

IToolCo

User's Guide



CANNON M VIPER™

1325 CARDEN FARM DRIVE | CLINTON, TN 37716 | 865.670.3713 |
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BEFORE OPERATION OF THIS TOOL, READ AND UNDERSTAND ALL OF THE INSTRUCTIONS AND SAFETY INFORMATION IN THIS MANUAL



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SAFETY FIRST

Safety is essential in the use and maintenance of this tool. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

SAFETY ALERT SYMBOLS

This symbol is used to call your attention to hazards or unsafe practices that could result in injury or property damage. The three signal words, defined below, indicate the severity of the hazard. The message after the signal word provides the information for preventing or avoiding the hazard.



DANGER

Immediate hazards that, if not avoided, **WILL** result in severe injury or death.



WARNING

Hazards that, if not avoided, **COULD** result in severe injury or death.



CAUTION

Hazards or unsafe practices that, if not avoided, **MAY** result in injury or property damage.

IMPORTANT SAFETY INFORMATION



WARNING

Read and understand all instructions and safety information in this manual before operating or servicing this tool.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH



WARNING – PERSONAL SAFETY HAZARDS

Only qualified persons should use iTOOLco MVP20K.

Wear eye protection and hard hat when using this tool.

Do not use this tool while tired or under the influence of drugs, alcohol, or medication.

Keep body parts and loose clothing away from moving parts and pinch points. Keep hands away from capstan.

Always follow operating procedures.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH.



WARNING – ELECTRICAL SHOCK HAZARDS

Do not expose power tools to rain or wet conditions. Water entering a power tool can increase the risk of electric shock.

Maintain proper care of power cords. Replace damaged cords immediately. Damaged cords can increase the risk of electrical shock.

Do not use this tool near live circuits. Shut off and lock out power when working near existing circuits.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH.

**WARNING – ENTANGLEMENT HAZARD**

Do not operate this tool while wearing loose-fitting clothing.

Retain long hair.

Keep hands away from pullers capstan. Rope at capstan can pinch or crush a hand or body part.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH.

**WARNING – TIPPING HAZARD**

Use the same size adapter with conduit. Disassemble when not in use. FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH.

**WARNING – TOOL USE HAZARDS**

Use this tool for manufacturer's intended purpose only. Use other than that which is described in this manual can result in injury or property damage.

Inspect all aspects of the wire pull to ensure safety, including the cable puller, booms, sheaves, rope, swivels, pins, etc. and replace any defective components.

Always inspect structural integrity of any supports, conduit, anchoring system, etc. that will hold the cable puller during the wire pull.

Only trained & qualified personnel should use pulling equipment.

Do not use the cable puller as a hoist or winch. The cable puller cannot lower a load and may fall causing serious injury or death.

Do not exceed load rating of cable puller, rope, or accessories.

Always disconnect cable puller before servicing.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH. **(CONTINUED)**

**WARNING – TOOL USE HAZARDS (continued)**

Do not operate cable puller in wet or damp locations. Do not expose to rain.

Do not operate in an explosive atmosphere.

Some components of the mobile cable pulling package exceed 50 lb. and will require more than one person to lift, transport, or assemble.

Always inspect pins to be sure they are the correct part number for the assembly and are fully inserted through holes and have spring clips properly attached. Do not substitute any other object for factory supplied pins.

When making a vertical pull, keep the area underneath the cable puller clear of all personnel.

Use caution during assembly and disassembly of boom components. Keep pins in place to avoid uncontrolled movement. Have control of boom components before removing any pins.

Always ensure factory supplied boom tubes are fully inserted into the receiver tubes and that the spring loaded boom pins are fully engaged.

Do not switch between forward & reverse while the foot pedal is depressed.

Always make sure the puller has completely stopped before switching from forward to reverse.

Do not alter this cable puller. Doing so will void the warranty.

Guards and safety features are provided for your protection. Do not use an extension cord longer than 100'. Extension cord should be a minimum of 12 gauge wire with ground.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH.

**WARNING – ROPE HAZARDS**

Do not use nylon or polypropylene rope, extreme force can be stored when rope stretches. Inspect all aspects of the rope before each use.

Only use 9/16" diameter or larger braided composite pulling rope with a minimum average breaking strength of 40,000 lb.

Pulling rope should be the only thing in contact with the capstan.

Never let swivels, grips, etc. come in contact with the capstan.

Keep as much rope confined in conduit as possible. This will help prevent injury should the rope break.

Do not wrap rope around any body parts. Do not wrap rope around wrists.

Always keep rope away from operator's feet.

Rope must always be pulled over a rotating sheave. If a sheave does not rotate, turn cable puller off immediately and determine problem before continuing the pull.

Never allow rope to slip on a rotating capstan for more than a couple of seconds. The rope will wear in that spot and could break under pressure. If you need to stop the pull, turn the cable puller off and tie the rope off to hold it in place until you restart the pull.

Never allow rope to overlap on the capstan. If this condition begins to occur, immediately release the tailing force on the rope. To do this, stop the cable puller, switch to reverse gear, unload capstan, stop puller again, place in forward gear, and finish the pull.

The pulling rope must come in contact with all the sheaves used in the boom system.

FAILURE TO OBSERVE THESE WARNINGS CAN RESULT IN SEVERE INJURY OR DEATH.



SAFE OPERATION

Careful operation is your best insurance against an accident.

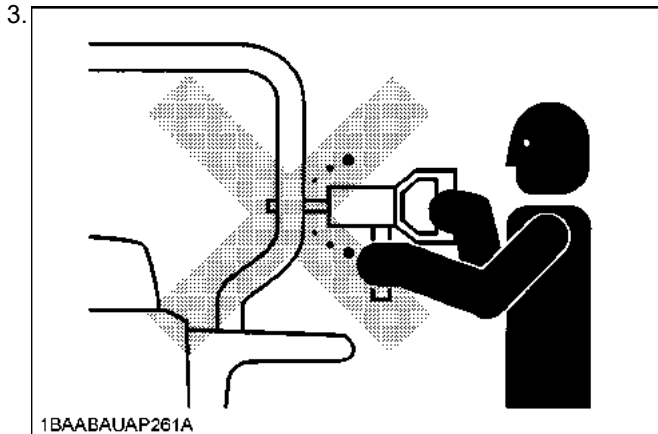
Read and understand this section carefully, before operating the machine.

Every user, however experienced, should carefully read and understand this section and those of the attachments and accessories before taking the machine into operation. The owner is obliged to inform the operators of these instructions in detail.

Keep this manual in the storage place. (See "Where to keep Operator's Manual" in "MAINTENANCE" section.)

1. BEFORE OPERATION

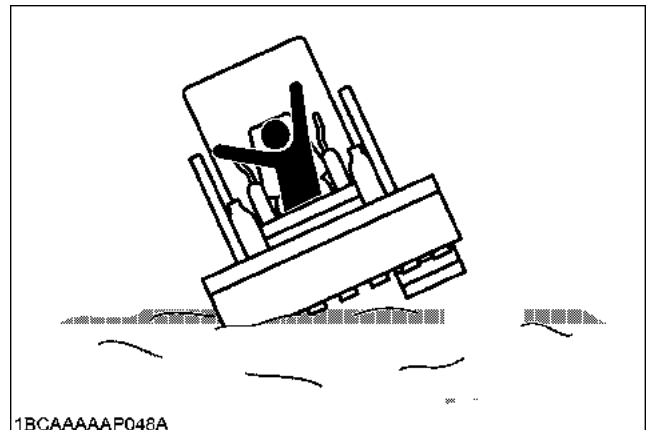
1. Know your equipment and its limitations. Read and understand this entire manual before attempting to start and operate the machine.
2. Obey the danger, warning and caution labels on the machine.



4. The ROPS/FOPS structure complies with ISO 3471, ISO 3449 and OSHA regulations.
5. The seat belt must be inspected regularly and replaced if frayed or damaged.



6. Always sit in the operator's seat when starting the engine or operating the levers or controls.
7. Do not operate the machine while under the influence of alcohol, medication, controlled substances or while fatigued.
8. Check the surrounding area carefully before using the machine or when attachments are being connected. To avoid any danger of electrocution, never operate the machine near power lines before confirming the power is off and all local and national safety regulations. Never approach a machine or load that is contacting a power source such as power lines. Electrocution can occur by coming into contact with a machine that is near power lines.
9. Check for buried pipes and cables before digging.
10. Check for hidden holes, obstacles, soft underground, and overhangs. Do not enter soft ground.
 - During machine use, do not allow any persons within the working range.



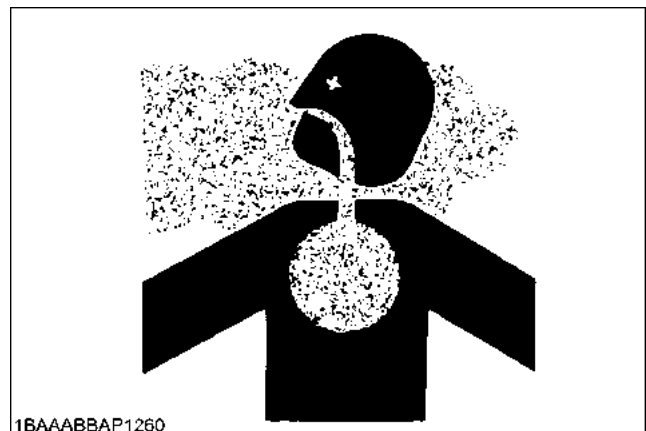
11. Do not allow anyone to use the machine until they have been informed of the work to be performed and they have read and understood the operator's manual.
12. Do not wear baggy, torn or oversized clothing when working with the machine as such clothing can get caught in rotating parts or control elements which can cause accidents or injuries. Wear adequate safety clothing, e.g. safety helmet, safety shoes, eye protection, ear protection, working gloves, etc, as necessary and as prescribed by law or statutes.
If exposed to loud noise for long hours, you may suffer from hearing difficulty or loss. To protect your ears from unpleasant, loud noise, wear ear muffs, ear plugs or other protective ear pieces, as required.



13. Do not allow passengers to ride on any part of the machine at any time. The operator must remain in the machine seat during operation.
14. Check the levers, pedals and mechanical parts for correct adjustments and wear. Replace worn or damaged parts immediately. Check the nuts and bolts regularly for correct torque.
15. Keep your machine clean. Heavy soiling, grease, dust and grass can cause fires, accidents or injuries.
16. Before starting the machine, be absolutely sure that the machine has been filled with fuel, lubricated, greased and undergone all necessary maintenance.
17. Do not modify the machine, otherwise it could lead to unforeseen safety problems.

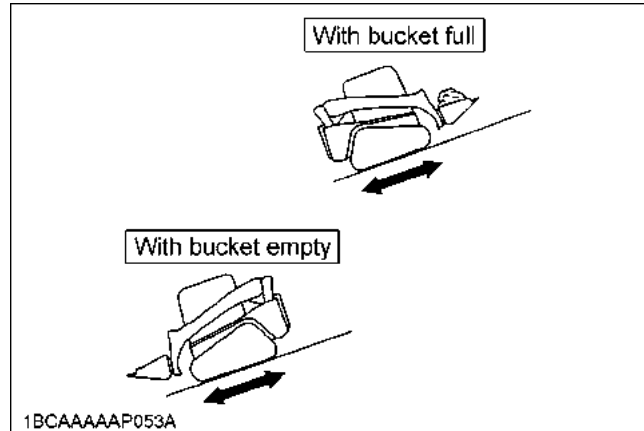
2. OPERATING THE MACHINE

1. Mount and dismount the machine safely. Always face the machine. Always use handrails and available steps at least three points and keep yourself well balanced. Do not grab or hold any of the control levers, pedals or switches. Do not jump on or off the machine, whether stationary or in motion.
2. Before starting the job, run the machine for all movements in a large space and make sure the machine functions well in every action.
3. Start and control the machine only from the operator's seat. The operator should not lean out of his/her seat when the engine is running.
4. Before starting the engine, make sure that the armrests are in the "Raised" position and the control levers are in their neutral position and the seat belt is fastened correctly.
5. Always thoroughly check the surrounding area for any possible conditions that could create a dangerous situation.
 - Make sure you read the operator's manual to thoroughly understand the operating conditions and limitations of the machine.
 - To avoid damage and to prevent accidents, always use the buddy system and have the other person, check for clearances and other possible dangers that may be obstructed from view.
 - Never allow people to approach the vicinity of the turning radius of the machine.
 - Be cognizant of blind spots to the rear and always check behind you before backing up.
6. Only operate the machine in well-ventilated area to avoid poisoning from carbon monoxide, an odorless, colorless gas that is deadly.



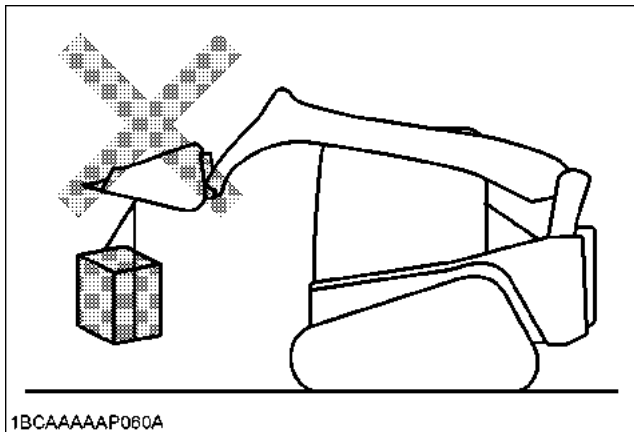
7. Never remove any of the safety features on the machine.
 - Make sure all safety features, including guards, protective devices, doors and cabin, are functioning normally, properly secured and in good condition. Repair and replace any lost or damaged protective features.
 - Carefully read the operator's manual in order to understand the proper use of safety features such as armrest, seat belt, and other equipment. Make sure you use them properly.
 - Make sure all safety features are in good operating condition and remove only when repair is needed.
8. To avoid injury, always keep hands and body inside the ROPS/FOPS (protective structures) whenever operating the machine. Never try to operate machine using control levers from outside the operator's cabin while the machine is running.
9. Always keep the heavy end of the machine up when traveling up or down an incline to avoid any possibility of machine rolling over.
10. Place the bucket at a distance of 20 to 30 cm (8 to 12 in.) from the ground when moving up or down an incline. Be prepared to lower the bucket to the ground in case of emergency.
11. To avoid injury or accidents, always operate the machine or the equipment at slow speed when going up or down an incline by reducing the engine speed (rpm). Place the stroke of the left control lever at half speed or less when going down an incline. Traveling too fast down an incline can cause the operator to lose control of the machine.
When going up or down an incline, keep the travel speed switch low speed position.
12. Avoid stopping suddenly on an incline, which can cause the machine to become unstable and rollover.
13. Never cross an incline horizontally or at an angle, which can cause the machine to rollover. Approach inclines vertically to avoid loss of control.
14. Take care when moving the machine on slippery or unstable surfaces such as grass, fallen leaves, metal plates, or ice, as it may skid out of control. Do not allow the machine to be oriented diagonally to such surfaces.
15. Watch where you are going at all times. Watch for and avoid obstacles. Remain alert for trees, wires and other obstructions.

- 16-18. Avoid performing any work with the machine when it is on an incline, which could cause it to become unbalanced and rollover. Always take care when moving the machine on an incline. Always make sure the heavy end of the machine is facing up the incline when moving it up or down the incline.



19. Always use caution when floating the lift arms.
 - Always make sure the bucket is lowered to the ground before floating the lift arms. Floating the lift arms when the bucket is raised could cause an accident or injury from the bucket falling.
 - Never move forward when the lift arms are in the "float" position.
20. Never dig or shovel at high speed, which could cause the operator to be thrown from the operator's cabin or cause injury from hitting something when the machine stops suddenly. Always operate the machine at low speed, carefully checking the area in front of the load you will be moving.
21. Never operate the machine with the bucket raised over the heads of people. Accident or injury may occur from objects falling from the bucket or the bucket itself falling.
22. Beware of material falling from the bucket. Unstable material in the bucket such as round, cylindrical, or stacked items could fall from the bucket, causing injury. Always move an unstable load with the bucket lowered.
23. Any sudden movements of the machine such as lowering or stopping of the attachment may cause it to recoil and rollover. Pay particular attention when the bucket is loaded.
24. Never exceed the maximum loading capability of the bucket or put loads off-center of the bucket, which can cause the machine to become unstable and rollover.

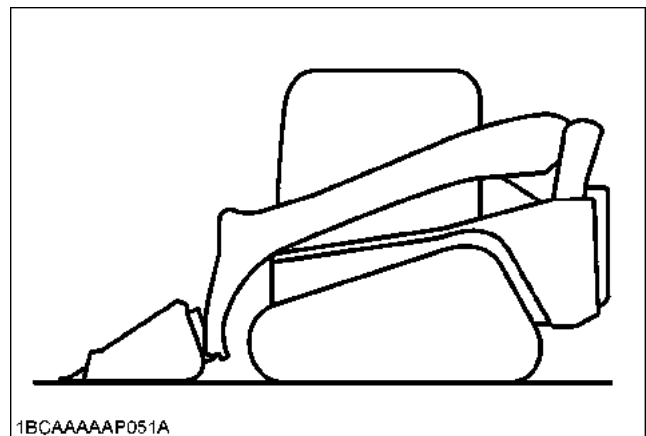
25. Never attempt to undercut a high embankment. Always carefully check the area for conditions that could cause the ground to cave-in.
- Never operate in areas where there is a possibility of falling rock.
 - Never attempt to operate or drive the machine on unstable surfaces such as cliffs, shoulder of roads, deep trenches, etc. The machine could lose stability from unstable ground or vibration underneath, causing it to rollover or fall.
 - (1) Ground surfaces are especially unstable after heavy rain or explosions.
 - (2) Embankments and trenches may cause instability of the ground around the area.
26. Always operate the machine at a safe, low speed, especially in congested or closed-in areas where there is a danger of hitting or running into something. Pay close attention to obstructions.
27. Pay particular attention when passing through tunnels or moving the machine near high walls to avoid hitting it and causing accident or injury. Always check height and width dimensions of the machine against tunnels or any other narrow spaces through which the machine is to be moved in order to avoid accident or injury from hitting an obstruction.
28. The machine is NOT designed for operation with hanging loads and has no safety features for such circumstances. Never operate in conjunction with a crane or other such device, which could cause serious injury.



◆ Safety for children

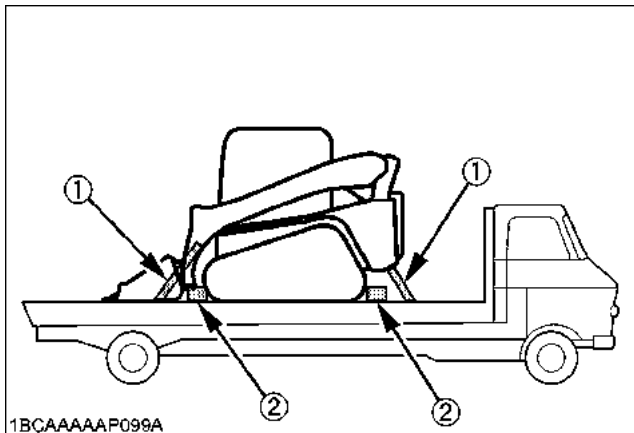
Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to machines and the work they do.

1. Never assume that children will remain where you last saw them.
2. Keep children out of the work area and under the watchful eye of another responsible adult.
3. Be alert and shut your machine down if children enter the work area.
4. Never carry children on your machine. There is not a safe place for them to ride. They may fall off and be run over or interfere with your control of the machine.
5. Never allow children to operate the machine even under adult supervision.
6. Never allow children to play on the machine or on the attachments.
7. Use extra caution when backing up. Look behind and down to make sure the area is clear before moving.



4. SAFE LOADING AND TRANSPORT OF THE MACHINE

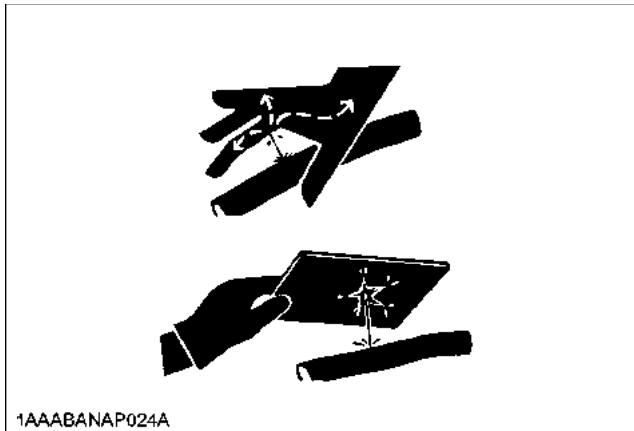
1. Observe all regulations concerning the transport of the machine on public roads.
2. Use adequately long and robust ramps when loading the machine. Block the ramps and transport appropriately. If towing is required, use proper tow lines and attachment points. (for details, see "TRANSPORTING THE MACHINE" section)
3. To avoid tipping over, the heaviest end of the unit should proceed up the ramps first, do not change the running direction and do not swing the attachment crosswise to the loading ramps.
4. Lower the attachment on the loading bed and release the pressure from the hydraulic system. After loading the machine on the truck, secure the tracks with chains and tie down the machine at the appropriate locations.



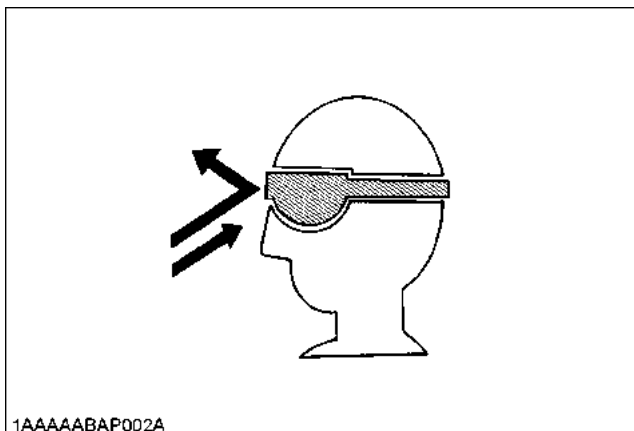
- (1) Chain
(2) Block

5. Avoid abrupt braking of the vehicle with the machine loaded. Sudden braking could cause the machine to move and could cause a serious accident.

1. Leaking hydraulic fluid has enough pressure to penetrate the skin and cause serious injuries. Leakages from pinholes can be totally invisible. Do not use hands for checking for leaks. Always use a piece of wood or cardboard. It is strongly recommended to use a face mask or eye protection. Should injuries occur with leaking hydraulic fluid, contact a doctor immediately. This fluid can cause gangrene or serious allergic reactions. Never repair the hydraulic and air-conditioner hoses until the pressure has been relieved.

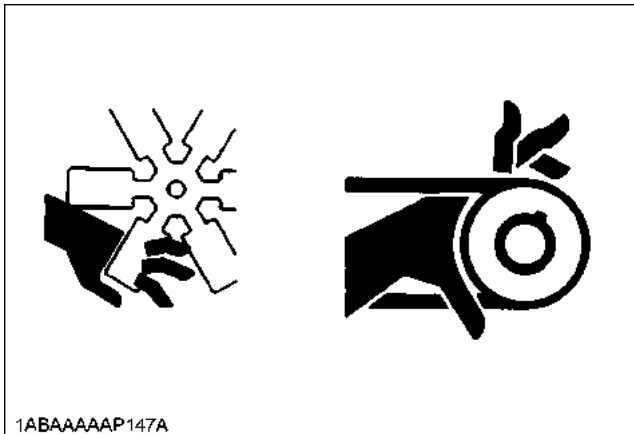


2. Observe all laws and regulations concerning the disposal of used oil, coolants, solvents, hydraulic fluids, battery acids and batteries.
3. To avoid fire, do not heat the hydraulic components (tanks, pipes, hoses, cylinders) before they have been drained and washed.
4. Use a face mask or eye protection to protect the eyes and respiratory system against dust and other foreign particles.



5. Securely support the machine with stands or suitable blocking before working underneath. For your safety, do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered.

1. Always make sure the engine is stopped before performing any maintenance or repairs.
- Do not attempt to lubricate or make mechanical adjustments while the machine is in motion or while the engine is running even if stationary.
 - Always stay clear of moving parts. Clothing, hands or other parts of the body can become caught in moving parts of the machine and cause personal injury or death.
 - Make sure to avoid any rotating parts, Never insert tools, fingers, hands, etc. while these parts are running.



1. Use care when refueling.

- Never smoke cigarettes or permit the use of fire while refueling or in the vicinity of refueling.
- Always make sure the engine is off and cool before removing the fuel cap to refuel the tank. Avoid getting fuel on any hot components.
- Keep control of the fuel filler nozzle while refueling.
- Never overfill the tank with fuel. Leave room for thermal expansion.
- Always remove any excess or spilled fuel immediately.
- Always make sure the fuel tank cap is securely reinstalled. Replace the cap only with a manufacturer approved cap whenever it becomes damaged. Use of the wrong type of cap may not allow for proper venting, causing pressure in the tank to build up.
- Never use fuel to clean the machine.
- Always use the correct type of fuel for the machine and the temperature in which it is being operated.



2. Hoses

- Leakage in any fuel, oil or hydraulic line can cause fire or explosion.
- Avoid any twisting, bending or hitting of hoses that could cause damage to the line.
- Make sure any loose connections are secure properly before using the machine.

3. Fire prevention

Compact Track Loader and some attachments have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcing or sparks.

The following fire prevention guidelines will help to keep your equipment up and running efficiently and keep the risk of fire to a minimum.

- Blow off all accumulated debris near hot engine exhaust components such as turbocharger and exhaust manifold as well as exhaust pipes and muffler more frequently when working in severe conditions.
- Clean out all accumulated flammable debris such as leaves, straw, pine needles, branches, bark, small wood chips and any other combustible materials from inside the machine belly pans or lower unit structures as well as from area in proximity to the engine.
- Inspect all fuel lines and hydraulic hoses for wear or for deterioration. Replace them immediately if they begin to leak.
- Examine electrical wiring and connectors frequently for damage. Repair any wires that are loose or frayed before operating the machine. Clean all electrical connections and tighten all electrical connections as necessary.
- Inspect the exhaust system daily for any signs of leakage. Check for broken pipes and muffler and also for loose or missing bolts, nuts and clamps. If any exhaust leaks or fractured parts are found, repairs must be completed prior to operation.
- Always keep a multipurpose fire extinguisher on or near the machine. Be familiar with the operation of the fire extinguisher.

1. Take care when working around hot and pressurized components.
 - Always allow the engine to cool sufficiently before performing any maintenance, inspection or repairs

3. Always use care whenever handling grease that is pressurized.
 - Always follow the proper procedure to adjust tension.

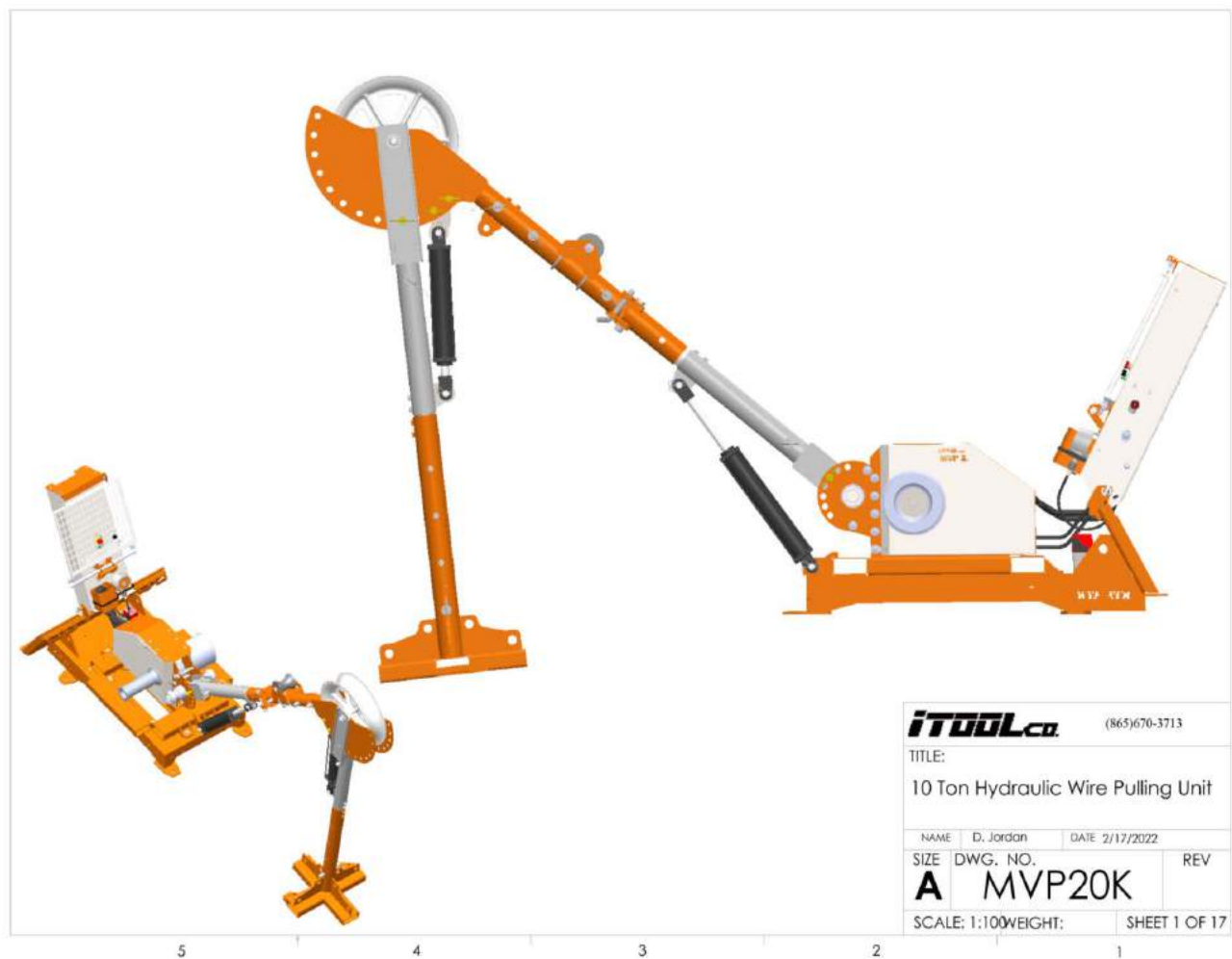
- Always loosen the discharge valve for the grease slowly.
- Avoid standing in front of, or putting any parts of the body in the line of the grease discharge valve.

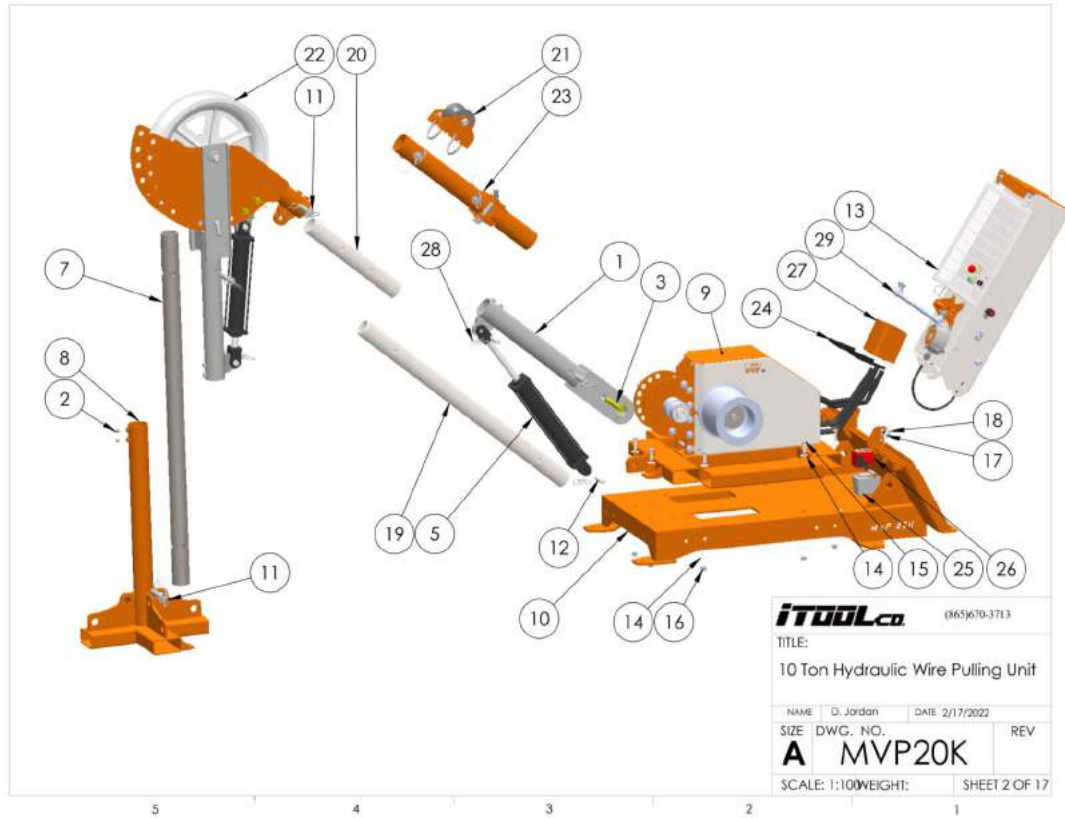


2. Make certain pressure from all of these systems is sufficiently released before performing any maintenance or repairs. Oil or other fluids could be released when caps or filters are removed before the pressure has been stabilized in the hydraulic system.

DESCRIPTION AND IDENTIFICATION

The ITOOLco Cannon MVP20K is a 20,000 lb. cable puller intended to pull medium to large wire through conduit. It sets up in only minutes, and is a dual capstan, multiple speed puller. The Cannon MVP20K does not need to be anchored to the ground, and is easy to set up, transport, and operate.

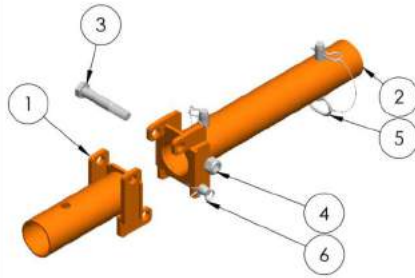




ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-405	Boom Arm Base Knuckle	1
2	HW-305	5/8" 111-3/4" Set Set	6
3	HW-263	1 inch x 7 Hitch Pin w/ Linch Pin	1
5	HYD-013	3"x 18" Ram Cylinder	1
7	C20K-417	6' Inner Extension C20K	1
8	C20K-412	X Brace	1
9	C20K-619	Complete Gearbox Base and Motor Assembled	1
10	C20K-410	Skid Steer Mount	1
11	HW-420	Loop-Grip Clevis Pin with Hairpin Cotter Pin	4
12	SP-347	1in. Diameter by 3.5 in. Pin for 20K Rams	2
13	C20K-612	Fully Assembled Control Tower	1
14	HW-190	3/4" SAE Washer	16
15	HW-410	5/8"-11 x 2" Hex Bolt	8
16	HW-411	5/8"-11 Nylock Nut	8
17	SP-001.2	Push Pop Pin	2
18	ROJ-430	Pop pin Holder	2
19	C20K-413	5' Extension with Bevel Cut End for Sliding Through Hinge	1
20	C20K-414	23.75" Extension TL Cut	1
21	C20K-621	Rope Guide Roller Complete Assembly	1
22	C20K-607	Boom Arm Roller Assembly	1
23	C20K-620	Complete Main Boom Folding Hinge Assembly	1
24	SP-325	24" x 5/8" Velcro Strap	2
25	SP-375	M18 Milwaukee Battery	1
26	SP-370	Milwaukee Inverter 110vac Plug	1
27	SP-130	Standard 110vac Footswitch with Cord	1
28	HW-431	5/8"- 1" Pin Diameter Hairpin	8
29	CK-601	Rope Roller Assembly	1
30	HW-180	1/4" Wire-Lock Clevis Pin	1

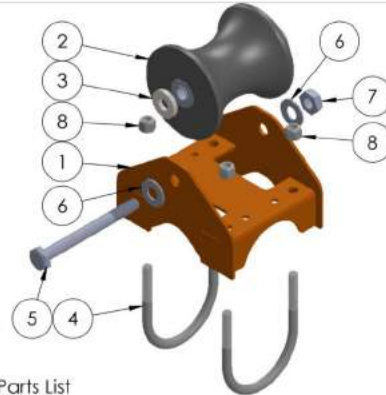


C20K-620 Hinge Subassembly Breakout



C20K-620 Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-474	Sliding Hinge Weldment 2 Short	1
2	C20K-475	Sliding Hinge Weldment 1	1
3	HW-419	1"-8 x 6" Hex Bolt	1
4	HW-358	1" 8T Nylock Nut	1
5	HW-420	Loop-Grip Clevis Pin with Hairpin Cotter Pin	2
6	HW-418	1" Dia. 5" Usable Pin	1



C20K-621 Guide Roller Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-477	Welded U-Bolt Roller Frame	1
2	SP-142	5" Roller	1
3	CS-401	1/4" Thick Washer	2
4	HW-417	1/2"-13 4" ID U-Bolt	2
5	HW-175	5/8" 11 x 6.5" Bolt	1
6	HW-176	5/8" SAE Washer	2
7	HW-182	5/8" nyloc nut	1
8	HW-306	1/2"-13T Nyloc Nut	4

IToolCo

(865)670-3713

TITLE:

10 Ton Hydraulic Wire Pulling Unit

NAME: D. Jordan

DATE: 2/17/2022

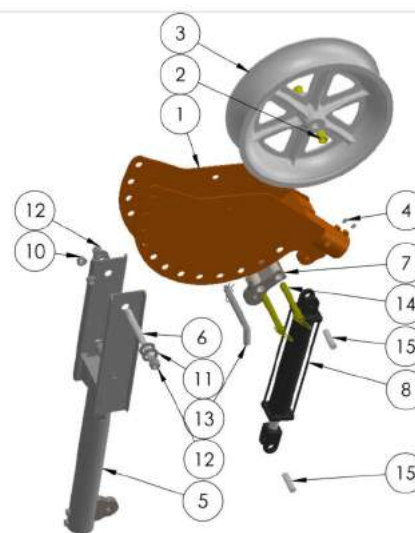
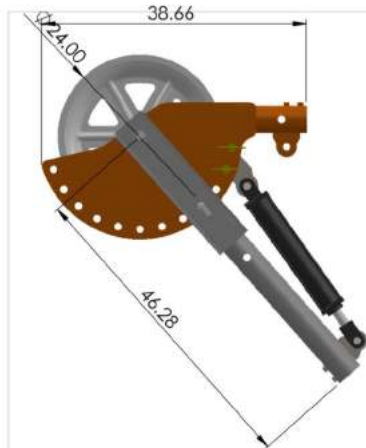
SIZE: DWG. NO.

A MVP20K

REV

SCALE: 1:100WEIGHT:

SHEET 4 OF 17



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-407	Main Roller	1
2	Main Roller Bearing	1" ID Flanged Bearing	2
3	SP-290 24in. Roller	24" Aluminum Sheave Roller	1
4	HW-305	5/8" 11 x 3/4" Set Screw	4
5	C20K-406	Boom Arm Mid-Knuclie	1
6	C20K-155M	1" dia shaft for main roller 10.5" Long	1
7	C20K-408	Pin in Place Ram Mount	1
8	HYD-014	3" Bore x 16" Stroke Ram Cylinder	1
9	SP-323	1" ID x 7.5" L Bronze Sleeves Bearing	2
10	HW-422	1.25" ID x 2.5" OD SAE Washer	4
11	HW-358	1" 8T Nylock Nut	2
12	HW-426	1" Dia Bent Hitch Pin 8" Useable Length	1
13	HW-263	1 inch x 7 Hitch pin	2
14	SP-347 1in. Pin	1in. Diameter by 3.5 in. Pin for 20K Rams	2

IToolCo

(865)670-3713

TITLE:

Main Roller Complete Assembly

NAME: D. Jordan

DATE: 2/17/2022

SIZE: DWG. NO.

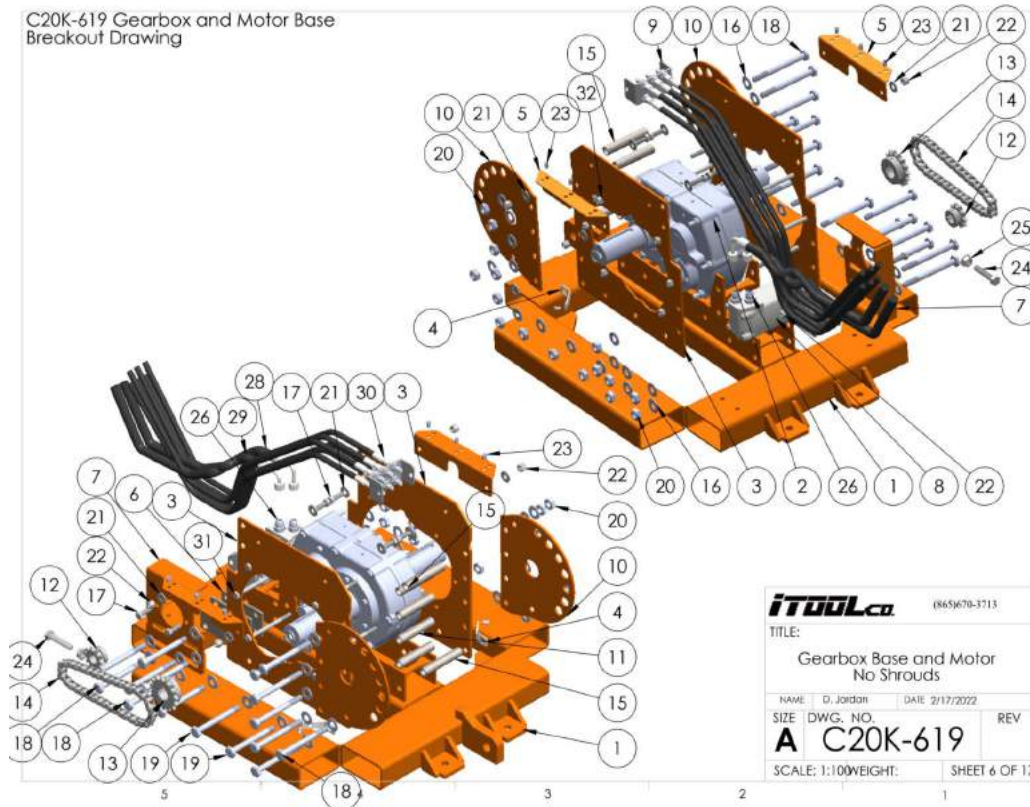
A C20K-607

REV

SCALE: 1:100WEIGHT:

SHEET 5 OF 17

C20K-619 Gearbox and Motor Base
Breakout Drawing

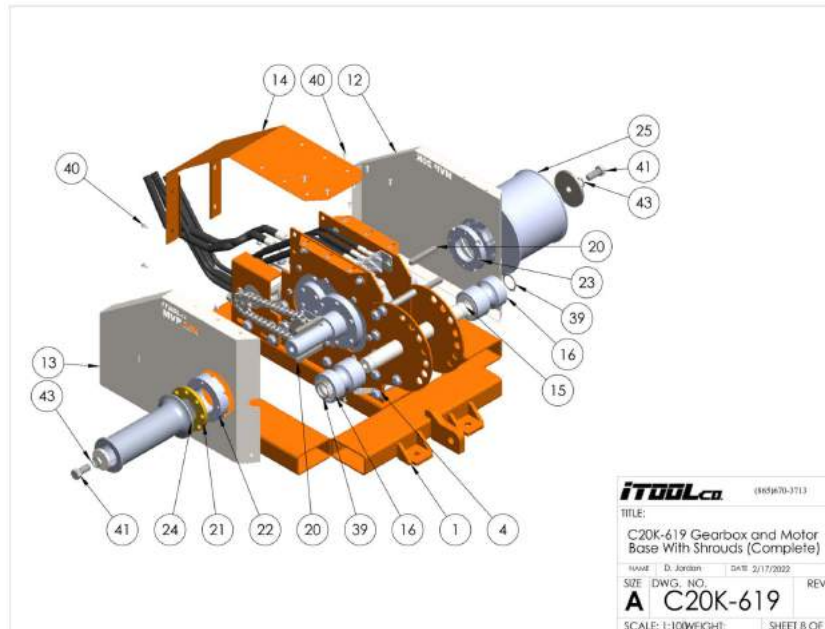


IToolCo (865)670-3713	
TITLE:	
Gearbox Base and Motor No Shrouds	
NAME: D. Jordan	DATE: 2/17/2022
SIZE: DWG. NO.	REV
A	C20K-619
SCALE: 1:100WEIGHT:	SHEET 6 OF 17

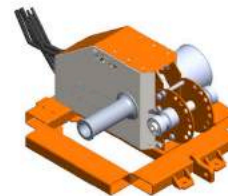
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-401	Base	1
2	GB-007	20K Gearbox with Output Shafts	1
3	C20K-402	Coated Gearbox Bolt Side Plates	2
4	C20K-465	Shroud Bottom Bracket	2
5	C20K-430	Angle shroud brackets	2
6	C20K-409	Motor Mount Spacer Plate	3
7	C20K-455	Motor Mount	1
8	HYD-001	Rex Roth Hydraulic Motor 20K	1
9	C20K-625	Bulkhead Assembly	1
10	C20K-419	Base Knuckle Bolt on Sides	2
11	C20K-415	Body Spacer (4.71 BM-28)	4
12	SP-345	Motor side sprocket for 20K 1in. Shaft Dia. 10 Tooth ANSI 60	1
13	SP-346	ANSI 60 Sprocket 15Tooth 1-7/16" Bore	1
14	SP-369	ANSI 60 Chain for 20K	1
15	C20K-473	Body Spacer (5.22" of BM-28)Tube Laser Cut	2
16	HW-176	5/8" SAE Washer	32
17	HW-289	1/2"-13t x 1.5" Hex Bolt	6
18	HW-175	5/8" 11t x 6.5" Bolt	11
19	HW-174	5/8" 11t x 6" Bolt	5
20	HW-182	5/8" nyloc nut	16
21	HW-166	1/2" flat washer	8
22	HW-306	1/2"-13t Nyloc Nut	6
23	HW-416	Rivnut 1/4"-20, .027"-1.65" Material Thickness	8
24	HW-405	5/8"-11 x 3" Fully Threaded Hex Bolt	1
25	HW-406	5/8"-11 Flange Nut	1
26	HYDF-011	Parker 10 F5OX-S 5/8 Male ORB to 5/8 Male JIC Adapter	2
27	HW-427	22mm Split Lock Washer	2
28	HYDH-008 Base End	5/8" Hose with Crimped on Long Drop 90° Female JIC Fitting	1
29	HYDH-009 Base End	5/8" Hose with Crimped on Short Drop 90° Female JIC Fitting	1
30	HYDH-003 Base End	3/8" Hose 86" Long from Valve Top Section to Top of Bulkhead	6
31	HW-429	M12 x 1.75T x 150mm Long Bolt 8.8 Grade	6
32	HW-430	M12 1.75T Nylock Nut Class 8	6



IToolCo (865)670-3713	
TITLE:	
C20K-619 Gearbox and Motor Base No Shrouds Bill of Materials	
NAME: D. Jordan	DATE: 2/17/2022
SIZE: DWG. NO.	REV
A	C20K-619
SCALE: 1:100WEIGHT:	SHEET 7 OF 17



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-401	Base	1
2	GB-007	20K Gearbox with Output Shafts	1
3	C20K-402	Coated Gearbox Bolt Side Plates	2
4	C20K-405	Shroud Bottom Bracket	2
5	C20K-430	Angle shroud brackets	2
6	C20K-409	Motor Mount Spacer Plate	3
7	C20K-455	Motor Mount	1
8	HYD-001	Rex Roth Hydraulic Motor 20K	1
9	C20K-625	Bulkhead Assembly	1
10	C20K-419	Base Knuckle Bolt on Sides	2
11	C20K-415	Body Spacer (4.71 BM-28)	4
12	C20K-482	Left Side Shroud	1
13	C20K-481	Right Side Shroud	1
14	C20K-483	Top Shroud	1
15	C20K-136M	Rope Guide Roller Shaft	1
16	C20K-618M	Capstan Rope Guide Roller	2
17	SP-345	Motor side sprocket for 20K 1in. Shaft Dia. 10 Tooth ANSI 60	1
18	SP-346	ANSI 60 Sprocket 15Tooth 1-7/16" Bore	1
19	SP-369	ANSI 60 Chain for 20K	1
20	SP-324 Key	5/8" Oversized Keystock Rounded 4.5" Long	4
21	SP-128	10K Brass bearing	2
22	C20K-116M	High Torque Capstan Spacer	1
23	C20K-117	High Speed Capstan Spacer	1
24	C20K-120M	20K High torque capstan	1
25	C20K-121M	20K High speed capstan	1
26	C20K-476	High Speed Capstan Washer	1
27	C20K-467	High Torque Capstan Washer	1
28	C20K-473	Body Spacer (5.22" of BM-26) Tube Laser Cut	2
29	HW-176	5/8" SAE Washer	32
30	HW-289	1/2"-13L x 1.5" Hex Bolt	6
31	HW-175	5/8" 11t x 6.5" Bolt	11
32	HW-174	5/8" 11t x 6" Bolt	5
33	HW-182	5/8" nyloc nut	16
34	HW-166	1/2" flat washer	8
35	HW-306	1/2"-13T Nyloc Nut	6
36	HW-416	Rivnut 1/4"-20, .027"- .165" Material Thickness	12
37	HW-405	5/8"-11 x 3" Fully Threaded Hex Bolt	1
38	HW-408	5/8"-11 Flange Nut	1
39	HW-288	2" HD EXTERNAL RETAINING RING	2
40	HW-404	1/4"-20 x .75 Flanged Rounded Head Screw	12
41	HW-409	M22 x 1.5mm x 50mm Class 10.9 Hex Bolt	2
42	HYDF-011	Parker 10 F5OX-S 5/8 Male ORB to 5/8 Male JIC Adapter	2
43	HW-427	22mm Split Lock Washer	2
44	HYDH-008 Base End	5/8" Hose with Crimped on Long Drop 90° Female JIC Fitting	1
45	HYDH-009 Base End	5/8" Hose with Crimped on Short Drop 90° Female JIC Fitting	1
46	HYDH-003 Base End	3/8" Hose 66" Long from Valve Top Section to Top of Bulkhead	6
47	HW-429	M12 x 1.75T x 150mm Long Bolt 8.8 Grade	6
48	HW-430	M12 1.75T Nylock Nut Class 8	6



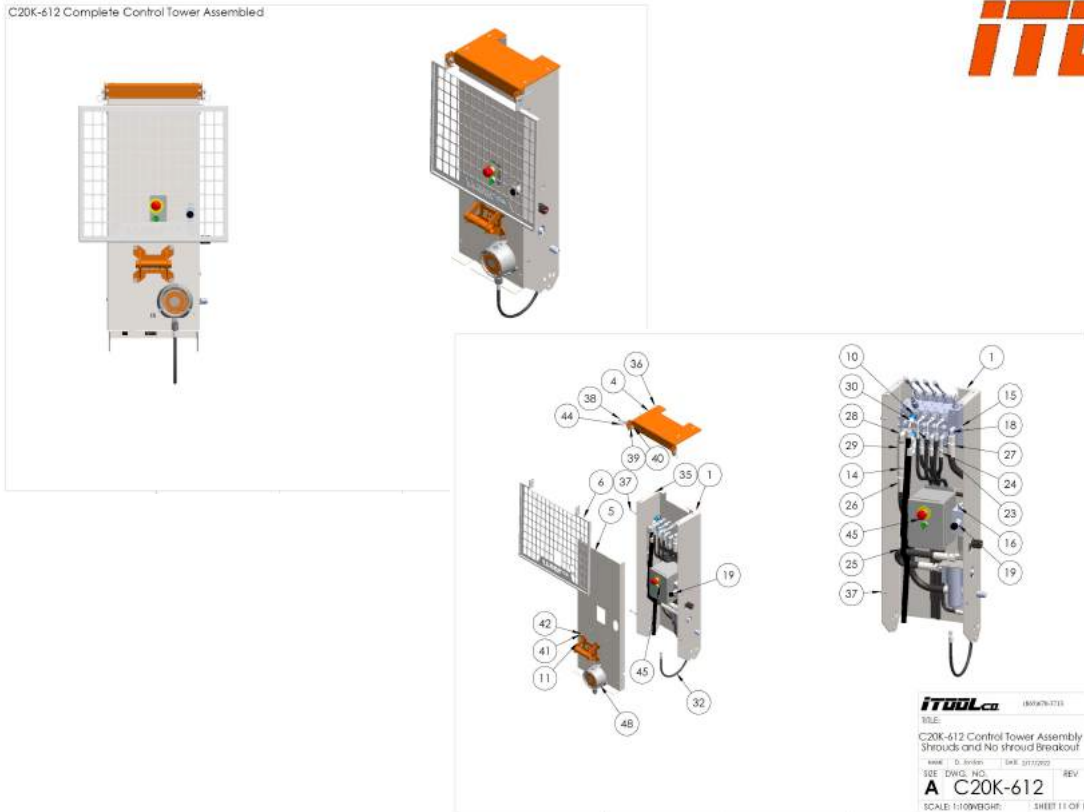
IToolCo (865)670-3713

TITLE:
C20K-619 Gearbox and Motor Base Complete Bill of Materials

NAME: D. Jordan DATE: 2/17/2022

SIZE DWG. NO. REV
A C20K-619

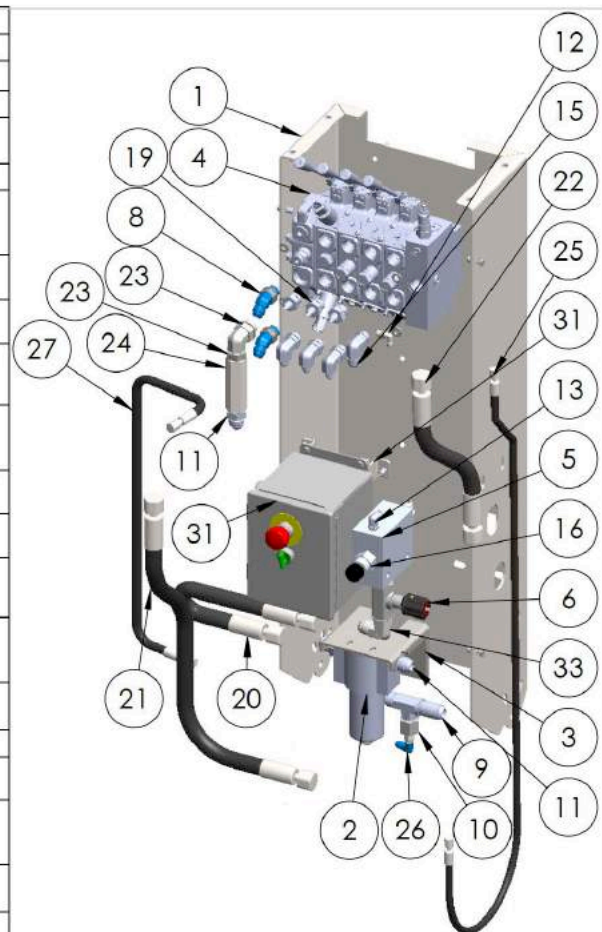
SCALE: 1:100WEIGHT: SHEET 9 OF 17



C20K-612 Control Tower Assembly Complete Bill of Materials

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-452	Control Tower Coated	1
2	HYD-007	Hydraulic Pressure Filter	1
3	C20K-431	Oil Filter Bracket	1
4	C20K-451	Tower Top Plate	1
5	C20K-454	Control Tower Cover	1
6	C20K-460	Cab Protection Grate	1
7	HYD-005	Sandwich Body 1-17A Cavity	1
8	HYD-012	Needle Flow Control Valve	1
9	HYDF-014	Parker 10-12_c50x-5 1-1/16" ORB Male to 5/8" JIC Male 90° Fitting	1
10	HYDF-024	Parker 10_V50X-5 5/8" Male ORB to 5/8" Male JIC 45°	2
11	C20K-466	Protection Grid	1
12	HYDF-025	12_WJTX-5 3/4" JIC Bulkhead Tee	1
13	HYDF-026	Parker 12-6_TRTXN-5 3/4" JIC Female to 3/8" JIC Male Reducer	1
14	HYDF-027	Parker 12_F50X-5 3/4" ORB male to 3/4" JIC Male Adapter	3
15	HYD-028	Parker 4-3_C50X 3/8" Male ORB to 1/4" JIC Male 90°	1
16	HYDF-029	Parker 6_c50x-5 3/8" Male ORB to 3/8" male JIC 90°	1
17	HYDF-031	Parker 6-10_c50x-5 5/8" Male ORB to 3/8" JIC Male 90°	3
18	HYDF-015	Parker 10-8_C50X-5 5/8" Male JIC to 3/4" ORB Male 90° Fitting	1
19	HYD-008	Cartridge Style pressure relieving valve	1
20	HW-357	5/16" Flat Washer	4
21	HW-413	5/16"-18 x 3/4" Hex Head Bolt	4
22	HYDF-030	Parker 6-10_F50X-5 5/8" Male ORB to 3/8" Male JIC Adapter	3
23	HYDH-003 Tower End	Valve to Bulkhead 3/8" 86" Length with 90°	3
24	HYDH-002 Tower End	Valve to Bulkhead 3/8" 84" Length	3
25	HYDH-010	Filter to Flow Control 3/4" 18" Length	1
26	HYDH-011	Valve T Port to Bulkhead Tee 3/4" 40" Length	1
27	HYDH-012	Pressure control to Main Valve P 3/4" 18" Length	1
28	HYDF-039	Parker 12_3/4" Male ORB to 3/4" Male ORB 90°	1
29	HYD-010	Check Valve 3/4"	1
30	HYDH-009 Tower End	Valve to Motor port 2 5/8" 58" Length	1
31	HYDH-008 Tower End	Valve to Motor port 1 5/8" 58" Length	1
32	HYDH-001	Gauge Hose 1/4" x 72" Length	1
33	HYDF-040	Parker 6_C6X-5 3/8" JIC 90°	1
34	HYDH-014	Pressure Red. Valve to BulkH Tee 3/8" 40" Length	1
35	HW-403	1/4"-20 Rivet Nut	8
36	HW-404	1/4"-20 x .75 Flanged Rounded Head Screw	8
37	HW-120	1/4"-20 x 7/8" hex bolt	4
38	HW-394	3/8"-16 x 1" Hex Bolt	2
39	HW-146	3/8" Washer	4
40	HW-306	3/8 16T x nyloc nut	2
41	HW-388	1/4"-20 x 3/4" Hex Bolt	4
42	HW-126	1/4" flat washer	8
43	HW-128	1/4 20 Nyloc nut	4
44	HW-412	3/8" Diameter, 1/2" Usable Ring-Grp Quick-Release Pin	2
45	C20K-624	Assembled Electrical Box, Ready for Install	1
46	HYDF-012	Parker 12_F50HAC-5 3/4" ORB Male Nipple	1
47	HYDF-033	Parker 12_C50X-5 3/4" Male ORB to 3/4" Male JIC 90°	1
48	C20K-626	Pressure Gauge Assembly	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-452	Control Tower Coated	1
2	HYD-007	Hydraulic Pressure Filter	1
3	C20K-431	Oil Filter Bracket	1
5	HYD-005	Sandwich Body T-17A Cavity	1
6	HYD-012	Needle Flow Control Valve	1
7	HYDF-014	Parker 10-12_c5ox-s 1-1/16" ORB Male to 5/8" JIC Male 90° Fitting	1
8	HYDF-024	Parker 10_V5OX-S 5/8" Male ORB to 5/8" Male JIC 45°	2
9	HYDF-025	12_WJTX-S 3/4" JIC Bulkhead Tee	1
10	HYDF-026	Parker 12-6_TRTXN-S 3/4" JIC Female to 3/8" JIC Male Reducer	1
11	HYDF-027	Parker 12_F5OX-S 3/4" ORB male to 3/4" JIC Male Adapter	3
12	HYD-028	Parker 4-3_C5OX 3/8" Male ORB to 1/4" JIC Male 90°	1
13	HYDF-029	Parker 6_c5ox-s 3/8" Male ORB to 3/8" male JIC 90°	1
14	HYDF-031	Parker 6-10_c5ox-s 5/8" Male ORB to 3/8" JIC Male 90°	3
15	HYDF-015	Parker 10-8_C5OX-S 5/8" Male JIC to 3/4" ORB Male 90° Fitting	1
16	HYD-008	Cartridge Style pressure relieving valve	1
17	HW-357	5/16" Flat Washer	4
18	HW-413	5/16"-18 x 3/4" Hex Head Bolt	4
19	HYDF-030	Parker 6-10_F5OX-S 5/8" Male ORB to 3/8" Male JIC Adapter	3
20	HYDH-010	Filter to Flow Control 3/4" 18" Length	1
21	HYDH-011	Valve T Port to Bulkhead Tee 3/4" 40" Length	1
22	HYDH-012	Pressure control to Main Valve P 3/4" 18" Length	1
23	HYDF-039	Parker 12_3/4" Male ORB to 3/4" Male ORB 90°	1
24	HYD-010	Check Valve 3/4"	1
25	HYDH-001	Gauge Hose 1/4" x 72" Length	1
26	HYDF-040	Parker 6_C6X-S 3/8" JIC 90	1
27	HYDH-014	Pressure Red. Valve to BulkH Tee 3/8" 40" Length	1
28	HW-403	1/4"-20 Rivet Nut	8
29	HW-404	1/4"-20 x .75 Flanged Rounded Head Screw	4
30	HW-120	1/4"-20 x 7/8" hex bolt	4
31	C20K-624	Assembled Electrical Box, Ready for install	1
32	HYDF-012	Parker 12_F5OHAO-S 3/4" ORB Male Nipple	1
33	HYDF-033	Parker 12_C5OX-S 3/4" Male ORB to 3/4" Male JIC 90°	1



(865)670-3713

TITLE:

C20K-612 Control Tower Assembly
No shrouds BOM and parts Breakout

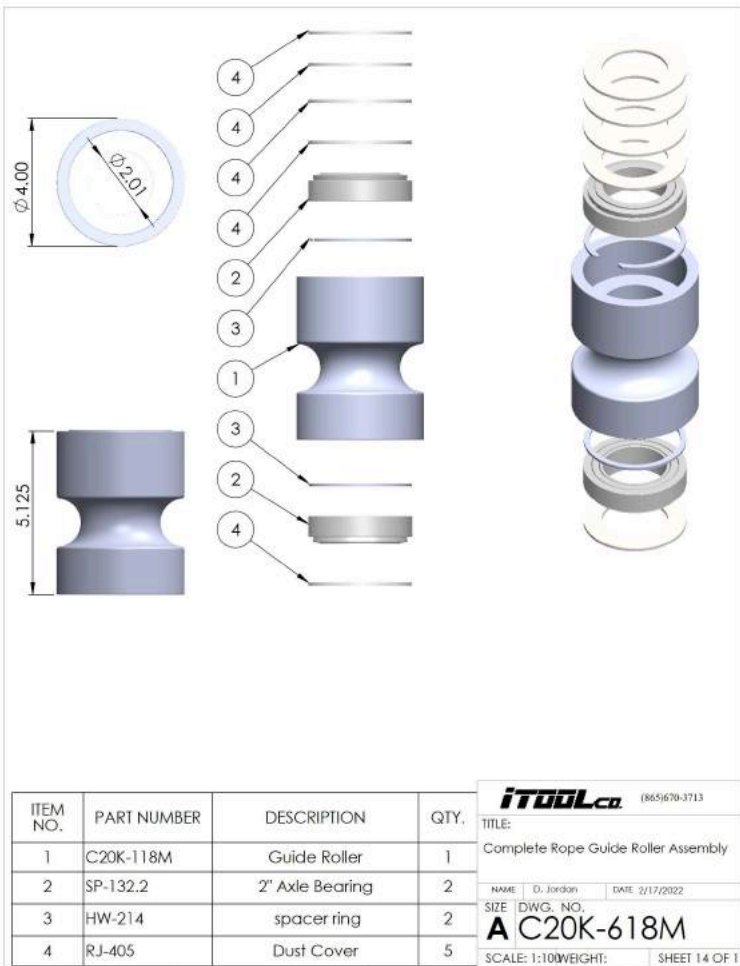
NAME D. Jordan DATE 2/17/2022

SIZE DWG. NO.

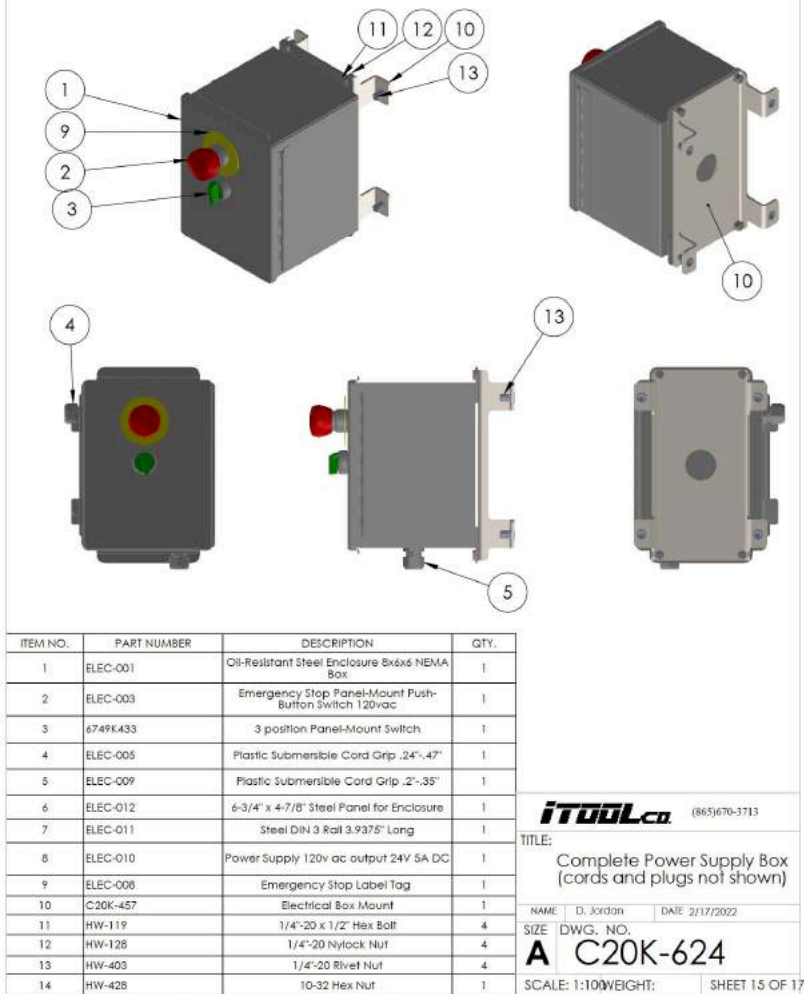
A C20K-612

SCALE: 1:100 WEIGHT:

SHEET 13 OF 17




C20K-624 Complete Electrical Box Assembly With Wiring and Plugs (Not Shown)



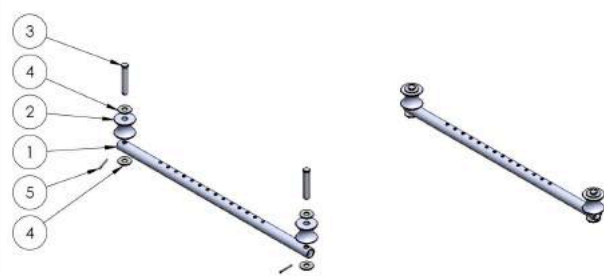
C20K-625

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C20K-458	Hose Bulkhead	1
2	HYDF-008	6_WTX-5 3/8" Male JIC Bulkhead Fitting with Nut	6



CK-601

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C10K-423	Rope roller tube	1
2	SP-109	Rope roller	2
3	HW-254	1/2" X 3"L Clevis pin	2
4	HW-166	1/2" flat washer	4
5	HW-222	1/8" - 1 1/4" Cotter Pin	2



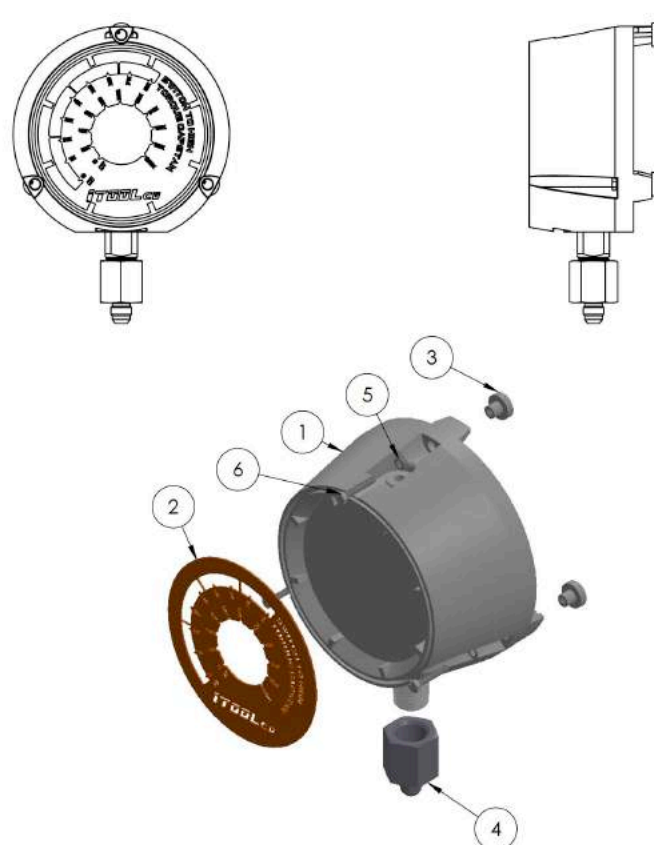
IToolCo (865)670-3713

TITLE: C20K-625 Bulkhead & CK-601 Rope Roller

NAME: D. Jordan DATE: 2/17/2022

SIZE: DWG. NO. **A** MVP20K

SCALE: 1:10 WEIGHT: SHEET 17 OF 17



IToolCo (865)670-3713

TITLE: C20K-624 Pressure Gauge Assembly

NAME: D. Jordan DATE: 2/17/2022

SIZE: DWG. NO. **A** MVP20K

SCALE: 1:10 WEIGHT: SHEET 16 OF 17

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	HYD-002	Large Gauge 0-3000 psi	1
2	C20K-488	Coated Gauge Faceplate	1
3	HW-423	Encased Magnet	3
4	HYDF-041	Parker 6-8 GTX-S 3/8 JIC Male to 1/2 NPT Female	1
5	HW-425	M4 Washer	3
6	HW-424	M4-0.7mm x 25mm Hex Bolt	3

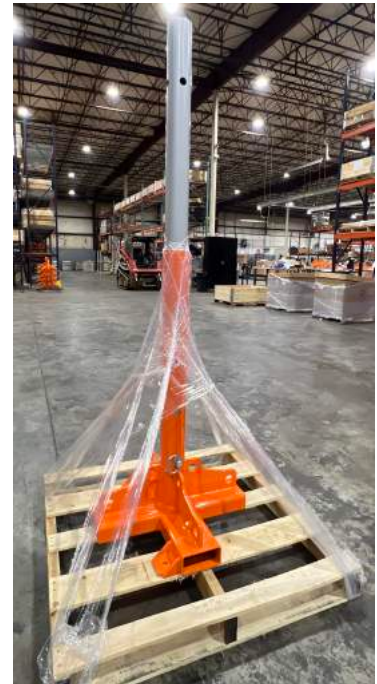
SET UP AND OPERATION

It is the sole responsibility of the owner of this equipment to properly train all personnel on proper use of the equipment and provide written directions to operator.

1.) Inspect unit for any shipping damages **before** accepting the unit.

Your unit is shipped on a pallet and folded up for transit from the factory and must be unfolded and put into the proper pulling position setup before use.

If you have also purchased the X-Brace, it will arrive on a second pallet. Inspect this unit as well before accepting.

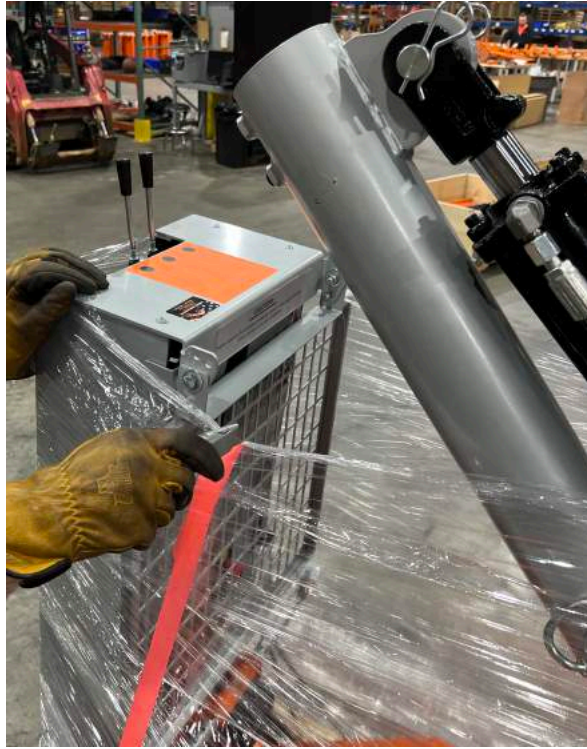


2.) This unit has been pre inspected prior to leaving the factory.

The unit is shipped with AW 32 hydraulic fluid in it, so bleeding the system is unnecessary.

The output torque limit dial is set at 1,000 lbs pounds from the factory to raise and lower the booms. **This will need to be changed before you begin pulling. Please see further instructions for how to set your output limit.**

3.) Remove packing material, cutting along tape line as shown. Ensure to cut down the tape line away to avoid puncturing hydraulic lines.

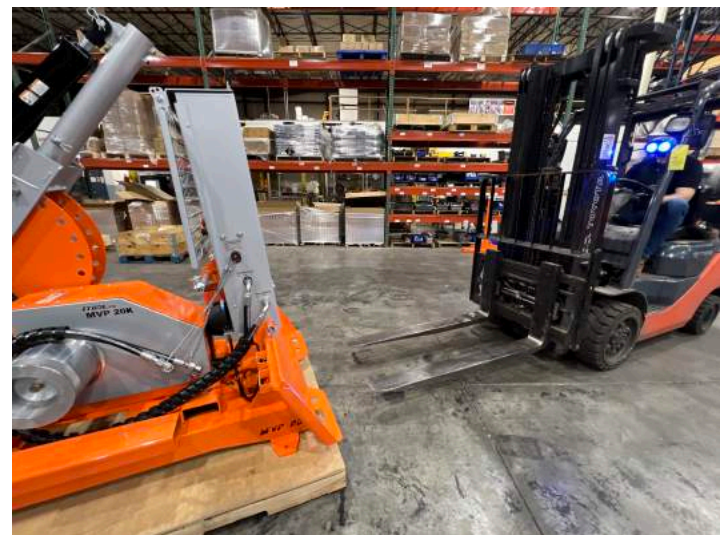
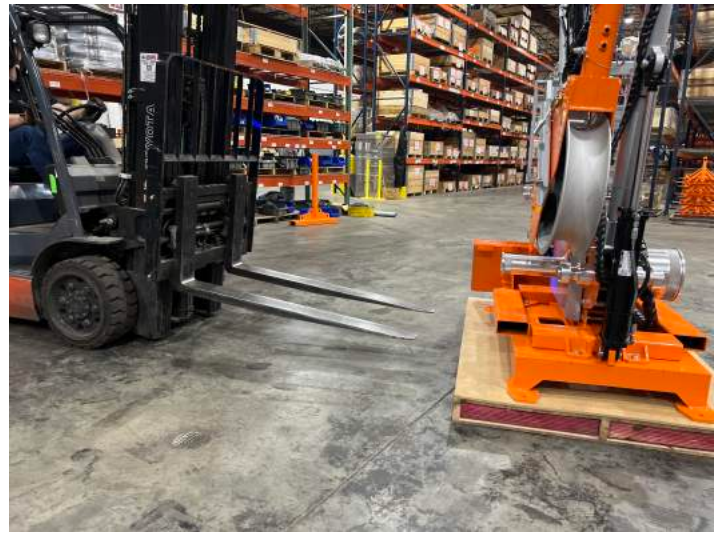
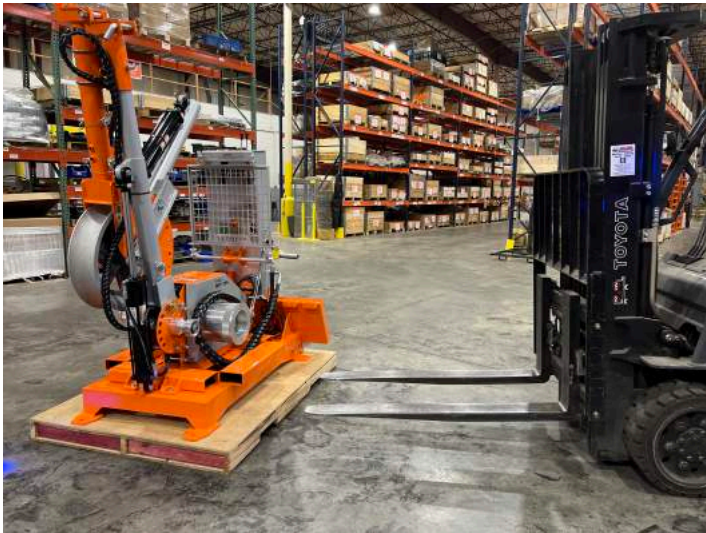


4.) Once Packaging is cut away and T-brace has been taken off of the pallet, remove anchoring points from MVP20K used to stabilize the unit to the pallet during shipping.



NOTE: When forklifting the MVP20K - pick up unit from either of the capstan sides or from the skid steer attachment side as shown.

Caution: Picking from front boom end opposite of skid steer attachment side increases the chance of damaging the hydraulic hoses with forks.



5.) Once removed from shipping pallet, set MVP20k on level ground.



6.) Remove force gauge and foot switch from stored location on tower.



7.) While holding the weight of the control tower, pull pop pins at base of either side of the tower. Tip towards capstans until the pins engage the next locking position. This will allow extra room for coupling to skid steer. Slight maneuvering of the tower might be needed to ensure pop pins are in locked position.



8.) Couple skid steer to MVP20k skid plate, ensuring that the plate is fully seated and the coupling arms are fully locked as shown.



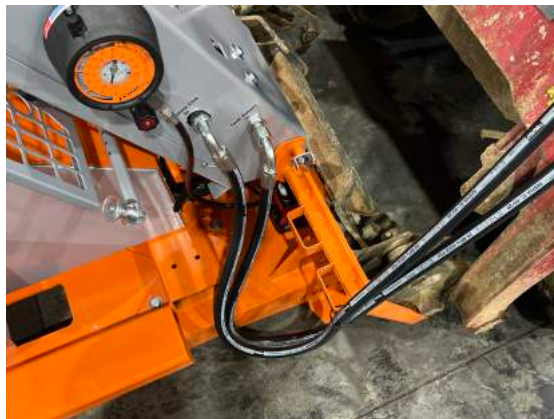
9.) Once the MVP20k is coupled correctly, set on flat level surface.



10.) Connect the corresponding hydraulic hoses from MVP20K to skid steer. Your skid steer most likely will have a pressure relief valve. Release pressure valve to make connection of hoses easier.



Note: Tie wrap the hydraulic hoses to step as shown here to help keep hoses free of pinch points.



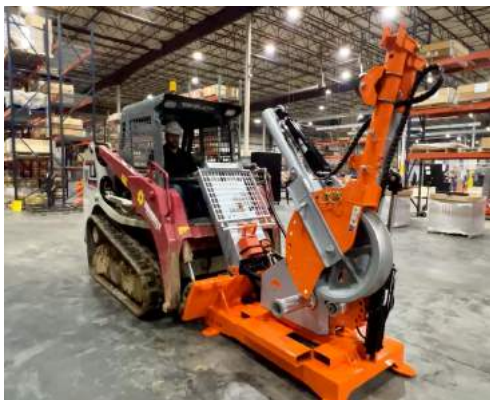
11.) Pull pop pins at the base of the control tower and tip the tower towards skid steer back into operating position. Hold the weight of the tower as you do this, ensuring the tower does not drop or slam into position. Once tower is in operating position, ensure pop pins are locked and engaged.



12.) Re insert the foot switch and force gauge back into their holsters.



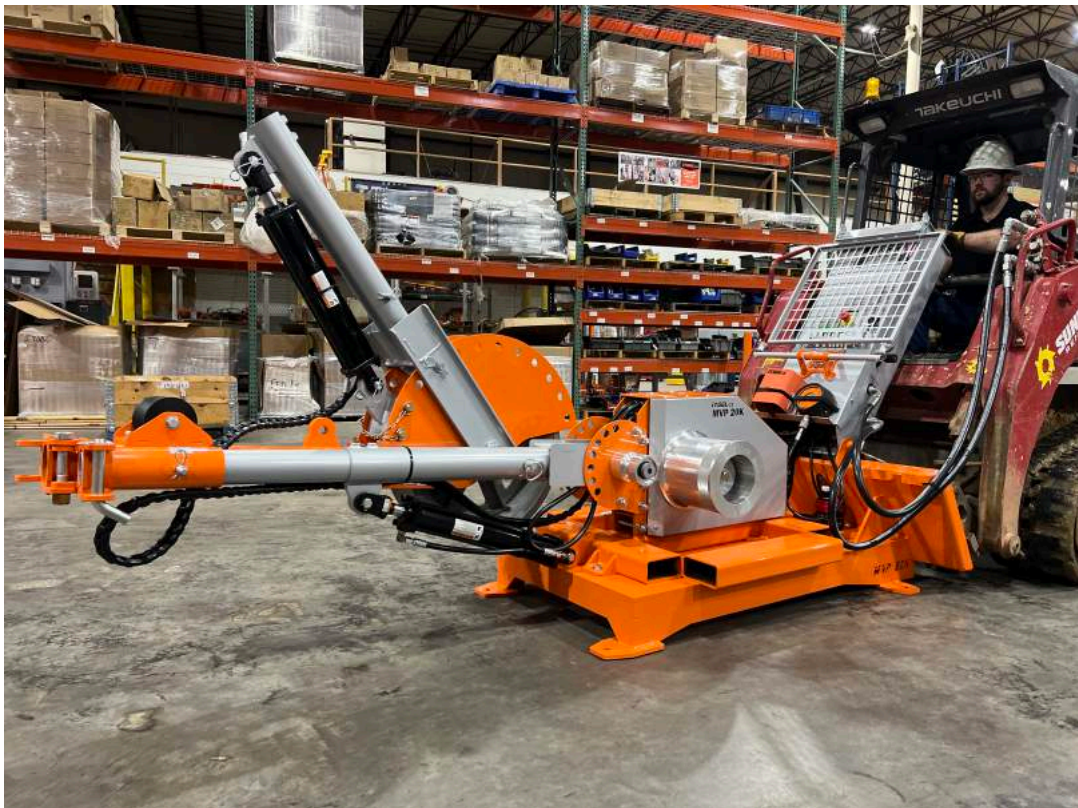
13.) When transporting the MVP20K, it is recommended to have unit folded as shown with pins fully inserted and in the locked position.



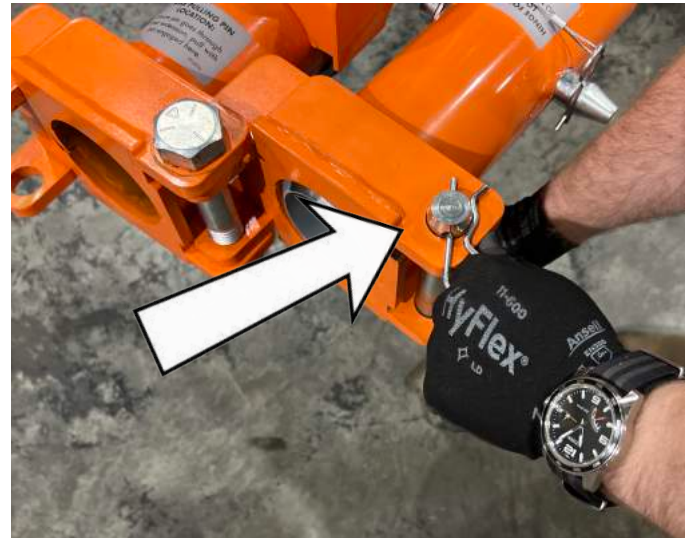
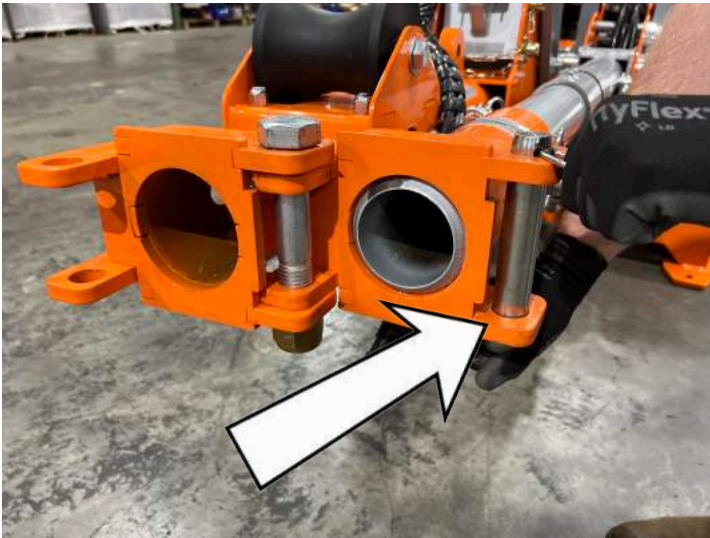
NOTE: The MVP20K requires continuous flow to run. Make sure your skid steer's auxiliary switch is set to continuous when operating the puller.

14.) To unfold the extensions, begin with the MVP20K flat on ground. Use the main boom control to slightly raise or lower boom until main boom pin easily comes out. Then lower main boom to a position just above perpendicular to the ground as shown. You do not need to reinstall main boom pin once lowered.

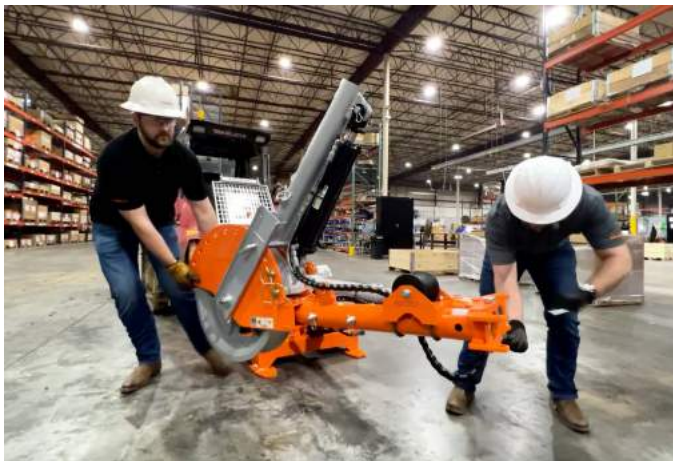
Note: If main boom is extended all the way down you will NOT have room to unfold pulling head.



15.) To unfold main boom, first remove folding hinge pin. (Do NOT unscrew hinge bolt.)



16.) Once folding hinge pin is removed. While lifting the end of main roller, maneuver the folded half of the main boom to be in line with the rest of the boom. While still lifting the main roller, reinsert the folding hinge pin.



Important Note: Your puller was shipped in a folded position with the folding hinge pinned in a transporting location. When using the wire puller, **ALWAYS** unfold the puller and move the folding hinge location to the pulling location to reinforce the pulling boom.

17.) To move boom and folding hinge into proper pulling location, pull folding hinge location pin. Once pin is removed, push inward on the end of the main roller. Move it until the interior extension hole lines up with the pulling pin location hole as marked on the outer extension. Then insert the pin. **The pin should move from behind the folding hinge (closer to the capstans) to in front of it (closer to the main roller).**



1



2



(Extended Folding Position)

3



(Collapsed Pulling Position)

4



5

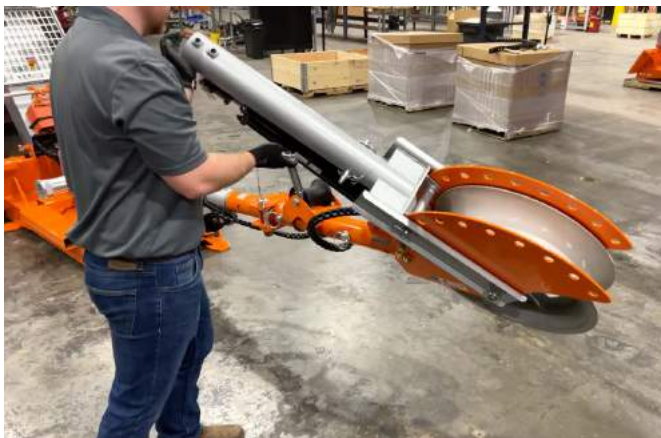
18.) To install front extension, have your skid steer running with auxiliary power on and set to continuous flow. Remove main roller articulating pin while holding the main roller from rotating right or left. Have operator raise main boom slowly. Meanwhile one person needs to hold the main roller and begin to turn it downward, using gravity to do the work. Keep hydraulic hoses in line - don't let hoses corkscrew around extension. **Caution: Do NOT stand underneath main roller as you turn it. Keep control of the main roller to prevent it turning too quickly or falling.** Once main roller is facing down, re insert pin.



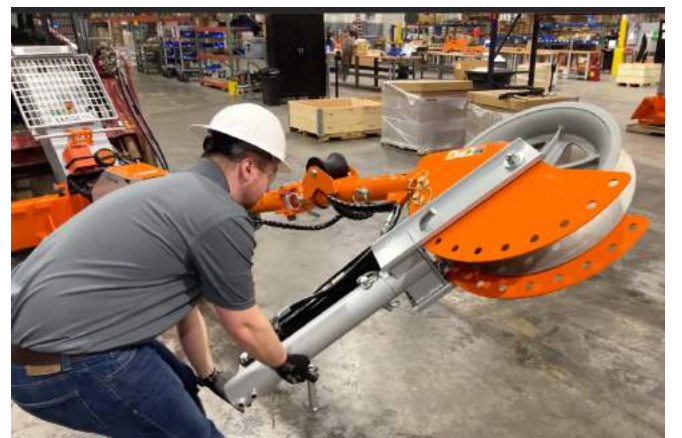
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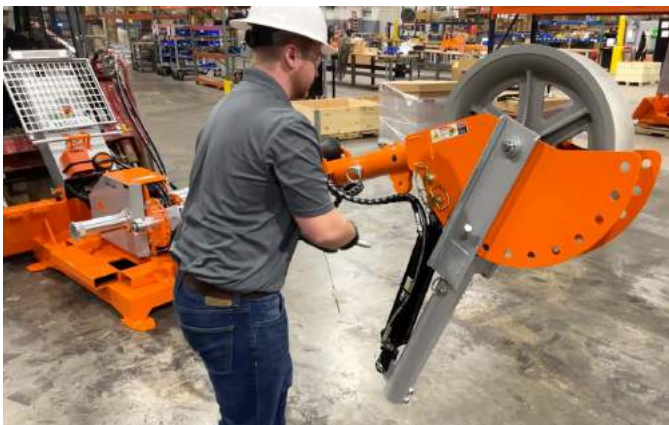
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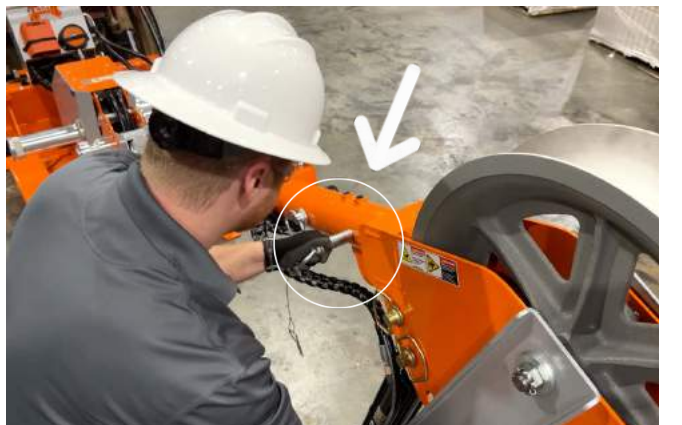
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4

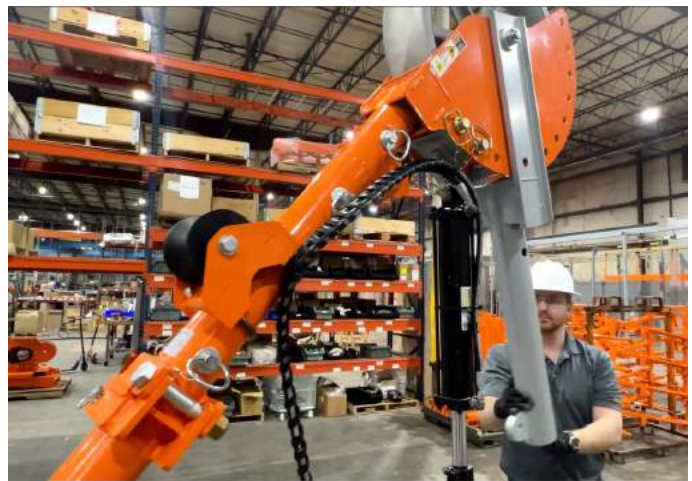


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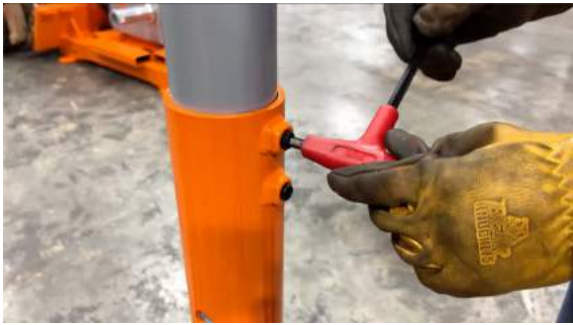


6

19.) Remove main roller adjustment pin and front hydraulic boom pin as shown. This will allow the front outer extension portion to swing freely. Raise main boom to a height that will allow you to insert the front extension.



20.) Use a 5/16 Allen wrench to loosen the set screws. (Using the X-Brace as example.)



21.) Remove pin from front extension as well.



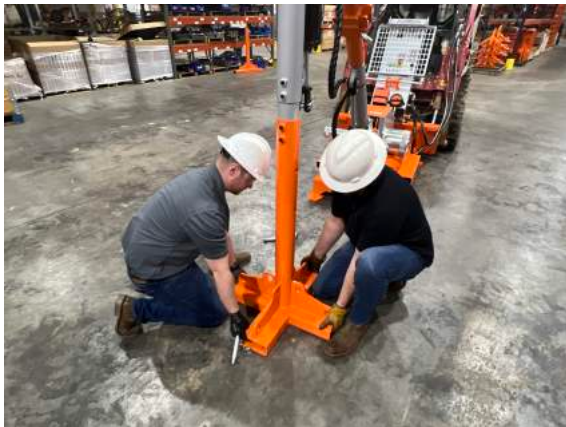
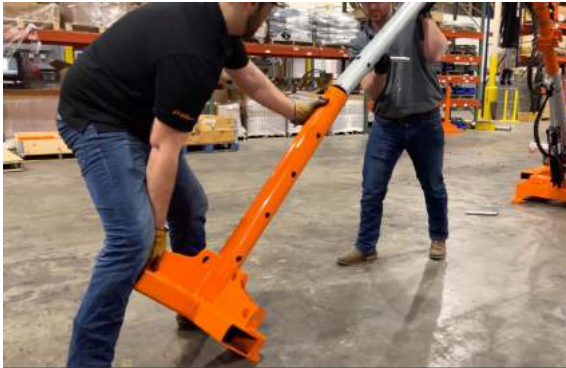
22.) Tip extension, remove silver inner tubing from brace. Insert into main roller outer extension and pin.



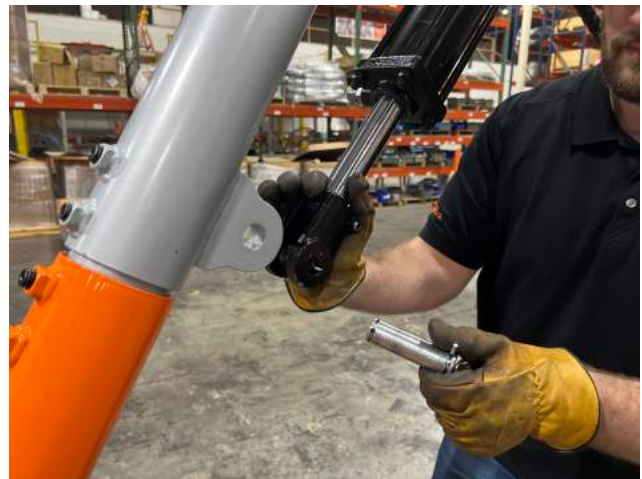
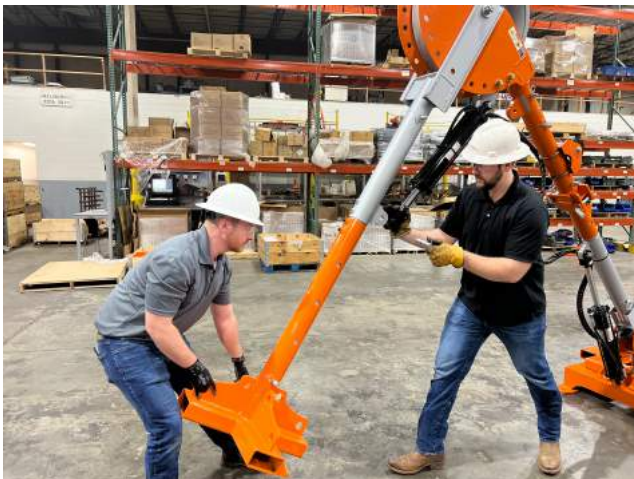
Tilt and insert extension - re insert pin.



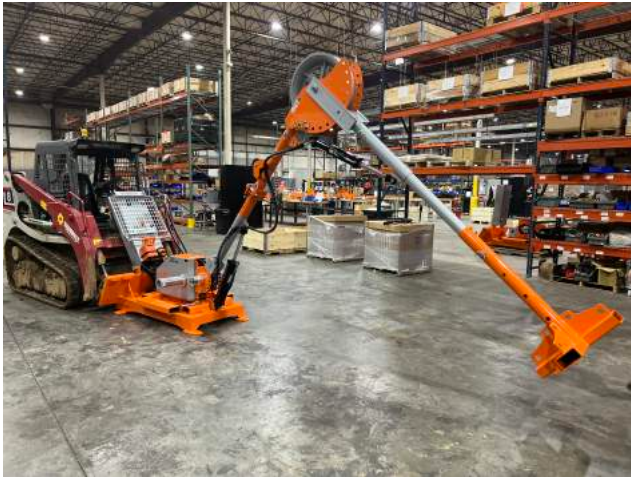
23.) Install the T-brace or X-brace using the same process as before. Tip, tilt, and align and slide together manually. Insert pin at desired length.



24.) Re insert front hydraulic pin by tipping extension forward and aligning pin points.
Caution: Do not try to set extensions and pins using power from hydraulics. Doing the adjustments manually limits the potential for injury.



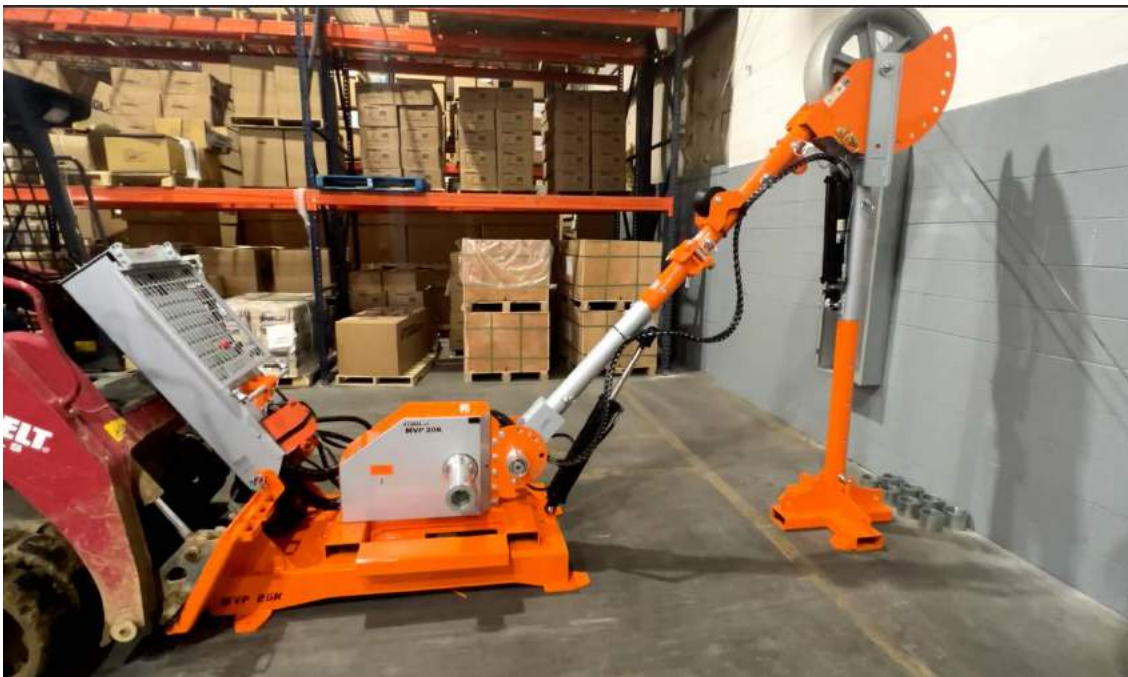
25.) To adjust the front extension, boom front extension and brace up and out. Then remove pin and slide base accordingly (take caution to hold base using two people to set final adjustment point.)



Note: When front extension is fully extended it is 19' from front of brace to capstans. When front extension is fully collapsed it is 17' from brace to capstan.

Placing unit for an underground pull.

26.) Position base just in front of conduits so main roller extends above conduit bank to be pulled for an underground configuration.



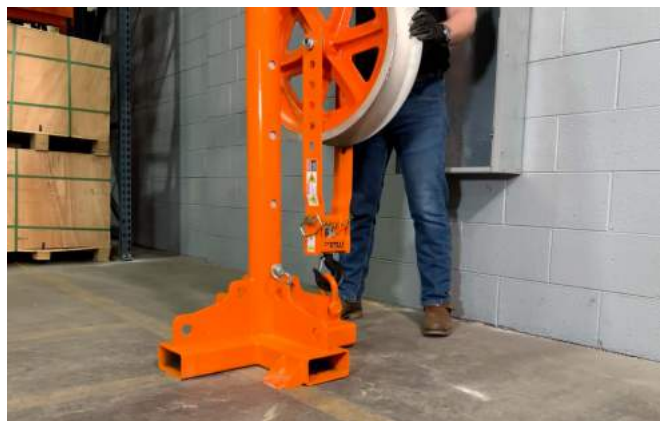
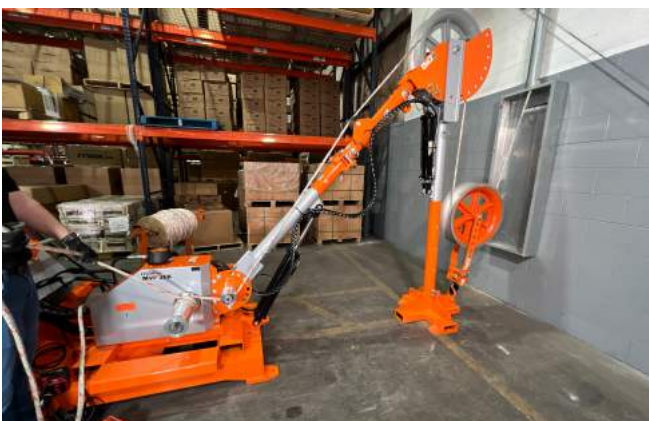
27.) Using a rotary hammer set 2 - 5/8" concrete anchors to secure base as shown.



Note: Structural integrity is based upon concrete and anchor manufacturer specifications.

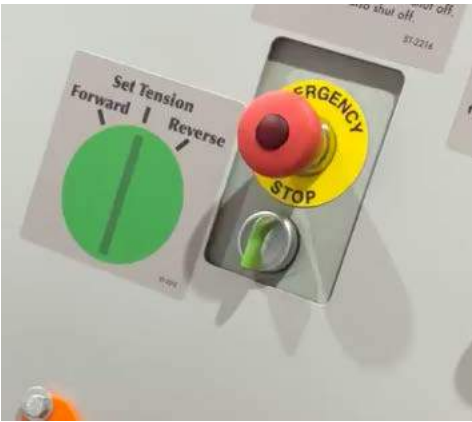
Placing unit for overhead or side pull.

28.) Position base in front of the conduit allowing room for your sheave to rotate. In this example we are using a 24" sheave, so we're positioned about 30" back from the conduit front edge to the picking eye. Next choose what picking eye you want to use.



Supplying the control tower power.

1.) Ensure set tension switch is in vertical "Set Tension" position.



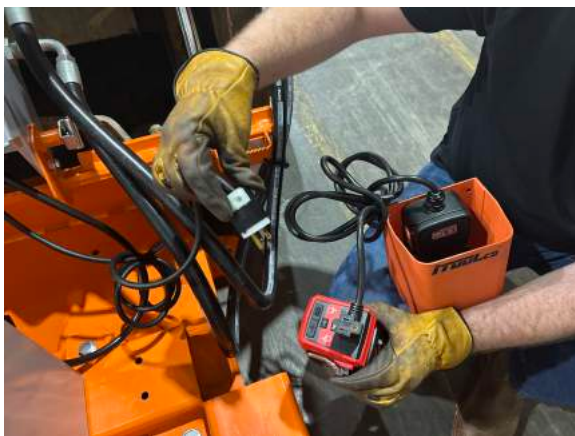
2.) Plug provided Milwaukee battery into the provided Milwaukee inverter. From there, plug the provided foot switch into the inverter. After you have plugged your foot switch in, plug the control tower into the back of the of the foot switch power cord. Once both the foot switch and tower are plugged in, turn on the Milwaukee inverter.



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3.) On the control tower, pull out on the emergency stop. If the tower and foot switch are plugged in properly you will see the back lights for the emergency stop and tension set switch come on. (Power & lights will only be supplied when the foot switch is pressed.)

Note: If no lights come on, check that the emergency stop is pulled out. Then check that the foot switch is properly plugged in. If they are, check to see power inverter is on and the battery is charged.



Setting the desired pulling force & pressure for your pull.

1.) With your skid steer on and running, set auxiliary power on and to be continuous. On the side of the control tower, open the pulling speed control all the way by rotating knob counterclockwise.



Decide what capstan you are going to be using for your pull. (Large capstan is for higher speeds and lower torque, smaller capstan is for lower speeds and more weight.)

When looking at the force gauge, the outer set of numbers indicates the large high speed capstan. Meanwhile the inner set of numbers are for the small low speed, high torque capstan settings.

2.) To set your maximum pulling tension, ensure the tension set switch is in the vertical "set tension" position.

With foot switch pressed, rotate the output torque limit dial to match the desired pulling force. (Fig.1)

Note: Start 500 lb to 1000 lb below desired pulling force. Then increase as needed to ensure that the maximum force is not exceeded.

Reminder: When looking at the force gauge, the outer set of numbers indicates the large high speed capstan. Meanwhile the inner set of numbers are for the small low speed, high torque capstan settings.



1



2



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3.) Adjust speed dial to match desired speed by rotating dial clockwise or counterclockwise.



Proper rope use.

NOTE: Minimum size rope required is PS916 with a tensile strength of 39,000 lbs. PS34 with a tensile strength of 65,000 lbs. Or PS78 with a tensile strength of 79,000 lbs.

1.) Always keep rope on line guide roller to prevent damage. Wrapping the rope about the capstan should be accomplished by adding two to three wraps at a time. Start with two wraps then apply tension to the rope to see if the load is moving or still requires more wraps. If the load isn't moving add two or three wraps around the capstan and apply tension. Repeat as necessary until rope rotation matches the rotation of the capstan while under load.



Maintenance of your MVP20K. Following these steps is imperative to the upkeep of your unit.

Lube chain daily as shown here. (LPS #2 Lubricant.)



Grease rope guides every 100 hours of operation as shown. (Standard axle bearing grease.)



Change hydraulic filter every 200 hours of operation.

The filter change indication window is located on the back of the tower, look closely you will see a green stripe indicating that the filter doesn't need changed. The button inside the window will pop out and a red tint will be present if filter change is required. Some high flow machines can cause the indicator to pop out and turn red, if this is the case with your machine simply push button back in to reset.

After filter is changed push button to reset to a green indication.



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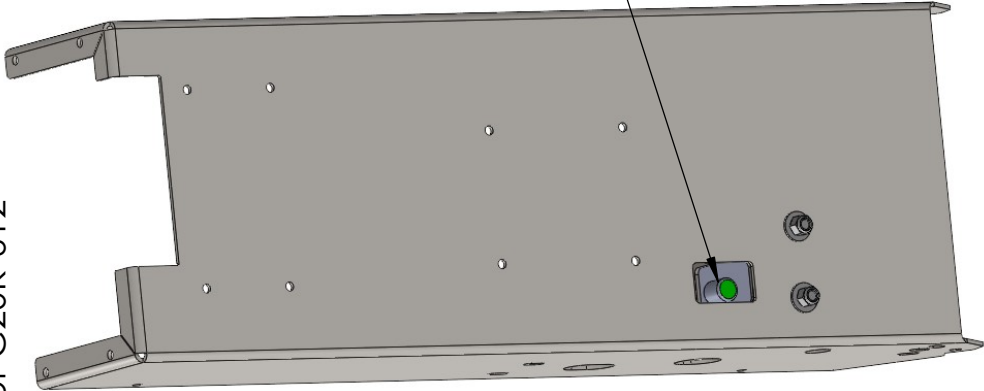


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Diagram 1
Showing Back of
Hydraulic Control
Tower C20K-612



MVP20K Comes equipped with a Hydraulic Oil Filter on the input (high pressure side) to protect its components from damage caused by contaminated oil from hydraulic pump systems. It is important to check for contamination buildup in cartridge filter during each use. MVP20K hydraulic system comes pre-bled, Filter, hoses, and components will be filled with hydraulic fluid AW32.

Steps for Checking Hydraulic Pressure Cartridge Filter

Step 1. Check Filter Bypass indicator once pump system is connected and pressure is supplied to MVP20K Unit. Filter bypass indicator is accessible from the back of the control tower closest to skid steer mount through a small viewing window without the need to remove any shrouds. Rock Control Tower Forward away from skid steer if needed to reveal filter access window.

Filter Bypass indicator will be green when filter is clean and functioning properly. During initial pressurization of the system or high flow spikes during normal operations the filter may be bypassed shortly even when cartridge filter is clean and still functioning but this will cause the indicator to pop out and turn red. To Reset filter bypass indicator use finger to depress button in the end of the indicator completely. You will see the indicator return to green. Normal operation can then be resumed.

2. When to Replace Filter Cartridge

Apply constant pressure from pump or skid steer to system, run the puller capstans in forward without engaging the rope to the capstan and reset the filter bypass button to green if needed. If the filter bypass indicator stays red indefinitely or switches back to red within 1-2 minutes of running normally then Filter cartridge is sufficiently contaminated and will need to be replaced. **WARNING: FAILURE TO REPLACE CONTAMINATED FILTER CARTRIDGE WITH CONTINUED OPERATION WILL RESULT IN DAMAGE TO HYDRAULIC SYSTEM.** Contact IToolco or your local IToolco Distributor to order part# HYD-006 (hydraulic Cartridge Filter Replacements) and follow Filter cartridge replacement procedure on next page.

WARNING: HYDRAULIC COMPONENTS, AND OIL CAN BECOME HOT AND CAUSE BURNS WHEN UNIT IS UNDER PRESSURE FROM PUMP. ALWAYS TURN OFF PUMP, RELEASE PRESSURE, AND LET SYSTEM COOL TO A REASONABLE TEMPERATURE BEFORE TOUCHING OR WORKING ON ANY OF THE HYDRAULIC SYSTEM.



(865)670-3713

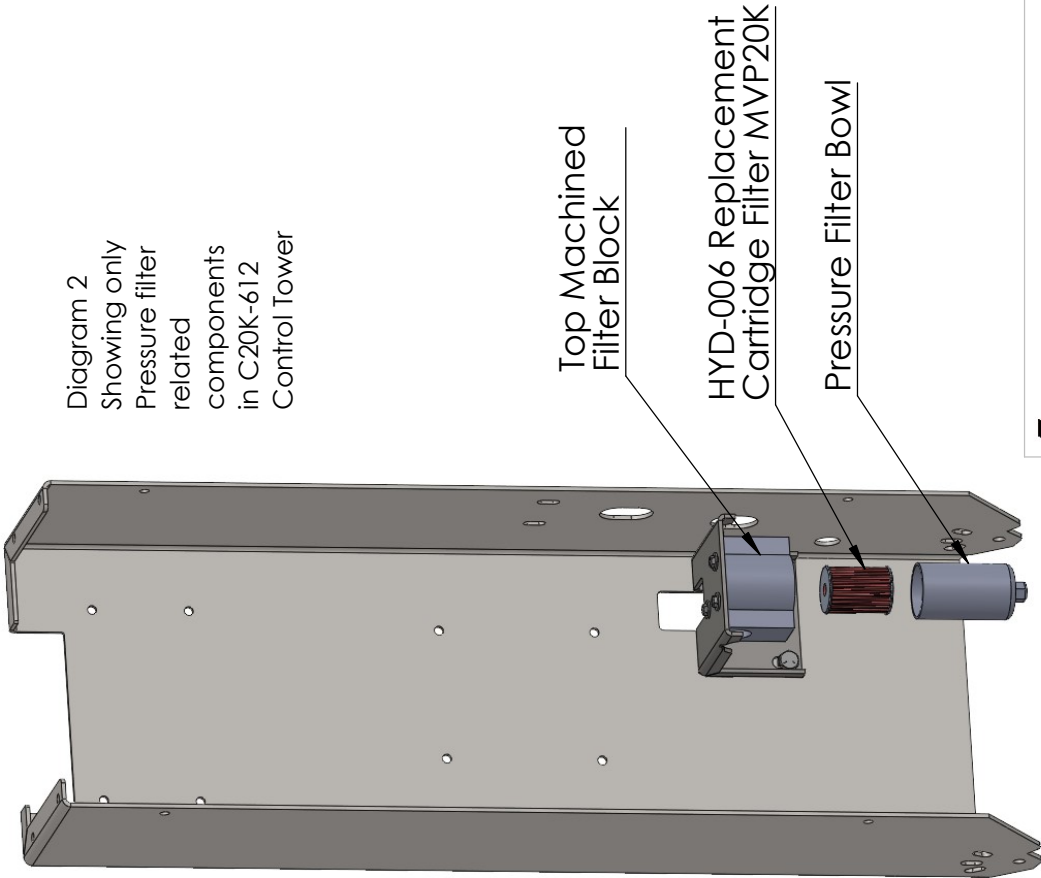
TITLE:


Cartridge Filter Check and Replacement

NAME	D. Jordan	DATE	??
SIZE	DWG. NO.	REV	
A			
SCALE: 1:20	WEIGHT:	SHEET 1 OF 2	

Filter Cartridge Replacement Procedure MVP20K

- Step 1. Move booms into position to be able to be pinned safely and pin in place. **WARNING:** if booms are not pinned, once the pressure is relieved from the system the booms can move and cause injury if the Boom Movement levers are moved or bumped into.
- Step 2. Verify that Pump or skid steer Auxillary power are completely off and there is no risk of the system being repressurized during this procedure.
- Step 3. Use pressure relief on skid steer auxillary or pump to release System Pressure.
- Step 4. Completely disconnect quick connect fittings from skid steer ports or pump, there should be no connection that could result in oil flow from hydraulic power source during this operation.
- Step 5. Allow Oil to cool completely, oil may be hot from operation and could cause serious burns if come into contact with. Hot oil may pressurize filter bowl and spray if filter bowl is removed before oil has cooled.
- Step 6. Remove Front Sheet Metal Shroud from Control Tower revealing all internal components. Pressure filter will be in the bottom right hand corner of the control tower when looking inside.
- Step 7. Rock Tower up to center vertical position using pop pins if not already there, and place a small bucket or oil drip pan underneath Oil Filter Bowl.
- Step 8. Unthread Oil Filter bowl from top machined filter block by rotating entire bowl several revolutions using a wrench on bottom Hex of filter Bowl. Do not remove any hardware or hoses/fittings from top machined filter block or brackets. This is not necessary to change internal filter cartridge.
- Step 9. Remove old contaminated oil filter cartridge replacement from bowl and discard properly. Empty Remaining oil and contaminants from filter bowl and wipe down filter components with a clean rag, make sure that there are no obstructions to oil flow in the top machined filter block and that all O-rings are undamaged and in place.
- Step 10. Insert Replacement filter cartridge into filter bowl, align top of filter cartridge with seals in filter top machined block and thread filter bowl with new cartridge back into place. Ensure filter bowl is not cross threaded and tighten firmly to prevent leaks.
- Step 11. Before reinstalling front cover of control tower, reconnect MVP20K to hydraulic power source and turn on pressure to system. Air will purge from filter bowl when capstans are run in either direction. Check for leaks. Reset Filter bypass indicator button on back of control tower to green if necessary.
- Step 12. Filter Cartridge Change is complete. Continue Normal operating use.



 (865)670-3713			TITLE:	
NAME	D. Jordan	DATE	??	
SIZE	DWG. NO.	REV	A	
SCALE: 1:20		WEIGHT:	SHEET 2 OF 2	



LIMITED WARRANTY: ITOOLCO CANNON MVP20K

iTOOLco warrants all new Cannon MVP20K covered by this agreement, when properly used, to be free from defects in material and workmanship under normal use and service for which it is intended for a period of one year from date of delivery by the dealer. Date of delivery shall be the date product is placed in possession of the user. NORMAL WEAR FROM USE IS NOT PART OF THIS WARRANTY. This limited warranty is extended to the original user only and is not transferable to, nor enforceable by any other person.

iTOOLco will replace free of charge any part(s) of the product found to be defective when such part(s) is returned to iTOOLco at the address shown below, freight prepaid. If the part(s) is found to be defective, iTOOLco will refund freight charges paid by you in returning the defective part(s) and prepay replacement part(s) freight charges. iTOOLco will not be responsible for more than replacement of any defective part(s) and standard freight charges (parcel post or UPS ground rate) of any part(s) found to be defective.

THIS IS THE EXCLUSIVE REMEDY. ITOOLCO SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECTS COVERED BY THIS WARRANTY OR ANY IMPLIED WARRANTY APPLICABLE TO THE PRODUCT INCLUDING, BUT NOT LIMITED TO, PROPERTY DAMAGE, LOSS OF USE OF PRODUCT, LOSS OF TIME, LOSS OF PROFITS, INCONVENIENCE, COMMERCIAL LOSS, LABOR COSTS, SERVICE TRIPS, AND MILEAGE.

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

Dealer/Distributor Warranty Claim Procedure

1. All warranty claims must be pre-approved by iTOOLco Warranty Department PRIOR to starting any warranty work. Warranty work performed without prior approval will not be considered.
2. All claims must be handled through dealer/distributor.
3. Written approval must be received from iTOOLco before return of merchandise. A Return Authorization is to be returned with the merchandise which is sent back.
4. All parts must be returned to iTOOLco at the address shown below, freight prepaid.
5. The serial number of the product and the date of delivery must accompany the part(s) being returned.
6. If the part(s) is found to have failed because of a defect in material or workmanship, replacement will be made on a no-charge basis, and the part(s) returned, freight prepaid. Standard freight charges (parcel post or UPS ground rate) incurred in returning the part(s) will be refunded.
7. For reasons of expediency, replacement and/or repair part(s) may be shipped as soon as possible and billed to the dealer/distributor. When part(s) is returned, if it is covered under warrant, credit will be issued for the part(s) and freight charges.
8. All parts found to be defective shall be retained by and shall become the property of iTOOLco. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Corporate Address: iTOOLco
1325 Carden Farm Drive
Clinton, TN 37716

