

BUNN

The Keep it all Together People

MODEL 3091 TYING MACHINE OPERATOR MANUAL



The Original Package Tying Machine

B. H. Bunn Company

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BUNN TYING MACHINE SERIAL # **90664**

Notice

Do not attempt to operate this Equipment before reading the operation instructions and performing the Before Operation Checks paragraph in section 3 of this manual.

OPERATOR SAFETY REMINDERS

The National Safety Council reminds us that most accidents are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason, you as a careful operator, are the best insurance against an accident.

Regardless of the care used in the design and construction of any type of equipment there are many conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

- **NEVER ATTEMPT TO THREAD, CLEAN, OIL OR ADJUST A MACHINE WHILE MOTOR IS OPERATING OR MACHINE IS IN MOTION.**
- **NEVER OPERATE MACHINE WITH ANY GUARD OR PANEL REMOVED AND KEEP HANDS AWAY FROM INSIDE OF GUARD TO AVOID BEING STRUCK BY THE TWINE ARM.**
- **DO NOT REMOVE GROUNDING PRONG FROM THE POWER CORD.**

Tying Machine Operator Manual

Foreword

This manual contains instructions for installation, operation, preventative maintenance, troubleshooting and repair parts identification for your tying machine manufactured by the B. H. Bunn Company, Lakeland, Florida. Proper use of the manual should ensure safe and efficient operation and maintenance of the tying machine. Because of the increasing staff of Service Representatives, B. H. Bunn Company can now

offer a Maintenance Contract. Contact your local service representative, who is capable to render factory approved service, for full details maintenance contract information or the B. H. Bunn Company.

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Section I - Introduction

Purpose of Tying Machine

The primary purpose of the tying machine is to automatically tie mail, packages, cartons, piece parts, printed matter, newspaper, laundry, produce, meats, corrugated cardboard and miscellaneous materials and products requiring a secure wrap (figure 1). The tying machine ties almost everything that was previously wired, banded, taped, strapped, tied by hand in offices, factories and commercial establishments. The tying machine reduces tying time, employee effort and fatigue, reduces twine lint and waste, enables trained operators to make secure ties quickly, ties larger bundles with greater ease and efficiency and discourages tampering because the knot cannot be duplicated by hand tying.

General Description

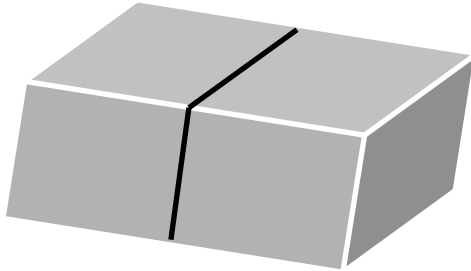
The tying machine is made of steel, cast iron and high impact plastic construction. Heavy duty panels and guards completely enclose the moving parts of the tying machine to prevent accidental operator contact. However, the unique design of the tying machine still provides the operator with easy accessibility to maintenance points without the use of tools. For ease of mobility, caster wheels are used. A brake feature on each caster resists the movement of the tying machine when assigned a permanent position. The “ON-OFF” switch (used to supply electrical power) and a foot pedal (used to initiate the tying cycle) are within easy and comfortable reach of the operator. The material tying area consists of a front table, back table, and standard. A knotter head assembly, stringholder assembly, twine arm and drive assemblies comprise the tying cycle components.

Principles of Operation

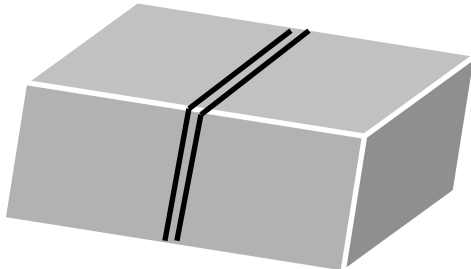
Double Wrap One Way

With the tying machine power cord connected to an approved power source and the material to be tied properly positioned on the front table and the back table, the operator then places the “ON-OFF” switch in the “ON” position. Electrical ac power is then transferred by the switch to start the motor. The motor rotating at approximately 1725 rpm drives the pulley on the clutch via a V belt mechanically coupling the pulley assembly to the motor. At this time, the tying machine is considered to be in a locked condition until the operator applies toe pressure to the foot pedal to begin the wrapping and tying cycle. Depressing the foot pedal causes the trip cable to position the bell crank and kickout assembly so the kickout wedge slides free from the clutch fork assembly. Repositioning the kickout wedge permits the lever clutch of the kickout mechanism to first pull away from the clutch kickout block on the main cam assembly and then is engaged by the clutch fork. As soon as this occurs, the clutch shaft becomes unlocked and starts to rotate which in turn drives a series of gears; main shaft, main gear and chain gear. As a result, the twine arm begins to swing around the package being tied pulling the twine from the twine cone pilot assembly, through the properly adjusted tension device and each threading guide. After the second swing of the twine arm, the drawslide is positioned to allow the twine to fall directly behind the stringholder button. The drawslide then pushes the twine from the stringholder button to the left side of the forward moving knotter body as viewed from the right hand side of the tying machine.

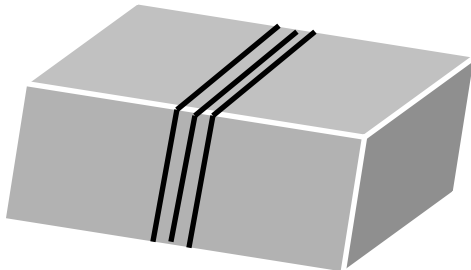
Basic Types of Different Wraps



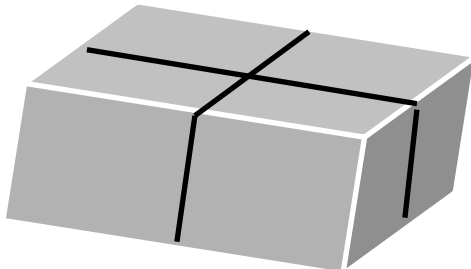
Single Wrap —
The arm carries the twine arm around once and the knot is formed.



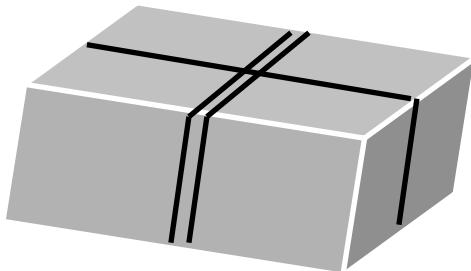
Double Wrap — One Way
Two wraps in one direction with one knot.



Triple Wrap — One Way
Three wraps in one direction with one knot.



Double Wrap* — Cross Tie
One wrap in each direction with only one knot.



Triple Wrap — Cross Tie**
One wrap in one direction; Two wraps in other direction — with only one knot.

** Triple wrap cross tie additionally provides: (1) Three wraps in one direction if package is not turned between wrap cycles; (2) two wraps one way by tripping out the first wrap.

* Double wrap cross tie also provides: (1) two wraps in one direction if package is not turned between wrap cycles; (2) one way by tripping out the first wrap.

Section I – Introduction

Continued

Simultaneously, the twine arm is continuing its arc and the knotter body turns counter clockwise opening the jaw for the two strands of twine which are wrapped around the knotter body assembly. The strands of twine are brought through the jaws and the jaws firmly lock. The knotter body assembly then moves towards its finished position and the stripper forces the twine strands off the knotter body jaws, into the tight part of the knot. As the two strands of twine are pulled into loops from the knotter body assembly jaws, the knifetrapp moves forward and cuts a fresh end of twine and pushes the previously cut end of twine from behind the stringholder button. The knotter body assembly completes its movement to finished position and the knotter body assembly jaws open to release the loops completing the tying process.

The tied bundle is then removed from the tying machine.

Double Wrap Cross Tie

The double wrap cross-tie tying cycle (available on all models except 1991) operates in exactly the same manner as the double wrap one way tying cycle previously described above except that the twine arm rotates once around the bundle being tied then automatically stops. The operator properly repositions the bundle 90 degrees in a clockwise direction, again applies toe pressure to the foot pedal and the twine arm rotates around the bundle once more automatically completing the knot tying process. The bundle is crossed-tied in each direction with one strand of twine and is tied with one knot.

Threading Procedures

Before the tying machine is shipped, it is threaded through each guide starting from the twine container to the stringholder button. To avoid threading problems in the future, you should become familiar with the threading sequence at this time.

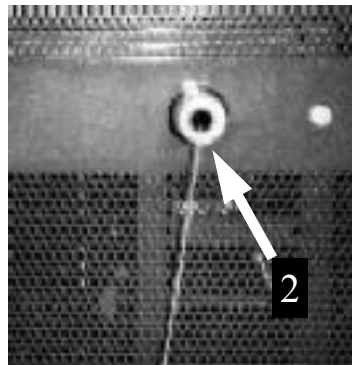
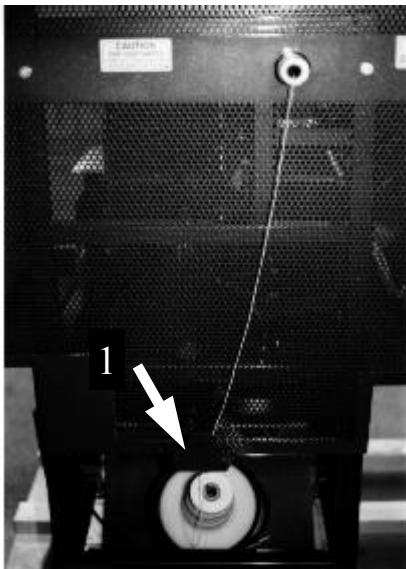
Complete threading of the tying machine can be avoided if the end of the twine or tape being used is caught before it leaves the twine container. This is accomplished by simply tying the end of the existing

twine or tape to the starting end of the new twine or tape with a square knot.

If the end of the twine or tape is not caught before it leaves twine container, the tying machine must be threaded as explained in the subsequent procedures.

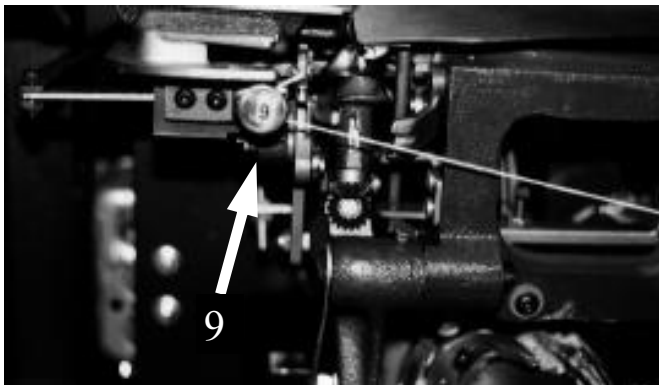
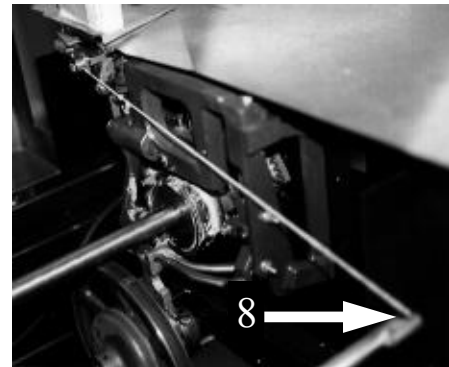
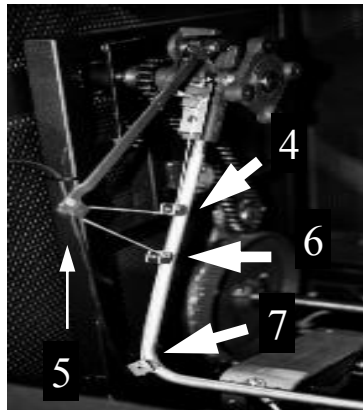
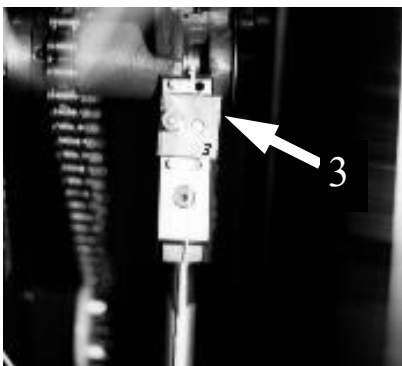
It is important to observe the various openings which are identified by numbered labels affixed to the machine which the twine or tape is to be threaded.

Never thread machine while motor is operating.



Place twine cone over cone pilot assembly. Press firmly until cone is seated on foam pad at bottom of twine container. Note: Cone pilot assembly is adjustable if cone does not seat properly. Grasping end of twine, thread through guide

Fish twine out from quill shaft on inside of machine. Thread twine through tension device # 3 under tension spring between pins. Spring may be lifted GENTLY to facilitate this procedure. Continue to thread through roller # 4, end of drawback lever #5, rollers # 6, #7 and through the tip of the twine arm # 8.



Pull twine to right side of machine. While gently pulling the stringholder release lever, place the twine under stringholder button # 9. Pull twine up and over button shaft and release stringholder release lever. Pull the twine taut to cut off excess twine.

Section II - Preparation For Use

Uncrating instructions

1. Cut bands securing the carton to the skid.
2. Cut the bottom of the cardboard carton where it is secured to skid.
3. Carefully raise and remove the carton from the tying machine.
4. Carefully remove the steel strapping from the machine and then pull the tying machine away from the skid.
5. Remove the box in the twine container shipped with the tying machine containing four casters.
7. Using the casters shipped with the tying machine, insert a caster into the caster socket on each leg of the tying machine.

Note: The manual should be wrapped around the knotter at standard, along with the warranty card, certificate and spare knives. If any problems are encountered, contact your local B. H. Bunn Company Distributor.

Power requirements

The single-phase, 1/4 hp, 1725 rpm standard motor provided with your tying machine requires an external power source of 115 volts at 60 cycles. A standard three-prong electrical cord is provided with electric motor. If a three-prong receptacle is not available at the installation site, a three-prong adapter should be used with the electrical cord.

Tying Materials

The tying machine is adaptable to a wide range of tying materials ranging from natural fiber twines to synthetics which can replace wire and strapping in many applications. Be sure the twine or tape used is the proper type and size for the application and your Bunn machine. Each new or factory reconditioned Bunn Tying Machine is factory adjusted and set for a particular size and type of twine. Other sizes or types will require adjustments and may require internal part changes. The right Bunn Twine, tested and approved for Bunn Tying Machines, aids in maximum machine performance. Bunn Twine is of uniform size and strength, free of irregularities that cause mis-ties. It is strong and fray-resistant, with minimum linting characteristics.

A free sample folder showing actual twine samples and specifications is available through your local B. H. Bunn Company Distributor.

Conversion kits are available through your local B. H. Bunn Company Distributor when and if it ever becomes necessary to change to a different material – twine to tape or tape to twine. The twine container will hold up to a 5-pound cone of twine. The base diameter of the cone must not exceed 9 inches.

Section IV – Maintenance

Introduction

A good preventative maintenance program is a major step forward to assure trouble-free tying machine operation. In order to be effective, routine inspection, lubrication and adjustment schedule must be established and followed.

For tying machines subjected to normal usage which is considered to be approximately 30 hours of operation weekly, the following maintenance and lubrication schedule should be followed. Substantial deviations from normal usage should require an adjustment in the indicated frequencies.

The Lubrication Requirement has frequencies of 50 and 150 hours. The following mechanical components should be checked daily: Stringholder button holes for lint or twine buildup, knife condition, V-belt tension, loose hardware and broken or weak knotter flat springs. The twine running tension should be checked on a monthly basis.

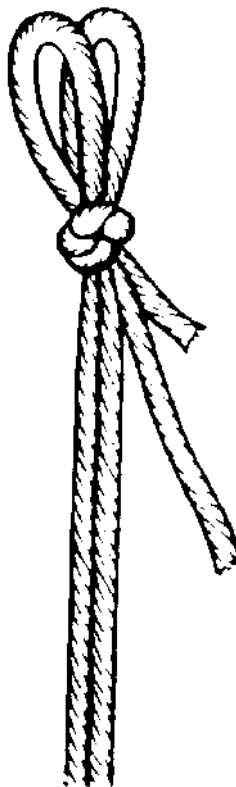
Any abnormal noises or loose components should be inspected and corrected. Power cord should be checked for fraying and the motor inspected for excessive lint or dirt.

LUBRICATION ITEM	Frequency	
	30 Hours	90 Hours
Note: Apply several drops of SAE oil or equivalent unless otherwise specified. If necessary, refer to the exploded view in the parts list section of this manual for assembly part nomenclature.		
Knotter Head Assembly		
1. Oil cup (Knotter Head Pivot).	X	
2. Two oil holes (encircled in red on machine).	X	
3. Between knotter lever and knotter head assembly.		X
4. Around diameter of knotter roller.		X
5. Knotter lock plunger.		X
Stringholder Assembly		
1. Between knife trap pivot and knife trap lever assembly.	X	
2. Between knife trap shoulder screw and knife trap lever assembly.	X	
Main Table Assembly		
1. Around diameter of drawslide lever assembly roller.	X	
2. Between washer and drawslide lever.		X
3. Between drawslide lever assembly and main table subassembly.	X	
4. Into three oil holes (encircled in red on machine).	X	
5. Between stripper and main table subassembly so that stripper pivot pin is lubricated.	X	
NOTE: Apply a liberal coat of recommended lubricant to the following unless otherwise specified.		
Drive Assembly		
1. Main gear cam surface.		X
2. Knotter rack assembly cam surface and teeth.		X
3. Cam riser surface.		X
4. Knotter switch cam surface.		X
5. Apply several drops SAE 10 oil to chain gear oil hole (encircled in red on machine).	X	
6. Apply several drops of SAE 10 oil to the two oil cups.	X	
7. Apply several drops of SAE 10 oil to the back frame two oil holes (encircled in red on machine).	X	
8. Main shaft (encircled in red on machine).	X	
9. Clutch shaft (encircled in red on machine).	X	
10. Clutch fork pivot (encircled in red on machine).	X	

The Quality Knot Tells the Story

THIS IS A PERFECT KNOT

A perfect knot, like the illustration, has two long even loops extending out one side of the knot with one short and one long end, the body of the knot is tight and hard. The stripper should be on the line where the upper and lower jaws meet at the lip of the lower jaw and very little space between them as the stripper comes down to push the twine off of the knoter.



Important!

Your
BUNN PACKAGE TYING MACHINE
will tie perfect knots every time when
in proper adjustment.



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Section V Trouble Shooting




This section of the manual contains a Table of Trouble Shooting information for locating and correcting most of the troubles which develop in the tying machine.

The tying machine is generally trouble free. However, the tying machine suffers the usual wear and mis-adjustment from normal use. Careful inspection and accurate analysis of the symptoms listed in the

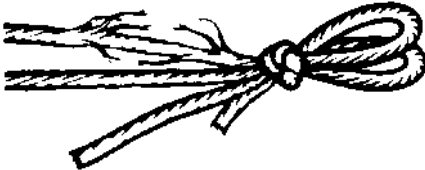



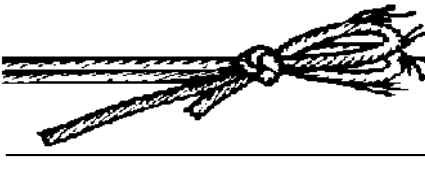
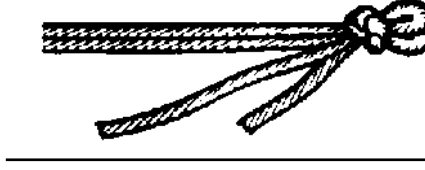
Table of Trouble Shooting Information will localize the trouble more quickly than any other method.

This manual cannot cover all possible troubles and deficiencies that may occur, therefore if a specific trouble is not covered herein, proceed to isolate the major component in which the trouble occurs and then isolate and correct the problem.

TABLE OF TROUBLE SHOOTING INFORMATION

TROUBLE	POSSIBLE CAUSE	CORRECTIVE ACTION
a. Tying machine will not operate with "ON-OFF" switch set to "ON" position.	Electric power cord not plugged into receptacle.	Plug electric power cord into receptacle.
	Circuit breaker tripped.	Reset circuit breaker. If circuit breaker trips again, inspect and test for short in tying machine circuit or electric power cord. Correct defect as required.
	Broken or disconnected circuit wire.	Repair or replace broken wire.
	Faulty "ON-OFF" switch.	Replace defective "ON-OFF" switch.
b. Twine (or tape) breaks frequently in stringholder button.	Improper twine (or tape).	Use proper size of twine (or tape).
	Excessive stringholder button tension.	Readjust stringholder button pressure.
c. Half or single loop on knot. 	Piece of twine (or tape) wrapped around stringholder button shaft relieving tension on twine (or tape).	Depress and hold button release lever and remove bits of twine (or tape) using a small pair of tweezers. Then release the button release lever.
d. One loop knot that slipped out. 	Excessive twine running tension.	Readjust to decrease twine running tension.
e. One long and one short loop. 	Improper twine (or tape). One loop catching in back of knotter throat, improper knotter release adjustment.	Use proper size of twine (or tape). Readjust knotter release.

Trouble Shooting Information (cont.)

TROUBLE	POSSIBLE CAUSE	CORRECTIVE ACTION
f. Break in twine front of knot.	Friction along twine (or tape) path.	Remove edges from twine path in twine tension plate assembly, twine bracket, quill shaft, twine arm hub, twine arm elbow assembly, drawback lever and twine arm tip.
		
g. Ragged ends of twine at knot.	Dull or knicked knife blade.	If knife is excessively knicked, replace. If knives continue being knicked, lubricate knife trap pivot points to assure that knife trap does not stick, allowing knife to remain in path of drawslide.
		
h. Loose knots and loops slightly shorter than normal.	Loops release from knotter too soon, improper knotter release adjustment.	Readjust knotter release.
	Stripper too short.	Replace stripper.
i. Short loops and tight knot.	Improper balance between twine running tension and stringholder button pressure.	Check stringholder button pressure. Readjust twine running tension.
		
j. Cut loop ends.	Stripper points shearing against side of knotter jaws when stripping.	Readjust stripper shear action, bend top front end of stripper down by tapping with a light hammer.
		
k. Very short loops and ends.	Knot slipping by stripper. Improper gap between stripper point and knotter.	Realign stripper point and knotter.
	Knotter flat springs broken or weak.	Replace knotter flat springs.
l. Twine (or tape) catches in stripper	Stripper spring broken or weak.	Replace stripper spring.
m. Twine (or tape) pulls out of stringholder button.	Twine (or tape) improperly threaded.	Check stringholder button threading and rethread if necessary.

Section VI – Parts List

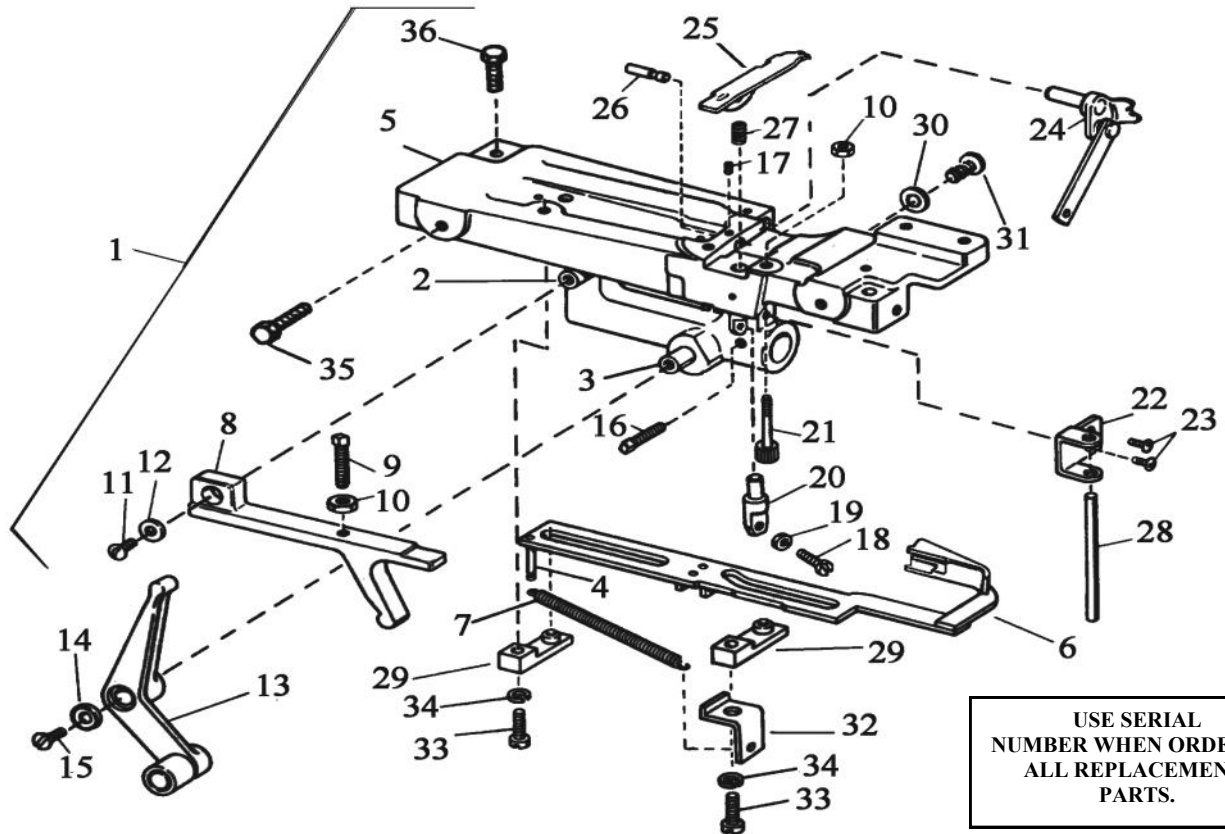
The tying machine is identified by the Model Characteristic Sheet and serial number stamped on the name plate located on the front frame of the machine.

Be sure to use both the model number and the serial number when requesting part information or when ordering replacement parts.

Using the complete equipment identifier (model number and the serial number) will ensure receipt of proper replacement part or parts.

If your tying machine is equipped with a frame extension or special modifications, please provide the information along with the complete model identifier when ordering replacement parts.

MAIN TABLE ASSEMBLY



Index Number	Part Number	Description	Qty Req	Index Number	Part Number	Description	Qty Req
1	008003	Main Table Assembly	1	19	100191	Nut, Jam Hex 1/4-28 NF	1
2	081014	Stud, Riser Lever	1	20	081056	Stud, Knotter Release	1
3	081013	Stud, Drawslide Lever	1	21	100710	Stud, Knotter Head Stop	1
4	100695	Pin, Drawslide Spring	1	22	083073	Guide, Riser Pin	1
5**	008009	Main Table Sub Assembly	1	23	100597	Screw, Pan Head, Self Tap 10-24 NC X 5/8 in	2
6	045034	Drawslide Assembly	1	24*	032035	Tip Up Assembly	1
7	074059	Spring, Drawslide	1	25*	052***	Stripper	1
8	032003	Riser Lever	1	26*	083071	Pin, Stripper Pivot	1
9	100124	Screw, Set Square Head Dog Point 1/4-20	1	27*	074006	Spring, Stripper	1
10	100150	Nut, Hex 1/4-20	2	28*	083060	Pin, Riser	1
11	100098	Screw, Round Head 10-24 NC x 3/8 in	1	29	070049	Drawslide Cap Assembly	2
12	100131	Washer, Flat 1/2 OD x 7/32 ID x 3/64 in Thick	1	30	100134	Washer, Drawslide Lever	1
13	032075	Lever, Drawslide	1	31	100566	Screw, Drawslide Lever	1
14	100019	Washer, Drawslide Lever	1	32	025288	Bracket, Drawslide Spring	1
15	100110	Screw, Flat Head Slotted 1/4-20 NC x 1/2 in	1	33	100104	Screw, Drawslide Cap, 1/4-20 x 1 Fillister Head	2
16	100596	Screw, Set Square Head Cup Point 1/4-20 x 3/4	1	34	100135	Washer, Split lock 1/4	2
17	100121	Screw, Set Socket Head Cup Point 8-32 x 1/4 in	1	35	100115	Screw, Hex Head 5/16-18 x 1	2
18	100018	Screw, Knotter Release Adjusting	1	36	100615	Screw, Hex Head 5/16-18 x 1-1/4	1

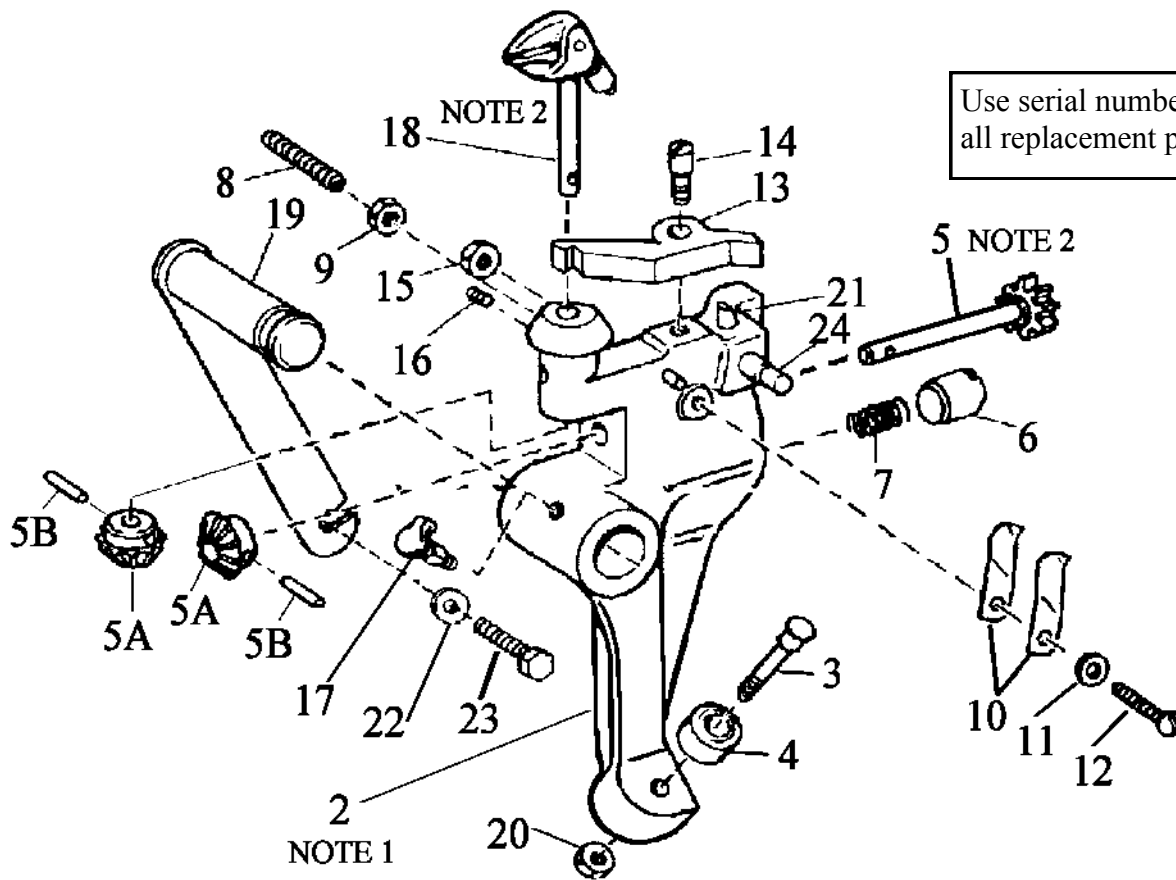
* Not Part of Assembly, Order Separately.

** Sub-Assembly includes Items 2, 3, 10, 17, 18, 19, 20, 21, 22, 23, 30 and 31.

*** Specify Type of Twine or Poly Tape Being Used.

(For 6-8-10 ply twine or 24/28 Poly tape use 052021, 12-16 Ply twine or 35 Poly tape use 052022)

KNOTTER HEAD ASSEMBLY

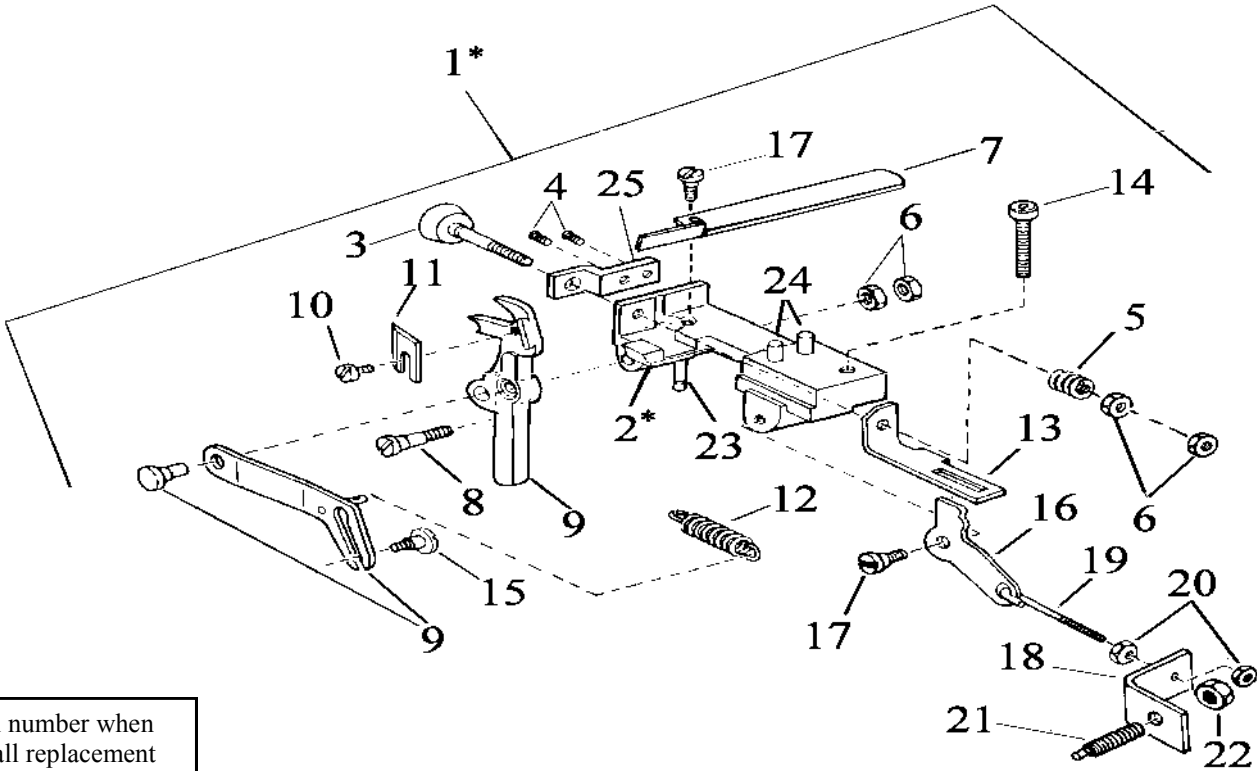


Index Number	Part Number	Description	Qty Req	Index Number	Part Number	Description	Qty Req
1	017***	Knotter Head Assembly	1	13	032042	Lever, Knotter	1
2	017035	Knotter Head Sub- Assembly (Note 1)	1	14	100009	Screw, Shoulder Knotter Lever	1
3	081020	Knotter Head roller Stud	1	15	100143	Nut-Hex, 10-24	1
4	064008	Knotter Head Roller	1	16	100370	Screw, Set Socket Head Cup Point 10-24 x 3/16	1
5	020157	Star Wheel & Miter Gear Assembly (Note 2)	1	17	100701	Oil Cup	1
6	082003	Plunger, Knotter Lock	1	18	017***	Knotter Body & Miter Gear (Note 2)	1
7	074006	Spring, Knotter Lock	1	19	011004	Pivot, Knotter Head	1
8	100187	Screw, Set Knotter Lock 1/4-20 x 1 1/2 Half Dog	1	20	100521	Nut, 5/16-18 Nylon Insert	1
9	100150	Nut, Hex Knotter Lock	1	21	100174	Pin, Roll	1
10	074013	Spring, Knotter Flat	2	22	100280	Washer, Flat	1
11	100131	Washer, Flat	1	23	100119	Screw-Hex 5/16 x 1/2	1
12	100092	Screw, Round Head 10-24 x 1 in Long	1	24	081022	Stud, Tip up Lever	1

*** Specify Type of Twine or Poly Tape Being Used

Note 1: Sub-Assembly includes Items 3,4,20,21 and 24 Note 2: Includes Items 5A and 5B (ONE OF EACH).

STRINGHOLDER AND KNIFE TRAP ASSEMBLY

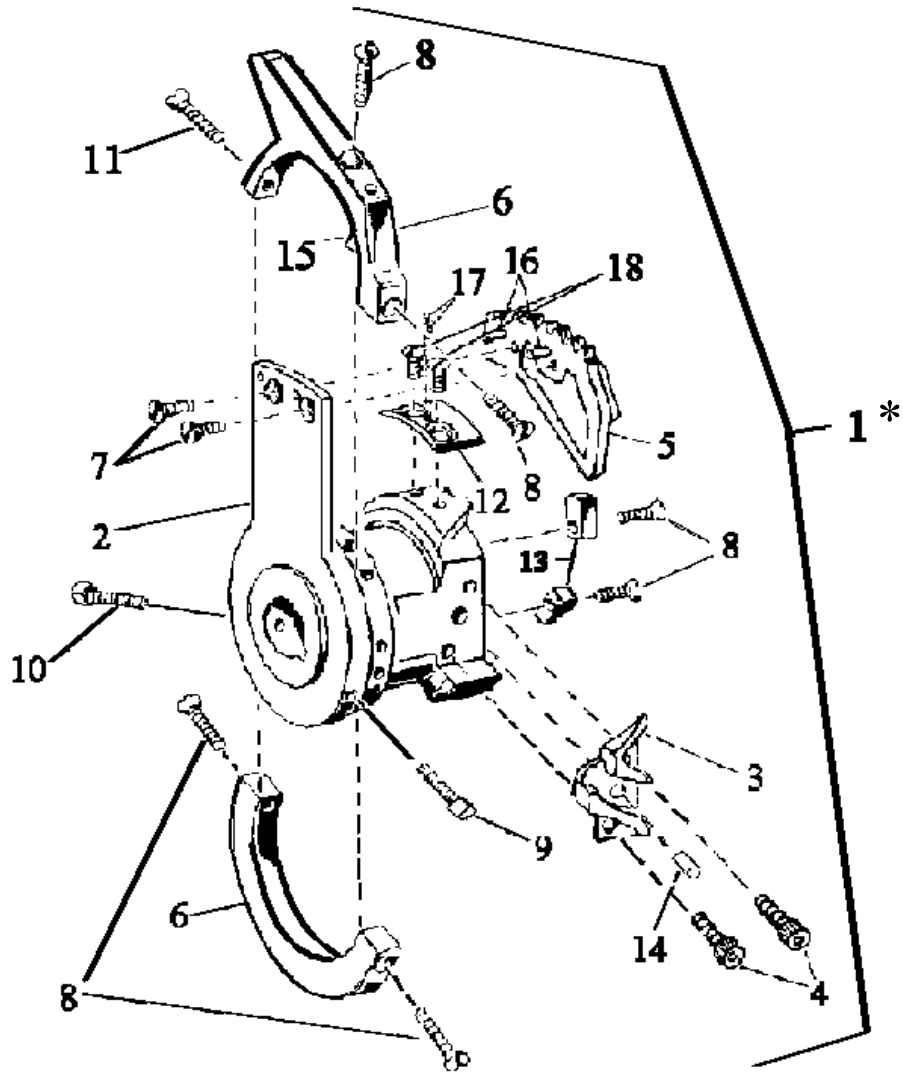


Use serial number when ordering all replacement parts.

Index Number	Part Number	Description	Qty Req	Index Number	Part Number	Description	Qty Req
1*	030***	Stringholder Assembly	1	13	030084	Lever, Slide	1
2	030***	Stringholder and Pins Sub Assembly	1	14	100565	Screw, Socket Head Cap	1
3	030147	Button, Stringholder	1	15	100011	Screw, Knife Trap Shoulder	1
4	100489	Screw, 10-32	2	16	030083	Pivot, Dual Tension	1
5	074***	Spring, Stringholder button	1	17	100088	Screw, Pivot	2
6	100144	Nut, Hex 10-32	4	18	030085	Angle, Dual Tension	1
7	032218	Lever, Button Release	1	19	030086	Link, Dual Tension	1
8	100646	Screw, Knife Trap Pivot	1	20	100146	Nut, hex 12-24 X 20 ESNA	2
9	032159	Knife Trap & Lever Assembly	1	21	100187	Screw, Set Half Dog Point 1/4-20 X 1	1
10	100090	Screw, Binder Head 8-32 x 1/4	1	22	100188	Nut, Hex 1/4 X 20	1
11	021009	Knives, Package of 10	1	23	100158	Pin, Groove	1
12	074011	Spring, Knife Trap	1	24	100569	Pin, Groove	2
				25	030***	Face, Stringholder	1

* Assembly does not include items 14, 15, 18, 19, 20, 21 and 22, Order Separately
 *** Specify Type of Twine or Tape Being Used

MAIN CAM ASSEMBLY

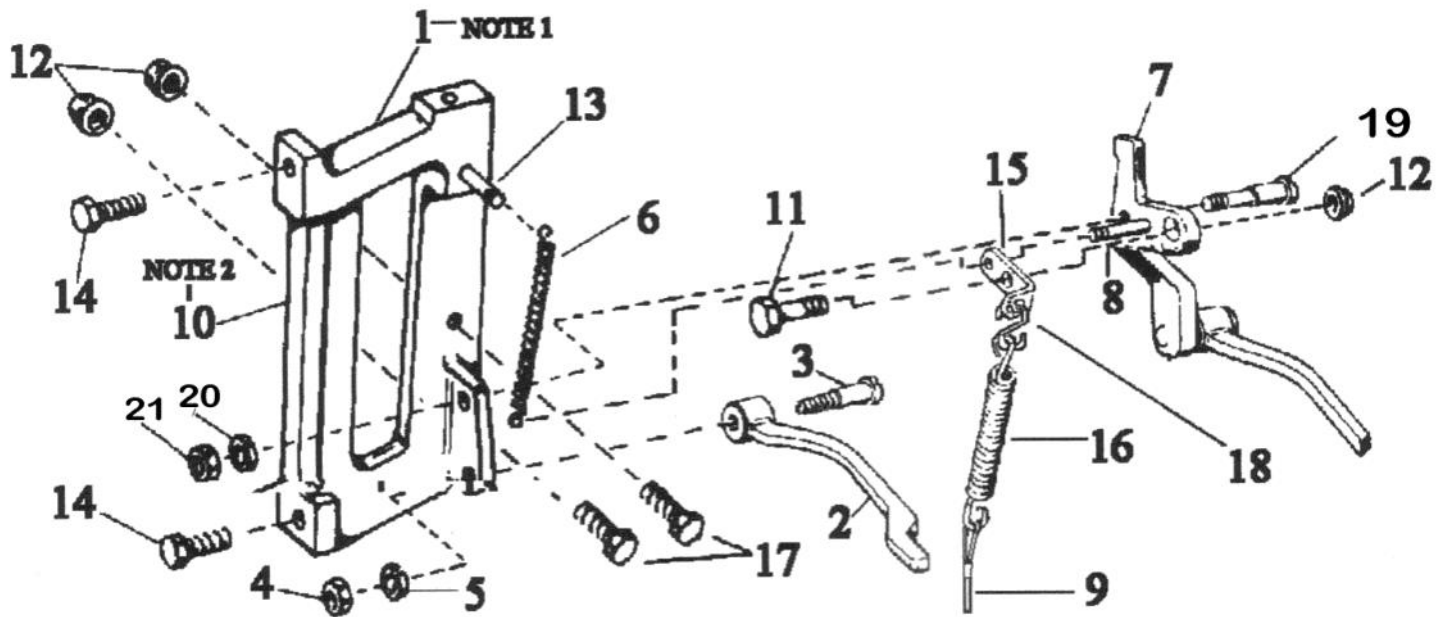


Use serial number when ordering all replacement parts.

Index Num-	Part Number	Description	Qty Req	Index Number	Part Number	Description	Qty Req
1*	009033	Main Cam Assembly	1	10	100127	Screw, Set Square Head Knurled Cup Point 5/16-18 x 1 1/2 in	1
2	009059	Main Cam Sub Assembly	1	11	100095	Screw, Machine Flat Head 10-24 x 5/8 in	2
3	009025	Switch, Cam Knotter Head (includes pin)	1	12	209007	Riser, Cam	1
4	100109	Screw, Socket Head Cap 1/4-20	2	13	009026	Clutch, Kickout Block (two required for cross tie)	1
5	020135	Rack, Knotter Cam	1	14	100161	Pin, Knotter Cam Groove	1
6	009078	Ring Cam (Sold as set only)	1	15	100160	Pin, Drawslide Ring Cam Groove	1
7	100328	Screw, Machine Flat Head 12-24 x 5/8 in	2	16	100372	Pin, Knotter Rack Roll	2
8	100326	Screw, Machine Flat Head 10-24 x 7/8 in	4	17	100712	Screw, Socket Set Cone Point	2
9	100128	Screw, Set Square Head Knurled Cup Point 5/16-18 x 1 1/4 in	1	18	100102	Screw, Machine Flat Head 12-24 x 3/4	2

* Includes all Items #2 through #18

MAIN TABLE SUPPORT AND KICKOUT ASSEMBLY



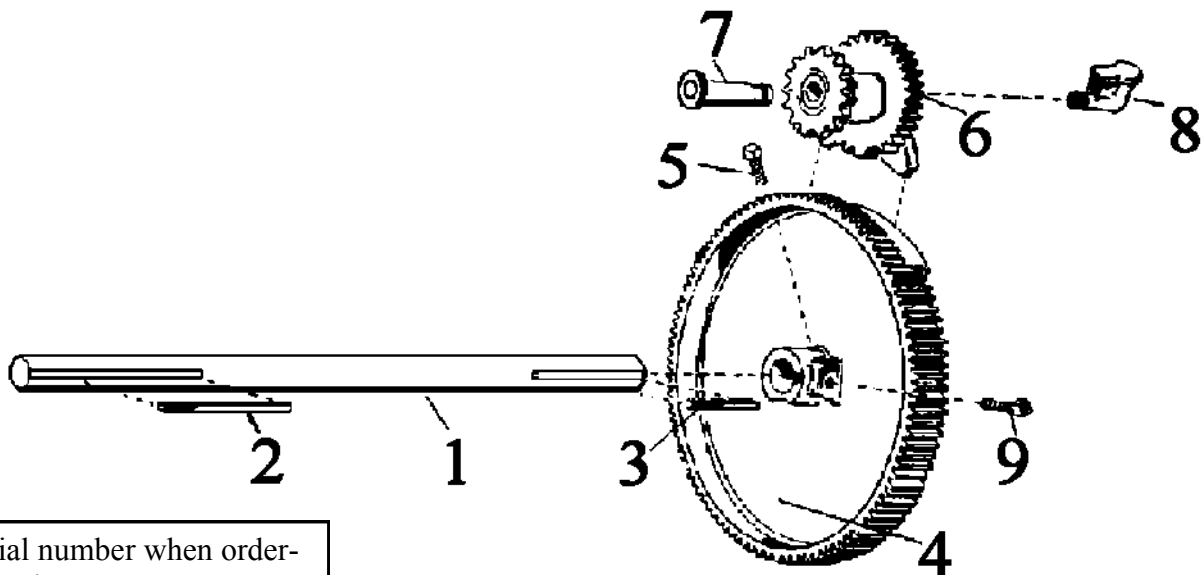
Use serial number when ordering all replacement parts.

Index Number	Part Number	Description	Qty Req	Index Number	Part Number	Description	Qty Req
1	084014	Main Table Support and Kickout Assembly	1	12	100286	Nut, flanged Hex Head 1/4-20	3
2	032018	Lever, Clutch Kickout	1	13	100503	Pin, Groove 3/16 x 1 1/2	1
3	100005	Screw, Trip	1	14*	100273	Screw, Hex Head 5/16-18 X 5/8 "Whiz Loc"	2
4	100151	Nut, Hex Head 1/4 - 28	1	15	011034	Trip Extension	1
5	100135	Washer, Split Lock	1	16*	074050	Spring, Trip Cable	1
6	074054	Spring, Trip Return	1	17	100238	Screw, Hex Head 1/4-20 X 1 1/4	2
7	011007	Bell Crank and Kickout Wedge Assembly	1	18*	100690	S-Hook	1
8	100158	Pin, Groove 3/16 X 1	1	19	100770	Trip Screw, New Style	1
9*	011022	Cable, Clutch Trip	1	20	100138	Washer Lock	1
10	084048	Main Table Support Sub Assembly	1	21	100442	Nut	1
11	100450	Screw, Hex Head 1/4-20 X 1	1				

* Not part of assembly. Order separately

Note 1: Includes item 13. Note 2: Includes items 12, 13 & 17

MAIN GEAR AND CHAIN GEAR ASSEMBLY



Use serial number when ordering all replacement parts.

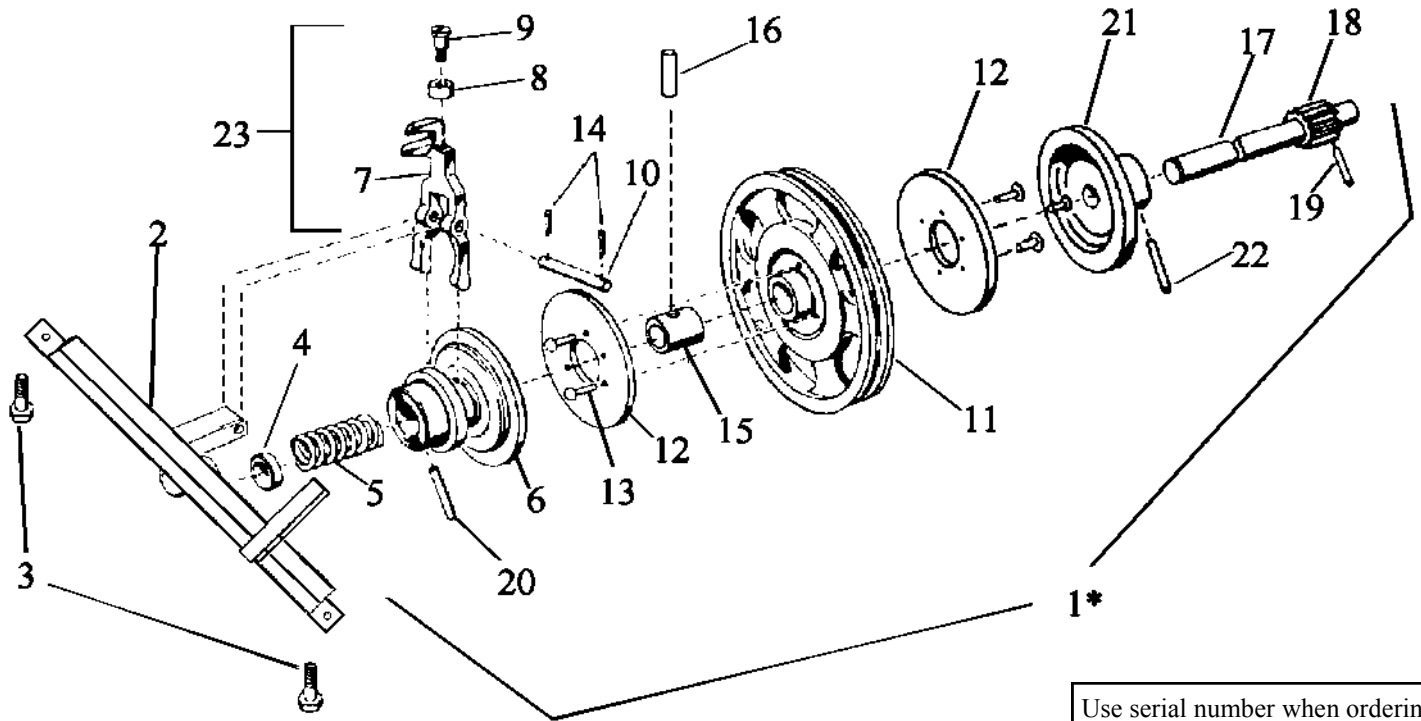
Index Number	Part Number	Description	Qty Req.	Index Number	Part Number	Description	Qty Req.
1	012183	Main Shaft	1	6	020***	Chain Gear Assembly ***	1
2	083057	Key, Main Cam	1	7	081072	Stud, Chain Gear Assembly	1
3	083074	Key, Main Gear	1	8	100087	Oil Cup 90°	1
4	020***	Main Gear	1	9	100128	Screw, Set Square Head Knurled Cup Point 5/16-18 x 1/14	1
5	100127	Screw, Set Square Head Knurled Cup Point 5/16-18 x 1 1/2	1				

NOTE: When Changing either the Main Gear or Chain Gear Assembly, make sure the timing tooth on both parts are not worn.

If either timing tooth is not square like other teeth then both gears *must* be replaced.

*** USE SERIAL NUMBER WHEN ORDERING

MAIN CLUTCH ASSEMBLY



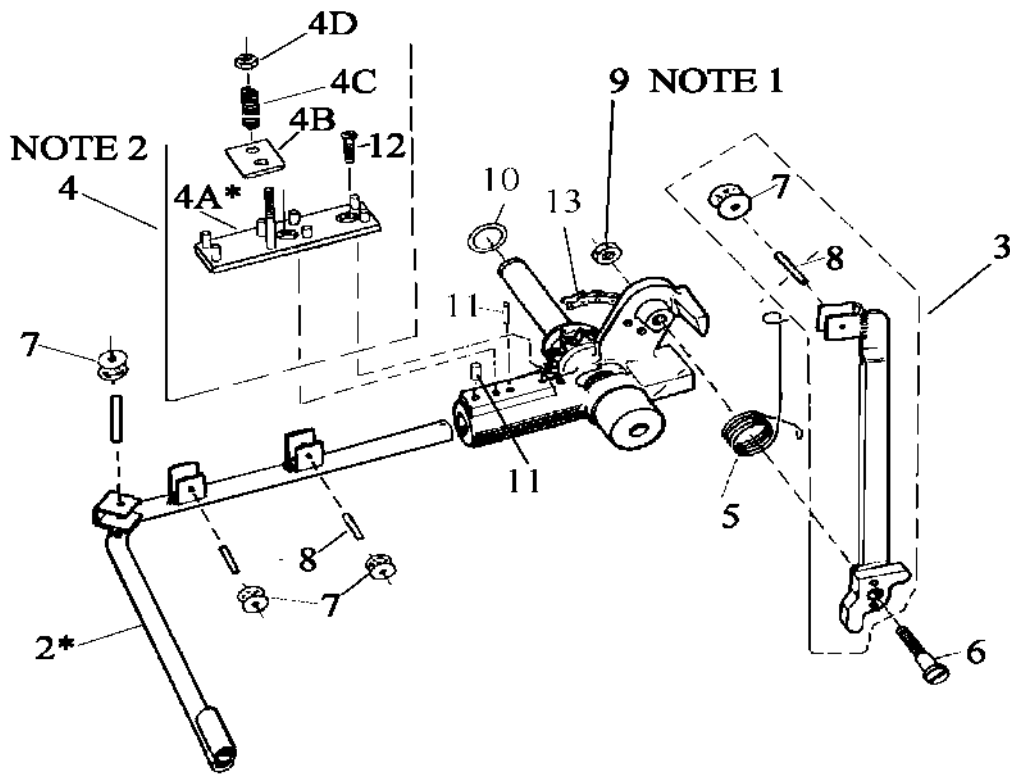
Use serial number when ordering all replacement parts.

Index Number	Part Number	Description	Qty Req	Index Number	Part Number	Description	Qty Req
1*	019146	Clutch Assembly	1	13	100181	Screw, Drive	6
2**	013144	Bearing, Lower	1	14	100297	Pin, Hitch	2
3	100273	Screw, Hex Head	2	15	013099	Bearing, Clutch	1
4	094005	Collar, Clutch Shaft End	1	16	100601	Pin, Roll	1
5	074003	Spring, Clutch	1	17	012188	Shaft, Clutch	1
6	024002	Member, Clutch Outer	1	18	020020	Gear, Clutch Shaft Pinion	1
7	071001	Fork, Clutch	1	19	100706	Pin	1
8	064002	Roller, Clutch Fork	1	20	083075	Pin, Solid	1
9	100002	Screw, Clutch Fork Roller	1	21	024021	Member, Clutch Inner	1
10	083056	Pin, Clutch Fork Pivot	1	22	100705	Pin, Roll	1
11	019093	Pulley, V Belt	1	23	071004	Fork Assembly, Clutch	1
12	024003	Disc, Clutch	2	24	040006	V-Belt—Not Shown	1

* Includes all items above except #2, 3, 7, 8, 9, 10, 14 & 23

**For serial numbers prior to 89337 use 013118/ serial numbers prior to 90462 use 013133

Twine Arm Assembly 3091



Item Number	Part Number	Description	Qty Req	Item Number	Part Number	Description	Qty Req
1	041367	Twine Arm Assembly	1	10	094008	Collar, Twine Arm	1
2**	033202	Elbow, Twine Arm with Rollers	1	11	101761	Pin, Roll	2
3	032230	Lever, Drawback	1	12	100713	Screw, Socket Flat Head	2
4	130226	Tension Assembly	1	13	135033	Chain, Twine Arm	1
4A**	130227	Plate, Tension Sub Assembly	1	NOT SHOWN IN PICTURE:			
4B**	130224	Plate, Tension Pressure	1		213005	Bearing, Thrust, No Rev.	1
4C	074062	Spring, Tension	1		213012	Bearing, Thrust, Mtg. Plate, Rev.	1
4D**	100711	Nut, No. 10-32, ESNA	1		213013	Bearing, Needle	2
5	274005	Spring, Drawback Torsion	1		213014	Inner Race-Needle Bearing	2
6	100714	Screw, Drawback Lever Pivot	1		126003	Spacer	1
7	064037	Roller, Twine arm	4		126090	Spacer, Twine Arm Rear Frame	1
8	100649	Pin, Spring 5/32 x 3/4	4		130256	Mounting Plate Loose	1
9	100500	Nut, jam	1				

Items # 2 & 3 includes items # 7, 8 and 9

** Sold as Assembly Only

Note 1: Assemble with Loctite No 242

Warranty

Each part of the Bunn Packaging machine is warranted to the original purchaser to be free of defects in material and workmanship. Upon notice received by us within 90 days of installation, we will replace, at our own expense, any part or parts of this machine which our examination disclose to be defective, unless the machine or part has been damaged by accident, negligence, alteration, abuse or misuse. All electrical motors have up to a 1 year warranty from installation, under the motor's manufacturer's warranty program.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS WARRANTY AND ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS. OUR SOLE OBLIGATION WITH RESPECT TO THIS MACHINE IS TO REPLACE DEFECTIVE PARTS AS ABOVE STATED

This warranty is void if parts or service not authorized by us are used or if the installation report tag attached to this machine is not completely filled out, signed by the installing agent and the customer, and returned to us within ten days after installation date.

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Lakeland, Florida
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PLEASE REMEMBER
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PARTS AND BUNN TWINES

Two ways to keep your BUNN tying machine in top operating order -

1 Use Only BUNN twine or tapes

Bunn has the right tying twines for every job... cottons, rayon's, nylons, poly tapes and heavy-duty twines with a complete selection of tensile strengths. BUNN twines have high speed quality characteristics that are guaranteed to match your machine performance.

2 Use the right twine for the job

Rayon A continuous filament, high tensile strength with very little stretch and minimal lint build-up.

Cotton A high quality grade natural fiber.

HY-TY A high, wet modulus rayon that is clean, white and is the finest twine on the market.

Special HY-TY A blend of the best characteristics of both cotton and polyester offering a high yield and strength with economy.

Polyester A high grade synthetic fiber that provides maximum tensile strength, clean appearance and minimal lint build-up.

Poly tape A low density polyethylene tape that is a soft non-abrasive blend with all the strength and tying characteristics of conventional twine yet is still economical.
