Melvelle Equipment Corp Pty Ltd

"Proud Australian Manufacturers"

FP-112-AA Stihl BT131 Sleeper Drill

Operation, Training & Maintenance Manual

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MEC Part Number – MANUAL-112-AA

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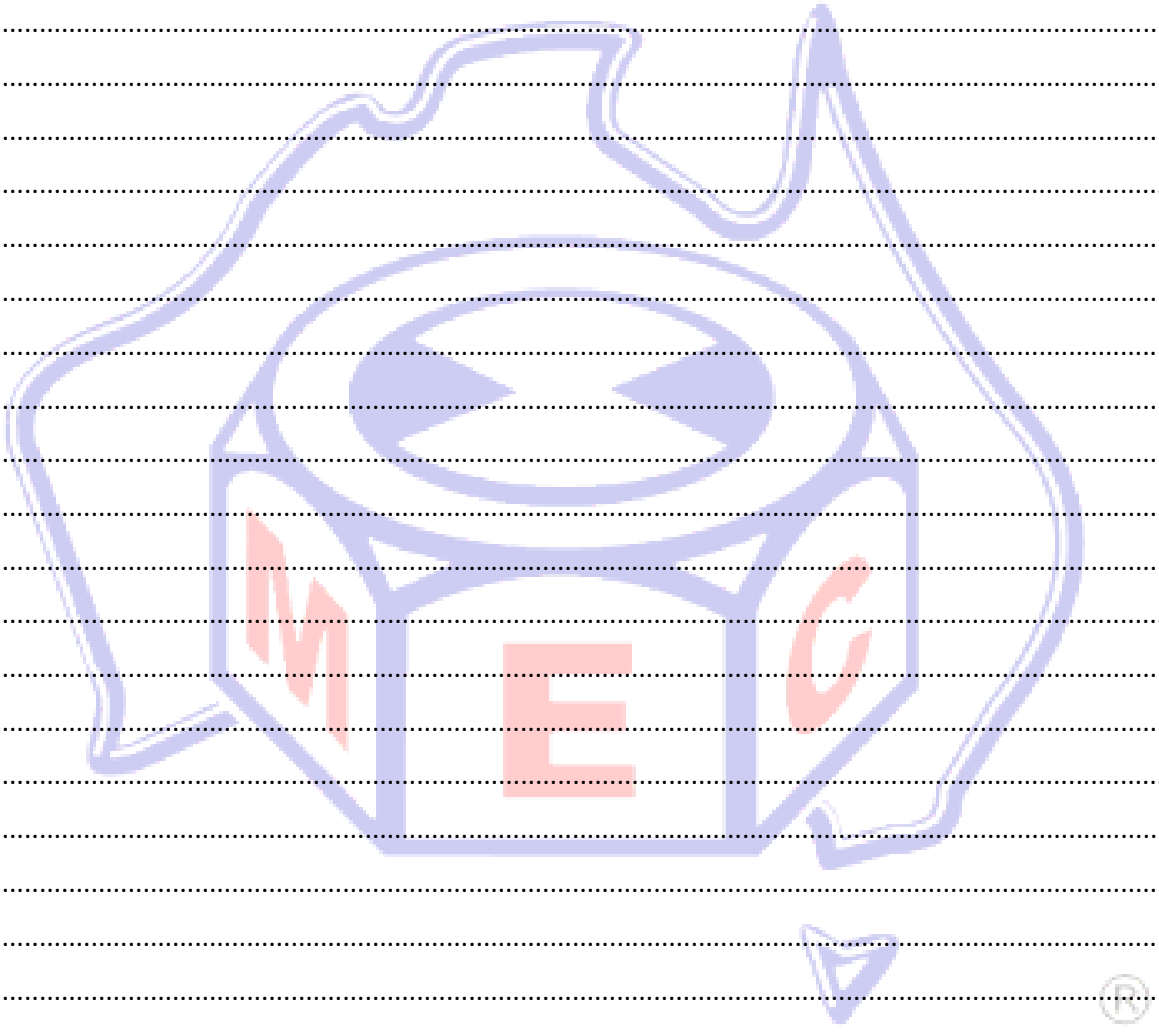

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1. Preface

Every attempt has been made to present accurate and current information within this manual. However, as product development on the Sleeper Drill and components used within is continuous, the information contained herein may be subject to change without notice, and without incurring obligation.

The information provided within this manual is the sole property of Melvelle Equipment Corporation Pty Ltd (MEC) and as such, reproduction or replication of any material contained within is not allowed without the written consent of MEC.

Information provided within this manual assumes:

- The person(s) operating the machinery have read and understand this manual and other manuals provided for specific components
- The person(s) operating are properly trained and equipped to safely and professionally operate this machinery
- The person(s) operating utilise the correct attachments and/or tools, and are trained and equipped to use them safely and professionally

This manual is to compliment the Stihl BT131 Operation Manual and both should be reviewed together before operation of the FP-112-AA Sleeper Drill.

SERVICING THE 112-AA SLEEPER DRILL

This manual contains safety, operation and periodic maintenance instructions. MEC recommends that servicing of equipment, other than periodic maintenance, must be performed by MEC or certified and authorised dealer. Please read the following warning.

WARNING

SERIOUS INJURY OR DEATH COULD RESULT FROM THE IMPROPER REPAIR OR SERVICE OF THIS EQUIPMENT.

REPAIRS AND / OR SERVICE OF THIS EQUIPMENT MUST ONLY BE PERFORMED BY MELVELLE EQUIPMENT CORP. PTY LTD. OR CERTIFIED AND AUTHORISED DEALER.

THE USER SHALL NOT MODIFY THE DESIGN OR CONFIGURATION OF EQUIPMENT WITHOUT CONSULTING MEC

2. Safety Information

This operation and training manual is intended to complement existing site procedures.

The following site documentation must be reviewed by the trainee before commencing training:

- Safe Work Procedures (SWP)
- Isolation Procedures

If the training package information conflicts with existing site documentation, then the authorised site and/or end user is to consult with MEC in regards to any possible amendments or modifications required.

The following practices and procedures must be adhered to:

- Always complete Pre-Operation Checks prior to use and report any defects if found
- Only connect equipment with compatible MEC equipment
- Only operate the equipment for its intended purpose
- Never operate with guards missing or damaged
- PPE Equipment as a minimum should be worn at all times according to this manual and as per site specifications
- Ensure Isolation Procedures are followed prior to carrying out any maintenance
- If any faults or damage to this machine are found during pre-operation checks or operation, tag the machine “Out-of-Service” and follow site procedures

Following the above mentioned and the information contained within this manual will ensure safe, efficient operation of the equipment.

3. Safety Symbols

The safety symbols and signal words, as shown below, are used to emphasise all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to the equipment.

3.1. Safety Symbols & Signal Words

	**This safety alert and signal word indicates a hazardous situation which, if not avoided, will result in death or serious injury.**
	**This safety alert and signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**
	**This safety alert and signal word indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**
	**This signal word indicates a potentially hazardous situation which, if not avoided, may result in property damage.**
	**This signal word indicates a situation which, if not avoided, will result in damage to the equipment.**
	**This signal word indicates a situation which, if not avoided, may result in damage to the equipment.**

3.2. Hazard Warning Signs

	**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all instructions to avoid possible injury or death.**
	**This is the fire risk symbol. It is used to alert you to the potential of a fire starting if ignition sources are present.**
	**This is the explosive risk symbols. It is used to alert you to the potential of an explosion /explosive substances present.**
	**This is the toxic hazard symbol. It is used to alert you to the presence of toxic substances.**
	**This is the corrosive risk symbol. It is used to alert you to the presence of corrosive substances.**
	**This is the electric shock risk symbols. It is used to alert you to the presence of an electrical supply.**
	**This is the battery symbol. It is used to alert you to the potential hazard of electrical supply, battery acid and leaking batteries.**

	**This is the hot surface symbol. It is used to alert you that the surfaces may be hot.**
	**This is the dangerous gases symbol. It is used to alert you to the presence of dangerous gases.**
	**This is the fluid under pressure symbol. It is used to alert you that there are fluids under pressure in this machinery.**
	**This is the sharp edges symbol. It is used to alert you to the presence of sharp edges or cutting hazard.**
	**This is the keep hands clear symbol. It is used to warn you to keep hands clear as there are pinch points present.**
	**This is the rotating parts symbols. It is used to warn you of rotating parts on the machinery. Keep clear of rotating parts.**

3.3. Personal Protection Symbols

	**This is the eye protection symbol. It is used when eye protection must be worn.**
	**This is the hearing protection symbol. It is used when hearing protection must be worn.**
	**This is the head protection symbol. It is used when head protection must be worn.**
	**This is the hand protection symbol. It is used when hand protection must be worn.**
	**This is the foot protection symbol. It is used when feet protection must be worn.**
	**This is the protective body clothing symbol. It is used when protective clothing must be worn.**

	**This is the face protection symbol. It is used when face protection must be worn.**
	**This is the long hair protection symbol. It is used when long hair is required to be contained or restrained.**

3.4. Prohibition Symbols

	**This is the naked flame symbol. It is used when there is not to be a fire, naked flame, ignition sources and smoking nearby.**

4. Safety Precautions

To ensure safe operation, please read and understand the following statements and their meanings. Also refer to supporting manuals from the tool manufacturer on specific operation and maintenance of the equipment. This manual contains safety precautions which are outlined below.

WARNING

Ensure all personnel operating this equipment are properly trained to ensure safe operation

WARNING

Wear personal protective equipment around this machinery.
For example: safety glasses, hearing protection, head protection, protective clothing and safety shoes at all times.

WARNING

Loose hair, clothing and jewellery can cause severe injury.
Ensure hair is restrained; loose clothing not to be worn and jewellery must be removed before operating the machinery.

WARNING

Rotating parts can cause severe injury
Stay away whilst machine is in operation. Ensure ALL guarding is in place and secured before operation.

WARNING

Hot parts can cause severe burns.
Beware of hot parts on the machinery – i.e. exhaust, engine, hoses, radiator, solenoids, exposed metal components, etc.

WARNING

Carbon monoxide can cause severe nausea, fainting or death.
Avoid inhaling exhaust fumes and never operate the engine in a closed or refined area.

WARNING

Fuel can cause fires and severe burns.
Do not fill the fuel tank while the engine is hot or running.

WARNING

Clamping parts can cause severe injury.
Stay away whilst machine is in operation. Ensure ALL guarding is in place and secured before operation.

WARNING

Injury can occur through incorrect operation of the equipment.
Only operate the equipment for its intended use. Failure to do so may result in injury.
Read and understand the Stihl BT131 Operation Manual

WARNING

Ignition sources can cause fires and severe burns.
There is not to be a fire, naked flame, ignition sources or smoking around any MEC machinery.

WARNING

Toxic and/or Hazardous substances utilised in this machinery.
Beware of toxic and/or hazardous substances used within this machinery. Do not inhale, swallow or touch toxic/hazardous substances.

WARNING

Injury can occur due to terrain and operating speeds.
To ensure safe work is achieved, do not exceed walking pace whilst operating this equipment. Also note the terrain conditions (underfoot and rail conditions). Do not walk on sleepers or the rail head.

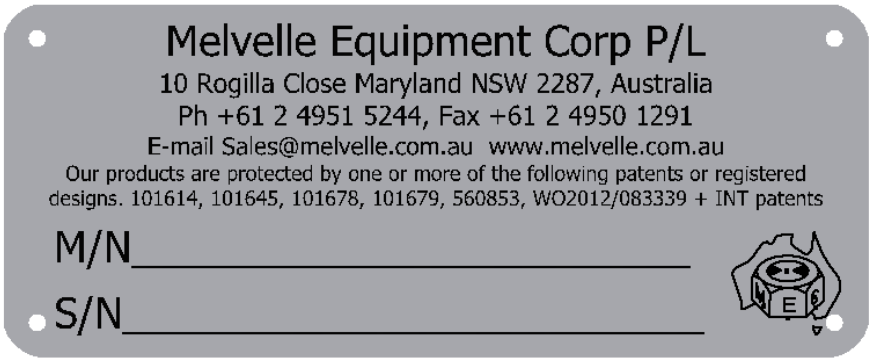
WARNING

Electrification can occur if used on live third rail and/or fourth rail.
Do not use equipment on live third rail and/or fourth rail electrification.

WARNING	WARNING
	
Vibration Hazard Normal and proper use of this equipment will expose the operator to vibration. Vibration exposure may cause and/or contribute to injury throughout the body. Ensure proper procedures are followed for vibration exposure levels to reduce the risk of injury. Refer to Specifications for vibration level data.	**Noise Hazard.** Ensure adequate hearing protection is worn whilst using this machinery. High sound levels may cause permanent hearing loss. Refer to Specifications for noise level data.

5. Equipment Stickers & Tags

Below are the stickers and tags utilised on this equipment.



IDTAG02 – Model & Serial No. Tag

LAB0003 – Melvelle Newcastle Sticker

LAB0004 – Melvelle Achieving Excellence Sticker

*For stickers and tags on BT131 please refer to Stihl BT131 operation manual supplied with this manual

6. Introduction

Melvelle Equipment Corp Pty Ltd (MEC) supply Sleeper Drills to the rail industry. The FP-112-AA Sleeper Drill is designed to drill holes in timber sleepers for the dog and/or lock spikes used to secure the rail to the sleeper.

MEC have utilised and modified the Stihl BT131 as part of its Sleeper Drill. The modifications carried out increase the drive speed of the drill bit and incorporate an extension shaft with a trouser guard. This modification allows the user to perform drilling operations quickly and efficiently and at a comfortable standing height. Typically, the drilling operation will take only a few seconds to complete.

By utilising the BT131 as part of the FP-112-AA Sleeper Drill ensures a safe, lightweight and robust piece of equipment. There are various drills available to be used on the Sleeper Drill. Please contact MEC for more information.

7. Specifications

7.1. FP-112-AA

Engine	1.9HP Stihl Single Cylinder 4-MIX Engine*
Dimensions	400mm long x 530mm wide x 740mm high
Weight (dry) without cutter	12.5kg
Fuel Type	Petrol
Oil	Stihl HP, HP Super or HP Ultra Two Stroke Oil
Fuel Ratio (Fuel:Oil)	50:1
Drilling Speed (Max)	700rpm

*The 1.4 kW STIHL 4-MIX® engine combines the advantages of a two-stroke and a four-stroke engine

8. Operation

Before use of the equipment, be aware of the operating environment and conditions for which the equipment is to be used. Ensure all users are trained to operate the machinery before operation.

8.1. Operating Conditions

The following outlines the duties and conditions for which the equipment is intended to be operated:

- Used within a possession
- Has the ability to be used in all environmental conditions providing the rail is clean and accessible (i.e. snow, extreme heat, etc. may be considered hazardous to operation of the equipment)
- Equipment is designed to drill timber sleepers only
- Ensure operators are using hearing protection when using this machinery that is applicable to industry standards to reduce noise to acceptable levels
- Ensure operators adhere to industry accepted operating times for vibration exposure levels
- Operators to be aware of the environment and conditions in and around the work area
- Ensure the Operators have read and are aware of the Stihl BT131 Operation Manual in conjunction with this manual.

8.2. Pre-Operation Checks

Overall Inspection

1. Check that the equipment is free from damage or defects

2. If damaged, DO NOT USE. Contact MEC for repairs

Fuel

1. Check the level of fuel and add if required

2. Stihl BT131 requires a fuel mix (Fuel:Oil) of 50:1
   See Below table for mixture amounts

Gasoline	STIHL engine oil 50:1	
Liters	Liters	(ml)
1	0.02	(20)
5	0.10	(100)
10	0.20	(200)
15	0.30	(300)
20	0.40	(400)
25	0.50	(500)

Auger Brake

1. Ensure the Auger Brake is fitted to the equipment before starting

2. Check the operation of the Auger Brake before beginning work

3. If damaged or not available, contact MEC

Drill Bits/Cutters

1. Inspect the Drills are sharp and not damaged

2. If damaged, replace drill bits/cutters before use

Guards & Stickers/Tags

1. Inspect all guards and stickers/tags are in place and secure

2. Ensure there is no damage

3. If damaged, DO NOT use machinery. Replace before use

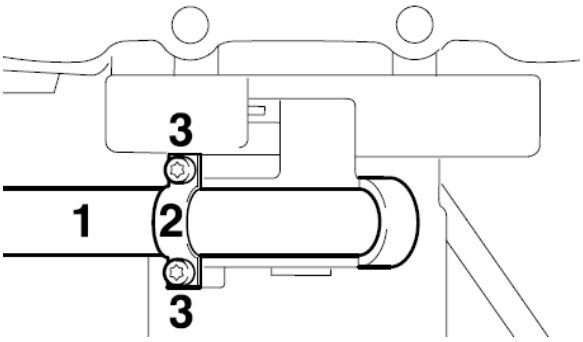
8.3. Assembly Procedures

WARNING

Before any assembly and/or maintenance are performed, ensure the Sleeper Drill is off and in a neutral position

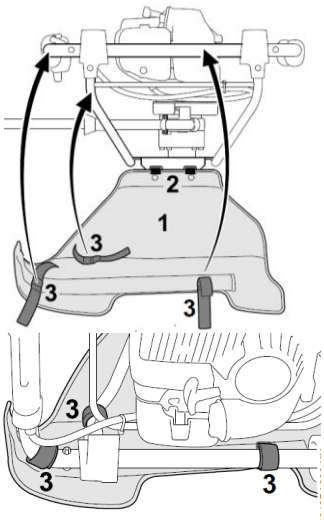
8.3.1. Mounting the Auger Brake Lever

1. Place the activating lever (1) into the clamp
2. Position the holder bracket (2) on the activating lever (1)
3. Insert the screws (3) and tighten firmly



8.3.2. Padding Assembly

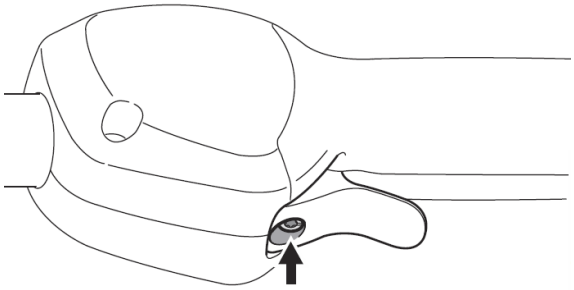
1. Engage tabs (2) on padding (1) in the slots in the handle frame
2. Swing the padding up and secure it to the handlebar with the Velcro strips (3)



8.3.3. Throttle Cable Adjustment

1. Set the throttle trigger to the full throttle position

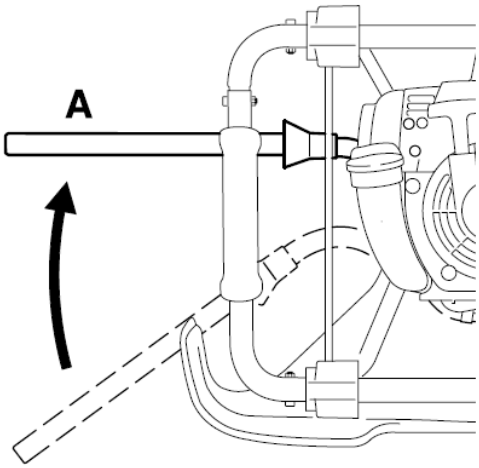
2. Rotate the screw in the throttle trigger clockwise until you feel initial resistance. Then rotate it another half turn in the same direction.



8.3.4. Engaging the Auger Brake

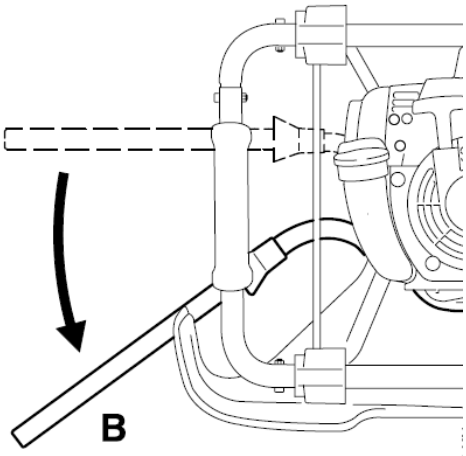
1. Move the activating lever to position A
- When starting
- At idling speed
- To unwind a trapped drill bit/auger

The Auger Brake will engage if the drill bit catches/snags whilst drilling which forces the head to rotate and press the auger brake against the operators leg



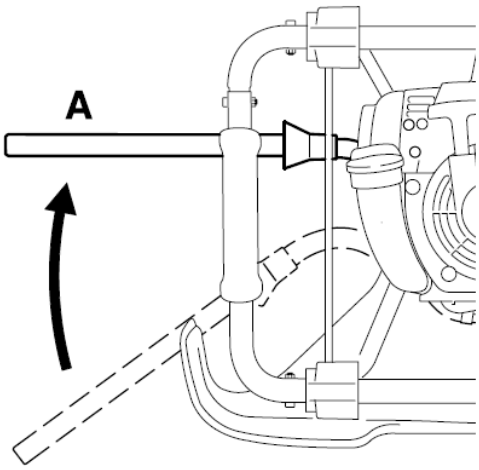
8.3.5. Disengaging the Auger Brake

1. Move the activating lever to position B



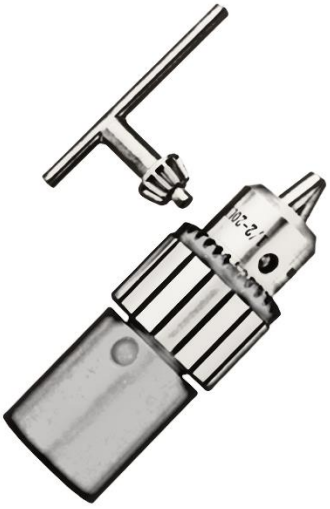
8.3.6. Fitting Drill Bits/Cutters

1. Ensure the engine is off and engage the Auger Brake



2. Place the machine on the ground with the drill spindle facing upwards

3. By using the chuck key supplied, rotate the chuck to release the drill bit or open the jaws



4. Place the drill bit inside the chuck and tighten the jaws onto the drill bit

8.4. Operation Procedures

WARNING

Only authorised personnel shall start, operate or interfere with the normal working of portable equipment. The user shall be careful to use the machine in the intended way, avoiding over-loading.

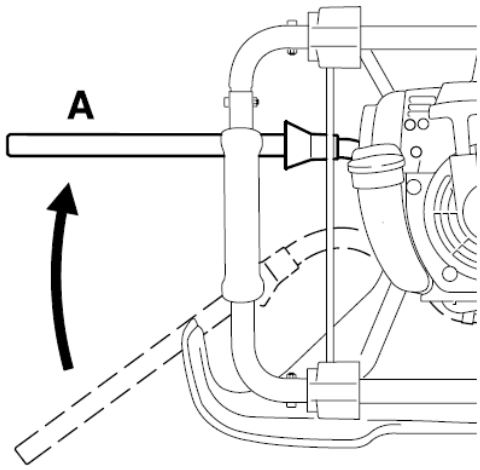
Below are the operation procedures for starting, operation and stopping of the Sleeper Drill. Please refer to the Stihl BT131 manual for detailed operating procedure information.

8.4.1. Starting the Engine

1. Observe all safety precautions

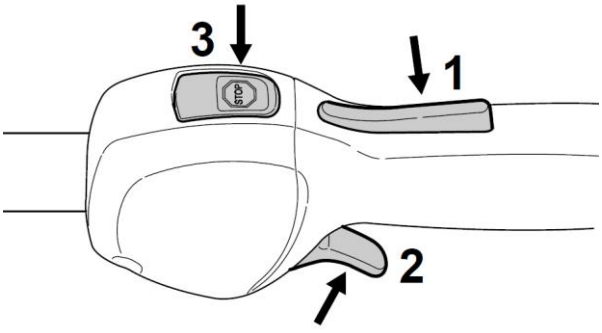
2. Ensure all pre-operation checks have been conducted

3. Engage the Auger Brake

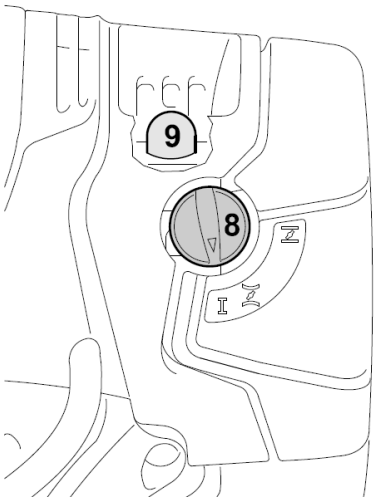


4. Press down the throttle trigger lockout (1). Squeeze the throttle trigger (2) and hold them in this position

5. The stop switch is normally in the Run position, i.e. when it is not depressed: The ignition is switched on – the engine is ready to start. Operate the stop switch to switch off the ignition. The ignition is switched on again automatically after the engine stops.



6. Press home the choke knob (8) and turn it to the required position:
   If the engine is cold
   For warm start and/or if the engine has been running

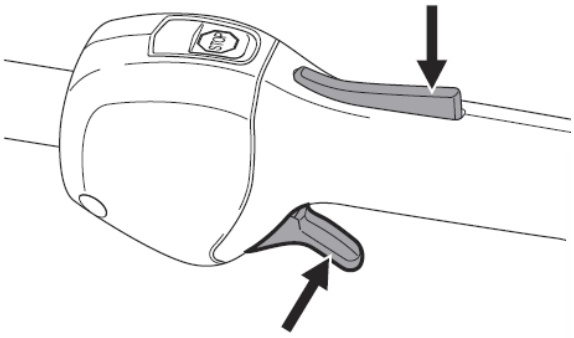


7. Press the manual fuel pump bulb (9) at least five times – even if the bulb is already filled with fuel.

8. Place the unit on the ground so that it is secure
9. Put your left foot on the handle frame.
10. Place your left hand on the handle frame
11. With your right hand pull the starter grip slowly until you feel it engage and then give it a brisk strong pull. Do not allow the starter grip to snap back – slowly guide it back to the housing so the rope can rewind correctly
12. Turn the choke knob to
13. Continue cranking until the engine runs
14. Depress throttle trigger lockout and immediately blip the throttle trigger. The choke knob moves to the run **I** position.

Note: Since the Auger Brake is still engaged, the engine must be returned to idling speed immediately or the clutch may be damaged.

15. Disengage the Auger Brake
16. Ensure the drill is not rotating at idling speed of the sleeper drill. If so, refer to Stihl BT131 manual for adjustment of the carburettor

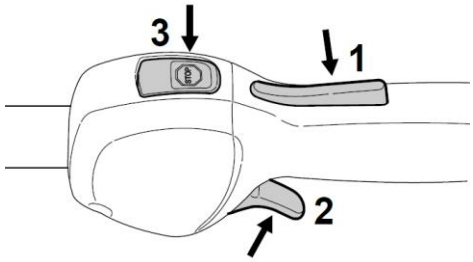


8.4.2. Equipment Operation – Drilling

1. Ensure the Drill Bit has been assembled
2. Start the engine as per “Starting the Engine – Section 8.4.1”
3. Ensure the Auger Brake is disengaged
4. By holding onto both handles and the drill bit placed on top of the sleeper, increase the throttle to begin drilling. Slight downward pressure may be required
5. Drill to the required depth into the sleeper
6. Remove the Drill from the hole once completed

8.4.3. Stopping the Engine

1. Set the engine speed to idle (min) by releasing the throttle
2. Depress the momentary contact stop switch (kill switch)

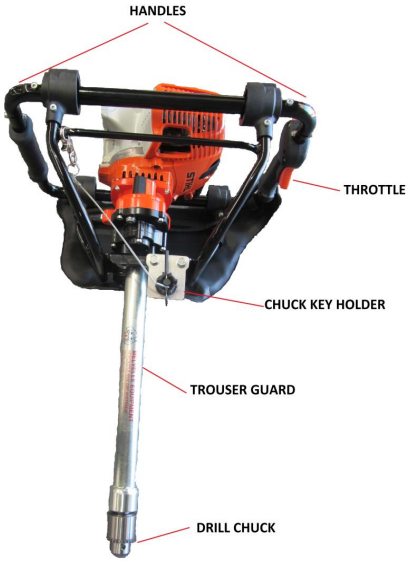


8.4.4. Lifting the Machinery

1. Observe all safety precautions

2. Ensure all pre-operation checks have been conducted

3. Firmly grip both handles to lift the machinery to the required position



8.5. Storage & Transport

8.5.1. Storage of Sleeper Drill

MEC equipment should be stored in a secure, safe, dry location to ensure the equipment is not damaged and maintained in good working order.

If possible, machines may be placed onto racks or placed on the ground for storage.

8.5.1.1. Storage for long periods of time without use

Drain and clean fuel tank in well ventilated area

Run the engine until the carburettor is dry (helps prevent the carburettor diaphragms sticking together

8.5.2. Transport of Sleeper Drill

Place the equipment onto a flat surface (truck or trailer) and strap down ensuring the equipment is unable to move.

When strapping the equipment down, ensure that the straps are used on the main frames of the equipment to avoid damage. Ensure hoses/cables and other lighter parts of the machinery are not used to secure the equipment during transport.

9. Equipment Protection & Care

NOTICE

In addition to the Safety Precautions found in this manual and the supporting tool and engine manuals, observe the following for equipment protection and care

- Always store the Sleeper Drill in a clean dry space, safe from damage or pilferage
- Always keep critical tool markings such as warning stickers and tags legible
- Sleeper Drill repairs and/or service work must only be performed by MEC or certified and authorised dealer
- Do not use the Sleeper Drill for applications for which it is not intended
- Ensure all bolts are tight and all covers/guards are fitted

10. Maintenance

WARNING

Before any maintenance of the Sleeper Drill is performed, ensure the engine is off and in a neutral position. Ensure maintenance is performed by a competent and authorised person.

Maintenance and Troubleshooting

Please refer to the Stihl BT131 Operation Manual for further information regarding Maintenance and Troubleshooting (Maintance table from Stihl BT131 Manualal)

The following intervals apply to normal operating conditions only. If your daily working time is longer or operating conditions are difficult (very dusty work area, etc.), shorten the specified intervals accordingly.		before starting work	after finishing work or daily	after each refueling stop	weekly	monthly	every 12 months	if problem	if damaged	as required
Complete machine	Visual inspection (condition, leaks)	X		X						
	Clean		X							
	Replace any damaged parts	X							X	
Auger brake	Check operation	X		X						
	Have serviced by dealer[1)]									X
Control handle	Check operation	X		X						
Air filter	Visual inspection					X		X		
	Replace[2)]								X	X
Manual fuel pump (if fitted)	Check	X								
	Have repaired by servicing dealer[1)]								X	
Pickup body in fuel tank	Have checked by servicing dealer[1)]							X		
	Have replaced by servicing dealer[1)]						X		X	X
Fuel tank	Clean							X		X
Carburetor	Check idle adjustment – drilling spindle must not rotate	X		X						
	Adjust idle speed									X
Spark plug	Adjust electrode gap							X		
	Replace after every 100 operating hours									
Cooling inlets	Visual inspection		X							
	Clean									X
Cylinder fins	Have cleaned by servicing dealer[1)]						X			
Valve clearance	If power is low or cranking effort very high, have valve clearance checked and, if necessary, adjusted by servicing dealer[1)]									X
Spark arresting screen in muffler	Check		X					X		
	Clean or replace								X	X
All accessible screws and nuts (not adjusting screws)	Retighten									X
Anti-vibration elements	Check	X						X		X
	Have replaced by servicing dealer[1)]								X	
Gearbox lubrication	Check				X					
	Replenish									X
Drilling spindle	Clean		X							
Auger	Check	X								
	Replace								X	X
Safety labels	Replace								X	

11. Further Documents

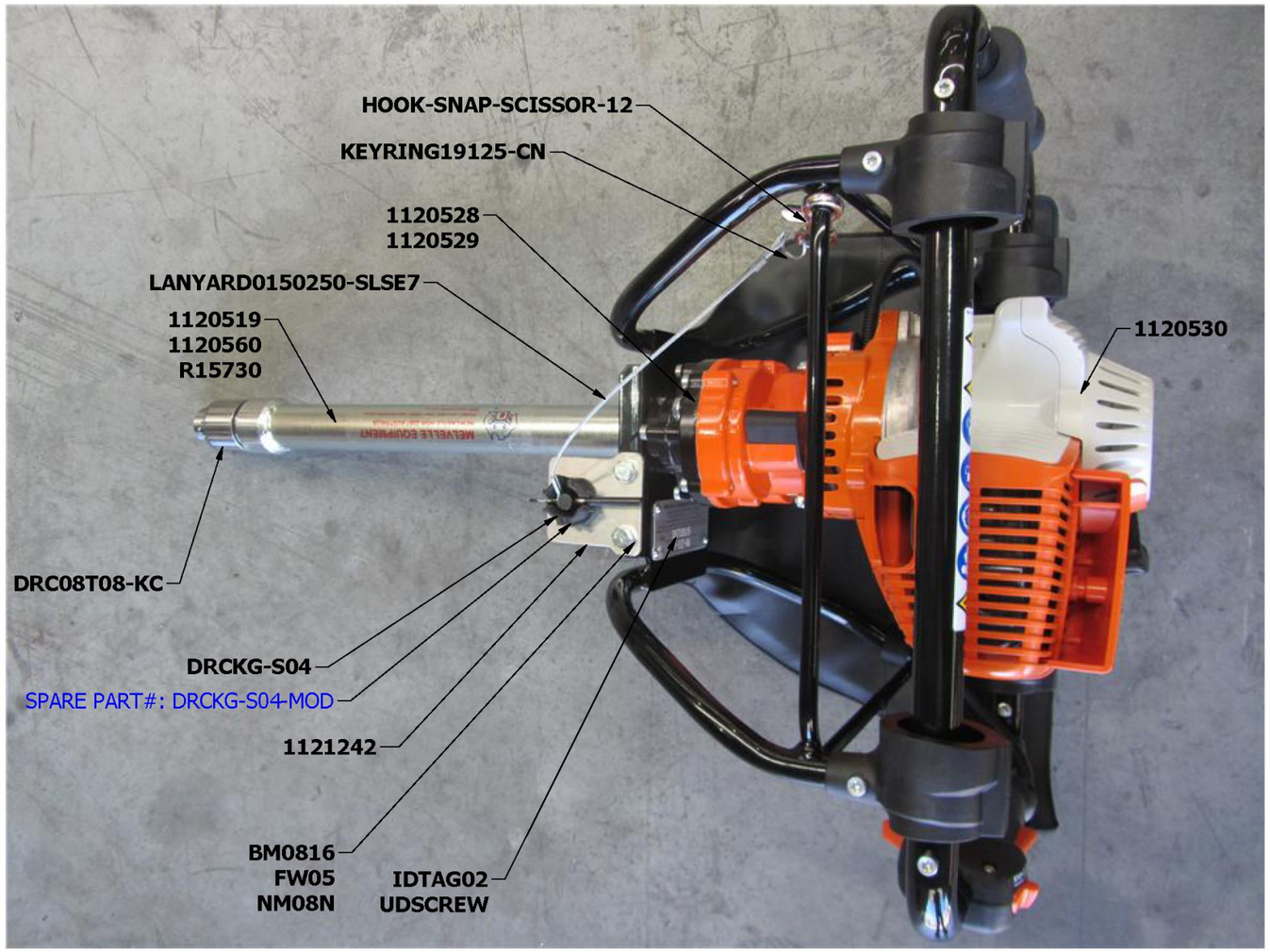
Please refer to the further documents within for drawing, risk assessment and other related information.

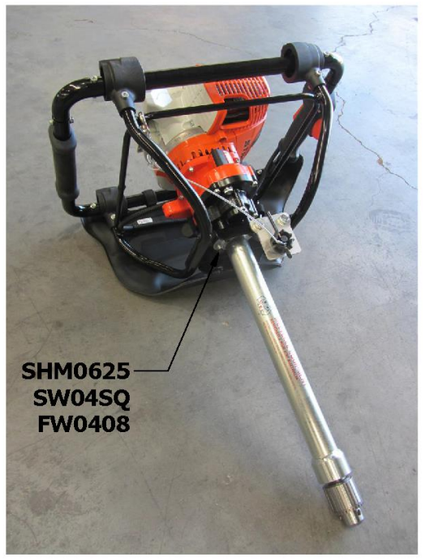
Further documents for the 112-AA Sleeper Drill:

Document No.	Description	Type	Pg. #
112-503	FP-112-AA - STIHL BT130 With Modified Gearbox For 700 Rpm Spindle	Drawing	31
BT131	Stihl BT131 Parts Diagram	Drawing	11.232
112-AA-OPRA	Operational Risk Assessment	Document	33
BT131	Stihl BT131 Operation Manual	Document	35

11.1. FP-112-AA PARTS LIST

1 OF 2	MAIN SHEET
SHEET #	SHEET DESCRIPTION





ITEM	QTY	DESCRIPTION	PART NUMBER
10	4	FLAT WASHER - ENGINEERS - 1/4" X 1/2" ZINC	FW0408
9	2	BOLT METRIC M8 X 16LG ZINC GR8.8	BM0816
8	1	CHUCK KEY HOLDER GROMMET SUITS 1/4" CHUCK KEY	DRCKG-S04
7	1	DRILL CHUCK KEYED 1/2 CAPACITY 1/2"-20 UNF SCREWED	DRC08T08-KC
6	1	BONDING DRILL CHUCK KEY MOUNTING PLATE	1121242
5	1	STIHL BT121 EXTENSION SHAFT - MODIFIED FOR TROUSER GUARD	1120560
4	1	BT130 POST HOLE DRILL - STANDARD 1.9HP	1120530
3	1	GEAR - BT121 REDUCTION PINION SHAFT	1120529
2	1	GEAR - BT121 REDUCTION GEAR	1120528
1	1	BT121/BT130 STIHL TROUSER GUARD - WITH BEARING	1120519

PARTS LIST

ITEM	QTY	DESCRIPTION	PART NUMBER
20	4	U DRIVE SCREW	UDSCREW
19	4	1/4" SPRING WASHER	SW04SQ
18	4	SOCKET HEAD CAP SCREW M6 x 25	SHM0625
17	1	SEL LOK PIN 4MM X 30MM LONG	R15730
16	2	NUT M8 NYLOC	NM08N
15	1	LANYARD 1.5mm 7X7 SOFT LOOP TO STEEL EYE 250mm OAL	LANYARD0150250-SLSE7
14	1	KEY RING 19mm OD x 1.25mm CS NICKEL PLATED COPPER	KEYRING19125-CN
13	1	MELVELLE MODEL & SERIAL N/O AL TAG	IDTAG02
12	1	HOOK SCISSOR SNAP 12mm HOLE 12mm SWIVEL END 50mmLG	HOOK-SNAP-SCISSOR-12
11	2	FLAT WASHER - ENGINEERS - 5/16" X 5/8" ZINC	FW05

PARTS LIST

REV	DATE	DRN	CRF	DESCRIPTION	CHK	APP
2	23/06/2017	BB	1400	ADDED GROMMET MODIFICATION SHEET	-	-
1	3/05/2017	BB	1566	FIXED INCORRECT PART NUMBERS	-	-
0	15/08/2016	-	-	ORIGINAL ISSUE	-	-

Melvelle Equipment Corp. Pty. Ltd
10 Rogilla Close
Wallsend N.S.W 2287
Ph:+61 02 4951 5244
Fax:+61 02 4950 1291

IF IN DOUBT, ASK!

TOLERANCES UNO:- DIMENSIONS IN mm UNO

.XX ±0.1	XXX. ±2.0
.X ±0.2	XXXX. ±3.0
X. ±0.5	.X° ±0.1°
XX. ±1.0	X.° ±0.5°

DRAWN	DATE
bryceb	15/08/2016
CHECKED	APPROVED

DESCRIPTION: STIHL BT130 WITH MODIFIED GEARBOX FOR 700 RPM SPINDLE

PART #: FP-112-AA

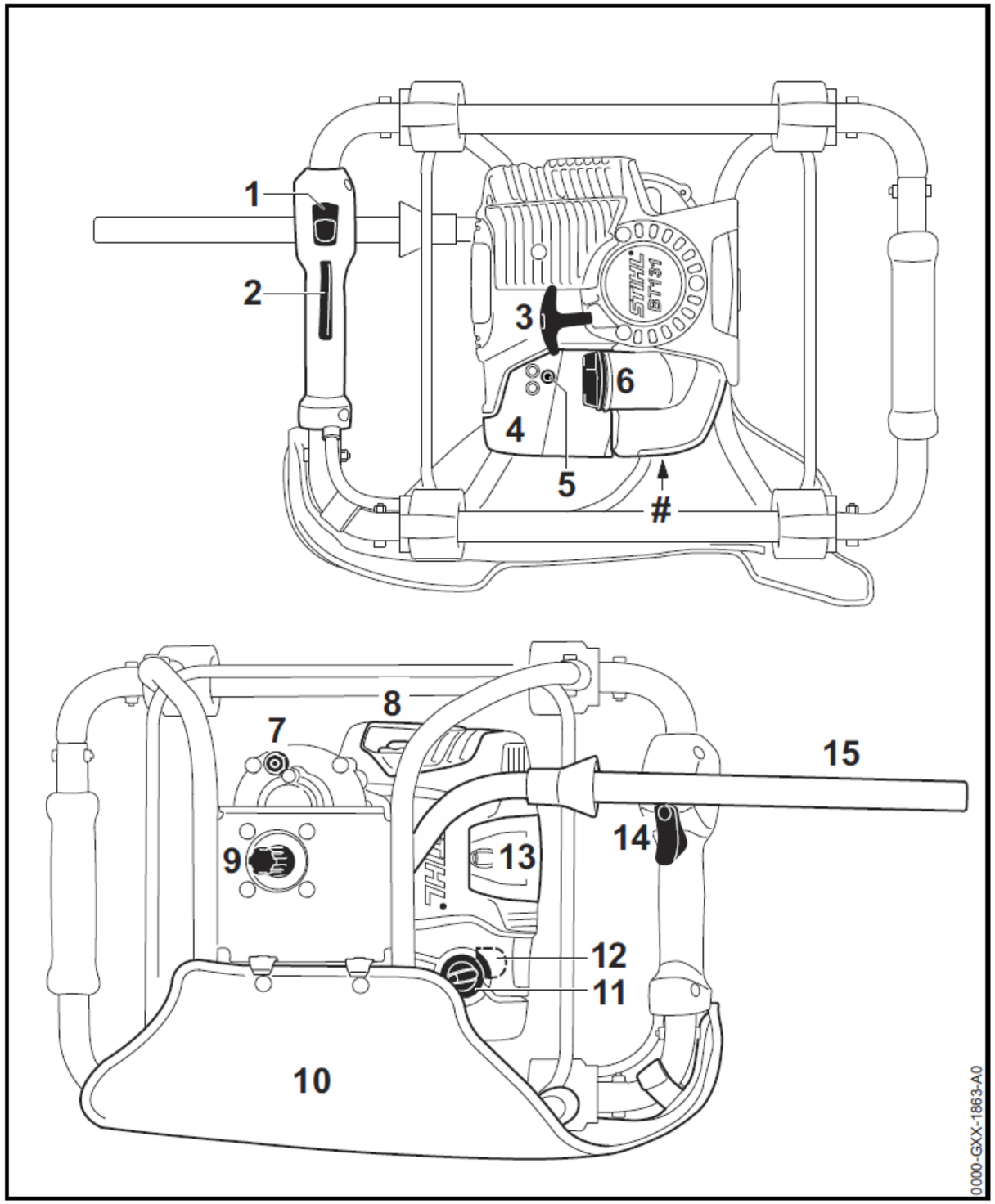
MODELLED BY: bryceb

SCALE: PHOTOS

DRG: 3-112-530 REV: 2

11.2. BT131 PARTS LIST

*Contact Melvelle Equipment for further details and part numbers on Stihl BT131 spare parts



1	Stop Switch
2	Throttle Trigger Lockout
3	Starter Grip
4	Air Filter Cover
5	Carburetor Adjusting Screw
6	Fuel Filler Cap
7	Screw Plug
8	Muffler with Spark Arresting Screen
9	Drilling Spindle
10	Padding
11	Choke Knob
12	Manual Fuel Pump
13	Spark Plug Cover
14	Throttle Trigger
15	Auger Brake Activating Lever
#	Serial Number

11.3. Operational Risk Assessment

	Machine: FP-112-AA Sleeper Drill							Form No.:	
	ABN							Issue Date	19/06/2013
	WORKPLACE GENERIC HIRARC FORM							Version:	0

Company	MELVELLE EQUIPMENT CORP	Department / Workplace:	Melvelle Offices	Date of Assessment 19-6-13	Commenced:	11am	Completed:	12md

Scope of Assessment: Identify the risks and hazards associated with the operation of a rail maintenance machine to remove and insert screw spikes in situ tracks.

Names of Risk Assessment Team: Gary Morris, Adrian Gersbach	Names of additional personnel consulted during Risk Assessment:	Identified limitations of risk assessment: Only applies to risks identified as part of the operation of the machine. Information Sources / References: AS4024.1-2006 Safety of Machinery

RISK ASSESSMENT MATRIX

Potential Consequences			Likelihood				
			Almost Certain	Likely	Possible	Unlikely	Rare
Keyword	Description Safety Health & Hygiene	Description Environmental	*Expected to occur*	*Will occur occasionally*	*May Occur*	*Not expected to occur*	*Requires unusual chain of events*
Minor	First Aid Injury	On-site release immediately contained with business unit resources	Medium 8	Medium 7	Low 3	Low 2	Low 1
Significant	Medical Treated Injury or illness	On-site release or offsite release immediately contained with smelter resources	High 14	Medium 10	Medium 9	Low 5	Low 4
Serious	Lost Time Injury or illness	Off-site release causing nuisance or community complaint. Breach of license condition	High 16	High 15	Medium 12	Medium 11	Low 6
Severe	Fatality or Permanently disabling injury of illness	Off-site release with detrimental impact to environment or community. Repeated breach of license conditions	Extreme 24	Extreme 22	High 20	High 18	Medium 13
Disastrous	Multiple Fatalities or work-related fatal diseases	Toxic release off-site with detrimental impact to environment or community	Extreme 25	Extreme 23	Extreme 21	High 19	High 17

LEGEND	ACTION REQUIRED	NOTIFY
LOW 1-6	Tolerable - Manage by Routine Procedures	
MEDIUM 7-13	Risk reduction required to "As low as Reasonably Practicable" ALARP	Design Team/Engineer
HIGH 14-20	Immediate action required to reduce risk. Authorisation required before proceeding on task	CEO
EXTREME 21-25	Intolerable. Cease activity until controls in place to reduce risk. Immediate & urgent Senior Management Team action required	CEO

MANAGEMENT ACTIONS	
Comments	Refer to Action Plan
Risk Assessment Referred to:	Design Team
Risk Assessment Accepted by:	Andrew Melvelle
Risk Assessment findings recorded in the Project Design Folder	Design Team
Risk Assessment Findings communicated to:	Design Team, Melvelle Equipment Corp.

		Raw Risk Rating (no controls)				Residual Risk Rating (after controls)					
Ref no	Description / hazard / risk	Consequence (no controls)	Likelihood	Risk Level & Score	Controls	Consequence	Likelihood	Risk Level & Score	Is Risk Tolerable Y/N	Additional Controls Req	Action By / Name & date required
	Manual lifting of machine is dangerous to the operators back, and other areas	Serious	Possible	12	Lightweight equipment, less than 20kg - One man lift. Ensure the operator is aware of good lifting techniques and environment underfoot.	Serious	Rare	6	Y		
	Fluid levels too high causing overflow and low causing machine damage	Significant	Likely	10	Pre-start checklist requiring operator to check fluid levels before operating machine	Significant	Rare	4	Y	Pre start checklist	
	Exposure to hazardous materials such as fuel and oils	Significant	Likely	10	Hazardous material documentation in MSDS.	Significant	Rare	4	Y	MSDS	
	Fueling the fuel tank can lead to explosions, fires, and dangerous fumes being inhaled	Serious	Possible	12	Engine must only be re-filled when the engine is stopped and in well ventilated area	Serious	Rare	6	Y		
	General machine operation	Significant	Likely	10	Procedures developed such as prestart checklist, where one operator is needed	Significant	Rare	4	Y	Pre start checklist	
	Loud noise from engine and machine causing permanent hearing damage	Serious	Likely	15	Manufacturer specifications rate the motor at 104dba at operator.Motor fitted with muffler. Operator required to wear hearing protection.	Serious	Rare	6	Y		
	Exhaust fumes during machine operation	Serious	Possible	12	Operate the machine upwind of the exhaust fumes. Operate in a well ventialted area.	Serious	Rare	6	Y		
	Serious burns can occur through the touching of hot surfaces	Significant	Likely	10	Include warning signs. Include warnings in training and operating manuals.	Significant	Unlikely	5	Y	Warning sticker list	
	Injury through rotating cutting surfaces	Serious	Likely	15	Ensure correct operation procedures are followed	Significant	Rare	6	Y	Operating Instructions	
	Kicking of drill when caught during drilling operation	Significant	Likely	10	Securely hold the drill with two hands on handles. Follow operation procedures	Significant	Unlikely	5	Y	Operating Instructions	
	Trip hazard through ballast and loose items on rail way	Significant	Likely	10	Correct training in railway safety	Significant	Rare	4	Y	Railway Safety	
	Entanglement in rotation of drill spindle	Serious	Likely	15	Use of Auger Brake and throttle held by hand that stops rotation . Correct operation training.	Significant	Rare	6	Y		

11.4. Stihl BT131 Operations Manual

*For further information on Stihl BT131 please refer to Stihl BT131 operation manual supplied together with this manual.