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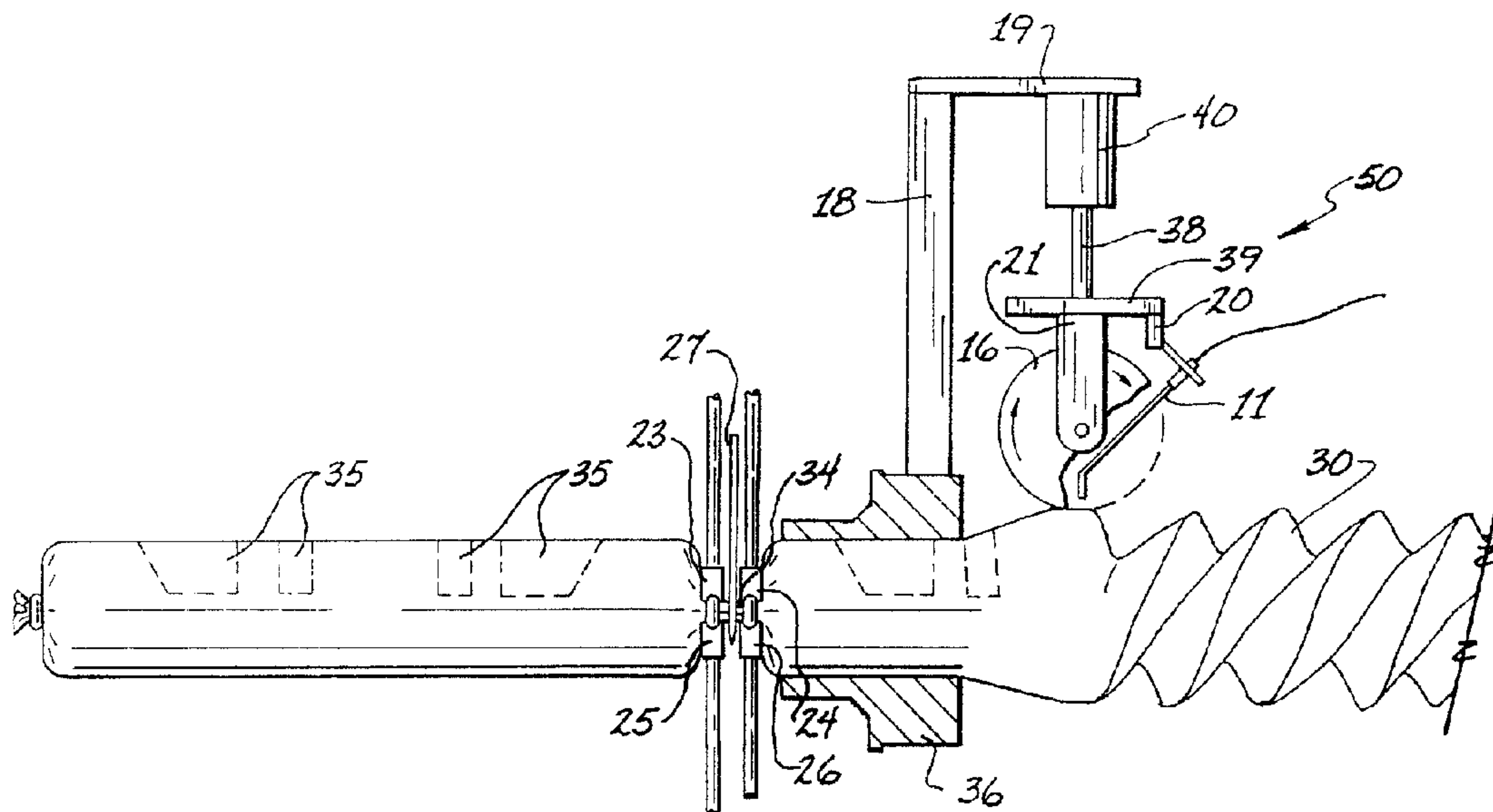
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(54) Title: METHOD AND APPARATUS FOR ALIGNING LABELS ON SHRRED FOOD CASING



(57) Abrégé/Abstract:

In a method for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for the casings from a supply source is axially shirred into sections and the sections are stuffed with food emulsion into divided off portions, the improvement comprising measuring linear motion of the casing as the portions are filled with food emulsion; inputting the measured motion to a programmable logic controller; within the programmable logic controller, calculating an approximate distance between eye-mark bars separating the individual portions, where the calculation is based upon a known distance between eye-mark bars; based upon the calculated approximate distance and the measured motion, selectively sensing eye-mark bars which separate individual casings while ignoring printed label material between eye-mark bars; and, clipping individual sections of the casing closed at precise locations in response to the sensing of eye-mark bars to accurately position the labels between end-clips secured to ends of each of the portions.

METHOD AND APPARATUS FOR ALIGNING LABELS ON SHIRRED FOOD CASINGS

Abstract of the Invention

In a method for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for the casings from a supply source is axially shirred into sections and the sections are stuffed with food emulsion into divided off portions, the improvement comprising measuring linear motion of the casing as the portions are filled with food emulsion; inputting the measured motion to a programmable logic controller; within the programmable logic controller, calculating an approximate distance between eye-mark bars separating the individual portions, where the calculation is based upon a known distance between eye-mark bars; based upon the calculated approximate distance and the measured motion, selectively sensing eye-mark bars which separate individual casings while ignoring printed label material between eye-mark bars; and, clipping individual sections of the casing closed at precise locations in response to the sensing of eye-mark bars to accurately position the labels between end-clips secured to ends of each of the portions.

METHOD AND APPARATUS FOR ALIGNING LABELS ON SHIRRED FOOD CASINGS

An appendix comprising 108 pages is to be considered part of the specification of this patent.

Background of the Invention

The invention relates generally to the control of a machine for automatically sizing and filling food casings, and, more particularly, to a method and apparatus for aligning labels on shirred food casings as the casings are being filled and clipped.

Food products such as sausage and other processed meats, cheese, sandwich spreads and the like are often packaged in tubular casings which are tied, clipped or otherwise secured at both ends. Larger size packages (e.g., one to three pounds) are known in the industry as chub packages.

Chub packages are typically made of fibrous material, polyethylene film, saran film, or a combination of polyethylene film and saran film. The film is typically stored on a roll, and is shirred into strands prior to filling. Usually two or more plies of film are used, and at least one ply is imprinted with information about the product. Thus, the film functions both as a package and as a permanent label for the product.

The shirred casing strands are placed on the stuffing horn and sizing ring of an automatic sizing and stuffing machine. The

leading end of the first casing is clipped closed and food, in the form of an emulsion, is pumped through the stuffing horn. As each casing is filled, the shirred casing is pulled off the stuffing horn by the force of the food flow. Each casing is clipped to make individual chub packages. It is desirable that the imprinted label be centered between the end clips of each filled casing.

Various methods and machines are known in the art related to the controlling of machines which shirr and/or fill food casings. In United States Patent No. 2,949,371 (Freund II, et al.), for example, a method and apparatus are disclosed for distinguishing between encased and skinless frankfurters. The invention incorporates longitudinal regenerated cellulose stripes in sausage casings, which stripes have characteristics different than the casing cellulose itself. The stripes are detectable and are used to distinguish encased frankfurters from skinless frankfurters. This patent does not address the additional problem of centering a label imprinted on an individual casing.

United States Patent No. 3,112,516 (Bonnee) discloses a control for a shirring machine which uses a mechanical means to detect a splice in unshirred casing. Again, this patent is not concerned with casings having labels and with the problem of centering the labels between end clips.

United States Patent No. 4,580,316 (Kollross) discloses a machine for automatically manufacturing shirred sausage casings which includes means for measuring register marks on the casings. However, the shirred casings of this invention do not include

imprinted labels and hence there is no problem of interference between the register marks and a label.

United States Patent No. 4,625,362 (Kollross et al.) discloses a method and device for automated manufacture of strings of sausages which incorporates a photocell for sensing sealing joints in shirred casings. However, the shirred casings of this invention are not imprinted with labels, and hence there is no interference problem between the sealing joints and the labels.

It has previously been impossible to accurately center printed blocks between endclips applied by automatic sizing machines. Such machines typically used product length, elapsed time, or pump metered portioning of products to control chub size. None of these methods accurately provides for centering printed blocks between endclips. Thus, a need has existed for a method and apparatus for centering imprinted labels on filled food casings between endclips, which casings are shirred prior to filling.

Summary of the Invention

The invention broadly relates to a method for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for the casings from a supply source is axially shirred into sections and the sections are stuffed with food emulsion into divided off portions, and comprises the improvement of measuring linear motion of the casing as the portions are filled with food emulsion; inputting

the measured motion to a programmable logic controller; within the programmable logic controller, calculating an approximate distance between eye-mark bars separating the individual portions, where the calculation is based upon a known distance between eye-mark bars; based upon the calculated approximate distance and the measured motion, selectively sensing eye-mark bars which separate individual casings while ignoring printed label material between eye-mark bars; and, clipping individual sections of the casing closed at precise locations in response to the sensing of eye-mark bars to accurately position the labels between end-clips secured to ends of each of the portions. An apparatus operatively arranged to implement the method of the invention is also provided.

A primary object of the invention is to provide a method and apparatus for centering labels between endclips of filled food casings.

A secondary object is to provide a method and apparatus for centering labels between ends of filled food casings which does not require precise placement of the casing on a horn ring of a filling machine.

These and other objects and advantages of the present invention are efficiently obtained, and will become apparent from the specification, drawings and appended claims.

Brief Description of the Drawings

Figure 1 is a block diagram which illustrates how the programmable logic controller controls the operations of the present invention;

Figure 2 is a side elevation of the apparatus of the invention, showing a shirred casing installed over the stuffing horn, but pulled back to reveal the horn ring and stuffing horn;

Figure 3 is a partial cross-sectional view taken generally along line A'-A' of Figure 2;

Figure 4 is a view similar to that of Figure 2 except showing the casing pulled over the horn ring to align an eye-mark bar with the sensing means, and also showing the leading end of the casing in position for clipping;

Figure 5 is a view similar to that of Figure 2 except showing the endclip secured to the leading end of the casing at the eye-mark bar, and illustrating how the casing proceeds from right to left in the machine;

Figure 6 is a view similar to that of Figure 2 except with the trailing eye-mark bar aligned under the sensing means, as the casing continues to be filled with food emulsion, and continues to move from right to left;

Figure 7 is a view similar to that of Figure 2 except showing the trailing end of the filled casing being clipped and cut at the eye-mark bar, and also illustrating the leading end of a subsequent casing being clipped as the process begins anew.

Detailed Description of the Invention

At the outset, it should be clearly understood that like reference numerals are intended to identify the same structural elements, portions or surfaces consistently throughout the several drawing figures, as such elements, portions or surfaces

may be further described or explained by the entire written specification. The drawings are intended to be read together with the specification, and are intended to be considered a portion of the entire "written description" of this invention. As used in the following description, the phrases "right" and "left", and "clockwise", as well as adjectival and adverbial derivatives thereof (e.g., "rightwardly" and "leftwardly", etc.) refer to the relative orientation of the structure of the invention from the perspective of one facing Figure 2.

The invention broadly relates to a method for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for the casings from a supply source is axially shirred into sections and the sections are stuffed with food emulsion into divided off portions, and comprises the improvement of measuring linear motion of the casing as the portions are filled with food emulsion; inputting the measured motion to a programmable logic controller; within the programmable logic controller, calculating an approximate distance between eye-mark bars separating the individual portions, where the calculation is based upon a known distance between eye-mark bars; based upon the calculated approximate distance and the measured motion, selectively sensing eye-mark bars which separate individual casings while ignoring printed label material between eye-mark bars; and, clipping individual sections of the casing closed at precise locations in response to the sensing of eye-mark bars to accurately position the labels between end-clips secured to ends of each of the portions. An

apparatus operatively arranged to implement the method of the invention is also provided.

It should be understood that the apparatus of the invention is an improvement to existing and well known food filling machines. In the preferred embodiment described herein, the improvement is mounted to a sausage filling machine.

Quite simply, the invention comprises a programmable logic controller (PLC) in communication with optical sensing means which sense eye-mark bars on casings to be filled, mechanical sensing means which measure the rate of motion of the casings, and clipping and cutting means which, in response to commands from the PLC, cut and clip the casing at precise locations to center a printed label between eye-mark bars on the individual casing portion.

Figure 1 illustrates a block diagram of the present invention. The heart of the invention is programmable logic controller 10 (model TI-335, or equivalent). The software necessary to run the PLC is listed in the **Appendix**.

The PLC receives signals from optical sensor 11 (SUNX FX-77, Des Moines, Iowa, or equivalent) which senses the eye-mark bars on the casing. The PLC also receives signals from mechanical sensing means 12 which measures the rate of the motion of the casing as it moves over the stuffing horn. In response to the sensed eye-marks and the sensed motion, the PLC sends a control signal to the crimper/cutter mechanism 13 which applies endclips to the leading and trailing ends of individual filled casings,

which endclips are applied precisely proximate (on either side of) the eye-mark bars. Mechanism 13 also cuts the casing material between the trailing endclip of one casing portion and the leading endclip of the next casing portion. The cutting is done precisely at the eye-mark bar.

Figure 2 is a side elevation of the apparatus 50 of the invention, showing a shirred casing portion 30 installed over the stuffing horn 14, but pulled back to reveal the horn ring 15 and stuffing horn. The casing material is tubular in shape and is initially stored on a supply reel (not shown). Also shown is brake ring assembly 36, index wheel 16, trailing endclip installers 23 and 25, leading endclip installers 24 and 26, and cutter 27. Index wheel 16 is partially broken away to reveal optical sensor 11.

Figure 3 is a partial cross-sectional view taken generally along line A'-A' of Figure 2. Index wheel 16 is shown supported by vertical support members 21 and 22, which, in turn, are supported by horizontal member 39 which, in turn, is mounted to piston 38 of pneumatic cylinder 40. Cylinder 40 is mounted to top horizontal support member 19 which is mounted to the filling machine by vertical support member 18. The index wheel is brought into contact with horn ring 15 by pneumatic cylinder 40, which is driven by a 25 psi source and is pressure regulated to ensure that the wheel turns in a 1:1 ratio as the casing moves over the horn ring. The necessary pressure is determined experimentally and may vary depending upon the diameter and coefficient of friction of the casing and horn ring. Obviously,

too much pressure would tend to brake the casing, and too little pressure would result in the casing slipping with respect to the index wheel.

In a preferred embodiment, index wheel 16 is approximately 12 inches in diameter and is divided into eighteen (18) pie sections (other diameter wheels and different pie section configurations may be used as well.) Index wheel 16 is coupled to proximity sensing device 12 which generates 24 VDC (volts direct current) pulses as the wheel rotates. The PLC uses these pulses to determine the rotational speed of the wheel and the rate of linear motion of the casing.

Figure 4 is a view similar to that of Figure 2 except showing the casing portion 30 pulled over the horn ring 15 (shown in Figures 2 and 3) to align eye-mark bar 31 with sensing means 11, and also showing the leading end of the casing in position for clipping under clipping means 24 and 26. Clipping means 24 and 26 apply an endclip to the leading end of a casing portion, whereas clipping means 23 and 25 apply an endclip to the trailing end of a casing portion. Cutting means 27 is located between the leading and trailing clipping means and functions to cut the casing material at the eye-mark bar between filled casing portions, in response to a command from the PLC.

In operation, the fixed length between eye-mark bars is manually programmed into the PLC. The starting point is then read into the PLC, which is the point where the first eye-mark bar is aligned with optical sensor 11 as shown in Figure 4.

To commence operation, initially, the casing is manually advanced, and trailing end-clip 32 and leading end-clip 33 are applied as shown in Figure 5, and the casing material is cut by cutter 27 at eye-mark bar 31. Once casing portion 30 is clipped on its leading end, food emulsion pumped through stuffing horn 14 (shown in Figures 2 and 3) causes the casing portion to move leftwardly over the stuffing ring, over the horn ring, and under brake ring 36 (shown in cross-section in Figure 5.) Index wheel 16 rotates in a clockwise direction from the perspective of one facing Figure 5, and, as it rotates, the PLC measures the linear rate of motion of the casing. Optical sensor 11 is always active, but the PLC is programmed to ignore the printed label material between eye-mark bars. The PLC is programmed to look for the eye-mark bars within a certain distance window. In a preferred embodiment, this window may be four inches in length, and may be programmed to begin at a point equal to the length of an individual casing portion minus two inches (assuming a total individual casing portion length of thirty inches.)

Figure 6 is a view similar to that of Figure 2 except with trailing eye-mark bar 34 aligned under the sensing means, as the casing portion continues to be filled with food emulsion, and continues to move from right to left. This figure clearly shows how label 35 is being centered between the leading clipped end of the casing portion and the trailing end defined by eye-mark bar 34. As optical sensor 11 senses eye-mark bar 34, the PLC processes a command to the clipper and cutter to precisely clip the casing and to cut it at eye-mark bar 34.

Figure 7 is a view similar to that of Figure 2 except showing the trailing end of the filled casing portion being clipped and cut at eye-mark bar 34, and also illustrating the leading end of a subsequent casing portion being clipped as the process begins anew. Label 35 is centered perfectly between the ends of the stuffed casing portion.

Although the present invention has been described herein with a certain degree of particularity, it is to be understood that the present disclosure has been made as an exemplification of the preferred embodiment of the present invention, and the scope thereof is not considered limited by that description, but rather, is defined by what is hereinafter claimed.

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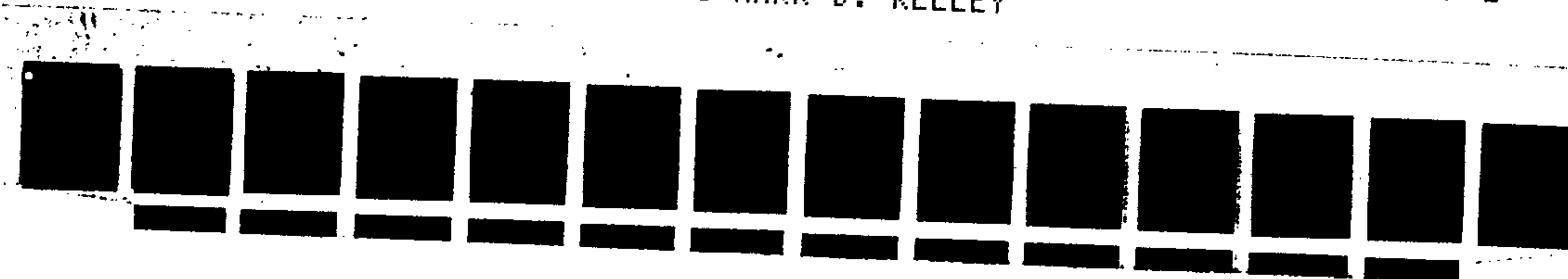
METHOD AND APPARATUS FOR ALIGNING LABELS ON SHIRRED FOOD CASINGS

~~MICROFICHE~~ APPENDIX

on pages 1 to 108

EYEMARK PORTION PROGRAM VERSION TEST 555
FOR KITCHEN MACHINE COPYRIGHT 1993 MARK D. KELLEY

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TITLE

EYEMARK PORTION PROGRAM VERSION TEST555 FOR KITCHEN MACHINE
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METHOD AND APPARATUS FOR ALIGNING LABELS ON SHIRRED FOOD CASINGS
Mark D. Kelley and Mark L. Fox

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VERSION: T555

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```

!Left Door
!Safety
!Wr#200/64
! 064
0 [---]/[---]*----- ( OUT )
!
!Rite Door!
!Safety !
!Wr#201/66!
! 066 !
[---]/[---]
!
!Ball Valv!
!Cover !
!Wr#74/101!
! 101 !
[---]/[---]
!
!Ext. Door!
!Safety !
!Wr#78/104!
! 104 !
[---]/[---]
!
!Ext. Door!
!Safety !
!Wr#79/105!
! 105 !
[---]/[---+
!

```

IO376

Output
Disable

Output
Disable

6--] /[-

58--] /[-

```

!Output At Clean
!Disable /Clean
!
! 376 171
6 [---]/[-----]/[-----] ( OUT )
! 0 58

```

IO11

Main Air
Sl-09
Wr#22/11

Main Air Sol-09
Wire #22/Ref#11

49--] [-

108--] [-

```

!Powerup
!Oneshot
!
! 374
9 [---] [---]*-----*--- ( OUT )
!
!Run Lite !
!
!Wr#26/15 !
! 015 !
[---] [---+
!
!Run Lite
!
!Wr#26/15
! 015
+--- ( OUT )
!

```

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IO15	Run Lite	Run Light
		Wire #26/Ref#15
	Wr#26/15	

```

!Ring Carr Ring Carr Turret      Turret      Clip Carr Clip Carr Clip Carr
!Clr Sl-00 Work      Sl-01      Out      Wk Sl-02  Clr Sl-04 Work
!Wr#13/00  Wr#50/41  Wr#14/01  Wr#51/43  Wr#15/02  Wr#17/04  Wr#53/47
!    000          041          001          043          002          004          047          >
13 [---]/[-----] [-----]/[-----]/[-----] [-----] [-----] [-----] [-----] [-----] a
!    266          291          222          224          >

```

	D-Table	Dump	Carrs at
	Sl-07	Table	Work Pos.
		Wr#62/50	
>	007	050	160
a-----	]/[-----	[-----	(OUT)
>	421		

IO160	Carrs at Work Pos.	Carriages at Work Position

63--]	[-	79--]	[-	110--]	[-
175--]	[-	402--]	[-	433--]	[-
450--]	/[-	457--]	[-	468--]	[-
483--]	[-	909--]	[-		

```

!Clip Carr Clip Carr Clip Carr Ring Carr Ring Carr Carrs at
!Wk Sl-02 Clr Sl-04 Clr Clr Sl-00 Work Clr. Pos.
!Wr#15/02 Wr#17/04 Wr#69/67 Wr#13/00 Wr#50/41
! 002 004 067 000 041 161
23 [---]/[-----]/[-----] [-----] [-----]/[-----] ( OUT )
! 222 224 266

```

IO161	Carrs at Clr. Pos.	Carriages at Clear Position

45--] [- 49--] [- 72--] [-
450--] [-

```

!Ring Carr Ring Carr Clip Carr Clip Carr Clip Carr Turret      Turret
!Clr Sl-00 Work          Wk Sl-02  Clr Sl-04 Position  Sl-01      Out
!Wr#13/00  Wr#50/41  Wr#15/02  Wr#17/04  Wr#71/62  Wr#14/01  Wr#51/43
!    000          041          002          004          062          001          043          >
29 [---]/[-----] [-----]/[-----] [-----] [-----]/[-----]/[-----]a
!    266          222          224          291          >

```

Carrs at
Clip Pos.

> _____ 162
a----- (OUT)
>

IO162	Carrs at Clip Pos.	Carriages at Clip Position
-------	-----------------------	----------------------------

457--] [-

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```

!Ring Carr Ring Carr Clip Carr Clip Carr Clip Carr Turret Turret
!Clr Sl-00 Work Wk Sl-02 Clr Sl-04 Position Sl-01 Out
!Wr#13/00 Wr#50/41 Wr#15/02 Wr#17/04 Wr#71/62 Wr#14/01 Wr#51/43
! 000 041 002 004 062 001 043 >
37 [---]/[-----] [-----]/[-----] [-----] [-----] [-----] [-----] [-----] [-----] a
! 266 222 224 291 >

```

Carrs at
Clean

```

> 163
a----- ( OUT )
>

```

IO163 Carrs at
Clean Carriages at Clean Position

58--] [- 457--] [-

```

!Turret Turret Carrs at Horn Out
!Sl-01 Out Clr. Pos.
!Wr#14/01 Wr#51/43
! 001 043 161 170
45 [---] [-----] [-----] [-----] ( OUT )
! 291 23

```

IO170 Horn Out Horn Out

457--] /[-

```

!Carrs at Turret Turret Clean/ At Clean Cycling Main Air
!Clr. Pos. Sl-01 Out PortionPB /Clean Sl-09
! Wr#14/01 Wr#51/43 Wr#64/54 Wr#22/11
! 161 001 043 054 171 165 011 >
49 [---] [-----] [-----] [-----] [---*---]/[-----]/[-----] [-----] a
! 23 291 ! 58 175 6 >
!Go to !
!Clean !
! 164 !
[---] [-----] +
!

```

Go to
Clean

```

> 164
a----- ( OUT )
>

```

IO164 Go to
Clean Go to Clean

58--] [- 237--] [- 314--] [-

```

!Go to      Carrs at  Output      At Clean
!Clean      Clean      Disable      /Clean
!
!      164      163      376      171
58 [---] [-----] [---*---]/[-----] ( OUT )
!      49      37      0
!At Clean
!/Clean
!
!      171
! [---] [-----] +
!
IO171      At Clean      At Clean/ Clean
           /Clean

           6--] /[-           49--] /[-

!Low Case  Clip      Load      Auto Clip      Stop Cycl
!Stop Pump Cycle      Casing PB from      Hold for
!      Reset      Wr#60/55  Low Case      Auto Clip
!      172      204      055      174      173
63 [---] [-----] [---*---]/[-----]/[---*---] ( OUT )
!      142      406      72
!Stop Cycl
!Hold for
!Auto Clip
!      173
! [---] [-----] +
!
!      160      224      166
! [---] [-----] +---] [-----]/[-----] ( OUT )
!      13      416
IO166      Go load      Go Load from Low Case
           from
           Low Case
           457--] [-

IO173      Stop Cycl      Stop Cycle/ Hold for Auto Clip
           Hold for
           Auto Clip
           72--] [-           142--] /[-           175--] /[-

!Stop Cycl Carrs at  Manual      Stop Pump Eyemark      Auto Clip
!Hold for Clr. Pos. Horn      Portion      from
!Auto Clip      Low Case
!      173      161      205      203      346      174
72 [---] [-----] [-----] [---*---]/[-----]/[-----] ( OUT )
!      63      23      278      110      475
!Auto Clip
!from
!Low Case
!      174
! [---] [-----] +
!
IO174      Auto Clip      Auto Clip from Low Case
           from
           Low Case
           63--] /[-           110--] [-

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```

!Cycling   Carrs at SET/RUN   Stop Pump Volumetric Encoder   Block All
!           Work Pos. ON SS AND Portion   Stopped   For
!           ACK/NAK           Empty           Splice
!    165      160      353      203      270      200      240      >
79 [---] [-----] [---*---] [---*---]/[-----]/[-----]/[-----]/[-----]a
!    175      13      !    611      !    110      103      146      211      >
!Meat Pump Cycling !Eyemark !
!Relay R#1          !Portion !
!Wr#23/12           !         !
!    012      165      !    346      !
[---] [-----] [---*---]/[---+
!    99      175      !    475
!Pump           Time/Pump!
!Jog PB         Portion !
!Wr#61/57       !
!    057      344      !
[---] [-----]/[---+
!              479

```

```

Sing/Clip D-Table   Pump
Latch and Save      Enable
Hold
>                  176      224      220
a-----] / [-----] / [----- ( OUT )
>                  372      416
IO220      Pump      Pump Enable
           Enable
           97--] [-           99--] [-

```

```

!Pump           Ball Valv
!Enable          Sl-05
!              Wr#18/05
!    220          005
97 [---] [-----] ( OUT )
!    79
IO5      Ball Valv      Ball Valve Sol-05
           Sl-05        Wire #18/Ref#05
           Wr#18/05
           99--] [-

```

```

!Pump           Ball Valv Ball Valv      Meat Pump
!Enable          Sl-05      Open          Relay R#1
!              Wr#18/05    Wr#73/100      Wr#23/12
!    220          005      100          012
99 [---] [-----] [-----] [-----] (SET OUT)
!    79          97
IO12      Meat Pump      Meat Pump Relay R#1
           Relay R#1      Wire #23/Ref#12
           Wr#23/12
           79--] [-           103--] [-           110--] [-
           151--] [-           186--] [-           190--] [-
           226--] /[-           433--] [-           633--] [-
           635--] [-           643--] [-           665--] [-
           725--] /[-

```

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```

!Meat Pump Time/Pump Portion
!Relay R#1 Portion Cmplt
!Wr#23/12 Wr#67/63
! 012 344 063
103 [---] [-----] [---*---] [-----] ( OUT )
! 99 479 !
!Volumetric
!Portion
!Empty
! 270
! [---] [-----]
!
IO270 Volumetric Volumetric Portion logic
Portion For Portion empty must reset before
Empty calling for Pump
79--] /[-

!Main Air
!Sl-09
!Wr#22/11
! 011
108 [---] [-----] ( MCS )
! 6
!Cycling Meat Pump Chub Time/Pump Clip
! Relay R#1 Length Portion Cycle
! Wr#23/12 Wr#58/51 Reset
! 165 012 051 344 204 >
110 [---] [---*---] [---*---] [-----] / [-----] * [---] / [-----] a
! 175 99 479 406 >
!
!Time/Pump Eyemark Zero Portion
!Portion Portion Block Cmplt
! T-Wheel Wr#67/63
! 344 346 216 063
! [---] [-----] / [---*---] [-----] [---]
! 479 475 572
!
!Zero T-Wheel
!Block Timer
!T-Wheel Portion
! 216 T625
! +---] / [-----] [---]
! 572
!
!Eyemark Cmp True Time to Calc Time
!Portion Open End of Eyemark
! Window Horn Calc to Horn
! 346 244 271 T626
! [---] [-----] [-----] [-----] [---]
! 475 721 862
!
!Low Case
!Stop Pump
!
! 172
! +---] [-----]
! 142
!
!Splice
!Latch
!Detect
! 231
! +---] [-----]

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```
!Stop Carrs at
!Cycle PB Work Pos.
!Wr#68/65
! 065 160
[---] [---*---] [---*---+
! 13
!Auto Clip!
!from
!Low Case !
! 174 !
[---] [---+
! 72
!Stop Pump
!
! 203
[---] [-----+
!
```

Stop Pump

```
>
a----- ( 203 OUT )
>
IO203 Stop Pump
```

72--] /[- 79--] /[- 139--] [-
190--] /[- 416--] [-

```
!Stop Pump +--Delay -+
! ! Clip !
! ! Cycle !
! 203 TMR T615
139 [---] [-----+-----K0000---+
! 110
!Low Case Stop Cycl Low Case
!Supply Hold for Stop Pump
!Wr#52/45 Auto Clip
! 045 173 172
142 [---] [---*---]/[----- ( OUT )
! 63
!Low Case !
!Stop Pump!
! 172 !
[---] [---+
!
```

IO172 Low Case Low Case/ Stop Pump
Stop Pump

63--] [- 110--] [- 433--] [-
526--] [- 542--] /[- 546--] /[-
552--] /[- 556--] /[-

```
!Encoder      Start      Encoder
!Holes        Cycle PB   Stopped
!              Wr#63/52
!   T607      052        200
146 [---] [---]*---]/[------( OUT )
!
!Encoder      !
!Solids       !
!   T611      !
! [---] [---] !
!Encoder      !
!Stopped      !
!   200       !
! [---] [---+ !
!
IO200          Encoder      Encoder Stopped
                Stopped
                79--] /[-

!Meat Pump
!Relay R#1
!Wr#23/12
!   012
151 [---] [-----*--( MCS )
!   99
!
!              !
!              !   Water Spr
!              !   Sl-
!              !   Wr#27/16
!              !   016
!              ! [---( OUT )
!              !
!              !+--Time to -+
!              !! Encoder  !
!              !! Wheel   !
!              !TMR      T604
!              ++----K9999----+
!
IO16           Water Spr    Water Spray Sl-
                Sl-        Wire #27/Ref#16
                Wr#27/16

!Time to      Casing      +--Encoder -+
!Encoder      Break      ! Holes      !
!Wheel        Wr#59/53    !              !
!   T604      053        TMR      T607
156 [---] [-----]/[-----+----K0200----+
!
!Time to      Casing      +--Encoder -+
!Encoder      Break      ! Solids      !
!Wheel        Wr#59/53    !              !
!   T604      053        TMR      T611
160 [---] [-----] [-----+----K0200----+
!
```

```
!Cycling      Time/Pump Eyemark      +---T-Wheel  -+
!              Portion   Portion      !   Timer      !
!              !         !         !   Portion    !
!      165      344      346      TMR      T625
164  [---] [-----] [-----]/[-----] +-----R0466---+
!      175      479      475
R466      Thumb-      Thumbwheel Value
          Wheel
          Value
          586--DSTR      974--DOUT      983--DOUT
```

```
!Eyemark      Cmp True   Time to      +---Calc Time--+
!Portion      Open      End of      !   Eyemark      !
!              Window   Horn Calc    !   to Horn      !
!      346      244      271      TMR      T626
169  [---] [-----] [-----] [-----] +-----R0444---+
!      475      721      862
R444      Calc Time      Time Calculated to End of Horn
          to End of
          Horn
          862--DOUT
```

```
!
!
!
!
174  [-----] ( MCR )
!
!Carrrs at      Start      Stop      Stop Cycl Low Clip      Stop PB      Splice/
!Work Pos.      Cycle PB   Cycle PB   Hold for Stop      During      Short\Chb
!              Wr#63/52   Wr#68/65   Auto Clip      Splice      Detect
!      160      052      065      173      175      241      254      >
175  [---] [-----] [---*---]/[---*---]/[-----]/[-----]/[-----]/[-----]a
!      13      !         !         63      198      219      190      >
!Cycling      !Block All!
!              !For      !
!              !Splice   !
!      165      !      240      !
[---] [-----*---] [---+
!              211
```

Cycling

```
>
a-----165
>      ( OUT )
IO165      Cycling      Cycling
```

```
49--] /[-      79--] [-      79--] [-
110--] [-      164--] [-      186--] [-
190--] [-      204--] [-      338--] /[-
448--] /[-      542--] [-      546--] [-
552--] [-      556--] [-      623--] /[-
635--] [-      643--] [-      665--] [-
691--] /[-      725--] /[-      743--] [-
881--] /[-      889--] /[-
```

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```

!Meat Pump Cycling
!Relay R#1
!Wr#23/12
! 012 165
186 [---] [-----] [-----] +---Splice --+
! 99 175 ! Short !
! ! Chub !
! TMR T665
!Cycling Splice Splice Splice Meat Pump Stop Pump Splice/
! Detect Short Latch Relay R#1 Short\Chb
! Switch Chub Detect Wr#23/12 Detect
! 165 140 T665 231 012 203 254
190 [---] [-----] [-----]/[-----]/[-----] [---*---]/[-----] ( OUT )
! 175 204 99 110
!Splice/
!Short\Chb
!Detect
! 254
[---] [-----]
!

```

```

IO254 Splice/ Short Chub Detected Splice
Short\Chb
Detect
175--] /[- 204--] /[- 519--] [-
526--] [-

```

```

!Low Clip Clip Start Low Clip
!Horn Cycle Cycle PB Stop
!Wr#56/44 Reset Wr#63/52
! 044 204 052 175
198 [---]/[---*---] [---*---]/[-----] ( OUT )
! 406 !
!Low Clip !
!Chub !
!Wr#57/46 !
! 046 !
[---]/[---+
!
!Low Clip
!Stop
!
! 175
[---] [-----]
!

```

```

IO175 Low Clip Low Clip Stop
Stop

```

```

175--] /[- 537--] [-

```

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```

!Splice      Splice/      Splice      Cycling      Splice
!Detect      Short\Chb Reset      Latch      Detect
!Switch      Detect      Latch
!      140      254      232      165      231
204 [---] [-----]/[---*---]/[-----] [-----] ( OUT )
!      190      !      322      175
!Set 2nd
!Latch
!Detect
!      234
[---] [---*-----+
!      330      !
!Splice      !
!Latch      !
!Detect      !
!      231      !
[---] [---+
!

```

```

IO231      Splice      Splice Latch Detect
          Latch
          Detect
          110--] [-      190--] /[-      211--] [-
          257--] [-      309--] [-      322--] [-
          338--] [-      359--] [-      433--] [-

```

```

!Splice      Splice      Block All
!Latch      Clr/Str      For
!Detect      C-Cycle      Splice
!      231      233      240
211 [---] [---*---]/[-----] ( OUT )
!      204      !      345
!Block All!
!For
!Splice
!      240
[---] [---+
!

```

```

IO240      Block All      Block All For Splice
          For
          Splice
          79--] /[-      175--] [-      215--] [-
          353--] /[-

```

```

!Stop      Block All      Latch PB
!Cycle PB      For      Stop Cycl
!Wr#68/65      Splice      Splice
!      065      240      237
215 [---] [-----] [---*---] ( OUT )
!      211      !
!Latch PB
!Stop Cycl
!Splice
!      237
[---] [-----+
!

```

```

IO237      Latch PB      Latch PB Stop Cycle Splice
          Stop Cycl
          Splice

```

```

!Splice      Latch PB                      Stop PB
!Clr/Str     Stop Cycl                    During
!C-Cycle     Splice                      Splice
!      233      237                      241
219  [---] [-----] [-----] ( OUT )
!      345      215
IO241      Stop PB      Stop PB During Splice
          During
          Splice
          175--] /[-

```

```

!Control
!Clip Carr
!Work
!      342
222  [---]/[-----] ( OUT )
!      294
IO2      Clip Carr      Clip Carr Work Sol-02
          Wk Sl-02      Wire #15/Ref#02
          Wr#15/02
          13--] [-      23--] /[-      29--] /[-
          37--] /[-      228--] /[-      257--] /[-
          284--] /[-      330--] [-      345--] [-
          379--] /[-      421--] [-

```

```

!Control
!Clip Carr
!Clear
!      343
224  [---]/[-----] ( OUT )
!      309
IO4      Clip Carr      Clip Carr Clr Sol-04
          Clr Sl-04      Wire #17/Ref#04
          Wr#17/04
          13--] [-      23--] /[-      29--] [-
          37--] [-      228--] /[-      257--] /[-
          284--] /[-      330--] [-      345--] [-

```

```

!Meat Pump
!Relay R#1
!Wr#23/12
!      012
226  [---]/[-----] ( MCS )
!      99
!Load      Clip Carr Clip Carr Clip Carr Horn Clip      Control
!Out to    Clr      Wk Sl-02 Clr Sl-04 Open      Ring Carr
!Clear     Wr#69/67 Wr#15/02 Wr#17/04 Wr#70/60
!      301      067      002      004      060      341
228  [---] [-----] [-----]/[-----]/[-----] [---]* ( SET )
!      457      222      224      !
!Ring Carr Ring Carr
!Move Comm Move
!      Timer
!      230      T661
[---] [-----]/[-----]
!      257
IO341      Control      Control Ring Carr

```

237--(RST)

266--] [-

```

!Load
!Back to
!Work
! 300 T601
237 [---] [---*---] [-----*-----] ( RST )
! 450 !
!Ring Carr!
!Move !
!Timer !
! T661 !
[---] [---+
!
!Go to Turret Turret !
!Clean Sl-01 Out !
! Wr#14/01 Wr#51/43 !
! 164 001 043 !
[---] [-----] [-----] [---+
! 49 291
IO341 Control Control Ring Carr
Ring Carr
  
```

228--(SET)

266--] [-

```

!Load Turret Turret +-----+
!Back to Sl-01 Out ! !
!Work Wr#14/01 Wr#51/43 ! !
! 300 001 043 TMR T601
245 [---] [-----]/[-----]/[-----] +---K0050---+
! 450 291
!Ring Carr Ring Carr Ring Carr Splice +--Ring Carr--+
!Clr Sl-00 Work Move Comm Reset ! Move !
!Wr#13/00 Wr#50/41 Latch ! Timer !
! 000 041 230 232 TMR T661
250 [---] [-----]/[-----] [---*---]/[-----] +---K0020---+
! 266 257 ! 322
!Ring Carr !
!Move !
!Timer !
! T661 !
[---] [-----]
!
  
```

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```

!Splice      Clip Carr Clip Carr Clip Carr Chub      Ring Carr Splice
!Latch       Work      Clr Sl-04 Wk Sl-02  Clip      Move      Reset
!Detect      Wr#53/47   Wr#17/04  Wr#15/02  Timer     Timer     Latch
!   231      047      004      002      T603      T661      232      >
257 [---] [-----]/[-----]/[-----]/[-----] [---*---]/[-----]/[-----]a
!   204      224      222      !      322      >
!Ring Carr
!Move Comm
!
!   230
[---] [-----]
!
```

Ring Carr
Move Comm

```

>
a----- ( OUT )
>
IO230      Ring Carr      Ring Carr Move Command
           Move Comm
```

228--] [- 250--] [-

```

!Control
!Ring Carr
!
!   341
266 [---] [-----] ( OUT )
!   228
```

```

IO0      Ring Carr      Ring Carr Clear Sol-00
         Clr Sl-00      Wire #13/Ref#00
         Wr#13/00
```

```

         13--] /[-      23--] [-      29--] /[-
         37--] /[-      250--] [-      268--] [-
         273--] [-      284--] [-      300--] /[-
         314--] /[-
```

```

!Load      Ring Carr Ring Carr      +--Carr's  -+
!Out to    Work      Clr Sl-00      ! Clr for  !
!Clear     Wr#50/41  Wr#13/00      ! Horn Out  !
!   301      041      000      TMR      T600
268 [---] [-----]/[-----] [-----] +---K0050---+
!   457      266
```

```

!Load      Ring Carr Ring Carr Carr's      Turret
!Out to    Work      Clr Sl-00 Clr for      Control
!Clear     Wr#50/41  Wr#13/00 Horn Out
!   301      041      000      T600      340
273 [---] [-----]/[-----] [-----] [-----] ( SET )
!   457      266
```

```

IO340      Turret      Turret Control
           Control
```

278--] [- 284--(RST) 291--] [-

```

!Turret      Turret      Load      Load      Manual
!Out          Control      Back to    Out to      Horn
!Wr#51/43      Work      Clear
!  043          340          300          301          205
278 [---]/[---*---] [-----]/[-----]/[-----] ( OUT )
!  273          450          457
!Manual      !
!Horn        !
!  205        !
[---] [---+
!

```

IO205 Manual Horn Manual Horn

72--] [- 291--] /[-

```

!Load      Clip Carr Ring Carr Clip Carr Clip Carr Ring Carr      Turret
!Back to    Clr      Work      Wk Sl-02    Clr Sl-04    Clr Sl-00    Control
!Work      Wr#69/67  Wr#50/41  Wr#15/02  Wr#17/04  Wr#13/00
!  300          067          041          002          004          000          340
284 [---] [-----] [-----]/[-----]/[-----]/[-----] ( RST )
!  450          222          224          266

```

IO340 Turret Control Turret Control

273--(SET) 278--] [- 291--] [-

```

!Turret      Manual      Turret
!Control      Horn      Sl-01
!  340          205      Wr#14/01
!  273          278      001
291 [---] [-----]/[-----] ( OUT )

```

IO1 Turret Sol-01
Sl-01 Wire #14/Ref#01
Wr#14/01
13--] /[- 29--] /[- 37--] [-
45--] [- 49--] [- 237--] [-
245--] /[-

```

!Load      Control
!Out to      Clip Carr
!Clear      Work
!  301          342
294 [---] [-----*-----] ( SET )
!  457
!Chub      Single      Chub Clip!
!Clip      Portion      Sl-06      !
!Timer      Temp      Wr#19/06      !
!  T603          207          006      !
[---] [-----]/[-----] [---+
!  546          359

```

IO342 Control Control CLip Carr Work
Clip Carr
Work
222--] /[- 300--(RST)

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```

!Load          Ring Carr Horn Clip Ring Carr          Control
!Back to       Work      Open      Clr S1-00          Clip Carr
!Work          Wr#50/41  Wr#70/60  Wr#13/00          Work
!      300          041      060      000          342
300  [---] [---*-----*---] [-----] [-----]/[-----] ( RST )
!      450          !          !          266
!Clip          !          !
!Cycle          !          !
!Reset          !          !
!      204          !          !
[---] [---+          !
!      406          !
!Splice        Chub CLip!
!Reset          Clsd      !
!Latch         Wr#54/40  !
!      232          040      !
[---] [-----] [---+
!      322
IO342          Control          Control CLip Carr Work
          Clip Carr
          Work
          222--] /[-          294--(SET)

!Load          Control
!Out to        Clip Carr
!Clear          Clear
!      301          343
309  [---] [-----*-----] ( SET )
!      457          !
!Splice        Chub      !
!Latch         Clip      !
!Detect        Timer     !
!      231          T603   !
[---] [-----] [---+
!      204
IO343          Control          Control Clip Carr Clear
          Clip Carr
          Clear
          224--] /[-          314--(RST)

!Load          Ring Carr Ring Carr          Control
!Back to       Work      Clr S1-00          Clip Carr
!Work          Wr#50/41  Wr#13/00          Clear
!      300          041      000          343
314  [---] [---*-----*---] [-----]/[-----] ( RST )
!      450          !          !          266
!Go to         !          !
!Clean         !          !
!      164          !          !
[---] [---+          !
!      49          !
!Splice        Chub CLip!
!Reset          Clsd      !
!Latch         Wr#54/40  !
!      232          040      !
[---] [-----] [---+
!      322

```

```
IO234      Set 2nd      Set 2nd Latch Detect
           Latch
           Detect
           204--] [-           322--] / [-           359--] [-
```

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```

!Splice      Clip Carr Ring Carr
!Latch       Clr          Move
!Detect      Wr#69/67    Timer
!   231      067        T661
338 [---] [-----] [-----] [-----]
!   204
!Chub
!Length/
!C-Cycle
!   167
[---] [---*-----]
!   353
!Cycling
!
!   165
[---]/[---+
!   175
!Splice      Clip Carr Clip Carr Clip Carr Splice      Chub          Splice
!Reset       Work      Wk S1-02  Clr S1-04  Pull      Length/      Clr/Str
!Latch       Wr#53/47   Wr#15/02 Wr#17/04  Cntr      C-Cycle      C-Cycle
!   232      047        002        004        C662      167          233
345 [---] [-----] [-----] [-----] [-----] [---*---]/[-----] ( OUT )
!   322      222        224
!Splice
!Clr/Str
!C-Cycle
!   233
[---] [-----]
!
IO233      Splice          Splice Clear/Start C-Cycle
           Clr/Str
           C-Cycle
           211--] /[-
           353--] [-
           219--] [-
           322--] /[-

!Delay       Block All Clip
!Clip        For      Cycle
!Cycle       Splice    Reset
!   T615     240        204
353 [---] [---*---]/[-----]/[-----]
!   211      406
!Splice
!Clr/Str
!C-Cycle
!   233
[---] [---]
!   345
!Chub
!Length/
!C-Cycle
!   167
[---] [---+
!
IO167      Chub          Chub Length/ Clip Cycle
           Length/
           C-Cycle
           338--] [-
           345--] /[-
           359--] [-

```

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881--] [-

691--] [-

725--] [-

```

!Chub                                     Chub Clip
!Length/                                Sl-06
!C-Cycle                                Wr#19/06
!   167                                006
359 [---] [-----*------( OUT )
!   353                                !
!Delay      Splice      Splice      !
!Clip       Latch       Reset       !
!Cycle      Detect      Latch       !
!   T615          231          232   !
[---] [---*---] [-----]/[---+
!           !   204          322
!Chub Clip!
!Sl-06    !
!Wr#19/06 !
!   006    !
[---] [---]
!           !
!Set 2nd  !
!Latch    !
!Detect   !
!   234    !
[---] [---+
!   330

```

IO6 Chub Clip Chub Clipper Sol-06
 Sl-06 Wire #19/Ref#06
 Wr#19/06
 294--] [- 330--] /[- 367--] [-

```

!Chub Clip Chub CLip                    +--Chub      -+
!Sl-06      Clsd                        ! Clip      !
!Wr#19/06   Wr#54/40                    ! Timer     !
!   006          040                    TMR          T603
367 [---] [---*---]/[-----+----K0020---+
!   359      !
!Chub      !
!Clip      !
!Timer     !
!   T603   !
[---] [---+
!           !
!Chub      Single      Single          +--Single    -+
!Clip      Portion     Clip            ! Clip      !
!Timer     Temp        Timer           ! Timer     !
!   T603          207          T650     TMR          T650
372 [---] [-----] [---*---]/[-----*+----K0070---+
!           546      !
!Sing/Clip      !
!Latch and      !
!   Hold        !
!   176         !
[---] [-----+
!           !

```

IO176 Sing/Clip Latch and hold for Single Clip
 Latch and

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79--] /[-

```

!Clip Carr Clip Carr Chub
!Position Wk Sl-02 Length/
!Wr#71/62 Wr#15/02 C-Cycle
! 062 002 167
379 [---] [-----]/[---*---] [-----] ( OUT )
! 222 ! 353
!Clipper
!Advanced
! 177
! [---] [-----+
!
IO177 Clipper Clipper Advanced (work stroke)
Advanced
384--] [-

!Clipper
!Advanced
! 177
384 [---] [-----] ( OUT )
! 379
IO10 Horn Clip Horn Clipper Sol-08
Sl-08 Wire #21/Ref#10
Wr#21/10
386--] [-

!Horn Clip Horn Clip Clip +--Horn -+
!Sl-08 Clsd Cycle ! Clip !
!Wr#21/10 Wr#55/42 Reset ! Timer !
! 010 042 204 TMR T605
386 [---] [---*---]/[-----]/[-----] +---K0010---+
! 384 ! 406
!Horn
!Clip
!Timer
! T605
! [---] [---+
!
!Horn Knife Db1 Clip Knife
!Clip Timer Portion Sl-03
!Timer Temp Wr#16/03
! T605 T606 211 003
392 [---] [---*---]/[-----]/[-----] ( OUT )
! 556
!Knife
!Sl-03
!Wr#16/03
! 003
! [---] [---+
!
IO3 Knife Knife Sol-03
Sl-03 Wire #16/Ref#03
Wr#16/03
397--] [-

```

```

!Knife      Clip
!Sl-03      Cycle
!Wr#16/03   Reset
!  003      204
397 [---] [---*---]/[-----+-----K0020---+
!  392      !  406
!Knife      !
!Timer      !
!           !
!  T606      !
[---] [---+
!
!Clip      Carrs at D-Table      Break
!Cycle     Work Pos. Save        C-Cycle
!Reset                                           Reset
!  204      160      224      201
402 [---] [-----] [-----]/[----- ( OUT )
!  406      13      416
IO201      Break      Break Clip Cycle Reset
          C-Cycle
          Reset
          406--] /[-

!Knife
!Timer
!
!  T606      201
406 [---] [-----*---]/[----- ( OUT )
!           !  402
!Single     Chub
!Portion    Clip
!Temp       Timer
!  207      T603
[---] [-----] [---]
!  546
!Dbl Clip   Horn
!Portion    Clip
!Temp       Timer
!  211      T605
[---] [-----] [---]
!  556
!Clip
!Cycle
!Reset
!  204
[---] [-----+
!
IO204      Clip      Clip Cycle Reset
          Cycle
          Reset
          63--] [-      110--] /[-      198--] [-
          300--] [-      353--] /[-      386--] /[-
          397--] /[-      402--] [-      421--] [-

```

```

!D-Table      Stop Pump Dump      D-Table
!Command      Table                Save
!
!      225      203      050      224
416 [---] [-----] [---*---] [-----] ( OUT )
!      433      110      !
!D-Table      !
!Save          !
!
!      224      !
[---] [-----] +
!

```

IO224 D-Table D-Table Save
Save

63--] /[- 79--] /[- 402--] /[-

```

!Clip          D-Table      Clip Carr Clip Carr      D-Table
!Cycle         Command      Wk Sl-02  Position      Sl-07
!Reset         Wr#15/02     Wr#71/62
!      204      225      002      062      007
421 [---] [-----] [---*---] [-----] / [-----] ( OUT )
!      406      433      !      222
!D-Table      D-Table      !
!Sl-07         Timer        !
!
!      007      T610      !
[---] [-----] / [---+
!

```

IO7 D-Table Dump Table
Sl-07 Sl-07

13--] /[- 429--] [-

```

!D-Table      +--D-Table  +-
!Sl-07        !  Timer    !
!
!      007      TMR      T610
429 [---] [-----] +----K0050----+
!      421
!
!
!
432 [-----] ( MCR )
!

```

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```

!Meat Pump Chub      Carrs at Dump      D-Table
!Relay R#1 Length    Work Pos. Table      Command
!Wr#23/12  Wr#58/51      Wr#62/50
!   012      051      160      050      225
433 [---] [-----] [-----] [---*---] [-----] ( OUT )
!   99      13      !
!Splice      !
!Latch      !
!Detect      !
!   231      !
[---] [---*-----]
!   204      !
!Stop      !
!Cycle PB  !
!Wr#68/65  !
!   065      !
[---] [---]
!Low Case  !
!Stop Pump!
!   172      !
[---] [---]
!   142      !
!D-Table  !
!Command  !
!   225      !
[---] [---+
!
IO225      D-Table      D-Table
           Command      Command

```

```

416--] [-
556--] /[-

```

421--] [-

546--] /[-

```

!Decrease      Increase
!Size PB      Motor
!Wr#66/61      Wr#83/31
!   061      031
442 [---] [-----] *--- ( OUT )
!
!      Increase
!      Lite
!      Wr#29/21
!      021
!      +--- ( OUT )
!
IO21      Increase      Increase Light
           Lite      Wire #29/Ref#21
           Wr#29/21
IO31      Increase      Increase Sizing Motor
           Motor      Wire #83/Ref#31
           Wr#83/31

```

```

!Decrease
!Size PB
!Wr#65/56
! 056
445 [----] [-----] *---( OUT )
!
!
!
!
!
!
!
IO17 Decrease Decrease Light
      Lite      Wire #28/Ref#17
      Wr#28/17

IO30 Decrease Decrease Sizing Motor
      Motor      Wire #82/Ref#30
      Wr#82/30

!Cycling
!
!
! 165
448 [---]/[-----] ( MCS )
! 175
!Load Carrs at Carrs at Load
!Casing PB Clr. Pos. Work Pos. Back to
!Wr#60/55 Work
! 055 161 160 300
450 [---] [-----] [---*---]/[-----] ( OUT )
! 23 13
!Load Load
!Back to Out to
!Work Clear
! 300 301
[---] [-----]/[---+
! 457
IO300 Load Load Back to Work Position
      Back to
      Work
      237--] [- 245--] [- 278--] /[-
      284--] [- 300--] [- 314--] [-
      457--] /[-

```

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```

!Load      Carrs at  Horn Out      Load
!Casing PB Work Pos.              Out to
!Wr#60/55                          Clear
!   055          160          170          301
457 [---] [---*---] [---*---]/[------( OUT )
!   13          45
!Go load  !Carrs at  !
!from     !Clean    !
!Low Case !         !
!   166    !   163   !
[---] [---*---] [---]
!   63     !   37    !
!         !Carrs at !
!         !Clip Pos.!
!         !         !
!         !   162   !
!         +---] [---]
!         29       !
!Load      Load
!Out to    Back to
!Clear     Work
!   301     300
[---] [-----]/[---+
!         450
IO301      Load      Load Out to Clear Postition
          Out to
          Clear
          228--] [-          268--] [-          273--] [-
          278--] /[-        294--] [-          309--] [-
          450--] /[-

!Clean/    Carrs at
!PortionPB Work Pos.
!Wr#64/54
!   054          160
468 [---] [-----] [------(OUT RST)
!         13
IO275      Cln/Port      Clean Port PB Oneshot
          PB
          Oneshot
          471--] [-          475--] [-          479--] [-
          494--] [-

!Cln/Port  Time/Pump Eyemark      Portion
!PB         Portion  Portion      Set/Set
!Oneshot                                         Rst
!   275          344          346          302
471 [---] [-----] [-----]/[------( OUT )
!   468          479          475
IO302      Portion      Portion Set/Set/Rst
          Set/Set
          Rst
          494--] [-

```

	!Cln/Port	Time/Pump	Eyemark	Eyemark
	!PB	Portion	Portion	Portion
	!Oneshot			
	!	275	344	346
475	[---]	[-----]	[-----]	----- (SET)
	!	468	479	494
IO346		Eyemark	Eyemark	Portion
		Portion		

72--]	/[-	79--]	/[-	110--]	/[-
110--]	[-	164--]	/[-	169--]	[-
471--]	[-	479--]	/[-	483--]	[-
494--]	[-	494--(RST)		502--]	[-
552--]	[-	561--]	[-	568--]	/[-
586--]	[-	596--]	[-	974--]	/[-
983--]	[-				

	!Cln/Port	Time/Pump	Eyemark	Time/Pump
	!PB	Portion	Portion	Portion
	!Oneshot			
	!	275	344	346
479	[---]	[-----]	[-----]	----- (SET)
	!	468	494	475
IO344		Time/Pump	Time/Pump	Portion
		Portion		

79--]	/[-	103--]	[-	110--]	/[-
110--]	[-	164--]	[-	471--]	[-
475--]	[-	483--]	[-	494--]	[-
494--(RST)		542--]	[-	568--]	[-
912--]	[-	974--]	[-		

	!Time/Pump	Pump	Carrs at	Pumpjog
	!Portion	Jog PB	Work Pos.	PB
	!	Wr#61/57		Oneshot
	!	344	057	160
483	[---]	[---*---	[-----]	----- (OUT RST)
	!	479	!	13
	!Eyemark	!		
	!Portion	!		
	!	346	!	
	[---]	[---+		
	!	475		

IO276	Pumpjog	Pumpjog PB Oneshot for Clip Style
	PB	
	Oneshot	
	488--]	[- 491--]
		[-

	!Pumpjog	Single	Double
	!PB	Clip	Clip
	!Oneshot	Style	Style
	!	276	345
488	[---]	[-----]	----- (SET)
	!	483	491
IO347		Double	Double Clip Style
		Clip	
		Style	

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546--1 / [-

556--] [-

```

!Pumpjog      Single                               Single
!PB            Clip                                Clip
!Oneshot      Style                               Style
!      276      345                               345
491  [---] [-----]/[-----] ( SET )
!      483      494
IO345          Single          Single Clip Style
          Clip
          Style
          488--] [-          494--(RST)          507--] [-
          530--] [-          537--] [-          546--] [-

```

	!Cln/Port	Time/Pump	Eyemark	Portion		Time/Pump
	!PB	Portion	Portion	Set/Set		Portion
	!Oneshot			Rst		
494	!	275	344	346	302	344
	[---]</td <td>[-----]</td> <td>[-----]</td> <td>[-----]</td> <td>*----</td> <td>(RST)</td>	[-----]	[-----]	[-----]	*----	(RST)
	!	468	479	475	471	!
	!					Single
	!					Clip
	!					Style
	!					345
	!					[---(RST)
	!					!
	!					Eyemark
	!					Portion
	!					!
	!					346
	!					[---(RST)
	!					!
	!					Double
	!					Clip
	!					Style
	!					347
	!					+----(RST)
	!					
IO344		Time/Pump	Time/Pump	Portion		
		Portion				

79--]	/[-	103--]	[-	110--]	/[-
110--]	[-	164--]	[-	471--]	[-
475--]	[-	479--]	/[-	479--(SET)	
483--]	[-	542--]	[-	568--]	[-
912--]	[-	974--]	[-		

IO345	Single Clip Style	Single Clip Style	
	488--]	[-	491--] /[-
	507--]	[-	491--(SET)
	546--]	[-	530--] [-
			537--] [-

IO346	Eyemark Portion	Eyemark Portion	
	72--] /[-	79--] /[-	110--] /[-

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471--]	[-	475--]	/[-	475--(SET)
479--]	/[-	483--]	[-	502--]
552--]	[-	561--]	[-	568--]
586--]	[-	596--]	[-	974--]
983--]	[-			/[-

IO347	Double	Double Clip Style	
	Clip		
	Style		
	488--(SET)	507--] /[-	513--] [-
	546--] /[-	556--] [-	

```

!Eyemark
!Portion
!
!      346
502 [---] [-----*+-----K0300---+
!      475
!
!
!DOUT-----F60
!! Eyemark  !
!! Light    !
!! Blink    !
!
!+-----R0570---+

```

R570	Eyemark Light Blink	Eyemark Light Blink Value
	561--TMR	565--TMR

```

!Single      Double                      DSTR-----F50
!Clip        Clip                          !                !
!Style       Style                        !                !
!   345          347                     !                !
507 [---] [-----]/[-----]*+----K0200---+
!   491          488                     !
!                                           !DOUT-----F60
!                                           !!  Clip Styl  !
!                                           !!  Light     !
!                                           !!  Blink    !
!                                           ++-----R0572---+
```

R572	Clip Styl	Clip Style	Light Blink	Value
	Light			
	Blink			
	513--DOUT	530--TMR		534--TMR

```

!Double
!Clip
!Style
! 347
513 [---] [-----*+-----K0400---+
! 488
!
!DOUT-----F60
!! Clip Styl !
!! Light !
!! Blink !
!
!+-----B0572---+

```

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R572	Clip Styl Light Blink	Clip Style Light Blink Value
	507--DOUT	530--TMR 534--TMR
518	[-----] (MCR)	
	!Splice/ Casing	+--Casing -+
	!Short\Chb Light	! Light !
	!Detect Blinker	! Blinker !
	! 254 T664	TMR T663
519	[---] [-----]/[-----] +---K0100---+	
	! 190	
	!Casing	+--Casing -+
	!Light	! Light !
	!Blinker	! Blinker !
	! T663	TMR T664
523	[---] [-----] +---K0100---+	
	!Splice/ Casing	Low Case
	!Short\Chb Light	Lite
	!Detect Blinker	Wr#24/13
	! 254 T663	013
526	[---] [-----]/[---*] (OUT)	
	! 190	
	!Low Case	
	!Stop Pump	
	! 172	
	[---] [-----] +	
	! 142	
IO13	Low Case	Low Casing Light
	Lite	Wire #24/Ref#13
	Wr#24/13	
	!Single Clip	+--Clip -+
	!Clip Light	! Light !
	!Style Blinker	! Blinker !
	! 345 T653	TMR T654
530	[---] [-----]/[-----] +---R0572---+	
	! 491	
R572	Clip Styl	Clip Style Light Blink Value
	Light	
	Blink	
	507--DOUT	513--DOUT 534--TMR
	!Clip	+--Clip -+
	!Light	! Light !
	!Blinker	! Blinker !
	! T654	TMR T653
534	[---] [-----] +---R0572---+	
	!	
R572	Clip Styl	Clip Style Light Blink Value
	Light	

507--DOUT

513--DOUT

530--TMR

```

!Single      Clip      Low Clip
!Clip        Light      Lite
!Style       Blinker    Wr#25/14
!   345      T654      014
537 [---] [-----]/[---*----- ( OUT )
!   491
!Low Clip
!Stop
!
!   175
! [---] [-----+
!   198
IO14      Low Clip      Low Clip Light
          Lite          Wire #25/Ref#14
          Wr#25/14

!
!
!
541 [----- ( MCR )
!
!Time/Pump Cycling Low Case      Time/Pump
!Portion           Stop Pump      Portion
!
!   344           165           172      206
542 [---] [-----] [-----]/[----- ( OUT )
!   479           175           142
IO206      Time/Pump      Time/Pump Portion Temp
          Portion
          Temp

!Single      Cycling    Low Case    D-Table    Double      Single
!Clip        Stop Pump  Command    Clip        Portion
!Style                               Style      Temp
!   345      165         172         225         347      207
546 [---] [-----] [-----]/[-----]/[-----] ( OUT )
!   491      175         142         433         488
IO207      Single      Single Clip Portion Temp
          Portion
          Temp
          294--] /[-          372--] [-          406--] [-

!Eyemark     Cycling    Low Case      Eyemark
!Portion     Stop Pump      Portion
!
!   346      165         172      210
552 [---] [-----] [-----]/[----- ( OUT )
!   475      175         142
IO210      Eyemark     Eyemark Portion Temp
          Portion
          Temp

```

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```

!Double      Cycling      Low Case      D-Table      Dbl Clip
!Clip                               Stop Pump Command      Portion
!Style                                              Temp
!      347      165      172      225      211
556 [---] [-----] [-----]/[-----]/[-----] ( OUT )
!      488      175      142      433
IO211      Dbl Clip      Double Clip Portion Temp
      Portion
      Temp
      392--] /[-      406--] [-

!Eyemark      Eyemark      +--Eyemark -+
!Portion      Light      ! Light !
!      Blinker      ! Blinker !
!      346      T652      TMR      T651
561 [---] [-----]/[-----] +---R0570---+
!      475
R570      Eyemark      Eyemark Light Blink Value
      Light
      Blink
      502--DOUT      565--TMR

!Eyemark      +--Eyemark -+
!Light      ! Light !
!Blinker      ! Blinker !
!      T651      TMR      T652
565 [---] [-----] +---R0570---+
!
R570      Eyemark      Eyemark Light Blink Value
      Light
      Blink
      502--DOUT      561--TMR

!Time/Pump Eyemark      Portion
!Portion      Portion      Lite
!      344      346      Wr#30/23
568 [---] [-----]/[---*-----] ( OUT )
!      479      475 !
!Eyemark      !
!Light      !
!Blinker      !
!      T651      !
[---] [-----] +
!
IO23      Portion      Portion Light
      Lite      Wire #29/Ref#23
      Wr#30/23

```

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```

!1/10th 2/10th 4/10th 8/10th 1 Second 2 Second 4 Second
!T-Wheel T-Wheel T-Wheel T-Wheel T-Wheel T-Wheel T-Wheel
!Wr#300/70 Wr#301/71 Wr#302/72 Wr#303/73 Wr#304/74 Wr#305/75 Wr#306/76
! 070 071 072 073 074 075 076
572 [---]/[-----]/[-----]/[-----]/[-----]/[-----]/[-----]a
!

```

```

>
a-----] / [----- ( OUT )
>
IO216 Zero Zero Block T-Wheel
Block
T-Wheel
110--] [- 110--] / [-

```

```

!Powerup DSTR-----F50
!Oneshot !
! 374 !
581 [---] [-----*+----K0064---+
! !
! ! DOUT-----F60
! ! !! Oneshot/ !
! ! !! Oneshot !
! ! !! Distance !
! ! ++----R0500---+
!

```

```

R500 Oneshot/ Oneshot to Oneshot Base Distance
Oneshot
Distance
705--DSTR 784--DSTR 849--SUB
849--CMP 862--DIV

```

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```

!Eyemark      Start                      DSTR-----F50
!Portion      Cycle PB                  ! Thumb-    !
!              Wr#63/52                 ! Wheel     !
!       346           052                ! Value     !
586 [---] [-----] [-----]*+----R0466---+
!       475
!
! SUB-----F72
!!
!!
!!
[+----K1000---+
!
! SUB-----F72
!!
!!
!!
[+----K0200---+
!
! DOUT-----F60
!! Open Eye !
!! Window   !
!! Cmp Value !
++----R0460---+

```

R460	Open Eye Window Cmp Value	Open Eyemark Window when Cmp is Great than or Equal to this Value
	715--CMP	

R466	Thumb- Wheel Value	Thumbwheel Value	
	164--TMR	974--DOUT	983--DOUT

```

!Eyemark
!Portion
!
!      346
596 [---] [-----] ( MCS )
!      475
!ACK/NAK      SET/RUN      SET ON      EYEMARK      SET OFF      SET ON
!ALARM        SELECT      EYEMARK      DETECT/      EYEMARK/      EYEMARK
!INPUT        SWITCH      ON          ON          BACKGRND      ON SET
!      144      141      145      143      142      351
598 [---] [-----]/[-----]/[-----] [-----] [-----] ( SET )

```

IO351	SET ON	SET WHEN EYEMARK ON IS SET
	EYEMARK	
	ON SET	
	604--] [-	611--] [-
	617--(RST)	623--] [-
		611--(RST)

	!ACK/NAK	SET ON	SET/RUN	SET OFF	EYEMARK	SET ON	SET ON
	!ALARM	EYEMARK	SELECT	EYEMARK/	DETECT/	EYEMARK	OFF
	!INPUT	ON SET	SWITCH	BACKGRND	ON	ON	EYEMARK
	! 144	351	141	142	143	145	352
604	[---]	[-----]	[-----]	/[-----]	/[-----]	/[-----]	[-----](SET)
	!	598					

IO352 SET ON SET WHEN OFF EYEMARK/BACKGROUND IS SET
 OFF
 EYEMARK
 611--] [- 611--(RST) 617--(RST)
 623--] [-

!SET/RUN SET ON SET ON SET/RUN
 !SELECT OFF EYEMARK ON SS AND
 !SWITCH EYEMARK ON SET ACK/NAK
 ! 141 352 351 353
 611 [---] [-----] [-----] [-----]*---(SET)
 ! 604 598
 !
 ! SET ON
 ! EYEMARK
 ! ON SET
 ! 351
 [---(RST)
 !
 ! SET ON
 ! OFF
 ! EYEMARK
 ! 352
 +---(RST)

IO351 SET ON SET WHEN EYEMARK ON IS SET
 EYEMARK
 ON SET
 598--(SET) 604--] [- 617--(RST)
 623--] [-

IO352 SET ON SET WHEN OFF EYEMARK/BACKGROUND IS SET
 OFF
 EYEMARK
 604--(SET) 617--(RST) 623--] [-

IO353 SET/RUN SET WHEN SS SET TO RUN AND ACK/NAK(351,352)
 ON SS AND
 ACK/NAK
 79--] [- 617--(RST) 623--] [-

!SET/RUN SET OFF SET ON SET/RUN
 !SELECT EYEMARK/ EYEMARK ON SS AND
 !SWITCH BACKGRND ON ACK/NAK
 ! 141 142 145 353
 617 [---]/[-----]/[-----]/[-----]*---(RST)
 !
 ! SET ON
 ! EYEMARK
 ! ON SET
 ! 351
 [---(RST)
 !
 ! SET ON
 ! OFF
 ! EYEMARK
 ! 352
 +---(RST)

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IO351 SET ON SET WHEN EYEMARK ON IS SET
EYEMARK
ON SET
598--(SET) 604--] [- 611--] [-
611--(RST) 623--] [-

IO352 SET ON SET WHEN OFF EYEMARK/BACKGROUND IS SET
OFF
EYEMARK
604--(SET) 611--] [- 611--(RST)
623--] [-

IO353 SET/RUN SET WHEN SS SET TO RUN AND ACK/NAK(351,352)
ON SS AND
ACK/NAK
79--] [- 611--(SET) 623--] [-

!SET ON SET ON ACK/NAK
!EYEMARK EYEMARK SET/CYCLE
!ON SET ON WINDOW
! 351 145 027
623 [---] [-----]/[---]*------(SET OUT)
! 598 !
!SET ON SET OFF !
!OFF EYEMARK/ !
!EYEMARK BACKGRND !
! 352 142 !
[---] [-----]/[---]
! 604 !
!SET/RUN Cycling !
!ON SS AND !
!ACK/NAK !
! 353 165 !
[---] [-----]/[---]
! 611 175 !
!Cmp True !
!Open !
!Window !
! 244 !
[---] [-----]+
! 721

IO27 ACK/NAK ACKNOWLEDGE/SET CYCLE/WINDOW OPEN LAMP
SET/CYCLE WIRE #37
WINDOW REF #27

!Meat Pump Pump On
!Relay R#1 Oneshot
!Wr#23/12
! 012 323
633 [---] [------(OUT RST)
! 99

IO323 Pump On Pump On Oneshot
Oneshot
635--] [- 643--] [-

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```
!Pump On      Casing      Prox Off      Cycling      Chub      Meat Pump      Prox On
!Oneshot      Break      at Pump      at Pump      Length/      Relay R#1      at Pump
!              Wr#59/53      On      C-Cycle      Wr#23/12      On
!      323      053      325      165      167      012      324
635  [---] [-----] [-----]/[---*---] [-----]/[-----] [-----] ( OUT )
!      633      643      !      175      353      99
!Prox On
!at Pump
!On
!      324
!      [---] [-----] +
```

```
IO324      Prox On      Prox On at Pump On
          at Pump
          On
          643--] /[-      651--] [-      672--] [-
```

```
!Pump On      Casing      Prox On      Cycling      Chub      Meat Pump      Prox Off
!Oneshot      Break      at Pump      at Pump      Length/      Relay R#1      at Pump
!              Wr#59/53      On      C-Cycle      Wr#23/12      On
!      323      053      324      165      167      012      325
643  [---] [-----]/[-----]/[---*---] [-----]/[-----] [-----] ( OUT )
!      633      635      !      175      353      99
!Prox Off
!at Pump
!On
!      325
!      [---] [-----] +
```

```
IO325      Prox Off      Prox Off at Pump On
          at Pump
          On
          635--] /[-      655--] [-      672--] [-
```

```
!Casing      Prox On      Prox On/
!Break      at Pump      State
!Wr#59/53      On      Change
!      053      324      326
651  [---]/[---*---] [-----] ( OUT )
!      !      635
!Prox On/
!State
!Change
!      326
!      [---] [---] +
```

```
IO326      Prox On/      Prox On/ State Change
          State
          Change
          659--] [-
```

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```

!Casing      Prox Off      Prox Off/
!Break       at Pump      State
!Wr#59/53    On           Change
!   053      325          327
655  [---] [---*---] [-----] ( OUT )
!           !   643
!Prox Off/!
!State     !
!Change    !
!   327    !
[---] [---+
!
```

```

IO327      Prox Off/      Prox Off/ State Change
          State
          Change
          662--] [-
```

```

!Prox On/    Casing      Prox On
!State       Break      Oneshot
!Change      Wr#59/53
!   326      053          330
659  [---] [-----] [-----] (OUT RST)
!   651
```

```

IO330      Prox On      Prox On Oneshot
          Oneshot
```

```

          665--] [-          672--] /[-          684--] [-
          691--] [-          698--] [-          705--] [-
          774--] /[-          784--] [-          833--] [-
          844--] /[-          849--] [-
```

```

!Prox Off/    Casing      Prox Off
!State       Break      Oneshot
!Change      Wr#59/53
!   327      053          331
662  [---] [-----]/[-----] (OUT RST)
!   655
```

```

IO331      Prox Off      Prox Off Oneshot
          Oneshot
```

```

          665--] [-          672--] /[-          684--] [-
          691--] [-          698--] [-          705--] [-
          774--] /[-          784--] [-          833--] [-
          844--] /[-          849--] [-
```

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IO332	Enable Tmr/Cntr Eyemark	Enable Tmr/Cntr Eyemark
-------	-------------------------------	-------------------------

672--]	[-	684--]	[-	691--]	[-
698--]	[-	705--]	[-	784--]	[-
823--]	[-	833--]	[-	844--]	[-

```

!Prox On      Prox On      Enable      +---Oneshot/ -+
!Oneshot      at Pump      Tmr/Cntr    ! Oneshot      !
!              On          Eyemark    ! Timer        !
!      330          324          332          TMR          T616
672 [---]/[-----] [---*---] [-----*+---K9999---+
!      659          635          665          !
!Prox Off      Prox Off      !
!Oneshot      at Pump      !
!              On          !
!      331          325          !
[---]/[-----] [---+
!      662          643          !
!
!
!
!
!
!DOUT-----F60
!! Oneshot/  !
!! Oneshot   !
!! Running   !
++-----R0402---+

```

R402	Oneshot/ Oneshot Running 684--DSTR	Oneshot to Oneshot Running Reg 774--DSTR
------	---	---

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```

!Prox On      Enable      DSTR-----F50
!Oneshot      Tmr/Cntr    ! Oneshot/  !
!              Eyemark    ! Oneshot   !
!      330      332      ! Running   !
684 [---] [---*---] [-----*+-----R0402---+
!      659      !      665      !
!Prox Off !
!Oneshot !
!              !
!      331      !
[---] [---+
!      662      !
!! Oneshot/  !
!! Oneshot   !
!! Holding   !
++-----R0404---+

```

R402	Oneshot/ Oneshot Running 672--DOUT	Oneshot to Oneshot Running Reg 774--DSTR
------	---	---

R404	Oneshot/ Oneshot Holding	Oneshot to Oneshot Holding Reg	
	754--DSTR	784--DIV	784--DSTR
	862--DSTR		

	!Prox On	Enable		CTR
	!Oneshot	Tmr/Cntr		
	!	Eyemark		Encoder
	! 330	332		Oneshot
691	[---] [---*	---		Length
	! 659	! 665		C617
	!Prox Off	!		
	!Oneshot	!		
	!	!		
	! 331	!		K9999
	[---] [---+			
	! 662			
	!Cycling			
	!			
	!			
	! 165			
	[---]/[---*	---		
	! 175	!		
	!Chub	!		
	!Length/	!		
	!C-Cycle	!		
	! 167	!		
	[---] [---+			
	! 353			

```
!Prox On      Enable
!Oneshot      Tmr/Cntr
!              Eyemark
!      330      332
698 [---] [---*---] [-----*+---R0617---+
!      659      665
!Prox Off !
!Oneshot !
!              !
!      331      !
[---] [---+
!      662
```

R420 Oneshot Oneshot Counts For Length
 Cnts for
 Length
 705--MUL

```
!Prox On      Enable
!Oneshot      Tmr/Cntr
!              Eyemark
!      330      332
705 [---] [---*---] [-----*+---R0500---+
!      659      665
!Prox Off !
!Oneshot !
!              !
!      331      !
[---] [---+
!      662
```

```
!DOUT-----F60
!! Totaling !
!! Length !
!! !
[+---R0510---+
!
! Cmp Dist.
! to Open
! Window
! 242
+---( OUT )
```

IO242 Cmp Dist. Compare Distance Traveled to Open Window
 to Open
 Window
 715--] [- 721--] [-

R420 Oneshot Oneshot Counts For Length
 Cnts for
 Length
 698--DOUT

R500 Oneshot/
 Oneshot
 Distance
 581--DOUT 784--DSTR 849--SUB
 849--CMP 862--DIV

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R510 Totaling Totaling of Length for Cntr X Base Distance
 Length

715--DSTR

	!Cmp Dist.	Cmp True		DSTR-----F50
	!to Open	Open		! Totaling !
	!Window	Window		! Length !
	! 242	244		! !
715	[---] [---]	/[---]		*+----R0510---+
	! 705	721		! !
	! !			!CMP-----F70
	! !			!! Open Eye !
	! !			!! Window !
	! !			!! Cmp Value !
	! !			++----R0460---+

R460 Open Eye Open Eyemark Window when Cmp is Great than
 Window or Equal to this Value
 Cmp Value

586--DOUT

R510 Totaling Totaling of Length for Cntr X Base Distance
 Length

705--DOUT

	!	Cmp Dist.		Cmp True
	!	to Open		Open
	!	Window		Window
	!	772	242	244
721	[---]	[---]*---	[---]	(SET)
	!	! 705		
	!	!		
	!	!		
	!	773		
	[---]	[---]		

IO244 Cmp True Cmp True Open Window For Eyemark
 Open
 Window

110--]	[-	169--]	[-	623--]	[-
715--]	/[-	725--(RST)		730--]	[-
738--]	[-	743--]	[-	754--]	[-

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```

!Chub
!Length/
!C-Cycle
! 167
725 [---] [---]*-----*---( RST )
! 353 !
!Cycling !
! !
! 165 !
[---]/[---]
! 175 !
!Meat Pump!
!Relay R#1!
!Wr#23/12 !
! 012 !
[---]/[---+
! 99

```

```

IO244      Cmp True      Cmp True Open Window For Eyemark
Open
Window
110--] [-      169--] [-      623--] [-
715--] /[-      721--(SET)      730--] [-
738--] [-      743--] [-      754--] [-

```

```

IO263      Internal      Internal Cycle Pulse
Cycle
Pulse
730--] /[-      770--(SET)      774--] [-
833--] [-

```

```

!Cmp True EYEMARK Eyemark Internal Eyemark
!Open DETECT/ Detect Cycle Detect
!Window ON Latch Pulse oneshot
! 244 143 261 263 260
730 [---] [-----] [-----]/[-----]/[-----](OUT RST)
! 721 738 725

```

```

IO260      Eyemark      Eyemark Detect oneshot
Detect
oneshot
738--] [-      743--] [-      754--] [-
763--] [-      774--] [-      833--] [-

```

```

!Eyemark EYEMARK Eyemark
!Detect DETECT/ Detect
!Latch ON Oneshot
! 261 143 264
735 [---] [-----]/[-----](OUT RST)
! 738

```

```

IO264      Eyemark      Eyemark Detect Oneshot
Detect
Oneshot
738--] /[-

```

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```

!Eyemark      Cmp True  Eyemark      Eyemark
!Detect      Open      Detect      Detect
!oneshot     Window    Oneshot      Latch
!      260      244      264      261
738 [---] [---*---] [-----]/[-----] ( OUT )
!      730      !      721      735
!Eyemark      !
!Detect      !
!Latch      !
!      261      !
[---] [---+
!
IO261      Eyemark      Eyemark Detect Latch
Detect
Latch
      730--] /[-      735--] [-

!Cycling      EYEMARK      +--Eyemark  --+
!      DETECT/      ! Cycle      !
!      ON      ! Cntr      !
!      165      143      TMR      T621
743 [---] [-----]/[---*-----*+-----K9999---+
!      175      !
!Eyemark      Cmp True !      !DSTR-----F50
!Detect      Open      !      !!      !
!oneshot     Window    !      !!      !
!      260      244      !      !!      !
[---] [-----] [---+      [+-----R0621---+
!      730      721      !
!      !      !DOUT-----F60
!      !      !! Cycle Cnt !
!      !      !! Minus 5      !
!      !      !!      !
!      !      ++-----R0424---+
!
R424      Cycle Cnt      Cycle Cnt minus 5
Minus 5

763--DSTR

```

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	!Eyemark	Cmp True		DSTR-----F50
	!Detect	Open		! Oneshot/ !
	!oneshot	Window		! Oneshot !
	! 260	244		! Holding !
754	[---] [-----] [-----]			*+----R0404---+
	! 730	721		!
	!			!MUL-----F73
	!			!! !
	!			!! !
	!			!! !
	!			[+----K0002---+
	!			!
	!			!DOUT-----F60
	!			!! One/One !
	!			!! Cycle !
	!			!! Cntr !
	!			[+----R0422---+
	!			!
	!			! Eyemark
	!			! Detected
	!			! and Mul
	!			! 257
	!			+----(OUT)

IO257 Eyemark Eyemark Detected and Multiplied by
Detected 325
and Mul
763--] [-

R404 Oneshot/ Oneshot to Oneshot Holding Reg
Oneshot
Holding
684--DOUT 784--DIV 784--DSTR
862--DSTR

R422 One/One Oneshot to Oneshot Internal Cycle Cnt
Cycle
Cntr
763--CMP

	!Eyemark	Eyemark		DSTR-----F50
	!Detect	Detected		! Cycle Cnt !
	!oneshot	and Mul		! Minus 5 !
	! 260	257		! !
763	[---] [-----] [-----]			*+----R0424---+
	! 730	754		!
	!			!CMP-----F70
	!			!! One/One !
	!			!! Cycle !
	!			!! Cntr !
	!			[+----R0422---+
	!			!
	!			! Internal
	!			! Cycle
	!			! Pulse
	!			! 262
	!			+----(OUT)

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```

R422      One/One      Oneshot to Oneshot Internal Cycle Cnt
          Cycle
          Cntr
          754--DOUT

```

```

R424          Cycle Cnt          Cycle Cnt minus 5
              Minus 5
              743--DOUT

```

```

!           Internal                               Internal
!           Cycle                               Cycle
!           Pulse                               Pulse
!       772           262
770 [---] [---*---] [-----] (  SET  )
!           !           763
!           !
!           !
!           !
!       773           !
[---] [---+

```

I0263	Internal Cycle Pulse	Internal Cycle Pulse	
	725--(RST)	730--] /[-	774--] [-
	833--] [-		

```

!Prox On      Eyemark    Oneshot     Internal          DSTR-----F50
!Oneshot      Detect     R402 load Cycle   ! Oneshot/       !
!              oneshot   to R406   Pulse         ! Oneshot        !
!      330           260           304           263             ! Running        !
774 [---]/[----*-] [-----]/[-----] [------+-----]*+-----R0402---+
!      659      !      730            881            725             !
!Prox Off      !
!Oneshot      !
!              !
!      331      !
[---]/[----+
!      662
!
!
!
!
!
```

IO304	Oneshot	Oneshot Load R402 to R406
	R402 load	
	to R406	
	784--]	[- 881--(RST)

R402	Oneshot/ Oneshot	Oneshot to Oneshot Running Reg
------	---------------------	--------------------------------

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672--DOUT

684--DSTR

R406

Eyemark

Detect

Holding

784--SUB

Eyemark Detect Holding Reg from Oneshot to Oneshot Timer

!Prox On	Calculate	Distance	Oneshot	Enable	DSTR-----F50
!Oneshot	Dist. to	to End of	R402 load	Tmr/Cntr	! Oneshot/ !
!	Oneshot	Horn Ld	to R406	Eyemark	! Oneshot !
! 330	265	266	304	332	! Distance !
[---] [---*---]	/[-----]	/[-----]	[-----]	[-----]	*+-----R0500---+
! 659	! 881	823	774	665	!
!Prox Off !					!DIV-----F74
!Oneshot !					!! Oneshot/ !
!					!! Oneshot !
! 331					!! Holding !
[---] [---+					[+-----R0404---+
662					!
!					!DOUT-----F60
!					!! Calc Reg !
!					!! Top 1/2 !
!					!! !
!					[+-----R0432---+
!					!
!					!DSTR-----F50
!					!! Aux. !
!					!! Reg !
!					!! !
!					[+-----R0576---+
!					!
!					!DIV-----F74
!					!! !
!					!! !
!					!! !
!					[+-----K1000---+
!					!
!					!DOUT-----F60
!					!! Calc Reg !
!					!! Bottom !
!					!! 1/2 !
!					[+-----R0434---+
!					!
!					!DSTR-----F50
!					!! Calc Reg !
!					!! Top 1/2 !
!					!! !
!					[+-----R0432---+
!					!
!					!MUL-----F73
!					!! !
!					!! !
!					!! !
!					[+-----K0010---+
!					!

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```
!ADD-----F71
!!  Calc Reg  !
!!  Bottom    !
!!  1/2       !
[+----R0434---+
!
!DOUT-----F60
!!  Calc Reg  !
!!  Top 1/2   !
!!           !
[+----R0432---+
!
!DSTR-----F50
!!  Oneshot/   !
!!  Oneshot    !
!!  Holding    !
[+----R0404---+
!
!SUB-----F72
!!  Eyemark    !
!!  Detect     !
!!  Holding    !
[+----R0406---+
!
!DOUT-----F60
!!  Time Trvl  !
!!  Detect/    !
!!  Oneshot    !
[+----R0436---+
!
!MUL-----F73
!!  Calc Reg  !
!!  Top 1/2   !
!!           !
[+----R0432---+
!
!DIV-----F74
!!           !
!!           !
!!           !
[+----K0010---+
!
!DOUT-----F60
!!  Traveled   !
!!  Sense      !
!!  Detect     !
[+----R0430---+
!
!  Calculate
!  Dist. to
!  Oneshot
!  265
+---( SET )
```

IO265

Calculate
Dist. to
Oneshot

823--] [-

Calculate Distance from Eyemark Detect to
Next Prox Oneshot

881--(RST)

R404	Oneshot/ Oneshot Holding 684--DOUT	Oneshot to Oneshot Holding Reg 754--DSTR 862--DSTR
R406	Eyemark Detect Holding 774--DOUT	Eyemark Detect Holding Reg from Oneshot to Oneshot Timer
R430	Traveled Sense Detect 823--SUB	Distance Traveled Sense Detect of Eyemark
R432	Calc Reg Top 1/2	Calculating Register Top 1/2
R434	Calc Reg Bottom 1/2	Calculating Register Bottom 1/2
R436	Time Trvl Detect/ Oneshot	Time Traveled from Detect to Next Oneshot
R500	Oneshot/ Oneshot Distance 581--DOUT 849--CMP	Oneshot to Oneshot Base Distance 705--DSTR 862--DIV 849--SUB
R576	Aux. Reg 862--DSTR	This is an Auxilery Register or Overflow Register for Math Functions

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	!Distance Calculate Enable	DSTR-----F50
	!to End of Dist. to Tmr/Cntr	! Distance !
	!Horn Ld Oneshot Eyemark	! To End of !
	! 266 265 332	! Horn !
823	[---]/[-----] [-----] [-----]	*+-----R0502---+
	! 833 784 665	!
!		!SUB-----F72
!		!! Traveled !
!		!! Sense !
!		!! Detect !
!		[+-----R0430---+
!		!
!		!DOUT-----F60
!		!! Dist Calc !
!		!! To End of !
!		!! Horn !
!		[+-----R0440---+
!		!
!		! Distance
!		! to End of
!		! Horn Ld
!		! 266
!		+----(SET)

IO266	Distance to End of Horn Ld	Distance to End of Horn Loaded
	784--] /[-	833--] /[-
	844--] [-	833--(SET)
		881--(RST)
R430	Traveled Sense Detect	Distance Traveled Sense Detect of Eyemark
	784--DOUT	
R440	Dist Calc To End of Horn	Distance Calculated to End of Horn
	833--DOUT	849--DSTR
	862--MUL	849--DOUT
R502	Distance To End of Horn	Distance to End of Horn
	833--DSTR	

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```

!Prox On      Eyemark   Distance   Enable     Internal    DSTR-----F50
!Oneshot      Detect    to End of Tmr/Cntr Cycle    ! Distance !
!              oneshot   Horn Ld   Eyemark    Pulse       ! To End of !
!        330          260         266         332         263        ! Horn      !
833 [---] [---*---] [-----]/[-----] [-----] [-----]*+----R0502---+
!        659      !       730           823           665           725           !
!Prox Off !
!Oneshot !
!              !
!        331      !
[---] [---+
!        662
!
!
!
!
!
+----( SET )
```

IO266	Distance to End of Horn Ld	Distance to End of Horn Loaded
	784--] /[-	823--] /[-
	844--] [-	881--(RST)
		823--(SET)

R440	Dist Calc	Distance Calculated to End of Horn
	To End of	
	Horn	
	823--DOUT	849--DSTR
	862--MUL	849--DOUT

R502	Distance	Distance to End of Horn
	To End of	
	Horn	
	823--DSTR	

```

!Prox On      Distance  Enable      Enable
!Oneshot      to End of Tmr/Cntr      next
!              Horn Ld   Eyemark      Oneshot
!      330      266      332      267
844 [---]/[---*---] [-----] [-----] ( SET )
!      659      !      823      665
!Prox Off !
!Oneshot !
!      !
!      331      !
[---]/[---+
!      662

```

IO267	Enable	Enable next Oneshot after Detect
	next	
	Oneshot	
	849--]	[- 881--(RST)

	!Prox On	Enable	Sub Dist.		DSTR-----F50
	!Oneshot	next	Amount		! Dist Calc !
	!	Oneshot	Cmp		! To End of !
	! 330	267	272		! Horn !
849	[---] [---*---	]	[-----]/[-----		*+----R0440---+
	! 659	!	844		!
	!Prox Off	!			!SUB-----F72
	!Oneshot	!			!! Oneshot/ !
	!	!			!! Oneshot !
	! 331	!			!! Distance !
	[---] [---+				[+----R0500---+
	! 662				!
	!				!DOUT-----F60
	!				!! Dist Calc !
	!				!! To End of !
	!				!! Horn !
	!				[+----R0440---+
	!				!
	!				!CMP-----F70
	!				!! Oneshot/ !
	!				!! Oneshot !
	!				!! Distance !
	!				[+----R0500---+
	!				!
	!				! Sub Dist.
	!				! Amount
	!				! Cmp
	!				! 272
	!				+---(OUT)

IO272	Sub Dist. Amount Cmp	Sub Distance of Oneshot to Oneshot and Cmp to Distance (R500)
	862--] [-	
R440	Dist Calc To End of Horn	Distance Calculated to End of Horn
	823--DOUT	833--DOUT 862--MUL
R500	Oneshot/ Oneshot Distance	Oneshot to Oneshot Base Distance
	581--DOUT 862--DIV	705--DSTR 784--DSTR

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	Sub	Dist.	Time to	
	Amount	End of	Horn Calc	
	Cmp			
862	774	272	271	
	[---]	[---*]	[---]	[---]/[---]
		849	881	
	773			
	[---]	[---+]		

DSTR-----F50
! Oneshot/ !
! Oneshot !
! Holding !
! +-----R0404---+
! DIV-----F74
!! Oneshot/ !
!! Oneshot !
!! Distance !
! +-----R0500---+
! DSTR-----F50
!! Aux. !
!! Reg !
! +-----R0576---+
! DIV-----F74
!! !
!! !
!! !
! +-----K0100---+
! MUL-----F73
!! Dist Calc !
!! To End of !
!! Horn !
! +-----R0440---+
! DIV-----F74
!! !
!! !
!! !
! +-----K0100---+
! DOUT-----F60
!! Calc Time !
!! to End of !
!! Horn !
! +-----R0444---+
! Time to
! End of
! Horn Calc
! 271
+---(SET)

I0271	Time to End of Horn Calc 110--] [-	Time to End of Hoen Calculated 169--] [-	881--(RST)
R404	Oneshot/ Oneshot Holding 684--DOUT 784--DSTR	Oneshot to Oneshot Holding Reg 754--DSTR	784--DIV

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R440	Dist Calc	Distance Calculated to End of Horn	
	To End of		
	Horn		
	823--DOUT	833--DOUT	849--DSTR
	849--DOUT		

R444	Calc Time to End of Horn	Time Calculated to End of Horn
	169--TMR	

R500	Oneshot/ Oneshot Distance	Oneshot to Oneshot Base Distance	
	581--DOUT	705--DSTR	784--DSTR
	849--SUB	849--CMP	

R576	Aux. Reg	This is an Auxilery Registor or Overflow Registor for Math Functions
784--DSTR		

	! Chub	Calculate
	! Length/	Dist. to
	! C-Cycle	Oneshot
	! 167	265
881	[---] [---*-----*---	(RST)
	! 353 !	!
	! Cycling !	! Distance
	! !	! to End of
	! !	! Horn Ld
	! 165 !	! 266
	[---]/[---+	[---(RST)
	! 175	!
	!	! Enable
	!	! next
	!	! Oneshot
	!	! 267
	!	[---(RST)
	!	!
	!	! Time to
	!	! End of
	!	! Horn Calc
	!	! 271
	!	[---(RST)
	!	!
	!	! Oneshot
	!	! R402 load
	!	! to R406
	!	! 304
	!	+---(RST)

IO265	Calculate	Calculate Distance from Eyemark Detect to
	Dist. to	Next Prox Oneshot
	Oneshot	
	784--] /[-	784--(SET) 823--] [-

I0266	Distance	Distance to End of Horn Loaded
-------	----------	--------------------------------

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```

!Powerup                                     DSTR-----F50
!Oneshot                                     !
!
!      374                                   !
889 [---] [---]*-----+-----K0000----+
!Cycling   !
!
!      165   !
[---]/[---+
!      175
!
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! One      !
[+-----R0550----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Two      !
[+-----R0552----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Four     !
[+-----R0554----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Eight    !
[+-----R0556----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Ten      !
[+-----R0560----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Twenty   !
[+-----R0562----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Forty    !
[+-----R0564----+
!
!DOUT-----F60
!! Thumb    !
!! Wheel    !
!! Eighty   !
++-----R0566----+

R550          Thumb       Thumbwheel One
              Wheel
              One
                  915--DOUT
                          955--DSTR

```

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R552	Thumb Wheel Two 920--DOUT	ThumbWheel Two 955--ADD
R554	Thumb Wheel Four 925--DOUT	Thumbwheel Four 955--ADD
R556	Thumb Wheel Eight 930--DOUT	Thumbwheel Eight 955--ADD
R560	Thumb Wheel Ten 935--DOUT	Thumbwheel Ten 955--ADD
R562	Thumb Wheel Twenty 940--DOUT	Thumbwheel Twenty 955--ADD
R564	Thumb Wheel Forty 945--DOUT	Thumbwheel Forty 955--ADD
R566	Thumb Wheel Eighty 950--DOUT	Thumbwheel Eighty 955--ADD

!Start	Carrs at	Oneshot
!Cycle PB	Work Pos.	Str PB
!Wr#63/52		Load Data
! 052	160	303
909 [---] [-----] [-----]		(OUT RST)
!	13	
IO303	Oneshot	Oneshot Start PB Load Data
	Str PB	
	Load Data	
	912--] [-	955--] [-
	983--] [-	974--] [-

!Time/Pump	Oneshot
!Portion	Str PB
!	Load Data
! 344	303
912 [---] [-----] [-----]	(MCS)
!	479 909

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```
!1/10th
!T-Wheel
!Wr#300/70
! 070
915 [---] [-----*+---K0001---+
!
!DOUT-----F60
!! Thumb
!! Wheel
!! One
++---R0550---+

R550      Thumb      Thumbwheel One
Wheel
One
      889--DOUT      955--DSTR
```

```
!2/10th
!T-Wheel
!Wr#301/71
! 071
920 [---] [-----*+---K0002---+
!
!DOUT-----F60
!! Thumb
!! Wheel
!! Two
++---R0552---+

R552      Thumb      ThumbWheel Two
Wheel
Two
      889--DOUT      955--ADD
```

```
!4/10th
!T-Wheel
!Wr#302/72
! 072
925 [---] [-----*+---K0004---+
!
!DOUT-----F60
!! Thumb
!! Wheel
!! Four
++---R0554---+

R554      Thumb      Thumbwheel Four
Wheel
Four
      889--DOUT      955--ADD
```

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```
!8/10th
!T-Wheel
!Wr#303/73
! 073
930 [---] [-----*+-----K0008---+
!
!DOUT-----F60
!! Thumb
!! Wheel
!! Eight
++-----R0556---+

R556      Thumb      Thumbwheel Eight
          Wheel
          Eight
          889--DOUT      955--ADD
```

```
!1 Second
!T-Wheel
!Wr#304/74
! 074
935 [---] [-----*+-----K0010---+
!
!DOUT-----F60
!! Thumb
!! Wheel
!! Ten
++-----R0560---+

R560      Thumb      Thumbwheel Ten
          Wheel
          Ten
          889--DOUT      955--ADD
```

```
!2 Second
!T-Wheel
!Wr#305/75
! 075
940 [---] [-----*+-----K0020---+
!
!DOUT-----F60
!! Thumb
!! Wheel
!! Twenty
++-----R0562---+

R562      Thumb      Thumbwheel Twenty
          Wheel
          Twenty
          889--DOUT      955--ADD
```

```

!4 Second                                     DSTR-----F50
!T-Wheel                                    !          !
!Wr#306/76                                !          !
!    076                                  !          !
945 [---] [-----*+----K0040---+
!
!
!DOUT-----F60
!! Thumb      !
!! Wheel      !
!! Forty     !
++-----R0564---+

R564           Thumb       Thumbwheel Forty
                Wheel
                Forty
                  889--DOUT        955--ADD
```

```

!8 Second
!T-Wheel
!Wr#307/77
! 077
950 [---] [-----*+---K0080---+
!
!
!
!
!
!
!
!
R566 Thumb Thumbwheel Eighty
Wheel
Eighty
889--DOUT 955--ADD
DSTR-----F50
!
!
!
!
!DOUT-----F60
!! Thumb
!! Wheel
!! Eighty
++----R0566---+

```

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```
!Oneshot
!Str PB
!Load Data
!      303
```

```
DSTR-----F50
!   Thumb   !
!   Wheel   !
!   One     !
```

955 [---] [-----*+-----R0550---+
! 909 !

```
!ADD-----F71
!!  Thumb      !
!!  Wheel      !
!!  Two        !
[+-----R0552---+
```

```
!ADD-----F71
!!  Thumb      !
!!  Wheel      !
!!  Four       !
[+----R0554---+
```

```
!ADD-----F71
!!  Thumb      !
!!  Wheel      !
!!  Eight      !
[+-----R0556---+
```

```
!ADD-----F71
!!  Thumb      !
!!  Wheel      !
!!  Ten        !
[+----R0560---+
```

```
!ADD-----F71
!!  Thumb      !
!!  Wheel      !
!!  Twenty     !
[+-----R0562---+
```

```
!ADD-----F71
!! Thumb !
!! Wheel !
!! Forty !
[+----R0564---+
```

```
!ADD-----F71
!!  Thumb      !
!!  Wheel      !
!!  Eighty     !
[+----R0566----+
```

```
!DOUT-----F60
!!   Thumb      !
!!   Wheel      !
!!   Temp       !
++----R0574----+
```

R550	Thumb Wheel One	Thumbwheel One
	889--DOUT	915--DOUT

R552	Thumb Wheel Two 889--DOUT	ThumbWheel Two 920--DOUT
R554	Thumb Wheel Four 889--DOUT	Thumbwheel Four 925--DOUT
R556	Thumb Wheel Eight 889--DOUT	Thumbwheel Eight 930--DOUT
R560	Thumb Wheel Ten 889--DOUT	Thumbwheel Ten 935--DOUT
R562	Thumb Wheel Twenty 889--DOUT	Thumbwheel Twenty 940--DOUT
R564	Thumb Wheel Forty 889--DOUT	Thumbwheel Forty 945--DOUT
R566	Thumb Wheel Eighty 889--DOUT	Thumbwheel Eighty 950--DOUT
R574	Thumb Wheel Temp 974--DSTR	Thumbwheel Temp Registor 983--DSTR

!Oneshot	Time/Pump	Eyemark	DSTR-----F50
!Str PB	Portion	Portion	! Thumb !
!Load Data			! Wheel !
! 303	344	346	! Temp !
974 [---] [-----] [-----]/[-----]			*+-----R0574---+
! 909	479	475	!
!			!MUL-----F73
!			!! !
!			!! !
!			!! !
!			[+-----K0010---+
!			!
!			!DOUT-----F60
!			!! Thumb-
!			!! Wheel !
!			!! Value !
!			++-----R0466---+

R466 Thumb- Thumbwheel Value
 Wheel
 Value
 164--TMR 586--DSTR 983--DOUT

R574 Thumb Thumbwheel Temp Registor
 Wheel
 Temp
 955--DOUT 983--DSTR

	!Oneshot	Eyemark		DSTR-----F50
	!Str PB	Portion		! Thumb
	!Load Data			! Wheel
	! 303	346		! Temp
983	[---]	[-----]	[-----]	*+-----R0574---+
	! 909	475		!
	!			!MUL-----F73
	!			!!
	!			!!
	!			!!
	!			[+-----K0100---+
	!			!
	!			!DOUT-----F60
	!			!! Thumb-
	!			!! Wheel
	!			!! Value
	!			++-----R0466---+

R466 Thumb- Thumbwheel Value
 Wheel
 Value
 164--TMR 586--DSTR 974--DOUT

R574 Thumb Thumbwheel Temp Registor
 Wheel
 Temp
 955--DOUT 974--DSTR

991 [----- (MCR)

992 [----- (END)

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MPC

MPC Holder

Holder

R400 INTEGER 00000

R401 INTEGER 00000

Oneshot/

Oneshot

Running

Oneshot to Oneshot Running Reg

R402 INTEGER 00000

R403 INTEGER 00000

Oneshot/

Oneshot

Holding

Oneshot to Oneshot Holding Reg

R404 INTEGER 00000

R405 INTEGER 00000

Eyemark

Detect

Holding

Eyemark Detect Holding Reg from Oneshot
to Oneshot Timer

R406 INTEGER 00000

R407 INTEGER 00000

R410 INTEGER 00000

R411 INTEGER 00000

R412 INTEGER 00000

R413 INTEGER 00000

R414 INTEGER 00000

R415 INTEGER 00000

R416 INTEGER 00000

R417 INTEGER 00000

Oneshot

Cnts for

Length

Oneshot Counts For Length

R420 INTEGER 00000

R421 INTEGER 00000

One/One

Cycle

Cntr

Oneshot to Oneshot Internal Cycle Cnt

R422 INTEGER 00000

R423 INTEGER 00000

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	Cycle Cnt Minus 5	Cycle Cnt minus 5
R424	INTEGER 00000	
R425	INTEGER 00000	
	Cycle Cnt Plus 5	Cycle Cnt Plus 5
R426	INTEGER 00000	
R427	INTEGER 00000	
	Traveled Sense Detect	Distance Traveled Sense Detect of Eyemark
R430	INTEGER 00000	
R431	INTEGER 00000	
	Calc Reg Top 1/2	Calculating Registor Top 1/2
R432	INTEGER 00000	
R433	INTEGER 00000	
	Calc Reg Bottom 1/2	Calculating Registor Bottom 1/2
R434	INTEGER 00000	
R435	INTEGER 00000	
	Time Trvl Detect/ Oneshot	Time Traveled from Detect to Next Oneshot
R436	INTEGER 00000	
R437	INTEGER 00000	
	Dist Calc To End of Horn	Distance Calculated to End of Horn
R440	INTEGER 00000	
R441	INTEGER 00000	
	Eye Cycle Cnt X 325	Eyemark Cycle Cnt Multiplied by 325
R442	INTEGER 00000	
R443	INTEGER 00000	
	Calc Time to End of Horn	Time Calculated to End of Horn
R444	INTEGER 00000	

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R445	INTEGER	00000
R446	INTEGER	00000
R447	INTEGER	00000
R450	INTEGER	00000
R451	INTEGER	00000
R452	INTEGER	00000
R453	INTEGER	00000
R454	INTEGER	00000
R455	INTEGER	00000
R456	INTEGER	00000
R457	INTEGER	00000

Open Eye
Window

Cmp Value

R460 INTEGER 00000

R461 INTEGER 00000

Str Cycle
Cntr Cmp
Value

R462 INTEGER 00000

R463 INTEGER 00000

R464 INTEGER 00000

R465 INTEGER 00000

Thumb-
Wheel
Value

R466 INTEGER 00000

R467 INTEGER 00000

R470 INTEGER 00000

R471 INTEGER 00000

R472 INTEGER 00000

R473 INTEGER 00000

R474 INTEGER 00000

Open Eyemark Window when Cmp is Great than
or Equal to this ValueStart Internal Cycle Cntr when Cmp
is Greater than or Equal to this Value

Thumbwheel Value

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R475 INTEGER 00000

R476 INTEGER 00000

R477 INTEGER 00000

Oneshot/
Oneshot
Distance

Oneshot to Oneshot Base Distance

R500 INTEGER 00000

R501 INTEGER 00000

Distance
To End of
Horn

Distance to End of Horn

R502 INTEGER 00000

R503 INTEGER 00000

R504 INTEGER 00000

R505 INTEGER 00000

R506 INTEGER 00000

R507 INTEGER 00000

Totaling
Length

Totaling of Length for Cntr X Base Distance

R510 INTEGER 00000

R511 INTEGER 00000

R512 INTEGER 00000

R513 INTEGER 00000

R514 INTEGER 00000

R515 INTEGER 00000

R516 INTEGER 00000

R517 INTEGER 00000

R520 INTEGER 00000

R521 INTEGER 00000

R522 INTEGER 00000

R523 INTEGER 00000

R524 INTEGER 00000

R525 INTEGER 00000

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R526	INTEGER	00000
R527	INTEGER	00000
R530	INTEGER	00000
R531	INTEGER	00000
R532	INTEGER	00000
R533	INTEGER	00000
R534	INTEGER	00000
R535	INTEGER	00000
R536	INTEGER	00000
R537	INTEGER	00000
R540	INTEGER	00000
R541	INTEGER	00000
R542	INTEGER	00000
R543	INTEGER	00000
R544	INTEGER	00000
R545	INTEGER	00000
R546	INTEGER	00000
R547	INTEGER	00000

Thumb
Wheel
One

Thumbwheel One

R550	INTEGER	00000
R551	INTEGER	00000

Thumb
Wheel
Two

ThumbWheel Two

R552	INTEGER	00000
R553	INTEGER	00000

Thumb
Wheel
Four

Thumbwheel Four

R554	INTEGER	00000
R555	INTEGER	00000

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Thumb
Wheel
Eight
R556 INTEGER 00000

Thumbwheel Eight

R557 INTEGER 00000

Thumb
Wheel
Ten
R560 INTEGER 00000

Thumbwheel Ten

R561 INTEGER 00000

Thumb
Wheel
Twenty
R562 INTEGER 00000

Thumbwheel Twenty

R563 INTEGER 00000

Thumb
Wheel
Forty
R564 INTEGER 00000

Thumbwheel Forty

R565 INTEGER 00000

Thumb
Wheel
Eighty
R566 INTEGER 00000

Thumbwheel Eighty

R567 INTEGER 00000

Eyemark
Light
Blink
R570 INTEGER 00000

Eyemark Light Blink Value

R571 INTEGER 00000

Clip Styl
Light
Blink
R572 INTEGER 00000

Clip Style Light Blink Value

R573 INTEGER 00000

Thumb
Wheel
Temp
R574 INTEGER 00000

Thumbwheel Temp Registor

R575 INTEGER 00000

Aux.

This is an Auxilery Registor or Overflow

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	Reg	
R576	INTEGER	00000
R577	INTEGER	00000

Register for Math Functions

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IO0	Ring Carr Clr Sl-00 Wr#13/00	Ring Carr Clear Sol-00 Wire #13/Ref#00
IO1	Turret Sl-01 Wr#14/01	Turret Sol-01 Wire #14/Ref#01
IO2	Clip Carr Wk Sl-02 Wr#15/02	Clip Carr Work Sol-02 Wire #15/Ref#02
IO3	Knife Sl-03 Wr#16/03	Knife Sol-03 Wire #16/Ref#03
IO4	Clip Carr Clr Sl-04 Wr#17/04	Clip Carr Clr Sol-04 Wire #17/Ref#04
IO5	Ball Valv Sl-05 Wr#18/05	Ball Valve Sol-05 Wire #18/Ref#05
IO6	Chub Clip Sl-06 Wr#19/06	Chub Clipper Sol-06 Wire #19/Ref#06
IO7	D-Table Sl-07	Dump Table Sl-07
IO10	Horn Clip Sl-08 Wr#21/10	Horn Clipper Sol-08 Wire #21/Ref#10
IO11	Main Air Sl-09 Wr#22/11	Main Air Sol-09 Wire #22/Ref#11
IO12	Meat Pump Relay R#1 Wr#23/12	Meat Pump Relay R#1 Wire #23/Ref#12
IO13	Low Case Lite Wr#24/13	Low Casing Light Wire #24/Ref#13
IO14	Low Clip Lite Wr#25/14	Low Clip Light Wire #25/Ref#14
IO15	Run Lite Wr#26/15	Run Light Wire #26/Ref#15
IO16	Water Spr Sl-	Water Spray Sl- Wire #27/Ref#16

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IO17	Decrease Lite Wr#28/17	Decrease Light Wire #28/Ref#17
IO21	Increase Lite Wr#29/21	Increase Light Wire #29/Ref#21
IO23	Portion Lite Wr#30/23	Portion Light Wire #29/Ref#23
IO27	ACK/NAK SET/CYCLE WINDOW	ACKNOWLEDGE/SET CYCLE/WINDOW OPEN LAMP WIRE #37 REF #27
IO30	Decrease Motor Wr#82/30	Decrease Sizing Motor Wire #82/Ref#30
IO31	Increase Motor Wr#83/31	Increase Sizing Motor Wire #83/Ref#31
IO40	Chub CLip Clsd Wr#54/40	Chub Clip Closed Wire#54/Ref#40
IO41	Ring Carr Work Wr#50/41	Ring Carr Work Wire #50/Ref#41
IO42	Horn Clip Clsd Wr#55/42	Horn Clip Closed Wire #55/Ref#42
IO43	Turret Out Wr#51/43	Turret Out Wire #51/Ref#43
IO44	Low Clip Horn Wr#56/44	Low Clip Supply Horn Clipper Wire #56/Ref#44
IO45	Low Case Supply Wr#52/45	Low Casing Supply Wire #52/Ref#45
IO46	Low Clip Chub Wr#57/46	Low Clip supply Chub Clipper Wire #57/Ref#46
IO47	Clip Carr Work Wr#53/47	Clip Carr Work Wire #53/Ref#47
IO50	Dump Table	Dump Table Wire #62/Ref#50

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IO51	Chub Length Wr#58/51	Chub Length Wire #58/Ref#51
IO52	Start Cycle PB Wr#63/52	Start Cycle PB Wire #63/Ref#52
IO53	Casing Break Wr#59/53	Casing Break Detect Wire #59/Ref#53
IO54	Clean/ PortionPB Wr#64/54	Clean/Portion PB Wire #64/Ref#54
IO55	Load Casing PB Wr#60/55	Load Casing PB Wire #60/Ref#55
IO56	Decrease Size PB Wr#65/56	Decrease Size PB Wire #65/Ref#56
IO57	Pump Jog PB Wr#61/57	Pump Jog PB Wire #61/Ref#57
IO60	Horn Clip Open Wr#70/60	Horn Clip Open Wire #70/Ref#60
IO61	Decrease Size PB Wr#66/61	Decrease Size PB Wire #66/Ref#61
IO62	Clip Carr Position Wr#71/62	Clip Carr Position Wire #71/Ref#62
IO63	Portion Cmplt Wr#67/63	Portion Complete From Pump R#2 Wire #67/Ref#63
IO64	Left Door Safety Wr#200/64	Left Door Safety Wire #200/Ref#64
IO65	Stop Cycle PB Wr#68/65	Stop Cycle PB Wire #68/Ref#65
IO66	Rite Door Safety Wr#201/66	Right Door Safety Wire #201/Ref#66
IO67	Clip Carr Clr	Clip Carr Clear Wire #69/Ref#67

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IO70	1/10th T-Wheel Wr#300/70	1/10th Second Thumbwheel Wire #300/Ref#70
IO71	2/10th T-Wheel Wr#301/71	2/10th Second Thumbwheel Wire #301/Ref#71
IO72	4/10th T-Wheel Wr#302/72	4/10th Second ThumbWheel Wire #302/Ref#72
IO73	8/10th T-Wheel Wr#303/73	8/10th Second Thumbwheel Wire #304/Ref#73
IO74	1 Second T-Wheel Wr#304/74	1 Second Thumbwheel Wire #304/Ref#74
IO75	2 Second T-Wheel Wr#305/75	2 Second Thumbwheel Wire #305/Ref#75
IO76	4 Second T-Wheel Wr#306/76	4 Second Thumbwheel Wire #306/Ref#76
IO77	8 Second T-Wheel Wr#307/77	8 Second Thumwheel Wire #307/Ref#76
IO100	Ball Valv Open Wr#73/100	Ball Valve Open Wire #73/Ref#100
IO101	Ball Valv Cover Wr#74/101	Ball Valve Cover Wire #74/Ref#101
IO102	MPC Prox Wr#72/102	MPC Prox Wire #72/Ref#102
IO103	Looper Select Wr#77/103	Looper Select Wire #77/Ref#103
IO104	Ext. Door Safety Wr#78/104	Extended Cage Door Wire #78/Ref#104
IO105	Ext. Door Safety Wr#79/105	Extended Cage Door Wire #79/Ref#105
IO106	MPC Paddl Switch	

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IO140	Splice Detect Switch	Splice Detect Switch
IO141	SET/RUN SELECT SWITCH	SET/RUN SELECTOR SWITCH WIRE #141 MODULE 4 LIGHT 11
IO142	SET OFF EYEMARK/ BACKGRND	SET OFF EYEMARK/BACKGROUND PB WIRE #142 MODULE 4 LIGHT 12
IO143	EYEMARK DETECT/ ON	EYEMARK DETECT/ON INPUT ON/ ON EYEMARK WIRE #143 MODULE 4 LIGHT 13
IO144	ACK/NAK ALARM INPUT	ACKNOWLEDGE/ALARM INPUT FROM SENSOR WIRE #144 MODULE 4 LIGHT 14
IO145	SET ON EYEMARK ON	SET ON EYEMARK PB WIRE #145 MODULE 4 LIGHT 15
IO160	Carrs at Work Pos.	Carriages at Work Position
IO161	Carrs at Clr. Pos.	Carriages at Clear Position
IO162	Carrs at Clip Pos.	Carriages at Clip Position
IO163	Carrs at Clean	Carriages at Clean Position
IO164	Go to Clean	Go to Clean
IO165	Cycling	Cycling
IO166	Go load from Low Case	Go Load from Low Case
IO167	Chub Length/ C-Cycle	Chub Length/ Clip Cycle
IO170	Horn Out	Horn Out

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IO171	At Clean /Clean	At Clean/ Clean
IO172	Low Case Stop Pump	Low Case/ Stop Pump
IO173	Stop Cycl Hold for Auto Clip	Stop Cycle/ Hold for Auto Clip
IO174	Auto Clip from Low Case	Auto Clip from Low Case
IO175	Low Clip Stop	Low Clip Stop
IO176	Sing/Clip Latch and Hold	Latch and hold for Single Clip
IO177	Clipper Advanced	Clipper Advanced (work stroke)
IO200	Encoder Stopped	Encoder Stopped
IO201	Break C-Cycle Reset	Break Clip Cycle Reset
IO203	Stop Pump	
IO204	Clip Cycle Reset	Clip Cycle Reset
IO205	Manual Horn	Manual Horn
IO206	Time/Pump Portion Temp	Time/Pump Portion Temp
IO207	Single Portion Temp	Single Clip Portion Temp
IO210	Eyemark Portion	Eyemark Portion Temp

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IO211	Dbl Clip Portion Temp	Double Clip Portion Temp
IO216	Zero Block T-Wheel	Zero Block T-Wheel
IO220	Pump Enable	Pump Enable
IO224	D-Table Save	D-Table Save
IO225	D-Table Command	D-Table Command
IO230	Ring Carr Move Comm	Ring Carr Move Command
IO231	Splice Latch Detect	Splice Latch Detect
IO232	Splice Reset Latch	Splice Reset Latch
IO233	Splice Clr/Str C-Cycle	Splice Clear/Start C-Cycle
IO234	Set 2nd Latch Detect	Set 2nd Latch Detect
IO237	Latch PB Stop Cycl Splice	Latch PB Stop Cycle Splice
IO240	Block All For Splice	Block All For Splice
IO241	Stop PB During Splice	Stop PB During Splice
IO242	Cmp Dist. to Open Window	Compare Distance Traveled to Open Window
IO243	Cmp True Start	Cmp True Start Cycle Counter

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IO244	Cmp True Open Window	Cmp True Open Window For Eyemark
IO245	Cmp for Eyemark 1/4 high	Cmp for Eyemark 1/4 inch Highend
IO246	Cmp for Eyemark 1/4 low	Cmp for Eyemark 1/4 inch Lowend
IO247	Save/Stop Pulse Counter	Save Value and Stop Pulse Counter
IO254	Splice/ Short\Chb Detect	Short Chub Detected Splice
IO255	Cycle Pulse	Oneshot to oneshot Cycle Pulse
IO256	Cycle Pulse	Oneshot to oneshot Cycle Pulse
IO257	Eyemark Detected and Mul	Eyemark Detected and Multiplied by 325
IO260	Eyemark Detect oneshot	Eyemark Detect oneshot
IO261	Eyemark Detect Latch	Eyemark Detect Latch
IO262	Internal Cycle Pulse	Internal Cycle Pulse
IO263	Internal Cycle Pulse	Internal Cycle Pulse
IO264	Eyemark Detect Oneshot	Eyemark Detect Oneshot
IO265	Calculate Dist. to Oneshot	Calculate Distance from Eyemark Detect to Next Prox Oneshot
IO266	Distance to End of	Distance to End of Horn Loaded

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IO267	Enable next Oneshot	Enable next Oneshot after Detect
IO270	Volumetric Portion Empty	Volumetric Portion logic For Portion empty must reset before calling for Pump
IO271	Time to End of Horn Calc	Time to End of Horn Calculated
IO272	Sub Dist. Amount Cmp	Sub Distance of Oneshot to Oneshot and Cmp to Distance (R500)
IO273	Eyemark Pass 1/4" Test	Eyemark Passed 1/4 inch test.
IO274	Eyemark Failed 1/4" Test	Eyemark Failed 1/4 inch Test
IO275	Cln/Port PB Oneshot	Clean Port PB Oneshot
IO276	Pumpjog PB Oneshot	Pumpjog PB Oneshot for Clip Style
IO277	Dummy Block	Dummy Block
IO300	Load Back to Work	Load Back to Work Position
IO301	Load Out to Clear	Load Out to Clear Position
IO302	Portion Set/Set Rst	Portion Set/Set/Rst
IO303	Oneshot Str PB Load Data	Oneshot Start PB Load Data
IO304	Oneshot R402 load to R406	Oneshot Load R402 to R406
IO323	Pump On Oneshot	Pump On Oneshot

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IO324	Prox On at Pump On	Prox On at Pump On
IO325	Prox Off at Pump On	Prox Off at Pump On
IO326	Prox On/ State Change	Prox On/ State Change
IO327	Prox Off/ State Change	Prox Off/ State Change
IO330	Prox On Oneshot	Prox On Oneshot
IO331	Prox Off Oneshot	Prox Off Oneshot
IO332	Enable Tmr/Cntr Eyemark	Enable Tmr/Cntr Eyemark
IO340	Turret Control	Turret Control
IO341	Control Ring Carr	Control Ring Carr
IO342	Control Clip Carr Work	Control CLip Carr Work
IO343	Control Clip Carr Clear	Control Clip Carr Clear
IO344	Time/Pump Portion	Time/Pump Portion
IO345	Single Clip Style	Single Clip Style
IO346	Eyemark Portion	Eyemark Portion
IO347	Double Clip	Double Clip Style

IO350 LOOPER

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IO351 SET ON EYEMARK ON SET SET WHEN EYEMARK ON IS SET

IO352 SET ON OFF EYEMARK SET WHEN OFF EYEMARK/BACKGROUND IS SET

IO353 SET/RUN ON SS AND ACK/NAK SET WHEN SS SET TO RUN AND ACK/NAK(351,352)

IO374 Powerup Oneshot Powerup Oneshot

IO375 0.1 Clock Pulse 0.1 Clock Pulse

IO376 Output Disable Output Disable

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TC600	Carr's Clr for Horn Out	Ring Carr. is Clear for Horn Out
TC603	Chub Clip Timer	Chub Clip Timer
TC604	Time to Encoder Wheel	Time To Encoder Wheel
TC605	Horn Clip Timer	Horn Clip Timer
TC606	Knife Timer	Knife Timer
TC607	Encoder Holes	Encoder Holes
TC610	D-Table Timer	Dump Table Timer
TC611	Encoder Solids	Encoder Solids
TC615	Delay Clip Cycle	Delay Clip Cycle Timer
TC616	Oneshot/ Oneshot Timer	Oneshot to Oneshot Encoder Timer
TC617	Encoder Oneshot Length	Encoder Oneshot Cntr for Length
TC620	One/One Cycle Cntr	Oneshot to Oneshot Internal Cycle Cntr
TC621	Eyemark Cycle Cntr	Eyemark Internal Cycle Cnrt
TC625	T-Wheel Timer Portion	Thumbwheel Timer Portion
TC626	Calc Time Eyemark	Calculated Time of Eyemark to End of Horn

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TC650	Single Clip Timer	Single Clip Style Timer
TC651	Eyemark Light Blinker	Eyemark Portion Light Blinker
TC652	Eyemark Light Blinker	Eyemark Portion Light Blinker
TC653	Clip Light Blinker	Clip Style Light Blinker
TC654	Clip Light Blinker	Clip Style Light Blinker
TC661	Ring Carr Move Timer	Splice/ Ring Carr Move Timer
TC662	Splice Pull Cntr	Splice Carr Pull Cntr
TC663	Casing Light Blinker	Short Chub/Splice/Casing Light Blinker
TC664	Casing Light Blinker	Short Chub/Splice/Casing Light Blinker
TC665	Splice Short Chub	Splice Short Chub Timer

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R400	MPC Holder	MPC Holder
R402	Oneshot/ Oneshot Running	Oneshot to Oneshot Running Reg
R404	Oneshot/ Oneshot Holding	Oneshot to Oneshot Holding Reg
R406	Eyemark Detect Holding	Eyemark Detect Holding Reg from Oneshot to Oneshot Timer
R420	Oneshot Cnts for Length	Oneshot Counts For Length
R422	One/One Cycle Cntr	Oneshot to Oneshot Internal Cycle Cnt
R424	Cycle Cnt Minus 5	Cycle Cnt minus 5
R426	Cycle Cnt Plus 5	Cycle Cnt Plus 5
R430	Traveled Sense Detect	Distance Traveled Sense Detect of Eyemark
R432	Calc Reg Top 1/2	Calculating Registor Top 1/2
R434	Calc Reg Bottom 1/2	Calculating Registor Bottom 1/2
R436	Time Trvl Detect/ Oneshot	Time Traveled from Detect to Next Oneshot
R440	Dist Calc To End of Horn	Distance Calculated to End of Horn
R442	Eye Cycle Cnt X 325	Eyemark Cycle Cnt Multiplied by 325
R444	Calc Time to End of	Time Calculated to End of Horn

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R460	Open Eye Window Cmp Value	Open Eyemark Window when Cmp is Great than or Equal to this Value
R462	Str Cycle Cntr Cmp Value	Start Internal Cycle Cntr when Cmp is Greater than or Equal to this Value
R466	Thumb- Wheel Value	Thumbwheel Value
R500	Oneshot/ Oneshot Distance	Oneshot to Oneshot Base Distance
R502	Distance To End of Horn	Distance to End of Horn
R510	Totaling Length	Totaling of Length for Cntr X Base Distance
R550	Thumb Wheel One	Thumbwheel One
R552	Thumb Wheel Two	ThumbWheel Two
R554	Thumb Wheel Four	Thumbwheel Four
R556	Thumb Wheel Eight	Thumbwheel Eight
R560	Thumb Wheel Ten	Thumbwheel Ten
R562	Thumb Wheel Twenty	Thumbwheel Twenty
R564	Thumb Wheel Forty	Thumbwheel Forty
R566	Thumb Wheel Eighty	Thumbwheel Eighty
R570	Eyemark Light	Eyemark Light Blink Value

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R572 Clip Styl Clip Style Light Blink Value
 Light
 Blink

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R574 Thumb Thumbwheel Temp Registor
 Wheel
 Temp

R576 Aux. This is an Auxilery Registor or Overflow
 Reg Registor for Math Functions

ELEMENT ADDRESS/USAGE

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IO0	Ring Carr Clr Sl-00 Wr#13/00	Ring Carr Clear Sol-00 Wire #13/Ref#00	
	13--] /[-	23--] [-	29--] /[-
	37--] /[-	250--] [-	266--(OUT)
	268--] [-	273--] [-	284--] [-
	300--] /[-	314--] /[-	
IO1	Turret Sl-01 Wr#14/01	Turret Sol-01 Wire #14/Ref#01	
	13--] /[-	29--] /[-	37--] [-
	45--] [-	49--] [-	237--] [-
	245--] /[-	291--(OUT)	
IO2	Clip Carr Wk Sl-02 Wr#15/02	Clip Carr Work Sol-02 Wire #15/Ref#02	
	13--] [-	23--] /[-	29--] /[-
	37--] /[-	222--(OUT)	228--] /[-
	257--] /[-	284--] /[-	330--] [-
	345--] [-	379--] /[-	421--] [-
IO3	Knife Sl-03 Wr#16/03	Knife Sol-03 Wire #16/Ref#03	
	392--] [-	392--(OUT)	397--] [-
IO4	Clip Carr Clr Sl-04 Wr#17/04	Clip Carr Clr Sol-04 Wire #17/Ref#04	
	13--] [-	23--] /[-	29--] [-
	37--] [-	224--(OUT)	228--] /[-
	257--] /[-	284--] /[-	330--] [-
	345--] [-		
IO5	Ball Valv Sl-05 Wr#18/05	Ball Valve Sol-05 Wire #18/Ref#05	
	97--(OUT)	99--] [-	
IO6	Chub Clip Sl-06 Wr#19/06	Chub Clipper Sol-06 Wire #19/Ref#06	
	294--] [-	330--] /[-	359--] [-
	359--(OUT)	367--] [-	
IO7	D-Table Sl-07	Dump Table Sl-07	
	13--] /[-	421--] [-	421--(OUT)
	429--] [-		
IO10	Horn Clip Sl-08	Horn Clipper Sol-08 Wire #21/Ref#10	

384--(OUT) 386--] [-

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IO11 Main Air Main Air Sol-09
Sl-09 Wire #22/Ref#11
Wr#22/11

6--(OUT) 49--] [- 108--] [-

IO12 Meat Pump Meat Pump Relay R#1
Relay R#1 Wire #23/Ref#12
Wr#23/12

79--] [- 99--(SET OUT) 103--] [-
110--] [- 151--] [- 186--] [-
190--] [- 226--] /[- 433--] [-
633--] [- 635--] [- 643--] [-
665--] [- 725--] /[-

IO13 Low Case Low Casing Light
Lite Wire #24/Ref#13
Wr#24/13
526--(OUT)

IO14 Low Clip Low Clip Light
Lite Wire #25/Ref#14
Wr#25/14
537--(OUT)

IO15 Run Lite Run Light
Wire #26/Ref#15
Wr#26/15
9--] [- 9--(OUT)

IO16 Water Spr Water Spray Sl-
Sl- Wire #27/Ref#16
Wr#27/16
151--(OUT)

IO17 Decrease Decrease Light
Lite Wire #28/Ref#17
Wr#28/17
445--(OUT)

IO21 Increase Increase Light
Lite Wire #29/Ref#21
Wr#29/21
442--(OUT)

IO23 Portion Portion Light
Lite Wire #29/Ref#23
Wr#30/23
568--(OUT)

IO27 ACK/NAK ACKNOWLEDGE/SET CYCLE/WINDOW OPEN LAMP
SET/CYCLE WIRE #37
WINDOW REF #27
623--(SET OUT)

IO30 Decrease Decrease Sizing Motor
Motor Wire #82/Ref#30

445--(OUT)

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IO31 Increase Increase Sizing Motor
Motor Wire #83/Ref#31
Wr#83/31

442--(OUT)

IO40 Chub CLip Chub Clip Closed
Clsd Wire#54/Ref#40
Wr#54/40

300--] [- 314--] [- 367--] /[-

IO41 Ring Carr Ring Carr Work
Work Wire #50/Ref#41
Wr#50/41

13--] [- 23--] /[- 29--] [-
37--] [- 250--] /[- 268--] /[-
273--] /[- 284--] /[- 300--] [-
314--] [- 322--] [-

IO42 Horn Clip Horn Clip Closed
Clsd Wire #55/Ref#42
Wr#55/42

386--] /[-

IO43 Turret Turret Out
Out Wire #51/Ref#43
Wr#51/43

13--] /[- 29--] /[- 37--] [-
45--] [- 49--] [- 237--] [-
245--] /[- 278--] /[-

IO44 Low Clip Low Clip Supply Horn Clipper
Horn Wire #56/Ref#44
Wr#56/44

198--] /[-

IO45 Low Case Low Casing Supply
Supply Wire #52/Ref#45
Wr#52/45

142--] [-

IO46 Low Clip Low Clip supply Chub Clipper
Chub Wire #57/Ref#46
Wr#57/46

198--] /[-

IO47 Clip Carr Clip Carr Work
Work Wire #53/Ref#47
Wr#53/47

13--] [- 257--] /[- 330--] [-
345--] [-

IO50 Dump Dump Table
Table Wire #62/Ref#50
Wr#62/50

13--] [- 416--] [- 433--] [-

ELEMENT ADDRESS/USAGE

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IO51	Chub Length Wr#58/51	Chub Length Wire #58/Ref#51	
	110--]	[-	433--] [-
IO52	Start Cycle PB Wr#63/52	Start Cycle PB Wire #63/Ref#52	
	146--]	/[-	175--] [-
	586--]	[-	909--] [-
IO53	Casing Break Wr#59/53	Casing Break Detect Wire #59/Ref#53	
	156--]	/[-	160--] [-
	643--]	/[-	651--] /[-
	659--]	[-	662--] /[-
IO54	Clean/ PortionPB Wr#64/54	Clean/Portion PB Wire #64/Ref#54	
	49--]	[-	468--] [-
IO55	Load Casing PB Wr#60/55	Load Casing PB Wire #60/Ref#55	
	63--]	/[-	450--] [-
IO56	Decrease Size PB Wr#65/56	Decrease Size PB Wire #65/Ref#56	
	445--]	[-	
IO57	Pump Jog PB Wr#61/57	Pump Jog PB Wire #61/Ref#57	
	79--]	[-	483--] [-
IO60	Horn Clip Open Wr#70/60	Horn Clip Open Wire #70/Ref#60	
	228--]	[-	300--] [-
IO61	Decrease Size PB Wr#66/61	Decrease Size PB Wire #66/Ref#61	
	442--]	[-	
IO62	Clip Carr Position Wr#71/62	Clip Carr Position Wire #71/Ref#62	
	29--]	[-	37--] [-
	421--]	/[-	379--] [-

ELEMENT ADDRESS/USAGE

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IO63	Portion Cmplt Wr#67/63 103--]	Portion Complete From Pump R#2 Wire #67/Ref#63 [- 110--] [-	
IO64	Left Door Safety Wr#200/64 0--] /[-	Left Door Safety Wire #200/Ref#64	
IO65	Stop Cycle PB Wr#68/65 110--] [- 433--] [-	Stop Cycle PB Wire #68/Ref#65 175--] /[-	215--] [-
IO66	Rite Door Safety Wr#201/66 0--] /[-	Right Door Safety Wire #201/Ref#66	
IO67	Clip Carr Clr Wr#69/67 23--] [- 322--] [-	Clip Carr Clear Wire #69/Ref#67 228--] [- 338--] [-	284--] [-
IO70	1/10th T-Wheel Wr#300/70 572--] /[-	1/10th Second Thumbwheel Wire #300/Ref#70 915--] [-	
IO71	2/10th T-Wheel Wr#301/71 572--] /[-	2/10th Second Thumbwheel Wire #301/Ref#71 920--] [-	
IO72	4/10th T-Wheel Wr#302/72 572--] /[-	4/10th Second ThumbWheel Wire #302/Ref#72 925--] [-	
IO73	8/10th T-Wheel Wr#303/73 572--] /[-	8/10th Second Thumbwheel Wire #304/Ref#73 930--] [-	
IO74	1 Second T-Wheel Wr#304/74 572--] /[-	1 Second Thumbwheel Wire #304/Ref#74 935--] [-	
IO75	2 Second T-Wheel Wr#305/75	2 Second Thumbwheel Wire #305/Ref#75	

ELEMENT ADDRESS/USAGE

IO76 4 Second 4 Second Thumbwheel
T-Wheel Wire #306/Ref#76
Wr#306/76
572--] /[- 945--] [-

IO77 8 Second 8 Second Thumwheel
T-Wheel Wire #307/Ref#76
Wr#307/77
572--] /[- 950--] [-

IO100 Ball Valv Ball Valve Open
Open Wire #73/Ref#100
Wr#73/100
99--] [-

IO101 Ball Valv Ball Valve Cover
Cover Wire #74/Ref#101
Wr#74/101
0--] /[-

IO104 Ext. Door Extended Cage Door
Safety Wire #78/Ref#104
Wr#78/104
0--] /[-

IO105 Ext. Door Extended Cage Door
Safety Wire #79/Ref#105
Wr#79/105
0--] /[-

IO140 Splice Splice Detect Switch
Detect
Switch
190--] [- 204--] [-

IO141 SET/RUN SET/RUN SELECTOR SWITCH
SELECT WIRE #141
SWITCH MODULE 4 LIGHT 11
598--] /[- 604--] /[- 611--] [-
617--] /[-

IO142 SET OFF SET OFF EYEMARK/BACKGROUND PB
EYEMARK/ WIRE #142
BACKGRND MODULE 4 LIGHT 12
598--] [- 604--] /[- 617--] /[-
623--] /[-

IO143 EYEMARK EYEMARK DETECT/ON INPUT ON/ ON EYEMARK
DETECT/ WIRE #143
ON MODULE 4 LIGHT 13
598--] [- 604--] /[- 730--] [-
735--] /[- 743--] /[-

IO144 ACK/NAK ACKNOWLEDGE/ALARM INPUT FROM SENSOR
ALARM WIRE #144

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598--] [- 604--] [-
IO145 SET ON SET ON EYEMARK PB
EYEMARK WIRE #145
ON MODULE 4 LIGHT 15
598--] /[- 604--] [- 617--] /[-
623--] /[-

IO160 Carrs at Carriages at Work Position
Work Pos.
13--(OUT) 63--] [- 79--] [-
110--] [- 175--] [- 402--] [-
433--] [- 450--] /[- 457--] [-
468--] [- 483--] [- 909--] [-

IO161 Carrs at Carriages at Clear Position
Clr. Pos.
23--(OUT) 45--] [- 49--] [-
72--] [- 450--] [-

IO162 Carrs at Carriages at Clip Position
Clip Pos.
29--(OUT) 457--] [-

IO163 Carrs at Carriages at Clean Position
Clean
37--(OUT) 58--] [- 457--] [-

IO164 Go to Go to Clean
Clean
49--] [- 49--(OUT) 58--] [-
237--] [- 314--] [-

IO165 Cycling Cycling
49--] /[- 79--] [- 79--] [-
110--] [- 164--] [- 175--] [-
175--(OUT) 186--] [- 190--] [-
204--] [- 338--] /[- 448--] /[-
542--] [- 546--] [- 552--] [-
556--] [- 623--] /[- 635--] [-
643--] [- 665--] [- 691--] /[-
725--] /[- 743--] [- 881--] /[-
889--] /[-

IO166 Go load Go Load from Low Case
from
Low Case
63--(OUT) 457--] [-

ELEMENT ADDRESS/USAGE

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IO167	Chub Length/ C-Cycle	Chub Length/ Clip Cycle	
	338--] [-	345--] /[-	353--] [-
	353--(OUT)	359--] [-	379--] [-
	635--] /[-	643--] /[-	665--] /[-
	691--] [-	725--] [-	881--] [-
IO170	Horn Out	Horn Out	
	45--(OUT)	457--] /[-	
IO171	At Clean /Clean	At Clean/ Clean	
	6--] /[-	49--] /[-	58--] [-
	58--(OUT)		
IO172	Low Case Stop Pump	Low Case/ Stop Pump	
	63--] [-	110--] [-	142--] [-
	142--(OUT)	433--] [-	526--] [-
	542--] /[-	546--] /[-	552--] /[-
	556--] /[-		
IO173	Stop Cycl Hold for Auto Clip	Stop Cycle/ Hold for Auto Clip	
	63--] [-	63--(OUT)	72--] [-
	142--] /[-	175--] /[-	
IO174	Auto Clip from Low Case	Auto Clip from Low Case	
	63--] /[-	72--] [-	72--(OUT)
	110--] [-		
IO175	Low Clip Stop	Low Clip Stop	
	175--] /[-	198--] [-	198--(OUT)
	537--] [-		
IO176	Sing/Clip Latch and Hold	Latch and hold for Single Clip	
	79--] /[-	372--] [-	372--(OUT)
IO177	Clipper Advanced	Clipper Advanced (work stroke)	
	379--] [-	379--(OUT)	384--] [-

ELEMENT ADDRESS/USAGE

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IO200	Encoder Stopped	Encoder Stopped	
	79--]	/[-	146--] [- 146--(OUT)
IO201	Break C-Cycle Reset	Break Clip Cycle Reset	
	402--(OUT)	406--]	/[-
IO203	Stop Pump		
	72--]	/[-	79--]
	110--(OUT)		110--]
	416--]		139--]
			190--]
IO204	Clip Cycle Reset	Clip Cycle Reset	
	63--]		110--]
	300--]		198--]
	397--]		386--]
	406--(OUT)		406--]
			421--]
IO205	Manual Horn	Manual Horn	
	72--]		278--]
	291--]		278--(OUT)
IO206	Time/Pump Portion Temp	Time/Pump Portion Temp	
	542--(OUT)		
IO207	Single Portion Temp	Single Clip Portion Temp	
	294--]		372--]
	546--(OUT)		406--]
IO210	Eyemark Portion Temp	Eyemark Portion Temp	
	552--(OUT)		
IO211	Dbl Clip Portion Temp	Double Clip Portion Temp	
	392--]		406--]
			556--(OUT)
IO216	Zero Block T-Wheel	Zero Block T-Wheel	

ELEMENT ADDRESS/USAGE

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IO220	Pump Enable	Pump Enable	
	79--(OUT)	97--] [-	99--] [-
IO224	D-Table Save	D-Table Save	
	63--] /[- 416--] [-	79--] /[- 416--(OUT)	402--] /[-
IO225	D-Table Command	D-Table Command	
	416--] [- 433--(OUT)	421--] [- 546--] /[-	433--] [- 556--] /[-
IO230	Ring Carr Move Comm	Ring Carr Move Command	
	228--] [- 257--(OUT)	250--] [-	257--] [-
IO231	Splice Latch Detect	Splice Latch Detect	
	110--] [- 204--(OUT) 309--] [- 359--] [-	190--] /[- 211--] [- 322--] [- 433--] [-	204--] [- 257--] [- 338--] [-
IO232	Splice Reset Latch	Splice Reset Latch	
	204--] /[- 300--] [- 322--(OUT) 359--] /[-	250--] /[- 314--] [- 330--] [-	257--] /[- 322--] [- 345--] [-
IO233	Splice Clr/Str C-Cycle	Splice Clear/Start C-Cycle	
	211--] /[- 345--] [-	219--] [- 345--(OUT)	322--] /[- 353--] [-
IO234	Set 2nd Latch Detect	Set 2nd Latch Detect	
	204--] [- 330--(OUT)	322--] /[- 359--] [-	330--] [-
IO237	Latch PB Stop Cycle Splice	Latch PB Stop Cycle Splice	
	215--] [-	215--(OUT)	219--] [-

ELEMENT ADDRESS/USAGE

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IO240	Block All For Splice	Block All For Splice		
	79--] /[-	175--] [-	211--] [-	
	211--(OUT)	215--] [-	353--] /[-	
IO241	Stop PB During Splice	Stop PB During Splice		
	175--] /[-	219--(OUT)		
IO242	Cmp Dist. to Open Window	Compare Distance Traveled to Open Window		
	705--(OUT)	715--] [-	721--] [-	
IO244	Cmp True Open Window	Cmp True Open Window For Eyemark		
	110--] [-	169--] [-	623--] [-	
	715--] /[-	721--(SET)	725--(RST)	
	730--] [-	738--] [-	743--] [-	
	754--] [-			
IO254	Splice/ Short\Chb Detect	Short Chub Detected Splice		
	175--] /[-	190--] [-	190--(OUT)	
	204--] /[-	519--] [-	526--] [-	
IO257	Eyemark Detected and Mul	Eyemark Detected and Multiplied by 325		
	754--(OUT)	763--] [-		
IO260	Eyemark Detect oneshot	Eyemark Detect oneshot		
	730--(OUT RST)	738--] [-	743--] [-	
	754--] [-	763--] [-	774--] [-	
	833--] [-			
IO261	Eyemark Detect Latch	Eyemark Detect Latch		
	730--] /[-	735--] [-	738--] [-	
	738--(OUT)			
IO262	Internal Cycle Pulse	Internal Cycle Pulse		
	763--(OUT)	770--] [-		

ELEMENT ADDRESS/USAGE

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IO263	Internal Cycle Pulse	Internal Cycle Pulse		
	725--(RST)	730--] /[-	770--(SET)	
	774--] [-	833--] [-		
IO264	Eyemark Detect Oneshot	Eyemark Detect Oneshot		
	735--(OUT RST)	738--] /[-		
IO265	Calculate Dist. to Oneshot	Calculate Distance from Eyemark Detect to Next Prox Oneshot		
	784--] /[-	784--(SET)	823--] [-	
	881--(RST)			
IO266	Distance to End of Horn Ld	Distance to End of Horn Loaded		
	784--] /[-	823--] /[-	823--(SET)	
	833--] /[-	833--(SET)	844--] [-	
	881--(RST)			
IO267	Enable next Oneshot	Enable next Oneshot after Detect		
	844--(SET)	849--] [-	881--(RST)	
IO270	Volumetric Portion Empty	Volumetric Portion logic For Portion empty must reset before calling for Pump		
	79--] /[-	103--] [-	103--(OUT)	
IO271	Time to End of Horn Calc	Time to End of Hoen Calculated		
	110--] [-	169--] [-	862--] /[-	
	862--(SET)	881--(RST)		
IO272	Sub Dist. Amount Cmp	Sub Distance of Oneshot to Oneshot and Cmp to Distance (R500)		
	849--] /[-	849--(OUT)	862--] [-	
IO275	Cln/Port PB Oneshot	Clean Port PB Oneshot		
	468--(OUT RST)	471--] [-	475--] [-	
	479--] [-	494--] [-		
IO276	Pumpjog PB Oneshot	Pumpjog PB Oneshot for Clip Style		
	483--(OUT RST)	488--] [-	491--] [-	

ELEMENT ADDRESS/USAGE

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IO300	Load Back to Work	Load Back to Work Position	
	237--]	[-	245--] [-
	284--]	[-	278--] /[-
	450--]	[-	300--] [-
			314--] [-
			450--(OUT)
			457--] /[-
IO301	Load Out to Clear	Load Out to Clear Postition	
	228--]	[-	268--] [-
	278--]	/[-	273--] [-
	450--]	/[-	294--] [-
			309--] [-
			457--(OUT)
IO302	Portion Set/Set Rst	Portion Set/Set/Rst	
	471--(OUT)		494--] [-
IO303	Oneshot Str PB Load Data	Oneshot Start PB Load Data	
	909--(OUT RST)		912--] [-
	974--]	[-	955--] [-
			983--] [-
IO304	Oneshot R402 load to R406	Oneshot Load R402 to R406	
	774--]	/[-	774--(SET)
	881--(RST)		784--] [-
IO323	Pump On Oneshot	Pump On Oneshot	
	633--(OUT RST)		635--] [-
			643--] [-
IO324	Prox On at Pump On	Prox On at Pump On	
	635--]	[-	635--(OUT)
	651--]	[-	643--] /[-
			672--] [-
IO325	Prox Off at Pump On	Prox Off at Pump On	
	635--]	/[-	643--] [-
	655--]	[-	643--(OUT)
			672--] [-
IO326	Prox On/ State Change	Prox On/ State Change	
	651--]	[-	651--(OUT)
			659--] [-
IO327	Prox Off/ State	Prox Off/ State Change	

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	655--]	[-	655--(OUT)		662--]	[-
IO330	Prox On		Prox On Oneshot			
	Oneshot					
	659--(OUT RST)		665--]	[-	672--]	/[-
	684--]	[-	691--]	[-	698--]	[-
	705--]	[-	774--]	/[-	784--]	[-
	833--]	[-	844--]	/[-	849--]	[-
IO331	Prox Off		Prox Off Oneshot			
	Oneshot					
	662--(OUT RST)		665--]	[-	672--]	/[-
	684--]	[-	691--]	[-	698--]	[-
	705--]	[-	774--]	/[-	784--]	[-
	833--]	[-	844--]	/[-	849--]	[-
IO332	Enable		Enable Tmr/Cntr Eyemark			
	Tmr/Cntr					
	Eyemark					
	665--]	[-	665--(OUT)		672--]	[-
	684--]	[-	691--]	[-	698--]	[-
	705--]	[-	784--]	[-	823--]	[-
	833--]	[-	844--]	[-		
IO340	Turret		Turret Control			
	Control					
	273--(SET)		278--]	[-	284--(RST)	
	291--]	[-				
IO341	Control		Control Ring Carr			
	Ring Carr					
	228--(SET)		237--(RST)		266--]	[-
IO342	Control		Control CLip Carr Work			
	Clip Carr					
	Work					
	222--]	/[-	294--(SET)		300--(RST)	
IO343	Control		Control Clip Carr Clear			
	Clip Carr					
	Clear					
	224--]	/[-	309--(SET)		314--(RST)	
IO344	Time/Pump		Time/Pump Portion			
	Portion					
	79--]	/[-	103--]	[-	110--]	/[-
	110--]	[-	164--]	[-	471--]	[-
	475--]	[-	479--]	/[-	479--(SET)	
	483--]	[-	494--]	[-	494--(RST)	
	542--]	[-	568--]	[-	912--]	[-
	974--]	[-				

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ELEMENT ADDRESS/USAGE

IO345 Single Single Clip Style

Clip
Style

488--] [- 491--] /[- 491--(SET)
494--(RST) 507--] [- 530--] [-
537--] [- 546--] [-

IO346 Eyemark Eyemark Portion
Portion

72--] /[- 79--] /[- 110--] /[-
110--] [- 164--] /[- 169--] [-
471--] [- 475--] /[- 475--(SET)
479--] /[- 483--] [- 494--] [-
494--(RST) 502--] [- 552--] [-
561--] [- 568--] /[- 586--] [-
596--] [- 974--] /[- 983--] [-

IO347 Double Double Clip Style
Clip
Style

488--(SET) 494--(RST) 507--] /[-
513--] [- 546--] /[- 556--] [-

IO351 SET ON SET WHEN EYEMARK ON IS SET
EYEMARK
ON SET

598--(SET) 604--] [- 611--] [-
611--(RST) 617--(RST) 623--] [-

IO352 SET ON SET WHEN OFF EYEMARK/BACKGROUND IS SET
OFF
EYEMARK

604--(SET) 611--] [- 611--(RST)
617--(RST) 623--] [-

IO353 SET/RUN SET WHEN SS SET TO RUN AND ACK/NAK(351,352)
ON SS AND
ACK/NAK

79--] [- 611--(SET) 617--(RST)
623--] [-

IO374 Powerup Powerup
Oneshot Oneshot

9--] [- 581--] [- 889--] [-

IO376 Output Output
Disable Disable

0--(OUT) 6--] /[- 58--] /[-

IO770 9--(OUT)

IO772 721--] [- 770--] [-

IO773 721--] [- 770--] [-

IO774 862--] [- 862--] [-

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ELEMENT ADDRESS/USAGE

T600	Carr's Clr for Horn Out	Ring Carr. is Clear for Horn Out		
	268--TMR	273--]	[-	
T601	237--]	[-	245--TMR	
T603	Chub Clip Timer	Chub Clip Timer		
	257--]	[-	294--]	[-
	367--]	[-	367--TMR	
	406--]	[-		
			309--]	[-
			372--]	[-
T604	Time to Encoder Wheel	Time To Encoder Wheel		
	151--TMR	156--]	[-	160--]
				[-
T605	Horn Clip Timer	Horn Clip Timer		
	386--]	[-	386--TMR	
	406--]	[-		
			392--]	[-
T606	Knife Timer	Knife Timer		
	392--]	/[-	397--]	[-
	406--]	[-		
			397--TMR	
T607	Encoder Holes	Encoder Holes		
	146--]	[-	156--TMR	
T610	D-Table Timer	Dump Table Timer		
	421--]	/[-	429--TMR	
T611	Encoder Solids	Encoder Solids		
	146--]	[-	160--TMR	
T615	Delay Clip Cycle	Delay Clip Cycle Timer		
	139--TMR	353--]	[-	359--]
				[-
T616	Oneshot/ Oneshot Timer	Oneshot to Oneshot Encoder Timer		
	672--TMR			

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ELEMENT ADDRESS/USAGE

T621	Eyemark Cycle Cntr	Eyemark Internal Cycle Cnrt		
		743--TMR		
T625	T-Wheel Timer Portion	Thumbwheel Timer Portion		
		110--] [-	164--TMR	
T626	Calc Time Eyemark to Horn	Calculated Time of Eyemark to End of Horn		
		110--] [-	169--TMR	
T650	Single Clip Timer	Single Clip Style Timer		
		372--] /[-	372--TMR	
T651	Eyemark Light Blinker	Eyemark Portion Light Blinker		
		561--TMR	565--] [-	568--] [-
T652	Eyemark Light Blinker	Eyemark Portion Light Blinker		
		561--] /[-	565--TMR	
T653	Clip Light Blinker	Clip Style Light Blinker		
		530--] /[-	534--TMR	
T654	Clip Light Blinker	Clip Style Light Blinker		
		530--TMR	534--] [-	537--] /[-
T661	Ring Carr Move Timer	Splice/ Ring Carr Move Timer		
		228--] /[-	237--] [-	250--] [-
		250--TMR	257--] /[-	322--] [-
		338--] [-		
T663	Casing Light Blinker	Short Chub/Splice/Casing Light Blinker		
		519--TMR	523--] [-	526--] /[-
T664	Casing Light Blinker	Short Chub/Splice/Casing Light Blinker		

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ELEMENT ADDRESS/USAGE

T665	Splice Short Chub	Splice Short Chub Timer
	186--TMR	190--] /[-

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ELEMENT ADDRESS/USAGE

C617 Encoder Encoder Oneshot Cntr for Length
Oneshot
Length
691--CTR

C662 Splice Splice Carr Pull Cntr
Pull
Cntr
330--] /[- 338--CTR 345--] [-

ELEMENT ADDRESS/USAGE

R402	Oneshot/ Oneshot Running 672--DOUT	Oneshot to Oneshot Running Reg 684--DSTR	774--DSTR
R404	Oneshot/ Oneshot Holding 684--DOUT 784--DSTR	Oneshot to Oneshot Holding Reg 754--DSTR 862--DSTR	784--DIV
R406	Eyemark Detect Holding 774--DOUT	Eyemark Detect Holding Reg from Oneshot to Oneshot Timer 784--SUB	
R420	Oneshot Cnts for Length 698--DOUT	Oneshot Counts For Length 705--MUL	
R422	One/One Cycle Cntr 754--DOUT	Oneshot to Oneshot Internal Cycle Cnt 763--CMP	
R424	Cycle Cnt Minus 5 743--DOUT	Cycle Cnt minus 5 763--DSTR	
R430	Traveled Sense Detect 784--DOUT	Distance Traveled Sense Detect of Eyemark 823--SUB	
R432	Calc Reg Top 1/2 784--DOUT 784--MUL	Calculating Registor Top 1/2 784--DSTR	784--DOUT
R434	Calc Reg Bottom 1/2 784--DOUT	Calculating Registor Bottom 1/2 784--ADD	
R436	Time Trvl Detect/ Oneshot 784--DOUT	Time Traveled from Detect to Next Oneshot	
R440	Dist Calc To End of Horn	Distance Calculated to End of Horn	

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849--DOUT

862--MUL

R444 Calc Time Time Calculated to End of Horn
to End of
Horn

169--TMR

862--DOUT

R460 Open Eye Open Eyemark Window when Cmp is Great than
Window or Equal to this Value
Cmp Value

586--DOUT

715--CMP

R466 Thumb- Thumbwheel Value
Wheel
Value

164--TMR

586--DSTR

974--DOUT

983--DOUT

R500 Oneshot/ Oneshot to Oneshot Base Distance
Oneshot
Distance

581--DOUT

705--DSTR

784--DSTR

849--SUB

849--CMP

862--DIV

R502 Distance Distance to End of Horn
To End of
Horn

823--DSTR

833--DSTR

R510 Totaling Totaling of Length for Cntr X Base Distance
Length

705--DOUT

715--DSTR

R550 Thumb Thumbwheel One
Wheel
One

889--DOUT

915--DOUT

955--DSTR

R552 Thumb ThumbWheel Two
Wheel
Two

889--DOUT

920--DOUT

955--ADD

R554 Thumb Thumbwheel Four
Wheel
Four

889--DOUT

925--DOUT

955--ADD

R556 Thumb Thumbwheel Eight
Wheel
Eight

889--DOUT

930--DOUT

955--ADD

R560 Thumb Thumbwheel Ten
Wheel
Ten

889--DOUT

935--DOUT

955--ADD

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ELEMENT ADDRESS/USAGE

R562	Thumb Wheel Twenty	Thumbwheel Twenty	889--DOUT	940--DOUT	955--ADD
R564	Thumb Wheel Forty	Thumbwheel Forty	889--DOUT	945--DOUT	955--ADD
R566	Thumb Wheel Eighty	Thumbwheel Eighty	889--DOUT	950--DOUT	955--ADD
R570	Eyemark Light Blink	Eyemark Light Blink Value	502--DOUT	561--TMR	565--TMR
R572	Clip Styl Light Blink	Clip Style Light Blink Value	507--DOUT 534--TMR	513--DOUT	530--TMR
R574	Thumb Wheel Temp	Thumbwheel Temp Registor	955--DOUT	974--DSTR	983--DSTR
R576	Aux. Reg	This is an Auxilery Registor or Overflow Registor for Math Functions	784--DSTR	862--DSTR	
R616			672--DSTR		
R617			698--DSTR		
R621			743--DSTR		

WHAT IS CLAIMED IS:

1. A method for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for said casings from a supply source is axially shirred into sections and said sections are stuffed with food emulsion into divided off portions, characterized by:

measuring linear motion of said casing as said portions are filled with food emulsion;

inputting said measured motion to a programmable logic controller;

within said programmable logic controller, calculating an approximate distance between eye-mark bars separating said individual portions, where said calculation is based upon a known distance between eye-mark bars;

based upon said calculated approximate distance and said measured motion, selectively sensing eye-mark bars which separate individual casings while ignoring printed label material between eye-mark bars; and

clipping individual sections of said casing closed at precise locations in response to said sensing of eye-mark bars to accurately position said labels between end-clips secured to ends of each of said portions.

2. The method of Claim 1 wherein said measuring of linear motion of said casing as said portions are filled with food emulsion is done with an index wheel which rotates at a rate directly proportional to said linear motion, and with a proximity sensor which measures the rotational movement of the wheel.

3. The method of Claim 1 wherein said sensing is done with a fiber optic sensing means.

4. The method of Claim 1 comprising the further step of cutting said casing material precisely at said eye-mark bars to separate individual casing portions.

5. An apparatus for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for said casings from a supply source is axially shirred into sections and said sections are stuffed with food emulsion into divided off portions, characterized in that there are provided:

means for measuring linear motion of said casing as said portions are filled with food emulsion;

means for sensing printed material on said casing;

a programmable logic controller operatively arranged to calculate an approximate distance between eye-mark bars separating said individual portions, where said calculation is based upon a known distance between eye-mark bars, and for selectively sensing eye-mark bars which separate individual casings based upon said calculated approximate distance and said

measured motion, while ignoring printed label material between eye-mark bars; and,

means for clipping individual sections of said casing closed at precise locations in response to said sensing of eye-mark bars to accurately position said labels between end-clips secured to ends of each of said portions.

6. The apparatus of Claim 5 wherein said means for measuring linear motion of said casing as said portions are filled with food emulsion comprises an index wheel which rotates at a rate directly proportional to said linear motion, and a proximity sensor which measures the rotational movement of the wheel.

7. The apparatus of Claim 5 wherein said means for sensing printed material comprises a fiber optic sensing means.

8. The apparatus of Claim 5 further comprising means for cutting said casing material precisely at said eye-mark bars to separate individual casing portions.

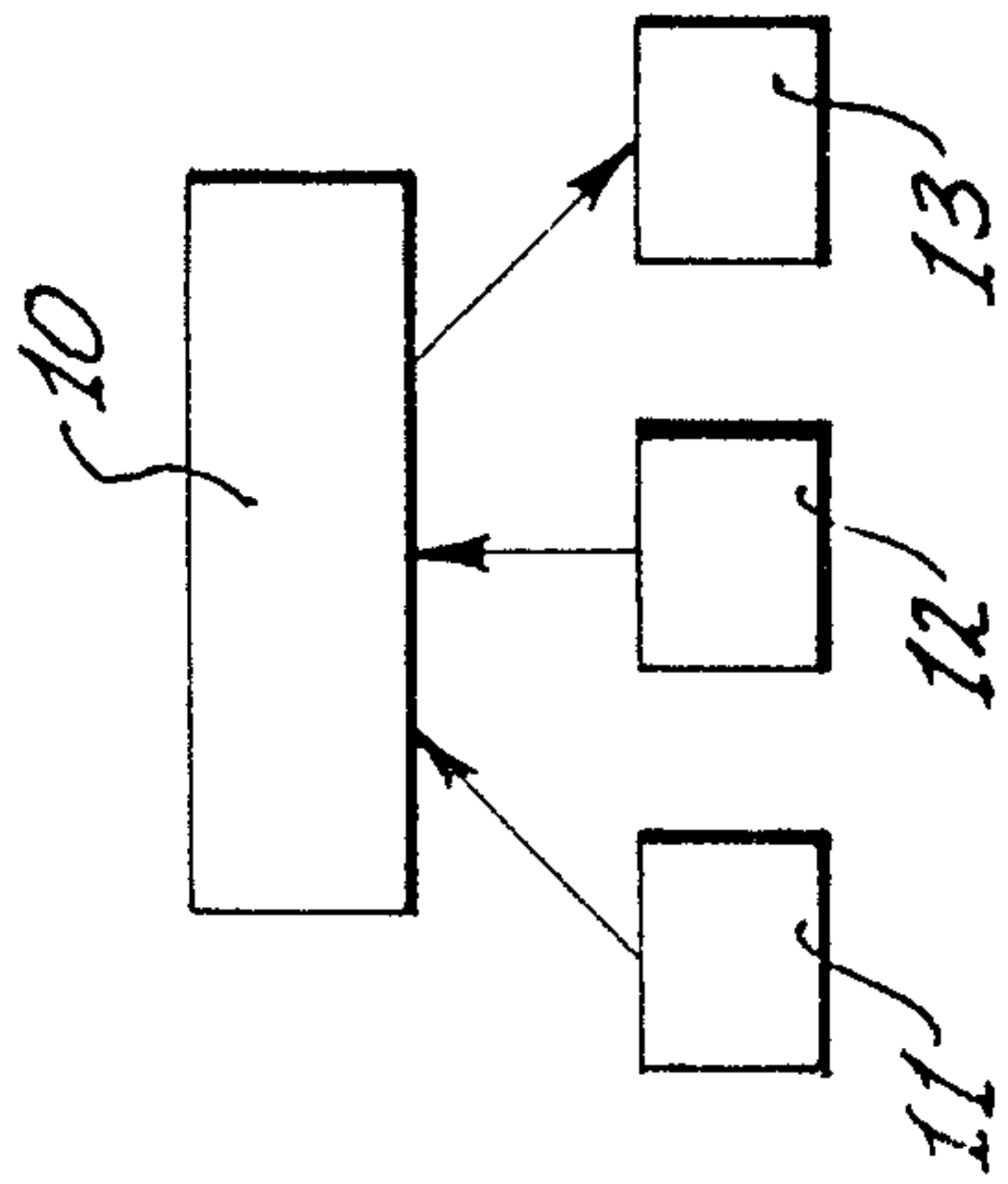


Fig. 1

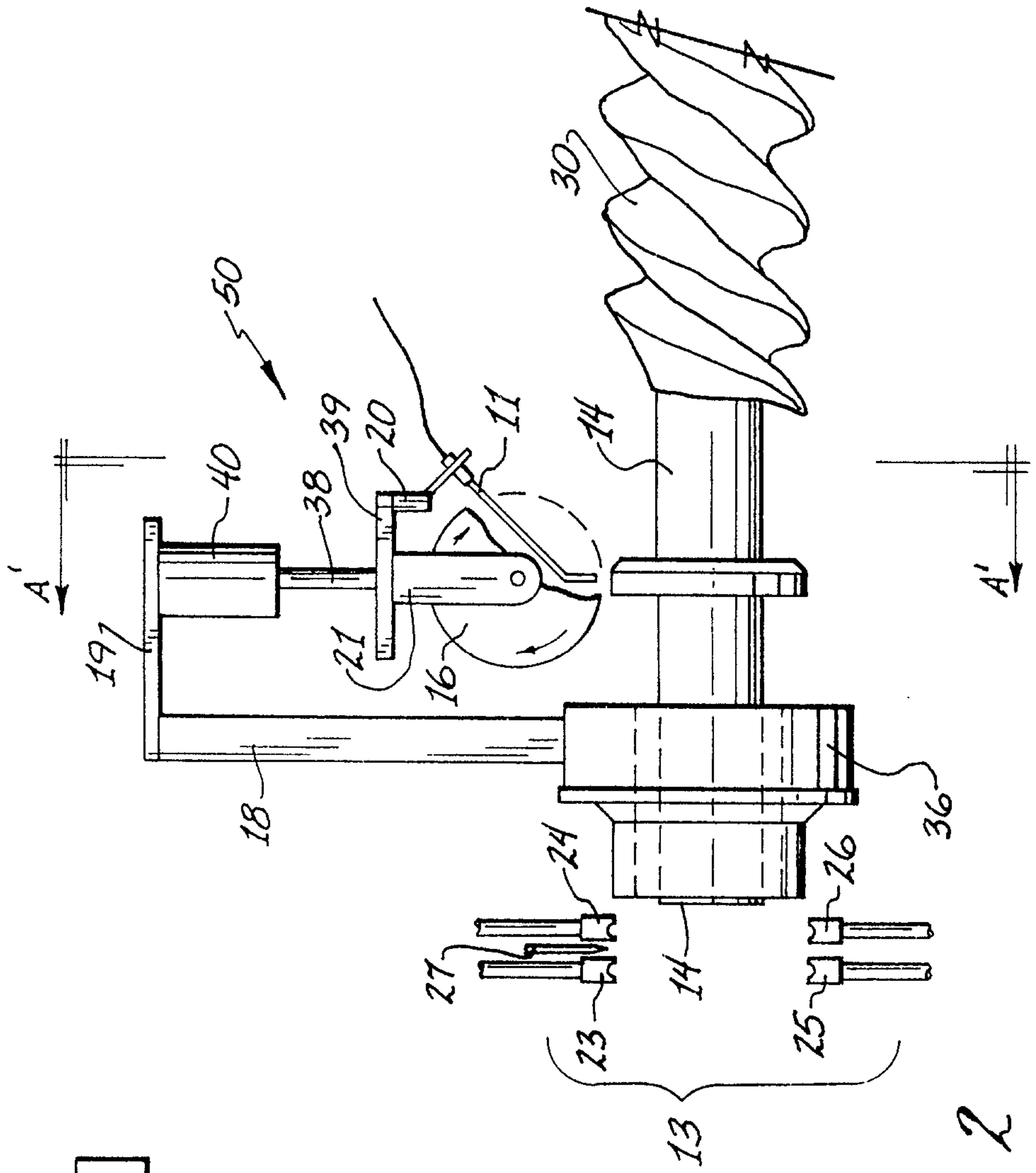
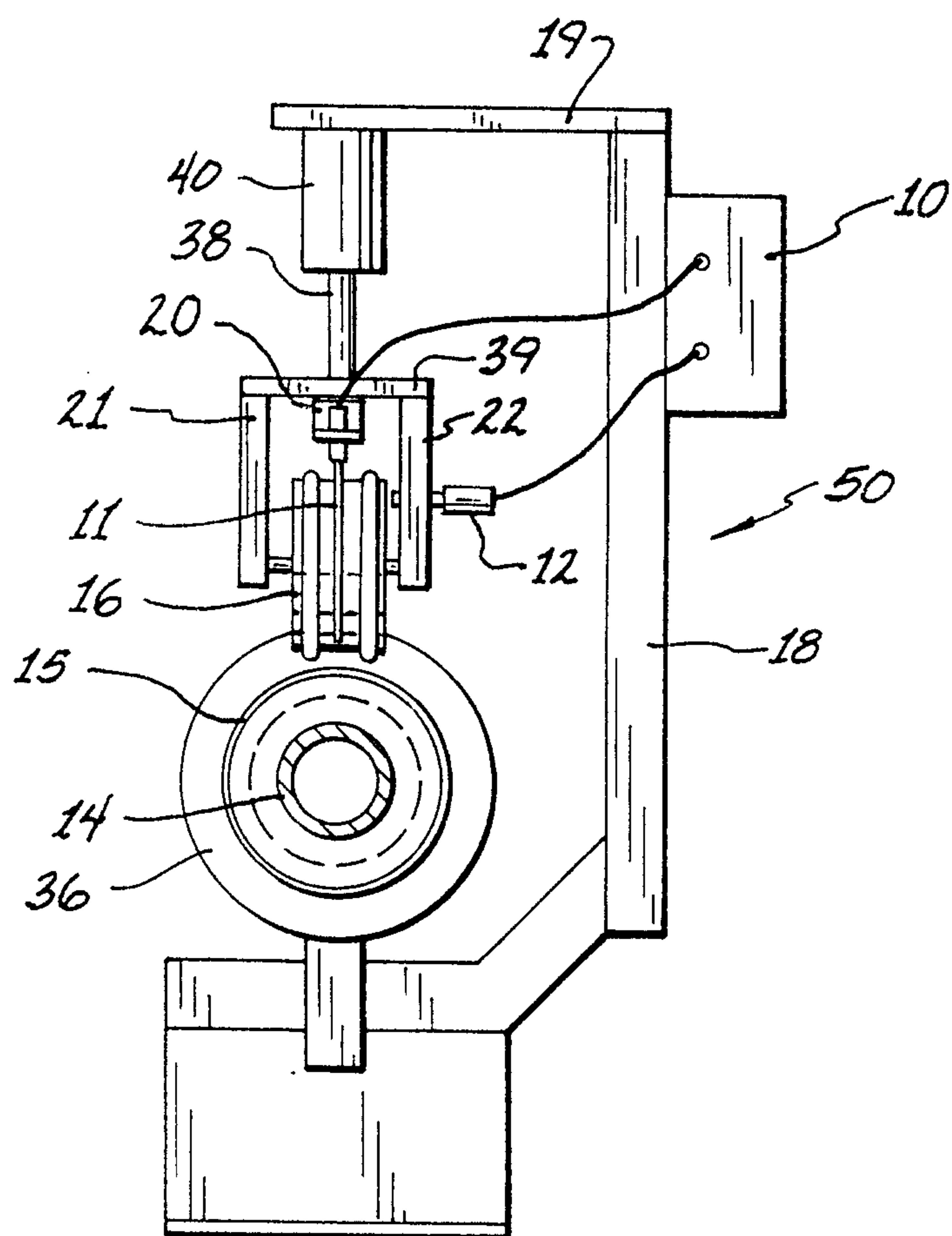


Fig. 2

*Fig. 3*

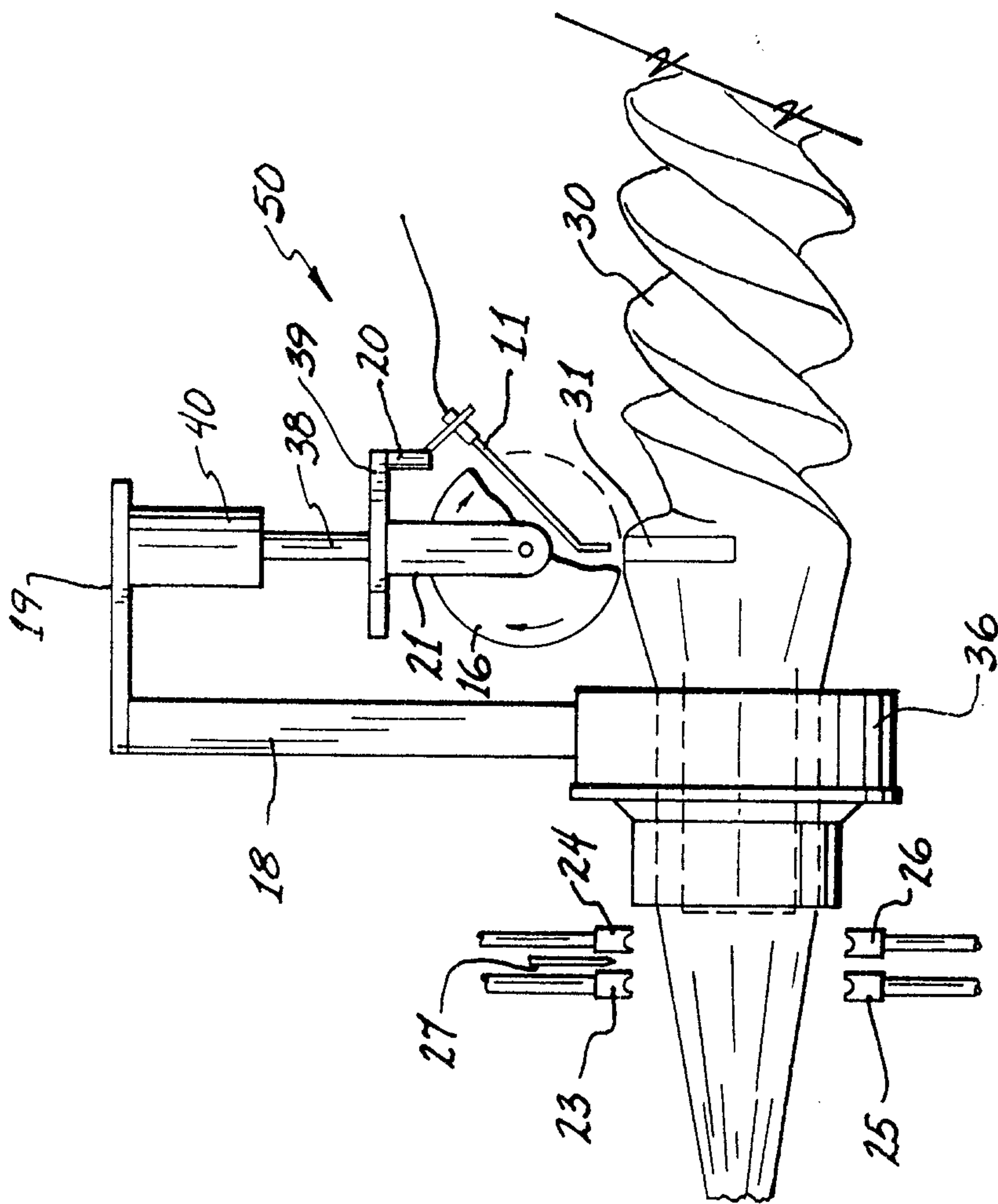


Fig. 4

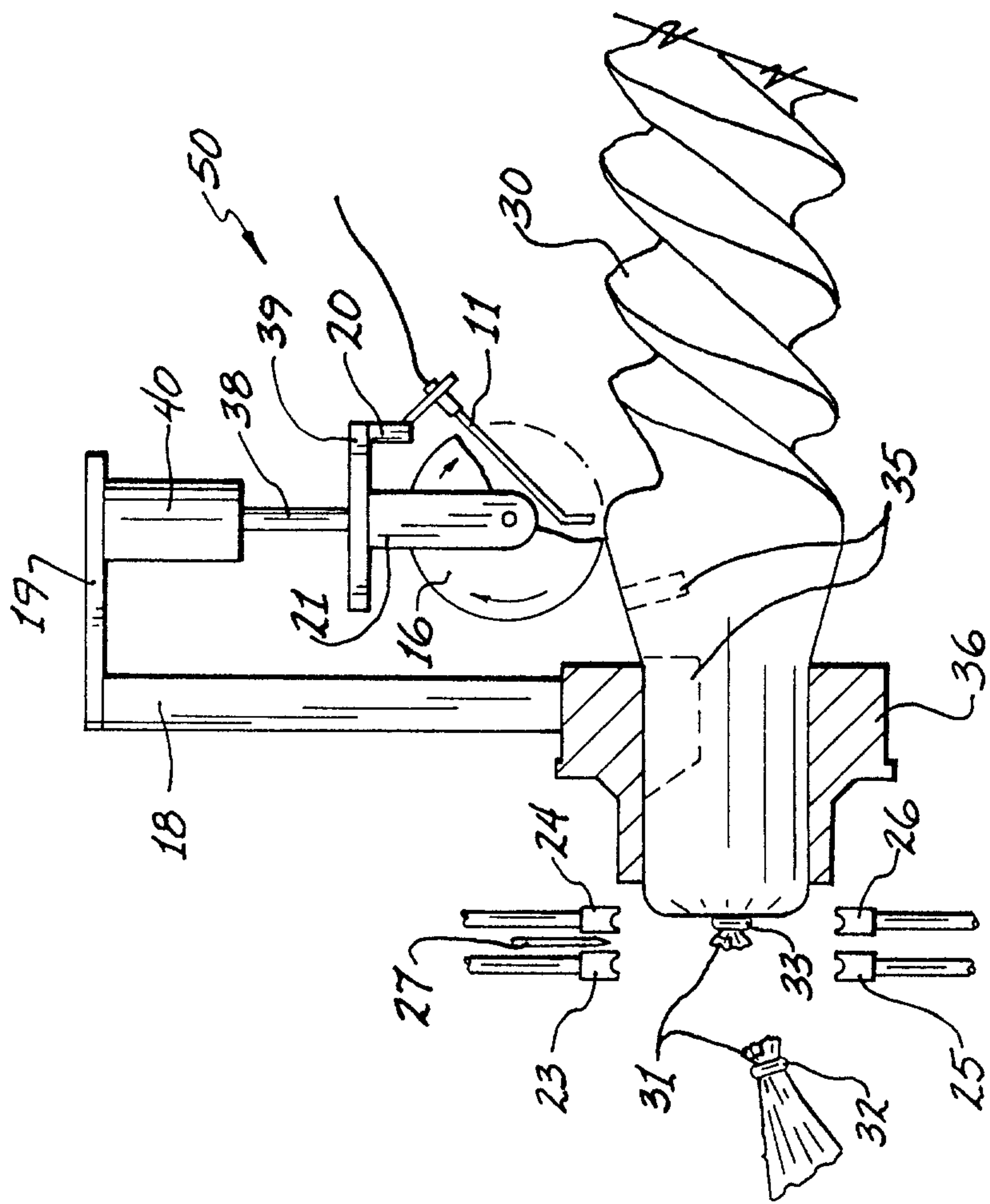


Fig. 5

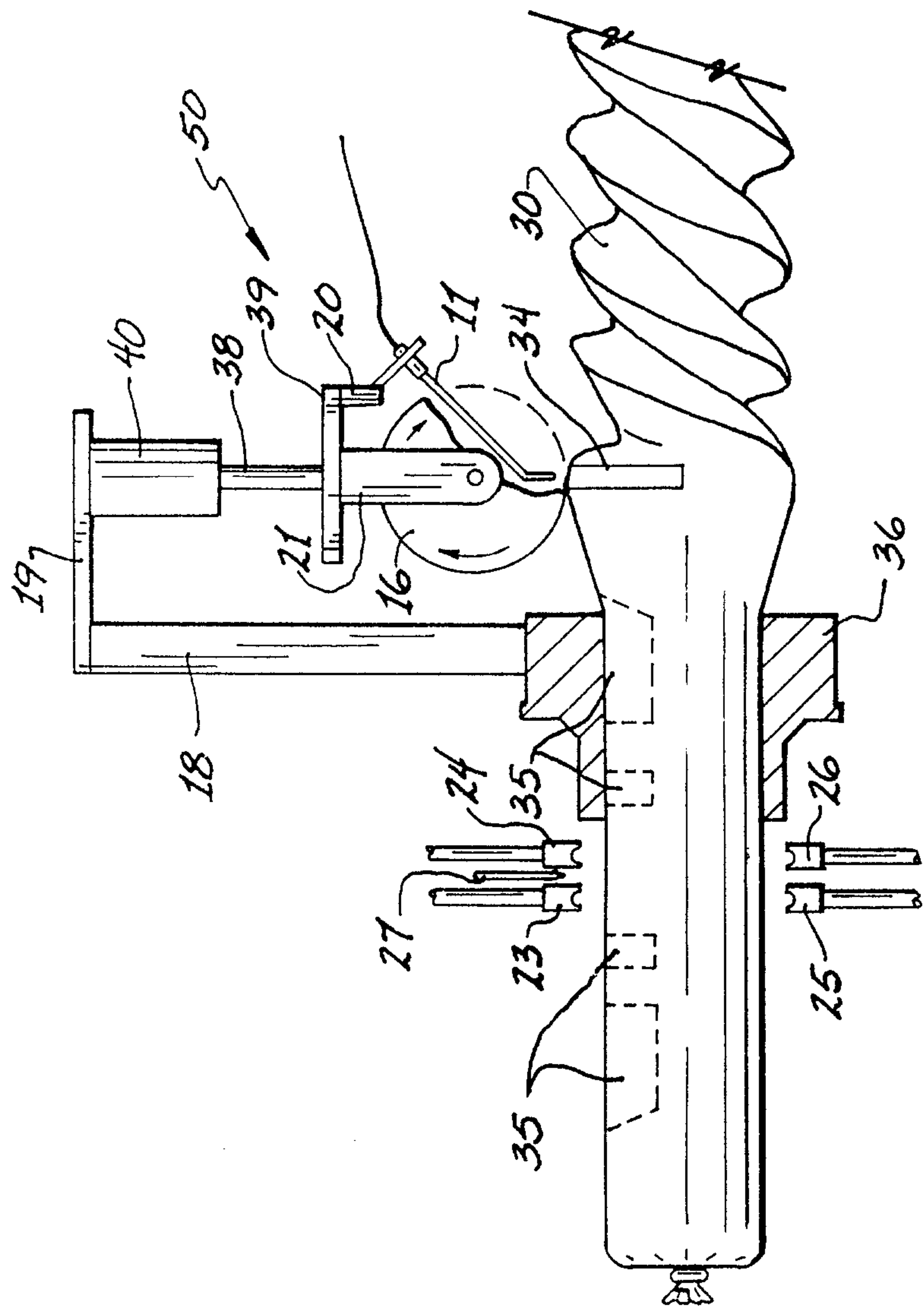


Fig. 6

