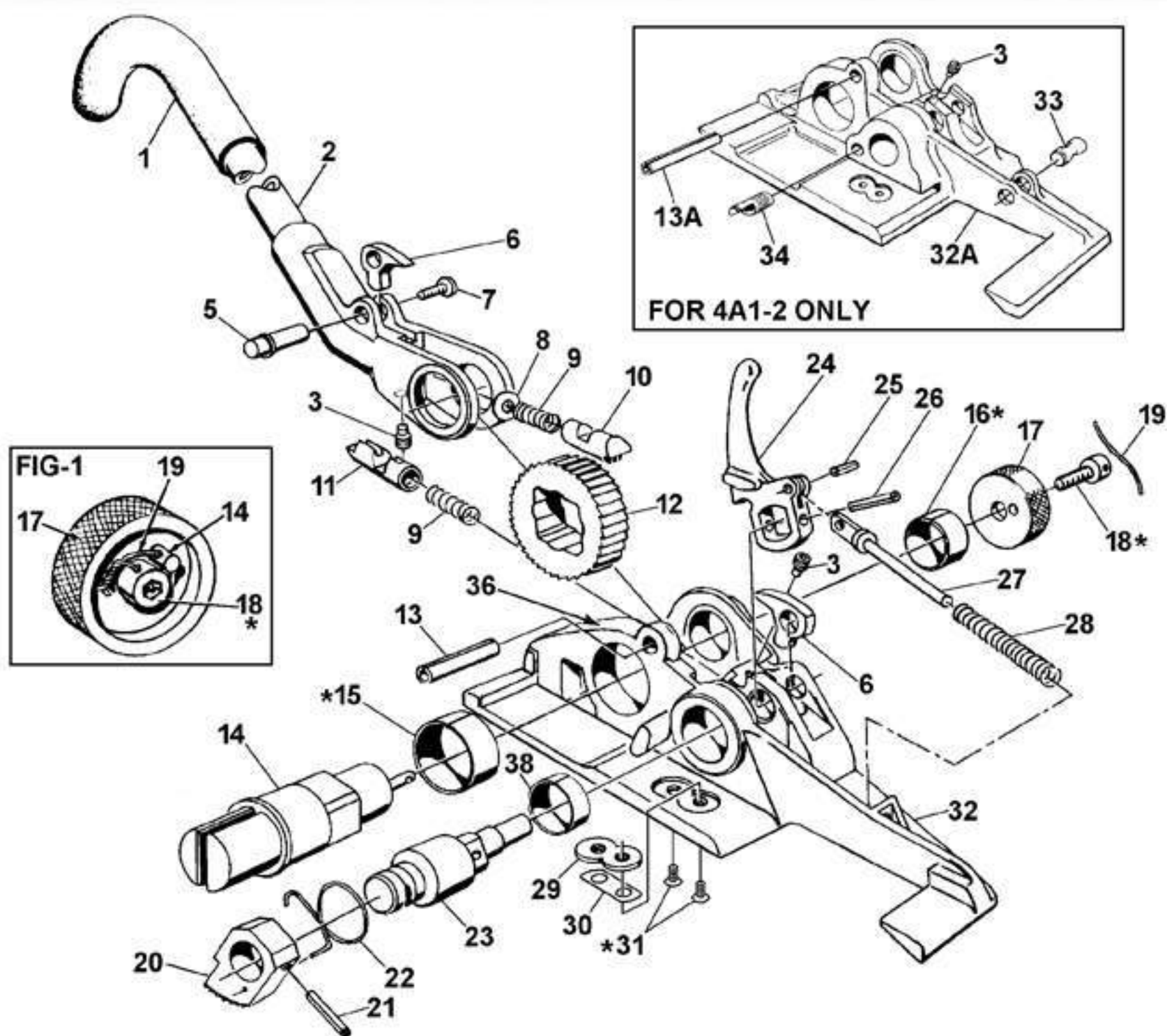


Signode 4A1-114 Windlass Tensioner



* Use Loctite #242.

NOTES:

1. Thread wire (19) through hole in screw (18) and through hole in pin (14). Twist wire ends until snug (See Figure 1 above).
2. Assemble Key Nos. 13, 15 and 16 with slot facing up.
3. Do not apply sealant to small screws or to moving parts as liquid spreads easily.
4. Clean tool at least once a week and apply light machine oil to all moving parts daily.

⚠ 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.

PARTS LIST

KEY	QTY.	4A1-114 PART NO.	4A1-114KR PART NO.	4A1-2 PART NO.	DESCRIPTION
1	1	171652	171652	171652	Handle grip
2	1	171955	171955	179023	Yoke handle assembly
3	2	173956	173956	173956	Set screw, Nylock
5	1	006768	--	006768	Pawl pin
5A	1	--	005568	--	Pawl pin
6	2	006767	006767	006767	Pawl cam
7	1	086190	086190	086190	Klipring, Truarc #5304-77
8	1	006746	006746	006746	Pawl spring washer, 1/4 SAE Std.
9	2	006769	006769	006769	Pawl spring
10	1	<u>006711</u>	<u>006711</u>	<u>006711</u>	<u>Handle pawl</u>
11	1	<u>006712</u>	<u>006712</u>	<u>006712</u>	<u>Base pawl</u>
12	1	<u>006762</u>	<u>006762</u>	<u>006762</u>	<u>Ratchet wheel</u>
13	1	006920	006920	--	Roll pin, 3/8 x 1 5/8
13A	1	--	--	071804	Roll pin, 3/8 x 2 1/4
14	1	005908	005908	005909	Windlass shaft assembly
15	1	008675	008675	008675	Bushing
16	1	008682	008682	008682	Bushing
17	1	006705	006705	006705	Windlass knob
18	1	006748	006748	006748	Cap screw, 5/16-18 x 3/4
19	1	007184	007184	007184	Retaining wire
20	1	<u>006758</u>	<u>006758</u>	<u>006758</u>	<u>Gripper</u>
21	1	<u>006787</u>	<u>006787</u>	<u>006787</u>	<u>Roll pin, 3/16 x 1</u>
22	1	<u>006788</u>	<u>006788</u>	<u>006788</u>	<u>Gripper spring</u>
23	1	005907	005907	005912	Gripper shaft
24	1	006765	--	006765	Gripper release cam
24A	1	--	005565	--	Gripper release cam
25	1	006738	006738	006738	Roll pin, 5/32 x 3/8
26	1	006737	006737	006737	Cam retaining pin (roll pin), 5/32 x 1
27	1	<u>006739</u>	<u>006739</u>	<u>006739</u>	<u>Cam push rod</u>
28	1	<u>006741</u>	<u>006741</u>	<u>006741</u>	<u>Cam push rod spring</u>
29	1	<u>006742</u>	<u>006742</u>	<u>006742</u>	<u>Gripper plate</u>
30	A/R	005913	005913	005913	Shim
31	2	<u>004860</u>	<u>004860</u>	<u>006789</u>	<u>Gripper plate screw</u>
32	1	163321	--	--	Base
32A	1	--	--	163333	Base
32B	1	--	163327	--	Base, not shown
33	1	--	--	006740	Push rod swivel
34	1	--	--	006698	Gripper stop pin
35	1	177896	177896	177896	Warning sign
36	1	002481	002481	002481	Nameplate
37	2	002163	002163	004939	Drive screw
38	1	424193	424193	424193	DU Bearing (14DU12)

! When ordering parts, please show tool model, part number and name.

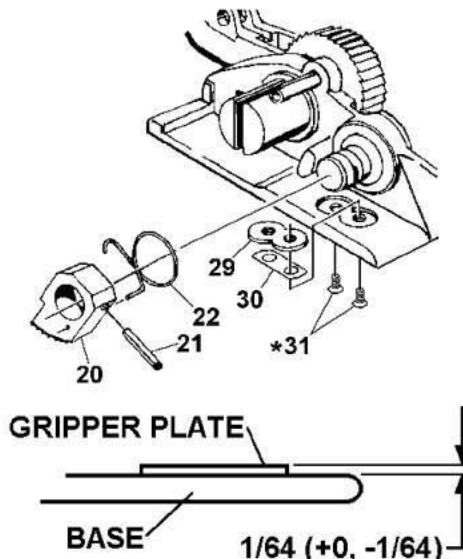
! All recommended spare parts are underlined and should be stocked.

! Standard hardware parts may be obtained from local hardware suppliers.

PART REMOVAL AND REPLACEMENT

GRIPPER, GRIPPER SPRING, GRIPPER PLATE

1. To remove the gripper and the gripper spring (20 and 22), drive the roll pin (21) out of the gripper using a 3/16" pin punch. Pull the gripper and gripper spring off the gripper shaft. Inspect and replace as required. Before reassembling, clean the exposed end of the gripper shaft and lubricate using light machine oil. Do not use grease. Reassemble in reverse order.
2. To replace the gripper plate (29) remove the two gripper plate screws (31) and lift the gripper plate out of the base. Be careful not to lose the shims (30) beneath the gripper plate. Before installing a new gripper plate, blow any dirt out of the hole in the base. The gripper plate must be installed flush to 1/64" above the base surface as shown in Figure 1. Apply one drop of Loctite sealant #242 to each screw. Reassemble in reverse order. After reassembling the tool, do not use for 12 hours to permit Loctite sealant to harden.

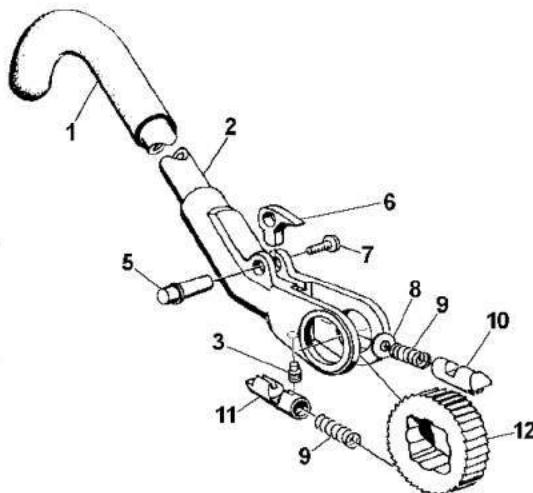


⚠ WARNING

The top of the gripper plate must be only slightly above the top of the base. Failure to install the gripper plate properly can cause a loss of strap tension.

TENSION HANDLE ASSEMBLY, WINDLASS SHAFT, AND RATCHET WHEEL.

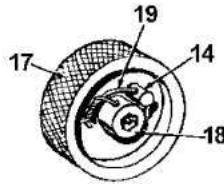
1. Remove the retaining wire (19) from the windlass knob (17). Remove the cap screw (18) from the windlass shaft (14). Pull the windlass knob off the end of the windlass shaft.
2. Slide the windlass shaft out of the base (32) and lift out the tension handle assembly. The ratchet wheel can then be removed and inspected.
3. To remove the handle pawl (10) from the yoke handle weldment (2), first remove the Klipring Truarc (7) from the slot on the pawl pin (5). Press the pawl pin out of the handle yoke by pushing on the pin from the Truarc side of the pin. Once the pawl pin is removed, remove the handle pawl aligning set screw (3). The pawl cam, handle pawl, pawl spring and spring washer (6, 10, 9 and 8) can now be removed and inspected. Before reassembling, clean all parts thoroughly in solvent, particularly the hole in the handle yoke for the handle pawl. Lubricate all moving parts with light machine oil and reassemble in reverse order.



4. Should it be necessary to replace the windlass shaft bushings (15 and 16), it is recommended that each bushing be driven out of the base by using pieces of rod or pipe with smaller diameters than the holes in the base. If pipe of the correct size cannot be obtained, the bushings can be driven out with a pin punch. Before installing new bushings, apply one drop of Loctite sealant #242 to each outer bushing surface. It is recommended that the bushings be pressed into the base. Be careful not to damage the edges of the bushings during installation.
5. Before reassembling the tool, clean ratchet wheel, windlass shaft, and yoke handle assembly thoroughly. Lubricate all moving parts with light machine oil. Do not use grease. Reassemble in reverse order.

NOTE: To tighten cap screw on windlass knob, first rotate slot in the windlass shaft to vertical position. Cut two (2) pieces of strap about 6" long and insert in windlass slot. Place one drop of Loctite sealant #242 on cap screw threads. Use strap to prevent windlass from turning as cap screw is tightened. **DO NOT USE** a screwdriver to prevent windlass from turning as windlass slot can be damaged. After cap screw is tightened, install a new retaining wire as shown.

THREAD WIRE (19) THROUGH HOLD IN SCREW (18) AND THROUGH HOLE IN PIN (14), TWIST WIRE ENDS UNTIL SNUG.



⚠ WARNING

Never use Loctite or any similar adhesive on handle pawl aligning set screw (3) as this could cause the handle pawl to stick and not engage the ratchet gear properly.

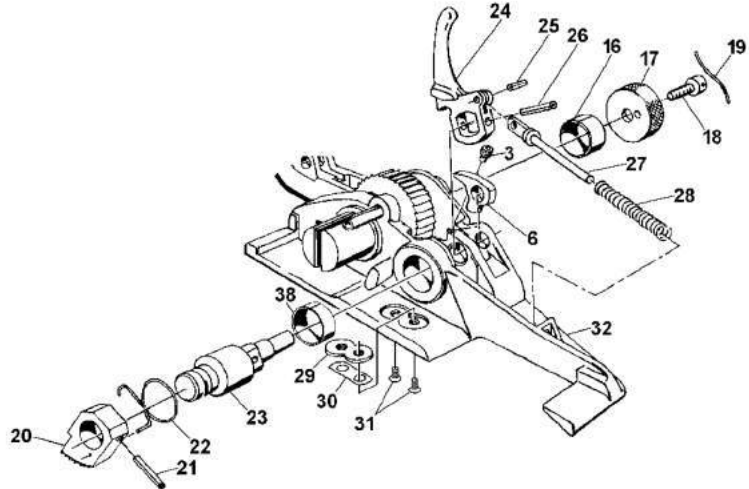
GRIPPER SHAFT, CAM PUSH ROD, AND BASE PAWL

1. Remove the gripper and the gripper spring in accordance with the instructions on the previous pages.
2. To remove the gripper shaft and the cam push rod, place the tension handle assembly in the forward position and manually return the gripper release cam (24) to the full rear position. Working from the top of the tool with a pin punch, drive the roll pin (26) out of the gripper release cam. It will be necessary to rotate the gripper release cam forward after the roll pin is part way through the gripper release cam to obtain clearance to drive the roll pin all the way out. After the roll pin is removed, rotate the gripper release cam to the full forward position. Tap the gripper shaft (23) out of the base. Once the gripper shaft is removed, the gripper release cam, cam push rod, spring, and pawl cam (24, 27, 28 and 6) can be removed and inspected.

PART REMOVAL AND REPLACEMENT, Continued

- Should it be necessary to replace or service the base pawl (11), the tension handle assembly, windlass shaft, and the ratchet wheel must be removed first. See instructions on previous pages. Once the ratchet wheel is removed, remove the base pawl aligning set screw (3). The base pawl and spring can now be removed and inspected.

- Before reassembling the tool, clean all parts thoroughly in solvent and allow to dry completely. All moving parts should be lubricated with light machine oil.



- To reassemble the tool, install the pawl spring, set screw, and base pawl into the base. Next, assemble the ratchet wheel, tension handle assembly, and windlass shaft. See instructions on previous pages. To install the gripper shaft, use the following procedure:
 - Ensure that the gripper release cam (24) is pinned to the cam push rod (27) with the roll pin (25).
 - Slide cam push rod spring (28) onto the cam push rod.
 - Set gripper release cam assembly into the appropriate position in the base with end of the cam push rod extending through the hole in the base.
 - Set pawl cam (6) in position in the base.
 - Insert the gripper shaft into the base and through the gripper release cam. The gripper shaft will only go part way through the gripper release cam.
 - Pull the gripper release cam to the full rear position, see Figure 4.
 - Insert a screwdriver between the gripper release cam and the base. Use the screwdriver to pry the gripper release cam towards the rear of the tool. At the same time, rotate the gripper shaft until the square part of the gripper shaft slides into the square hole in the gripper release cam.

NOTE: When sliding the gripper shaft into the gripper release cam, ensure that the wide radius on the gripper shaft is facing down.

- h. Push the gripper shaft fully into the base.
- i. Remove the screwdriver and install the roll pin (26) into the hole in the gripper release cam.
- j. Install the gripper (20) and gripper spring (22).

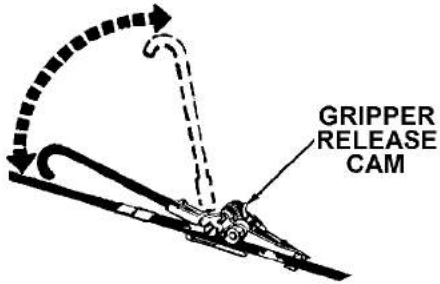
NOTE: After the tool is reassembled, crank the tension handle several times to be sure that set screws (3) are not binding the handle pawl or base pawl. If either pawl is binding, turn the appropriate set screw counterclockwise 1/2 turn at a time and recheck each time by cranking the handle.

PART #	DESCRIPTION	AREA OF USE
LUBRICANTS		
177029	BROWN K-55 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

TROUBLESHOOTING

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

- #1 - Gripper will not hold lower strap.
- #2 - Strap slides off windlass shaft during tensioning.
- #3 - Tensioning handle slips during tension stroke.
- #4 - Tool will not hold tension.

#1 SYMPTOM: Gripper will not hold lower strap.	
CAUSE	REMEDY
<p>1. Operator is bringing tension handle too far back allowing tension handle to hit gripper release cam.</p>	<p>1. While tensioning strap, do not rotate the tensioning handle to the point where it will contact the gripper release cam. This will result in a loss of strap tension.</p> 
<p>2. Gripper spring (22) is weak or broken.</p>	<p>2. Replace gripper spring. See Parts Removal and Replacement Instructions.</p>
<p>3. Dirt in gripper teeth.</p>	<p>3. Clean gripper teeth and apply light machine oil to end of gripper shaft. Do not use grease.</p>
<p>4. Gripper teeth worn.</p>	<p>4. Replace gripper and apply light machine oil to end of gripper shaft. Do not use grease.</p>
<p>5. Gripper plate (29) is worn. Top of plate must be above base.</p>	<p>5. Replace gripper plate. See Parts Removal and Removal Instructions.</p>
<p>6. Dirt or rust has accumulated between gripper and gripper shaft preventing gripper from rotating.</p>	<p>6. Remove gripper (see Parts Removal and Removal Instructions). Clean hole in gripper and exposed end of gripper shaft, then lubricate using light machine oil. Do not use grease.</p>
<p>7. A bent or dirty cam push rod (27) or weak spring (25) prevents gripper shaft from rotating.</p>	<p>7. Replace cam push rod and spring. Clean and apply light machine oil to all moving parts.</p>

#2 SYMPTOM: Strap slides off windlass shaft during tensioning.	
CAUSE	REMEDY
1. Strap not inserted fully inserted into windlass shaft slot during strap loading.	1. Push strap fully into slot during initial tensioning strokes. See Operating Instructions for details.
2. Tool is not kept in line with strap during tensioning.	2. Keep tensioning handle in line with strap during tensioning.
3. Excessive amount of strap being wound onto windlass shaft.	3. Cut off strap 2 to 4" beyond windlass. See Operating Instructions for details.

#3 SYMPTOM: Tensioning handle slips during tension stroke.	
CAUSE	REMEDY
1. Handle pawl is clogged by dirt or rust preventing free movement of handle pawl.	1. Remove tension handle, handle pawl, spring and ratchet wheel. Clean parts and hole in handle yoke and apply light machine oil to moving parts. See Parts Removal and Replacement.
2. Tip of handle pawl is heavily worn or chipped.	2. Replace handle pawl and lubricate with light machine oil. See Parts Removal and Replacement.
3. Teeth on ratchet wheel are heavily worn or chipped.	3. Replace ratchet wheel and lubricate with light machine oil. See Parts Removal and Replacement.
4. Windlass shaft bushings (15 and 16) are heavily worn allowing windlass shaft to wobble. This may cause improper ratchet wheel/handle pawl alignment.	4. Replace bushings and lubricate with light machine oil. See Parts Removal and Replacement.

#4 SYMPTOM: Tool will not hold tension.	
CAUSE	REMEDY
1. Base pawl is clogged by dirt preventing free movement of base pawl.	1. Remove base pawl, spring and ratchet wheel. Clean parts and hole in handle yoke and apply light machine oil to moving parts. See Parts Removal and Replacement.
2. Tip of base pawl is heavily worn or chipped.	2. Replace base pawl and lubricate with light machine oil. See Parts Removal and Replacement.
3. Teeth on ratchet wheel are heavily worn or chipped.	3. Replace ratchet wheel and lubricate with light machine oil. See Parts Removal and Replacement.
4. Windlass shaft bushings (15 and 16) are heavily worn allowing windlass shaft to wobble. This may cause improper ratchet wheel/handle pawl alignment.	4. Replace bushings and lubricate with light machine oil. See Parts Removal and Replacement.