

OPERATION, PARTS AND SAFETY MANUAL



SIGNODE®

AMPT-12

POWERED COMBINATION STRAPPING TOOL

**IMPORTANT!
DO NOT DESTROY**

**It is the customer's responsibility to
have all operators and servicemen
read and understand this manual.**

Contact your local Signode representative
for additional copies of this manual.

READ ALL INSTRUCTIONS BEFORE OPERATING THIS SIGNODE PRODUCT

SIGNODE • 3620 WEST LAKE AVENUE • GLENVIEW, ILLINOIS 60025

SAFETY INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SEVERE PERSONAL INJURY.

GENERAL SAFETY CONSIDERATIONS

1. STRAP BREAKAGE HAZARD.

Improper operation of the tool or sharp corners on the load can result in strap breakage during tensioning, which could result in the following:



- A sudden loss of balance causing you to fall.
- Both tool and strap flying violently towards your face.

Failure to place the strap properly around the load or an unstable or shifted load could result in a sudden loss of strap tension during tensioning. This could result in a sudden loss of balance causing you to fall.

Read the tool's operating instructions. If the load corners are sharp use edge protectors. Place the strap correctly around a properly positioned load.

- Positioning yourself in-line with the strap, during tensioning and sealing, can result in severe personal injury from flying strap or tool. When tensioning or sealing, position yourself to one side of the strap and keep all bystanders away.
- Using strap not recommended for this tool can result in strap breakage during tensioning. Use the correct Signode products for your application.

2. TRAINING.

This tool must not be used by persons not properly trained in its use. Be certain that you receive proper training from your employer. If you have any questions contact your Signode Representative.

3. EYE INJURY HAZARD.

Failure to wear safety glasses with side shields can result in severe eye injury or blindness. Always wear safety glasses with side shields which conform to ANSI Standard Z87.1 or EN 166.



4. FALL HAZARD.

Maintaining improper footing and/or balance when operating the tool can cause you to fall. Do not use the tool when you are in an awkward position.

5. CUT HAZARD.

Handling strap or sharp parts could result in cut hands or fingers. Wear protective gloves.



6. TOOL CARE.

Take good care of the tool. Inspect and clean it daily, lubricate it weekly and adjust when necessary. Replace any worn or broken parts.

7. WORK AREA.

Keep work areas uncluttered and well lighted.

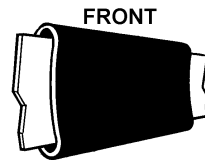
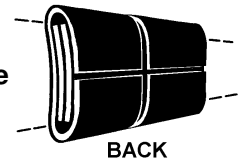
Several types of strap can be used with this tool. Use the correct Signode products for your application. If you need help contact your Signode Representative.

SAFETY PROCEDURES FOR TOOL OPERATION

1. Before using this tool, read its Operation and Safety instructions.

- Do not exceed the operating air pressures stated elsewhere in the manual.
- Use Signode's approved filter-regulator-lubricator unit (P-173111).
- Never operate a pneumatic tool with a bottled air or gas source.
- For tension adjustments, follow instructions in this manual. For all other adjustments, repairs or cleaning of the tool, disconnect air supply.
- This tool has a crimp type sealer. A properly made joint will appear as shown in the illustration. If the joint does not appear as shown, then the operator must proceed as follows:

- A. Insure that the tools operating instructions are being followed before applying another strap.
- B. Cut the strap off and apply another.



If the joint still does not appear as shown, then inspect the tool for worn and/or damaged parts. Replace tool parts as needed. **NEVER HANDLE OR SHIP ANY LOAD WITH IMPROPERLY FORMED JOINTS.** Misformed joints may not secure the load and could cause serious injury.

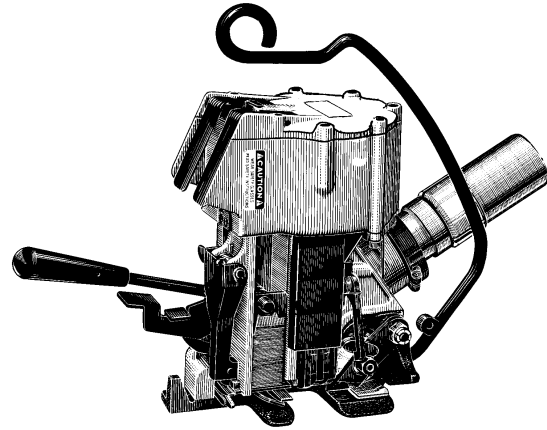
- Tuck strap end back into the dispenser when not in use.

CUTTING TENSIONED STRAP

Use only cutters designed for cutting strap; never use claw hammers, crowbars, chisels, axes or similar tools. Such tools will cause the strap to fly apart with hazardous force. Before using any Signode product, read its Operation and Safety Manual.

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AMPT-12
Part No. 422910

CAUTION

**DO NOT USE AMPT-12
WITH STEEL STRAPPING**

Using strap not recommended for this tool can result in strap breakage, improper joint formation and tool damage.

SPECIFICATIONS

MODEL	STRAP			SEAL
	TYPE	WIDTH	THICKNESS	
AMPT-12	Tenax 1822,1818,1816	1/2" (12mm)	.015" to .030" (0.4 - 0.8mm)	50ASD
	Contrax 818,816,814			
	Dymax 508,506,504,502			

PNEUMATIC INFORMATION

AIR PRESSURE REQUIREMENTS

The AMPT-12 tools are designed to operate at air pressures ranging between 65 and 90 psig (4.5 - 6.2 Bar).

AIR SUPPLY INSTALLATION

If compressor has a good dryer unit, use black pickled pipe. When a dryer unit is not installed, use galvanized or copper pipe.

To perform reliably, a pneumatic tool requires a continuous source of clean, water-free air at adequate pressure.

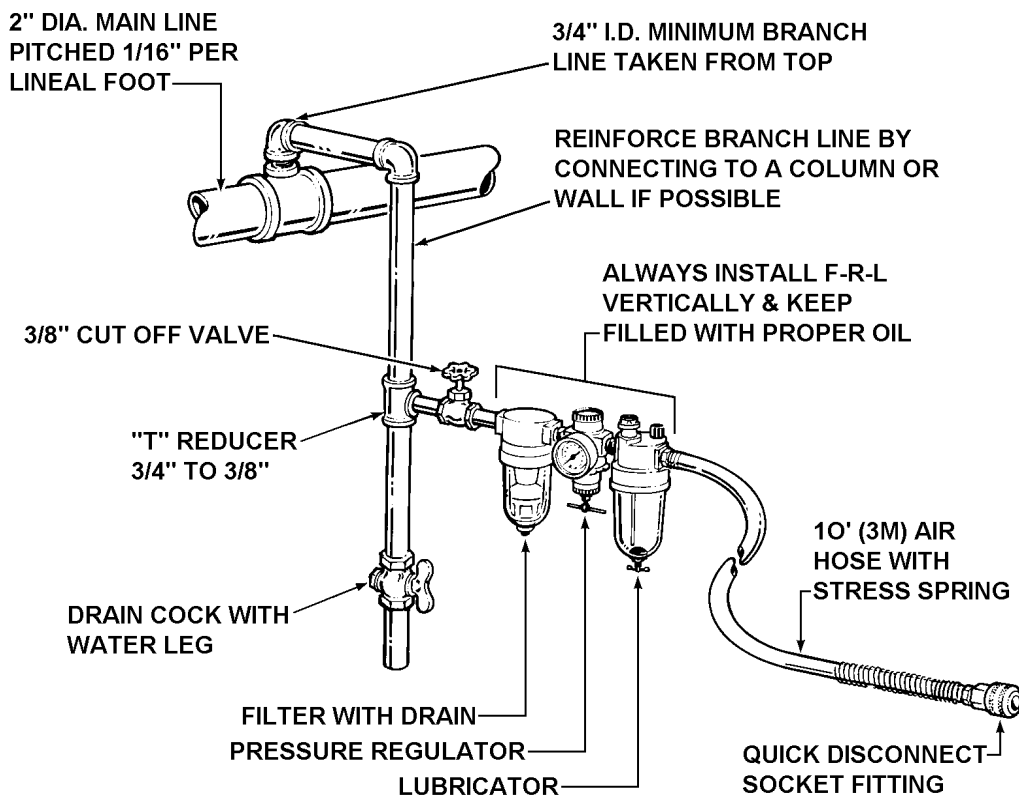
WARNING

Never operate this tool using a bottled air or gas source.

A filter-regulator-lubricator unit (Signode Part No. 173111) must be installed as close to the air tool as possible, preferably within 10 feet. It should be placed in a convenient location where it can easily be drained, adjusted, and filled with oil. The air hose must have at least a 1/4" I.D. A quick-connect press-on socket is installed on the stress spring end of the hose for convenient hookup to the air tool.

Filter and lubricator bowls are made of polycarbonate material. Do not install where bowls may be exposed to materials incompatible with polycarbonate. Certain oils, solvents, and chemicals or their fumes can weaken these bowls and possibly cause them to burst. Clean only with warm water.

A cut-off valve placed ahead of the filter will be useful when cleaning the filter or replenishing the lubricator.



PNEUMATIC INFORMATION, Continued

MOISTURE

Moisture is always present in air lines due to condensation within the lines as the air cools. Steps must be taken to remove this moisture and to keep it from the air tool. This is because water tends to wash away lubricants and cause corrosion, sticking and failure of internal parts.

The main line should be pitched so the far end terminates in a water leg. Branch lines are taken from the top of the main, never off the bottom. Every branch should have a water leg at its lowest point, with a drain cock which is drained daily.

If these precautions are taken and water is still present, an after cooler and a moisture separator are required between the compressor and the air receiver tank. A large air line separator can be installed in the air tool line, but precautions must be taken to insure that it will be drained daily, before the air tool is operated.

Water in air lines is a constant threat to the proper operation of air tools. Even near freezing operating conditions, a good refrigerant type dryer is essential. A good dryer will remove 95% or more of water right at the compressor. The remaining moisture is removed at the water leg in the piping system or in the filter portion of the F-L-R (Part No. 173111) unit.

NOTE: Additional information is available in the Signode publication, "Air Supply Manual" (Part No. 186038). If you have any questions, contact your local Signode Representative.

LUBRICATION

The air motor must be properly lubricated. This is achieved by keeping the air line lubricator filled with oil and correctly adjusted. Without proper lubrication, the motor will become sticky and the tool will give low and erratic tension and be difficult to release from the strap.

Install the lubricator as close to the air tool as possible. The arrow on the lubricator's top surface must point in the direction of air flow.

For proper operation, oil must drop through the lubricator sight glass at a rate of 1 to 4 drops per minute. This rate is checked while the air tool is running free. Only 20% of this oil is actually delivered to the tool. The remaining oil drops back into the oil reservoir. The unit is factory set and should require no adjustment. If an adjustment is required, the adjusting screw on top of the lubricator may be turned as marked to reduce or increase the flow of oil.

The correct grade of oil must be used in the lubricator; too heavy an oil will not provide sufficient lubrication and will cause sticking and sluggish operation of the air tool.

Recommended oils are any good grade of rust and oxidation inhibiting oil with a viscosity of 80-120 S.U.S. at 100 degrees Fahrenheit. (0.15 to 0.25 cm²/sec. at 38 degrees Celsius), such as:

Non Fluid Oil Co., grade #LS-1236
Signode oil - Part No. 008556

If necessary, use SAE #5 or SAE #10 non-detergent, cut 1 to 1 with kerosene.

NOTE: Some oils contain anti-wear additives which may disable the air motor. Be certain to use recommended oil.

Several drops of lubricator oil added to the inlet of the air motor or into the air line each day will help insure good operation. A noticeable reduction of air motor performance can usually be corrected by squirting a few drops of oil into the air line.

AIR CONSUMPTION

Air consumption in cubic feet per minute (cfm) for the AMPT-12 can be calculated as follows:

$$\text{cfm} = (a) \times (b) \times (0.20)$$

- a = Number of straps applied per minute.
b = Number of seconds motor is on per strap during tensioning, from start to deceleration to stall including stall time while making joint when.
0.20 = AMPT-12 efficiency ratio.

Example Calculation:

Peak strapping load: 4 straps/min. so a = 4

Air motor run time: 5 sec./strap, so b = 5

AMPT-12 efficiency ratio is 0.20

$$(a) \times (b) \times (0.20) \rightarrow 4 \times 5 \times 0.20 = 4 \text{ cubic ft/min.}$$

Air pressure is assumed to be 90 psig (6.2 Bar) with recommended size and length of air hose. Volume of air is at room temperature and sea level pressure, or so-called "free air" conditions. For more detailed information about air supply systems refer to Signode manual Part No. 186038.

COLD WEATHER OPERATION

If a tool does not operate satisfactorily in freezing temperatures, certain steps can correct the problem. The following steps can be taken to improve cold weather operation of the tool:

- a. An air line dryer adjacent to the compressor.
- b. Use lubricant recommended by Signode. Signode has tested the use of anti-freezes, none work well in air tools; the tool will gum up when anti-freezes are introduced and will not function properly. The best lubricant for freezing weather is the 1 to 1 oil and kerosene combination.
- c. If possible, run the air supply line to a indoor located Filter-Regulator-Lubricator or relocate the F-L-R to a warmer operating area.

STRAP TENSION

The AMPT-12 tools are factory tested to ensure that at least 350 lbs. (1554N) of tension is drawn at 90 psig (6.2 Bar).

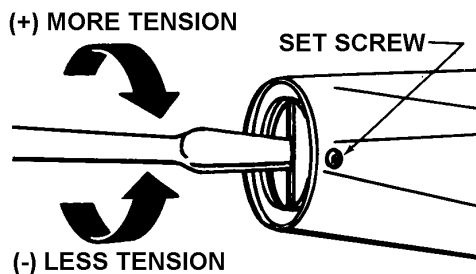
NOTE: Make sure the input air pressure to the tool is set between 65 and 90 psig.

⚠ WARNING

Strap breakage hazard. Strap can break while tension is being increased. Stand to one side of the strap as it is being tensioned. Failure to do so could result in personal injury.

To adjust the AMPT-58 strap tension, use the following instructions:

1. Loosen the set screw on the side of the air motor.

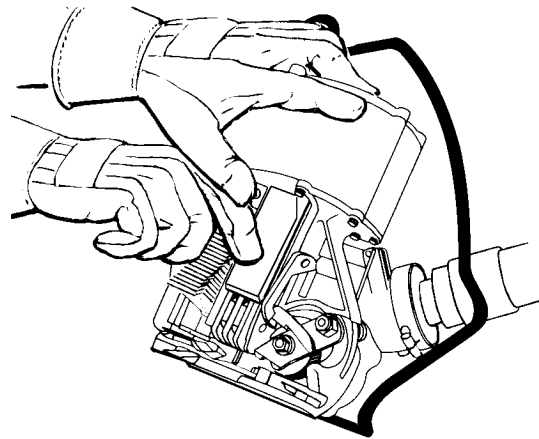


2. Turn the pressure adjustment screw in increments of 1/8 turns clockwise to decrease strap tension and counter-clockwise to increase strap tension.
3. Turn the adjustment screw until the desired tension level has been reached.
4. When a satisfactory tension level has been reached tighten the set screw.

The tool is now set to operate at a given air pressure in combination with a particular strap size. Any change in air pressure or strap size could result in unsatisfactory tool performance or strap breakage.

LOADING SEALS

To load seals, raise the seal pad assembly and insert a stack of seals inside the seal magazine. Release the seal pad. Activate the sealing mechanism by depressing then releasing the sealing lever. A seal will be ejected into the sealing jaws. An extension on the seal pad closes the top strap loading slot as a reminder to add seals.

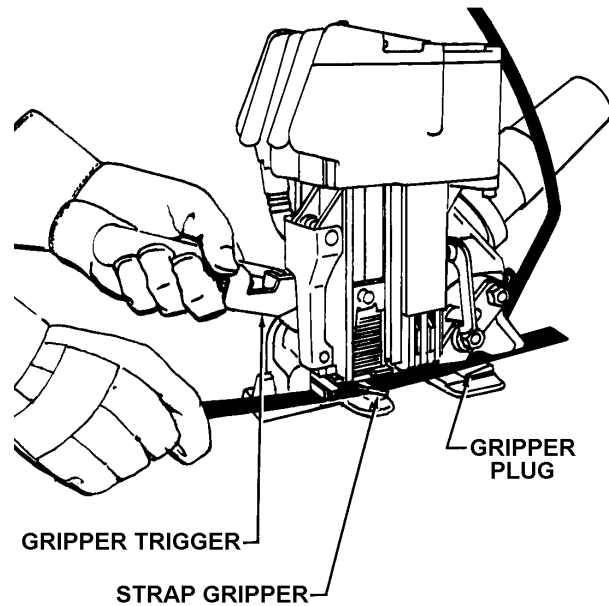
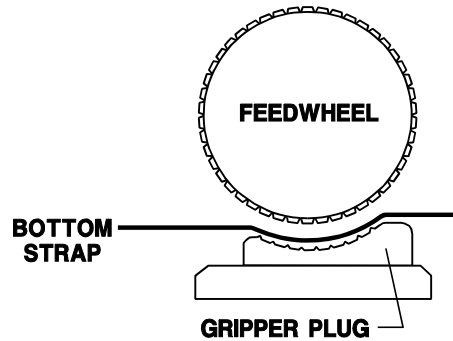


CUTTER ADJUSTMENT

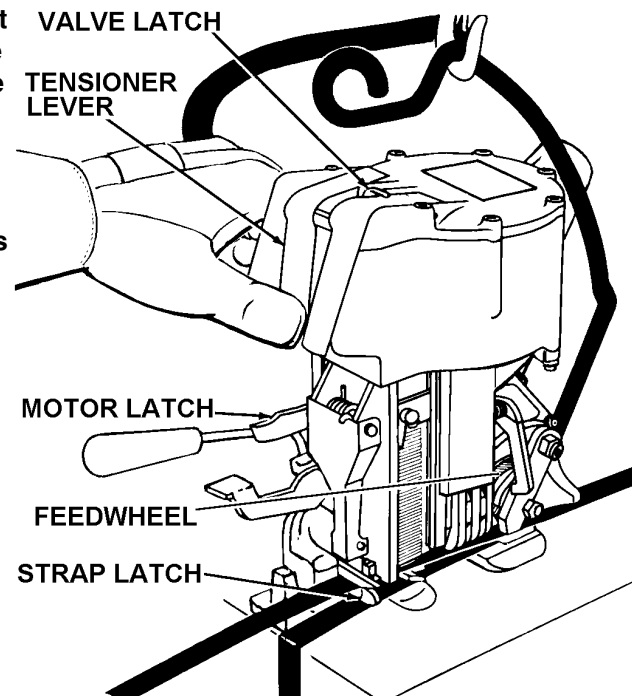
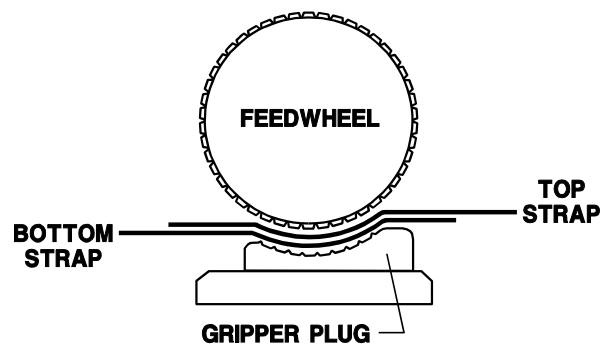
If the cutter on the tool does not cut properly, loosen the shoulder bolt (39) and cap screw (42), and adjust set screw (44) to remove clearance between the cutter blade and the cutter block. Adjust with the jaws in the down position. Do not over tighten as the sealing mechanism can be bound by this adjustment. When adjustment has been made, retighten the shoulder bolt and cap screw.

OPERATING INSTRUCTIONS

1. Encircle the package with strap and insert the bottom end under feedwheel so that it extends at least 1/2" (12mm) beyond the gripper plug. Depress the gripper trigger to actuate the strap gripper.



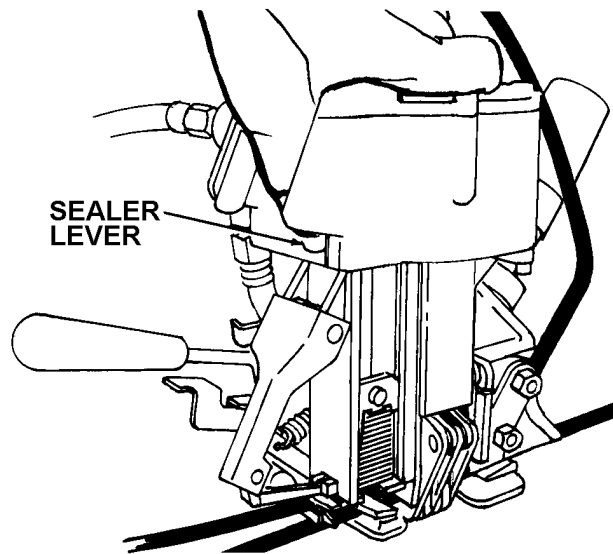
2. Insert the top strap between the feedwheel and the gripper plug and insert it into the slot of the strap latch. Pull excess slack from the strap. Make sure you are not standing in line with the strap and press the tensioner lever all the way down. It will lock in place. The feedwheel will engage automatically and the tool will begin tensioning. Should it become necessary to stop the tensioning cycle, press the valve latch forward.



NOTE: The feedwheel can be lowered manually, without starting the motor, by pressing the motor latch. To start the motor, press the tensioner lever.

OPERATING INSTRUCTIONS, Continued

3. The motor will stall when the pre-set tension level has been reached. Press the sealer lever all the way down, then release. Do not hold tensioner lever down while pressing the sealer lever as the tensioning lever will be released automatically. The tool will automatically seal the straps together, cut off the top strap and eject a new seal into the jaws. Inspect the joint to make sure the tool has properly crimped the seal.
4. After the tool has sealed and the sealing mechanism retracts, the feedwheel will automatically raise off the straps. Swing the rear of the tool away from the completed tie to free the tool.
5. If the resulting tension level is not satisfactory for your strapping needs, then proceed to adjust the tension as described earlier in this manual.

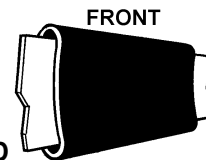
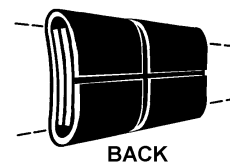


JOINT INSPECTION

This tool has a crimp type sealer. A properly made joint will appear as shown in the illustration. If the joint does not appear as shown, then the operator must proceed as follows:

1. Insure that the tools operating instructions are being followed before applying another strap.
2. Cut the strap off and apply another.

If the joint still does not appear as shown, then inspect the tool for worn and/or damaged parts. Replace tool parts as needed. **NEVER HANDLE OR SHIP ANY LOAD WITH IMPROPERLY FORMED JOINTS.** Misformed joints may not secure the load and could cause serious injury.



PARTS LISTS & EXPLODED VIEWS

TOOL HOUSING

<u>KEY</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>PART NO.</u>
1	SHCS, 10-24 x 13/16	11	180600
1A	FHSCS, 10-24 x 3/4	1	008757
2	SHCS, 10-24 x 1	2	004061
3	Valve Latch Pin	1	020658
4	<u>Valve Latch</u>	<u>1</u>	<u>020653</u>
5	Valve Latch Spring	1	020654
6	SHSS, 1/4-28 x 7/16	1	004361
7	<u>Tensioning Lever</u>	<u>1</u>	<u>020656</u>
8	<u>Sealing Lever</u>	<u>1</u>	<u>020655</u>
9	Cover	1	020691
10	Valve Lever Pin	1	020671
11	Cover Gasket	1	016906
12	O-Ring	1	020702
14	Piston	1	020648
15	O-Ring	6	020699
16	Tensioner Valve Sleeve	1	020651
17	<u>O-Ring</u>	<u>5</u>	<u>020701</u>
18	Tensioner Valve	1	020652
19	Valve Spring	1	020665
20	Sealer Valve Sleeve	1	020660
21	Sealer Valve Sleeve	1	020657
22	Sealer Valve	1	020731
23	Sealer Valve Spring	1	020725
24	Sealer Valve Sleeve	1	020732
25	Cylinder	1	020734
27	Hansen Plug	1	020704
28	Pipe Bushing	1	008478
29	Elbow	1	020710
29A	Tru-Seal, 1-1/4 NPT	1	023087
29B	90° Elbow, 1/4 Tube x 1/4-18 NPS	1	023524
30	SHSS, 1/4-28 x 1/4	1	003465
31	FHSCS, 10-24 x 1/2	2	020729
32	Cover Plate	1	020726
33	<u>Sure-Seal Spring</u>	<u>1</u>	<u>020724</u>
34	Sure-Seal Pawl	1	020727
35	O-Ring	1	020728
36	O-Ring	1	020680
37	Motor Plunger	1	020668
38	Plunger Spring	1	020669
39	Shoulder Bolt	1	024726
40	Roll Pin, 1/8 x 13/16	2	004658
41	Motor Latch	1	020639
42	SHCS, 5/16-18 x 1	1	009016
43	Sealer Frame	1	267632
44	SHCS, 1/4-20 x 1/2	1	023352
45	Roll Pin, 3/16 x 1	1	006787
46	Roll Pin, 3/16x 1-1/2	1	020707

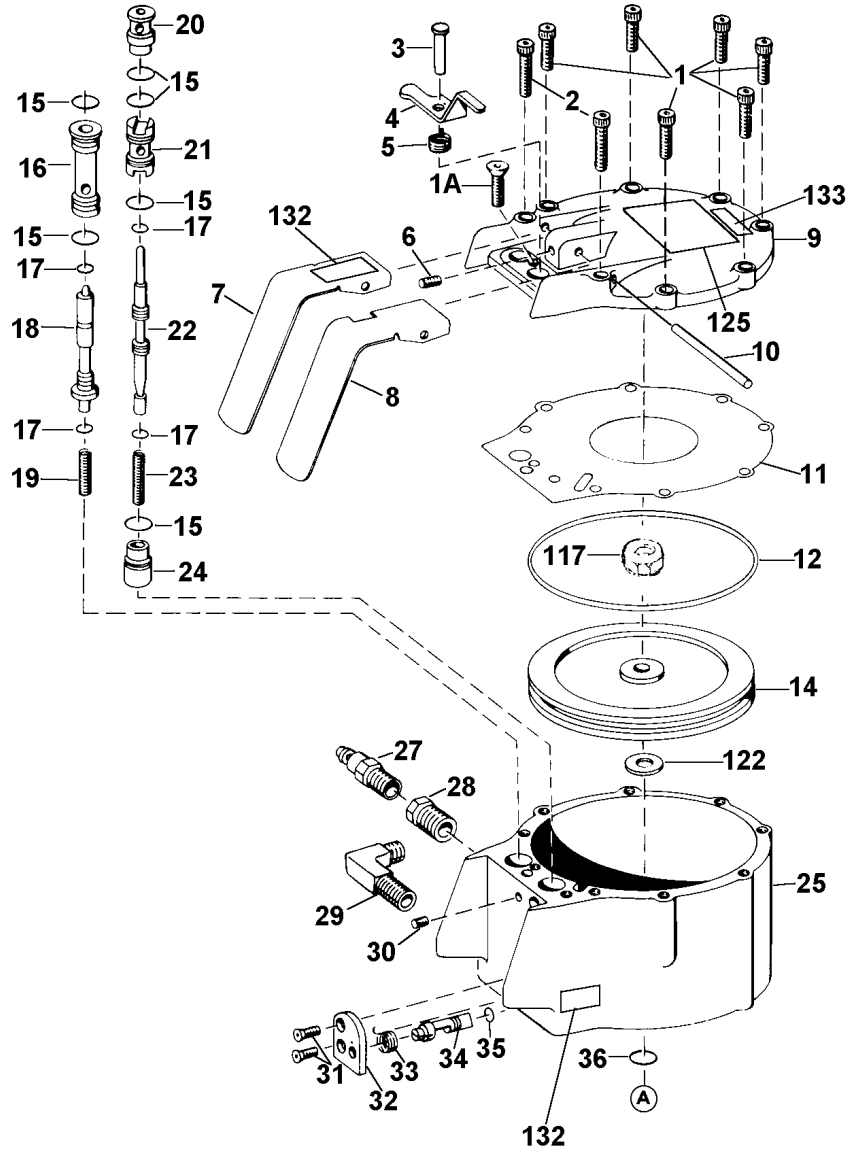
PARTS LISTS & EXPLODED VIEWS, Continued

TOOL HOUSING

<u>KEY</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>PART NO.</u>
46A	Roll Pin, 1/4,x 1-1/2	1	070528
47	Motor Latch Stop	1	020638
48	Jaw Support Stop	1	020626
49	Drive Screw #2-3/16	2	004939
50	Magazine Spring	1	020640
51	Seal Pad Assembly	1	422940
53	Truarc #5133-25	1	023766
54	<u>Gripper Trigger</u>	<u>1</u>	<u>023756</u>
55	Trigger Pivot	1	023765
56	Gripper Spring	1	020635
57	Flexloc Nut 5/16-18	3	005211
58	Gripper Lever	1	023758
59	Ejector Arm Spring	1	423811
60	Ejector Lever	1	024719
61	<u>Ejector Spring</u>	<u>1</u>	<u>020629</u>
62	<u>Ejector</u>	<u>1</u>	<u>024415</u>
63	Ejector Pin	1	020621
64	Truarc	1	026866
65	Strap latch pin	1	020662
66	<u>Strap Latch (Fixed)</u>	<u>1</u>	<u>020601</u>
67	<u>Strap Latch (Moveable)</u>	<u>1</u>	<u>020858</u>
68	SHCS, 5/16-18 x 3/4	2	003914
69	Dowel Pin 3/16 x 7/8	1	007150
70	<u>Strap Gripper</u>	<u>1</u>	<u>024414</u>
71	<u>Cutter Block</u>	<u>1</u>	<u>024418</u>
72	Ejector Arm Pin	1	020622
73	Truarc #5100-31	2	005054
74	Magazine	1	024710
76	Ram	1	020647
77	Roll Pin, 3/32 x 1 1/16	1	005709
78	Ram Release Pin	1	020625
79	Ram Release Spring	1	020646
80	Roll Pin, 1/4 x 3/4	1	005214
82	Roller Pin	1	423796
83	<u>Cutter Blade</u>	<u>1</u>	<u>306915</u>
84	Jaw Spacer	1	020659
85	<u>Outer Jaw</u>	<u>4</u>	<u>422789</u>
86	Ram Pin	1	020649
87	<u>Crimper</u>	<u>2</u>	<u>422788</u>
88	<u>Center Jaw</u>	<u>2</u>	<u>422907</u>
89	<u>Flat Link</u>	<u>2</u>	<u>020608</u>
90	<u>Forked Link</u>	<u>1</u>	<u>020616</u>
91	<u>Toggle Pin</u>	<u>2</u>	<u>020627</u>
93	<u>Jaw Pin</u>	<u>2</u>	<u>020615</u>
94	Jaw Support	1	422909
98	Pickup Spring	1	020630

<u>KEY</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>PART NO.</u>
99	Pickup Latch Assembly	1	020641
100	Roll Pin, 1 /8 x 9/16	1	008837
102	Handle Assembly	1	016931
103	Knob	1	008852
104	Hose Assembly	1	306376
105	Motor Latch Pin	1	020642
106	Motor Latch Spring	1	020645
107	Support Shaft	1	008539
108	Strap Guide Spring	1	023353
109	SHCS, 1/4-20 x 3/4	2	009041
110	FHSCS, 5/16-18 x 3/4	2	008153
111	Tensioner Frame	1	422777
<u>112</u>	<u>Gripper plug</u>	<u>1</u>	<u>422939</u>
<u>112A</u>	<u>Guide</u>	<u>1</u>	<u>422942</u>
113	Spring Washer	1	006566
114	<u>Feedwheel</u>	<u>1</u>	<u>422786</u>
115	Motor Spring	1	422785
116	Side Plate	1	423295
117	Flexloc Nut, 3/8-24	2	003868
<u>118</u>	<u>Bushing</u>	<u>1</u>	<u>006567</u>
119	Washer	1	005208
120	Hex Nut (L.H.) 5/16-24 x 1/4	1	005209
121	Truarc #5100-34	1	423294
122	Thrust Washer	1	024729
123	Sealer Guard	1	422131
124	Wear plug (1/2)	2	261854
124A	Rear guide pad (1/2)	1	263383
125	Warning Sign	1	267596
129	SHCS, #8-32 x 1/4	1	014546
131	Nameplate	1	433386
132	Information Sign	2	024727
133	Safety Sign	1	286373

- When ordering parts show tool model, part number and name.
- Common hardware parts may be obtained from local hardware suppliers.
- All recommended spare parts are underlined and should be stocked.

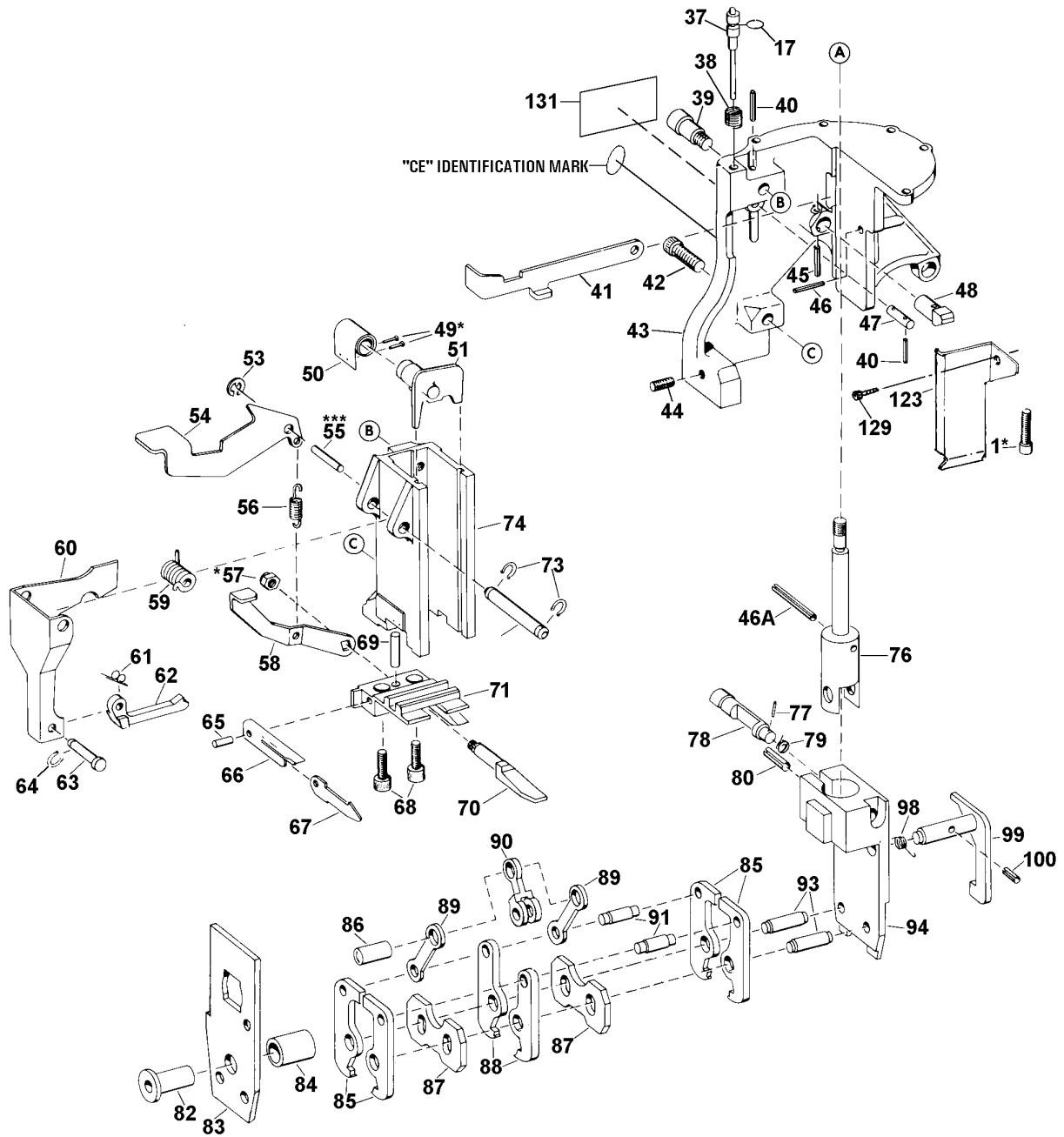


⚠ WARNING

All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect a product's operation and can result in personal injury.

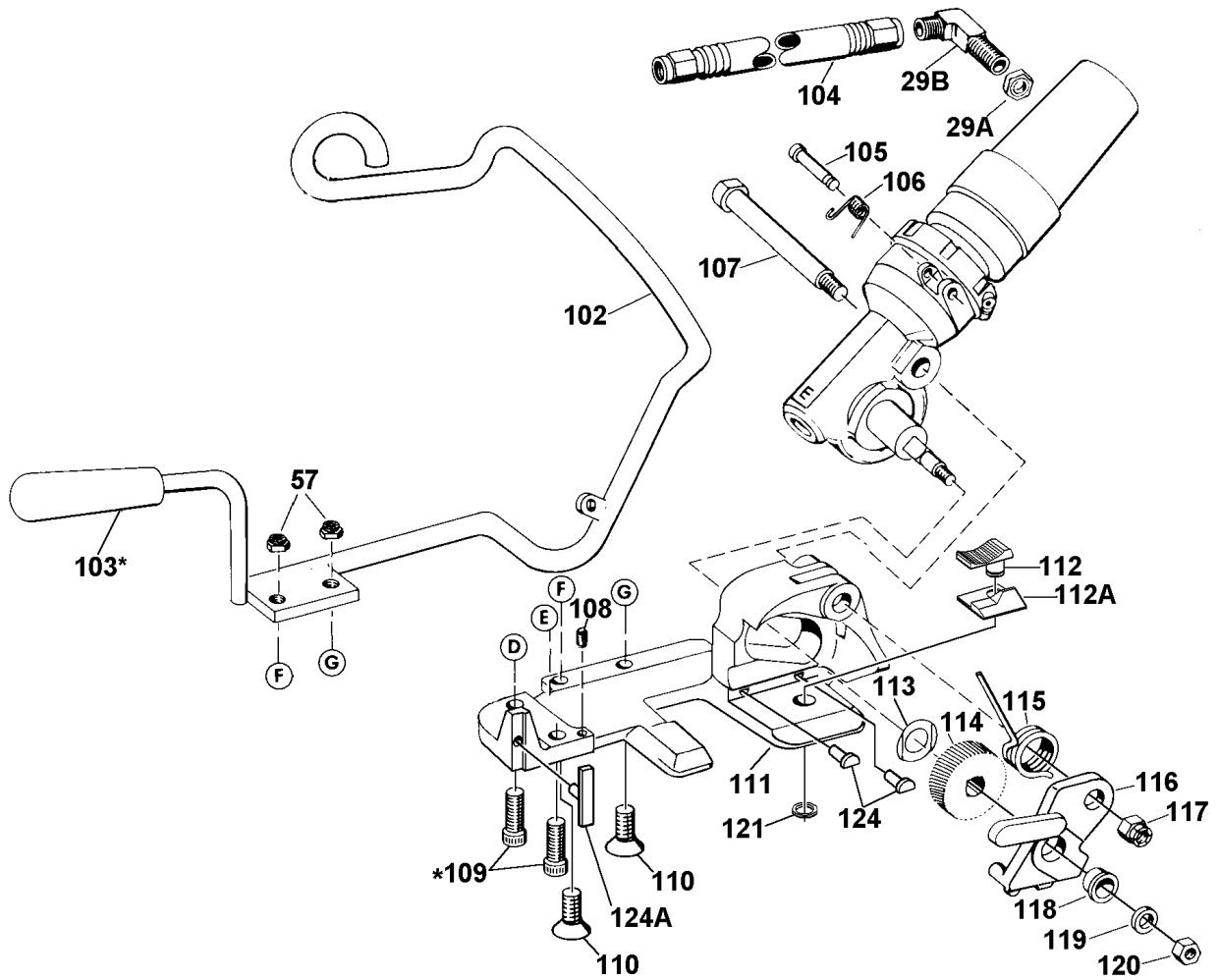
* Apply one drop of Loctite #242 Sealant to cleaned parts. Allow 12 hours to set if possible.

*** Use Loctite #609.



⚠ WARNING

All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect a product's operation and can result in personal injury.



* Apply one drop of Loctite #242 Sealant to cleaned parts. Allow 12 hours to set if possible.

⚠ WARNING

All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect a product's operation and can result in personal injury.

TOOL HOUSING, DISASSEMBLY & REASSEMBLY

The following instructions cover the removal and replacement of the following tool components:

- Seal Magazine and Sealer Mechanism
- Seal Ejector and Ejector Lever
- Feedwheel
- Gripper Plug

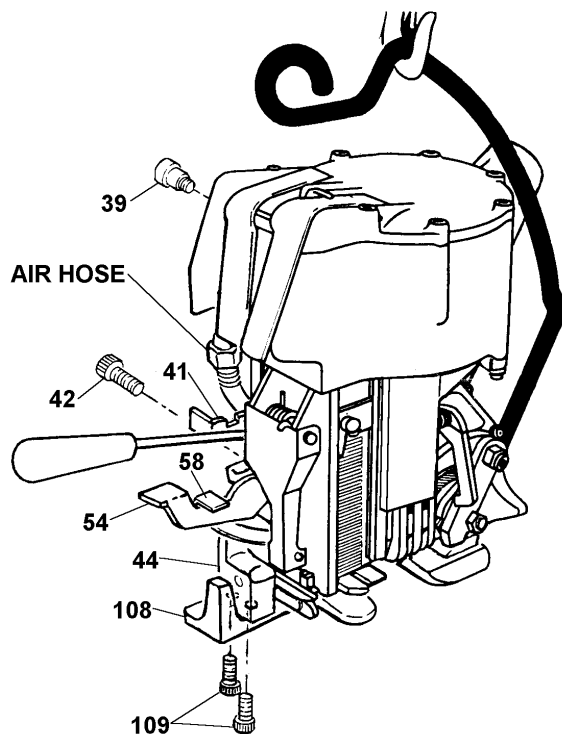
Refer to the exploded views and parts list in this manual for addition information and details. The following tools are required for perform these operations: 3 Allen wrenches 1/8", 3/16", and 1/4", Truarc pliers, 1/2", 9/16" 3/8" and 1/4" socket wrenches, a rubber mallet, common pliers, screwdriver and a set of assorted punches.

SEAL MAGAZINE AND SEALER MECHANISM - DISASSEMBLY:

Disconnect the air supply from tool and remove the seals from the magazine and sealer mechanism. Release the gripper lever (58) by pressing the gripper trigger (54). Press motor latch (41) to drop feedwheel. Loosen cutter adjustment set screw (44). Remove the two magazine screws (39 & 42) on the side of the sealer frame.

Remove the two socket head cap screws (109) from the bottom of the base. With the tool lying on its left side, swing the rear of the base down and away from the sealer frame. Tilt the top of the magazine away from the sealer mechanism and lift the magazine assembly out.

The magazine and sealer mechanisms are now accessible for examination and replacement of worn or broken parts. The sealer mechanism is serviced by removing the cutter blade. Clean the parts. Jaws and crimpers are replaced as required. After the necessary repairs have been made grease the parts or apply light machine oil. The tool is now ready for assembly.



SEAL MAGAZINE AND SEALER MECHANISM - ASSEMBLY:

With the sealer mechanism fully assembled and in place, insert the magazine by placing the lower portion of the magazine between the sealer mechanism and frame. Tilt the top forward to align properly with the sealer mechanism.

Swing the base up against the sealer frame. Be sure the strap guide spring (108) is in its proper position in the base. Insert and tighten the two socket head cap screws (109) through the base. Insert the top and bottom shoulder screw (39 & 42) through the sealer frame and into the magazine. Snug - do not tighten.

TOOL HOUSING, DISASSEMBLY & REASSEMBLY, Continued

Connect air supply and hold in sealer lever (8). With jaws in fully downward position, adjust the cutter adjustment screw (44). Tighten both magazine screws (39 & 42) through the sealer frame.

Insert seals into the magazine and operate the sealer mechanism at it's recommended air pressure through 3 or 4 cycles to check tightness of the cutter adjustment screw and see that seals feed properly. If the sealer mechanism is excessively tight, back off the cutter adjustment set screw slightly.

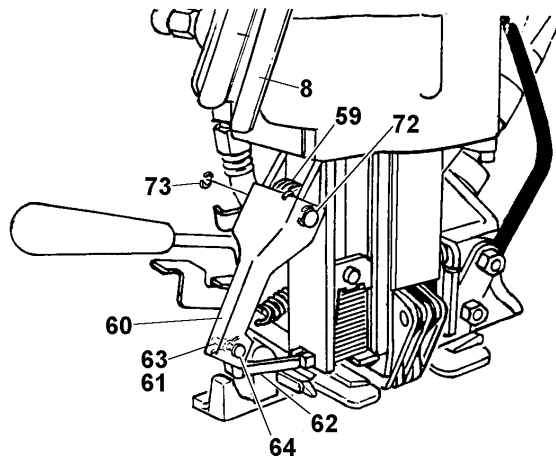
Apply a strap under tension to be sure that all elements of tool operate properly.

SEAL EJECTOR & EJECTOR LEVER - DISASSEMBLY

Remove the seals from the magazine. Remove the Truarc (73) from the left side of the ejector arm pin (72) then drive out ejector arm pin (72) from the left side of tool. Remove ejector arm spring (59). Hold gripper lever (58) down, pull out ejector lever (60).

Drive out roll pin (63) from ejector pin (64). Be sure to support ejector lever. Remove pin (64), ejector (62) and spring (61). Replace the ejector lever and/or the ejector as necessary. Re-assemble with new ejector following these steps in reverse order.

NOTE:If the ejector only needs to be replaced, it can be removed without removing the ejector lever following the 3 steps above.

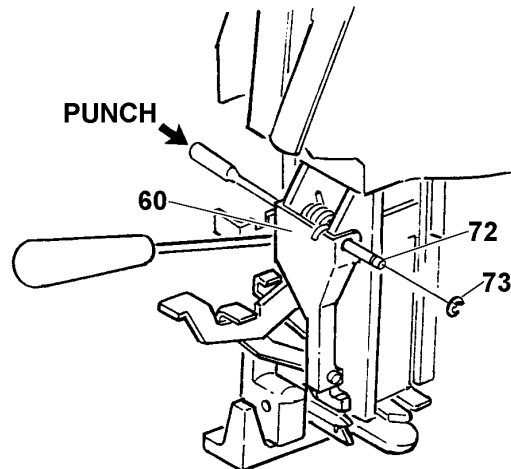


SEAL EJECTOR & EJECTOR LEVER - ASSEMBLY

Insert ejector (62) into cutter block (71) slot, hold gripper lever (58) down and slide ejector lever (60) into position. Insert ejector arm spring (59) ahead of the top of the ejector arm so it will slide under the edge of the cylinder. Start ejector arm pin (72) through right side of ejector lever and magazine.

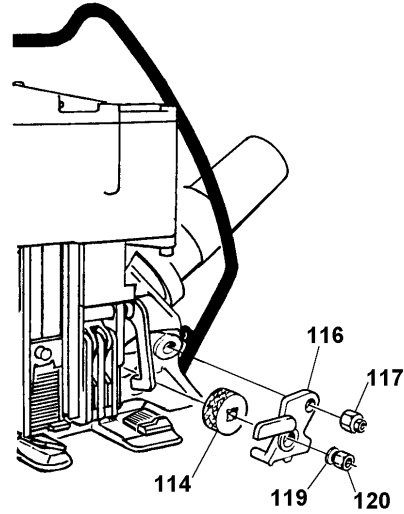
Insert a punch from the left side to hold the spring in alignment. Tap ejector arm pin (72) in from the right side, while removing the aligning punch at the same time. Push on lower part of ejector lever (60) to align holes on left side of tool. Finish tapping in ejector arm pin (72).

Replace Truarc (73). Insert seals in the magazine. Operate the sealer mechanism through 3 or 4 cycles to check and see that seals feed properly. Apply a strap under tension to be sure that all elements of tool operate properly.



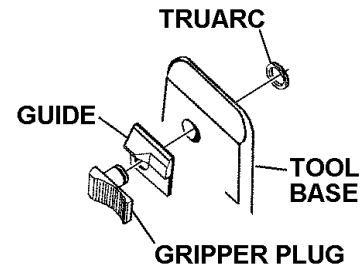
FEEDWHEEL

Remove the left hand nut (120) from the feedwheel shaft and lock nut (117) from the support shaft. With motor and gear housing latched in up position, remove washer (119), side plate (116) and feedwheel (114). Replace the feedwheel onto the feedwheel shaft. Apply grease to the bore of the side plate's bushing and reassemble the remaining parts in reverse order.



GRIPPER & GUIDE

Turn the tool on it's side. Motor and gear housing should be latched in up position. With a Truarc pliers remove the Truarc from the gripper plug stem. Push the gripper plug and guide up and out. Insert a new gripper plug or guide and install the Truarc.



PARTS LISTS & EXPLODED VIEW

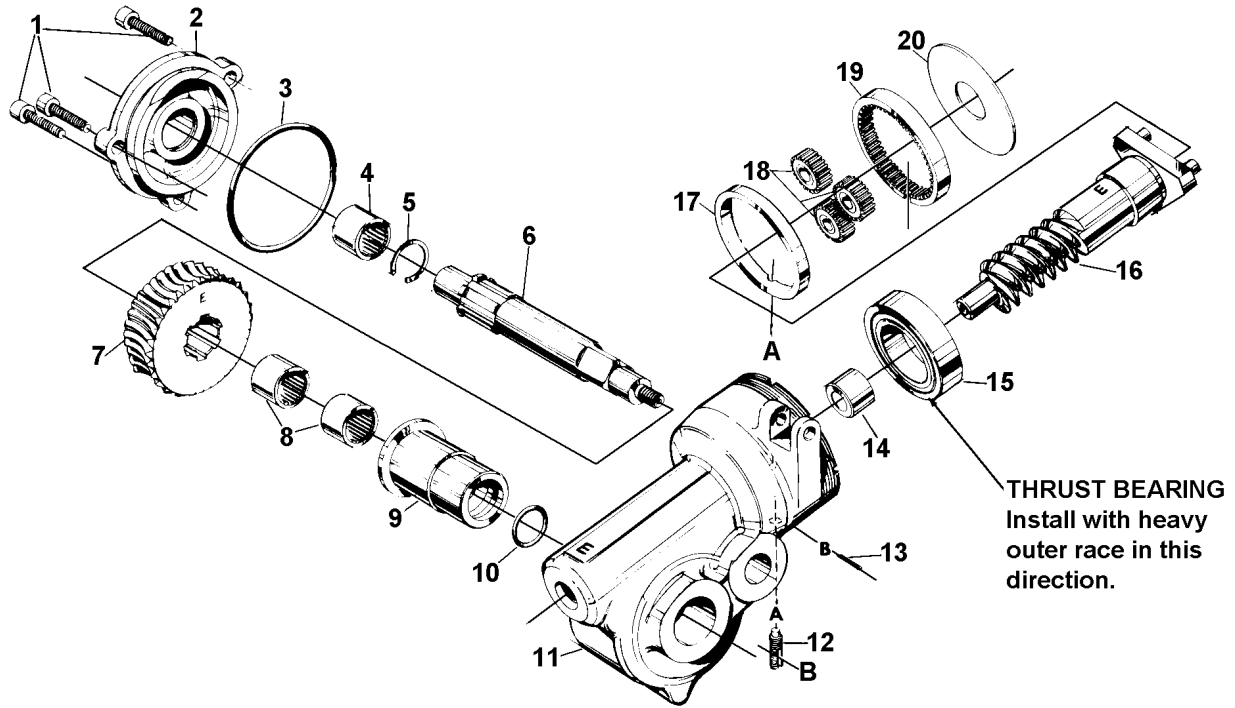
GEAR HOUSING

<u>KEY</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>PART NO.</u>
1	SHCS, 1/4-20 x 3/4	3	009041
2	Gear Housing Cover	1	020623
3	O-Ring	1	008546
4	Needle Bearing	1	008549
5	Truarc #5008-75	1	008547
6	Feedwheel Shaft	1	006585
7	Worm Wheel	1	023561
8	Wheel Bearing	2	006563
9	Gear Housing Bushing	1	006581
10	O-Ring	1	006594
11	Gear Housing	1	023564
12	Lock Screw	1	008581
13	Roll Pin 5/64 x 7/16 or Cotter pin, 1/16 x 5/8	1	008582 181482
14	Needle Bearing	1	008751
15	Thrust Bearing	1	023754
16	Worm Assembly	1	023563
17	Spacer Ring	1	008534
<u>18</u>	<u>Idler Gear Assembly</u>	<u>3</u>	<u>008815</u>
19	Ring Gear	1	008524
20	Washer	1	008536

- When ordering parts show tool model, part number and name.
- Common hardware parts may be obtained from local hardware suppliers.
- All recommended spare parts are underlined and should be stocked.

GEAR HOUSING DISASSEMBLY & REASSEMBLY

1. Remove the washer (20) the ring gear (19) and the idler gear assembly (18).
2. Remove the roll pin (13) and loosen the lock screw (12) to permit removal of the spacer ring (17).
3. Remove the worm assembly (16). Note that the thrust bearing (15) must be reinstalled with the heavy side of the outer race positioned as shown.
4. Remove the three gear housing cover mounting screws (1), then remove the housing cover (2). Withdraw the feedwheel shaft (6) and the worm wheel (7). Note that the worm wheel (7) must be reinstalled with the letter "E" positioned as shown.
5. Parts and housing must be free of metallic particles. Clean as required and regrease using non-fluid oil K-55. Reassembly gear housing by reversing above instructions. Fill gear housing to approximately 1/2 full.
6. When reassembled, check gearing for freeness by turning worm assembly (16) clockwise before attaching air motor.



⚠ WARNING

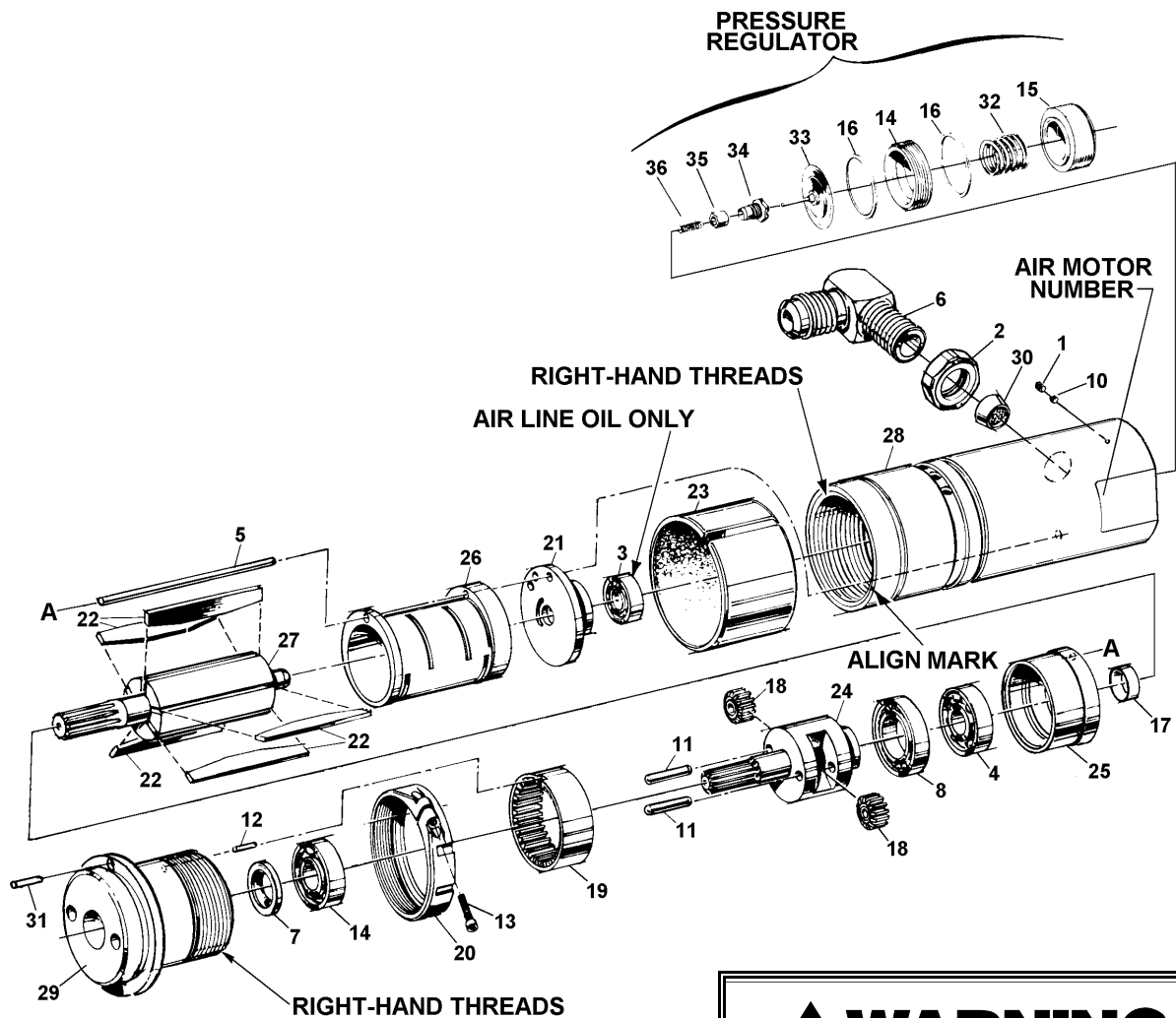
All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect a product's operation and can result in personal injury.

PARTS LISTS & EXPLODED VIEW

AIR MOTOR 18R36, Part No. 422912

<u>KEY</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	020173	Set Screw, flat point, #10-24 x 3/16
2	1	023087	1/4-18 NPT, Tru-Seal, Miller
3	<u>1</u>	<u>024633</u>	<u>Ball Bearing, Fafnir #AS1K7-R1#2</u>
4	1	023481	Ball Bearing, General #R-06-00-04
5	1	023510	Align pin
6	1	023524	90° Elbow, 1/4 tube, x 1/4-18 NPS
7	1	023558	Seal, Trostel #B-44-28-2
8	1	023552	Aircraft ball bearing, fafnir #B-538
9	1	306396	Ball bearing, MRC #1901S
<u>10</u>	<u>1</u>	<u>023540</u>	<u>Lock plug</u>
11	2	023555	Pin, 5/32 x 5/8, Torr. #Q-8254, spherical ends
12	1	023536	Pin, 1/16 x 1/4, Groove Pin #GP1-062X250-70
13	1	008731	SHCS, #10-24 x 3/4
14	1	023511	Diaphragm nut
15	1	023512	Pressure adjusting screw
<u>16</u>	<u>2</u>	<u>023543</u>	<u>Slip ring</u>
17	1	024602	Spacer
<u>18</u>	<u>2</u>	<u>024607</u>	<u>Idler assembly</u>
19	1	024608	Ring gear
20	1	023534	Ring nut
<u>21</u>	<u>1</u>	<u>024643</u>	<u>Back end plate</u>
<u>22</u>	<u>5</u>	<u>024612</u>	<u>Vane</u>
23	1	024618	Deflector assembly
<u>24</u>	<u>1</u>	<u>422783</u>	<u>Cage</u>
<u>25</u>	<u>1</u>	<u>024622</u>	<u>Front end plate</u>
26	1	024623	Cylinder
<u>27</u>	<u>1</u>	<u>024625</u>	<u>Rotor</u>
28	1	422782	Motor housing
29	1	422781	Gear housing
30	1	024630	Filter
31	1	023533	Pin, 7/64 x 1/4, Driv-Lok Type A-3
32	1	020166	Regulator spring
<u>33</u>	<u>1</u>	<u>023570</u>	<u>Pressure regulator diaphragm assembly</u>
34	1	023537	Valve seat
35	1	023572	Pressure regulator valve
36	1	023536	Valve spring

- When ordering parts show tool model, part number and name.
- Common hardware parts may be obtained from local hardware suppliers.
- All recommended spare parts are underlined and should be stocked.



WARNING
 All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect a product's operation and can result in personal injury.

NOTES:

Idler assemblies (Key 18) and Vanes (Key 22) must soak in air line oil overnight before assembly.

All motor parts are to be lubricated with Air Line Oil (Signode Part No. 008556, Non-Fluid Oil Co., Grade #LS-1236.

Idler assemblies and bearings except Key 3 are to be lubricated with non-fluid oil #K55 (Non-Fluid Oil Co.) or equivalent.

SEE NEXT PAGE FOR DISASSEMBLY & REASSEMBLY INSTRUCTIONS . . .

AIR MOTOR 18R36, DISASSEMBLY & REASSEMBLY

Considerable care must be used when an air motor is disassembled. Lack of lubrication and dirty unfiltered air are the main causes of malfunctions, which are corrected by proper maintenance of the filter, regulator and lubricator unit. Review Pneumatic Information in this manual for installation and maintenance recommendations.

REGULATOR DISASSEMBLY:

1. Remove the motor pressure regulator parts, clean and replace if necessary.
2. Reassemble and test tool before proceeding with the Motor Disassembly.

MOTOR DISASSEMBLY:

1. Loosen cap screw (13). Loosen ring nut (20) and remove motor from tool gear housing.
2. Hold motor housing (28) lightly in a vise, and remove gear housing (29) by rotating counter-clockwise when facing gearing end.
3. Keep groups of parts together without separating bearings unless their replacement is necessary.
4. Wash out any dirty parts using a fresh clean oil base type solvent.
5. Rotate bearings to make certain parts are clean. Apply a light coating of grease, #K-55, non-fluid oil, or an equivalent light cup grease. Do not apply grease on rotor (27) since this will cause sticking of vanes (22). Do not grease bearing (3) located in back end plate (21). Lubricate rotor, vanes and end bearing with air line oil only.
6. Replace gearing (18, 24, 27) and vanes (22) if worn or cracked. Apply a light coating of grease to gearing and air line oil to rotor and vanes.

REASSEMBLY:

1. Begin reassembly by making certain that the alignment pin (5) is correctly positioned to align the back-end plate (21), the cylinder (26) and the front-end plate (25) with the hole in the motor housing (28).
2. Assemble parts (8, 11, 12, 14, 18, 19, 24) and place them in the gear housing (29). Make certain that the roll pin (12) enters into the slot of the ring gear (19).
3. Assemble the gear housing (29) and the ring nut (20) to the motor housing (28). Hand tighten. Rotate the pinion of the gear case (24) by hand in the clockwise direction to be certain all parts are free. If parts are not free, gears are not properly meshed.
4. Add one teaspoon or squirt air line lubricating oil into the motor. Connect the air hose with the pressure set at approximately 20 p.s.i.g. With motor housing in vise, slowly tighten gear housing in a clockwise direction while the motor is rotating. Tighten the motor, noting an increase in speed. The correct adjustment is about 400-600 inch lbs. If the motor is over tightened it will slow down. When set, attach the air motor to the gear housing.

TROUBLESHOOTING

The following items are the most common types of tool malfunctions. For symptoms or remedies not shown, contact your Signode service representative for additional information and details. The following tool conditions are shown in this manual:

TENSIONING

- #1 - Motor will not start when tensioning lever is pressed.
- #2 - Air motor runs slowly or sluggishly.
- #3 - Air motor runs slowly or sluggishly.
- #4 - Feedwheel slips on top strap during tensioning.
- #5 - Bottom strap slips out of tool during tensioning.
- #6 - Feedwheel will not drop onto strap when tensioning lever is pressed.
- #7 - Feedwheel will not lift off strap after cycle is completed.
- #8 - Motor runs slowly as soon as air is connected to tool.
- #9 - Tool breaks strap during tool removal or tensioning.

SEALING

- #10 - Joints failing after tool removal.
- #11 - Sealing mechanism crushes or deforms seals.
- #12 - Tool won't complete sealing cycle unless sealing lever is held down manually.
- #13 - Sealing mechanism stalls in down position.

STRAP CUT-OFF

- #14 - Tool will not cut off strap after sealing.

SEAL EJECTION

- #15 - Seals do not eject fully and/or cutter blade cuts off seal ends.
- #16 - Ejector does not pick up seals.

#1 CONDITION: Motor will not start when tensioning lever is pressed.	
CAUSE	REMEDY
1. No air reaching tool.	1. Check gauge on filter-regulator-lubricator (FRL) for proper 65-90 psig pressure setting. Check air line from FRL to tool for blockage.
2. Air motor filter screen is blocked with rust or dirt.	2. Check air motor filter screen for obstruction then clean or replace as required.
3. Air motor is dry. Oil has evaporated leaving sticky varnish which prevents motor vanes from extending.	3. Add teaspoon air line oil directly into motor at elbow. Reconnect air line and test. Tap motor lightly w/rubber mallet to free vanes. Check function of lubricator.

TROUBLESHOOTING, Continued

#2 CONDITION: Air motor runs slowly or sluggishly.	
CAUSE	REMEDY
<p>1. Air supply to tool is restricted.</p>	<p>1A. Check gauge on FRL for proper 65-90 psig pressure setting.</p> <p>1B. Check air line from FRL for blockage</p> <p>1C. Check for satisfactory air volume reaching tool by either of the following methods:</p> <ul style="list-style-type: none"> a. Install an in-line air gauge at the tool if one is available. Hook up air and record pressure reading. With no strap in tool, press tension lever and record gauge reading. If pressure drops more than 15 psig, air supply is inadequate. Remedy is to improve air flow by shortening length of line from FRL to tool, increasing size of air lines, or checking for obstructions to or from FRL unit. Example: If piping system equipped with shutoff valves, ensure valve are fully open. b. If no in-line gauge available, repeat step "a", above, except use gauge on FRL unit.
<p>2. Air motor filter screen is blocked with rust or dirt.</p>	<p>2. Check air motor filter screen for obstruction then clean or replace as required.</p>
<p>3. Air motor is dry, unlubricated, causing motor to run slowly.</p>	<p>3. Add teaspoon air line oil directly into the motor at elbow. Place rag around motor, reconnect air and test. If motor speed increases, motor was dry. Check lubricator for proper adjustment, quantity and type of oil.</p>

#3 CONDITION: Air motor runs slowly or sluggishly.	
CAUSE	REMEDY
1. Valve latch (Page 11, Key 4) has popped up.	1. Check by pressing tension lever fully and then releasing lever. Press tension lever and hold lever fully in. If motor speed increases, valve latch is popped up, correct by first loosening lock screw (Page 11, Key 30). Push valve latch pin down and hold while tightening lock screw.
2. Insufficiently lubricated strap.	2. Use lubricated strapping.

#4 CONDITION: Feedwheel slips on top strap during tensioning.	
CAUSE	REMEDY
1. Feedwheel teeth packed with dirt or grit.	1. Clean feedwheel teeth with wire brush.
2. Feedwheel teeth worn or chipped.	2. Replace feedwheel (Page 13, Key 114).
3. Bushing in outer link worn.	3. Check I.D. of bushing to determine if hole is elongated. Replace if visually elongated.
4. Strap not aligned properly - outer link coming down on strap.	4. Align strap in tool properly.
5. Motor assembly not dropping the feedwheel on to the strap.	5. Lubricate the support shaft (Page 13, Key 107).

#5 CONDITION: Bottom strap slips out of tool during tensioning.	
CAUSE	REMEDY
1. Gripper plug teeth packed with dirt or grit.	1. Clean teeth feedwheel with wire brush (Page 13, Key 114).
2. Gripper plug teeth worn or chipped.	2. Replace gripper plug.

#6 CONDITION: Feedwheel will not drop onto strap when tensioning lever is pressed.	
CAUSE	REMEDY
1. Motor plunger (Page 11, Key 37) binding.	1. Invert tool. Add a few drops of air line oil to the hole in sealer frame for the motor plunger.

TROUBLESHOOTING, Continued

#7 CONDITION: Feedwheel will not lift off strap after cycle is completed.	
CAUSE	REMEDY
<ol style="list-style-type: none"> 1. Motor pickup latch (Page 11, Key 99) is worn. 2. Motor is dry, preventing motor from backing up and causing feedwheel teeth to remain imbedded in strap. 	<ol style="list-style-type: none"> 1. Check wing of motor pickup latch that contacts outer link, for wear. Replace if severely worn. 2. Add teaspoon of air line oil directly into motor at elbow. Reconnect air line and test as follows: <ol style="list-style-type: none"> a. Load tool with strap. b. Press tension lever and allow to tension until motor stalls. c. Press valve latch (Page 11, Key 4). Tool must release tension by feedwheel rolling back. If tool does not release tension, problem exists in motor or gear housing gearing.

#8 CONDITION: Motor runs slowly as soon as air is connected to tool.	
CAUSE	REMEDY
<ol style="list-style-type: none"> 1. Lower O-ring on tensioner valve stem (Page 11, Key 18) is ripped or has blown off. 	<ol style="list-style-type: none"> 1. Replace lower tensioner valve O-ring (Page 11, Key 17).

#9 CONDITION: Tool breaks strap at feedwheel, gripper, corner of load, or at joint during tool removal or tensioning.	
CAUSE	REMEDY
<ol style="list-style-type: none"> 1. Excessively applied tension. 2. Strap in use is insufficiently lubricated. 3. Strap not aligned properly - outer link coming down on strap. 	<ol style="list-style-type: none"> 1A. Reduce air pressure. 1B. Adjust motor to produce less tension by loosening lock screw on motor, and then turning adjusting screw out, counterclockwise. Tighten lock screw after making adjustment. 2. Use lubricated strap. 3. Align straps in tool properly.

#10 CONDITION: Joints failing after tool removal.	
CAUSE	REMEDY
1. Low joint strength caused by worn sealer mechanism parts.	1. Examine sealer mechanism for worn jaws, crimpers and pins. Replace all sealer mechanism parts.
2. Application related; i.e., strap not strong enough to contain load; load subjected to impact; load expands after strapping.	2. Review application to determine that strap-seal-tool in use is adequate for application.
3. Strap tension set too high.	3. Readjust tension to a lower setting per adjustment instructions.

#11 CONDITION: Sealing mechanism crushes or deforms seals.	
CAUSE	REMEDY
1. Worn ram and/or ram release pin.	1. Disassemble tool. Examine ram (76) and ram release pin (79). Replace as required.

#12 CONDITION: Tool won't complete sealing cycle unless sealing lever is held down manually.	
CAUSE	REMEDY
1. Broken sure seal pawl spring (Page 11, Key 33).	1. Replace sure seal pawl spring.
2. Worn sure seal pawl (Page 11, Key 34).	2. Replace sure seal pawl.
3. Worn sealer valve stem (Page 11, Key 22).	3. Replace sealer valve stem.

TROUBLESHOOTING, Continued

#13 CONDITION: Sealing mechanism stalls in down position.	
CAUSE	REMEDY
<ol style="list-style-type: none"> 1. Insufficient air pressure to complete sealing. 2. Broken sealer mechanism part. 	<ol style="list-style-type: none"> 1. Increase air pressure until sealing is completed. WARNING - Air pressure must be maintained in the 65-90 psig range. 2. Carefully inspect sealer mechanism for broken parts. Jaw stack can be returned to the up position by inserting screw driver in slot in sure seal pawl and rotating clockwise. WARNING - Stand to side of and hold tool securely when rotating pawl on jammed tool.

#14 CONDITION: Tool will not cut off strap after sealing.	
CAUSE	REMEDY
<ol style="list-style-type: none"> 1. Cutter blade out of adjustment. 2. Cutter blade worn. 3. Cutting leg on cutter block worn or broken. 	<ol style="list-style-type: none"> 1. Adjust cutter. 2. Replace cutter blade. 3. Replace cutter block.

#15 CONDITION: Seals do not eject fully and/or cutter blade cuts off seal ends.

CAUSE	REMEDY
1. Broken ejector spring (Page 12, Key 61).	1. Replace ejector spring.
2. Severely worn tip on ejector (Page 12, Key 62).	2. Replace ejector.
3. Severely worn cutter blade (Page 12, Key 83).	3. Replace cutter blade.
4. Bent or cracked ejector lever (Page 12, Key 60).	4. Check by first examining ejector lever for cracks. If no cracks are found, connect air to tool and note position of lugs on ejector in relation to cutter block. Front of lugs must contact rear of cutter block. If lugs do not contact cutter block, ejector lever is bent and must be replaced.
5. Screws (Page 12, Key 68) securing cutter block to magazine are loose.	5. Disassemble tool, remove screws. Add one drop of Loctite #242 to each screw. Reassemble.
6. Seal jam.	6. Disconnect air source. Pull back ejector lever and secure in retracted position by placing an object such as a screwdriver between the magazine and the ejector lever. Lightly tap the seal back into the magazine. Remove the seal from the magazine and discard with any plastic beading possibly lodged in the cutter block area.

TROUBLESHOOTING, Continued

#16 CONDITION: Ejector does not pick up seals.	
CAUSE	REMEDY
1. Seals improperly seated in cutter block track.	1. Position seals properly.
2. Dirt in cutter block rear track.	2. Brush dirt out of cutter block rear track.
3. Broken ejector tip.	3. Replace ejector.
4. Screws securing cutter block to magazine are loose.	4. Disassemble tool and tighten screws.
5. Ram roll pin bent.	5. Install new roll pin (Page 12, Key 46).
6. Broken or bent ejector lever (60) wing behind jaw stack.	6. Replace ejector lever.
7. Ejector lever.	7. Lightly tap the seal back into the magazine. Discard the seal and any plastic filament lodged in the cutter block area.

TOOL MAINTENANCE

The most common reason for poor tool performance and incorrectly formed straps joints is improper tool maintenance. The easiest way to determine if a tool is performing correctly is by inspecting the strap joint. Having a tool maintenance program is a simple task which consists of three parts. First, a quick daily inspection of the tool for any worn or broken parts. Secondly, keep each tool on a schedule of service intervals for cleaning and lubrication. Third, when problems do occur, use the troubleshooting guide to properly determine and fix problems before they lead to more serious tool conditions. Each of these three tasks have been outlined for this particular tool, read and understand all information for improving the life and performance of the tool.

TOOL INSPECTION


Visually inspect the exterior of the tool on a daily basis. Decreased tool life can be prevented by early detection of broken parts. Replace all broken parts with new parts. Review the Parts Removal, Replacement & Adjustments portion of this manual for information and details.

SERVICE INTERVALS

This tool, like most Signode tools, can be used with various sizes of strap which cause different rates of component wear. Also, wear is affected by the environment and tension that the tool applies. In the worst case, heavy gauge wide strapping. All critical moving components of the tool should be inspected at particular intervals, some more often than others. Broken parts can decrease sealing effort, leading to additional component wear and produce lower joint strength.

Inspect the components of the sealing mechanism when:

- A. Joint does not appear as shown in this manual or visually it is detected that the joint is not all formed or formed improperly.
- B. Sealing effort requires higher air pressure or tool is difficult to remove from strap.
- C. When scheduled.

 WARNING If there is any question that joint formation is not as shown or is suspect, it is important that you contact your tool representative immediately.

The feed wheel and the gripper teeth are also subject to wear and chipping. A daily cleaning of these parts by brushing off debris will be important to maintaining long life. The first indication of wear will be strap slippage during tensioning. The operator of the tool should be instructed on how to determine when the strap slips during tensioning. Sometimes the teeth need to be cleaned with a wire brush, but if slipping is allowed to continue, the parts will need to be replaced. Using the tool in a dirty environment will increase feedwheel and gripper plug wear.

NOTE: On some Signode tools the feedwheel can be cleaned by holding the tool open in the strap loading position while the tool runs without strap and using a wire brush to clean the feedwheel as it rotates.

Inspect the components of the tensioner mechanism when:

- A. Strap slips when being tensioning.
- B. Evidence of feedwheel milling on the strap face.
- C. When scheduled.

TOOL MAINTENANCE, Continued

TOOL LUBRICATION

Signode tools use a variety of greases and oils, all of which can be ordered through Signode using the appropriate description shown below.

- Air Line Oil, Part No. 008556
- K55 Grease, Part No. 177029

THREAD SEALANTS

Signode tools use a variety of thread sealants, all of which can be ordered in 10 ml bottles through Signode using the appropriate description shown below.

- Loctite #222, Part No. 422794
- Loctite #242, Part No. 422795
- Loctite #609, Part No. 422797



EU Declaration of Conformity
The Supply of Machinery (safety) Regulations
1992 (S.I. 1992/3073)

It is hereby declared that the undermentioned machinery has been designed and constructed to comply with the health and safety requirements defined in EC Directive 89/392/EEC

Machine Supplier: Signode, Division of ITW Ltd.
Queensway, Fforestfach
Swansea SA5 4ED


Machine Description: AMPT

Machine Type: Pneumatic Combination Hand Strapping tool.

Provisions with which machine complies:
89/392/EEC, 91/368/EEC

Harmonized EuroNorms with which machine complies:
EN 292:1, EN 292:2, EN 294, EN 349

Technical Standards with which machine complies:
NA

Signature: 
(Peter Oseland) **Date:** 1 SEPT 2000

**SIGNODE
NEW TOOL WARRANTY**

Signode Engineered Products Warrants that a new Signode strapping tool will operate per functional specifications for a period of sixty (60) days after the date of shipment to the owner's place of business. Normal wearing parts, as outlined in the Operation, Parts & Safety manual, are covered by a thirty (30) day warranty unless, in Signode's judgement, these parts have been subjected to abnormal or extreme usage. Signode's sole liability hereunder will be to repair or replace, without charge, F.O.B. Signode's Glenview, Illinois plant, any tool which proves to not operate per functional specifications within the stated period. Signode reserves the right to replace any tool which proves not to operate per functional specifications with a new or like-new tool of the same model if in Signode's judgement such replacement is appropriate. Any new replacement tool provided to an owner will carry a full sixty (60) day warranty. Any warranty repaired tool or like-new replacement tool will carry a warranty for the balance of the time remaining on the initial sixty (60) day warranty. This warranty will be extended to compensate for the time the tool is in Signode's possession for warranty repairs.

This warranty is void as to any tool which has been: (I) subjected to mis-use, misapplication, accident, damage, or repaired with other than genuine Signode replacement parts, (II) improperly maintained, or adjusted, or damaged in transit or handling; (III) used with improperly filtered, unlubricated air or improper strapping material, (IV) in Signode's opinion, altered or repaired in a way that affects or detracts from the performance of the tool.

SIGNODE MAKES NO WARRANTY, EXPRESSED OR IMPLIED, RELATING TO MERCHANTABILITY, FITNESS OR OTHERWISE EXCEPT AS STATED ABOVE AND SIGNODE'S LIABILITY AS ASSUMED ABOVE IS IN LIEU OF ALL OTHERS ARISING OUT OF OR IN CONNECTION WITH THE USE AND PERFORMANCE OF THE TOOL. IT IS EXPRESSLY UNDERSTOOD THAT SIGNODE SHALL IN NO EVENT BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES WHICH MAY ARISE FROM LOSS OF ANTICIPATED PROFITS OR PRODUCTION, SPOILAGE OF MATERIALS, INCREASED COSTS OF OPERATION OR OTHERWISE.

Considerable effort has been made to ensure that this product conforms to our high quality standards. However, should you experience any difficulties, please contact your Sales Representative providing samples and the manufacturing code specified on the tool.

Thank you for your help.

SIGNODE ENGINEERED PRODUCTS
Hand Tool Division
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