RedBox INFINITY

RedBox Power

Generator Operation & Maintenance Manual

Do not operate the generator before reading this manual and engine manufacturer's owner's manual and warnings.

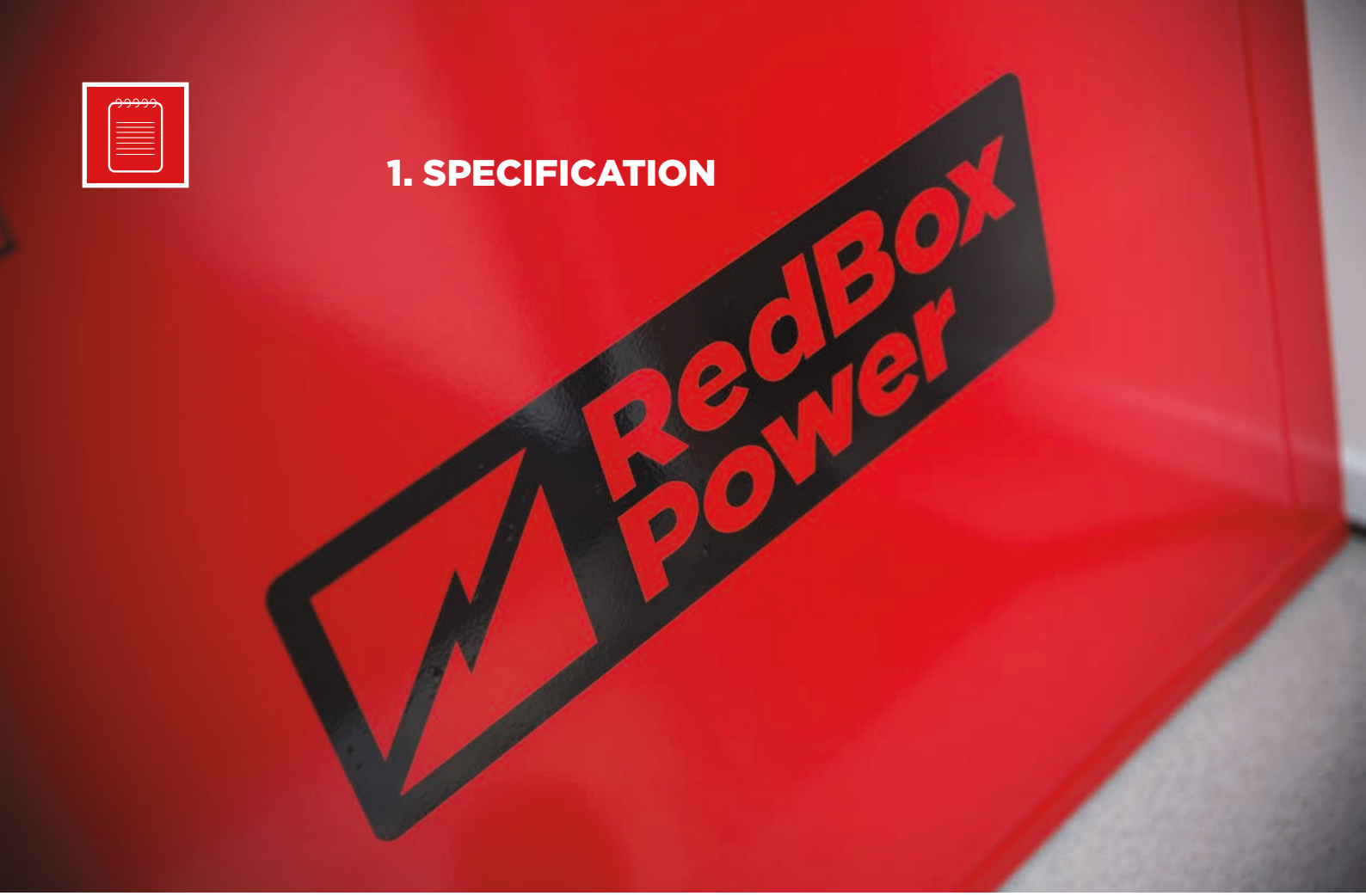
This RedBox Power generator has been designed to provide safe and efficient service if operated and maintained correctly.

Many accidents occur through failure to adhere to fundamental safety procedures.

CONTENTS

Note: **Wiring diagrams refer to the standard Redbox only, please contact Redbox Power Ltd for Redbox Infinity specific wiring diagrams.**

1. SPECIFICATION

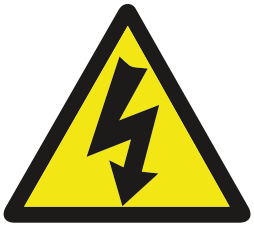


	RedBox Power	RedBox INFINITY
kVA	7.0	7.0
kW	5.6	5.6
LWA	79	79
dBA@7M	56	56
Engine	Hatz IB40T-4	Hatz IB40T-4
Alternator	Meccalte S20W - 110/2	Meccalte S20W - 110/2
Voltage	230v	230v
Weight	197Kg	203Kg
Width	865mm	865mm
Depth	555mm	555mm
Height	700mm	928mm

2. GENERAL SAFETY

2.1 Warning signs

Warnings shown on the machine should be observed at all times. The warning signs should be checked for legibility and any that have become damaged should be replaced. The following are shown on the generator:



RISK OF ELECTRIC SHOCK
ALWAYS TURN OFF GENERATOR BEFORE OPENING
KEEP CLOSED AT ALL OTHER TIMES

CAUTION HOT EXHAUST

WARNING

BEFORE STARTING.

- → Read handbook and safety advice
- → Check oil level
- → Do not adjust engine speed without suitable test equipment

2.2 Safety hazards

Do not climb on the generator, as dents may cause overheating of the acoustic lining. It is important to keep the generator clean and well serviced, in particular keep all air vents / louvers clear of debris to prevent poor performance or possible overheating and permanent damage to the generator. Keep well clear of moving parts on the generator at all times. Children and pets must be kept clear of the operating area.

3. POTENTIAL HAZARDS

3.1 Auxiliary Power

The electricity produced by an engine driven Generator is very similar to mains electricity and should be treated accordingly. Do not remove covers and attempt to work on the Generator while the engine is running. Check the rating and electrical safety of the load before connecting the Generator. Equipment should never be connected that in total exceeds the specified rating of the Generator. Installation of the generator as a standby or secondary power source should only be undertaken by a fully qualified electrician using the appropriate means of isolation from the mains supply. Installation must comply with all applicable laws and electrical codes.

3.2 Operating Environment

The Generator should always be operated on level ground.

3.3 Temperature Range

A temperature range between -10˚C and +35˚C are the normal limits of operation. Operating outside the range will require additional modifications.

3.4 Reference Relative Humidity

The standard reference condition for relative humidity is 30%. Above this value the rated power must be reduced.

3.5 Reference Barometric Pressure

The standard reference condition for total barometric pressure is 1 bar. This corresponds to an altitude of approximately 100m. Above 100m the rated power must be reduced.

3.6 Flammable Environment

RedBox Power generators must not be used in a flammable environment.

3.7 Saline Environment

Operation of the machine in a saline environment will require additional corrosion protection.

4. SAFETY CONSIDERATIONS

4.1 General

All RedBox Power generators comply with all the current EEC directives including:

2006/42/EC	Machinery Directive
2000/14/EC	Noise Emission in the Environment by Equipment for use Outdoors
2004/108/EC	EMC Directive
2006/95/EC	Low Voltage Directive

4.2 Fuel

Fuels and lubricants are a potential source of fire. Lubricants, in particular used engine oil, are potentially carcinogenic. Direct contact should always be avoided by wearing suitable rubber gloves when handling them. Be careful not to spill fuel, clean up any spillages. Inhalation or swallowing of diesel should be avoided. If in doubt seek medical advice. All other forms of contact are irritant and therefore should also be avoided. If skin contact is made wash with soap and water.

4.3 Lubricating Oil

New oil presents no hazard following short term exposure. Used oil should not be allowed to contact the skin. If this does occur, wash off quickly with a proprietary hand cleanser.

4.4 Safe Lifting

Where mechanical assistance is used in lifting machines, ensure the lifting eyes are used, and that all components used to lift the machine are within their Safe Working Load (SWL). The lifting eye on the generator should be regularly checked for signs of damage or gross corrosion.

Lifting equipment should not be attached directly to the Engine/Alternator except for lifting of Engine/Alternator only.

4.5 Earth Connection

All RedBox Power products are fitted with an earth stud on the control panel and this must be connected to an earthing system or spike. Any earth spike required is dependant on the local conditions of use. The size is determined by reference to current IEE regulations or to a competent electrician.

4.6 Fumes

Make sure that the generator is at least 2 metres away from any building during operation. Operate in a well ventilated unconfined area, so that fumes can be properly dispersed. Silencer outlet should be facing an open area to prevent fumes being recirculated. There is the danger of asphyxiation due to exhaust gases. Inhalation of poisonous exhaust fumes can lead to serious injury or death. The generator must not be used in a poorly ventilated or enclosed area.

4.7 Noise

Ear protection may be required depending on the combined noise level of the generator, auxiliary load and the operator's distance from it and the length of exposure. (Noise at Work Regulations 1989)

4.8 Battery Acid

This is corrosive and irritant by all forms of exposure. Direct contact should always be avoided by wearing suitable rubber gloves, some form of eye protection should also be used. If skin contact is made wash with clean water.

4.9 Fire

Ensure that suitable fire extinguishers (AFFF or CO2) are kept within proximity to the generator. Do not cover, enclose, or obstruct the airflow to the generator during or shortly after use, due to fire hazard or damage to the generator from overheating. Allow the generator to cool after use before storing away. Keep all inflammable objects clear of the generator.

4.10 Hot Parts

There is the danger of burns as parts of the generator will become very hot during use. No part of the engine, alternator or exhaust must be touched during or shortly after operation. Do not operate the generator unless all guards are in place. There is a risk of burns or serious personal injury.

5. OPERATING INSTRUCTIONS

Fig. 1

5.1 Pre-start Checks

Before starting the generator please read the Hatz engine owner's manual. Check Fuel & Oil level before attempting to start. This engine is equipped with an oil and temperature switch and will shut-down for low oil pressure and high engine temperature. If engine runs out of fuel do not attempt to start before priming. Press fuel pump prime button for 20–30 seconds. The engine should then self-bleed and start when you go through the starting procedure.

5.2 Warning

Always switch load off before disconnecting plugs. To switch power off at Generator always use circuit breaker.

5.3 Control Panel

The control panel has an emergency stop which is only for emergency use.
This generator is equipped with an RCD for fault protection only. Ensure load is switched off before starting generator. Always turn load off before stopping generator.

5.4 Long Term Storage

For storage or long periods of inactivity, RedBox Power recommend the following: Generators should be stored with oil filled to the correct capacity & battery disconnected; Storage periods of 18 months and over may require special lubricants and treatments. If so please seek further advice from the engine manufacturer.

Before the generator is used after long term storage, all fuels and oils should be replaced. Generator mounts, pipes and hoses should be checked to ensure that they are un-perished following extended periods of storage. The generator should be stored in a clean dry area, ideally having a reasonable constant ambient temperature, and ideally not below freezing.

6 DEEP SEA 3110 OPERATING INSTRUCTIONS

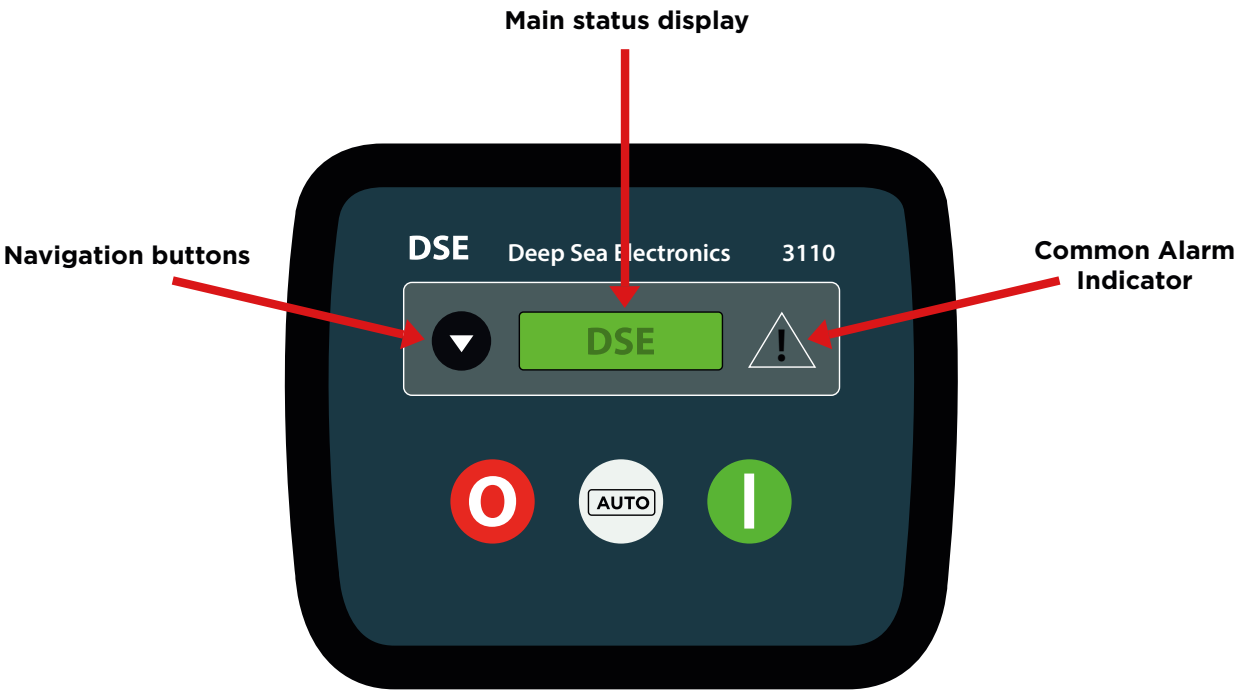


Fig. 2

6.1 Description of controls

See diagram above.

6.2 Panel Locked in Auto

The Stop, Auto and Start buttons are disabled and will not operate. They will do nothing if pressed. The engine can only be started and stopped using the remote start and stop buttons in the cabin itself.

6.3 Starting the Engine via Remote Start Panel Operation

Press green button (Fig. 1) to start generator, green lamp will illuminate when generator is running & voltage is within limits. The remote module will illuminate to indicate any faults. Faults will need to be re-set at generator by pressing the BLUE Reset button labeled. Press red button (Fig. 1) to stop.

6.4 Starting Sequence

If a start request is present, the fuel relay is energised and the engine will be cranked. If the engine fails to fire during this cranking attempt then the starter motor is disengaged for the crank rest duration after which the next start attempt is made. Should this sequence continue beyond 3 attempts, the start sequence will be terminated and the display shows Fail to Start. When the engine fires, the starter motor is disengaged. Speed detection is factory configured to be derived from the main alternator output frequency.

After the starter motor has disengaged, the Safety On timer activates (10 Sec), allowing Oil Pressure, High Engine Temperature, Under-speed, Charge Fail and any delayed Auxiliary fault inputs to stabilise without triggering the fault.

6.5 Engine Running

Once the engine is running and all starting timers have expired, the animated icon is displayed.

If all start requests are removed, the stopping sequence will begin.

6.6 Stopping the Engine

To stop the engine press the Stop Button on the remote panel in the cabin — the set will immediately stop.

Note: In Hybrid cabins with a SmartGauge fitted the generator will continue to run even if the stop Button is pressed if the battery requires charging. The engine will continue to run until the battery has achieved 95% charge as indicated on the SmartGuage. The engine will only Stop in this instance when the cabin is isolated using the main cabin isolation switch. When the cabin is switched back on the engine will restart automatically and run until the battery is charged. When the battery charge is between 95% and 50% the generator will be able to be started and stopped using the remote Start / Stop Buttons.

6.7 Waiting in Auto Mode

If a starting request is made, the starting sequence will begin. Starting requests can be from the following sources:

1. Activation using the remote start panel
2. Activation via the optional SmartGuage where fitted

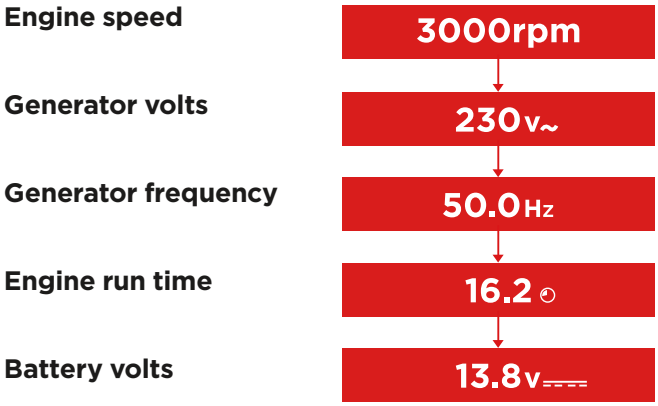
6.8 Viewing the Instruments

It is possible to scroll to display the different pages of information by repeatedly operating the scroll button:

Once selected the page will remain on the LCD display until the user selects a different page or after an extended period of inactivity, the module will revert to the status display.

When scrolling manually, the display will automatically return to the Status page if no buttons are pressed for the duration of the configurable LCD Page Timer. If an alarm becomes active while viewing the status page, the display shows the Alarms page to draw the operator's attention to the alarm condition.

Page order:-



6.9 Redbox Infinity Oil Recycling Sequence

The Oil Recycling Sequence operates automatically after the first manual stop after every 24hrs of running time.

During this sequence the control panels are locked and the generator will not start. The Common Alarm Indicator on the panel shown previously will flash until the sequence is complete.

The recycling sequence takes approximately 5 minutes, comprising:-

1 Minute: Initial Oil Settlement

3 Minutes: Pumping

2 Minutes: Final Oil Settlement

When the sequence is complete the Common Alarm Indicator will stop flashing, the panel will be unlocked and the generator can be started in the normal way.

6.10 Fault icons

	AUXILIARY INPUTS	Auxiliary inputs can be user configured and will display the message as written by the user.
	FAIL TO START	The engine has not fired after the pre-set number of start attempts.
	FAIL TO STOP	The module has detected a condition that indicates that the engine is running when it has been instructed to stop. **NOTE:** 'Fail to stop' could indicate a faulty oil pressure sensor - if engine is at rest, check oil sensor wiring and configuration.
	LOW OIL PRESSURE	The module detects that the engine oil pressure has fallen below the low oil pressure pre-alarm setting level after the Safety On timer has expired.
	ENGINE HIGH TEMPERATURE	The module detects that the engine temperature has exceeded the high engine temperature pre-alarm setting level after the Safety On timer has expired.
	UNDERSPEED	The engine speed has fallen below the underspeed pre-alarm setting.
	OVERSPEED	The engine speed has risen above the overspeed pre-alarm setting.
	CHARGE FAILURE	The auxiliary charge alternator voltage is low as measured from the W/L terminal.
	LOW FUEL LEVEL	The level detected by the fuel level sensor is below the low fuel level setting. (Optional)
	BATTERY UNDER VOLTAGE / BATTERY OVER VOLTAGE	The DC supply has fallen below or risen above the low/high volts setting level.
	GENERATOR UNDER VOLTAGE	The generator output voltage has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	GENERATOR OVER VOLTAGE	The generator output voltage has risen above the pre-set pre-alarm setting.
	GENERATOR UNDER FREQUENCY	The generator output frequency has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	GENERATOR OVER FREQUENCY	The generator output frequency has risen above the pre-set pre-alarm setting.
	EMERGENCY STOP	The emergency stop button has been depressed. This is a failsafe (normally closed to battery positive) input and will immediately stop the set should the signal be removed. Removal of the battery positive supply from the emergency stop input will also remove DC supply from the Fuel and Start outputs of the controller. **NOTE:** The emergency stop positive signal must be present otherwise the unit will shut down.
	INTERNAL MEMORY ERROR	The configuration file is corrupted. Contact your supplier for assistance.

6.11 Fault finding 3110

Unit shuts down	Check DC supply voltage is not above 16 Volts or below 9 Volts. Check the operating temperature is not above 70°C. Check the DC fuse.
Unit locks out on Emergency Stop	Check emergency stop switch is functioning correctly. Check wiring is not open circuit.
Fault operates after engine has fired	Check engine oil pressure. Check oil pressure switch/sensor and wiring, switch is normally closed and opens with pressure.
High engine	Check engine temperature.
Temperature fault operates after engine has fired.	Check switch/sensor and wiring. Check switch polarity is correct.
Shutdown fault operates	Check relevant switch and wiring of fault indicated on LCD display. Check configuration of input.
Warning fault operates	Check relevant switch and wiring of fault indicated on LCD display. Check configuration of input.
Fail to Start is activated after pre-set number of attempts to start	Check wiring of fuel solenoid. Check fuel lift pump operational & fuel supply to engine. Check battery supply. Check battery supply is present on the Fuel output of the module.
Generator fails to start on receipt of Remote Start signal.	Check Start Delay timer has timed out (not configured on standard builds). Check signal is on “Remote Start” input. Confirm correct configuration of input is configured to be used as “Remote Start”. Check that the oil pressure switch or sensor is indicating low oil pressure to the controller. The set will not start if oil pressure is not low.
Starter motor inoperative	Check wiring to starter solenoid. Check battery supply. Check battery supply is present on the Starter output of module. Ensure oil pressure switch or sensor is indicating the “low oil pressure” state to the 3110 controller.
Engine runs but generator will not take load	Check MCB is switched on.
Fail to stop alarm when engine is at rest	Check low oil pressure switch is operating correctly. Check engine is operating correctly.
Inaccurate generator measurements on controller display	The 3110 controller is true RMS measuring so gives more accurate display when compared with an ‘average’ meter such as an analogue panel meter or some lower specified digital multimeters. Accuracy of the controller is better than 1% of full scale. Ie Gen volts full scale is 333V ph-n so accuracy is ±3.33V (1% of 333V).

NOTE:- The above fault finding is provided as a guide check-list only.
For further information http://www.deepseaplc.com/

6.12 Fault finding general

High engine temperature	Check for loose wires on the temperature switch & DC loom connector block. Check the continuity of the earth wire (refer to wiring diagram). Check operation of the Temperature switch. Check that the generator air inlets and outlets are not obstructed.
Low oil pressure	Check Oil level and fill to correct level if necessary. Check for loose wires on the Oil switch & DC loom connector block. Check the continuity of the earth wire (refer to wiring diagram). Check operation of Oil switch.
HZ / Frequency shutdown & Voltage shutdown	Check the Circuit Breaker has not tripped and reset if required. Check AC Input at module 230V. Check engine speed is set to 52.5Hz at no load. Adjust if required (speed should be set when engine is cold). Check AC supply from alternator (if no output refer to alternator handbook). Check fuse on AVR. Check engine has been regularly serviced.
No power to control module has fired	Check the Circuit Breaker has not tripped and reset if required. Check 12V DC supply to module. If supply present but not operational try new unit. Check battery voltage. Check battery isolator switch is on. Check for loose wires on battery isolator. Check for loose wires on the DC connector plug and socket. Check continuity on +VE and -VE wires to battery.
Battery not charging	Check for loose wires on charge alternator. Check for loose wires on the DC connector plug and socket. Check continuity of all wires from charge alternator. (Refer to wiring diagram) Check AC voltage at yellow wire from engine to regulator 28 – 32V. Check voltage at the battery while generator is running, voltage should be 13.4V - 14.4V.
Engine not starting has fired	Check battery voltage is above 12.5V. Check Oil level and fill to correct level if necessary. Check fuel level. Check operation of fuel lift pump. Check fuel is reaching the injectors. When running correctly fuel should be running freely from the injector return pipe. If no fuel running from return check the fuel filters & check condition of fuel. Check no air in system. Keep fuel pump running using prime button for 20- 30 seconds.
Starter Motor not operating	Check Emergency stop. Check the fuses. Check battery voltage is above 12.5V. Check for loose wires on the solenoid, relays, fuses, module terminals, plug and socket. Check +VE supply from battery to starter motor via isolator switch. Check -VE supply. Check start terminal on Starter motor & trace back to battery via relay. Check start terminal on Starter motor & trace back to module via relay, plug & socket.
Fuel solenoid not operating	Does the Fuel solenoid energise when the starter motor turns over. Check Emergency stop. Check the Circuit Breakers. Check battery voltage is above 12.5V. Check for loose wires on the solenoid, relays, fuses, module terminals, plug and socket. Check -VE supply. Check +VE on Fuel solenoid & trace back to battery via relay. Check +VE on Fuel solenoid & trace back to module via relay, plug & socket.

7. SERVICE AND MAINTENANCE

IMPORTANT WARNING:

After any service on the generator, ensure that all piping and electrical cables are correctly routed and secured away from hot parts. Failure to observe this warning may result in damage to the piping and cables which could result in a fire.

Do not service or work on generator whilst the engine is running, also ensure battery is disconnected.

7.1 Engine/alternator removal instructions

1) Remove Generator Door

2) Remove Exhaust Cover Front Panel

3) Remove lower exhaust clamp to release the silencer from the engine

4) Remove x4 bolts (x2 bolts on Redbox Infinity) holding the genset carrier to the Enclosure

5) Pull Engine/Alternator carrier out using the handles provided

6) Now fully removed, Engine/ Alternator can be worked on

7) Refitting is a reversal of removal. After re-fitting the exhaust, check for emissions of CO at all the joints of the exhaust system. The emission reading from a CO detector must not exceed 0ppm.

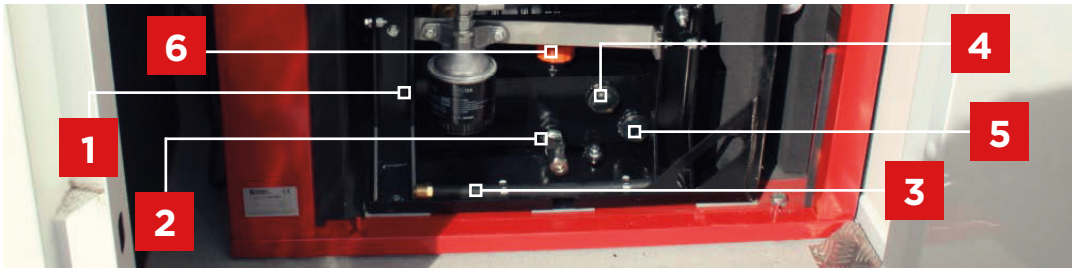
7.2 Engine service

Service the engine strictly in accordance with the instructions given in the relevant operator manual / handbook. An approved specialist must carry out any maintenance. Any spare parts required should be of genuine manufacturer's origin. Note: failure to adhere to manufacturer's recommended service schedules may invalidate the warranty. An enhanced 1000 hour Hatz engine service interval is provided with the standard RedBox Power generator. All tasks noted to be completed at 250 hours and 500 hours in the Hatz Operators Manual supplied with the generator should be carried out at 1000 hours.

The RedBox Infinity generator has a 2000hour service interval. All tasks noted to be completed at 250 hours and 500 hours in the Hatz Operators Manual supplied with the generator should be carried out at 2000 hours including replacing the oil in the external sump. The Infinity system, cycles the oil in the engine every 24 hours, whilst controlling the amount of oil left in the engine. The oil level in the external sump can be monitored and the sight glasses are there to provide the user with an indication of the oil levels.

On standard RedBox engines, the user is advised to check the engine oil level daily. However, with the Infinity Generator, oil levels only need to be checked on a weekly basis. Unlike the standard RedBox Generator, checking & topping up of oil should now be carried out by removing the oil filler cap on the external sump ensuring that the level observed is half way up the top sight glass, then replace the cap afterwards. Topping up the sump in this way prevents the end user over filling the engine itself.

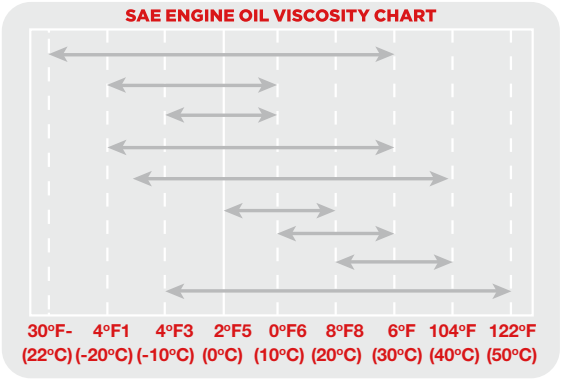
The external sump arrangement is shown below.



1. External Sump
2. Oil Drain Valve - Connect the drain tube 3 to the valve to initiate a controlled flow of oil into a suitable container when draining oil from the engine
3. Oil Drain Connection Tube - Clean the tube after use and return to the stowage position
4. Oil Level Upper Sight Glass - When checking the oil level after servicing and prior to operating the generator it should be along the centre of the upper sight glass
5. Oil Level Lower Sight Glass - If the oil level is only visible in the lower sight glass, do not operate the generator and replenish oil as required.
6. External Sump Oil Filler Cap

7.3 Engine oil

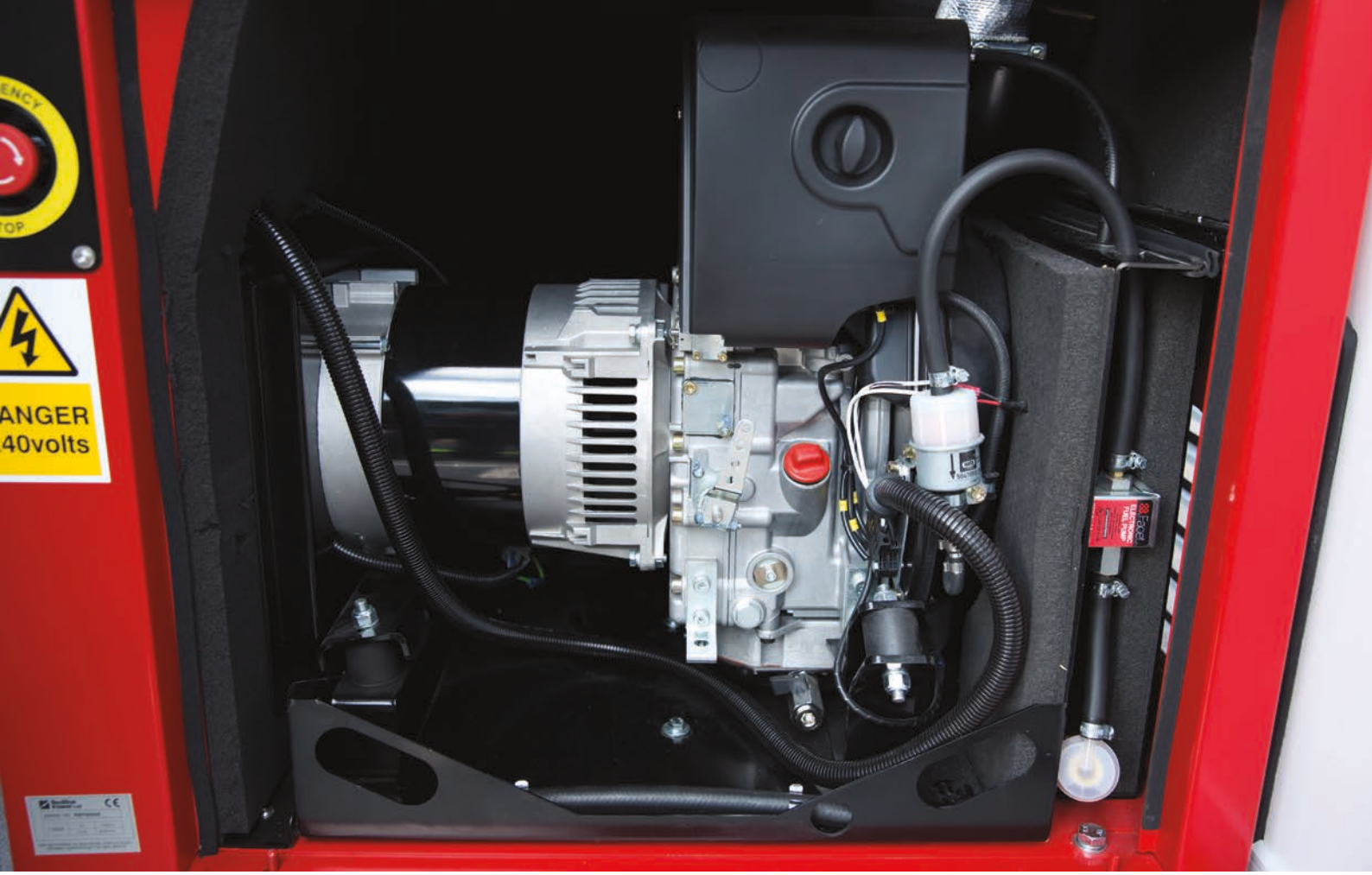
Engine oil should be chosen by referring to the below chart and the grade applicable will depend on the environment the unit is used in.



Units will be pre-filled using a 15W-40 mineral oil as standard.

7.4 Alternator service

Brushless alternators employed on RedBox Power are maintenance free. Service must be carried out by competent qualified personnel strictly in accordance with the instructions given in the handbook. Any spare parts required should be of genuine manufacturer's origin.



8. MECCALTE ALTERNATOR SPARES

Part No	Description
RB527036	35Uf Capacitor

9. HATZ CONSUMABLE SPARES

Part No	Description
RB250005	Air filter
RB250003	Fuel filter (In line) (main)
RB507002	Pre filter (90°)

10. REDBOX SPARES

Part No	Description	Quantity
RB527062	Meccalte Alternator S20W - 110	1
RB250001	Engine Hatz IB40T-4	1
RB250002	Temperature switch	1
RB777006	Fan	1
RB777022	Facet fuel lift pump	1
RB150003	Silencer	1
RB150004	Inlet flex	1
RB150005	Outlet flex	1
RB150006	Manifold pipe	1
RB600006	Door latch	1
RB507011	46mm Parallel pipe clamp	1
RB527038	MCB 25Amp 2 pole	1
RB527044	RCD 40Amp 2 pole	1
RB527030	Circuit breaker 20Amp	1
RB527028	Circuit breaker 1 Amp	1
RB527029	Circuit breaker 2 Amp	1
RB527014	32A Panel mounted angled socket 2P4E 32A/240V	1
RB777024	Emergency stop assembly	1
RB527032	Deep Sea 3110 Module	1
RB527033	Deep Sea 3110 Gasket	1
RB777007	25mm Battery cable red	1m
RB777008	25mm Battery cable black	1m
RB250003	Fuel filter (In line)	1
RB527045	Relay-4pin 12V DC	2
RB250004	Charge Regulator	1
RB777011	Remote control assembly	1
RB150010	Outlet Flex (Infinity)	1
RB150013	Inlet Flex (Infinity)	1
RB600061	External Sump Oil Filter	1
RB600078	Fuel/Water Separator Filter (Infinity)	1
RB600079	Extended Oil Sump Hose Kit	1

11. WARRANTY

This generator supplied by REDBOX POWER LTD carries a warranty of 12 months from date of dispatch or 1000 Hours (Redbox) /2000 Hours (Redbox Infinity), whichever comes sooner.

During the warranty period, should the plant fail due to faulty design, materials or workmanship by REDBOX POWER or its sub-contractors, we undertake to rectify the fault.

REDBOX POWER will accept no responsibility whatsoever for equipment that has failed due to:

- Operation with incorrect fuel, lubricating oil.
- Improper repair or use of parts not supplied by REDBOX POWER.
- Lack of, or incorrect, maintenance.
- Fair wear and tear, misuse, negligence, accidental damage, improper storage, incorrect starting / warm-up / run-in or shutdown.
- Operation for extended periods of time with little or no load on the engine (low loading)

No warranty claim will be considered by REDBOX POWER unless any defective parts are available for inspection by us, or our nominees, to determine the reason or cause of failure, and REDBOX POWER is given the option of repair or replacement.

REDBOX POWER are not responsible for incidental or consequential damages, downtime, or other costs due to warrantable failure, and unauthorised alterations made to any product supplied by REDBOX POWER.

PART No

RBW001

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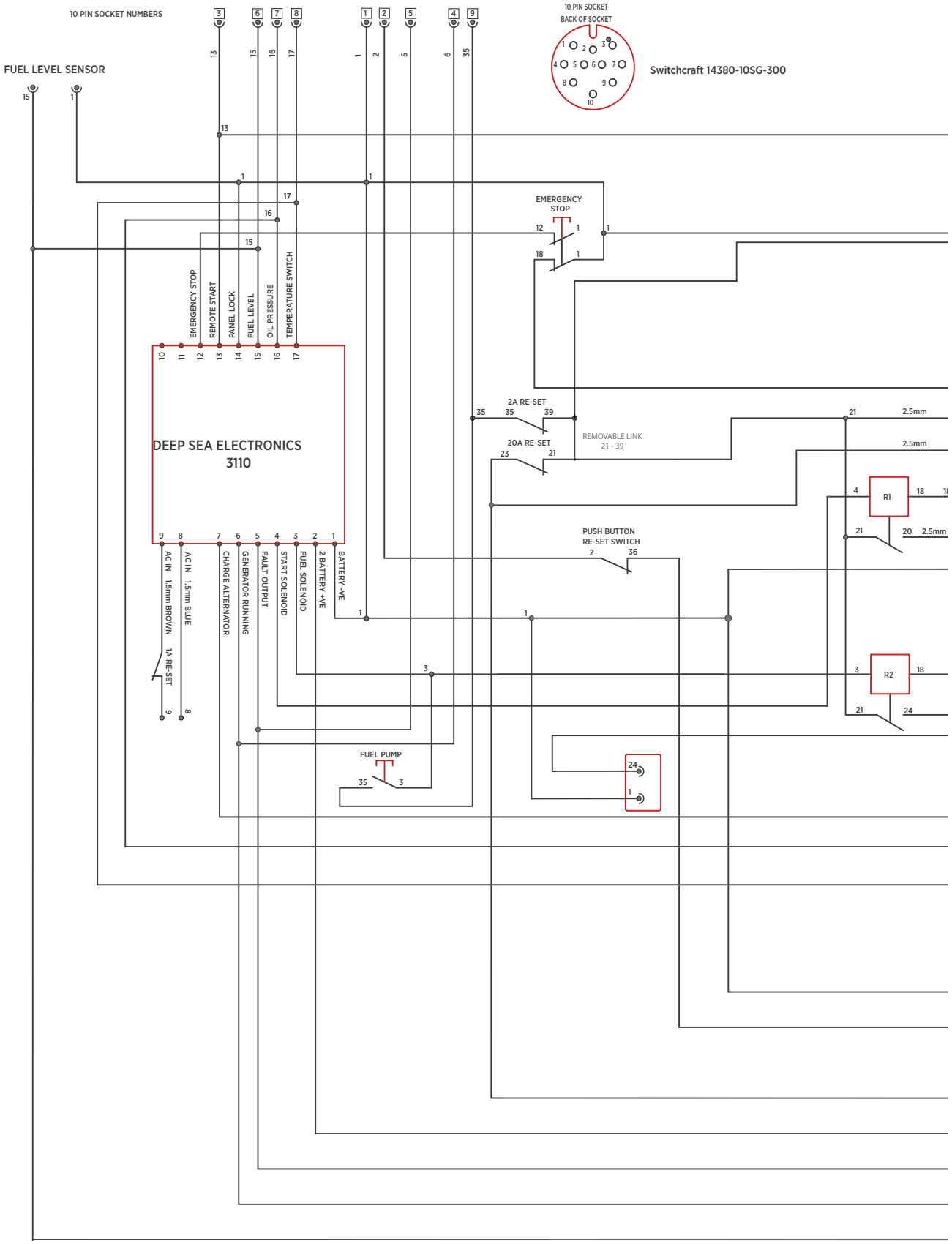
DO NOT SCALE - IF IN DOUBT ASK

THIRD ANGLE PROJECTION



UNITS IN MILLIMETRES

MACHINING AND SURFACE TEXTURE SYMBOLS ARE TO BS308 WITH VALUES IN MICROMETRES RA TO BS1134. ALL WELDING SYMBOLS ARE TO BS499. TOLERANCE SYMBOLS AND LIMITS TO BS EN 20286

ANGULAR TOLERANCE ` 0.5 ~
SCREW THREADS TO BE ISO METRIC COARSE (BS3643)

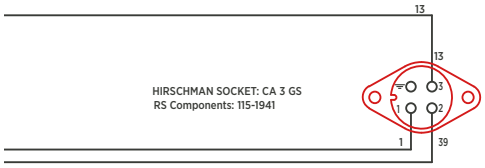
PERMISSIBLE VARIATIONS OF UNTOLERANCED DIMENSIONS(VALUE IN ` MM)

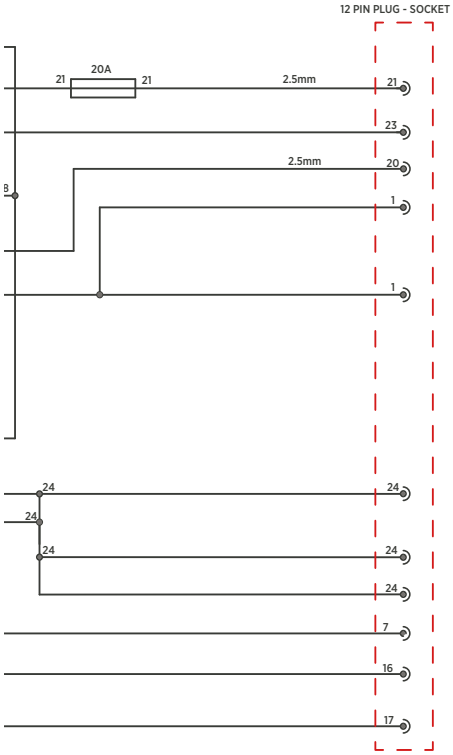
	NOMINAL DIMENSION RANGE							
	0.5 3	3 6	6 30	30 120	120 400	400 1000	1000 2000	2000 +
FINE	0.05	0.05	0.1	0.15	0.2	0.3	0.5	---
MEDIUM	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
COARSE	0.2	0.3	0.5	0.8	1.2	2	3	4
VERY COARSE	---	0.5	1	1.5	2.5	4	6	8

REVISION DESCRIPTION

NOTE

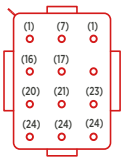
ALL CABLE TO BE 1.5MM UNLESS STATED





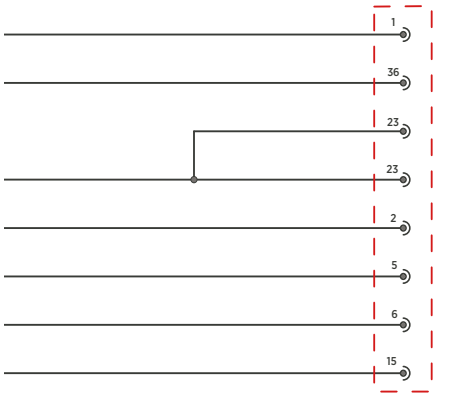
NOTE

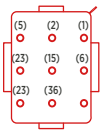
VIEW FROM REAR OF FEMALE SOCKETS



Durite multiple connector 0-013-16
'Mate n Lock'2.00mm female housing 12 way

Durite multiple connector 0-013-12
'Mate n Lock' 2.00mm female housing 2 way





Durite multiple connector 0-013-15
'Mate n Lock' 2.00mm female housing 9 way

SCALE	
FINISHED WEIGHT	
FINISH	
MATERIAL	**ASSY**
MATERIAL STANDARD	
TOLERANCE CLASS	**MEDIUM**
DRAWN	**PM**
CHECKED	
DATE	**04-Aug-14**

RedBox Power

DESCRIPTION

DSE PANEL WIRING DIAGRAM

PART No

RBW001

REMOVE ALL SHARP EDGES

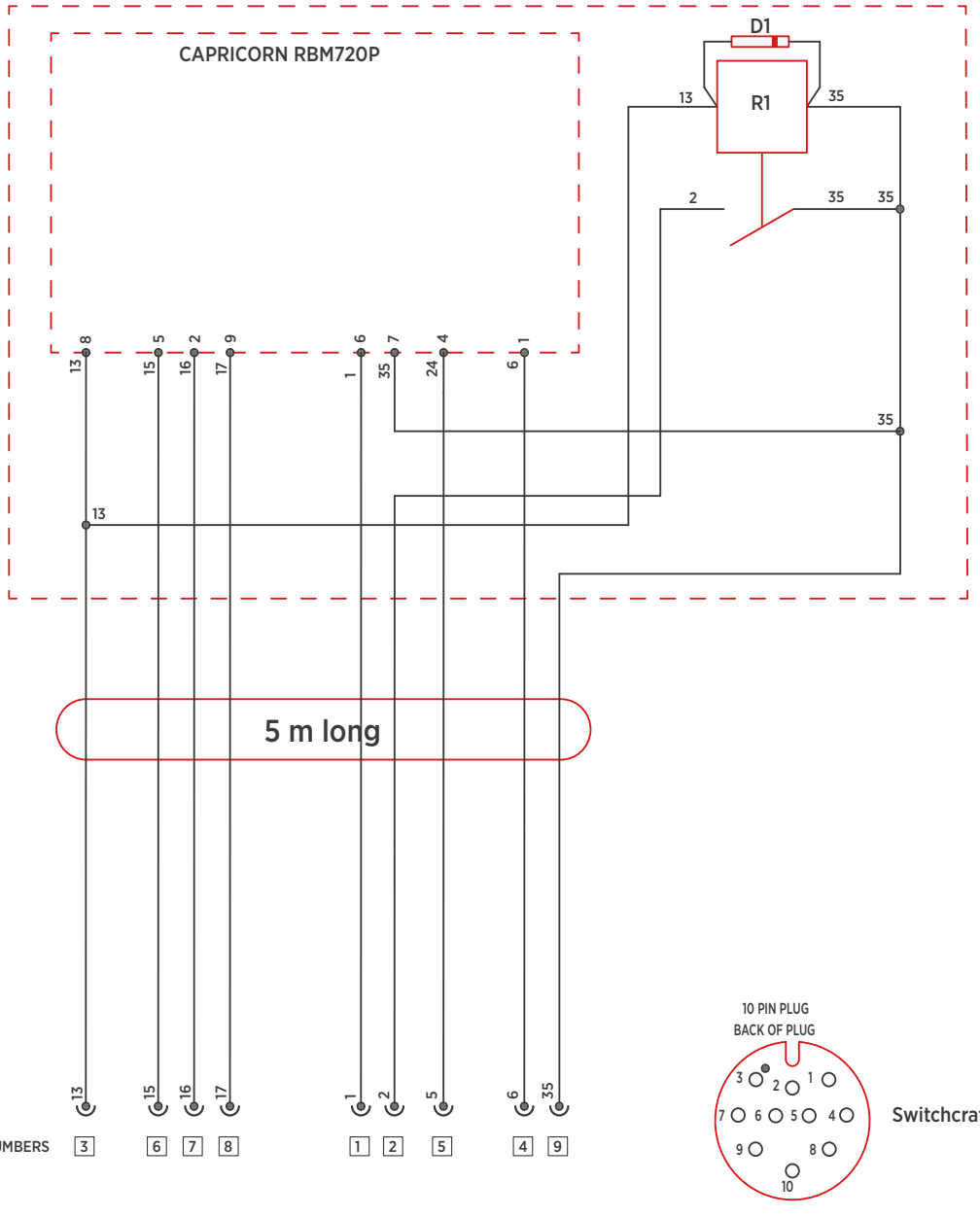
SHEET 1 OF 1 | | A3

PART No **RBW002**

DO NOT SCALE - IF IN DOUBT ASK

THIRD ANGLE PROJECTION

R1 = Power on relay
D1 = DIODE 1N4001



Switchcraft 13380-10PG-331

UNITS IN MILLIMETRES

NOTE

ALL CABLE TO BE 1.5MM UNLESS STATED

Term 1 = Running +VE I/P (CTG)

Term 2 = Low oil pressure -VE I/P (CTG)

Term 3 = High engine temp -VE I/P (CTG)

Term 4 = Aux +VE I/P (CTP)

Term 5 = Low fuel -VE I/P (CTG)

Term 6 = Battery -VE

Term 7 = Battery +VE

Term 8 = Start -VE O/P

Term 9 = High engine temp -VE I/P (OFG)

Term 10 = Low fuel - VE I/P (OFG)

(CTG) = CLOSED TO GROUND ON FAULT
(OFG) = OPEN FROM GROUND ON FAULT
(CTP) = CLOSED TO POSITIVE ON FAULT

TO USE TERM 9 HIGH ENGINE TEMPERATURE -VE IP (CFG) SW 4 MUST BE ON

Dip switches

Swt 1 = Runtime
Swt 2 = Runtime
Swt 3 = Reverse I/P - High engine temp
Swt 4 = Reverse I/P - Low fuel

RUNTIME CHAT

Swt 1	1h	OFF	2h	ON	3h	OFF	NON TIMER RUN	ON
Swt 2		OFF		OFF		ON		ON

MACHINING AND SURFACE TEXTURE SYMBOLS ARE TO BS308 WITH VALUES IN MICROMETRES RA TO BS1134. ALL WELDING SYMBOLS ARE TO BS499. TOLERANCE SYMBOLS AND LIMITS TO BS EN 20286

ANGULAR TOLERANCE ` 0.5 ~
SCREW THREADS TO BE ISO METRIC COARSE (BS3643)

PERMISSIBLE VARIATIONS OF UNTOLERANCED DIMENSIONS(VALUE IN ` MM)

	NOMINAL DIMENSION RANGE							
	0.5 3	3 6	6 30	30 120	120 400	400 1000	1000 2000	2000 +
FINE	0.05	0.05	0.1	0.15	0.2	0.3	0.5	---
MEDIUM	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
COARSE	0.2	0.3	0.5	0.8	1.2	2	3	4
VERY COARSE	---	0.5	1	1.5	2.5	4	6	8

REVISION DESCRIPTION

SCALE	
FINISHED WEIGHT	
FINISH	
MATERIAL	**ASSY**
MATERIAL STANDARD	
TOLERANCE CLASS	**MEDIUM**
DRAWN	**PM**
CHECKED	
DATE	**04-Aug-14**

RedBox Power

DESCRIPTION

REMOTE CONTROL WIRING DIAGRAM

PART No

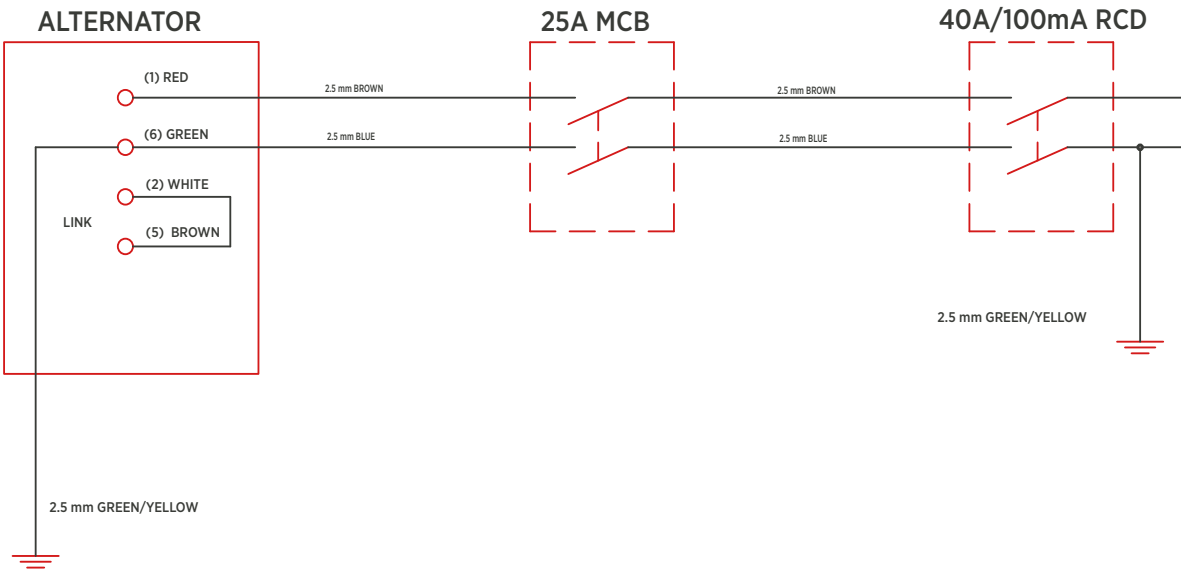
RBW002

REMOVE ALL SHARP EDGES

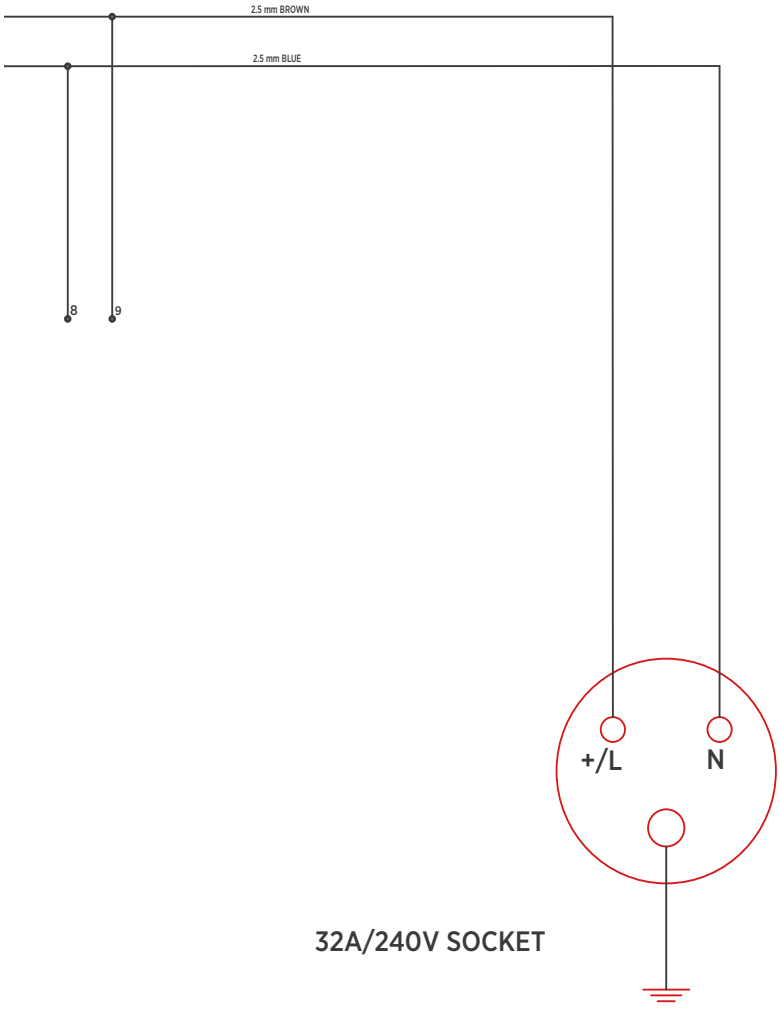
SHEET 1 OF 1 | A3

PART No

RBW003



UNITS IN MILLIMETRES



32A/240V SOCKET

MACHINING AND SURFACE TEXTURE SYMBOLS ARE TO BS308 WITH VALUES IN MICROMETRES RA TO BS1134. ALL WELDING SYMBOLS ARE TO BS499. TOLERANCE SYMBOLS AND LIMITS TO BS EN 20286

ANGULAR TOLERANCE ` 0.5 ~
SCREW THREADS TO BE ISO METRIC COARSE (BS3643)

PERMISSIBLE VARIATIONS OF UNTOLERANCED DIMENSIONS(VALUE IN ` MM)

	NOMINAL DIMENSION RANGE							
	0.5 3	3 6	6 30	30 120	120 400	400 1000	1000 2000	2000 +
FINE	0.05	0.05	0.1	0.15	0.2	0.3	0.5	---
MEDIUM	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
COARSE	0.2	0.3	0.5	0.8	1.2	2	3	4
VERY COARSE	---	0.5	1	1.5	2.5	4	6	8

REVISION DESCRIPTION

SCALE	
FINISHED WEIGHT	
FINISH	
MATERIAL	**ASSY**
MATERIAL STANDARD	
TOLERANCE CLASS	**MEDIUM**
DRAWN	**PM**
CHECKED	
DATE	**04-Aug-14**

RedBox Power

DESCRIPTION

230V CIRCUIT WIRING DIAGRAM

PART No

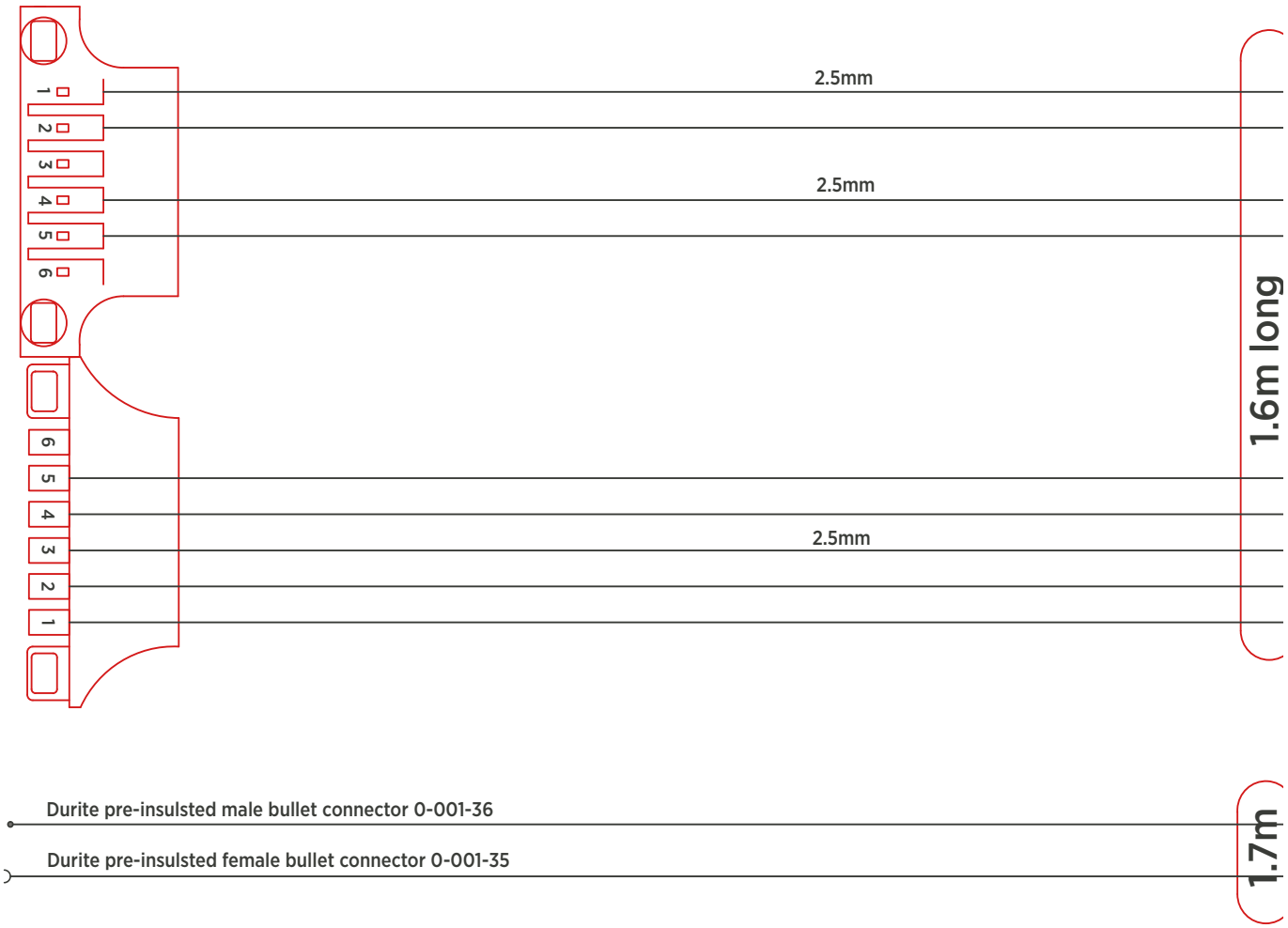
RBW003

REMOVE ALL SHARP EDGES

SHEET 1 OF 1 | | A3

PART No

RBW005



UNITS IN MILLIMETRES

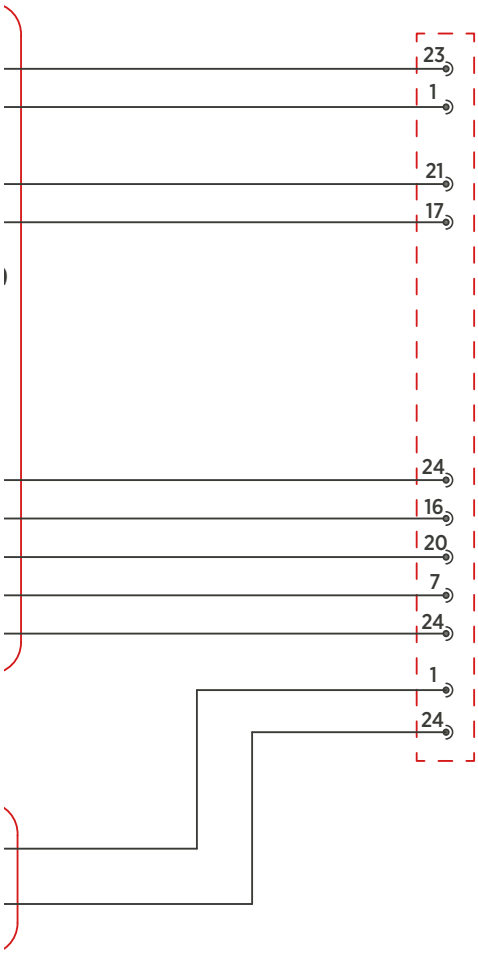
MACHINING AND SURFACE TEXTURE SYMBOLS ARE TO BS308 WITH VALUES IN MICROMETRES RA TO BS1134. ALL WELDING SYMBOLS ARE TO BS499. TOLERANCE SYMBOLS AND LIMITS TO BS EN 20286

ANGULAR TOLERANCE ` 0.5 ~
SCREW THREADS TO BE ISO METRIC COARSE (BS3643)

PERMISSIBLE VARIATIONS OF UNTOLERANCED DIMENSIONS(VALUE IN ` MM)

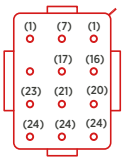
	NOMINAL DIMENSION RANGE							
	0.5 3	3 6	6 30	30 120	120 400	400 1000	1000 2000	2000 +
FINE	0.05	0.05	0.1	0.15	0.2	0.3	0.5	---
MEDIUM	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
COARSE	0.2	0.3	0.5	0.8	1.2	2	3	4
VERY COARSE	---	0.5	1	1.5	2.5	4	6	8

REVISION DESCRIPTION



NOTE

VIEW FROM REAR OF MALE SOCKETS



Durite multiple connector 0-013-06
'Mate n Lock' 2.00mm male housing 12 way

SCALE	
FINISHED WEIGHT	0.000 (KG)
FINISH	
MATERIAL	ASSY
MATERIAL STANDARD	
TOLERANCE CLASS	MEDIUM
DRAWN	PM
CHECKED	
DATE	04-Aug-14

RedBox Power

DESCRIPTION

REMOTE START WIRING DIAGRAM

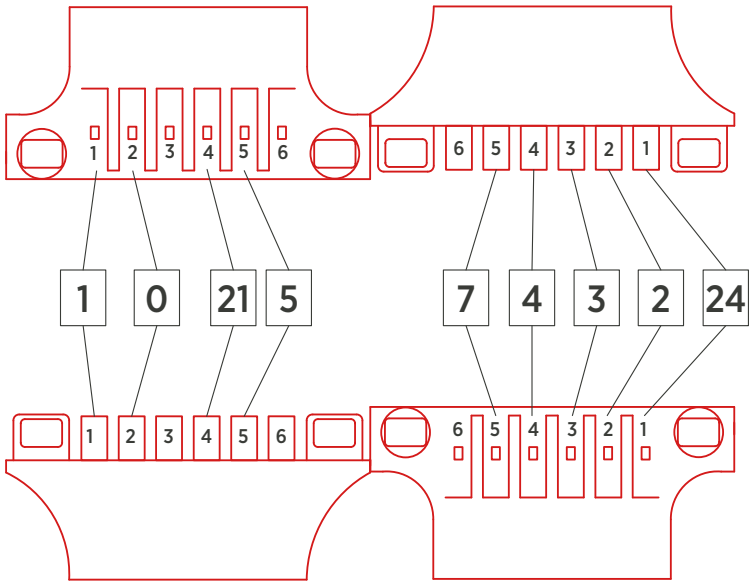
PART No

RBW005

REMOVE ALL SHARP EDGES

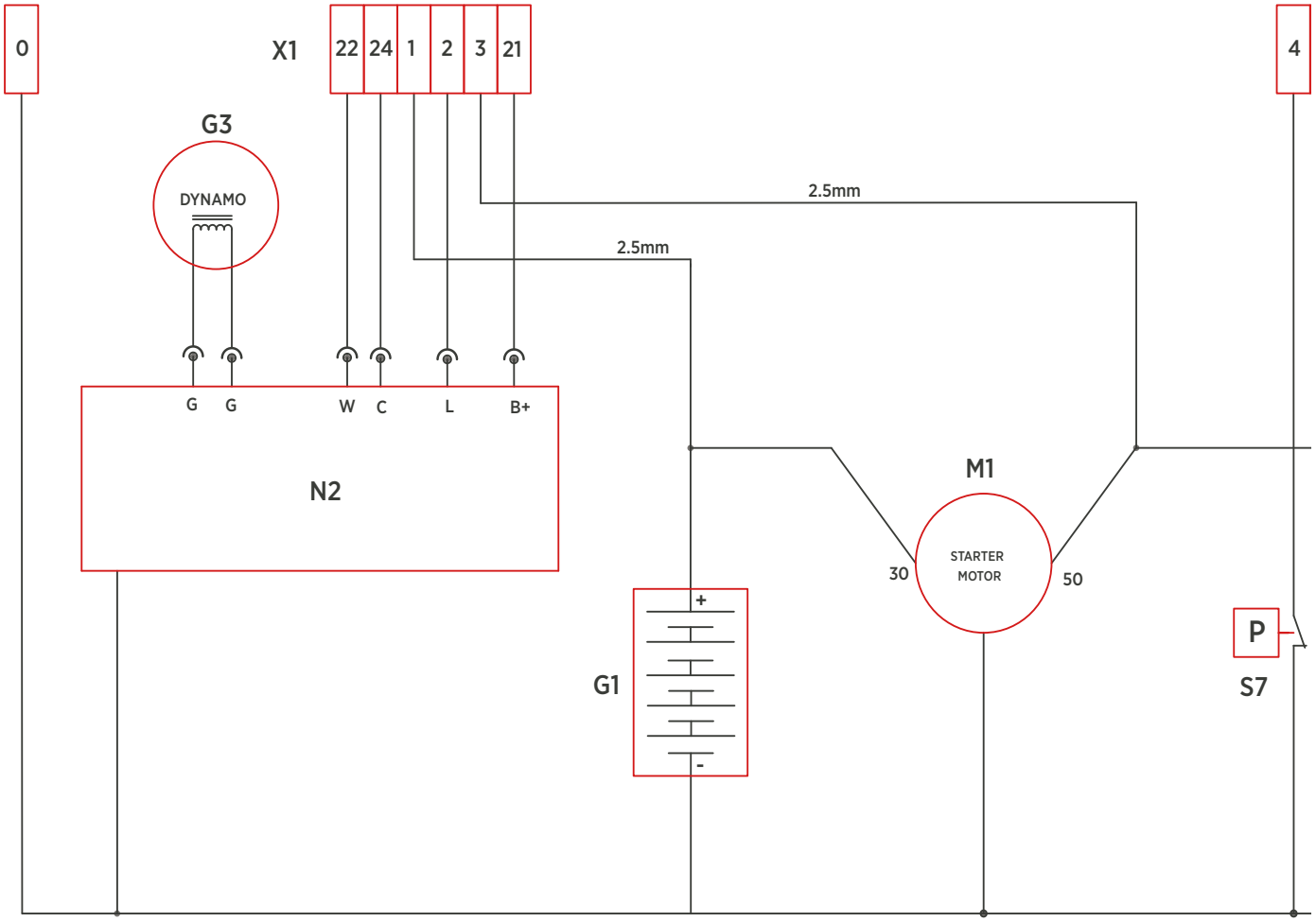
SHEET 1 OF 1 | A3

PART No RBW006



WIRING HARNES

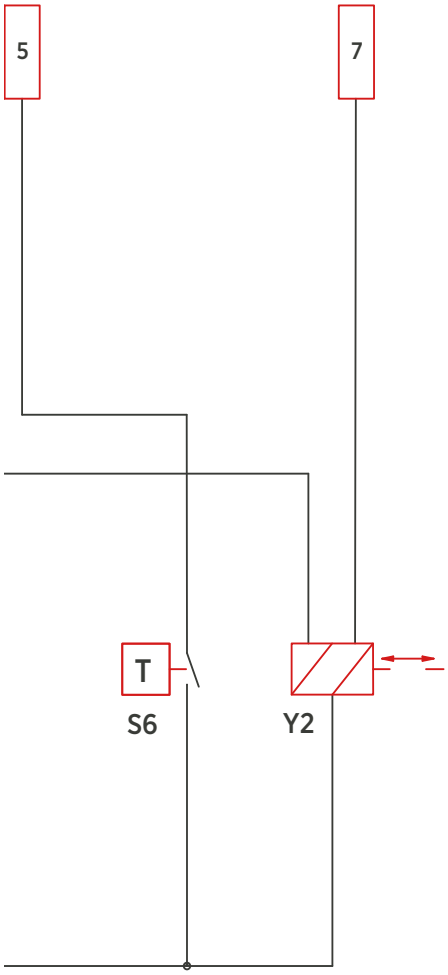
ENGINE



UNITS IN MILLIMETRES

NOTE

X1 TERMINAL STRIP
N2 REGULATOR FOR FLYWHEEL ALTERNATOR
G1 BATTERY
G3 FLYWHEEL ALTERNATOR
M1 STARTER MOTOR
S6 TEMPERATURE SWITCH
S7 OIL PRESSURE SWITCH
Y2 SOLENOID FOR ENGINE STOP
0 = BATTERY -VE
1 = BATTERY +VE
2 = CHARGE ALTERNATOR
3 = STARTER MOTOR PIN 50
4 = OIL PRESSURE SWITCH
5 = ENGINE TEMP SWITCH
7 = FUEL STOP SELENIOD
21 = BATTERY CHARGE +VE
22 = FREQUENCY COUNTER (NOT IN USE)
24 = I/P +VE



MACHINING AND SURFACE TEXTURE SYMBOLS ARE TO BS308 WITH VALUES IN MICROMETRES RA TO BS1134. ALL WELDING SYMBOLS ARE TO BS499. TOLERANCE SYMBOLS AND LIMITS TO BS EN 20286

ANGULAR TOLERANCE ` 0.5 ~
SCREW THREADS TO BE ISO METRIC COARSE (BS3643)

PERMISSIBLE VARIATIONS OF UNTOLERANCED DIMENSIONS(VALUE IN ` MM)

	NOMINAL DIMENSION RANGE							
	0.5 3	3 6	6 30	30 120	120 400	400 1000	1000 2000	2000 +
FINE	0.05	0.05	0.1	0.15	0.2	0.3	0.5	---
MEDIUM	0.1	0.1	0.2	0.3	0.5	0.8	1.2	2
COARSE	0.2	0.3	0.5	0.8	1.2	2	3	4
VERY COARSE	---	0.5	1	1.5	2.5	4	6	8

REVISION DESCRIPTION

SCALE	1:1
FINISHED WEIGHT	0.000 (KG)
FINISH	
MATERIAL	ASSY
MATERIAL STANDARD	
TOLERANCE CLASS	MEDIUM
DRAWN	PM
CHECKED	
DATE	04-Aug-14

RedBox Power

DESCRIPTION

HATZ ENGINE WIRING DIAGRAM

PART No

RBW006

REMOVE ALL SHARP EDGES

SHEET 1 OF 1 | A3

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