

OPERATION MANUAL
FOR ATLAS™ AE 40 SPIN-PULL TOOL



PNEUMATIC-HYDRAULIC INSTALLATION TOOL

PennEngineering®

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KENT, OH 44240

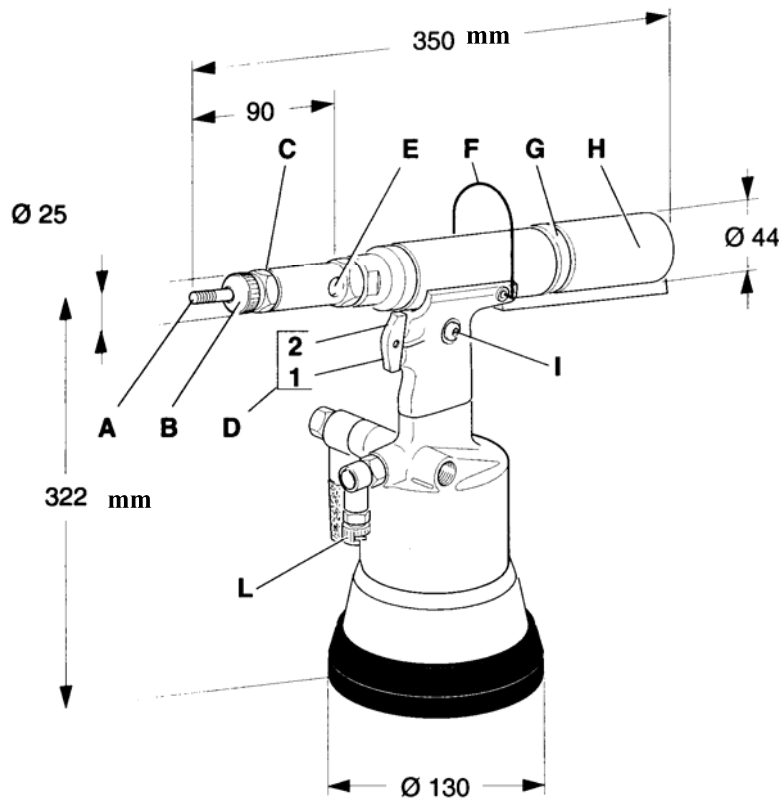
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Revision 01/06

MAIN COMPONENTS

ITEM	DESCRIPTION
A.....	Threaded Pull-Up Stud (With Automatic Thread-on Actuation)
B.....	Anvil
C.....	Anvil Lock-Nut
D.....	Trigger
E.....	POS. 2 Axial Pull
	POS. 1 Reverse Rotation
F.....	Pin Insertion Hole, To Disengage Hex Driver from Pull-Up Stud
G.....	Bail
H.....	Stroke Adjustment Ring
I.....	Air Motor
L.....	Oil Reservoir Fill Plug
	Air Line Connector





Read Manual Before Operating Tool!

OPERATING INSTRUCTIONS

GENERAL DESCRIPTION

The Atlas[™] AE40 Spin-Pull Tool with its pneumatic hydraulic system provides an efficient, light weight, powerful and quiet rivet nut installation tool. It is designed to provide long life and trouble free service.

The air supplied to the Atlas[™] AE40 tool should be dry and free of contamination, to prevent premature wear and tear of the internal components. We suggest use of a filter, pressure regulator and oil lubrication system, located in close proximity to the tool.

TECHNICAL DATA:

Air Requirements	85 to 100 PSI (5.8 to 6.8 BAR)
Air Consumption.....	Approx. 530 cu in
Max. Axial Pulling Load.....	5200 lbs.
Weight.....	5.6 lbs. (2.5 kg)

Please read and follow the safety precautions listed below.



SAFETY PRECAUTIONS

- ◆ Always use safety goggles when operating or maintaining the tool.
- ◆ Always use hand protection such as gloves.
- ◆ Before using the tool, make sure that a shutoff device has been fitted on the air supply line and the location is easily accessible, so that the air supply to the tool can be shut off in an emergency.
- ◆ Check the air hose and fittings regularly for wear.
- ◆ Use only approved parts for maintenance and repairs.
- ◆ Do not use chipped, cracked or damaged accessories and tools.
- ◆ Attach air line securely.
- ◆ Keep body parts away from moving parts.
- ◆ Never wear jewelry, loose clothing or anything that could get caught in moving parts.
- ◆ If a new user is operating the tool, be sure these instructions are readily available.
- ◆ Do not use the tool in any way other than for its intended purposes.
- ◆ Do not modify the tool.

If at any time you have any difficulty with the operation or maintenance of this tool, please contact PennEngineering[®] at toll free 877-682-2505 or 330-676-1006.

Setup Instructions



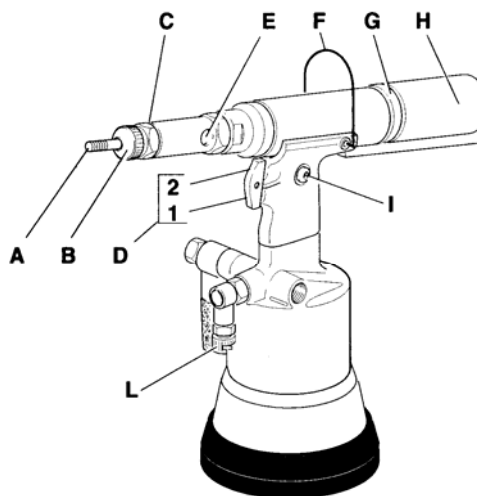
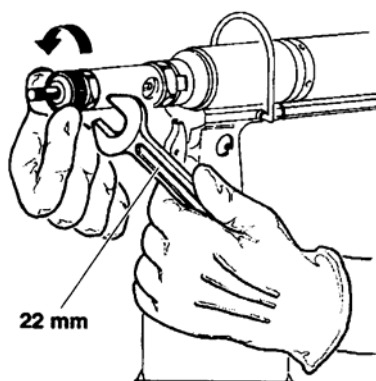
IMPORTANT

The thread of the Pull-up Stud must match the thread of the fastener you are installing. See Section Change Tool Thread Size to change the pull-up stud.

Set the Extension of the Pull-up Stud.

With the tool disconnected from the air line, adjust how far the pull-up stud (A) extends from the anvil face (B).

Start by loosening the anvil lock-nut (C).



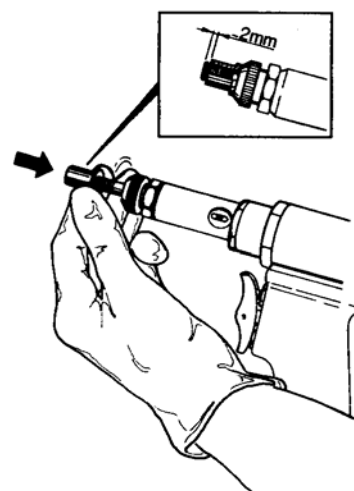
Thread the blind threaded fastener, that will be installed, onto the pull-up stud by hand.

Thread the fastener on until about 1 thread (or 2mm) of the pull-up stud is showing beyond the end of the fastener. (When setting up on a closed end part, thread the fastener on until the end of the stud hits the bottom of the hole, then unthread one full turn).

If the head of the fastener meets the anvil face before the pull up stud is through the fastener, turn the anvil (B) in, to increase the pull-up stud extension.

Turn the anvil until the anvil face is against the head of the fastener. Tighten the anvil lock-nut to secure the anvil. Unthread the fastener from the pull-up stud.

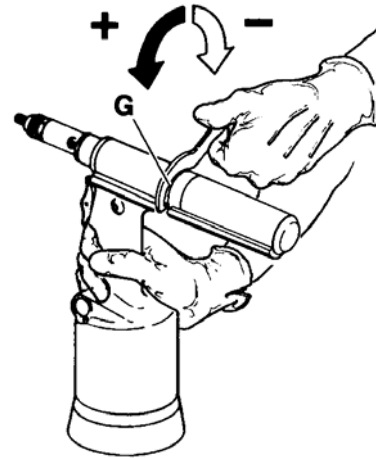
The extension is now set.



Test the Tool

With the special spanner wrench provided, set the stroke adjustment ring (G) to the Minimum. Turn in the (–) direction.

Connect the air line to the tool.

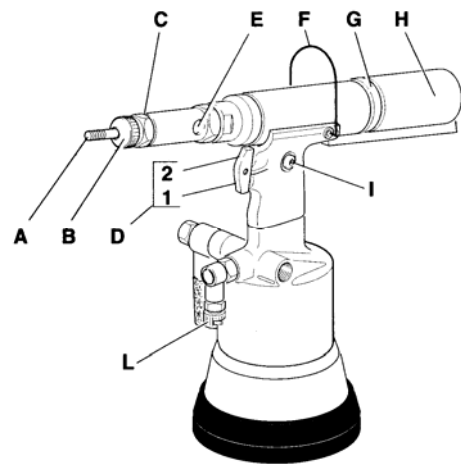


Automatic Spin-In

Partially thread the fastener onto the pull up stud (A). Pull on the fastener, pushing the pull-up stud into the anvil (B). The pull-up stud will automatically thread into the fastener and stop when the head of the fastener contacts the anvil face.

Pull

Actuate Position 2 of the trigger (D-2) and the fastener will be partially pulled. How far the pull-up stud pulls in is set by the stroke adjustment ring (G).

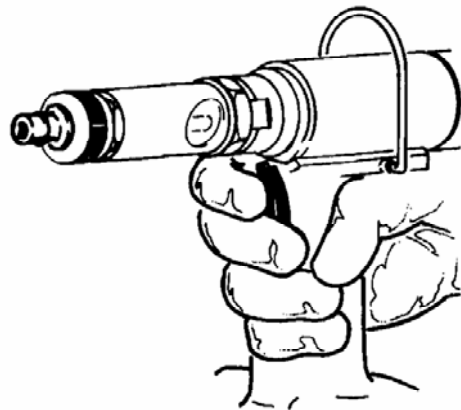


IMPORTANT

The proper stroke setting is very important to the quality of the installation and the performance of the blind threaded fastener.

Spin-Out

Hold the fastener and actuate Position 1 of the trigger (D-1). The pull-up stud will thread out of the fastener and push it away from the anvil.



Determine the Proper Pull-up

The proper pull-up for a fastener and the material it is being installed into is determined by the grip range of the fastener and the thickness of the material.

Use the PennEngineering® Atlas™ Fastener Catalog to look up the Grip Range of the fastener, the A dimension and the M dimension.

Check that the thickness of the material is within the Grip Range of the fastener.

Calculate the Pull-up Distance

$$\text{PULL-UP DIST} = A - \text{Material Thickness} - M$$

Measure the length of the fastener Before Pull-Up

$$\text{LENGTH}_{\text{BEFORE PULL-UP}} = [\text{MEASURE}]$$

Calculate the length of the fastener After Pull-Up

$$\text{LENGTH}_{\text{AFTER PULL-UP}} = \text{LENGTH}_{\text{BEFORE PULL-UP}} - \text{PULL-UP DIST}$$

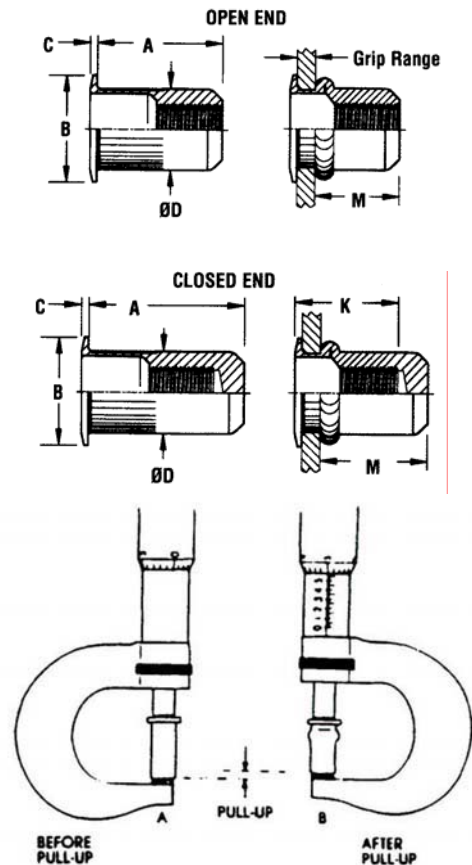
Examples:

AELS-1032-130 to be installed in .060" thick material:

A dimension	0.475"
M dimension	0.315"
PULL-UP DIST = .475 - .060 - .315 =	0.100"
LENGTH _{AFTER PULL-UP} = .505 - .100 =	0.405"

AELS-580-3.3 to be installed in 1.5mm thick material:

A dimension	12.07mm
M dimension	8mm
PULL-UP DIST = 12.07 - 1.5 - 8 =	2.57mm
LENGTH _{AFTER PULL-UP} = 12.83 - 2.57 =	10.26mm



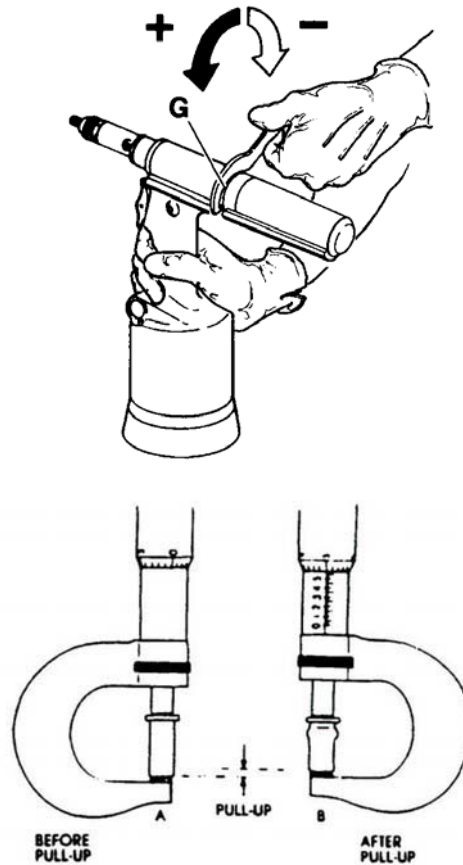
Set the Proper Stroke

With the special spanner wrench provided, turn the stroke adjustment ring (G) in the (+) direction to increase the pull-up dist. (-) direction to decrease the pull-up distance.

Each $\frac{1}{4}$ turn is about 0.4mm or 0.015"

Repeat the Test Procedure with a new fastener and measure the fastener length after pull-up.

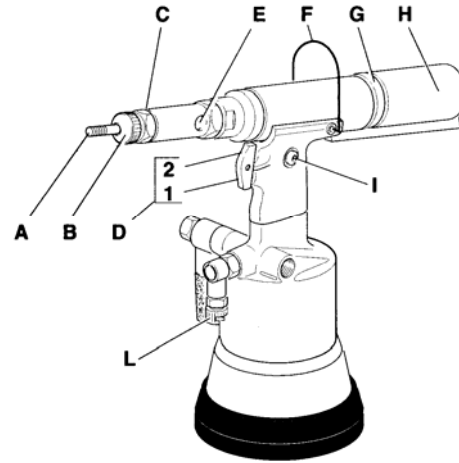
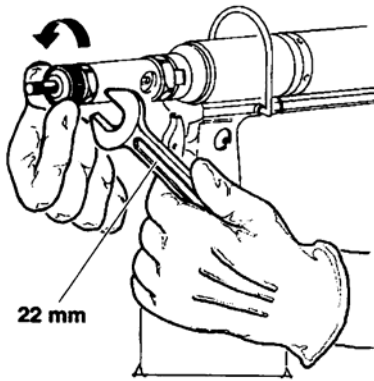
Compare the result with the LENGTH AFTER PULL-UP dimension calculated. The final setting should produce fasteners within ± 0.005 " or 0.125 mm of the calculated length.



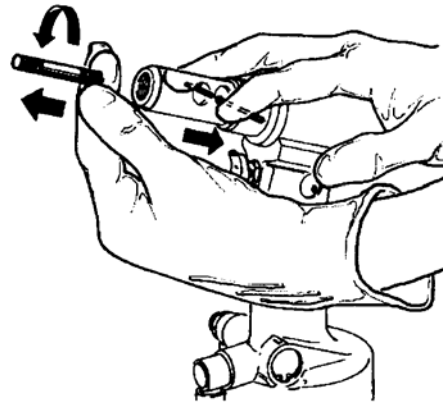
Install several fasteners into the exact material for your application, to ensure that all settings are adequate.

TO CHANGE TOOL THREAD SIZES

Loosen the anvil lock-nut (C) and remove the anvil (B) from the front of the hand tool.



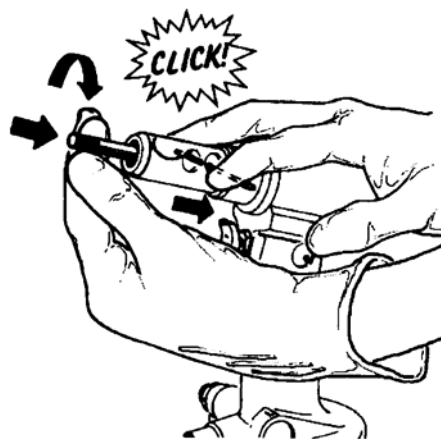
Use the pin supplied with the tool and engage the roll pin found through the pin insertion hole (E). Pull the roll pin toward the back of the AE40 Hand Tool as far as possible. This will disengage a hex driver from the back end of the pull-up stud. While holding the roll pin back, unscrew the pull-up stud and remove it.



Select the pull-up stud thread size that you need. Pull back on the roll pin again to pull the hex driver out of the way. Thread the new pull-up stud in until it contacts the hex driver.

Rotate the pull-up stud while gently releasing the roll pin until the hex driver clicks into the back of the pull-up stud. Check that the roll pin is in the fully forward position.

Install the proper anvil (B) and the anvil lock-nut (C), tighten the anvil lock-nut and you are ready to proceed.

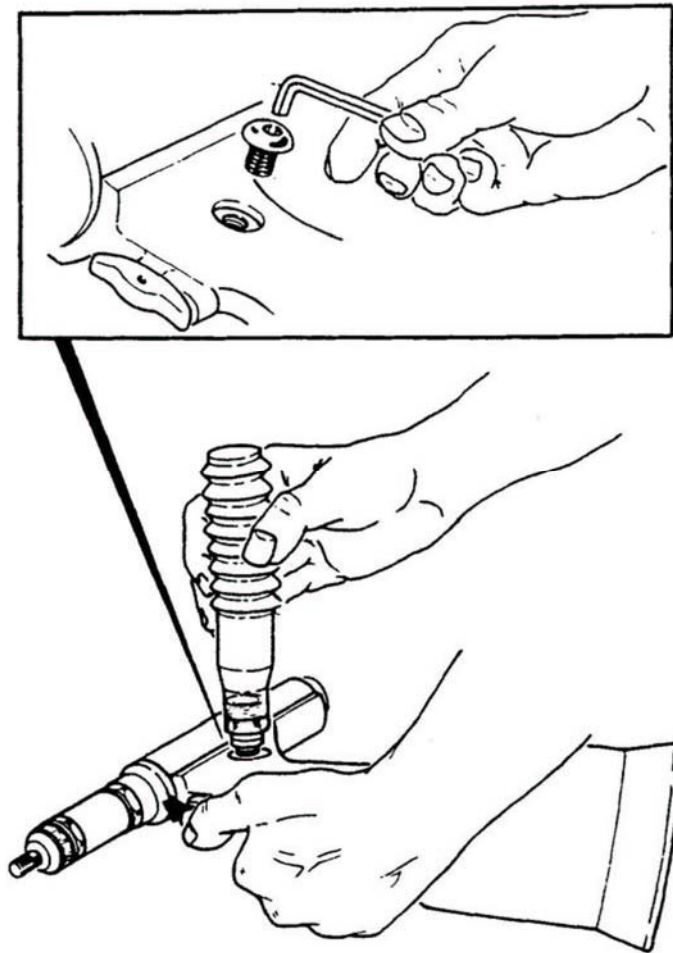


MAINTENANCE

The only maintenance required is the occasional addition of oil to the hydraulic system. This may be necessary after a long period of use. (You may notice a reduction in pulling power with the tool).

Place the tool in a horizontal position and unscrew the filler plug (I). Add oil with the special applicator provided. Fill until the oil level reaches the bottom of the hole.

Use clean SAE 10 Oil or equivalent.



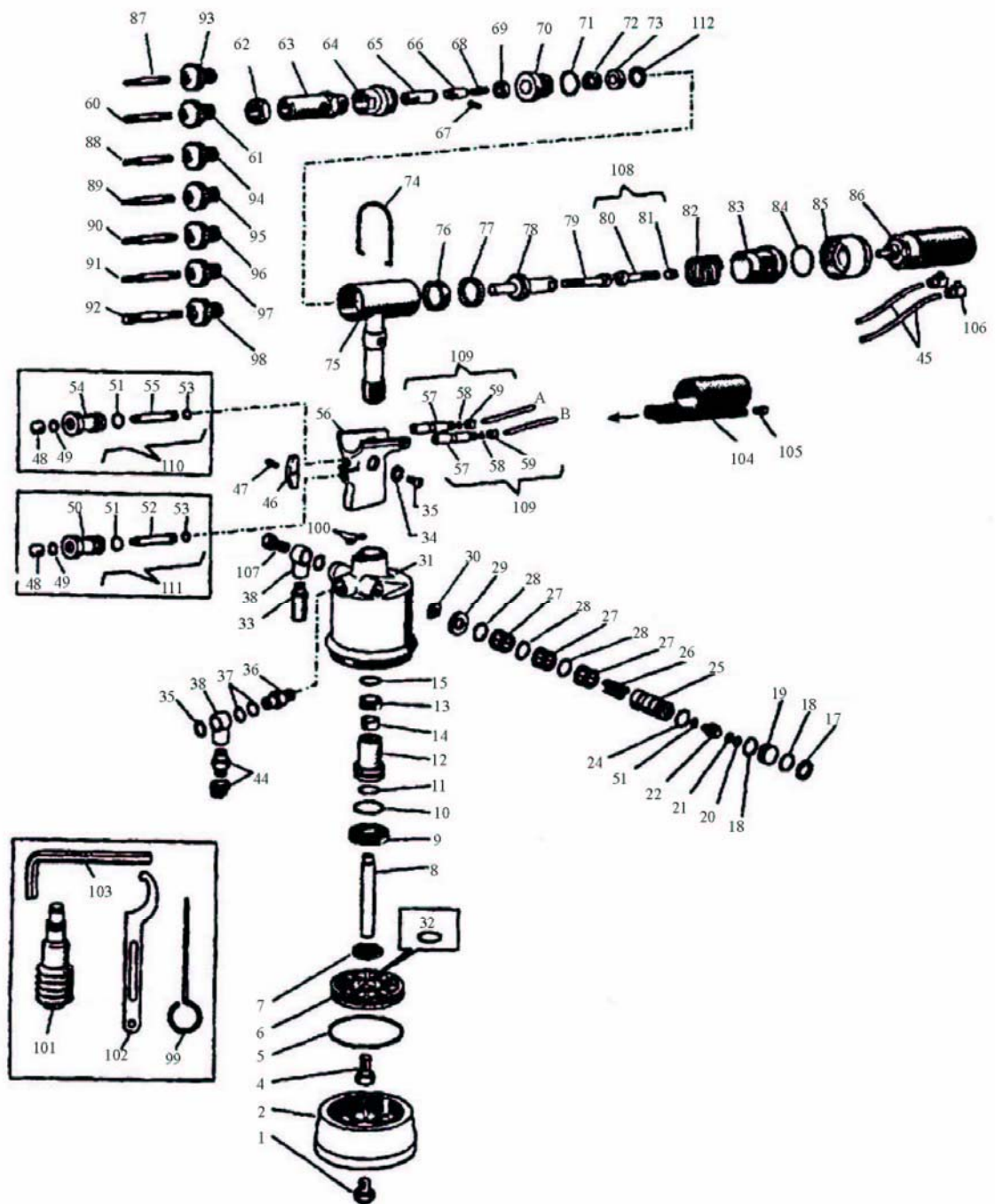


Fig. 9 – Exploded View of AE40 Tool

Fig. 9 – Parts List for AE40 Tool

Index No.	Part No.	Part Description	Qty
1	721481	Safety Valve	1
2	720814	Cover	1
4	710837	Screw Stem	1
5	710920	O-Ring 2-337	1
6	720815	Pneumatic Piston	1
7	710836	Flat Washer	1
8	710860	Stem	1
9	710829	Dampner	1
10	710915	O-Ring 2/124 Parker	1
11	710931	O-Ring 5/615 Parker	1
12	710856	Guide Stem Connector	1
13	710390	Balsele B075047	1
14	711827	Sealing TS 12-19-5, 7L	1
15	710914	O-Ring 2/116 Parker	1
16	710904	Seeger Ring I 19	1
17	710402	Seeger Ring I 22	1
18	710922	O-Ring 018D	2
19	710846	Cap	1
20	710905	Seeger Ring I 11	1
21	710258	O-Ring 5/612 Parker	1
22	710822	Valve Piston	1
24	710916	O-Ring 2/15 Parker	1
25	710841	Coil	1
26	711158	Spring	1
27	710823	Spring	3
28	710921	O-Ring 2/115 Parker	3
29	710840	Valve Spacer	1
30	710835	Washer Stopping Spring	1
31	720811	Tool Body	1
32	710350	O-Ring 2/109 Parker	1
33	711304	Silencer ¼	1
34	710906	Hermetic Washer	1
35	710839	Oil Tank Plug	1
36	710844	Air Feed Connection	1
37	710923	O-Ring 012D	2
38	710909	Rotating Connector 2023	2
39	710903	Seeger Ring E13	1

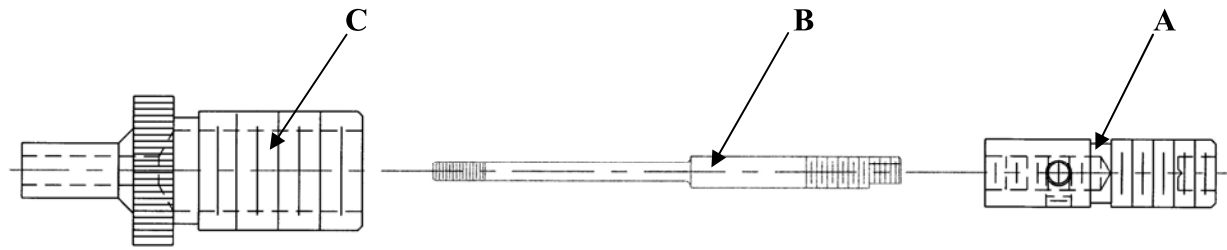
Fig. 9 – Parts List for AE40 Tool (Continued)

Index No.	Part No.	Part Description	Qty
44	710173	Milled Nut Connector ¼	1
45	710862	Feeding Motor Tube	2
46	710861	Trigger	1
47	710885	Pin	1
48	710866	Push Button	2
49	710919	O-Ring 2/4 Parker	2
50	710868	Long Valve Body	1
51	710528	O-Ring 008 D	3
52	710867	Long Valve Piston	1
53	710918	O-Ring 2/5 Parker	2
54	710847	Short Valve Body	1
55	711150	Knurled Short Valve Piston	1
56	720813	Handgrip	1
57	720865	Tube Guide	2
58	710376	O-Ring 2/9 Parker	2
59	710864	Stopping Connector	2
60	710891	Tie Rod M10	1
61	710898	M10 Anvil	1
62	710884	Anvil Lock Nut	1
63	710880	Anvil Housing	1
64	710878	Front Connector	1
65	710881	Pull-Up Stud Connector	1
66	710879	Hex Driver	1
67	710138	Spring Pin 4 X 16	1
68	710874	Driver Disengagement Spring	1
69	710912	Nut M10 X 6	1
70	710877	Sleeving Gasket	1
71	710578	O-Ring 2/217 Parker	1
72	710577	Balsele B 086055	1
73	710908	Flat Washer	1
74	710873	Balancer Hook	1
75	710817	Oil-Dynamic Cylinder	1
76	710900	Balsele B 141110	1
77	710872	Anti-Extrusion Ring	1
78	710833	Oil-Dynamic Piston	1
79	710883	Female Clutch	1
80	710882	Male Clutch	1
81	710635	Dowel M6 X 6	1

Fig. 9 – Parts List for AE40 Tool (Continued)

Index No.	Part No.	Part Description	Qty
82	710875	Piston Return Spring	1
83	710869	Stroke Adjustment Connector	1
84	710925	O-Ring 027	1
85	710913	Pneumatic Motor	1
86	710863	Air Conveyor	1
87	710886	M3 Pull-Up Stud	1
88	710887	M4 Pull-Up Stud	1
89	710888	M5 Pull-Up Stud	1
90	710889	M6 Pull-Up Stud	1
91	710890	M8 Pull-Up Stud	1
92	710892	M12 Pull-Up Stud	1
93	710893	M3 Anvil	1
94	710894	M4 Anvil	1
95	710895	M5 Anvil	1
96	710896	M6 Anvil	1
97	710897	M8 Anvil	1
98	710899	M12 Anvil	1
99	710876	Stud Disengagement Pin	1
100	710385	O-Ring 006 D	2
101	721387	Oil Container	1
102	710970	Stroke Adjustment Key	1
103	711092	5mm Hex Key	1
104	711135	Motor Housing	1
105	711348	Screw TCCE M4 X 16	1
106	721496	Motor Air Connector	2
107	711305	Connector 1631/01 – ¼	1
108	720882	Male Clutch Assembly	1
109	740865	Guide Tube Assembly	2
110	721936	Short Valve Body Assembly	1
111	720868	Long Valve Body Assembly	1
112	711974	Seeger Ring JV22	1

Parts List for AE40 Tool



Thread Size	Complete Tool Part No.	Dynamic Air Pressure (PSI-Bars)	Part No. for Complete Nose Assembly	Nose Assembly Component Part Numbers		
				A Stud Holder	B Pull-Up Stud	C Anvil
4-40	AE40-440	60-90	AE40NP-440	SH-1	L-70-440	AN-1-4
6-32	AE40-632	60-90	AE40NP-632	SH-1	L-70-632	AN-1-6
8-32	AE40-832	60-90	AE40NP-832	SH-1	L-70-832	AN-1-8
10-24	AE40-1024	60-90	AE40NP-1024	SH-1	L-70-1024	AN-1-10
10-32	AE40-1032	60-90	AE40NP-1032	SH-1	L-70-1032	AN-1-10
¼-20	AE40-2520	60-90	AE40NP-2520	SH-2	L99-2520	AN-1-25
¼-28	AE40-2528	60-90	AE40NP-2528	SH-2	L99-2528	AN-1-25
M3	AE40-M3	4.1-6.2	AE40NP-M3	SH-1	L-142-M3	AN-1-M3
M4	AE40-M4	4.1-6.2	AE40NP-M4	SH-1	L-142-M4	AN-1-M4
M5	AE40-M5	4.1-6.2	AE40NP-M5	SH-2	L-143-M5	AN-1-M5
M6	AE40-M6	4.1-6.2	AE40NP-M6	SH-2	L-143-M6	AN-1-M6