



Union Special[®]
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INDUSTRIAL
SEWING
MACHINES

STYLES

2800 A-6
2800 A-12
2800 AZ-12



AUTOMATED SYSTEMS

**FORMATION UNIT FOR AUTOMATICALLY
HEMMING SHORT KNIT SHIRT SLEEVES
AND KNIT BODY PIECES IN THE FLAT**

UNION SPECIAL CORPORATION

CHICAGO

From the library of: Superior Sewing Machine & Supply LLC

CATALOG
No.
502A

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INSTRUCTIONS

AND

LIST OF PARTS

CLASS 2800

Styles

2800 A-6

2800 A-12

2800 AZ-12

First Edition

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UNION SPECIAL CORPORATION

INDUSTRIAL SEWING MACHINES

CHICAGO

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GENERAL INFORMATION

The sewing head on the "ForMation" Unit is mounted at right angles to the linear travel of the conveyor. The operator positions the sleeve piece along a guide marker and then lays it onto the conveyor. As the sleeve piece passes the first air blower, its free hanging edge is blown up and over a shoe to form the first fold or turn in the hem. As the piece is carried along, a guide re-forms the top ply of the hem while a second air blower holds the hem in position as it enters the sewing machine. From that point on, the standard blind hem is produced by the sewing machine. The conveyor is synchronized with the sewing machine speed which in turn is regulated to match the speed at which the operator can most efficiently place the pieces on the conveyor.

DESCRIPTION OF UNIT

- 2800 A-6 - "ForMation" Unit, automatically hems flat sleeve pieces for knit "T" shirts, polo shirts, and sport shirts
 - Specifications: 3 phase - 60 HZ - 220 volts
1 phase - 60 HZ - 110 volts
 - Treadle operated

- 2800 A-12 - Same as 2800 A-6 except continuous operation control

- 2800 AZ-12 - Same as 2800 A-12 except 24" wide conveyor for hemming flat knit body pieces as well as both long and short sleeves

STYLE OF MACHINE

39500 RNZ - Differential feed, single-needle machine for blind-stitch hemming on light weight rayon, silk, cotton, wool, nylon, flat, warp and ribbed knit material used in "T", polo, and sport shirts.

SPECIFICATIONS

Shipping Information:

Height - 48"
Width - 48"
Length - 84"
Weight - 375 lbs. - 12" conveyor
450 lbs. - 24" conveyor

Floor Space Required: 3-1/2' x 6'

Minimum Total Work Area: 6 x 9

INSTALLATION INSTRUCTIONS

2800 A-6
2800 A-12
2800 AZ-12

1. Remove the four wood screws holding perforated iron strapping to top of crate.
2. Unbolt lower end of table legs from skids and lift complete assembly off skids.
3. Cut the steel banding that crosses the top of the crate. Lift out crate top and then stand clear as the one circumference band is cut.
4. Set thread stand on upright already placed. Use only one pull off guide, that farthest from the front of the machine.
5. Bolt the 1/2" flange using the pre-positioned bolts so that the needle thread pull off guide should be over the cone of thread nearest the front of the table board.
6. Connect the two wires found at base of 1/2" pipe to the two unconnected matching wires using the wire nuts provided.
7. Remove "L" shaped bracket which is fastened to the foot lifter lever pivot screw. This bracket is only used to hold sewing head to table top during shipment. Replace foot lifter lever pivot screw.
8. Remove hold down bolt and block of wood behind handwheel.

III. OPERATION INSTRUCTIONS

A. Care and handling of work

1. Pieces to be hemmed should not be tied in bundles nor disarranged. Sleeves taken carefully from the cutting table and placed in a canvas bin or box, taking care that the ends to be hemmed are not turned under or pleated will produce superior results. Careless handling of bundles causes the ends of the sleeves to curl into a roll that in turn causes folder trouble and difficulty in getting the roll to start properly under the presser foot.

B. Adjustments for various weights of material

After once setting the machine almost all materials can be handled by two adjustments. The most important adjustment is conveyor speed. The conveyor should run just a trifle slower than what the sewing machine feeds. This can be observed visually by concentrating attention at the cloth near the presser foot.

1. Conveyor too slow - can cause a widening trim at the finish end of sleeve.
2. Conveyor too fast - causes pleats in the top ply of the hem and a diminishing trim as the length of the sleeve progresses.

The second most used adjustment will be the sewing machine hem guide controlled by the knurled thumb screw. Weight of cloth, thickness and sizing content causes varying bites that can be compensated for by adjusting screw.

1. Bite too deep:
 - a. Turn knurled thumb screw in clockwise direction.
2. Bite is uneven or misses:
 - a. Turn knurled thumb screw in a counterclockwise direction.

C. Maintenance

1. Unit should be blown out daily.
2. Oil in machine should be checked every week.
3. Bearing on end of the rollers should be oiled once weekly.

CONVEYOR INSTRUCTIONS

1. Adjust conveyor belts so that they are approximately 1/2" above the table top. Make this adjustment with the idler roller by loosening the wing nuts and moving the pillow block base.
2. The conveyor speed is adjusted by turning the black knob on the end of the gear reduction box. To adjust conveyor faster, rotate adjusting knob counterclockwise; to adjust conveyor slower, rotate adjusting knob clockwise.

Note: Do not force adjusting knob. Turn only while conveyor is running.

3. For best results, the conveyor should always run a little slower than the machine feeds. For certain materials that are semi-stiff, it is possible to have both run at the same speed.

Note: The conveyor must never run faster than the machine feeds. Check the sewing machine bite after changing the conveyor speed.

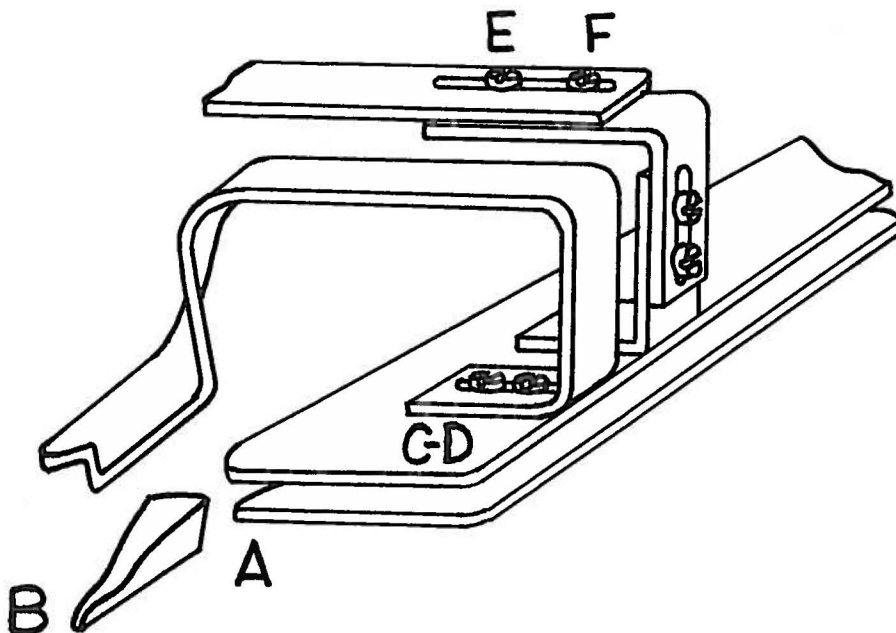
4. The gear reduction drive requires #90 oil to the plug so marked. This oil is obtainable at any garage. Unless there is oil leakage, it should last almost indefinitely.
5. Oil the self aligning bearing with a few drops of machine oil every week.

FOLDER ADJUSTMENTS

1. TO PLACE FOLDER IN OPERATING POSITION
 - A. Place folder on conveyor and slide to right till the "V" notch on folder engages the small upright pin screw on the sewing machine hem guide.
 - B. At left of folder gently spring the steel strip with the notch in same until it engages the upright pin on the folder.
 - C. This strip acts to position the left end of the folder and the slight spring in same keeps the right end of the folder positioned by keeping the "V" notch engaged.

2. TO SET FOLDER EDGE GUIDE CLEARANCE FROM THE MACHINE HEM GUIDE
 - A. Swing out sewing machine presser foot.
 - B. Sighting at conveyor level from discharge end of conveyor note clearance between folder edge guide "A" to machine hem guide "B".
 - C. The clearance should equal three times the thickness of the material being hemmed but in no case less than 1/16". Loosen screws "C" and "D" to adjust same.
 - D. Too little clearance and the sleeves will "jam" and too much clearance and the sleeves will have varying depths of bite.

3. TO SET WIDTH OF HEM
 - A. Loosen screws "E" and "F" and then set folder center piece for hem width desired. Check interior folder clearance after adjusting.



FOLDER ADJUSTMENTS, CONTD.

4. DEPTH OF BITE (Needle thread showing on outside of sleeve)
 - A. This adjustment is made using the regular sewing machine hem bracket adjusting screw.

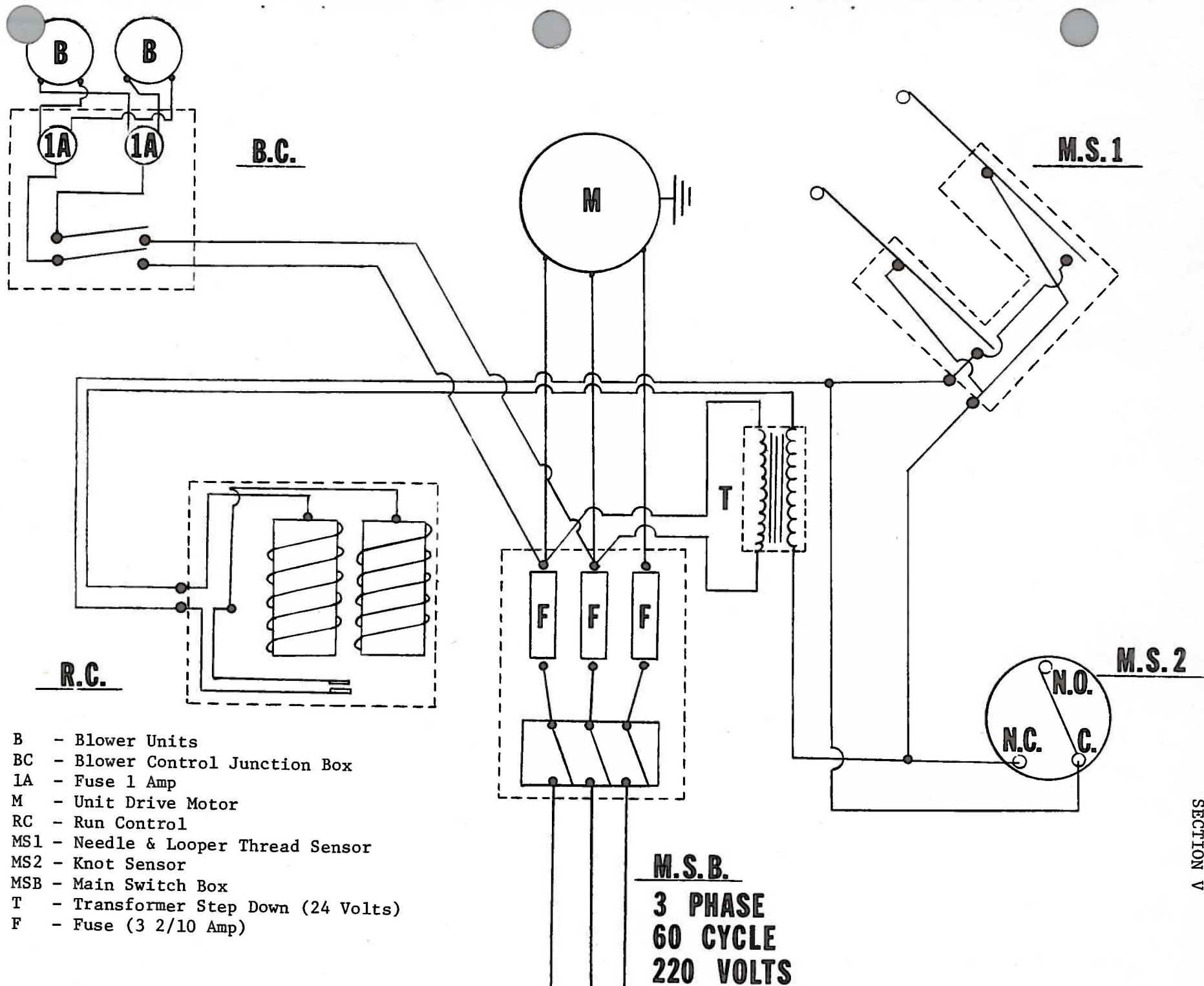
5. PROPER POSITIONING OF SLEEVES ON THE CONVEYOR
 - A. Place sleeve edge to be hemmed on the white line. Run the sleeve through the sewing machine while watching for and noting the amount of or width of the trimming cut off the sleeve.
 - B. Adjust white line away from operator to trim less and toward operator to trim more.
 - C. The width of the trim is governed by the straightness of the sleeve edge and the care in which it is placed on the line. Too narrow a trim is a poor economy as it results in open hems that require repairing.

6. WIRE UNCURLER
 - A. The wire's purpose is to prevent the natural curl in the material from doubling or pleating while going through the folder to cause either a "jam" or a pleat at the beginning of the hem.
 - B. Its work must be coordinated with the first air blower. In principle, the material is blown back over the wire whose shape, as the sleeve progresses through the folder, prevents a pleat or double thickness from developing.
 - C. The first blower should bend the cloth back over the wire and remove any "end" curl; the second blower keeps out and serves the same purpose as the material progresses.

AIR BLOWERS

1. Blowers can be moved and relocated as required for individual requirements. Their air streams can be raised or lowered by loosening their brackets.
2. The first blower has an adjustable intake cover. Allow enough air to firmly and definitely blow the material back over the folder wire and enough air to blow out the curl in the leading end of the sleeve.
3. The second blower takes over as the sleeve passes out of range of the first.
4. Clean lint from fan vanes with a very small stiff brush to loosen same and then starting them for a moment to clear the loosened lint.
5. Oil the motor bearings on the blowers with regular sewing machine oil every three months.

Note: Some stiffer materials that do not tend to curl will work as well or better without using the blowers.



- B - Blower Units
- BC - Blower Control Junction Box
- 1A - Fuse 1 Amp
- M - Unit Drive Motor
- RC - Run Control
- MS1 - Needle & Loper Thread Sensor
- MS2 - Knot Sensor
- MSB - Main Switch Box
- T - Transformer Step Down (24 Volts)
- F - Fuse (3 2/10 Amp)

M.S.B.
3 PHASE
60 CYCLE
220 VOLTS

V. SEQUENCE OF OPERATION

I. Turn main control switch to on position.

1. Supplies power to motor.
2. Supplies power to blower control box.
3. Supplies power to automatic run control box.

II. Turn blower switch to on position.

1. Energize blowers.

III. Press handle on automatic run control box to down position.

1. Coil in automatic run control box becomes energized.
2. Clutch engages and is locked into run position through mechanical linkage.
3. Knot sensor mercury switch is normally open.

A. Sequence of operation when knot is caught in the knot catching blades.

- 1) Switch tilts to horizontal position.
- 2) Mercury becomes conductor, circuit is now closed.
- 3) Power flows through switch to coil.
- 4) Coil de-energizes and unlocks mechanical linkage shutting off unit.

4. Needle and looper thread sensor micro-switch is normally open.

A. Sequence of operation when thread breaks.

- 1) Arm on side of micro-switch goes up.
- 2) Circuit is now closed.
- 3) Power flows through switch to coil.
- 4) Coil de-energizes and unlocks mechanical linkage shutting unit off.

ACCESSORIES AVAILABLE29480 GZ

The "Air-Klipp" chain cutter is the simplest, most efficient chain cutter available. Compact design makes it easy to install, adjust, and maintain. The "Air-Klipp" chain cutter is air powered, and neat close severing of the chain is assured at the start and finish on a wide variety of operations.

Functionally, the material carries the chain to the knife mechanism at the start and finish of the seam. At that point through the use of a venturi system, the chain is sucked into an opening at the front of the chain inlet tube. The knife mechanism is driven by the main feed bar and is in continuous operation when machine is running. The air supply is activated by a treadle mounted switch which turns the air on when the sewing treadle is depressed, thus conserving the air supply.

Air Requirements: 4 CFM
10-20 PSI

2899 A-14

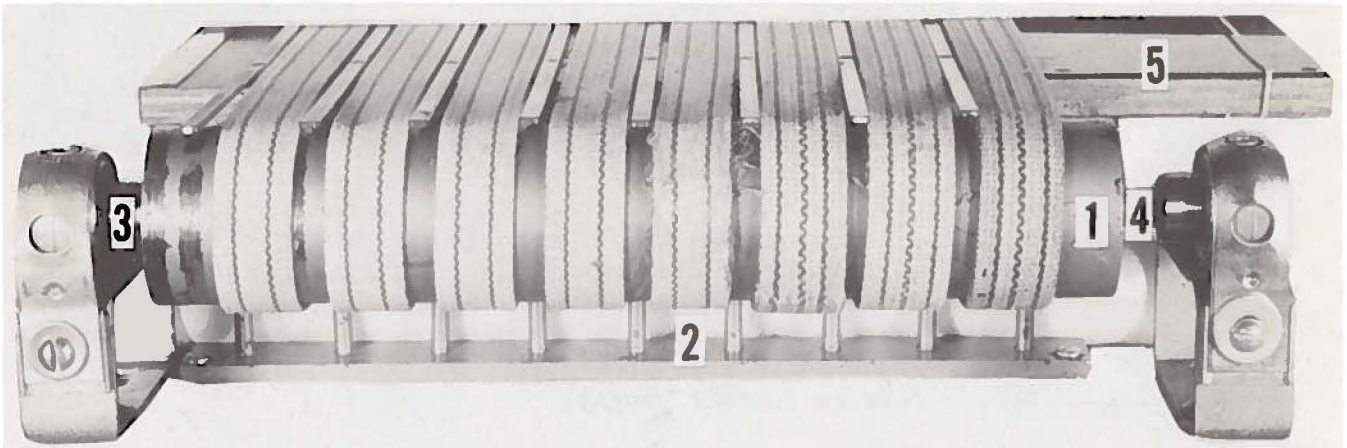
Trim-Master automatic chain cutter, stationary mounted trimmer draws off the chain between the pieces into blades and automatically trims both ends and disposes of the cloth trimming from the sewing machine trim knife.

Electrical Spec: 3 phase
60 cycle
220 volts

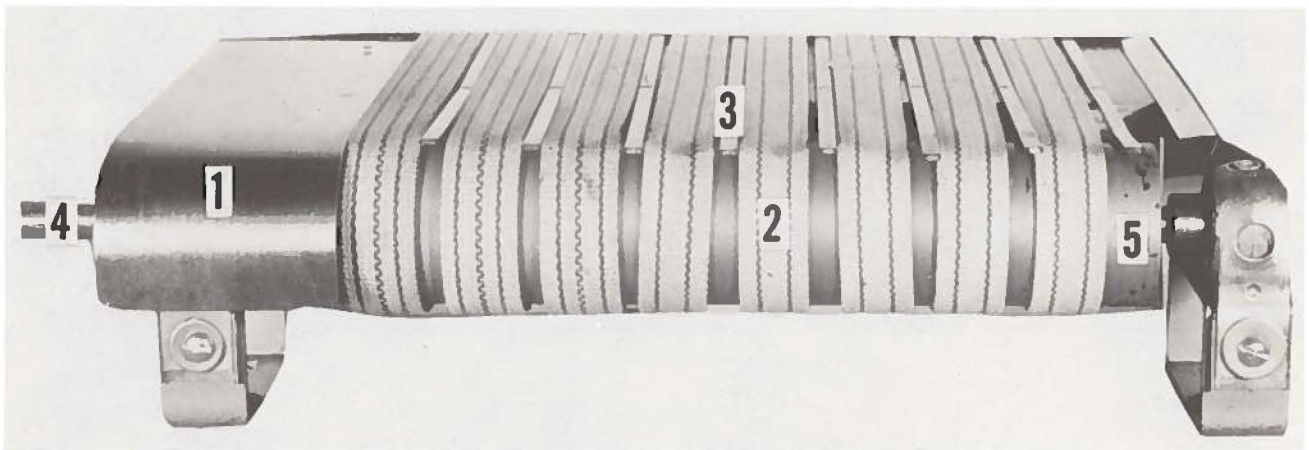
Folders

There are several folders available upon request. These vary in capacity due to the wide ranges of material now being used. Material samples must be enclosed with order.

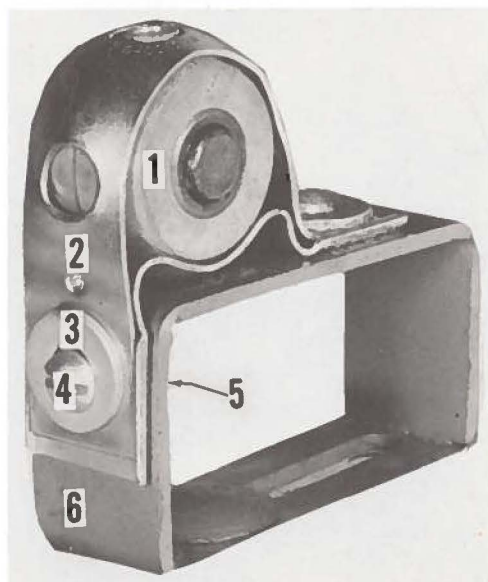
FRONT ROLLER ASSEMBLY



REAR ROLLER ASSEMBLY



BEARING ASSEMBLY



PARTS LISTFRONT ROLLER ASSEMBLY

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1008	Front Roller (Screw for Roller FU 1008A)-----	1
2	FU 1009	Lower Belt Separator-----	1
3	FU 1010	Collar (Screw FU 1010A)-----	1
4	FU 1011	Front Roller Shaft-----	1
5	FU 1012	Conveyor Table-----	1

REAR ROLLER ASSEMBLY

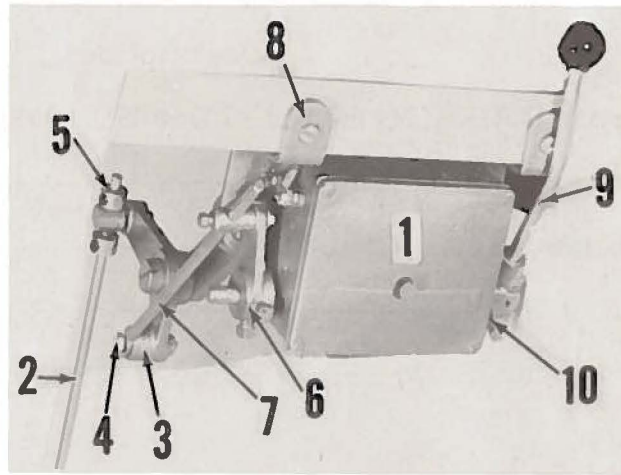
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1004	Bearing Shield-----	1
*2	FU 1005	Conveyor Belt (1" width)-----	8
3	FU 1006	Belt Separator Track (Screw for Tracks FU 1006A)-----	8
4	FU 1007	Rear Roller Shaft-----	1
5	FU 1008	Rear Roller (Screw for Roller FU 1008A)-----	1

BEARING ASSEMBLY

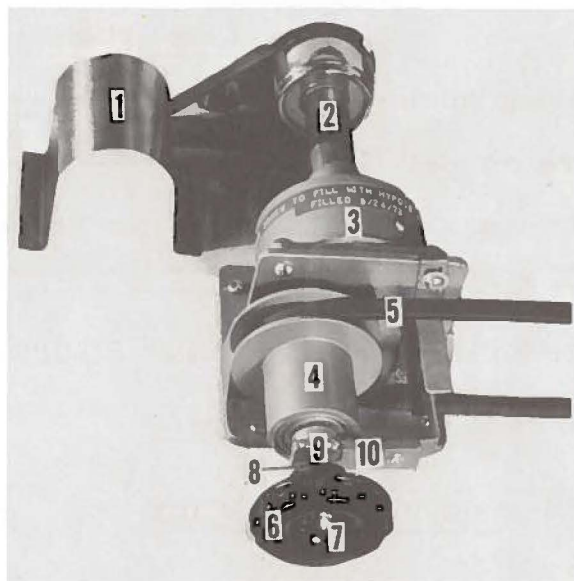
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1001	Self Aligning Bearing-----	4
2	FU 1002	Bearing Casing-----	4
3	FU 1002A	Washer (For attachment Bearing to Mounting Bracket)--	8
4	FU 1002B	Screw (For attachment Bearing to Mounting Bracket)----	8
5	FU 1002C	Nut (For attachment Bearing to Mounting Bracket)-----	8
6	FU 1003	Mounting Bracket for Bearing-----	4

*NOTE: Please specify width of belt.

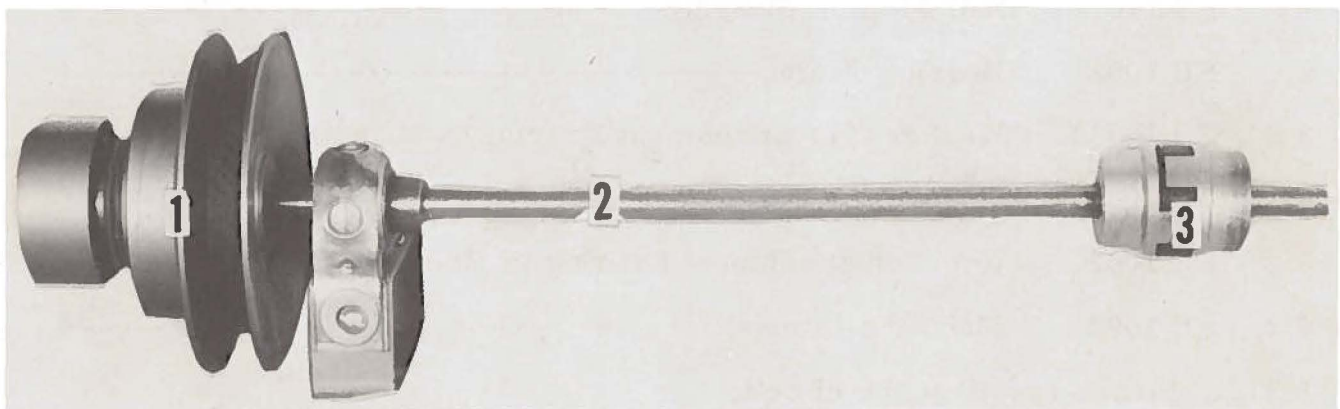
MOTOR SPEED CONTROL



CONVEYOR DRIVE ASSEMBLY



REAR DRIVE PULLEY



PARTS LISTMOTOR SPEED CONTROL

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1024	Motor Speed Control Box-----	1
2	FU 1025	Pitman Rod-----	1
3	FU 1026	Rocker-----	1
4	FU 1027	Rocker Bolt-----	1
5	FU 1028	Collar (Screw FU 1028A)-----	1
6	FU 1029	Knock Off Cam-----	1
7	FU 1030	Sew Rod-----	1
8	FU 1031	Mounting Bracket-----	1
9	FU 1032	Control Handle-----	1
10	FU 1033	Spring-----	1

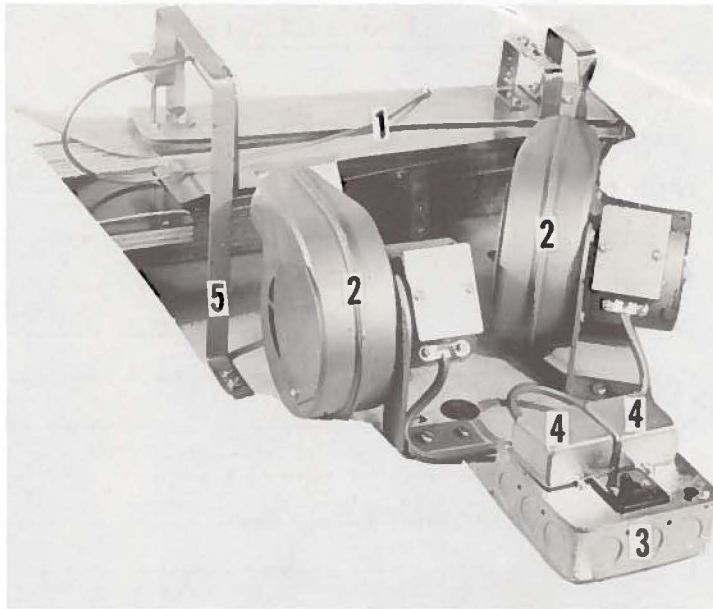
CONVEYOR DRIVE ASSEMBLY

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1013	Coupling Shield-----	1
2	FU 1014	Handwheel Coupling-----	1
3	FU 1015	Gear Box-----	1
4	FU 1016	Gear Box Adjustable Pulley-----	1
5	FU 1017	Belt-----	1
6	FU 1018	Adjustment Control-----	1
7	FU 1018A	Nut (Outside)-----	1
8	FU 1018B	Nut (Inside)-----	1
9	FU 1019	Screws for Speed Control Locking Arm-----	2
10	FU 1020	Speed Control Locking Arm-----	1

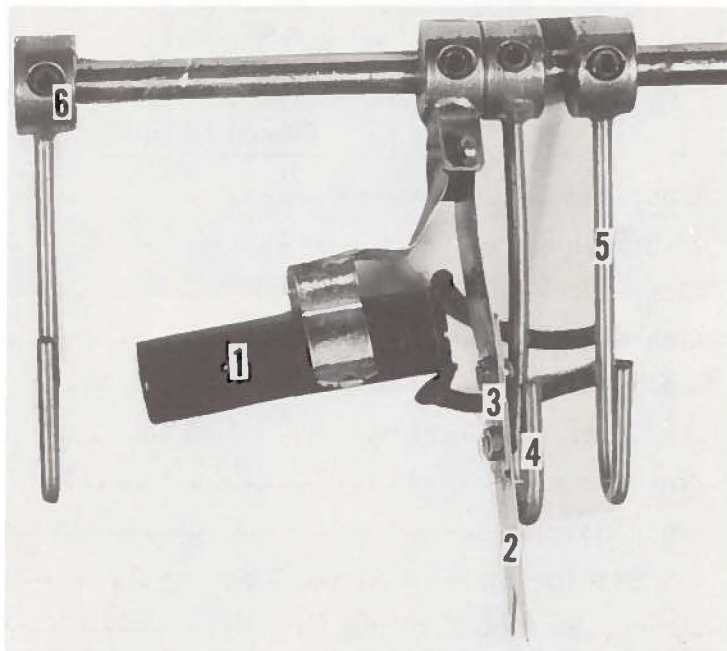
REAR DRIVE PULLEY

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1021	Rear Adjustable Pulley-----	1
2	FU 1022	Drive Shaft-----	1
3	FU 1023	Coupling (Screws for Coupling FU 1023A)-----	1

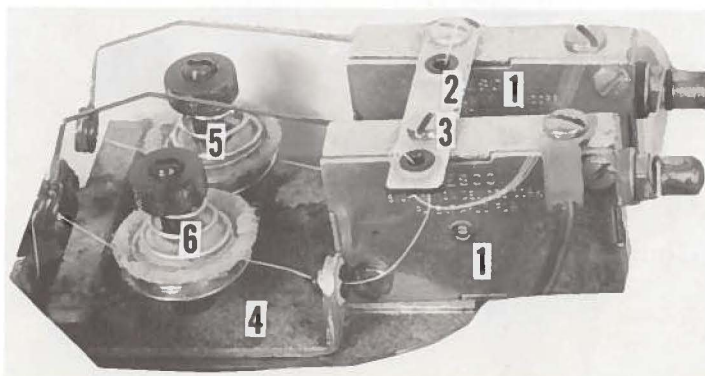
FOLDER AND BLOWER UNITS



KNOT CATCHING SWITCH



MICRO SWITCH



PARTS LIST
FOLDER AND BLOWER UNITS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1034	Folder-----	1
2	FU 1035	Blower-----	2
3	FU 1036	Blower Unit Control Box-----	1
4	FU 1037	Fuse 1 Amp-----	2
5	FU 1038	Folder Positioning Bracket-----	1

KNOT CATCHING SWITCH

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1044	Mercury Switch-----	1
2	FU 1045	Knot Catching Blades-----	2
3	FU 1045A	Nuts (For Attaching Knot Catching Blades)-----	4
4	FU 1045B	Screws (For Attaching Knot Catching Blades)-----	4
5	FU 1046	Thread Guide-----	3
6	FU 1047	Collar Screw (FU 1047A)-----	4

MICRO SWITCH

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Amt. Req.</u>
1	FU 1039	Micro Switch-----	2
2	FU 1040	Thread Guide-----	1
3	FU 1040A	Screws for Thread Guide-----	2
4	FU 1041	Tension Assembly Mounting Plate-----	1
5	FU 1042	Tension Assembly (Needle)-----	1
6	FU 1043	Tension Assembly (Looper)-----	1

TROUBLE SHOOTING

This unit is designed to handle a wide variety of materials with varying degrees of stretch and thickness. When changing from one type of weight or stretch material to another, it is often necessary to make two or more adjustments to compensate for this. The most important adjustment in this area is the synchronization of the conveyor speed to the sewing head speed. This setting is most critical, and should be adjusted so the conveyor runs just slightly slower than the sewing head.

A. IF THE BITE IS TOO DEEP

1. Adjust sewing machine hem edge guide with knurled thumb screw.
2. Folder base shoe too high above sewing machine throat plate and cloth goes over machine hem edge guide. Set folder base shoe 1/16" clearance over throat plate by raising or lowering conveyor tabletop or shimming sewing machine rubber isolators.
3. Too little clearance between folder base shoe edge and machine hem guide. Clearance should be 1/16" to 1/8".

B. IF THE BITE IS UNEVEN OR MISSES

1. Adjust sewing machine hem edge guide with knurled thumb screw.
2. Too much clearance between folder base shoe and machine hem edge guide. Should be 1/16" to 1/8".
3. Is the work cut straight?
4. Is guide wire properly positioned?
5. Wide at beginning. Check for sideward movement of cloth on conveyor.
6. Trimming widens as sleeve progresses. Check conveyor for being too slow. Check sleeve for sideward movement on conveyor.
7. Trimming starts okay and then diminishes or runs off. Conveyor is too fast. Try increasing angle made by intersection of folder base shoe and folder center piece.
8. Presser foot should have as little pressure as possible to keep the same in contact with the cloth at all times.

C. IF THE MATERIAL REFUSES TO START UNDER PRESSER FOOT PROPERLY

1. Sewing machine feed dog tilt adjustment not set for almost maximum tilt (high in front).
2. Sewing machine feed dog worn or set too low.

3. Folder too far from presser foot. Folder should almost touch presser foot.
4. Too little clearance between edge of folder base shoe and machine hem edge guide causing pinching.
5. Presser foot hinge tight. Should be perfectly loose so foot can move of own weight.
6. Presser foot bottom coming down on sewing machine hem edge guide instead of alongside. Loosen presser foot hinge screw and move foot sideways for 1/32" clearance.
7. Ends of sleeves curled from rough handling of the cut work before operator sews same.
8. Leading edge of presser foot uncurler not rounded (only if replaced with a new unit as these are properly rounded when shipped with a unit).

D. FOLDING OF CLOTH

1. Sleeves must blow over (not under) the brass wire and the brass wire must help remove any curl as the cloth progresses along its length. Bend the brass wire to suit the material being sewn.
2. Blower turbines should be kept clean. Use just enough air to blow the cloth being sewn over the brass wire. The air cut off is adjustable. The second blower is to blow out any small curl in the leading end of the sleeve.
3. Sleeves moving sideways under folder. Lessen the angle that the folder base shoe makes with the conveyor's edge. Make sure folder bottom contacts canvas conveyor, especially from centerpoint of folder to discharge end at sewing machine. Check interior folder clearance.

Sewing Head - 39500 RNZ - List 923

Standard 39500 RN except fitted with:

Presser Foot - 39520 H
Carbide Lower Knife - 39503 J
Edge Guide - 39503 J modified (see drawing)



STANDARD

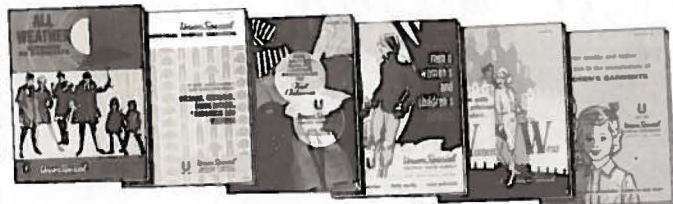


MODIFIED

Seam Specification - 503 EFc-1
Stitch Eccentrics Available - 8 to 30 S.P.I.
Standard Setting (Ecc. 39540 B-10-12) - 12 S.P.I.
Needle - 154 GAS 027
Needle Thread - 70/2 Soft
Looper Thread - 70/2 Soft
Machine Speed up to - 8000 R.P.M.
Unit Sewn Off at - 4200 R.P.M.

114 101321

Helpful, authoritative information on the most efficient types of equipment for making virtually any machine sewed article is available from Union Special's Sales Promotion Department. Among the many interesting, illustrated bulletins that are available without obligation are the following:

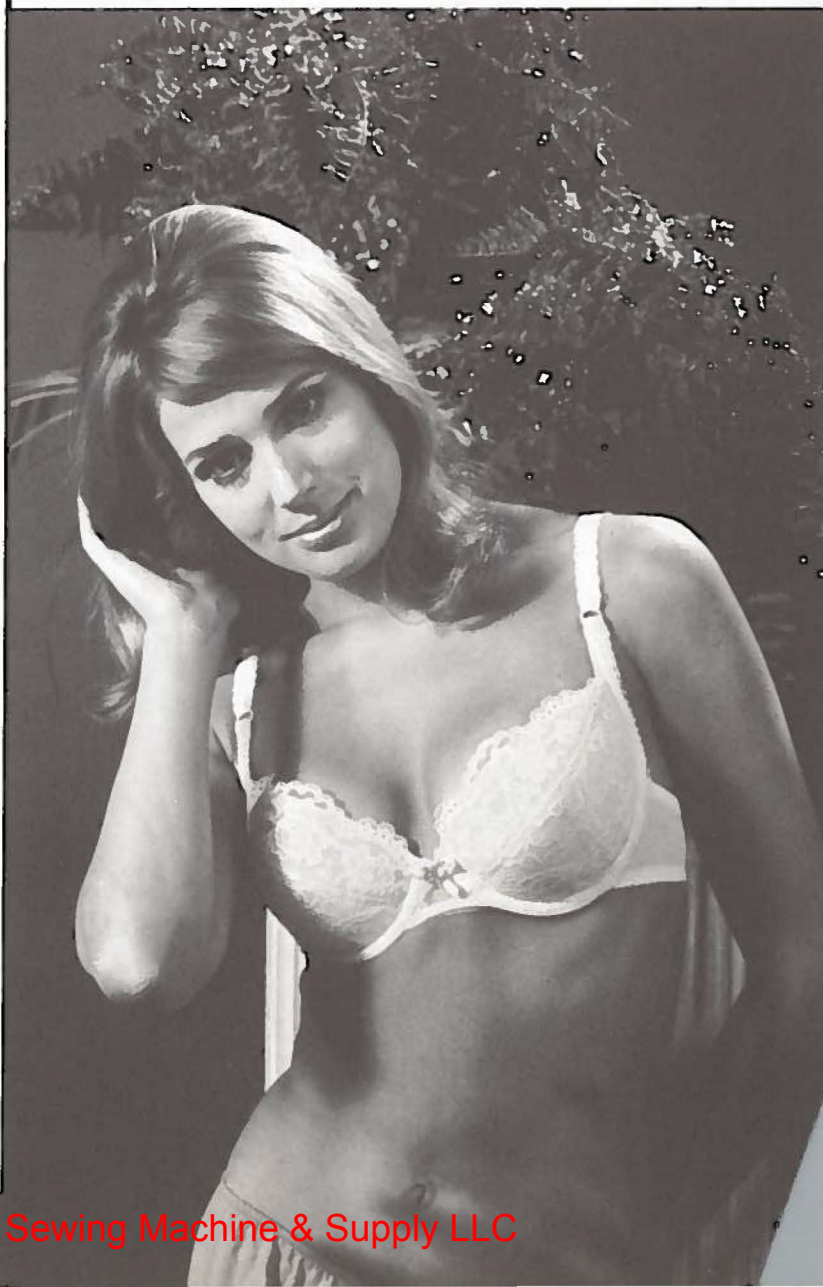


- No. 240, "Men's, Women's, Children's Footwear"
- No. 249, "Rainwear"
- No. 250, "Men's Dress Shirts"
- No. 251, "Service Shirts and Pants"
- No. 252, "Men's Shorts and Pajamas"
- No. 253, "Overalls, Coveralls, and Dungarees"
- No. 254, "Men's Knit Underwear"
- No. 256, "Knit Outerwear"
- No. 259, "Men's Sports Shirts"
- No. 260, "Work Gloves"
- No. 262, "Cotton, Burlap, Jute, and Multiwall Paper Bags"
- No. 263, "Men's Clothing"
- No. 264, "Men's Women's, Children's Jackets"
- No. 265, "Women's Wear"
- No. 266, "Women's Wear And High Fashion"
- No. 267, "Corsets, Girdles, Brassieres"
- No. 268, "Children's Wear"
- No. 269, "Mattresses, Slip Covers, Furniture Upholstery"
- No. 271, "Awnings, Canopies, Tents, Tarps"
- No. 273, "Curtains & Drapes"
- No. 610, "Klipp-it"
- No. 710, "MCS ForMation Unit"
- No. 730, "MCS Automatic Dual Underfront Shirt Hemmer"
- No. 740, "MCS Automatic Rib-Knit Cuff Machine"
- No. 750, "Fusing Presses"
- No. 1100, "Lewis Blindstitch, Chainstitch, Lockstitch, Machines"
- No. 1105, "Button Sewers—Ticket Tackers"
"Columbia Blindstitch, Saddle Stitch, and Tie Closing Machines"
- No. 1500, "Alteration Department Machines"



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