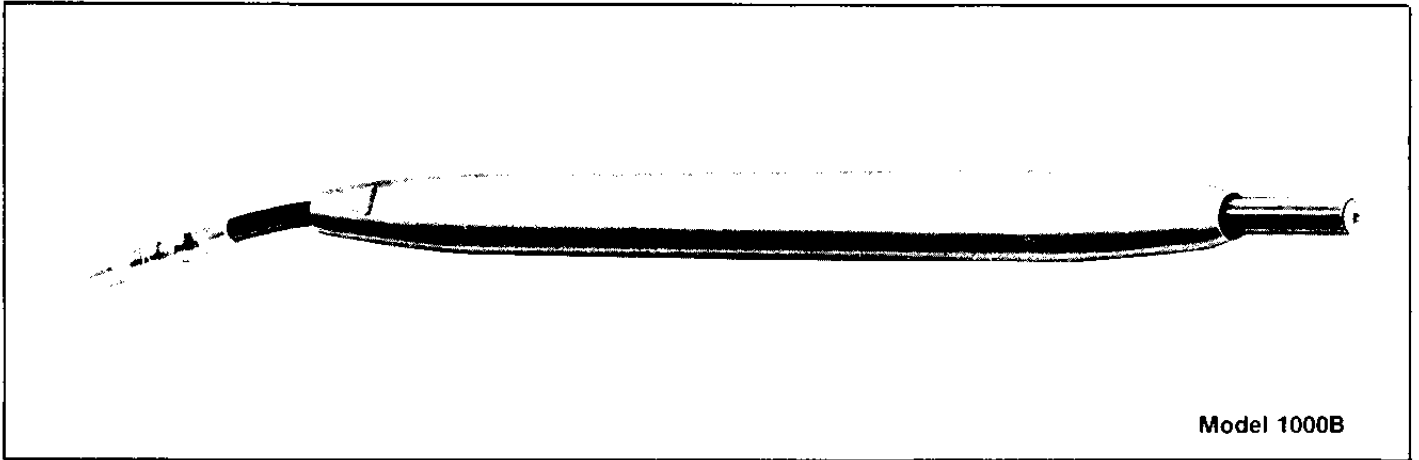


ALLIED MODEL 1000B HOLE-HOG®

Quick Reversing Underground Piercing Tool OPERATING AND MAINTENANCE INSTRUCTIONS PARTS LIST AND WARRANTY

P/N 100112



Model 1000B

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 STANDARD PROCEDURES THAT ARE EXPECTED AND/OR REQUIRED OF THOSE WORKING UNDERGROUND SHOULD 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 shutting off the air and pulling on the air hose. While maintaining tension on hose, turn the air on. Turning off the air will reposition the tool in the forward position.

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

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.

3.0 SPECIFICATIONS:

	U.S./Metric
Outside Diameter	3 in./76 mm.
Overall Length	53¼ in./135 cm.
Weight	72 lbs./33 kg.
Working Air Pressure	90 p.s.i./6.3 kg./cm. ²
Air Consumption Per Minute	40 c.f.m./1.1 c.m.m.
Air Hose (Inside Diameter)	¾ in./20 mm.
Percussion Rate Per Minute	400
Single Percussion Energy	90 ft. lbs./102 n.m.
Average Ground Piercing Speed**	Up to 4 ft./min./1.3 m.
Reversing Speed	Up to 5 ft./min./1.5 m.
Maximum Working Pressure For All Models	95 p.s.i./6.7 kg./cm. ²

*The longer the hole to be pierced, the higher the pressure required to compensate for line pressure drop. Allow 5 p.s.i./0.4 kg./cm.² difference for each 100 ft./30 m. of hose. Pressure above 95 p.s.i.g./6.7 kg./cm.² 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.

OPTIONS: 3.75 in./95 mm. diameter Expander, Air Supply Hose Assemblies.

OPERATING DEPTHS*:

Hard Glacial Clay	18 in.	Clay/Sand Mix	18 in.
Wet or Dry Sand and Cultivated Soil	24 in.	Clay/Loam Mix	20 in.

*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.

Specifications subject to change without notice

4.0 OPERATION

4.1 PREPARING FOR OPERATION: 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:

TORQUE MINIMUM: 275 FT./LBS., 375 N.M. **WRENCH:** 2¾ IN./70 MM. OPEN END

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 AND 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 in. to 10 in./152 mm. to 254 mm.
4. Note type of soil.
5. Leave 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 with level.
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.
11. Reduce air pressure to approximately 60 p.s.i./4 kg./cm.² and start piercing tool penetration into the ground. It is necessary to apply force in the direction of its motion. 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 p.s.i./6.3 kg./cm² and complete hole penetration. **Never exceed 95 p.s.i.g./6.7 kg./cm². Pressures above 95 p.s.i.g./6.7 kg./cm² could decrease tool life.**

After 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.

4.2 TO REVERSE THE TOOL PROCEED AS FOLLOWS:

1. Stop compressed air delivery by shutting off the valve at the compressor or kinking the hose assembly.

2. With the air supply off, pull on the hose assembly until the valve stem is retracted approximately 3/4". While maintaining the pulling force, turn on the air supply. The tool is now in the reverse position.

3. When the tool is out of the hole, shut off the air supply. The tool automatically goes into the forward position.

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.

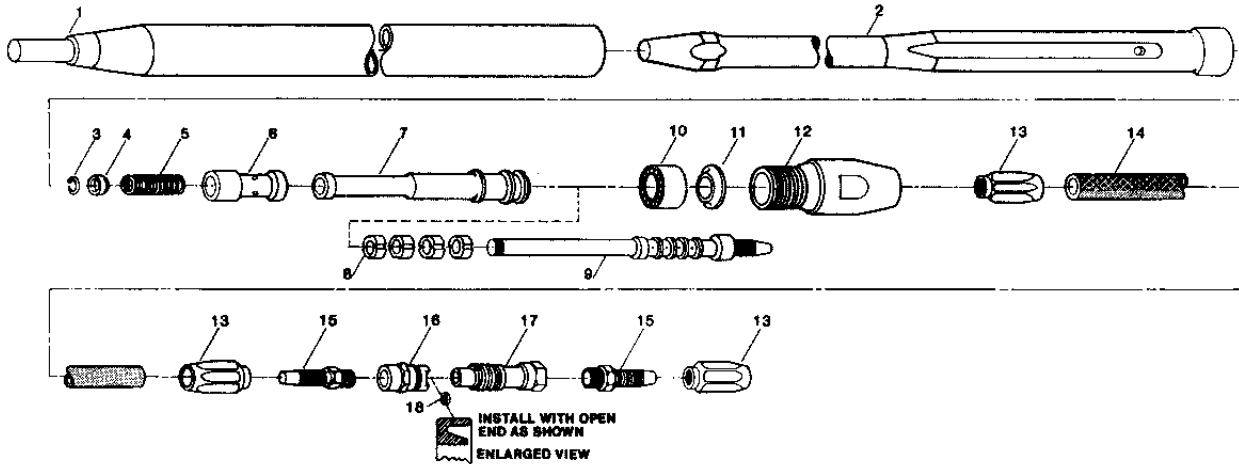
5.1 CAUTION: IF EITHER OR BOTH OF THE ITEMS LISTED BELOW OCCUR, ALLIED IS RELIEVED OF ALL WARRANTY RESPONSIBILITIES ON THAT HOLE-HOG:

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 g. (1/2 of a small paper cup) of motor oil or transmission fluid into the air hose. This should be repeated at approximately 100 ft./30 m. intervals.

When operating in extremely low temperatures and/or high humidity, use lubricant containing molybdenum disulphide (MoS²). NOTE: If icing or freezing takes place, we suggest pouring 2 oz./60 g. of alcohol or dry gas into the air line, as close to the tool as possible, followed immediately by lubricant.



HOLE-HOG MODEL 1000B — PART NUMBER 831700

Item No.	Qty.	Part No.	Description	Weight		Item No.	Qty.	Part No.	Description	Weight	
				Lbs.	Kg.					Lbs.	Kg.
1	1	831720	Anvil & Body Assembly	46.0	20.9	10	1	831712	Shock Absorber	.1	0.04
2	1	831701	Striker	16.0	7.3	11	1	831713	Valve Seal	.05	0.01
3	1	831709	Retainer Ring	.01	0.04	12	1	831707	End Cap	3.63	1.65
4	1	831721	Spring Retainer	.04	0.02	13	3	831029	Hose Socket Fitting	.3	0.14
5	1	831722	Spring	.5	0.22	14	1	831747	Hose Whip Section	.5	0.23
6	1	831714	Valve Spool	.5	0.22	15	2	831028	Hose Nipple Fitting	.3	0.14
7	1	831706	Valve Sleeve	1.33	.6	16	1	831027	QD Female Coupling	.4	0.18
8	4	831715	Grip	.01	0.004	17	1	831042	QD Male Coupling	.8	0.36
9	1	831704	Valve Stem	1.2	0.55	18	1	831030	Gasket (For Replacement Only)	.05	0.01

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: WILL NOT RUN OR START	
PROBABLE CAUSE	CORRECTION
<ul style="list-style-type: none"> a. Restriction in inlet hose. b. In cold weather, condensation may have frozen inside unit. c. Bent valve stem. d. Foreign material in unit through valve seal, or air line. e. Striker broken. f. Rusting of friction surfaces. 	<ul style="list-style-type: none"> a. Disconnect and blow out hose b. Pour small amount of anti-freeze or de-icing fluid into hose. c. Replace valve stem. d. Disassemble unit and clean. e. Replace striker. f. Disassemble, clean, and polish.
TROUBLE: RUNS ERRATICALLY (FORWARD) OR STOPS IN GROUND	
PROBABLE CAUSE	CORRECTION
<ul style="list-style-type: none"> a. Bent valve stem. b. Hose restricted. c. Immovable obstacle. d. Excessive clearance body to striker. e. Excessive clearance striker to valve sleeve. 	<ul style="list-style-type: none"> a. Replace valve stem. b. Disconnect and blow out hose. c. Reverse. d. Replace worn parts. e. Replace worn parts.
TROUBLE: RUNS ERRATICALLY (REVERSE)	
PROBABLE CAUSE	CORRECTION
<ul style="list-style-type: none"> a. Air pressure too high. (Recommended: 90 p.s.i.) b. Improper lubrication. c. Bent valve stem. d. Worn or deteriorated shock absorber. 	<ul style="list-style-type: none"> a. Check air pressure and flow. b. See recommended lube procedure. c. Replace valve stem. d. Replace shock absorber.
TROUBLE: LOW ON POWER OR SLOW RATE OF PENETRATION	
PROBABLE CAUSE	CORRECTION
<ul style="list-style-type: none"> a. Restriction in air hose. b. Air pressure too high (90 p.s.i. recommended). c. Air pressure too low. d. Shock absorber worn or deteriorated. e. Oscillation due to ground condition (i.e., water and clay). f. Very hard ground condition. 	<ul style="list-style-type: none"> a. Disconnect and blow out hose. b. Check air pressure. c. Check air pressure. d. Reptace shock absorber. e. Prevent water from entering hole if possible. f. Examine application.

9.0 DISASSEMBLE

1. Using a 2 $\frac{3}{4}$ " 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.

2. Remove the striker (3) from the body by tilting the body.

3. DO NOT disassemble the valve and shock absorber assembly unless it is necessary to replace internal parts of the assembly.

4. If necessary to disassemble further, proceed according to the following instructions. To facilitate disassembly it is recommended that tool (20A) be on hand.

a) Place the end cap, item (12), upright in a vise with valve spool (6) on top. Slide tool

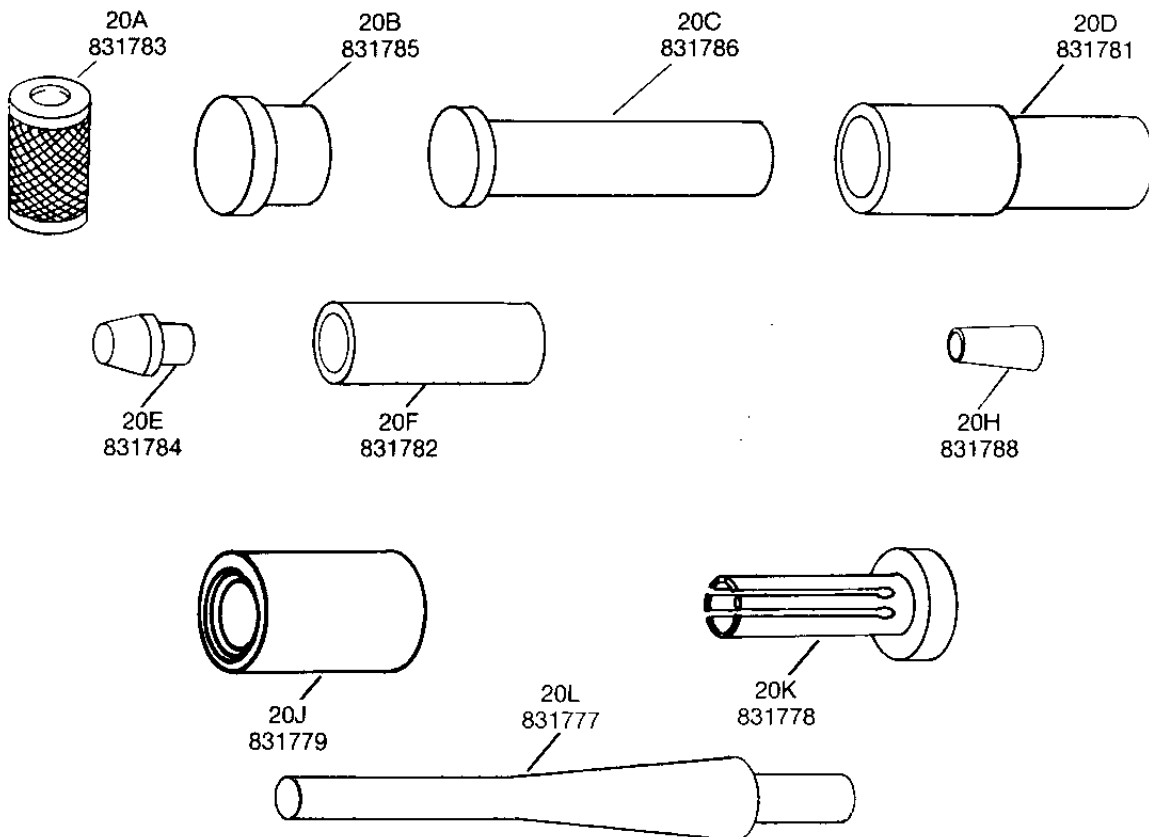
(20A) over valve spool (6). Compress until retainer ring (3) clears the tool. Pry retainer ring (3) off with a screwdriver. Carefully release pressure on tool and remove. Remove spring retainer (4), spring (5) and valve spool (6).

b) Clamp end cap horizontally in vise and pull on the whip hose (14). This will separate the valve stem (9) from the valve sleeve, item (7).

c) Remove valve sleeve (7) from end cap (12) and shock absorber (10). Press valve sleeve (7) out of shock absorber (10) using suitable tools.

d) To remove rubber components: grip (8), shock absorber (10), and valve seal (11), use a sharp instrument to cut through the rubber and remove.

MODEL 1000B HOLE-HOG ASSEMBLY TOOL KIT PART NO. 831780



10.0 ASSEMBLY:

1. To perform the assembly operations, Tool Kit 831780 is required.

2. Valve Stem Assembly.

Slide the grip pilot (20H) over valve stem (9). Install 3 sets of grip spacers (20G) in the first three grooves adjacent to the grip pilot. Lubricate the I.D. of a grip (8) with a suitable lubricant. Slide grip (8) over pilot and spacers to open groove. Remove the set of spacers nearest the grip that was just installed. Slide another grip into the groove. Repeat until all four grips (8) are installed. Using a screwdriver or similar tool, wedge the grips (8) between the shoulders of the groove.

3. Shock Absorber Assembly.

a) Grease OD and ID of shock absorber (10) and place in tool (20D). Install the first stage pusher, item (20B), and press in shock absorber until shoulder of the pusher nearly touches the tool (20B). Remove the first stage pusher, install the second stage pusher (20C) and press until the shock absorber (10) is installed. An audible "pop" will indicate this.

4. Valve Sleeve Installation:

a) Nest end cap (12) in press with threaded end up.
b) Install shock absorber and valve seal tool (20E) in large end of valve sleeve (7). Place large end of valve sleeve into end cap and press into shock absorber (10).

5. Valve Seal Installation:

a) Nest end cap and valve stem assembly in press with valve stem down.
b) Install shock absorber and valve seal tool (20E) in valve stem.
c) Install valve seal (11) over tool (20E). Press in with valve seal pusher (20F).

6. Whip Hose and Valve Stem Assembly:

a) Clamp valve stem assembly in vise on flats with threaded end up.
b) With suitable wrench, screw on whip hose until the hose socket fitting (14) bottoms on the valve stem (9).

7. End Cap and Valve Assembly:

a) Insert valve stem (9) into valve sleeve and end cap assembly (7, 12).
b) Place end cap (12) on vise with valve sleeve (7) up, clamp on hose.
c) Slip valve spool (6) over valve stem (9) small land end down and insert spring (5) in valve spool and place spring retainer in spring and place retainer ring tool (20A) over spring retainer groove on the valve stem exposed. Place 20J over 20A, insert 20L into valve stem (9), tapered end up. Insert retaining ring (3) over 20L. Slide 20K over 20L and 20J. With one continuous motion slide 20K down, approximately 1 inch. At this point 20A, 20J, 20K should all slide as a single unit. Retaining ring (3) will now be installed.

8. Thoroughly clean ID of body and anvil assembly (1). Pay special attention to threads in the body.

9. Clean striker (2). Coat part with light oil and slide into body (1).

10. Grease end cap threads with a suitable lubricant. Thread into the body with a 2 $\frac{3}{4}$ " open end wrench, tighten to approximately 400 ft.lbs./540 n.m. Rap handle of wrench if necessary to assure end cap is tight.

11. After assembly, test run in forward and reverse 5 to 10 minutes to ascertain correct assembly.

12. Before using the Hole-Hog it should be lubricated by pouring 2 oz./60 g. of motor oil or transmission fluid into the air hose.

MODEL 1000B HOLE-HOG ACCESSORIES

HOSE ASSEMBLY OPTIONS

Male-Female Assembly
25 Ft. Lgth. No. 831793
50 Ft. Lgth. No. 831792



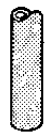
831042
MALE Q.D.
FITTING



831028
NIPPLE FITTING



831029
HOSE SOCKET



HOSE



831029
HOSE SOCKET



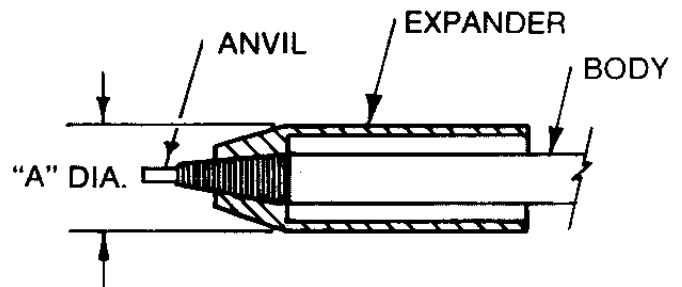
831028
NIPPLE FITTING



831027
FEMALE Q.D.
FITTING

AIR SUPPLY HOSE

25 Ft. Lgth. No. 831790
50 Ft. Lgth. No. 831791



MODEL 1000B EXPANDER
PART NUMBER 831061
A=3.75 IN./95MM.

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 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 or 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

THESE WARRANTIES AND THE COMPANY'S OBLIGATIONS THEREUNDER ARE IN LIEU OF ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. ALL OTHER REPRESENTATIONS TO THE ORIGINAL PURCHASER, USER OR RENTER AND ALL OTHER OBLIGATIONS OR LIABILITIES, INCLUDING LIABILITY FOR INCIDENTAL AND CONSEQUENTIAL DAMAGES ON THE PART OF THE COMPANY OR THE SELLER WITH RESPECT TO THE SALE OR USE OF THE MACHINE.

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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