

OPERATION, PARTS AND SAFETY MANUAL



SIGNODE®

PN2-114 & PN2-2

AIR POWERED TENSIONERS

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

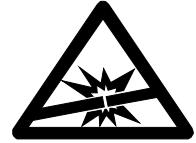
⚠ WARNING

READ THESE INSTRUCTIONS CAREFULLY. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS PERSONAL INJURY.

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.

- If the load corners are sharp use edge protectors.
- 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.

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.

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.



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.

CUT HAZARD

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



TOOL CARE

- Inspect and clean the tool daily. Replace all worn or broken parts.
- Lubricate all moving parts weekly unless otherwise specified.
- On air powered tools, always disconnect the pneumatic connection to the tool when performing part removal and replacement procedures. NEVER connect a pneumatic source to a disassembled tool unless otherwise specified.

WORK AREAS

Keep work areas uncluttered and well lighted.

WARNING

READ THESE INSTRUCTIONS CAREFULLY. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS PERSONAL INJURY.

- Use correct Signode products for your application. If you need help contact your Signode Representative.
- Signode tools and machines are designed and warranted to work together with Signode strapping and seals. Use of non-Signode strap and seals and/or manufactured or specified replacement parts may result in strap breakage or joint separation while applying strapping to a load or during normal shipping and handling. This could result in severe personal injury.

JOINT FORMATION

- Before using this tool, read its Operation and Safety Instructions contained in this manual.
1. This tool can be used with a variety of Signode sealer tools. Read the sealer's manual thoroughly to inspect a formed seal joint. Each joint must be inspected to make certain it has been properly made. A properly formed joint is shown in every sealer's manual. If the joint does not appear to have been made properly, then the operator must proceed as follows.
 - A. Make certain that the tool's operating instructions are being followed before applying another strap.
 - B. Cut the strap off and apply a new strap and seal.
 - C. An improper formed seal which does not have good notches or crimps, could result in strap separation. Before moving any package be certain that the seal is formed as shown in the sealer's manual. Inspect the joint to make certain it appears as shown in the sealer's manual. If not, remove the broken strap and check the tool for worn or broken parts. Repair the tool for worn or broken parts. Repair the tool before applying another strap.

MOVING AND STACKING STRAPPED LOADS

Before moving or stacking any strapped load, follow all standard industry practices regarding safe material handling procedures.

CUTTING TENSIONED STRAP

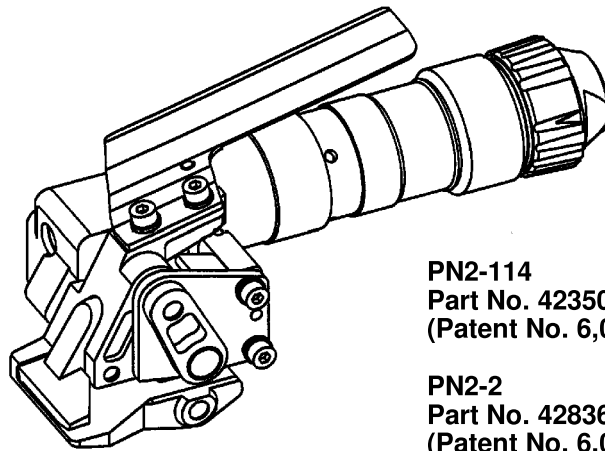
Use only cutters designed for cutting strap; never use claw hammers, crowbars, chisels, axes or similar tools. Such tools will cause the strap to fly apart with hazardous force. Before using any Signode product read its Operation and Safety Manual.

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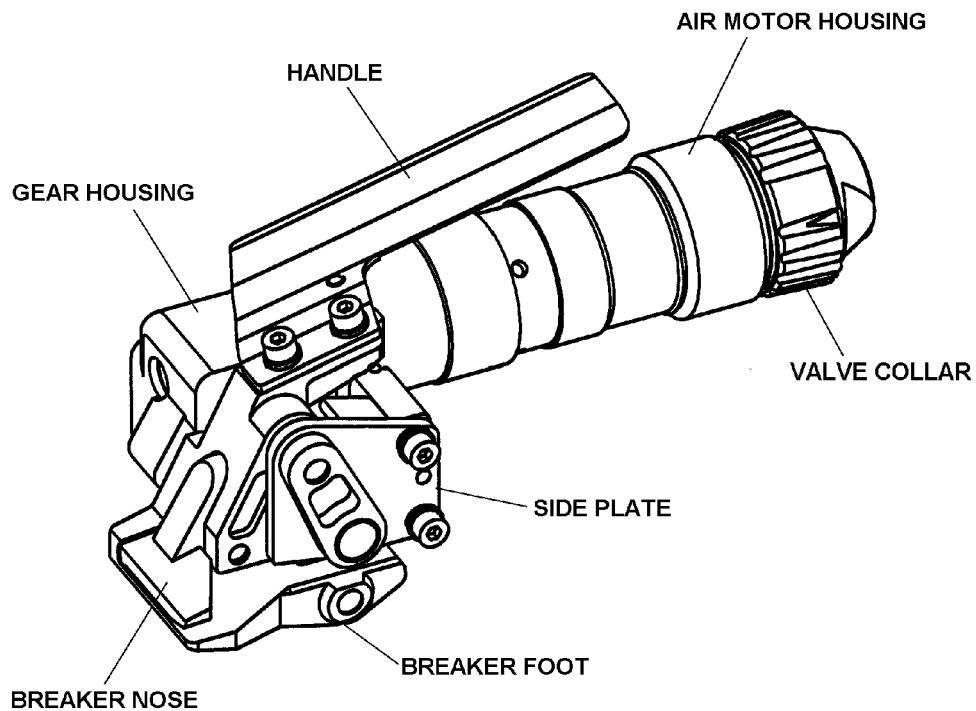
PN2-114
Part No. 423500
(Patent No. 6,073,664)

PN2-2
Part No. 428360
(Patent No. 6,073,664)

SPECIFICATIONS

MODEL	STRAP			SEALS
	TYPE	WIDTH	THICKNESS	
PN2-114	Apex & Magnus	3/4" (19mm) to 1-1/4" (31.75mm)	.020" (0.5mm) to .044" (1.12mm)	34HOC 114P
PN2-2	Magnus	1-1/4" (1.27mm) to 2" (50mm)	.025 (.63mm) to 0.044" (1.12mm)	250P

MAJOR COMPONENTS, PN2



TOOL INSTALLATION

To work effectively, the tool must be properly installed. This installation includes the proper placement of a strapping dispenser to provide a continuous supply of strap for the application and a satisfactory air supply.

TOOL MAINTENANCE

Clean the tool daily with a brush and apply light machine oil to all the moving surfaces. The feed wheel can be cleaned by holding a wire brush parallel to the face of the wheel while the tool is running.

PNEUMATIC INFORMATION

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.
Bottled air/gas sources do not provide consistent operating pressure

A filter-regulator-lubricator (FRL) unit 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 3/8" I.D. A quick disconnect socket fitting is installed on the stress spring end of the hose for convenient hookup to the air tool.

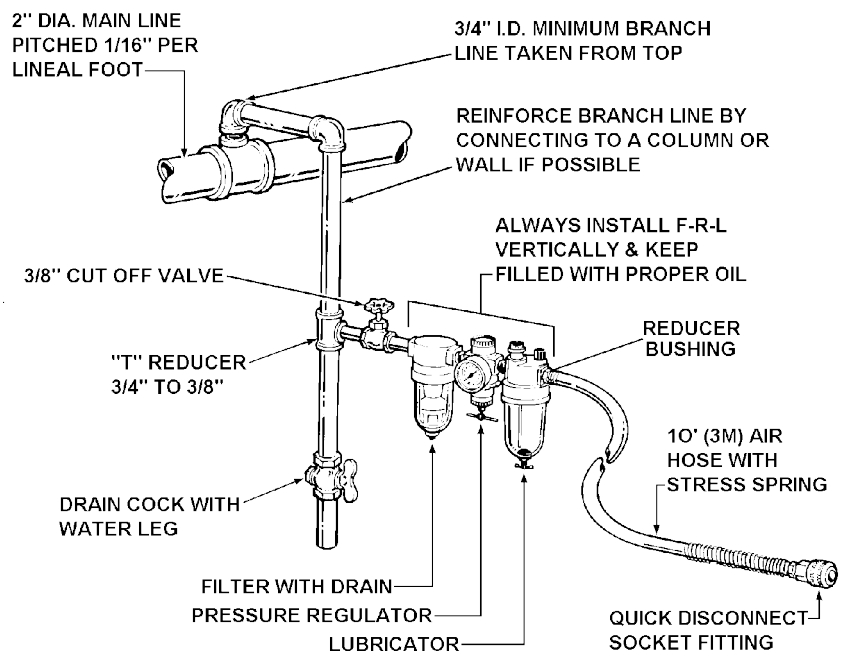
Filter-Regulator-Lubricator Unit
(Signode Part No. 008559 or 173111)

FRL Mounting Bracket
(Signode Part No. 071982)

Air Hose, 3/8" ID, 1/4" Fittings
(Signode Part No. 008558)

Reducer Bushing, 3/8" to 1/4"
(Signode Part No. 008478)

Quick Disconnect, 1/4" Fitting
(Signode Part No. 020706)



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.

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 (Part No. 008559).

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 tool must be properly lubricated. This is achieved by keeping the air line lubricator filled with oil and correctly adjusted. Without proper lubrication, the tool will become sticky and will 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 4 to 10 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 tool. Be certain to use recommended oil.

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

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

WARNING

Failure to use the proper strap/seal/tool combination for the load being strapping can result in an improperly secured load which can result in severe personal injury. If you have any questions, contact your local Signode Representative.

Strap tension is controlled by air pressure. Adjust the pressure regulator to give the desired tension level. Once the regulator is set, tension will be uniform on all straps provided the operator allows the air motor to stall. The air pressure gauge must be accurate. Confirm calibration by comparing it to a master gauge.

WARNING

Strap breakage hazard. Increasing the tension can result in strap breakage. If a strap breaks during tensioning, reduce the air pressure by 5 psi (0.35 Bar) increments until the strap does not break.

APPROXIMATE STRAP TENSIONS

AIR PRESSURE		TENSION	
psig	Bar	lbs.	Newtons
90	6.2	1600	7104
80	5.5	1425	6327
70	4.8	1200	5328
60	4.1	1050	4662
50	3.4	900	3996

RECOMMENDED AIR PRESSURE

APEX	psig	Bar
3/4 x .020 (19 x .51mm)	55	3.7
3/4 x .023 (19 x .58mm)	55	3.7
3/4 x .028 (19 x .71mm)	80	5.5
3/4 x .035 (19 x .89mm)	80	5.4

MAGNUS	psig	Bar
3/4 x .020 (19 x .51mm)	75	5.1
3/4 x .025 (19 x .64mm)	80	5.5
3/4 x .031 (19 x .79mm)	85	5.8
3/4 x .035 (19 x .89mm)	85	5.8
3/4 x .044 (19 x 1.1mm)	85	5.8
1-1/4x.031 (31.75 x .79mm)	90	6.2
1-1/4x.035 (31.75 x .88mm)	90	6.2
1-1/4x.044 (31.75 x 1.1mm)	90	6.2
2 x .044 (50 x 1.1mm)	90	6.2

If the above air pressures do not result in tension levels that satisfy your strapping needs, then increase the air pressure in increments of 5 psig (.34 Bar) until desired tensions are achieved.

WARNING

Do not exceed 90 psig (6.2 Bar) input air pressure to the tool.

OPERATING INSTRUCTIONS

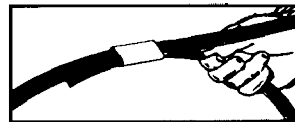
WARNING

Before operating this tool, make sure it has been properly maintained as noted in the Maintenance section of this manual.

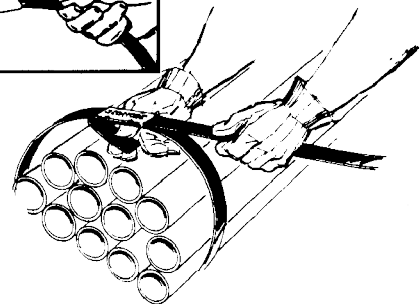
Wear safety glasses. Always position yourself to one side of the strap. Make sure all bystanders are clear before proceeding.

Failure to follow the above could result in severe personal injury.

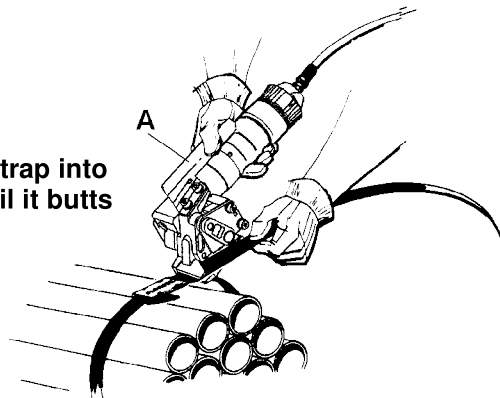
1. Thread the strap through a Signode full overlap push type seal. Encircle the bundle and rethread the strap end through the seal as shown. Bend the strap end back sharply under the seal, about 2 ½ inches, and pull out the slack strap.



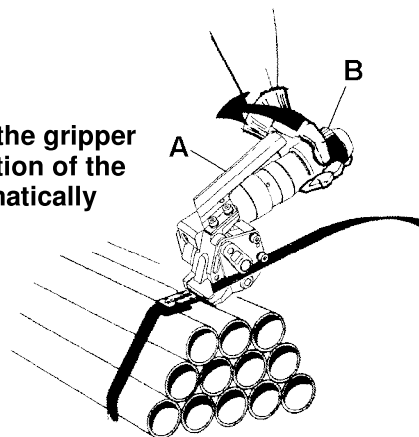
- For 3/4" strap use #34HOC Seals.
- For 1-1/4" strap use #114P seals.
- For 2" strap use #250P seals.



2. Press the gripper lever (A) with palm. Place the top strap into the front nose opening and slide the tool forward until it butts against the seal.

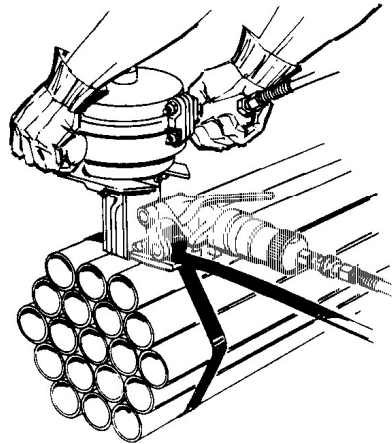


3. While standing to one side of the strap line, release the gripper lever (A) and turn the air control ring (B) in the direction of the arrow with the palm of the hand. The tool will automatically tension the strap and hold it tight.

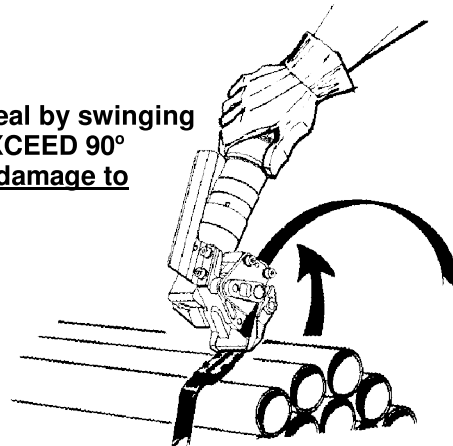


OPERATING INSTRUCTIONS, Continued

4. Notch the seal with a sealing tool. Note that the tensioner automatically keeps tension on the strap. Inspect the seal to make sure the sealing tool has properly formed a joint.



5. Before shutting of the air , break the strap at the seal by swinging the tensioner up and down as shown. **DO NOT EXCEED 90° MOVEMENT.** If the tool is swung too far forward, damage to the seal will occur and the strap will not break off.



PARTS LIST, TOOL

KEY	QTY.	PART #	DESCRIPTION
1	1	800120	Flange bearing
2	1	423537	Nameplate (PN2-114)
	1	510462	Nameplate (PN2-2)
3	1	800119	Pivot pin, $\varnothing 10\text{mm} \times 55\text{mm}$
4	1	267596	Warning plate
5	4	005464	Lock washer
6	2	423549	SHCS, M6 x 18
7	1	<u>423532</u>	Handle
8	2	423790	SHCS, M6 x 25
9	1	162391	Pin, $\varnothing 5\text{mm} \times 24\text{mm}$
10	1	427295	Adjustment screw
14	1	423548	Foot spring
16	1	<u>423514</u>	Breaker foot
17	1	<u>423513</u>	Breaker nose (PN2-114)
	1	<u>428486</u>	Breaker nose (PN2-2)
18	1	<u>252262</u>	Nose pin, $\varnothing 8\text{mm} \times 36\text{mm}$
19	1	423546	Nose spring
20	1	<u>423398</u>	Feed wheel
21	1	<u>423521</u>	Bushing
22	1	423505	Side plate
26	1	<u>423517</u>	Roller
28	1	<u>423524</u>	Roller pin, $\varnothing 10\text{mm} \times 50\text{mm}$

WARNING

Inspect all parts daily and replace them if they are worn or broken. Failure to do this can affect a product's operation and could result in serious personal injury.

- When ordering parts please show tool model, part number and description.
- Recommended spare parts are underlined and should be stocked.
- Common hardware parts can be obtained at any local hardware supply.

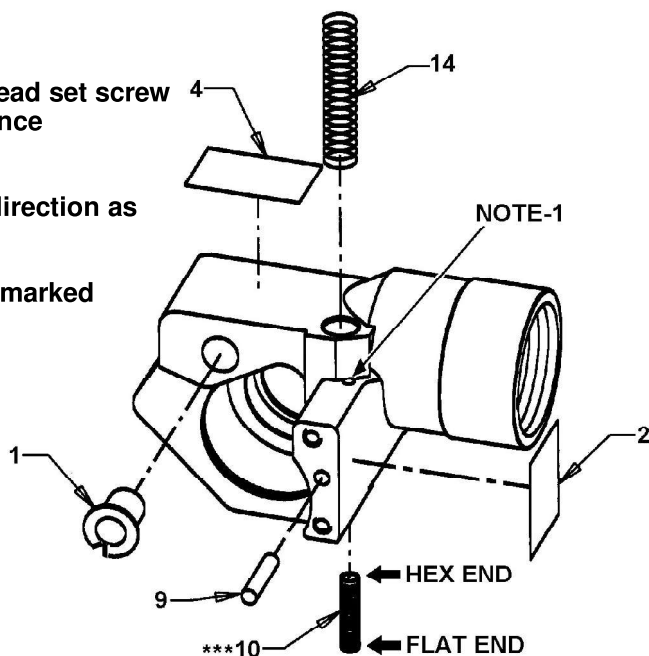
* Apply one drop of Loctite #242 (Blue) sealant to cleaned parts. Allow 12 hours to set if possible. Do not apply to small screws or close to moving parts as liquid spreads easily.

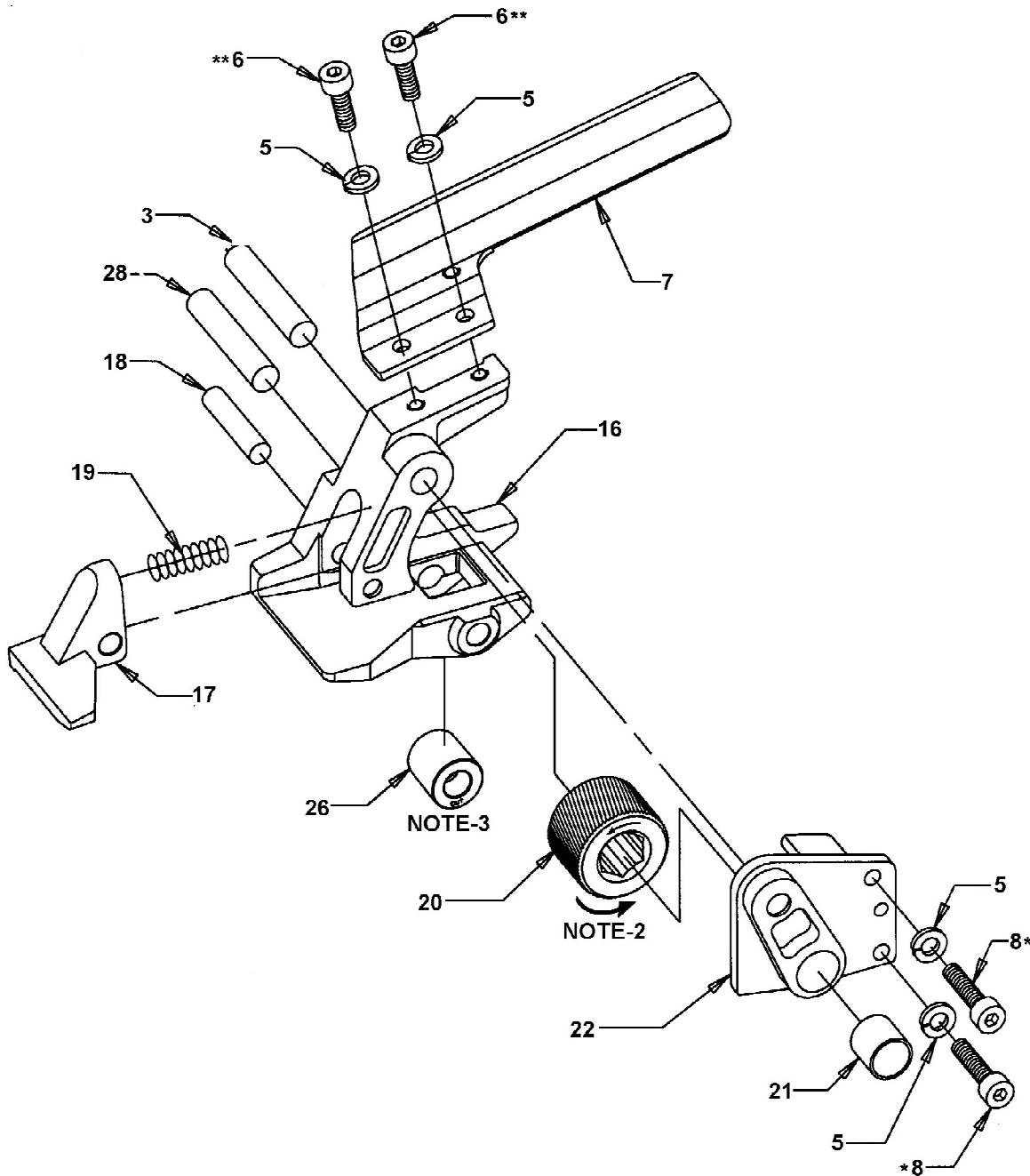
** Apply one drop of Loctite #271 (Red) sealant to cleaned parts. Allow 12 hours to set if possible. Do not apply to small screws or close to moving parts as liquid spreads easily.

*** Apply one drop of Loctite #222 (Purple) sealant to cleaned parts. Allow 12 hours to set if possible. Do not apply to small screws or close to moving parts as liquid spreads easily.

NOTES:

1. Allen wrench access hole to socket head set screw (Key 10) for feedwheel to roller clearance adjustment.
2. Install feedwheel in noted rotational direction as shown by arrows.
3. Install roller with the larger diameter (marked OUT) facing outwards as shown.

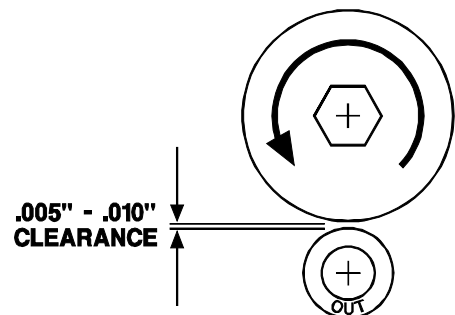




FEEDWHEEL TO ROLLER CLEARANCE:

The feedwheel (Key 20) to roller (Key 26) clearance is set by turning the set screw (Key 10) until there is a .005" - .010" clearance to be established between the two parts.

NOTE: The feedwheel and roller should not come together.



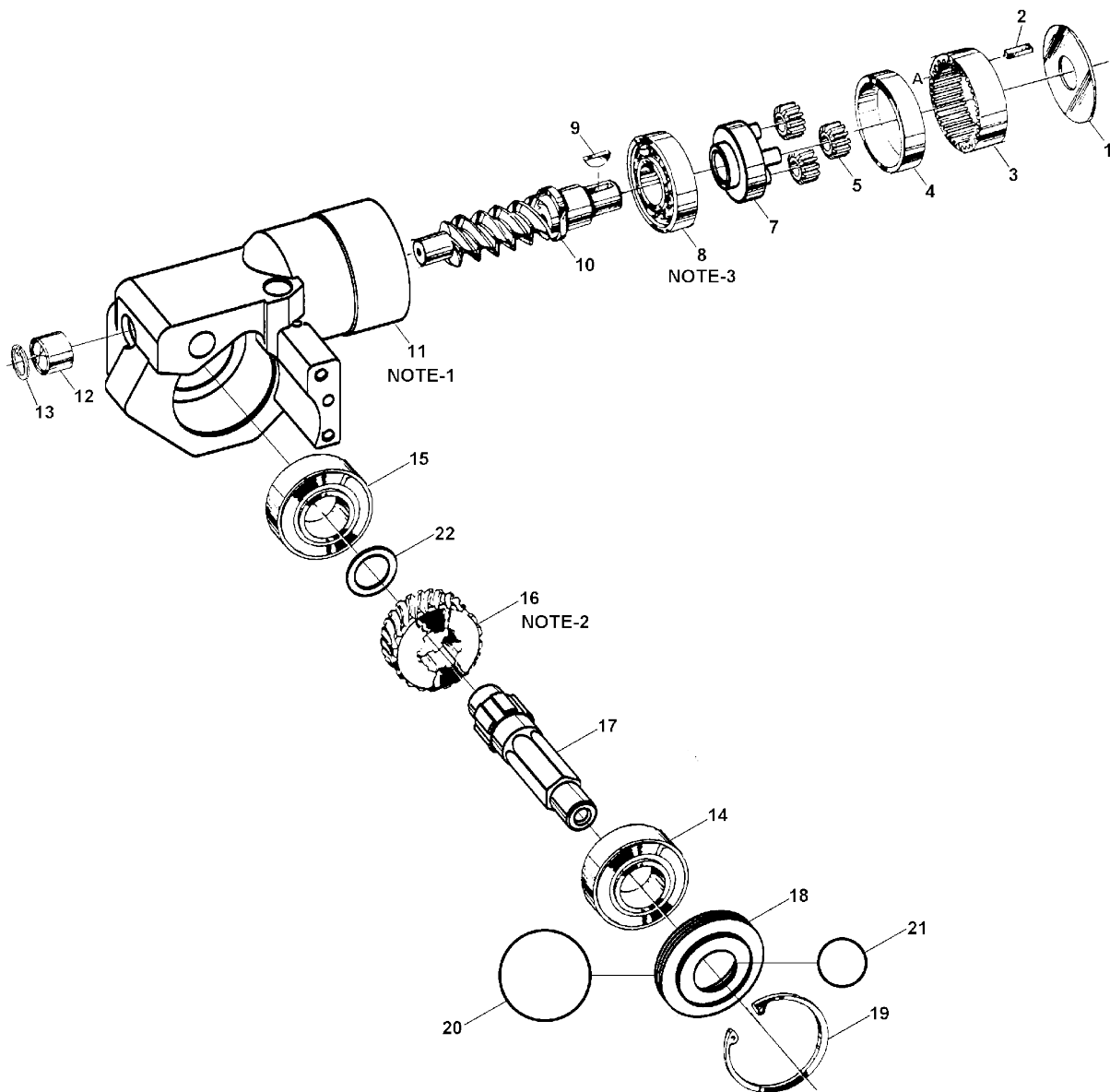
PARTS LIST, GEAR HOUSING ASSEMBLY, PART NO. 423520

<u>KEY</u>	<u>QTY.</u>	<u>PART #</u>	<u>DESCRIPTION</u>
1	1	008781	Thrust washer
2	1	008872	Ring gear key
3	1	008871	Ring gear
4	1	008769	Spacer
5	3	<u>008766</u>	<u>Idler gear</u>
7	1	306389	Idler gear plate assembly
8	1	008756	Bearing, Fafnir 7203
9	1	008774	Key
10	1	423530	Worm
11	1	423511	Gear housing
12	1	008751	Needle bearing, Torr M781
13	1	008752	Truarc, N5000-62
14	1	423515	Bearing, Fafnir B539DD
15	1	024038	Bearing, Fafnir KP10A
16	1	<u>423529</u>	<u>Worm - gear</u>
17	1	423501	Feedwheel shaft
18	1	423509	Cover
19	1	250731	Truarc ring, N5000-185
20	1	256755	O-Ring, SAE 30
21	1	423531	O-Ring, SAE 18
22	1	423533	Thrust washer

- When ordering parts please show tool model, part number and description.
- Recommended spare parts are underlined and should be stocked.
- Common hardware parts can be obtained at any local hardware supply.

WARNING

Inspect all parts daily and replace them if they are worn or broken. Failure to do this can affect a product's operation and could result in serious personal injury.



NOTES:

1. Pack the gear housing (11) about 1/3 full with Non-Fluid Oil #K55 or equivalent.
2. When assembling the worm gear, the side stamped 'T' must face towards the back of the housing.
3. Bearing must be installed with wide shoulder away from worm.

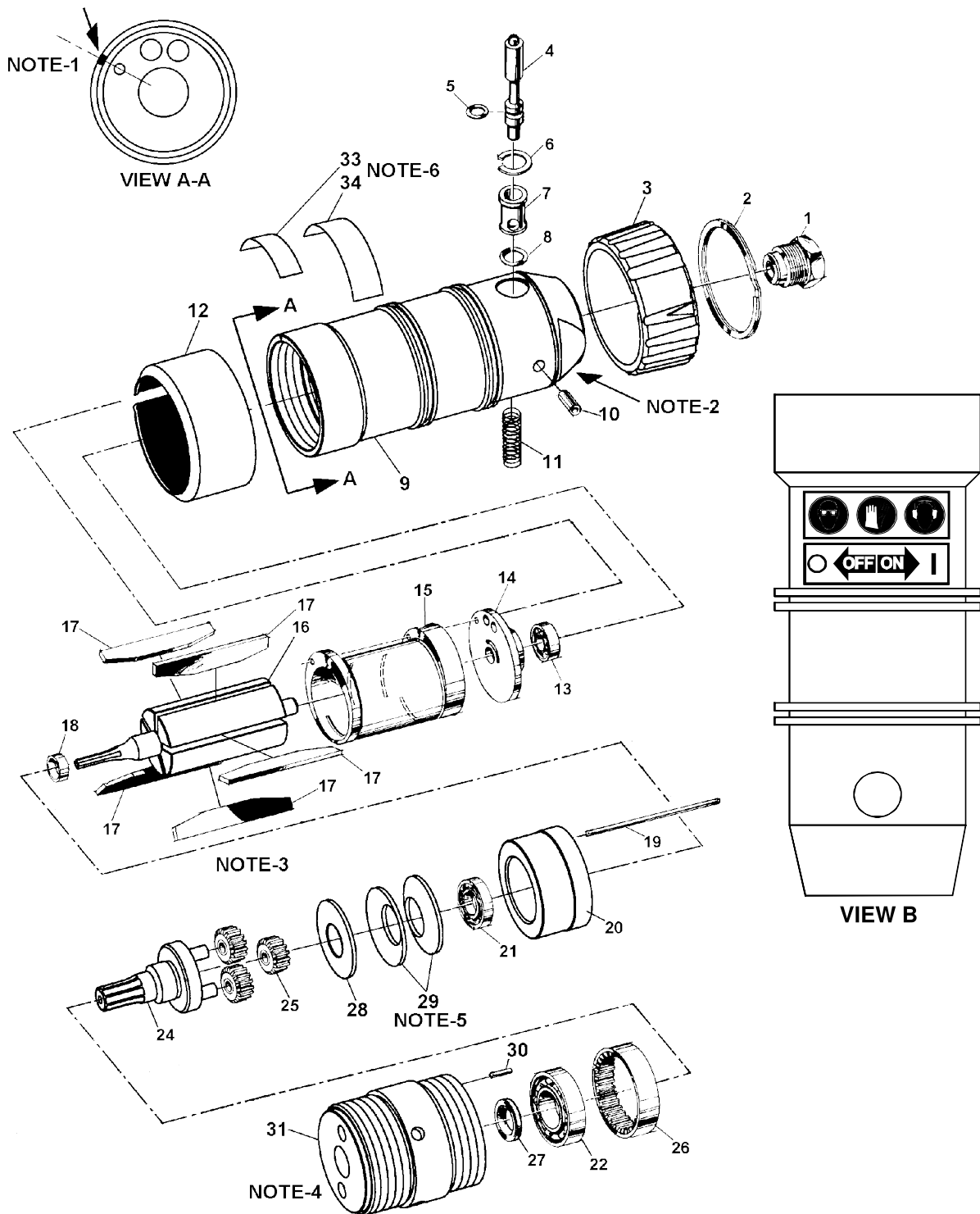
PARTS LIST, AIR MOTOR 100L15, PART NO. 423510

<u>KEY</u>	<u>QTY.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	024631	Filter assembly
2	1	023557	Retainer, Spirolox, #RS-181
3	1	024676	Valve collar
4	1	<u>024662</u>	<u>Valve stem</u>
5	1	<u>023559</u>	<u>O-ring</u>
6	1	023549	Retainer
7	1	024663	Valve sleeve
8	1	<u>004164</u>	<u>O-ring</u>
9	1	423508	Motor housing
10	1	023372	Roll pin, 3/16 x 3/8
11	1	024661	Valve spring
12	1	423534	Deflector assembly
13	1	<u>024633</u>	<u>Bearing, Fafnir, #ASIK7-SRI #2</u>
14	1	<u>024653</u>	<u>Back end plate</u>
15	1	024652	Cylinder
16	1	<u>423423</u>	<u>Rotor</u>
17	5	<u>024651</u>	<u>Vane</u>
18	1	024602	Spacer
19	1	023510	Align pin
20	1	<u>423794</u>	<u>Front end plate</u>
21	1	023481	Ball bearing
22	1	023547	Ball bearing
24	1	423403	Idler carrier assembly
25	3	<u>423060</u>	<u>Idler</u>
26	1	423798	Ring gear
27	1	023558	Seal
28	1	423404	Spacer
29	2	423793	Bevel spring washer
30	1	306612	Pin
31	1	423795	Gear housing
33	1	286373	3 symbol safety sign
34	1	280537	On-Off label

- When ordering parts please indicate air motor model, part number and description.
- Recommended spare parts are underlined and should be stocked.
- Common hardware parts can be obtained at any local hardware supply.

NOTES:

1. Align marks on motor housing as indicated in "View A-A".
2. Location of air motor number (underside).
3. Idler gears (25) are to be lubricated with Non-Fluid Oil #K55 or equivalent. Vanes (17) must soak in air line oil overnight before assembling air motor.
4. If the rear motor housing (9) becomes loose, it must be retightened while the motor is running at 20 to 30 psig (1.6 to 2.0 Bar) air pressure. This will ensure proper alignment and rotor freedom.
5. Spring washers should be assembled back to back with cup shape facing outwards) (.
6. Apply labels (Key 33 & 34) to motor housing oriented as shown in "View B".



⚠ WARNING

Inspect all parts daily and replace them if they are worn or broken. Failure to do this can affect a product's operation and could result in serious personal injury.



SIGNODE®

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: PN2

Machine Type: Pneumatic Tensioner 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 MARCH 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
3620 W. Lake Avenue, Glenview, Illinois 60026

PART #	DESCRIPTION	AREA OF USE
LUBRICANTS		
177029	GEAR HOUSING GREASE	CLUTCH DRIVES, INTERNAL GEARS, GEAR SETS
422792	WHITE LUBRIPLATE GR-132 GREASE	PNEUMATIC PARTS, AIR CYLINDERS, AIR VALVES, O-RINGS
422793	BLACK LUBRIPLATE 3000W GREASE	MOVING INTERNAL PARTS, JAWS, LINKS
432322	EP ACCROLUBE GREASE	HIGH FRICTION CONTACT PARTS
008556	LS-1236 AIR LINE OIL	AIR MOTORS, AIR VALVES
ADHESIVES		
422794	LOCTITE #222, PURPLE	LOW STRENGTH, SCREWS 1/4" (6MM) OR SMALLER SIZES
422795	LOCTITE #242, BLUE	MEDIUM STRENGTH, SCREWS 5/16" (8MM) OR LARGER SIZES
422796	LOCTITE #271, RED	HIGH STRENGTH, SEMI-PERMANENT SCREW APPLICATION
422797	LOCTITE #609, GREEN	PERMANENT, CURVED SURFACE PART CONTACT
274111	LOCTITE #380, BLACK MAX	PERMANENT, FLAT SURFACE PART CONTACT
CLEANING BRUSHES		
023963	SMALL BRUSH	FEEDWHEEL & GRIPPER TEETH
269589	LARGE BRUSH	FEEDWHEEL & GRIPPER TEETH