

6-1-91

RENNCO, INC.
PACKAGING MACHINES AND SYSTEMS
P.O. BOX 116
23721 M-60 WEST
HOMER, MICHIGAN 49245
(517) 568-4121

THIS MANUAL APPLIES TO PACKAGERS WITH HEATED BACK-UP STYLE "SHRINK" OR TYPE "SF" JAW ASSEMBLIES. AND SPECIFICALLY FOR EQUIPMENT WITH THE FOLLOWING SERIAL NUMBERS:

| ITEM | MODEL | SERIAL NUMBER |
|----------|-------|---------------|
| Packager | 101 | JRL420S2119GN |
| | | |
| | | |
| | | |
| | | |

101 GN
201 FL
401 AP
501 AC
CODE: HBSHRINKMAN1,
HBSHRINK.MAN2

FORWARD

Your Rennco Packaging System has been designed, and tested to obtain the best results for your particular product and application. Its performance depends on proper use and care. For this reason please take the time to read through and understand the information in this manual before attempting to set up or operate the equipment.

As with all machinery containing moving parts, it is important to pay particular attention to all information in this manual, and labels on the machinery that contain safety warnings and cautions.

This manual is assembled in "UNITS" that follow a logical progression. Machine and packaging film specifications, requirements before installation, and component identification illustrations are given in UNIT A.

UNIT B details procedures before actual start up of the machine, and UNIT C describes the initial set up steps of adjusting heat, loading film, adjusting jaw safety function, and threading trim tail.

UNIT D deals with adjustment and set up procedures in depth.

Particular attention should be paid to UNIT E which contains SAFETY WARNINGS.

Rennco welcomes the opportunity to serve you in every way that we can. If questions arise, feel free to contact us.

TABLE OF CONTENTS

| | |
|--------|---|
| UNIT A | GENERAL INFORMATION |
| | Section 1 - Inspection, Warranty, Parts Ordering Information, Requirements before Installation |
| | 1.1 Inspection |
| | 1.2 Limited Warranty |
| | 1.3 Parts Ordering Information |
| | 1.4 Requirements Before Installation |
| | Section 2 - Machine Specifications, Recommended Materials |
| | 2.1 Machine Specifications - Model 201, 101, 401 |
| | 2.2 Recommended Materials |
| | 2.3 Web Layout Details |
| | Section 3 - Packager Parts Listing |
| | 3.1 Frame Assembly |
| | 3.2 Drive Assembly |
| | 3.3 Film Feed Assembly |
| | 3.4 Film Feed Roll and Hold Down |
| | 3.5 Film Roll Support Assembly |
| | 3.6 Trim Wind-up Assembly |
| | 3.7 Heater Jaw Parts |
| | 3.8 Solid Jaw Parts |
| | 3.9 Electrical Enclosure |
| | 3.10 Manifold Valve Assembly |
| UNIT B | REQUIREMENTS BEFORE START-UP |
| | Section 1 - Supply Air System |
| | 1.1 F.R.L. Unit Operation |
| | 1.2 Lubricator Adjustment |
| | 1.3 Regulator Adjustment |
| | 1.4 Recommended Air Piping System |
| | 1.5 Air Consumption |
| | Section 2 - Electrical Requirements |
| UNIT C | INITIAL SET-UP PROCEDURES |
| | Section 1 - Power Up and Temperature Adjustment |
| | 1.1 Power Up |
| | 1.2 Temperature Adjustment |
| | Section 2 - Loading Film |
| | Section 3 - Film Threading Diagrams and Procedures |
| | 3.1 Film Threading Diagrams |
| | 3.2 Making The First Bag |
| | Section 4 - Jaw Safety Adjustment |
| | 4.1 Purpose, Cautions, Notes |
| | 4.2 Adjustment of Screw Actuator |
| | 4.3 Adjustment of Timing |

TABLE OF CONTENTS

UNIT C INITIAL SET-UP PROCEDURES, Continued,

Section 5 - Heater Dwell Adjustment

- 5.1 Purpose
- 5.2 Adjustment of Dwell Timing

UNIT D MACHINE FUNCTION DETAILS AND ADJUSTMENT

Section 1 - Trim Wind-Up Assembly

- 1.1 Shrink Trim Wind-Up - Shrink Films
- 1.2 Standard Trim Wind-Up - Polyethylene Films

Section 2 - Film Guidance and Tracking

- 2.1 Explanation
 - A. Symmetrical Film Spreading
 - B. Film Roll Position
 - C. Bag Shape Problems and Solutions
- 2.2 Illustrations of Film Guidance Details

Section 3 - Film Feed and Film Hold Down Assemblies

- 3.1 Film Feed Functions
- 3.2 Film Feed Drive Roll
- 3.3 Dancer Bar Assembly
- 3.4 Film Hold Down Assembly

Section 4 - Jaw Drive Components

- 4.1 Main Drive Cylinder
- 4.2 Transfer Shaft Assembly

Section 5 - Jaw Assembly

- 5.1 Sealing Method
- 5.2 Gripping and Jaw Alignment
- 5.3 Jaw Configuration
- 5.4 Heater Alignment
- 5.5 Heater Blade & Heating Element Replacement

Section 6 - Temperature Controls

- 6.1 Temperature Control Overview
- 6.2 Temperature Control Operation
- 6.3 Temperature Control System Troubleshooting

Section 7 - Programmable Controller (P.C.)

- 7.1 Description of P.C.
 - A. Base Rack and Power Supply
 - B. Thumbwheel Interface Module
 - C. Prom Memory Chip
- 7.2 Cycle Sequence
- 7.3 Controls and Timing Adjustments
 - A. Jaw Lock Open/Safety Reset
 - B. Manual Cycle Switch
 - C. Heater Extend Toggle Switch
 - D. Heater Dwell Timer
 - E. Seal Cooler Timer
 - F. Auto Cycle Timer
 - G. Safety Timer
 - H. Cycle Counter
 - I. Servicing the Programmable Controller

TABLE OF CONTENTS

UNIT D MACHINE FUNCTION DETAILS AND ADJUSTMENTS

- Section 7 - Programmable Controller (P.C.), Cont.
 - 7.4 Electrical Circuit Drawing Description
- Section 8 - Air System
 - 8.1 Description of Valve Manifold Assembly
 - 8.2 Cylinder Speed and Cushion Adjustment
 - 8.3 Air Circuit Drawing Explanation

UNIT E WARNINGS AND CAUTIONS

- Section 1 - Warnings
- Section 2 - Cautions

UNIT F TROUBLESHOOTING GUIDE

- Section 1 - General Electrical Troubleshooting
- Section 2 - Troubleshooting Chart

UNIT G MAINTENANCE AND LUBRICATION SCHEDULE

- Section 1 - Maintenance
- Section 2 - Lubrication

UNIT H RECOMMENDED SPARE PARTS

UNIT I OPTIONAL EQUIPMENT MANUALS AND SPECIFICATIONS

UNIT A G E N E R A L I N F O R M A T I O N

SECTION 1
INSPECTION, WARRANTY, PARTS ORDERING INFORMATION
REQUIREMENTS BEFORE INSTALLATION

- 1.1 INSPECTION Your Rennco Packaging System has received a thorough inspection before shipment. At time of delivery, please inspect all containers for any concealed damage or shortage. If damage is evident, note this on all freight bills and have the delivering driver sign. File a claim with the carrier as they are responsible for any damage that occurs in shipment. For Rennco's records, and so that we may assist you in every way possible, please notify us as soon as possible.
- 1.2 LIMITED WARRANTY The basic warranty of your Rennco Packaging Equipment is for a period of 6 months, exclusive of purchased components which are covered by the manufacturer's warranty. Rennco warrants all parts it manufacturers to be free of defects in material and workmanship for a period of 6 months to the original owner. Parts found to be defective will be replaced free of charge. Labor incurred in removing or installing the defective part is not covered by this warranty.
- 1.3 PARTS ORDERING INFORMATION When requesting information on parts or general assistance, it is important to give the model number and serial number of the equipment. This can be obtained from the specification page of this manual or from the nameplate mounted on the front upright plate of the packager, or the side panels of conveyors and optional equipment.
- 1.4 REQUIREMENTS BEFORE INSTALLATION After completion of the following items, the machinery can be installed by a Rennco Service Representative. Call (517) 568-4121 and request the service department for scheduling of installation. Allow 1 to 2 weeks after call for installation date.
- **Have proper packaging films on hand at time of installation.
 - **Have adequate product available for packaging to simulate actual production.
 - **Have personnel that will later be responsible for the system's operation and maintenance available during the installation.
 - **For details of requirements for air and electric service, see the following packager specification sheet that applies to your machine and UNIT B, SECTIONS 2 AND 3.

SECTION 2.1 MACHINE SPECIFICATIONS

| MODEL 201 | MODEL 101 | MODEL 501 | MODEL 501-36 | MODEL 401 |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 37" (94 cm) | 45" (114 cm) | 45" (114 cm) | 37" (94 cm) | 33" (83 cm) |
| 30" (76 cm) | 41" (104 cm) | 73" (185 cm) | 51" (130 cm) | 51" (130 cm) |
| 56" (142 cm) | 62" (158 cm) | 62" (158 cm) | 62" (158 cm) | 60" (153 cm) |
| 33" to 44" (84 cm to 112 cm) | 34" to 48" (86 cm to 122 cm) | 34" to 48" (86 cm to 122 cm) | 34" to 48" (86 cm to 122 cm) | 32" to 46" (81 cm to 117 cm) |

MACHINE DIMENSIONS:

WIDTH OVERALL
DEPTH OVERALL
HEIGHT OVERALL

PRODUCT LOAD HEIGHT:

PACKAGER CYCLE SPEED:

5 to 60 PACKAGES PER MINUTE DEPENDING ON PACKAGING MATERIAL AND PRODUCT

APPROXIMATE WEIGHT:

MACHINE ONLY
EXPORT CRATED-OCEAN
EXPORT CRATED-AIR

| | | | | |
|-------------------|-------------------|--------------------|--------------------|--------------------|
| 350 lbs. (159 kg) | 550 lbs. (250 kg) | 1050 lbs. (477 kg) | 1050 lbs. (477 kg) | 950 lbs. (432 kg) |
| 600 lbs. (272 kg) | 800 lbs. (363 kg) | 1550 lbs. (704 kg) | 1550 lbs. (704 kg) | 1400 lbs. (637 kg) |
| 400 lbs. (181 kg) | 600 lbs. (272 kg) | 1350 lbs. (613 kg) | 1350 lbs. (613 kg) | 1100 lbs. (500 kg) |

SEAL DIMENSIONS:

MAXIMUM VERTICAL SEAL

MAXIMUM HORIZONTAL SEAL

MAXIMUM PRODUCT THICKNESS

MINIMUM PACKAGE SIZE

| 201 STD. | 201 PP | 101 STD. | 101 PP |
|---------------------------|------------|------------|------------|
| 8" (20 cm) | 8" (20cm) | 14" (36cm) | 10" (25cm) |
| 10" (25 cm) | 10" (25cm) | 20" (51cm) | 18" (46cm) |
| 3½" (9cm) | 3½" (9cm) | 4½" (11cm) | 4½" (11cm) |
| 1" x 1" (2.5 cm x 2.5 cm) | | | |

YOUR PACKAGER:

SERIAL NUMBER

AMPS AT _____ VOLTS A.C. - 50/60 HZ - PH

ELECTRICAL

AIR USAGE _____ S.C.F.M. PER MACHINE CYCLE AT _____ P.S.I.

AIR USAGE

UNIT A G E N E R A L I N F O R M A T I O N

SECTION 2
MACHINE SPECIFICATIONS, RECOMMENDED MATERIALS

2.2 RECOMMENDED PACKAGING MATERIALS

Centerfolded film roll dimensional requirements:

- *3" I.D. core
- *12" maximum O.D.
- *Film roll width should include the package width plus 1 to 1 1/2 inches for the required trim take-up
- *"A" wind film is recommended; however, the packager is capable of running "B" wind film.

Polyethylene films in either low density, high density or linear low density types can be sealed on Rennco packagers equipped with the type "SF" sealing assembly. The film should be made with virgin resins and contain 3 to 5 percent "EVA".

Oriented shrink films are run on packagers equipped with "shrink" type sealing assembly. The following types of film may be sealed on this type of sealing assembly:

- *DUPONT - Clȳsar XEH921, Polyolefin
 Clȳsar EHC, Polypropylene
- *W. R. GRACE - Cryovac D955, Polyolefin
 Cryovac MPD, Polypropylene

The construction of shrink and type "SF" sealing assemblies is similar but different types of films may require different temperatures, different sealing blades or different back-up materials.

In most cases, running shrink film requires the use of shrink trim take up instead of the standard trim wind up assembly.

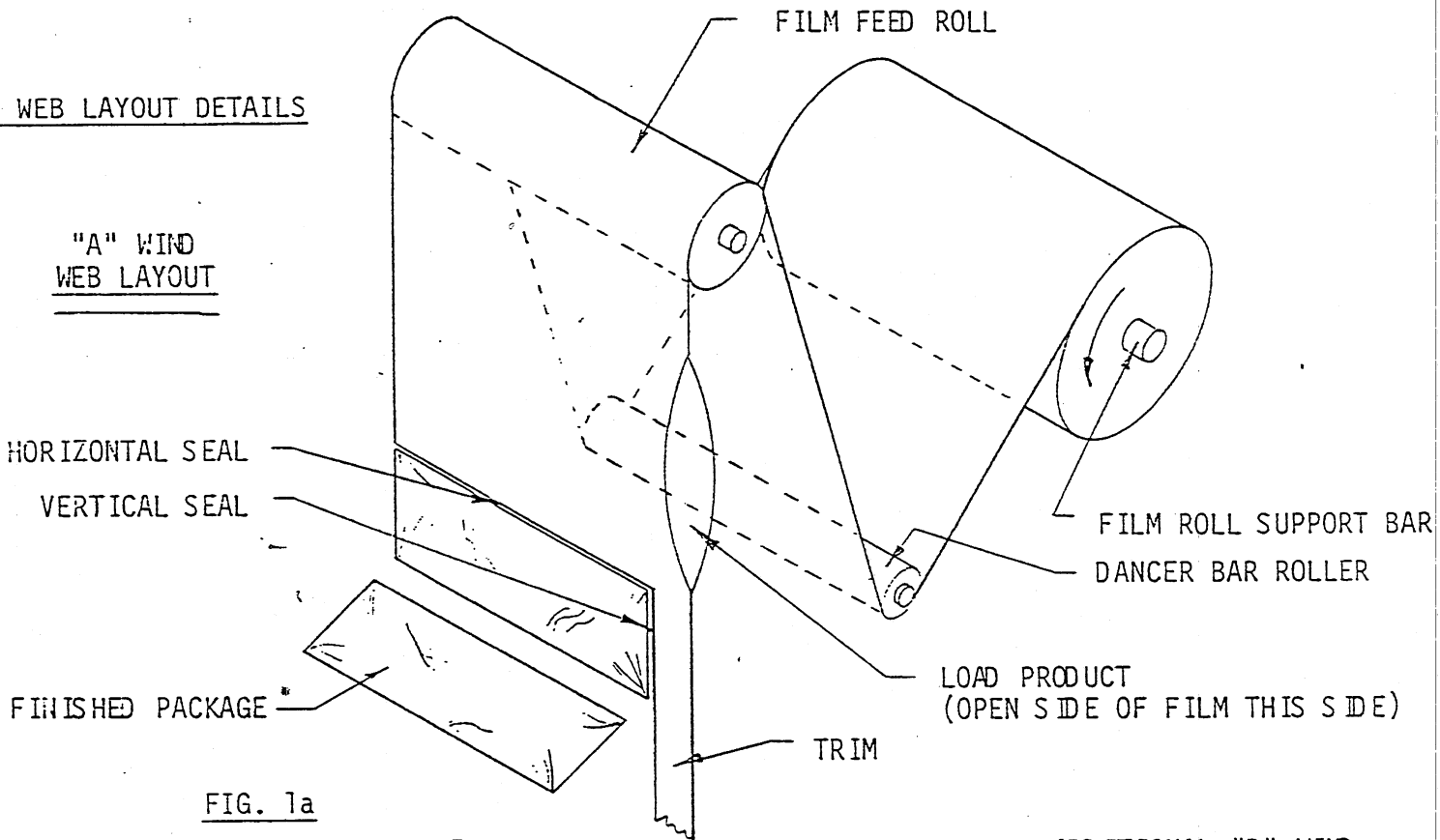
Usually film can be supplied by your Rennco representative or he can recommend where it can be purchased in your area.

Refer to the following diagrams for additional film specifications and web layouts.

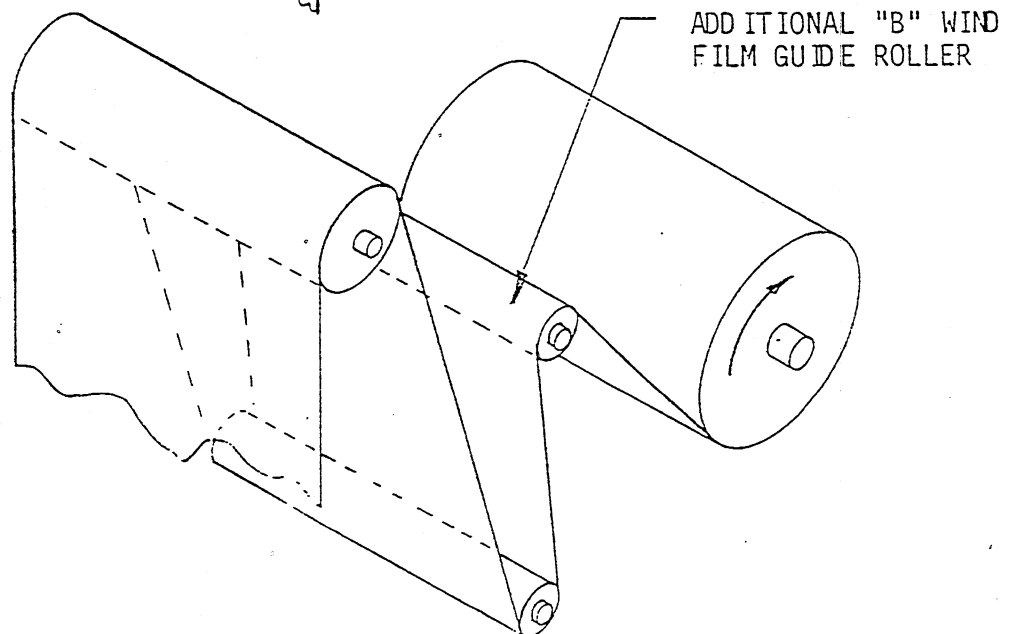
UNIT A GENERAL INFORMATION

SECTION 2

2.3 WEB LAYOUT DETAILS



"B" WIND
WEB LAYOUT



NOTE: As viewed from the open edge of the film roll, if the film roll spins counter-clockwise as the web is pulled from the roll it is "A" wind film, if it spins clockwise it is "B" wind film.

SECTION 2
RECOMMENDED PACKAGING MATERIALS

2.3 WEB LAYOUT DETAILS
HEADER AND REGISTERED PRINTED FILMS

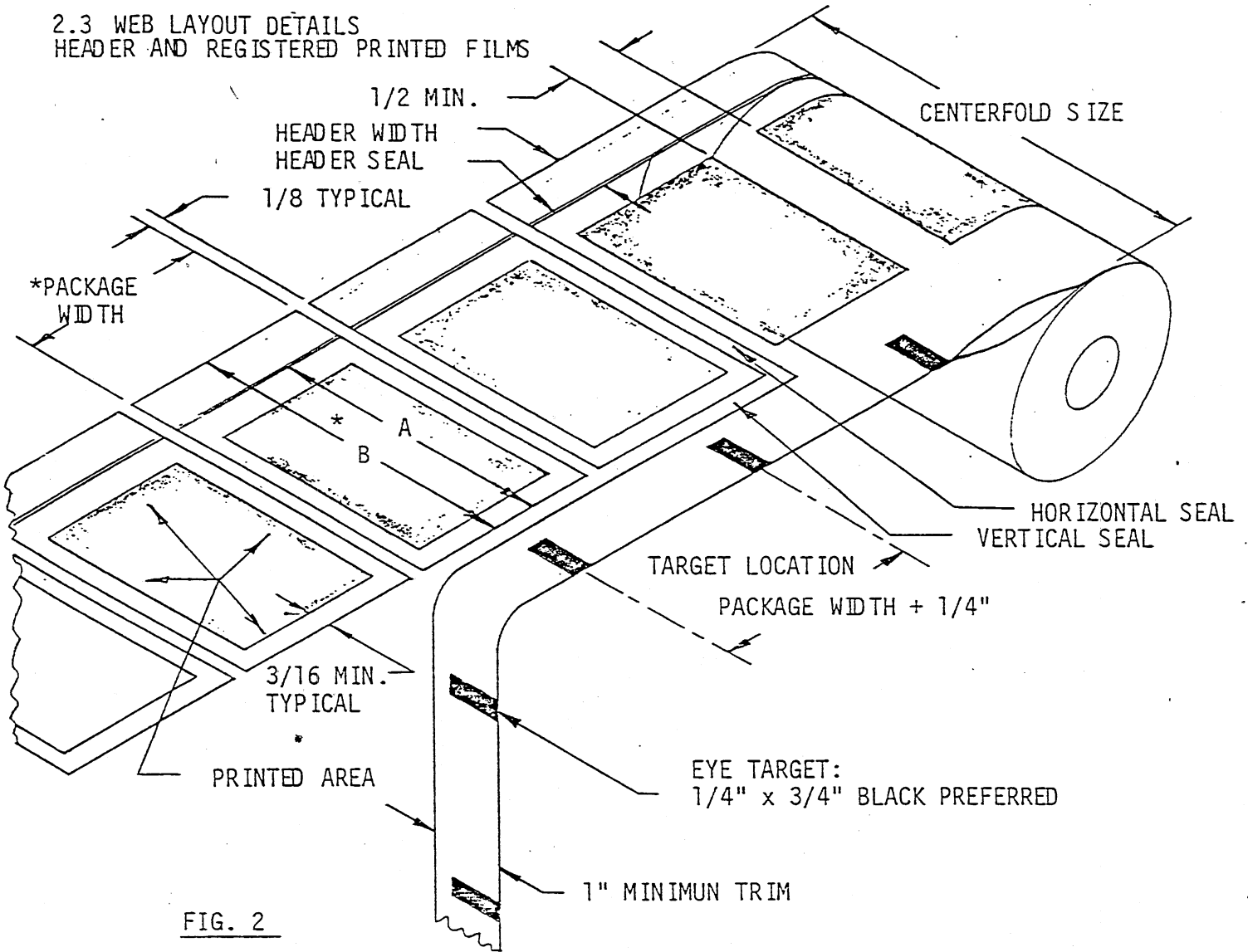


FIG. 2

NOTES

- * Shows package size not product dimension
- A Actual package length when header material is used
- B Package length if not header material
- C Header width usually ranges between 1" and 2". This dimension is to be added to overall bag length.

SECTION 2
RECOMENDED PACKAGING MATERIALS

2.3 WEB LAYOUT DETAILS

WEB LAYOUT FOR PREPRINTED FILM/SCH-34 IMPRINTER COMBINATION

1. The film must be preprinted on this side if the added SCH-34 Imprinter matter is to be on the same side as the preprinted matter.
2. The film must be preprinted on this side if the added SCH-34 Imprinter matter is to be on the side opposite the preprinted matter.

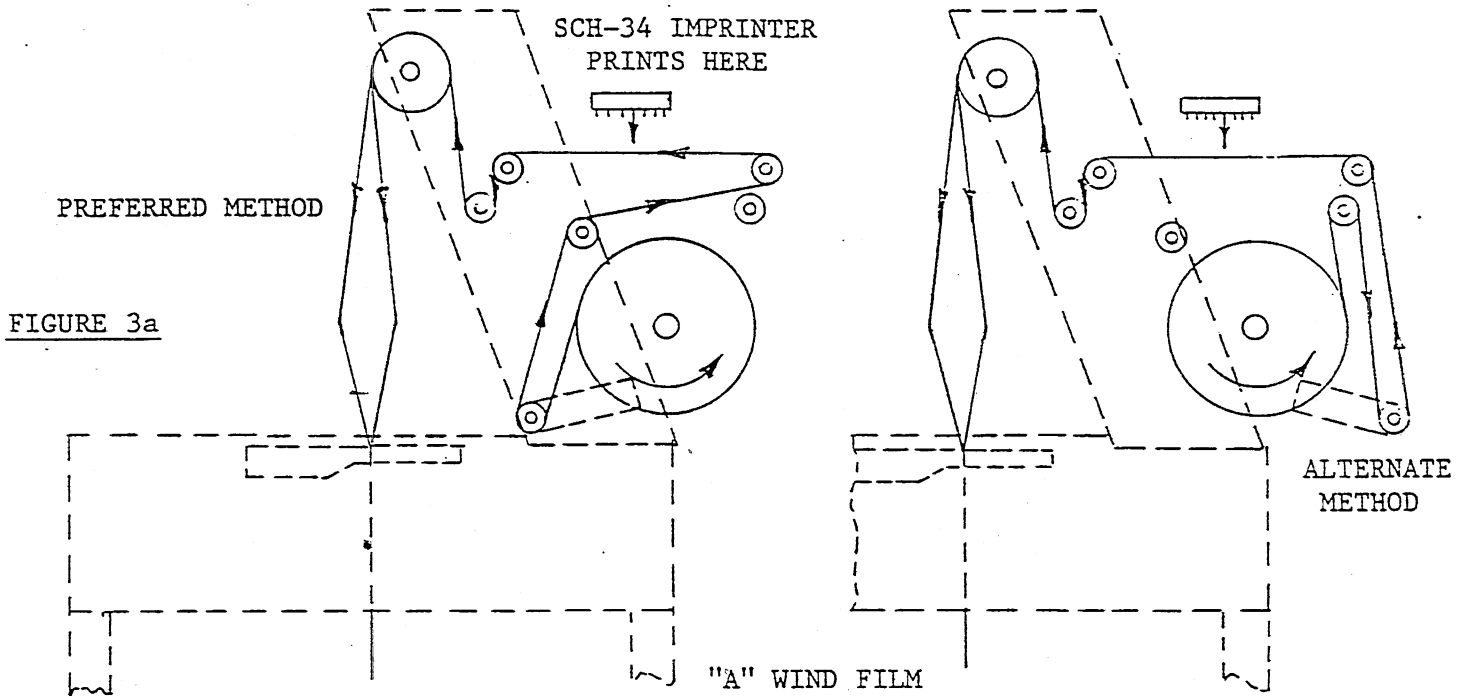


FIGURE 3a

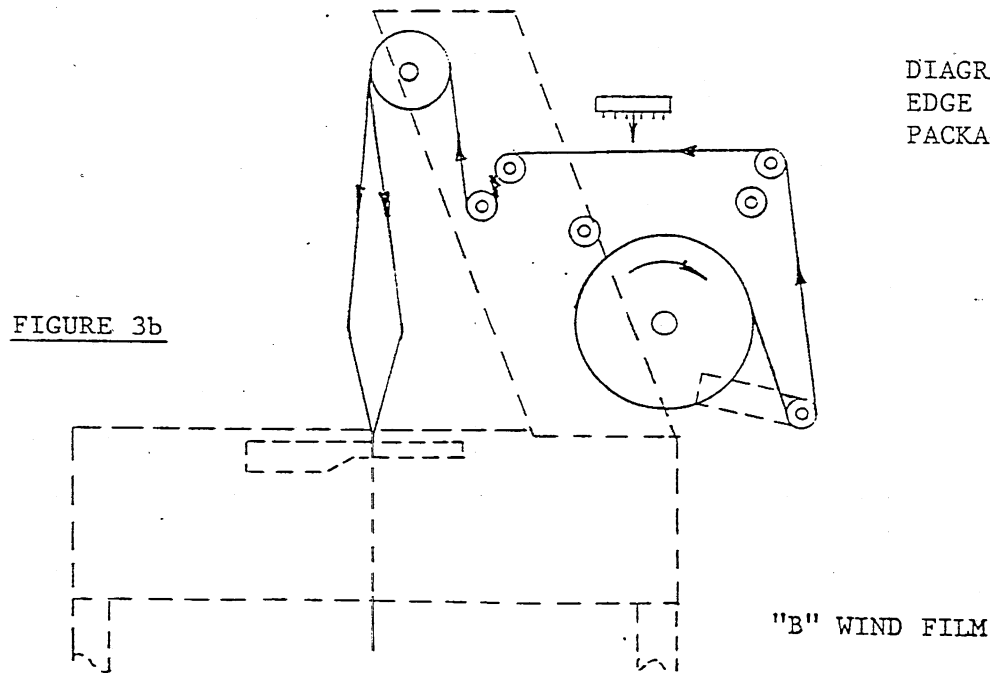
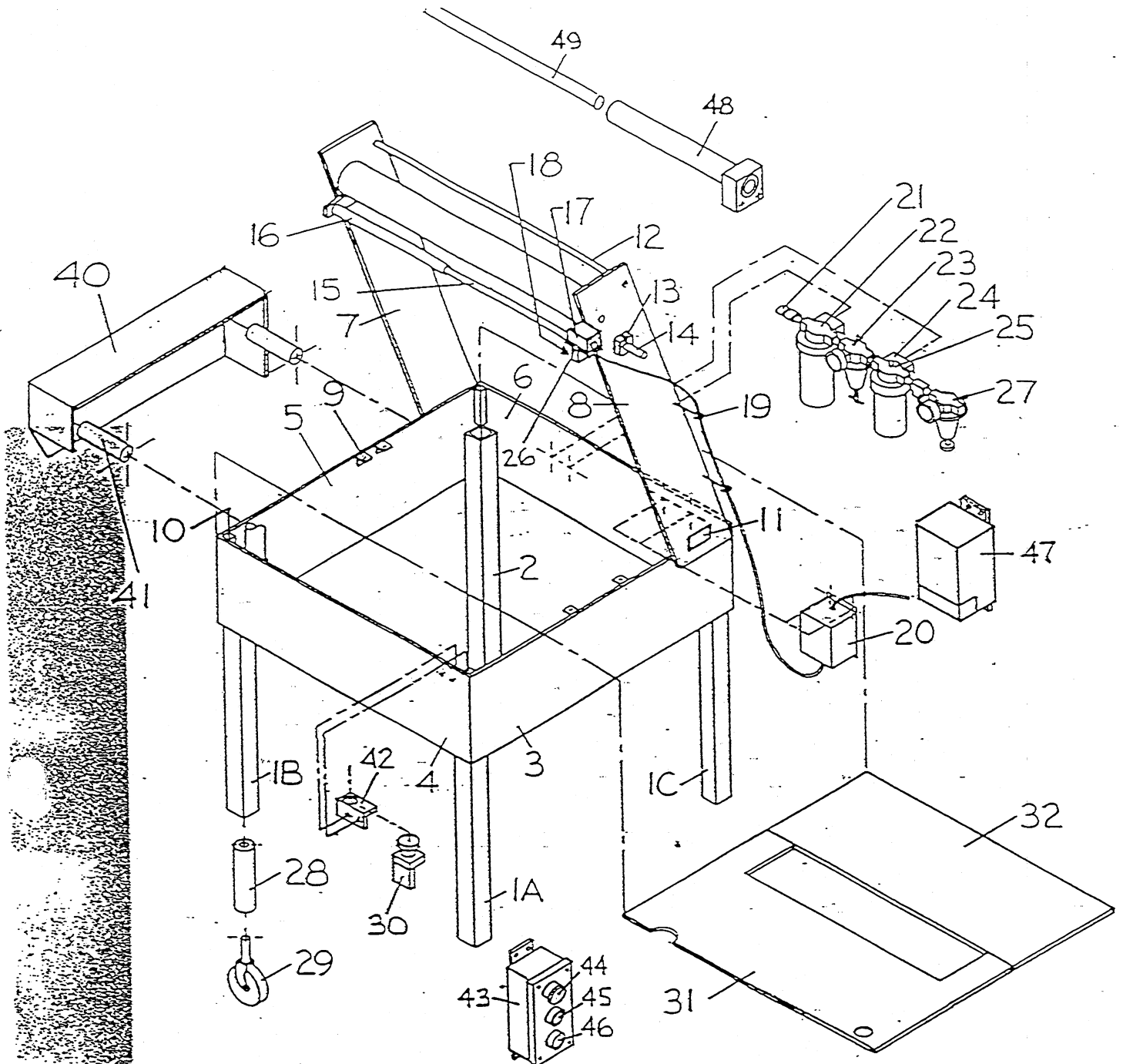


FIGURE 3b

DIAGRAMS ARE SHOWN FACING THE OPEN EDGE OF THE FILM. (LOAD SIDE OF THE PACKAGER)



201

| | |
|--------------------------------|-----------------------|
| REFRIGCO INC. HONOLULU, HI. | |
| Part No. 9-10-06 | Drawing No. A |
| Description: FRAME ASSEMBLY | Scale: 1/2" = 1'-0" |
| Material: STEEL | Quantity: 1 |
| Date: 9-10-66 | Drawing Date: 9-10-66 |
| Drawing By: SF | Check By: SHK |
| Revision: 13716 A | Date: 9-10-66 |

SHRINK & S.F. WITH
BACK-UP HEATER

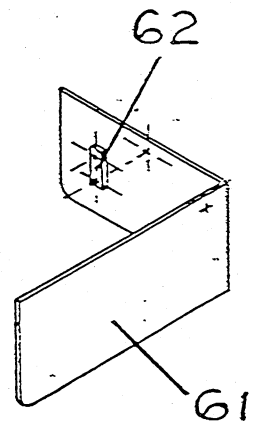
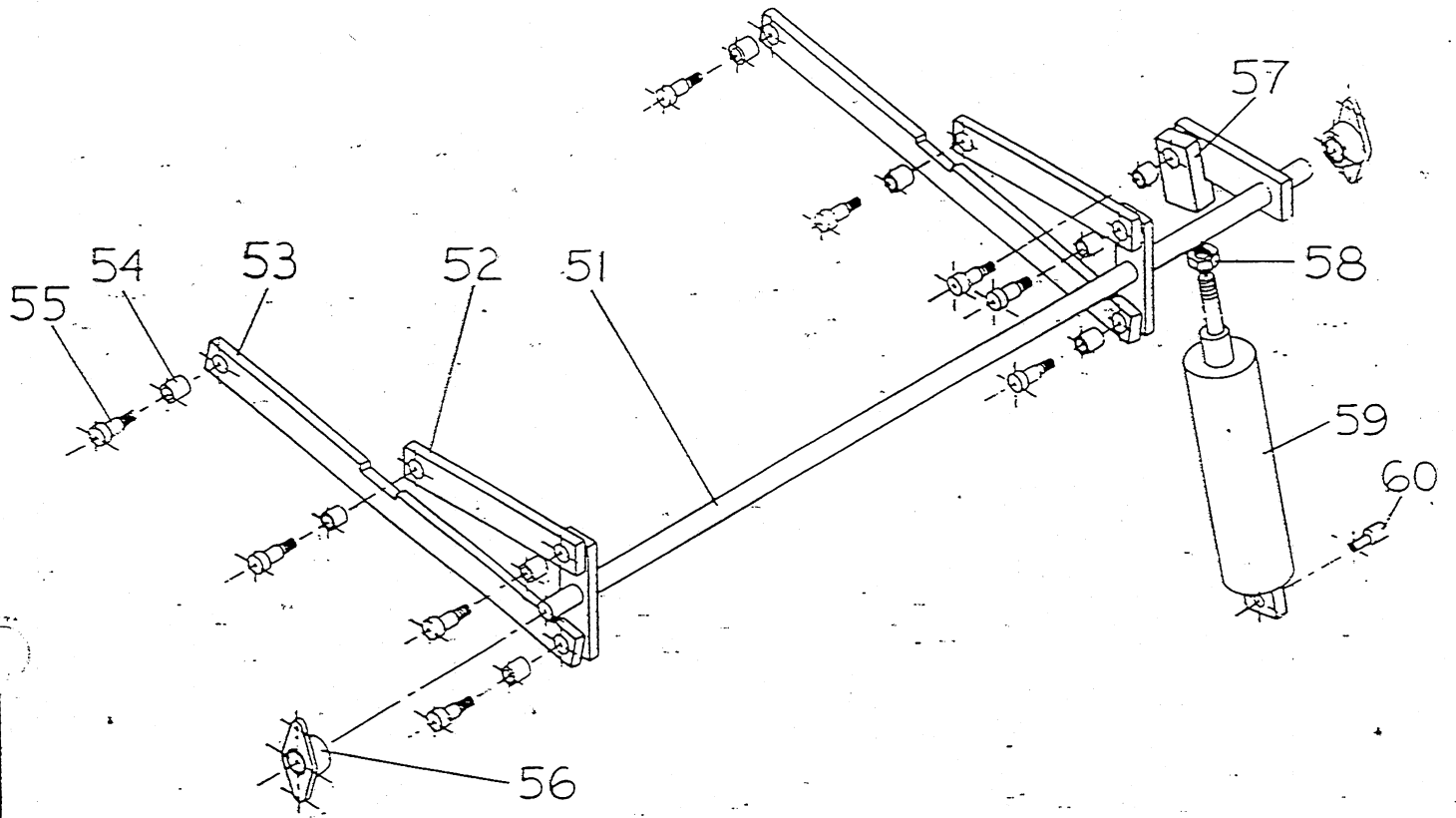
SER.G ISS.N

101

FRAME ASSEMBLY - 101

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|----------------|-------|-------------------------------------|------|
| 1B,C | R101-608B P1 | C | R.H. FRONT & L.H. REAR LEG | 2 |
| 1A | R101-608B P2 | C | L.H. FRONT LEG | 1 |
| 2 | R101-610B | C | R.H. REAR LEG | 1 |
| 3 | R101-594C | E | FRONT PLATE | 1 |
| 4 | R101-595C | I | L.H. SIDE PLATE | 1 |
| 5 | R101-593C | I | BACK PLATE | 1 |
| 6 | R101-596C | J | R.H. SIDE PLATE | 1 |
| 7 | R101-592C | G | BACK UPRIGHT | 1 |
| 8 | R101-479C | K | FRONT UPRIGHT | 1 |
| 9 | R101-114A | B | TOP CLIP | 4 |
| 10 | R101-569A | A | CORNER CLIPS | 4 |
| 11 | LABEL | | RENNCO NAME PLATE | 1 |
| 12 | R101-602A | A | UPRIGHT SUPPORT | 1 |
| 13 | R101-705A | B | FILM SEPARATOR MT. BLOCK | 1 |
| 14 | R101-706A | B | FILM SEPARATOR ROD | 1 |
| 15 | MEJ15 | | 18" SIMCO STATIC BAR | 1 |
| 16 | NOT USED | | | |
| 17 | RS101-10113A | A | STATIC ELIMINATOR BAR CLAMP | 1 |
| 18 | RS101-10111A | A | STATIC ELIMINATOR BAR MTG. BRKT. | 1 |
| 19 | | | SIMCO CABLE SUPPORTS | 3 |
| 20 | F167 | | SIMCO TRANSFORMER | 1 |
| 21 | T08-000-E1P0 | | NORGREN SHUT OFF VALVE | 1 |
| 22 | F08-000-A3D0 | | NORGREN FILTER | 1 |
| 23 | R08-000-RGMO | | NORGREN REGULATOR W/GAUGE | 1 |
| 24 | 5302-06 | | MOUNTING BRACKET | 2 |
| 25 | L08-000-MP00 | | NORGREN LUBRICATOR | 1 |
| 26 | RS101-10112A | A | STATIC ELIMINATOR BAR MTG. PLATE | 1 |
| 27 | R08-000-RGFO | | NORGREN REGULATOR W/GUAGE | 1 |
| 28 | R401-083B | B | LEG EXTENSION & CASTER MT. | 4 |
| 29 | TP5250-12-SR-B | | CASTER | 4 |
| 30 | PW3M32 | | MICRO-SWITCH MUSH. HD. P.B. | 1 |
| | PW3CD | | MICRO-SWITCH N.O. CONTACT BLK. | 1 |
| 31 | R101-597C | E | L.H. TOP PLATE | 1 |
| 32 | R101-598C | C | R.H. TOP PLATE | 1 |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | R101-758C | C | VALVE COVER | 1 |
| 41 | R101-760A | A | VALVE COVER SPACER | 2 |
| 42 | R101-1067B | A | CYCLE SW. MOUNT BRKT. | 1 |
| 43 | NOT USED | | | |
| 44 | NOT USED | | | |
| 45 | NOT USED | | | |
| 46 | NOT USED | | | |
| 47 | NOT USED | | | |
| 48 | NOT USED | | | |
| 49 | NOT USED | | | |

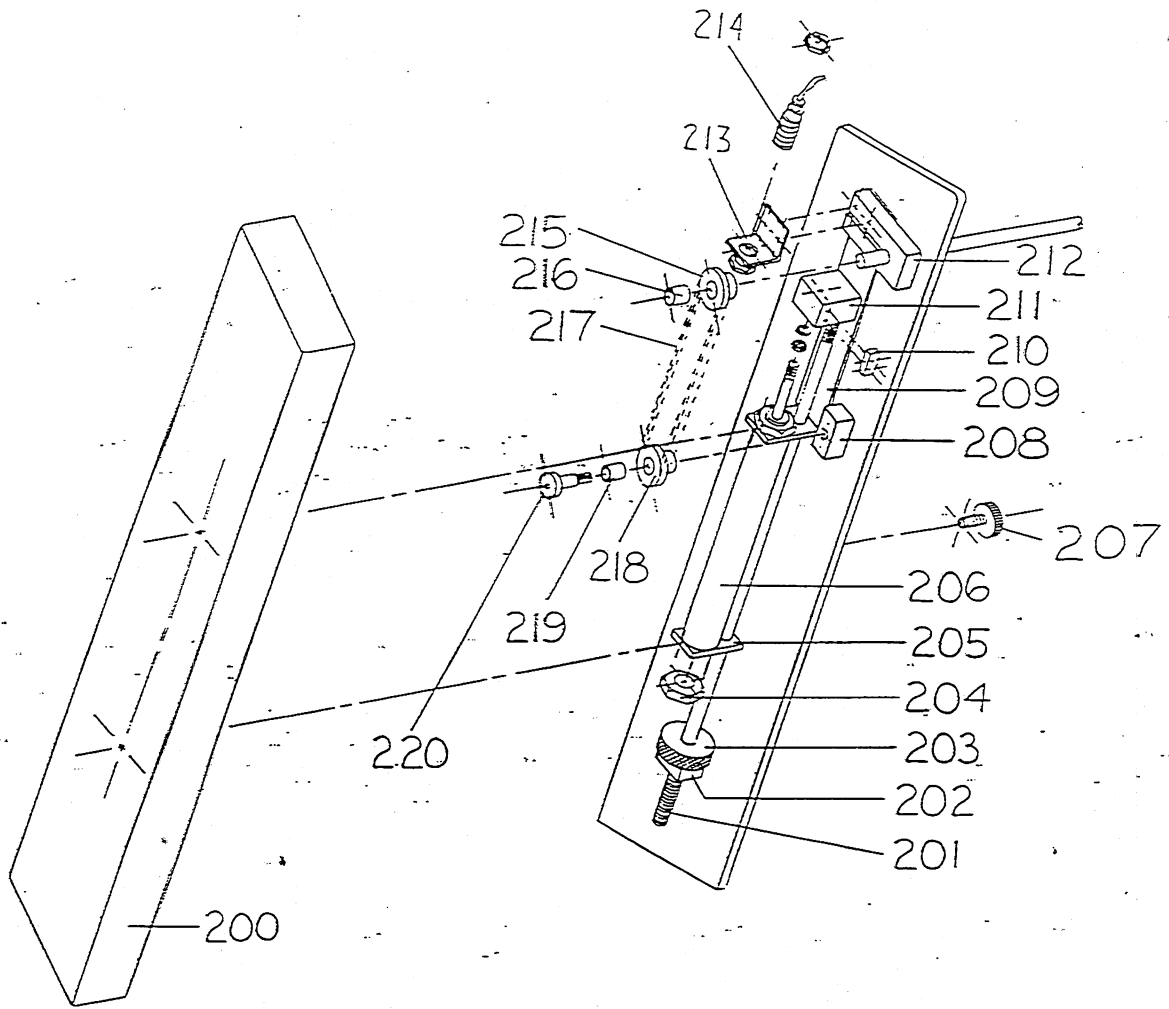
CODE: 101SHRNK



| | | | |
|--|--|--|--|
| Part No. Description Quantity Unit Price Total Price Date By | Part No. Description Quantity Unit Price Total Price Date By | Part No. Description Quantity Unit Price Total Price Date By | Part No. Description Quantity Unit Price Total Price Date By |
| DRIVE ASSEMBLY | | | |
| RENCO INC HOMER, MI | | | |
| Date: 9-11-96 | | | |
| PS101-6250 | | | |

DRIVE - 101

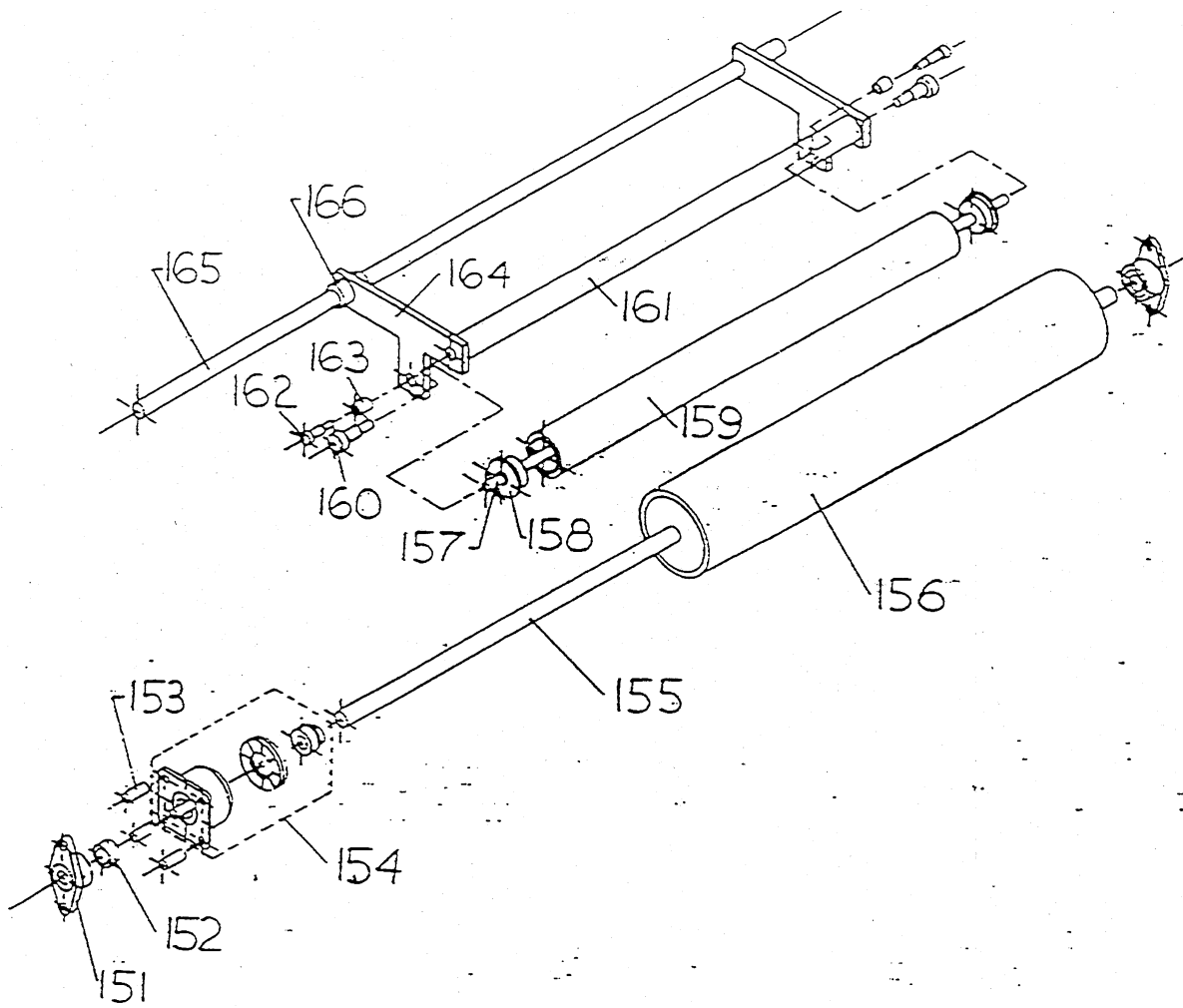
| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|---------------|-------|---------------------------|------|
| 51 | R101-557B | C | TRANSFER SHAFT WELDMENT | 1 |
| 52 | R101-018A | E | TOP PIVOT ARM | 2 |
| 53 | R101-019A | F | BOTTOM PIVOT ARM | 2 |
| 54 | B1010 | | TORRINGTON NEEDLE BEARING | 9 |
| 55 | SHSS23 | | VLIER SHOULDER BOLT | 9 |
| 56 | LT1624-16 | | MASTEN BEARING | 2 |
| 57 | R101-394A | A | JAW DRIVE CLEVIS | 1 |
| 58 | 5/8-11 | | JAM NUT | 1 |
| 59 | 0420-1009-050 | | ARO CYLINDER | 1 |
| 60 | NOT USED | | | |
| 61 | NOT USED | | | |
| 62 | NOT USED | | | |



| | | | |
|---------------------------|--|-----------------|-----------|
| RENNCO INC. HOMER, MI. | | DATE 2-15-69 | BY SWS |
| PROJECT FILM FEED | | NO. A | REV. A |
| DESCRIPTION REVISIONS | | DATE | |
| 1. INITIAL DESIGN | | | |
| 2. REVISED DESIGN | | | |
| 3. REVISED DESIGN | | | |
| 4. REVISED DESIGN | | | |
| 5. REVISED DESIGN | | | |
| 6. REVISED DESIGN | | | |
| 7. REVISED DESIGN | | | |
| 8. REVISED DESIGN | | | |
| 9. REVISED DESIGN | | | |
| 10. REVISED DESIGN | | | |
| 11. REVISED DESIGN | | | |
| 12. REVISED DESIGN | | | |
| 13. REVISED DESIGN | | | |
| 14. REVISED DESIGN | | | |
| 15. REVISED DESIGN | | | |
| 16. REVISED DESIGN | | | |
| 17. REVISED DESIGN | | | |
| 18. REVISED DESIGN | | | |
| 19. REVISED DESIGN | | | |
| 20. REVISED DESIGN | | | |
| 21. REVISED DESIGN | | | |
| 22. REVISED DESIGN | | | |
| 23. REVISED DESIGN | | | |
| 24. REVISED DESIGN | | | |
| 25. REVISED DESIGN | | | |
| 26. REVISED DESIGN | | | |
| 27. REVISED DESIGN | | | |
| 28. REVISED DESIGN | | | |
| 29. REVISED DESIGN | | | |
| 30. REVISED DESIGN | | | |
| 31. REVISED DESIGN | | | |
| 32. REVISED DESIGN | | | |
| 33. REVISED DESIGN | | | |
| 34. REVISED DESIGN | | | |
| 35. REVISED DESIGN | | | |
| 36. REVISED DESIGN | | | |
| 37. REVISED DESIGN | | | |
| 38. REVISED DESIGN | | | |
| 39. REVISED DESIGN | | | |
| 40. REVISED DESIGN | | | |
| 41. REVISED DESIGN | | | |
| 42. REVISED DESIGN | | | |
| 43. REVISED DESIGN | | | |
| 44. REVISED DESIGN | | | |
| 45. REVISED DESIGN | | | |
| 46. REVISED DESIGN | | | |
| 47. REVISED DESIGN | | | |
| 48. REVISED DESIGN | | | |
| 49. REVISED DESIGN | | | |
| 50. REVISED DESIGN | | | |
| 51. REVISED DESIGN | | | |
| 52. REVISED DESIGN | | | |
| 53. REVISED DESIGN | | | |
| 54. REVISED DESIGN | | | |
| 55. REVISED DESIGN | | | |
| 56. REVISED DESIGN | | | |
| 57. REVISED DESIGN | | | |
| 58. REVISED DESIGN | | | |
| 59. REVISED DESIGN | | | |
| 60. REVISED DESIGN | | | |
| 61. REVISED DESIGN | | | |
| 62. REVISED DESIGN | | | |
| 63. REVISED DESIGN | | | |
| 64. REVISED DESIGN | | | |
| 65. REVISED DESIGN | | | |
| 66. REVISED DESIGN | | | |
| 67. REVISED DESIGN | | | |
| 68. REVISED DESIGN | | | |
| 69. REVISED DESIGN | | | |
| 70. REVISED DESIGN | | | |
| 71. REVISED DESIGN | | | |
| 72. REVISED DESIGN | | | |
| 73. REVISED DESIGN | | | |
| 74. REVISED DESIGN | | | |
| 75. REVISED DESIGN | | | |
| 76. REVISED DESIGN | | | |
| 77. REVISED DESIGN | | | |
| 78. REVISED DESIGN | | | |
| 79. REVISED DESIGN | | | |
| 80. REVISED DESIGN | | | |
| 81. REVISED DESIGN | | | |
| 82. REVISED DESIGN | | | |
| 83. REVISED DESIGN | | | |
| 84. REVISED DESIGN | | | |
| 85. REVISED DESIGN | | | |
| 86. REVISED DESIGN | | | |
| 87. REVISED DESIGN | | | |
| 88. REVISED DESIGN | | | |
| 89. REVISED DESIGN | | | |
| 90. REVISED DESIGN | | | |
| 91. REVISED DESIGN | | | |
| 92. REVISED DESIGN | | | |
| 93. REVISED DESIGN | | | |
| 94. REVISED DESIGN | | | |
| 95. REVISED DESIGN | | | |
| 96. REVISED DESIGN | | | |
| 97. REVISED DESIGN | | | |
| 98. REVISED DESIGN | | | |
| 99. REVISED DESIGN | | | |
| 100. REVISED DESIGN | | | |

FILM FEED - 101

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|--------------|-------|--------------------------|---------|
| 200 | R101-450C | E | FILM FEED GUARD | 1 |
| 201 | R101-448A | A | ADJUSTMENT ROD | 1 |
| 202 | R101-015A | B | ADJUSTMENT WHEEL SUPPORT | 1 |
| 203 | R101-017A | D | ADJUSTMENT WHEEL | 1 |
| 204 | 3/4-16 | | JAM NUT | 2 |
| 205 | R101-436A | B | CYLINDER MOUNT BLOCK | 2 |
| 206 | 5-DP-7 | | HUMPHREY CYLINDER | 1 |
| 207 | NOT USED | | | |
| 208 | R101-105A | A | SPROCKET MOUNT | 1 |
| 209 | R101-447A | A | WEAR STRIP | 1 |
| 210 | R101-258A | A | CHAIN CLAMP | 1 |
| 211 | R401-092A | A | CYLINDER STOP | 1 |
| 212 | R101-571A | A | FILM FEED BRAKE | 1 |
| 213 | R101-985B | A | PROXIMITY SWITCH MOUNT | 1 |
| 214 | E2E-X5E1 | | OMRON PROXIMITY SWITCH | 1 |
| 215 | R101-058A P2 | B | DRIVE SPROCKET | 1 |
| 216 | RCB121616 | | TORRINGTON CLUTCH | 1 |
| 217 | #25 | | ROLLER CHAIN | 26 1/2" |
| 218 | R101-058A P1 | B | IDLER SPROCKET | 1 |
| 219 | B1010 | | TORRINGTON BEARING | 1 |
| 220 | SHSS23 | | VLIER SHOULDER BOLT | 1 |



| | |
|-------------------------------|--------------|
| REFINCO INC. HONOLULU, HI. | |
| DATE: 9-11-86 | DRAWN BY: J. |
| FILM FEED ROLL - QLD DOWN | |
| PART NO: R3101-624B C | REV: 1 |

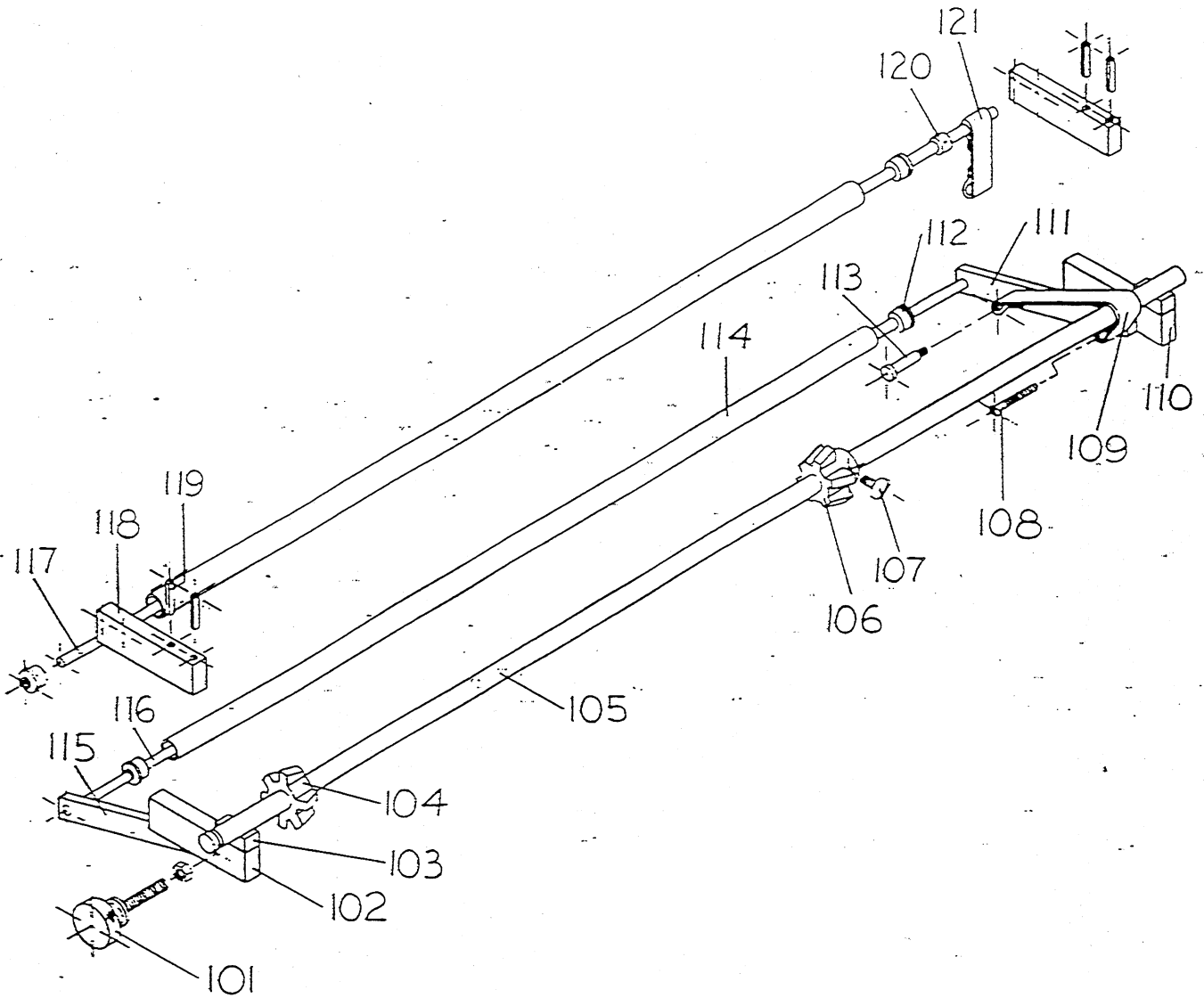
SER. 6 ISS. N.

SF

FILM FEED ROLL & HOLD DOWN - 101

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|----------------|-------|-------------------------------|------|
| 151 | FB110x3/4 | | MASTEN BEARING | 2 |
| 152 | NOT USED | | | |
| 153 * | R101-768A P1 | A | SPACERS | 4 |
| 154 * | PE-250-90V-3/4 | | 90VDC-WARNER BRAKE | 1 |
| 155 | R101-607A | E | FILM FEED ROLL SHAFT | 1 |
| 156 | R101-587B | A | FILM FEED ROLL ASSEMBLY | 1 |
| 157 | R101-709A | A | FILM HOLD DOWN SHAFT | 1 |
| 158 | 1016D | | BOSTON NYLON BEARING | 2 |
| 159 | RS101-2193B | B | 21 1/2" FILM HOLD DOWN ROLLER | 1 |
| 160 | MS-17 | | REID SHOULDER BOLT | 2 |
| 161 | R101-605A | A | FILM HOLD DOWN BAR | 1 |
| 162 | MS-13 | | REID SHOULDER BOLT | 2 |
| 163 | B-68 | | TORRINGTON NEEDLE BEARING | 2 |
| 164 | R101-708B | A | FILM HOLD DOWN BRACKET | 2 |
| 165 | R101-603A | A | TOP FRAME SUPPORT | 1 |
| 166 | 3/4" I.D. | | SHAFT COLLAR | 3 |

*OPTIONAL ITEMS

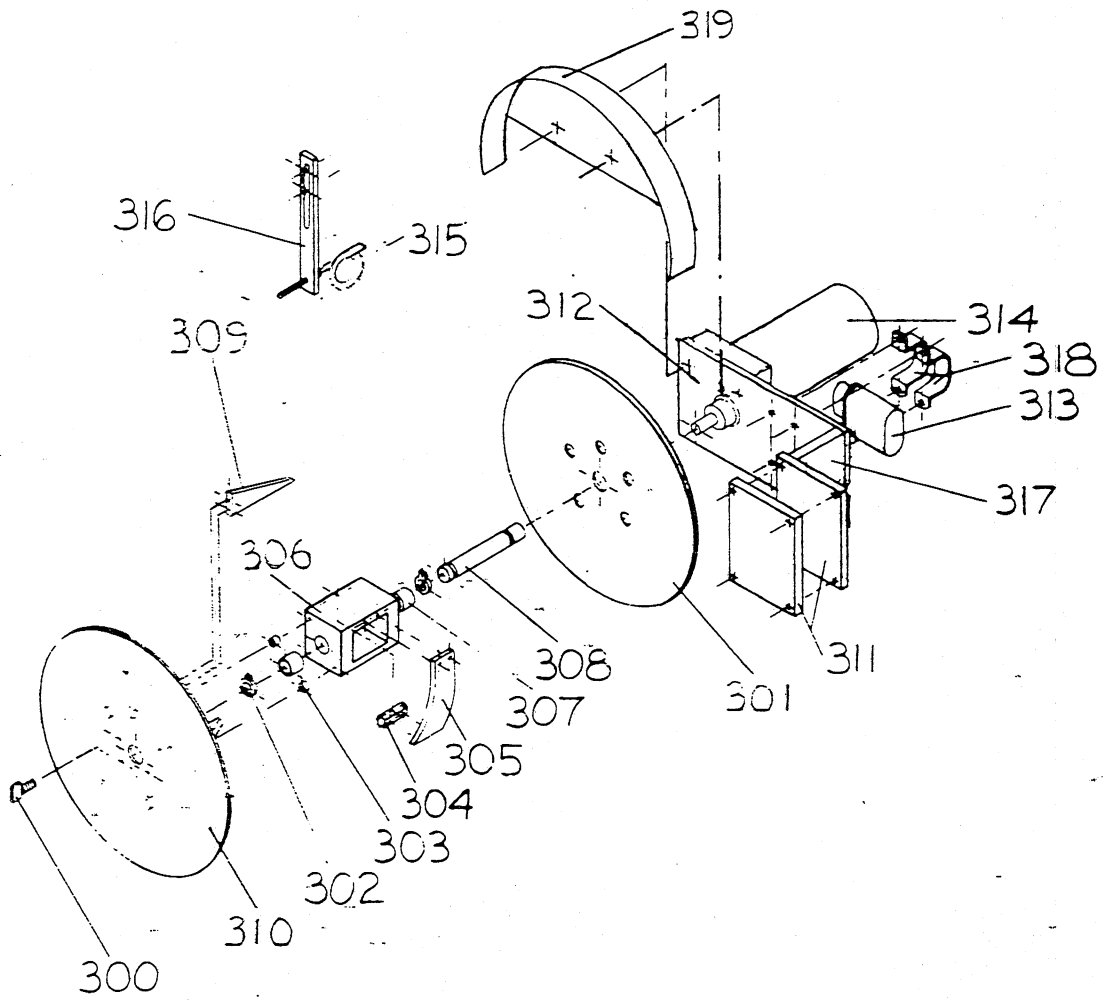


| | | | |
|---|-----------------|----------------------------|--------------------|
| 121 Found On Part No. 101-6249C Rev. 10/11/96 Part No. 101-6249C | | REYNOLDS INC. HOMER, MI | |
| Title 9-11-96 | Date 9-11-96 | Drawing No. or T.D. | Part No. 101-6249C |
| FILM ROLL SUPPORT ASS'Y | | | |
| RS101-6249C | | | |

FILM ROLL SUPPORT ASSEMBLY - 101

SER. G ISS N
SF

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|--------------|-------|--|------|
| 101 | R101-572A | A | ADJUSTMENT KNOB | 1 |
| 102 | R101-428A P1 | B | FILM ROLL SUPPORT BRACKET LOWER FRONT | 1 |
| 103 | R101-429A | A | FILM ROLL SUPPORT | 2 |
| 104 | R101-467B | B | STATIONARY FILM ARBOR | 1 |
| 105 | R101-606A | C | FILM ROLL SUPPORT SHAFT | 1 |
| 106 | R101-466B | B | ADJUSTABLE FILM ARBOR | 1 |
| 107 | 3/8-16 X 1" | | THUMB SCREW | 1 |
| 108 | 5/16-18 X 3" | | ROUND HEAD SCREW | 1 |
| 109 | R101-321A | D | BRAKE STRAP | 1 |
| 110 | R101-428A P2 | B | FILM ROLL SUPPORT BRACKET LOWER REAR | 1 |
| 111 | R101-048A P1 | F | DANCER BAR BRACKET - REAR | 1 |
| 112 | 1016D | | BOSTON NYLON BEARING | 4 |
| 113 | 48519 | | ALLEN SHOULDER BOLT | 1 |
| 114 | R101-599A | B | DANCER & B-WIND TUBE | 2 |
| 115 | R101-048A P2 | F | DANCER BARB BRACKET - FRONT | 1 |
| 116 | R101-600A | A | DANCER BAR SHAFT | 1 |
| 117 | R101-601A | A | B-WIND SHAFT | 1 |
| 118 | NOT USED | | | |
| 119 | NOT USED | | | |
| 120 | 1/2" I.D. | | SHAFT COLLAR | 1 |
| 121 | NOT USED | | | |



| | | | |
|---|--|--------------------------|--|
| TITLE TRIM WIND-UP | | DRAWN BY T.D. | |
| DATE 9-10-86 | | CHECKED BY A | |
| MANUFACTURED BY RENCO INC HOMER, MI | | PART NO. 101 AND 201 | |
| QUANTITY 1000 | | ORDER NO. RS101-6257C | |

SER. G ISS. N

SF

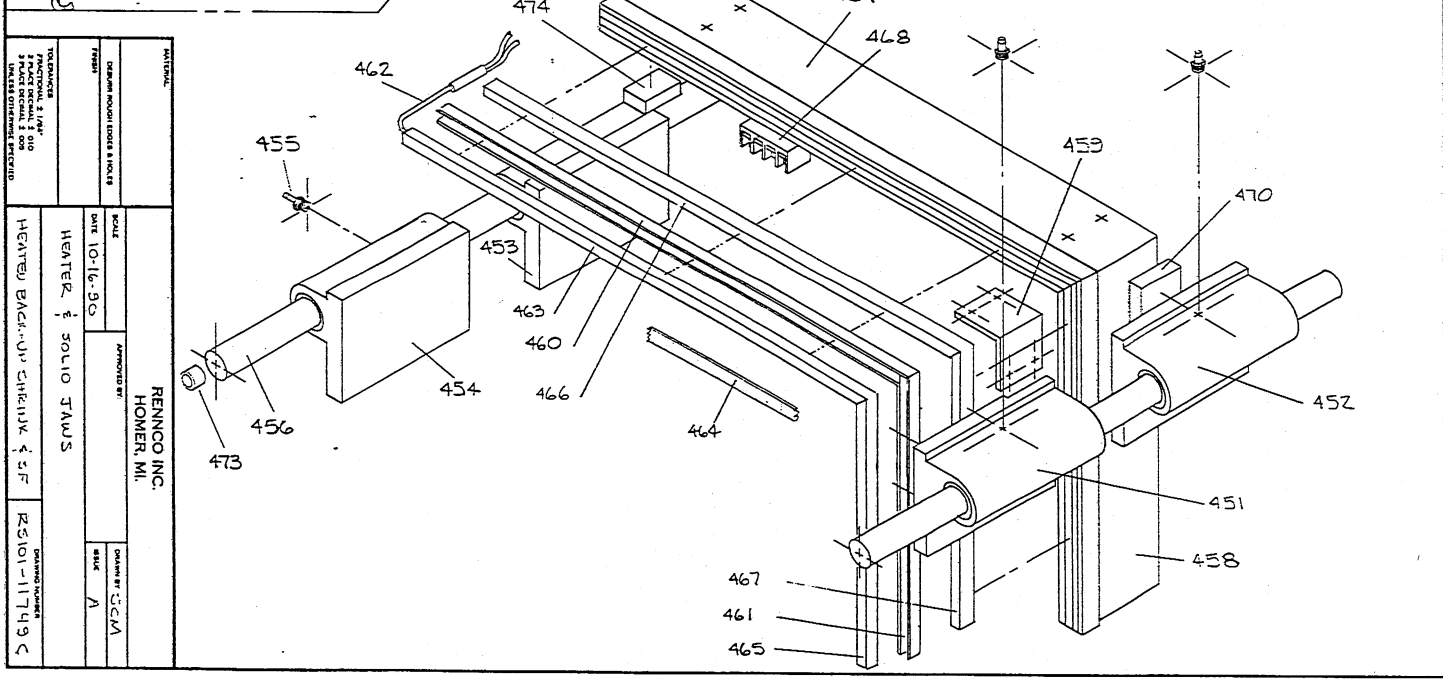
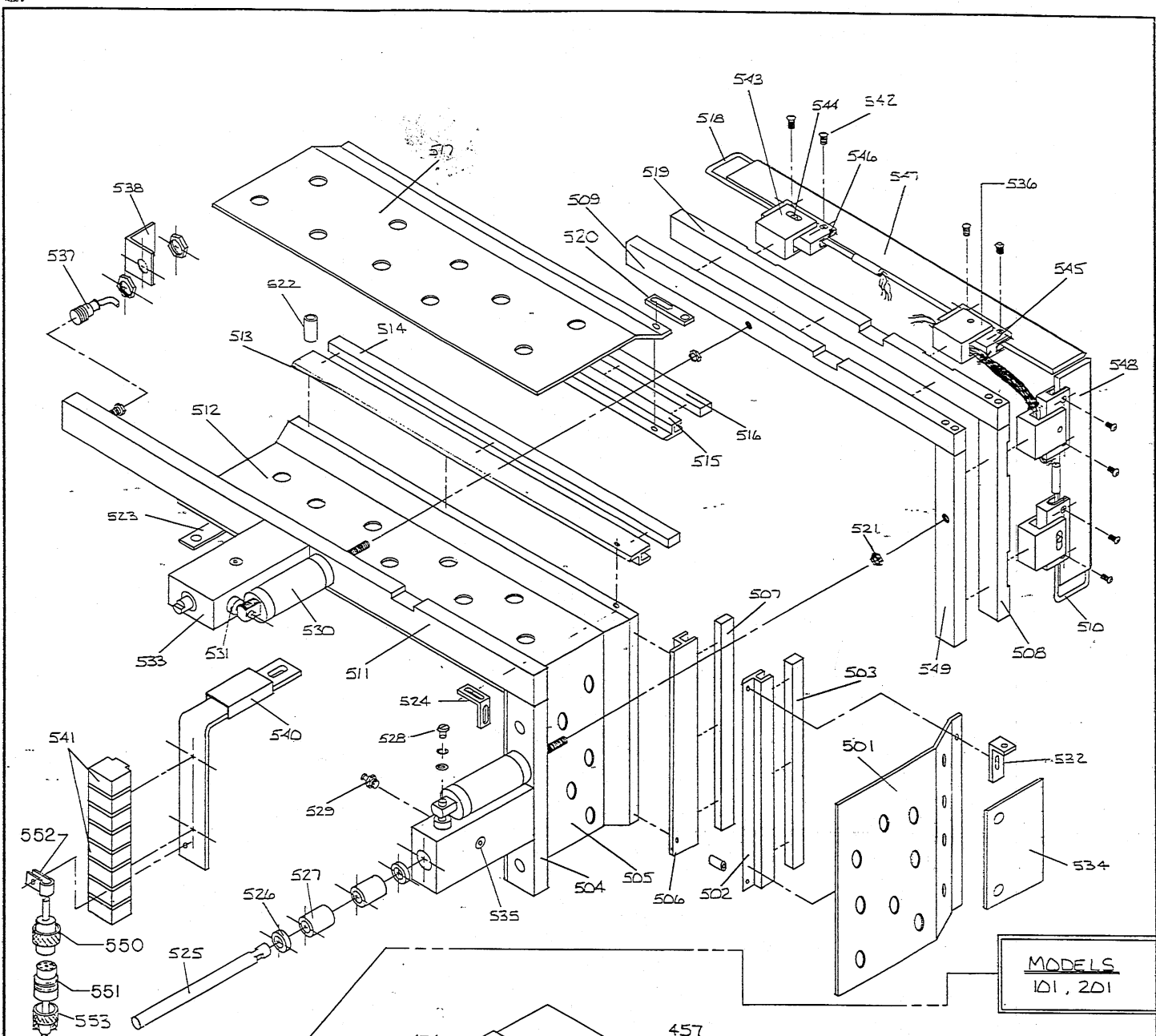
TRIM WIND-UP - 101

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|---------------|-------|------------------------|------|
| 300 | 5/16-18 X 1/2 | | THUMB SCREW W/COLLAR | 1 |
| 301 | R101-126B | E | INSIDE SPOOL | 1 |
| 302 | 5100-75 | | TRUARC RETAINING RING | 1 |
| 303 | 71-1-618-13 | | KNURLED INSERT | 2 |
| 304 | R101-246A | A | STRAP ADJUSTMENT BAR | 1 |
| 305 | R101-245A | A | STRAP | 1 |
| 306 | R101-244B | A | CLUTCH BLOCK | 1 |
| 307 | P77-6 | | BUNTING BRONZE BUSHING | 2 |
| 308 | R101-166A | B | SHAFT | 1 |
| 309 | R101-210A | C | FINGERS | 5 |
| 310 | RS101-129B | G | OUTSIDE SPOOL | 1 |
| 311 | R201-107A | C | SPACER PLATE | 2 |
| 312 | R101-035B | K | MOUNTING PLATE | 1 |
| 313 | 3X685 | | DAYTON CAPACITOR | 1 |
| 314 | 4Z613 | | DAYTON GEARMOTOR | 1 |
| 315 | RS101-9563B | A | TRIM GUIDE EYE | 1 |
| 316 | R101-506B | B | TRIM GUIDE EYE BRACKET | 1 |
| 317 | R101-807A | A | MOUNT SPACER | 1 |
| 318 | 3 X 684 | | DAYTON CAPACITOR CLAMP | 2 |
| 319 | RS101-4583C | A | TRIM WIND-UP COWL | 1 |

USE PART # R101-170D WHEN ORDERING AN ENTIRE TRIM WIND-UP UNIT,
ASSEMBLED. ALL ITEMS ABOVE ARE INCLUDED EXCEPT ITEMS 315 AND 316.

SHRINK FILM TRIM WIND-UP

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|-----------------|-------|---|------|
| 1 | RS101-6674B | A | BEARING PLATE | 1 |
| 2 | RS101-6675B | A | MOTOR PLATE | 1 |
| 3 | RS101-6676B | A | SUPPORT BRACE | 1 |
| 4 | R201-107A | C | SPACING PLATE (201, 401 & 501 PKGR. USES ONLY 1) | 2 |
| 6 | RS101-6950B | A | MOUNT PLATE (201 PKGR.) | 1 |
| 7 | RS101-6677B | B | SPOOL PLATE (INSIDE) | 1 |
| 8 | RS101-7563A | A | SPOOL FINGER | 4 |
| 9 | RS101-6679B | A | DANCER BRACKET (101, 401 & 501 PKGR.) | 1 |
| 9 | RS101-6948B | A | DANCER BRACKET (201 PKGR.) | 1 |
| 10 | RS101-7564A | A | DANCER FINGER | 1 |
| 11 | RS101-7567B | A | SPOOL SHAFT | 1 |
| 12 | RS101-6682A | A | CLUTCH BACK-UP | 1 |
| 13 | RS101-6683A | A | FELT CLUTCH | 1 |
| 14 | RS101-8268A | A | CLUTCH PULLEY ASS'Y. W/BRG. | 1 |
| 15 | RS101-6685A | A | MOTOR PULLEY (BOSTON PULLEY #PVL2) | 1 |
| 16 | SCH34-023A | B | RUBBER BELT | 1 |
| 17 | RS101-9563B | A | TRIM GUIDE EYE (101 & 201 PKGR) | 1 |
| 17 | R401-217B | A | TRIM GUIDE EYE (401 & 501 PKGR) | 1 |
| 18 | R101-506B | B | TRIM GUIDE EYE BRACKET (101, 201, 401 PKGR.) | 1 |
| 18 | R5-141B | A | TRIM GUIDE EYE BRACKET (501 PKGR.) | 1 |
| 19 | 4Z613 | | DAYTON GEARMOTOR | 1 |
| 20 | 6X653 | | DAYTON CAPACITOR | 1 |
| 21 | 3X684 | | DAYTON CLAMP | 2 |
| 22 | 3X685 | | DAYTON TERMINAL BOOT | 1 |
| 23 | FB110-1/2 | | HUB CITY FLANGE BEARING | 2 |
| 24 | LC-085K-1 | | LEE COMPRESSION SPRING | 1 |
| 25 | RS101-7566A | A | INSIDE SPOOL PLATE HUB | 1 |
| 26 | FL50-3 | | BUNTING BRONZE FLANGE BEARING | 2 |
| 27 | 50-8 | | BUNTING BRONZE BEARING | 1 |
| 28 | MS-18 | | REID SHOULDER BOLT | 1 |
| 29 | CLA-13F | | RULAND THREADED SHAFT COLLAR (1/2-13) | 1 |
| 30 | 1/4"DIA. X1"LG. | | SPRING PIN | 2 |
| 31 | 8912 | | SMITH CABLE CLAMP (1/4"DIA.) | 2 |
| 32 | DK-19 | | REID PLASTIC KNOB | 1 |
| 33 | RS101-7565B | A | SPOOL PLATE (OUTSIDE) | 1 |
| 34 | R401-221A | A | TRIM WIND-UP SPACER (401 & 501 PKGR.) | 1 |



| | | | |
|--|---------------------|--|-----------------|
| TORQUE SPECIFICATIONS 1/4" DIA. & SMALLER 1/2" DIA. & LARGER UNLESS OTHERWISE SPECIFIED | | MODEL NO. RENNCO INC. HOMER, MI. | |
| PART NO. HEATER & SOLID TUBES | DATE 10-16-90 | DRAWN BY SCAM | CHECKED BY A |
| HEATED BACK-UP SHEATH & SF | REVISION 1-17-90 | | |

HEATER JAW PARTS

SER. G (ISS. N)

SF

MODEL 101 HEATED BACK-UP SHRINK & SF

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|-----------------|-------|---|------|
| 501 | RS101-11150C | A | 8" OUTSIDE VERT. JAW PLATE | 1 |
| | RS101-11131C | A | 14" OUTSIDE VERT. JAW PLATE | 1 |
| 502 | RS101-8238BP1 | A | 8" OUTSIDE VERT. GRIPPER EXTRU. | 1 |
| | RS101-8471B P1 | A | 14" OUTSIDE VERT. GRIPPER EXTRU. | 1 |
| 503 | R101-431A | A | 8" O.S. VERT. RUBBER GRUPPER | 10 |
| | R101-431A | A | 14" O.S. VERT. RUBBER GRUPPER | 16 |
| 504 | RS101-8186B | A | 8" VERTICAL JAW FRAME | 1 |
| | RS101-11123B | A | 14" VERTICAL JAW FRAME | 1 |
| 505 | RS101-11149C | A | 8" INSIDE VERT. JAW PLATE | 1 |
| | RS101-11130C | A | 14" INSIDE VERTICAL JAW PLATE | 1 |
| 506 | RS101-8238BP2 | A | 8" INSIDE VERT. GRIPPER EXTRU. | 1 |
| | RS101-8471B P2 | A | 14" INSIDE VERT. GRIPPER EXTRU. | 1 |
| 507 | R101-431A | A | 8" INSIDE VERT. RUBBER GRIPPER | 10 |
| | R101-431A | A | 14" RUBBER GRIPPER MATERIAL | 16 |
| 508 | R101-11146A | A | 8" VERTICAL HEATER FRAME | 1 |
| | RS101-11127B | A | 14" VERTICAL HEATER FRAME | 1 |
| 509 | RS101-11124B | A | HORIZ. HEATER FRAME MT. | 1 |
| 510 | R101-1015BP3 | A | 8" VERTICAL HEATER | 1 |
| | R101-1015B P6 | A | 14" VERTICAL HEATER | 1 |
| 511 | RS101-8744B | C | HORIZONTAL JAW FRAME | 1 |
| 512 | RS101-11129D | A | BOTTOM HORIZ. JAW PLATE | 1 |
| 513 | RS101-11643B P2 | A | BOTTOM HORIZ. GRIPPER EXTRU. | 1 |
| 514 | R101-431A | A | RUBBER GRIPPER MATERIAL | 20 |
| 515 | RS101-11643BP1 | A | TOP HORIZONTAL GRIPPER EXTRU. | 1 |
| 516 | R101-431A | A | RUBBER GRIPPER MATERIAL | 21 |
| 517 | RS101-11128D | A | TOP HORIZ. JAW PLATE | 1 |
| 518 | R101-1015B P8 | A | HORIZONTAL HEATER | 1 |
| 519 | RS101-11125B | A | HORIZONTAL HEATER FRAME | 1 |
| 520 | RS101-11540A | A | RETAINER CUP - TOP HORIZONTAL JAW PLATE | 1 |
| 521 | 5/16-24 | | JAM NUT | 2 |
| 522 | 7022F | | SMITH HEX STAND-OFF | 2 |
| 523 | RS101-8187A | A | L.H. BTM. HORIZ. JAW PLATE SPACER | 1 |
| 524 | RS101-11369A | A | CORNER CLIP-JAW PLATE RETAINER | 1 |
| 525 | R101-732A | B | GUIDE SHAFT | 2 |
| 526 | NOT USED | | | |
| 527 | NOT USED | | | |
| 528 | 10-32X3/8 | | PAN HEAD MACHINE SCREW | 2 |
| 529 | HGF-13 | | REID GREASE FITTING | 2 |
| 530 | 5DP1 | | HUMPHREY CYLINDER | 2 |
| 531 | NOT USED | | | |
| 532 | RS101-11541A | A | ANGLE CLIP - JAW PLATE RETAINER | 1 |
| 533 | R101-1124B | A | BEARING BLOCK ASS'Y | 2 |
| 534 | RS101-8188A | A | L.H. OUTSIDE VERTICAL - JAW PLATE SPACER | 1 |
| 535 | 91256A535 | | GREASE HOLE PLUG | 2 |
| 536 | R101-1125A | A | STATIONARY HEATER MOUNT ASS'Y | 2 |
| 537 | E2E-X5E1 | | OMRON PROXIMITY SWITCH | 1 |
| 538 | R101-1126A | A | FLOATING HEATER MOUNT ASS'Y | 2 |
| 539 | R101-1069A | A | FRONT PROXIMITY SWITCH ACTUATOR | 1 |
| 540 | RS101-12302B | A | ELEC. HEATER BOX BRK'T. | 1 |
| 541 | 110SP | | MARATHON TERMINAL BLOCK | 1 |
| 542 | NOT USED | | | |
| 543 | NOT USED | | | |
| 544 | NOT USED | | | |
| 545 | NOT USED | | | |

MODEL 101 HEATED BACK-UP SHRINK & SF

SF

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|--------------|-------|----------------------------------|------|
| 546 | RS101-10423A | A | TEFLON SPACER | 4 |
| 547 | * SEE NOTE | | 20" HORIZ. SEALER BLADE | 1 |
| 548 | * SEE NOTE | | 8" VERTICAL SEALER BLADE | 1 |
| | * SEE NOTE | | 14" VERTICAL SEALER BLADE | 1 |
| 549 | RS101-11145B | A | 8" VERTICAL HEATER FRAME MOUNT | 1 |
| | RS101-11126B | A | 14" VERT. HEATER FRAME MOUNT | 1 |
| 550 | 5000110-10 | | JOY (4PIN) MALE RECEPTACLE | 2 |
| 551 | 5000110-4 | | JOY (4PIN) FEMALE PLUG W/6' CORD | 2 |
| 552 | 31F2282 | | AMEROCK GROMMET | 1 |
| 553 | R101-1095B | A | ELEC. BOX, HEATER CONN. | 1 |
| 554 | R101-1071A | A | FRONT PROX. SW. ACTUATOR SPACER | 1 |
| 555 | R5-052A | A | PROXIMITY SWITCH MOUNT | 1 |

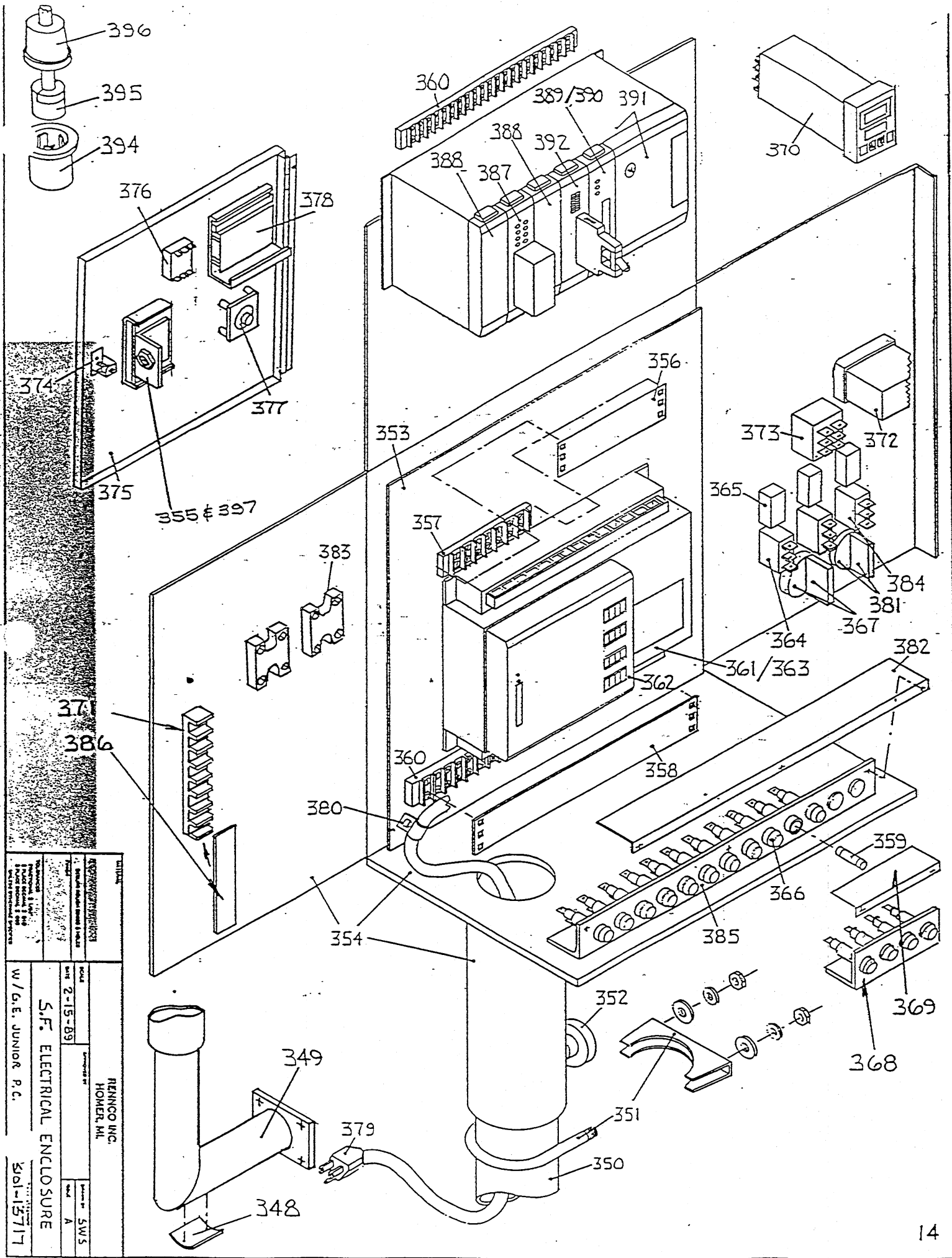
* FOR REPLACEMENT SEAL BLADE PART NUMBERS, GET NUMBER DIRECTLY OFF THE BLADE ITSELF.

SER. G ISS. N

SF

SOLID JAW PARTS & SUPPORT BLOCK
101 W/HEATED BACK-UP SHRINK & SF

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|------------------|-------|------------------------------------|------|
| 450 | | | | |
| 451 | RS101-11121A | A | L.H. FRONT JAW SUPPORT BLOCK | 1 |
| 452 | R101-913A | A | R.H. FRONT JAW SUPPORT BLOCK | 1 |
| 453 | R101-912A | A | R.H. REAR JAW SUPPORT BLOCK | 1 |
| 454 | R101-914A | A | L.H. REAR JAW SUPPORT BLOCK | 1 |
| 455 | HGF-13 | | REID GREASE FITTING | 4 |
| 456 | R101-585A | A | CLAMPING SHAFT | 2 |
| 457 | RS101-11116B | A | HORIZONTAL SOLID JAW | 1 |
| 458 | RS101-11137B | A | 8" VERTICAL SOLID JAW | 1 |
| | RS101-11118B | A | 14" VERTICAL SOLID JAW | 1 |
| 459 | R101-1020B | A | SOLID JAW CORNER BRACKET | 1 |
| 460 | RS101-11119B | A | HORIZ. H-CHANNEL | 1 |
| 461 | RS101-11140B | A | 8" VERT. H-CHANNEL | 1 |
| | RS101-11056B | A | 14" VERT. H-CHANNEL | 1 |
| 462 | R101-1122B | A | 8" VERT. HEATER, SILICONE BACK-UP | 1 |
| | R101-1052B | A | 14" VERT. HEATER, SILICONE BACK-UP | 1 |
| 463 | RS101-11120A | A | HEATED SILICONE - HORIZONTAL | 1 |
| 464 | T-10X18 YD. ROLL | | PARFLEX TEFLON TAPE -1/4"X10 MIL. | 2 |
| 465 | RS101-11142A | A | 8" VERT. HEATED SILICONE | 1 |
| | RS101-11058A | A | 14" VERT. HEATED SILICONE | 1 |
| 466 | RS101-8967A | A | SILICONE FOAM CUSHION - HORIZ. | 1 |
| 467 | RS101-8853A | A | 8" VERT. SILICONE FOAM CUSHION | 1 |
| | RS101-8956A | A | 14" VERT. SILICONE FOAM CUSHION | 1 |
| 468 | MK6-4 | | KLIFFON TERMINAL BLOCK | 1 |
| 469 | | | | |
| 470 | RS101-8190A | A | VERT. JAW SPACER - FRONT | 1 |
| 471 | | | | |
| 472 | | | | |
| 473 | RS101-1825A | B | CLAMPING SHAFT SPACER | 2 |
| 474 | RS101-8189A | A | HORIZ. SOLID JAW SPACER - REAR | 1 |



| | |
|--|-----------------------------|
| APPROVED FOR RELEASE NATIONAL ARCHIVES RG 226 DATE 11-15-71 | HENCO INC. HONOLULU, HI. |
| W/G.E. JUNIOR P.C. | S.F. ELECTRICAL ENCLOSURE |
| 2-15-69 | SW/S |
| 3401-15717 | A |

SER.G ISS.N
SF

ELECTRICAL ENCLOSURE PARTS - 101
SMOKE FREE

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|---------------|-------|---------------------------------------|--------|
| 350 | R101-752B | B | ENC. SUPT. TUBE | 1 |
| 351 | 3/8-16 | | 2 1/2" I.D. MUFFLER CLAMP | 2 |
| 352 | DK-19 | | REID KNOB | 1 |
| 353 | R101-987C | A | ENC. SUB PANEL | 1 |
| 354 | R101-1064B | A | MACHINE ENCLOSURE | 1 |
| 355 | S300-8AC | | BACK-UP HEATER CONTROL | 1 |
| 356 | CW110 | | MARATHON TERM BLK COVER | 1 |
| 357 | 110SP | | MARATHON TERMINAL BLOCK | 1 |
| 358 | CW124 | | MARATHON TERMINAL BLK COVER | 1 |
| 359 | ABC-15 | | FUSE - 15 AMP | 1 |
| | ABC-5 | | FUSE - 5 AMP | 1 |
| | ABC-3 | | FUSE - 3 AMP | 1 |
| | AGC-1 | | FUSE - 1 AMP | 10 |
| 360 | 124SP | | MARATHON TERMINAL BLK | 1 |
| 361 | 1C609SJR102 | | GE JR. BASIC PC. | 1 |
| 362 | 1C609TCU100A | | GE TIMER/COUNTER SET POINT UNIT | 1 |
| 363 | 1C610ACC151A | | GE PROM MEMORY CHIP | 1 |
| 364 | 160011E653 | | ARROW HART NOM LIGHTED SPST SWITCH | 2 |
| 365 | 1609DUM11 | | ARROW HART FILLER PLUG | 2 |
| 366 | HKPHH | | LITTLEFUSE FUSEHOLDER | 13 |
| 367 | PW3P23 | | MICRO-SWITCH PUSHBUTTON - RED | 1 |
| | PW3CD | | MICRO-SWITCH N.O. CONTACT BLOCK | 1 |
| 368 | NOT USED | | | |
| 369 | | | | |
| 370 | 965-1CD0-0000 | | WATLOW HEATER CONTROL | 2 |
| 371 | | | | |
| 372 | P2-4906-115AC | | REDDINGTON COUNTER | 1 |
| 373 | 2600HR11E | | ARROW HART LIGHTED DPST SWITCH | 1 |
| 374 | 44-99-116-11 | | SOUTHCO KNOB LATCH | 1 |
| | 44-99-222-51 | | SOUTHCO KEYED LATCH | OPT. 1 |
| 375 | RS101-13002C | A | MACHINE ENCLOSURE DOOR | 1 |
| 376 | QSS221 | | INFITEC ONE SHOT MODULE | OPT. 1 |
| 377 | P1800-24 | | 1 MEGA OHM POT. | OPT. 1 |

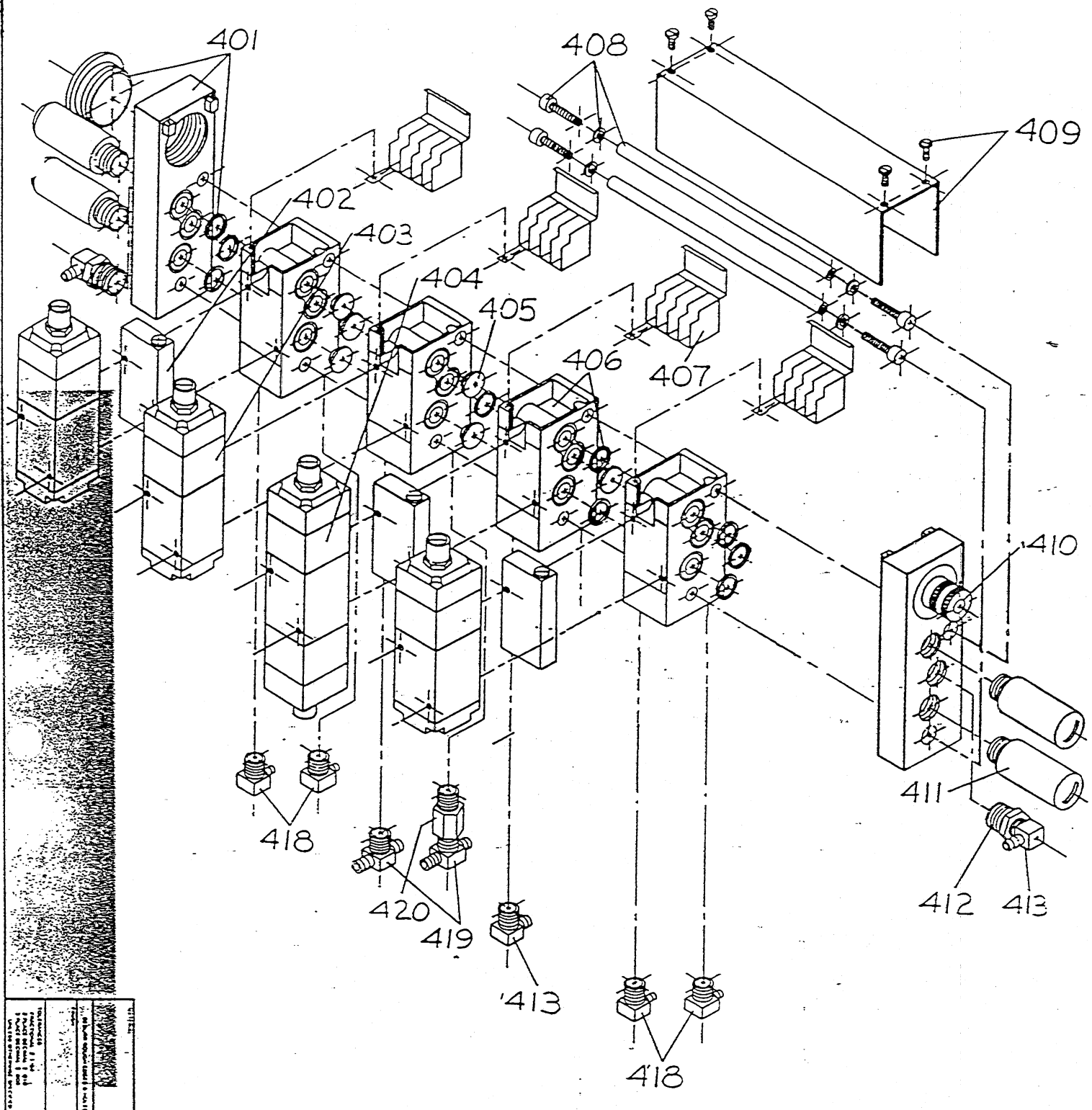
ELECTRICAL ENCLOSURE PARTS - 101 SMOKE FREE
PAGE 2

SER. 6 ISS. 0
SF

| ITEM# | PART# | ISSUE | DESCRIPTION | QTY. |
|-------|-------------|-------|----------------------------------|--------|
| 378 | CBC-700-90 | | WARNER BRAKE CONTROL | OPT. 1 |
| 379 | 15143SJ | | AMERICAN POWER CORD SET | 1 |
| 380 | 115 | | JIFFY CLIP | 1 |
| 381 | NOT USED | | | |
| 382 | R101-990B | A | FUSEHOLDER COVER | 1 |
| 383 | SSRT-240D25 | | P&B SOLID STATE RELAY | 2 |
| 384 | 1600HR11E | | ARROWHART LIGHTED SPST SWITCH | 1 |
| 385 | R101-989B | A | FUSEHOLDER MTG. BRKT | 1 |
| 394 | NOT USED | | | |
| 395 | NOT USED | | | |
| 396 | NOT USED | | | |
| 397 | R101-1117A | A | MTG. TRACK, BACK-UP HTR. CONTROL | 1 |

USE THE FOLLOWING ITEMS WHEN THE STANDARD SERIES ONE IS USED IN PLACE OF THE SERIES ONE JUNIOR.

| | | | | |
|-----|--------------|--|----------------------------------|---|
| 358 | CW124 | | MARATHON TERM BLOCK COVER (ADTL) | 1 |
| 360 | 124SP | | MARATHON TERMINAL BLOCK (ADTL) | 1 |
| 362 | 1C609TCU100A | | GE TIMER/COUNTER SET | 1 |
| 387 | IC610MDL175A | | GE SERIES ONE OUTPUT MOD | 1 |
| 388 | IC610MDL100A | | GE SERIES ONE FILLER MOD | 1 |
| 389 | IC610CPU104A | | GE SERIES ONE CPU MOD | 1 |
| 390 | IC610ACC155A | | GE PROM MEMORY CHIP | 1 |
| 391 | IC610CHS110A | | GE SERIES ONE CHASSIS | 1 |
| 392 | IC610MDL106A | | GE SERIES ONE INPUT MOD | 1 |
| 393 | IC610CBL105A | | GE SERIES ONE INTERFACE CABLE | 1 |



| | | | |
|---|--|---------------------------------|--|
| TECHNICAL DATA PART NO. 101, 401, 501 MANUFACTURED BY HERRING & COMPANY 101, 401, 501 | | DATE 9-23-54 | |
| DRAWN BY J. D. | | CHECKED BY A | |
| MANIFOLD VALVE ASSEMBLY | | HERRING & COMPANY HOMER, MI. | |
| 101, 401, 501 | | RS101-13721A | |

MANIFOLD VALVE ASSEMBLY PARTS

SER. G ISS. N

SF

| ITEM# | PART# | DESCRIPTION | QTY. |
|-------|---------------|---|------|
| 401 | ME401LR | SMC RIGHT & LEFT END PLATES W/O-RINGS | 1 |
| 402 | SP0100 | SMC INTERFACE SPEED CONTROL W/GASKET | 3 |
| 403 | NVS4114-0009D | SMC SINGLE SOLENOID VALVE (SPR RET) | 4 |
| 404 | NVS4214-0009D | SMC DOUBLE SOLENOID VALVE | 1 |
| 405 | AXT336-6 | SMC GALLERY BLOCKING DISCS | 6 |
| 406 | MB4010-02 | SMC MANIFOLD BLOCK WITH O-RINGS | 5 |
| 407 | AXT336-21A | SMC TERMINAL BLOCK | 5 |
| 408 | AXT336-5-5 | SMC 5 STATION TIE-RODS WITH SCREWS | 2 |
| 409 | NXT336-4-5 | SMC 5 STATION CONDUIT COVER WITH SCREWS | 1 |

PART-NUMBERS SHOWN-FOR TIMES 408 AND 409 ARE FOR STANDARD 5 STATION VALVE ASSEMBLY. IF OTHER THAN 5 STATION, CHANGE LAST DIGIT OF PART NUMBER TO INDICATE THE NUMBER OF VALVE STATIONS.

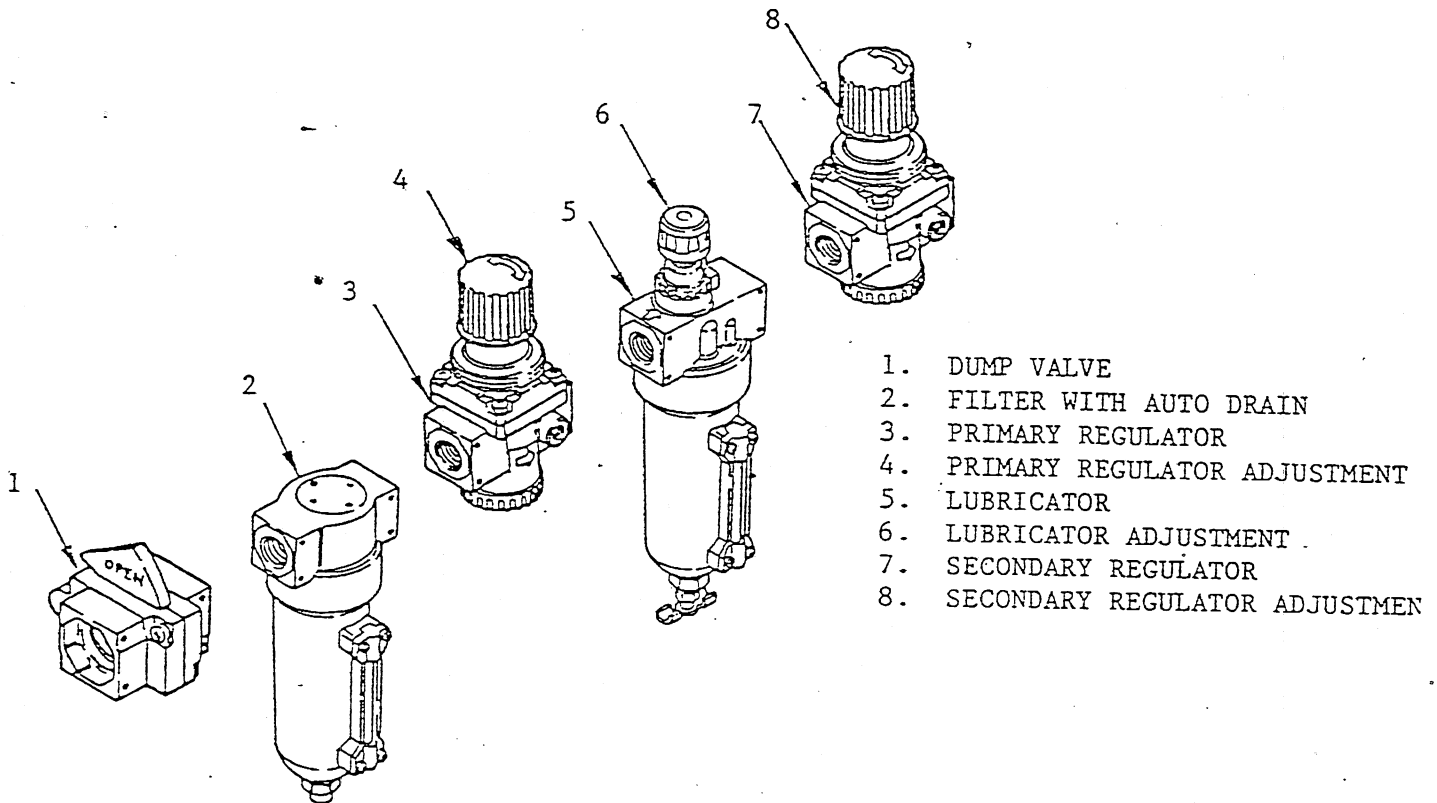
| | | | |
|-----|----------|-------------------------|---|
| 410 | DB3 | PYLE/NATIONAL CORD GRIP | 1 |
| 411 | 3/8 N.T. | WAIRCOM BREATHER | 4 |
| 412 | 209P-6-4 | REDUCER BUSHING | 2 |
| 413 | 229-6-4 | MALE ELBOW | 4 |
| 414 | 216P-4-2 | REDUCER NIPPLE | 1 |
| 415 | F10BK | FLOW CONTROL VALVE | 1 |
| 416 | 231-4-2 | RUN TEE | 1 |
| 417 | 218P-4 | HEX HEAD PLUG | 1 |
| 418 | 229-4-4 | MALE ELBOW | 4 |
| 419 | 232-6-4 | BRANCH TEE | 2 |
| 420 | 222P-4-4 | ADAPTER | 1 |

UNIT B R E Q U I R E M E N T S P R I O R T O S T A R T - U P

SECTION 1
SUPPLY AIR SYSTEM OPERATION, ADJUSTMENT, CONSUMPTION

1.1 FRL UNIT OPERATION (FILTER-REGULATOR-LUBRICATOR UNIT) A dump valve is provided ahead of the FRL Unit as a means of stopping and starting the main air supply to the machine. When the dump valve is pushed upward, it starts the air flow through the FRL Unit. When pushed downward, all the air that is trapped in valves and cylinders is exhausted to the atmosphere.

The filter unit is intended to remove solids down to 5 microns. It is not intended as a water and oil removal filter. It will remove water to a certain degree, but if the shop air coming to the machine is excessively wet, it will not remove enough water for trouble-free operation. In this case, an air dryer or moisture separator should be used in the air system, or a coalescing water-oil removal filter added at the packager. **CAUTION:** Dirty, moisture laden air can damage the valving system.



1.2 LUBRICATOR ADJUSTMENT The lubricator is factory set, and can be checked for proper operation by noting the number of drops of oil that fall from the stem as viewed through the sight dome on top of the lubricator. One drop should fall for every 7-8 cycles of the packager.

If readjustment is necessary, turn the recessed screw adjustment to the sight dome counter clockwise to decrease flow. When necessary, refill oil bowl with #6 velocite oil or #10 non detergent air lubricant. **CAUTION:** Over-oiling the valve system will eventually lead to malfunctioning of the spools in the valves.

UNIT B R E Q U I R E M E N T S P R I O R T O S T A R T - U P

SECTION 1

SUPPLY AIR SYSTEM OPERATION, ADJUSTMENT, CONSUMPTION

1.3 REGULAR ADJUSTMENT Models 101, 201, and 401 have a main and secondary regulator. 101 and 201 main regulator is normally set at 80 PSI and secondary regulator at 40 PSI. Model 401 main regulator is normally set at 40 PSI and the secondary at 20 PSI.

Models 501-36 and 501 have 3 regulators, a main and 2 secondary. The main regulator is set at 100 PSI and controls the film feed function, seal cooler air blast and jaw opening function. The first secondary regulator is set normally at 60 PSI and controls the heater cylinders. The other secondary regulator is normally set at 20 PSI and controls the pressure of the main drive cylinder when the jaws are closing.

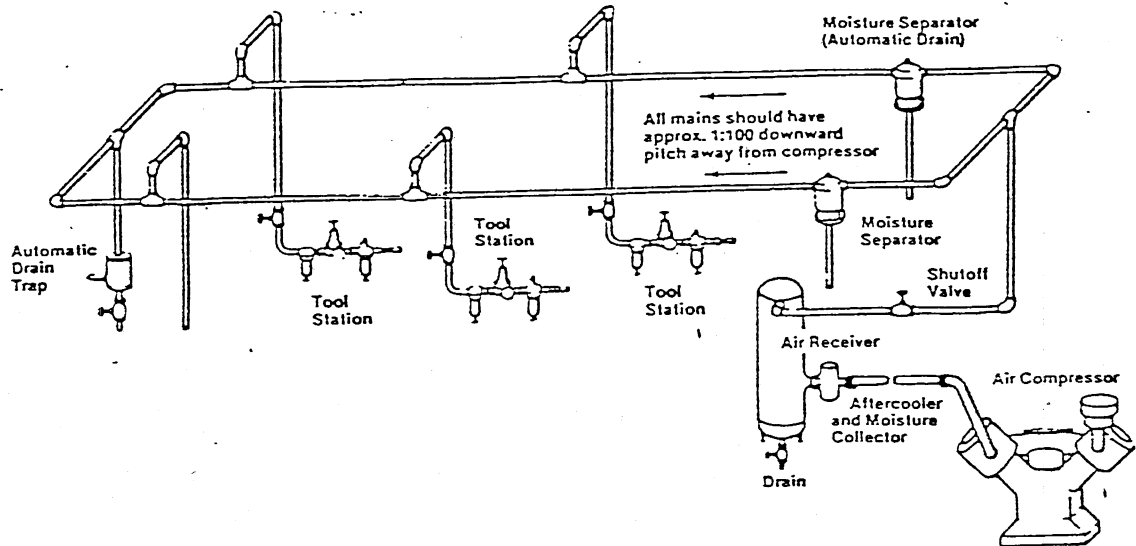
In some cases, the prescribed settings may be different than those indicated above. Check the labels mounted on the regulator gauges and refer to the air circuit drawing.

Regulator adjustment is made by loosening the lock nut or ring and turning the adjustment knob clockwise to increase pressure, counter clockwise to decrease pressure.

Because the filter has an automatic drain feature and will dump accumulated water when it reaches a certain level, make sure no electrical components or power cord connectors are located under or near the filter.

SECTION 1
SUPPLY AIR SYSTEM OPERATION, ADJUSTMENT, CONSUMPTION

1.4 RECOMMENDED AIR PIPING SYSTEM DIAGRAM



1.5 AIR CONSUMPTION The air consumption for your system as shipped is shown on the specifications page UNIT A, SECTION 2.1. The following list of air operated optional equipment and their air consumption is provided in the event they are added to the original equipment at a later date. The air consumption is given per cycle because all systems operate at different cycle rates. To find the consumption of these options if applied to your system, multiply the figure given by the cycles per minute that your system operates.

| <u>BASIC PACKAGERS</u> | <u>CUBIC FEET</u> <u>PER MACHINE CYCLE</u> |
|--|---|
| Model 101 | .19 |
| Model 201 | .10 |
| Model 401 | .16 |
| Model 501 AND 501-36. | .40 |
| Model 101 with large jaw opening | .26 |
| Model 401 with large jaw opening | .18 |
| <u>OPTIONAL EQUIPMENT</u> | |
| Bucket Conveyor with 4" wide buckets | .06 |
| Bucket Conveyor with 8" wide buckets | .12 |
| Pusher Infeed (average types - 12" stroke) | .09 |
| Hot Hole Punch | .007 |
| Cold Hole Punch | .004 |
| SCH-34 Hot Roll Leaf Imprinter | .035 |
| RC-1000 Electronic Counter | .01 |
| Seal Cooler | .04 |
| Product Shelf | .02 |
| Pocket Conveyor | .12 |
| CCL Cup Counter/Loader | .10 |

EXAMPLE: Model 201 with Pusher Infeed, Cold Hole Punch and SCH-34 Imprinter
 .10 + .09 + .004 + .035 = .229 Cubic Feet per machine cycle.
 If packager is to cycle 20 times per minute:
 .229 x 20 = 4.58 Cubic Feet per minute (SCFM).

UNIT B R E Q U I R E M E N T S P R I O R T O S T A R T - U P

SECTION 2
ELECTRICAL REQUIREMENTS

2.1 ELECTRICAL REQUIREMENTS An 8 foot power cord with grounded plug is provided. Connect to properly grounded circuit of correct voltage and amperage ratings. **WARNING:** Bypassing or severing the ground lug on the cord plug may result in personal injury. Electrical specifications for your system as shipped are shown on the specifications page UNIT A, SECTION 2.1. The following list of optional equipment and their electrical ratings is intended as a guide in the event they are added at a later date.

| | | | |
|-----------|---------|---|-----------------------------|
| MODEL 201 | 8 X 10 | = | 6 AMPS @ 120 VOLTS A.C. |
| MODEL 101 | 14 X 20 | = | 8 AMPS @ 120 VOLTS A.C. |
| MODEL 401 | 14 X 36 | = | 7 AMPS @ 240 VOLTS A.C. |
| MODEL 501 | 14 X 42 | = | 7 1/2 AMPS @ 240 VOLTS A.C. |
| MODEL 501 | 14 X 52 | = | 7 AMPS @ 240 VOLTS A.C. |

| <u>OPTIONAL EQUIPMENT</u> | <u>AMPS @ 120 VOLTS A.C.</u> |
|--|------------------------------|
| Discharge Conveyor 12" Wide | 3.8 |
| Discharge Conveyor 24" Wide | 4.0 |
| Hot Hole Punch | .3 |
| SCH-34 Imprinter | 2.0 |
| Electric Eye for Film Registration | .2 |
| Static Eliminator | .5 |
| Vacuum Trim Removal | 10.0 |
| RC-1000 Electronic Counter | 2.0 |
| RC-1000 with Hopper | 3.5 |
| Infeed Conveyor | 1.5 |
| Pocket Conveyor | 1.5 |
| CCL Cup Counter/Loader | 2.0 |

NOTE: Amperages shown for heaters are maximum. Actual average working amperage is somewhat less.

UNIT C I N I T I A L S E T - U P P R O C E D U R E S

SECTION 1
POWER UP AND TEMPERATURE ADJUSTMENT

1.1 POWER-UP Turn on air supply to packager.

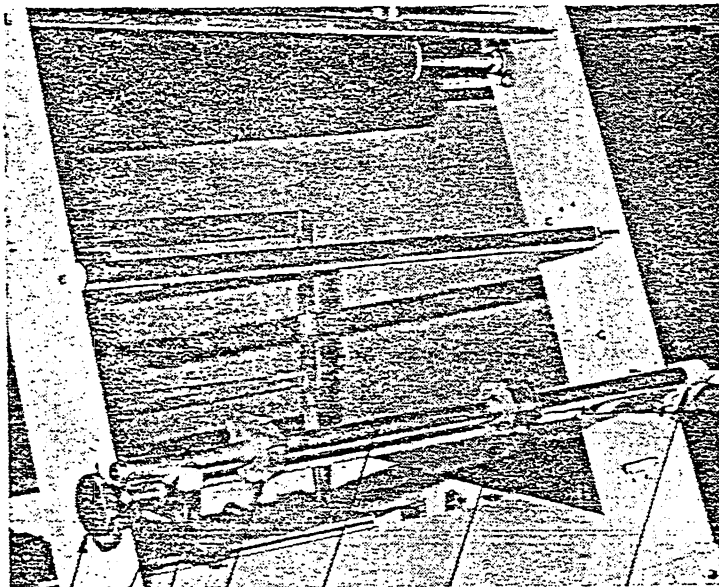
Move the main electrical power switch to the "on" position. This switch provides power to the sealing elements and the exhaust blower. The switch labeled "trim" provides power to the trim wind-up motor.

1.2 TEMPERATURE ADJUSTMENT Temperature control adjustment depends on many factors. The temperature controls are factory set at time of shipment and should give satisfactory initial operation. Refer to temperature control adjustment in UNIT D, SECTION 5.1 AND SECTIONS 6.1 AND 6.2.

UNIT C I N I T I A L S E T - U P P R O C E D U R E S

SECTION 2
LOADING FILM

- 2.1 LOADING FILM (NOTE: Remember that the load side of the machine is the front and that the control panel side is the left side of the machine. The position of individual components will be referred to by the same relationship).



1. Film Roll Shaft
2. Front Film Roll Arbor
3. Rear Film Roll Arbor
4. Adjustment Knob
5. Film Roll Nylon Support (Roller Bearings on Model 501)
6. Film Roll Support Mount Block
7. Brake Strap

4 5 6 2 1 3 7

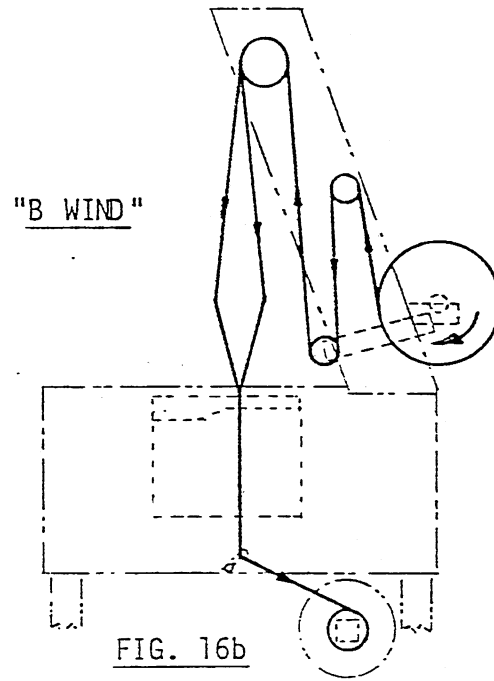
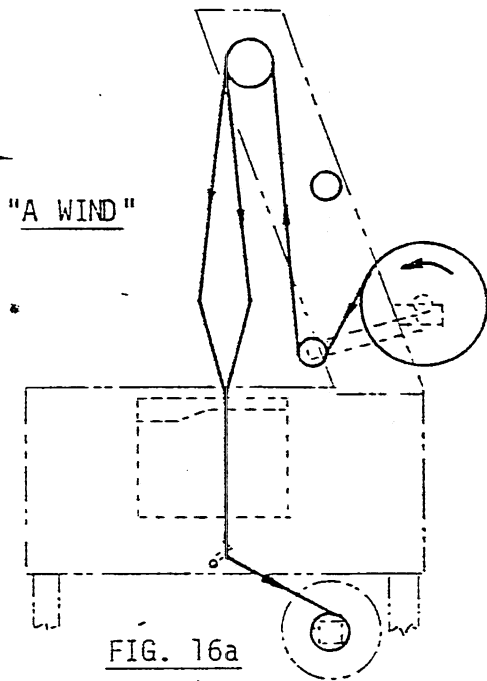
FIGURE 15

Loosen one end of the brake strap to lift off the film roll shaft from its supports. Remove the rear arbor (with thumb screw). Put film roll onto shaft with open end of film toward front arbor. Replace rear arbor into film roll core and be sure arbors are gripping core tightly. Tighten thumb screw. Place shaft on supports and replace brake strap.

UNIT C INITIAL SET - UP PROCEDURES

SECTION 3
FILM THREADING DIAGRAMS & PROCEDURES

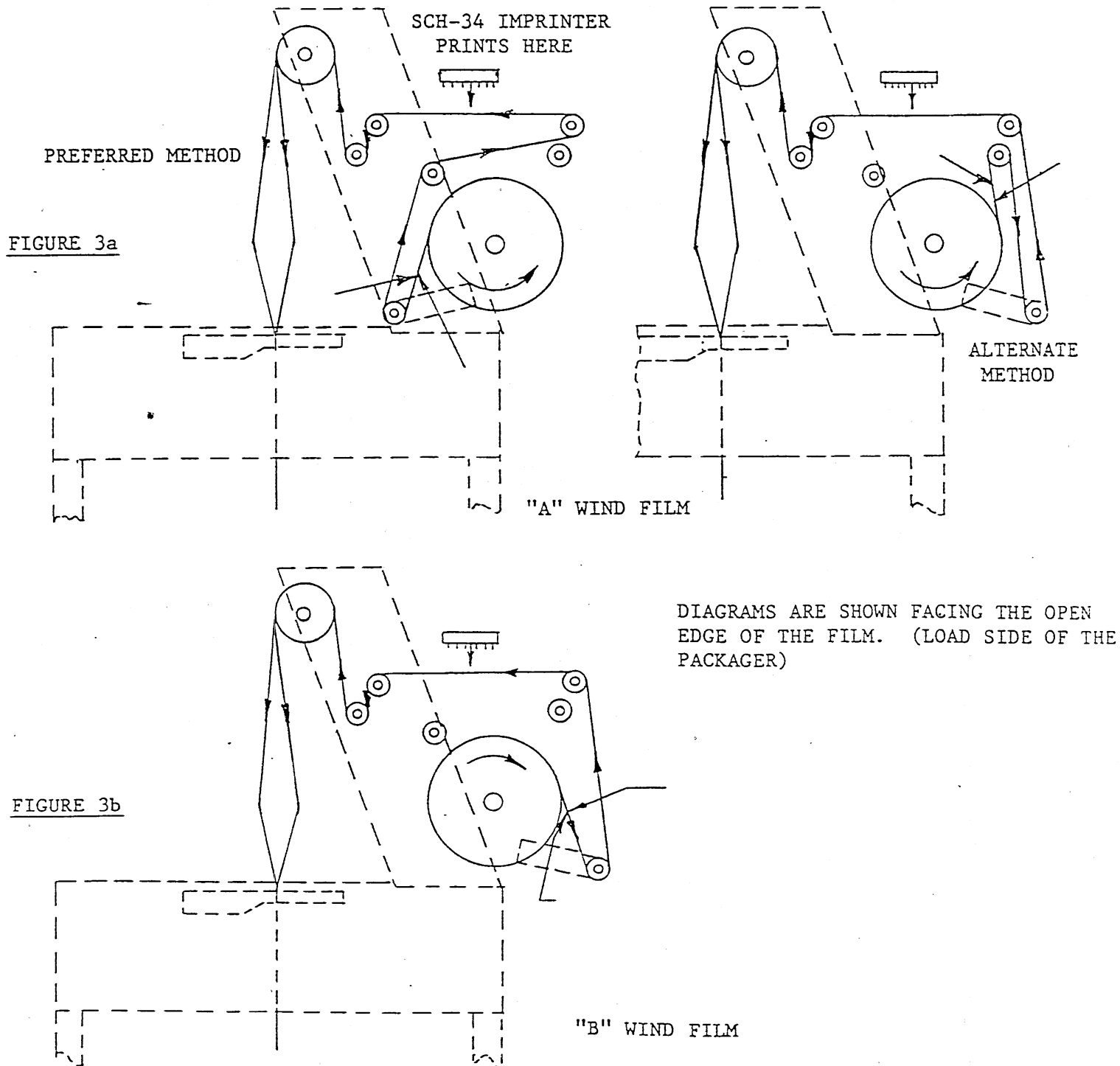
3.1 FILM THREADING DIAGRAMS Figures 16a and 16b show the threading method for a standard machine. For film threading of SCH-34 Imprinter mounted to packager see the following page. On some applications the threading may be different than shown because of special attachments. In any case, attachments should not interfere with the tracking of the film. They should not push or distort the film from its otherwise straight travel between one guide roll to the next.



UNIT C INITIAL SET - UP PROCEDURES

SECTION 3
FILM THREADING DIAGRAMS

FILM THREADING DIAGRAMS FOR PACKAGER WITH SCH-34 IMPRINTER



UNIT C I N I T I A L S E T - U P P R O C E D U R E S

SECTION 3
FILM THREADING DIAGRAMS & PROCEDURES

- 3.2 **MAKING THE FIRST BAG** After threading the film over the film feed roll, place it around the film guide bar, chute, or pusher infeed, depending on how your machine is equipped. Depress the jaw lock open/safety reset push button momentarily to open the jaws. Advance the film manually so it is below the jaws 6-8 inches. Lower the film hold down; assembly into position.

WARNING: The following procedure requires placing hands near moving machine parts! Be sure hands and fingers are visible at all times. A second person should not be used to operate the jaws while another is advancing the bag and tying the trim tail.

NOTE:The above description is for operation of a Model 101 or 201. For operation of Model 401 and 501 equipped with safety door, see Unit D, Section 7.3.

REFER TO SECTION 4 AND CHECK OPERATION OF JAW SAFETY AT THIS TIME.

See Figures 18a and 18b - Grasp the lower outside corner of the film below the jaws, and pull downward and outward. Hold the jaw lock open/safety reset button for one full second and then release to close the jaws and make the seal. Tap the jaw lock open/safety reset button to open the jaws. The film will advance. Do this enough times to create a trim tail that will reach the trim wind-up spool. Route the trim tail through the trim guide eyebolt with the trim wind-up switch off and the spool stopped, tie off the trim tail to one of the 5 spool fingers. Turn trim wind-up switch on and close the jaws.

At this time, the packager is ready to be loaded with product and operated. Refer to UNIT D for details of specific machine functions and for adjustments needed in changeover.



FIGURE 18A



FIGURE 18B

UNIT C I N I T I A L S E T - U P P R O C E D U R E S

SECTION 4
JAW SAFETY ADJUSTMENT

- 4.1 THE PURPOSE of the jaw safety system is to open the jaws if something other than film is caught between the jaws when they are closing.

WARNING: Personal injury can result if safety is not adjusted properly and hands or fingers are caught between the moving jaws.

CAUTION:

**Safety adjustment should be checked daily or before each shift
**Never assume safety is operating properly without checking it first
**Never place hands between jaws even if safety is adjusted and working properly

NOTE:

**The safety is designed to actuate on anything 3/16" thick or larger.
Items less than 3/16" thick may not actuate safety
**If the speeds of the jaws opening and closing are changed, the safety must be readjusted.

There are two safety system adjustments to set which work in conjunction with each other. Refer to UNIT A, SECTION 3.7 for locations.

- 4.2 ADJUSTMENT OF THE ACTUATOR SCREW that actuates the jaws closed proximity switch should be made as follows: With the jaws closed and the air pressure turned on, loosen the jam nut on the actuator screw and turn it so that it moves away from the switch. The led on the switch will go out. Then turn the screw toward the switch until the led turns on again. At that point continue to turn the screw 1/4-1/2 turn more.

* NOTE: Cycle the packager and test to see if the setting is as sensitive as it can be. Readjust if necessary.

NOTE: Some packagers with longer jaw assemblies are equipped with 2 jaw closed proximity switches located at each end of the horizontal jaw. For safe operation of the machine, both switch actuator bolt adjustments must be made correctly.

4.3 THE SAFETY TIMING is set by decreasing the number on the safety thumbwheel timer so that the packager will not complete its cycle when operating. NOTE: Use only R.H. thumbwheel to adjust the safety. The three L.H. thumbwheels must remain set at "0" for this timer to work properly. Now with the jaws locked open, increase the safety timing by 1 and attempt to close the jaws by depressing the safety reset button. Repeat until jaws stay closed and the heaters advance. Once this happens, leave the setting where it is.

NOTE: Changing the main drive cylinder closing speed will necessitate repeating the timing adjustment. Also, if the jaws will not stay closed and advance the heaters, the screw adjustment may need to be repeated.

Check for proper operation of the jaw safety system by purposely closing the jaws on an object such as a small rubber hose approximately 3/8"-1/2" diameter. If the safety is adjusted correctly, the jaws will open promptly when they close on the object.

WARNING: DO NOT PUT HANDS IN JAWS.

UNIT C I N I T I A L S E T - U P P R O C E D U R E S

SECTION 5
HEATER DWELL ADJUSTMENT

- 5.1 PURPOSE OF HEATER DWELL It provides an adjustable timing to regulate how long the heater stays plunged into the film.

The operation of the heater dwell is as follows: The dwell timing begins at the same time that the heaters are signaled to advance, so the dwell time includes both the amount of time that it takes the heaters to advance to the film, plus the time that they stay extended to make the seal.

- 5.2 ADJUSTMENT OF THE HEATER DWELL TIMER is done by setting the two R.H. thumbwheels to an approximate initial setting of 20. It will then be necessary to increase or decrease the setting to get the best seal with the particular film being used. Generally, the thicker the film is, the higher the setting will have to be.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 1

SHRINK TRIM WIND UP ASSEMBLY -
MACHINES WITH SHRINK TYPE SEAL ASSEMBLY

- 1.1 SHRINK TRIM WIND UP OPERATION Most shrink films require a more sensitive trim wind up unit due to their inherent tear properties. Because of this, the trim wind up unit is provided with a friction disc clutch that allows a more infinite adjustment. The friction disc is usually felt and in normal use will not require attention. However, in time, the felt will wear or become filled with contaminants. If adjustment of the tension provides jerky operation, or if a lack of tension is the problem, the felt disc may need to be replaced. In doing so, clean the mating surfaces of the adjacent metal discs.

TRIM TENSION ADJUSTMENT (Refer to exploded parts page 15) Trim tension should be kept at a maximum that will not break the trim tail. Also, it should be pointed out that the recommended trim tail width is 1 inch, and the machine may not function properly if less than this amount is provided. Adjustment is made by loosening the clamp screw of the threaded clamp collar, Item #29, and turning the collar clockwise to add tension or counter clockwise to lessen the tension while holding the spool, Item #8, from turning.

The tension should be such that the trim is pulled immediately when the film starts to advance. If the spool hesitates at the time the film advances, the trim tail will go slack for an instant, then when the spool does begin to turn, it may take up the trim abruptly and cause it to break. Another important factor is the routing of the film through the trim guide eye bolt, Item #17. If the trim tail is pulled too hard sideways rather than downward, it may cause the film to tear in the corner where the vertical and horizontal seals meet. It is best to arrange the position of the eye bolt so the trim tail is pulled downward as much as possible .

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

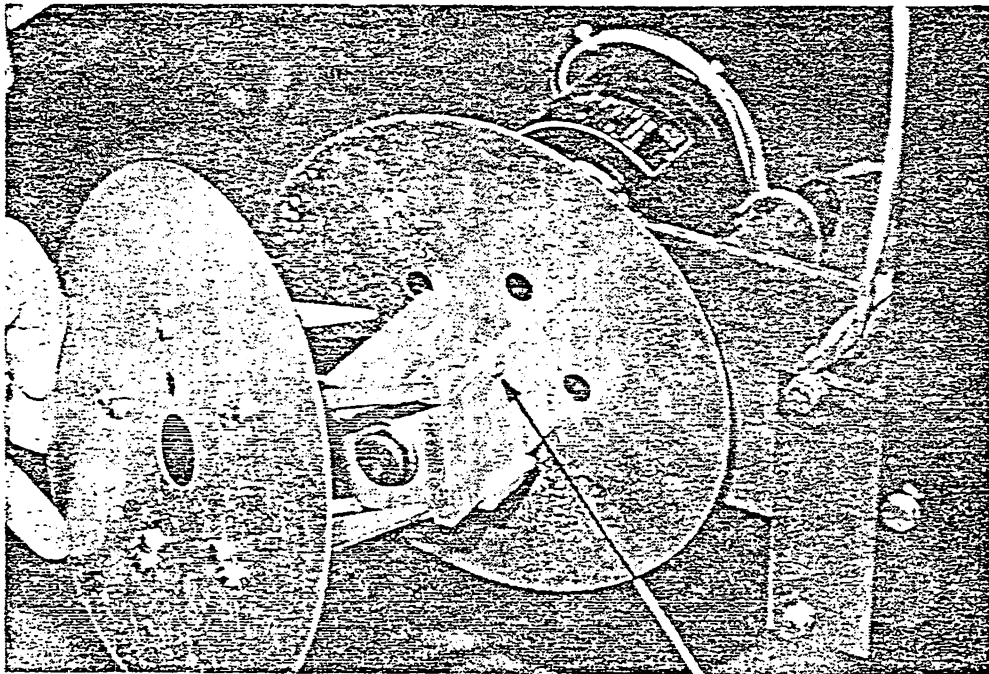
SECTION 1
STANDARD TRIM WIND UP ASSEMBLY -
MACHINES EQUIPPED WITH TYPE "SF" SEAL ASSEMBLY

1.2 STANDARD TRIM WIND UP TENSION ADJUSTMENT - Trim tension should be kept at a maximum that will not break the trim tail.

*It should be pointed out that the recommended minimum trim tail width is 1 inch. If the trim is less than 1 inch, the trim wind up assembly may not be able to be set with enough tension to aid film advancing and tracking.

*Trim tension is accomplished by a leather strap that acts as a slip clutch to transfer power from a continuous run gearmotor to the wind up spool. Tension can be adjusted by turning the adjustment screw shown in Figure 19. Turn the screw clockwise to increase tension, counter-clockwise to decrease.

Trim tension should be adjusted so that as the film advances the trim tail is kept taught during the entire time the film advances.



TENSION ADJUSTMENT
SCREW

FIGURE 19

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 2
FILM GUIDANCE AND TRACKING

2.1 FILM GUIDANCE AND TRACKING One of the main factors that contribute to the performance of the packager is how well the film guides and spreaders form the opening that accepts the product. Your packager is equipped with guides and spreaders to do this job effectively, but there are a few things to check if problems arise.

A. Symmetrical Film Spreading Looking from the front (load side) of the machine, any attachments above the jaws (film guide, spreader bars or plates, chutes, or infeed mechanism) should be centered on a line from the film feed roll to the jaws in the closed position. These attachments, if not centered, will cause more pressure against one of the film webs than the other. This will make the two edges of the film webs get out of alignment with each other and create unnecessary wrinkles and distort the shape of the bag. See Figure 20.

Looking from the left side (control panel) of the machine, there are several considerations.

B. Film Roll Position The center fold edge of the film roll and where the edge passes over guide rollers, film feed roll and finally along the edge of the film guide bar should all line up. Lay a straight edge along the end surface of the film roll (preferably as large a roll as possible). The centerfold edges of the film where it passes over the guide rollers and the edge of the film guide should line up with the straight edge. See Figure 21a. This should be done with the film guide adjusted squarely to the jaws.

If the film roll is too far toward the front of the machine, the film will bunch up on the film guide. See Figure 21b.

If the film roll is too far toward the rear of the machine, the centerfold edge of the film will move away from the film guide bar and the trim tail will become narrow and either be cut off or broken. See Figure 21c.

Adjustment of the film roll position can be made with the film adjustment knob. See UNIT C, SECTION 2, Figure 15.

After adjusting the film roll as above, it may be found that even though the film edges are lined up properly, the film bunches up at the top corner of the film guide bar similar to Figure 22a. In this case, it is caused by how far the film is being spread open. To solve this problem, tilt the film guide as shown in Figure 22b. Note that the bottom tip of the film guide is held at a point that keeps the film edge in line just the same as if the film guide were adjusted square to the jaws. In other words, while the bottom tip of the film guide is kept in alignment with the film roll edge. The top of the film guide is tilted in.

UNIT D MACHINE FUNCTION DETAILS & ADJUSTMENTS

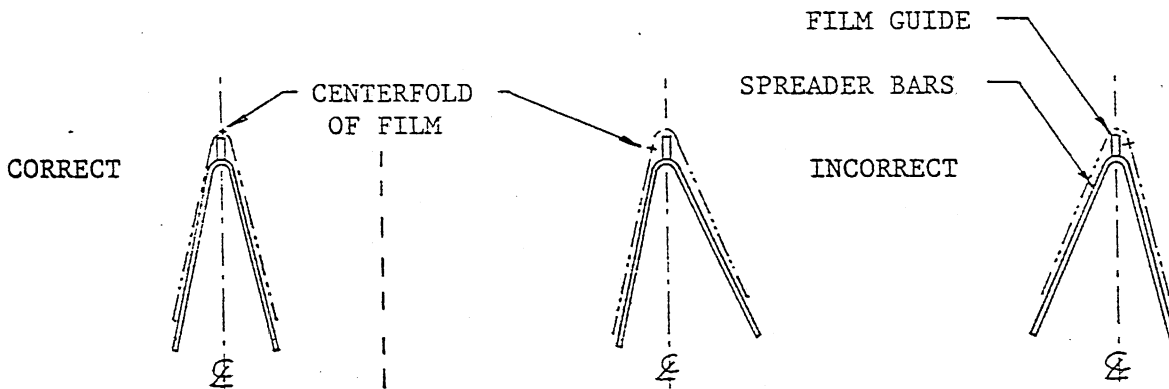
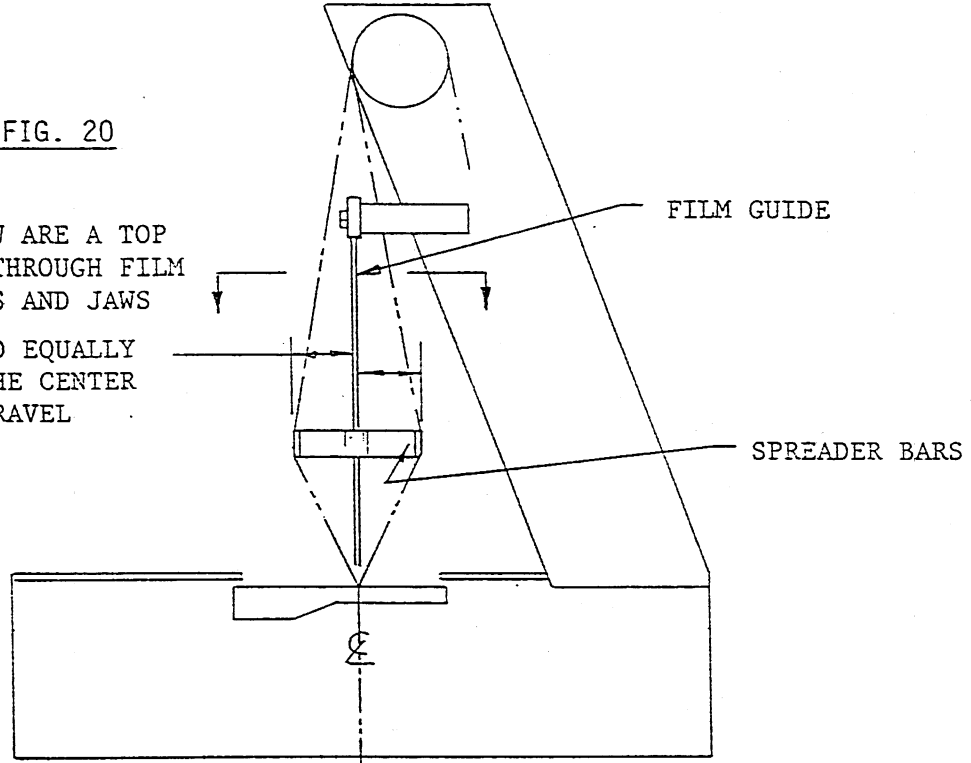
SECTION 2
FILM GUIDANCE AND TRACKING

2.2 FILM GUIDANCE DETAILS

FIG. 20

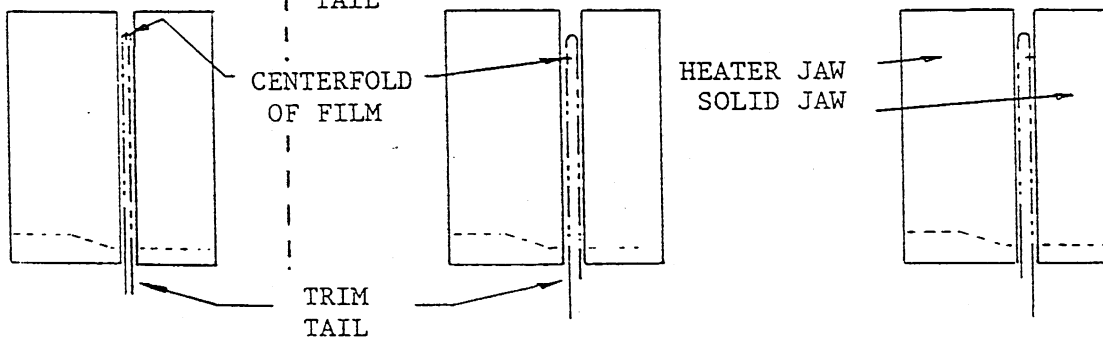
ILLUSTRATIONS BELOW ARE A TOP VIEW LOOKING DOWN THROUGH FILM GUIDE AND SPREADERS AND JAWS

FILM MUST BE SPREAD EQUALLY ON BOTH SIDES OF THE CENTER LINE OF THE FILM TRAVEL



EQUAL, SYMETRICAL FILM SPREADING ALLOWS EDGES OF FILM TO LINE UP FOR PROPER TRIM

UNEQUAL SPREADING OF FILM CAUSES CENTERFOLD TO DRAW OFF-CENTER AND TO MAKE THE EDGES OF THE FILM MISALIGN WHICH CAN CAUSE WEAK TRIM TAIL



UNIT D MACHINE FUNCTION DETAILS & ADJUSTMENTS

SECTION 2
FILM GUIDANCE AND TRACKING

2.2 FILM GUIDANCE DETAILS

With the film roll properly positioned the centerfold edge of the film will contact a straight edge at points shown indicating the edges are aligned.

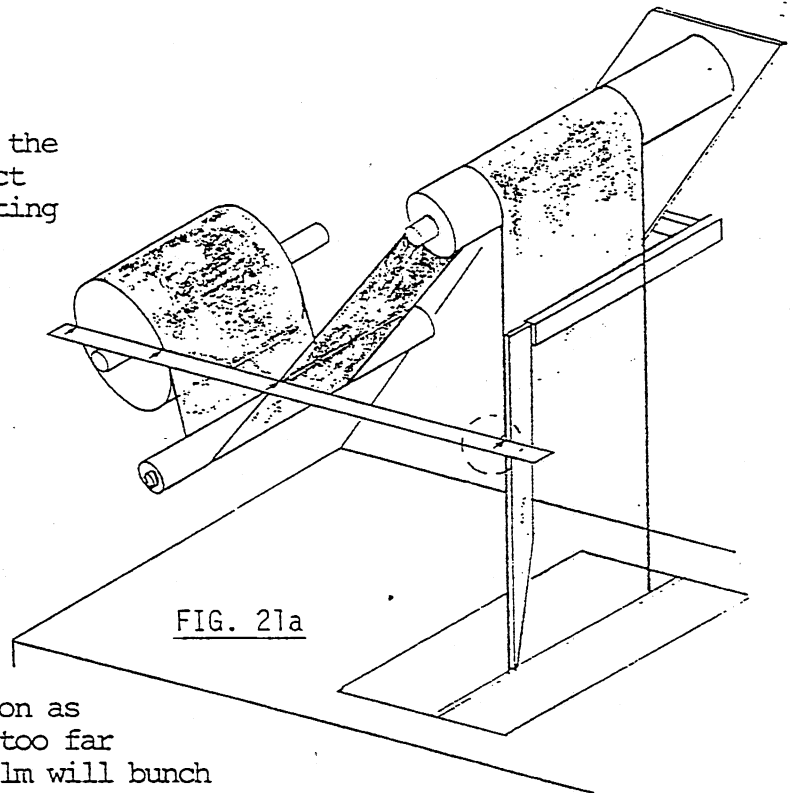


FIG. 21a

With the film guide in the same position as above, if the film roll is positioned too far toward the front of the machine the film will bunch up at the corner of the film guide. If the film roll is too far away from the front of the machine, the film will not contact the film guide and it may cause the trim to be cut off or the package to be distorted.

Too Far Toward Front

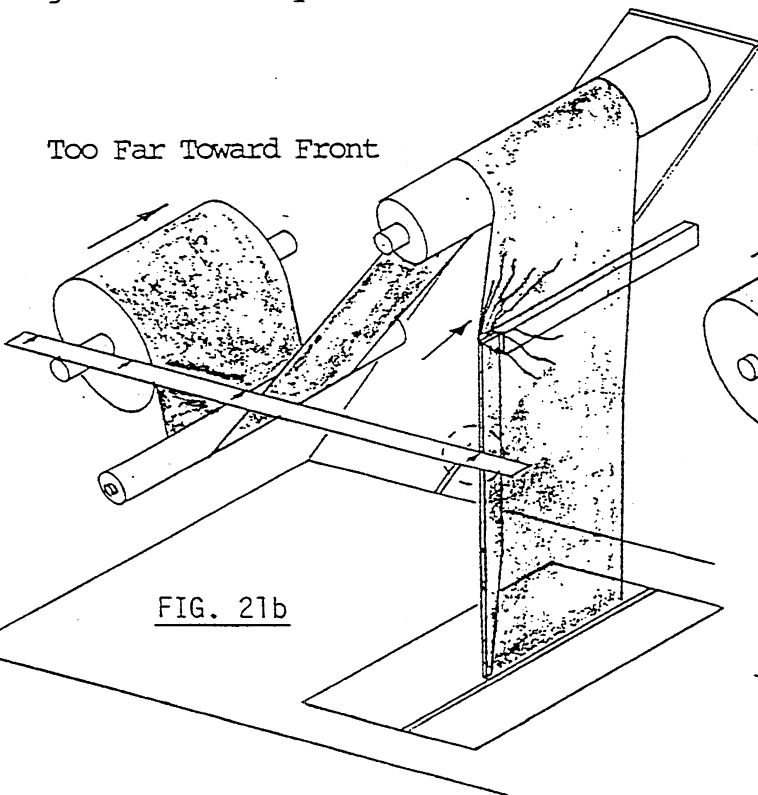


FIG. 21b

Too Far Toward Rear

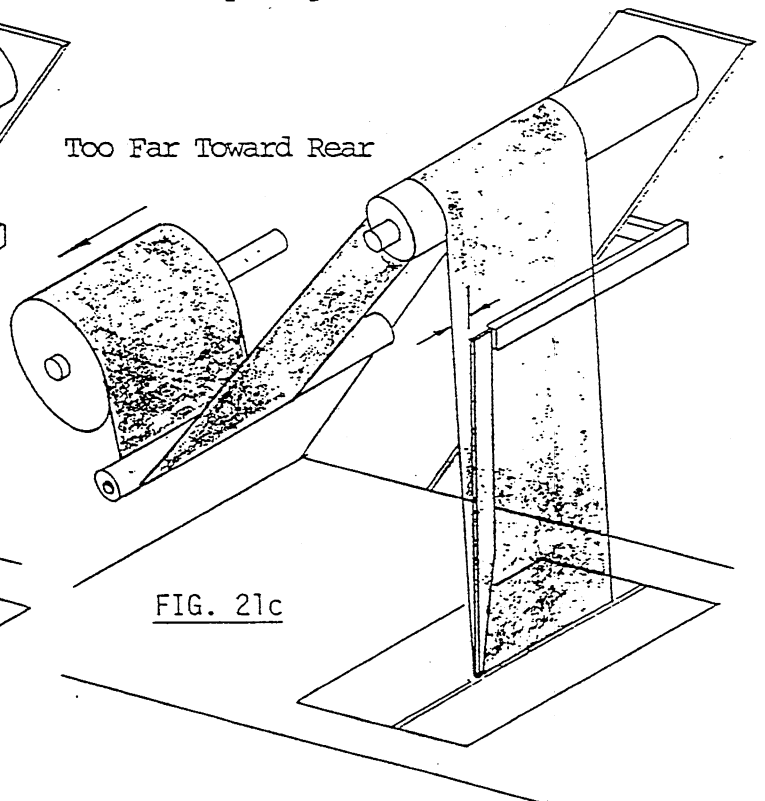
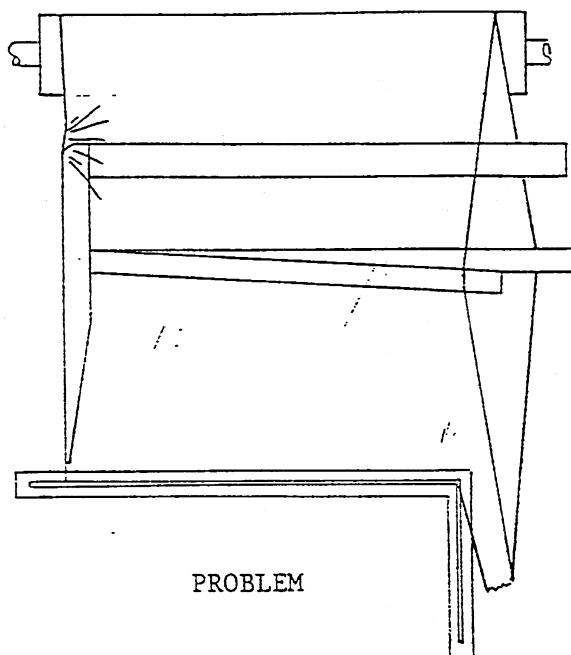
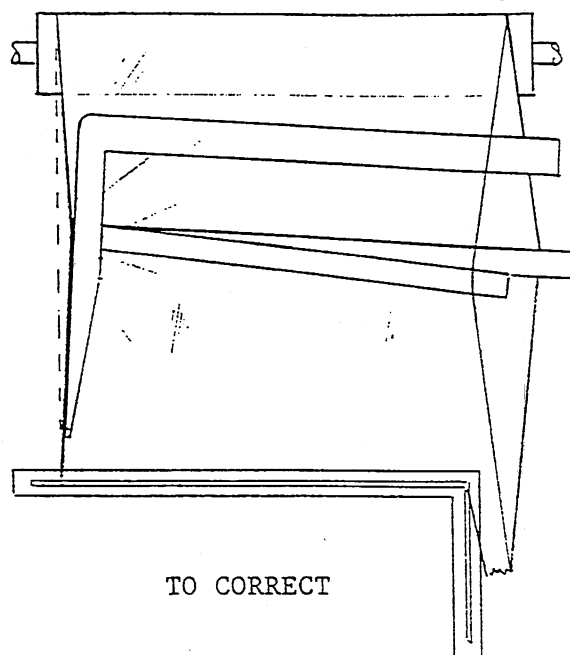


FIG. 21c



PROBLEM

FIG. 22a



TO CORRECT

FIG. 22b

SPREADING THE OPEN SIDE OF THE FILM TENDS TO DRAW THE CENTER-FOLD EDGE TOWARD THE AREA BEING SPREAD OPEN, WITH THE FILM GUIDE BAR VERTICAL EDGE IN LINE WITH THE FILM ROLL AND SQUARE TO THE JAWS, THIS MAY CAUSE THE FILM TO BUNCH UP ON THE TOP CORNER OF THE FILM GUIDE

KEEPING THE BOTTOM TIP OF THE FILM GUIDE IN LINE WITH THE FILM ROLL (DOTTED LINE) WHILE TIPPING THE TOP CORNER AWAY FROM THE CENTERFOLD, ALLOWS THE CENTERFOLD EDGE TO TAKE ITS NATURAL DRAW TOWARD WHERE THE FILM IS BEING SPREAD OPEN. THIS ALLOWS THE FILM TO TRAVEL OVER THE FILM GUIDE MORE SMOOTHLY.

SECTION 2
FILM GUIDANCE AND TRACKING

2.2 FILM GUIDANCE DETAILS

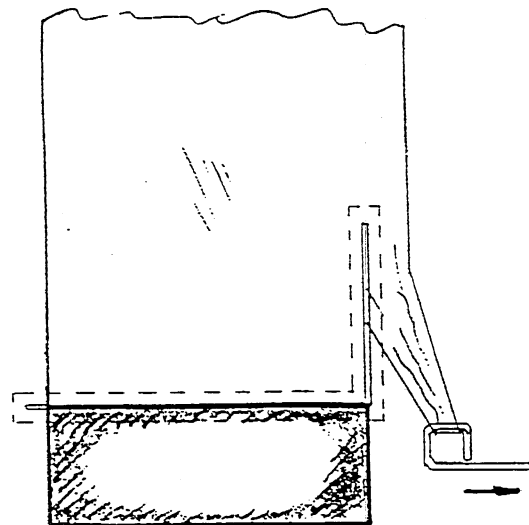
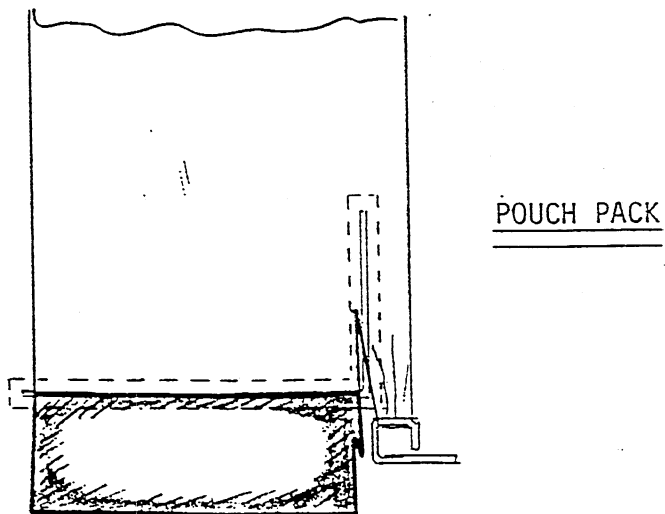
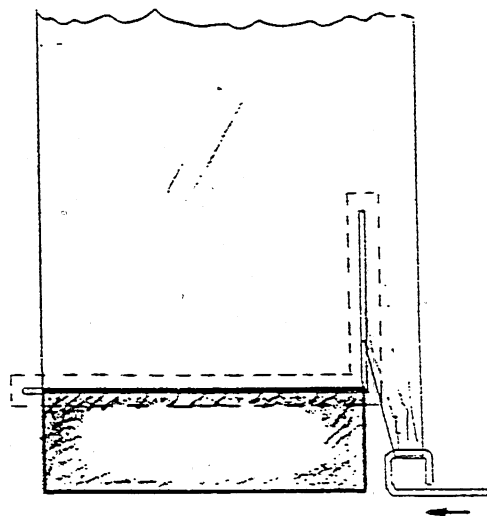
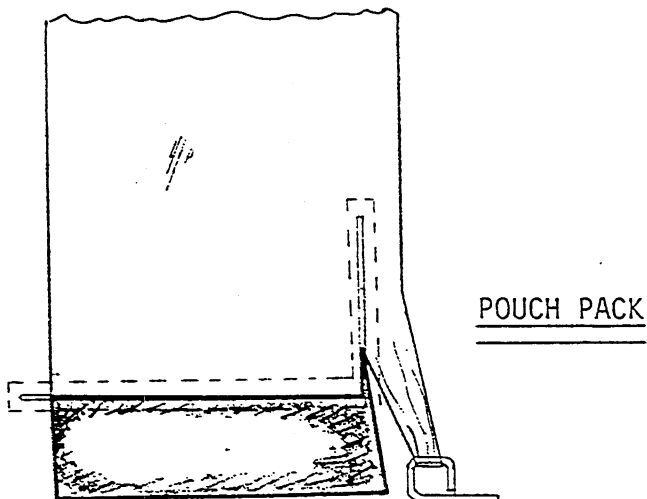
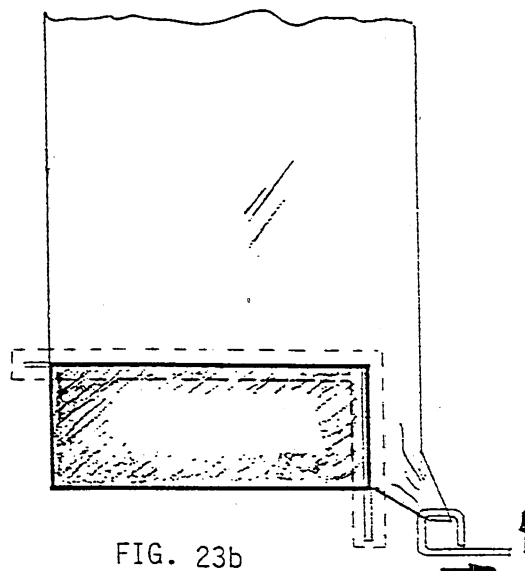
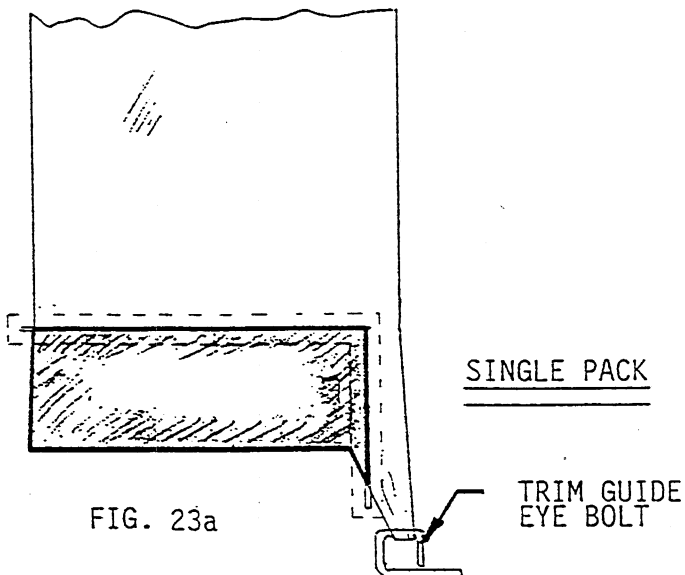


FIG. 24c

FIG. 24d

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 3
FILM FEED AND FILM HOLD DOWN

- 3.1 FILM FEED FUNCTION The film feed drive mechanism is composed of a cylinder driving a chain that turns the film feed roll through a one-way clutch on the shaft. The stroke of the cylinder can be adjusted to produce bags of different vertical dimensions.

The adjustment can be made by loosening the lock screw and turning the adjustment wheel as indicated by the label to either increase or decrease the film travel. Refer to Figure 25.

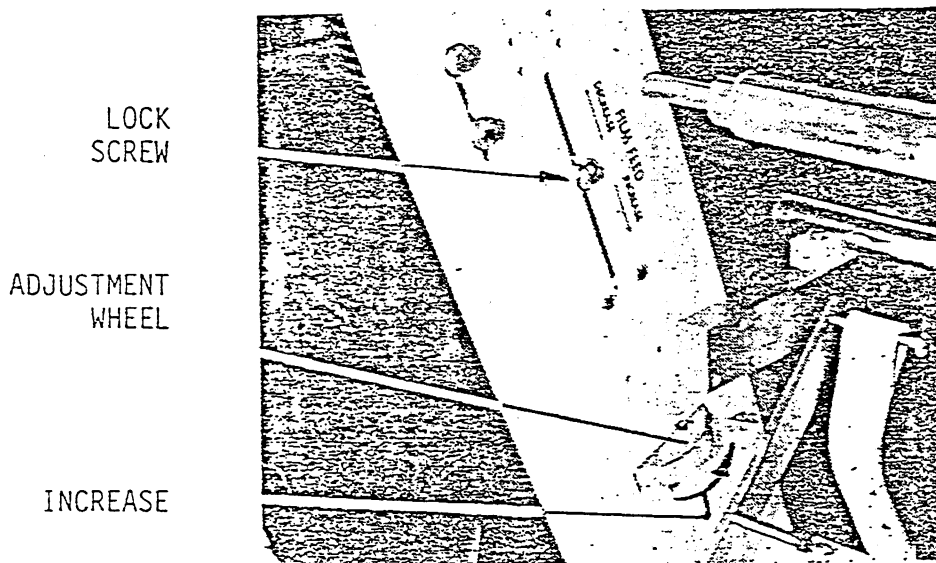


FIGURE 25

The film feed drive mechanism contains some additional features that should be noted. Refer to UNIT A, SECTION 3.3.

As the cylinder extends, the film is being fed. As the cylinder reaches the end of its stroke, two things happen: 1) The cylinder block contacts the nylon pinch brake which grips the film feed shaft to limit over-travel. Because of this, the nylon brake should be kept clean and free of oil. 2) The cylinder block also actuates the film advanced proximity switch. This switch must be actuated before jaws can close.

IMPORTANT: It is necessary that the cylinder block does not bottom out on the switch but rather bottoms out on the nylon brake.

If packager is equipped with optional electric eye, the electric brake must be the component that stops the film feed roll. In this case the cylinder must retract prior to contacting the pinch brake.

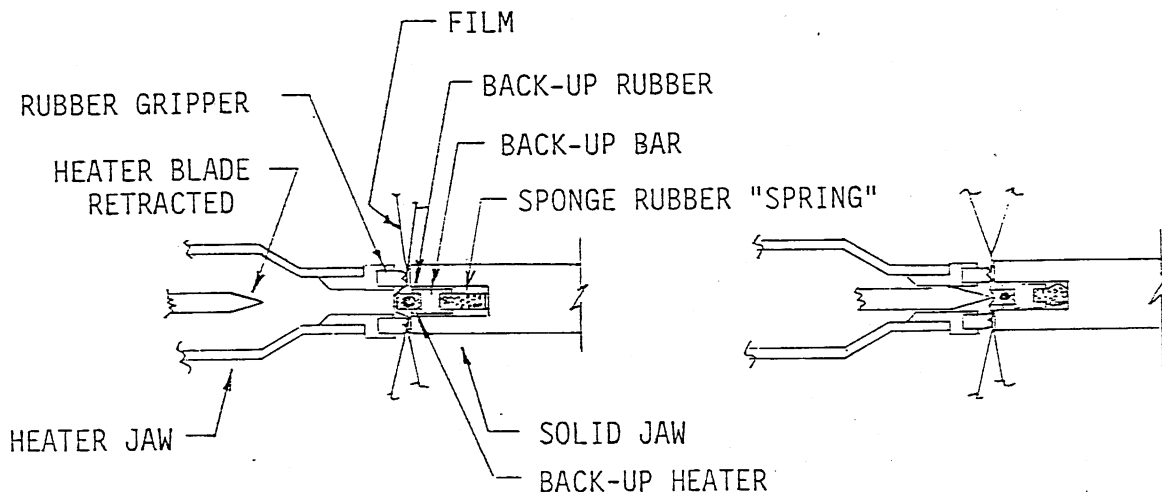
UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 5
JAW ASSEMBLY - SHRINK FILM AND TYPE "SF"

- 5.1 SEALING METHOD (Refer to Figure Fig. 26) All films require that the two film webs be held flat and always in contact with each other at the time that the seal bar advances to make the seal. This is accomplished by the fact that the rubber back up protrudes out from the gripping surfaces of the solid jaw. The purpose is not to stretch the film over the back up rubber, but to simply keep the webs of film from separating.

To create the seal, a heated blade with a special edge configuration is used to provide enough pressure to melt and press the two webs of film together, and at the same time separate the sealed bag from the rest of the film. A bead is created at the edge of the film while a small area adjacent to the bead is sealed flat. The strongest seal is created when the film is not under tension but is relaxed. The rubber back-up provides a means of relaxing the film slightly at the time the blade contacts it. The edge of the back-up rubber opposite the sealing edge is made of foam rubber which compresses as the blade pushes against it. This "springing" effect allows the film to relax and follow the blade as it moves forward.

The solid back-up rubber contains a heating element that raises the temperature of the rubber to approximately 150 degrees F (66 degrees C). The heated back-up rubber allows the seal to be made with a blade temperature somewhat lower than would be possible without a heated back-up. Lower blade temperatures help keep molten film (especially polyethylene) from building up on the blades.



Film is gripped against solid jaw surfaces. Back-up bar sponge is relaxed.

Heater blade extends, pressing film into back-up rubber, compressing sponge rubber, relaxing film; creating the seal.

Figure 26a

Figure 26b

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 5
JAW ASSEMBLY

Refer to UNIT A, SECTION 3 for component identification and UNIT G for scheduled maintenance and lubrication.

- 5.2 GRIPPING AND JAW ALIGNMENT Gripping and jaw alignment on type "SF" and shrink jaws is a matter of making sure the jaw plates and heater blade are assembled to a certain dimensional relationship, then adjusting the back-up jaw assembly to the heater jaws. Disconnect air supply. The heater jaw should be checked first by removing the horizontal top jaw plate and the inside vertical jaw plate. Check the heater blade alignment by measuring from the inside surface of the jaw frame to the tip of the heater blade in the extended condition. The dimension should be 5". This dimension must be checked at both ends of the horizontal blade and the vertical blade and the blades must touch and align in the corner where they meet. This can be adjusted by screwing the cylinders in or out. If binding occurs, it may be necessary to loosen the guide shaft blocks.

The jaw plates are to be checked next using a dimension of 4 7/8" from the leading edge of the gripper to the inside edge of the jaw frame. This makes it so the blade protrudes past the rubber grippers 1/8" when the blade is extended

In order to adjust the position of the outside vertical jaw plate, if required, it will be necessary to loosen the 2 socket head bolts that attach the vertical jaw frame to the jaw support block. Because the outside vertical plate is sandwiched between these parts, this will allow it to move.

Remove the back-up rubber and "H" channel. At this point, close the jaws by hand (not under air pressure) and bring the rubber gripper into contact with the back-up jaw, but don't compress the rubber. The back-up jaw surfaces should be touching the gripper rubber full length. If they are not, the back-up jaw must be brought into alignment with the jaw plates on the heater jaw. Adjust the vertical back-up jaw first, if necessary, by loosening the two bolts that fasten the vertical back-up jaw to the angle corner bracket. Then loosen the 2 socket head bolts that fasten the vertical jaw frame to the jaw support block. Pivot the vertical back-up jaw into alignment and retighten the bolts taking care to keep the corner right where the vertical and horizontal back-up jaws meet. Retighten the mounting bolts and double check alignment.

Next, check horizontal back-up jaw alignment to the bottom horizontal jaw plate. Bring the back-up jaw into alignment by first loosening the 2 bolts that fasten the horizontal back-up jaw to the angle corner bracket, then loosen the hex bolts that fasten it to the real jaw support block. Retighten bolts after alignment is correct.

Now the top horizontal and inside vertical jaw plates can be assembled in place and adjusted into alignment with the back-up jaw.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 5
JAW ASSEMBLY

5.2 GRIPPING AND JAW ALIGNMENT, Continued

When properly aligned, the top of the heater blade, when it is extended, is in alignment with the leading edges of the rubber grippers both horizontally and vertically. Also, the gripping surfaces of the back-up jaw mate to the rubber grippers on the jaw plates in such a way as to provide even, consistent gripping forces over the entire length of the jaw.

To test the grip, hold the hand flat near the jaw plate and press the tips of the fingers into the film horizontally near the rubber grippers. It should be difficult to pull the film from the jaws. Test the grip above and below the horizontal jaw and on the inside and outside of the vertical. It may be necessary to adjust a jaw plate slightly if it isn't gripping.

IMPORTANT: In all adjustment having to do with alignment of the jaw parts, it is best to loosen and adjust one component at a time then recheck its position before continuing on to adjust other parts. Making several adjustments at one time can lead to worse mis-alignment problems than there were to start with. Feel free to contact the Rennco Service Department for advice before attempting major adjustment.

5.3 JAW CONFIGURATION Figure 27 illustrates the necessary relationships between jaw plate opening, solid jaw groove and heaters.

NOTE:

- 1) The width between the gripper rubbers should be centered on the width of the solid jaw.
- 2) The heater should be aligned with the center of the slot in the solid jaw.

The adjustment necessary to gain the alignment between plates and solid jaw are the bolts that fasten the vertical jaw frame to its jaw support block and the bolts that fasten the vertical solid jaw to its jaw support block. When making an adjustment to align the horizontal jaws to each other vertically, take care not to pivot the vertical jaws from a true vertical position.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 5
JAW ASSEMBLY

Heater blade must move in and out smoothly and must not scrape gripper extrusion as it passes through the opening. With jaws open, and with heaters extended, the tip of the blade is 1/8" beyond the leading edge of the rubber gripper.

Heater blade should be centered on rubber back-up surface. The opening between the rubber grippers should be centered on the solid jaw groove. Back-up bar assembly must slide easily in the solid jaw cavity when it is depressed.

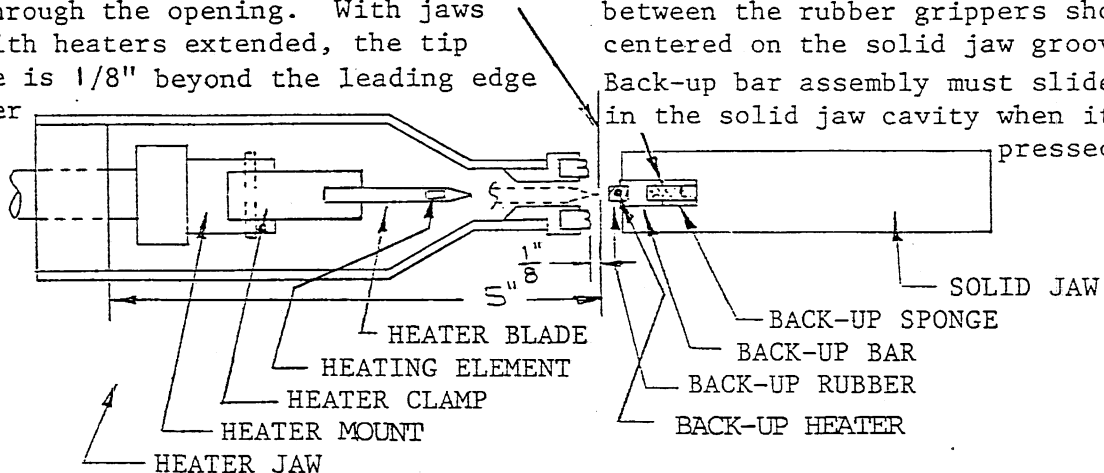


FIG. 27 JAW CONFIGURATION DETAILS

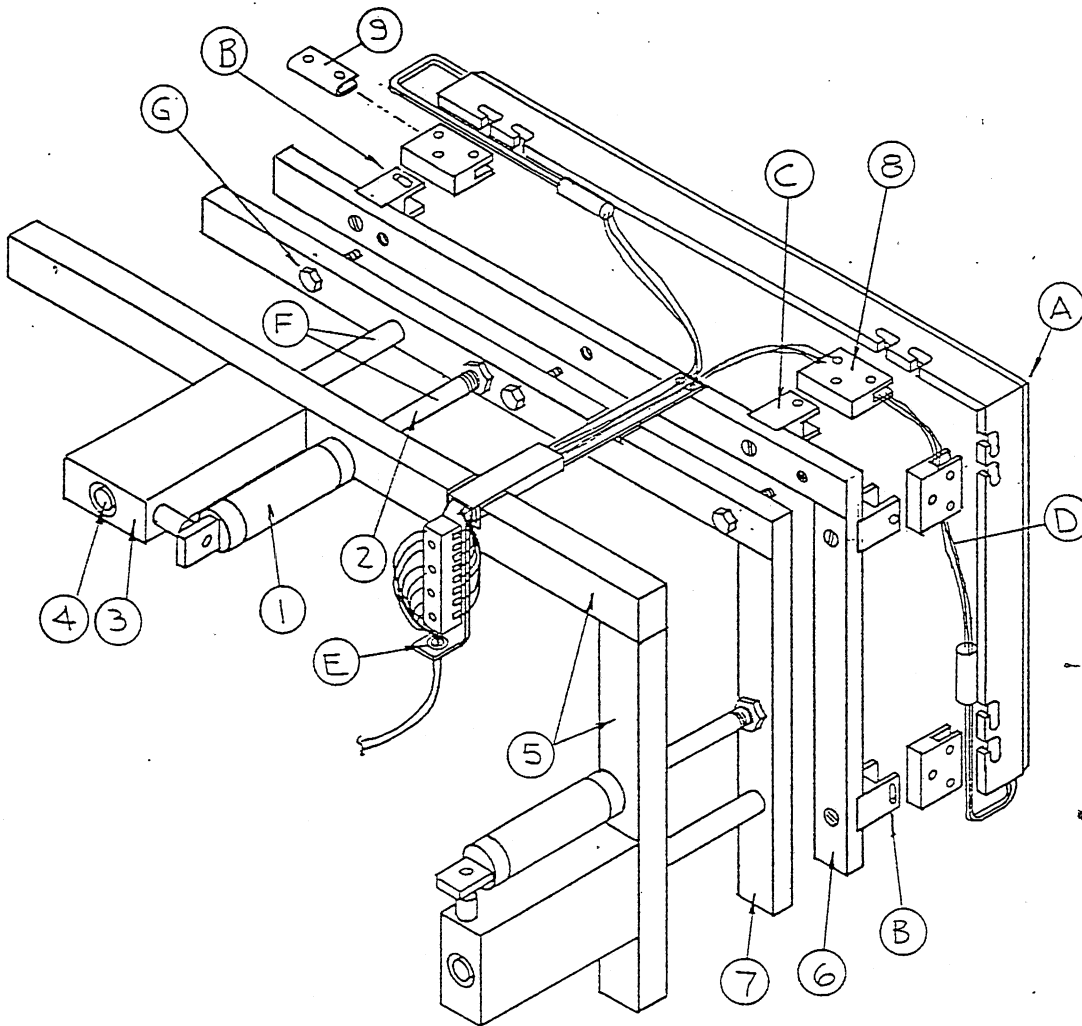
5.4 HEATER ALIGNMENT The alignment of the heater blades to both the opening between the jaw plates that they come out of and the rubber back-up in the solid jaw they go into is critical to the quality and strength of the seals.

Important considerations are

- 1) The heater blade must pass through the opening between the jaw plates without scraping the plates.
- 2) Make sure the "L" shaped heater frame that supports the heater bars moves in and out smoothly and that it is parallel with the jaw frame both vertically and horizontally. In addition, the heater frame must stay parallel to the jaw frame as it moves. That is, one end must not get ahead of the other.
- 3) The heat being used to make the seal causes both the heater blade and heater clamps to expand. The longer the seal length, greater the amount of expansion. If this expansion is not allowed to happen, the blades will become bowed and seal quality will be affected. The "L" shaped heater assembly is mounted with a clevis that is fixed, and a slotted clevis that allows the heater clamp to move. If for some reason the heater clamps are removed, care must be taken when reinstalling them so that the heater clamps can slide inside the slotted clevis.

SECTION 5
JAW ASSEMBLY5.5 HEATER REPLACEMENT

NOTE: Standard single pack jaws are shown. Pouch pack details are similar.



- A. Heater blades must touch in the corner.
 B. Blade clamp must be allowed to slide in the floating heater mount for expansion.
 C. Fixed heater mount.
 D. Route wiring so that it won't be damaged.
 E. Wires going to the electrical enclosure must be gripped by the grommet and should be routed so they do not rub on machine parts.
 F. Do not loosen cylinder or guide shafts to remove the heater frame assembly.
 G. Loosen these bolts to remove heater frame assembly.
- | | |
|---------------------|-----------------------|
| 1. Heater Cylinders | 5. Jaw Frames |
| 2. Cylinder Rod | 6. Heater Frame Ass'y |
| 3. Bearing blocks | 7. Heater Frame Mount |
| 4. Guide Shaft | 8. Blade Clamp |
| | 9. Teflon Spacer |

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 6
TEMPERATURE CONTROLS

- 6.1 TEMPERATURE CONTROL OVERVIEW - SEAL JAW Two separate temperature controls provide separate power to the horizontal and vertical heaters. Due to thermal differences in the jaw configuration and the grain structure of packaging films, separate controls are required to get the best results on each seal.

The state-of-the-art micro processor controls chosen for the Rennco Shrink and type "SF" packagers are designed to hold the operating temperature at the seal bar to within a few degrees of the set point value. The control also has features that allow it to be adjusted to suit the thermal characteristics of the Rennco Packager at time of assembly, then engage a "LOC" electronically so only the temperature set point function is available to machine operators. If necessary, the control can be "unlocked" by maintaining personnel in order to change the parameters of operation, then the "LOC" can be engaged again when it is put back into service.

At time of final assembly at Rennco, the controls are set to "Auto Tune" the system, which is described in later pages. The "Auto Tune" function allows the controller to tune its operation parameters to the specific machine it is installed in. Once the "Auto Tune" function is performed, it never needs to be done again until a new temperature control is installed.

The only adjustment that needs to be made is to set the temperature to get the best seal with the film being used. This is done with the "Up/Down" keys. All other keys and their functions are not adjustable unless the "LOC" is removed.

The thermocouple is an integral part of the heating element. It senses temperature in approximately the center of the heater. The lead wires are solid wire (not stranded) and must be kept from flexing as they will fatigue and break. Continuity of the thermocouple lead wires is important because if they are connected incorrectly, the temperature controller will not function properly. The red wire is always the negative (-) wire, the white wire is the positive wire. The thermocouple is a "grounded" type junction, which means it has continuity with the heater sheath tubing.

TEMPERATURE CONTROL OVERVIEW - BACK-UP JAW - The back-up heater in the silicone back up rubber serves to warm the back-up rubber to a temperature of 150 deg. F (66 deg. C to 74 deg. C). Warming the back-up rubber helps to make seals at a lower seal blade temperature which helps to reduce poly film build up on the blade. The back-up heater is powered by a control that supplies a fixed voltage. The temperature of the rubber should not need to be adjusted for different applications. However, incoming power line differences from customer to customer may require a slight initial adjustment. See section 6.2.1 for adjustment procedure.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 6
TEMPERATURE CONTROLS

6.2 TEMPERATURE CONTROL OPERATION

SERIES 965 MENUS

| | |
|-------------|--|
| Set Up | Used to establish levels of operator access, input type, units of measure, low and high range limits, and output 2 configuration. |
| Operation | Used to enter the set point and the tuning valves, and alarm set points, parameters for proportional band, reset, rate and cycle time for outputs 1 and 2, alarm low and high, dead band, calibration offset and auto tune. |
| Calibration | Use of the calibration menu is not required. If the calibration menu is accidentally initiated, press the mode key repeatedly to return to the normal display. The controller is in this menu when "CAL" appears in the upper display. |

The values for the parameters of the above menus were entered at the factory when the machines were auto tuned. The information provided on the following pages is provided for an understanding of how the controls function and to provide information on troubleshooting the heating system.

It is suggested that if the values that are preset into the control at the factory are inadvertently altered, the values on the following pages be entered in and the control be "Auto Tuned" again. This will bring it back to its original operation.

DO NOT PUT THE CONTROLLER IN THE MANUAL MODE WHILE "CAL" IS DISPLAYED. THIS WILL CAUSE THE CONTROL TO CHANGE ITS CALIBRATION AND WILL RESULT IN HAVING TO BE RE-CALIBRATED AT THE FACTORY.

UNIT D MACHINE FUNCTION DETAILS
& ADJUSTMENTS
SECTION 6

TEMPERATURE CONTROLS

6.2 TEMPERATURE CONTROL OPERATION, CON'T

How to Use the Keys and Displays

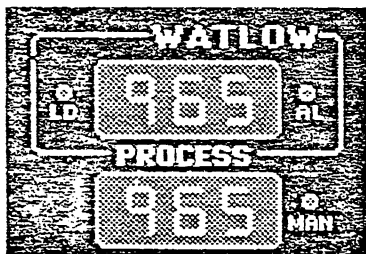
Use this page to learn the nature and function of the Series 965's keys and displays.

Series 965 Keys, Displays and Load LED's

Upper Display

Red, 0.3" (8 mm) high, seven segment, three digit LED display, indicating either process actual temperature, the operating parameter values, or an open sensor. When powering up, the Process display will be blank for 5 seconds.

LD
When lit, this LED tells you when the control output is energized.



AL
When lit, this LED tells you when the alarm is active.

Lower Display

Red 0.3" (8 mm) high, seven segment, three digit LED display, indicating the set point, output value, prompts for data in the upper display, or error and alarm codes.

MAN
Lit when the control is in Manual operation. Press the A/M key twice to enter Auto operation. When blinking, this indicates that pressing the A/M key will toggle between Auto and Manual. After 5 seconds without pressing the A/M key, the LED stops blinking, and returns to its previous state.

UP/DOWN Keys

When pressed simultaneously for 3 seconds, the Setup Menu appears displaying the LOC parameter. Continue to press the UP/DOWN keys, and the Calibration Menu appears.

MODE Key

Steps the control through the Operating menu; also, in the Auto mode, new data is self entering in 5 seconds.



AUTO/MAN Key

Pressed once, it clears any latched alarms. If pressed again within 5 seconds, the control toggles between Auto and Manual mode. While in Manual mode, percent power is in the lower display.

UP Key

Increases the value of the displayed parameter. A light touch increases the value by one. Holding the key down increases the value at a rapid rate. New data is self entering in 5 seconds.

DOWN Key

Decreases the value of the displayed parameter. A light touch decreases the value by one. Holding the key down decreases the displayed value at a rapid rate. New data is self entering in 5 seconds.

SECTION 6
TEMPERATURE CONTROLS

How To Setup The Series 965

Setting up the Series 965 is a simple process. First configure the 965's features to your application in the Setup Menu, then enter values in the Operating Menu. Both tasks use the MODE key to move through the menus and the UP/DOWN keys to select data. At this point, enter the Calibration menu, and select US or SI under the dFL parameter, if necessary. Rate, reset, and °F appear with US, and integral, derivative and °C appear with SI. See Appendix 3, Page 28.

NOTE:

While in the Setup menu, all outputs are OFF.

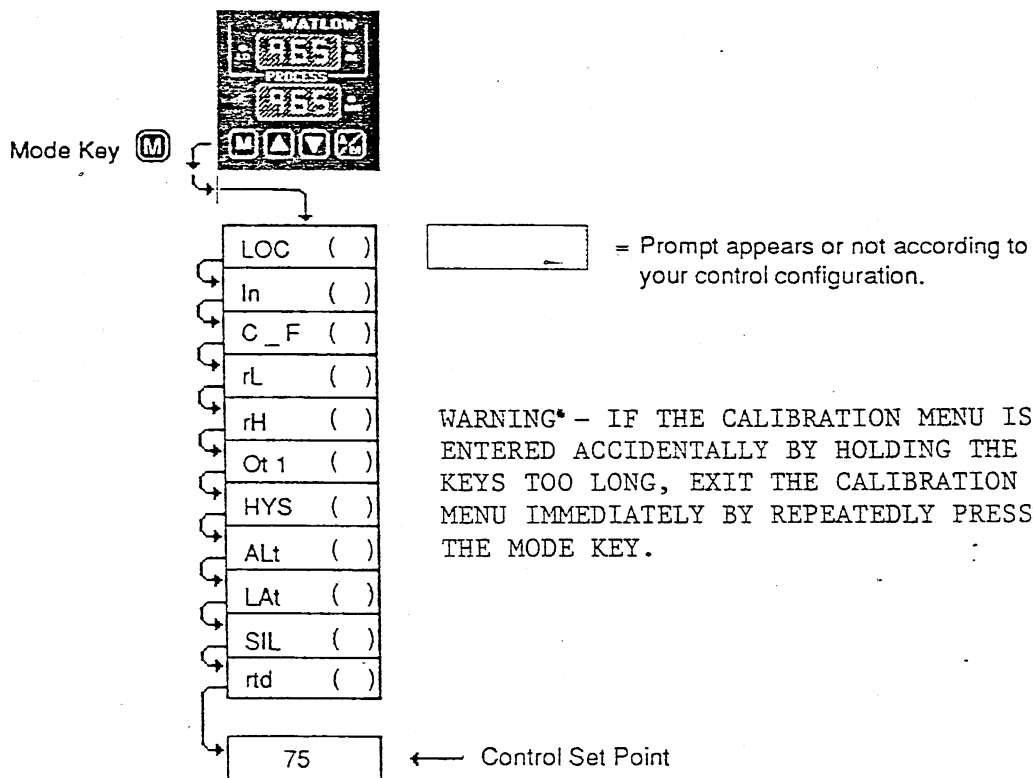


Figure 18 - The Setup Menu.

WARNING* - IF THE CALIBRATION MENU IS ENTERED ACCIDENTALLY BY HOLDING THE KEYS TOO LONG, EXIT THE CALIBRATION MENU IMMEDIATELY BY REPEATEDLY PRESSING THE MODE KEY.

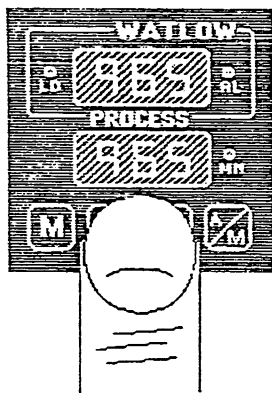


Figure 19 - Entering the Setup Menu.

Entering the Setup Menu

The Setup Menu displays the parameters that configure the Series 965's features to your application.

To enter the Setup Menu, press the UP and DOWN keys simultaneously for 3 seconds. See Figure 19. The lower display shows the LOC parameter, and the upper display shows its current level. All keys are inactive until you release both keys. You can reach the LOC parameter from anywhere except the CAL menu.

Use the MODE key to cycle through the menu; use the UP/DOWN keys to select Setup data. You may not see all parameters in this menu, depending on the unit's configuration and model number. After stepping through the menu, you will return to the control set point parameter under the Operation menu.

UNIT D MACHINE FUNCTIONS DETAILS
& ADJUSTMENTS

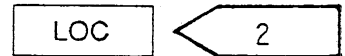
SECTION 6
TEMPERATURE CONTROLS

Setup Parameters

When you are at the top of the menu, the Series 965 displays the user level of operation in the upper display, and the LOC parameter in the lower display.

When you press the MODE key, the value of the next parameter appears in the upper display, and the parameter appears in the lower display.

Lock: Selects the level of operator lock-out as defined below.
Range: 0 - 4 Default: 0



LOC 0: All operating parameters may be viewed or changed. Manual operation is permitted. When in manual operation, percent power is adjustable.

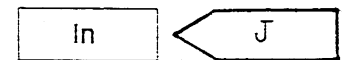
LOC 1: The set point and actual are the only visible parameters, set point is adjustable in this level. Manual operation and auto-tune are permitted. When in manual operation, percent power is adjustable.

LOC 2: The set point and actual are the only visible parameters, set point is adjustable in this level. Manual operation is permitted. When in manual operation, percent power is adjustable.

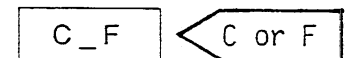
LOC 3: The set point and actual are the only visible parameters, set point is adjustable in this level. Manual operation is not permitted.

LOC 4: The set point and actual are the only visible parameter\$, set point is not adjustable in this level of lock-out. Manual operation is not permitted.

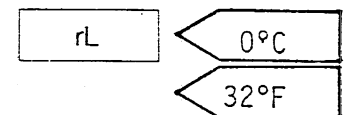
Input: Selects the sensor input type. Only those input types which are compatible with your unit will appear. See the model number information for your type.
Range: J, K (appears as H), t, n, rtd Default: J or rtd



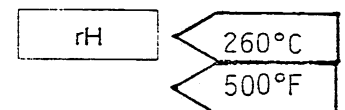
Celsius _ Fahrenheit: Selects the units of temperature measurement for the control. The default is dependent on the dFL parameter located in the Calibration menu. If dFL = US, the default is F. When dFL = SI, the default is C.
Range: C or F



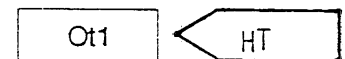
Range Low: Selects the low limit of the operating range. See the model number and specification in the Appendix for range values. See Table 1 on Page 16.
Range: Sensor range low to rH Default: Low limit of sensor type



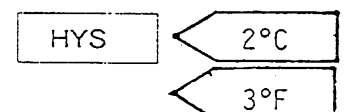
Range High: Selects the high limit of the operating range. See the model number and specification information in the Appendix for your range values.
Range: Sensor range high to rL Default: High limit of sensor type



Output 1: Selects the output action for the primary output. Action in response to the difference between set point and process variable.
Range: ht, CL Default: ht



Hysteresis: Selects the switching hysteresis for Output 1 when you select 0 (ON/OFF) under the Pb1 parameter. See Page 17 for the Pb1 parameter.
Range: 1°F - 99°F/1°C - 55°C Default: 3°F/2°C



SECTION 6
TEMPERATURE CONTROLS

Alarm Type: Determines whether the alarm type is process, deviation, or none. A process alarm is set at an absolute temperature to prevent over/underrange. See Chapter 5, "Using Alarms."

Range: Pr, dE, no Default: Pr



Latching: Selects whether the alarm is latching or non-latching. Latching alarms must be cleared before the alarm output will reset. Non-latching automatically resets the alarm output when the condition clears. This parameter will not appear if ALt = no.

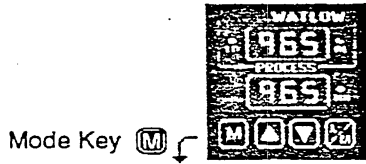
Range: LAT or nLA Default: nLA



Silencing: Selects alarm silencing (inhibit) for the alarm. This parameter appears only when ALt = dE. For more information see Chapter 5, "Using Alarms."

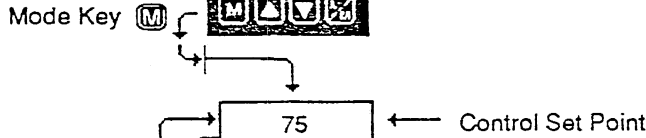
Range: On or OFF Default: OFF

SECTION 6
TEMPERATURE CONTROLS



NOTE:

The upper display will always return to the process value after 1 minute without key strokes.



[] = Prompt appears or not according to control configuration.

Because your packager was "Auto Tuned" at the factory, use of the operation parameters is not required. It is shown here for reference only, or in the event that a customer would require manual operation.

The values indicated by * below in the R.H. column are automatically set during the "Auto Tune" function, when the Aut prompt is a value other than 0.

Operation Parameters

Set Point: Sets the operating set point for Output 1. Represents the process value the system tries to achieve for Output 1. "SP" does not appear, the control set point value will.

[SP]

Proportional Band 1: A proportional band expressed in degrees, within which a controller proportioning function is active for Output 1. When Pb1 = 0, the unit functions as an ON/OFF control. The switching differential is then determined by the HYS parameter.

Pb1 80 *

Range: 0 to 999°F/0 to 555°C Default: 25°F/14°C

Reset 1: A reset (integral) control action for Output 1 that automatically eliminates offset, or "droop," between set point and actual process temperature in a proportional control. This parameter will not appear if Pb1 = 0 or dFL = SI.

rE1 4.00 *

Range: 0.00 to 9.99 repeats/minute Default: 0.00

Rate 1: The rate (derivative) function for Output 1 of the Series 965. The rate is determined by how fast the error is changing. This parameter will not appear if Pb1 = 0 or dFL = SI.

rA1 .02 *

Range: 0.00 to 9.99 minutes Default: 0.00

SECTION 6
TEMPERATURE CONTROLS

| | |
|---|-----|
| 2 | Ct1 |
|---|-----|

Cycle Time 1: Expressed in seconds for a controller to complete one ON/OFF cycle for Output 1. Time between successive turn ons. This parameter will not appear if Pb 1 = 0.

Range: 1 to 60 seconds

Default: 5

| | |
|------|-----|
| 0°C | ALO |
| 32°F | |

Alarm Low: This parameter represents the low process alarm or low deviation alarm. This parameter will not appear if ALt = no or your unit does not have alarms. See the model number.

If ALt = dE: Range: 0 to -99°F/0 to -99°C Default: -99°F/-55°C

If ALt = Pr: Range: rL to AHI Default: rL

| | |
|-------|-----|
| 260°C | AHI |
| 500°F | |

Alarm High: This parameter represents the high process alarm or high deviation alarm. This parameter will not appear if ALt = no or your unit does not have alarms. See the model number.

If ALt = dE: Range: 0 to 99°F/0 to 99°C Default: 99°F/55°C

If ALt = Pr: Range: ALO to rH Default: rH

| | |
|-----|-----|
| 0°C | CAL |
| 0°F | |


Calibration Offset: Adds or subtracts degrees from the input signal.

Range: -180°F to 180°F/-100°C to 100°C Default: 0

| | |
|---|-----|
| 3 | AUt |
|---|-----|

Auto-Tune: This parameter initiates auto-tune for Output 1. This parameter only appears if Ot1 = ht.

Range: 0 = off, 1 = slow, 2 = medium, 3 = fast Default: 0

SECTION 6
TEMPERATURE CONTROLS NOTE:

Set the HYS parameter under the Setup menu to 3°F/2°C before auto-tuning your control.

How to Tune and Operate

Tuning - Automatic

Auto-tuning: The Series 965 can automatically tune the PID parameters to fit the characteristics of your particular thermal system.

The auto-tuning procedure operates on a thermal response value — slow, medium, or fast. Use the slow thermal response when your process does not need to reach set point too rapidly, or if it usually does not often exceed set point. A fast thermal response produces a rapid temperature change over a short period of time.

You can only auto-tune when Output 1 is heat. Once the auto-tune sequence has begun, the lower display flashes between At and the setpoint. The heat proportional band is set to 0 and the control goes into an ON/OFF mode of control at 90% of the established set point. The displayed set point remains unchanged.

Once the control finishes "learning" the system, it returns to a standard PID control with the heat PID values automatically set as a result of the auto-tuning. Tuning is complete within 80 minutes. Any change of the set point, while in auto-tune, re-initiates the auto-tune procedure.

To start auto-tuning:

1. Press the MODE key until the AUt prompt appears in the data display.
2. Select a thermal response value, 1=slow, 2=medium, and 3=fast, using the UP/DOWN keys. A thermal response value of 2 satisfactorily tunes most thermal systems.
3. Press the MODE key. While the control is in the tuning mode, the lower display alternately displays the normal information and the prompt At. The time between alternations is 1 second.
4. When tuning is complete, the displays return to their previous state and AUt reverts to 0. The 965 installs appropriate PID tuning parameters and saves them in the non-volatile memory.

To abort auto-tuning, operator must reset the AUt parameter to 0, or press the AUTO/MAN key twice. The auto-tuning process may also be aborted by cycling the power off and on. In all cases, aborting auto-tune restores all original values.

SECTION 6
TEMPERATURE CONTROLS

Tuning - Manual

For optimum control performance, tune the Series 965 to the thermal system. The tuning settings here are for a broad spectrum of applications; your system may have somewhat different requirements. **NOTE: This is a slow procedure, taking from minutes to hours to obtain optimum value.**

1. **Apply power to the Series 965 and enter a set point.** Begin with these Operation Parameters: $Pb1 = 1$, $rE1/It1 = 0.00$, $rA1/dE1 = 0.00$, $Ct1 = 5$, $CAL = 0$, $AUt = 0$.
2. **Proportional Band Adjustment:** Gradually increase $Pb1$ until the upper display temperature stabilizes to a constant value. The process temperature will not be right on set point because the initial reset value is 0.00 repeats per minute. (When $Pb1 = 0$; $rE1/It1$ and $rA1/dE1$ are inoperative, and the 965 functions as a simple ON/OFF control.) The HYS parameter determines the switching differential value.
3. **Reset/Integral Adjustment:** Gradually increase $rE1$, or decrease $It1$ until the upper display temperature begins to oscillate or "hunt." Then slowly decrease $rE1$ or increase $It1$ until the upper display stabilizes again near set point.
4. **Cycle Time Adjustment:** Set $Ct1$ as required. Faster cycle times sometimes achieve the best system control. However, if a mechanical contactor or solenoid is switching power to the load, a longer cycle time may be desirable to minimize wear on the mechanical components. Experiment until the cycle time is consistent with the quality of control you want.
5. **Rate/Derivative Adjustment:** Increase $rA1/dE1$ to 1.00 minute. Then raise set point by 20° to 30°F, or 11° to 17°C. Observe the system's approach to set point. If the load temperature overshoots set point, increase $rA1/dE1$ to 2.00 minutes.

Raise set point by 20 to 30°F, or 11 to 17°C and watch the approach to the new set point. If you increase $rA1/dE1$ too much, approach to set point is very sluggish. Repeat as necessary until the system rises to the new set point without overshooting or approaching the set point too slowly.

6. **Calibration Offset Adjustment:** You may want your system to control to a temperature other than the value coming from the input sensor. If so, measure the difference between that temperature (perhaps at another point in the system) and the process value showing in the upper display. Then enter the **CAL** offset value you want. Calibration offset adds or subtracts degrees from the value of the input signal.

Manual and Automatic Operation

To change from manual to auto operation, press the AUTO/MAN key twice.

Manual operation provides direct (time proportioned % power) control of the outputs from -100% to 100%. The 965 allows a negative output value only with a Cl (Cool) selection on Ot1, a positive output value is allowed with heat only.

Automatic operation provides closed loop ON/OFF or PID control. When the operation transfers from a closed loop to an open loop, the 965 retains the power level from the closed loop control. When the 965 returns to the closed loop control, it restores the previous set point temperature.

SECTION 6
TEMPERATURE CONTROLS

D. The preset temperature shown entered in step 21 is arbitrary and can be varied depending on film type used. This temperature cannot be set higher than the "range high" setting (step 11) or the "alarm high" setting (step 31).

| <u>STEP</u> | <u>EXPLANATION</u> | <u>DEPRESS KEY</u> | <u>BOTTOM DISPLAY</u> (SETPOINT TEMP.) | <u>TOP DISPLAY</u> (ACTUAL HEATER TEMP.) |
|-------------|---|---|--|---|
| 1 | After power up the displays will show actual temperature reading from thermocouple (top) and set-point temperature (bottom). Do not be concerned with the display now as the preset will be made later. | | | |
| 2 | Access set up menu by depressing both up and down keys together for 3 seconds, then release. The "lock-out" menu will be displayed. | <input type="checkbox"/> <input type="checkbox"/> Both 3 Sec. | LOC | |
| 3 | Set "lock-out" to '0' by using either the up or down keys. | <input type="checkbox"/> or <input type="checkbox"/> | LOC | 0 |
| 4 | Access "input" menu by depressing the mode key once. | <input type="checkbox"/> M | In | |
| 5 | Set "input" to type 'J' thermocouple, by using the up or down keys. | <input type="checkbox"/> or <input type="checkbox"/> | In | J |
| 6 | Access "temperature scale" menu by depressing the mode key once. | <input type="checkbox"/> M | C _ F | |
| 7 | Set "temperature scale" to 'C' or 'F' using the up or down keys. | <input type="checkbox"/> or <input type="checkbox"/> | C - F | C or F |
| 8 | Access "range low" menu by depressing the mode key once. | <input type="checkbox"/> M | rL | |
| 9 | Set "range low" to '0' for C Deg. or 32 for F Deg. by using the up or down keys. | <input type="checkbox"/> or <input type="checkbox"/> | rL | 0 or 32 |
| 10 | Access "range high" menu by depressing the mode key once. | <input type="checkbox"/> M | rH | |
| 11 | Set "range high" to '260' for C Deg. or '500' for F Deg. by using the up or down keys. | <input type="checkbox"/> or <input type="checkbox"/> | rH | 260 or 500 |

SECTION 6
TEMPERATURE CONTROLS

| <u>STEP</u> | <u>EXPLANATION</u> | <u>DEPRESS KEY</u> | <u>BOTTOM DISPLAY</u> | <u>TOP DISPLAY</u> |
|-------------|--|------------------------|---------------------------|------------------------|
| 12 | Access "output 1" menu by depressing the mode key once. | M | Ot1 | |
| 13 | Set "output 1" to 'ht' by using the up or down keys. | △ or ▽ | Ot1 | ht |
| 14 | Access "hysteresis" menu by depressing the mode key once. | M | HYS | |
| 15 | Set "hysteresis" to '2' by using the up or down keys. | △ or ▽ | HYS | 2 |
| 16 | Access "alarm type" menu by depressing the mode key once. | M | ALT | |
| 17 | Set "alarm type" to 'Pr' by using the up or down keys. | △ or ▽ | ALT | Pr |
| 18 | Access "latching" menu by depressing the mode key once. | M | Lat | |
| 19 | Set "latching" to 'nLA' by using the up or down keys. | △ or ▽ | Lat | nLA |
| 20 | Access "set point" menu by depressing the mode key once. | M | | |
| 21 | Set "set point" temp. by using the up or down keys | △ or ▽ | Setpoint Temp. | (Actual Temp.) |
| 22 | Depress the mode key once, this accesses the "proportional band" menu. Do not be concerned with this as it will be set automatically with the auto-tune procedure. | M | Pb1 | |
| 23 | Depress the mode key once. This accesses the "reset 1" menu. Do not be concerned with this as it will be set automatically with the auto-tune procedure. | M | rE1 | |
| 24 | Depress the mode key once. This accesses the "rate 1" menu. Do not be concerned with this as it will be set automatically with the auto-tune procedure. | M | rA1 | |

SECTION 6
TEMPERATURE CONTROLS

| <u>STEP</u> | <u>EXPLANATION</u> | <u>DEPRESS KEY</u> | <u>BOTTOM DISPLAY</u> | <u>TOP DISPLAY</u> |
|-------------|---|--------------------|--------------------------|------------------------|
| 25 | Access "cycle time" menu by depressing the mode key once. | M | Ctl | |
| 26 | Set "cycle time" to '2' by using the up or down keys. | △ or ▽ | Ctl | 2 |
| 27 | Access "alarm low" menu by depressing the mode key once. | M | ALO | |
| 28 | Set "alarm low" to '0' for C Deg. or '32' for F Deg. by using the up or down keys. | △ or ▽ | ALO | 0 or 32 |
| 29 | Access "alarm high" menu by depressing the mode key once. | M | AHL | |
| 30 | Set "alarm high" to '260' for C Deg. or '500' for F Deg. by using the up or down keys. | △ or ▽ | AHL | 260 or 500 |
| 31 | Access "calibration offset" menu by depressing the mode key once. | M | CAL | |
| 32 | Set "calibration offset" to '0' by using the up or down keys. | △ or ▽ | CAL | 0 |
| 33 | Access "auto-tune" menu by depressing the mode key once. | M | AUT | |
| 34 | Set "auto-tune" to '3' by using the up or down keys. | △ or ▽ | AUT | 3 |
| 35 | To start the auto-tune procedure, press the mode key once. The bottom display will alternate between at and the setpoint temperature until the auto-tune procedure is finished. | M | at/Setpoint Temp. | (Actual Temp.) |
| 36 | Once the "auto-tune" procedure is finished, access the set up menu again by depressing both up and down keys together for 3 seconds, then release. The "lock out" menu will be displayed. | △ ▽ Both | Setpoint Temp. LOC | (Actual Temp.) 0 |
| 37 | Set "lock out" to '3' by depressing the up key 3 times. | △ | LOC | 3 |

SECTION 6
TEMPERATURE CONTROLS

| <u>STEP</u> | <u>EXPLANATION</u> | <u>DEPRESS KEY</u> | <u>BOTTOM DISPLAY</u> | <u>TOP DISPLAY</u> |
|-------------|--|----------------------------|---------------------------|------------------------|
| 38 | depress the mode key repeatedly until the bottom display shows set point temperature and the top display shows the actual heater temperature. | <input type="checkbox"/> M | Setpoint Temp. | (Actual Temp.) |
| * | The controller is now programmed and is running. The top display, which is the actual heater temperature should stabilize and be within a few degrees of the setpoint temperature. | | | |

SECTION 6
TEMPERATURE CONTROLS

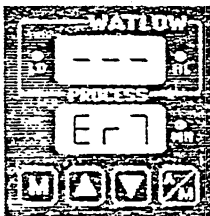
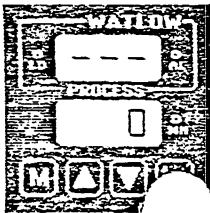
How To Deal With Error Codes

**NOTE:**

Electrical noise or a noise event, vibration or excess environmental moisture or temperature may cause Series 965 errors to occur. If the cause of an error is not otherwise apparent, check for these.

Figure 22 -
Error Code Display
Examples

Press twice -
Read error



Three dashes, "- - -" or "rES" (reversed sensor), in the upper display indicate a Series 965 error.

- If operator access is LOC 0, 1 or 2...
 - Press the AUTO/MAN key twice to see the error code for one second.
- If operator access is LOC 3 or 4...
 - The error code is already in the lower display.
- Error code definitions and actions...

Er 1 - Sensor overrange error

The sensor input generated a value higher than that allowed for the range of the sensor, or the A/D circuitry malfunctioned. Enter a valid input. The A/D value is above the range limits, but within the A/D conversion limits. Make sure the In parameter matches your sensor.

Er 2 - Sensor underrange error

The sensor input generated a value lower than that allowed for the range of the sensor, or the A/D circuitry malfunctioned. Enter a valid input. The A/D value is below the range limits, but within the A/D conversion limits. Make sure the In parameter matches your sensor.

Er 3 - Ambient error

Check the specification for the ambient temperature range.

Er 4 - Configuration error

The unit's microprocessor is faulty; call the factory.

Er 5 - Non volatile checksum error

The nonvolatile memory checksum discovered a checksum error. Unless a momentary power interruption occurred while the unit was storing data, the nonvolatile memory is bad. Call the factory.

Er 6 - A/D underflow error

The A/D circuit is underrange. An open or reversed polarity sensor is the most likely cause. Check the sensor; if the connection is good and functions properly, call the factory. The A/D underrange voltage is too low to convert an A/D signal. Make sure the In parameter matches your sensor.

Er 7 - A/D overflow error

The A/D circuit is overrange. An open or reversed polarity sensor is the most likely cause. Check the sensor; if the connection is good, and the sensor functions properly, call the factory. The A/D overrange voltage is too high to convert an A/D signal. Make sure the In parameter matches your sensor.

- To clear a corrected error...
 - Cycle power to the control.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 6
TEMPERATURE CONTROLS

Er 1, 2, 3, 6 & 7 Errors - Control Outputs May Be ON

- If operator access is LOC 0, 1 or 2...

...and the control was in AUTO operation when the error occurred, it goes into MANUAL (% power) operation. If the output power is less than 75% power, and a <5% change in power occurred within the last two minutes, the 965 switches into Manual operation at the last Automatic power level. If the control was in MANUAL operation, it remains there. (You must press the AUTO/MAN key twice to see the error code.) The alarm output (if present) is in its alarm state (LED lit). The upper display reads "- - -" or rES. The lower display indicates the error code.

If the control was operating with stable output values when the error occurred, it continues to operate at those levels on a % power basis. If output values were not stable, the control outputs go to 0% power (OFF).
- If operator access is LOC 3 or 4...


The control remains in AUTO operation. The control outputs shut OFF. The AUTO/MAN and MODE keys are inactive. The UP/DOWN keys may be used together to enter the Setup Menu. The alarm output (if present) is in its alarm state (LED lit). The upper display reads "- - -" or rES. The lower display indicates the error code.
- To clear a corrected error...
 - Cycle power to the control.

Er 4 & 5 Errors - Control Outputs Will Be OFF

- Error codes Er 4 and Er 5 result in these conditions:
 - The control is in AUTO operation with the output OFF.
 - The alarm output, if present, is in the alarm state (de-energized with the LED lit).
 - The upper display indicates the process value.
 - The lower display indicates the error code.
 - All keys are inactive.
 - All Setup Menu parameters return to default values.
 - The above conditions occur regardless of the value of LOC, or the presence of the Setup or Calibration Menus.
- To clear a corrected error...
 - Cycle power to the control.

SECTION 6
TEMPERATURE CONTROLS

The MAN LED indicates auto or manual operation. When the LED is ON, the control is in Manual operation. When the LED is OFF, the control is in AUTO operation. When the LED flashes, press the key again within five seconds to complete the change in operation. If the sensor is open and LOC = 0, 1 or 2, the Series 965 switches to Manual operation (time proportioned % power), if the output was stable before the break occurred.

 NOTE:

When the alarm output is de-energized, the N.O. contact is open in the alarm condition.

When transferring from auto to manual operation, the control output(s) remain stable ("bumpless," smooth transition). When transferring from manual to automatic operation, the control output(s) may change significantly. In manual, the output value (% power) appears in the lower display. In automatic operation, the set point appears.

NOTE: IN THE EVENT OF A THERMOCOUPLE FAILURE THE CONTROL WILL SHUT DOWN, DISCONTINUING PACKAGER OPERATION. MANUAL MODE CAN BE USED TO GET UP AND RUNNING AGAIN—CONSULT RENNCO SERVICE. **WARNING:** OPERATION OF THE CONTROL ABOVE 30% IN THE MANUAL MODE COULD DAMAGE SEAL BLADES.

Using Alarms

The Series 965 has two alarm types, Process or Deviation. A Process alarm sets an absolute temperature when the process exceeds that absolute temperature limit. Process alarm set points may be independently set high and low.

A Deviation alarm alerts the operator when the process strays too far from set point. The operator can enter independent high and low alarm settings. The reference for the deviation alarm is the set point. Any change in set point causes a corresponding shift in the deviation alarm. Example: If your set point is 100°F/38°C, and you have a deviation alarm set at +7°F/4°C as the high limit, and -5°F/3°C as the low limit, the high alarm trips at 107°F/41.6°C, and the low alarm at 95°F/35°C. If you change the set point to 130°F/54.4°C, the alarms follow the set point and trip at 137°F/59°C and 125°F/51.6°C.

Alarm Silencing is available with the deviation alarm. When SIL is selected as "on," the non-latching mode automatically enables the alarm out-put on initial power up. In the latching mode, the operator must manually disable the alarm by pressing the AUTO/MAN key once. In both cases alarm silencing disables the alarm output relay, but the AL LED displays the alarm condition until the process value is within the "safe" region of the deviation alarm band. Once the process value crosses into the "safe" region, both a latching or a non-latching alarm is ready. Any future deviation outside this safe band triggers an alarm.

Both Process and Deviation alarms can be latching or non-latching. The operator must manually reset a latching alarm before the alarm will reset. The operator must also remove the condition that created the alarm. When the operator removes the condition causing the alarm, a non-latching alarm automatically resets the alarm output.

Flashing "LO" or "HI" in the lower display indicates an alarm. The Lower display alternately shows information from the current parameter and the "LO" or "HI" alarm message at one second intervals. The alarm output is de-energized and the AL LED is lit.

To clear an alarm...

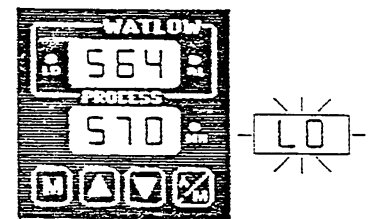
- First correct the alarm condition, then...
 - If the alarm is latching...
Clear it manually; press the AUTO/MAN key once as soon as the process temperature is inside the alarm limit by 1°F/0.6°C.
 - If the alarm is non-latching...
The alarm clears itself automatically as soon as the process temperature is inside the alarm limit by 1°F/0.6°C.



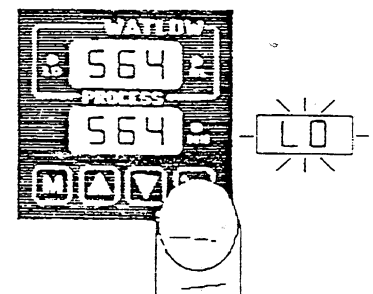
CAUTION:

An alarm display will be masked by an error condition or when the control is in the Calibration or Setup Menus.

Figure 21 -
Alarm Display
Examples



Press once -
Clear
a latched
and
corrected
alarm.



SECTION 6
TEMPERATURE CONTROLS

STEP BY STEP INSTRUCTIONS FOR REPLACEMENT AND/OR PROGRAMMING OF CONTROL.

The following section explains a procedure that will allow the controls to be set up and tuned by persons unfamiliar with them. It is simply an extension of the information given in previous sections but put in a step by step format.

Section I deals with replacing a defective control with a new one. This section can be bypassed if the only objective is to set up the control menu of an existing unit. Section II can be used to either set up a new control or to step through the menus of an existing control to verify or change contents.

Read Notes and Cautions Section before stepping through the menus.

I. Replacing a controller.

Turn off power to the packager. Remove the heater control insert circuitry from the outer case by releasing the latches on both sides of the face of the control and then sliding it out of the case. Remove the new control insert from it's case and slide it in.

*Since all the wiring for the control is to the outer case, the electrical enclosure door will not even have to be opened to replace this unit.

Turn "on" power to packager.

II. Setup control menu.***Notes and Cautions**

A. After the set up menu is accessed (step 2 or step 37), if at any time during programming, no keys are depressed in a period of 1 minute, the control automatically goes back to step 1. Programming will have to be started again at step 2, although the menu items already programmed will stay where they were set.

B. When stepping through the menu items, if they are already set up with the correct presets, it is not necessary to use the up or down keys to change them.

C. CAUTION: When accessing the menu, do not hold the up and down keys any longer than necessary to access the desired menu (see step 2 or step 37). Once this menu is accessed release the keys, as eventually the calibration menu is accessed. If the calibration menu is altered it would require sending the control back to the Watlow factory for reprogramming. If the calibration menu is accessed accidentally, exit this menu by repeatedly pressing the mode key.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 6
TEMPERATURE CONTROLS

6.2.1 BACK UP HEATER CONTROL S300-8AC

The heated silicone back up rubber applies heat to the side of the film opposite the seal bar allowing seals to be made at a lower seal bar temperature. This helps reduce film build up on the blades..

The operating temperature should be between 105 deg. F and 165 deg. F (66 deg. C to 74 deg. C) as measured on the sealing surface of the teflon tape covering the silicone back up rubber. The voltage source for the heater is a controller that supplies a constant voltage. The voltage required to make the heater operate at the above temperature is indicated on a label along side the controller. This voltage is factory preset but may need slight adjustment depending on main power line voltage. To check and verify voltage level, place meter leads on terminals "A" and "B" of the terminal strip in the lower part of the electrical enclosure. If adjustment is necessary, turn the main pot while reading voltage at terminals "A" and "B" until desired voltage is achieved. (If desired temperature cannot be reached, read installation and tuning procedure below.)

CAUTION: Operating the back up heater at temperatures higher than shown above may damage back-up jaw components.

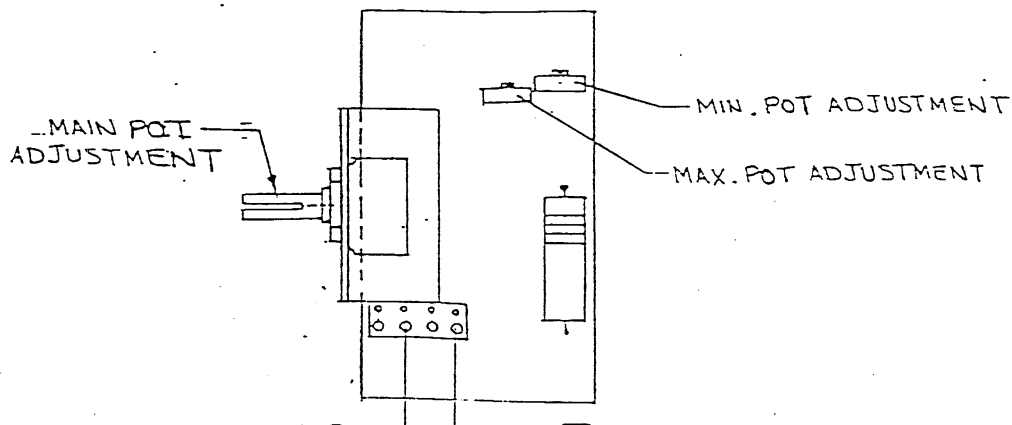
INSTALLATION AND TUNING OF A REPLACEMENT BACK UP HEATER CONTROL.

When installing a new back-up heater control it must be tuned to the model of machine it is installed in. First turn off the power and wire the control. Locate all the adjustment pots (Main, Min. and Max. in figure below) and turn all counter-clockwise to off position. Attach meter leads to terminals L2 and out on control terminal junction or to "A" and "B" terminals at rear of electrical enclosure.

Turn power on and turn main pot stem to full clockwise on position. (meter should read near zero voltage) adjust Max. pot screw clockwise until the voltage reading on the meter reaches the voltage indicated on the back-up heater label on the control panel door.

If the voltage required on the label cannot be obtained by the setting procedure above then the Min. pot. adjustment screw will have to be turned clockwise until correct voltage is reached.

See Page 56B for voltage set point and maximum voltage requirement.



UNIT D

MACHINE FUNCTION DETAILS
& ADJUSTMENTS

SECTION 6
TEMPERATURE CONTROLS

| MODEL | TEMP. | DON'T EXCEED |
|-----------|------------|--------------|
| HTR. SIZE | SET VOLTS | MAX. VOLTS |
| 101 | 150°F/66°C | |
| 8" x 20" | 20 to 21 | 24 |
| 14" x 20" | 20 to 22 | 26 |

| MODEL | TEMP. | DON'T EXCEED |
|-----------|------------|--------------|
| HTR. SIZE | SET VOLTS | MAX. VOLTS |
| 201 | 150°F/66°C | |
| 8" x 10" | 11 to 12 | 14 |

| MODEL | TEMP. | DON'T EXCEED |
|-----------|------------|--------------|
| HTR. SIZE | SET VOLTS | MAX. VOLTS |
| 401 | 150°F/66°C | |
| 14" x 36" | 30 to 31 | 38 |
| 18" x 36" | 34 to 35 | 44 |

| MODEL | TEMP. | DON'T EXCEED |
|--------------|------------|--------------|
| HTR. SIZE | SET VOLTS | MAX. VOLTS |
| 501 | 150°F/66°C | |
| 8" x 42/52" | 40 to 41 | 50 |
| 14" x 42/52" | 45 to 46 | 56 |
| 18" x 42/52" | 52 to 53 | 62 |

SETTING INSTRUCTIONS FOR THE BACK-UP HEATER
CONTROL R101-1060B

Before wiring control turn both potentiometers counter-clockwise to off position. (remove horizontal and vertical heater fuses.) After wiring control connect digital voltage meter to terminals A & B at the back panel terminal strap.

Turn power on and adjust main potentiometer screw to full open setting. (If this setting exceeds the maximum 12.5 volts for the 201 machine adjust main pot to 12.5 volts and lock stem nut.) If the voltage reading is less than required for your machine (see chart below) turn the main pot screw back 1/8 turn and adjust the trim potentiometer screw slowly clockwise until proper voltage is reached. Do not exceed maximum in chart. Lock stem nut on main pot and replace heater fuses.

| MACHINE MODEL | MAXIMUM VOLTAGE |
|---------------|-----------------|
| 101 | 23 to 25 |
| 201 | 11.5 to 12.5 |
| 401 | 36 to 38 |
| 501 | 44 to 46 |

The silicone back-up temperature should be between 145° & 165° for polyethelene films. You should be able to touch the back-up with your hand for a few seconds before it becomes to uncomfortable. If not, the temperature is excessive. Check with pyrometer and adjust back-up heater control until you can touch with your hand for a few seconds.

CAUTION: Excessive temperature may produce poor seals, film sticking to back-up, ruin back-up silicone and "H" channel extrusion.

NOTE: When running shrink films a lower back-up temperature may be required (or no temperature) to produce more adequate seals. Adjust heater control to suit film used.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 7
PROGRAMMABLE CONTROLLER (PC)

7.2 CYCLE SEQUENCE, Continued**AUTO CYCLE OPERATION**

If the auto cycle feature is being used, the cycle will repeat starting immediately after the seal cooler stops if the auto cycle thumbwheel timer is set at its low setting or, it can be adjusted higher to slow the cycle rate.

7.3 CONTROLS AND TIMING ADJUSTMENTS**A. JAW LOCK OPEN/SAFETY RESET -JAW CLOSE (101 AND 201 PACKAGERS)**

Large red push-button located in operator panel of control box. Tap to manually lock the jaws open. Hold one second to reset the safety so the jaws can close. **CAUTION:** The jaws will close when releasing the push-button after it has been held depressed longer than one second.

A. JAW LOCK OPEN/SAFETY RESET-JAW CLOSE (401 AND 501 PACKAGERS)

The jaw lock open is a red push-pull switch located on the operator control panel of the control box (401) or in a push button box mounted on the front of the packager (501). The safety reset-jaw closed is a yellow push button located on the operator panel of the control box (401) or in a push button box mounted on the front of the packager (501). To lock the jaws open push in on the jaw lock open switch. To close the jaws or reset the safety, the jaw lock open switch must be pulled out and then the safety reset jaw close switch must be depressed.

NOTE: The jaws will not open or close if the safety door is not closed completely.

B. MANUAL CYCLE (Palm Switch)

Tap once to cycle the machine. Jaws will stay open as long as switch is depressed.

C. HEATER EXTEND TOGGLE SWITCH

When turned "on", the heaters will extend and remain extended, for the purpose of cleaning or checking alignment, etc. **NOTE:** The jaws will not close as long as the heaters are extended.

D. HEATER DWELL TIMER

Adjust so that the heater dwell in the extended position for a short time before they retract. The thinner the film, the shorter the dwell period required. If heater cylinder advance speed is adjusted, it will affect the dwell timer adjustment.

NOTE: Heater dwell time is approximately equal to 1/60th second x thumbwheel setting. Adjust only the two R.H. thumbwheels. The two L.H. thumbwheels must remain set at "0" for the heater dwell timer to function properly.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 7

PROGRAMMABLE CONTROLLER (PC)

7.3 CONTROLS AND TIMING ADJUSTMENTS, Continued

- E. JAW OPEN DWELL TIMER This thumbwheel timer is used to adjust the amount of time that the jaws stay in the open position. Timing starts when the jaws begin to open. Adjust the timing so that the jaws are able to fully open before they start to close.

NOTE: Jaw Open Dwell Time is equal to .1 second x thumbwheel setting. Adjust only the two R.H. thumbwheels. The two L.H. thumbwheels must remain set at "0" for the jaw open dwell to function properly.

- F. AUTO CYCLE DELAY TIMER
Timing begins after the seal cooler stops. The jaws are signaled to open after the timer is timed out.

NOTE: Auto cycle delay time is equal to .1 second x thumbwheel setting. Adjust only the two R.H. thumbwheels. The two L.H. thumbwheels must remain set at "0" for the auto cycle delay timer to function properly.

- G. SAFETY TIMER
Adjusting Procedure: With jaws closed and the thumbwheel set to "0", manually cycle the palm switch. The jaws should lock open. Now alternately reset the safety push-button, while turning the thumbwheels up one digit at a time until the jaws finally stay closed. NOTE: The safety timer should be re-adjusted whenever the cylinder speed of the jaws closing is changed. Refer to the standard packager instruction manual for adjustment of the screw that actuates the "jaws closed" switch.

NOTE: Safety time adjustment is equal to .1 second x thumbwheel setting. Adjust only the R.H. thumbwheel. The three L.H. thumbwheels must remain set at "0" for the safety timer to function properly.

- H. CYCLE COUNTER
The signal to increment the totalizing cycle counter comes at the time that the heaters start to advance. So if the packager goes into reset, the heaters do not advance, and the counter is not incremented.

UNIT D

M A C H I N E F U N C T I O N S D E T A I L S
& A D J U S T M E N T S

SECTION 7
PROGRAMMABLE CONTROLLER (PC)

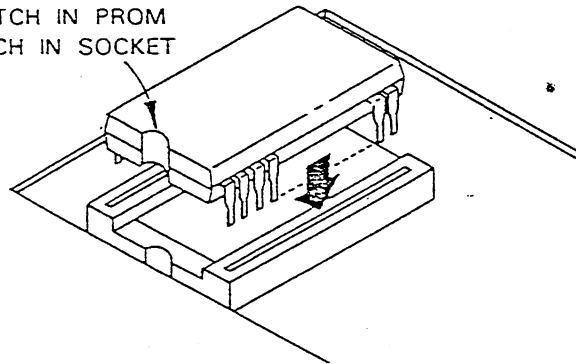
I. SERVICING THE PC (FOR SERIES ONE JUNIOR)

The only service to perform on the G.E. Series One Junior is if the prom chip needs to be changed or added, or if the timer/counter access terminal needs to be added or removed.

To insert a prom into the socket, line up the notch in the prom chip to the notch in the socket, and make sure all the terminal pins line up with their respective holes.

If during troubleshooting an electrical problem, it is determined that the PC is defective, it will be necessary to change the entire PC. There are no replaceable modular components.

ALIGN NOTCH IN PROM
WITH NOTCH IN SOCKET



PROM ORIENTATION INTO SOCKET

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

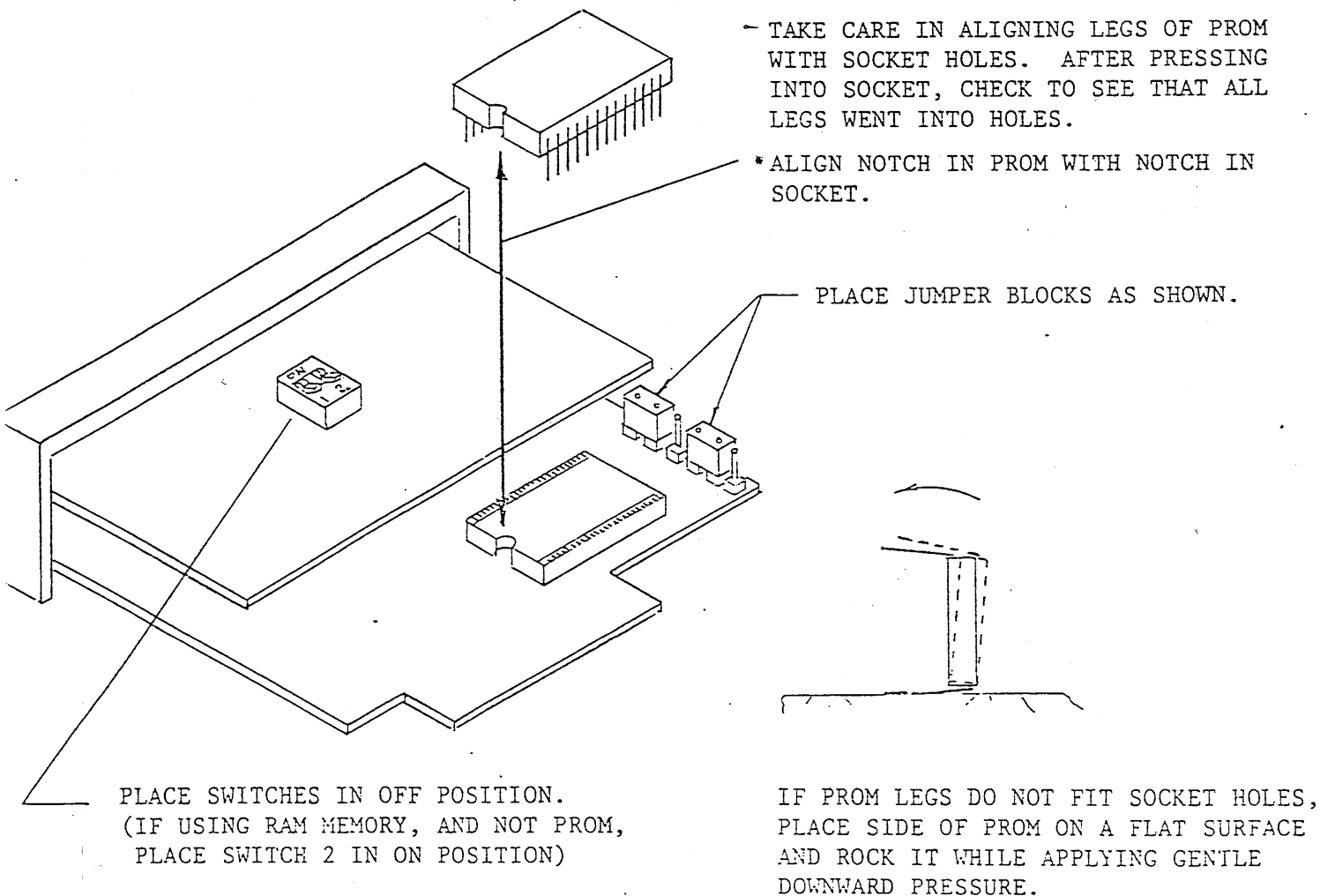
SECTION 7
PROGRAMMABLE CONTROLLER (PC)

I. SERVICING THE PC

Removing Modules:

1. Turn main power off and disconnect power cord.
2. Disconnect any wiring that goes directly to the module.
3. Squeeze the module at the front top and bottom to release the securing tabs.
4. Pull module straight out.
5. If replacing CPU module, the prom chip must first be installed with circuit board mounted switches and jumpers set correctly.
6. Insert new module aligning circuit boards first into bottom tracks.
7. Rotate module upwards slightly to engage top tracks.
8. Push module into base unit until both tabs snap into place.
9. Replace any wiring that was removed.
10. Re-apply power.

Preparation of CPU Module includes setting board mounted switches and placing jumpers in their correct position.

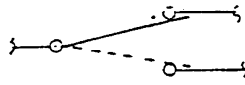

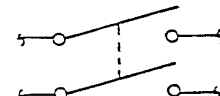


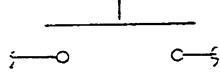
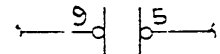
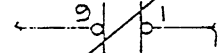
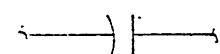

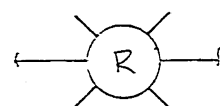
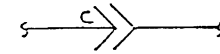
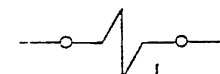
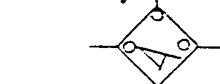


CPU MODULE PREPARATION

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 7
PROGRAMMABLE CONTROLLER (PC)

7.4 ELECTRICAL CIRCUIT DRAWING DESCRIPTION

| | |
|---|---|
|  | SINGLE POLE DOUBLE THROW TOGGLE SWITCH (ON-ON) |
|  | SINGLE POLE SINGLE THROW TOGGLE SWITCH (ON-OFF) |
|  | DOUBLE POLE SINGLE THROW TOGGLE SWITCH |
|  | NORMALLY OPEN LIMIT SWITCH |
|  | NORMALLY CLOSED LIMIT SWITCH |
|  | MOMENTARY CONTACT PUSH BUTTON SWITCH |
|  | NORMALLY OPEN RELAY CONTACT |
|  | NORMALLY CLOSED RELAY CONTACT |
|  | CAPACITOR |
|  | RELAY COIL |
|  | INDICATOR LAMP (RED) |
|  | MALE - FEMALE PLUG CONNECTION |
|  | VALVE SOLENOID |
|  | PROXIMITY LIMIT SWITCH |

- *Switches and relay contacts as they appear on the circuit drawing are shown in their normal, unactuated condition.
- *Numbers adjacent to relay coils and contacts indicate the terminal number of the socket the relay mounts in.
- *Letters adjacent to plug connections indicate the pin designation of the connector body.

UNIT D M A C H I N E F U N C T I O N D E T A I L S
& A D J U S T M E N T S

SECTION 8
AIR SYSTEM

REFER TO UNIT A, SECTION 3.10 FOR COMPONENT IDENTIFICATION

- 8.1 DESCRIPTION OF VALVE MANIFOLD ASSEMBLY The manifold assembly consists of a series of manifold base blocks whose supply and exhaust air passages are common through the length of the assembled blocks. However, because certain functions of the machine are operated at lower air pressure than others, blocking discs are used between certain blocks to segregate the two operating pressures. If the base blocks are ever disassembled, care should be taken to not loose the discs nor install them in the wrong ports.

Mounted on top of the base block is the "speed control" interface block which is used to control the exhaust of the cylinder. This is done with metering screws located at each end of the speed control block. Turning the screws clockwise slows the cylinder speed. Each of the screws controls the speed of air leaving one end of the cylinder. The screw is marked with an "A" or "B" which relates to the output port of the valve.

Some machine functions such as the 40 PSI - 80 PSI selector, or hole punch cylinder do not require the speed control block.

The valve itself is either a direct or pilot assisted solenoid spool valve depending on packager model. Direct solenoid valves are capable of operating at air pressures as low as 10 PSI (models 101, 401, 501, 501-36). Pilot assisted solenoid valves (model 201) are capable of operation at no lower than 20 PSI. In applications not requiring high speeds, the regulators can be set somewhat lower than the normal 40 and 80 PSI for 101, 201, and 501, and 20 and 40 PSI for 401. This will reduce air consumption somewhat and more importantly lower the cylinder forces which will lessen the damage to something that gets caught between the jaws.

NOTE: In resetting the regulators lower, make sure that the gripping force of the jaws is still good enough to maintain good seals. It will probably be necessary to adjust the "safety" and "heater dwell" timers.

At each end of the valve are manual override buttons that can be used to operate the spool in the valve, which is helpful in troubleshooting.

- 8.2 CYLINDER SPEED AND CUSHION ADJUSTMENTS A label is added to each end of the valves using speed control blocks. The label refers to the function being controlled by the speed control screw at that end of the speed control block.

In making cylinder speed adjustments on "jaw closing" and "heater advance" functions, it may be necessary to readjust the "safety" and "heater dwell" thumbwheel timers. In any case, adjust cylinder speeds in such a way that the machine cycles smoothly.

The main drive cylinder is equipped with adjustable cushions that slow the cylinder during the last 1/2" of travel. Adjust the cushions to keep the jaws from banging at the end of their stroke. NOTE: It is possible to adjust the cushion that affects the jaws closing to be too slow. This may result in the packager going into safety or the heaters starting to advance before the jaws are completely closed and gripping the film.

UNIT E C A U T I O N S & W A R N I N G S

WARNING: (Failure to observe can cause damage to machine and/or injury to personnel)

*Do not bypass or cut the ground lug off the power cord plug.

*Do not place hands or fingers near moving machine parts. Have hands in full view at all times.

*Do not have one person operate the machine while another is making mechanical adjustments. Specific areas for concern are:

- 1) The opening between the jaws
- 2) Safety timing adjustment
- 3) The linkage arms that move the jaws
- 4) The internal jaw parts (moving heater frame)
- 5) Film feed mechanism
- 6) Areas where moving machine parts contact and actuate fixed switches
- 7) Trim wind up spinning spool

ALWAYS disconnect air and electric power sources when working on internal machine parts.

CAUTIONS: (Failure to observe can cause damage to equipment)

- *Over oiling air system will eventually lead to malfunctioning of valves
- *Dirty, moisture laden air can cause damage to valving
- *Refer to maintenance schedule for necessary lubrication
- *Continual jamming of products in the jaw area can lead to misalignment
- *Programmable controller inputs are 24 volt DC and outputs are 120 volt AC.
Do not make direct connection between inputs and outputs.
- *Take extreme care in changing a prom memory chip to not damage legs of chip.
- *Do not adjust back up heater control beyond voltage stated. (see back-up heater control adjustments. Unit D Section 6.2.1)

SECTION 1
GENERAL ELECTRIC TROUBLESHOOTING

CAUTION: Remember that input terminals are 24 volt DC and output terminals are 120 volt AC.

The following process of elimination should help to isolate most problems.

1. Verify that air and electric power is on, that machine is not in safety, and there is no mechanical binding.
2. Check condition of main power fuse.
3. Check CPU module:
 - a) If "power" LED is not lit, the P.C. may have to be replaced.
 - b) If "CPU" LED is on, the unit may have to be replaced.
 - c) If "run" LED is off, the unit is program, load or tape mode, and needs to be put back into run mode.
4. If the machine has stopped with some outputs energized or basically stopped in mid-cycle, check condition of input and output LEDs. Look for LEDs that should be on but are not and also LEDs that are on that should not be.

If an input is not being received check the condition of the device. If it is a switch, make sure the switch actuator is in position and capable of actuating the switch. If it appears the switch should be actuated but no input is being received, check the condition of the switch. If it is a mechanical switch, disconnect the lead wires and use an ohmmeter to check continuity through the contacts. If it is a proximity switch or electric eye, remove the lead wire from the input terminal. Use a volt meter to check the operation of the switch by putting the negative (-) lead to the wire from the switch and the positive lead (+) to the +24 volt terminal of the P.C. power supply terminals. If the proximity switch or eye is working correctly, the meter will read 24 volts when the device is actuated.

Outputs should be checked as follows:

If output LED is on but valve coil or relay coil is not functioning, check output fuse then use a volt meter to verify that there is power at the coil. If there is power, replace the valve or relay.

If the output LED is off but should be one, or if the LED is on but there is no power at the coil, replace the output module.

If the correct inputs and outputs are present and the valve is not operation as it should, replace the valve. If valve seems to be operating correctly, but the cylinder is not reacting as it should, check to see if cylinder is worn out and "blow by" is occurring. This is when the piston seal is damaged and air is blowing past it. The usual indication of this is constantly exhausting air when the machine is at rest. It can be verified by removing the air line from the cylinder port opposite of the end that is pressurized. Air will bleed out of this port if the cylinder is defective.

The manual overrides at the valve solenoids can be used in the troubleshooting to check cylinder operation.

TROUBLESHOOTING ...ART

SOLUTION

POSSIBLE CAUSES

PROBLEM

| PROBLEM | POSSIBLE CAUSES | SOLUTION |
|---|---|---|
| HEATER WILL NOT HEAT UP OR S UNCONTROLLABLE | <ol style="list-style-type: none"> HEATER IS BLOWN OUT THERMOCOUPLE IS DEFECTIVE TEMPERATURE CONTROL IS IN ANY OF SEVERAL ALARM OR ERROR CODE MODES | <ol style="list-style-type: none"> CHECK CONTINUITY OF LEAD WIRES TO VERIFY AN OPEN CIRCUIT THEN REPLACE THE HEATER IF THERMOCOUPLE IS AN OPEN CIRCUIT, THE CONTROLLER WILL GO INTO AN ERROR CODE MODE. SEE SECT. 6.2. BECAUSE THE THERMOCOUPLE IS AN INTEGRAL PART OF THE HEATER, THE HEATER WILL HAVE TO BE REPLACED SEE SECTION 6.2 |
| FILM WILL NOT ADVANCE | <ol style="list-style-type: none"> FILM FEED ROLL SET SCREW LOOSE CYLINDER DEFECTIVE FEED SPROCKET CLUTCH SLIPPING PC OR VALVE DEFECTIVE | <ol style="list-style-type: none"> TIGHTEN SET SCREW CHECK FOR "BLOW BY" REPLACE CLUTCH SEE GENERAL TROUBLESHOOTING |
| HEATERS WILL NOT ADVANCE OR RETRACT PROPERLY | <ol style="list-style-type: none"> HEATER FRAME IS BINDING "JAWS CLOSED" SWITCH OUT OF ADJUSTMENT "HEATER DWELL" TIMER NOT SET PROPERLY PC OR VALVE DEFECTIVE | <ol style="list-style-type: none"> CHECK FOR BINDING WITH AIR TURNED OFF CHECK ADJUSTMENT - SEE UNIT C, SECTION 4 READJUST TIMER SEE GENERAL TROUBLESHOOTING |
| JAWS STAY EITHER CLOSED AND WON'T OPEN OR STAY OPEN AND WON'T CLOSE | <ol style="list-style-type: none"> MECHANICAL BINDING IN JAWS SAFETY THUMBWHEEL TIMER SET INCORRECTLY "JAWS CLOSED" SWITCH OUT OF ADJUSTMENT "FILM ADVANCED" SWITCH DEFECTIVE | <ol style="list-style-type: none"> CORRECT BIND ADJUST THUMBWHEEL TIMER ADJUST ACTUATOR BOLT, SEE UNIT C, SECTION 4 SEE GENERAL TROUBLESHOOTING |
| JAW SAFETY WILL NOT ACTIVATE WHEN SOMETHING GETS CAUGHT IN JAWS | <ol style="list-style-type: none"> "JAWS CLOSED" SWITCH ACTUATOR BOLT OUT OF ADJUSTMENT "SAFETY" THUMBWHEEL TIMER OUT OF ADJUSTMENT THUMBWHEEL MAY BE DEFECTIVE | <ol style="list-style-type: none"> SEE UNIT C, SECTION 4 SEE UNIT C, SECTION 4 CHECK THUMBWHEEL BY CHANGING IT TO A LOW NUMBER (2 OR 3). IF SAFETY STILL DOESN'T ACTIVATE, REPLACE THUMBWHEEL INTERFACE MODULE OR THUMBWHEEL SWITCH ASSEMBLY. |

TROUBLESHOOTING CHART

| PROBLEM | POSSIBLE CAUSES | SOLUTION |
|-------------------------------------|--|--|
| POOR SEAL QUALITY | <ol style="list-style-type: none"> 1. RUBBER BACK-UP IS CUT OR WORN 2. HEATER BLADE IS DAMAGED 3. HEATER BLADE IS NOT IN ALIGNMENT WITH BACK-UP OR IS SCRAPING THE JAW PLATES 4. RUBBER GRIPPERS ON JAW PLATES ARE NOT IN ALIGNMENT WITH SOLID JAW 5. BACK-UP HEATER IS NOT OPERABLE. | <ol style="list-style-type: none"> 1. TURN RUBBER TO A FRESH SURFACE OR REPLACE RUBBER 2. CHECK CONDITION OF BLADE. REPLACE IF THE EDGE IS DAMAGED OR IF THE RELEASE COATING IS NOT KEEPING THE MOLTEN FILM FROM BUILDING UP 3. SEE SECT. 5.4 4. SEE SECT. 5.2 5. SEE SECT. 6.3 |
| INCONSISTENT VERTICAL BAG DIMENSION | <ol style="list-style-type: none"> 1. FILM FEED ROLL SET SCREW LOOSE 2. FILM FEED ROLL DIRTY 3. FILM FEED SPROCKET CLUTCH SLIPPING 4. FILM FEED NYLON BRAKE NOT WORKING | <ol style="list-style-type: none"> 1. TIGHTEN SET SCREW 2. CLEAN THE ROLL 3. REPLACE CLUTCH 4. CLEAN OR REPLACE BRAKE |
| NO HEAT AT SILICONE BACK-UP RUBBER | <ol style="list-style-type: none"> 1. BLOWN FUSE 2. HEATER IS BLOWN 3. HEATER CONTROL IS NOT SET PROPERLY 4. CONTROL IS DEFFECTIVE | <ol style="list-style-type: none"> 1. REPLACE FUSE 2. CHECK HEATER AND REPLACE IF BLOWN. 3. CHECK VOLTAGE AT TERMINAL STRIP IN PANEL. IF NO VOLTAGE, SEE CONTROL ADJUSTMENT INSTRUCTION UNIT D, SECTION 6.2.1 4. REPLACE IF DEFFECTIVE. |

IF THE PROBLEM CANNOT BE SOLVED BY THE INFORMATION IN THIS MANUAL, CONTACT RENNCO BY PHONE AND REQUEST TO TALK TO SOMEONE IN SERVICE.

UNIT G M A I N T E N A N C E & L U B R I C A T I O N
S C H E D U L E

SECTION 1
RECOMMENDED MAINTENANCE FOR YOUR RENNCO PACKAGER

DAILY MAINTENANCE

1. Make sure all guards are in place
2. Check to see that safety is functioning properly
3. Wipe seal blade surfaces to remove any build-up
4. See that film guide bar is set properly
5. Make sure machine is operating smoothly and is making good seals

WEEKLY MAINTENANCE (After 40 hours)

1. Remove heater jaw cover and clean sealing assembly
2. Check the silicone gripper and replace if necessary
3. Wipe seal blade surfaces to remove any build-up
4. Insure that all nuts, bolts and heater wire are secured
5. Check trim take-up, clean (no oil or grease) and adjust if necessary
6. Make sure all cylinders are working smoothly
7. Make sure you are getting good seals and good gripping of material

SECTION 2
LUBRICATION SCHEDULE

| | | |
|---|------------------------------------|---|
| Trim Wind-up Motor Gear Head | Yearly | SAE #50 non-detergent gear oil |
| Jaw Support Blocks | Weekly | Models 101 & 201, light weight grease; Model 401, light oil |
| Heater Guide Shaft Linear Bearing Blocks | Monthly | Light weight grease |
| Bronze Bushings on: Transfer Shaft | Normally None required | Light oil if required |
| Roller Bearings on Jaw Drive Linkage | 6 months | Medium weight bearing grease (disassemble and pack) |
| Film Feed Sprockets | 6 months | Medium weight bearing grease (disassemble and pack) |
| FRL Unit | As required to keep bowl filled | Mobil velocite V-6 light bodied oil or equivalent air lubricant |

SPARE PARTS FOR MODEL 101, 201, 401, 501 SHRINK PACKAGERS
(GE PC CONTROLLED)

| <u>QUANTITY</u> | <u>PART DESCRIPTION</u> |
|-----------------|--|
| 1 | SMC Single Solenoid 4-way valve NSV 4114-0009D |
| 1 | SMC Interface Speed Control SPO100 |
| 1 | Omron Proximity Switch E2E-X5E1 |
| 6ft. | Silicone Gripper Material |
| 1/2 pt. | Mobil V-6 light bodied oil |
| 10 ft. | 1/4" poly tubing |
| 10 ft. | 3/8" poly tubing |
| 2 ea. | Fuses: Model 101 - 1 amp, 5 amp, 8 amp, 15 amp |
| | Model 201 - 1 amp, 5 amp, 15 amp |
| | Model 401 - 1 amp, 5 amp, 10 amp, 15 amp |
| | Model 501 - 1 amp, 5 amp, 10 amp, 13 amp, 20 amp |
| 1 | Horizontal Heater Blade |
| 1 | Vertical Heater Blade |
| 1 | Horizontal Heater |
| 1 | Vertical Heater |
| 5 | Horizontal Solid Silicone Back-Up - 1/4" Square, 35 Durometer |
| 5 | Vertical Solid Silicone Back-Up - 1/4" Square, 35 Durometer |
| 1 | Horizontal Silicone Foam Cushion - 1/4" x 1/2" (Firm) |
| 1 | Vertical Silicone Foam Cushion - 1/4" x 1/2" (Firm) |
| 1 | 18 yd. roll, 10 mil x 1/4" wide teflon tape T-10 |

OPTIONAL

| <u>QUANTITY</u> | <u>PART DESCRIPTION</u> |
|-----------------|--|
| 1 | G/E/ series one JR programmable controller |