# BUNN®

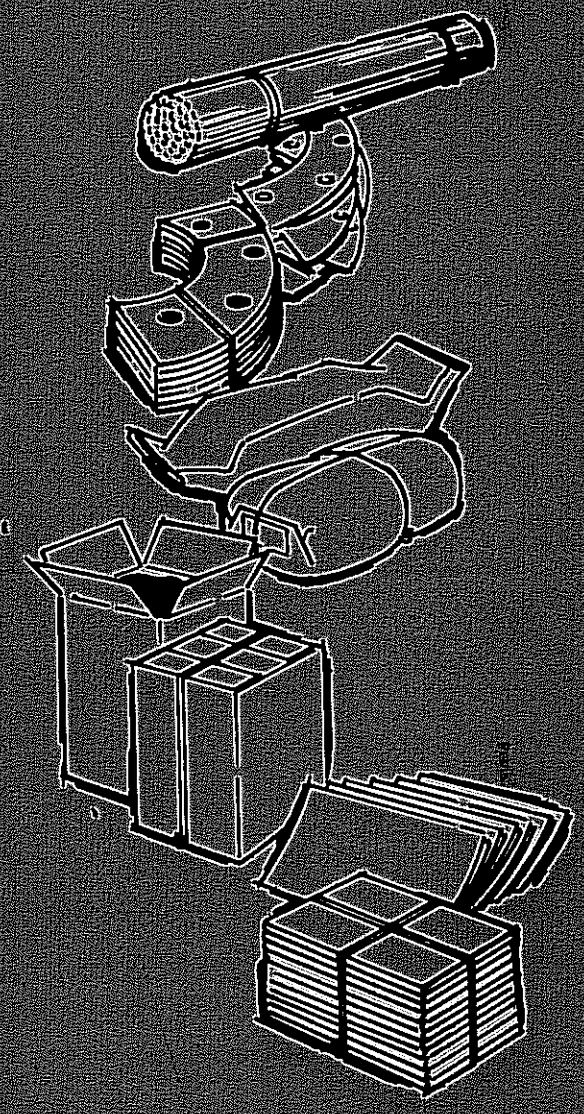
SINCE 1907 THE ORIGINAL
PACKAGE TYING MACHINE

# TYING MACHINES

## Operator's Manual

**S-10-E**

- Quickly ties packages.
- Automatically adjusts to size.
- Any shape—any size.
- Ties small parts, irregular shapes, soft packages, cartons and publications.

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# Operator's Manual

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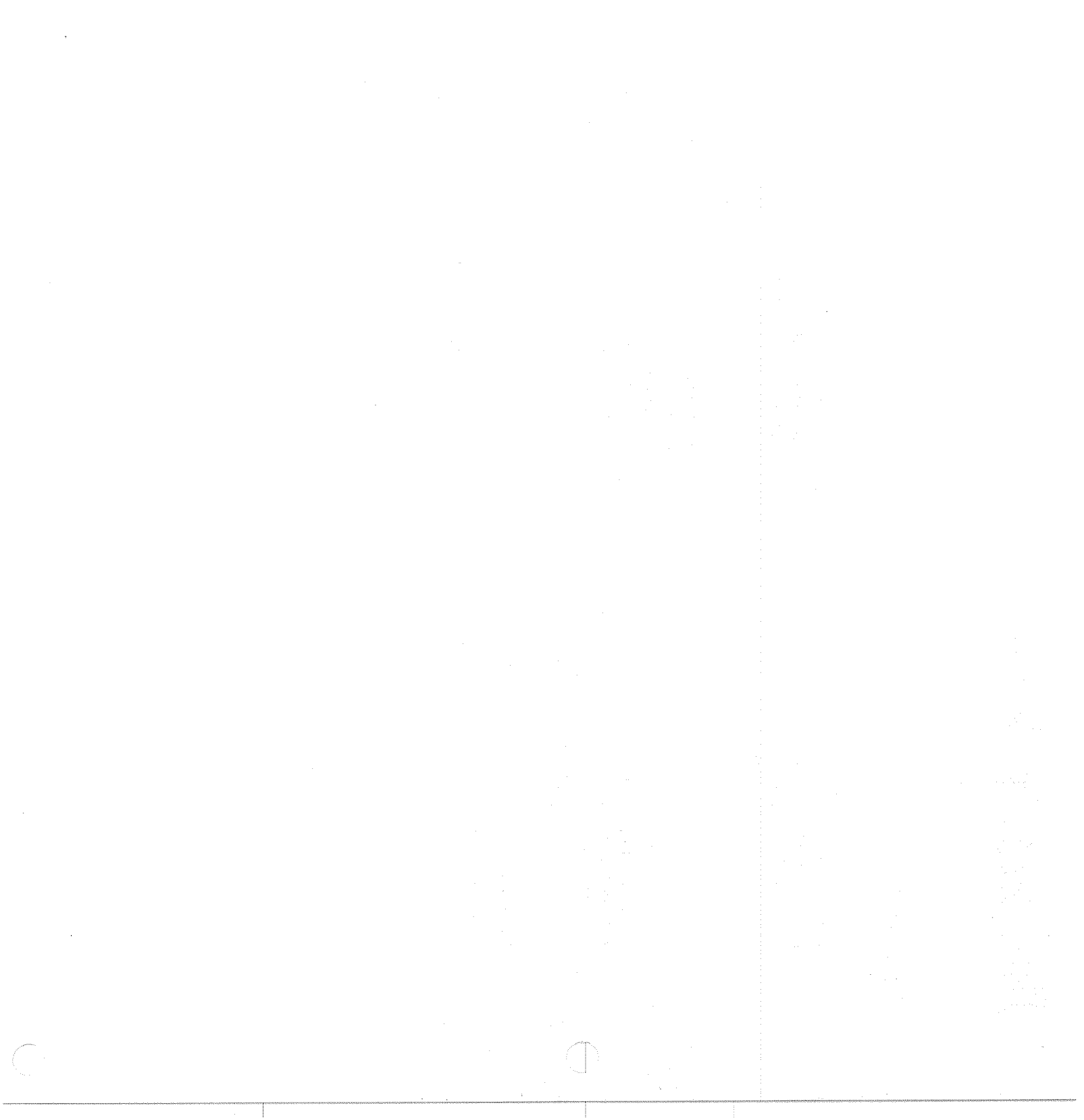
## LIST OF ILLUSTRATIONS



tie mail, packages, cartons, pieceparts, printed matter, newspapers, laundry, produce, meat, corrugated cardboard, and miscellaneous materials and products requiring a secure wrap. The tying machine ties almost everything that was previously wired, banded, taped, strapped or previously tied by hand in offices, factories, and commercial establishments. The tying machine reduces tying time, employee effort and fatigue, reduces twine lint and twine 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

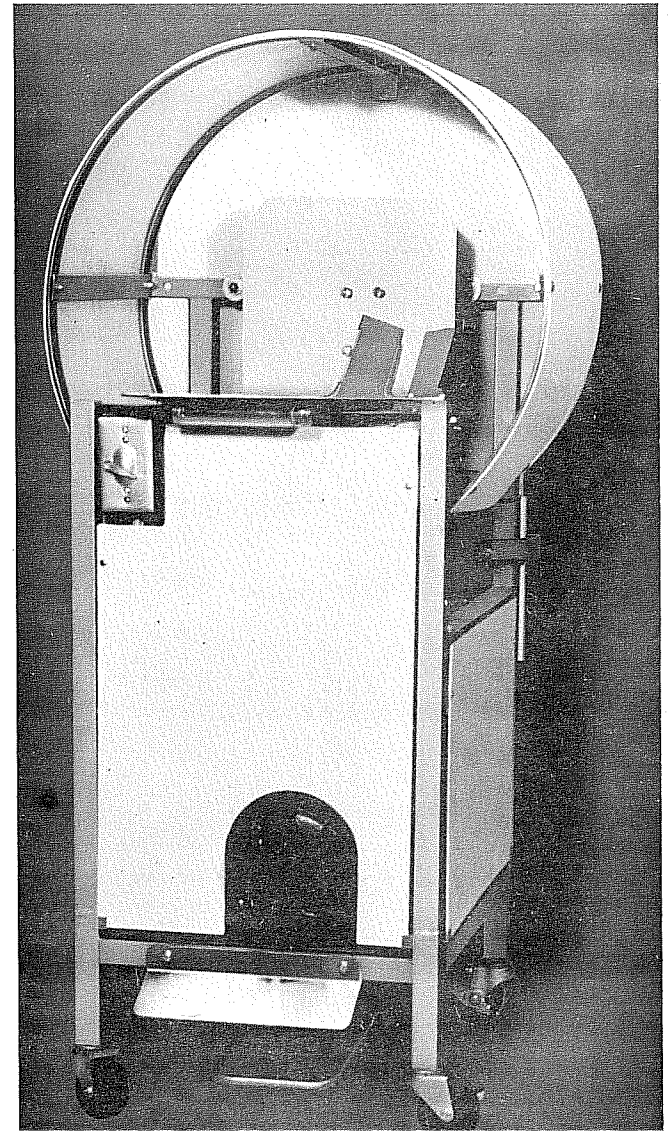
The tying machine is of steel, cast iron, and high impact plastic construction. Heavy duty panels and guards completely enclose the moving parts of the tying machine to prevent accidental operator contact. However the unique design of the tying machine still provides the operator with easy accessability to maintenance points without the use of tools. For ease of mobility caster wheels are used. A break feature on each caster resists 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. The standard is used as a positioning guide for the material to be tied when placed on the front and back tables. A knotter head assembly, stringholder assembly, twine arm, and drive assemblies comprise the tying cycle components.

## PRINCIPLES OF OPERATION

*SINGLE WRAP ONE WAY*

With the tying machine power cord connected to an appropriate power source and the material to be tied properly positioned on the front table and 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 assembly on the clutch shaft via the 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

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 fork clutch. 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 cone pilot assembly, through the properly adjusted tension device and each threading guide. After the 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



tinuing its arc and the stripper is holding the twine in position until the knotter body turns counter-clockwise opening its jaws 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 toward its finished position and the stripper forces the twine strands off the knotter body assembly and pulls the previously cut end of the twine from behind the stringholder button. The knotter body assembly completes its movement to the 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 typing machine.

To perform the uncrating instructions, a pry-bar or hammer will be required.

1. Using a pry-bar or hammer, carefully remove the top wood slats and then the side wood slats secured to the bottom skid.

2. Open the top of the protective plastic bag enclosing the tying machine.

3. Raise the plastic bag free from the tying machine.

**NOTE**

The plastic bag protecting the tying machine during shipment can be used as an effective cover when the tying machine is not in use.

4. Remove the box in the twine container shipped with the tying machine containing four casters.

5. Cut the bands securing the base frame of the tying machine to the bottom skid.

6. Lift tying machine off of skid.

7. Using the casters shipped with the tying machine, insert a caster into the caster socket on each leg of the tying machine base frame.

If any problems are encountered, contact your local B. H. Bunn factory representative.

## 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 Hertz. A standard three-prong electrical cord is provided with the electrical motor. If a three-prong

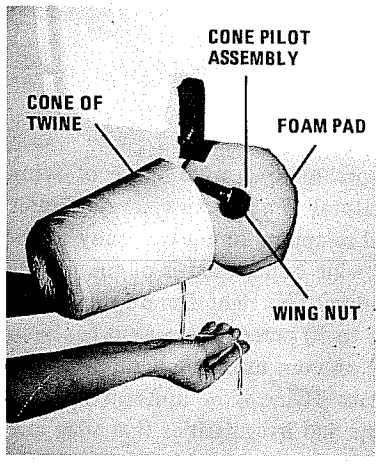
Upon request, optional electrical motors are available to meet specific power requirements. A convenience outlet for the electrical power cord should be installed at the working location(s) to reduce the hazard of tripping over the cord. When installed the convenience outlet must meet all the electrical standards and wiring color codes for your geographical area.

## TYING MATERIALS

The tying machine is adaptable to a wide range of tying materials ranging from natural fibre twines to synthetics which can replace wire and strapping in a great many applications. Be sure that the twine being used is of the proper type for the tying application. The right Bunn tying twine can improve production up to 50 percent because it has been tested and approved for use on your machine. It runs through the machine smoothly. Bunn Twine is of uniform size and strength and is free of knots and irregularities that snag and break. It is super-strong and fray-resistant, with minimum linting eliminating twine-snagging and breaking. A free sample folder showing actual twine samples and specifications is available through your local B. H. Bunn factory representative or the B. H. Bunn Company.

The twine cone pilot assembly will hold up to a 10-pound cone of twine. The base diameter of the cone must not exceed 9 inches. Conversion kits are available through your B. H. Bunn Company factory representative when and if it ever becomes necessary to change to a different tying material.

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 being used is caught before it passes through the quill shaft. This is accomplished by simply tying the end of the existing twine to the starting subsequent procedures. It is important to observe the various openings which are identified by numbered labels affixed to the machine through which the twine is to be threaded. Never thread machine while motor is operating.



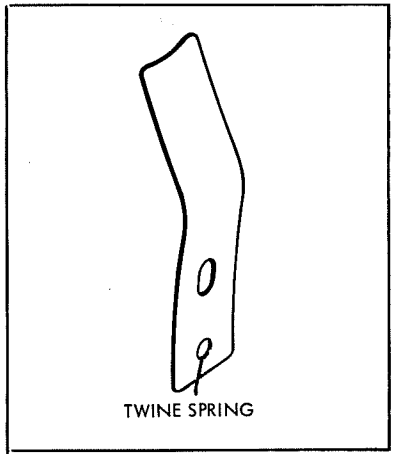

1. Place power switch in "OFF" position.

2. REMOVE ELECTRICAL CORD FROM POWER RECEPTACLE.

3. Position cone of twine over the cone pilot assembly. Press firmly until seated on foam pad.

NOTE

Check proper adjustment of twine cone pilot assembly by moderately trying to turn cone of twine. If movement is encountered, turn wing nut on top of twine cone pilot assembly until cone of twine is secured by the twine cone pilot assembly.



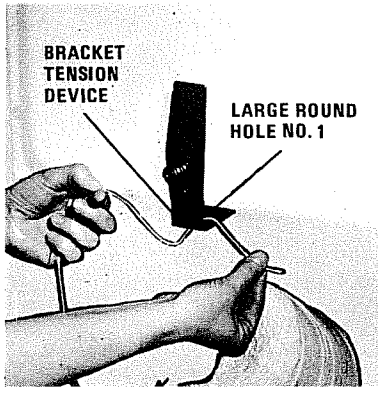

4. Grasp starting end of twine and pull approximately 5 to 6 feet of twine through large round hole at bottom of bracket tension device labeled No. 1.

5. Gently pull tension spring back and thread:

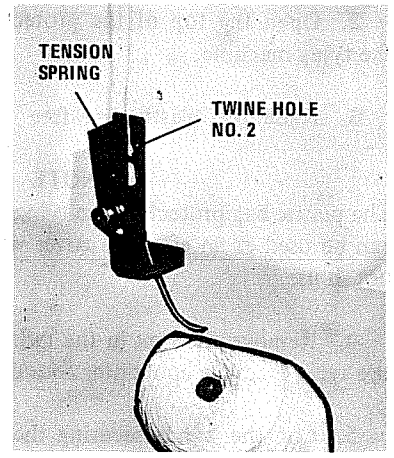
Twine Through bracket tension device small round hole.

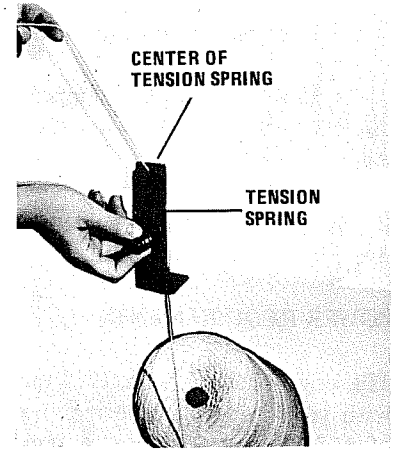
NOTE

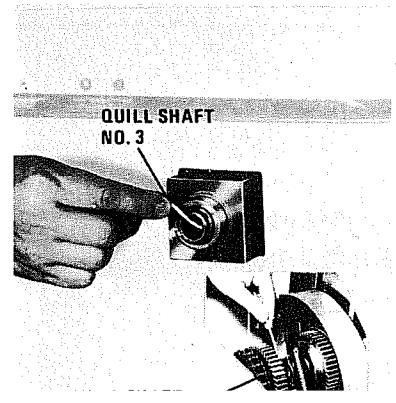
The hole is identified by Number 2 Label.

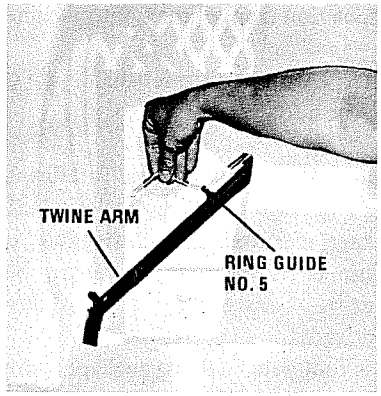



6. Release tension spring making sure twine is positioned under center of tension spring.



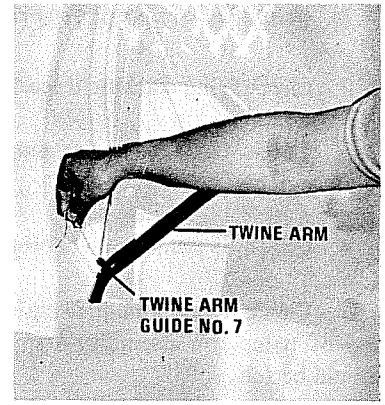



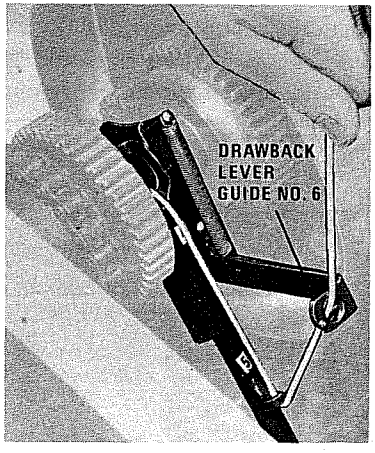



Make sure that appropriate tension spring is installed before proceeding with the threading of the tying machine. It is recommended that a threading tool which may be purchased from your local Bunn factory representative be used to perform steps 7 and 8.

7. Insert twine through quill shaft labeled No. 3.

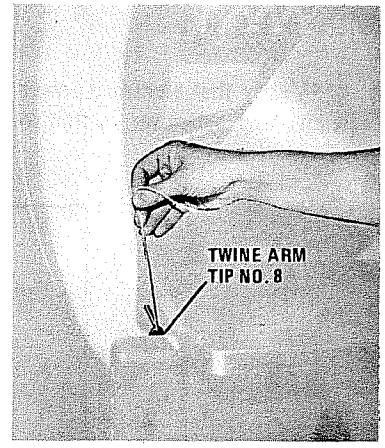


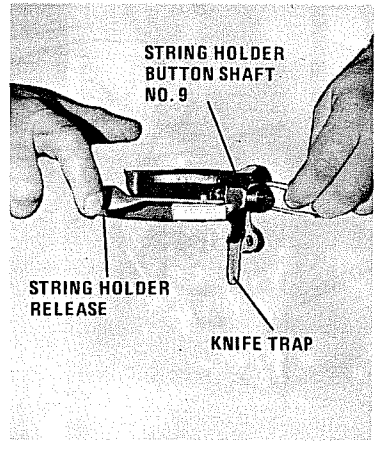

8. Fish twine out from quill shaft labeled No. 4. After twine is free, thread twine through ring guide labeled No. 5 on twine arm.




9. Pull twine through backside of draw back lever opening labeled No. 6 and then down through ring guide labeled No. 7 at bend in twine arm.

10. Continue to thread twine through twine arm tip labeled No. 8. Pull twine over to the right side of tying machine and press back stringholder release lever. Place twine under stringholder button shaft labeled No. 9, pull up and over shaft and release stringholder release lever. Pull twine taut and press knife trap toward front of tying machine to cut off excess twine.



1. TURN MASTER SWITCH TO THE "OFF" POSITION.

2. Check tying machine threading sequence.

3. Check twine cone for proper positioning over cone pilot assembly.

4. Check of twine cone is properly seated on foam pad.

5. Check twine running tension by pulling twine from end of twine arm assembly. A smooth easy running tension should be felt.

6. Check proper adjustment of twine cone pilot assembly.

7. Visually check tying machine for any mechanical defects or missing parts.

8. Verify that electrical power cord is inserted into receptacle and then set power switch to the "ON" position.

1. Stand at operator's position-front of the tying machine.

2. Position power switch located on the left-hand side of tying machine to the "ON" position.

3. Hold ends of package between thumbs and forefingers of both hands and position package on tying machine table so that right side of package is butted against standard or notch in front table (Figure 1) and positioned over gap between front and back tables.

4. Momentarily depress foot pedal holding package firmly until tying cycle is completed. The tying cycle is completed after the twine arm makes the required wrap.

**NOTE**

The tying machine automatically compensates for the size and shape and the different lengths of twine required. The tying machine also automatically applies the correct amount of tension, ties the patented slipproof and tamperproof knot and then cuts the twine.

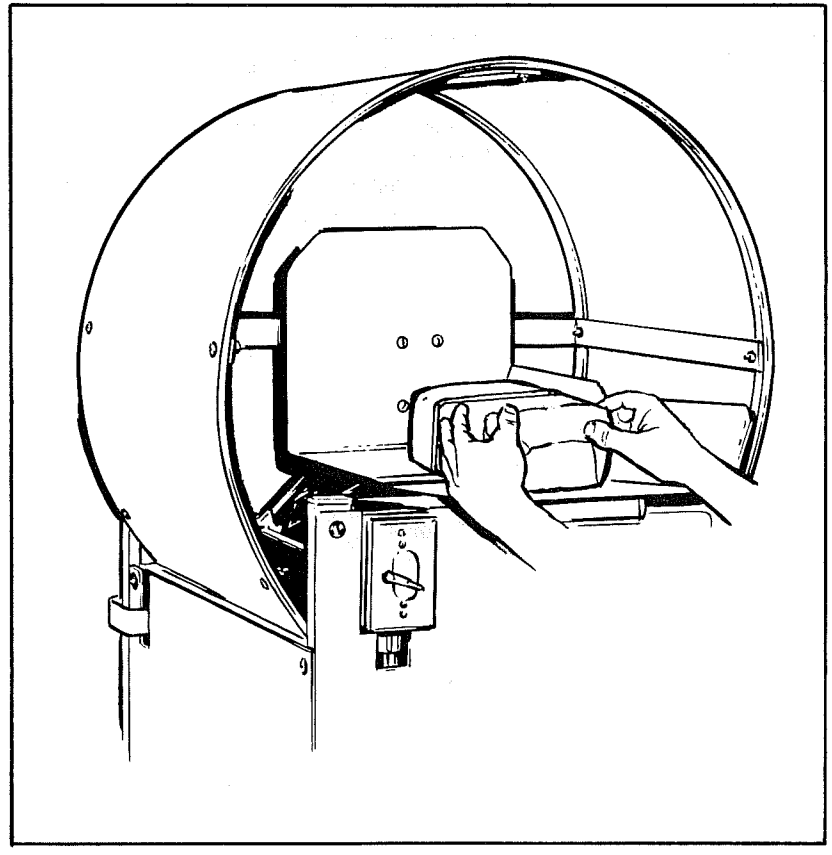


Figure 1. Positioning Package for Tying

6. Remove package from tying machine.

7. Repeat steps 3 through 6 above for each package to be tied.

8. After all packages have been tied, set power switch to "OFF" position.

## AFTER OPERATION PROCEDURES

1. Check remaining supply of twine. If supply is low tie the end of the exsiting twine to the starting end of the new twine with a square knot.

2. Clean any lint that may have collected in string-holder casting hole. A small pair of tweezers can be used for this purpose.

3. Steam clean and wipe tying machine dry at the end of each normal daily working period.

4. Lubricate tying machine in accordance with Table of Lubrication Requirements.

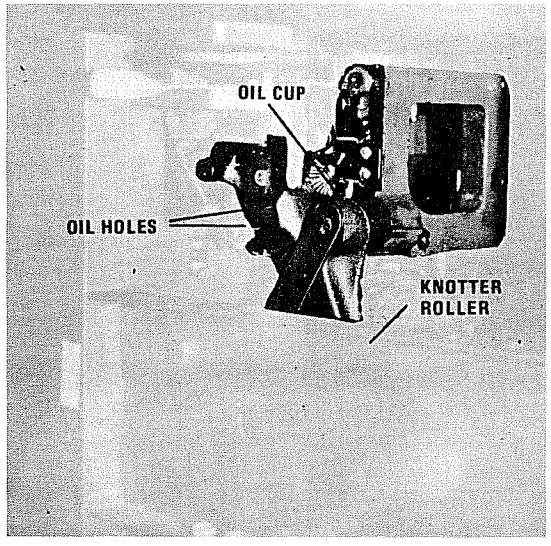
5. Cover tying machine with plastic bag used to ship tying machine.

The following paragraphs provide maintenance instructions and maintenance function schedules. Maintenance responsibility of the tying machine should be assigned to the maintenance mechanic or other authorized personnel.

A good preventive maintenance program is a major step forward to assure trouble-free tying machine operation. In order to be effective, routine inspection, lubrication, and adjustment schedules must be established and followed. The following Table Preventive Maintenance Checks and Services and Table of Lubrication Requirements is provided for tying machines subjected to normal usage which is considered to be approximately 30 hours of operation weekly. Substantial deviations from normal usage should require an adjustment in the indicated frequencies. Frequencies established in the Table of Preventive Maintenance Checks and Services are: Daily (D), Monthly (M), and every third month (Q). The Table of Lubrication Requirements has frequencies of daily and weekly. The tables should be copied for use by maintenance personnel, to facilitate checking off each item as it is performed. These lists can then be signed and dated to serve as an accurate record of preventive maintenance work performed. Deviations from normal tying machine usage should become a part of the records for the tying machine.

| CHECK OR SERVICE ITEM | FREQUENCY | | |
|---|---|---|---|
| | D | M | Q |
| **ELECTRICAL COMPONENTS** | | | |
| 1. Check electric power cord and plug. Cord should not be frayed and should be securely fastened. Plug should not be faulty. | | X | |
| 2. Check electric motor assembly, especially breather vents, which should be free of dirt and foreign particles. | | X | |
| 3. Operate electric motor assembly and listen for abnormal noises. | X | | |
| 4. Check condition of power switch to verify that it is securely mounted and operating properly. | X | | |
| **MECHANICAL COMPONENTS** | | | |
| 1. Operate tying machine and observe that it ties a bundle or package correctly. | X | | |
| 2. Remove lint and loose twine from stringholder button holes using a small pair of tweezers. | X | | |
| 3. Check twine running tension. Readjust twine tension spring if necessary. | | X | |
| 4. Check condition of knife. Knife should be sharp and free of knicks. Replace if necessary. | X | | |
| 5. Check for proper position of star wheel and shaft assembly gear and observe gear for excessive wear. Replace if necessary. | | X | |
| 6. Check for cracked or broken teeth on gears and sprockets and main gear. Replace as required. | | | X |
| 7. Check condition of v-belt for evidence of fraying. Replace if required. | | X | |
| 8. Check for loose pins and set screws in gears. | | | X |
| 9. Check entire tying machine for loose hardware. Tighten loose hardware as required. | X | | |
| 10. Check for broken or weak knotter flat springs and weak tension. Replace as required. | X | | |

| LUBRICATION ITEM | FREQUENCY | |
|---|---|---|
| | DAILY | WEEKLY |
| **NOTE**<br><br>Apply several drops of SAE 10 oil or equivalent unless otherwise specified. If necessary, refer to the exploded views 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 Knotter Head Sub-assembly). | X | |
| 3. Oil hole (encircled in red on Star Wheel and Moter Gear Assembly. | X | |
| 4. Between knotter lever and knotter head subassembly. | | X |
| 5. Around diameter of knotter roller. | | X |
| 6. Knotter lock plunger. | | X |
| **STRINGHOLDER AND KNIFE TRAP ASSEMBLY** | | |
| 1. Between knife trap rivet 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 assembly. | | X |
| 3. Between drawslide lever assembly and main table subassembly. | X | |
| 4. Into three oil holes (encircled in red on Main Table Sub-assembly). | X | |
| 5. Between stripper and main table subassembly so that stripper pivot pin is lubricated. | X | |

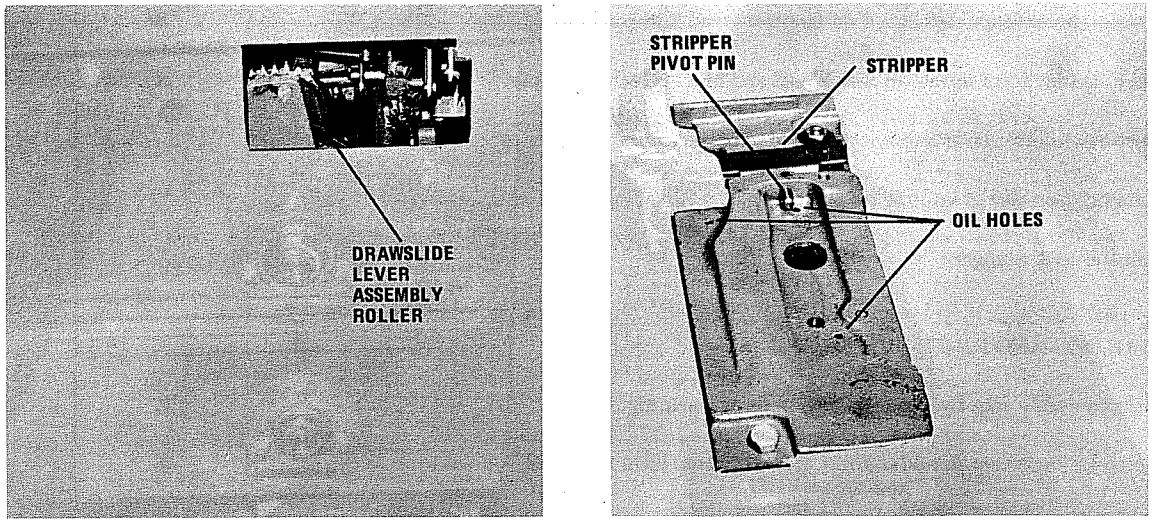
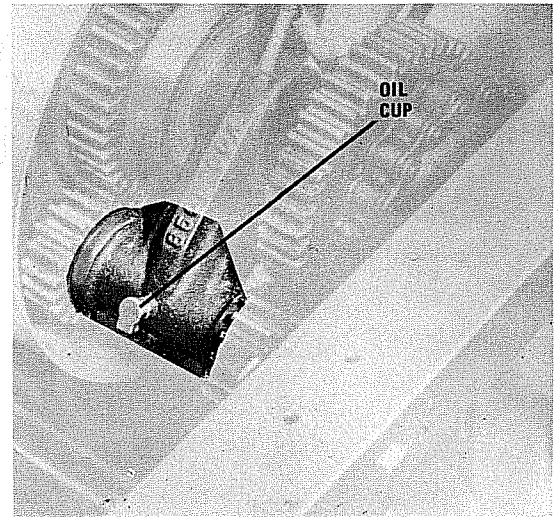



Figure 4. Main Table Lubrication Diagram



| | | |
|---|---|---|
| **NOTE**<br><br>Apply a liberal coat of recommended lubriplate to the following unless otherwise specified. | | |
| **DRIVE ASSEMBLY** | | |
| 1. Knotter rack assembly cam surface and teeth. | | X |
| 2. Cam riser cam surface. | | X |
| 3. Cam switch cam surfaces. | | X |
| 4. Apply several drops of SAE 10 oil to chain gear oil hole (encircled in red on machine). | | X |
| 5. Apply several drops of SAE 10 oil to the oil cup(s) located at the rear of the tying machine. | X | |
| 6. Clutch fork pivot pin. | X | |
| | X | |

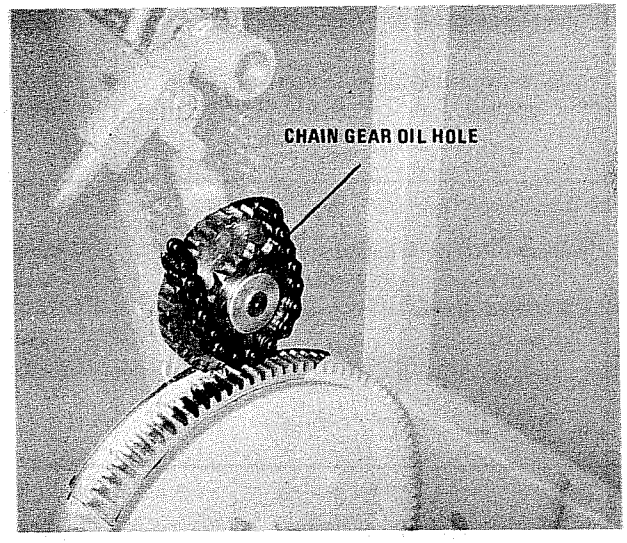
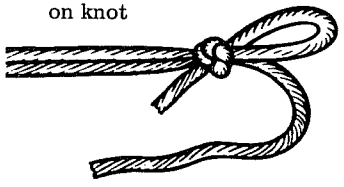
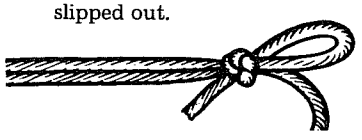
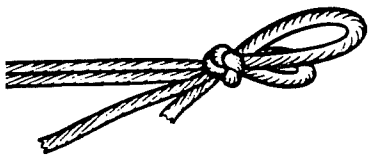
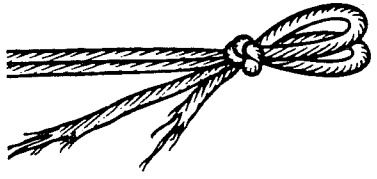
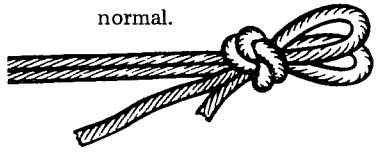


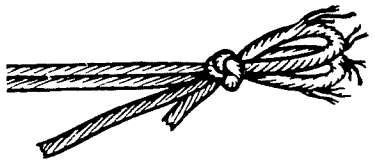

Figure 6. Drive Assembly Lubrication Diagram

troubles which may develop in the tying machine. The tying machine is generally trouble free. However, the tying machine suffers the usual wear and misadjustment from normal use. Careful inspection and accurate analysis of the symptoms listed in the Table of Troubleshooting Information will cies 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 trouble.

## TABLE OF TROUBLE SHOOTING INFORMATION

| TROUBLE | POSSIBLE CAUSE | CORRECTIVE ACTION |
|---|---|---|
| a. Tying machine will not operate with power 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 power switch. | Replace defective power switch. |
| b. Twine breaks frequently in stringholder button. | Improper twine. | Use proper size of twine. |
| | Excessive stringholder button tension. | Readjust stringholder button pressure. |
| c. Half or single loop on knot  | Piece of twine wrapped around stringholder button shaft relieving tension on twine (or tape). | Depress and hold button release lever and remove bits of twine using a small pair of tweezers. Then release button release lever. |
| d. One loop knot that slipped out.  | Excessive twine running tension. | Readjust to decrease twine running tension. |

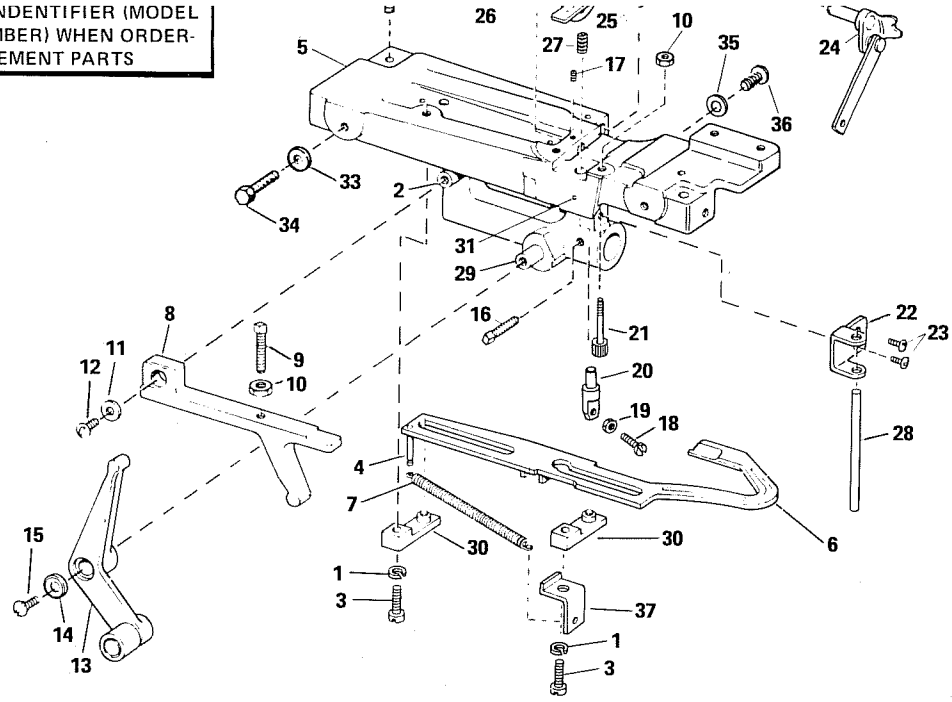
| | | |
|---|---|---|
| e. One long and one short loop.<br>  | Improper twine.<br><br>One loop catching in back of knotter throat, improper knotter release adjustment. | Use proper size of twine.<br><br>Readjust knotter release. |
| f. Break in twine in front of knot.<br>  | Friction along twine path. | Remove sharp edges from twine path in twine tension plate assembly, twine bracket, quill shaft, twine arm hub, twine arm assembly ring guides, drawback lever, and twine arm tip. |
| g. Ragged ends of twine at knot.<br>  | Dull or knicked knife. | 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 knot and loops slightly shorter than normal.<br>  | Loops release from knotter too soon, improper knotter release adjustment.<br><br>Stripper too short. | Readjust knotter release.<br><br>Replace stripper. |
| i. Short loops and tight knot.<br>  | Improper balance between twine running tension and stringholder button pressure. | Check stringholder button pressure. Readjust twine running tension. |

| | | |
|---|---|---|
| j. Cut loop ends.<br>  | Stripper points shearing against side of knotter jaws when stripping. | Readjust stripper shear action, bend top front end of stripper down tapping with a light hammer. |
| k. Very short loops and long ends.<br>  | Knot slipping by stripper. Improper gap between stripper point and knotter.<br><br>Knotter flat springs broken or weak. | Realign stripper point and knotter.<br><br>Replace knotter flat springs. |
| l. Twine catches in stripper. | Stripper spring broken or weak. | Replace stripper spring. |
| m. Twine pulls out of stringholder button. | Twine improperly threaded. | Check stringholder button threading and rethread if necessary. |

# Section VI / PARTS LIST

The tying machine is identified by the model number and serial number stamped on the name plate located on the left side frame of machine. Be sure to use both the model number and serial number when requesting part information or when ordering replacement parts. Using the complete equipment identifier (model number and serial number) will ensure receipt of proper replacement part(s). Use only genuine B.H. Bunn tying machine parts. These parts are identified by the B.H. Bunn trademark stamped on the part. Substitution parts may cause erratic and/or abnormal tying cycle operation.

USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS

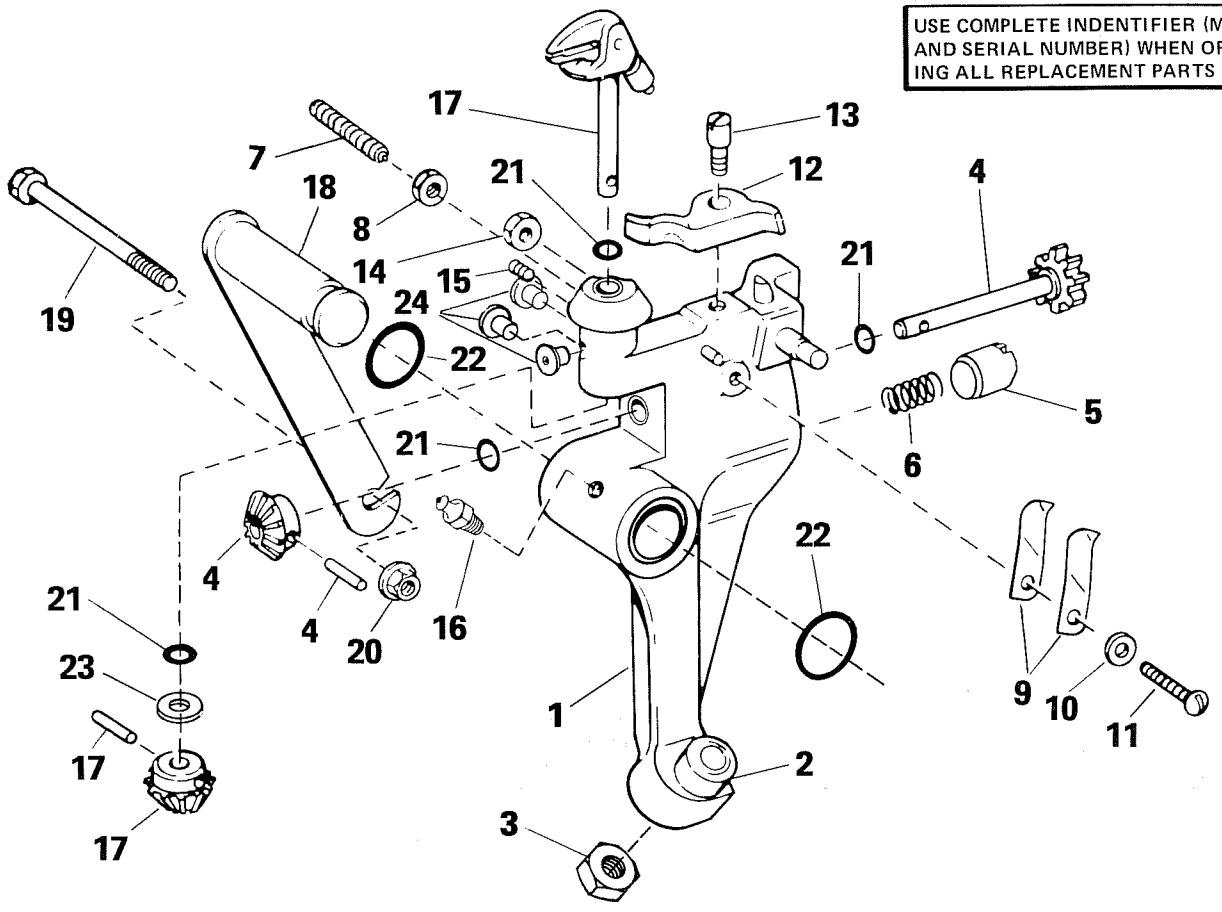



| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| — | 008 067 | Main Table Assembly | 1 |
| 1 | 100 135 | Washer-Split Lock 1/4 in. | 2 |
| 2 | 081 014 | Riser Lever Stud | 1 |
| 3 | 100 104 | Screw-Fillister head, slotted 1/4-20 NC x 1 in. long | 2 |
| 4 | 100 158 | Pin-Groove, 3/16, dia. x 1 in. long, Drawslide Spring | 1 |
| 5 | 088 066 | Main Table Sub-Assembly, Note 1. | 1 |
| 6 | 045 020 | Drawslide Assembly and Cap. Note 2. | 1 |
| 7 | 074 059 | Spring-Drawslide | 1 |
| 8 | 032 127 | Riser Liver | 1 |
| 9 | 100 124 | Screw-Set, square head, half dog point, 1/4-20 NC x 1 in. long. | 1 |
| 10 | 100 150 | Nut-Hex, 1/4-20 NC | 2 |
| 11 | 100 098 | Screw-Round head 10-24 NC x 3/8 in. long | 1 |
| 12 | 100 131 | Washer-Flat 1/2 o.d. x 7/32 i.d. x 3/64 in thk. | 1 |
| 13 | 032 132 | Drawslide Lever Assembly | 1 |
| 14 | 100 067 | Washer-Drawslide Lever | 1 |
| 15 | 100 110 | Screw-Flat head, slotted 1/4-20 NC x 1/2 in. long | 1 |
| 16 | 100 596 | Screw-Set, square head, cup point, 1/4-20 NC x 3/4 in. long | 1 |
| 17 | 100 121 | Screw-Set, socket head, cup point, 8-32 x 1/4 in long | 1 |
| 18 | 100 084 | Screw-Knotter release adjusting | 1 |
| 19 | 100 191 | Nut-Jam-Hex, 1/4-28NF | 1 |
| 20 | 081 056 | Stud-Knotter release | 1 |
| 21 | 100 591 | Stud-Knotter head stop | 1 |
| 22 | 083 079 | Guide-Riser pin | 1 |
| 23 | 100 597 | Screw-Round head, self tap 10-24 NC x 3/8 in. long | 2 |
| 24△ | 032 128 | Tip-Up Assembly | 1 |
| 25△ | 052 — | Stripper | 1 |
| 26△ | 083 085 | Pin-Stripper pivot | 1 |
| 27△ | 074 035 | Spring-Stripper | 1 |
| 28△ | 083 053 | Pin-Riser | 1 |
| 29 | 081 013 | Stud, Drawslide Lever | 2 |
| 30 | 070 065 | Cap, Drawslide Assembly | 1 |
| 31 | 100 372 | Pin-Roll, 1/8 dia. x 3/4 in. | 1 |
| 32 | 100 615 | Screw-Hex head 5/16-18 NC 1-1/4 in. long | 2 |
| 33 | 100 185 | Shim-Main Table | 1 |
| 34 | 100 273 | Screw-Hex head 5/16 x 18 NC x 3/4 in. long, "Whiz-Loc" | 2<br>1 |
| 35 | 100 134 | Washer | 1 |
| 36 | 100 566 | Screw | 1 |
| 37 | 025 288 | Bracket Drawslide Spring | 1 |

* Specify Type Twine Being Used — △ Not Part of Assembly, Order Separately

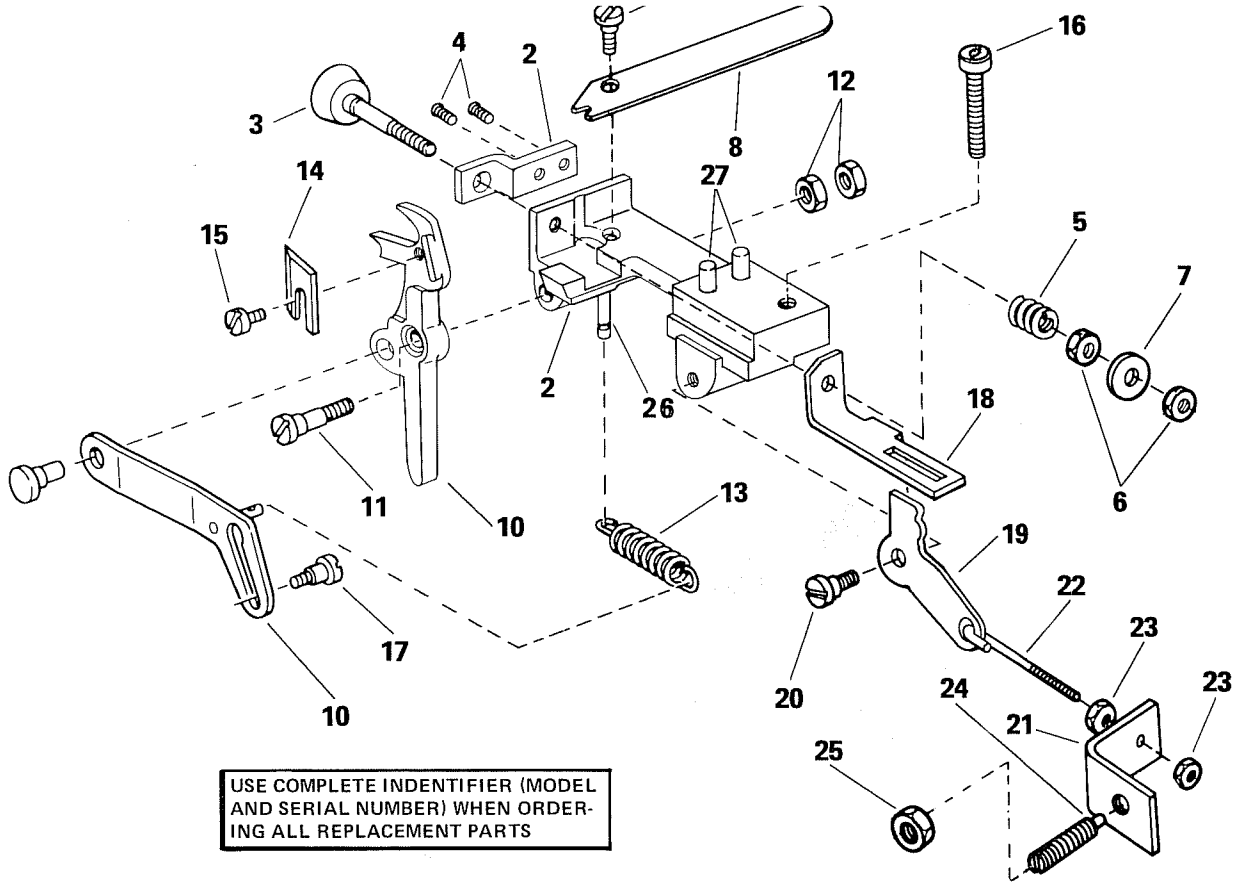
NOTE: 1. Sub-Assembly includes Items 2, 4, 10, 19, 20, 21, 22, 29 and 31.

USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS




| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| | 017 — | Knotter Head Assembly | 1 |
| 1 | 017 094 | Knotter Head Sub-Assembly. Note | 1 |
| 2 | 013 085 | Knotter Head Roller | 1 |
| 3 | 100 528 | Nut Nylock | 1 |
| 4 | 020 156 | Star Wheel & Miter Gear Assembly | 1 |
| 5 | 082 003 | Plunger-Knotter lock | 1 |
| 6 | 074 006 | Spring-Knotter lock | 1 |
| 7 | 100 187 | Screw-Set, half dog point, 1/4-20 NC x 1 in. long | 1 |
| 8 | 100 150 | Nut-Jam-Hex, heavy 1/4-20 NC | 1 |
| 9 | 074 013 | Spring-Flat knotter | 2 |
| 10 | 100 131 | Washer-Flat No. 10 | 1 |
| 11 | 100 092 | Screw-Round head, 10-24 NC x 1 in. long | 1 |
| 12 | 032 068 | Lever-Knotter | 1 |
| 13 | 100 009 | Screw-Knotter Lever | 1 |
| 14 | 100 143 | Nut-Hex, 10-24 NC | 1 |
| 15 | 100 120 | Screw-Set, socket head, cup point, 10-32 NF x 5/16 in. long | 1 |
| 16 | 100 574 | Fitting Hydraulic | 1 |
| 17 | 017 — | Knotter Body & Miter Gear Assembly | 1 |
| 18△ | 011 004 | Pivot Assembly-Knotter Head | 1 |
| 19△ | 100 275 | Screw-Hex head cap, 5/16-18 NC x 3-1/4 in. long | 1 |
| 20△ | 100 287 | Nut-Flange lock, large 5/16-18 NC | 1 |
| 21 | 100 575 | "O" Ring | 4 |
| 22 | 100 576 | "O" Ring | 2 |
| 23 | 100 571 | Spacer "O" Ring | 1 |
| 24 | 100 062 | Cover-Ball Valve Oil Hole | 3 |

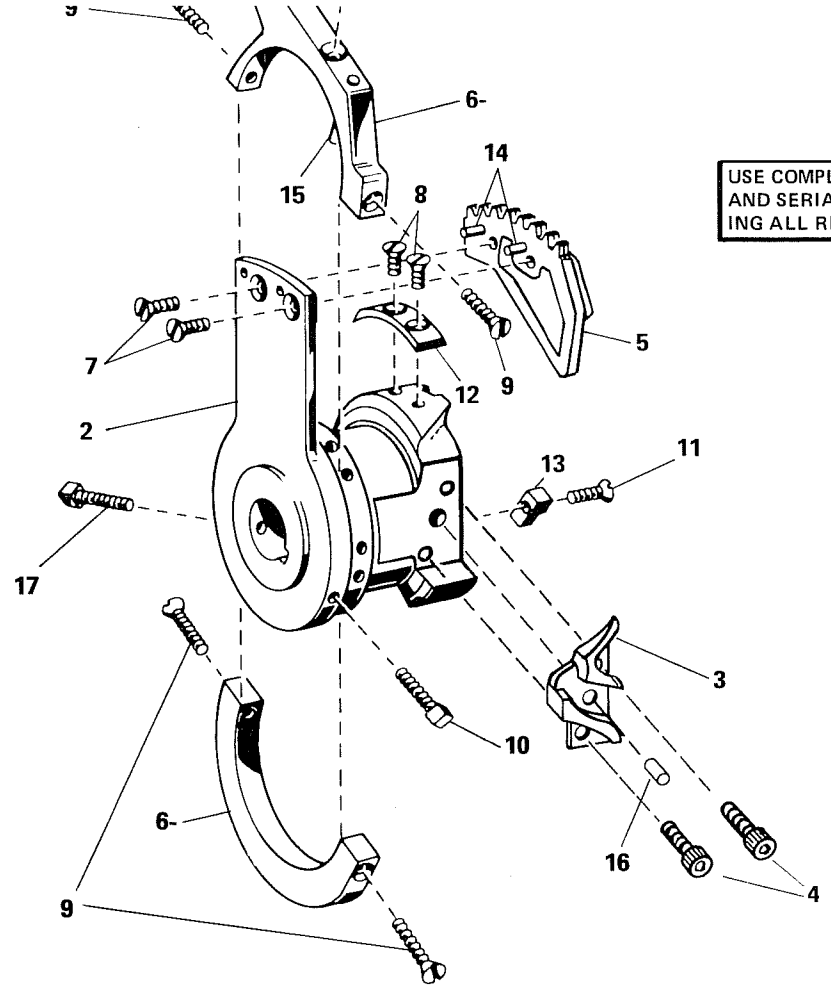
* Specify Type Twine Being Used △ Not Part of Assembly, Order Separately




USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS

| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| 1 | 030 144 | Stringholder and Knife Trap Assembly | 1 |
| 2 | 030 142 | Stringholder and Pins Sub-Assembly | 1 1 |
| 3 | 030 029 | Button-Stringholder | 2 |
| 4 | 100 610 | Screw 10-32 x 3/8 | 1 |
| 5 | 074 041 | Spring | 2 |
| 6 | 100 144 | Nut-Hex, 10-32 NF | 1 |
| 7 | 100 033 | Washer-Stringholder Button | 1 |
| 8 | 032 157 | Lever-Button Release | 1 |
| 9 | 100 010 | Screw-Button Release Lever | |
| 10 | 032 159 | Knife Trap and Lever Assembly | 1 1 |
| 11 | 100 562 | Screw-Knife Trap | 2 |
| 12 | 100 607 | Nut-Hex | 1 |
| 13 | 074 033 | Spring-Knife Trap | |
| 14 * | 021 002 | Knife | 1 |
| – | 021 009 | Knife, Package of 10 | |
| 15△ | 100 356 | Screw-Binder head, 8-32 NF x 1/4 in. long | 1 |
| 16△ | 100 565 | Screw Socket Head Cap | 1 |
| 17△ | 100 081 | Screw-Knife Trap Shoulder | 1 |
| 18 | 030 084 | Slide-Lever | 1 |
| 19 | 030 083 | Pivot | 1 |
| 20 | 100 088 | Screw-Pivot | 1 |
| 21△ | 030 085 | Angle | 1 |
| 22△ | 030 086 | Link | 1 |
| 23△ | 100 425 | Nut-Hex Lock No. 12-24 NC | 1 |
| 24△ | 100 187 | Screw-Set, half dog point, 1/4 x 20 NC x 1 in. long | 1 |
| 25△ | 100 188 | Nut-Hex, 1/4 x 20 NC ESNA | 1 |
| 26 | 100 158 | Spring Pin | 1 |
| 27 | 100 569 | Groove Pin | 2 |

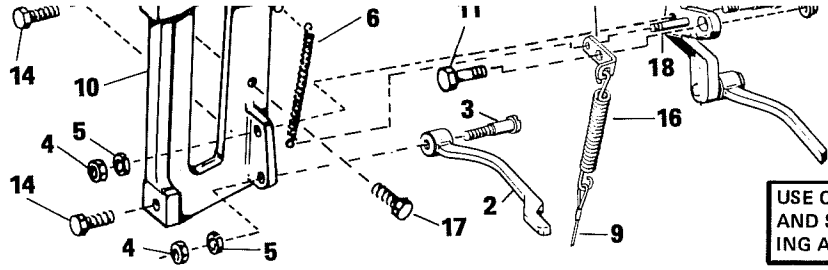
* Specify Type Twine Being Used — △ Not Part of Assembly. Order Separately.




USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER)WHEN ORDERING ALL REPLACEMENT PARTS

| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| 1 | 009 112 | Main Cam Assembly (0°) | 1 |
| 2 | 009 101 | Cam Wheel, (0°) Note 1. | 1 |
| 3 | 009 060 | Switch-Knotter Head Cam | 1 |
| 4 | 100 399 | Screw-Socket head, cap, 1/4-20 NC x 5/8 in. long | 2 |
| 5 | 020 072 | Rack-Knotter Cam. Note 1. | 1 |
| 6 | 009 113 | Cam Drawslide | 1 set |
| 7 | 100 102 | Screw-Machine, flat head, No. 12-24 NC x 3/4 in. long | 2 |
| 8 | 100 328 | Screw-Machine flat head, No. 12-24 NC x 5/8 in. long | 2 |
| 9 | 100 095 | Screw-Machine, flat head, No. 10-24 NC x 5/8 in. long | 4 |
| 10 | 100 128 | Screw-Square Head | 1 |
| 11 | 100 326 | Screw-Machine flat head No. 10-24 NC x 7/8 in. long | 2 |
| 12 | 009 120 | Riser Cam | 1 |
| 13 | 009 063 | Clutch-Kickout Block | 1 |
| 14 | 100 372 | Roll Pin | 2 |
| 15 | 100 160 | Groove Pin 3/16 x 7/8 in. long | 1 |
| 16 | 100 161 | Groove Pin 3/16 x 1 1/2 in. long | 1 |
| 17 | 100 127 | Screw, Square Head | 1 |

NOTE: Item 2 Includes Knotter Head Cam Switch.




USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS

| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| 1 | 084 056 | Main Table Support and Kickout Assembly | 1 |
| 2 | 032 081 | Lever-Clutch Kickout | 1 |
| 3 | 100 078 | Screw-Trip Rod | 2 |
| 4 | 100 151 | Nut-Hex, 1/4-28 NF | 2 |
| 5 | 100 135 | Washer-Split Lock, 1/4 | 2 |
| 6 | 074 055 | Spring-Trip Return | 1 |
| 7 | 011 019 | Bell Crank and Kickout Wedge Trip Assembly. Note 1. | 1 |
| 8 | 100 306 | Screw-Socket Set Oval Point, 1/4-20 NC x 1 1/4 in. long | 1 |
| 9 | 011 022 | Trip Cable-Clutch | 1 |
| 10 | 084 055 | Main Table Support Sub-Assembly. Note 2. | 1 |
| 11△ | 100 450 | Screw-Hex Head, 1/4-20 NC x 1 in. long | 1 |
| 12△ | 100 286 | Nut-Flanged Hex, 1/4-20 NC | 3 |
| 13 | 100 503 | Groove pin, 3/16 dia. x 1 1/2 in. | 1 |
| 14△ | 100 273 | Screw-Hex, Head, 5/16-18 NC x 3/4 in. long "Whiz-Loc" | 2 |
| 15 | 011 034 | Trip Extension | 1 |
| 16 | 074 050 | Spring-Trip Cable | 1 |
| 17 | 100 238 | Screw-Hex 1/4-20 x 1 1/4 in. long | 1 |
| 18 | 100 158 | Groove Pin 3/16 dia. x 1 in. long | 1 |

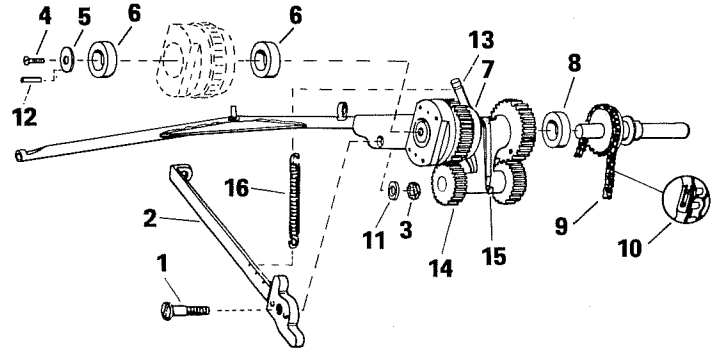
△ Not Part of Assembly. Order Separately

NOTE: 1. Includes Item 13. —2. Includes Items 8, 12, 13 and 17

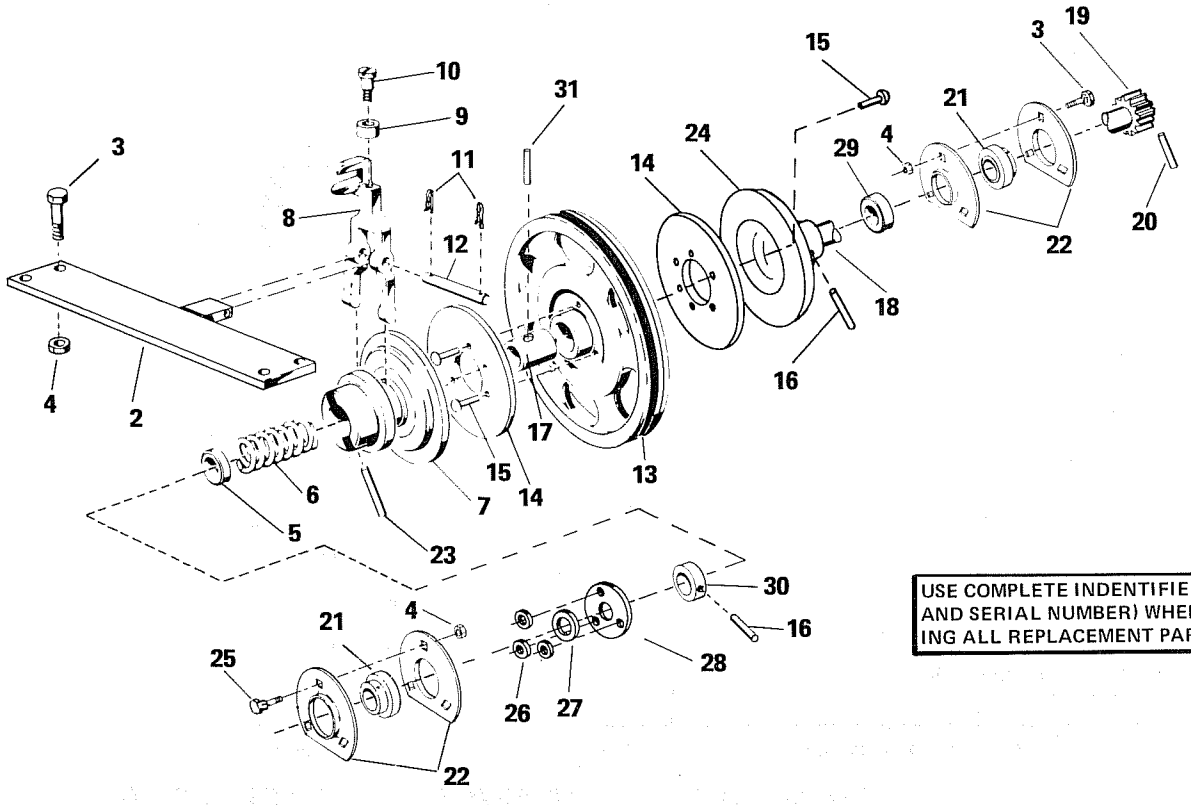
## Parts List

# TWINE ARM & DRAWBACK LEVER ASSEMBLY

USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS



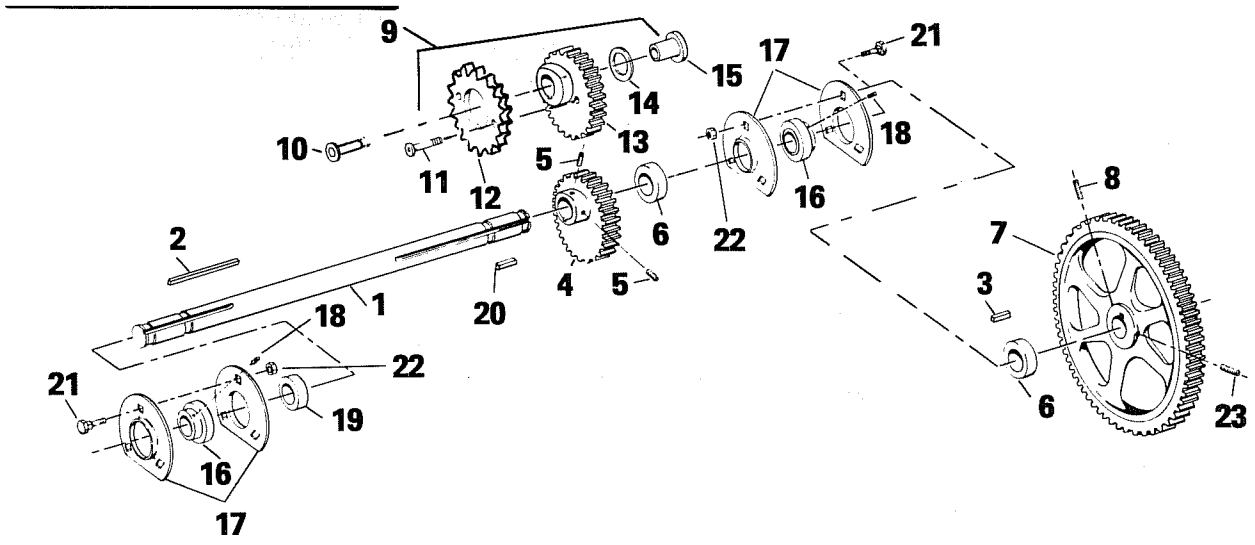

| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| — | 041 296 | Twine Arm and Drawback Lever Assembly | 1 |
| 1 | 100 040 | Screw-Drawback Lever | 1 |
| 2 | 032 121 | Drawback Lever Assembly | 1 |
| 3 | 100 501 | Nut | 1 |
| 4 | 100 110 | Screw-Machine, flat head, No. 1/4-20 x 1/2 in. long | 2 |
| 5 | 100 039 | Washer-Bearing Retainer | 1 |
| 6 | 013 065 | Bearing Ball | 1 |
| 7 | 034 013 | Housing and Gear Assembly | 1 |
| 8 | 013 064 | Bearing Ball | 1 |
| 9 | 135 027 | Chain-Twine Arm Drive | 1 |
| 10 | 135 049 | Link-Master | 1 |
| 11 | 100 136 | Washer, Lock | 1 |
| 12 | 100 235 | Pin, Retaining #0 x 3/8 in. long | 1 |
| 13 | 100 157 | Pin Grove 3/16 x 1 1/4 in. long | 1 |
| 14 | 020 008 | Transfer Gear Assembly | 1 |
| 15 | 100 017 | Oil Cup | 1 |
| 16 | 074 018 | Spring Drawback Lever | 1 |




USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS

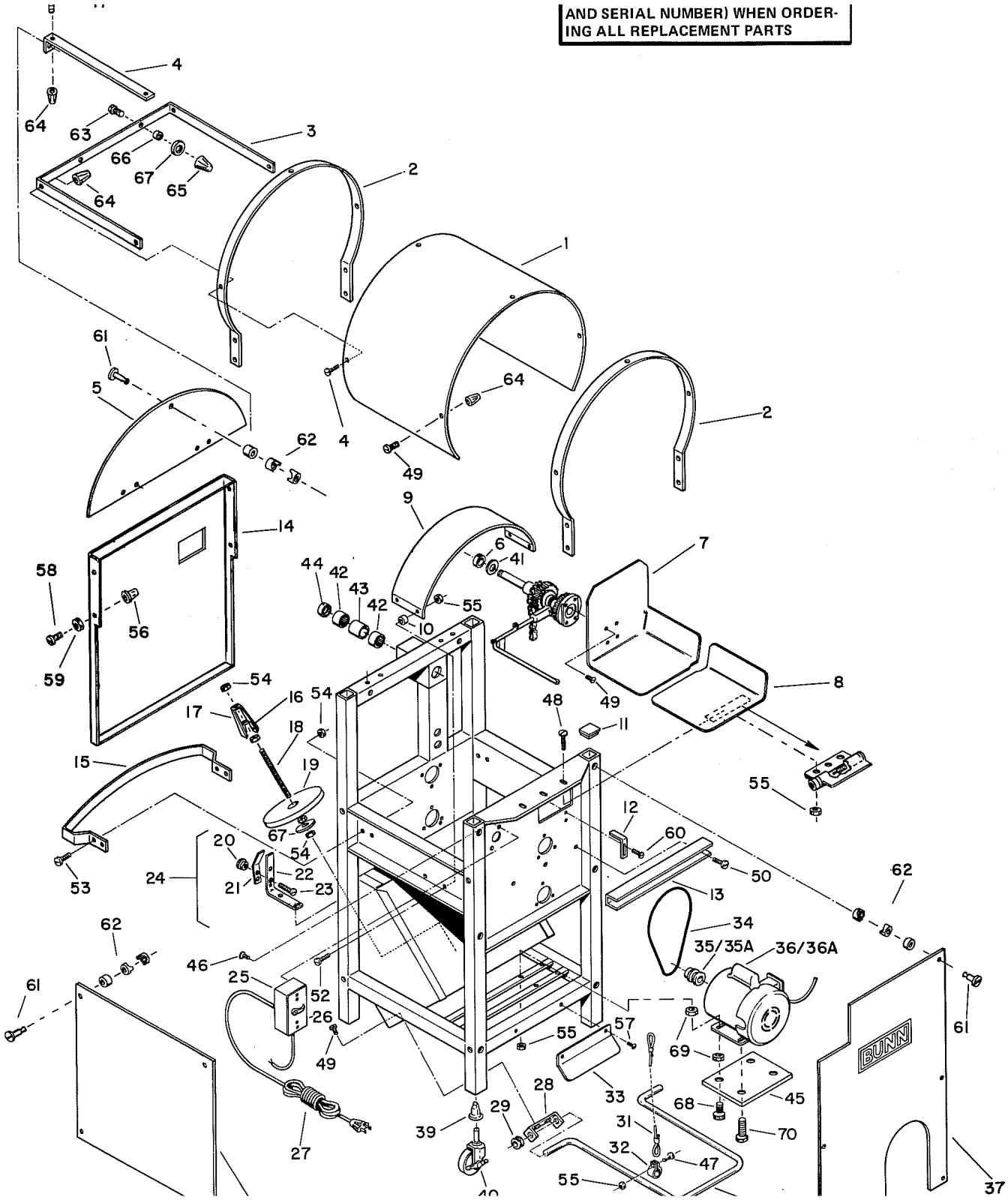
| Index Number | Part Number | Description | Number Required |
|---|---|---|---|
| 1 | 019 073 | Clutch Assembly | 1 |
| 2△ | 025 238 | Bracket Assembly, Clutch Fork Pivot | 1 |
| 3△ | 100 239 | Screw-Hex head, 5/16-18 NC x 5/8 in. long. "Whiz-Loc" | 7 |
| 4△ | 100 284 | Nut-Hex, 5/16-18 NC "Whiz-Loc" | 10 |
| 5 | 094 035 | Collar-Clutch Shaft | 3 |
| 6 | 074 004 | Spring-Clutch (Export only) | 1 |
| 6A | 074 003 | Spring-Clutch (Domestic only) | 1 |
| 7 | 024 016 | Clutch Member-Outer | 1 |
| 8△ | 071 001 | Fork-Clutch | 1 |
| 9△ | 064-031 | Roller-Clutch Fork | 1 |
| 10△ | 100 072 | Screw-Clutch Fork Roller | 1 |
| 11△ | 100 297 | Hitch-Pin No. 13 | 2 |
| 12△ | 083 006 | Pin-Clutch Fork Pivot | 1 |
| 13 | 019 095 | Pulley, Grooved | 1 |
| 14 | 024 003 | Clutch Disc | 2 |
| 15 | 100 181 | Drive Screw Round head No. 12 x 5/8 in. long | 6 |
| 16 | 100 294 | Pin-Spirol 3/16 dia. x 1 3/4 in. long | 2 |
| 17 | 013 099 | Bearing-Clutch | 1 |
| 18 | 012 145 | Shaft-Single Clutch | 1 |
| 19 | 020 216 | Pinion-Clutch Shaft | 1 |
| 20 | 100 497 | Pin | 1 |
| 21△ | 013 089 | Bearing-Clutch Shaft | 2 |
| 22△ | 013 091 | Bearing Flangette Clutch Shaft | 4 |
| 23 | 083 075 | Groove Pin 3/16 x 1 1/4 in. long | 1 |
| 24 | 024 014 | Clutch Member-Inner | 2 |
| 25 | 100 406 | Screw-Hex head 5/16-18 x 1 in. long | 3 |
| 26 | 126 075 | Spacer Thrust Plate | 3 |
| 27 | 130 189 | Thrust Plate | 1 |
| 28 | 024 022 | Disc | 1 |
| 29 | 094 032 | Collar-Clutch Shaft, Adjustable | 1 |
| 30 | 094-030 | Thrust Coller Clutch | 1 |
| 31 | 100 601 | Pin Rolled 3/16 x 7/8 | 1 |

△Not Part of Assembly. Order Separately.




| Index Number | Part Number | Description | Number Required | Index Number | Part Number | Description | Number Required |
|---|---|---|---|---|---|---|---|
| 1 | 012 132 | Main Shaft | 1 | 12 | 020 212 | Sprocket-Chair Drive | 1 |
| 2 | 083 005 | Key-Cam Wheel | 1 | 13 | 020 214 | Elliptical Gear (upper) | 1 |
| 3 | 083 090 | Key-Main Gear | 1 | 14 | 100 344 | Shim-Chain Gear Assembly | 1 |
| 4 | 020 215 | Eliptical Gear (lower) | 1 | 15 | 013 048 | Bearing-Gear | 1 |
| 5 | 100 262 | Screw-Socket Set Knurled, cup point, 5/16-18 NC x 3/8 in. long | 4 | 16 | 013 090 | Bearing-Main Shaft | 2 |
| | | | | 17 | 013 092 | Bearing Flangette-Main Shaft | 4 |
| | | | | 18 | 100 259 | Screw-Socket Set-Knurled Cup Point, 1/4-28 NF x 1/4 in. long | 4 |
| 6 | 126 071 | Spacer-Elliptical Gear (to rear bearing) | 2 | | | | |
| 7 | 020 217 | Main Gear | 1 | 19 | 126 070 | Spacer-Main Cam Assembly (to front plate) | 1 |
| 8 | 100 128 | Screw-Square Head Set | 1 | | | | |
| 9 | 020 213 | Chain Gear Assembly | 1 | 20 | 083 091 | Key-Elliptical Gear (lower) | 1 |
| 10 | 081 077 | Stud Assembly-Chain Gear Pivot | 1 | 21 | 100 239 | Screw-Hex Head 5/16-18 NC x 5/8 in. long "Whiz-Loc" | 6 |
| 11 | 100 268 | Screw-Flat Head Socket Cap, 1/4-20 NC x 1-1/4 in. long | 2 | 22 | 100 284 | Nut-Hex 5/16-18 NC, "Whiz-Loc" | 6 |
| | | | | 23 | 100 227 | Screw-Square Head Cup Pt. | 1 |

AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS



| | | | |
|---|---|---|---|
| 2 | 132 212 | Ring Guard | 2 |
| 3 | 132 213 | "U" Brace Guard, Twine Arm | 1 |
| 4 | 132 214 | Top Brace Center Guard, Twine Arm | 1 |
| 5 | 038 117 | Door Panel | 1 |
| 6 | 094 002 | Collar - Quill, Twine Arm | 1 |
| 7 | 010 095 | Loose Table Assembly | 1 |
| 8 | 007 090 | Trough Assembly | 1 |
| 9 | 037 034 | Shield - Clutch | 1 |
| 10 | 126 056 | Spacer - Clutch Shield | 4 |
| 11 | 081 085 | Tube Cap | 2 |
| 12 | 025 240 | Lever - Knife Trap, Release | 1 |
| 13 | 069 038 | Channel - Front Plate Support | 1 |
| 14 | 132 219 | Guard - Rear | 1 |
| 15 | 132 187 | Guard - Rear End | 1 |
| 16 | 025 350 | Bracket Twine Holder | 1 |
| 17 | 070 075 | Twine Cone Pilot | 1 |
| 18 | 081 071 | Stud - Twine Cone Pilot | 1 |
| 19 | 077 016 | Pad - Twine Cone | 1 |
| 20 | 100 145 | Nut - Knurled Brass - No. 12-24 NC | 1 |
| 21 | 074 001 | Spring - Tension | 1 |
| 22 | 025 239 | Bracket Tension Device | 1 |
| 23 | 100 410 | Screw - Tension Holder | 1 |
| 24 | 130 181 | Tension Device Assembly | 1 |
| 25 | 050 189 | Box - Switch, Watertight | 1 |
| 26 | 050 190 | Switch & Cover Assembly | 1 |
| 27 | 050 194 | Cord Set Assembly with Switch | 1 |
| 28 | 025 241 | Foot Pedal Mounting Bracket Assembly | 2 |
| 29 | 100 320 | Grommet - Plain Bore Rounded | 2 |
| 30 | 059 033 | Foot Pedal | 1 |
| 31 | 011 022 | Trip Cable - Clutch | 1 |
| 32 | 100 303 | Tubing Clamp | 1 |
| 33 | 132 215 | Guard - Foot Pedal | 1 |
| 34 | 040 006 | V-Belt | 1 |
| 35 | 019 091 | Motor Sheave (115V - 60HZ) | 1 |
| 35A | 019 100 | Motor Sheave (22V - 50HZ) | 1 |
| 36 | 039 034 | Motor (115V - 60HZ) | 1 |
| 36A | 039 033 | Motor (220V - 50HZ) | 1 |
| 37 | 038 115 | Panel - Front | 1 |
| 38 | 038 113 | Panel - Side | 2 |
| 39 | 135 063 | Caster - Socket | 4 |
| 40 | 135 062 | Caster with Side Brake | 4 |
| 41 | 100 023 | Washer | 1 |
| 43 | 126 006 | Spacer-Torrington Bearing | 1 |
| 44 | 013 016 | Race | |
| 45 | 130 207 | Support - Motor Plate | 1 |
| 46 | 100 101 | Screw, 10-32 x 1/2 in. long, Round Head | 2 |
| 47 | 100 105 | Screw, 1/4-20 x 3/4 in. long, Truss Head | 7 |
| 48 | 100 107 | Screw, 1/4-20 x 5/8 in. long, Hex Head | 3 |
| 49 | 100 111 | Screw, 1/4-20 x 1/2 in. long, Truss Head | 14 |
| 50 | 100 239 | Screw, 5/16-18 x 5/8 in. long, Hex Head - "Whiz-Loc" | 7 |
| 51 | 100 255 | Screw, 8-32 x 1/2 in. long, Pan Head | 2 |
| 52 | 100 256 | Screw, 1/4-20 x 3/4 in. long, Hex Head Flanged - "Whiz-Loc" | 8 |
| 53 | 100 273 | Screw, 5/16-18 x 3/4 in. long, Hex Head - "Whiz-Loc" | 12 |
| 54 | 100 284 | Nut, 5/16-18 Hex "Whiz-Loc" | 23 |
| 55 | 100 286 | Nut, 1/4-20 Hex "Whiz-Loc" | 10 |
| 56 | 100 289 | Welnut Fastener - J1032 | 4 |
| 57 | 100 379 | Screw, 1/4-20 x 1 1/2 in. long, Hex Head | 2 |
| 58 | 100 481 | Screw, 10-32 x 1 in. long, Oval Head | 4 |
| 59 | 100 482 | Washer #10 Countersunk | 4 |
| 60 | 100 564 | Screw, 8-32 x 1/2 in. long, Hex Head Flanged - "Whiz-Loc" | 2 |
| 61 | 100 572 | Oval Head Slotted Stud | 7 |
| 62 | 100 573 | Receptacle Assembly | 7 |
| 63 | 100 577 | Screw, 5/16-18 x 2 in. long, Hex Head | 2 |
| 64 | 100 581 | Nut, 1/4-20 Hex - Acorn | 10 |
| 65 | 100 582 | Nut, 5/16-18 Hex - Acorn | 2 |
| 66 | 126 055 | Spacer | 2 |
| 67 | 100 279 | Fender Washer | 3 |
| 68 | 100 565 | Screw, 5/16-18 x 1 1/4 in. long, Socket Head Cap | 2 |
| 69 | 100 537 | Nut, 5/16-18 Hex Flanged "Whiz-Loc" | 8 |
| 70 | 100 127 | Screw, 5/16-18 x 1 1/2 in. long, Square Head | 2 |

**USE COMPLETE INDENTIFIER (MODEL AND SERIAL NUMBER) WHEN ORDERING ALL REPLACEMENT PARTS**

# NOTICE

## DO NOT ATTEMPT TO OPERATE THIS EQUIPMENT BEFORE READING THE OPERATION INSTRUCTIONS AND PERFORMING THE BEFORE OPERATIONS 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 PANELS REMOVED AND KEEP HANDS AWAY FROM INSIDE OF GUARD TO AVOID BEING STRUCK BY TWINE ARM.
- DO NOT REMOVE GROUNDING PRONG FROM POWER CORD.