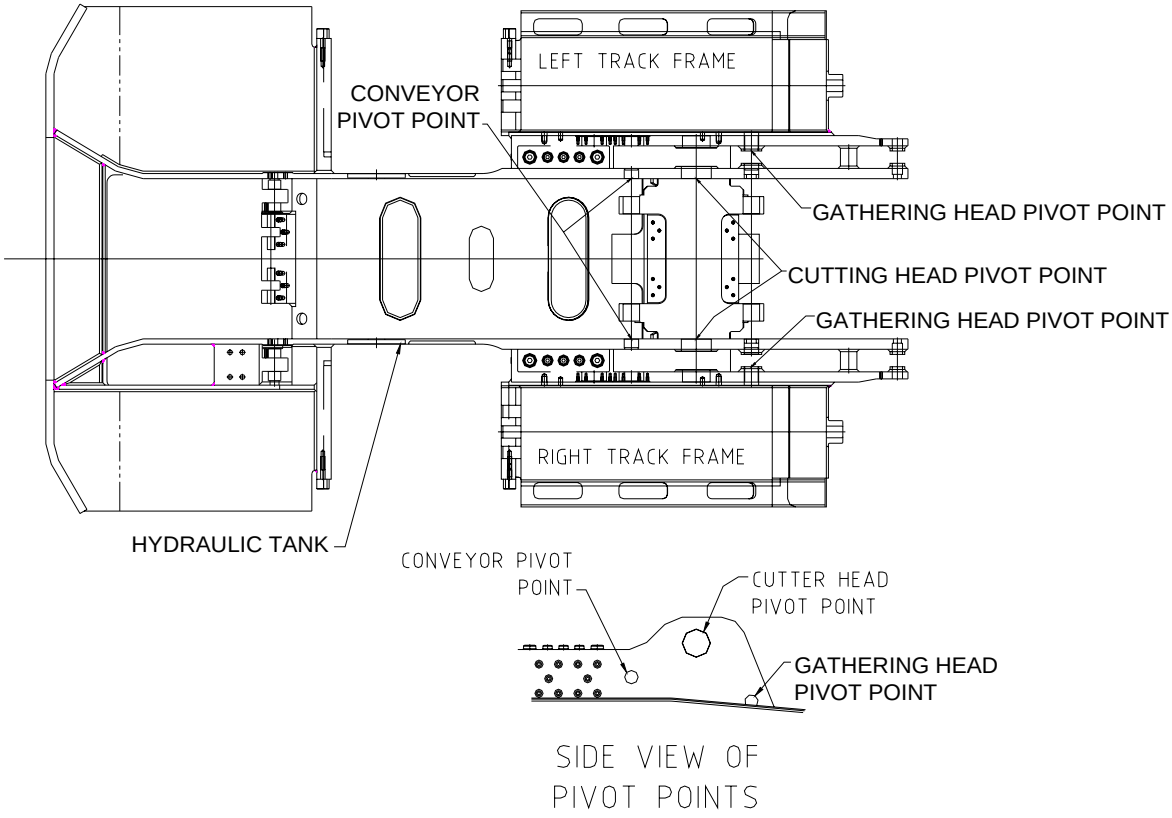
Technical Manual

Main Chassis



The main chassis of the machine is a robust box-type structure of high-strength steel construction that provides the following:

Mounting of the RH and LH crawler tracks and their independent drive systems and take-up provisions.

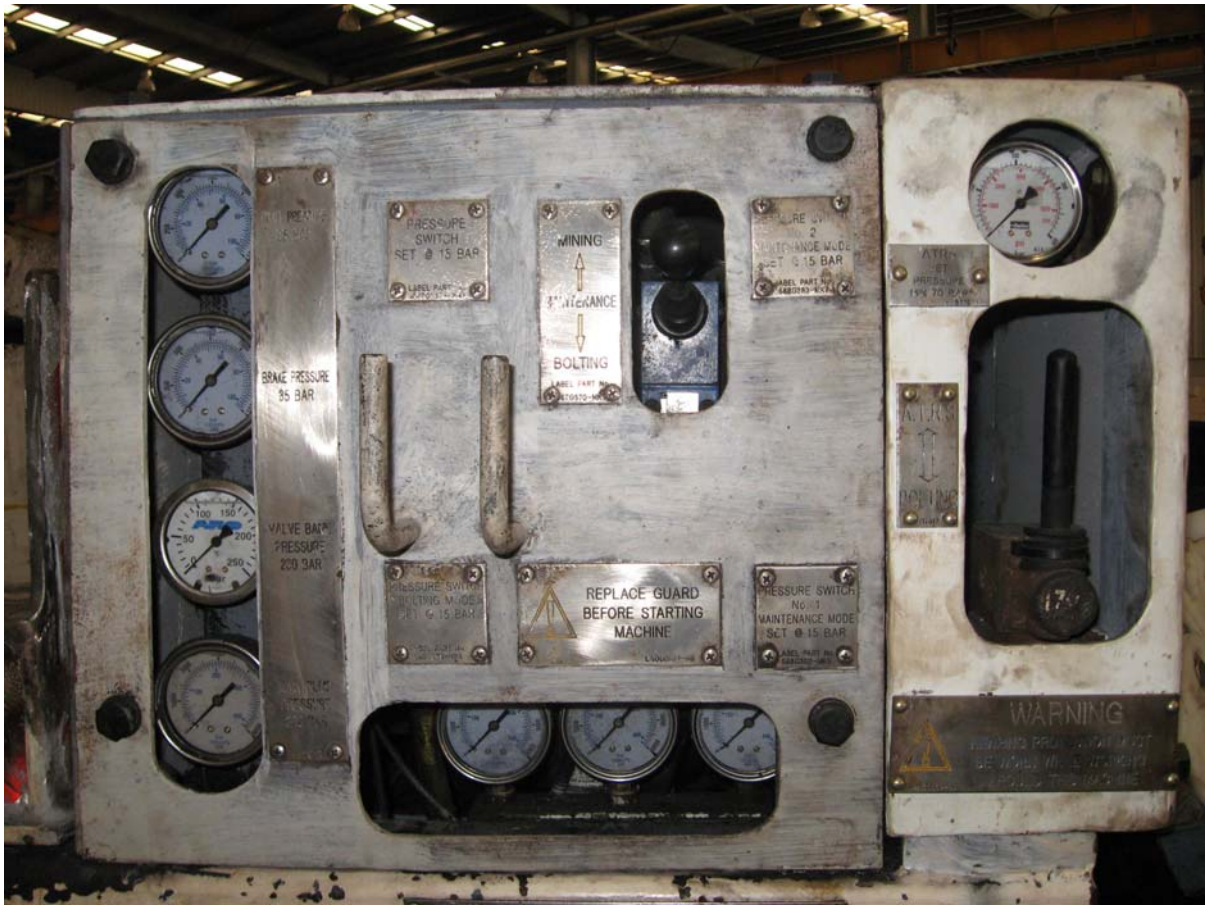
- Independent pivots for mounting the cutting head and gathering head and conveyor components and their associated hydraulic cylinders for articulation.
- An integral hydraulic oil tank along with two electric motor/hydraulic pump assembly‘s and associated valves and piping.
- A rear stabiliser and its articulating hydraulic cylinder for improving leverage forces during shear-down in the cutting sequence.
- Mounting provisions for all major electrical system components and their associated wiring.

Bolting, Mining and Maintenance Modes

Bolting, Mining and maintenance modes have been fitted to the 30MB3 Miner and can be selected by operating a diversion valve as per its tagging, this valve is mounted upon the Right Hand side of the Miner beside the rib drilling rig.

The selections for the diversion valve are as follows:

Mining Mode	-	Raise the handle to the top position
Maintenance Mode	-	Move the handle to the centre position
Bolting Mode	-	Lower the handle to the lowest position



3. **Isolate and secure energy sources**

- Isolate primary isolator in an approved manner or using site procedures and/or manufacturers recommended instructions e.g., operate whole current isolator, remove plug, close valve etc. Shedding of loads prior to operating primary isolator may need to be considered in some instances.
- Isolate or secure/control all secondary energy sources. For example:
  - bleed off stored hydraulic or pneumatic pressure from pressure vessels, accumulators etc,
  - Release stored energy such as springs, conveyor belt tension, etc.
  - secure/barricade/chock elevated equipment or material hang-up in chutes, truck bodies etc
  - Chock machinery and equipment to prevent unplanned movement.
- Do not use auxiliary devices for isolation e.g., push buttons, control circuit devices, emergency stop buttons, key-switches, conveyor lanyards, etc. except where these remote isolator devices control an approved (to relevant Australian Standard) whole of current isolation device e.g. Motorised lanyard controls on conveyors to AS1755.

4. Apply Personal Danger Tags / Locks, or Permit Danger Tags / Locks

- A Personal Danger Tag or lock is to be placed on the appropriate isolation point/s by a competent person.
- In the case of a permit:
  - a Permit Danger Tag / Lock is to be placed on the relevant isolation point/s by the Authorised Isolator after the Permit Holder has raised the appropriate permit
  - All members of the work party shall sign onto, or attach their Personal Danger Tag or lock to the appropriate permit after checking the work they are performing is covered by the Permit.
- Any visitor requiring to place a Personal Danger Tag or lock or sign onto a permit can only do so under direct supervision of a competent person or Permit Holder

NB Depending on the circumstances, it may be necessary to reverse steps 4 and 5 e.g. When access to switchboards is necessary for verification purposes and a tag or lock will prevent entry.

5. Verify the effectiveness of the isolation

All isolations must be checked to verify the isolation has been effective by:

- ***Testing*** the test equipment is in good operating condition and is set to correct scale eg. Pressure gauges, non-contact voltage detector, multi-meters etc
- ***Checking*** the operation of test equipment before and after isolation
- ***Test*** the isolation has been effective by:
  - Checking for the presence of voltage for electrical isolations
  - Attempting to start the equipment e.g. mobile equipment/machinery
  - Opening valves in pipelines
  - Confirming secondary energies are secured e.g. Chocks etc.

Check for test methods that may have been developed and approved for use for various isolations.

Control and Light Circuit Breakers

The control and lights breaker handle is a thin lever located on the top right hand side of the flameproof Main Control Case, which is on the left hand side of the machine.

The lever is pushed in to turn both circuit breakers ON and pulled out to turn circuit breakers OFF.

If the machine is powered and these circuit breakers are ON, the green 110V Control LED indication light should be indicating healthy, behind the viewing window on the Main Control Case.

Traction AC Circuit Breakers
The Traction AC Circuit Breakers are located in the flameproof Main Control Case and operated via the operating handle located on the front right hand side on the Main Control Case.

These isolate the AC power to the SCR Traction Drive Units. The circuit breakers are switched on by moving the handle to the left. If a circuit breaker has tripped it must be reset by turning the handle fully to the OFF position before it can be turned back on.

Whenever working on the traction, setting conveyor stops or head stops ensure both circuit breakers are opened and operator handle tagged.

NOTE: **This circuit breaker must be open to operate in maintenance mode**

30MB3 ELECTRICAL TECHNICAL MANUAL

SECTION 4
GENERAL ELECTRICAL

30MB3 ELECTRICAL TECHNICAL MANUAL

SECTION 5

ELECTRICAL COMPONENT LAYOUTS

Swing Panel Front Components

No.	Component	Labelled	Qty
1	MTL Zener Barrier for Siren	Z1	1
2	24V dc Power Supply	PS1	1
3	50mA Control Fuses	F4 & F5	2
4	Banshee Siren Auxiliary Relay	BS	1
5	Side Lights Auxiliary Relay (Area Lights)	SLR	1
6	Rear Lights Auxiliary Relay (Not Used)	RLR	1
7	Traction Earth Leakage Auxiliary Relay	TELR	1
8	Front Lights Auxiliary Relay (Headlights)	FLR	1
9	Lights Dimmer Auxiliary Relay (Headlights)	LDR	1
10	Machine Voltage Analogue Converters	C1, C2 & C3	3
11	110V 3 Phase Control Circuit Breaker	CB6	1
12	LED Indication Panel		1
13	Relay I/O Module A	LAP00391	1
14	Relay I/O Module B	LAP00522	1
15	Control System Power Supply Module	LAP00395	1
16	Processor Control Hub	LAP00418	1
17	Traction Fibre Optic Interface Module	LAP00565	1
18	Thermistor Module	LAP00394	1
19	RS422/RS232 Data Converter for CH4 TX9042	Dwg 509021	1
20	MTL Zener Barrier for Methane Cct	Dwg 509020	1

Power Supply Module

The 110/24 V DC Power supply module supplies 24V dc to all radio modules excluding the I.S. Solenoid Driver. It is complete with (2) relay outputs which are used to interrupt the pilot (earth continuity) circuit from the DCB to the miner when an inadvertent operation is detected by the control system or a Pilot Trip function is activated by the operator on the remote control transmitter.

Inclinometer

The inclinometer is mounting within its own flameproof enclosure and is mounted under a small cover behind the headlights on the cutter boom.

The inclinometer is used to indicate the cutting head height. The top and bottom cutting heights are referenced to the horizontal zero position. You will not be able to shear beyond these limits unless boom override mode is enabled.

To override the Inclinometer with the pumps running, using the transmitter operate the [SHIFT] then TRAM 3 and TRAM 4.

Override will stay on until the pumps are turned off.

Traction Module

The traction module is mounted on the front of the swing panel in the main control case.

The traction module communicates with the hub via a fibre optic CAN link and then interfaces to the SCR traction drives via a RS 484 link that loops two the two drives. The power supply is 24V from the control system.

Graphics Display Screen

This graphics display screen is located behind the viewing window on the display enclosure and provides the operator/tradesman with fault information, machine modes and performance information.

The graphics display screen is connected directly to the processor control hub via a display communications port. This is connected via a designated screen cable between the main control case and the display enclosure.

The intrinsically safe hardware consists of:

I.S. Solenoid Module

The module is located in the stainless steel solenoid junction box mounted beside the main solenoid valve bank.

The I.S. Solenoid Module is complete with:

a) (18) I.S. digital inputs
b) (14) I.S. proximity inputs
c) (22) I.S. solenoid outputs

The solenoid module is supplied by a Forced Potato 12V 2A I.S. power supplied which is mounted inside the top compartment of the display enclosure.

A display on the front of the solenoid drive indicates if the I.S. supply is on and communicating with the hub.

I.S. Solenoid Module

12V dc I.S Solenoid Board

A18 - V35 Female 34 Pin

Pin	Schematic	Name	Wire Number	Type
A18-A	SOL_5	Plow Out	605	12V I.S. Solenoid +
A18-B	SOL_11	Conveyor Raise	611	12V I.S. Solenoid +
A18-C	SOL_2	Cutter Head Lower	602	12V I.S. Solenoid +
A18-D	SOL_8	Spare		
A18-E	SOL_4	Cutter Head Retract	604	12V I.S. Solenoid +
A18-F	SOL_10	Stab Jack Lower	610	12V I.S. Solenoid +
A18-H	SOL_1	Cutter Head Raise	601	12V I.S. Solenoid +
A18-J	SOL_7	Spare		
A18-K	SOL_3	Cutter Head Extend	603	12V I.S. Solenoid +
A18-L	SOL_9	Stab Jack Raise	609	12V I.S. Solenoid +
A18-M	NC			
A18-N	SOL_6	Plow In	606	12V I.S. Solenoid +
A18-P	SOL_ 12	Conveyor Lower	612	12V I.S. Solenoid +
A18-R	SOL_13	Conveyor Swing Right	613	12V I.S. Solenoid +
A18-S	NC			
A18-T	SOL_14	Conveyor Swing Left	614	12V I.S. Solenoid +
A18-U	SOL_15	Apron Raise	615	12V I.S. Solenoid +
A18-V	SOL_16	Apron Float	616	12V I.S. Solenoid +
A18-W	NC			
A18-X	SOL_17	Water Sprays	617	12V I.S. Solenoid +
A18-Y	SOL_18	Traction Brake	618	12V I.S. Solenoid +
A18-Z	SOL_19	Left East / West Conveyor Fwd	619	12V I.S. Solenoid +
A18-AA	NC			
A18-BB	SOL_20	Right East / West Conveyor Fwd	620	12V I.S. Solenoid +
A18-CC	NC			
A18-DD	SOL_21	Left East / West Conveyor Rev	621	12V I.S. Solenoid +
A18-EE	NC			
A18-FF	SOL_22	Right East / West Conveyor Rev	622	12V I.S. Solenoid +
A18-HH	NC			
A18-JJ	SOL_23	Spare		12V I.S. Solenoid +
A18-KK	NC			
A18-LL	SOL_24	Spare		12V I.S. Solenoid +
A18-MM	OV	12V dc I.S. Negative	0VIS	Power Supply
A18-NN	12V	12V dc I.S. Positive	401	Power Supply

Graphic Display Screens

The display screen is located on the right hand side of the machine in the flameproof display enclosure. This provides the operator and tradesmen with fault information, machine modes and performance information.

Navigation Functions on Transmitter

The main machine display can be changed using the new Navigation System. To enter the radio system Navigation mode the following steps must be followed.

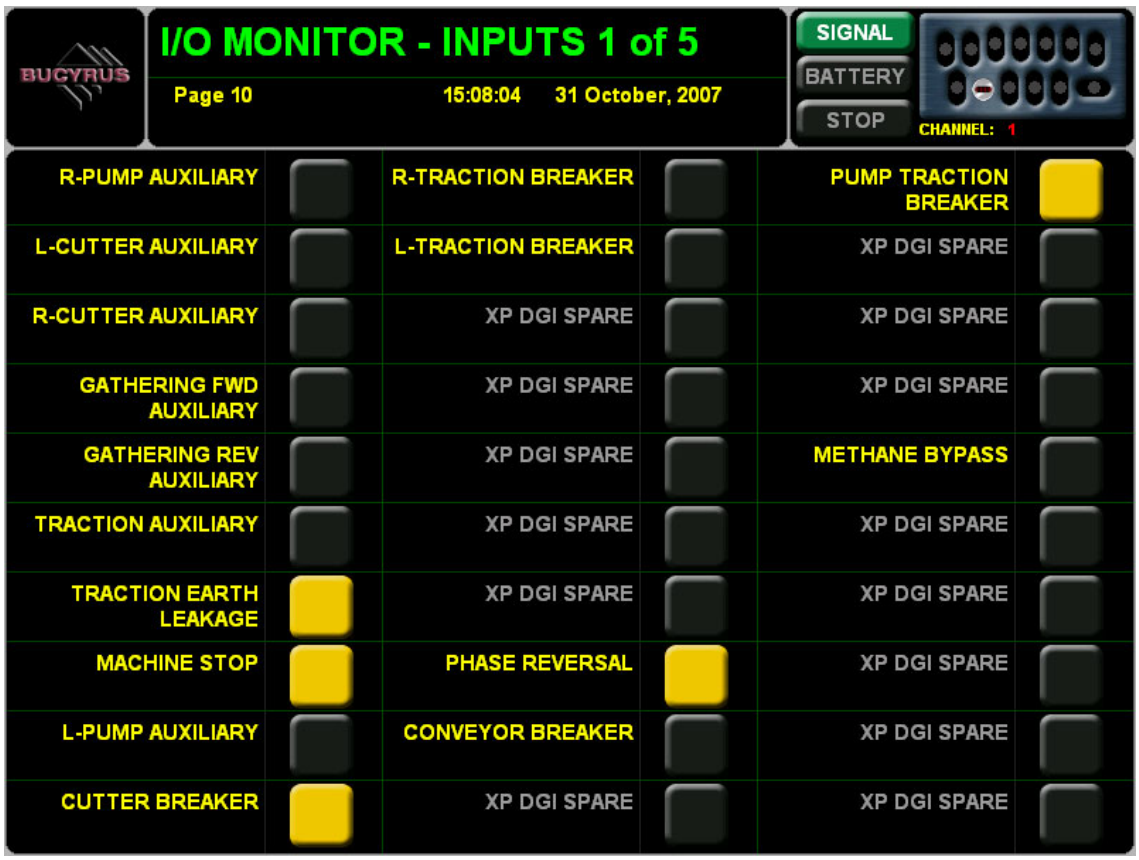
1. Press [SHIFT] and [MENU] (WATER switch) and hold for approx 2 seconds until screen heading flashes.

2. Press [SHIFT] and [NAV] (CON left or right) to move through consecutive screens until the desired page is reached. A password is required for pages above page 99.

3. Alternatively you can access the desired page by using the Blue numbers on the transmitter. To access page 201 press switches 2 (STAB DOWN), then 0 (FAN OFF), then 1 (TRAM 2-3), then # (CON UP). This will then open page 201 Remote Console.

4. Screens can also be accessed by pushing the screen scroll button on the front of the display enclosure. This provides access to screens 1 to 20 and 99 only, all other screens require password to access. Optional – not fitted to all machines.

I/O Monitor – Inputs 1 of 5 (110V Inputs)

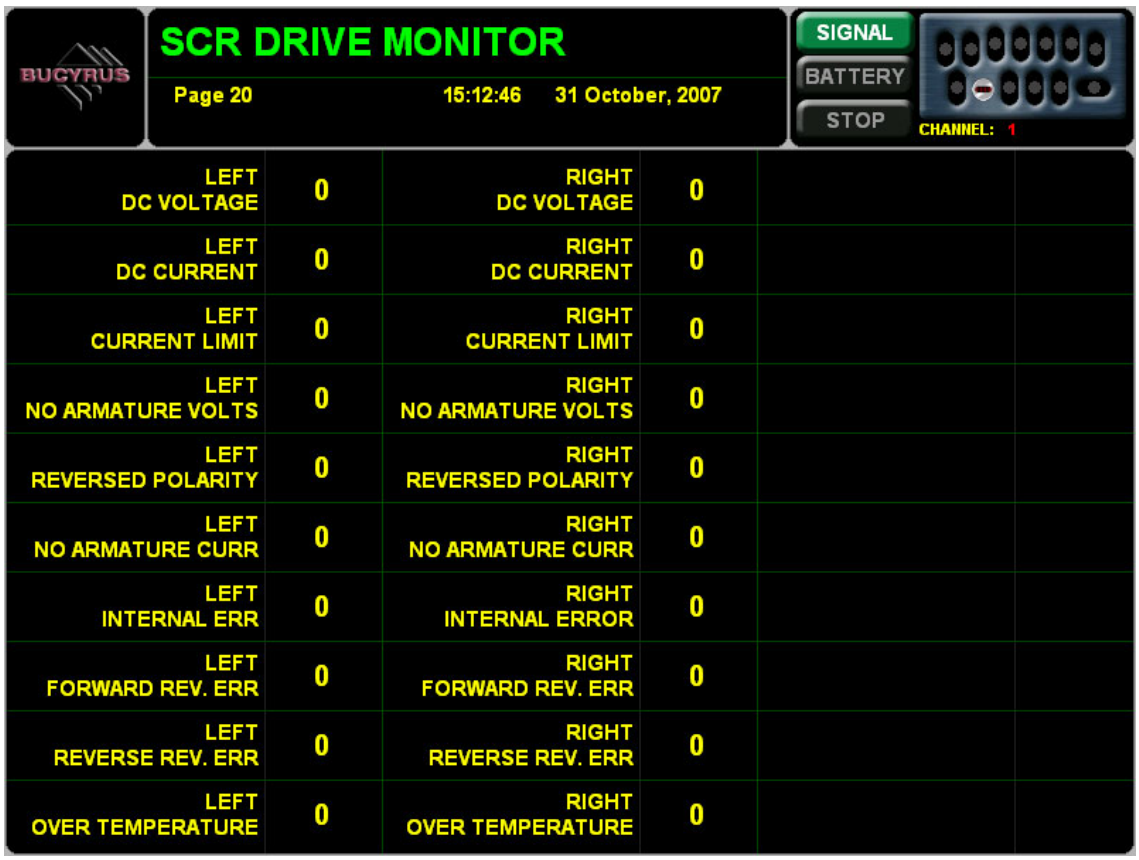


This I/O Monitor – Inputs 1 of 5 screen is Page 10 on the display screen menu. It displays the status of the 110V inputs connected to the I/O Modules A and B.

If a device input is closed (asserted/active), then it is displayed with a yellow button next to it on the screen.

If a device is open (non asserted or de-active), then no colour is shown next to it.

SCR Drive Monitor



This SCR Drive Monitor screen is Page 20 on the display screen menu. It displays the following information from both the left and right SCR traction drive power modules:

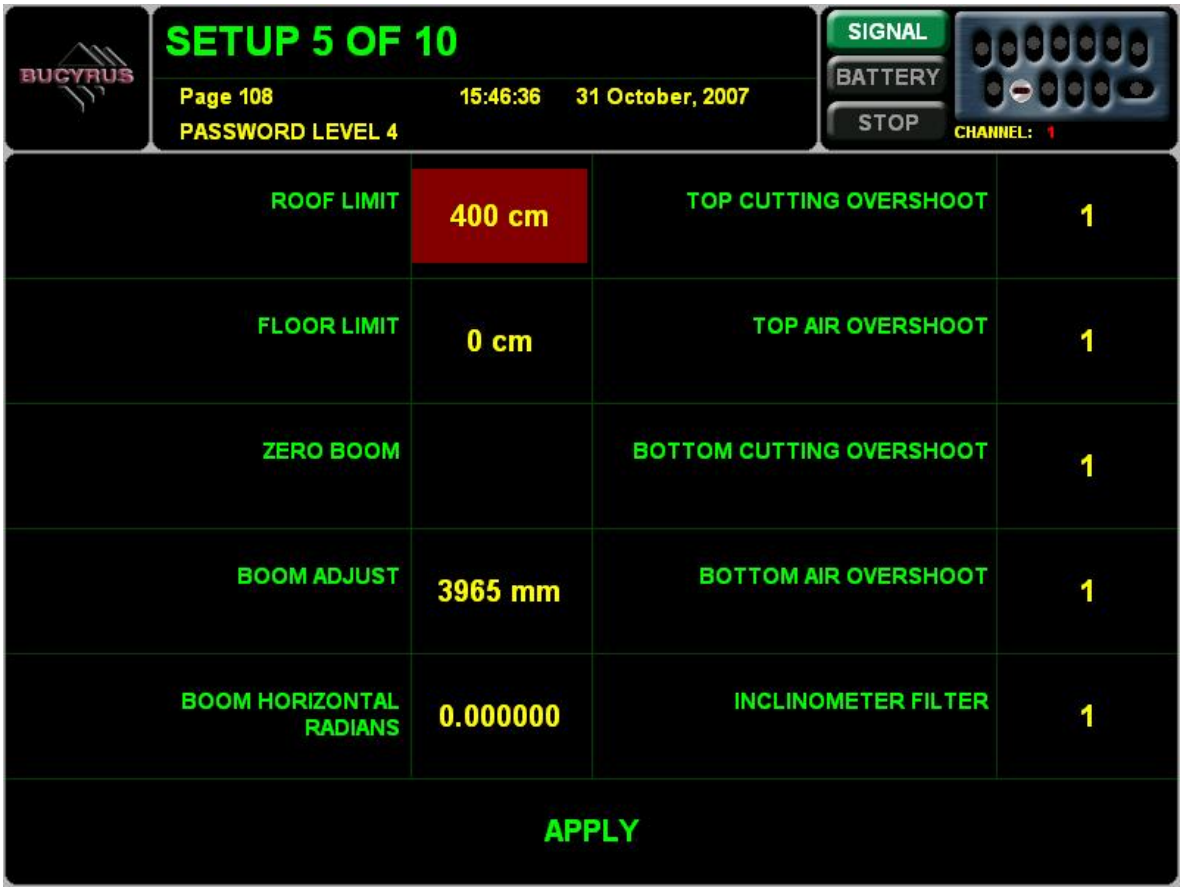
- DC Motor Voltages
- DC Motor Currents
- DC Current Limits
- Motor Armature No Volts
- Motor Reversed Polarity
- Motor Armature No Current
- Drive Internal Error
- Drive Forward Rev Error
- Drive Reverse Rev Error
- Drive Over Temperature

The voltage and current will give an actual voltage and current readout.

The other outputs will be either “0” or “1”. With a “1” indicating that that output function is on and the “0” being off.

The voltages should be equal when observing both motor trends but the current can vary depending on the load required for each track.

Setup 5 of 10 – Inclinometer



The Setup 5 of 10 – Inclinometer is Page 108 on the display screen menu and this screen includes:

- Roof Limit – Is the height of heading that is required to be cut.
- Floor Limit – Is the lower height that the Shear Down function is inhibited.
- Boom Horizontal Radians – This is the raw data received from the Inclinometer.
- Top Cutting Overshoot – Is the distance the solenoid is de-energised from the roof to ensure the cutter stops at the required height while cutting coal.
- Top Air Overshoot – Is the distance the solenoid is de-energised from the roof to ensure the cutter stops at the required height while not cutting coal.
- Bottom Cutting Overshoot – Is the distance the solenoid is de-energised from the floor to ensure the cutter stops at the required height while cutting coal.
- Bottom Air Overshoot – Is the distance the solenoid is de-energised from the roof to ensure the cutter stops at the required height while not cutting coal.
- Inclinometer Filter – provides a filter on the readings coming from the inclinometer to ensure the readings do not jump around too much.

Parameters – Commissioning January 2010
Parameters in Red Won't Change at commissioning. Black parameters may change.

Setup – Left Traction Page 102

SPEED 1:	35%	RAMP DELTA:	0.2s
SPEED 2:	65%	SUMP DELTA	0.2s
SPEED 3:	100%	MIN SUMP:	10%
		MAX SUMP:	30%

Setup – Right Traction Page 103

SPEED 1:	35%	RAMP DELTA:	0.2s
SPEED 2:	65%	SUMP DELTA	0.2s
SPEED 3:	100%	MIN SUMP:	10%
		MAX SUMP:	30%

Setup – Timers Page 104

PUMP PRE START	3 Sec	BRAKE PRESSURE DELAY	6 Sec
CUTTER PRE START	1 Sec	BRAKE DELAY TO APPLYING	200 ms
CONV.FWD PRE START	1 Sec	CONV E/W PRE START TIMER	3 Sec
CONV REV PRE START	4 Sec	INSTANTANEOUS OVERLOAD TIMER	1200ms
MODE CHANGE PRE START	2 Sec	UNDER VOLTAGE COIL FITTED	YES

ELECTRONIC CIRCUIT BREAKER SETTINGS

CIRCUIT BREAKER	BASE CURRENT SETTING (Io)	INST PICK-UP CURRENT (I3)	SHORT TIME PICK-UP CURRENT (I2)	LONG TIME PICK-UP CURRENT (I1)	SHORT TIME DELAY (T2)	LONG TIME DELAY (T1)
CB1	640 A	2048 A	1536 A	512 A	0.1 s	5 s
CB2	320 A	1280 A	1024 A	256 A	0.1 s	20 s
CB6	157 A	630 A	630 A	126 A	0.1 s	10 s
CB9	157 A	787 A	630 A	126 A	0.1 s	10 s

ISOLATOR CONTROL CASE

INCOMING SUPPLY
3~ 1100V 50Hz

95mm²

CB1 800A
12.5KA @ 1100V
IO=0.63
I1=0.8
I2=3
I3=4
T1=5
T2=0.1
ST OFF

MAIN CONTROL CASE

T1 2~ 1050 50Hz
110V, 240V, 12V
800/300/600 VA
Z=8%

1.5mm²
F1
6A
63KA

CB2 400A
12.5KA
IO=0.8
I1=0.8
I2=4
I3=5
T1=20
T2=0.1
ST OFF

CB6 250A
12.5KA
IO=0.63
I1=0.8
I2=4
I3=4
T1=10
T2=0.1
ST OFF

CB9 250A
12.5KA
IO=0.63
I1=0.8
I2=4
I3=5
T1=10
T2=0.1
ST OFF

TRACTION CONTACTOR
160A
10KA

MM9
125A

T4
3~ 1040V/380V
50HZ 140kVA. Z=4.5%
TRANSFORMER

2.5mm²
CB3
16A
6kA

R6
1.5R
25W

R3
11R
300W

12VAC SUPPLY
CURRENT LIMIT
4A

110VAC SUPPLY
CURRENT LIMIT
5A

CB5
16A
6kA
MCB/RCD
500mA

LEL
200mA
EL
1 TURN

FLR
10A

1~
12V 50Hz
HEADLIGHTS
MAX 4*35W + 2*20W

1~ 110V 50Hz
CONTROL SUPPLY

LC
LEFT CUTTER CONTACTOR
320A
18KA

RC
RIGHT CUTTER CONTACTOR
320A
18KA

GHF
GATHER FWD CONTACTOR
160A
10KA

GHR
GATHER FWD CONTACTOR
160A
10KA

LP
LEFT PUMP CONTACTOR
160A
10KA

RP
RIGHT PUMP CONTACTOR
160A
10KA

TEL
400mA
EL
2 TURNS

25mm
R1
100R
300W

380VAC SUPPLY
CURRENT LIMIT
3.8A

FLC=123A
MM1
O/L>110% FLC

FLC=123A
MM2
O/L>110% FLC

FLC=31A
MM3
O/L>110% FLC

FLC=31A
MM4
O/L>110% FLC

FLC=47A
MM5
O/L>110% FLC

FLC=47A
MM6
O/L>110% FLC

CB8
150A
450A TRIP
35kA @ 415V

CB7
150A
450A TRIP
35kA @ 415V

160A
MM7
O/L>110% FLC
LEFT
POWER MODULE
HEATSINK THERMOSTAT
85 C

160A
MM7
O/L>110% FLC
RIGHT
POWER MODULE
HEATSINK THERMOSTAT
85 C

4 CORE 25mm²

145°C THERMOSTAT
130°C PT100
M 3~

3~ 1040V 50Hz
LEFT CUTTER
173kW

3~ 1040V 50Hz
RIGHT CUTTER
173kW

3~ 1040V 50Hz
LEFT GATH
33kW

3~ 1040V 50Hz
RIGHT GATH
33kW

3~ 1040V 50Hz
LEFT PUMP
67kW

3~ 1040V 50Hz
RIGHT PUMP
67kW

350VDC
LEFT TRACTION
33kW

350VDC
RIGHT TRACTION
33kW

CAD DRAWING

REVISIONS

0	ECN 4027		
1	ECN 13758	30-09-09	CD
2	ECN 13942	07-10-09	CD
3	ECN 16080	22-12-09	CD

Manufactured component shall comply with Manufacturing Specification No. 503870
DO NOT SCALE. IF IN DOUBT,ASK.

DRAWN: C.DAVIS
REV: 3
DATE: 20.01.08
CHECKED: –
DATE: –
APPROVED: –

TITLE– MINER BOLTER 30MB
DeltaSBD S/N-177866
PROTECTION DIAGRAM

DWG. No. 518972
SIZE A1
SHEET 6 OF 7
SCALE: NTS

BUCYRUS Australia

BUCYRUS	30MB3 MINER FAULT DISPLAY GUIDE	DELTA SBD

MESSAGE DISPLAY	EXPLANATION	POSSIBLE SYMPTOM	CHECKS TO CARRY OUT
LEFT CUTTER RTD OPEN RIGHT CUTTER RTD OPEN LEFT PUMP RTD OPEN RIGHT PUMP RTD OPEN LEFT GATHERER RTD OPEN RIGHT GATHERER RTD OPEN LEFT CONVEYOR RTD OPEN RIGHT CONVEYOR RTD TRIP LEFT TRACTION RTD OPEN RIGHT TRACTION RTD OPEN TRANSFORMER RTD OPEN	Motors have been stopped due to excessive heat in the windings. An open circuit RTD circuit will result in a reading of greater than 160 deg C. If this occurs a message will be displayed and the fault logged. As there is a normally closed back up thermostat in series with the RTD a temperature trip will result in an open circuit. NOTE: The RTD over temperature protection will trip the motor circuit when a temperature of 130^{o}C is reached. The trip point of the motor thermostat is set at 145^{o}C.	No water supply. Blocked bag filter. Blocked sprays. Faulty motor cooling circuit. Faulty water solenoid Faulty pilot operated water valves Open circuit fault in the motor RTD circuit. Cable damage	1. Ensure sufficient mine water supply. 2. Check operation of bag filter 3. Check sprays 4. Check motor cooling circuit for: c) Sufficient flow (no blockages). d) Damaged or broken hosing 5. Check continuity of motor RTD circuit. 6. Check operation of water solenoid and pilot operated water valves. 7. Check pilot cores in motor supply cable. If pilot cores are damaged replace cable. Motor cables have one spare core.
L0LE1 RELAY OUTPUT ACTIVATION FAULT L0LE2 RELAY OUTPUT ACTIVATION FAULT	Each I/O module relay output has two relays in series. Relay 1 is to be energised and feedback checked 100mS before relay 2 is closed. If a feedback from either relay is detected when not required, the pumps will shut down. If a feedback from either relay is not detected when required the pumps will be shut down. Note: LOLE1 is I/O module A, and LOLE2 is I/O module B.	Loss of control voltage or open circuit wiring to output relay(s) whilst activated. Open circuit wiring between output relay and contactor coil. Open circuit wiring from contactor coil to control neutral supply. Open circuit control neutral reference to I/O module output relay groups. Open circuit contactor coil. Faulty auxiliary contact block on right pump contactor. Internal I/O module fault	1. Check I/O monitor page 15 to confirm faulty output relay and check continuity of supply wiring to I/O module output relays. 2. Check wiring from I/O output plug (A9 or B9) to contactor coils. 3. Check wiring of contactor coil neutrals (wire N^{o} 110) 4. Check continuity of wire N^{o} 110 to neutral reference for output relay groups. 5. Check continuity of contactor coils. 6. If the only the right pump will start in mining mode and both pumps will start in bolting mode check the auxiliary contact block on the right pump contactor (wire N^{o}116 and 125). This ensures that the other motors will not start until the right pump motor has started. 7. Replace I/O module if no other faults can be found.

MESSAGE DISPLAY	EXPLANATION	POSSIBLE SYMPTOM	CHECKS TO CARRY OUT
			module with function not operated: 600 to 650mVDC. Measured from Proximity return to 0 V I.S. Return supply from proximity switch to Solenoid I/O module with function operated: 2.0 to 2.55 V I.S. Measured from Proximity return to 0 V I.S. Remove proximity switch wiring from the terminal and test continuity between the supply leads with a meter on diode range. A reading of approx 1.3 V from the positive to negative leads. If a proximity function is not working correctly perform the tests as above. A readjustment may be necessary. Unscrew the proximity until the reading goes above 2.0 V. Screw the proximity switch back in until the measured voltage reads between 600 to 650 mV. Test function for correct operation. 6. Replace Solenoid I/O module if no other faults can be found.
PROXIMITY FROZEN - SHEAR UP/DOWN SOLENOIDS PROXIMITY FROZEN - STABILIZER UP/DOWN SOLENOIDS PROXIMITY FROZEN - CONVEYOR UP/DOWN SOLENOIDS PROXIMITY FROZEN - CONVEYOR LEFT/RIGHT SOLENOIDS PROXIMITY FROZEN - PLOW IN/OUT SOLENOIDS PROXIMITY FROZEN - DRUM IN/OUT SOLENOIDS PROXIMITY FROZEN - APRON	Intrinsically Safe Proximity switches are fitted to the hydraulic valve bank to monitor for stuck spools, incorrect operation of solenoids and valves. The radio system monitors the status of the 12V I.S. Solenoid Proximity switches via inputs into the I.S. Solenoid Driver Module. The pump motor operation will be inhibited if the status of the spools is not in accordance to the hydraulic operation. The hydraulic spool for the selected function has not returned to the OFF or neutral position (stuck on) after operation when required by the control system for the “PROXIMITY FROZEN” fault to occur.	Incorrect main spool adjustment. Hydraulic spool jammed on (Hydraulic oil contamination). Hydraulic pilot pressure blockage. Solenoid valve not operating correctly (stuck on). Solenoid valve being operated Manually.	1. Operate the Miner and observe the pressure gauges to ensure that the hydraulic system is operating correctly. Pilot pressure should be set at 35 bar. Check valve banks if hydraulic function operates in pendant mode. The brake solenoid is the only solenoid function operated in pendant mode. All other solenoid functions should not operate. If any other function operates inspect valve banks for mechanical malfunction. 2. Access the Solenoid I/O monitor page 202 and perform a solenoid test to confirm a faulty solenoid or wiring. 3. If the fault occurs on individual solenoids check both active and common wiring from Solenoid output plug (A18) to the individual solenoids. 4. Check operation of solenoid coils. A red LED should

Proximity Switch Install/Adjust Procedure

Installation of New Proximity - For adjustment only go to Step 5

Step 1 – Preparation

Before screwing proximity switch into the valve bank position locknut up towards the flattened section of the thread. This will keep it out the way when screwing in. See Figure 1

Note: Do not connect cable into IS enclosure. The cable must remain free to spin as the proximity switch is wound in or it will become twisted.

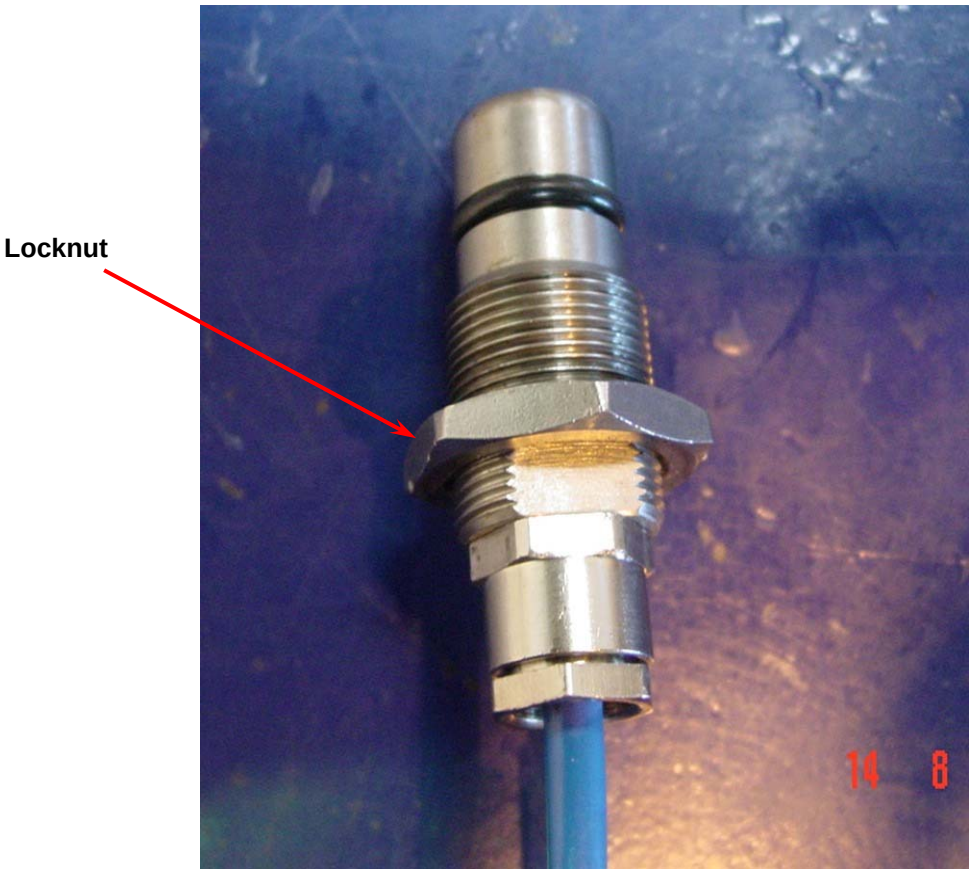
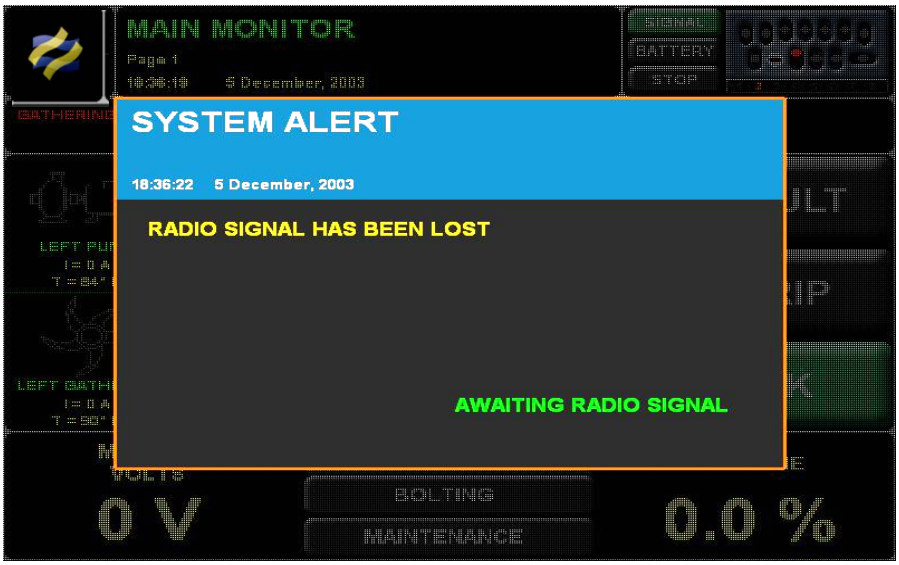


Figure 1

WARNING: Incorrect adjustment of proximity switches can result in machine damage and/or personal injury.

Radio Signal Continuity

If the remote control is turned off or stops transmitting for any reason, the receiver unit will detect the loss of the radio signal and stop the machine. If no function is selected for five (5) minutes, the console will automatically turn itself off, causing the machine to stop as well.



Turn the Transmitter On

- Press the ON switch and hold it for two seconds until transmitter number and the message 'ON' are displayed.

If you have successfully turned the transmitter on, it will maintain continuous communications with the control unit until turned off. This is known as "Handshaking" with the receiver.

NOTE: **Transmitter must be turned on beside the machine. If power is lost, the transmitter must be turned off and then on again**

Turn the Transmitter Off

- Press the OFF switch.

This will also stop any machine that is turned on or operating after a delay of one second.

Stop

Pressing the STOP switch in either direction will cause all functions on the mining machine to cease immediately. The hydraulic pump will be turned off.

Siren

The 30MB3 miners are equipped with a warning siren that sounds when you select certain functions, such as starting the pump. The duration of the siren sound is adjustable.

The selected function will not operate until after the siren has stopped.