BIGSHOT
Underground Piercing Tools

Owners Manual

Footage

IMPORTANT
DO NOT OPERATE THIS TOOL UNLESS THESE INSTRUCTIONS HAVE BEEN CAREFULLY READ AND UNDERSTOOD.

54 Audia Crt. Vaughan, ON, Canada L4K 3N4 - Phone (905) 695-9900 - Toll Free 1 (888) 737-3668 - Fax (905) 695-8874

OPERATING INSTRUCTIONS

SAFETY PRECAUTIONS

Allow only responsible, properly instructed individuals to operate the tool. Wear all required personal protective equipment including but not limited to:

- Safety Glasses - Eye protection is necessary when using the Underground Piercing Tool. Avoid looking into the borehole while the Underground Piercing Tool is in use. High-pressure exhaust can eject dirt, stones, or other materials.
- Ear Protection – Ear protection is suggested until the tool is fully underground. However, ear protection should be removed when working in close proximity to traffic.

Be sure the machine is in good operating condition. Visually inspect and oil the machine daily before starting. Make sure that all air line couplings are tightened and secured to eliminate the chance of accidental uncoupling. Use hose retaining devices such as whip checks. CAUTION: Air hose has a limited life and the user must be alert to the signs of impending failure. Keep all fittings and hose ends tight. Visually inspect the hose for loose covers, kinking, bulges, wire (cord) damage, cutting or any soft spots. Replace the hose immediately, if damaged, or serious bodily injury may result. Make no modifications to your piercing tool.

Do not work in trench with unstable sides. Specific requirements for shoring or sloping trench walls are available from several sources including federal and state offices. Be sure to contact local authorities for these requirements before working in the trench.

Before starting work, remember that contact with buried utilities may cause serious injury or death. Before boring, check with qualified sources to properly locate all buried utilities in and around bore path. Select a bore path that will not intersect buried utilities. Never launch tool on a path toward a buried utility line.

Only one person is required to operate the Underground Piercing Tool and monitor the tool to be sure that the air hose does not cause an unsafe condition around the pit. However, one person should be available outside the excavation pit, to call for assistance in case of an emergency.

Know and obey all Federal, State, and local laws and regulations that apply to your work situation.

UNDERGROUND PIERCING TOOL OPERATION

Prepare entry and exit pits. The depth of the entry pit should suit the application involved and should be 24" longer than the tool to keep the supply line from kinking during the shot. The exit pit should have extra width and depth to accommodate for tool misalignment. Measure the distance between the pits to determine the length of the bore.

Check the compressed air filter. Drain water if flooded or replace element if clogged. Refer to the instructions included with your compressor for details. Connect a ¾" air service hose rated at 800 psi minimum to the compressor outlet, wipe jacket to remove any oil or debris that may make the hose slippery. Start compressor. Hold the open end of the hose tightly and partially open the compressor valve to blow the air hose clean. Close the compressor valve. Connect the open end to the lubricator (oiler) after ensuring air control valve is closed. Fill lubricator with approved underground piercing tool oil.

Operation Tip – Add 6 ounces (180 cc) of oil into any new 50' length of hose to pre-lubricate it.

Connect air supply hose (¾" double wire braided hose rated at 800 psi minimum) to the lubricator and partially open the lubricator control valve to blow the line free of contaminants and close the lubricator control valve. Turn whip hose on the rear of the tool fully clockwise to the forward position.

Operation Tip – When operating the tool for the first time, add 1/2 ounce (15 cc) of oil directly into the whip hose to provide lubrication during start-up.

Connect the end of the supply hose to the whip hose on the tool. To avoid accidental uncoupling, tighten all hose locking collars against fittings and install hose retaining devices such as locking rings, or "whip" checks.

Operation Tip – Measure the distance from the entry pit to the exit pit and mark your hose accordingly, measuring from the nose pin.

Place the tool in the entry pit and aim it toward the exit pit. Arrange the hose so it may follow the tool into the entry pit without twisting or kinking which could inadvertently shift the tool into neutral or reverse. Support the tool to keep it aligned. Fully open the air supply valve to start the piston moving. Do this quickly, then slow it down. This will make it easier to start the bore. Stop the tool periodically as it enters the ground. Use a magnetic torpedo level to check your angle and aim. Adjust the direction of the tool by pushing or pulling the tool body. Do not attempt to steer or lift the tool by the whip hose as damage to the tool or whip hose may result.

OPERATION TIP - Experienced operators have learned to drape or tie a rag over the nose of the tool. This gives the tool something to grab on to which facilitates the start of a shot in very hard soils.

During operation, periodically check the supply hose to make sure it is fully turned clockwise to ensure it is in the forward position. When the tool reaches the exit pit, shut it OFF. Disconnect the air hose from the tool, cap the inlet to prevent dirt and sand from entering the tool, and remove the tool from the exit pit, lifting it by the barrel.

- **REVERSING TOOL DIRECTION**

Reverse the direction of the tool if it becomes stuck or is deflected off course. To do this: Shut the tool OFF. Disconnect the air supply hose from the lubricator. Turn the hose fully counterclockwise to Reverse. Clean the connectors, then re-connect the air supply hose. Turn the tool ON. During operation make sure the tool stays in reverse by checking that the air supply hose is turned fully counter-clockwise. Keep pulling on the air supply hose as the tool backs up. This will keep the tool from backing over its own air supply hose. If the air supply hose will not turn into the reverse position while in the ground, the tunnel may have collapsed on the air supply hose. Turn the air supply hose while the tool is running. The impact action of the tool may help loosen stuck supply line.

TROUBLESHOOTING

- **LOCATING A LOST TOOL**

If the tool does not reach the exit pit at the length marked off on the air hose: Turn the air hose counterclockwise until the tool is in Neutral (neither moving forward or backward.) Locate the tool by sound and vibration. **IMPORTANT: When using Neutral for an extended time, slow the tool by reducing airflow at the valve**.

- **TOOL WILL NOT START**

Check the compressor for proper air output (90 to 110 psi or 620 to 760 kPa). Improper or low air pressure setting can cause starting problems. Check that full pressure air is available at the tool and that hoses and fittings are of the proper diameter (¾" or larger) and are clear of any obstructions.

- **TOOL STOPS IN MIDDLE OF SHOT**

Ensure that the hose is rotated to the full forward position. A kink in the air supply hose may have unfurled inadvertently shifting the tool into neutral or reverse. Next, follow the restart procedure while tool is in the ground: Remove the air supply hose from the lubricator to the tool and inject 1/2 oz. of oil directly into the hose. Turn air supply hose one turn into reverse if in forward, or one turn into forward if in reverse. Connect the supply line to the lubricator and snap the air control valve open. If that does not work, the tool could be frozen. Shut off air supply at the compressor and wait at least 30 minutes for it to thaw and repeat the restart procedure. If the tool fails to start after the above steps have been performed, contact your distributor.

- **TOOL RUNS BUT WILL NOT MOVE IN HOLE**

First, check to make sure that the tool is not in contact with a gas line, water line, electrical line, or some other underground obstruction that can be damaged or cause personal injury. Ensure that the hose is rotated to the full forward position. If the tool is oscillating back and forth, partially reduce the airflow at the lubricator valve. Soft or wet ground conditions can cause a tool to lose traction and oscillate. Put a mark on the hose for reference to determine if the tool is moving. If the tool has hit an obstruction, the reverse feature allows you to maximize impact force. Rotate the hose counter clockwise 2 to 3 turns until the tone of the impact changes. Turning the hose in the clockwise (forward) direction slightly, until this tone is gone, will provide the most impact force available to break through an obstruction. If the tool is unable to break through, reverse the tool and start a new hole away from the obstruction, **IMPORTANT: When re-shooting a new bore the operator should move over a distance of 10 times the diameter of the tool or the tool may cross into the other bore.**

- **TOOL SLOWS DOWN DURING LONG BORES**

The tunnel behind the tool may be collapsed and restricting airflow.

- **TOOL RUNS BUT IS LOW ON POWER**

Check the compressor for proper air output and pressure. Check that the tool is using oil. Turn or adjust air service line while the tool is moving forward or reversing. Check that supply lines and fittings are properly sized. Perform the piston tip test as follows: The piston should slide from front to back when the tool is tipped from horizontal to approximately 22°. A tool with high piston friction may have ingested dirt and should be inspected and/or overhauled before being shot again.

- **TOOL ICING**

When the supply air is used in the tool it expands rapidly causing a sudden drop in temperature. This can cause the condensation in the supply air to freeze. This phenomenon is most noticeable when ambient temperature is above freezing and the humidity is high – tools can ice so severely that they become inoperable. Even in sub-zero weather the soil temperature at the depth the underground piercing tool is operating at may be above freezing. Shutting off the tool for a period may allow the tool to thaw out using the soils warmth. Do not heat the tool with a torch as damage to critical parts may result in the premature failure of the tool and possible personal injury. We recommend the use of a second air filter at the compressor to remove additional water and underground piercing tool oil, as it absorbs water while remaining ice free in sub zero conditions, is effective in eliminating stoppages due to freezing.

NOTE: Footage Tools supplies an Ice-Free, biodegradeable, all season, pneumatic lubricant.

ACCESSORIES

- **The installation and removal of the 4 ½" Expander or the Stepped Tool Head on the U300 "Big Shot" in field conditions.**

Place the U300 "Big Shot" on a surface so that the area around the nose is clear of obstructions. (The bed of a pick-up truck is ideal– the tool nose can hang out past the tailgate.) Engage the rectangular hole in the U300-23 wrench over the end of the bit cover. Have a helper put a foot on the body of the "Big Shot" while hitting the handle of the wrench with a five-pound hammer so that it will rotate counter-clockwise when viewed from the front of the tool. (As shown in the photo at right.)

Make sure the front area of the tool is clean, any dirt will affect the seating of the accessory. Slide the accessory expander or stepped tool head into position so that the threaded nose pin extends past the accessory. (Apply some "anti-seize" to the threads and screw the bit cover back on as far as it will go by hand.) Tighten the cover with the wrench in the same manner as removal (except turning it clockwise when viewed from the front of the tool and hitting the wrench 5 to 10 times with the five-pound hammer. Re-torque the bit cover after each shot to ensure accessory retention.)

Remove accessories in the same manner. After the bit cover is off, tap the accessory lightly to help release it.

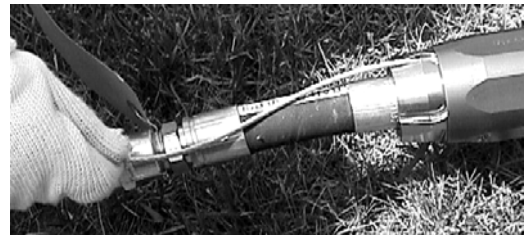
- **Use of the 5 ½" expander on the U400 "Big Shot".**

The U400-28 expander simply slips on and will be lost should the tool be reversed while this expander is in use.

Important: When using any expander, the initial shot should be without an expander. Then enlarge the hole with an expander on the tool.

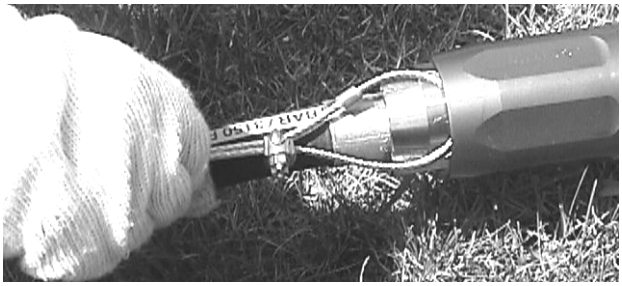
- **Use of the Pulling Cable on the U262 or U300 "Big Shot".**

The U300-26 Pulling Cable is standard equipment with every new U262 and U300 tool. It allows a cable to be pulled through the bore hole beside the air supply hose at the same time the hole is made. It has a loop on one end, to which the cable is attached, and the straight (fused) end goes through the groove in the tailpiece extension and is clamped in position with a captive wire rope clip.



Installing the Pulling

Cable. If the fused end of the cable is looped, loosen the nuts on the captive wire rope clip with a 5/16" wrench in order to free the fused end. (Note that the nuts can not be removed from the wire rope clip and may only be loosened.) Push the straight fused end through the groove in the tailpiece until it comes out the other side. Keep pushing it through until the swaged stop sleeve is almost touching the tailpiece extension. Slide the fused, straight end of the cable through the captive wire rope clip. Slide the wire rope clip towards the tailpiece extension until it is near the swaged stop sleeve and tighten the two nuts on the wire rope clip with a 5/16" wrench. The cable to be pulled may now be attached to the loop at the other end of the pulling cable.



Removing The Pulling Cable. After the "shot" disconnect the pulled cable. Loosen the nuts on the captive wire rope clip with a 5/16" wrench to free the fused end. Pull the pulling cable out of the groove in the tailpiece extension.

FOOTAGE TOOLS "BIG SHOT" UNDERGROUND PIERCING TOOL WARRANTY

Footage Tools Inc. warrants its pneumatic driven piercing tools to be free from manufacturer defects, for a period of **Three Years** from date of delivery. Should any part fail due to defects in material or workmanship during this period, Footage Tools Inc. will furnish a new part free of charge F.O.B. their factory in Toronto, Canada. Parts claimed to be defective must be held for inspection by Footage Tools Inc. or an authorized repair center. This warranty covers only workmanship and materials and does not cover failure of parts as a result of negligence or improper use of the tool or parts that have been repaired or altered by anyone other than Footage Tools Inc. or their authorized repair centers.

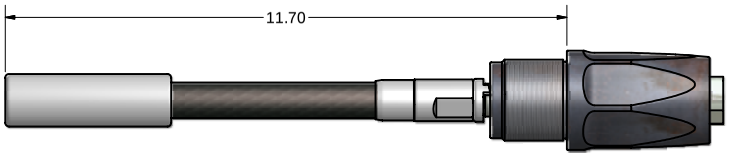
Shipping costs to and from the factory or repair centers are the responsibility of the customer. Piercing tools must be operated with a suitable lubricator and an approved lubricant to be covered by the three year warranty. The purchaser of this equipment is responsible for the manner in which it is used and Footage Tools Inc. disclaims all responsibility for any consequential damages.

- **SUPPORT**

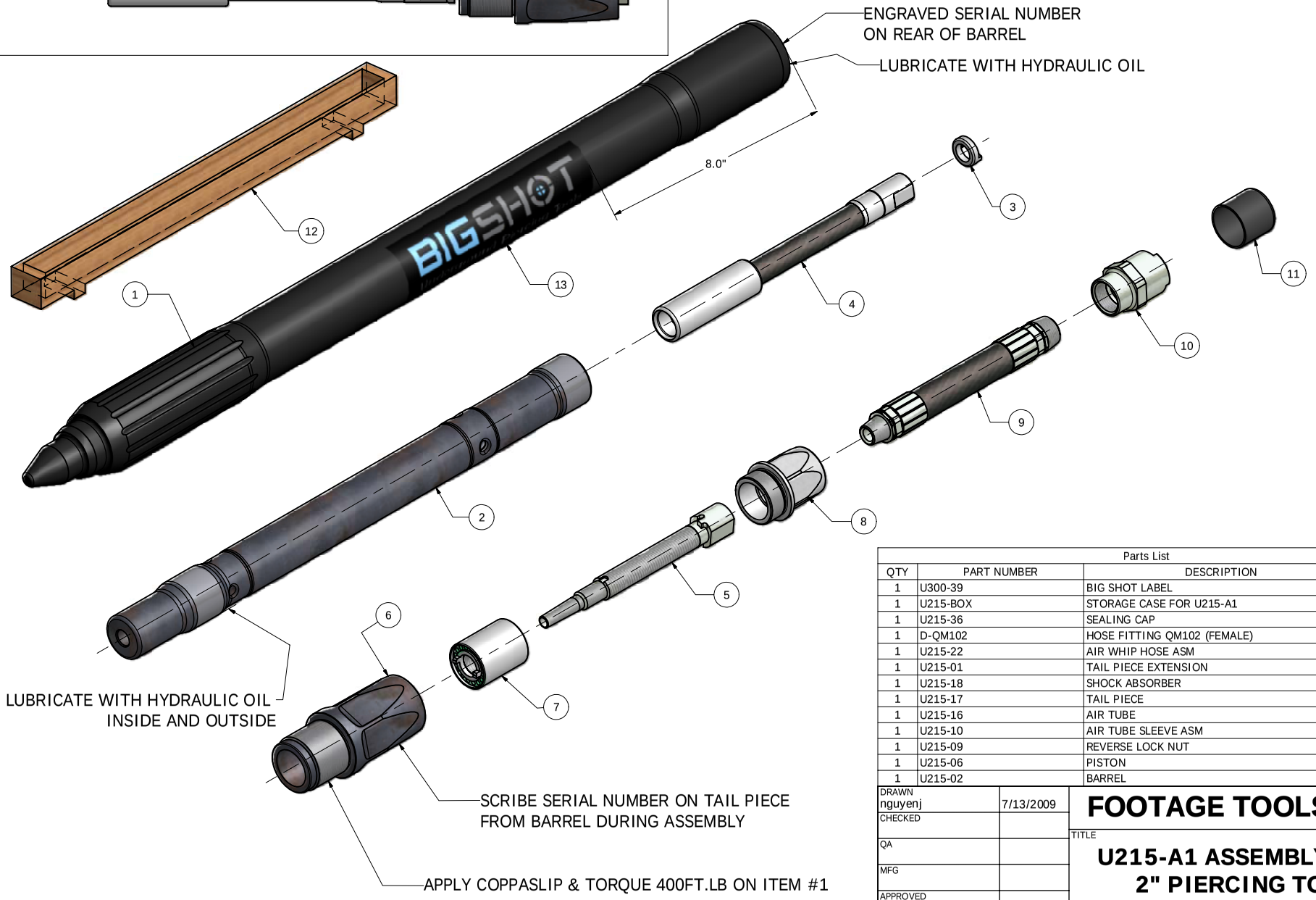
Should this guide not have the information you require, consult the Service and Parts Manual available for this product.

If you require further information, contact your local distributor or Footage Tools Inc. at our Toll-free number 1 (888) 737-3668.

SUB ASSEMBLY LENGTH



REVISION HISTORY				
REV	DESCRIPTION	ECN	DATE	APPROVED
A	DIM 11.70 WAS 10.10 (MEASURE FROM END OF TAIL PIECE)	1650	01OC02	SJH
B	ITEM 11 WAS SHIPPING STOCK	1659	29NO02	SJH
C	ADDED TORQUE SPECIFICATION ON IT#6	D1704	29SE06	JLN
D	ADDED LABEL & 8.0" DIM	1786	13FE08	NN



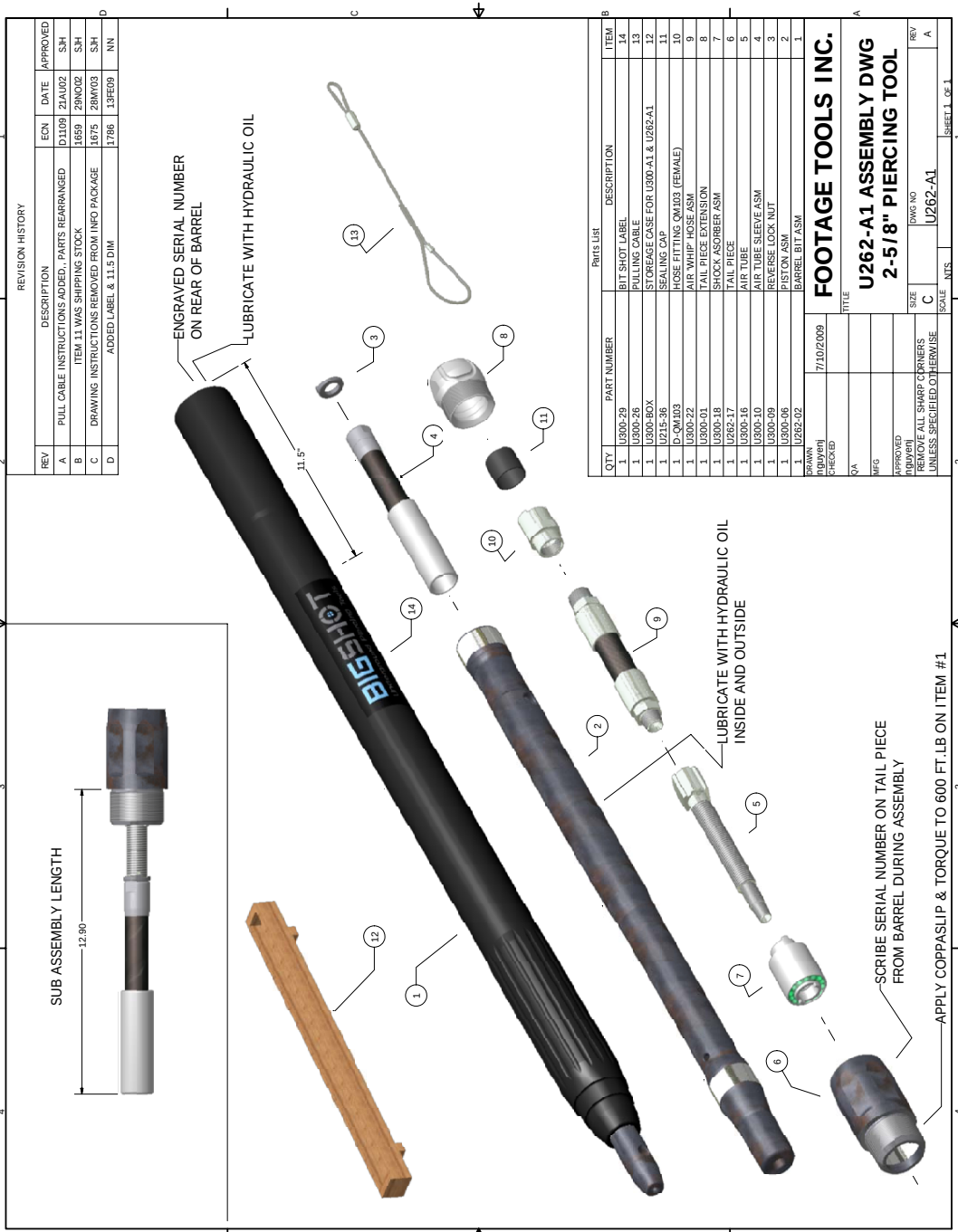
Parts List			
QTY	PART NUMBER	DESCRIPTION	ITEM
1	U300-39	BIG SHOT LABEL	13
1	U215-BOX	STORAGE CASE FOR U215-A1	12
1	U215-36	SEALING CAP	11
1	D-QM102	HOSE FITTING QM102 (FEMALE)	10
1	U215-22	AIR WHIP HOSE ASM	9
1	U215-01	TAIL PIECE EXTENSION	8
1	U215-18	SHOCK ABSORBER	7
1	U215-17	TAIL PIECE	6
1	U215-16	AIR TUBE	5
1	U215-10	AIR TUBE SLEEVE ASM	4
1	U215-09	REVERSE LOCK NUT	3
1	U215-06	PISTON	2
1	U215-02	BARREL	1

DRAWN nguyenj 7/13/2009
CHECKED
QA
MFG
APPROVED nguyenj
REMOVE ALL SHARP CORNERS
UNLESS SPECIFIED OTHERWISE

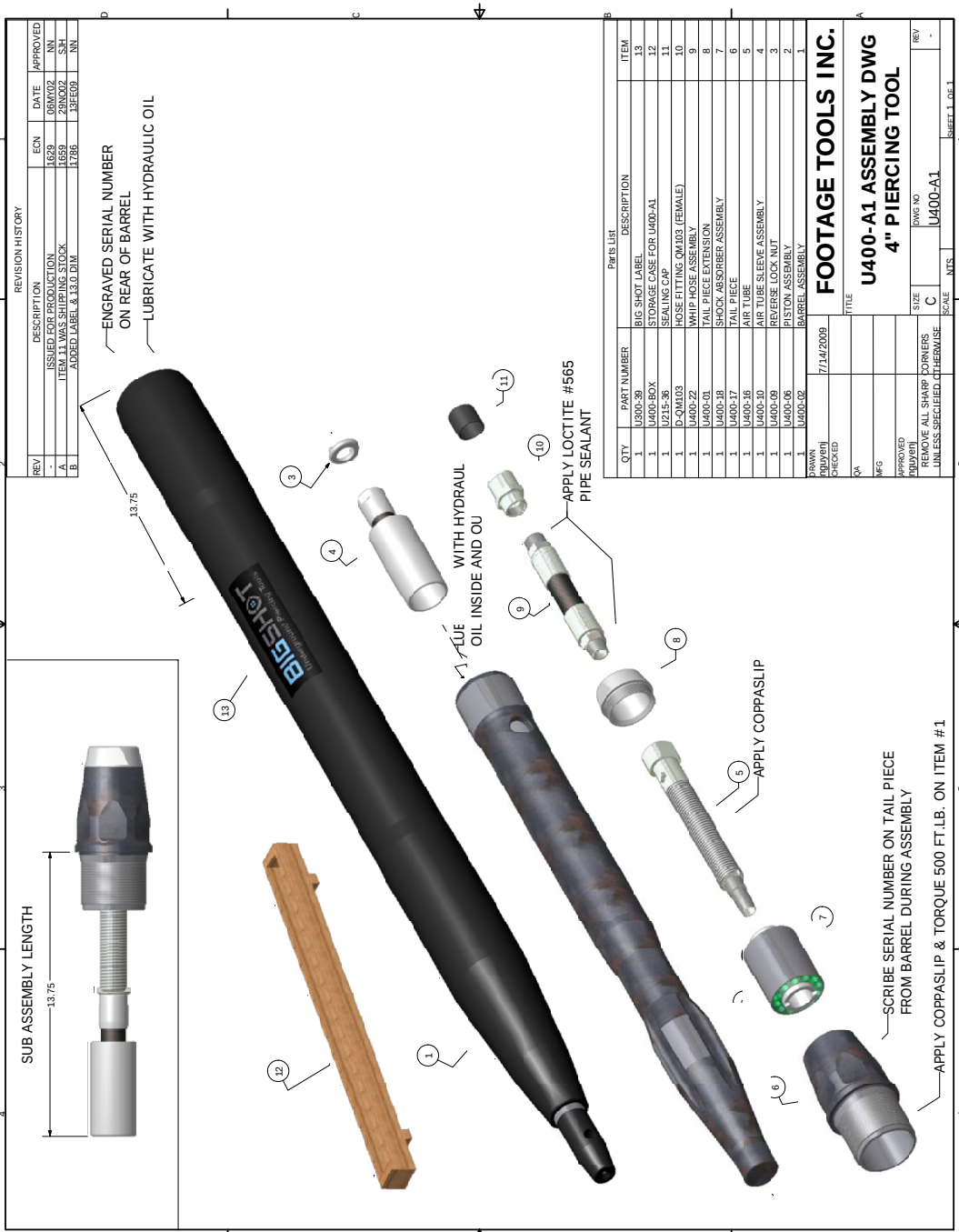
FOOTAGE TOOLS INC.

TITLE
U215-A1 ASSEMBLY DWG
2" PIERCING TOOL

SIZE C | DWG NO U215-A1 | REV A
SCALE NTS | SHEET 1 OF 1


REVISION HISTORY
REV | DESCRIPTION | ECN | DATE | APPROVED
A | PULL CABLE INSTRUCTIONS ADDED., PARTS REARRANGED | D1109 | 21AU02 | SJH
B | ITEM 11 WAS SHIPPING STOCK | 1659 | 29NO02 | SJH
C | DRAWING INSTRUCTIONS REMOVED FROM INFO PACKAGE | 1675 | 28MY03 | SJH
D | ADDED LABEL & 11.5 DIM | 1786 | 13FE09 | NN
Parts List
QTY | PART NUMBER | DESCRIPTION | ITEM
1 | U300-29 | BIT SHOT LABEL | 14
1 | U300-26 | PULLING CABLE | 13
1 | U300-BOX | STOREAGE CASE FOR U300-A1 & U262-A1 | 12
1 | U215-36 | SEALING CAP | 11
1 | D-QM103 | HOSE FITTING QM103 (FEMALE) | 10
1 | U300-22 | AIR 'WHIP' HOSE ASM | 9
1 | U300-01 | TAIL PIECE EXTENSION | 8
1 | U300-18 | SHOCK ASORBER ASM | 7
1 | U262-17 | TAIL PIECE | 6
1 | U300-16 | AIR TUBE | 5
1 | U300-10 | AIR TUBE SLEEVE ASM | 4
1 | U300-09 | REVERSE LOCK NUT | 3
1 | U300-06 | PISTON ASM | 2
1 | U262-02 | BARREL BIT ASM | 1
DRAWN nguyenj 7/10/2009
CHECKED
QA
MFG
APPROVED nguyenj
FOOTAGE TOOLS INC.
TITLE
U262-A1 ASSEMBLY DWG
2-5/8" PIERCING TOOL
SIZE C
DWG NO U262-A1
REV A
REMOVE ALL SHARP CORNERS
UNLESS SPECIFIED OTHERWISE
SCALE NTS
SHEET 1 OF 1
SUB ASSEMBLY LENGTH
12.90
ENGRAVED SERIAL NUMBER ON REAR OF BARREL
LUBRICATE WITH HYDRAULIC OIL
11.5"
LUBRICATE WITH HYDRAULIC OIL INSIDE AND OUTSIDE
SCRIBE SERIAL NUMBER ON TAIL PIECE FROM BARREL DURING ASSEMBLY
APPLY COPPASLIP & TORQUE TO 600 FT.LB ON ITEM #1
BIG SHOT

BIG SHOT Underground Piercing Tool


REVISION HISTORY
REV | DESCRIPTION | ECN | DATE | APPROVED
- | ISSUED FOR PRODUCTION | 1629 | 06MY02 | NN
A | ITEM 11 WAS SHIPPING STOCK | 1659 | 29NO02 | SJH
B | ADDED LABEL & 13.0 DIM | 1786 | 13FE09 | NN
ENGRAVED SERIAL NUMBER ON REAR OF BARREL
LUBRICATE WITH HYDRAULIC OIL
13.75
WITH HYDRAUL
OIL INSIDE AND OU
APPLY LOCTITE #565 PIPE SEALANT
APPLY COPPASLIP
SCRIBE SERIAL NUMBER ON TAIL PIECE FROM BARREL DURING ASSEMBLY
APPLY COPPASLIP & TORQUE 500 FT.LB. ON ITEM #1
SUB ASSEMBLY LENGTH
13.75
Parts List
QTY | PART NUMBER | DESCRIPTION | ITEM
1 | U300-39 | BIG SHOT LABEL | 13
1 | U400-BOX | STORAGE CASE FOR U400-A1 | 12
1 | U215-36 | SEALING CAP | 11
1 | D-QM4103 | HOSE FITTING QM103 (FEMALE) | 10
1 | U400-22 | WHIP HOSE ASSEMBLY | 9
1 | U400-01 | TAIL PIECE EXTENSION | 8
1 | U400-18 | SHOCK ABSORBER ASSEMBLY | 7
1 | U400-17 | TAIL PIECE | 6
1 | U400-16 | AIR TUBE | 5
1 | U400-10 | AIR TUBE SLEEVE ASSEMBLY | 4
1 | U400-09 | REVERSE LOCK NUT | 3
1 | U400-06 | PISTON ASSEMBLY | 2
1 | U400-02 | BARREL ASSEMBLY | 1
DRAWN nguyen 7/14/2009
CHECKED
QA
MFG
APPROVED nguyen
REMOVE ALL SHARP CORNERS
UNLESS SPECIFIED OTHERWISE
FOOTAGE TOOLS INC.
TITLE
U400-A1 ASSEMBLY DWG
4" PIERCING TOOL
SIZE C
DWG NO U400-A1
REV -
SCALE NTS
SHEET 1 OF 1

NOTES

Footage

IMPORTANT NOTICE

Warranty registration now available online.

Please visit

www.footagetools.com

and click on

'warranty registration'.

54 Audia Crt. Unit #1
Vaughan, Ontario
Toll Free: 1-888-737-3668
www.footagetools.com

Footage

Model: _____

S/N: _____

Tool Registration Card