1. GENERAL DESCRIPTION

The 8810 series printer is intended for use with Toledo digital indicators, such as Models 3200, 8132, 8136 and 280 conversions. The 8810 series printer may also be used with the 150 Data Accumulator module, and the 8182 Parts Counting Scale.

FEATURES

-- 9 wire, dot matrix print head.

-- Double width printing of data.

-- Print fields of up to 72 characters, at 10 characters per inch (36 characters at 5 characters per inch).

-- Manual, Friction, or Tractor feeds.

-- Selectable voltage operation.

-- Accumulation of net, or gross weights.

-- Data input is through a data cable selected for the indicator used. (20 MA current loop, even parity, 300, 600, 1200, and 2400 baud depending on the RAM used).

-- Power input through a separate line cord.

-- Battery back-up for accumulated totals (up to 24 hours).

-- Printer dimensions are 7.73" (10.33 cm) Tall X 18.92" (47.30 cm) Wide X 16.83" (42.74 cm) Deep.

-- Data output option (20 mA current loop ASCII, at 300 or 1200 baud).

\

-- Unit meets U.L. and C.S.A. design criteria for case flammability, power input connections, fusing and grounding of all metal parts.

-- 7.2 inch print line.

2. SYSTEM DESCRIPTION

2.1 OPERATING PRINCIPLE

The printer uses a 9 wire, dot matrix print head that moves from right to left across the paper, with a maximum printing area of 7.2" (183 mm). The 9 wires are moved within guiding sleeves to impact an ink ribbon against the paper, forming characters in a 7 X 9 dot matrix arrangement. Character height is fixed at .129" (3.3 mm). Both alpah and numeric characters may be printed, with single or double width printing selectable through programming.

The 8810 series consists of 7 (seven) major blocks which follow:

2.1.1 Power Supply

Supplies and regulates all necessary voltages for printer and printer PCB'S.

2.1.2 Logic PCB

Controls printer functions, consecutive numbering and selective numbering. It also processes all incoming data from scale.

2.1.3 Motor and Printhead Driver

Contains controls for printhead solenoids and ticket feed motor.

2.1.4 Keyboard and Display PCB

Used to enter and verify all operator inputs and maintain time & date.

2.1.5 Print Head

Contains printing mechanism, ribbon and print head drive motor.

2.1.6 Photo Cell PCB

Used for timing of electronics by sensing location of print head.

2.1.7 LED and Beeper PCB

Contains LED's used to show paper consecutive numbering, accumulator status and error codes.

3. SPECIFICATIONS

3.1 ELECTRICAL & PHYSICAL

3.1.1 Environment

The printer is operable from 32 F (0 C) to + 104 F (+40 C) at relative humidities from 10% to 95% non-condensing.

3.1.2 Power Input

The printer is operable (upon selection) with 120V, 220V and 240V AC, (+10% to -15%), 50 or 60 Hz. Power consumption is about 50 watts.

3.1.3 UL & CSA Standards

Materials, components, and electrical design are intended to comply with UL and C.S.A. standards and requirements, including case flammability, power cord grounding, fusing, grounding of all metal parts, etc.

3.1.4 Appearance & Dimensions

The color of the printer is fog white with a flat black base. The dimensions are 7.73" (19.33 cm) tall X 18.92" (47.30 cm) wide X 16.83" (42.08 cm) deep. The weight is 37 lbs. (17 kg).

3.2 EXTERNAL CONTROLS

The 8810 (Ram 2 & 3) keyboard controls all customer data entries such as time and date, selective numbering, consecutive numbering, add, non-add, and accumulator functions. The keyboard also has the capability for entering gross or tare weights.

3.3 INTERNAL FUNCTIONS

The 8810 has the necessary electronics to process incoming data and print the data in a programmed sequence. The printer will also accumulate gross, or net weights in two memory storage registers.

3.4 DISPLAY FORMATS

The display is a 16 digit, 16 segment, alphanumeric, vacuum fluorescent display package.

The four LED's located at the upper right hand corner of the operators panel., These LED's are used for two functions. The first is to indicate the status of the paper, consecutive numbering, and the first and second accumulators. This function is indicated by the LED being in a steady on condition (see LED status chart). The second is to indicate an error code. This function is indicated by the LED's being in a flashing BCD format. For a complete description of the error codes, see Section 6, Part 6.

The following is a list describing the functions of the LED's when used as status indicators on the Ram 1 printer.

PAPER

When this light is on, this indicates the paper is in place and ready for printing.

E1 E2 E3

Used to display error codes. See section 6 part 6 for error code description.

The following is a list describing the functions of the LED's when used as status indicators on the Ram 2 & 3.

PAPER

When this light is ON, this indicates the paper is in place and ready for printing.

CN = 1

When ON, this light indicates the consecutive number is on 1, the next non-total print will be consecutive number of 1.

ACC-1

When ON, this light indicates accumulator # 1 is not on zero, (i.e,. there is data in storage).

ACC-2

When ON, this light indicates accumulator # 2 is not on zero (i.e,. there is data in storage).

3.5 PRINT FORMATS

Print formatting is accomplished by program switch setting at the time of initial set-up. Below are samples of print formats.

3.5.1 Single Width Print

Single width print is 7 X 9 data, 10 characters per inch.

```
000001                MAY .28.81  A  10:21
                1103. 0LB          500.0LB        603.0LB  N
SINGLE WIDTH PRINTS
000002                MAY .28.81  A  10:22
1103 0LB
500. 0LB  T
603.OLB  N
SINGLE WIDTH PRINTS
```

3.5.2 Double Width

Double width print is 14 X 9 dots, 5 characters per inch.

```
000024                 MAY .28 .81  A  10: 46
1103.0LB
500.0LB  T
603.0LB  N
DOUBLE WIDTH PRINT WEIGHT ONLY

000021                 MAY .28.81  A  10:43
1103. 0LB
500.0LB  T
603.0LB  N
DOUBLE WIDTH PRINT ALL FIELDS
```

3.5.3 Print Area

The printing area covered by the printhead is 7.2" wide, providing for a 72 character line capacity at a standard 10 characters per inch (36 character line capacity at 5 characters per inch). Vertical line spacing on multiple line prints are programmable from 1/6" minimum to 2/3" maximum in 1/12" increments.

Margins of Printable Area

LINE SPACING IS PROGRAMMABLE

3.5.4 Paper Dimensions

8810 Manual Feed

Width: 4.3" (110 mm) minimum to 10.0" (250 mm) maximum.
Length: 1.0" (25 mm) minimum
Thickness: .016 maximum four copies

8820 Friction Feed

Width: 2.5" (65 mm) minimum to 10.0" (250 mm) maximum
Length: 3.6" (90 mm) minimum
Thickness: .016 maximum four copies

8830 Tractor Feed

Width: 2.5" (65 mm) minimum to 10.0" (250 mm) maximum
Length: 3.6" (90 mm) minimum
Thickness: .016 maximum four copies

3.6 RAM CONFIGURATIONS

8810 - Printer with Manual Paper Feed

Ram 1 - 5 function keyboard
Ram 2 - Full function, plus numeric keyboard, with display and information status LED's time & date.
Ram 3 - Full function plus alpha - numeric keyboard, with display and information status LED's, time and date.

8820 - Printer with Friction Paper Feed

Ram 1 - 5 function keyboard.

Ram 2 - Full function, plus numeric keyboard, with display and information status LED's time & date.

Ram 3 - Full function, plus alpha-numeric keyboard, with display and information status LED's time & date.

8830 - Printer with Tractor Paper Feed

Ram 1 - 5 function keyboard.

Ram 2 - Full function, plus numeric keyboard, with display and information status LED's time and date.

Ram 3 - Full function, plus alpha-numeric keyboard with display and information status LED's, time & date.

4. INSTALLATION INSTRUCTIONS

NOTE: DO NOT OPERATE PRINTER WITHOUT INK RIBBON INSTALLED.

4.1 SET-UP PROCEDURE

4.1.1 Inspect the printer for loose or damaged parts. Remove the covers and check that all PCB's, interconnecting harnesses, and cables are securely connected.

4.1.2 Remove shipping tape from print head and install ink ribbon cartridge.

1). Model 8810 and 8820 Only

Do not remove the rubber sheet from the paper tray at this time, as this sheet may be used as a paper stop if required (See Set-Up procedure, Paragraph 11 for paper stop adjustment).

2). Model 8830 Only

Remove cardboard from the paper tray.

3). When installing the ink ribbon, it is important to check that the ribbon is not stuck inside the cartridge. To free the ribbon pull about 2" out of the cartridge from the right side. Also care should be taken to insure that the ribbon is properly seated in the ribbon shield and guide. See Figure 1.

FIGURE # 1

NOTE: IF INK RIBBON IS INCORRECTLY INSTALLED, DAMAGE TO THE PRINT HEAD WILL RESULT.

4). Using a feeler gauge, check the print head air gap. The nominal setting for the air gap is .030" ±.005". Adjustment to the air gap is two step process.

The first step is to insure that the print head travels across the carriage guide bar parallel to the platen. To check this, move the print head to the right end of the platen and measure the gap between the print head and the platen with the feeler gauge. Now move the print head to the left end of the platen and measure the gap. If the two measurements are the same no parallel adjustment is necessary. If the measurements are different, loosen the allen screw (A) and recheck for a parallel condition. Repeat if necessary.
The second step is the air gap adjustment, this should only be done after you are sure the print head travel is parallel to the platen (see step one). The air gap is adjusted by loosening the two philip head screws (B & C). After the screws are loose, the air gap should be adjusted to .030" ± .005" with a feeler gauge, this adjustment should be made with the ink ribbon installed. Retighten the two screws (B & C). This adjustment is a nominal one, a slight adjustment may be necessary depending on the thickness of the paper used. See Figure # 2.

FIGURE # 2

5). At this time, set all the program switches to the following positions (Rams 2 & 3 only).

SW1-1 = ON, 2 = ON, 3 = ON, 4 = ON

SW2-1 = ON, 2 = ON, 3 = ON, 4 = ON, 5 = OFF, 6 = OFF, 7 = ON,
8 = OFF, 9 = ON

SW3 - 1 = ON, 2 = ON, 3= ON, 4 = OFF, 5 = ON, 6= ON, 7 = ON, 8 = ON, 9 = ON

SW4 (Matrix Switch on Logic PCB)

Column	Set to Position	
0		1
1		1

2	1
3	1
4	1
5	1
6	1
7	2
8	2
9	7

SW5 - 1 = ON, 2 = ON, 3 = ON, 4 = ON

Keyboard Matrix Switch

Column	Set to Position
0	1
1	1
2	1
3	1
4	1
5	1
6	2
7	1
8	4
9	2

With the program switches set as listed, the printer will print all seven fields on a separate line. This format will cause the least amount of operational errors.

NOTE: IF AT ANY TIME REPEATED ERROR CODE 5 (OVERLAPPING PRINT POSITION) OR ERROR CODE 6 (LINE TO LONG) ARE ENCOUNTERED, RESET THE PROGRAM SWITCHES AS LISTED AND PROCEED WITH THE SET-UP.

6). Connect the interface cable from the indicator.

7). When installing a printer with any new or existing Model 8132 indicator, an interface Kit of Parts is required. This KOP consists of an interconnecting cable (6' or 20') interface PCB assembly, replacement harness, instructions, and all necessary hardware needed for installation. For KOP part numbers see Section 6, Preventive Maintenance.

(Model 8132 Only)

a). Remove the serial I/O harness from the indicator.

b). Using the same hardware, mount the new I/O interface PCB and connector into the existing hole in the chassis.

c). Connect the new internal harness between the interface PCB J27 and the main control PCB j-14 and J-5.

d). Connect the ground lug to the indicator chassis.

e). Install the interconnecting cable between the 8132, J-19 and the printer J-25.

8132 Wall Type

a). Remove the serial I/O harness from the indicator.

b). Assembly the interface PCB to the mounting plate with the supplied hardware.

c)

ach the mounting plate assembly to the inside wall of the 8132 with the adhesive tape supplied.

d). Connect the new internal harness between the interface PCB J-27 main control PCB j-14 and J-5.

e). Mount the new I/O harness into the existing hole in the chassis and connect the other end to the interface PCB J-26.

f). Connect the ground lug to the indicator chassis.

g). Install the interconnecting cable between the 8132, J-19 and the printer J-25.

8). Check all program switches in the indicator used to be certain of proper output (i.e.,. Gross, Tare, net, only Weight Displayed, Checksum, etc,).

NOTE: THE OUTPUT FROM THE INDICATOR SHOULD ALWAYS BE A SINGLE LINE MESSAGE.

9). Check the AC line filter/fuse holder/voltage selection device for proper voltage selection and fusing.

VOLTAGE SELECTION	PART NUMBER	REQUIRED FUSE
120 VAC	105408 00A	1.25 A Slo Blo
220-240 VAC	095100 00A	.4A Slo Blo

10). Connect power to all units.

11). Adjust if necessary the internal paper stop. The paper stop consists of the rubber mat, which was installed in the paper tray during the manufacturing process. This mat serves a dual function. First it serves as a cushion to protect the paper tray and printing assembly during shipping. The second is a paper stop. To adjust the rubber mat when used as a paper stop, simply pull the mat forward, out of the paper tray until the paper can be inserted to the desired starting point of the print. If the print format is more than one line, the top line should be used as a starting point, as the direction. After the proper setting as paper feed moves the paper in an upward direction. After the proper setting is obtained, remove the excess rubber mat with a sharp knife or razor blade. If no paper stop is required the rubber mat should be removed entirely and discarded. See Figure 3.

12). Upon power up (Rams 3.3 only) the display will read YEAR and further operation is inhibited until the date and time information is entered.

1 Time & Date Formats

Three formats are provided under program switch control. The three forms are as follows:

15 .MAY.81 H 17:34	Europe
MAY. 15.81 P 5:34	U.S.
81. MAY. 15 H 17:34	Canada

Time and Date information may be set by pushing the time//Date Set button and entering the correct data via the keyboard. The data can be entered and the next question asked by pushing the Time/Date Set button again. Continu

e this sequenc e until all Time and Date informati on is entered.

13). Selective numbering (Ram 2 & 3 only) if required, may be entered at this time. There are three banks of which one, two or all three may be used, also through programming the first, first and second or all three selective numbering banks may be cleared after each print cycle. Each back may consist of up to ten characters which may be either alpha, numeric or a combination of both.

To enter selective numbering first push the ENTER/SLN Display will read SLN1. Enter the data via the keyboard. Pushing the ENTER/SLN Display button the second time will cause the data to be entered and the display will read SLN2. Data for the second entry may be made at this time. Continue this procedure to enter the information into the third bank. Anytime the selective numbering contents or printing position is changed this sequence must be stepped through before the logic processing circuit will recognize the change.

14). Consecutive numbering may be entered by pushing the CLEAR/CN Display button and entering the desired starting number via the keyboard. To set or reset the consecutive number to one, push and hold the CN Reset button for 3 seconds until the ON = LED lights.

15). After all functions are tested and operating properly adjustments to print positioning may be made. When adjustments to the positioning of the print filed on a line are necessary, these adjustments should be made before this sequence will eliminate many set-up errors.

First print should be as shown, all fields printed on a separate line.

```
7 line print

000004                    06.JUL. 81  H 11:12
1654.OLB
500.OLB T
1154. OLB N+
1111111111
2222222222
3333333333
```

Adjustments to print positioning should be made before printing format is changed.

After positioning is complete, print format may be changed as required.

16). Install the top cover and tighten the five cover retaining screws, also install the plastic dust cover (s).

4.2 PROGRAM SWITCH SUMMARY

The programming switches are divided into two types, those used for determining operating functions, and those used for data or mode entries. The first type are miniature rocker switches and are used for such functions as: checksum and LB, add KG, inverted printing, double width printing, and battery

back-up. The second type are matrix switches and are used for determining modes such as spacing between print lines, print out formatting, and print field positioning. The functions above are not a compete list and are only used as examples.

TYPE #1

ROCKER SWITCH

TYPE #2

MATRIX SWITCH

Because of the electronic difference between the Ram 1 and Rams 2 & 3, it was necessary to use two different switch maps. Since the Ram 1 is a "Dumb Printer" its only function is to print data sent to it from the indicator used. Because of this, programming for the Ram 1 is the easier of the three rams.

NOTE: Caution should be used when programming a printer, BE SURE YOU ARE USING THE PROPER SWITCH MAP.

There are a few considerations which should be remembered when setting the program switches.

4.2.1 When only one switch is used to control one function this switch will represent the ON or OFF condition of that function. When the switch is used along with one or more switches to control function such as print positioning, the setting of these switches will be read by the microprocessor as a binary number.

4.2.2 When programming the matrix switch for print positioning (Ram 2 & 3 only) two columns are used for positioning of each filed printed. The first column increments in steps of eight positions for each step. The second column increments in steps of one position for each step. The combined settings of these two columns will give you a starting position from Position #1 to Position # 54.

NOTE: Check to see that jumper is in position shown for proper operation.

The print positioning columns are also used to remove the corresponding field from the printed data. This is done by moving both positioning columns for the field to the zero position.

EXAMPLE #1 - Print Includes SLN #1, SLN #2, SLN#3

000039 JUN ,18,81 A 03:19

1103.OLB
500.OLB T
603.0LB N+

22222 88888 4444444

EXAMPLE #2 - Same Print Except columns 4 and 5 on the Keyboard Matrix were Moved to the Zero Position.

00040 JUN .18.81 A 03:19

1103.OLB
500.0LB T
603.0LB N+

22222 88888

SLN #3 Has Been Removed from the Print.

4.3 SWITCH SETTINGS RAM 1 ("DUMB PRINTER MODE")

SW1-1 Print Starting Position 8 Spaces from Left.
SW1-2 Print Starting Position 16 Spaces from Left.
SW1-3 Print Starting Position 32 Spaces from Left.
SW1-4 Print Starting Position 4 Spaces from Left.
SW2-1 Print Starting Position 2 Spaces from Left.

SW2-2 Print Starting Position 1 Space from Left.

NOTE: For a starting point other than listed a combination of the above switches may be used.

SW2-3- Not Used

SW2-4
SW2-5 Baud Rate From Indicator Used
SW2-6
SW2-7

SW2-4	SW2-5	SW2-6	SW2-7	
OFF	ON	ON	ON	300 Baud
ON	OFF	ON	ON	600 Baud
ON	ON	OFF	ON	1200 Baud
ON	ON	ON	OFF	2400 Baud

NOTE: Do not set SW2-4, 2-5, 2-6, or 2-7 in any other combination than the four listed.

SW2-8
- Checksum
SW2-9

SW2-8	SW2-9	
OFF	ON	No Checksum required
ON	OFF	Checksum required

NOTE: Do not set SW2-8 and SW2-9 in any other combination than the two listed.

SW3-1 - Parity

ON - Even parity
OFF - Odd parity

SW3-2 - Print Orientation

With this switch in the OFF position all printer functions are inverted (i.e,. paper feed, character positioning, and printed figures).

ON - Normal Print
OFF - Inverted Print

SW3-3 - Tractor Feed

ON - Normal Print
OFF - Inverted Print

SW3-3 - Tractor Feed

ON - For manual or friction feed (8810 & 8820)

OFF - For tractor feed (8830)

NOTE: With SW3-3 ON, keyboard paper feed buttons operate in direction of arrow. With SW3-3 OFF (tractor feed only), keyboard paper feed buttons operate differently. Down arrow (V) will advance the paper upward in small increments, the up arrow ( ) will advance the paper upward in larger increments. This is done to permit top of form alignment.

SW3-4

- Last Character in Message

SW3-5

SW3-4	SW3-5	
OFF	ON	Last Character set will be EOT (End of Transmission)
ON	OFF	Last character sent will be CR (Carriage Return)

SW3-6 - Line spacing between print lines (multiple of 8)

SW3-7 - Line spacing between print lines multiple of 4)

SW3-8 - Line spacing between print lines (multiple of 2)

SW3-9 - Line spacing between print lines (multiple of 1)

NOTE: Standard line spacing is 1/12". One or a combination of the four switches will give you a spacing form 1/2" to 1-3/12" space between print lines.

SW4 (Matrix Switch) - All columns must be set to the 0 position.

SW5-1 - Battery Back-Up

ON - Battery back-up
OFF - No battery back-up

SW5-2 - Must be ON

SW5-3 - Beeper Control

ON - Beeper will sound when button is pushed
OFF - Beeper inactive

SW5-4 - Not Used

4.4 SWITCH SETTINGS RAM 2 & 3 ONLY (ACCUMULATOR PRINTER)

SW1-1

Clear selective numbers after print.

SW1-2

SW1-1	SW1-2	
ON	ON	No SN Cleared
ON	OFF	Clear SN1
OFF	ON	Clear SN1 & SN2
OFF	OFF	Clear SN1 & SN2 & SN3

SW1-3 Double Width Printing

SW1-4

SW1-3	SW1-4	
OFF	ON	Double Width Print-Weight Field Only
ON	OFF	Double Width Print- All Fields
ON	ON	Single Width Print-All Fields

NOTE: Both SW1-3 and SW1-4 may not be OFF at the same time.

SW2-1 - Print consecutive number with totals

ON - No consecutive number printed with totals
OFF - The last consecutive number printed will be printed with the totals.

SW2-2 - Output baud rate (for external device only)

ON - 300 Baud
OFF - 1200 Baud

SW2-3
SW2-4 Data Processing (external device only)
SW2-5

SW2-3	SW2-4	SW2-5	
OFF	ON	ON	Data processing with no reply message
ON	OFF	ON	Data processing with reply message
ON	ON	OFF	No Data processing

NOTE: Do not set SW2-3, SW2-4 or SW2-5 in any other combination than the three listed.

SW2-6
- Active Print Button
SW2-7

SW2-6	SW2-7	
OFF	ON	Print Buttons on Printer Active
ON	OFF	Print Button on Indicator Active

NOTE: Both print buttons may NOT be active at the same time.

SW2-8
Checksum
SW2-9

SW2-8	SW2-9	
OFF	ON	No checksum required
ON	OFF	Checksum required

NOTE: Do not set SW2-8 and SW2-9 in any other combination than the two listed.

SW3-1 - Comma for Decimal Point in Totals

ON - Decimal point used in totals
OFF - Comma used as decimal point in totals

SW3-2 - Print Orientation

With this switch in the OFF position all printer functions are inverted (i,e., paper feed character position, and printed figures).

ON - Normal print
OFF - Inverted print

SW3-2 - Print Orientation

With this switch in the OFF position all printer functions are inverted (i.e., paper feed character positioning, and printed figures).

ON - Normal print
OFF - Inverted print

SW3-3 - Tractor Feed

ON - For manual or friction feed (8810 & 8820)
OFF - For tractor feed (8830)

NOTE: With SW3-3 ON, keyboard paper feed buttons operate in direction of arrow. With SW3-3 OFF (tractor feed only), keyboard paper feed buttons operate differently. Down arrow (V) will advance the paper upward in small increments, the up arrow ( ) will advance the paper upward in larger increments. This is done to permit top of form alignment.

SW3-4
SW3-5
SW3-6 Mode of Accumulation
SW3-7
SW3-8

SW3-4	SW3-5	SW3-6	SW3-7	SW3-8	
OFF	ON	ON	ON	ON	No accumulation
ON	OFF	ON	ON	ON	Accumulation of KG only
ON	ON	OFF	ON	ON	Accumulation of LB only
ON	ON	ON	OFF	ON	Accumulation of Count only
ON	ON	ON	ON	OFF	Accumulation of Tons only

NOTE: Do not set SW3-4, 3-5, 3-6, 3-7, 3-8 in any other combination than the ones listed.

SW3-9 - Total Print Position (one line print only)

ON - Print totals in weight column
OFF - Print totals in net column

LOGIC PCB MATRIX SWITCH

COLUMN-0 Weight Field Print Position (Increments of Eight)

Position #1- Left Most Position
Position #2- 08 Positions to the Right
Position #3- 16 Positions to the Right
Position #4- 24 Positions to the right
Position #5- 32 Positions to the Right
Position #6- 40 Positions to the Right
Position #7- 48 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0 0 Positions to the Right

EXAMPLE

COLUMN- Consecutive Numbering Print Position (Increments of Eight)

Position #1- Left Most Position
Position #2- 08 Positions to the Right
Position #3- 16 Positions to the Right
Position #4- 24 Positions to the right
Position #5- 32 Positions to the Right
Position #6- 40 Positions to the Right
Position #7- 48 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0 0 Positions to the Right

EXAMPLE

COLUMN-1 Weight Field Position (Increments of One)

Position #1- 1 Position to the Right
Position #2- 2 Positions to the Right
Position #3- 3 Positions to the Right
Position #4- 4 Positions to the right
Position #5- 5 Positions to the Right
Position #6- 6 Positions to the Right
Position #7- 7 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0 0 Positions to the Right

EXAMPLE

COLUMN-3 Consecutive Numbering Print Position (Increments of One)

Position #1- 1 Position to the Right
Position #2- 2 Positions to the Right
Position #3- 3 Positions to the Right
Position #4- 4 Positions to the right
Position #5- 5 Positions to the Right
Position #6- 6 Positions to the Right
Position #7- 7 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0 0 Positions to the Right

EXAMPLE

COLUMN-4 Spacing of Print Lines (Measured from top of character of first line to top of character on second line.)

Position #1- 1/16" Spacing of Printed Lines in a Multiple Line Print
Position #2- 3/12' Spacing of Printed Lines in a Multiple Line Print
Position #3- 4/12" Spacing of Printed Lines in a Multiple Line Print
Position #4- 5/12" Spacing of Printed Lines in a Multiple Line Print
Position #5- 1/2" Spacing of Printed Lines in a Multiple Line Print
Position #6- 7/12" Spacing of Printed Lines in a Multiple Line Print
Position #7- 8/12" Spacing of Printed Lines in a Multiple Line Print
Position #8 - Not Used
Position #9- Not Used
Position #0- Minimum Spacing of Print Lines (Single Line Print Only)

EXAMPLE

Printed With column #4 in Position #1

COLUMN-5 Paper Feed After Last Line Printed

The amount of paper feed is determined by the combined switch setting of column #4 and column #5. Set column #4 to the spacing of print lines required, then see the accompanying chart for distance of paper feed available.

Number of Places to the Right of the Decimal point (Total, Subtotal, and Grand Total)

COLUMN -6 Number of Places to the Right of the Decimal Point (Total, subtotal, and Grand total).

Position #1- 1 Place to the Right of the Decimal Point
Position #2- 2 Places to the Right of the Decimal Point
Position #3- 3 Places to the Right of the Decimal Point
Position #4- 4 Places to the Right of the Decimal Point
Position #5- 5 Places to the Right of the Decimal Point
Position #6- 6 Places to the Right of the Decimal Point
Position #7- 7 Places to the Right of the Decimal Point
Position #8- Not Used
Position #9- Not Used
Position #0- No Decimal Point in Point

COLUMN -7 Gross Tare Net Print Format

Position #1- Gross, Tare, Net printed on one line, Selective numbering starts on following line
Position #2- Gross, Tare, net printed on three lines, selective numbering starts on following line
Position #3- Gross, Tare, Net printed on three lines, selective numbering prints on same three lines
Position #4- Not Used
Position #5- Not Used
Position #6- Not Used
Position #7- Not Used
Position #8- Not Used
Position #9- Not Used
Position #0- Gross, Tare, Net printed on one line, selective numbering starts on the same line

COLUMN - 8 Selective Numbering Print Format

Position #1- All fields of selective numbering are printed on one line
Position #2- All fields of selective numbering are printed on separate lines
Position #3- Not Used
Position #4- Not Used

Position #5- Not Used
Position #6- Not Used
Position #7- Not Used
Position #8- Not Used
Position #9- Not Used
Position #0- Not Used

COLUMN - 9 Consecutive numbering and Time 7 Date Print Formats

Position #1- Weight, consecutive numbering, and time only printed on first line.
Position #2- Weight, consecutive numbering, and date only printed on first line.
Position #3- Weight, consecutive numbering ,and time and date are printed on the first line.
Position #4- Consecutive numbering only, printed on first line. No time & date printed -- Weight printed on following line.
Position #5- Consecutive numbering and time only are printed on the first line. Weight printed on the following line.
Position #6- Consecutive numbering and date only are printed on the first line. Weight printed on the following line.
Position #7- Consecutive numbering, and time & date are printed on the first line. Weight printed on the following line.
Position #8- Not Used
Position #9- Not Used
Position #0- Weight and consecutive numbering are printed on the first line. No time & date are printed.

SW5-1 - Battery Back-Up

ON - Battery Back-up
OFF - No Battery Back-up

SW5-2 - Must be ON

SW5-3 - Beeper Control

ON - Beeper will sound when button is pushed
OFF - Beeper inactive

SW5-4 - Not Used

KEYBOARD MATRIX SWITCH

NOTE: After any selective numbering switch position is changed (SW-1 Column 0 through 5), the enter/SLN display key must be depressed four times. If not, the printer will not recognize the new position of the switch.

COLUMN-0 First Selective Number, Print Position (Increments of Eight) Position #1 -

Position #2- 08 Positions to the Right
Position #3- 16 Positions to the Right
Position #4- 24 Positions to the Right
Position #5- 32 Positions to the Right
Position #6- 40 Positions to the Right
Position #7- 48 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN-2 Second Selective Number, Print Position (Increments of Eight)

Position #1- Left Most Position
Position #2- 08 Positions to the Right
Position #3- 16 Positions to the Right
Position #4- 24 Positions to the Right
Position #5- 32 Positions to the Right
Position #6- 40 Positions to the Right
Position #7- 48 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN -1 First Selective Number, Print Position (Increments of One)

Position #1- 1 Position to the Right
Position #2- 2 Positions to the Right
Position #3- 3 Positions to the Right
Position #4- 4 Positions to the Right
Position #5- 5 Positions to the Right
Position #6- 6 Positions to the Right
Position #7- 7 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN -3 Second Selective Number, Print Position (Increments of One)

Position #1- 1 Position to the Right
Position #2- 2 Positions to the Right
Position #3- 3 Positions to the Right
Position #4- 4 Positions to the Right
Position #5- 5 Positions to the Right
Position #6- 6 Positions to the Right
Position #7- 7 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN-4 Third Selective Number, Print Position (Increments of Eight)

Position #1- Left Most Position
Position #2- 08 Positions to the Right
Position #3- 16 Positions to the Right
Position #4- 24 Positions to the Right
Position #5- 32 Positions to the Right
Position #6- 40 Positions to the Right
Position #7- 48 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN-5 Third Selective Number, Print Position (Increments of One)

Position #1- 1 Position to the Right
Position #2- 2 Positions to the Right
Position #3- 3 Positions to the Right
Position #4- 4 Positions to the Right
Position #5- 5 Positions to the Right
Position #6- 6 Positions to the Right
Position #7- 7 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN -6 Time and Date Print Position (Increments of Eight)

Position #1- Left Most Position
Position #2- 08 Positions to the Right
Position #3- 16 Positions to the Right
Position #4- 24 Positions to the Right
Position #5- 32 Positions to the Right
Position #6- 40 Positions to the Right
Position #7- 48 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN -7 Time & Date Print Position (Increments of One)

Position #1- 1 Position to the Right
Position #2- 2 Positions to the Right
Position #3- 3 Positions to the Right
Position #4- 4 Positions to the Right
Position #5- 5 Positions to the Right
Position #6- 6 Positions to the Right
Position #7- 7 Positions to the Right
Position #8- Not Used
Position #9- Not Used
Position #0- 0 Positions to the Right

EXAMPLE

COLUMN -8 Time Format

Position #1- 24 Hour Clock with 60 Hz. Line
Position #2- 12 Hour Clock with 50 Hz. Line
Position #3- 24 Hour Clock with 50 Hz. Line
Position #4- 12 Hour Clock with 60 Hz. Line
Position #5- Not Used
Position #6- Not Used
Position #7- Not Used
Position #8- Not Used
Position #9- Not Used
Position #0- Not Used

EXAMPLE

COLUMN - 9 Date Format

Position #1 - Day, Month, Year (15, MAY. 81)
Position #2 - Month, Day, Year (MAY. 15. 81)
Position #3- Year, Month, Day (81. MAY. 15)
Position #4- Illegal Switch Setting
Position #5- Not Used
Position #6- Not Used
Position #7- Not Used
Position #8- Not Used
Position #0- Illegal Switch Setting

5. OPERATING INSTRUCTIONS

OPERATORS PANEL

NOTE: Operators panel shown is full alphanumeric and function keyboard. Your keyboard may not look exactly like this one.

5.1 OPERATOR PANEL DESCRIPTION

Gross weights may be entered via the keyboard by first pressing the Gross Weight entry button, then entering the weight information. The printer will use the scale weight as tare and print H after the gross weight and C after the net weight. The H means entered by hand and the C means calculated.

Gross Weight Entry

Gross weights may be entered via the keyboard by first pressing the Gross Weight Entry button, than entering the weight information. The printer will use the scale weight as tare and print after the net weight. The H means entered by hand and the C means calculated.

Keyboard Entry

Used with the + or - button to print data entered via the keyboard, this data will also be entered into the first accumulator. it may also be used with the (non-add) button.

Clear/CN Display

Clear is used to remove any inaccurate display or keyboard entry.
CN Display is used to display the consecutive number for inspection or change.

Enter/ SLN Display

Used to enter, change, or display the contents of the three banks of selective numbering.

Tare Weight Entry

Tare weights may be entered via the keyboard by first pressing the Tare Weight Entry button, then entering the weight information. The printer will use the scale weight and C after the net weight. The H means entered by hand and the C means calculated.
Time/Date Set

Used to enter or recall time and date information.

Space

Used to enter a blank space in keyboard entered data.

Clear Error

Used to reset the printer after a error code is displayed and problem is corrected. This button has no effect on the accumulators.

Repeat Print

Used to repeat the last print as many times as desired. The total, sub-total and grand total prints can not be repeated.

Test Verify

Used to initiate electronic and mechanical self test. When pushed the printer will print * TEST * and error code 9 will flash on the LED's. Pressing the Clear Error button will restore the printer for operation.

CN Reset

Pushing and holding the CN Reset button will reset the consecutive number to 1. The CN LED will come on when the consecutive number is 1.

Paper Release

Used to release the paper clamp on the 8810 and 8820 models. It has no effect on the 8830 model.

(Non Add)

Used to print the input from the keyboard or the indictor without effecting the contents of either accumulator.

ST (Sub-Total)

Used to print the contents of the second accumulator, and prints a symbol after the data. This does not clear the contents of the second accumulator.

GT (Grand Total)

Used to print and clear the contents of the second accumulator. The symbol * is printed after the data.

Used to increment the paper down. Pushing the button one time will advance the paper downward continuously until button is released.

+ (Add)

Used to print the input from the indicator, and add this data to the contents of the first accumulator.

- (Subtract)

Used to print the input from the keyboard or the indicator, and subtract this data from the contents of the first accumulator.

T (Total)

Used to print the contents of the first accumulators, add this data to the second accumulators, and reset the first accumulator to zero.

Used to increment the paper up. Pushing the button one time will advance the paper up one line space. Pushing and holding the button will cause the paper to be advanced upward continuously until the button is released.

Alphanumeric Keyboard

Used to enter all alphanumeric data.

NOTE: Consult the Operator Manual (OM008810 I00) for more detailed description of instructions.

6. PREVENTIVE MAINTENANCE

The Model 8810, 8820, 8830 printers are designed to require a minimum of maintenance and service. This section provides instruction and procedures for cleaning and maintenance of these printers, as well as a troubleshooting guide to aid in repair.

6.1 REQUIRED TOOLS AND SUPPLIES

The following items are recommended for easy of maintenance and repairs. Along with the items listed common hand tools are also required.

--Volt Ohm Meter
--Feeler Gauges
--Grease (# 083012 020)
--Isopropyl Alcohol
--Cleaning Cloth
--Cotton Swabs

6.2 MAINTENANCE SCHEDULE

The frequency at which normal maintenance (cleaning, lubricating, and inspection) should be performed is dependent on usage and environmental conditions.

6.3 CLEANING

6.3.1 Clean printer mechanism thoroughly, using alcohol, and cotton swabs to remove hardened grease, ink, and dirt.

6.3.2 Remove the print head and clean the head and shaft with alcohol.

6.3.3 Install print head and check for proper clearances.

6.4 INSPECTION

6.4.1 Check for easy movement of print head on the shaft assembly.

6.4.2 Inspect the ink ribbon for proper movement. Manually operate the ribbon feed thumb screw and check for a tight or binding condition.

6.4.3 Make a visual inspection, checking for loose or missing screws, or any defect in parts.

6.4.4 Check the motor belt tension and adjust if necessary.

6.5 LUBRICATION

After cleaning the following areas should be lubricated.

NOTE: Only a small amount of lubricant, enough to create a film, is needed in each location.

6.6 TROUBLESHOOTING

Troubleshooting is limited to adjustments in the print head and voltage checks from the power supply. Voltage checks must be made at the CB connections, (See Interconnecting Diagram) the power supply assembly is enclosed and difficult assembly, if found to be defective, should be replaced as a unit (see Parts Replacement, Section 7).

Check fuses, primary power line, external circuit elements and related wiring for possible defects. Failures and malfunctions often may be traced to simple causes such as loose or improper circuit or supply connections.

Use the interconnecting diagrams as an aid to locating trouble causes. The diagram contains various circuit voltages that are average for normal operation. When measuring these voltages use instrument probes carefully to avoid causing short circuits and damaging circuit components.

Due to the complexity of the printer, malfunctions are best located by substitution. A printed circuit board or subassembly believed to be defective, may be checked by replacing it with a known good PCB, and then observing whether the problem is corrected.

Exchange PCB's, or subassemblies are available form your authorized Toledo Scale Representative. These assemblies are built or repaired at the factory where the printer was built.

A test feature is also proved to assist in troubleshooting the printer. To activate the test cycle simply push the TEST VERIFY button. The test consists of a check of program memory (ROM check), data memory (RAM check), and program switch setting, it will also print the word TEST on the paper and display an error code 9 (print error) on the LED's . Not further printing is possible until the error is cleared, this is done by pushing the Clear Error button. If any of these tests are failed the LED's will display the error detected and inhibit further printing until the error is corrected.

ERROR INDICATORS

Because of the difference in the electronics between the Ram 1 and Rams 2 & 3, it was necessary to use two different error code displays and formats. Care should be used when determining the error description. BE SURE THAT YOU ARE USING THE PROPER ERROR CODE CHART FOR THE MODEL RAM THAT YOU HAVE.

ERROR CODES RAM 1 ONLY

If an error code is detected during the print cycle, a distinct "error code" will be displayed on three of the LED's. These three LED's are used only as error indicators. Two different display formats are used on the Ram 1 printer only. The first format is used to display a fatal error. This is done by causing the LED's to flash in a binary format. The second format is used to display a non-fatal or an operational error. This is done by causing the LED's to come on in a continuously on (non - flashing) binary format.

E1=Binary #1
E2=Binary #2
E3=Binary #4

EXAMPLE #1

If the E1 and E3 LED's are flashing, this would indicate an error code 5 (print buffer overflow).

NOTE: This would be a fatal error, because the LED's are flashing.

EXAMPLE #2

If the E2 LED was in a continuously on condition, this would indicate an error code 2 (checksum error).

NOTE: This would be an operational error because the LED is continuously on (not flashing).

The following table translates the error codes into a description for the error detected.

ERROR CODE	CONDITION	LED ERROR DESCRIPTION
1		Continuous Parity Error
1		Flashing Rom Error
2		Continuous Checksum Error
2		Flashing Ram Error
3		Flashing Program Switch Error

4		Flashing Print Error
5		Flashing Print Buffer Overflow
6		Flashing 20mA Buffer Overflow
7		Flashing 20mA Loop Open

ERROR CODES RAM 2 & 3 ONLY

If an error is detected during the print cycle, a distinct "error code" is displayed on the four LED's. this is done by causing the LED's to flash in a Binary format.

Paper=Binary #1
CN=1=Binary #2
ACC 1=Binary #4
ACC 2= Binary #8

EXAMPLE #1

If the Paper and the ACC 1 LED's are flashing, this would indicate an error code 5 (overlapping print position).

EXAMPLE #2

If the ACC 1 and the ACC 2 LED's are flashing, this would indicate an error code 12, (20mA buffer full or no units symbol).

The following table translates the error code into a description for the error detected.

ERROR CODE	ERROR DESCRIPTION
1	ROM Error
2	RAM Error
3	Open Program Matrix
4	Illegal Switch Settings
5	Overlapping Print Positions
6	Line Too Long
7	Accumulator Addition Error
8	Checksum Error
9	Print Error
10	Motor time Out Error
11	20mA Loop Open or Checksum Error
12	20mA Buffer Full or no Units Symbol
13	Keyboard Entry Error
14	Display Communication Failure
15	Data Processing Error

6.7 INPUT CONNECTIONS

8810 SERIES REAR PANEL

INTERCONNECTING CABLES

MODEL	TYPE	LENGTH	PART NUMBERS
8132	Desk	6'	111502 00A
8132	Desk	20'	111503 00A
8132	Wall	6'	114031 00A
8132	Wall	20'	114032 00A
8136	Desk	6'	114033 00A
8136	Desk	20'	114034 00A
8136	Wall	6'	114035 00A
8136	Wall	20'	114036 00A
8182/150	----	6'	113209 00A
8182/150	----	20'	113221 00A
8185	Wall	6'	113224 00A
8185	Wall	20'	113249 00A

8132 TO PRINTER INTERFACE KOP

Indicator	Type	Length	Part Number
8132	Desk	6'	114748 00A
8132	Desk	20'	114749 00A
8132	Wall	6'	114750 00A
8132	Wall	20'	114751 00A

7. PARTS REPLACEMENT

7.1 SERVICE KIT OF PARTS -082116 020

The "FIRST MAN" Kit of Parts for the 8810 series printer consists of the following parts:

Qty.	Part Number	Description
1	E111382 00A	Main PCB
1	111384 00A	Display Driver PCB
1	111386 00A	Motor Driver PCB
1	B111388 00A	Power Supply PCB
1	B111390 00A	Sensor PCB
1	A111392 00A	Beeper PCB
1	111394 00A	Display PCB
5	095957 00A	Fuse 3A Slo Blo
5	105408 00A	Fuse 1.25 A Slo Blo

Other items that will aid in the servicing of your Toledo printer are listed below.

Part Number	Description
085481 020	Triplett 530 Volt-Ohm Meter
112736 00A	Static Bag 8" X 10"
112737 00A	Static Bag 12" X 16"
086662 020	Grease 3 1/2 Oz. Tube
PC008810 I00	Parts Catalog

7.2 REPLACEMENT PROCEDURES

This section was written as a guide to aid in the replacement of the power supply and print head assembly.

7.1.1 Power Supply Assembly Replacement

1). Remove power form the printer.

2). Remove the top cover. this is done by removing the five retaining screws located on the under side of the printer. See Figure 4. Disconnect the key-board and LED display harness, also remove ground lug wire.

3). Carefully turn the printer on its right side and remove the four screws holding the base cover on. See Figure 4.

4). With the printer still on its side disconnect all harness leading to the power supply.

5). Carefully turn the printer assembly upside down and lay it on a flat surface.

6). Remove the two philip head screws located on the right side plate, also remove the two philip head screws located on the left side plate.
See Figure 5.

7). At this time the power supply assembly may be removed.

8). Remove all wire harnesses from the defective supply and install then on the new supply.

9). Reverse this procedure to install the new power supply assembly.

7.1.2 Print Head Replacement

1). Remove power from the printer.

2). Remove the top cover. This is done by removing the five retaining screws located on the underside of the printer. See Figure 4. Disconnect the keyboard and LED display harness, also remove ground lug wire.

3). Carefully turn the printer on its right side and remove the four screws holding the base cover on. See Figure 4.

4). Place the printing assembly upright on a flat surface and remove the ink carriage.

5). Move the print carriage tot he left edge of the guide bars. Remove the two wire clamps located on the carriage and center plate assembly. See Figure 6.

6). Remove the two philip screws holding the print head to the carriage assembly. See Figure 6.

7). Remove the ribbon cable from the driver PCB and feed cable up to the carriage assembly. See Figure 6.

8). Remove the print head.

9). Reverse this procedure to install the new print head.

FIGURE #4

FIGURE #5

FIGURE #6

INTRODUCTION

This publication is provided solely as a guide for individuals who have received Toledo Technical Training in Servicing the described Toledo product.

Information regarding Toledo Technical Training may be obtained by writing to :

Reliance Electric

Industrial Training

24701 Euclid Avenue

Cleveland, Ohio 44117

Phone: 800-321-2795

Ohio Customers: 800-362-7907

DUST COVERS

REF	PART NUMBER	DESCRIPTION	QTY.
1	103867 00A	Line Cord	1
2	111209 00A	Rear Dust Cover Model 8810 & 8820 Only	1
3	111493 00A	Paper Guide	1
4	A111208 00A	Front Dust Cover Model 8810 & 8820 Only	1
5	A111442 00A	Dust Cover - Model 8830 Only*	1
6	111367 00A	Grommet	4
7	111368 00A	Plunger	4
8	A111207 00A	Top cover (Front Mount Keyboard)***	
		Top Cover (Rear Mount Keyboard)**	1
9	B111207 00A		1

* Not Shown.

** When changing from front mount keyboard to rear mount keyboard, the top cover must also be changed.

*** Front mount keyboard, top cover and bottom cover assembly no longer available.

INK RIBBON

REF	PART NUMBER	DESCRIPTION	QTY.
1	107300 00A	Ribbon Cartridge-Black	1
2	B111286 00A	Power Supply Assembly	1
3	103525 00A	Fuse, 1.25A Slo Blo	1
4	104935 00A		
5			

.BASE PLATE

REF	PART NUMBER	DESCRIPTION	QTY.
1	R01077 130	Screw, 1/4 -20 X 1/2	4
2	000564 050	Flat Washer, 1/4	9
3	113973 00A	Label, FCC	1
4	111339 00A	Cover Assembly, Bottom and Corner (FMK)*	1
5	A111339 00A	Cover Assembly, Bottom and Corner (RMK)	1
6	111337 00A	Bumper Foot Adhesive	4
7	R02657 00A	Screw 1/4 - 20 X 2 -1/4	5

* Front mount keyboard, top cover and bottom cover assembly no longer available.

DISPLAY PCB

REF	PART NUMBER	DESCRIPTION	QTY.

1	R01611 050	Nut, Hex 8-32	7
2	033204 050	Spacer, #8 M 1/4 Ram 2 & 3	4
3	108178 00A	Laminar Conn., 40 Pos. Ram 2 & 3	1
4	111384 00A	PCB Assembly, Disp. Driver Ram 2 & 3	1
5	111394 00A	PCB Assembly, Display Ram 2 & 3	1
6	111396 00A	Disp. Driver Harness Ram 2 & 3	1

KEYBOARD ASSEMBLY

(1 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY.
1	114048 00A	Switch Map Accum. Ram 2 & 3	1
2	114047 00A	Switch Map Accum. Ram 2 & 3	1
3	114046 00A	Switch Map Ram 1	1
4	111397 00A	LED Harness	1
5	030484 050	Spacer, #8 X 3/8	3
6	R01611 050	Nut, Hex 8-32	3
7	111346 00A	Round Spacer, #8 X 3/8 Ram 2 & 3	4
8	111481 00A	Keyboard Clip, Upper	1
9	R 02865 00A	Screw, 6-32 X 1/4	10

(2 of 2)

REF	PART NUMBER	DESCRIPTION	QTY.
10	11480 00A	Keyboard Clip, Middle	2
11	0255150 050	Spacer, #8 X 5/8 Ram 2 & 3	2
12	111472 00A	KBD Assb'y. Ram 1 (RMK)*	1
13	111470 00A	KBD Assb'y.- Ram 2 (RMK)*	1
14	111468 00A	KBD Assb'y. -Ram 3 (RMK)*	1
15	111457 00A	KBD Assb'y. - Ram 1 (FMK)**	1
16	111455 00	KBD Assb'y -Ram 2 (FMK)**	1
17	111453 00A	KBD Assb'y - Ram 3 (FMK) **	1
18	111479 00A	Keyboard Clip, Lower	1
19	A111392 00A	PCB Assb'y., LED	1
20	114039 00A	Front Panel Gasket	1

* When changing form front mount keyboard to rear mount keyboard, the top cover must also be changed.

** Front mount keyboard, top cover and bottom cover assembly no longer available.

DRIVE MOTOR

REF	PART NUMBER	DESCRIPTION	QTY.
1	095915 00A	Cable Tie	2
2	103889 00A	Tywrap Mount (Adhesive)	1
3	111331 00A	Motor Assembly	1
4	111220 00A	Standoff	4
5	R02055 130	Screw, 6-32 X 1/2	4
6	R01611 050	Nut, Hex 8-32	4
7	A111386 00A	PCB Assembly Print Head & Motor Driver	1
8	B111286 00A	Power Supply Assembly	1
9	095223 00A	7400 uf Cap	
10	102302 00A	5800 uf Cap	

DRIVE HARNESS

REF	PART NUMBER	DESCRIPTION	QTY.
1	111293 00A	Print Head Assembly	1
2	R02502 00A	Screw, 8-32 X 1/4	4
3	A111403 00A	Motor & Print Head Power Harness	1
4	111399 00A	Motor & Print Head Drive Harness	1
5	R02638 00A	U-Clip*	1
6	A11462 00A	Printhead Nose Skid	
7	111288 00A	Clamp	1
8	R02244 00A	Screw	1

* Not Shown

CARRIDGE ASSEMBLY

(1 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY.
1	R02230 00A	Screw, 6-32 X 1/4	4
2	114053 00A	Bumper, Carriage	1
3	048241 020	Spring	2
4	111219 00A	Carriage Guide	1
5	111290 00A	Carriage Assembly	1
6	E111382 00A	PCB Assb'y,. Main Logic	1
7	111402 00A	Main Logic Power Harness	1
8	111451 00A	Ground Harness	1
9	111404 00A	Display Power Harness Ram 2 & 3	1

(2 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY

10	R02055 130	Screw, 6-32 X 1/2	1
11	R00813 050	Nut, Hex 6-32	1
12	R02502 00A	Screw, 8-32 X 1/4	6
13	111251 00A	Side Plt., Upper Left	1
14	R01089 050	Screw, 8-32 X 3/8	3
15	R00589 210	Washer, #8 Lock	4
16	111292 00A	Cable Assb'y., Ribbon Drive	2
17	111369 00A	Vinyl Cap, .281 ID X 1/2	1
18	111345 00A	Hex Stud, 8-32 X 1/2	1
19	111288 00A	Upper Harness Clamp	1
20	R02655 00A	Screw	1

PAPER DETECTOR

REF	PART NUMBER	DESCRIPTION	QTY.
1	A111258 00A	Locking Screw	1
2	R02480 00A	E-ring, 3/16 Dia.	1
3	R01765 050	Square Nut, 10-32	1
4	R02670 00A	Screw, 4 X 1/4 Plastite	1
5	111492 00A	Paper Chute Assembly	1
6	111227 00A	Photo, Paper Harness	1
7	R02101 050	Screw, 4-40 X 3/8	1
8	R01678 050	Hex Nut, 4-40	1
9	074121 050	Flat Washer, # 4	1
10	111495 00A	Detector Mtg. Plate	1

PRINT HEAD DRIVE BELT
(1 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY.
1	R01771 050	Lockwahser, 36	4
2	R01674 050	Screw, 6-32 X 3/8	4
3	111340 00A	Drive Belt Shield	1
4	R01611 050	Nut, Hex 8-32 X 3/8	4
5	R02473 00A	Screw, 8-32 X 3/8	1
6	037346 020	Spring	1
7	111295 00A	Release Lever Assembly	1
8	R01659 020	Screw, 8-32 X 3/16	1
9	111332 00A	Pulley Assembly - Carr. Drive	1
10	000564 050	Flat Washer, !/4	2
11	R00983 00A	Washer, 1/4 Lock	2
12	R00434 050	Nut, Hex 1/4, -20	2
13	111238 00A	Timing Belt, 1/4 75 T	1

(2 of 2)

REF	PART NUMBER	DESCRIPTION	QTY.

14	111237 00A	Belt 1/2" 320 T	1
15	111288 00A	Cable Clamp	1
16	R02244 00A	Self Tap Screw, 6-32	1
17	B111303 00A	Paper Tensioner Assembly	1
18	111770 00A	Static Awareness Label	1
19	111489 00A	Paper Stop	1
20	B111244 00A	Paper Tray Assb.'y - Manual	1
21	A111419 00A	Insulator, Logic PCB	1
22	111333 00A	Pulley Assb'y. - Carr. ID.	1
23	B111390 00A	PCB Assb'y,. sensor	1
24	111219 00A	Carriage guide	1
25	111398 00A	Head Sensor harness	1
26	111227 00A	Photo Cutoff Harness	1

FRAME ASSEMBLY

REF	PART NUMBER	DESCRIPTION	QTY.
1	A111252 00A	Slide Plate, Low Left	1
2	111255 00A	Middle plate	1
3	111317 00A	Printbar	1
4	R01611 050	Nut, Hex 8-32	3
5	111441 00A	Insulator, Sensor PCB	1
6	111379 00A	Cover Plate	1
7	R02473 00A	Screw, 8-32 X 3/8	1
8	111256 00A	Angle (Papertray)	1
9	R02244 00A	Self Tap, Screw 6-32	1
10	111353 00A	PCB Standoff	6
11	R02672 00A	Hole Plug, 1 5/8	1
12	111254 00A	Front Plate	1

SIDE PLATE

REF	PART NUMBER	DESCRIPTION	QTY
1	111216 00A	8-32 Connector nut	16
2	111217 00A	Connector Collar	16
3	R02644 00A	Screw, 8-32 X 5/8	16
4	111222 00A	bushing (Delrin)	2
5	R02670 00A	Screw, 4 X 1/4 Plastite	4
6	R00844 130	Screw, 8-32 X 3/8	4
7	D111253 00A	side Plate, Right	1
8	111347 00A	Hex Standoff, 8-32	4
9	R02473 00A	Screw, 8-32 X 3/8	4
10	111406 00A	Resistor Harness	1
11	R01391 050	Screw, 2-56 X 1/2	8
12	022266 050	Hex Nut, 2-56	8
13	111316 00A	Tension Assb.	1
14	R02502 00A	Screw	2

Listed below are additional parts for the 8810-20-30 printer. Add this information to our 8810-20-30 Parts Catalog, PC 008810 I01.

MODEL 8820/30

PARTS COMMON TO 8820 ONLY

POWER SUPPLY PART NUMBERS

REF	PART NUMBER	DESCRIPTION	QTY.
1	B111388 00A	Power Supply PCB	1
2	111421 00A	PCB Insulator	1
3	095223 00A	Capacitor 7400 uf 15V	1
4	102302 00A	Capacitor 5800 uf 40V	2
5	111409 00A	Transformer Assembly	1
6	103525 00A	Regulator LM317K	1
7	P00549 020	Insulator	2
8	114045 00A	Regulator Cover	2
9	104935 00A	Regulator LM323K	1
10	105408 00A	Fuse 1.25A Slo-Blo	1
11	111400 00A	Serial I/O Harness	1
12	111465 00A	Toggle Switch	1
13	093943 00A	Bridge Rectifier	2
14	095957 00A	Fuse 3A Slo-Blo	2
15	111410 00A	Line Filter Assembly	1

PAPER FEED MOTOR

REF	PART NUMBER	DESCRIPTION	QTY.
1	A111243 00A	Paper Tray Assb'y - Friction Feed	1
2	R02502 00A	Screw, 8-32 X 1/4	4
3	111444 00A	Hex Post, 6-32 X 1.44	3
4	R01674 050	Screw, 6-32 X 3/8	3
5	R01771 050	Lockwasher, #6	3
6	111331 00A	Motor Assembly	1
7	R02055 130	Screw, 6-32 X 1/2	3
8	111239 00A	timing belt, 1/4 114 T	1
9	111231 00A	Timing Pulley-90/Hub	1
10	R01997 050	Set Screw, 6-32 X 3/16	2
11	A111403 00A	Motor & PHD Pwr. Harness	1
12	111399 00A	Motor & PHD Drive Harness	1
13	B111303 00A	Paper Rollers	1

PAPER ADVANCE ROLLERS

REF	PART NUMBER	DESCRIPTION	QTY.

1	A111252 00A	Side Plate, Low, Left	1
2	111255 00A	Middle Plate	1
3	111317 00A	Printbar	1
4	111441 00A	Insulator, Sensor PCB	1
5	R01611 050	Nut, Hex 8-32	3
6	111261 00A	Roller Assb'y., Pap. Adv.	1
7	R01312 020	Retainer, Ring 1/4	2
8	111379 00A	Cover Plate	1
9	R02473 00A	Screw, 8-32 X 3/8	1
10	111353 00A	PCB Standoff	6
11	111256 00A	Angle (Papertray)	1
12	R02244 00A	Self Tap, Screw 6-32	1
13	111254 00A	Front Plate	1
14	R02672 00A	Hole Plug, 1 5/8 Blk.	1

BELT TENSIONER

REF	PART NUMBER	DESCRIPTION	QTY.
1	111216 00A	8-32 Connector Nut	16
2	111217 00A	Connector Collar	16
3	R02644 00A	Screw, 8-32 X 5/8	16
4	111222 00A	Bushing (Derlin)	4
5	R02670 00A	Screw, 4 X 1/4 Plastite	8
6	R00844 130	Screw, 8-32 X 3/8	4
7	R02502 00A	Screw, 8-32 X 1/4	2
8	111316 00A	Belt Tensioner Assb'y.	1
9	D111253 00A	Side Plate, Right	1
10	111347 00A	Hex Standoff, 8-32	4
11	R02473 00A	Screw, 8-32 X 3/8	4
12	111406 00A	Resistor Harness	1
13	R01391 050	Screw, 2-56 X 1/2	8
14	022266 050	Hex Nut, 2-56	8

BELT TENSIONER

REF	PART NUMBER	DESCRIPTION	QTY.
1	111216 00A	8-32 Connector Nut	16
2	111217 00A	Connector Collar	16
3	R02644 00A	Screw, 8-32 X 5/8	16
4	111222 00A	Bushing (Delrin)	4
5	R0267 00A	Screw, 4 X 1/4 Plastite	8
6	R00844 130	Screw, 8-32 X 3/8	4
7	R02502 00A	Screw, 8-32 X 1/4	2
8	111316 00A	Belt Tensioner Assb'y.	1
9	D111253 00A	Side Plate, Right	1
10	111347 00A	Hex Standoff, 8-32	4
11	R02473 00A	Screw, 8-32 C 3/8	4
12	111406 00A	Resistor Harness	1
13	R01391 050	Screw, 2-56 X 1/2	8
14	0222696 050	Hex Nut, 2-56	8

PARTS COMMON TO 8830 ONLY

PAPER FEED MOTOR

REF	PART NUMBER	DESCRIPTION	QTY.

1	111399 00A	Motor & PHD Drive Harness	1
2	111231 00A	Timing Pulley - 90/ Hub	1
3	111240 00A	Timing Belt, 1/4 120 T	1
3.5	107793 00A	Drive Belt (Old Style) (Roller toward front)	1
4	R01997 050	Set Screw, 6-32 X 3/16	2
5	111331 00A	Motor Assembly	1
6	R02055 130	Screw, 6-32 X 1/2	3
7	A111403 00A	Motor & PHD Pwr. Harness	1

PAPER TRAY

REF	PART NUMBER	DESCRIPTION	QTY.
1	A111412 00A	Guide Chute Assembly	1
2	R00844 130	Screw, 8-32 X 3/8	2
3	B1411244 130	Papertray Assb'y.	1
4	`114054 00A	Paper Detector	1
5	B111344 00A	Paper Guide Box	1
6	073954 130	8-32 X 5/10 screw	2
7	00786 050	#8 Flat Wash	4

PAPER FEED DRIVE

(1 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY.
1	111255 00A	Middle Plate	1
2	A111252 00A	Side Plate, Low Left	1
3	Not Available	Not Available	N.A.
4	117412 00A	Tractor Assb'y. (LH)	1
5	111275 00A	Tractor Idler Shaft	1
6	R02706 00A	E-Ring, 5/16 Shaft	2
7	111274 00A	Tractor Drive Shaft	1
8	R01312 020	Retainer, Ring 1/4	1
9	Not Available	Not Available	N.A.
10	117411 00A	Tractor Assembly (RH)	1
11	111352 00A	Detector Mtg. Brkt.	1
12	R02502 00A	Screw, 8-32 X 1/4	2

(2 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY.

13	R02101 050	Screw, 4-40 X 3/8	1
14	R01678 050	Hex Nut, 4-40	1
15	074121 050	Flat washer, #4	1
16	111227 00A	Photo - Cutoff Harness	1
17	111353 00A	PCB standoff, 1/4	6
18	111256 00A	Angle (Papertray)	1
19	R02244 00A	Self Tap, Screw 6-32	1
20	111441 00A	Insulator, Sensor PCB	1
21	R02672 00A	Hole Plug, 1 - 5/8	1
22	R01611 050	Nut, Hex 8-32	3
23	111317 00A	Printbar	1
24	111254 00A	Front Plate	1

BELT TENSIONER

(1 OP 2)

REF	PART NUMBER	DESCRIPTION	QTY.
1	111216 00A	8-32 Connector Nut	16
2	111217 00A	Connector Collar	16
3	R02644 00A	Screw, 8-32 X 5/8	16
4	D111253 00A	Side Plate, Right	1
5	R00844 130	Screw, 8-32 X 3/8	4
6	111222 00A	Bushing (Delrin)	2
7	R02670 00A	Screw, 4 X 1/4 Plastite	4
8	R02502 00A	Screw, 8-32 X 1/4	2
9	111444 00A	Hex Post, 6-32 X 1.44	3

(2 OF 2)

REF	PART NUMBER	DESCRIPTION	QTY.
10	R01674 050	Screw, 6-32 X 3/8	3
11	R01771 050	Lockwasher, #6	3
12	111316 00A	Belt Tensioner Assb'y.	1
13	111347 00A	Hex Standoff, 8-32	4
14	R02473 00A	Screw, 8-32 X 3/8	4
15	111406 00A	Resistor Harness	1
16	R01391 050	Screw, 2-56 X 1/2	8
17	022266 050	Hex Nut, 2-56	8

81312 DESK INTERFACE K.O.P. 6' CABLE

PART NUMBER - 114748 00A

Part Number	Description	Qty.

113757 00A	Interface PCB	1
113758 00A	Internal Harness	1
111502 00A	Interconnecting Cable (6[')	1
114970	Method of Assembly	

8132 DESK INTERFACE K.O.P. 20' CABLE
PART NUMBER - 114749 00A

Part Number	Description	Qty.
113757 00A	Interface PCB	1
113758 00A	Internal Harness	1
111503 00A	Interconnecting Cable (20')	1
114970	Method of Assembly	

8132 WALL INTERFACE K.O.P. 6' CABLE
PART NUMBER - 114750 00A

Part Number	Description	Qty.
R01678 050	Nut, Hex 4-40	12
R01679 050	Lockwasher	4
R02296 00A	Screw 4-40 X 5/8	4
113757 00A	Interface PCB	1
114972 00A	Harness	1
1174753 00A	Harness	1
114279 00A	Mounting Plate	1
274480	Tape	Suff.
114031 00A	Interconnecting Cable (6')	1
114970	Method of Assembly	

8132 WALL INTERFACE K.O.P. 20' CABLE
PART NUMBER - 114751 00A

Part Number	Description	Qty.
R01678 050	Nut, Hex 4-40	12
R01679 050	Lockwasher	4
R02296 00A	Screw 4-40 X 5/8	4
113757 00A	Interface PCB	1
114972 00A	Harness	1
114753 00A	Harness	1
114279 00A	Mounting Plate	1
274480	Tape	Suff.
114032 00A	Interconnecting Cable (20')	1
114970	Method of Assembly	

8810 8820 WALL MOUNT K.O.P.,
PART NUMBER - 111380 00A

Part Number	Description	Qty.

111485 00A	Wall Mount Bracket	2
111483 00A	Wall Mount Foot	4
111484 00A	mounting Template	1