

# ALLIED MODELS 1000/2000/3000/4000

## HOLE-HOG® REVERSIBLE UNDERGROUND PIERCING TOOLS

### OPERATING AND MAINTENANCE INSTRUCTIONS

### PARTS LIST AND WARRANTY

P/N 100067

**1.0 GENERAL:** The Allied "Hole-Hog" pneumatic reversible underground piercing tools are designed to pierce continuous and blind horizontal, inclined and vertical holes in compressible subsoils. Such holes are used for trenchless installation of underground utility lines, gas lines, water lines, sewers, etc., without the necessity of breaking or disturbing asphalt and concrete paving, landscaping such as lawns, shrubs, trees, and flowerbeds. Backfilling operations are eliminated and traffic is maintained. The tools may also be used to drive and withdraw rigid pipe from the ground with the use of optional attachments.

**THE STANDARD PROCEDURES THAT ARE EXPECTED AND/OR REQUIRED OF THOSE WORKING UNDERGROUND SHOULD OF COURSE BE FOLLOWED INCLUDING THE DETERMINATION AND LOCATION OF EXISTING UNDERGROUND SERVICE LINES, CABLES, CONDUIT AND THE LIKE.**

**2.0 DESCRIPTION:** The Allied Hole-Hog is a self-propelled pneumatic reversible piercing tool of percussion action. The body of the tool is the operating member which forms the hole. An internal ram (striker) performs reciprocating motion, delivering blows against the inner front face of the body. Under action of these blows, the body is driven through the ground.

A reversing mechanism allows for changing the direction of blows and thus the direction of the tool, allowing the tool to exit from the hole that it has made. Hole-Hog's simple reversing mechanism is actuated easily by several clockwise turns of the hose assembly:

- Model 1000 – 18 turns counter-clockwise
- Model 2000 – 14 turns counter-clockwise
- Model 3000 – 9 turns counter-clockwise
- Model 4000 – 10 turns counter-clockwise

The Hole-Hog consists of the following major parts and/or assemblies: (Refer to Illustrative Drawings.)

**2.1 BODY ASSEMBLY:** The body assembly consists of an Anvil and a Body. The body's tail end has an internal thread intended for fastening the slide valve assembly. The body's front section has an external conical surface. The anvil has an external conical surface which is pressed into a matching internal surface of the body forming an integral assembly.

**2.2 STRIKER:** Striker has two precision, externally ground bearing surfaces, one at the front and the other at the rear of the striker. These bearing surfaces guide and support the striker during its movement within the body assembly. The front bearing surface has machined flats to allow passage of compressed air. Ports are provided in the wall of the striker cylindrical surface to control the motion of the striker.

**2.3** The slide valve provides faultless starting of the unit in any position. It also controls forward and reverse directions of unit. This is achieved by turning the hose to a full stop clockwise for forward, counter-clockwise for reverse.

**2.4** The 3000 Hole-Hog has a stop ring fixed on the valve body with a lockscrew (see Assembly Instructions 14.6). 1000, 2000, 4000 Hole-Hogs bottom on the valve nut. No stop ring is required.

**3.0 SPECIFICATIONS:**

Dimensions & Capacities	MODEL 1000		MODEL 2000		MODEL 3000		MODEL 4000	
		Metric		Metric		Metric		Metric
Outer Diameter	2-3/4"	70MM	3-3/4"	95MM	5-1/8"	130MM	6	152MM
Overall Length	54"	137CM	59"	150CM	61"	155CM	67.7"	1720 M
Weight	58 lbs.	26Kg	110 lbs.	50Kg.	195 lbs.	84 Kg.	308 lbs.	140 Kg.
Working Air Pressure*	90 PSI	6.5Atu	90 PSI	6.5Atu	90 PSI	6.5Atu	90 PSI	6.5Atu
Air Consumption per Minute	60 CFM	1.7M <sup>3</sup>	90 CFM	2.5M <sup>3</sup>	140 CFM	4M <sup>3</sup>	290 CFM	8M <sup>3</sup>
Air Hose (Inside Diameter)	3/4"	20MM	1"	25MM	1"	25MM	1.5"	38MM
Percussion Rate Per Minute	380-400		380-400		380-400		380-400	
Single Percussion Energy	75 ft. lbs.	10KgM	150 ft. Lbs.	20KgM	250 ft. lbs.	35 KgM	400 ft. lbs.	55 KgM
Average Ground Piercing Speed**	Up to 4 ft. per minute (1.3 meters)				Up to 2 ft./min. (.6+ meters)		Up to 3 ft./min. (.9M/min.)	
Reversing Speed	Up to 5 ft. per minute (1.5 meters)				Up to 2.5 ft./min. (.75 meters)		Up to 4 ft./min. (1.25 M/min.)	
Maximum Working Pressure, All Models	95 PSI (6.86Atu)							

\*The longer the hole to be pierced, the higher the pressure required to compensate for line pressure drop. Allow 5 PSI (.4 Atu) difference for each 100 ft. (30 meters) of hose. Pressure above 95 PSIG (7 Atu) at the tool could decrease the life of the Hole-Hog.

\*\*Based on standard diameters. The rate, which depends upon soil conditions, will decrease when expanders are used for larger diameter holes.



STEEL & TRACTOR PRODUCTS, INC.  
5800 HARPER ROAD, SOLON, OHIO 44139  
(216) 248-2600 Cable ALTRAC Telex 980192

OPTIONS	Type Soil	Operating Depths*			
		1000	2000	3000	4000
Launching Stand (except 1000/4000)	Hard Glacial Gravel	18"	25"	36"	48"
	Sand – Dry	24"	33"	48"	60"
Pipe-Pusher (except 1000)	Sand – Moist	24"	33"	48"	60"
Expanders (except 1000)	Clay/Sand Mix	18"	25"	36"	48"
Extractors	Cultivated Soil	24"	33"	48"	60"
Lengtheners	Clay/Loam Mix	20"	28"	42"	60"

\*Hole-Hog operates best in soils that compact well. The minimum depth for operating the Hole-Hog varies with soil conditions and the length of the hole to be made. The chart above is meant as a guide only.

#### 4.0 OPERATION

- 4.1 **PREPARING FOR OPERATING:** The Hole-Hog as delivered by the manufacturer has been assembled, lubricated, factory tested, and placed in its shipping container. Remove the Hole-Hog from its container and inspect for possible damage. Pay particular attention to the hose. Check the end cap to ascertain its tightness. If loose, retorque as follows:

MODEL NO.	TORQUE MINIMUM		WRENCH	MODEL NO.	TORQUE MINIMUM		WRENCH
	FT./LBS.	KgM			FT./LBS.	KgM	
1000	275	38	2-3/8" (60 mm) open end 832017	3000	550	76	833017
2000	300	41		4000	550	76	834017

It is suggested that the air hose be connected to an air compressor of sufficient capacity and the Hole-Hog operated above ground momentarily.

#### SAFETY PRECAUTION

**DAILY, CHECK THE TIGHTNESS OF THE END CAP USING THE PROPER TOOL & TORQUE. AN END CAP THAT IS NOT TIGHT COULD BLOW OUT AND COULD CAUSE INJURY TO THE OPERATOR.**

- 4.2 **SUGGESTED OPERATIONAL PROCEDURES:** The following set of procedures should be followed when attempting to drive a hole with the Allied underground piercing tool.

1. Determine presence of obstructions such as: water lines, gas lines, sewers, and utility lines in the area to be penetrated.
2. Open entrance pit to depth, width, and length required to properly align piercing tool.
3. Open exit pit. Width and depth of exit pit should exceed entrance pit dimensions by 6 to 10 inches, (152MM to 254MM).
4. Note type of soil.
5. Level entrance pit to achieve ground cover required, preferably at least the minimum recommended critical depth for the soil type.
6. Determine length of hole to be penetrated and mark hose for that length. (This gives operator indication when the piercing tool should reach its terminal point, and would indicate if the tool had been deflected off course.)
7. Check slope of ground using level.
8. Set piercing tool in pit and align on target. If starting device is used, align on target and level. If starting device is not used, level piercing tool.
9. Connect hose to compressed air supply and blow out air hose.
10. Pour small amount of Type A automatic transmission fluid into air line and connect to piercing tool. Make certain that valve assembly is in proper position for forward penetration.
11. Reduce air pressure to approximately 60 PSI (4 Atm) and start piercing tool penetration into the ground. It is necessary to apply force in the direction of its motion. If optional starting device is used, a down pressure on the handle is all that is required. Stop after approximately 1/3 body length has penetrated, and recheck alignment on target and grade level using suitable spirit level.
12. Restart air supply to piercing tool. If tool fails to restart, simply kink the hose and release suddenly. Continually check alignment and grade level until the tool's body has fully penetrated.
13. Increase air pressure to 90 PSI (6.5 Atm) and complete hole penetration. **Never exceed 95 PSIG (7 Atm). Pressures above 95 PSIG (7 Atm) could decrease tool life.**

After the tool has reached the exit pit, proceed as follows:

14. Stop compressed air delivery by shutting off the compressor air valve.
15. Disconnect the hose and remove the hose from the hole.
16. Withdraw the tool from the pit.
17. **IF AT ANY TIME THE END CAP SHOULD LOOSEN UP, DO NOT RETIGHTEN IT. REMOVE END CAP, CLEAN THOROUGHLY (GIVE SPECIAL ATTENTION TO CLEANING THE THREADS OF END CAP AND BODY) AND GREASE THREADS AS STATED (IN MAINTENANCE SECTION), THEN REASSEMBLE.** If the piercing tool has met an unsurpassable obstacle or has deviated from the given direction more than permissible, the tool should be stopped and returned out of the hole. The tool may also be stopped and returned when a blind hole is required.

To reverse the tool, proceed as follows:

1. Stop compressed air delivery.
2. Disconnect the hose connector nearest the hole mouth.
3. Untwist the hose on its whole length and lay the hose connected to the tool along the hole axis.
4. Screw the slide valve mechanism to its extreme rear position by turning the hose counter-clockwise. When turning the hose in the hole, it is necessary to stretch it as it is being turned.
5. Pretwist the hose 3 to 4 turns so that it tends to turn the distributor counter-clockwise.
6. Connect the hose connector and open the air supply valve. If the tool fails to start, kink the hose and release suddenly.
7. When the tool is out of the hole, stop the compressed air delivery, disconnect the hose, and put the distributor valve assembly into the direct run position.

**5.0 TO PREVENT DAMAGE** to internal components, do not use the Hole-Hog's air hose as a handle, nor should you pull on the air hose.

**5.1 CAUTION: IF EITHER OR BOTH OF THE ITEMS LISTED BELOW OCCUR, ALLIED IS RELIEVED OF ALL WARRANTY RESPONSIBILITIES ON THAT HOLE-HOG:**

1. Heat applied by a torch or by any other method to any part or parts of the Allied Hole-Hog. This includes the body when attempting to remove the end cap. Applying heat may destroy the main body, valve body, striker and other parts beyond use.
2. USING A PIPE WRENCH ON THE BODY OF AN ALLIED HOLE-HOG. When a pipe wrench is used on the body while attempting to remove the end cap, it will usually hinder—not help—in the removing of the end cap.

**6.0 LUBRICATION:** Before using the Hole-Hog it should be lubricated by pouring 2 oz. (60 grams) (1/2 of a small paper cup) of motor oil or transmission fluid into the air hose. This should be repeated at approx. 100' (30M) intervals.

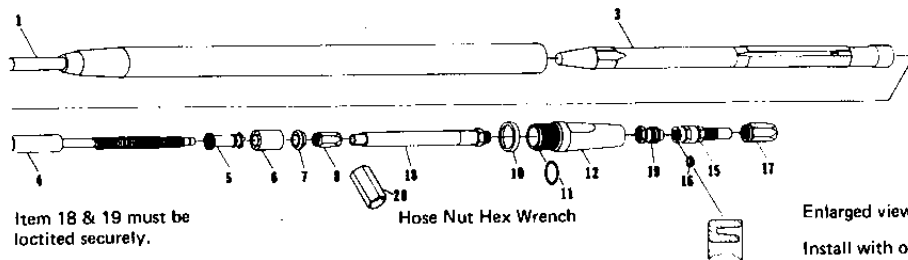
When operating in extremely low temperatures and/or high humidity, use lubricant containing molybdenum disulphide (MoS<sub>2</sub>). NOTE: If icing or freezing takes place, we suggest pouring 2 oz. (60 grams) of alcohol or dry gas into the air line, as close to the tool as possible, followed immediately by lubricant.

The slide valve thread should be periodically lubricated with Lubriko M2 or equivalent.

**7.0 MAINTENANCE:** The Allied tool is nearly a maintenance-free tool. However, at the end of each 100 operational hours (other than if operated in very sloppy soil; then, at the end of that working day), it is recommended that the tool be dismantled and all surfaces be checked for evidence of abrasion, and the exhaust ports in the Shock Absorber be inspected for obstructions.

**8.0 POSSIBLE TROUBLES AND REMEDIES**

TROUBLE	PROBABLE CAUSE	CORRECTION
1. Won't Run or Start	<ol style="list-style-type: none"> <li>a. Restriction in inlet hose.</li> <li>b. In cold weather, condensation may have frozen inside unit.</li> <li>c. Bent valve stem</li> <li>d. Valve not all the way in (forward) or out (for reverse)</li> <li>e. Hose locknut pin broken or bent (1000 only)</li> <li>f. Foreign material in unit through valve seal, or air line</li> <li>g. Striker broken</li> <li>h. Rusting of friction surfaces</li> </ol>	<ol style="list-style-type: none"> <li>a. Disconnect and blow out hose (Don't lose rubber seal.)</li> <li>b. Pour small amount of anti-freeze or de-icing fluid into hose</li> <li>c. Replace valve stem</li> <li>d. Be sure valve is against stop</li> <li>e. Replace hose locknut assembly</li> <li>f. Disassemble unit and clean</li> <li>g. Replace striker</li> <li>h. Disassemble, clean, and polish</li> </ol>
2. Runs Erratically (FORWARD) or stops in ground	<ol style="list-style-type: none"> <li>a. Hose locknut pin broken or bent (1000 only)</li> <li>b. Bent valve stem or damaged threads</li> <li>c. Hose restricted</li> <li>d. Immovable obstacle</li> <li>e. Valve not all the way in (Check for clogged or dirty threads causing binding.)</li> <li>f. Excessive clearance body to striker</li> <li>g. Excessive clearance striker to valve sleeve</li> </ol>	<ol style="list-style-type: none"> <li>a. Replace hose locknut assembly</li> <li>b. Replace valve stem</li> <li>c. Disconnect and blow out hose (Don't lose rubber seal.)</li> <li>d. Reverse</li> <li>e. Clean threads</li> <li>f. Replace worn parts</li> <li>g. Replace worn parts</li> </ol>
3. Runs Erratically (REVERSE)	<ol style="list-style-type: none"> <li>a. Valve not all the way out</li> <li>b. Damaged threads on valve</li> <li>c. Air pressure too high (recommended: 90 psi)</li> <li>d. Improper lubrication</li> <li>e. Bent valve stem</li> <li>f. Worn or deteriorated shock absorber</li> </ol>	<ol style="list-style-type: none"> <li>a. Check for correct number of turns</li> <li>b. Replace valve stem</li> <li>c. Check air pressure and flow</li> <li>d. See recommended lube procedure</li> <li>e. Replace valve stem</li> <li>f. Replace shock absorber</li> </ol>
4. Low on Power or Slow Rate of Penetration	<ol style="list-style-type: none"> <li>a. Restriction in air hose</li> <li>b. Air pressure too high (90 psi recommended)</li> <li>c. Air pressure too low</li> <li>d. Shock absorber worn or deteriorated</li> <li>e. Oscillation due to ground condition (i.e., water and clay)</li> <li>f. Very hard ground conditions</li> </ol>	<ol style="list-style-type: none"> <li>a. Disconnect and blow out hose (Don't lose rubber seal.)</li> <li>b. Check air pressure</li> <li>c. Check air pressure</li> <li>d. Replace shock absorber</li> <li>e. Prevent water from entering hole if possible.</li> <li>f. Examine application</li> </ol>



### HOLE-HOG MODEL 1000 – PART NO. 831000

Item No.	Qty.	Part No.	Description	Weight		Item No.	Qty.	Part No.	Description	Weight	
				Lbs.	Kg					Lbs.	Kg
1	1	831020	Anvil & Body Assy.	37.5	17.	15	1	831018	Quick Disconnect Coupling Assembly includes:	.6	.3
3	1	831001	Striker	15.3	7.						
4	1	831024	Valve Assembly	1.5	.7	16	1	831030	Gasket (Pt. No. for replacement only)		
5	1	831006	Valve Body Nut	.25	.11						
6	1	831012	Shock Absorber	.12	.05	17	1	831029	Hose Fitting Socket	.6	.3
7	1	831013	Valve Seal	.05	.02						
8	1	831023	Hose Lock Nut Assy.	.3	.14	18	1	831048	Hose Assembly	1.0	.5
10	1	831008	Lock Washer			19	1	831042	Quick Disconnect	.4	.2
11	1	831011	O-Ring	.2	.09	20	1	831049	Hose Nut Hex Wrench	.5	.2
12	1	831007	End Cap	3.5	1.6						

#### SAFETY PRECAUTION:

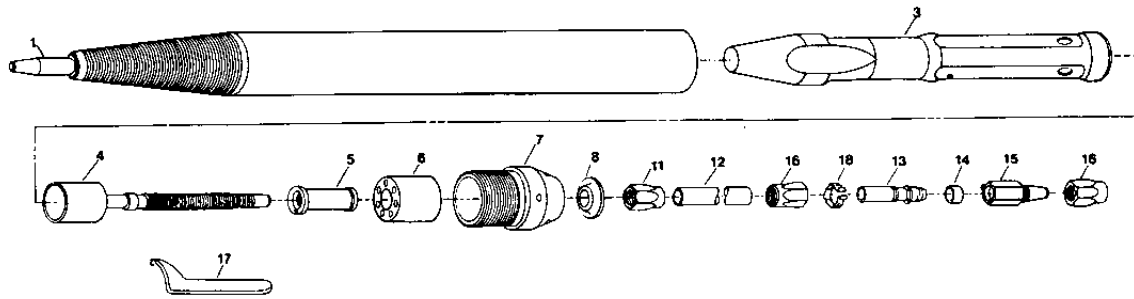
**DAILY, CAREFULLY CHECK THE TIGHTNESS OF THE END CAP USING THE PROPER TOOL & TORQUE. AN END CAP THAT IS NOT TIGHT COULD BLOW OUT AND COULD CAUSE INJURY TO THE OPERATOR.**

#### 9.0 DISASSEMBLE

- Using a 2-3/8" open end wrench and a hammer, strike the wrench handle several sharp raps until end cap is loosened. It may be necessary to hold the tool body with strap wrench or similar holding device.
- Remove the striker (3) from the body by tilting the body.
- DO NOT disassemble the valve and shock absorber assembly unless it is necessary to replace internal parts of the assembly.
- If necessary to disassemble further, proceed according to the following instructions:
  - Remove quick disconnect (19), clamp flats of valve stem assembly (4) in a vise. Using special hex socket wrench (20) 831049, remove hose assembly (18) and nut (8) from valve stem assembly (4).
  - Remove valve stem assembly (4) from end cap and shock absorber assembly. Press shock absorber (6) and valve nut (5) out of end cap (12) using suitable press tools.
  - To remove or replace shock absorbers (6) or valve seal (7) use sharp instrument to cut through rubber and remove.

#### 10.0 REASSEMBLE

- First make conical shaped adaptor (metal or wood) to insert into end of valve body nut (5) which will allow easier installation of shock absorber (6) over flanges of valve body nut.
- Coat O.D. of valve body nut (5) with glue (Gallahers Super "100" Adhesive or equivalent). Press valve body nut (5) onto shock absorber (6) using suitable pressing tools. Then press valve seal (7) onto valve nut.
- Coat I.D. of end cap (12) with glue. Apply a very small amount of grease on leading edge of shock absorber (6), 1/8" or less, for easier assembly. Press shock absorber (6), valve body nut (5) and valve seal (7) into end cap (12) until bottomed. Make sure valve seal is to the rear of end cap, and DOES NOT hang up on end cap lip. Distance from edge of end cap to shock absorber should be 3/16" (5MM). Wipe off excessive glue.
- Install valve assembly (4) into valve body nut (5).
- Insert hose locknut assembly (8) onto skived end of hose (18).
- Clamp flats of valve assembly (4) into vise. Grease valve stem end – threaded area. Using hose nut hex wrench (20), screw hose assembly on until bottomed against valve assembly (4) shoulder, making sure end can turn exactly 18 times from flats of valve assembly (4) to hose lock nut assembly (8). Look through valve stem to ascertain whether any rubber has extended into air passage. If so, remove as loose rubber parts may interfere with the operation of the unit.
- Install quick disconnect (19) onto hose assembly (18). Make sure items 18 and 19 are loctited securely.
- Install O-Ring (11) and lock washer (10) on end cap.
- Thoroughly clean I.D. of body and anvil assembly (1). Pay special attention to threads in body.
- Clean striker (3), then slide into body. Coat clean parts with light oil.
- Coat threads of body and end cap assemblies with Never Seez (or equivalent) lubricant.
- Install end cap assembly into body, by using a 2-3/8" open end wrench. Tighten end cap approximately 300 Ft. Lbs. (38 KgM). Rap handle of wrench if necessary to assure end cap is tight.
- After assembly, test run in forward and reverse for 5 to 10 minutes to ascertain correct assembly.
- Before using the Hole-Hog it should be lubricated by pouring 2 oz. (60 grams) (1/2 of a small paper cup) of motor oil or transmission fluid into the air hose. This should be repeated at approx. 100' (30M) intervals.



### HOLE-HOG MODEL 2000 – PART NO. 832000

Item No.	Qty.	Part No.	Description	Weight		Item No.	Qty.	Part No.	Description	Weight	
				Lbs.	Kg					Lbs.	Kg
1	1	832020	Anvil & Body Assy.	61.5	27.8	11	1	832046	Hose Nut	.8	0.36
3	1	832001	Striker	41.5	18.8	12	30"	832015	Air Hose	2.5	1.13
4	1	832045	Valve Body	3.0	1.36	13	1	832005	Connector	.8	0.36
5	1	832006	Valve Body Nut	1.5	0.7	14	1	832011	Rubber Bushing		
6	1	832057	Rubber Shock Absorber	.6	0.27	15	1	832008	Hose Disconnect	1.2	0.54
						16	2	832009	Hose Nut	.8	0.36
7	1	832056	End Cap	3.3	1.49	17	1	832017	Spanner Wrench	.5	0.22
8	1	832013	Rubber Valve Seal	.1	0.01	18	1	832042	Spring		

#### SAFETY PRECAUTION:

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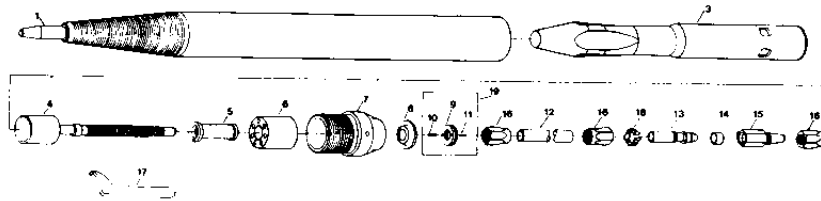
#### 11.0 DISASSEMBLE

- Using the spanner wrench provided, turn the slide valve assembly out of the body. Several sharp raps with a hammer on the wrench may be necessary to loosen the end cap.
- Remove the striker from the body, hooking it by the exhaust ports with a wire, or by tilting the body slightly.
- DO NOT disassemble the slide valve assembly unless it is necessary to replace the shock absorber.
- After disassembly of the tool, rinse the parts and slide valve assembly in kerosene.
- Wipe the rinsed parts and slide valve assembly with clean cloth and coat parts with a film of lubricant. (See Lubrication.)

**IMPORTANT: WHEN REASSEMBLING THE END CAP, A GOOD ANTI-SEIZE THREAD LUBRICANT (NEVER-SEEZ OR EQUIVALENT) SHOULD BE USED ON THE THREADS OF THE END CAP AND THE THREADS OF THE BODY. KEEP THE TAPER FREE OF DIRT OR LUBRICANT.**

#### 12.0 REASSEMBLE

- First make conical shaped adaptor (metal or wood) to insert into end of valve body nut (5) which will allow easier installation of shock absorber (6) over flanges of valve body nut (5).
- Coat O.D. of valve body nut (5) with glue (Gallahers Super "100" Adhesive or equivalent). Press valve body nut (5) into shock absorber (6), so that one end of shock absorber (6) is against the large flange of valve body nut (5).
- Coat I.D. of end cap (7) with glue. Apply a very small amount of grease on the leading edge of the shock absorber (5) 1/8" or less for easier assembly. Press shock absorber (6) and valve body nut (5) into end cap (7) until bottomed and distance from edge of end cap to shock absorber is 1/4" (64MM). Wipe off excessive glue.
- Using conical shaped adaptor press valve seal (8) onto valve body nut (4). Make sure rubber valve seal is properly secured.
- Install valve (4) into valve body nut (5).
- Turn end cap until valve body nut (5) bottoms on flats of valve (4).
- Assemble valve nut (11) and hose nut (16) on air hose (12). (Both ends of hose are the same.) Insert connector (14) on one end of hose. Grease connector (14) for easier installation.
- Securely hold valve nut (11) (end without connector) into vise. Grease valve (4) (threaded end) and insert into hose nut. Use wrench on flats of valve (4) until valve nut (11) bottoms with valve end cap (7). End cap should turn 14 times from stop on flats to stop ring.
- Thoroughly clean I.D. of body and anvil assembly (1). (Pay special attention to threads in body.)
- Clean striker (3) and slide into body (1). (Coat clean parts with light oil.)
- Coat threads of body and end cap assembly with Never-Seez (or equivalent) lubricant.
- Install end cap assembly into body, by using spanner wrench (17) (provided). Tighten end cap not less than 300 Ft. Lbs. (40 KgM). Rap handle of wrench if necessary to assure end cap is tight.
- After assembly, test run in forward and reverse for 5 to 10 minutes on ground to ascertain correct assembly.
- Before using the Hole-Hog it should be lubricated by pouring 2 oz. (60 grams) (1/2 of a small paper cup) of motor oil or transmission fluid into the air hose. This should be repeated at approx. 100' (30M) intervals.



### HOLE-HOG MODEL 3000 – PART NO. 833000

Item No.	Qty.	Part No.	Description	Weight		Item No.	Qty.	Part No.	Description	Weight	
				Lbs.	Kg					Lbs.	Kg
1	1	833020	Anvil & Body Assy.	91.5	41.5	12	30"	833015	Air Hose	2.5	1.13
3	1	833001	Striker	75.0	34.0	13	1	832005	Connector	.8	0.36
4	1	833004	Valve Body	5.5	2.5	14	1	832011	Rubber Bushing		
5	1	833006	Valve Body Nut	2.0	0.9	15	1	832008	Hose Disconnect	1.2	0.54
6	1	833012	Rubber Shock Absorber	1.5	0.7	16	3	832009	Hose Nut	.8	0.36
7	1	833007	End Cap	10.2	4.66	17	1	833017	Spanner Wrench	1.5	0.68
8	1	833013	Rubber Valve Seal	.1	0.05	18	1	832042	Spring		
19	1	833010	Stop Ring Assy. incl.:	.37	0.17						
9	(1)	833011	Stop Ring	.35	0.16						
10	(1)	833019	Pin	.01	0.01						
11	(1)	833018	Lockscrew	.01	0.01						

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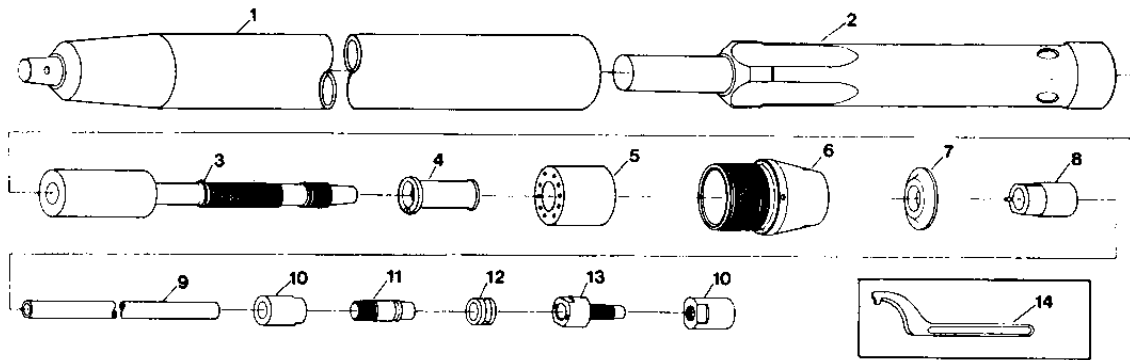
#### 13.0 DISASSEMBLE

- Using the spanner wrench provided, turn the slide valve assembly out of the body. Several sharp raps with a hammer on the wrench may be necessary to loosen the end cap.
- Remove the striker from the body, hooking it by the exhaust ports with a wire, or by tilting the body slightly.
- DO NOT disassemble the slide valve assembly unless it is necessary to replace the shock absorber.
- After disassembly of the tool, rinse the parts and slide valve assembly in kerosene.
- Wipe the rinsed parts and slide valve assembly with a clean cloth and coat parts with a film of lubricant. (See Lubrication.)

**IMPORTANT: WHEN REASSEMBLING THE END CAP, A GOOD ANTI-SEIZE THREAD LUBRICANT (NEVER-SEEZ OR EQUIVALENT) SHOULD BE USED ON THE THREADS OF THE END CAP AND THE THREADS OF THE BODY. KEEP THE TAPER FREE OF DIRT OR LUBRICANT.**

#### 14.0 REASSEMBLE

- First make conical shaped adaptor (metal or wood) to insert into end of valve body nut (5) which will allow easier installation of shock absorber (6) over flanges of valve body nut.
- Coat O.D. of valve body nut (5) with glue (Gallahers Super 100 or equivalent). Press valve body nut (5) into shock absorber (6) so that end of shock absorber (6) is against the large flange of valve body nut (5).
- Coat I.D. of end cap (7) with glue. Apply a very small amount of grease to leading edge of shock absorber (6) (1/8" or less) for easier assembly. Press shock absorber (6) and valve body nut (5) into end cap (7) until bottomed and distance from edge of end cap to shock absorber is 1/4" (64MM). Wipe off excess glue.
- Using conical shaped tool, press valve seal (8) onto valve body nut (5). Make sure valve seal is properly seated.
- Install valve (4) into valve body nut (5).
- Turn end cap until valve body nut (5) bottoms on flats of valve (4). Install stop ring (9) on first thread of valve body with dowel pin (10) facing in. Tighten lockscrew (12) and turn end cap counterclockwise until it stops. Check distance from end of valve body to face of end cap (measurement should be 10-7/8" – 250MM). Adjust stop ring as necessary until this dimension is achieved. Firmly tighten lockscrew (11) (using Loctite or equivalent).
- NOTE: If dowel pin (10) has to be replaced in stop ring (9) it should be pressed in from side opposite countersunk hole till it protrudes 1/4" (64MM).
- Securely hold valve nut (16) (end without connector) into vise. Grease valve (4) (threaded end) and insert into valve nut (16). Use wrench on flats of valve (4) until valve nut (16) bottoms with stop ring (9). End cap should turn 9 times from stop on flats to stop ring.
- Thoroughly clean I.D. of body and anvil assembly (1). (Pay special attention to threads in body.)
- Clean striker (3) and slide into body (1). (Coat clean parts with light oil.)
- Coat threads on body and end cap assembly with Never-Seez (or equivalent) lubricant.
- Install end cap assembly into body, by using spanner wrench (17) (provided). Tighten end cap not less than 550 Ft. Lbs. (75 KgM). Rap handle of wrench if necessary to assure end cap is tight. It may be necessary to hold the body (1) with strap wrench or other holding devices.
- After assembly, test run in forward and reverse for 5 to 10 minutes on ground to ascertain correct assembly.
- Before using the Hole-Hog it should be lubricated by pouring 2 oz. (60 grams) (1/2 of a small paper cup) of motor oil or transmission fluid into the air hose. This should be repeated at approx. 100' (30M) intervals.



### HOLE-HOG MODEL 4000 – PART NO. 834000

Item No.	Qty.	Part No.	Description	Weight		Item No.	Qty.	Part No.	Description	Weight	
				Lbs.	Kg					Lbs.	Kg
1	1	834020	Anvil & Body Assy.	122.5	55.68	8	1	834026	Valve Nut Assy.	.25	.11
2	1	834021	Striker Assembly	135.0	61.36		1	833019	Pin (Included)		
3	1	834022	Valve Assembly	9.25	4.2	9	1	834041	Air Hose	4.25	1.93
4	1	834006	Valve Body Nut	1.85	.84	10	2	834009	Hose Nut	.25	.11
5	1	834057	Shock Absorber	.70	.32	11	1	834008	Connector	.30	.13
6	1	834007	End Cap	15.0	6.32	12	1	834011	Rubber Bushing	.06	.027
7	1	834013	Valve Seal	.06	.027	13	1	834046	Hose Disconnect	.50	.22
						14	1	834017	Spanner Wrench	1.0	.45

#### SAFETY PRECAUTION:

**DAILY, CAREFULLY CHECK THE TIGHTNESS OF THE END CAP USING THE PROPER TOOL & TORQUE. AN END CAP THAT IS NOT TIGHT COULD BLOW OUT AND COULD CAUSE INJURY TO THE OPERATOR.**

#### 15.0 DISASSEMBLE

- Using the spanner wrench provided, turn the slide valve assembly out of the body. Several sharp raps with a hammer on the wrench may be necessary to loosen the end cap.
- Remove the striker from the body, hooking it by the exhaust ports with a wire, or by tilting the body slightly.
- DO NOT disassemble the slide valve assembly unless it is necessary to replace the shock absorber.
- After disassembly of the tool, rinse the parts and slide valve assembly in kerosene.
- Wipe the rinsed parts and slide valve assembly with a clean cloth and coat parts with a film of lubricant. (See Lubrication.)

**IMPORTANT:WHEN REASSEMBLING THE END CAP, A GOOD ANTI-SEIZE THREAD LUBRICANT (NEVER-SEEZ OR EQUIVALENT) SHOULD BE USED ON THE THREADS OF THE END CAP AND THE THREADS OF THE BODY. KEEP THE TAPER FREE OF DIRT OR LUBRICANT.**

#### 16.0 REASSEMBLE

- First make conical shaped adaptor (metal or wood) to insert into end of valve body nut (4) which will allow easier installation of shock absorber (5) over flanges of valve body nut.
- Coat O.D. of valve body nut (4) with glue (Gallahers Super 100 or equivalent). Press valve body nut into shock absorber (5) so that end of shock absorber (5) is against the large flange of valve body nut (4).
- Coat I.D. of end cap with glue. Apply a very small amount of grease to the leading edge of shock absorber (1/8" or less) for easier assembly. Press shock absorber (5) into end cap (6) until it bottoms and distance from edge of end cap (6) to shock absorber is 1/2" (128MM).
- Using conical shaped tool, press valve seal (7) onto valve body nut (4). Make sure valve seal is properly seated.
- Install valve (3) into valve body nut (4).
- Turn end cap (6) until valve body nut (8) bottoms on flat of valve body (3).
- Assemble valve nut (8) and hose nut (10) on hose (9). Insert connector (11) into hose nut (10). Grease to ease installation.
- Securely hold valve nut (8) in vise. Grease threaded end of valve (3) and insert into valve nut (8). Use wrench on flats of valve (3) until valve (3) bottoms in valve nut (8).
- Thoroughly clean I.D. of body and anvil assembly (1). (Pay special attention to threads in body.)
- Clean striker (2) and slide into body (1). (Coat clean parts with light oil.)
- Coat threads on body and end cap assembly with Never-Seez (or equivalent) lubricant.
- Install end cap assembly into body, by using spanner wrench (14) (provided). Tighten end cap not less than 550 Ft. Lbs. (75 KgM). Rap handle of wrench if necessary to assure end cap is tight. It may be necessary to hold the body (1) with strap wrench or other holding devices.
- After assembly, test run in forward and reverse for 5 to 10 minutes on ground to ascertain correct assembly.
- Before using the Hole-Hog it should be lubricated by pouring 2 oz. (60 grams) (1/2 of a small paper cup) of motor oil or transmission fluid into the air hose. This should be repeated at approx. 100' (30M) intervals.

## HOLE-HOG PRODUCT WARRANTY

### BASE WARRANTY

**ALLIED** warrants its products to be well-made, durable and of good material and if within one hundred eighty (180) days from the date of delivery of such new product to the actual and original purchaser or renter, but no more than twelve (12) months from the date of shipment from **ALLIED'S** factory, any part except the rubber shock absorber, rubber valve seal, hose assemblies, rubber gasket/bushing or Hole-Hog accessories, such as launchers, extractors, expanders, pipe pushers, lengtheners which are covered by the **LIMITED WARRANTY**, shall fail by reason of defective material or poor workmanship, **ALLIED** will at its option, repair or furnish such part free of charge under the conditions listed in **WARRANTY LIMITATIONS**. **ALLIED'S WARRANTY LABOR ALLOWANCE POLICY IS WITH THE DEALER**. All inquiries on the **WARRANTY LABOR ALLOWANCE** should be directed to the Allied Authorized Sales and Service Dealer.

### LIMITED WARRANTY

The rubber shock absorber, rubber valve seal, hose assemblies, rubber gasket/bushing or Hole-Hog accessories, such as launchers, extractors, expanders, pipe pushers, lengtheners are covered by the **LIMITED WARRANTY** for a period of thirty (30) days. **ALLIED** reserves the full right to determine if and to what extent warranty adjustments may be made for damage or breakage of these items. **ALLIED IS NOT RESPONSIBLE FOR LABOR OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL ITEM REQUIRED TO MAKE THE REPAIR.**

### EXTENDED WARRANTY

The **EXTENDED WARRANTY** covers the failure of the main anvil/body assembly and the striker, which results under normal use and service, from defects in workmanship or material in the part. The coverage begins with the expiration of the **BASE WARRANTY** and ends one (1) year or five hundred (500) hours, whichever comes first, from the date of delivery. New or **ALLIED** approved rebuilt (main anvil/body assemblies or strikers) may be used in making the repair. **ALLIED IS NOT RESPONSIBLE FOR LABOR OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL ITEM REQUIRED TO MAKE THE REPAIR.** **ALLIED** is not responsible for the replacement of parts damaged due to the main anvil/body assembly or striker failure or repair.

### WARRANTY LIMITATIONS

For warrantable failures, **ALLIED** will, at its option, repair or furnish such part free of charge, F.O.B. factory where manufactured (or other place designated by **ALLIED**); provided, however, that the defective part or sufficient evidence of such defect in the part be delivered to its factory in the United States where manufactured (or other place designated by **ALLIED**), transportation prepaid. Such parts or such evidence must clearly show that the failure was due to poor workmanship of defective material and not due to the negligence or improper use by such purchaser, renter or operator.

No claim under this warranty will be accepted by **ALLIED** unless the proper filled out claim form is submitted and received by **ALLIED** within thirty (30) days of the date of discovery of the defect or within fifteen (15) days of the date of repair.

Breakage or damage resulting from installation or operation or use not in accordance with **ALLIED'S** published installation and operating instructions are not covered by any warranty.

Operation or use beyond published capacities, substitution or interchanging of parts or any alterations not approved by **ALLIED** shall void this warranty.

**ALLIED'S** responsibility and warranty applies only when this equipment is operated and used in accordance with (1) its published instructions and (2) pursuant to the terms, conditions and restrictions of any local, state, dominion or federal laws, ordinances and regulations. The purchaser, user or renter assumes the responsibility to familiarize himself with such published capacities, instructions, terms and conditions as set forth above. **ALLIED'S** warranty is voided if the serial number is removed or altered in any way.

The original purchaser, user or renter is responsible for "downtime" expenses and all business costs and losses resulting from a warrantable failure.

### DISCLAIMER

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No person is authorized to give any other warranties or to assume any other liability on the Company's behalf unless made or assumed in writing by the Company, and no person is authorized to give any warranties or to assume any liabilities on the seller's behalf unless made or assumed in writing by the seller.

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