OPERATIONS, PARTS AND SAFETY MANUAL

FELINS

PAK TYER SERIES 2000 TYING MACHINES

IMPORTANT!
DO NOT DESTROY

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

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

READ ALL INSTRUCTIONS BEFORE OPERATING THIS FELINS PRODUCT

FELINS USA, INC • 8306 WEST PARKLAND COURT • MILWAUKEE, WISCONSIN 53223

(414) 355-7747 FAX (414) 355-7559

WELCOME!

YOU HAVE SELECTED ONE OF THE FINEST TYING MACHINES AVAILABLE. IT INCORPORATES NUMEROUS UNIQUE DESIGN FEATURES TO ASSURE OPERATING EASE AND DURABILITY.

WITH PROPER CARE AND MAINTENANCE, YOU WILL BE THOROUGHLY SATISFIED USING THIS PRODUCT FOR MANY YEARS. TO ENSURE MAXIMUM PERFORMANCE AND CAREFREE USE, WE ASK THAT YOU READ THIS MANUAL THOROUGHLY AND REFER TO IT OFTEN.

THIS OPERATION AND MAINTENANCE MANUAL CONTAINS SPECIFIC INSTRUCTIONS FOR USING AND MAINTAINING THIS MACHINE. WE SUGGEST THAT YOU KEEP THIS MANUAL NEAR THE MACHINE FOR READY REFERENCE WHENEVER YOU ARE OPERATING THE MACHINE.

THANK YOU FOR PURCHASING ONE OF OUR FELINS PRODUCTS. WE SINCERELY HOPE THAT YOU WILL BE SATISFIED WITH YOUR CHOICE!

FELINS MANAGEMENT AND EMPLOYEES.

!!!!!!!!!!!!! READ THIS MANUAL THOROUGHLY !!!!!!!!!!!!!!!!!

If you don't understand any portion, contact your dealer for a demonstration of actual starting and operating procedures.

NOTICE!!!!!

Throughout this publication, and on your machine, WARNINGS and CAUTIONS, accompanied by the International Hazard Symbol ! , may be used to alert the installer/user to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. OBSERVE THEM CAREFULLY!!!

These "Safety Alerts" alone cannot eliminate the hazards that they signal. Strict compliance with these special instructions while performing the service, plus "common sense" operation, are major accident prevention measures.

WARNING - Hazards or unsafe practices which could result in severe personal injury or death.

CAUTION - Hazards or unsafe practices which could result in minor personal injury and/or product damage.

IMPORTANT - Indicates information or instructions that are necessary for proper operation and/or maintenance.

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FELINS PAK TYER 2000 TYING MACHINES

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GENERAL SAFETY INSTRUCTIONS FOR THE FELINS PAK TYER 2000 TYING MACHINE

* Only trained personnel should service the machine.

BEFORE SERVICING MACHINE

* Read the Operations, Parts, and Safety Manual.
* Wear safety glasses.
* Disconnect all electric power.
* Use the correct tools to repair the machine.
* Never adjust, repair, or oil moving machine.

ADDITIONAL CONSIDERATIONS

* To insure proper operation of machine, use the specified power source.
* Do not overload machine by exceeding Felins' recommended performance limitations.
* Do not spill liquid on machine.
* Keep hands and loose clothing away from moving parts.
* Keep the Operations, Parts, and Safety Manual at your machine. Be familiar with it and refer to it often.

SIGNS AND WARNINGS

* Read all of the decals on the machine.
* Do not remove any of the decals from the machine.
* Replace all missing or damaged decals.

ADDITIONAL SAFETY INSTRUCTIONS ARE LOCATED THROUGHOUT THIS MANUAL. THEY SERVE TO WARN THE SERVICEMAN AND OPERATOR ABOUT POTENTIALLY HAZARDOUS SITUATIONS.

INTRODUCTION

The Pak Tyer 2000 series tying machines have been designed to be free-standing, to sit on a table, or to be incorporated into an automated conveyor system. The machines can be automatic or can be activated by an operator. The machines will adjust to any size or shape item being tied as long as it falls within the rated height capacity of the machine.

The Pak Tyer 2000 tying machine uses various tying materials ranging from 4 to 20 ply cotton and polyester; yarns; twine; different sizes and types of poly tapes; to various sizes and types of elastomers.

Six basic size units are available. Size is dictated by the clearance between the tying unit table top and the upper shaft that supports the twine delivery arm. Sizes range from 6 inches (15 cm) to 22 inches (55 cm).

APPLICATIONS

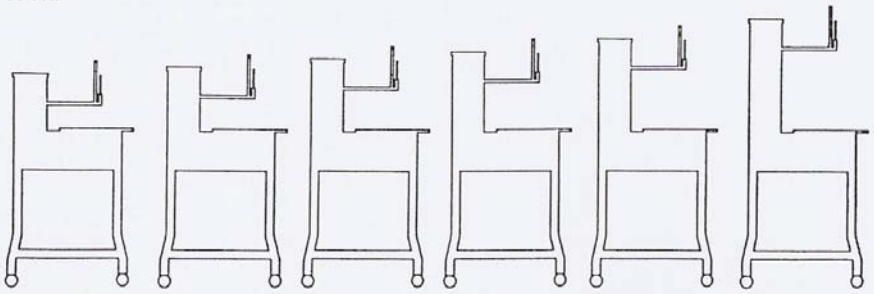
The Pak Tyler machine can be used in a variety of applications that require mechanical tying. Some examples of present uses are listed .

Laundries	Industrial laundries, hotel/motel laundries, hospital laundries, government institution laundries, towel/uniform suppliers, etc.
Agriculture	Florists, nurseries,vegetable growers, distribution centers, etc.
Printing	Commercial printers, in-house printers, mailing centers, quick printers, binderies, etc.
Publishing	Newspapers, magazines, newsletters,etc.
Garment	Sportswear, shirt, trouser, sock, and other clothing manufacturers, cloth and fabric manufacturers, etc.
Other	Manufacturers of various products that may need to be tied or held together for movement around the plant or for shipment to a distribution point.

Contact FELINS USA, INC., for help in solving your tying problem.

SPECIFICATIONS

The following chart shows the 6 sizes of Pak Tyer machines currently in production.



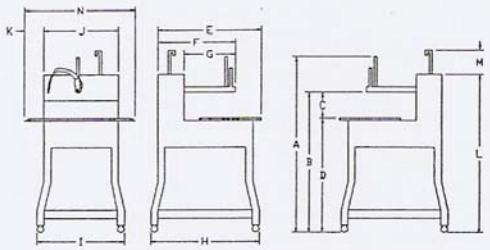
Model:	2000-6	2000-8	2000-10	2000-12	2000-16	2000-22
Maximum Package Height:	15 cm (6")	20 cm (8")	25 cm (10")	30 cm (12")	40 cm (16")	55 cm (22")
Weight:	65 kg (145 lbs)	77 kg (170 lbs)	95 kg (210 lbs)	104 kg (230 lbs)	117 kg (260 lbs)	135 kg (300 lbs)
Table Size:	40 cm x 71 cm (16" x 28")	40 cm x 71 cm (16" x 28")	60 cm x 88 cm (24" x 35")	60 cm x 88 cm (24" x 35")	60 cm x 106 cm (24" x 42")	60 cm x 106 cm (24" x 42")

Power Requirements: Available in 115 VAC, single phase, 60 Hz, 4 amps or 220V, single phase, 50 Hz, 2 amps

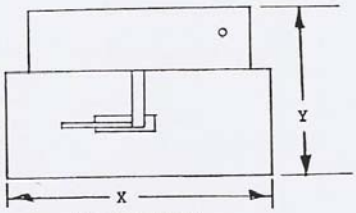
Package Size: Minimum 2.5 cm (1") diameter, no width or length restrictions, maximum height as per above

Speed: 40-50 cycles per minute

Tying Process: Slip knot (won't come undone)



mm	2000-6	2000-8	2000-10	2000-12	2000-16
A	1425	1450	1500	1550	1790
B	1082	1130	1180	1230	1335
C	152	200	250	300	425
D	910	910	910	910	910
E	660	725	940	940	940
F	533	610	730	730	730
G	295	370	495	495	495
H	505	660	660	660	660
I	425	460	460	460	460
J	540	465	500	500	500
K	25	160	220	220	320
L	1225	1290	1350	1400	1510
M	180	145	180	180	320
N	600	700	875	875	1055



(TOP VIEW)

FLOOR SPACE REQUIRED FOR EACH SIZE

SIZE	X		Y	
	IN	CM	IN	CM
2000-6	24.00	60.96	25.75	65.40
2000-8	28.00	71.12	28.50	72.39
2000-10	35.00	88.90	37.00	93.98
2000-12	35.00	88.90	37.00	93.98
2000-16	41.50	105.41	37.00	93.98
2000-22	41.50	105.41	37.00	93.98

The Pak Tyer machine can be tailored to fit the requirements of various applications. Several models have been developed to meet the needs of various industries and have become standard units because of their unique features. The most popular models are listed below.

1. COIL TYER - Designed for industrial applications centered around tying coils of hoses, tubing, v-belts, rope, and other materials.

2. ELASTIC TYER - Designed to replace manual application of rubber bands around any product for tying or packaging.

3. TANDEM TYER - Designed to apply two ties simultaneously around a package in parallel, spaced from 6 inches to 12 inches apart.

4. ATS (Automated Tying Station) - Designed as an inline, no-operator, conveyorized tying system. Each unit is designed to meet a customer's specifications.

5. TRAY BANDER - Designed to apply heavy plastic tape around any product, replacing conventional strapping machines.

6. RIGHT HANDED TYER - Designed as standard production unit in six sizes.

7. LEFT HANDED TYER - Designed for reversed product flow or to be used on opposite side of automatic conveyor systems. This is a mirror image model of standard units.

UNCRATING AND SET-UP

1. Check carton visually for damage caused by shipping. If damaged, contact Authorized Factory Representative before proceeding.

2. Remove cardboard box from wood skid. Remove metal straps from stand models; or remove mounting bolts from corners of base plate from table models. Remove machine from wooden skid.

3. Insert castors on stand models. Mount rubber mount pads to table models.

4. Mount twine arrestor bracket to twine delivery arm tube with two screws provided.

5. Check for proper voltage. Connect power cord. Wait 5 seconds for safety delay. Machine should now be ready for operation.

6. Trigger machine several times to insure proper cycling. If equipped with foot operated control, cycle by depressing foot lever. If equipped with auto-trip system, cycle by depressing and releasing switch lever with small bundle or rolled up newspaper. If equipped with electric eye sensor, cycle by moving small bundle or rolled up newspaper past light beam.

⚠ CAUTION KEEP HANDS AND LOOSE CLOTHING AWAY FROM MOVING PARTS!!!!!!!!!

7. Remove stainless steel table from inside of cardboard shipping liner if not already attached to machine when shipped. Loosen and remove table bracket screws and position brackets for table installation. Larger units will have table braces for added support. Smaller units do not have extra braces. Table braces may be inverted for shipping purposes. Using table screws provided, secure table to braces and supports. Be careful not to damage switch lever if your unit is equipped for auto-trip.

TWINE INSTALLATION AND THREADING

⚠ CAUTION SHUT OFF POWER BEFORE THREADING OR RETHREADING MACHINE

1. Open lid on top of top enclosure.

2. Place cone or ball of tying material (twine) in twine cabinet. Locate on long bolt located in center of twine cabinet.

3. Pull loose end of twine from cone or ball through twine hole in lid. Hole has plastic sleeve to protect twine. (#1 in Fig. 1).

4. Continue threading procedure by pulling twine up and over top of roller (#2 in Fig. 1). Pull twine toward tension pad holder bracket (#3 in Fig. 1).

5. Pull twine around roller on corner of tension pad holder bracket and over guide screw and tension adjusting stud (#4 in Fig. 1) - between tension pad and tension pad bracket. (See Fig. 2 for details).

NOTE: On 16" and 22" models take-up arm (#9 in Fig. 1) will be threaded now - continuing on to the twine delivery arm (#5).

NOTE: If your twine delivery arm has twine guide holes and guides on the side, follow steps 6 through 8. Then go to step 11. If your twine delivery arm has a twine channel at the bottom of the arm, go to step 9.

6. Continue threading through guide hole in bend of twine delivery arm (#5 in Fig. 1).

7. Continue through guide on side of twine delivery arm (#6 in Fig. 1).

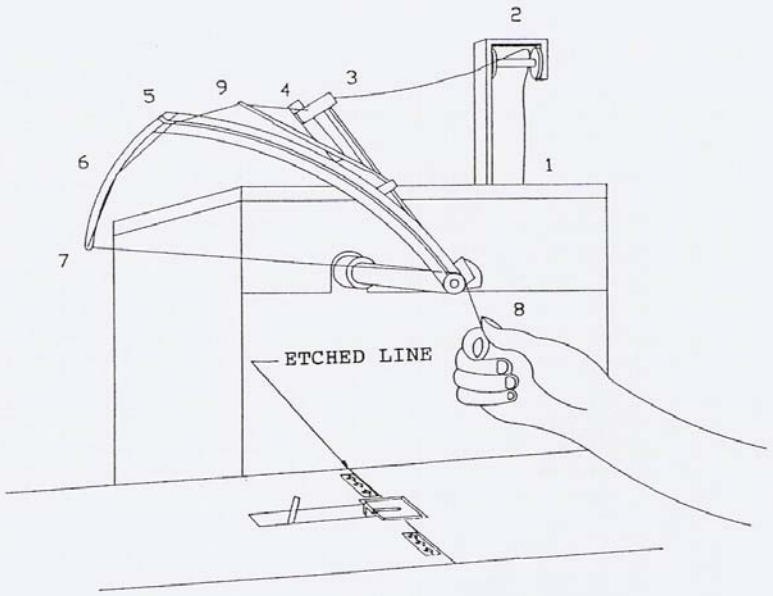
8. Continue through hole (#7 in Fig. 1) at the end of the twine delivery arm, going through from front to back.

9. Continue by threading twine under guide pin in twine channel at location #5 in Fig. 1.

10. Thread twine under guide pin in twine channel at location #7 in Fig. 1.

11. Pull twine beyond end of twine delivery arm approximately 18". Hold end of twine securely in right hand and drape over tube of twine delivery arm where the arm attaches to the delivery arm shaft. With twine in right hand, trip the auto-trip switch with small bundle or rolled up newspaper, activate cycle with foot pedal, or move small bundle or rolled up newspaper past electric eye, if so equipped. When the cycle of the delivery arm has finished, the machine is threaded and ready to operate.

Check the stringholder plate tension by tugging on the twine going from the delivery arm to the table top - pulling toward the delivery arm. The twine should be held securely. If it is easily pulled from the stringholder, the tension should be adjusted. See page 15.



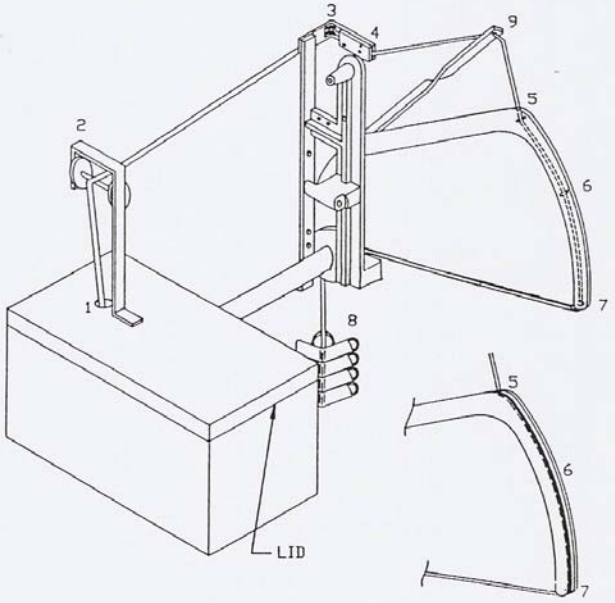


FIG.1

ALTERNATE THREAD ARM

THREADING POLY TAPE

Poly tape may create more drag than other tying materials. Therefore alternate threading procedures may be necessary. If poly tape creates more drag when run through the tension pad and tension pad holder, it may be necessary to bypass the standard threading route. Use the optional route if the tension pad cannot be adjusted to relieve excess drag tension. On the alternate route the tape is passed over the guide screw and under the tension adjusting stud between the tension pad and the tension pad bracket. This allows the pad to contact a smaller amount of tape as it passes between the pad and the bracket, and reduces the drag on the tape. See Fig. 2.

All twine threading holes and guides should be kept clean and smooth by using very fine emery cloth ripped into 1/4 inch strips and used to polish the openings.

NOTE: Some units that have been set up for special applications such as tying with elastic material or special poly tape may not have a roller on the tension pad bracket. There will be a hole for twine instead of the roller. When threading the unit, pass the twine through the hole and over the guide screw and adjusting stud - between the tension pad and the tension pad bracket as shown in Fig. 2.

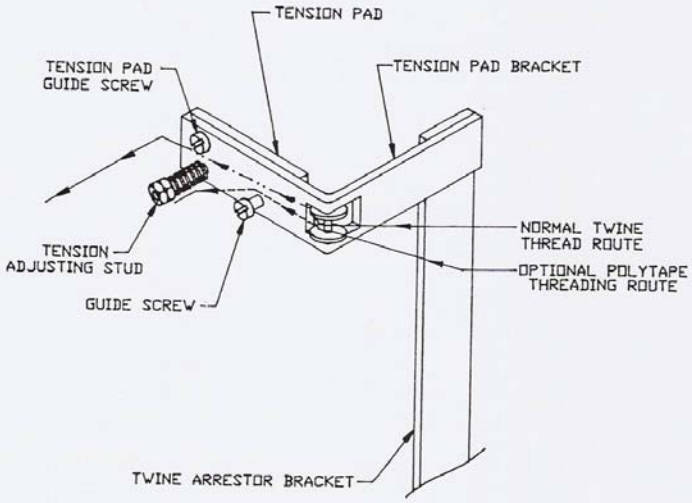


FIG.2

FELINS TYING MATERIAL

There are a number of types of tying material available for use depending upon the application. New materials are added to the list as new applications develop. If you have an application that is not covered by material on the list, contact your factory authorized representative or call 1-800-336-3220 for further assistance.

PART NUMBER	MATERIAL		
300A00208	ELASTIC #144	1.5 LB/TUBE	785 YDS/LB
300A00210	ELASTIC $393	1.5 LB/TUBE	573 YDS/LB
300A01006	ELASTIC #5020	1.5 LB/CONE	443 YDS/LB
300A01468	ELASTOMER - 900 - WHITE		6250 FT/CONE
300A00218	ELASTOMER - 1200 - WHITE		7925 FT/CONE
300A00212	ELASTOMER - 1200 - GRAY		7925 FT/CONE
300A00216	ELASTOMER - 1700 - WHITE		11225 FT/CONE
300A00214	ELASTOMER - 3000 - WHITE		19800 FT/CONE
300A01470	TWINE - POLY/COTTON - 6 PLY		2.5 LB/CONE
	2800 YD/CONE	15 LB TENSILE	
300A00220	TWINE - POLY/COTTON - 8 PLY		2.5 LB/CONE
	210 YD/CONE20 LB TENSILE		
300A00222	TWINE - POLY/COTTON - 10 PLY		2.5 LB/CONE
	1680 YD/CONE	25 LB TENSILE	
300A00224	TWINE - POLY/COTTON - 12 PLY		2.5 LB/CONE
	1400 YD/CONE	30 LB TENSILE	
300A00226	TWINE - POLY/COTTON - 16 PLY		2.5 LB/CONE
	1050 YD/CONE	40 LB TENSILE	
300A00228	TWINE - POLY/COTTON - 20 PLY		2.5 LB/CONE
	840 YD/CONE50 LB TENSILE		
300A01469	TWINE - POLY/COTTON - 24 PLY		2.5 LB/CONE
	625 YD/CONE60 LB TENSILE		
300A00246	POLY TAPE - 2800 PE, CLEAR, FLAT		4.4 LB/CONE
	12600 FT/CONE	38 LB TENSILE	
300A01477	POLY TAPE - 2800 PE, RED, FLAT		4.4 LB/CONE
	12000 FT/CONE	38 LB TENSILE	
300A01478	POLY TAPE - 2800 PE, BLUE, FLAT		4.4 LB/CONE
	12000 FT/CONE	38 LB TENSILE	
300A00252	POLY TAPE - 5000 PE, GREEN, FLAT		4.4 LB/CONE
	7260 FT/CONE	62 LB TENSILE	
300A00254	POLY TAPE - 7500 PE, YELLOW, FLAT		4.4 LB/CONE
	4850 FT/CONE	94 LB TENSILE	
300A01476	POLY TAPE - D-17 PE, CLEAR, FLAT		4.4 LB/CONE
	11500 FT/CONE	37 LB TENSILE	
300A00248	POLY TAPE - D-35 PE, BLUE, TWIST		4.4 LB/CONE
	9150 FT/CONE	50 LB TENSILE	
300A00250	POLY TAPE - D-50 PE, GREEN, TWIST		4.4 LB/CONE
	6850 FT/CONE	66 LB TENSILE	
300A01467	POLY TAPE - D-50 PE, CLEAR, FLAT		4.4 LB/CONE
	6850 FT/CONE	66 LB TENSILE	

OPERATING INSTRUCTIONS

Operation of the Pak Tyer 2000 requires that the operator become familiar with the controls and safety instructions. Read the general safety instruction on page 1 before proceeding.

To start the unit, press the on/off switch located on the left side of the front panel below the table top. The pilot light will light up - indicating the unit is on. Refer to Fig. 1.

NOTE: There is a fuse holder located in the on/off switch panel. If the pilot light does not light up when the unit is turned on, check to see if the unit is plugged into the proper outlet, 120v AC, single phase, 60 Hz, or 220v AC, single phase, 50 Hz if you have a 220v unit. Check to see if there is current at the outlet by plugging in an appliance or small power tool and checking its operation. If everything is correct, check to see if the fuse is intact.

If you have a unit that is approved for TUV, the fuse is located in the input module next to the on/off switch. The fuse can be removed after the power cord is unplugged from the switch panel. Use a small screwdriver or similar object to remove the retaining cap. The removal notch is located in the side of the plug opening.

⚠ CAUTION ALWAYS REPLACE A BLOWN FUSE WITH A FUSE OF EQUAL SIZE. NEVER INSTALL A FUSE RATED AT MORE THAT 4 AMPS.

The tying mechanism can be triggered three different ways, Your unit will be equipped with one of these systems to activate the mechanism.

1. FOOT ACTIVATED SYSTEM. The operator must place the item to be tied on the tying table to the left of the twine. Firmly slide the item from left to right along the table. Twine should slide through the twine delivery arm to encircle any size item being tied as it moves to the right. When the trailing edge of the item reaches an ETCHED LINE on the stainless steel table top, movement of the item is stopped. (Refer to Fig. 3). The foot lever is depressed by the operator and the tying mechanism is activated.

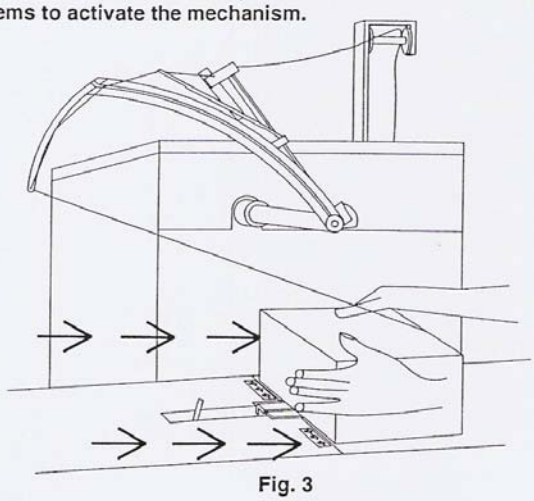


Fig. 3

⚠ CAUTION THE OPERATOR SHOULD CONTINUE TO HOLD THE ITEM IN PLACE BUT DO NOT PUT HANDS OR LOOSE CLOTHING IN THE PATH OF THE TWINE DELIVERY ARM OR NEAR MOVING PARTS!!!!!!!

NOTE: When tying, remove hands from the item when the twine delivery arm begins its return motion. This will allow the stripper plate to function freely as it removes the knot from the knotter.

Do not use excessive force to move the item across the table. The twine may be pulled out of the stringholder. If the twine is pulled out of the stringholder, you will have to repeat step 11 on page 6.

2. AUTO-TRIP SYSTEM. This system has a trip switch located below the tying table top just to the left of the tying station. A lever projects through the table top and is moved by the item as it passes over the switch.

The operator must place the item to be tied on the tying table to the left of the twine. Firmly slide the item from left to right along the table top. Twine should slide through the twine delivery arm to encircle any size item being tied as it is moved to the right.

As the item is moving along the table, it will ride over and depress the auto-trip lever. The tying cycle will automatically be activated when the trailing edge of the item clears the auto-trip lever and it springs back to its neutral position. An etched line is provided on the stainless steel table top as a guide for approximate stopping location to insure tautness of the tie.

3. ELECTRIC EYE SENSOR SYSTEM. This system is usually used with an automatic system where no operator is present. The electric eye sensor is located ahead of the tying station and actuates the tying mechanism when the item passes the sensor. The item is moved to the tying station and beyond by a conveyor. The position of the sensor is determined by the speed of the conveyor. The conveyor is stopped during the tying cycle.

IMPORTANT: Items should not be too far past the etched line when being tied or a loose tie will result.

Experimenting with different positions of the item will result in a more thorough understanding of the tying operation. It will also help determine the most desirable position in which to achieve the best tying results.

⚠ CAUTION KEEP HANDS AWAY FROM MOVING PARTS. DO NOT MAKE ADJUSTMENTS WHILE THE UNIT IS TURNED ON.

All machines will adjust to any size or shape item within the rated height capacity of the model.

KNOTTER

Different knotters are used for different applications and for different sizes of twine or poly tape. All machines will accept any size knotter. When ordering a machine, the application and the twine used should serve as a guide for determining the size knotter needed.

Available knotters:

Small Knotter: For 4, 6, 8 - ply cotton, polyester, or any other comparable size twine, 8's yarn and elastics.

Standard Knotter: For 8, 10, 12, 16 - ply cotton, polyester, or any other comparable size tying material, poly tape, larger elastics, and elastomers.

Large Knotter: For 20 - ply twine or larger, and larger poly tapes, and small jutes.

Many other materials can be used for tying or bundling and can be used with one of these knotters. Consult your factory authorized representative or call 1-800-336-3220 for further assistance.

The different size knotters can be identified by the size of the notch in the beak and the jaw. See the diagrams below for reference.

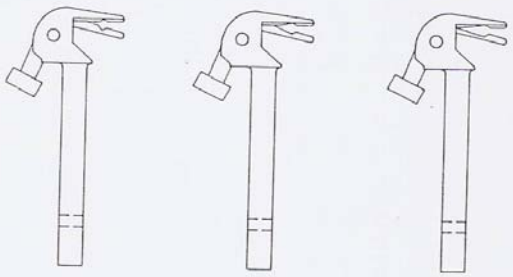


Fig. 4

ADJUSTMENTS AND CLEARANCES

Twine Tension Pad

Note: The Pak Tyer will tie as tight as the strength of the twine will allow.

Refer to Fig. 2 for part identification. The tension pad spring and the adjusting nuts work together with the twine arrestor screw to obtain tight ties. Too much tension may cause the string to break. It may also cause difficulty in moving the item being tied across the table top. To adjust the tension, loosen the jam nut and the locknut. Turn clockwise to increase the tension. Turn counter clockwise to decrease the tension. After tension is adjusted, tighten the locknut against the jam nut to lock.
Refer to Fig. G., items 4, 5, & 6.

The twine arrestor screw is one of the most adjusted screws to obtain tight ties. Loosen the knurled nut and adjust the screw. Turning the screw clockwise moves the twine tension leaf spring away from the arrestor frame and exerts more pressure on the tension pad when the twine arm is in its tying position. Refer to items 14 & 15, Fig. G.

If the string breaks, too much tension has been applied. Turn the screw counter-clockwise by increments of 1/8 turn. Adjust until the twine does not break and the tie is as tight as desired. Tighten the knurled nut when the adjustment has been made.

Note: If the tie cannot be made any tighter without breaking the twine because of the tension applied, it may be necessary to go to a heavier or thicker twine. The tightness of the tie is a result of enough tension, strength of twine, and position of item on the tying table during the tying cycle.

Twine Delivery Arm Brake

The twine delivery arm brake is only supplied on 16" and 22" units. The brake adjustment bolts are located on either side of the column head. Two bolts with locknuts force a nylon pressure plug against the twine delivery arm shaft to assist in controlling movement of the delivery arm during the tying cycle. To adjust the brake, loosen the locknuts and turn each bolt an equal amount clockwise to tighten the brake and counter clockwise to loosen the brake. Test the machine operation after each fractional turn of the bolts until a smooth action of the delivery arm is obtained. After adjustment is complete, tighten the locknuts. See Fig. F.

ADJUSTMENTS AND CLEARANCES (CONT.)

Stringholder Adjusting Studs

Adjustments to the stringholder are usually not necessary unless replacing the complete stringholder assembly. (See page 39 for instructions on replacing stringholder assembly). To make adjustments, loosen locknuts (refer to Fig. B, items 19 and 20). The stringholder assembly fits snugly on both studs with sufficient movement for string take-up. When adjustments are made to one stud, compensating adjustments are necessary to the second stud. When adjustments are complete, be sure the studs are snug, the stringholder is able to move for string take-up and the locknuts have been tightened.

Newer models have a single adjusting stud to correctly position the stringholder. Loosen the locknut located on the stud on front of the main frame. Turn the stud clockwise to move the stringholder away from the main frame, counter-clockwise to move the stringholder closer to the main frame. Tighten the locknut when the adjustment is complete.

Stringholder Return Spring Stud

The spring stud nut controls the tension of the stringholder return spring. (Refer to item 22, Fig. D.). Too much tension may cause the twine to break or pull out of the stringholder; too little tension may cause loose ties and string end tails to fall into the machine instead of on the string chute. Low tensile strength materials require less tension and more tension is needed for high tensile strength materials. To increase tension, turn the nut clockwise. To decrease tension, turn the nut counter-clockwise.

Main Frame Brace Bolt and Locknut

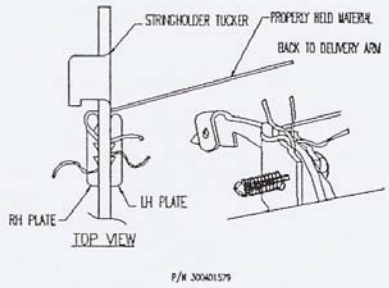
The bolt and locknut are used to secure the alignment of the bevel gears after proper backlash has been established. The bolt maintains the distance between the main frame and the shaft support bracket. During machine operation, twine end cut-offs can build up in the teeth of the bevel gears, causing the gears to separate and to jump teeth. The bolt will prevent the gears from separating. With the gear backlash properly set and no twine end cut-offs in the gear teeth, the bolt should be snug between the main frame and the shaft support. Adjusting the bolt too tight will cause binding between gears. Adjusting the bolt too loose will allow the gears to move apart when twine cut-offs build up in teeth. Refer to items 22 & 23, Fig. B.

Knotter Plate Spring

Adjustment of this spring will change the tightness of the knot. The adjust, loosen the locknut. A clockwise turn of the knurled nut will increase tension, which will increase the tightness of the knot. To loosen, turn the knurled nut counter-clockwise. When the adjustment is properly set, tighten the locknut against the knurled nut. Refer to items 25,27,28, Fig. E.

⚠ CAUTION OVER TIGHTENING WILL RESULT IN KNOT NOT RELEASING PROPERLY.

ADJUSTMENTS AND CLEARANCES (CONT.)



The left and right stringholder plates (item 10 and 11, Fig. D) have notches on the top end to catch the twine when the tucker (item 18, Fig. D) pulls the twine into the stringholder. The notches should be in line on both sides of the tucker, of equal size, and the plates should be rubbing the sides of the tucker with light pressure. The size of the notches on the plates varies with the type of tying material used. Notches will be larger for heavier twine.

PROPER SIZES OF STRINGHOLDER PLATES FOR EACH TYING MATERIAL

	SMALL	MEDIUM	LARGE
POLY/COTTON TWINE			
6 PLY	X		
8 PLY	X		
10 PLY		X	
12 PLY		X	
16 PLY			X
20 PLY			X
POLYTAPE			
2800		X	
5000			X
7500			X
TWISTED POLY			
D-35		X	
D-50			X
ELASTOMER			
3000		X	
1700		X	
1200		X	
900		X	
ELASTIC			
144	X		
393	X		
5020	X		

Stringholder Tension Spring

When changing tying materials or when increasing string tension, an adjustment of the plate tension spring (item 9, Fig. D) may be necessary. Loosen the locknut and turn the screw clockwise. This pulls the right and left hand stringholder plates together. If string continues to pull out from the plates, they may be bent too far away from the stringholder tucker, or may be worn. If adjusting the stringholder tension spring will not correct the problem, check for wear, and also check to see if the notches on the inside surfaces of the plates are mismatched to size or type of tying material used. If they are worn or mismatched to the tying material, they should be replaced. When all adjustments have been made, tighten the locknut. Refer to items 6,8,9, Fig. D.

⚠ CAUTION It is NORMAL to have 2-5 twine ends held in the stringholder. DO NOT use scissors, screw driver, knife, or any tool to remove twine ends from the stringholder. Some or all of the twine ends will be pushed out of the stringholder during the next tying cycle. Using tools to remove the twine ends may bend, scratch, or damage the surfaces and edges of the stringholder plates and create problems with the tying mechanism.

ADJUSTMENTS AND CLEARANCES (CONT.)

Break-Away Twine Delivery Arm

The break-away twine delivery are is a safety feature. The adjustment spring in the break-away block is preset at the factory to the minimum required tension to accomplish a tight tie without breaking loose. Refer to Fig. 5.

Increasing the spring tension with the adjustment screw should only be done when a tighter tie is needed. When tying, if the delivery arm breaks loose before reaching the stringholder, tighten the spring adjustment screw 1/4 turn at a time until the string is held in the stringholder and the desired tying tension is achieved.

NOTE: More tension on the break-away spring will result in harder break-away action and the possibility of damage to the machine if the delivery arm come down on an item to be tied. Decreasing the spring tension will result in a soft tie and a light break-away action.

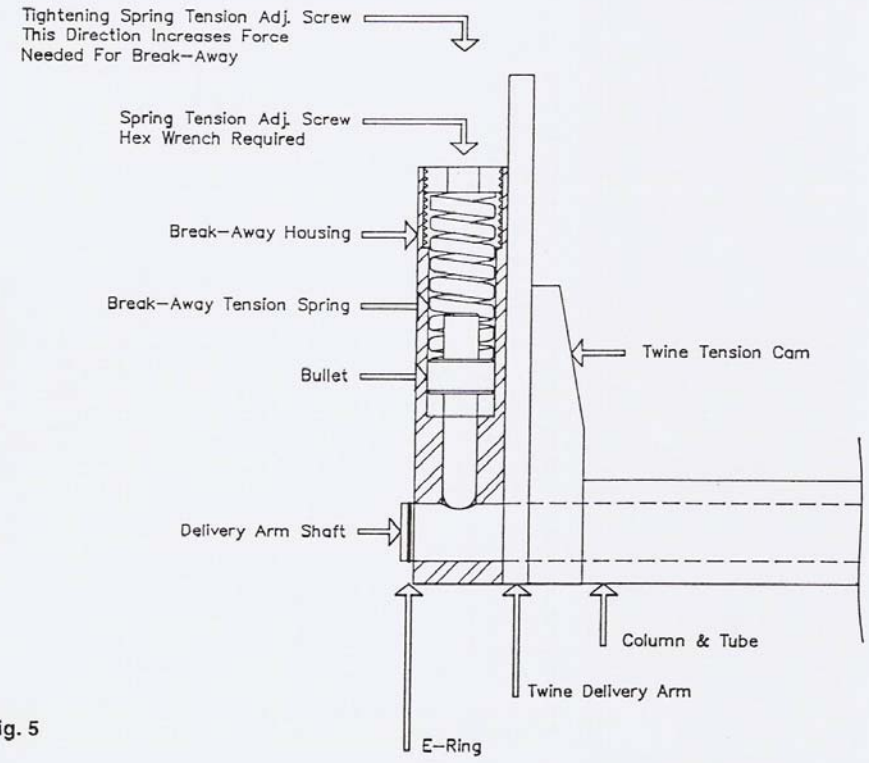


Fig. 5

TIMING PROCEDURES

These timing procedures will be the same for all 2000 series models. The only variation is the measurements will change for each size machine.

⚠ WARNING ALWAYS UNPLUG MACHINE BEFORE SERVICING OR MAKING ADJUSTMENTS!!! DISCONNECT POWER TO MACHINE WHEN MACHINE IS IN HOME POSITION ONLY. FAILURE TO DO THIS MAY RESULT IN MACHINE CONTINUING TO CYCLE WHEN POWER IS RESTORED!!!

Step 1. Refer to Fig. 6.

a. To rotate the mechanism to the proper position, use a jog button or disconnect the motor from the worm gear case and pull it out.

b. Rotate the lower crank arm clockwise until this is in approximately the 7:00 o'clock position. The tie rod center line will be in line with the center line of the lower crank arm and will also be in line with the center of the main shaft.

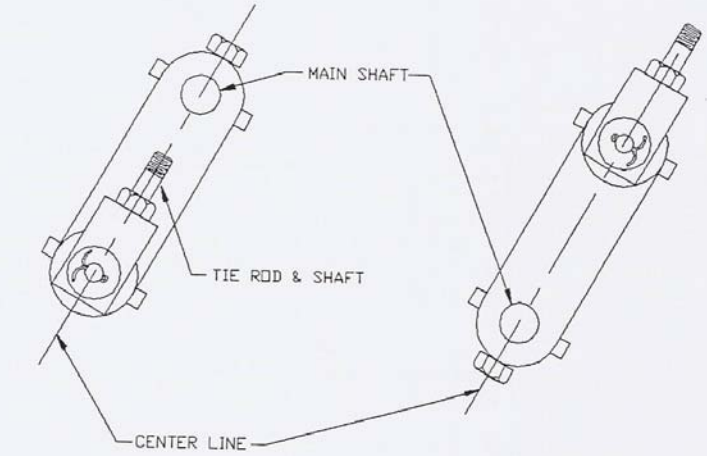
c. Check to see if the rubber stringholder bumper is worn. Check the distance from the edge of the stripper plate to the closest edge of the stringholder tucker. If the distance is greater than 1 1/2", the bumper is worn and should be replaced.

d. Take a measurement from the back of the stringholder tucker to the center hole at the tip of the twine delivery are. If the twine delivery arm has a string channel in the bottom instead of guides and a hole at the end, take the measurement to the rounded edge of the string channel where the twine leaves the delivery arm. Compare your measurements to the measurements listed here.

Long Measurements

Model	Measurement
2000-6	2"
2000-8	2 1/8"
2000-10	2 3/8"
2000-12	2 1/2"
2000-16	2 7/8"
2000-22	3"

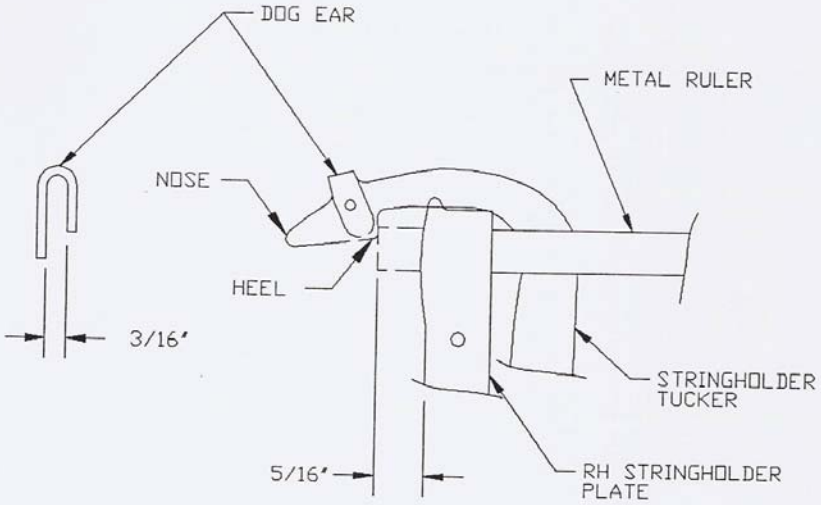
e. If the measurement for your machine is different from the listed measurement, check for proper tie rod length.



CRANKARM POSITIONS

CRANK ARMS AS VIEWED FROM BACK OF MACHINE

Fig. 6



STRINGHOLDER TUCKER ADJUSTMENT

Fig. 7

TIMING PROCEDURES (CONT.)

Step 2. Refer to Fig. 7.

a. In order to check for correct timing, there must be 5/16" space between the heel of the stringholder tucker and the bevel edge of the RH and LH stringholder plates.

b. Slowly turn the main shaft clockwise to rotate the twine delivery arm to the down position.,

c. As the twine hole in the tip of the twine delivery arm starts to reach the stringholder tucker, keep a close eye on the stringholder tucker for any movement. Once the slightest movement is seen, STOP!

d. Measure the distance from the back of the RH stringholder plate to the twine hole center at the tip of the twine delivery arm. If your twine delivery arm has a string chute at the bottom instead of guides and a hole at the end, measure to the rounded edge where the twine leaves the delivery arm. Check your measurement against the measurements listed below.

Short Measurements

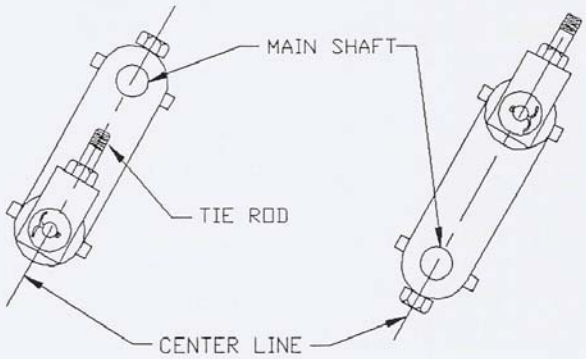
Model	Measurements
2000-6	1/8"
2000-8	3/8"
2000-10	3/4"
2000-12	5/8"
2000-16	1/2"
2000-22	1"

Approximate tie rod measurements - center hole to center hole.

Model	Measurement
2000-6	12 3/4"
2000-8	14 3/4"
2000-10	17 1/4"
2000-12	19 1/16"
2000-16	24 1/16"
2000-22	28 1/8"

STOP SWITCH ADJUSTMENT

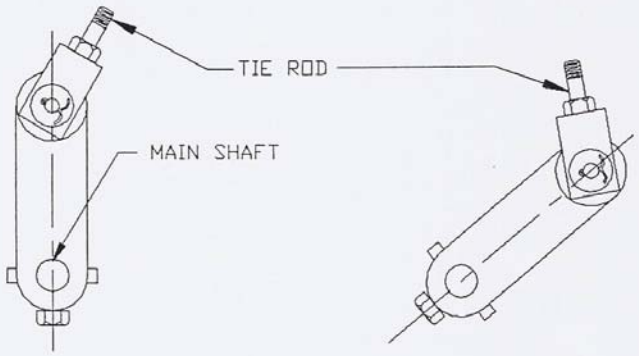
It is important to stop this machine in the top center position as shown Fig 6. See item 27, Fig. F. You can adjust the stop position by loosening the stop cam assembly (split collar and roller) and rotating forward or back until the machine stops in the desired position. Retighten the collar securely each time before operating the machine.



7:00 POSITION
BOTTOMED OUT

1:00 POSITION
TOP CENTER

CORRECT CRANKARM POSITIONS



12:00 POSITION
BEFORE TOP CENTER

1:00 POSITION
TOP CENTER

INCORRECT CRANKARM POSITIONS

CRANK ARMS AS VIEWED FROM BACK OF MACHINE

Fig. 8

TIMING PROCEDURES (CONT.)

Knotter Gear Timing

The knotter is driven by a series of gears and shafts during the tying cycle. At the bottom of the knotter housing (item 35, Fig. E) a knotter gear (item 29, Fig. E) is attached to the knotter shaft. The knotter gear is driven by a large, flat gear called a platter (item 5, Fig. B) during the tying cycle. The flat area on the knotter gear must be positioned against the flat area on the platter gear when the delivery arm is in the raised (at rest) position. The knotter gear can be set in the correct position by following the instructions for knotter removal and replacement on page 31.

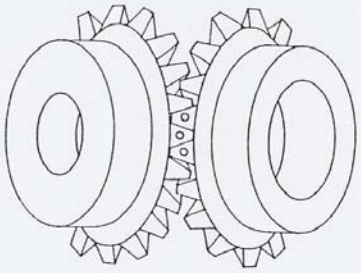
The platter gear is attached to the knotter drive shaft (item 6, Fig. B). The knotter drive shaft is driven by the short drive shaft (item 4, Fig. C). The two shafts are at right angles to each other and the drive is transmitted through two bevel gears (item 8, Fig. B and item 5, Fig. C). The two bevel gears have timing marks on the outer edge, adjacent to the gear teeth. One gear (item 5, Fig. C) has marks on two teeth. The other gear (item 8, Fig. B) has a mark on one tooth. The gears must be timed so that the single marked tooth is between the two marked teeth. The timing mark on the bevel gear on the knotter drive shaft should point to the half circle extension on the platter gear hub. Refer to Fig. 9

It is possible for the two bevel gears to jump teeth and get out of time. This can happen if the brace bolt (item 22, Fig. B) between the main frame (item 4, Fig. B) and the shaft support (item 10, Fig. C) is loose and a buildup of twine ends has gotten between the gears and forced them apart. CAUTION!!!!! Refer to page 14 to adjust brace bolt.

To retime the bevel gears, loosen the main frame and slide it away from the short drive shaft until the gear teeth are separated and can be rotated. An alternate method would be to loosen the drive collar (item 8, Fig. C) and then remove the bolts holding the shaft support (item 10, Fig. C) to the base plate.

When reinstalling the short shaft or the main frame, be sure that the gears are fully meshed, there is no looseness between the gear teeth, and that the gears are aligned at right angles to each other. When the bolts are installed, the shaft support or the main frame should return to the original position. Do not force the gears together too tightly. If the gears are too tight, the gear teeth will wear rapidly, the gears will put increased load on the drive unit, and shaft bearings will wear more rapidly.

Fig. 9



ELECTRICAL SEQUENCE OF EVENTS

REFER TO FIGURE 22, PAGE 36 AND FIGURE 24, PAGE 38.

When the external power switch in the input module (E1) is activated and the emergency stop switch (SA3) is not activated, a green pilot light (HL1) indicates power is supplied to the control module (E2). An isolation transformer (T1) (120/240 to 7.5 volts) converts the incoming power to a low voltage AC current that is used in the module low power logic section. A full wave DC bridge (VC1) converts the DC to AC. A capacitor (C6) is used to filter the DC. A 5 volt regulator (A1) is used to convert the unregulated DC to 5 volts regulated DC. The 5 volt regulator supplies power to the hex inverter chip (U2) and the transistor driven SCR (V6) firing circuit. The unregulated DC is used as the supply for the relay circuit. This relay (KL1) is switched on and off by a power mosfet (V2).

As soon as the 5 volt DC is present in the module (E2), the microprocessor (U4) is held for a short period established by an RC circuit. During this time the microprocessor is being initialized. If this initialization is performed properly, an output on the microprocessor will light the LED (V4) on the circuit board.

The microprocessor is programmed so that it will hold initial conditions for a period of 3 seconds no matter what happens with the on/off input. These initial conditions are:

1. Relay coil no voltage.

2. SCR firing pulse not active.

The relay contacts act as both a safety feature for the power circuit and the means to dynamic brake the PM DC motor (M1). In the relay-not-energized position the relay NC (normally closed) contacts connect a 2 ohm resistor (R14) across the armature of the motor (M1). The power circuit consists of a single SCR (V6) in series with a NO (normally open) relay contact, in series with the motor, and finally in series with another NO (normally open) relay contact. Both normally open contacts and the SCR must be conductive for power to be supplied to the armature of the motor. An output from the microprocessor is used to turn the relay on and off. This is obtained by connecting the microprocessor output to the gate terminal of the power mosfet.

In addition to the two external inputs which are connected to a start (SA1) and end of cycle contact (SA2) located on the machine, the low voltage AC line is sensed to provide a zero crossing signal to the microprocessor.

Begin the cycle by activating the start circuit. The start contact (SA1) will override an active end-of-cycle contact (SA2) and this start signal will tell the microprocessor to start processing the stored program. The first step in the program energizes the relay (KL1). After a few cycles of the line voltage, the SCR firing circuit will pulse the gate of the SCR (V6) in a manner commonly referred to as phase control.

The SCR firing circuit uses an OPTO isolator (U3) to provide a high degree of voltage isolation between the low voltage power control circuit and the motor power circuit. This is an important safety feature.

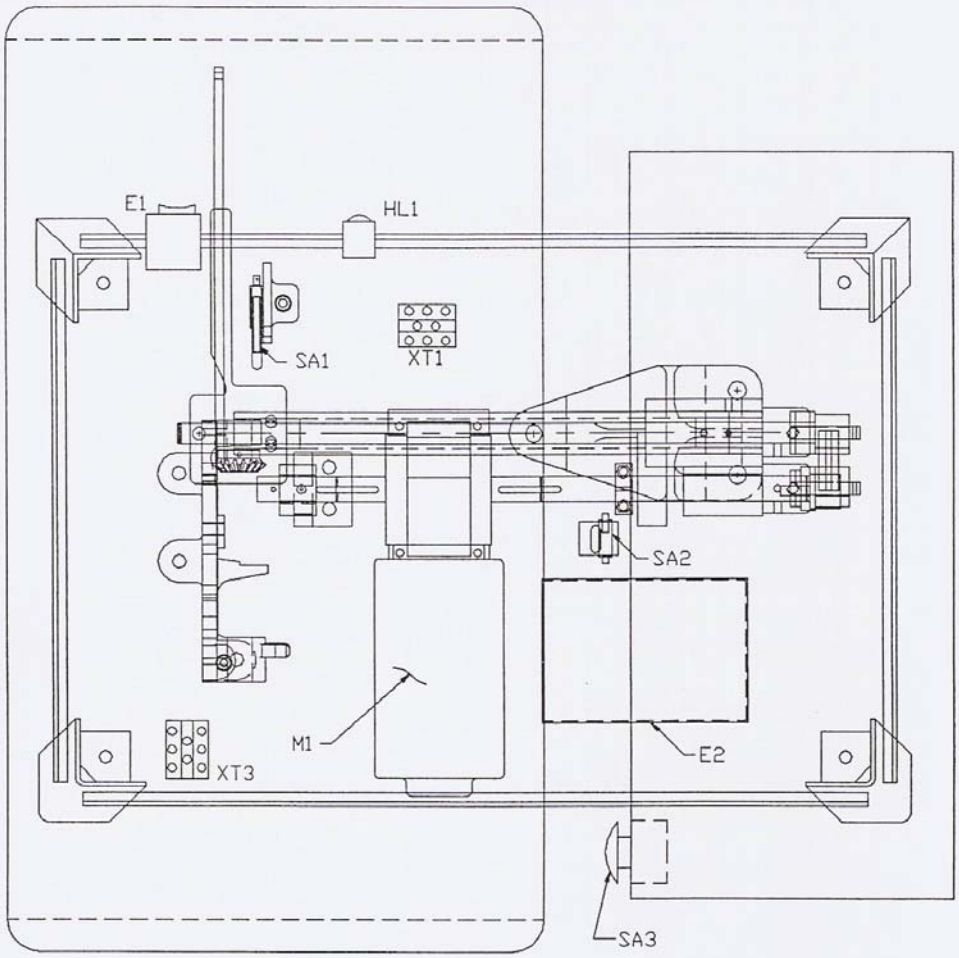
The firing point selected by the microprocessor for the SCR was preprogrammed in the microprocessor to match the torque requirements of the machine. In addition, a soft start feature is utilized to reduce the starting current to provide long life for both the motor and all moving machine parts. A set of 8 DIP switches (SA5) allow for selecting four different torque profiles and making positive and negative adjustments with regard to these profiles.

After one rotation of the main shaft, the end-of-cycle contact (SA2) will open and reclose. Upon reclosing, the microprocessor will turn off all firing pulse and will next de-energize the relay (KL1). A capacitor (C11) is connected in parallel with the coil of the relay. The capacitor and the relay coil function to provide a slow drop out of the relay.

After the relay has returned to the unenergized position, the NC (normally closed) contacts connect a two ohm resistor (R14) across the armature. This functions to dynamically brake the motor. This completes the cycle and a second cycle can be started with a closure of the start contact (SA1).

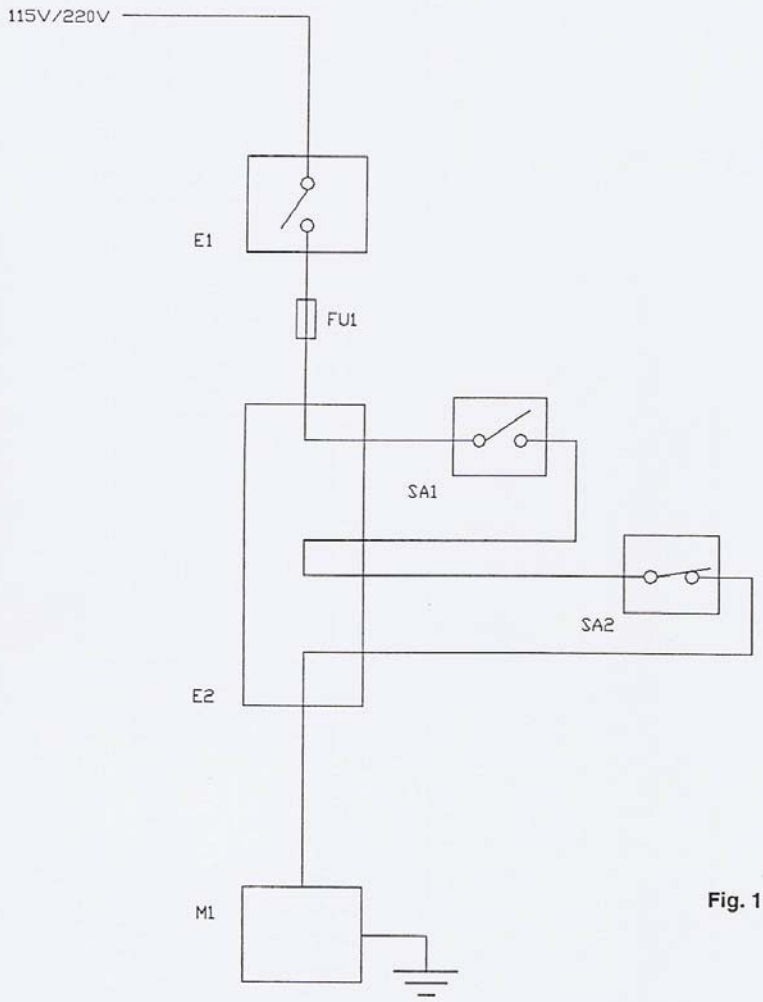
The circuit has additional components to enhance the operation. These include 3 MOV's F1, F2,F3) to suppress voltage transients and a high frequency inductor (L1) to filter any high frequency internal switching transients from disturbing the incoming lines. The incoming line is fused with a slow-blow fuse to provide protection from overloads and shorts.

If the machine must be stopped before the end of a cycle, an emergency stop contact (SA3) located near the input module (E1) can be opened. This will cut off the power supply to the control module (E2) and stop all machine motion.



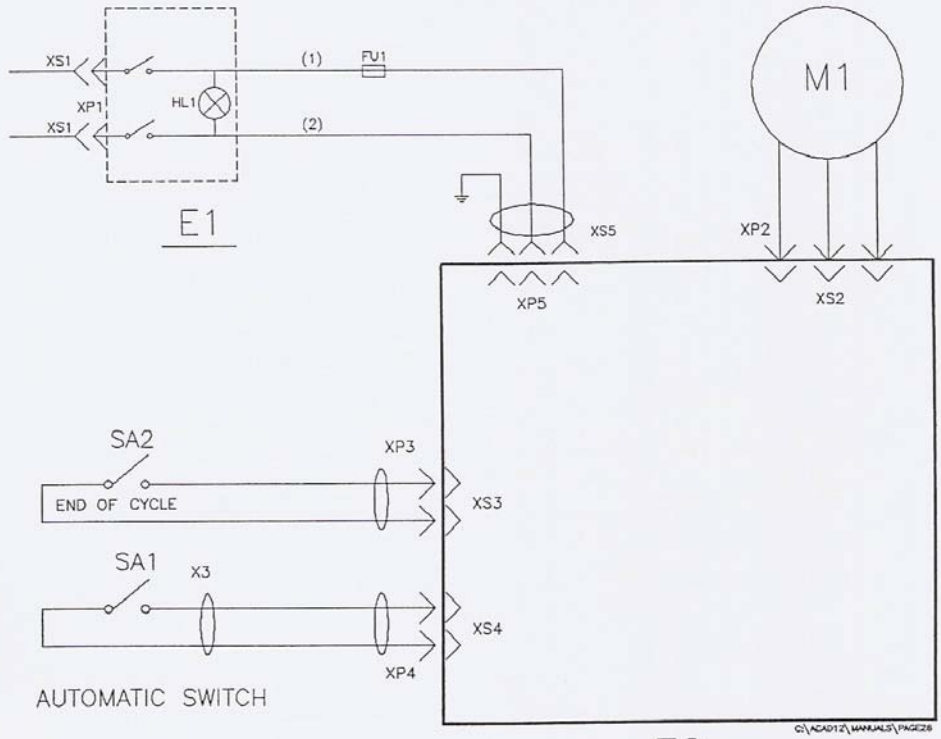
COMPONENT LOCATIONS

Fig. 10



ELECTRICAL BLOCK DIAGRAM

Fig. 11



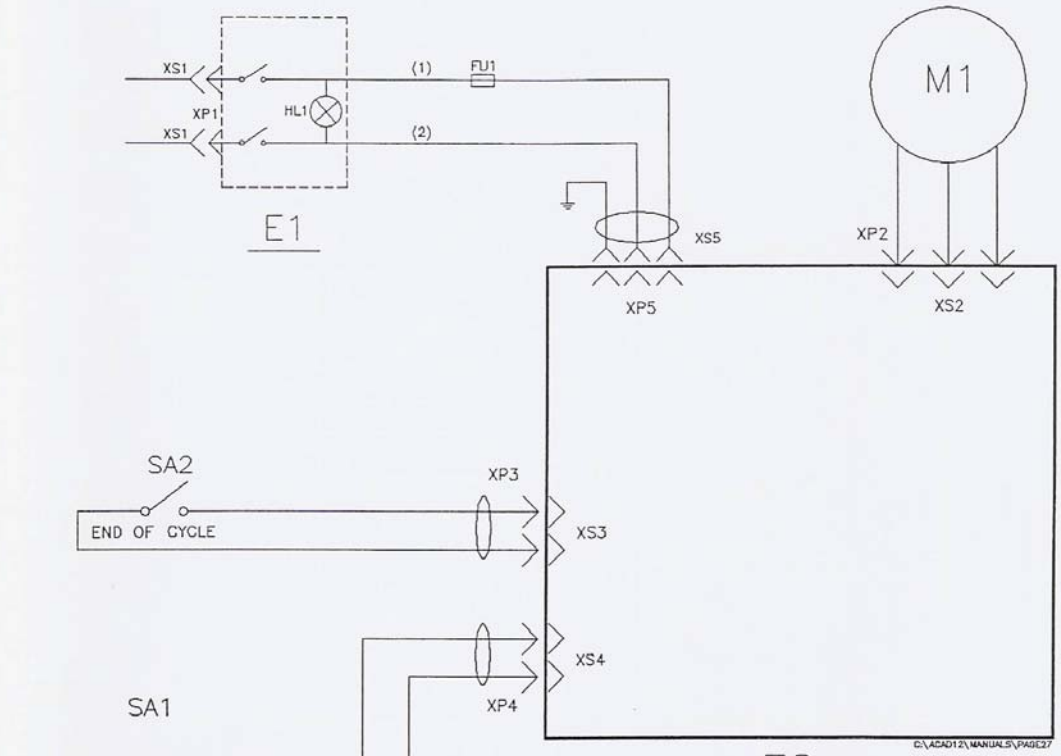
BILL OF MATERIALS

SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00414	FELINS
E2	2000 MODULE		300E00350	FELINS
SA1	MICRO SWITCH		300E00340	FELINS
SA2	MICRO SWITCH		300E00338	FELINS
M1	1/4HP PM MOTOR		300E00333	FELINS
M1	1/3HP PM MOTOR		300E00334	FELINS
FU1	4A TD FUSE	GMC4	300E00422	FELINS

CIRCUIT DIAGRAM PAK-TYER W/AUTO SWITCH ACTIVATION

( ) WIRE NUMBERS

FIG.12



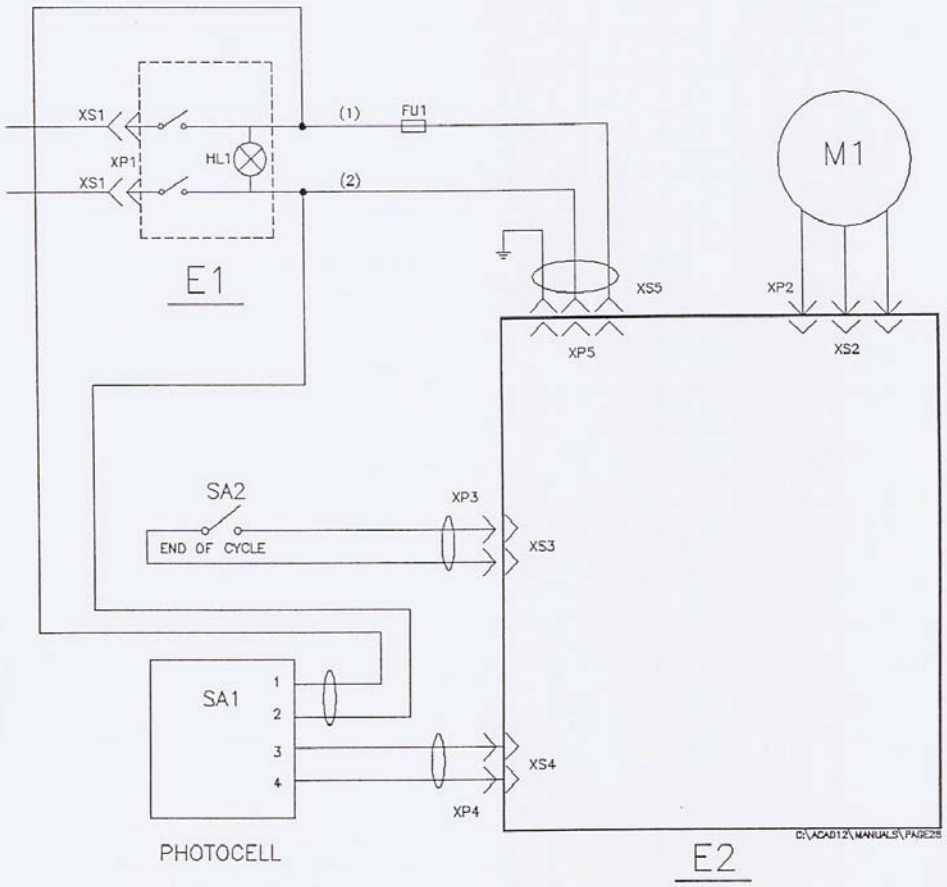
BILL OF MATERIALS

SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00414	FELINS
E2	2000 MODULE		300E00350	FELINS
SA1	FOOT SWITCH		300E00275	FELINS
SA2	MICRO SWITCH		300E00338	FELINS
M1	1/4HP PM MOTOR		300E00333	FELINS
M1	1/3HP PM MOTOR		300E00334	FELINS
FU1	4A TD FUSE	GMC4	300E00422	FELINS

( ) WIRE NUMBERS

CIRCUIT DIAGRAM PAK-TYER W/FOOT SWITCH ACTIVATION

FIG. 13



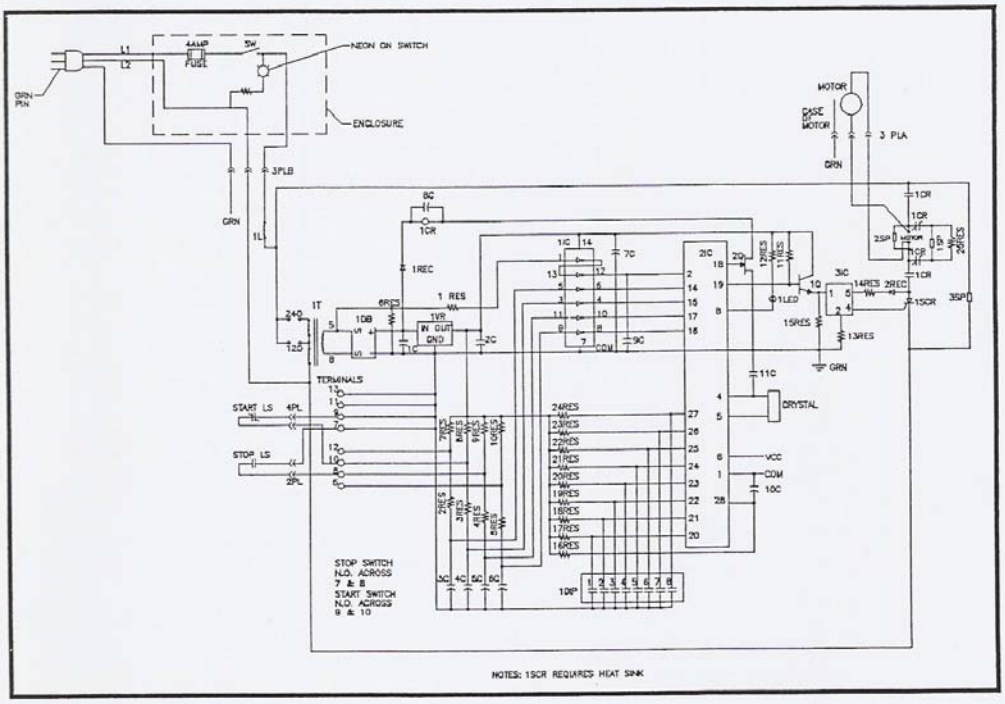
BILL OF MATERIALS

SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00414	FELINS
E2	2000 MODULE		300E00350	FELINS
SA1	PHOTOCELL		300E00486	FELINS
SA2	MICRO SWITCH		300E00338	FELINS
M1	1/3HP PM MOTOR		300E00334	FELINS
M1	1/4HP PM MOTOR		300E00333	FELINS
FU1	4A TD FUSE	GMC4	300E00422	FELINS

FIG. 14

CIRCUIT DIAGRAM PAK-TYER W/ PHOTOCELL
SWITCH ACTIVATION

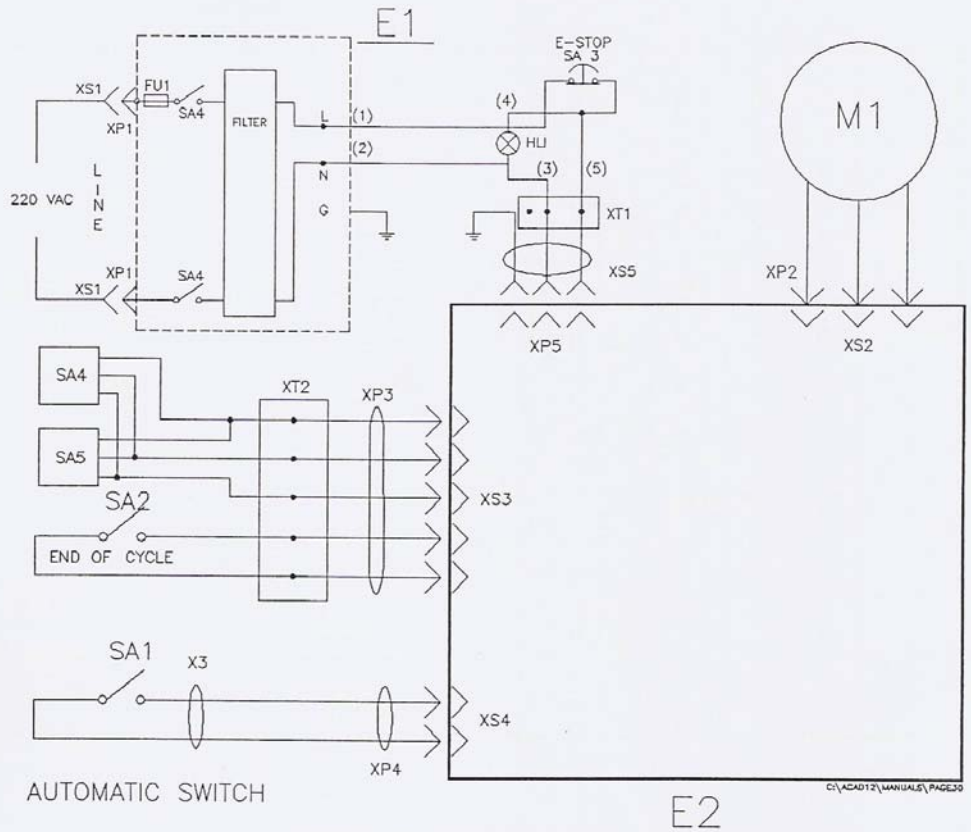
( ) WIRE NUMBERS



E2

(300E00350)

Fig. 15



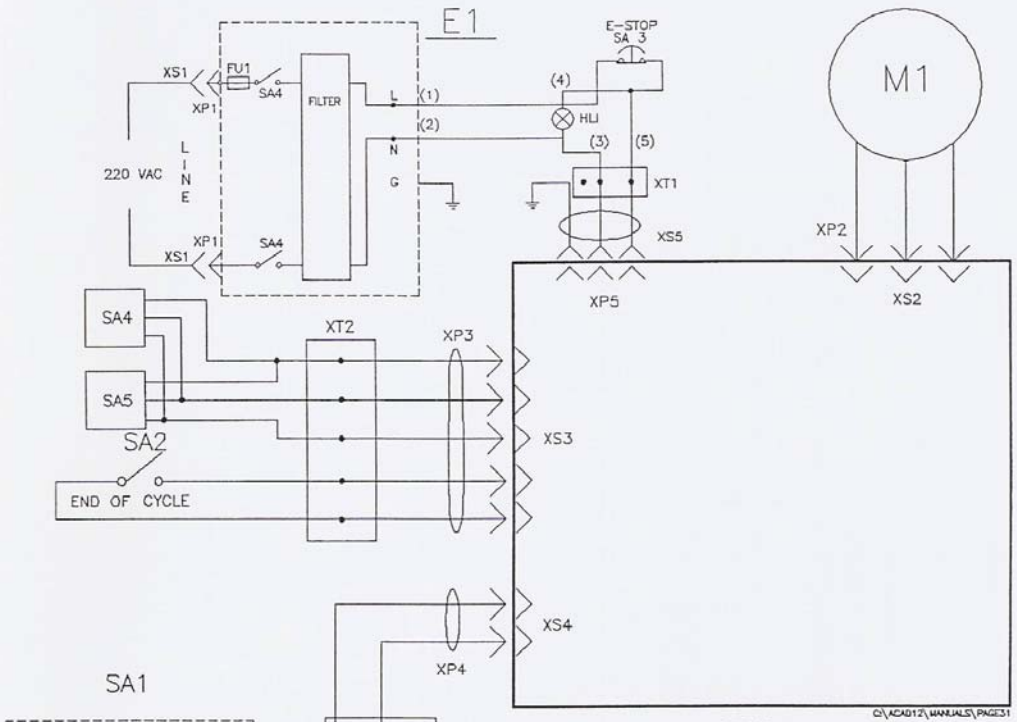
BILL OF MATERIALS

SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00740	FELINS
E2	2000 MODULE		300E01552	FELINS
SA1	MICRO SWITCH		300E00577	FELINS
SA2	MICRO SWITCH		300E00575	FELINS
SA3	EMERGENCY STOP		300E00715	FELINS
SA4	PHOTO CELL BACK		300E01561	FELINS
SA5	PHOTO CELL FRONT		300E01561	FELINS
M1	1/4HP PM MOTOR		300E00604	FELINS
M1	1/3HP PM MOTOR		300E00605	FELINS
XT1	3 POSITION TERM BLOCK		300E00714	FELINS
XT3	3 POSITION TERM BLOCK		300E00714	FELINS
HL1	240V PILOT LT. W/ GRN. LENS		300E00718	FELINS
FU1	4A TD FUSE	GMC4	300E00422	FELINS

CIRCUIT DIAGRAM PAK-TYER W/AUTO SWITCH ACTIVATION AND PHOTO SAFETY CIRCUIT

Fig. 16

( ) WIRE NUMBERS



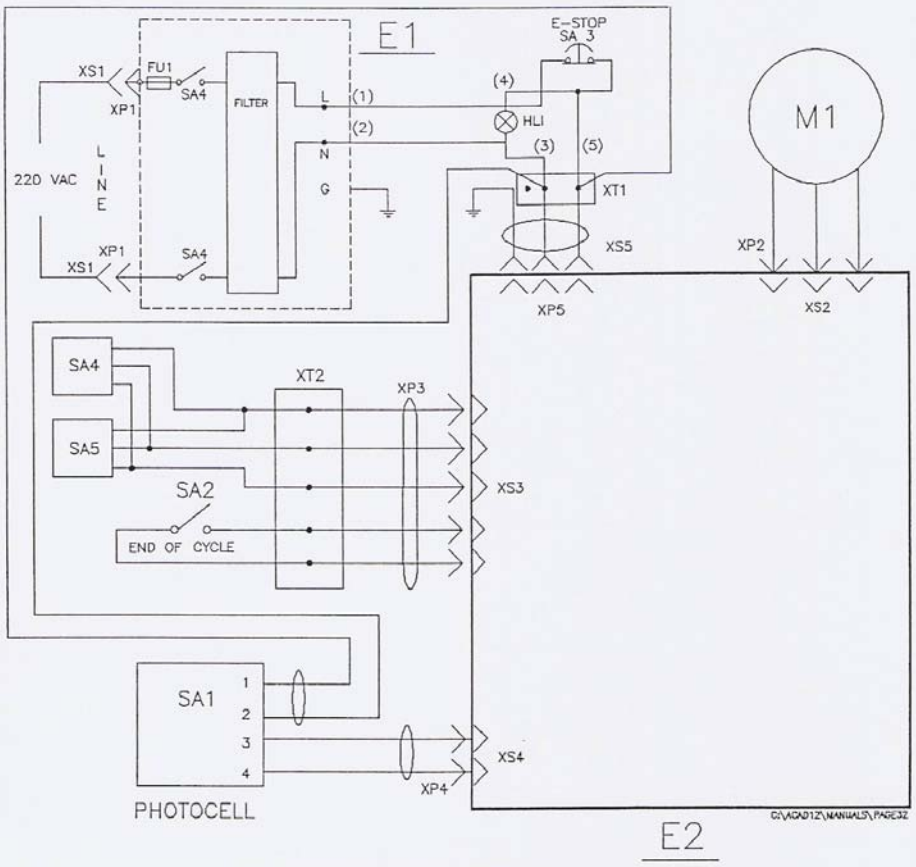
BILL OF MATERIALS

SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00740	FELINS
E2	2000 MODULE		300E01562	FELINS
SA1	FOOT SWITCH		300E00275	FELINS
SA2	MICRO SWITCH		300E00575	FELINS
SA3	EMERGENCY STOP		300E00715	FELINS
SA4	PHOTO CELL BACK		300E01561	FELINS
SA5	PHOTO CELL FRONT		300E01561	FELINS
M1	1/3HP PM MOTOR		300E00605	FELINS
M1	1/4HP PM MOTOR		300E00604	FELINS
XT1	3 POSITION TERM BLOCK		300E00714	FELINS
XT3	3 POSITION TERM BLOCK		300E00714	FELINS
HL1	240V PILOT LT. W/ GRN LENS		300E00718	FELINS
FU1	4A TD FUSE	GMC4	300E00422	FELINS

CIRCUIT DIAGRAM PAK-TYER W/FOOT
SWITCH ACTIVATION
AND PHOTO SAFETY CIRCUIT

Fig. 17

( ) WIRE NUMBERS



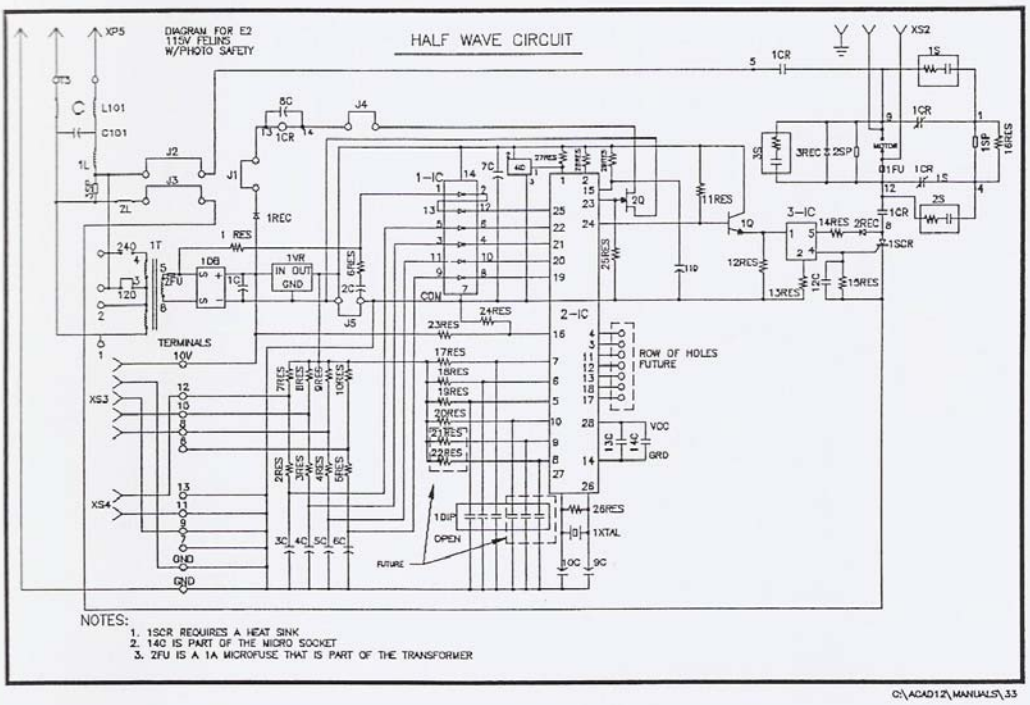
BILL OF MATERIALS

SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00740	FELINS
E2	2000 MODULE		300E01562	FELINS
SA1	PHOTOCELL		300E00486	FELINS
SA2	MICRO SWITCH		300E00575	FELINS
SA3	EMERGENCY STOP		300E00715	FELINS
SA4	PHOTO CELL BACK		300E01561	FELINS
SA5	PHOTO CELL FRONT		300E01561	FELINS
M1	1/4HP PM MOTOR		300E00604	FELINS
M1	1/3HP PM MOTOR		300E00605	FELINS
XT1	3 POSITION TERM BLOCK		300E00714	FELINS
HL1	240V PILOT LT. W/ GRN. LENS		300E00718	FELINS
FU1	4A TD FUSE	GMC4	300E00422	FELINS

CIRCUIT DIAGRAM PAK–TYER W/ PHOTOCELL
SWITCH ACTIVATION
AND PHOTO SAFETY CIRCUIT

Fig. 18

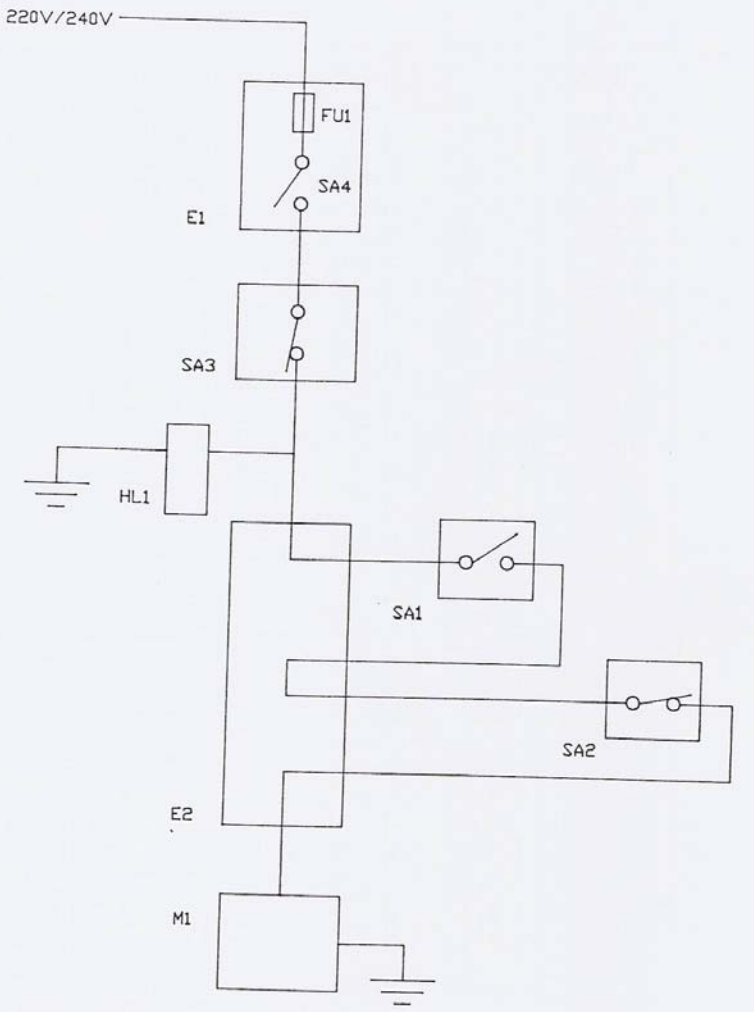
( ) WIRE NUMBERS



E2

(300E01562)

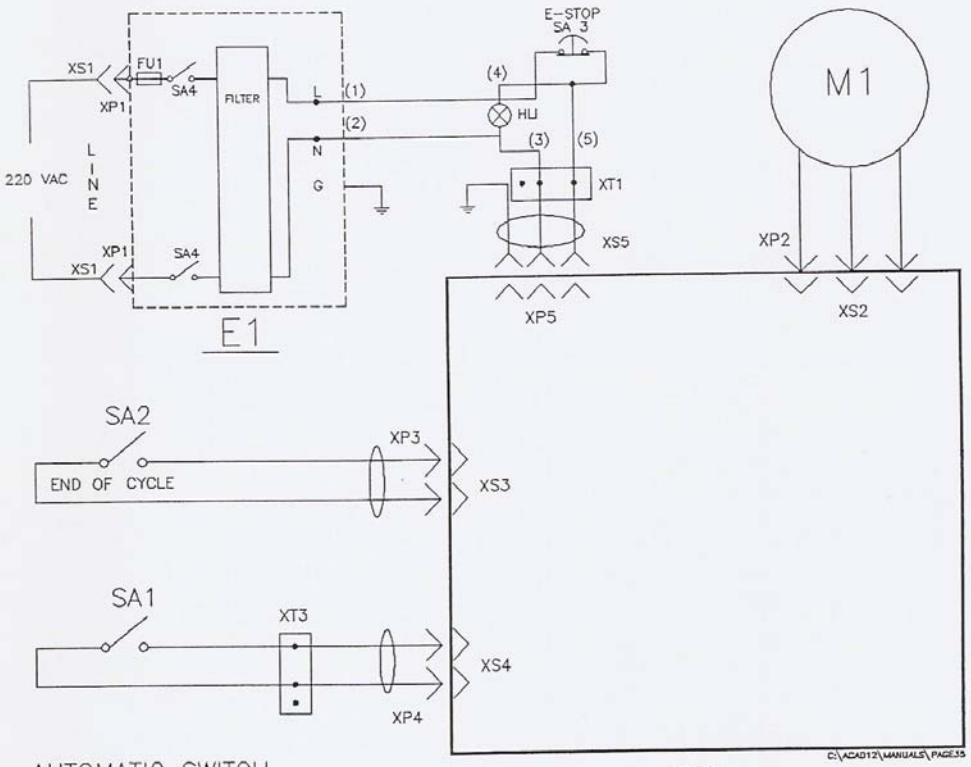
Fig. 19



ELECTRICAL BLOCK DIAGRAM -TUV

C\ACAD11\300\FIGDIA

Fig. 20



BILL OF MATERIALS

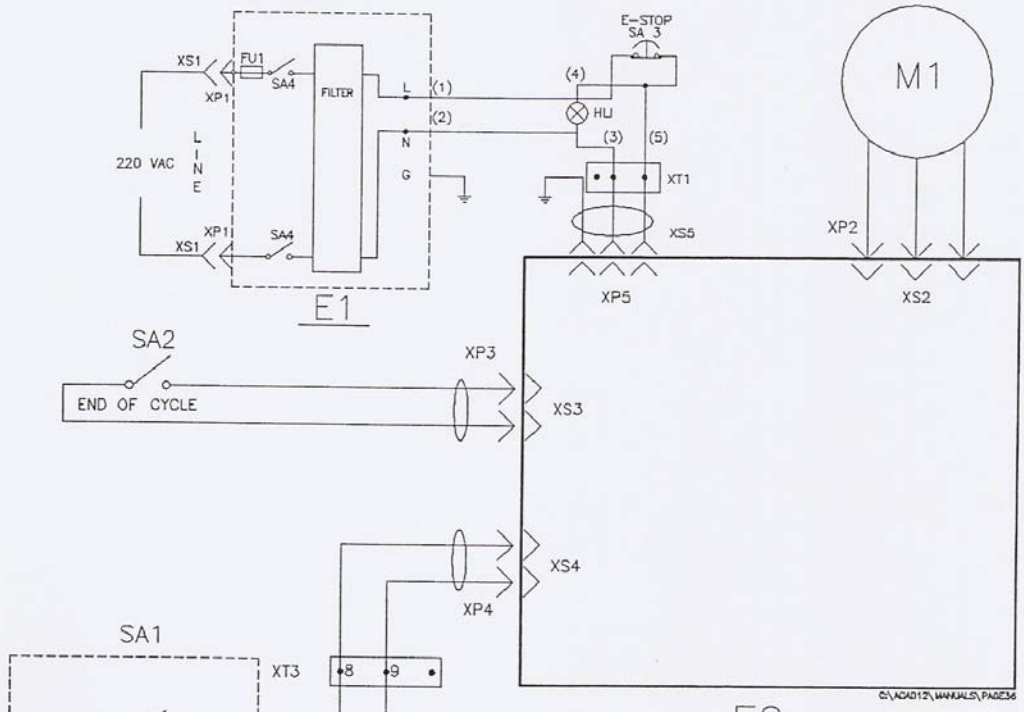
SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00740	FELINS
E2	2000 MODULE	*	300E00755	FELINS
E2	2000 MODULE	*	300E01563	FELINS
SA1	MICRO SWITCH		300E00577	FELINS
SA2	MICRO SWITCH		300E00575	FELINS
SA3	EMERGENCY STOP		300E00715	FELINS
M1	1/4HP PM MOTOR		300E00504	FELINS
M1	1/3HP PM MOTOR		300E00605	FELINS
XT1	3 POSITION TERM BLOCK		300E00714	FELINS
XT3	3 POSITION TERM BLOCK		300E00714	FELINS
HL1	240V PILOT LT. W/ GRN. LENS		300E00718	FELINS
FU1	2A TD FUSE	GMC2	300E00635	FELINS

*SEE FIG. II

CIRCUIT DIAGRAM PAK-TYER W/AUTO SWITCH ACTIVATION - TUV

Fig. 21

( ) WIRE NUMBERS



BILL OF MATERIALS

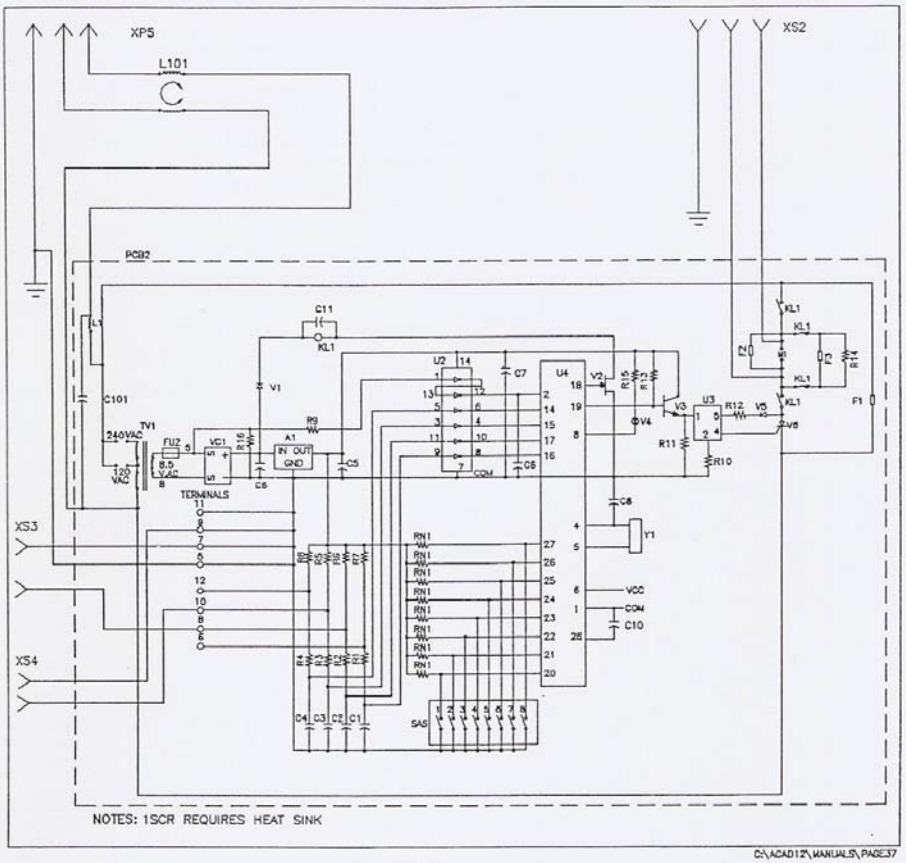
SYMBOL	DESCRIPTION	SIZE/RATING	NUMBER	MANUFACTURER
E1	INPUT MODULE		300E00740	FELINS
E2	2000 MODULE	*	300E00755	FELINS
E2	2000 MODULE	*	300E01563	FELINS
SA1	FOOT SWITCH		300E00275	FELINS
SA2	MICRO SWITCH		300E00575	FELINS
SA3	EMERGENCY STOP		300E00715	FELINS
M1	1/3HP PM MOTOR		300E00605	FELINS
M1	1/4HP PM MOTOR		300E00604	FELINS
XT1	3 POSITION TERM BLOCK		300E00714	FELINS
XT3	3 POSITION TERM BLOCK		300E00714	FELINS
HL1	240V PILOT LT. W/ GRN. LENS		300E00718	FELINS
FU1	2A TD FUSE	GMC2	300E00635	FELINS

* SEE FIG. II

CIRCUIT DIAGRAM PAK-TYER W/FOOT SWITCH ACTIVATION – TUV

Fig. 22

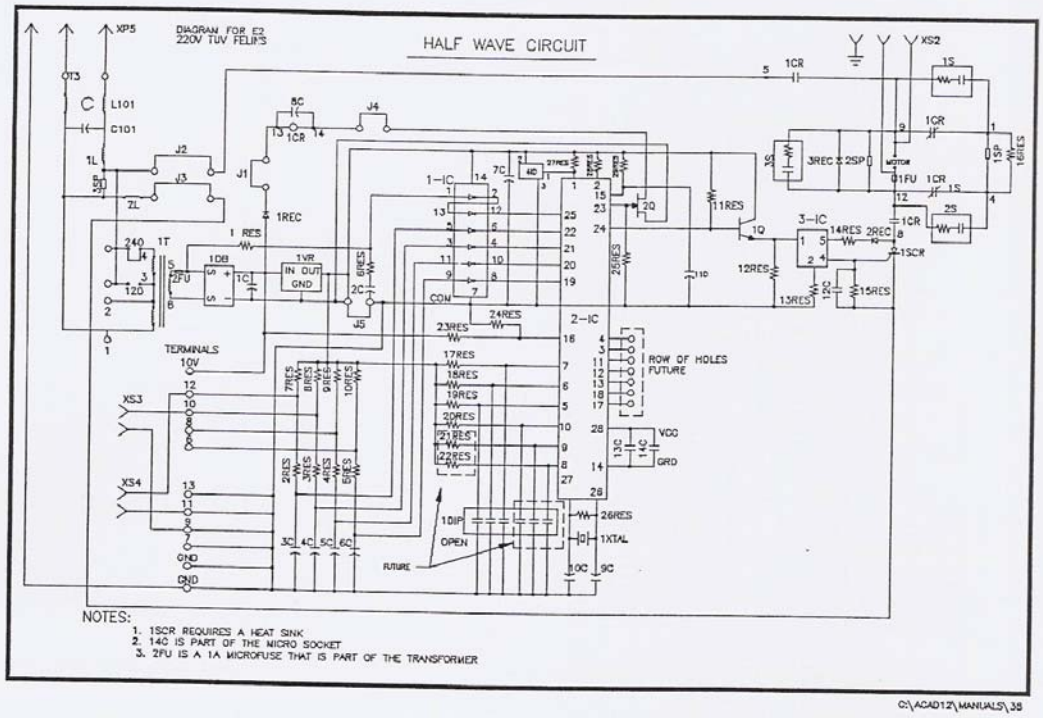
( ) WIRE NUMBERS



E2 TUV

(300E00755)

Fig. 23



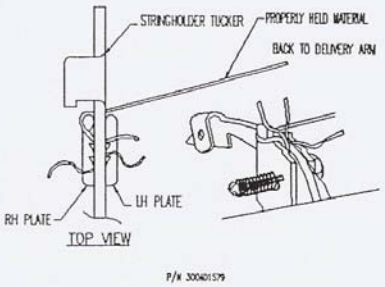
E2

(300E01563)

Fig. 24

TROUBLE SHOOTING

Stringholder Assembly



Check the stringholder plate tension by tugging on the twine going from the delivery arm to the table top - pulling toward the delivery arm. The twine should be held securely. If it is easily pulled from the stringholder, the tension should be adjusted. See page 15.

It is normal to have 3 - 5 twine ends held in the stringholder. Do not use scissors, screw driver, knife, or any tool to remove twine ends from the stringholder. Some or all of the twine ends will be pushed out of the stringholder during the next tying cycle. Using tools to remove the twine ends may bend, scratch, or damage the surfaces and edges of the stringholder plates and create problems with the mechanism. The plates will then have to be replaced.

If the twine delivery arm comes down on top of an item to be tied, instead of under it, the delivery arm may bend. (The break-a-way arm system will prevent this if the break-a-way spring load is not too great). If the machine is run without checking the delivery arm for straightness, damage to the stringholder assembly may occur. The twine delivery arm should be adjusted so it passes through the slot in the table top and glides under the stringholder tucker as close as possible without scraping or hitting it. The delivery arm should also pass close to the RH and LH stringholder plates and the bottom of the arm should not rub or scrape on the main frame top. The tying material must be completely wrapped around the small nub of the left hand stringholder plate or the material will easily pull out of the stringholder when a package is moved into tying position.

If the above adjustments were not made and the stringholder assembly no longer holds the string, no tie will occur. The parts that will have to be replaced are the stringholder tucker, RH stringholder plate, and LH stringholder plate. If damage has been done to the stringholder frame or the stringholder cam, the entire stringholder assembly should be replaced. Refer to items 10, 11, 18, Fig. D.

⚠ WARNING UNPLUG MACHINE BEFORE SERVICING OR MAKING ADJUSTMENTS!!!!!

To remove the stringholder assembly, release the stringholder return spring and remove the stringholder bracket. The stringholder assembly can be lifted out from behind the main frame. See item 23, Fig. D and item 18, Fig. B.

On newer models with only one adjusting stud, it will be necessary to remove the E-ring holding the stringholder assembly on the stud after the stringholder bracket is removed. Slide the stringholder assembly away from the main frame. Turn the adjusting stud counter clockwise until it can be removed from the main frame. Lift the stringholder assembly out from behind the main frame.

When replacing the RH and LH stringholder plates and/or the stringholder tucker, the space between the RH and LH plates where the stringholder tucker moves is very important. The plates should just touch the tucker without putting any pressure on it. This space can be adjusted after the plates are mounted to the stringholder frame by bending them backward or forward with a needle nose plier. This may have to be done a number of times in order to get the proper spacing. If the stringholder bumper is worn, it should be replaced. Refer to item 5, Fig. D.

To replace the stringholder assembly in the unit, follow the above procedure in reverse. Hold the stringholder assembly in position behind the main frame, replace the stringholder bracket and adjusting stud. Replace the stringholder return spring. On newer models replace the E-ring on the adjusting stud.

It is very important to make sure that the twine delivery arm clears the newly replaced stringholder assembly. Jog or rotate the machine through the cycle until the tucker is as far back from the twine delivery arm at it goes by itself. A measurement can now be made by placing a scale or ruler between the stringholder plates until it rests against the heel of the tucker. The distance from the heel of the tucker and the flat back edge of the stringholder plates should be 3/16". Refer to Fig. 25.

This distance can be adjusted by adjusting the stringholder adjusting studs on which the stringholder assembly pivots. When adjustments are made to one stud, compensating adjustments are made on the other stud. Newer units will have a single adjusting stud accessible from the front of the main frame. Loosen the locknut, turn the stud clockwise or counter clockwise to make the adjustment, and retighten the locknut. You may have to repeat the adjustment procedure a number of times to get the 3/16" measurement.

Check the distance from the edge of the stripper plate to the closest edge of the stringholder tucker. If the distance is greater than 1 1/2", the bumper is worn and should be replaced.

NOTE: A worn bumper will cause incorrect timing measurements and could cause the twine delivery arm to scrape the stringholder.

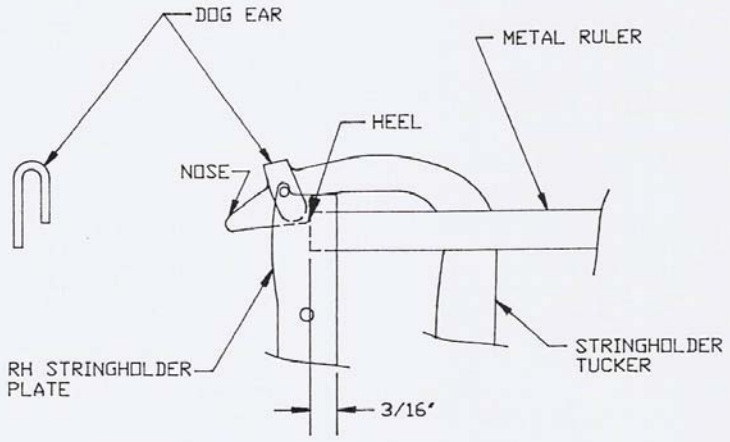


Fig. 25

TROUBLE SHOOTING (CONT.)

MACHINE RUNNING FAST OR RUNNING CONSTANTLY

Voltage is a factor in how fast or slow a machine runs. High voltage will cause a machine to run faster, low voltage will cause a machine to run slower. The machine is set for correct running speed at 120 volts or 220 volts.

On the first stroke of the machine, when loading the tying material, the machine will run very fast. When tying the product, the machine will slow down to normal speed.

Do not allow the machine to run empty as the speed may cause the machine to over-run the stop switch. If the machine starts to continuously run, there are three possible reasons:

1. The stop switch is not properly adjusted. Move the switch toward the cam until the machine stops.

2. The relay in the control module has burned out. Pull the relay and replace with a new one.

3. The stop switch plug may be disconnected.

There are 4 easy-to-connect plugs that go to the control module: a 2-prong plug for the stop switch, a 3-prong socket for the motor, a 3-prong plug for AC power input, and a 4-prong plug for the start switch. All must be securely fastened or the machine will not run properly. There is an outside accessible slow-blow fuse that should not exceed 4 amps on 120v power or 2 amps on 220v power. The fuse should be changed with the machine off and main power cord unplugged to avoid electrical shock.

⚠ CAUTION ALWAYS REPLACE A BLOWN FUSE WITH A FUSE OF EQUAL SIZE. NEVER INSTALL A FUSE RATED AT MORE THAT 4 AMPS.

TROUBLE SHOOTING (CONT.)

KNOTTER PROBLEMS

1. If the knotter jams with string during the tying operation, shut the machine off, pull the stripper plate forward to expose the knotter, and remove the string that is wrapped around the jaws. It may be necessary to take pressure off the knotter by using your thumb to push on the knotter tension plate.

2. If the knot is too loose after tying an object, tighten the brass adjustment nut that controls the amount of pressure on the knotter tension plate. It may be necessary to make several ties during the adjustment process in order to get the right amount of tension for a good tie. Refer to item 27, Fig. E.

3. If ripping of the twine occurs, the knife could be dull. Replace by loosening the two screws holding the knife to the stripper plate. Observe the position of the cutting edge before removing the dull knife to be sure that new knife is installed correctly. Long edge is down. After screws are in place, pull on rear of knife, lift up, and tighten screws.
Refer to items 8 & 9 Fig. E.

4. Check for damage to stringholder tucker.

REPLACING KNOTTER

1. Remove table top.

2. Loosen the two screws holding the knotter housing to the main frame. Item 37, Fig. E.

3. Remove the screw closest to the end of the main frame and tip the knotter housing up, exposing the knotter gear. Item 29, Fig. E. Tighten the remaining screw to hold the knotter housing in this raised position.

4. Turn the knotter until the screw in the knotter gear is visible. Remove the screw and the knotter gear. The knotter can then be removed from the housing. Items 29 & 30, Fig. E.

5. Insert new knotter after putting oil on shaft. Reverse the procedure for removal of knotter.

IMPORTANT: Knotter position in relation to knotter gear is important. The flat portion of the knotter gear should be against the platter drive gear and the beak of the knotter should be pointed out toward the operator's position, not back toward the column. Do not reverse the position of the knotter when replacing. Turn the knotter and gear to the correct position before lowering the knotter housing.

MAINTENANCE

⚠ WARNING UNPLUG MACHINE BEFORE SERVICING OR MAKING ADJUSTMENTS!!!!!

Lubrication

Several areas of the machine should be lubricated on a regular schedule in order to reduce wear, reduce noise, and promote ease of operation.

Open the front panel (item 12, Fig. A) and remove the table top (item 1, Fig. A) to lubricate the machine at the points indicated below.

Machine use is classed as HEAVY, MODERATE, and LIGHT.

1. HEAVY use is 20000 + tying cycles per week

2. MODERATE use is 7000 to 20000 tying cycles per week

3. LIGHT use is less than 7000 tying cycles per week

HEAVY use - lubricate once every 2 weeks
MODERATE use - lubricate once every 4 weeks
LIGHT use - lubricate once every 3 months

Apply 2-3 drops of lube oil (SAE # 30 weight) to the following points:
* Oil hole for main shaft at base of column (item 26, Fig. F and Fig. FF).
* Oil hole for main shaft in shaft support (item 10, Fig. C)
* Oil hole for stripper pivot (item 3, Fig. E).
* Oil hole for tucker pivot (item 17, Fig. F).
* Base of knotter at top of main frame (item 32 & 35, Fig. E).
* Roller on knotter jaw (item 31, Fig. E).
* Ends of roller on tucker (item 18, Fig. E).
* Ends of roller on stripper (item 7, Fig. E).
* Ends of roller on cam follower (item 11, Fig. B).

Use a grease gun or grease lube system to apply grease (lithium general purpose) to the two grease fittings on the front of the main frame (item 17, Fig. B).

Apply a small amount of general purpose grease to the cam surface on the twine arrestor cam plate. During the tying cycle the cam plate (item 15, Fig. F and Fig. FF) rubs against the end of the twine arrestor frame (item 13, Fig. G).

Apply a small amount of general purpose grease to the surface of the platter gear where the tucker and the stripper rollers contact the gear (item 5, Fig. B).

Apply a small amount of general purpose grease to the cam surface on top of the knotter housing (item 35, Fig. E) where the knotter jaw roller (item 31, Fig. E) contacts the housing.

Cleaning and inspection

Open the front panel (item 12, Fig. A) and remove the table top (item 1, Fig. A) to clean and inspect the interior of the machine on a regular basis. Remove the loose twine ends and other material, and inspect the internal components. Look for the following items:

* Loose nuts, screws, and clamps.
* Loose drive collars or signs of movement of the collar on the shaft.
* Loose electrical connections.
* Electrical wires too close to moving parts.
* Buildup of metal filings near wear points, indicating excessive wear.
* Check for changes in the shape or condition of the knotter and knotter jaw, indicating wear.

On machines with break-a-way twine delivery arm, pull on the delivery arm to exceed the break-a-way force and move the delivery arm through its travel motion. If the mechanism does not release, reduce the tension on the spring. Refer to the section on adjustments and clearances. It may be necessary to apply a few drops of lubricating oil to the shaft at the edge of the break-a-way spring block (items 21 and 16, Fig. F). When the delivery arm is travelling through its motion, observe the clearance between the main frame (item 4, Fig. G) and the delivery arm, between the knotter housing (item 35, Fig. E) and the side of the delivery arm, and between the stringholder tucker (item 18, Fig. D) and the delivery arm. The delivery arm should not contact any of the above mentioned components. It should be close to the stringholder tucker and the stringholder plates (items 10 & 11, Fig. D). If the delivery arm contacts any of the components, it may be bent. If the delivery arm cannot be bent to clear the components, it must be replaced.

HEAVY use - clean and inspect once every week
MODERATE use - clean and inspect once every 2 weeks
LIGHT use - clean and inspect once every 6 weeks

⚠ CAUTION OPERATION OF THE TYING MECHANISM CAUSES A BUILD-UP OF DISCARDED CUT-OFF ENDS OF TYING MATERIAL. AN EXCESS AMOUNT MAY CAUSE DAMAGE TO THE TYING MECHANISM. REMOVE CUT-OFF ENDS ON A REGULAR SCHEDULE.

Knife

The knife should be replaced on a regular schedule to provide proper cut-off during the tying operation. Replace the knife on the following schedule:

HEAVY use - replace every 3 months or more often if twine is not cut cleanly.
MODERATE use - replace every 6 months or more often if twine is not cut cleanly.
LIGHT use - replace every year or more often if twine is not cut cleanly.

MAINTENANCE (CONT.)

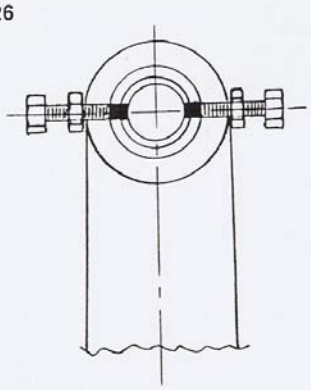
Delivery Arm Brake (on 16 and 22 size units)

Brakes on the twine delivery arm shaft (item 36 & 38, Fig F and Fig. FF) should be adjusted after the first week of use for a new machine and on the following schedule thereafter:

HEAVY use - adjust every 6 weeks
MODERATE use - adjust every 3 months
LIGHT use - adjust every 6 months.

See page 13 for the brake adjustment procedure. Refer to Fig. 26.

Fig. 26



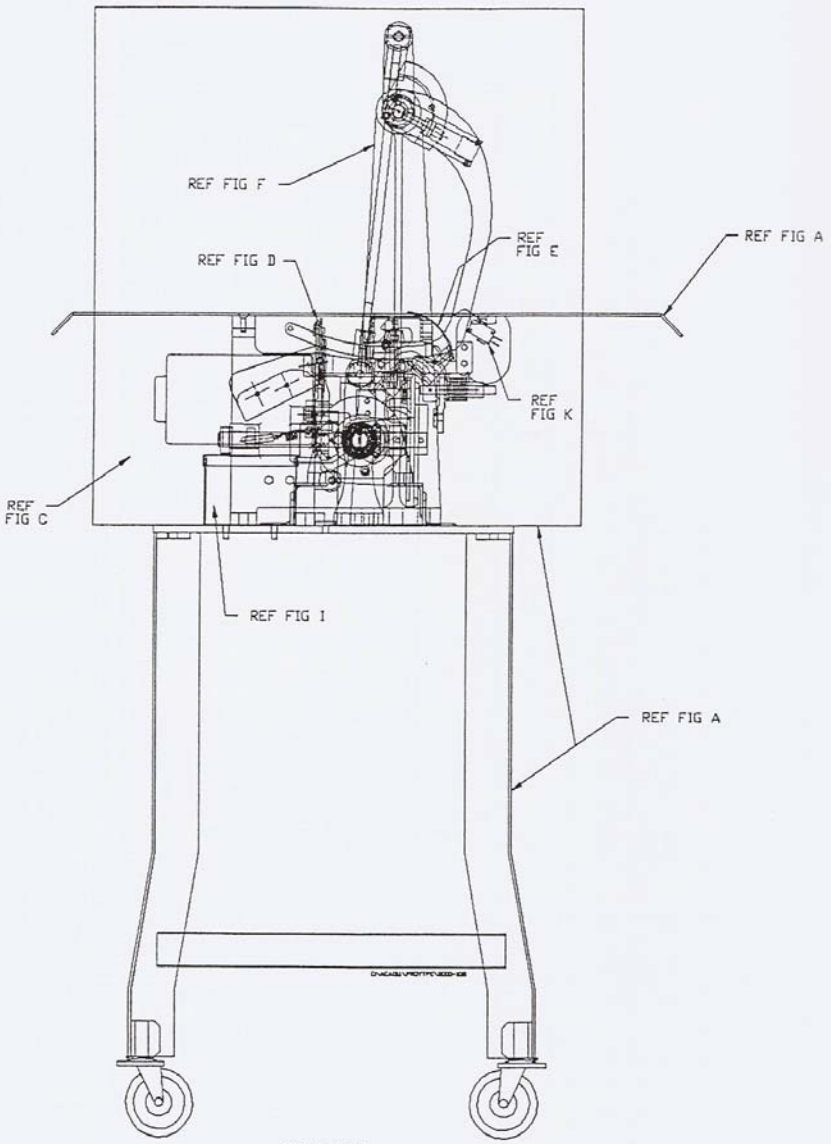
PARTS LIST

The parts shown on the following pages make up the entire range of sizes of 2000 series PAK TYERS. You can find the part number of a particular part by finding the item number in the exploded view. Then find the item number in the accompanying parts listing. Some items are used on all machines. Some are used on only one size machine. The column headed USED ON will tell you what machine a particular part number is used on.

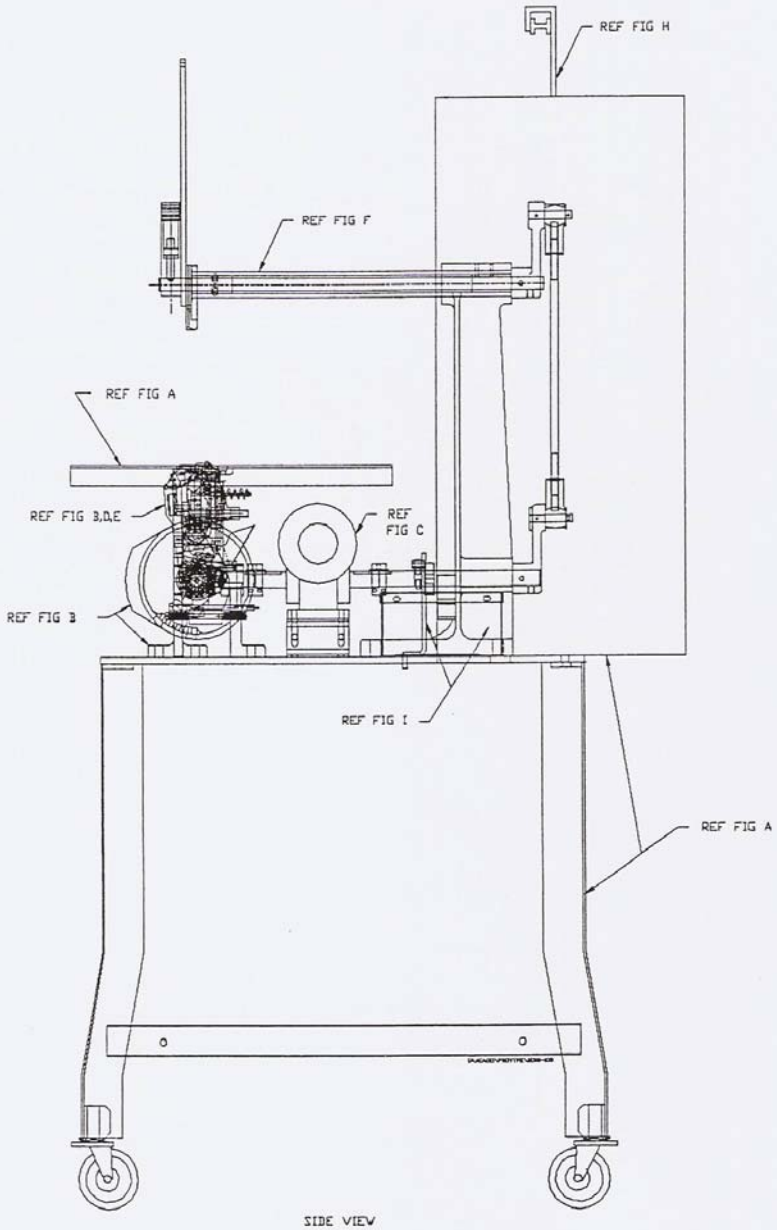
Most items will be used on standard and nursery units. Some items such as table tops or enclosures may be only used on one or the other. In that case part numbers are listed for the standard units and for the nursery units. Nursery units are identified with the letter N.

Some units are approved for TUV, a requirement for European sales. Some electrical components and some safety features are special for TUV. Pages showing special parts approved for TUV are identified at the top.

Some areas of the machine have been redesigned to improve the performance, reduce cost of manufacturing, or to make adjustments and repairs more easily. We have included in the parts listing the old design and the new design in order to provide a manual that will be useful to customers that have older machines as well as the newer units. To avoid confusion we have added exploded views and parts lists showing the new parts in a group and have identified those exploded views and parts lists with double letters. An example would be Fig. F exploded view and parts list showing the earlier design tie rod and Fig. FF exploded view and parts list showing the newer design.

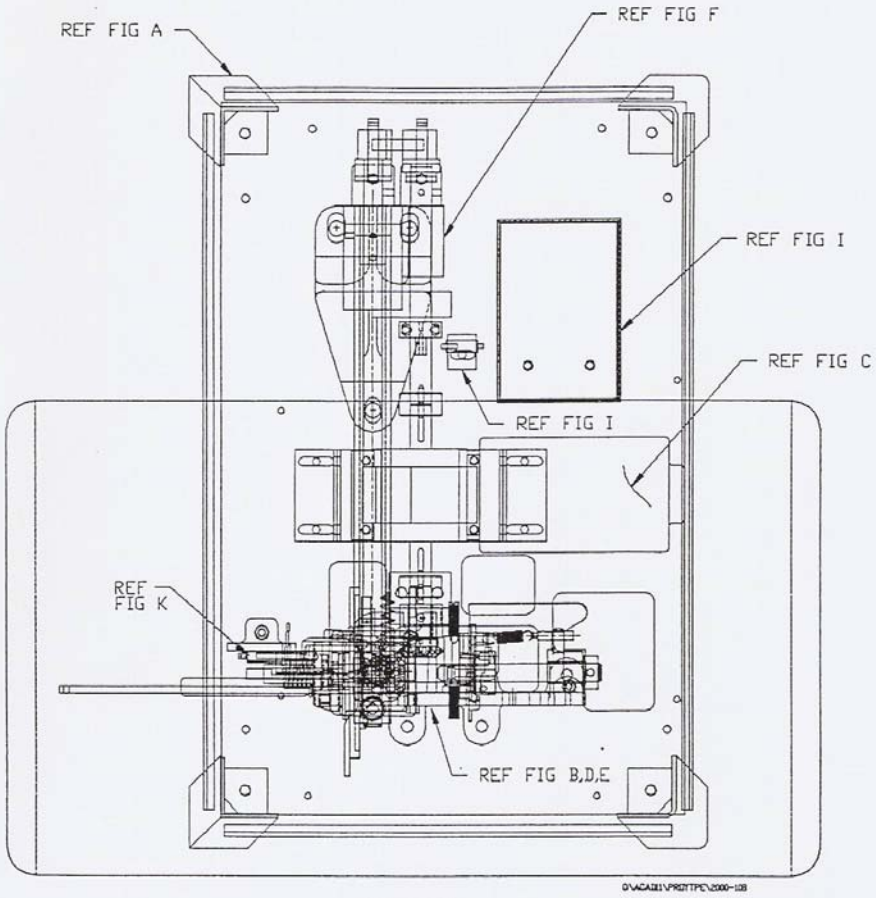


REAR VIEW
MIRROR FOR FRONT VIEW
Fig. 27



SIDE VIEW

Fig. 28



TOP VIEW

Fig. 29

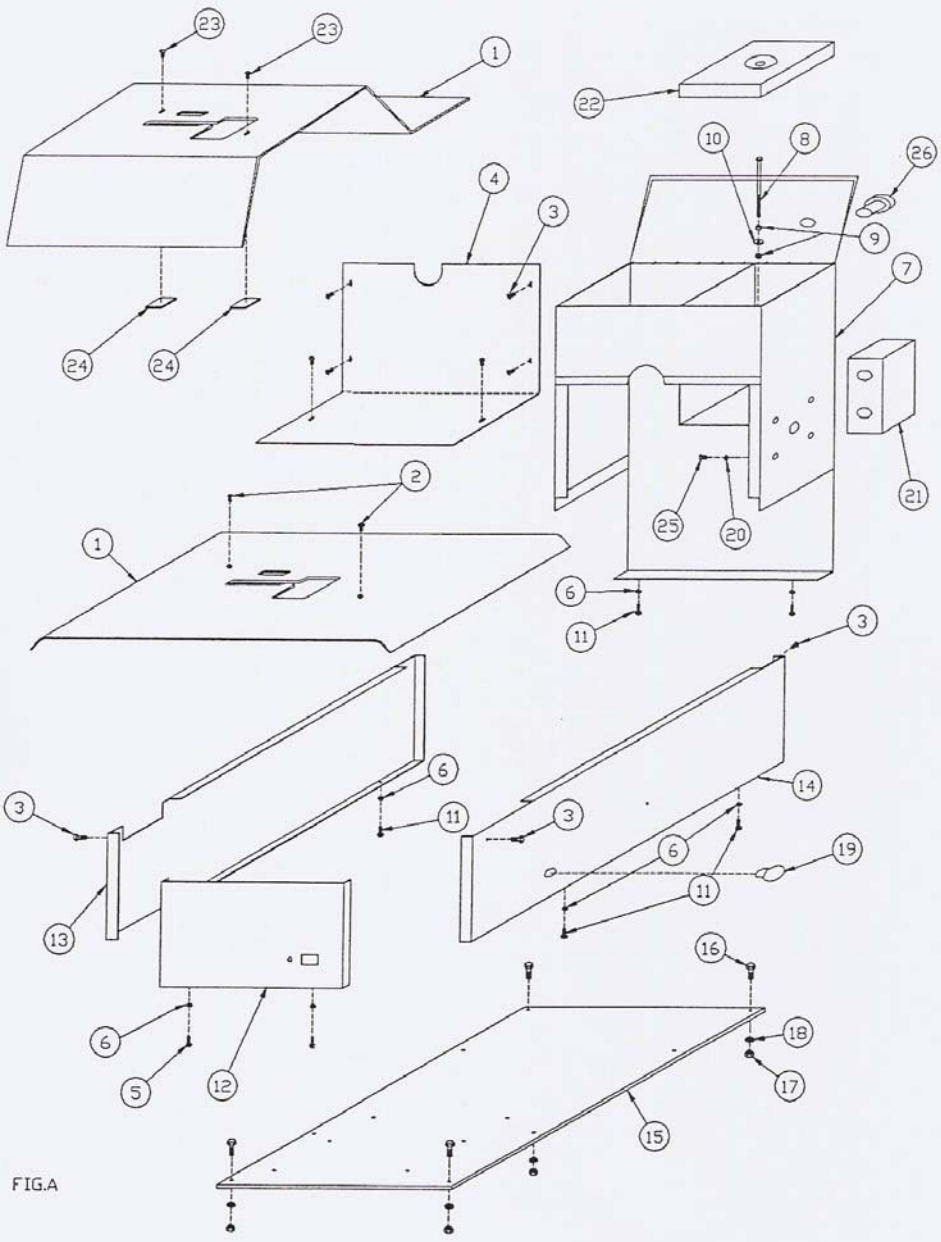

23
23
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FIG.A

FIGURE A TABLE, ENCLOSURE

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	306A00842	1	6	TABLE WITH DECALS
	308A00842	1	8	TABLE WITH DECALS
	300A00842	1	10,12	TABLE WITH DECALS
	316A00842	1	16	TABLE WITH DECALS
	322A00842	1	22	TABLE WITH DECALS
	306A00843	1	6N	TABLE WITH DECALS LOW WITH LARGE OPENING
	308A00843	1	8N	TABLE WITH DECALS LOW WITH LARGE OPENING
	300A00843	1	10N,12N	TABLE WITH DECALS LOW WITH LARGE OPENING
	316A00843	1	16N	TABLE WITH DECALS LOW WITH LARGE OPENING
	322A00843	1	22N	TABLE WITH DECALS LOW WITH LARGE OPENING
	306A00844	1	6N	TABLE WITH DECALS HIGH WITH MINIMUM OPENING
	308A00844	1	8N	TABLE WITH DECALS HIGH WITH MINIMUM OPENING
	300A00844	1	10N,12N	TABLE WITH DECALS HIGH WITH MINIMUM OPENING
	316A00844	1	16N	TABLE WITH DECALS HIGH WITH MINIMUM OPENING
	322A00844	1	22N	TABLE WITH DECALS HIGH WITH MINIMUM OPENING
	306A00845	1	6 COIL TYER	TABLE WITH DECALS
	308A00845	1	8 COIL TYER	TABLE WITH DECALS
	306A01373	1	6 LEFT HAND	TABLE WITH DECALS
	312A00895	1	12 ATS	TABLE
2	900A00102	2	6,8	FLAT SOCKET HEAD SCREW 1/4-20 X.1/2 BLACK ZINC
	900A00102	6	10,12,16,22	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 BLACK ZINC
	900A00259	2	6,8	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 STAINLESS ST.
	900A00259	6	10,12,16,22	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 STAINLESS ST.
*	900A00102	2	6N,8N	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 BLACK ZINC
*	900A00102	6	10N,12N,16N,22N	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 BLACK ZINC
*	900A00259	2	6N,8N	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 STAINLESS ST.
*	900A00259	6	10N,12N,16N,22N	FLAT SOCKET HEAD SCREW 1/4-20 X 1/2 STAINLESS ST.
3	900A00114	10	6,8,10,12,16,22	RND SOC BUT HEAD SCREW 1/4-20 X 1/2
4	306A00149	1	6	FRONT 90 DEG PANEL ASSEM
	308A00149	1	8	FRONT 90 DEG PANEL ASSEM
	310A00149	1	10	FRONT 90 DEG PANEL ASSEM

	312A00149	1	12	FRONT 90 DEG PANEL ASSEM
	316A00149	1	16	FRONT 90 DEG PANEL ASSEM
	322A00149	1	22	FRONT 90 DEG PANEL ASSEM
	306A00490	1	6N	FRONT 90 DEG PANEL ASSEM
	308A00490	1	8N	FRONT 90 DEG PANEL ASSEM
	310A00490	1	10N	FRONT 90 DEG PANEL ASSEM
	312A00490	1	12N	FRONT 90 DEG PANEL ASSEM
	316A00490	1	16N	FRONT 90 DEG PANEL ASSEM
	322A00490	1	22N	FRONT 90 DEG PANEL ASSEM
	306A00834	1	6 COIL TYER	FRONT 90 DEG PANEL ASSEM
	306A01278	1	6N TUV	FRONT 90 DEG PANEL ASSEM
	306A01275	1	6 TUV	FRONT 90 DEG PANEL ASSEM
	308A00834	1	8 COIL TYER	FRONT 90 DEG PANEL ASSEM
	306A01385	1	6 LEFT HAND	FRONT 90 DEG PANEL ASSEM
	312A00866	1	12 ATS	FRONT 90 DEG PANEL ASSEM
5	900A00112	2	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 1/2
6	900A00020	12	6,8,10,12,16, 22	LOCKWASHER 1/4
7	306A00156	1	6	ENCLOSURE ASSEMBLY
	308A00156	1	8,8 COIL TYER	ENCLOSURE ASSEMBLY
	310A00156	1	10	ENCLOSURE ASSEMBLY
	312A00156	1	12,12 ATS	ENCLOSURE ASSEMBLY
	316A00156	1	16	ENCLOSURE ASSEMBLY
	322A00156	1	22	ENCLOSURE ASSEMBLY
	306A00472	1	6N	ENCLOSURE ASSEMBLY
	308A00472	1	8N	ENCLOSURE ASSEMBLY
	310A00472	1	10N	ENCLOSURE ASSEMBLY
	312A00472	1	12N	ENCLOSURE ASSEMBLY
	316A00472	1	16N	ENCLOSURE ASSEMBLY
	322A00472	1	22N	ENCLOSURE ASSEMBLY
	306A01155	1	6 TUV	ENCLOSURE ASSEMBLY
	308A01155	1	8 TUV 8 COIL TYER TUV	ENCLOSURE ASSEMBLY
	310A01155	1	10 TUV	ENCLOSURE ASSEMBLY
	312A01155	1	12 TUV	ENCLOSURE ASSEMBLY
	316A01155	1	16 TUV	ENCLOSURE ASSEMBLY
	322A01155	1	22 TUV	ENCLOSURE ASSEMBLY
	306A01253	1	6N TUV	ENCLOSURE ASSEMBLY
	308A01253	1	8N TUV	ENCLOSURE ASSEMBLY
	310A01253	1	10N TUV	ENCLOSURE ASSEMBLY
	312A01253	1	12N TUV	ENCLOSURE ASSEMBLY
	316A01253	1	16N TUV	ENCLOSURE ASSEMBLY
	322A01253	1	22N TUV	ENCLOSURE ASSEMBLY
	306A00832	1	6 COIL TYER	ENCLOSURE ASSEMBLY
	306A01254	1	6 COIL TYER TUV	ENCLOSURE ASSEMBLY
	306A01387	1	6 LEFT HAND	ENCLOSURE ASSEMBLY
8	900A00055	1	6,8,10,12,16,22	CARRIAGE BOLT 1/4-20 X 5
9	900A00018	6	6,8,10,12,16,22	HEX NUT 1/4-20
10	900A00034	2	6,8,10,12,16,22	WASHER 1/4 FLAT
11	900A00135	6	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 5/8

12	306A00617	1	6	FRONT PANEL
	308A00617	1	8	FRONT PANEL
	300A00617	1	10,12,16,22	FRONT PANEL
	306A00840	1	6 TUV	FRONT PANEL
	308A00840	1	8 TUV	FRONT PANEL
	300A00840	1	10 TUV,12 TUV, 16 TUV,22 TUV	FRONT PANEL
	306A00618	1	6N	FRONT PANEL
	308A00618	1	8N	FRONT PANEL
	300A00618	1	10N,12N,16N,22N	FRONT PANEL
	306A00841	1	6N TUV	FRONT PANEL
	308A00841	1	8N TUV	FRONT PANEL
	300A00841	1	10N TUV,12N TUV, 16N TUV,22N TUV	FRONT PANEL
	306A00836	1	6 COIL TYER	FRONT PANEL
	308A00836	1	8 COIL TYER	FRONT PANEL
	306A01263	1	6 COIL TYER TUV	FRONT PANEL
	308A01263	1	8 COIL TYER TUV	FRONT PANEL
	306A01389	1	6 LEFT HAND	FRONT PANEL
13	306A00611	1	6,6 LEFT HAND	LEFT SIDE PANEL
	308A00611	1	8	LEFT SIDE PANEL
	300A00611	1	10,12	LEFT SIDE PANEL
	316A00611	1	16	LEFT SIDE PANEL
	322A00611	1	22	LEFT SIDE PANEL
	306A00612	1	6N	LEFT SIDE PANEL
	308A00612	1	8N	LEFT SIDE PANEL
	300A00612	1	10N,12N	LEFT SIDE PANEL
	316A00612	1	16N	LEFT SIDE PANEL
	322A00612	1	22N	LEFT SIDE PANEL
	306A01114	1	6 TUV	LEFT SIDE PANEL
	308A01114	1	8 TUV	LEFT SIDE PANEL
	300A01114	1	10 TUV,12 TUV	LEFT SIDE PANEL
	316A01114	1	16 TUV	LEFT SIDE PANEL
	322A01114	1	22 TUV	LEFT SIDE PANEL
	306A01198	1	6N TUV	LEFT SIDE PANEL
	308A01198	1	8N TUV	LEFT SIDE PANEL
	300A01198	1	10N TUV,12N TUV	LEFT SIDE PANEL
	316A01198	1	16N TUV	LEFT SIDE PANEL
	322A01198	1	22N TUV	LEFT SIDE PANEL
	306A00837	1	6 COIL TYER	LEFT SIDE PANEL
	308A00837	1	8 COIL TYER	LEFT SIDE PANEL
	312A00868	1	12 ATS	LEFT SIDE PANEL
14	306A00609	1	6, 6 LEFT HAND	RIGHT SIDE PANEL
	308A00609	1	8, 8 COIL TYER	RIGHT SIDE PANEL
	300A00609	1	10,12	RIGHT SIDE PANEL
	316A00609	1	16	RIGHT SIDE PANEL
	322A00609	1	22	RIGHT SIDE PANEL
	306A00610	1	6N	RIGHT SIDE PANEL
	308A00610	1	8N	RIGHT SIDE PANEL
	300A00610	1	10N,12N	RIGHT SIDE PANEL
	316A00610	1	16N	RIGHT SIDE PANEL
	322A00610	1	22N	RIGHT SIDE PANEL

	306A00838	1	6 COIL TYER	RIGHT SIDE PANEL
	306A01269	1	6 TUV 6 COIL TYER TUV	RIGHT SIDE PANEL
	306A01282	1	6N TUV	RIGHT SIDE PANEL
	308A01215	1	8 COIL TYER TUV	RIGHT SIDE PANEL
	312A00870	1	12 ATS	RIGHT SIDE PANEL
15	306A00006	1	6	MOUNTING PLATE
	308A00006	1	8	MOUNTING PLATE
	300A00006	1	10,12	MOUNTING PLATE
	316A00006	1	16	MOUNTING PLATE
	322A00006	1	22	MOUNTING PLATE
16	900A00001	4	6,8,10,12,16,22	HEX HEAD CAPSCREW 5/16-18 X 7/8
17	900A00002	4	6,8,10,12,16,22	HEX NUT 5/16-18
18	900A00069	4	6,8,10,12,16,22	LOCKWASHER 5/16
19	900A01229	1	6,8,10,12,16,22	HOLE PLUG
20	900A00020	4	6,8,10,12,16,22	LOCKWASHER 1/4
21	300A01154	1	6,8,10,12,16,22	E-STOP BOX
22**	300A00744	1	6,8,10,12,16,22	FOAM PAD
23*	900A00198	4	6N,8N,10N,12N, 16N,22N	FLAT SOCKET HEAD SCREW 6-32 X 3/8
24*	300A00761	2	6N,8N,10N,12N, 16N,22N	TABLE SPACER
25	900A00135	4	6,8,10,12,16,22	SCREW 1/4-20 X 5/8
26	300A00165	1	6,8,10,12,16,22	BEARING, PLASTIC

* PARTS MARKED WITH * ARE ONLY USED WITH THE HIGH, MINIMUM OPENING TABLES ON NURSERY UNITS.

** USED AS A CUSHION PAD FOR ELASTIC TYING MATERIAL.

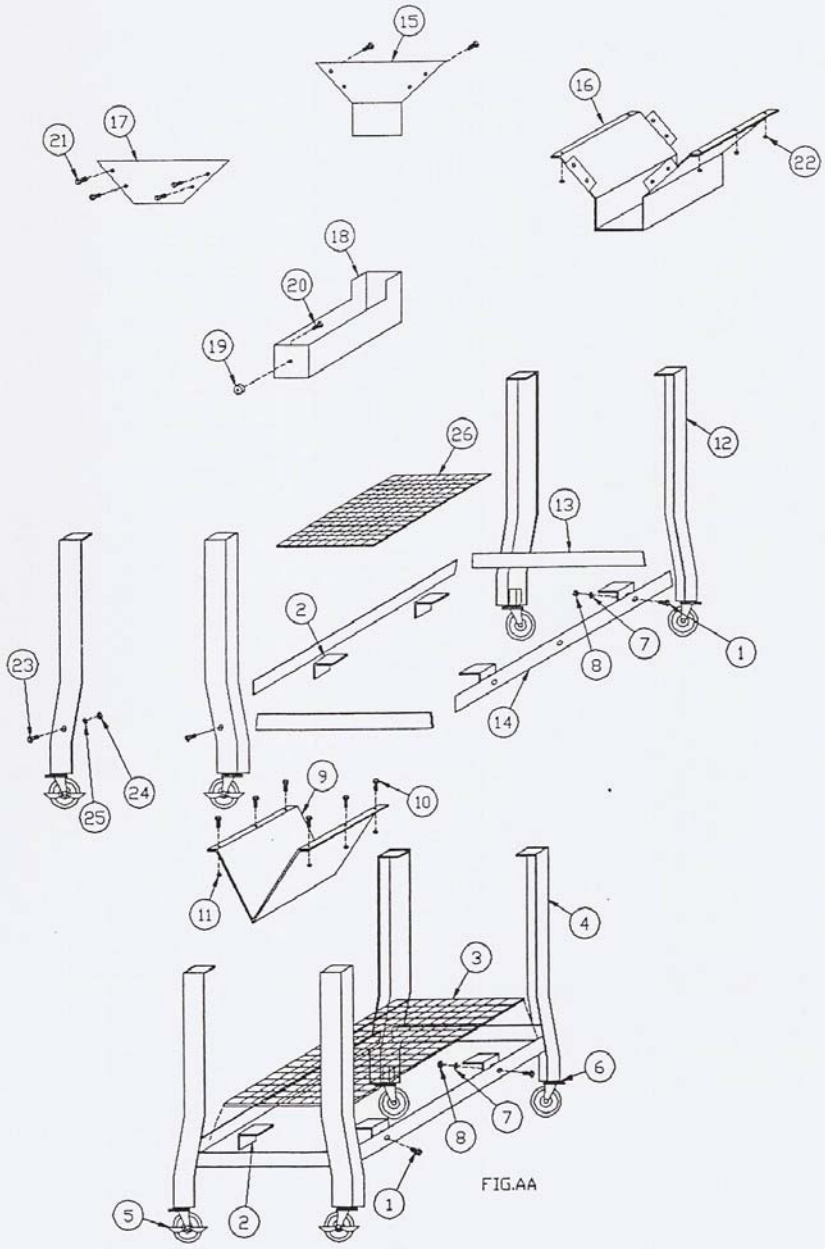

FIG.AA

FIGURE AA STAND, TWINE BIN AND TRAY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	900A00112	4	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 3/4
2	300A00325	4	6,8,10,12,16,22	LOWER GRATE SUPPORT
3	306A00326	1	6	LOWER GRATE WELDMENT
	300A00326	1	8,10,12,16,22	LOWER GRATE WELDMENT
4	306A00001	1	6	STAND WELDMENT
	300A00001	1	8,10,12,16,22	STAND WELDMENT
**	306A01233	1	6	BREAKDOWN STAND KIT
**	300A01233	1	8,10,12,16,22	BREAKDOWN STAND KIT
5	300A00002	2	6,8,10,12,16,22	LOCKING CASTOR
6	300A00003	2	6,8,10,12,16,22	NON-LOCKING CASTOR
7	900A00020	4	6,8,10,12,16,22	LOCKWASHER 1/4
8	900A00018	4	6,8,10,12,16,22	HEX NUT 1/4-20
9	300A00327	1	6,8,10,12,16,22	TWINE CATCH BIN
10	900A00177	4	6,8,10,12,16,22	RND SOC BUT HEAD SCREW 10-32 X 1/2
11	900A00026	4	6,8,10,12,16,22	HEX LOCKNUT 10-32 6-32 X 3/8
12	300A01219	4	6,8,10,12,16,22	LEG WELDMENT
13	306A01221	2	6	END BRACE
	300A01221	2	8,10,12,16,22	END BRACE
14	306A01220	2	6	SIDE BRACE
	300A01220	2	8,10,12,16,22	SIDE BRACE
15	300A01231	1	6,8,10,12,16,22	END, BIN - REAR
16	300A01232	1	6,8,10,12,16,22	BIN, TIWNE ENDS
17	300A01205	1	6,8,10,12,16,22	END, BIN - FRONT
18	300A01230	1	6,8,10,12,16,22	TRAY, TWINE ENDS
19	900A00215	1	6,8,10,12,16,22	KNOB
20	900A00056	1	6,8,10,12,16,22	SCREW 1/4-20 X 5/16
21	900A00258	10	6,8,10,12,16,22	SCREW #10 X 3/8 PAN HEAD
22	900A00080	4	6,8,10,12,16,22	SCREW 10-32 X 1/4
23	900A00341	8	6,8,10,12,16,22	RND SOC BUT HEAD SCREW 5/16-18 X 3/4
24	900A00069	8	6,8,10,12,16,22	LOCKWASHER 5/16
25	900A00002	8	6,8,10,12,16,22	HEX NUT 5/16-18
26	306A01295	1	6	GRATE
	300A01295	1	8,10,12,16,22	GRATE
***	300A01234	1	8,10,12,16,22	TWINE CATCH BIN & TRAY

** INCLUDES ITEMS 1,2,7,8,12,13,14,23,24,25,26
*** INCLUDES ITEMS 15,16,17,18,19,20,21,22

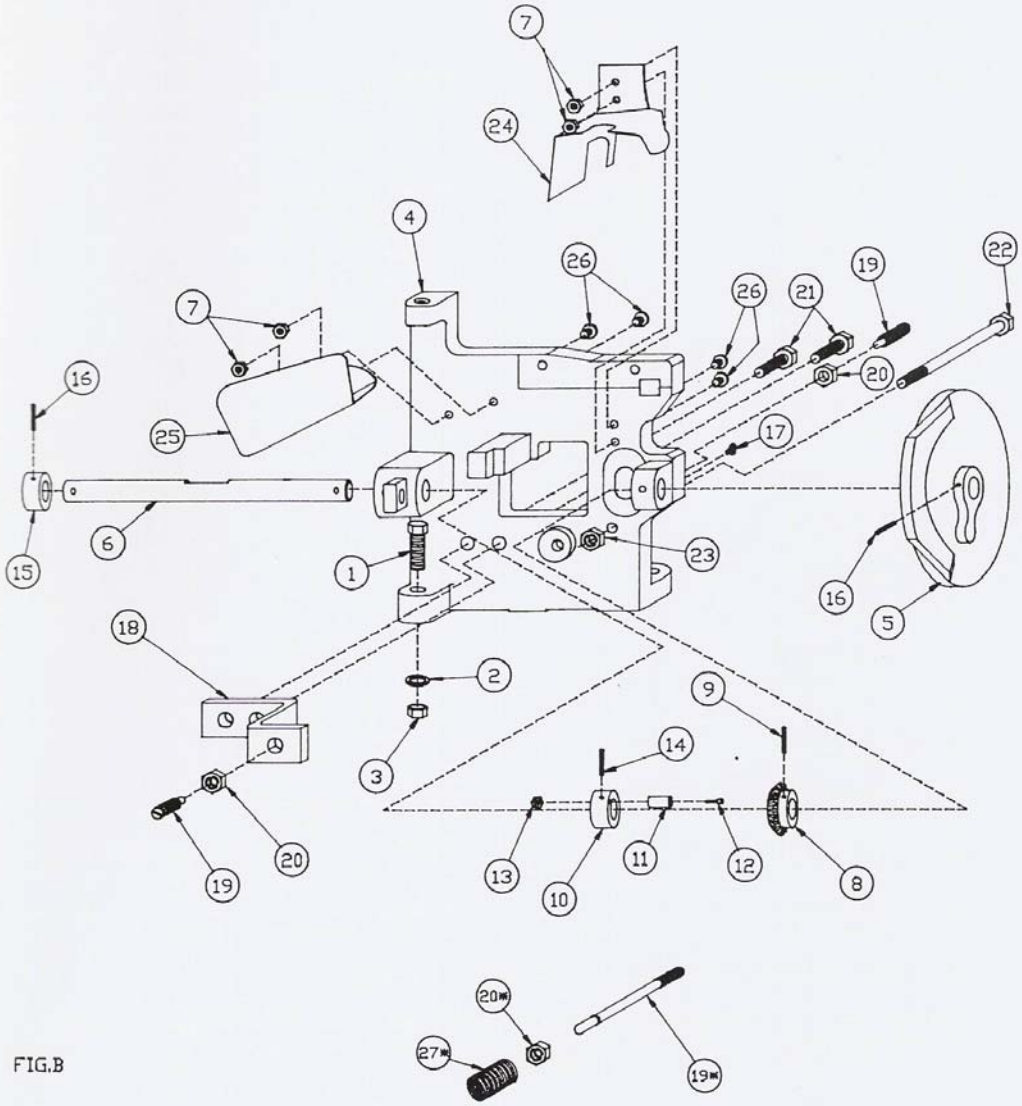
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FIG.B

FIGURE B MAIN FRAME ASSEMBLY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	900A00012	3	6,8,10,12,16,22	HEX HEAD CAPSCREW 3/8-24 X 1-1/2
2	900A00014	3	6,8,10,12,16,22	LOCKWASHER 3/8
3	900A00013	3	6,8,10,12,16,22	HEX NUT 3/8-24
4	300A00168	1	6,8,10,12,16,22	FRAME AND BEARINGS
5*	300A00071	1	6,8,10,12,16,22	KNOTTER DRIVE PLATTER
6*	300A00072	1	6,8,10,12,16,22	KNOTTER DRIVE SHAFT
7**	900A00082	4	6,8,10,12,16,22	HEX NUT 10-32
8	300A00074	1	6,8,10,12,16,22	KNOTTER DRIVE BEVEL GEAR
9	900A00015	1	6,8,10,12,16,22	DRIVE PIN #1 X 1-1/4
10	300A00075	1	6,8,10,12,16,22	CAM FOLLOWER COLLAR
11	300A00076	1	6,8,10,12,16,22	CAM FOLLOWER ROLLER
12	900A00063	1	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 1/4-20 X 1-3/4
13	900A00018	1	6,8,10,12,16,22	HEX NUT 1/4-20
14	900A00088	1	6,8,10,12,16,22	ROLL PIN 7/32 X 1-1/2
15	300A00073	1	6,8,10,12,16,22	RETAINING COLLAR
16*	900A00027	2	6,8,10,12,16,22	ROLL PIN 3/16 X 1
17	900A00004	2	6,8,10,12,16,22	GREASE FITTING
18	300A00085	1	6,8,10,12,16,22	STRINGHOLDER BRACKET
18#	300A00759	1	6,8,10,12,16,22	STRINGHOLDER BRACKET
19	300A00086	2	6,8,10,12,16,22	ADJUSTER SCREW 3/8-24 X 1-3/8
19#	300A00850	1	6,8,10,12,16,22	ADJUSTER SCREW 7/16-14 X 3-1/2
20	900A00087	2	6,8,10,12,16,22	HEX JAM NUT 3/8-24
20#	900A00194	1	6,8,10,12,16,22	HEX JAM NUT 7/16-14
21	900A00078	2	6,8,10,12,16,22	HEX HEAD CAPSCREW 3/8-16 X 3/4
22	900A00039	1	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 4
23	900A00124	1	6,8,10,12,16,22	HEX LOCKNUT 1/4-20
24	300A00082	1	6,8,10,12,16,22	BEVEL GEAR GUARD
25**	300A00089	1	6,8,10,12,16,22	STRING CHUTE
26**	900A00038	4	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 5/8
27#	300A01302	1	6,8,10,12,16,22	SPRING
28	300A00185	1	6,8,10,12,16,22	PLATTER & SHAFT ASSEM.

* THESE ITEMS SHIPPED IN ASSEMBLY 300A00185 (ITEM 28).

NEWER MODELS MAY HAVE ONLY ONE STRINGHOLDER ADJUSTER SCREW. THE PARTS MARKED WITH # ARE THE CORRECT PARTS TO ORDER FOR SERVICE IF YOUR UNIT HAS ONLY ONE ADJUSTER SCREW.

** PART 300A00089 STRING CHUTE IS NO LONGER INSTALLED ON NEW MACHINES.

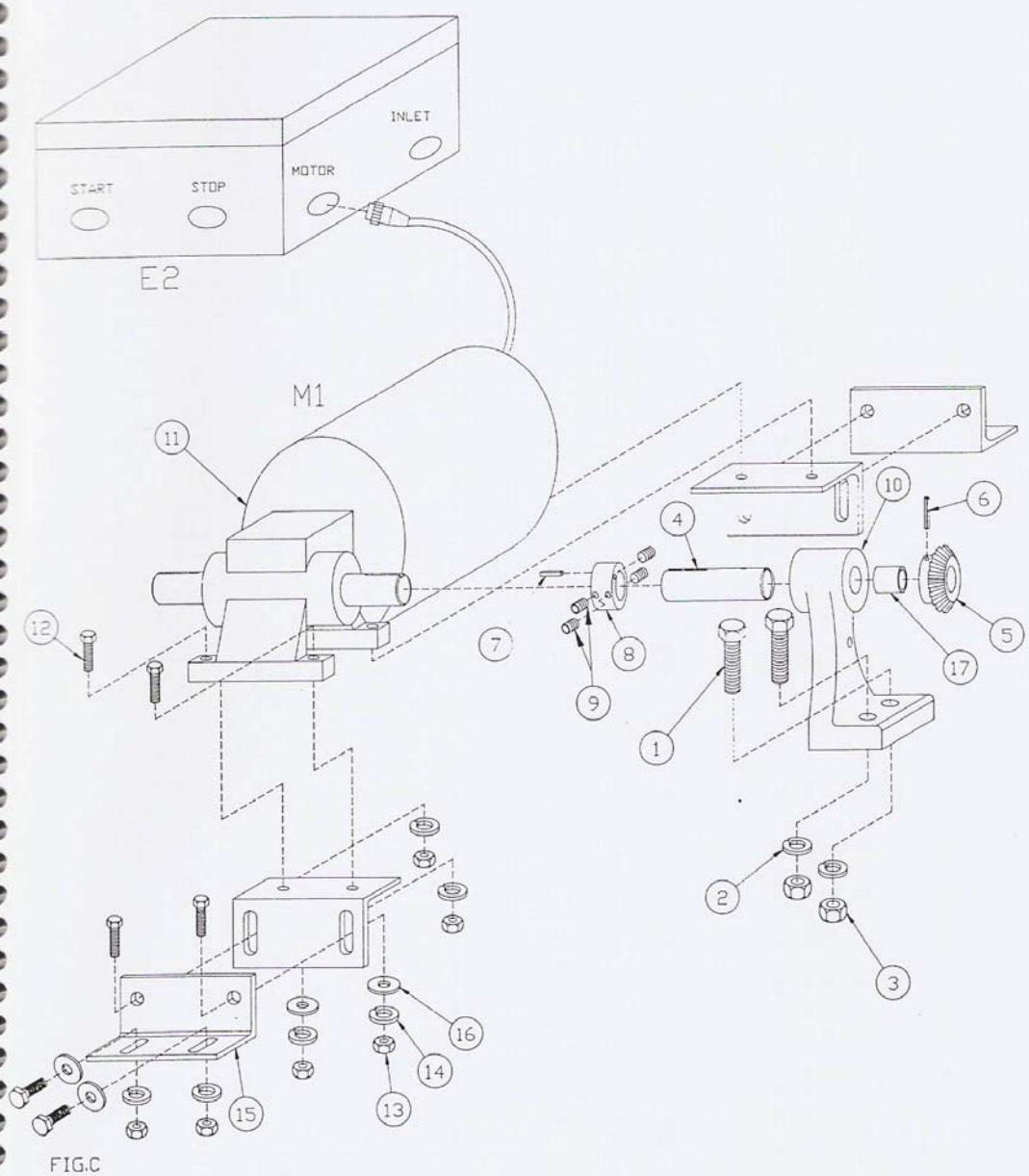

FIG.C

FIGURE C SHAFT, SUPPORT, DRIVE UNIT

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	900A00012	2	6,8,10,12,16,22	HEX HEAD CAPSCREW 3/8-24 X 1-1/2
2	900A00014	2	6,8,10,12,16,22	LOCKWASHER 3/8 REG
3	900A00013	2	6,8,10,12,16,22	HEX NUT 3/8-24
4**	300A00323	1	6,8,10	DRIVE SHAFT, SHORT
	300A00293	1	12,16,22	DRIVE SHAFT, SHORT
5	300A00060	1	6,8,10,12,16,22	BEVEL GEAR
6	900A00015	1	6,8,10,12,16,22	DRIVE PIN #1 X 1-1/4
7	900A00154	1	6,8,10,12,16,22	KEY 3/16 SQ X 1
8**	300A00328	1	6,8,10	DRIVE COLLAR
	300A00329	1	12,16,22	DRIVE COLLAR
9	900A00108	4	6,8,10,12,16,22	SETSCREW, SOC HEAD 1/4-20 X 3/8
10*	300A00176	1	6,8,10,12,16,22	SUPPORT AND BEARING
11**	306E00333	1	6 (115V)	MOTOR/GEAR REDUCER 1/4 HP .18 KW (FELINS) 90V 2.6 AMPS DC TORQUE-100 IN/LB 11.3N-M 76 RPM RATI0 45:1
	300E00333	1	8,10 (115V)	MOTOR/GEAR REDUCER 1/4 HP .18 KW (FELINS) 90V 2.6 AMPS DC TORQUE-100 IN/LB 11.3N-M 76 RPM RATI0 45:1
	300E00334	1	12,16,22 (115V)	MOTOR/GEAR REDUCER 1/3 HP .24 KW (FELINS) 130V 2.3 AMPS DC TORQUE-105 IN/LB 11.3N-M 83 RPM RATI0 30:1
	306E00604	1	6 (220V)	MOTOR/GEAR REDUCER 1/4 HP .18 KW (FELINS) 180V 1.3 AMPS DC TORQUE-100 IN/LB 11.3N-M 76 RPM RATI0 45:1
	300E00604	1	8,10 (220V)	MOTOR/GEAR REDUCER 1/4 HP .18 KW (FELINS) 180V 1.3 AMPS DC TORQUE-100 IN/LB 11.3N-M 76 RPM RATI0 45:1
	300E00605	1	12,16,22 (220V)	MOTOR/GEAR REDUCER .17 HP .24 KW (FELINS) 180V .85 AMPS DC TORQUE-105 IN/LB 11.3N-M 58 RPM RATI0 30:1
12	900A00117	12	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 7/8
13	900A00018	12	6,8,10,12,16,22	HEX NUT 1/4-20
14	900A00020	12	6,8,10,12,16,22	LOCKWASHER 1/4 REG
15**	300A00335	4	6,8,10	BRACKET, DRIVE MTG.
	300A00393	2	12,16,22	BRACKET, DRIVE MTG.
	300A01055	2	12,16,22	BRACKET, DRIVE MTG.
16	900A00034	8	6,8,10,12,16,22	WASHER 1/4 FLAT
17	300A00059	1	6,8,10,12,16,22	SLEEVE BEARING

* INCLUDES ITEM 17

** 12 INCH UNITS BUILT BEFORE JAN 1993 WERE ASSEMBLED WITH THE 1/4 HP MOTOR/GEAR REDUCER AND WILL REQUIRE DRIVE COLLAR 300A00328, SHORET SHAFT 300A00323, 300A00335 MOUNTING BRACKET, AND 300A00333 MOTOR/GEAR REDUCER OR 300A00604 MOTOR/GEAR REDUCER.

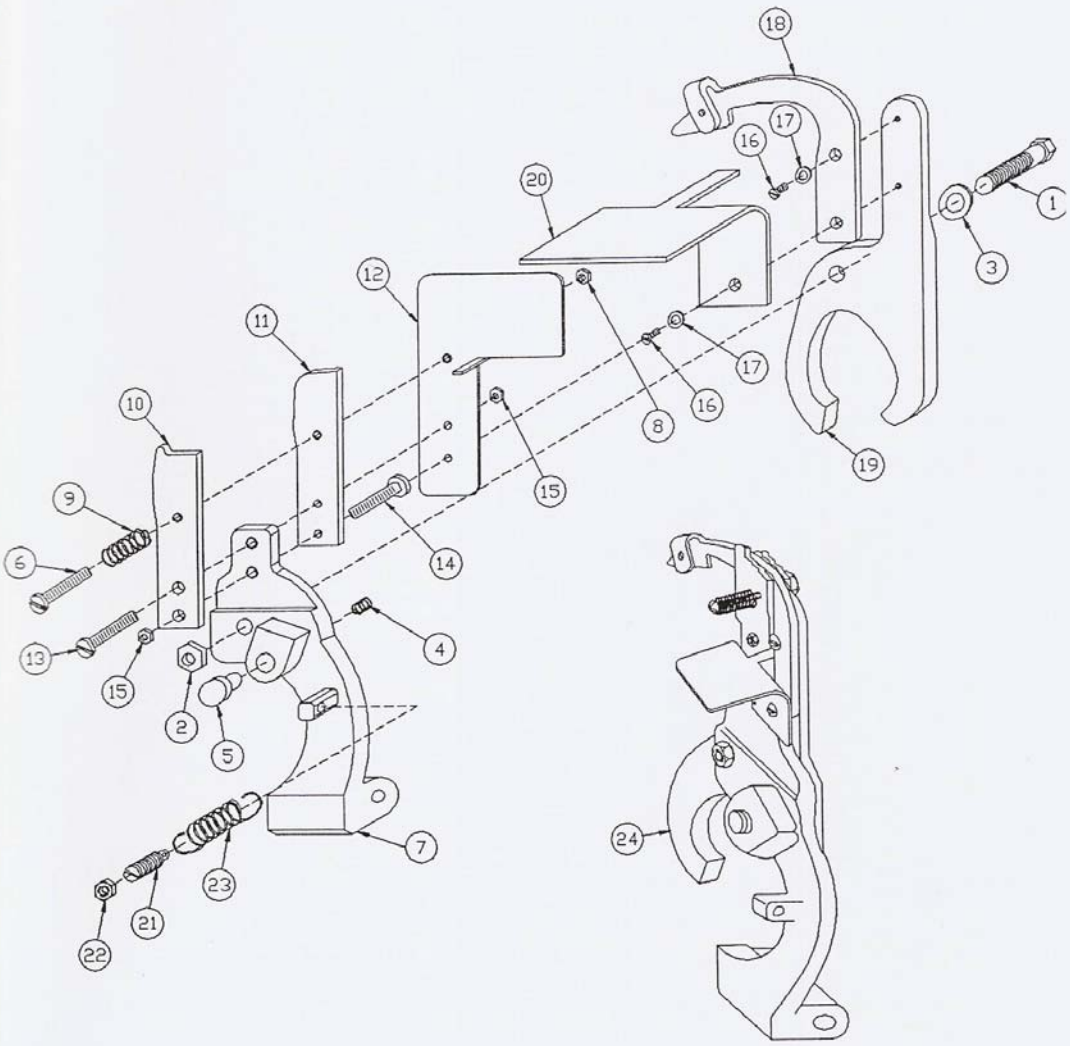

FIG.D

FIGURE D STRINGHOLDER ASSEMBLY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	900A00085	1	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-28 X 1
2	900A00086	1	6,8,10,12,16,22	HEX NUT 1/4-28
3	900A00034	1	6,8,10,12,16,22	WASHER 1/4 FLAT
4	300A00123	1	6,8,10,12,16,22	SPRING
5	300A00125	1	6,8,10,12,16,22	RUBBER BUMPER
6	900A00145	1	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 7/8
7	300A00115	1	6,8,10,12,16,22	STRINGHOLDER FRAME
7#	300A00760	1	6,8,10,12,16,22	STRINGHOLDER FRAME
8	900A00084	1	6,8,10,12,16,22	HEX NUT 6-32
9	300A00122	1	6,8,10,12,16,22	PLATE TENSION SPRING
10	300A00119	1	6,8,10,12,16,22	RH STRINGHOLDER PLATE
11	300A00120	1	6,8,10,12,16,22	LH STRINGHOLDER PLATE
12*	300A00126	1	6,8,10,12,16,22	LH STRINGHOLDER GUARD
13	900A00146	1	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 5/8
14	900A00162	1	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 1/2
15	900A00082	2	6,8,10,12,16,22	HEX NUT 10-32
16	900A00016	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 3/8
17	900A00143	2	6,8,10,12,16,22	LOCKWASHER 3/16
18	300A00117	1	6,8,10,12,16,22	STRINGHOLDER TUCKER
19	306A00116	1	6	STRINGHOLDER CAM
	308A00116	1	8	STRINGHOLDER CAM
	300A00116	1	10,12	STRINGHOLDER CAM
	316A00116	1	16	STRINGHOLDER CAM
	322A00116	1	22	STRINGHOLDER CAM
20	300A00129	1	6,8,10,12,16,22	RH STRINGHOLDER GUARD
21	300A00087	1	6,8,10,12,16,22	STUD 5/16-18 X 1-1/2
22	300A00037	1	6,8,10,12,16,22	HEX JAM NUT 5/16-18
23	300A00038	1	6,8,10,12,16,22	RETURN SPRING
24**	306A00191	1	6	STRINGHOLDER ASSEMBLY
	308A00191	1	8	STRINGHOLDER ASSEMBLY
	300A00191	1	10,12	STRINGHOLDER ASSEMBLY
	316A00191	1	16	STRINGHOLDER ASSEMBLY
	322A00191	1	22	STRINGHOLDER ASSEMBLY

NEWER MODELS MAY HAVE ONLY ONE STRINGHOLDER ADJUSTER SCREW. THE PARTS MARKED WITH # ARE THE CORRECT PARTS TO ORDER FOR SERVICE IF YOUR UNIT HAS ONLY ONE ADJUSTER SCREW.

* PART 300A00126 LH STRINGHOLDER GUARD IS NO LONGER INSTALLED ON NEW MACHINES.

** INCLUDES ALL ITEMS 1 THROUGH 23 EXCEPT 12.

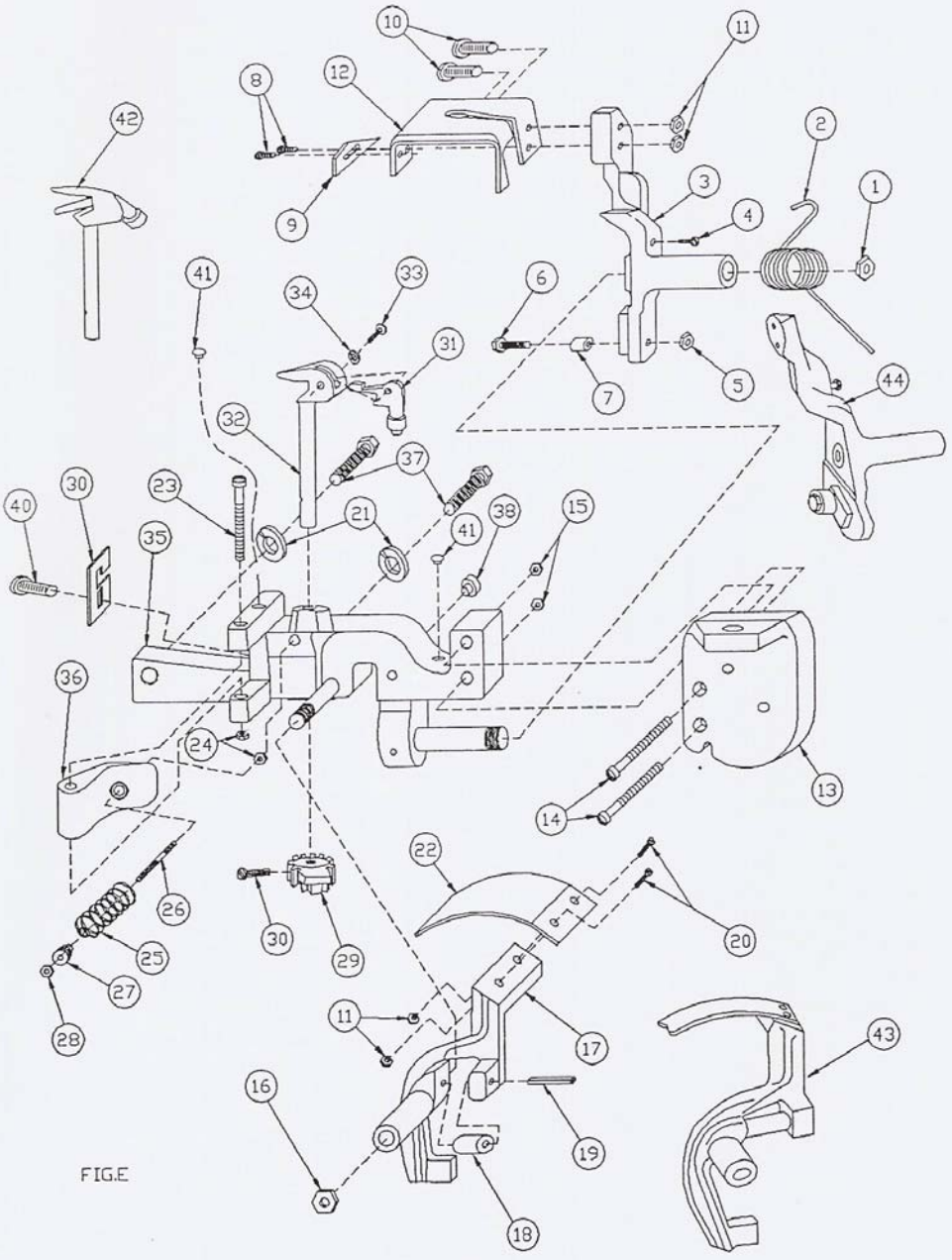
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FIG.E

FIGURE E KNOTTER, STRIPPER, TUCKER

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	900A00075	1	6,8,10,12,16,22	HEX LOCKNUT 3/8-24
2	300A00114	1	6,8,10,12,16,22	RETURN SPRING
3	300A00108	1	6,8,10,12,16,22	STRIPPER ARM
4	900A00016	1	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 3/8
5	900A00072	1	6,8,10,12,16,22	HEX NUT 5/16-24
6	900A00071	1	6,8,10,12,16,22	HEX HEAD CAPSCREW 5/16-24 X 1-1/4
7	300A00107	1	6,8,10,12,16,22	STRIPPER ARM ROLLER
8	900A00134	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 1/8
9	300A00106	1	6,8,10,12,16,22	KNIFE
10	900A00116	2	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 7/8
11	900A00026	2	6,8,10,12,16,22	HEX LOCKNUT 10-32
12	300A00110	1	6,8,10,12,16,22	STRIPPER ARM PLATE
13	300A00105	1	6,8,10,12,16,22	TABLE SUPPORT
**	300A00762	1	6N,8N,10N,12N, 16N,22N	TABLE SUPPORT
	300A01342	1	6,8,10,12,16,22	TABLE SUPPORT - TUV
14	900A00041	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 1/4-20 X 1-1/4
15	900A00124	2	6,8,10,12,16,22	HEX LOCKNUT 1/4-20
16	900A00079	1	6,8,10,12,16,22	HEX LOCKNUT 5/16-18
17**	300A00102	1	6,8,10,12,16,22	TUCKER
18	300A00104	1	6,8,10,12,16,22	ROLLER - STEEL
	300A01351	1	6,8,10,12,16,22	ROLLER - NYLON
19	900A00077	1	6,8,10,12,16,22	ROLL PIN 1/8 X 1-3/8
20	900A00049	2	6,8,10,12,16,22	RIVET, 3/16 X 3/8
21	900A00069	2	6,8,10,12,16,22	LOCKWASHER 5/16 REG
22	300A00103	1	6,8,10,12,16,22	TUCKER LEAF SPRING
23	900A00065	1	6,8,10,12,16,22	FILL HEAD MACH SCREW 8-32 X 1-3/4
24	900A00066	2	6,8,10,12,16,22	HEX NUT 8-32
25	300A00100	1	6,8,10,12,16,22	TENSION SPRING
26	300A00099	1	6,8,10,12,16,22	STUD 8-32
27	900A00089	1	6,8,10,12,16,22	BRASS NUT 8-32
28	900A00068	1	6,8,10,12,16,22	HEX LOCKNUT 8-32
29	300A00094	1	6,8,10,12,16,22	KNOTTER GEAR
30	900A00141	1	6,8,10,12,16,22	SCREW 8-32 X 5/8
31	300A00243	1	6,8,10,12,16,22	JAW ASSEM, KNOTTRER STD
	300A00263	1	6,8,10,12,16,22	JAW ASSEM, KNOTTER SMALL
	300A00449	1	6,8,10,12,16,22	JAW ASSEM, KNOTTER LARGE
32#	300A00090	1	6,8,10,12,16,22	KNOTTER, STD
#	300A00241	1	6,8,10,12,16,22	KNOTTER, SMALL
#	300A00242	1	6,8,10,12,16,22	KNOTTER, LARGE
33	900A00142	1	6,8,10,12,16,22	BUTTON SOCKET HEAD MACH SCREW 10-32 X 3/8
34	900A00143	1	6,8,10,12,16,22	LOCKWASHER 3/16 REG

35	900A00187	1	6,8,10,12,16,22	KNOTTER HOUSING ASSEM
36	300A00097	A	6,8,10,12,16,22	KNOTTER TENSION PLATE
37	900A00001	2	6,8,10,12,16,22	HEX HEAD CAPSCREW 5/16-18 X 7/8
38	300A00625	1	6,8,10,12,16,22	BUMPER, STRIPPER ARM
39*	300A00438	1	6,8,10,12,16,22	HOOK, ELASTIC
40*	900A00171	1	6,8,10,12,16,22	RND SOC BUT HEAD SCREW 10-32 X 1/3
41	300A01350	2	6,8,10,12,16,22	BUMPER, NYLON
42##	300A00188	1	6,8,10,12,16,22	KNOTTER ASSEM, STD
##	300A00452	1	6,8,10,12,16,22	KNOTTER ASSEM, SMALL
##	300A00448	1	6,8,10,12,16,22	KNOTTER ASSEM, LARGE
43***	300A00190	1	6,8,10,12,16,22	TUCKER ASSEMBLY
44###	300A00189	1	6,8,10,12,16,22	STRIPPER ARM ASSEMBLY

* THE ELASTIC HOOK IS USED WHEN TYING WITH ELASTIC MATERIAL TO AID IN CUTTING THE MATERIAL WHEN THE STRIPPER PLATE PULLS THE KNOT OFF THE KNOTTER. ONLY UNITS USING ELASTIC TYING MATERIAL WILL NEED THIS PART.

** THIS TABLE SUPPORT IS USED WITH THE HIGHER, MINIMUM OPENING NURSERY TABLE.

*** THIS ITEM IS SHIPPED AS ASSEMBLY 300A00190 (ITEM 43). INCLUDES ITEMS 17,18,19,20,22.

KNOTTER HEAD ONLY - DOES NOT INCLUDE KNOTTER JAW ASSEMBLY

INCLUDES ITEMS 31,32,33,34.

INCLUDES ITEMS 3,4,5,6,7.

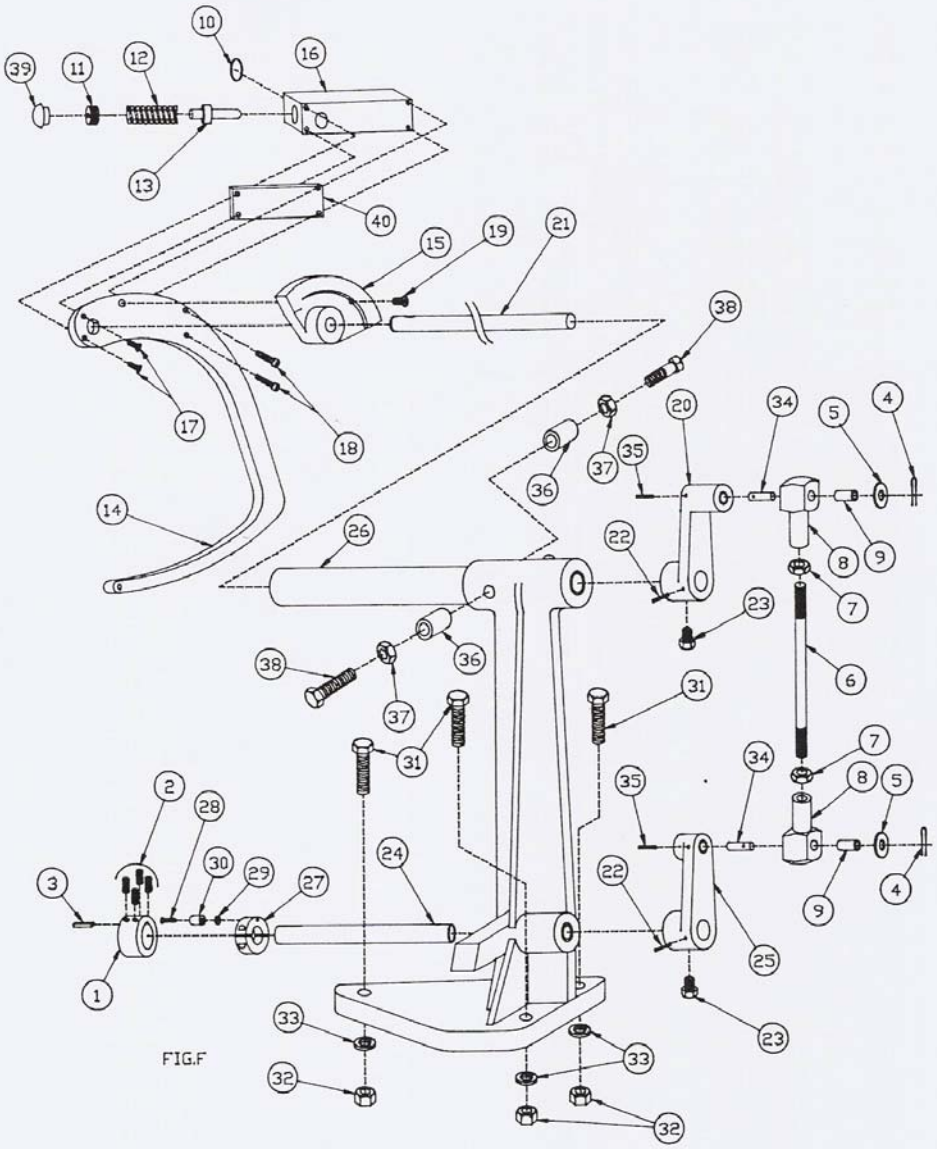
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FIG.F

FIGURE F COLUMN AND DELIVERY ARM

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1***	300A00328	1	6,8,10	DRIVE COLLAR
	300A00329	1	12,16,22	DRIVE COLLAR -1"
	300A01519	1	12,16,22	DRIVE COLLAR -2"
2	900A00108	4	6,8,10,12,16,18	SETSCREW, SOC HEAD 1/4-20 X 3/8
3***	900A00154	1	6,8,10	KEY 3/16 SQ X 1
	900A00313	1	12,16,22	KEY 3/16 SQ X 2
4	900A00048	2	6,8,10,12,16,22	COTTER PIN 3/32 X 3/4
5	900A00036	2	6,8,10,12,16,22	WASHER 3/8 STD FLAT
6	306A00037	1	6	TIE ROD 3/8 X 11-1/8
	308A00037	1	8	TIE ROD 3/8 X 12-5/8
	310A00037	1	10	TIE ROD 3/8 X 15
	312A00037	1	12	TIE ROD 3/8 X 17-1/8
	316A00037	1	16	TIE ROD 1/2 X 21-3/4
	322A00037	1	22	TIE ROD 1/2 X 26-1/4
7	900A00047	2	6,8,10,12	HEX JAM NUT 3/8-16
	900A00189	2	16,22	HEX JAM NUT 1/2-13
8*	306A00279	2	6	ROD END ASSEM
	300A00279	2	8,10,12	ROD END ASSEM
	300A00626	2	16,22	ROD END ASSEM
9	306A00040	2	6	SLEEVE BEARING
	300A00040	2	8,10,12	SLEEVE BEARING
	300A00052	2	16,22	SLEEVE BEARING
10	300A00428	1	6,8	RETAINING RING 5/8
	300A00423	1	10,12,16,22	RETAINING RING 3/4
11	900A00132	1	6,8	SCREW 7/8-14
	900A00133	1	10,12,16,22	SCREW 1 1/8-12
12	300A00386	1	6,8	SPRING
	300A00124	1	10,12,16,22	SPRING
13	300A00385	1	6,8	DELIVERY ARM BULLET
	300A00381	1	10,12,16,22	DELIVERY ARM BULLET
14	306A00281	1	6	DELIVERY ARM ASSEM (HOLE-STEEL) 1/4
	308A00281	1	8	DELIVERY ARM ASSEM (HOLE-STEEL) 1/4
	310A00281	1	10	DELIVERY ARM ASSEM (HOLE-STEEL) 1/4
	312A00281	1	12	DELIVERY ARM ASSEM (HOLE-STEEL) 1/4
	316A00281	1	16	DELIVERY ARM ASSEM (HOLE-STEEL) 1/4
	322A00281	1	22	DELIVERY ARM ASSEM (HOLE-STEEL) 1/4
	306A00812	1	6	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	308A00812	1	8	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	310A00812	1	10	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2

	312A00812	1	12	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	316A00812	1	16	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	322A00812	1	22	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	322A00768	1	22	DELIVERY ARM ASSEMBLY (SLOT - ALUMINUM) 1/2
15	306A00284	1	6	CAM PLATE
	308A00284	1	8	CAM PLATE
	310A00284	1	10	CAM PLATE
	312A00284	1	12	CAM PLATE
	316A00284	1	16	CAM PLATE
	322A00284	1	22	CAM PLATE
16	300A00387	1	6,8	SPRING HOLDER BLOCK
	300A00127	1	10,12,16,22	SPRING HOLDER BLOCK
17	900A00152	2	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 8-32 X 1/2
#	900A00235	2	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 8-32 X 3/4
18	900A00116	2	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 7/8
#	900A00237	2	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 1-1/8
19	900A00114	1	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 1/4-20 X 1/2
#	900A00123	1	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 1/4-20 X 3/4
20**	306A00192	1	6	UPPER CRANK ARM ASSEM
	308A00192	1	8	UPPER CRANK ARM ASSEM
	300A00192	1	10,12	UPPER CRANK ARM ASSEM
	300A00096	1	16,22	UPPER CRANK ARM ASSEM
21	306A00685	1	6	DELIVERY ARM.SHAFT
	308A00685	1	8	DELIVERY ARM SHAFT
	300A00685	1	10,12,16,22	DELIVERY ARM SHAFT
22	900A00044	2	6,8,10,12,16,22	DRIVE PIN #4 X 1-1/2
23	900A00153	2	6,8,10,12,16,22	HEX HEAD CAPSCREW 3/8-16 X 1/2
24***	306A00324	1	6	DRIVE SHAFT, LONG
	308A00324	1	8	DRIVE SHAFT, LONG
	300A00324	1	10	DRIVE SHAFT, LONG
	300A00294	1	12,16,22	DRIVE SHAFT, LONG
25**	306A00193	1	6	LOWER CRANK ARM ASSEM
	300A00193	1	8,10,12	LOWER CRANK ARM ASSEM
	300A00118	1	16,22	LOWER CRANK ARM ASSEM
26	306A00175	1	6	COLUMN AND TUBE ASSEM
	308A00175	1	8	COLUMN AND TUBE ASSEM
	310A00175	1	10	COLUMN AND TUBE ASSEM
	312A00175	1	12	COLUMN AND TUBE ASSEM
	316A00175	1	16	COLUMN AND TUBE ASSEM
	322A00175	1	22	COLUMN AND TUBE ASSEM
27	300A00336	1	6,8,10,12,16,22	SPLIT COLLAR 3/4

28	900A00164	1	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 5/8
29	900A00084	1	6,8,10,12,16,22	HEX NUT 6-32
30	300A00092	1	6	ROLLER
	300A00104	1	8,10,12,16,22	ROLLER
31	900A00009	3	6,8	HEX HEAD CAPSCREW 1/2-20 X 1-1/2
	900A00151	3	10,12,16,22	HEX HEAD CAPSCREW 1/2-20 X 2
32	900A00010	3	6,8,10,12,16,22	HEX NUT 1/2-20
33	900A00178	3	6,8,10,12,16,22	LOCKWASHER 1/2
34	306A00112	2	6	STUD, CRANK ARM
	300A00112	2	8,10,12	STUD, CRANK ARM
	300A00113	2	16,22	STUD, CRANK ARM
35	900A00113	2	6,8,10,12,16,22	ROLL PIN 1/8 X 1-1/4
36	300A00033	2	12,16,22	BRAKE PLUG
37	900A00007	2	12,16,22	HEX HEAD CAPSCREW 1/2-13 X 1
38	900A00060	2	12,16,22	HEX JAM NUT 1/2-13
39	300A01303	1	6,8	HOLE PLUG
	300A01304	1	10,12,16,22	HOLE PLUG
40	300A01157	1	6,8	SPACER
	300A01156	1	10,12,16,22	SPACER
##	300A01460	1	12,16,22	SPLIT DRIVE COLLAR KIT

* INCLUDES ITEM 9

** INCLUDES ITEMS 34 AND 35

*** 12 INCH UNITS BUILT BEFORE JAN 1993 WERE ASSEMBLED WITH THE 1/4 HP MOTOR/GEAR REDUCER AND WILL REQUIRE DRIVE COLLAR 300A00328, KEY 900A00154, LONG DRIVE SHAFT 300A00324.

USED TO MOUNT 1/2 INCH (12.7MM) WIDE DELIVERY ARMS OR 1/4 INCH (6.35MM) WIDE DELIVERY ARMS WITH 1/4 INCH (6.35MM) SPACER.

INCLUDES 300A01453 5/8 X 2 SPLIT COLLAR AND 900A00313 3/16 X 2 KEY.

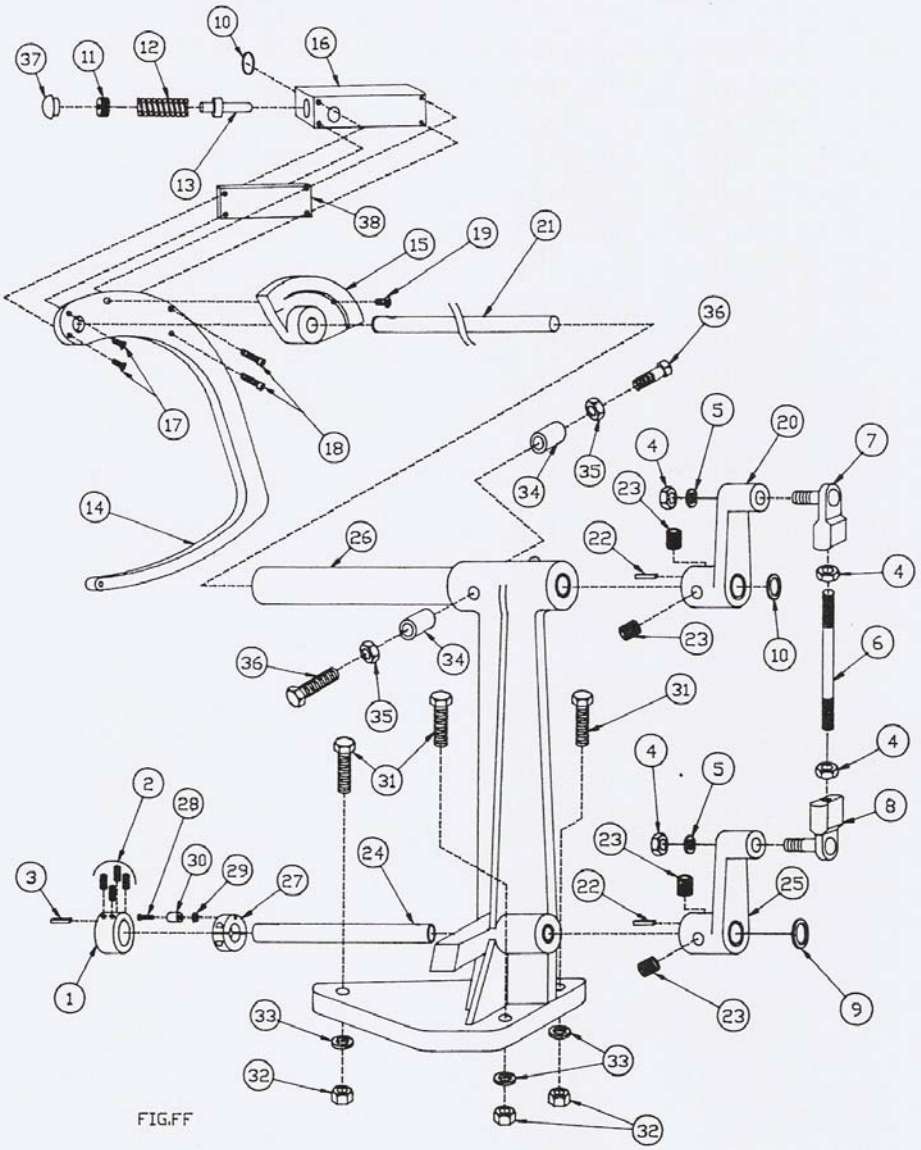
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FIG.FF

FIGURE FF COLUMN AND DELIVERY ARM

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1**	300A00328	1	6,8,10	DRIVE COLLAR
	300A00329	1	12,16,22	DRIVE COLLAR -1"
	300A01519	1	12,16,22	DRIVE COLLAR -2"
2	900A00108	4	6,8,10,12,16,22	SETSCREW, SOC HEAD 1/4-20 X 3/8
3**	900A00154	1	6,8,10	KEY 3/16 SQ X 1
	900A00313	1	12,16,22	KEY 3/16 SQ X 2
4	900A00013	4	6,8,10,12	HEX NUT 3/8-24
	900A00010	4	16,22	HEX NUT 1/2-20
5	900A00014	2	6,8,10,12	LOCKWASHER 3/8
	900A00178	2	16,22	LOCKWASHER 1/2
6	306A00690	1	6	TIE ROD 3/8 X 10 7/8
	308A00690	1	8	TIE ROD 3/8 X 12 3/8
	310A00690	1	10	TIE ROD 3/8 X 14 3/4
	312A00690	1	12	TIE ROD 3/8 X 16 7/8
	316A00690	1	16	TIE ROD 1/2 X 21 1/2
	322A00690	1	22	TIE ROD 1/2 X 26
7	300A00691	2	6,8,10,12	ROD END LH 3/8
	300A00692	2	16,22	ROD END LH 1/2
8	300A00681	2	6,8,10,12	ROD END RH 3/8
	300A00682	2	16,22	ROD END RH 1/2
9	300A00423	1	6,8,10,12,16,22	RETAINING RING 3/4
10	300A00428	2	6,8	RETAINING RING 5/8
	900A00423	2	10,12,16,22	RETAINING RING 3/4
11	900A00132	1	6,8,	SCREW 7/8-14
	900A00133	1	10,12,16,22	SCREW 1 1/8-12
12	300A00386	1	6,8	SPRING
	300A00124	1	10,12,16,22	SPRING
13	300A00385	1	6,8	DELIVERY ARM BULLET
	300A00381	1	10,12,16,22	DELIVERY ARM BULLET
14	306A00281	1	6	DELIVERY ARM ASSEM (HOLE - STEEL) 1/4
	308A00281	1	8	DELIVERY ARM ASSEM (HOLE - STEEL) 1/4
	310A00281	1	10	DELIVERY ARM ASSEM (HOLE - STEEL) 1/4
	312A00281	1	12	DELIVERY ARM ASSEM (HOLE -STEEL) 1/4
	316A00281	1	16	DELIVERY ARM ASSEM (HOLE - STEEL) 1/4
	322A00281	1	22	DELIVERY ARM ASSEM (HOLE - STEEL) 1/4
	306A00812	1	6	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	308A00812	1	8	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	310A00812	1	10	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	312A00812	1	12	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2

	316A00812	1	16	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	322A00812	1	22	DELIVERY ARM ASSEMBLY (SLOT - STEEL) 1/2
	322A00768	1	22	DELIVERY ARM ASSEMBLY (SLOT - ALUMINUM) 1/2
15	306A00284	1	6	CAM PLATE
	308A00284	1	8	CAM PLATE
	310A00284	1	10	CAM PLATE
	312A00284	1	12	CAM PLATE
	316A00284	1	16	CAM PLATE
	322A00284	1	22	CAM PLATE
16	300A00387	1	6,8	SPRING HOLDER BLOCK
	300A00127	1	10,12,16,22	SPRING HOLDER BLOCK
17	900A00152	2	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 8-32 X 1/2
*	900A00235	2	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 8-32 X 3/4
18	900A00116	2	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 7/8
*	900A00237	2	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 1 1/8
19	900A00114	1	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 1/4-20 X 1/2
*	900A00123	1	6,8,10,12,16,22	BUT SOC HEAD CAPSCREW 1/4-20 X 3/4
20	300A00683	1	6,8	UPPER CRANK ARM
	300A00684	1	10,12	UPPER CRANK ARM
	300A00693	1	16,22	UPPER CRANK ARM
21	306A00685	1	6	DELIVERY ARM SHAFT
	308A00685	1	8	DELIVERY ARM SHAFT
	300A00685	1	10,12,16,22	DELIVERY ARM SHAFT
22	900A00154	2	6,8,10,12,16,22	KEY 3/16 SQ X 1
23	900A00043	4	6,8,10,12,16,22	SETSCREW, SOC HEAD 3/8-16 X 3/8
24**	306A00686	1	6	DRIVE SHAFT, LONG
	308A00686	1	8	DRIVE SHAFT, LONG
	300A00686	1	10	DRIVE SHAFT, LONG
	300A00687	1	12,16,22	DRIVE SHAFT, LONG
25	300A00688	1	6,8,10,12	LOWER CRANK ARM
	300A00689	1	16,22	LOWER CRANK ARM
26	306A00175	1	6	COLUMN AND TUBE ASSEM
	308A00175	1	8	COLUMN AND TUBE ASSEM
	310A00175	1	10	COLUMN AND TUBE ASSEM
	312A00175	1	12	COLUMN AND TUBE ASSEM
	316A00175	1	16	COLUMN AND TUBE ASSEM
	322A00175	1	22	COLUMN AND TUBE ASSEM
27	300A00336	1	6,8,10,12,16,22	SPLIT COLLAR 3/4
28	900A00164	1	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 5/8
29	900A00084	1	6,8,10,12,16,22	HEX NUT 6-32
30	300A00092	1	6	ROLLER
	300A00104	1	8,10,12,16,22	ROLLER

31	900A00009	3	6,8	HEX HEAD CAPSCREW 1/2-20 X 1-1/2
	900A00151	3	10,12,16,22	HEX HEAD CAPSCREW 1/2-20 X 2
32	900A00010	3	6,8,10,12,16,22	HEX NUT 1/2-20
33	900A00178	3	6,8,10,12,16,22	LOCKWASHER 1/2
34	300A00033	2	12,16,22	BRAKE PLUG
35	900A00007	2	12,16,22	HEX HEAD CAPSCREW 1/2-13 X 1
36	900A00060	2	12,16,22	HEX JAM NUT 1/2-13
37	300A01303	1	6,8	HOLE PLUG
	300A01304	1	10,12,16,22	HOLE PLUG
38	300A01157	1	6,8	SPACER
	300A01156	1	10,12,16,22	SPACER
##	300A01460	1	12,16,22	SPLIT DRIVE COLLAR KIT

* USED TO MOUNT 1/2 INCH (12.7MM) WIDE DELIVERY ARMS OR 1/4 INCH (6.35MM) WIDE DELIVERY ARMS WITH 1/4 INCH (6.35MM) SPACER.

** 12 INCH UNITS BUILT BEFORE JAN 1993 WERE ASSEMBLED WITH THE 1/4 HP MOTOR/GEAR REDUCER AND WILL REQUIRE DRIVE COLLAR 300A00328, KEY 900A00154, LONG DRIVE SHAFT 300A00324.

INCLUDES 300A01453 5/8 X 2 SPLIT COLLAR AND 900A00313 3/16 X 2 KEY.

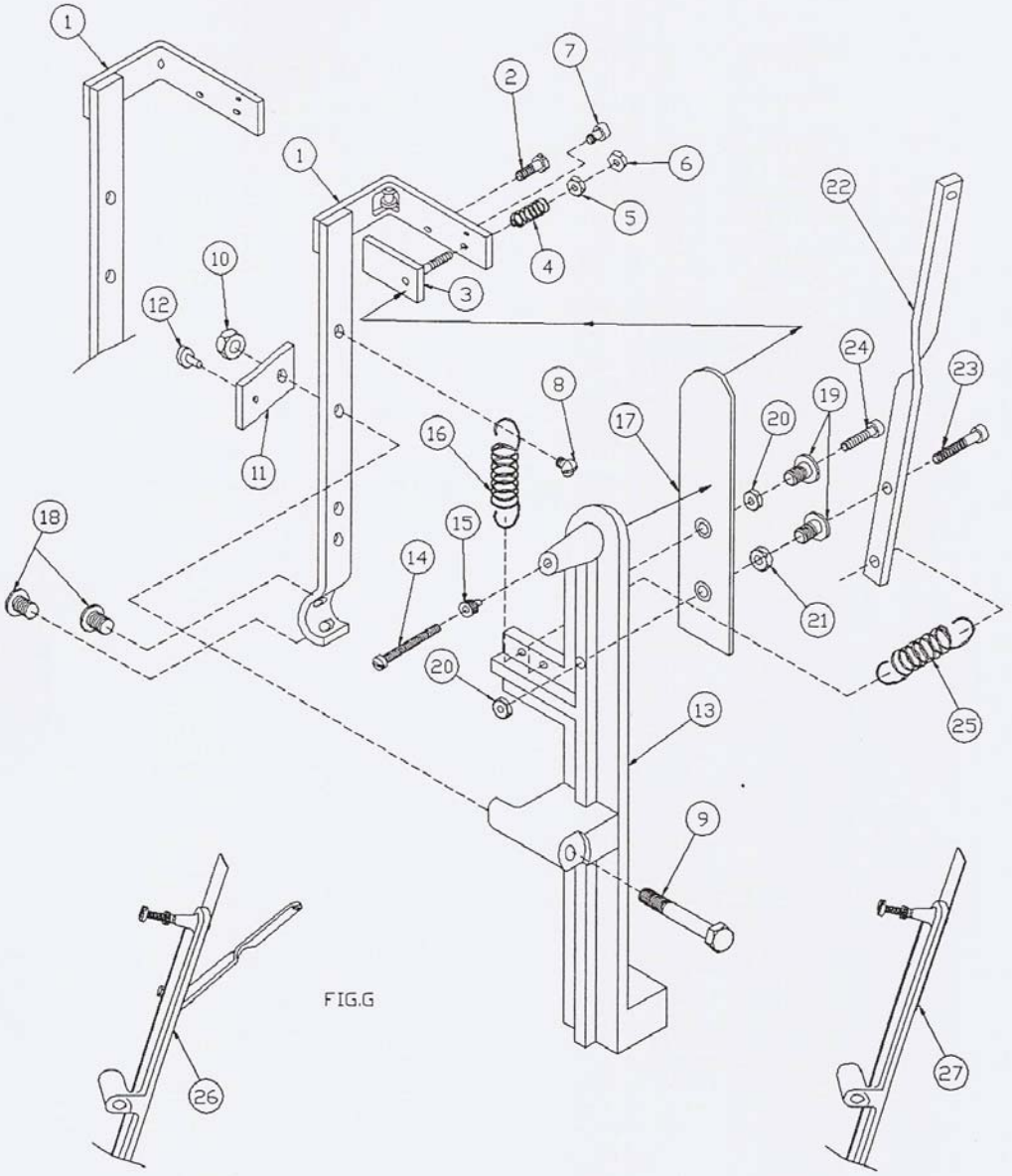


FIG.G

FIGURE G TWINE ARRESTOR ASSEMBLY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300A00139	1	6,8,10,12	BRACKET WLDMNT W/ROLLER
	300A00138	1	16,22	BRACKET WLDMNT W/ROLLER
	300A00300	1	6,8,10,12	BRACKET WLDMNT W/O ROLLER
	300A00296	1	16,22	BRACKET WLDMNT W/O ROLLER
	300A00736	1	6,8,10,12	BRACKET WLDMNT W/ROLLER WIDE PAD
	300A00763	1	16,22	BRACKET WLDMNT W/ROLLER WIDE PAD
2	900A00024	1	6,8,10,12,16,22	SCREW 10-32 X 5/8
3	300A00196	1	6,8,10,12,16,22	TENSION PAD WELDMENT
	300A00738	1	6,8,10,12,16,22	TENSION PAD WELDMENT WIDE PAD
4	300A00144	1	6,8,10,12,16,22	TENSION PAD SPRING
5	900A00066	1	6,8,10,12,16,22	HEX NUT 8-32
6	900A00068	1	6,8,10,12,16,22	HEX LOCKNUT 8-32
7	300A00093	1	6,8,10,12,16,22	SCREW 10-32 X 5/16
8	900A00016	3	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 3/8
9	900A00136	1	6,8,10,12,16,22	HEX HEAD CAPSCREW 5/16-18 X 2 1/2
10	900A00002	1	6,8,10,12,16,22	HEX NUT 5/16-18
11	300A00174	1	6,8,10,12,16,22	DELIVERY ARM STOP BRKT
12	300A00010	1	6,8,10,12,16,22	RUBBER STOP GROMMET
13	300A00147	1	6,8,10,12	TWINE ARRESTOR FRAME
	300A00382	1	16,22	TWINE ARRESTOR FRAME
14	900A00065	1	6,8,10,12,16,22	FILL HEAD MACH SCREW 8-32 X 1 3/4
15	900A00089	1	6,8,10,12,16,22	BRASS NUT
16	300A00150	1	6,8,10,12,16,22	RETURN SPRING
17	300A00146	1	6,8,10,12,16,22	TENSION LEAF SPRING
18	900A00090	2	6,8,10,12,16,22	RND SOC BUT HEAD SCREW 5/16-18 X 1/2
19	900A00016	2	6,8,10,12	ROUND HEAD MACH SCREW 10-32 X 3/8
20	900A00026	2	16,22	HEX LOCKNUT 10-32
21	900A00124	1	16,22	HEX LOCKNUT 1/4-20
22	316A00172	1	16	TAKE-UP ARM
	322A00172	1	22	TAKE-UP ARM
23	900A00110	1	16,22	SOCKET HEAD CAPSCREW 10-32 X 1 1/4
24	900A00116	1	16,22	SOCKET HEAD CAPSCREW 10-32 X 7/8
25	300A00173	1	16,22	SPRING, STRING ARM
26*	316A00143	1	16	TWINE ARRESTOR FRAME AY
*	322A00143	1	22	TWINE ARRESTOR FRAME AY
27**	300A00256	1	6,8,10,12	TWINE ARRESTOR FRAME AY

* INCLUDES ITEMS 13,14,15,17,20,21,22,23,24
** INCLUDES ITEMS 13,14,15,17,19

FIG.H

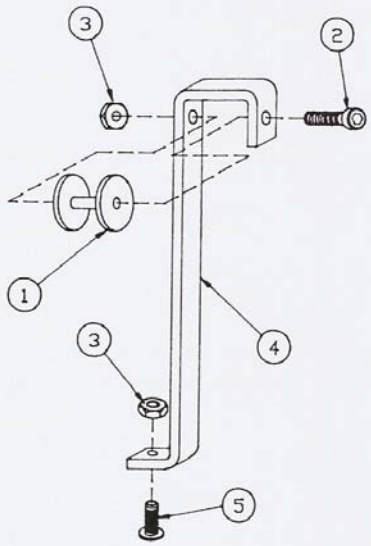


FIGURE H TWINE FEED BRACKET

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300A00379	1	6,8,10,12,16,22	ROLLER, SMALL
	300A00495	1	6,8,10,12,16,22	ROLLER, LARGE
2	900A00330	1	6,8,10,12,16,22	SOCKET HEAD CAPSCREW 10-32 X 1 1/2
3	900A00026	2	6,8,10,12,16,22	HEX LOCKNUT 10-32
4	300A00380	1	6,10,12	TWINE FEED BRACKET SMALL ROLLER
	308A00380	1	8	TWINE FEED BRACKET SMALL ROLLER
	300A00392	1	16,22	TWINE FEED BRACKET SMALL ROLLER
	300A00716	1	6,10,12	TWINE FEED BRACKET LARGE ROLLER
	308A00716	1	8	TWINE FEED BRACKET LARGE ROLLER
	300A00717	1	16,22	TWINE FEED BRACKET LARGE ROLLER
5	900A00115	1	6,8,10,12,16,22	RND SOC BUT HEAD SCREW 10-32 X 1/2

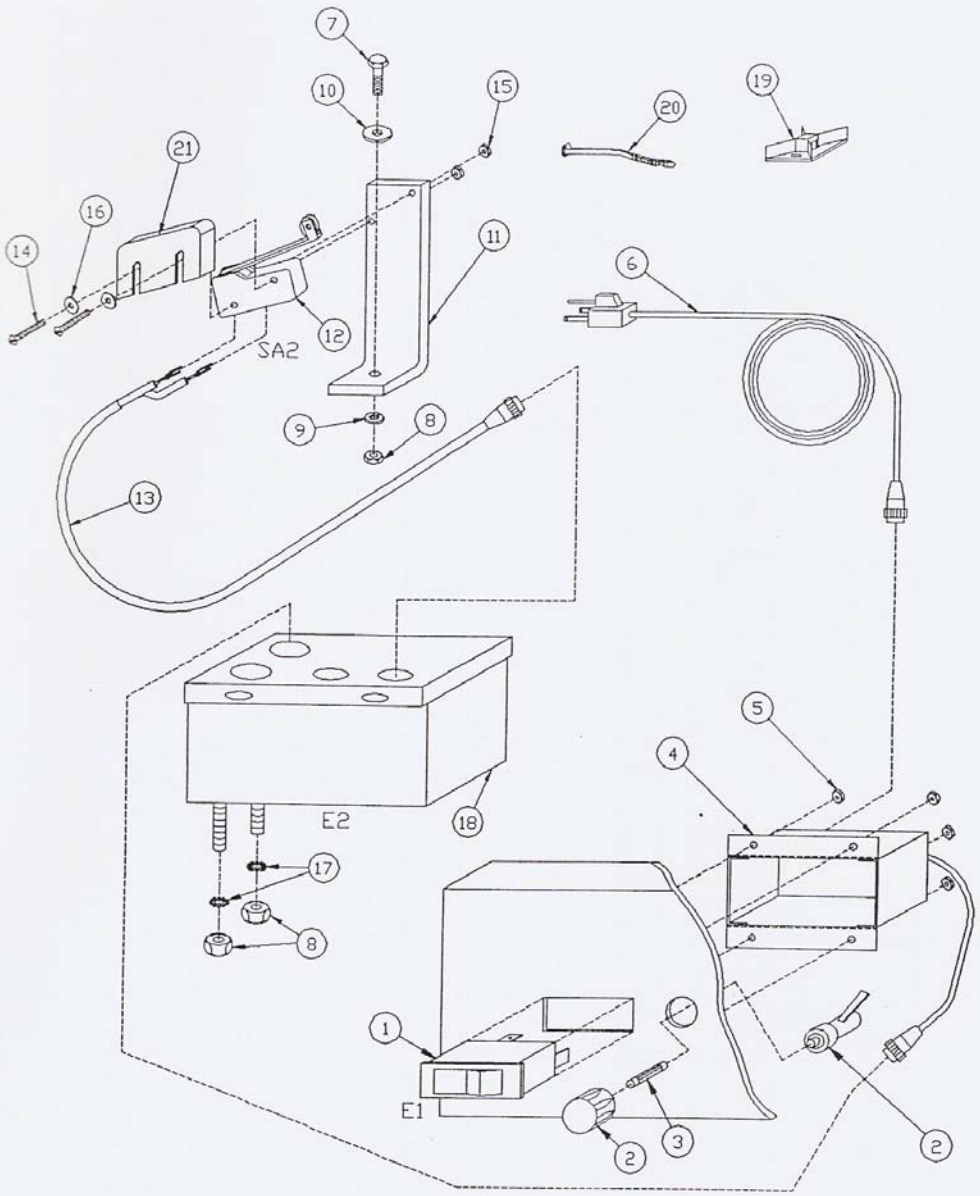


FIG.1 ELECTRICAL

FIGURE I ELECTRICAL

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300E00414	1	6,8,10,12,16,22	SWITCH, ON/OFF (E1) (FELINS) 125 VAC 15 AMPS 250 VAC 10 AMPS
2	300E00416	1	6,8,10,12,16,22	FUSEHOLDER AY
3	300E00422	1	6,8,10,12,16,22	FUSE, 4 AMP 250V SLOW BLOW
4	300E00258	1	6,8,10,12,16,22	BOX AY, SWITCH & FUSE
5	900A00128	4	6,8,10,12,16,22	NUT, HEX NYLOK 6-32
6	300E00354	1	6,8,10,12,16,22	POWER CORD ASSEM 115V
7	900A00117	1	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 7/8
8	900A00018	3	6,8,10,12,16,22	HEX NUT 1/4-20
9	900A00020	3	6,8,10,12,16,22	LOCKWASHER 1/4
10	900A00034	1	6,8,10,12,16,22	WASHER 1/4 FLAT
11	300A00337	1	6,8,10,12,16,22	STOP SWITCH BRACKET
12	300E00338	1	6,8,10,12,16,22	MICRO SWITCH (SA2) (FELINS) 277V-AC 11 AMPS
13	300E01343	1	6,8,10,12,16,22	STOP SWITCH CORD ASSEM
14	900A00139	2	6,8,10,12,16,22	ROUND MACHINE SCREW 6-32 X 1-1/4
15	900A00128	2	6,8,10,12,16,22	HEX LOCKNUT 6-32
16	900A00155	2	6,8,10,12,16,22	WASHER #6 FLAT
17	900A00126	2	6,8,10,12,16,22	LOCKWASHER 1/4 EXT TOOTH
18	300E00350	1	6,8,10,12,16,22	CONTROL MODULE 115V (E2) (FELINS)
19	300E00358	6	6,8,10,12,16,22	CABLE TIE MOUNT
20	300E00579	10	6,8,10,12,16,22	CABLE TIE, MINIATURE
21	300E00342	1	6,8,10,12,16,22	GUARD, SWITCH

⚠ CAUTION ALWAYS REPLACE A BLOWN FUSE WITH A FUSE OF EQUAL SIZE. NEVER INSTALL A FUSE RATED AT MORE THAN 4 AMPS.

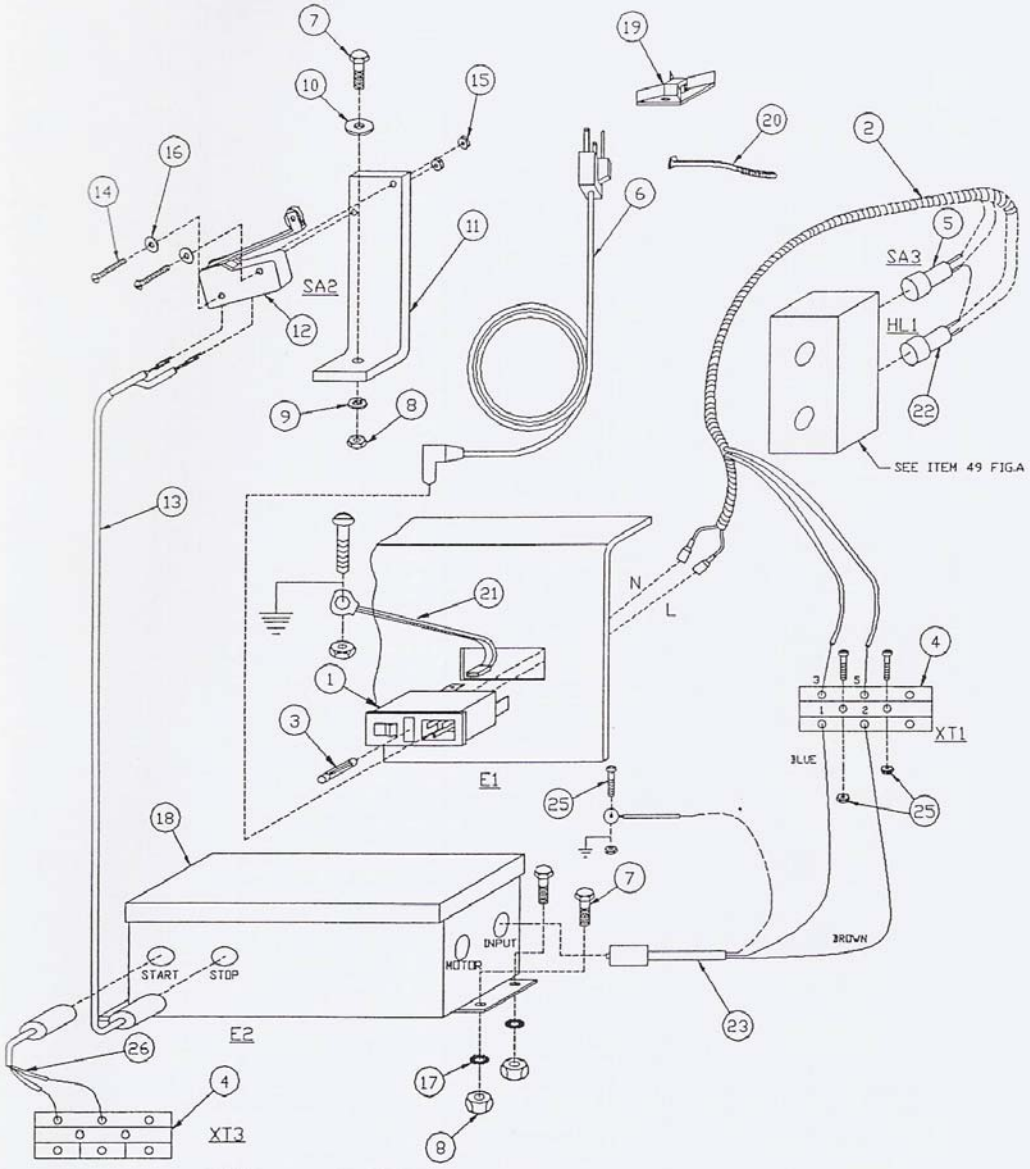


FIG.II ELECTRICAL - TUV

FIGURE II ELECTRICAL - TUV

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300E00740	1	6,8,10,12,16,22	INPUT MODULE (E1) (FELINS) (ON-OFF SWITCH, FUSE) 250V 4 AMPS
2*	300E01267	1	6,8,10,12,16,22	WIRE HARNESS E-STOP
3	300E00635	1	6,8,10,12,16,22	FUSE 2 AMP 250V SLOW-BLOW
4	300E00714	2	6,8,10,12,16,22	TERMINAL BLOCK, (XT1) 3 POSITION (FELINS)
5	300E00715	1	6,8,10,12,16,22	E-STOP, (SA3) (FELINS) 240V 3 AMPS BREAK
6	300E00633	1	6,8,10,12,16,22	POWER CORD ASSEM 220V
7	900A00117	5	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 7/8
8	900A00018	5	6,8,10,12,16,22	HEX NUT 1/4-20
9	900A00020	1	6,8,10,12,16,22	LOCKWASHER 1/4
10	900A00034	1	6,8,10,12,16,22	WASHER 1/4 FLAT
11	300A00576	1	6,8,10,12,16,22	STOP SWITCH BRACKET
12	300E00575	1	6,8,10,12,16,22	MICRO SWITCH (SA2) (FELINS) 277V-AC 11 AMPS
13	300E00355	1	6,8,10,12,16,22	STOP SWITCH CORD ASSEM
14	900A00139	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 1-1/4
15	900A00128	2	6,8,10,12,16,22	HEX LOCKNUT 6-32
16	900A00155	2	6,8,10,12,16,22	WASHER #6 FLAT
17	900A00126	4	6,8,10,12,16,22	LOCKWASHER 1/4 EXT TOOTH
18**	300E00755	1	6,8,10,12,16,22	CONTROL MODULE 220V (E2) (FELINS)
**	300E01563	1	6,8,10,12,16,22	CONTROL MODULE 220V (E2) (FELINS)
19	300E00358	16	6,8,10,12,16,22	CABLE TIE MOUNT
20	300E00579	31	6,8,10,12,16,22	CALBE TIE, MINIATURE
21	300E00753	1	6,8,10,12,16,22	WIRE AY, E1 TO GROUND
22	300E00718	1	6,8,10,12,16,22	LIGHT, PILOT (HL1) 240V/GREEN LENS (FELINS) TRANSFORMER/INPUT- 240V .9 WATTS LAMP - 6V .9 WATTS
23	300E00378	1	6,8,10,12,16,22	CABLE AY, E2 TO XT1 TO GR
24	900A00194	6	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 1-1/4
25	900A00026	6	6,8,10,12,16,22	NUT, HEX NYLOK 10-32
26	300E00745	1	6,8,10,12,16,22	CABLE AY, START XT3 TO E2

* INCLUDES THE BACK SNAP-IN PARTS OF ITEMS 5 AND 22.
** UNITS HAVE 1 OF 2 MODULES. CHECK THE MODULE IN THE UNIT FOR IDENTIFICATION. ALL 300E01563 MODULES HAVE PART NUMBER DISPLAYED ON TOP OF THE MODULE.

⚠ CAUTION ALWAYS REPLACE A BLOWN FUSE WITH A FUSE OF EQUAL SIZE. NEVER INSTALL A FUSE RATED AT MORE THAN 4 AMPS.

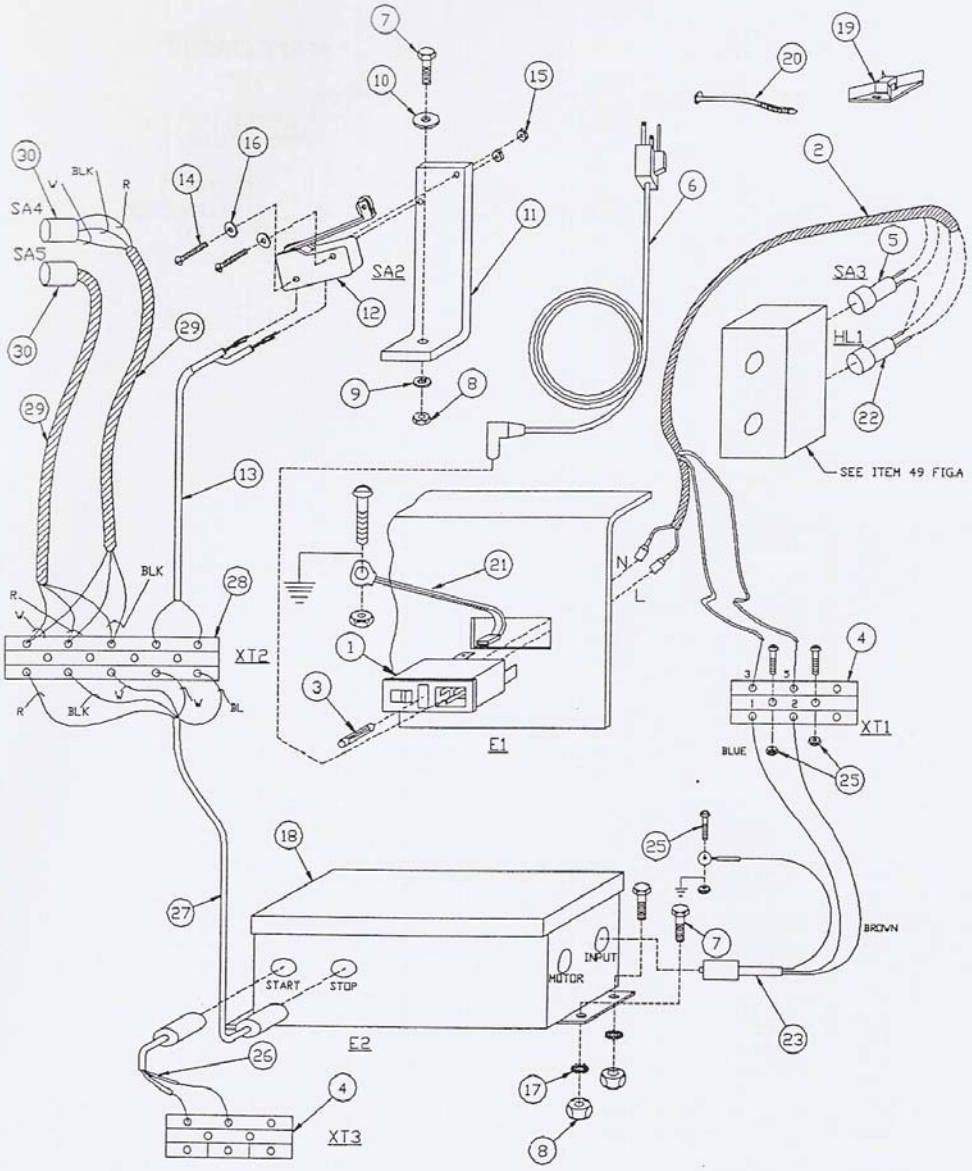


FIG.III ELECTRICAL WITH PHOTOCELL SAFETY CIRCUIT

FIGURE III 115V ELECTRICAL - WITH PHOTOCELL SAFETY CIRCUIT

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300E00740	1	6,8,10,12,16,22	INPUT MODULE (E1) (FELINS) (ON-OFF SWITCH, FUSE) 250V 4 AMPS
2*	300E01267	1	6,8,10,12,16,22	WIRE HARNESS E-STOP
3	300E00422	1	6,8,10,12,16,22	FUSE 4 AMP 250V SLOW-BLOW
4	300E00714	2	6,8,10,12,16,22	TERMINAL BLOCK, (XT1) 3 POSITION (FELINS)
5	300E00715	1	6,8,10,12,16,22	E-STOP, (SA3) (FELINS) 240V 3 AMPS BREAK
6	300E00757	1	6,8,10,12,16,22	POWER CORD ASSEM 115V
7	900A00117	5	6,8,10,12,16,22	HEX HEAD CAPSCREW 1/4-20 X 7/8
8	900A00018	5	6,8,10,12,16,22	HEX NUT 1/4-20
9	900A00020	1	6,8,10,12,16,22	LOCKWASHER 1/4
10	900A00034	1	6,8,10,12,16,22	WASHER 1/4 FLAT
11	300A00576	1	6,8,10,12,16,22	STOP SWITCH BRACKET
12	300E00575	1	6,8,10,12,16,22	MICRO SWITCH (SA2) (FELINS) 277V-AC 11 AMPS
13	300E00355	1	6,8,10,12,16,22	STOP SWITCH CORD ASSEMBLY
**	300E01565	1	6,8,10,12,16,22	WIRE HARNESS SA2 TO XT2
14	900A00139	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 1-1/4
15	900A00128	2	6,8,10,12,16,22	HEX LOCKNUT 6-32
16	900A00155	2	6,8,10,12,16,22	WASHER #6 FLAT
17	900A00126	4	6,8,10,12,16,22	LOCKWASHER 1/4 EXT TOOTH
18	300E01562	1	6,8,10,12,16,22	CONTROL MODULE 115V (E2) (FELINS)
19	300E00358	16	6,8,10,12,16,22	CABLE TIE MOUNT
20	300E00579	31	6,8,10,12,16,22	CABLE TIE, MINIATURE
21	300E00753	1	6,8,10,12,16,22	WIRE AY, E1 TO GROUND
22	300E00718	1	6,8,10,12,16,22	LIGHT, PILOT (HL1)240V/GREEN LENS (FELINS) TRANSFORMER/INPUT- 240V .9 WATTS LAMP - 6V .9 WATTS
23	300E00378	1	6,8,10,12,16,22	CABLE AY, E2 TO XT1 TO GR
24	900A00194	6	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 1-1/4
25	900A00026	6	6,8,10,12,16,22	NUT, HEX NYLOK 10-32
26	300E00745	1	6,8,10,12,16,22	CABLE AY, START XT3 TO E2
27**	300E01566	1	6,8,10,12,16,22	WIRE HARNESS XT2 TO E2
28**	300E00713	1	6,8,10,12,16,22	TERMINAL BLOCK-5 POSITION
29**	300E01567	2	6,8,10,12,16,22	WIRE HARNESS PHOTOCELL TO XT2
30**	300E01561	2	6,8,10,12,16,22	PHOTOCELL, SAFETY

*INCLUDES THE BACK SNAP-IN PARTS OF ITEMS 5 AND 22.
** USED ONLY WITH PHOTO SAFETY CIRCUIT.

⚠ CAUTION ALWAYS REPLACE A BLOWN FUSE WITH A FUSE OF EQUAL SIZE. NEVER INSTALL A FUSE RATED AT MORE THAN 4 AMPS.

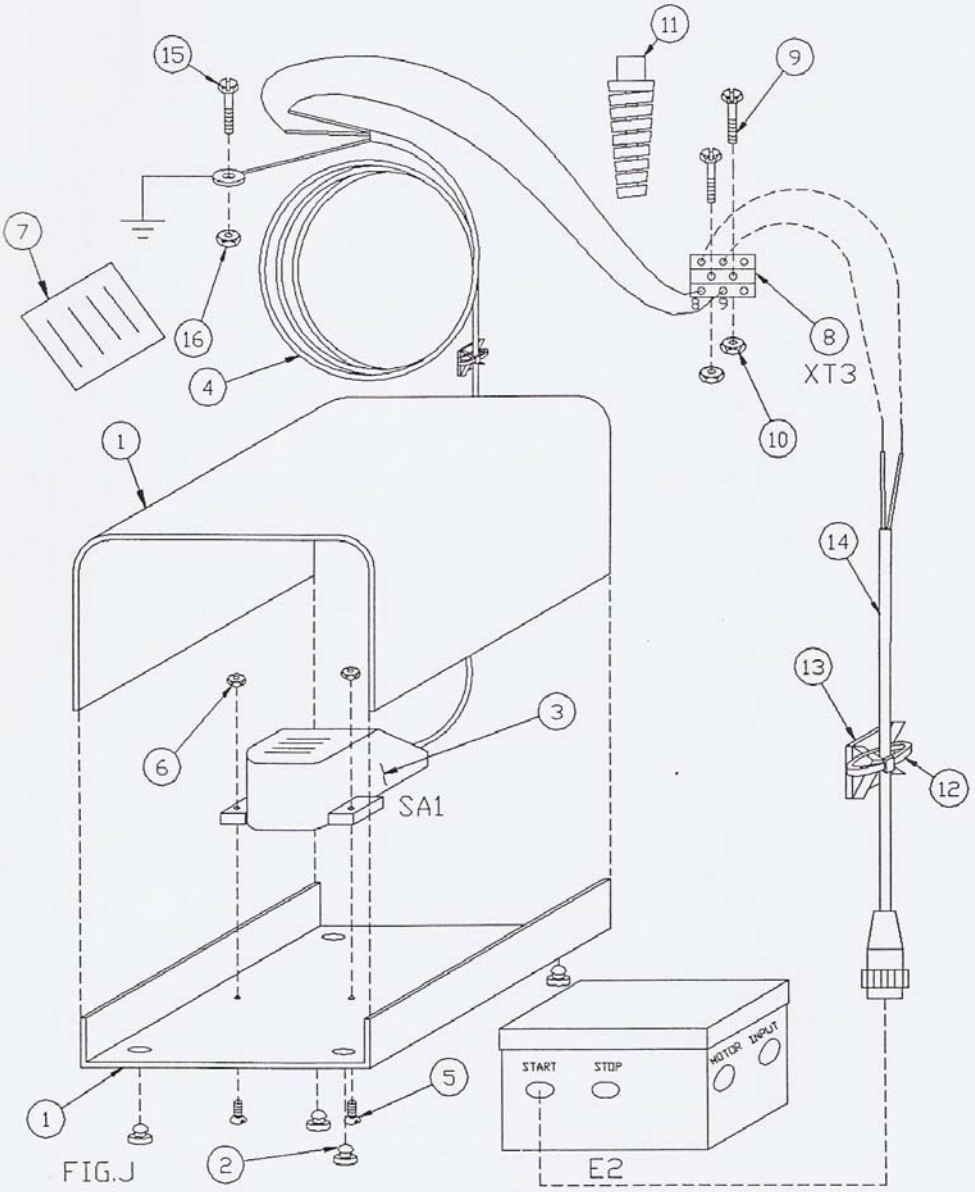

15
11
9
7
16
4
8
XT3
10
1
14
13
6
3
SA1
12
START
STOP
MOTOR INPUT
5
1
2
E2

FIG.J

FIGURE J FOOT TRIP ASSEMBLY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300A00269	1	6,8,10,12,16,22	GUARD ASSEMBLY
2	300A00274	4	6,8,10,12,16,22	BUMPER, RUBBER
3	300E00275	1	6,8,10,12,16,22	SWITCH ASSEMBLY (SA1) (FELINS)
4	300E00276	1	6,8,10,12,16,22	CORD ASSEMBLY
5	900A00149	2	6,8,10,12,16,22	FLAT HEAD MACHINE SCREW 10-24 X 1/2
6	900A00148	2	6,8,10,12,16,22	SEMS LOCK NUT 10-24
7	300A00746	1	6,8,10,12,16,22	DECAL
8	300E00714	1	6,8,10,12,16,22	TERMINAL BLOCK, 3 POS.
9	900A00194	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 10-32 X 1-1/4
10	900A00026	2	6,8,10,12,16,22	NUT, HEX NYLOK 10-32
11	300E01357	1	6,8,10,12,16,22	FITTING, STRAIN RELIEF
12	300E00579	1	6,8,10,12,16,22	CABLE TIE, MINIATURE
13	300E00358	1	6,8,10,12,16,22	CABLE TIE MOUNT
14	300E00745	1	6,8,10,12,16,22	CABLE AY, START-XT3 TO E2
15	900A00073	1	6,8,10,12,16,22	ROUND HEAD MACHINE SCREW 10-32 X 3/4
16	900A00026	1	6,8,10,12,16,22	NUT, HEX NYLOK 10-32
*	300A00198	1	6,8,10,12,16,22	FOOT TRIP ASSEMBLY

* INCLUDES ITEMS 1,2,3,4,5,6,7,11,15,16

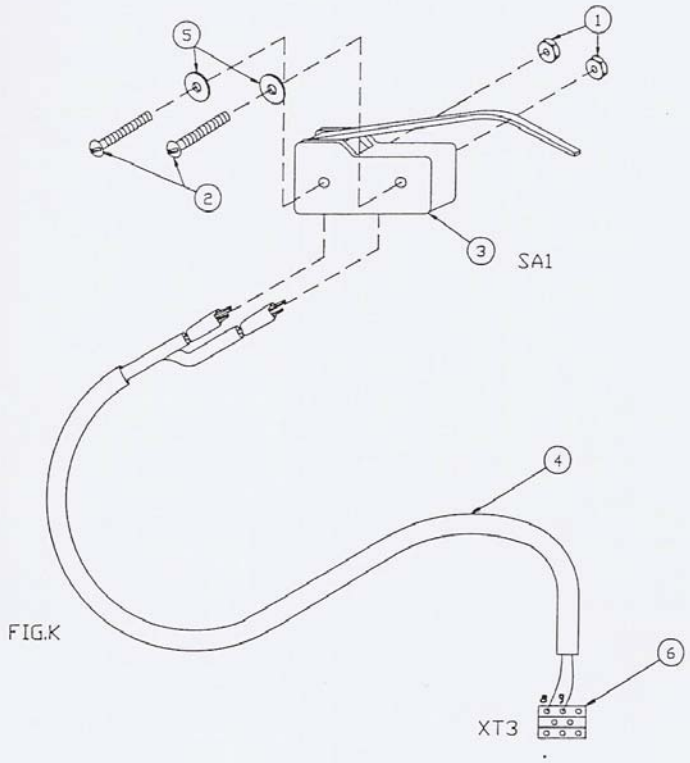


FIG.K

FIGURE K AUTO TRIP SWITCH ASSEMBLY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	900A00128	2	6,8,10,12,16,22	HEX NYLOK NUT 6-32
2	900A00139	2	6,8,10,12,16,22	ROUND HEAD MACH SCREW 6-32 X 1-1/4
3	300E00340	1	6,8,10,12,16,22	SWITCH, AUTO START (SA1) (FELINS) 277V-AC 11 AMPS
	300E00577	1	6,8,10,12,16,22 TUV UNITS	SWITCH, AUTO START (SA1) (FELINS) 277V-AC 11 AMPS
4	300E00356	1	6,8,10,12,16,22 TUV UNITS	CORD ASSEMBLY
	300E01344	1	6,8,10,12,16,22	CORD ASSEMBLY
5	900A00155	2	6,8,10,12,16,22	FLAT WASHER #6
6	300E00714	1	6,8,10,12,16,22	TERMINAL BLOCK, 3 POS.
*	300E01345	1	6,8,10,12,16,22	AUTO TRIP SWITCH PACK
*	300E00447	1	6,8,10,12,16,22 TUV UNITS	AUTO TRIP SWITCH PACK

* INCLUDES ITEMS 1 THROUGH 5.

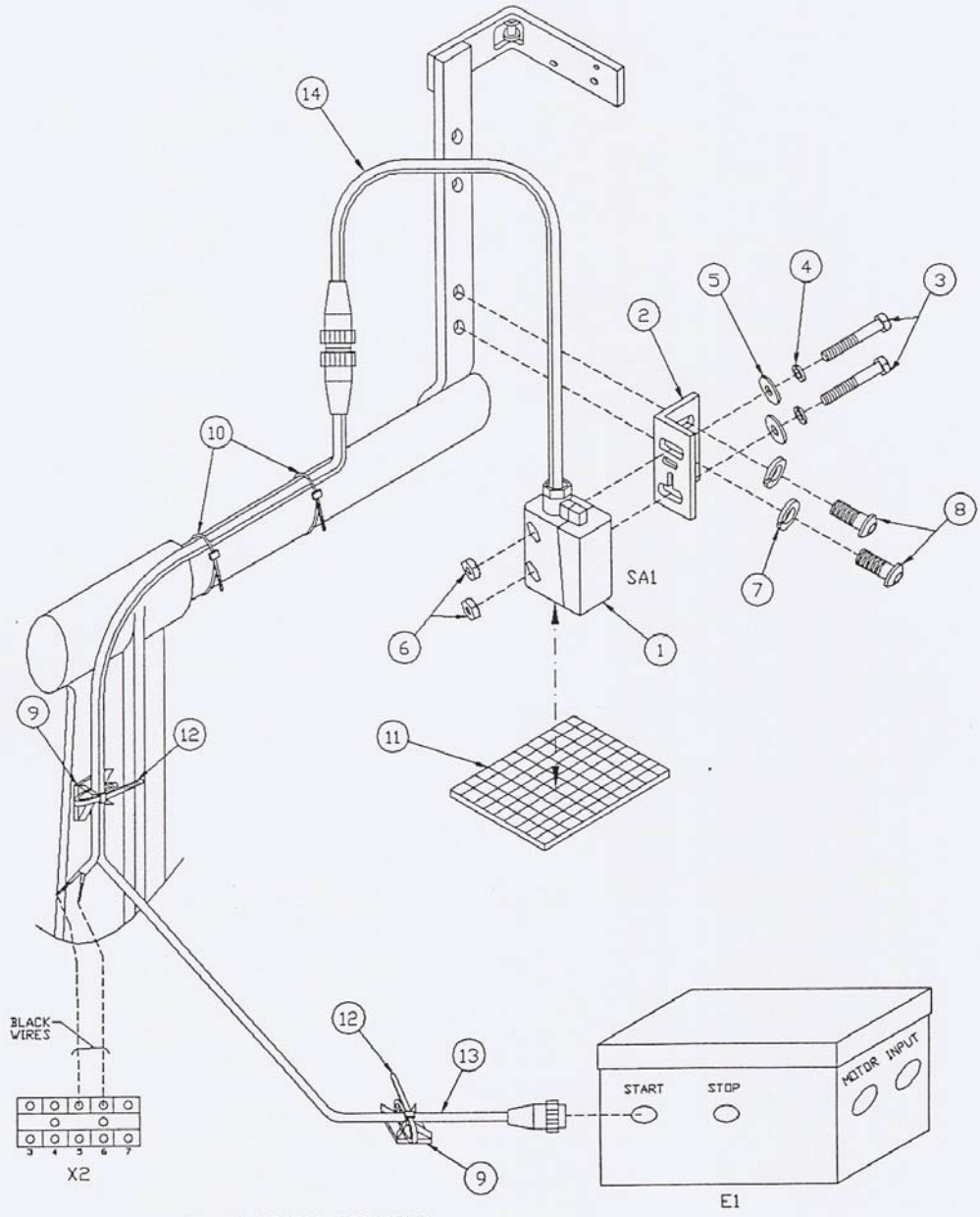


FIG. L PHOTO SENSOR ASSEMBLY

FIGURE L PHOTO SENSOR KIT

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300E00486	1	6,8,10,12,16,22	PHOTO SENSOR ASSEMBLY (SA1) (FELINS)
2	300A00488	1	6,8,10,12,16,22	BRACKET 90 DEG
3	900A00170	2	6,8,10,12,16,22	HEX HEAD CAPSCREW 10-32 X 1-1/4
4	900A00143	2	6,8,10,12,16,22	LOCKWASHER 3/16
5	900A00052	2	6,8,10,12,16,22	FLAT WASHER 3/16 STD
6	900A00082	2	6,8,10,12,16,22	HEX NUT 10-32
7	900A00069	2	6,8,10,12,16,22	LOCKWASHER 5/16
8	900A00090	2	6,8,10,12,16,22	BUTTON SOC HEAD CAPSCREW 5/16-18 X 1/2
9	300E00358	4	6,8,10,12,16,22	CABLE TIE MOUNT
10	300E00357	3	6,8,10,12,16,22	CABLE TIE, STD
11	300E00578	1	6,8,10,12,16,22	REFLECTIVE TAPE
12	300E00579	5	6,8,10,12,16,22	CABLE TIE, MINIATURE
13	300E00802	1	6,8,10,12,16,22	CABLE ASSEMBLY II
14	300E01533	1	6,8,10,12,16,22	CABLE ASSEMBLY I
*	300E00485	1	6,8,10,12,16,22	PHOTO SENSOR KIT

* INCLUDES ITEMS 1 THROUGH 14.

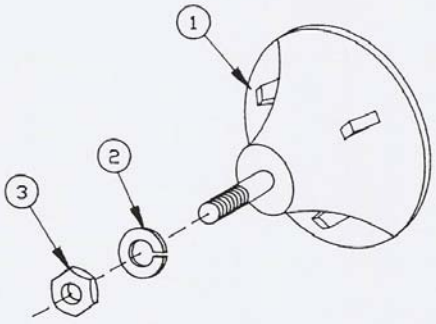


FIG. M

FIGURE M TABLE MOUNT KIT

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300A00492	4	6,8,10,12,16,22	MOUNTING ISOLATOR
2	900A00002	4	6,8,10,12,16,22	HEX NUT 5/16-18
3	900A00069	4	6,8,10,12,16,22	LOCKWASHER 5/16
*	300A00491	1	6,8,10,12,16,22	TABLE MOUNT KIT

* INCLUDES ITEMS 1,2,3.

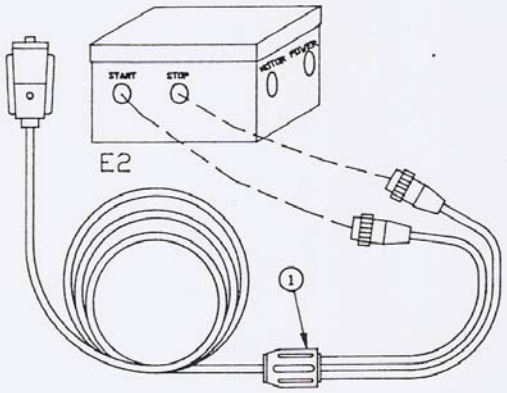


FIG.N

FIGURE N JOG BUTTON ASSEMBLY

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300E00677	1	6,8,10,12,16,22	JOG BUTTON CABLE ASSEM

Breakaway Adj. Information

Caution: Increasing spring tension will reduce needle breakaway action. See service manual for instructions.

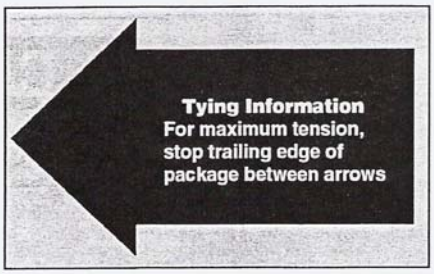
1.

2.

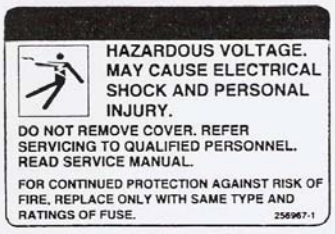
⚠ CAUTION

KEEP HAND AND LOOSE CLOTHING CLEAR OF OPENINGS AND MOVING PARTS AT ALL TIMES.

3.



4.



5.

6.

120V ~ 60 HZ

220V ~ 50 HZ

7.

T2A/250V

T4A/250V

8.

9.

CAUTION

STARTS TYING CYCLE

10.

CAUTION

DISCONNECT POWER TO MACHINE
WHEN RETHREADING

11.

CAUTION: Excessive buildup of cut-off ends of tying material may cause damage to the tying mechanism. Refer to the maintenance section of operator manual.

12.

CAUTION: Periodically check operation of breakaway twine delivery arm for proper release. Refer to maintenance section of operator manual.

13.

WARNING

SERIOUS INJURY MAY RESULT IF MACHINE IS OPERATED WITH GUARDS AND/OR SHIELDS REMOVED.

14.

FIGURE O DECALS

ITEM	PART NUMBER	QUAN	USED ON	DESCRIPTION
1	300A00803	1	6,8,10,12,16,22	DECAL, BREAK-AWAY ARM
	300A01168	1	6,8,10,12,16,22	DECAL, BREAK-AWAY ARM-GER
2	300A00805	1	6,8	DECAL, ARM SLOT
	300A00806	1	10,12,16,22	DECAL, ARM SLOT
3	300A00807	1	6,8,10,12,16,22	DECAL, CAUTION - STAY CLEAR
	300A01172	1	6,8,10,12,16,22	DECAL, CAUTION - STAY CLEAR-GER
4	300A00808	1	6,8,10,12,16,22	DECAL, TYING INFORMATION
	300A01173	1	6,8,10,12,16,22	DECAL, TYING INFO - GER
5	300A00996	1	6,8,10,12,16,22	DECAL, WARNING - ELECTRIC
	300A01171	1	6,8,10,12,16,22	DECAL, WARNING-ELEC-GER
6	300A00804	2	6,8	DECAL, ARROW LINE
	300A00804	3	10,12,16,22	DECAL, ARROW LINE
7	300A00433	1	6,8,10,12,16,22	DECAL, POWER SUPPLY 115V
	300A01007	1	6,8,10,12,16,22	DECAL, POWER SUPPLY 220V
8	300A00435	1	6,8,10,12,16,22	DECAL, FUSE 250V, 4 AMP
	300A00434	1	6,8,10,12,16,22	DECAL, FUSE 250V, 2 AMP
	300A01250	1	6,8,10,12,16,22	DECAL, FUSE 250V, 2.5 AMP
	300A01251	1	6,8,10,12,16,22	DECAL, FUSE 250V, 3.15 AMP
9	300A00432	1	6,8,10,12,16,22	DECAL, LIGHTNING BOLT
10	300A00813	1	6,8,10,12,16,22	DECAL, CAUTION - START CYCLE
	300A01170	1	6,8,10,12,16,22	DECAL, CAUTION - START CYCLE-GER
11	300A00982	1	6,8,10,12,16,22	DECAL, CAUTION
	300A01169	1	6,8,10,12,16,22	DECAL, CAUTION-GER
12	300A01208	1	6,8,10,12,16,22	DECAL, CAUTION
	300A01244	1	6,8,10,12,16,22	DECAL, CAUTION-GER
13	300A01209	1	6,8,10,12,16,22	DECAL, CAUTION
	300A01245	1	6,8,10,12,16,22	DECAL, CAUTION-GER
14	300A01305	1	6,8,10,12,16,22	DECAL, WARNING
	300A01306	1	6,8,10,12,16,22	DECAL, WARNING-GER

ORDERING PARTS

RECOMMENDED SPARE PARTS TO HAVE ON HAND FOR SERVICING THE MACHINE.

900A00108	SETSCREW (FOR DRIVE COLLAR)
900A00154	SQUARE KEY (FOR DRIVE COLLAR)
300A00328	DRIVE COLLAR (FOR 6,8,10,12)
300A00329	DRIVE COLLAR (FOR 16,22)
300A00106	KNIFE
900A00134	SCREW (FOR MOUNTING KNIFE)

When ordering parts, indicate model and serial number of machine. The model and serial number can be found on a decal located inside the unit at the front when the front panel is opened.

The serial number is important due to changes or modifications in machines to improve its performance and operation. Providing the serial number will assist the factory in sending the proper parts for your machine.

Refer to the parts list for the proper part numbers of parts needed. Also note and report the type of twine being used on your machine.

The age of the machine and the amount of use may make local repair difficult. If you cannot obtain the correct parts or get the correct adjustments made, contact the factory for consultation.

Call or write to:

FELINS USA, INC.
8306 WEST PARKLAND COURT
MILWAUKEE, WISCONSIN 53223
(414) 355-7747 FAX (414) 355-7559
1-800-336-3220

Be sure to include the machine model number and serial numbers for which parts to be ordered.

LIST YOUR MODEL AND SERIAL NUMBER HERE FOR QUICK REFERENCE:

MODEL NUMBER_____

SERIAL NUMBER_____

The descriptions and specifications contained herin were in effect at the time this manual was approved for printing. Felins, Inc., whose policy is one of continuous improvement, reserves the right to discontinue models at any time, or to change specifications or designs, without notice and without incurring obligation.

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

Thank you for your help.

By _____ Manufacturing Code _____

FELINS USA, Inc.
8306 West Parkland Court
Milwaukee, Wisconsin 53223