DISCOVERER®
EXCELLENCE SINCE 1993

Automatic Core Saw

Operating & Safety Manual

Updated: April 2026

Contents

IMPORTANT! READ THIS MANUAL BEFORE USING AND KEEP IN A SAFE PLACE FOR REFERENCE.

Safety & PPE

Safety is paramount in any operation and is sometimes overlooked in core cutting operations. It cannot be stressed enough the dangers associated with a high powered core cutting machine, with a blade spinning at high speeds.

Purpose

To establish the precautionary measures to ensure core cutting is carried out in a manner that reduces the risk of injury and/or damage while meeting required regulatory standards, and to outline the correct core cutting method when operating the Discoverer Automatic Core Saw.

Scope

These instructions apply to all persons involved in the cutting of diamond drill core using the Discoverer Core Saw.

Responsibilities

Before commencing this task, ensure that you have the knowledge and skills necessary to safely and competently operate the Discoverer Core Saw.

The following safety measures must be strictly adhered to:

(1) No person shall operate a diamond cutting saw without proper instruction and authorisation on the use of and the procedures involved with the operation of the saw.

(2) Under no circumstances should a diamond core cutting machine be operated whilst under the influence of alcohol or drugs, including prescription drugs unless approved by your site as not affecting your ability to safely operate the saw.

(3) **Personal Protective Equipment** - personal protective safety equipment must be worn whilst using a diamond core cutting machine. This includes:

- Safety goggles, ear muffs/plugs, P2 dust mask or better, tight fitting waterproof apron, steel toe rubber boots, plus any other related site safety equipment. Gloves can be worn but must be tight fitting.

(4) **Pre-start Checks** - as in the safe operation of any machine it is imperative that the responsible operator performs a pre-start check. Failure to observe this simple safety procedure represents a serious breach of mine regulations and will lead to disciplinary action. Never assume that a pre- start check has been performed. It is a simple task that takes only a few minutes. If you are not sure then redo the pre-start check. Remember that it is designed to protect you.

IMPORTANT - if saw requires servicing, maintenance, cleaning, a jam needs to be cleared, is unsafe or out of service, you must use a tag out method such as Master Lock 488 Rotating Electrical Plug Lockout.

Safety

Personal Protective Equipment Requirements

Gloves	Tight fitting leather or rubber gloves .
Eye Protection	Eye protection that complies with the relevant requirements of CSA Z94.3 or ANSI Z87.1
Lung Protection	A minimum of a P2 Dust mask or better should be worn to protect lungs from airborne particles/dust.
Foot Protection	Foot wear with Steel capped toes and non-slip soles for working in wet area.
Hearing Protection	The Discoverer Saw runs at around 82db (varies based on rock and blade type). It is recommended that the operator wears class 4 hearing protection.
Clothing	For the protection of clothes and body as per mine site requirements/regulations, but specifically a water proof apron is recommended.

Additional Recommendation

Face	Face Shield is an optional addition that can be worn for further protection.

The Core Blade

The core cutting blade is made to strict engineering design, and is specifically constructed for the purpose of cutting rock. The blade is perfectly balanced, which is critical to its performance. Miss-handling or improper use of the blade (e.g dropping) may impact its performance.

The following guidelines must be strictly adhered to:

(a) Never, under any circumstances, cut anything without a continuous flow of water onto the blade and into the cut. Failure to observe this can cause the blade to overheat, lose tension (become wobbly/warp), bend, and possibly fail.

(b) Never under any circumstances cut anything that the blade has not been designed to cut.

(c) Never "slam" core into the blade; always maintain a smooth entry.

(d) Avoid stalling the blade while cutting.

(e) Never hit the blade sideways.

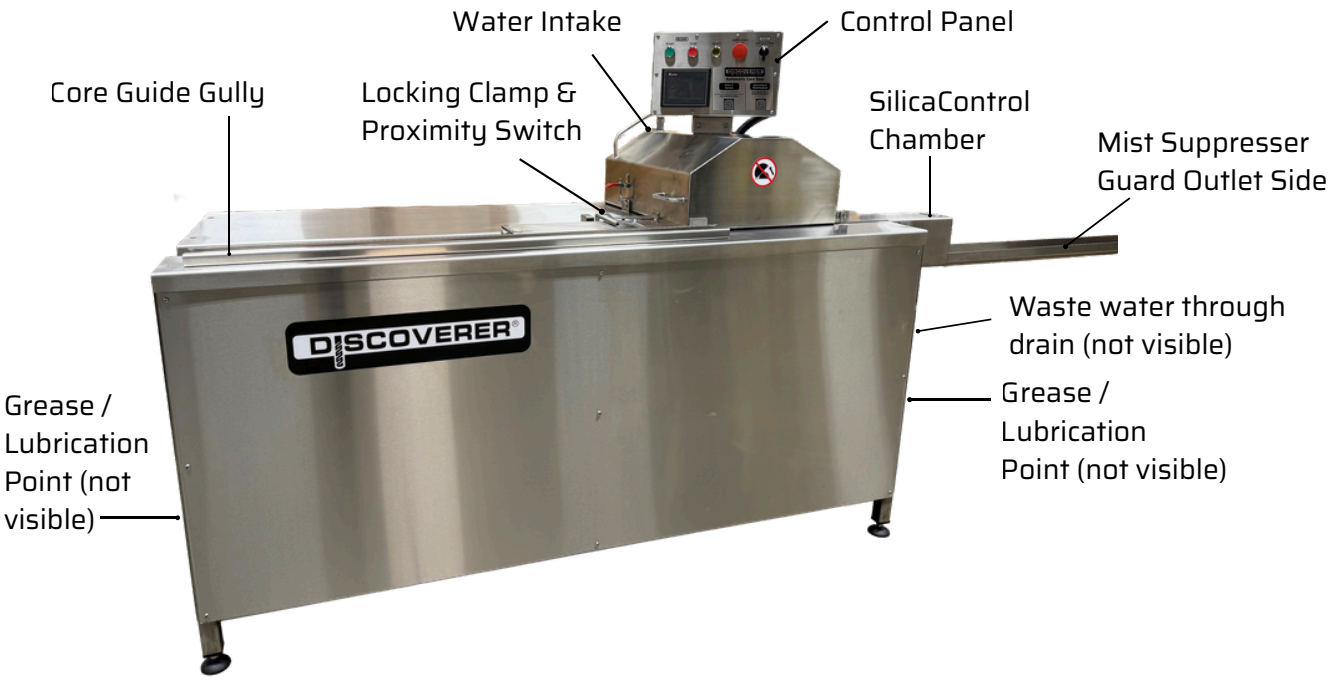
The life of the blade can be greatly increased by ensuring the proper conditions exist for the blade. These conditions include: proper operator training, correct water flows, correct blade speed, correct feed chain speed, and the correct selection of the blade to suit the rock type being cut.

Discoverer blades are designed to perform within specific parameters. These include: water flows, 8 - 11 litres/ minute and peripheral blade speed. Discoverer blades are designed to have optimum performance at a peripheral blade speed of 3,000 metres (9,900 feet) per minute.

Recommendation Guide For specific advise talk to our team ✓✓ Highly Recommended · ✓ Recommended (not for continual use) · ✗ Not Recommended	Rock Type 1 Tuff, Shale, Gypsum, Clay, Potash, Talc, Calcite and Soft Sandstone	Rock Type 2 Marble, Schist, Limonite, Weathered Granite, Siliceous Schist, Sepentine and Phyllites	Rock Type 3 Siliceous Volcanics, Hard Schist, Hard Limestone, Gneiss Basalt, Angesite, Pegmatite, Granite, Gabbro, Anorthosite and Amphibolite	Rock Type 4 Quartzite, Rhyolite, Tonalite, Aplite, Glass Highly Altered, Intrusives and Volcanics	Rock Type 5 Chert, Quartz, Red Granite, Jasperlite, Strongly Silicified, Banded Iron, Taconite and Haematite
Discoverer ® - CBLDS Medium to Abrasive Sound Dampened	✓✓	✓	✗	✗	✗
Discoverer ® - CBLDM Very Hard Sound Dampened	✗	✓✓	✓	✗	✗
Discoverer ® - CBLDA Ultra Hard Sound Dampened	✗	✗	✓✓	✓	✗
Discoverer ® - CBLDE Extreme Hard Sound Dampened	✗	✗	✗	✓✓	✓
Discoverer ® - CBLDI Insane Hard Sound Dampened	✗	✗	✗	✓	✓✓

Operating Procedures

Main features of the Discoverer Automatic Core Saw



1) Pre-Start Procedure

A pre-start inspection **must** be completed before commencing cutting. **See Pre-start Inspection Check List on page 20.** Personal protective equipment must worn at all times when a saw is in operation.

1	Ensure your work area is clean and free of hazards
2	Ensure saw is powered off
3	Ensure proper protective equipment is being worn by operator and bystanders (refer pg. 4)
4	Unlock & Lift blade hood, check blade is fitted properly and secured, inspect blade for wear & replace if necessary.. Check that the blade is tight and fitted correctly (refer pg 10)
5	Use a grease gun, apply grease to the nipples located on the left and right sides of the machine, as well as to the bearings on the blade shaft assembly

Operating Procedures

1) Pre-Start Procedure (Cont.)

6	Turn water on and ensure water is flowing out of the holes, and none are blocked. If blocked, follow guide on Page 13
7	Close the blade hood and ensure the locking clamp and safety sensor are engaged
8	Plug saw in/turn power on at mains
9	Check if chain was lubricated on last shutdown. If not/if in doubt, lubricate pusher chain belt. (Point 4 of section 5)
10	Check if waste water drain pipe directed into the first compartment of the recirculation tank or plumbed into waste to ensure waste is directed away from the work area

2) Start Up

1	Pull emergency stop button on control panel out
2	Press start button on control panel
3	**Test 1**: Press emergency stop button to ensure machine stops
4	Press reset button & then start button to restart saw
5	**Test 2**: Lift the bar to trip the proximity switch
6	If blade stops, press yellow reset button then start button and proceed with cutting **If blade fails to stop, tag machine out of service and contact manufacturer**

Repairs are to be carried out by qualified personnel.

Operating Procedures

3) Core Guide Loading & Core Cutting

Proper core guide loading technique - using both hands:

Note: 'Pre-start Procedure' on pg 6-7 must be completed

1. Turn feed switch to forward and reverse to confirm chain runs in both directions
2. Turn feed switch to forward
3. For chain with teeth follow guide A
   For chain without teeth follow guide B

A) Chain With Teeth:

3. Hold the handles on the back side of the guide with your left hand, and the front side with your right
4. Slide the front of the core guide into the end of the channel and let go of the front side of the core guide. With your left hand, hold the core guide in place until the tabs on the chain have slotted in to the slots on the bottom of the core guide. If the slots on the bottom of the guide line up with the chain tabs the guide will start getting pulled through immediately

5. Release the back side of the core guide down, allowing the teeth on the chain to engage with the remaining holes in the guide

Make sure the lid of your core guide is below the sides of the trough. If it is above, this indicates that the core guide is sitting on top of the chain tabs.

If this seems to be the case, push the boat back or forwards until the tabs on the chain align with the slots in the bottom and the core guide drops down.

6. Once the guide is pulled through, remove the guide from the outfeed tray on the right side of the machine.

Operating Procedures

3) Core Guide Loading & Core Cutting (cont.)

B) Chain Without Teeth:

3 Hold the handles on the back side of the guide with your left hand, and the front side with your right

4 Place down and release the front side of the core guide first.

5 Lower and release the back side of the core guide, allowing the teeth on the core guide to engage with the chain.

6 Once the guide is pulled through, remove the guide from the outfeed tray on the right side of the machine.

Operating Procedures

4) End Of Shift / Clean Down

1	Rise / wash the machine down thoroughly with clean water and a broom/brush to remove excess cutting fines and sludge. Ensure the waste water trough (below the chain) is sprayed out (this can get missed as not obviously visible) ** **AVOID water contact with the electrical control panel****
2	Rise / wash out core guides of any setament. *Note: If you have a recirculation tank, you can clean them off into the first trough of the tank
3	Clean all debris from floor area
4	Turn water off
5	Turn feed switch to forward, and allow feed chain one complete revolution while spraying chain lubricant such as Moly Chain Lube
6	Turn chain feed switch to off and shut saw down

5) Shutting Down

1	Check all core and core guides are removed from the machine
2	Turn the feed switch to the off position
3	Push in the emergency stop button
4	Turn off/unplug at mains power

TAKE NOTE

- Apply suitable chain lubricant to the chain at the end of each day
- Each time you replace the blade, apply anti-seize to the thread where you fit the blade on

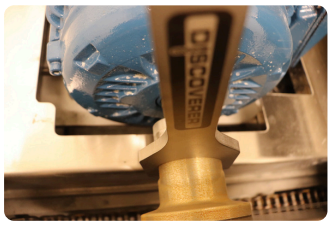
Repairs and Maintenance

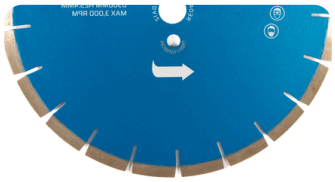
How To:
Replace the Blade

1	Ensure the saw is powered off and power is completely isolated at mains/unplugged, tagged out and the emergency stop is pushed in. Unlock blade housing cover and lift open
2	Loosen and remove blade locking nut, washer, blade bushing and old blade
3	Fit new blade onto the shaft, and ensure that the locating pin is secure to the blade. **NOTE: the blade needs to be fitted so that the directional arrow on the blade points in an anticlockwise direction - for some blade brands this may mean that the blade has the writing/ branding facing the motor rather than the operator**
4	Apply anti-sieze to thread
5	Fit shaft washer and locking nut, tighten securely - suggest using an anti-seize on the nut/bolt
6	Spin the blade to check it is fitted properly and the locking pin has stayed in the locking hole in the blade. To check this look down on the blade from directly above as you spin it to ensure there is no gap between the blade and either front or back bushings (if there is a gap the blade has likely slipped out of the locking pin hole on the blade)
7	Close blade housing cover and lock

1

2





6

7

TAKE NOTE It is expected to see some surface rust on the blade arbor, as the blade locking cover is made with high-strength carbon steel, for withstanding high clamping forces.

Repairs and Maintenance

How To:
Adjust Chain Speed

NOTE - It should be rare that this needs to be adjusted, and should only be done by an experienced operator.

1	Press the white “Change Settings” on the control panel.
2	In User Settings, under “Feed Rate”, press the number.
3	Put in the speed desired (the higher the number, the faster the speed). NOTE. It is **not recommend to exceed 40%** even on the softest core. Harder core would require a lower %. Press ”Enter” once finished.

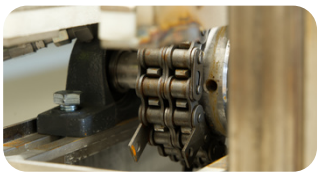
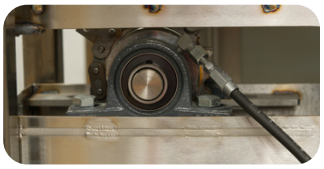
TAKE NOTE It is critical to listen to the blade to hear if you are cutting too fast or you are using the wrong blade type/hardness. Cutting too fast (either chain feed or blade speed) will cause the blade to glaze and not cut well.

TAKE NOTE We suggest never running the saw beyond 12 amps. A reading on the touch panel above 12 amps would demonstrate that the Blade Feed Rate is too high for that core.

4	**Blade Feed Guidelines:** On the main touch panel the user can adjust the Blade Feed Rate and Feed Rate Mid %. We recommend: • Feed rate to 10%-90%. • Feed Rate Mid to 5% For extremely hard cores we suggest starting at a Blade Feed Rate of 30-35% for your initial cuts and assessing how hard the saw is working to make the cut.

Repairs and Maintenance

How To: Change Drive Chain


1	Remove left and front panels
2	Loosen left pillar blocks and tensioners
3	Find chain link (always facing front panel) and remove
4	Remove chain
5	Refit new chain
6	Tension chain by pulling chain sprocket and bearing housing towards front of the saw until it supports its own weight
7	Tighten the 4 pillar bolts
8	Refit panels. **The stainless steel screws come pre-coated with anti-seize copper paste to ensure the screws don't bind or seize. Ensure adequate copper past is present (add more if necessary) when re-fitting screws**

How To: Check Your Blade Alignment

CAUTION Before performing this task please check with Supervisor and the Discoverer technical team. This should not be a common requirement as blade miss-alignment is rare.

1	Check Blade is fitted correctly (see pg 10). If all ok then continue with check - you will need the blade alignment tool (see pg 16).
2	Slide in jig into the channel and as far into the blade as possible. If the blade slides the whole way through the jig the blade is aligned and the process is complete
3	If the blade does not slide through, tighten whichever of the 4 adjusting bolts necessary to alter blade angle until the blade is able to slide all the way through the jig - this means it is square and runs true
4	Tighten 4 housing bolts completely
5	Remove jig

Repairs and Maintenance

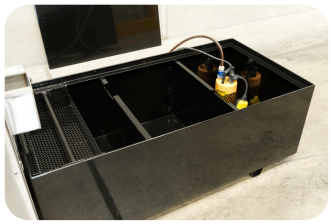
How To:
Clean Out Spray Nozzles

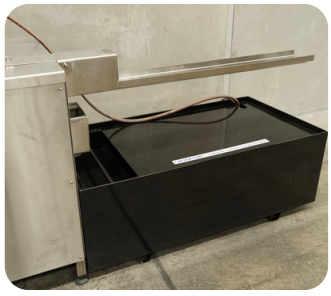
1	Make sure water is connected and pump turned on if using the water recirculation tank.
2	Ensure water valve is closed/turned off
3	Unlock blade cover latch.
4	Lift blade hood
5	Unscrew caps from spray system pipe.
6	Gently open the water valve to allow water to flow through the system and flush any dirt or chips built up in the spray system.
7	Turn water valve back to closed.
8	Screw the caps from spray system pipe back on.
9	Close the blade cover and lock latch

Repairs and Maintenance

How To:
Clean out Recirculation Tank

1	Remove the out-feed channel from the Discoverer Automatic saw and the recirculation tank lid
2	Ensure pump is turned off and remove the water hose connected to the Discoverer saw
3	Put the hose end in a suitable area and turn pump on to pump the waste water out . We suggest pumping any sludge from tank chambers into an IBC lined with a bulk bag that drains the water but retains the solids for appropriate disposal
4	If accessible with a forklift or jack, lift recirculation tank out of position and place tank on its side in a position suitable for cleaning run off. If not accessible with mechanical lift, scoop out as much of remaining sludge/fines as possible for appropriate disposal and move to step 7.
5	When the recirculation tanks end chamber (the one furthest from the saw with the pump) is empty, move the pump into the next middle chamber and pump this water out. To avoid the pump needing to pump excessively thick slurry (especially the two left hand chambers) you can either: • Hold the sump pump off the bottom off the tank so that you don't pump the heavy slurry, and then shovel out the remaining thick slurry. Add water and pump out as necessary to reach desired cleanliness • Or (only for when/where sediment is minimal) stir the water up so that the slurry at the bottom of the tank is 'watered down' and easier for the pump to pump. Continue process until all water chambers are empty and then remove water pump.
6	a. Open bungs on side of tank b. Wash out tank with fresh water.
7	a. Refit bungs b. With forklift or jack, return tank into position next to saw, and refill tank with fresh water.
8	Replace the pump into it's mesh housing in the far right chamber, and connect pump water hose to Discoverer Automatic Saw.
9	Replace tank lid and refit Discoverer outfeed channel





Accessories

Discoverer Water Recirculating Tank

DYNOATNK	Discoverer Automatic Water Recirculation Tank with pump included

Discoverer Core Guides

BKNCGP-H	Discoverer Plastic Broken Core Guide - HQ (63.5mm) Light Blue
BKNCGP-H3	Discoverer Plastic Broken Core Guide HQ3 (60 mm) - Yellow
BKNCGP-N2	Discoverer Plastic Broken Core Guide - NQ2 (50.7mm) Orange
BKNCGP-N	Discoverer Plastic Broken Core Guide - NQ (47.6mm) Red
BKNCGP-P	Discoverer Plastic Broken Core Guide - PQ (85mm) - Dark Blue
BKNCGP-N2SL	Discoverer Half Core Guide (Quarter Cut) - NQ2
BKNCGP-HSL	Discoverer Half Core Guide (Quarter Cut) - HQ
AUTVCGP-N	Discoverer V-Core Guide HQ/ NQ / NQ2

Spare Parts

Rear drive assembly

Spare chain

Core Blade alignment guide

Forward/reverse switch

Stop button

Start button

Reset button

Stop button

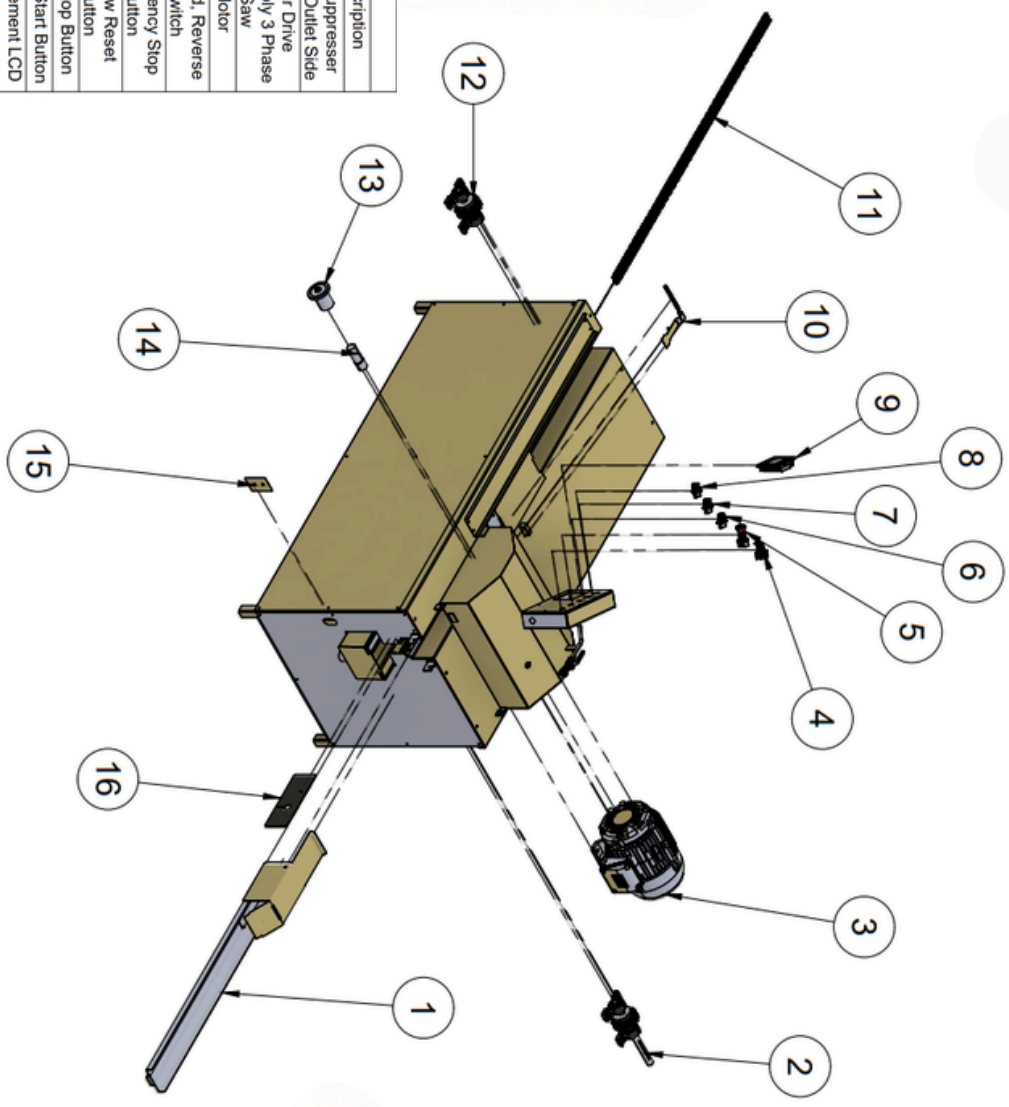
Grease nipple

DYNORDA	Rear Drive Assembly 3 Phase Auto Saw
DYNOREPC2	Spare Chain 3-Phase Automatic Core Saw
DYNOSTP	Emergency Stop Button
DYNOFRSWITCH	Forward, Reverse Switch
DYNORDB	Red Stop Button
DYNOCBA	Core Blade Alignment Guide
DYNOYRB	Yellow Reset Button
DYNOGSB	Green Start Button
RTF-CW	Rubber Trough Flaps

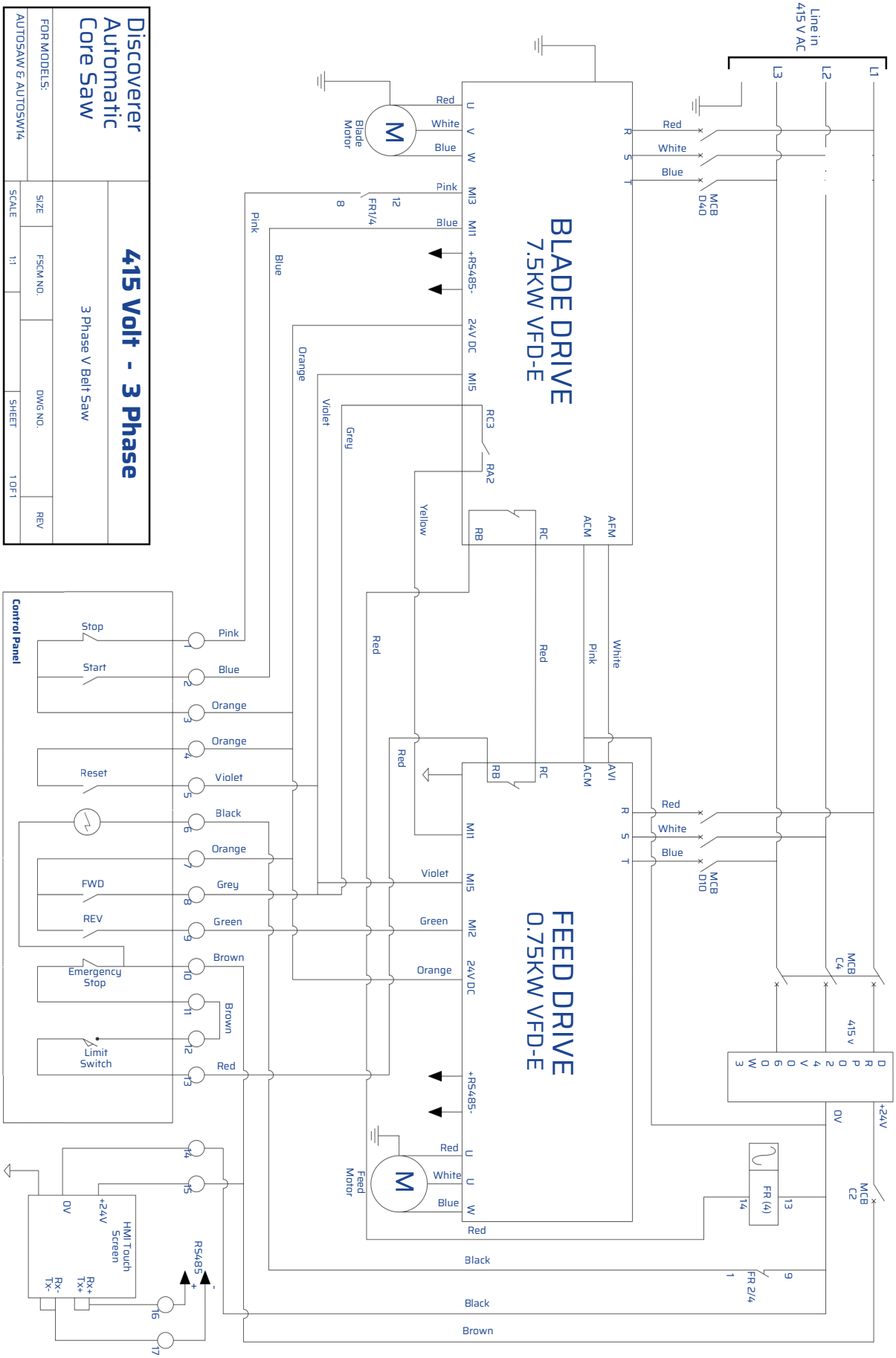
DYNOAPS	Proximity switch for Automatic Core Saw
DYNOLCD	Replacement LCD Screen for Automatic Core Saw
DYNOAUTO2-MOTOR	Replacement 3-phase motor 7.5 kW
DYNOMGI	Replacement Mist Guard (Intake Side)
MISTSG	Mist Suppresser Guard Outlet Side (Dust chamber box) for Automatic Core Saw
BHGN-6MM	Replacement Grease Nipple Fitting

Spare Parts

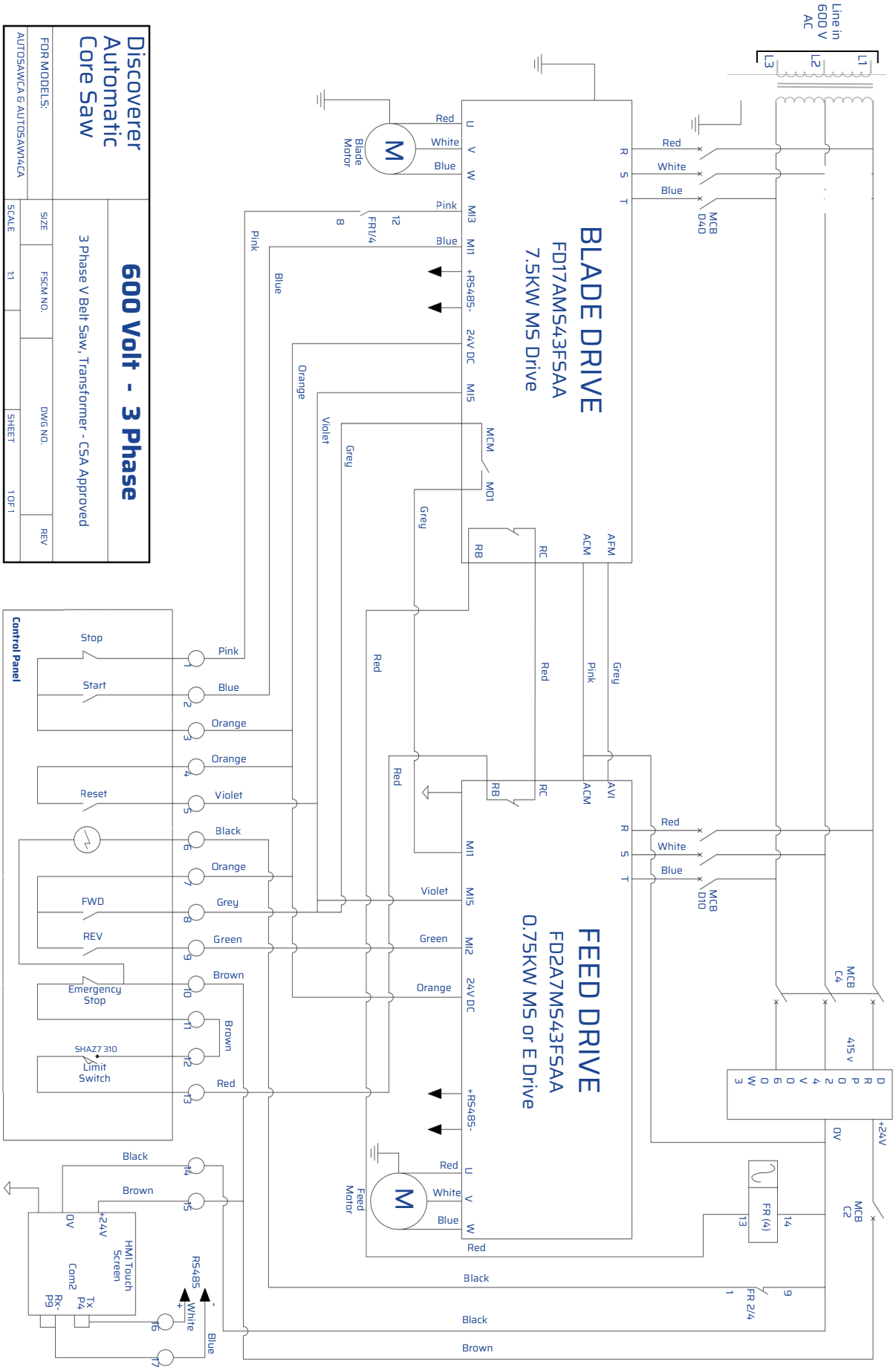
Parts List			
Item	Quantity	Product Code	Dscription
1	1	MISTSG	Mist Suppresser Guard Outlet Side
2	1	DYNORDA	Rear Drive Assembly 3 Phase Saw
3	1		Motor
4	1	DYNOFRSWITCH	Forward, Reverse Switch
5	1	DYNOSTP	Emergency Stop Button
6	1	DYNOYRB	Yellow Reset Button
7	1	DYNORDB	Red Stop Button
8	1	DYNOGSB	Green Start Button
9	1	DYNOLCD	Replacement LCD Screen
10	1	DYNOAPS	Proximity Switch
11	1	DYNOREPC2	Spare Chain 3-Phase Auto Core Saw
12	1		Front Drive Assembly
13	1		Arbor Main Body
14	1		Blade Drive Shaft
15	2(per side)	BHGN-6MM	Replacement Grease Nipple Fitting
16	2	RTF-CW	Rubber Trough Flaps



Wiring Diagram



Wiring Diagram



Specifications

Specifications	
Blade Guard Capacity	300 mm / 11.8"
Max Depth of Cut	Cuts from B to P size core
Blade Arbour Size	25.4 mm / 1"
Blade Drive	Direct Drive
Blade Guard	Stainless Steel
Blade Coolant	Water
Frame	Stainless Steel
Weight	440kg / 970lbs
Crated	543kg / 1197lbs
Dimensions	
Width	1043mm / 41"
Height	1406mm / 55"
Length	2048mm / 80.6"

Power	
Motor	Electric
Power	7.5Kw
HP	10
Voltage	415-480
Blade Shaft RPM	2940 @50 Hz, 3530 @60 Hz
Phase	3
Max load current	12 Amp
Starter	Variable Speed Drive
Coolant	Air

Pre-Start Checklist

Name: _____ **Date:** _____

	Check for any out of service / isolation tags for information, check cord for test and tag compliance that is in date.
	Check power leads connected correctly and power cable in good condition with power switch on at the mains.
	Check core saw area free of any potential trip hazards.
	Check that there is a blade on the blade shaft and that it has sufficient remaining segment left for cutting. Replace if necessary.
	Check water supply hose and fittings connected correctly, in good condition and that the water is running.
	Check drainage pipe is draining water well away from the work area, alternatively ensure recirculating water tank unit is in place and connected.
	Check the blade hood is locked and into place.
	Check gully is clear of all cuttings.
	Check to see if the chain belt, grease nipples or bearings on the blade shaft assembly need greasing / lubricating.
	Check the sensor on the hood is working by lifting up the arm on the hood/press the start button if the saw starts shut the saw down at mains and tag out then report.
	Check emergency stop button/start saw press emergency stop button if saw still works turn off at mains and tag out then report.
	Only if you are satisfied with all the checks you can start cutting core.

Signature: _____