

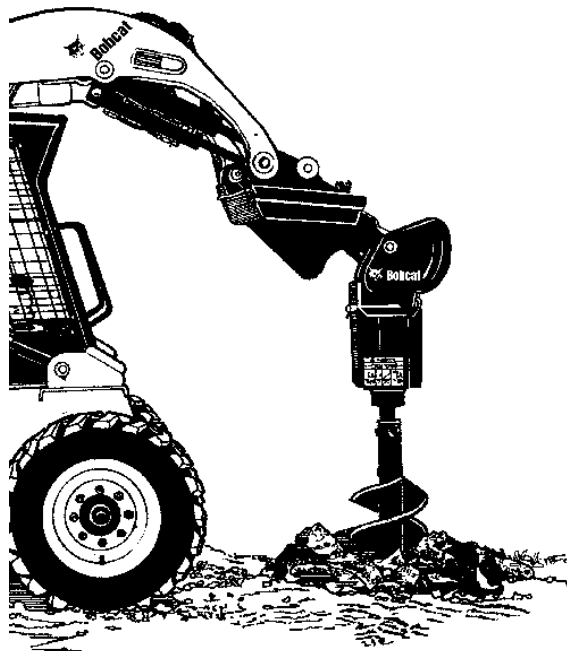
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RISK ASSESSMENT

For

Bobcat Auger Drive Unit



Clark Equipment
Sales Pty Ltd ABN 99 050 059 419

Auger Version 2

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Applicability

Standards referenced in the preparation of this document

Risk Assessment sheets

APPLICABILITY

The following Risk Assessment document is applicable to the following models of Bobcat Auger Drive Units:

Model 6
Model 10
Model 15
Model 30

STANDARDS REFERENCED

The following Standards, Acts and Regulations were referenced in the preparation of this Risk Assessment.

- NOHSC: 1010 (1994) - National Standard for Plant
- OHS Act 2000
- OHS Regulation 2001
- AS2359.6 (1995) – Powered Industrial Trucks – Safety Code
- AS4360 (1999) – Risk Management
- ISO/WD 3691-1 (1999) – Industrial Trucks – Safety Requirements and Verification
- EN1459 (1999) – Safety of Industrial Trucks
- AS/NZS2153.1 (1997) [ISO4254.1 (1989)] – Tractors and machinery for agriculture and forestry – Technical means for ensuring safety. Part 1 : General
- AS/NZS2153.5 (1997) [ISO4254.5 (1989)] – Tractors and machinery for agriculture and forestry – Technical means for ensuring safety. Part 5 : Power-driven soil-working equipment.

RISK ASSESSMENT - Auger Drive Unit

Subject: Bobcat Model 15C Auger Drive Unit, Built 2003

	HAZARD	RISK	CONTROL
1. Suitability of the type of plant for the particular task			
1.1	Untrained operators and work practices	Inappropriate use - injury to operator and/or bystander	High Operations Manual supplied. Owner to ENSURE all operators are trained
1.2	Drive machine overloaded - tipover	Injury to operator and/or bystander	Low Use correct machine and work procedures. Refer to Operations Manual
1.3	Drive Unit not compatible with drive machine	Potential for tipping - injury to operator and/or bystander	Low Use correct machine and work procedures. Refer to Operations Manual
1.4	Ground not appropriate for digging	Equipment wear/damage - operator frustration increases risk of accident	Low Ensure terrain is appropriate for digging with equipment set up on machine
1.5	Cutting components not suitable for ground conditions	Equipment wear/damage - operator frustration increases risk of accident	Medium Ensure terrain is appropriate for digging with equipment set up on machine
2. Actual and intended use in the workplace			
2.1	Ground not appropriate for digging	Equipment wear/damage - operator frustration increases risk of accident	Medium Ensure terrain is appropriate for digging with equipment set up on machine
2.2	Bystander collision	Minor injury to bystander	Low Bystanders MUST be kept well clear of machine (minimum 3 m), when in operation
2.3	Poor work practices	Excess time spent digging	Low Use correct machine and work procedures
2.4	Machine not suitable for work load	Excess time spent digging - operator frustration increases risk of accident	Medium Use correct machine and work procedures. Refer to authorised dealer when selecting attachment.
2.5	Untrained in operation and safe work procedures	Operator or bystander death or injury	High Operations Manual supplied. Owner to ENSURE all operators are trained
2.6	Obstructions overhead, low branches, wires, cables	Crush and/or electric shock injuries	Medium Inspect and become familiar with area before digging.
2.7	Obstructions underground - rocks	Equipment wear/damage - operator frustration increases risk of accident	Low Switch of drive unit and machine before inspecting for obstruction.
2.8	Obstructions underground - services - water, electric, gas	Electric shock, gas explosions, fire	Medium Inspect area and check with local authorities before digging
3. Environmental conditions and terrain in which plant is used			
3.1	Foreign objects ejected/thrown out whilst in operation	Hazardous to bystanders, eye, head, body, legs	Low Operator to ensure bystanders are at least 3m away from machine in operation
3.2	Continual noise (8 to 12 hours per day for extended periods	Hearing loss - more noise from drive unit	Medium Use hearing protection when machine is in operation. Minor noise emitted from slasher, most from DU
3.3	Tipover due to travelling on gradients incorrectly	Tip over causing operator strike injury	Low Operator to check drive unit capabilities and work area.
3.4	Tipover due to turn on gradients unsafely	Tip over causing operator strike injury	Low Operator to check drive unit capabilities and work area.
3.5	Tipover due to operating on gradients	Tip over causing operator strike injury	Low Work up or down the slope within stability limitations of the drive unit
4. Foreseeable abnormal situations, misuse and fluctuation of operating conditions			
4.1	Bystander collision	Strike injury to bystander	Medium Follow O.M. and ensure bystanders are out of danger zone
4.2	Machine used on non compatible drive unit - weight issues	Drive unit may tip up - impact injury	Medium Operator to check Drive unit capabilities and work area.
4.3	Tipover due to travelling on gradients incorrectly	Tip over causing operator crush injury	Low Operator to check drive unit capabilities and work area. Slasher likely to improve stability, not hinder it
4.4	Tipover due to turn on gradients unsafely	Tip over causing operator crush injury	Low Operator to check drive unit capabilities and work area. Slasher likely to improve stability, not hinder it
4.5	Tipover due to operating on gradients	Tip over causing operator crush injury	Low Work up or down the slope within stability limitations of the drive unit
4.6	Additional leverage / weight applied to auger during operation	Possible entanglement in digging auger	High Not to be used at any time, operator and/or bystander to keep clear of operational unit.
4.7	Forward / backward movement whilst auger still in the ground	Jarring, operator thrown about in cabin	Low Drive unit to be stationary when unit in operation and/or when digging auger is in the ground.
4.8	Leaving drive unit whilst digging hole	Potential for inadvertent movement of D.U. &/or machine.	High Follow D.U. O.M. guidelines. Switch off & ensure drive unit is disabled from intentional or inadvertent engaging
5. Potential for injury due to entanglement, crushing, trapping, cutting, stabbing, puncturing, shearing, abrasion, tearing and stretching;			
5.1	Lifting auger bit during (dis)connecting	Back injury	Medium Follow Operators Manual. Lay auger drive unit on ground, then bring auger bit to it
5.2	Auger bit falls during (dis)connecting	Major strike injury to fingers, hand, foot, leg.	Medium Follow Operators Manual. Lay auger drive unit on ground, then bring auger bit to it
5.3	Boom comes down whilst fitting / changing auger	Major strike injury to fingers, hand, foot, leg, shoulder.	Medium Never walk under a raised boom without boom locking bar/pin
5.4	Drive Unit rolls towards auger drive whilst connecting	Crush injury to body, legs, feet	Low Follow Drive Unit O.M. and ensure D.U. is switched off and brakes applied
5.5	Person/s impacted by rotating auger	Hand, arm, foot - mutilation - amputation potential	High Visual inspection from 1m of operating machine, machine & D.U. to be switched off before closer inspection & bystanders to be kept a minimum 3m away of operating machine. Do not wear loose fitting clothing.
5.6	Person/s become entangled with auger	Arm, leg, body injuries - mutilation - amputation - fatal	High Visual inspection from 1m of operating machine, machine & D.U. to be switched off before closer inspection & bystanders to be kept a minimum 3m away of operating machine. Do not wear loose fitting clothing.
5.7	Collision with bystander by machine/drive unit (run over)	Crush injury to body, limbs, - amputation - fatal	Medium Follow O.M. and ensure bystanders are out of danger zone
5.8	Collision with bystander by run away drive unit and machine	Crush injury to body, limbs, - amputation - fatal	Medium Follow Drive Unit O.M. and ensure D.U. is switched off and hand brakes applied
5.9	Clearance of diggings	Entanglement - arm, leg, body injuries - mutilation - amputation - fatal.	High Machine & D.U. to be switched off before any clearance is attempted. Do not wear loose fitting clothing
6. Generation of hazardous conditions, due to pressurised content, electricity, noise, radiation, friction, vibration, fire, explosion, temperature, moisture, vapour, gases, dust, ice, hot or cold parts			
6.1	Hydraulic leakage under pressure while hot	Burns to operator	Low Burst bag covers on all hydraulic lines
6.2	Attachment becomes hot due to sun	Minor burns to hands	Low Use gloves if need be, when connection / disconnecting attachment
7. Failure of the plant resulting in the loss of contents, loss of load, unintended ejection of work pieces, explosion, fragmentation or collapse of parts			
7.1	Impact bystander with ejected / thrown foreign object	Strike injury, body, limbs	Low Operator to walk area intended for work, clear debris, bystanders to be minimum of 3m away
7.2	Impact bystander with ejected machine component	Strike injury, body, limbs	Medium Follow OM maintenance guidelines & ensure bystanders to be minimum 3m away
7.3	Auger flighting becomes distorted	Equipment wear/damage - operator frustration increases risk of accident	Medium Machine & D.U. to be switched off before any inspection is attempted.
7.4	Auger shaft becomes distorted	Equipment wear/damage - operator frustration increases risk of accident	Medium Machine & D.U. to be switched off before any inspection is attempted.
8. Capability of the plant to lift and move people, equipment and materials and suitability of secondary back-up system to support the load			
8.1	Person rides / sits on machine	Crush injury to body, limbs, - amputation - fatal	Medium Attachment is not designed to carry people. Operator must never allow person/s to ride on attachment.
8.2	Additional weight used to improve down force	Strain & crush injuries - back - limbs	Medium Follow O.M., no additional weights are to be used
9. Control systems, including guarding and communications systems			
9.1	Flight unguarded	Entanglement of bystander	High Bystander MUST be kept at least 3 metres away from operation zone
10. Potential for falling objects and the plant roll over			
10.1	Lifting auger bit during (dis)connecting	Back injury	Medium Follow Operators Manual. Lay auger drive unit on ground, then bring auger bit to it

10.2	Auger bit falls during (dis)connecting	Major strike injury to fingers, hand, foot, leg.	Medium	Follow Operators Manual. Lay auger drive unit on ground, then bring auger bit to it
10.3	Boom comes down whilst fitting / changing auger	Major strike injury to fingers, hand, foot, leg, shoulder.	Medium	Never walk under a raised boom without boom locking bar/pin
10.4	Drive Unit rolls towards auger drive whilst connecting	Crush injury to body, legs, feet	Low	Follow Drive Unit O.M. and ensure D.U. is switched off and brakes applied
11. Suitability of materials used for the plant				
11.1	Machine of steel construction	Friction - potential for heat/sparks = fire in dry conditions	Medium	Carry fire extinguisher on DU for emergencies, follow local authorities fire risk warnings.
11.2	Petrochemicals used for lubrication	Poisoning of skin (maintenance staff)	Low	Materials Safety Data Sheets available
12. Suitability and conditions of all accessories				
12.1	Attachment not maintained - failure	Equipment wear/damage - operator frustration increases risk of accident	Medium	Conduct daily inspection of attachment for any abnormalities.
12.2	Auger and cutting components not suitable for conditions	Equipment wear/damage - operator frustration increases risk of accident	Medium	Machine & D.U. to be switched off before any inspection is attempted.
12.3	Auger extension shaft not fitted correctly and auger comes free	Moderate strike / crush injury	Medium	Ensure extension shaft fitted and inspected as per O.M.
12.4	Changing of digging teeth	Eye injury, strike injury to fingers	Medium	Wear safety glasses and follow O.M.
12.5	Fitment of digging auger	Major strike injury to fingers, hand, foot, leg, shoulder.	Low	Ensure machine is securely blocked / supported before attempting any change and / or maintenance
12.6	Auger should be secured correctly for transportation purposes	Moderate strike injury to bystander	Low	Following manufacturers guidelines in O.M. for transportation
13. Ergonomic needs relating to installation and use				
13.1	Machine - components may be heavy to lift	Back strain, injury	Medium	Use lifting equipment and/or two persons where necessary. Never lift attachment without proper lift equip.
14. Carrying out the work without the plant				
14.1	Using manual earth augers or spades to dig	Lacerations, strain, boredom, physical/mental fatigue	Low	Use correct equipment and work procedures - just do not do it - get machine fixed
15. Location in the workplace and the impact on workplace design and layout				
15.1	No risk identified			
16. Suitability and stability of the plant and supports				
16.1	Work up and down slopes to reduce tip over risk	Tip over causing operator crush injury	Medium	Operator to check drive unit capabilities and work area.
	Auger should be secured correctly for transportation purposes	Moderate strike injury to bystander	Low	Following manufacturers guidelines in O.M. for transportation
17. Presence of persons and other plant in the vicinity				
17.1	Impact bystander with ejected / thrown foreign object	Strike injury, body, limbs	Low	Operator to walk area intended for work, clear debris, bystanders to be minimum of 3m away
17.2	Impact bystander with ejected machine component	Strike injury, body, limbs	Medium	Follow OM maintenance guidelines & ensure bystanders to be minimum 3m away
17.3	Auger flighting becomes distorted	Equipment wear/damage - operator frustration increases risk of accident	Medium	Machine & D.U. to be switched off before any inspection is attempted.
17.4	Auger shaft becomes distorted	Equipment wear/damage - operator frustration increases risk of accident	Medium	Machine & D.U. to be switched off before any inspection is attempted.
18. Potential for inadvertent movement or operation of the plant				
18.1	Drive unit is accidentally turned on or engaged - contact	Arm, leg, body injuries - mutilation - amputation - fatal	Medium	Follow D.U. O.M. guidelines. Ensure drive unit is disabled from intentional or inadvertent starting/engaging
18.2	Contact with rotating auger	Hand, arm, foot - mutilation - amputation - fatal	High	Bystanders MUST be kept at least 3 metres from the work zone
18.3	Run over	Crush injury to body, limbs, - amputation - fatal	High	Follow O.M. and ensure bystanders are out of danger zone (minimum 3 metres)
18.4	Forward / backward movement whilst auger still in the ground	Jarring, whiplash, operator thrown from drive unit	Medium	Drive unit to be stationary when unit in operation and/or when digging auger is in the ground.
18.5	Auger should be secured correctly for transportation purposes	Moderate strike injury to bystander	Low	Following manufacturers guidelines in O.M. for transportation
19. Systems of work associated with the plant				
19.1	COMMENT: Low noise unit, lightweight and low speed.			
20. Access and egress				
20.1	COMMENT: No hazard identified			
21. Competency of operators				
21.1	Untrained operators using machine	Potential for all aforementioned problems	High	Training required for efficient usage. No licence known to be required. Understand O.M. prior to use

Hierarchy of Control

1. Elimination
2. Substitution
3. Isolation
4. Engineering Control
5. Administrative Control
6. PPE

Risk scores listed as HIGH need action taken to minimise the risk.