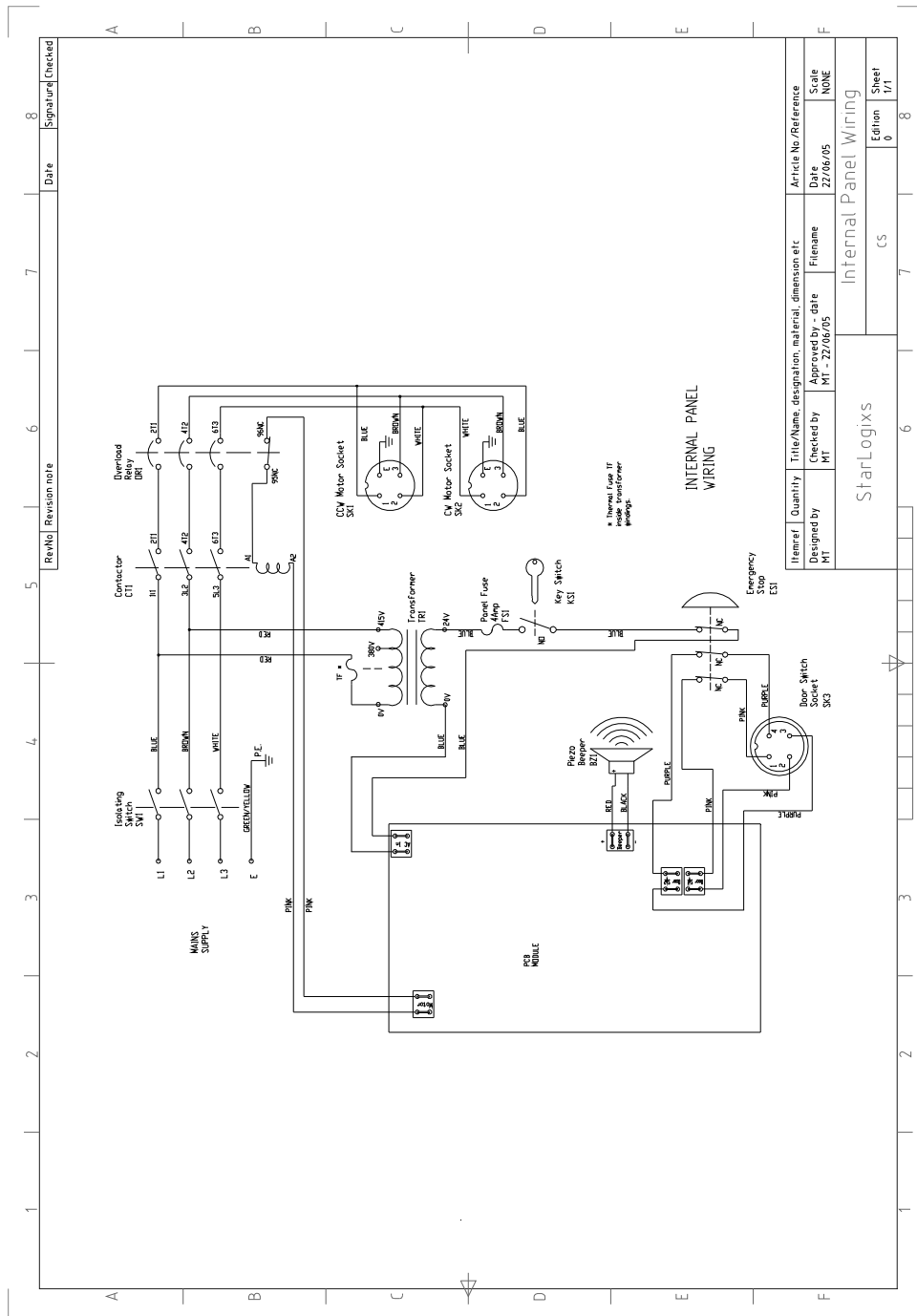
5.0 Trouble-Shooting



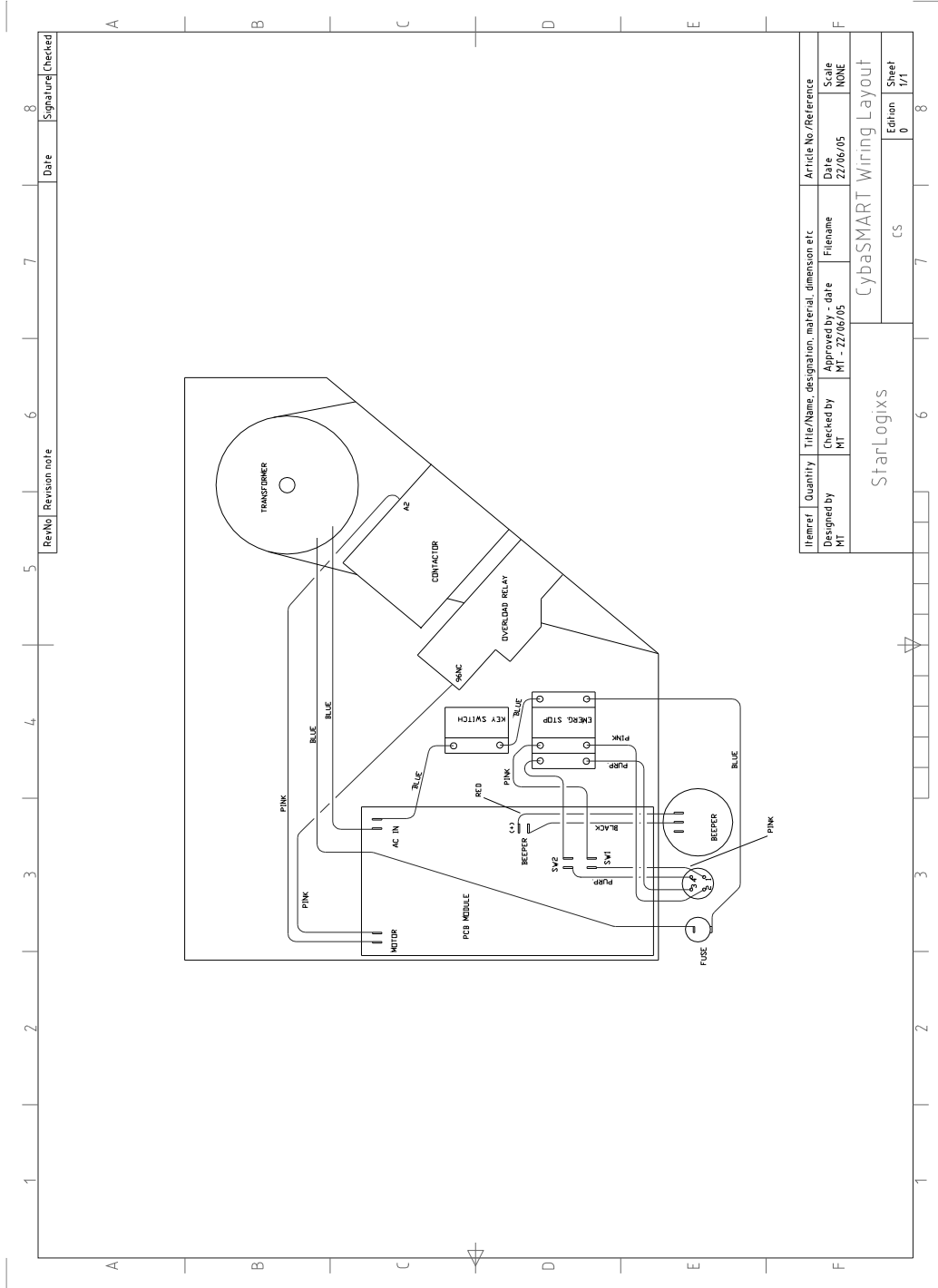
5.0 Trouble-Shooting



5.0 Trouble-Shooting - Internal Panel Wiring



5.0 Trouble-Shooting - Wiring Layout



Itemref	Quantity	Title/Name, designation, material, dimension etc.	Article No /Reference
Designed by MT	Checked by MT	Approved by - date MT- 22/06/05	Filename Date 22/06/05
StarLogix			Scale NONE
CybaSMART Wiring Layout			Sheet 1/1
Edition 0			Sheet 8

6.0 Specifications

Power Supply 415Vac 50Hz 20A
Control & Sensor Power Supply 24Vdc fully mains isolated
Motor Rating SL100 3.0 kW Three Phase
 SL200 3.0 kW Three Phase
 SL400 5.5 kW Three Phase
 SL250 5.5 kW Three Phase

Motor Protection: Auto resetting thermal overload relay
Panel Fuse: 4A MGC 32mm Glass Type
Hopper Detection System: Infra Red encoded beam type
Door Closed Detection: Non-Contact Magnetic Encoded Switch

- All control and sensor wiring is mains isolated.

6.1 Copyright

Copyright 2001 by Starlogixs Pty Ltd.
All rights reserved.

The contents of this document, CybaSMART Controller front panel artwork, printed circuit board artwork, and firmware (programs contained in Controller integrated circuits) are subject to copyright and can not be reproduced, transmitted into any language or computer language, in any form or any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without prior written consent from Starlogixs Pty. Ltd.

6.2 Trademarks

The symbols  and 

are subject to Australian and international Trademark registrations, and their use is expressly prohibited without written consent from Starlogixs Pty Ltd.

WARRANTY

Your StarLogixs CybaSMART Controller is guaranteed against faulty workmanship or components for a period of twelve months after the purchase date. For warranty contact your local sales agent with proof of purchase date.

This warranty does not cover damage or failure cause by or attributable to Acts of God, abuse, misuse, improper maintenance, lightning or other incidence of excessive voltage or any repairs other than those provided by an authorised StarLogixs service facility, or transportation costs.

StarLogixs is not responsible or liable for indirect, special, or consequential damages arising out of or in connection with the use or performance of the Controller or other damages with respect to any economic loss, loss of property, loss of revenues or profit, or cost of removal, installation or reinstallation.

There will be charges rendered for repairs to the product made after the expiration of the aforesaid twelve month warranty period.



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