150

Technical Manual
and
Parts Catalog

INTRODUCTION

This publication is provided solely as a guide for individuals who have received METTLER TOLEDO Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

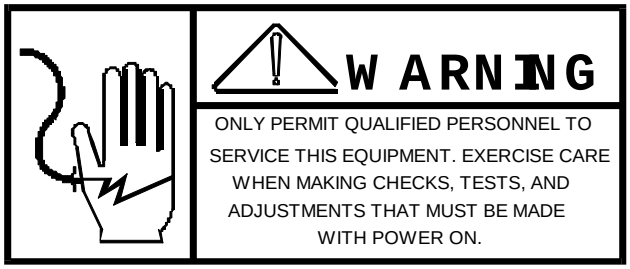
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.

- **ALWAYS REMOVE POWER** and wait at least 30 seconds **BEFORE** connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.

- **ALWAYS** take proper precautions when handling static sensitive devices.



- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

- **SAVE** this manual for future reference.

- **DO NOT** allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

- **ALWAYS DISCONNECT** this equipment from the power source before servicing.

- **CALL** METTLER TOLEDO for parts, information, and service.

1. GENERAL DESCRIPTION

The Model 150 Data Accumulator Accessory for the 8132 Digital Indicator provides data storage and recall, weight accumulation, and data output formatting for shipping and receiving applications like grain elevators, refuse dumps, scrap yards, coal yards, or quarries. An alphanumeric keyboard and display, as well as a printer output is provided for ease of reading and record keeping. A battery back-up memory retains stored data during power failures.

FEATURES

--Two modes of operation.

1. Receiving Scale, Gross weight storage and recall.
2. Shipping Scale, Tare weight storage and recall.

--Memory storage and recall of up to 100 Gross or Tare weights, addressed by a 2 digit location code.

--Up to 43 sixteen character commodity descriptions can be stored (in ship only or receive only mode) and recalled by a two character commodity code.

--Time and Date generation in three formats (USA, Canada, and European).

--16 Character alphanumeric display.

--Total accumulation clearing under keylock control.

--Six digit conversion factor.

--Leading zero suppression in all weight values.

2. SYSTEM DESCRIPTION

The Model 150 Accumulator Accessory consists of five major blocks which follow:

2.1 POWER SUPPLY

Supplies AC and DC voltages for the Logic, I/O and Display PCB's.

2.2 LOGIC PCB

Contains three serial I/O ports assigned to the following tasks:

1. Keyboard and Display PCB communications
2. Digital indicator input
3. Printer output

Other functions performed by the Logic PCB are logic control, memory and time and date generation.

2.3 POWER I/O PCB

Provides battery charging and power fail circuits for the battery backed RAM.

2.4 DISPLAY PCP

The Display PCB provides 16 positions of 16 segment alphanumeric characters, 0.5" (13 mm) high.

2.5 KEYBOARD

The keyboard is a mylar printed circuit type with an audible tone sounded for 300 ms with each key actuation.

3. SPECIFICATIONS

3.1 ELECTRICAL AND PHYSICAL

A). Environment
The 150 Data Accumulator Module is operable from 14 degrees F (--10 C) to 122 degrees F (50 C) 10 to 95% relative humidity, non-condensing.

B). RFI
The Model 150 is unaffected by RFI signals as specified by SMA, i.e,. 10V/meter at 30 MHz and at 440 MHz. Additional protection is available.

C). Power Input
The Model 150 is operable, upon selection at 120, 220, and 240 VAC, (+10%, --15%), 49Hz to 62 Hz. Power consumption is less than 30 watts.

D). U.L. and C.S.A. Standard
Materials, components, and electrical design are intended to comply with U.L. and C.S.A. standards and requirements, including grounding of all metal parts, fusing, etc.

E). Appearance and Dimensions
The color of the Model 150 is flat black with fog white trim on the keyboard extension. The enclosure is 5.25" (13.34 cm) tall, x 17" (43.18 cm) wide x 12" (30.48 cm) deep. The Model 150 weighs 25.4 pounds (11.5 kg).

F). Keyboard Location
The keyboard is mounted on an enclosure which slopes at 15 degrees from horizontal and may be attached to the Model 150 front panel. With an optional K.O.P., the panel may be mounted on a horizontal surface at a distance of up to 6' (1.82 m) 11242600A.

3.2. EXTERNAL FUNCTIONS

The 150 keyboard controls all weighing and printing functions, except for the ZERO and LB/KG functions on the 8132 Digital Indicator. Fourteen columns of 4 keys each, provide 56 functions, as follows:

Digits: 0-9
Letters: A-Z
Special Characters: /, -, (Space), and ...
Control Functions: gross, Tare, Net, Print, <, >,

Sub-Total, Multiply,  , Memory Status, ID Clear All, Clear Entry, Enter, and Correction Key.

A three position keylock switch is available on the operator panel for printing and clearing of the data accumulators, set-up of time and date, option selection and run operation.

3.3 DISPLAY FORMAT

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

No auxiliary display devices are provided, as all communication with the operator uses the alphanumeric display.

TYPICAL DISPLAY

33600 LB

0 L B

COMMODITY ?

3.4 DATA INTERFACE

Data is received from the Model 8132 Digital Indicator at the rate of 4800 baud. Other data input is via Model 150 keyboard. Checksum must be included from 8132.

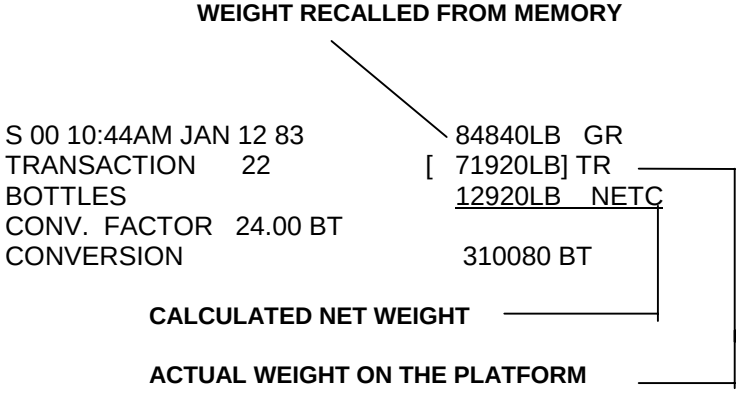
The Model 150, may also be used in conjunction with the Model 151 Switching Summing module, with the Model 151 data output set at 4800 baud.

Data output is provided at the 300 baud rate, on a 20 ma current loop, for use with the Toledo Scale Model 8805, 8820/8830 and 8855 printers.

3.5 PRINT FORMAT

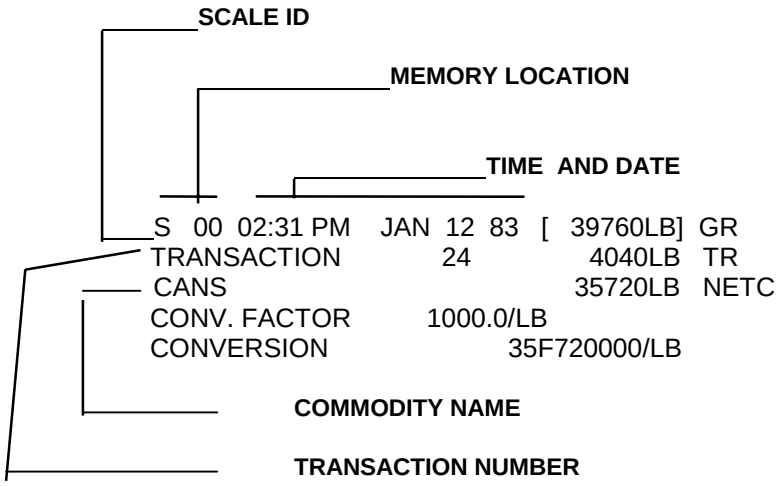
When a print is initiated, a set of brackets will be printed around the weight figure of the actual weight on the platform.

EXAMPLE:



NOTE: On earlier 8805 Printers, a bar(II------II) is used in place of the brackets ([------]).

The following example defines the remaining fields on a final transaction print.



To make a print of a weight on the scale without entering it into memory, simply press the "PRINT" button when the weight is on the scale. The printout will show:

"THE CURRENT WEIGHT IS (56760LB)"

There are three security statements that will be printed whenever an unfavorable weighing or operational situation occurs. The three printouts are as follows:

1. *"THE CURRENT WEIGHT IS IN MOTION"*

This printout will be seen when the print button is pushed while there is motion on the scale.

2. *"THE CURRENT WEIGHT IS UNDER ZERO"*

This printout will be seen when the print button is pushed and the indication is under zero.

3. *"THE CURRENT WEIGHT IS OVERCAPACITY"*

This printout will be seen when the print button is pushed and the indication is overcapacity.

4. INSTALLATION INSTRUCTIONS

4.1 SET-UP PROCEDURE

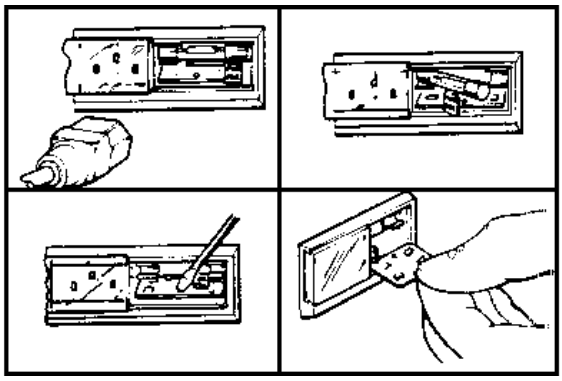
A. Inspect the 150 module for loose or damaged parts. Open the module, and check that all PCB's and interconnecting harnesses and cables are securely connected.

B. Check the A-C line filter/fuse holder/voltage section device for proper voltage selection and fusing.

The following photos will assist you in checking or changing the voltage selection. This step MUST be performed prior to applying power to the unit

1. This photo shows the line cord detached and the fuse cover moved to the left.

2. In this photo the fuse is removed by pulling the handle labeled “FUSE PULL”



3. With the fuse removed, use a small screwdriver or similar object and gently pry the card from the assembly.

4. Once you have determined the card in a readable position. A hole in the card is provided to assist removal. In the photo, the voltage selected e with Slide e.

VOLTAGE SELECTION	REQUIRED FUSE	PART NUMBER
120 VAC	.5 AMP SLO-BLO	112145 00A
220-240 VAC	.25 AMP SLO-BLO	095921 00A

C. Install optional remote keyboard K.O.P., if required, at this time.

D. Set the programming switches to the desired operation. (See Section 4.2).

E. Connect the input cable from the digital indicator, connect the output cable to the printer, and connect power to all units.

F. Upon power up, (in the RUN mode), if Time and Date have been programmed to print, the display will read "HOUR?" and further operation is inhibited until the Time and Date sequence is completed.

G. To enter Time and Date, simply follow the prompts on the 150 display and enter the proper information.

EXAMPLE:
1. HOUR? "0", "1"; press "ENTER"
2. MINUTE? "5", "3"; press "ENTER"
3. AM/PM? "P", "M"; press "ENTER"
4. MONTH? "N", "O", "V"; press "ENTER"
5. DAY? "1", "3"; press "ENTER"
6. YEAR? "8", "3"; press "ENTER"

Based on the above example, the following information would be input: *01:53 PM NOV 13 83*

Monthly abbreviations for USA format are:

JANUARY	JAN
FEBRUARY	FEB
MARCH	MAR
APRIL	APR
MAY	MAY
JUNE	JUN
JULY	JUL
AUGUST	AUG
SEPTEMBER	SEP
OCTOBER	OCT
NOVEMBER	NOV
DECEMBER	DEC

H. Turn the keylock switch to the SETUP position. The display will show "Time/Date? N ". If changes need to be made to the Time and Date, press "Y" then "ENTER" and the display will go through the prompting sequence described in the step 7 above. If no changes need to be made, press only the "ENTER" key.

I. The next question asked is "Mode Set? N". To access this sequence, press "Y" then ENTER". If no changes need to be made, simply press the "ENTER" key. If this sequence is accessed, the following displays will be shown.

1). "SHIP/RCV ACCS? N"
If dual accumulators (one for shipping and one for receiving are needed, press "Y" then "ENTER" key. If only one type is needed, press only the "ENTER" key.

2). "CMDTY COUNT = 20"
This allows space in memory for up to 20 commodities. If more are required, simply enter the desired number then press "ENTER". If no change is needed, press "ENTER" only. There is an interaction between the number of commodities and maximum number of weight storage locations. Reference the chart in Section
5.2, 4). for these limits.

NOTE: If the number of commodities is changed all information contained in memory locations will automatically be cleared.

3). "TRUCK COUNT= 20"
This programs the maximum number of locations that may be used for weight storage. When in the Normal Mode, this number represents the maximum number of tare weights that may be stored in tare memory. If more locations are required, simply enter the desired number then "ENTER". If no changes are required, simply press "ENTER". There is an interaction between the number of commodities and maximum number of weight storage locations. Reference the chart in Section 5.2, 4). for these limits.

NOTE: If the number of weight storage locations is changed, all information contained in memory locations will automatically be cleared.

4). "ACC MANDATORY? N"
If accumulation mandatory is selected, a commodity code must be entered during a transaction when the display shows "COMMODITY?" or further operation is inhibited. To select this, press “Y”" then "ENTER". If a commodity code need not be entered for every transaction, simply press "ENTER"

5). "AUTO CLEAR ACC? N"
To automatically clear the accumulators after a Totalize print, press "Y" then "ENTER". If the accumulated data is to be retained after a Totalize print, press "ENTER only.

6). "TAB 1 = 05 TAB 2 = 05
To program a specific number of print line advances, enter in the numeric value
for TAB 1 then TAB 2 then "ENTER". This is accessed through alternate actuation
of the key. The first actuation will cause the printer to advance the number of lines programmed as TAB 1 and the second actuation will advance the value of TAB 2.

7). "SCALE ID--"
This allows a one character scale identifier to be printed. If no character is required, press "SPACE" then "ENTER". If an ID is desired, enter that character then press "ENTER". If no character is entered, an "S" will be printed.

8). "TRANSACTN 11"
This allows entry of a value where the transaction counter will start. On power-up this will be 0. To enter a number, press the numeric keys corresponding to that number then the "ENTER " key.

J. If the Continuous Mode of operation is being used, the display will now show "CHANGE MEMORY? N". (Both SW1-4 and SW2-6 must be ON. If both switches are not ON, proceed to step 11.)

1). If no tare weights need to be entered or changed, press "ENTER".

2). To enter or change a tare weight in memory, press "Y" then "ENTER". The display will now show "TARE NUMBER?". Enter a two digit tare location code and the display will show what information is already in that location. To enter new data, press the numeric key corresponding to that data then the "ENTER" key. The display will then show "TARE NUMBER?" again and wait for further input. To exit this routine, press "ENTER" when the display shows the "TARE NUMBER?"

K. The next prompt on the 150 display will be "COMMODITY ID?". Enter a one or two character code for a commodity that will be accumulated then press "ENTER".

1). The prompt now will be "COMMODITY NAME?". Enter in the description or name of the commodity to be printed at the final transaction then press "ENTER".

2). The display will show "MULT. F. 1.00000" which is the prompt for entering a multiplying factor for a conversion. To enter a conversion factor, press the digits corresponding to the multiplying number (up to 6 digits) then the “ENTER" key.

L. To exit the SET-UP routine, turn the keylock switch back to the RUN position when the display shows "COMMODITY ID?”.

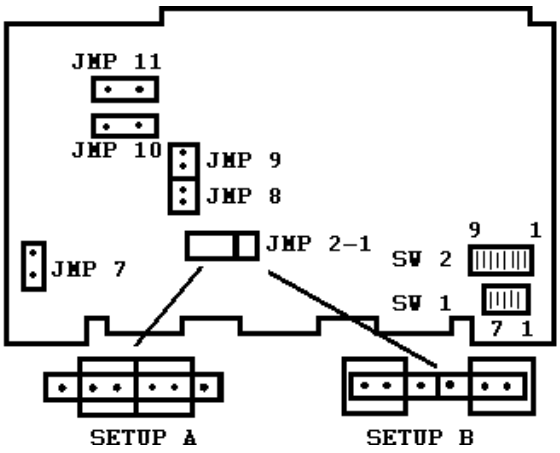
4.2 PROGRAM SWITCH SUMMARY

It is important that you refer to the Technical Manual, of the 8132 digital indicator and the printer for program switch settings that may affect indicator or printer operation.

The following switches in the 8132 must be as shown:

SW5-4	ON	Tare Display Inhibit
SW6-6	OFF	NOT Expanded
SW7-2	OFF	Checksum will be transmitted
SW7-6	ON	Data output at 4800 Baud
SW7-7	ON	Data Output at 4800 Baud

1. LOGIC PCB



JUMPER SET-UP

JMP 1 -- This jumper connects the negative side of the output opto isolator for the scale input to --12 volts or leaves it disconnected.

JMP 2-- This jumper connects the negative side of the output opto isolator for the printer output to --12 volts or leaves it disconnected.

NOTE: When installing an external device to J-3 it is important that JMP1 and JMP2 be in the correct position for the device attached.
Setup A -- For the 8805 and 8855 printers, these jumpers must be as shown (inside).
Setup B -- For the 8820/8830 printer, these jumpers must be to the outside.

JMP 7 -- This jumper will enable +5 volts or battery backup power for memory. SW1-4 (on the Power Supply PCB) must also be ON for battery backup.

JMP 8, JMP 9, JPM 10 and JPM 11 -- These jumpers are for manufacturing use only and must be in place shorting the two pins for correct operation.

SW1-1 PRINTER CHECKSUM

ON -- Checksum digit is transmitted.
OFF- No checksum digit transmitted.

SW1-2
SW1-3 — **TIME AND DATE FORMAT**

SW1-2	SW-3	FORMAT
ON	ON	10:07 (AM or PM) June 02 82 (U.S.A.)
ON	OFF	02 JUN 82 16:05 (EUROPE)
OFF	ON	82 JN 02 16:05 (CANADA)
OFF	OFF	NO TIME AND DATE

NOTE: With both switches OFF, Time and Date is not requested during set-up or is it printed.

SW1-4 CONTINUOUS MODE
ON -- Continuous mode enable.
OFF -- Continuous mode inhibit.

SW1-5 CHAIN MULTIPLICATION
ON -- Allows one or more conversions (or until memory is over capacity).
OFF -- Allows only one conversion.

SW1-6 KEYBOARD TARE
ON -- Allows tare entry via keys 0-9 and the Tare pushbutton.
OFF -- Tare cannot be entered via the keyboard.

SW1-7 PRINT MULTIPLIER
ON -- Prints the conversion factor and the resultant.
OFF -- Prints only the resultant.

SW2-1 REPEAT PRINT
ON -- Repeats the last transaction.
OFF -- No repeat print.

SW2-2 TRANSACTION COUNTER
ON -- A six digit transaction number will be printed with the final transaction print.
OFF -- No transaction number is printed.

SW2-3 ZERO INTERLOCK (when used with the "CLEAR ALL" button)
ON -- Scale has to return to zero for next entry to be made.
OFF -- Scale does not have to return to zero for next entry to be made.

SW2-4 PRINT COMPLETE
ON -- Print complete required from printer.
OFF -- No print complete required.

NOTE: If switch ON, and printer does not send print complete, display will show "PRINTER ERROR" after time delay.

SW2-5 ZERO TRUCK WEIGHT (Normal Mode Only)
ON -- "Zero Weight Data" can be entered into a memory location.
OFF -- "Zero Weight Data" cannot be entered into a memory location.

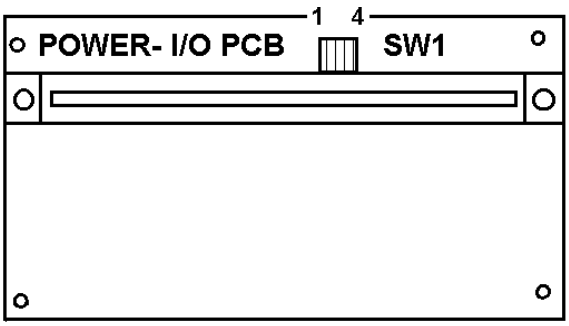
NOTE: With this switch ON the display will flash the memory location assigned, as well a print it.

SW2-6 CONTINUOUS MODE, TARE MEMORY
ON -- Tare weights may be entered into memory.
OFF -- Tare cannot be entered be entered into memory.

NOTE: When SW2-6 is ON, SW1-4 must also be ON.

SW2-7
SW2-8
SW2-9
NOT USED (should be OFF)

2. POWER I/O PCB

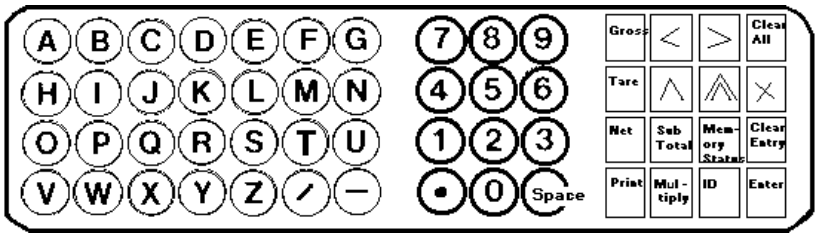


SW1-1
SW1-2 — NOT USED (should be OFF)
SW1-3

SW1-4 BATTERY BACKUP

ON -- Battery connected.
OFF -- Battery disconnected.

5. OPERATING INSTRUCTIONS



5.1 OPERATORS PANEL DESCRIPTION

Gross	**GROSS**		
	Normal Mode	-	It allows the operator to verify the gross weight after a net weight has been obtained.
	Continuous Mode	-	Used to enter the weight displayed as the gross weight, as well as to verify the gross weight.
Tare	**TARE**		
	Normal Mode	-	It allows the operator to verify the tare weight after a net weight has been obtained.
	Continuous Mode	-	Used to enter the tare weight, as well as to verify the gross weight.
Net	**NET**		
	Normal Mode	-	It allows the operator to return the display to the net weight after verifying either the gross or tare weights.
	Continuous Mode	-	Used to determine the net weight, as well as to verify the net weight.
Print	**PRINT**	-	Used to initiate a print routine.
Sub Total	**SUB-TOTAL**	-	Used in conjunction with a commodity ID, to inspect the accumulated total of the commodity.
Multiply	**MULTIPLY**	-	Used in conjunction with a constant factor or variable factor to convert net weight into an alternate unit (i.e. bushels, gallons, dollars, etc.).
Memory Status	**MEMORY STATUS**	-	Used to verify the number of memory locations that are available for use. With repeated pressing, you may inspect the contents of each location.
ID	**ID**	-	Used to allow identification data entry. A maximum of the 16 alphanumeric characters per line may be entered.

Enter	**ENTER**	-	Used to enter all inputs.
Clear Entry	**CLEAR ENTRY**	-	Used to clear any incorrect keyboard entry.
X	**CORRECTION KEY**	-	Used to void any incorrect memory location or commodity assignments. It may also be used to change a commodity identification code without affecting the commodity name or accumulated totals.
Clear All	**CLEAR ALL**	-	Used with “D”, “E” and “A”, ‘C” codes to clear accumulators.
>	**CURSOR CONTROL**	-	A cursor indicates the position where the next character will be displayed. If one character in a field requires change, the cursor can be manually repositioned. Each key depression moves the cursor one character to the left or right.
	**LINE FEED**	-	Used to send a signal to the printer to advance the ticket one line for each depression of the key.
	**LINE TAB**	-	Used to initiate a preprogrammed number of line feed commands to the printer. Two programmable tabs are available under set-up control.

NOTE: This button will cause Tab 1 and Tab 2 to be used alternately.

Totalize Run Setup

KEYLOCK SWITCH

Totalize - Allows printing and clearing of the accumulated totals in the commodity registers.

Run - Normal operational position.

Set-Up - Allows operator programming for selected options.

ALPHANUMERIC KEYBOARD

Used to enter all alphanumeric data.

5.2 SET - UP PROCEDURE AND DESCRIPTIONS

1). OPERATOR INSTRUCTIONS-- NORMAL MODE

1. Receiving Scale Operation (gross weight storage and recall).

   A total of 100 memory locations are available for storing gross weights. These storage locations are automatically assigned in the next available space in a numerical order of 00 to 99 and cleared when recalled and printed. Memory location recall may be in a random order unrelated to the storage sequence.

   The operating procedure is as follows:

   a). The keylock switch must be in the "RUN" position.

   b). The identification data; if desired, may be entered by pressing the "ID" button and entering the data via the keyboard. Printing this data is accomplished by pressing the "ENTER" button. Multiple identification prints are possible by repressing the "ID" button followed by the data and "ENTER" button.

   c). Move the truck onto the scale, then press the "ENTER" button. The 150 will assign a memory location and display this location number in the left edge of the display. The truck weight and memory location as well as the time and date and scale ID, if programmed, will be printed.

   d). Remove the truck from the scale and empty.

   e). Return the empty truck onto the scale, the tare weight will now be displayed.

   f). Enter the appropriate memory location of this truck, via the keyboard and press the "ENTER" button.

   g). The display will now request a commodity ID code. Enter this code via the keyboard and press the "ENTER" button.

h). At this time the net weight will be displayed and a final transaction print will be obtained.

i). Identification data, if required, may be entered and printed at this time. Press the "ID" button and enter the data via the keyboard. To print this data press the "ENTER" button.

NOTE: With the truck on the scale, the gross and tare weights may be checked by pressing the "GROSS" or "TARE" button.

j). When the truck leaves the scale, the 150 will clear the display and the unit will be ready for the next transaction.

2. Shipping Scale Operation (tare weight storage and recall).

A total of 100 memory locations are available for storing tare weights. These storage locations are automatically assigned in the next available space in numerical order from 00 to 99 and cleared when recalled and printed. Memory location recall may be in random order unrelated to the storage sequence.

The operating procedure is as follows:

a). The keylock switch must be in the “RUN” position.

b). The identification data; if desired, may be entered by pressing the “ID” button and entering the data via the keyboard. Printing this data is accomplished by pressing the “ENTER” button. Multiple identification prints are possible by repressing the “ID” button followed by the data and “ENTER” button.

c). Move the truck onto the scale, then press the “ENTER” button. The 150 will assign a memory location and display this location number in the left edge of the display. The truck weight and memory location as well as the time and date and scale ID, if programmed, will be printed.

d). Remove the truck from the scale and fill.

e). Return the full truck onto the scale, the gross weight will now be displayed.

f). Enter the appropriate memory location of this truck, via the keyboard and press the “ENTER” button.

g). The display will now request a commodity ID code. Enter this code via the keyboard and press the “ENTER” button.

h). At this time the net weight will be displayed and a final print will be obtained.

i). Identification data, if required, may be entered and printed at this time. Press the “ID” button and enter the data via the keyboard. To print this data press the “ENTER” button.

2). OPERATOR INSTRUCTIONS-- CONTINUOUS MODE

In the continuous mode of operation, the truck or container will remain on the scale until the operation is complete. In this mode it is possible to have up to 96 tare weights stored in memory and recalled by location number. Tare weights may be recalled in a random order unrelated to the storage sequence. Tare weights are accessed via a two digit location code. A different code is used for each of the 96 locations; codes range from "00" to "95".

The operating procedure is as follows:

1. The keylock switch must be in the "RUN" position.

2. The identification data, if required, may be entered by pressing the "ID" button and entering the data via the keyboard. Printing this data is accomplished by pressing the "ENTER" button. Multiple identification prints are possible by repressing the "ID" button followed by the data and "ENTER" BUTTON.

3. Move the truck or container onto the scale.

4 Press the appropriate button "GROSS" when receiving, "TARE" when shipping. This weight is then printed.

5. The display will now question you for the next weight entry.

6. Empty or fill, depending on the operation, the truck or container while still on the scale.

7. Press the appropriate button: "TARE" when receiving (or tare weight memory location code*); "GROSS" when shipping. This weight will now be printed.

NOTE: When using the tare memory feature, press the two digit location code then the "TARE" key. When using keyboard tare, enter the tare digits then press the "ENTER" key.

8. Enter the appropriate commodity ID code and press the "NET" button. If accumulation is not mandatory simply press the "NET" button. This weight will now be printed.

NOTE: With the truck or container on the scale, the gross and tare weights may be checked by pressing the "GROSS" or "TARE" buttons.

9. When the truck or container leaves the scale, the 150 will clear the display and the unit will be ready for the next transaction.

For more detailed operating instructions, refer to the Operators Manual (part number OM 000150 I00).

3). COMMODITY DESCRIPTIONS

Pre-stored commodity descriptions, each with a maximum of sixteen alphanumeric characters are possible. These descriptions are stored in memory via the keyboard when the keylock switch is in the SET-UP position. All descriptions and accumulated totals may be printed when the keylock switch is in the TOTALIZE position.

4). ACCUMULATORS

The number of accumulation locations available for use depends upon the number of commodities selected for use. The different combinations available to the operator are subject to having either single or dual weight accumulation. The process of selecting commodity accumulators and memory locations is under operator control in the SET-UP mode. Accumulator ID codes are the same as the commodity ID codes. The following chart depicts the combinations available.

SINGLE ACCUMULATOR			**DUAL ACCUMULATORS (SHIP/RECEIVE)**		
COMMODITY COUNT		**WEIGHT ACCUMULATION LOCATION**	**COMMODITY COUNT**		**WEIGHT ACCUMULATION LOCATION**
43	/	3	33	/	2
42	/	8	36	/	8
41	/	13	35	/	14
40	/	18	34	/	20
39	/	23	33	/	26
38	/	28	32	/	32
37	/	33	31	/	37
36	/	38	30	/	43
35	/	43	29	/	49
34	/	48	28	/	55
33	/	53	27	/	61
32	/	58	26	/	67
31	/	63	25	/	72
30	/	68	24	/	78
29	/	73	23	/	84
28	/	78	22	/	90
27	/	83	21	/	96
26	/	88	20	/	99
25	/	93			
24	/	98			
23	/	99			

Accumulation Inspection and Clearing

To inspect the contents of any accumulator simply enter the two digit commodity ID code and press the "SUBTOTAL" button. The display will now show the contents of the accumulator (A ID 1642 LB). To exit this sequence press "CLEAR ALL".

If dual accumulators are used, the display will show (R ID 1642 LB) for the receiving accumulator and (S ID 2794 LB) for the shipping accumulator. Sequential pressing of the "SUBTOTAL" button will cause the display to alternate between the receive and ship accumulators. The contents may be printed by pressing the "PRINT" button. To exit this sequence press the "CLEAR ALL" key.

The accumulators may only be cleared when the keylock switch is set in the "TOTALIZE" position. Select the accumulator to be cleared by entering the two digit commodity ID and press the "SUBTOTAL" button. At this time, there are two ways in which the accumulators may be cleared.

1. Pressing the letters "A" and "C" followed by the "CLEAR ALL" button will cause only the accumulated total to be cleared.

2. Pressing the letters "D" and "E" followed by the "CLEAR ALL" button will cause the commodity as well as the accumulated total to be cleared.

To exit this sequence, simply turn the keylock switch to the RUN mode and proceed with normal operation.

5). MEMORY ADDRESS RECALL AND INSPECTION
Pressing the "MEMORY STATUS" button will cause the display to show the number of memory locations that are in use, as well as the number of locations available for use. Subsequent actuations of this button will display each accumulator code and name. Entering a two digit memory location code, followed by the "MEMORY STATUS" button will cause the contents of that memory location to be displayed. To print the contents of this memory location, press the "PRINT" button when the contents are displayed.

6). KEYBOARD TARE (Continuous Mode Only)
Tare weight may be hand entered when the 150 display reads "TR?". This may be done by entering the tare weight via the keyboard and then pressing the "ENTER" button. Tare weight increments must be the same as the weighing increments.

Keyboard entered tare weights will be identified when printed, as TRH (tare hand) rather than TR. Net weights resulting from a hand entered tare or a tare weight recalled from memory will be identified, when printed as NETC (net weight calculated).

7). NET WEIGHT CONVERSION FACTORS

1. Multiplying by a Constant
The net weight may be multiplied by a programmed constant (6 digit) to convert from one unit to another. This may be used to convert pounds to bushels or any other commodity used by the customer. The desired constant plus a unit abbreviation (3 letters maximum) may be entered along with the commodity used by the customer. The desired constant plus a unit abbreviation (3 letters maximum) may be entered along with the commodity in memory in the SET-UP Mode.

To initiate this function, press "MULTIPLY" after the transaction is complete. The display will show the resultant. To print this resultant, press "PRINT".

2. Chain Multiplication
An internal program switch (SW1-5) is used to enable chain multiplication. With this switch in the ON position, it is possible to multiply the resultant from a previous conversion with a new factor. This may be done as many times as needed.

To perform a chain multiplication, enter the multiplying number via the keyboard after the transaction is complete then press the "MULTIPLY" key. The display will now show the resultant and printing is possible by pressing the "PRINT" button.

8). TRANSACTION COUNTER
An internal program switch (SW-2) is used to enable a transaction counter. This transaction number (consecutive number) will be printed on the tare line of the final transaction print. The counter, on power up, defaults to a zero value by may be set to any desired starting number, in the SET-UP mode.

6. PREVENTIVE MAINTENANCE

The model 150 Accumulator is designed to require a minimum of maintenance and service. This section provides instructions and procedures for maintaining the Model 150, as well as a troubleshooting guide to aid in problem analysis.

It is suggested that assistance from Toledo Scale service personnel be requested in the event of a problem should arise that is beyond the scope of this technical manual.

6.1 REQUIRED TOOLS AND SUPPLIES

The following items are recommended as aids to assist in maintenance and repair of this unit.

1. VOM
2. Cleaning Cloth
3. Mild Cleaning Solutions
4. Static Protection Strap
5. Static PCB Bags
6. Common Hand Tools

6.2 MAINTENANCE SCHEDULE

The frequency at which normal maintenance (cleaning and inspection) should be performed, when the 150 is installed in a clean office environment, should normally be one year. However, if the module is subjected to a dusty or a dirty environment, the frequency should be increased as required.

6.3 CLEANING

Clean the display lens and the keyboard with a soft clean cloth that has been slightly dampened with a mild window type cleaner. (Do not use kitchen appliance cleaners or any type of industrial solvent.) Do not spray cleaner directly onto the unit.

6.4 INSPECTION

Inspect the module for any loose connectors, screws, etc. Correct as necessary.

6.5 TROUBLESHOOTING

1). If operational difficulties are encountered, obtain as much information as possible regarding the problem. By doing so, this may eliminate a lengthy detailed checkout process.

2). Check fuses, AC power line, external circuits and related wiring for possible defects. Failures often can be traced to simple causes such as loose or improperly seated PCB's, or power supply connections or fuse failure.

3). Use the electrical or interconnecting diagram as an aid to locating trouble causes. This diagram contains various circuit voltages using the interconnecting diagram. Use measuring instrument probes carefully to avoid causing short circuits and damaging circuit components.

4). A printed circuit board believed to be defective may also be checked by replacing it with a like PCB known to be good, and then observing whether the problem is corrected.

NOTE: When any handling of a PCB is required, you MUST use a 'Velostat' type static bag for both the new PCB and the defective PCB as well as a 'Static' strap.

5). To verify the problem as being in the removed PCB, replace the 'defective' PCB and retest. This simple test will preclude the possibility of having replaced a good PCB due to loose connections or a similar problem.

6). Be sure to consult the technical manual for proper switch settings. Do not automatically program the replacement PCB like the suspected faulty PCB as the problem may be a programming error.

7). Error Displays

1. "NO WEIGHT DATA" -- Indicates that there is no data being input from the 8132 or that it is not the correct format or baud rate.

2. "ROM ERROR"-- Indicates there is an error in memory on the Logic or Display PCB's.

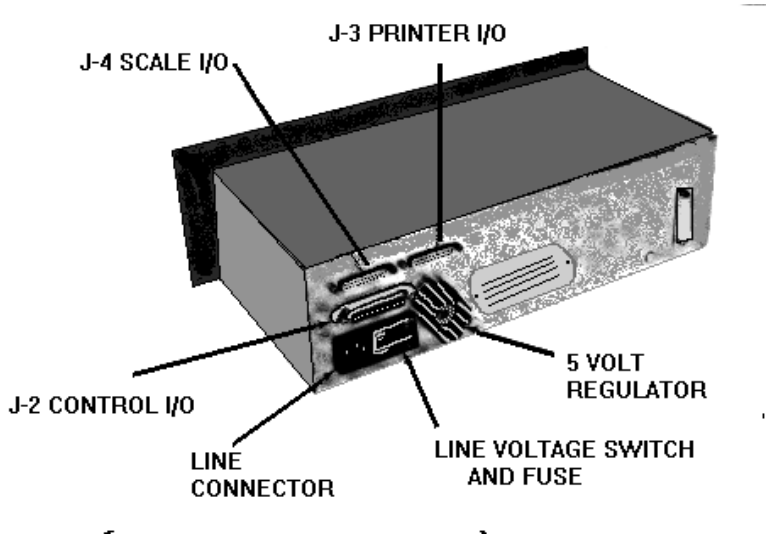
3. "RAM ERROR" -- Indicates there is a problem in data storage/memory on the Logic PCB.

4. "TRANSMISSION ERROR -- Indicates that the Display PCB is not receiving data from the Logic PCB.

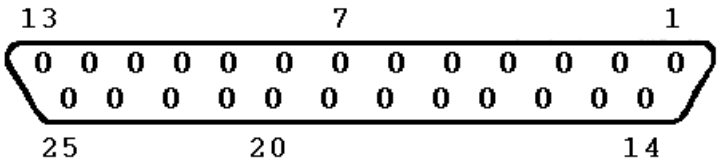
5. xxxxxxxxxxxx (All segments Lit) - This indicates there is no communication between the Logic PCB and Display PCB. Printer error occurs if SW2-4 is ON and no print complete is received from a printer.

6. "MEMORY OVERFLOW"- This display will occur if the number of commodities versus weight storage locations does not agree with the reference chart in Sec. 5.2, 4).

6.6 INPUT/OUTPUT CONNECTIONS



25 PIN CONNECTOR VIEWED FROM REAR OF INSTURMENT (DESK TOP ONLY) CONNECTOR IS SHOWN TO AID IN PIN NUMBER IDENTIFICATION



SCALE I/O CONNECTOR J-4		
SIGNAL NAME	**150J-4**	**8132-J-19 or 141 J-2**
TTL Transmit	2	
TTL Receive	3	
RTS (Request to Send)	4	
CTS (Clear to Send)	5	
DSR (Data Set Ready)	6	
Logic Ground	7	
20mA Transmit --	9	
Logic Ground	11	
20mA Transmit +	14	
20mA Supply (transmit)	15	
20mA Receive +	16	25
20mA Supply (receive)	17	
20mA Receive --	18	10
ISP Common	21	
Spare 2	22	
ISP Common	23	
Spare 1		
Jumper on 8132 end of cable		11 12

PRINTER I/O SERIAL CONNECTOR J -3				
SIGNAL NAME	**150 J-3**	**8805 J-1**	**8820/ 8830 J-25**	**8855 J-1**
TTL Transmit	2			
TTL Receive	3			
RTS (Request to Send)	4			
CTS (Clear to Send	5			
DSR (Data Set Ready)	6			
Logic Ground	7			
20mA Transmit--	9		9	
20mA Ground	11			
20mA Transmit +	14	28	18	22
20mA Supply (transmit)	15	26		3
20mA Receive +	16		2	
20mA Supply (receive)	17			
20mA Receive --	18	19	7	
ISP Common	19			
ISP Common	22	25		
Jumpers shown are in the 150 end of the interconnecting cable.		3 5 16 17	3 5	
Jumpers shown are in the printer end of the interconnecting cable.			9 19 16 17	

INTERCONNECTING CABLES
To Printers:

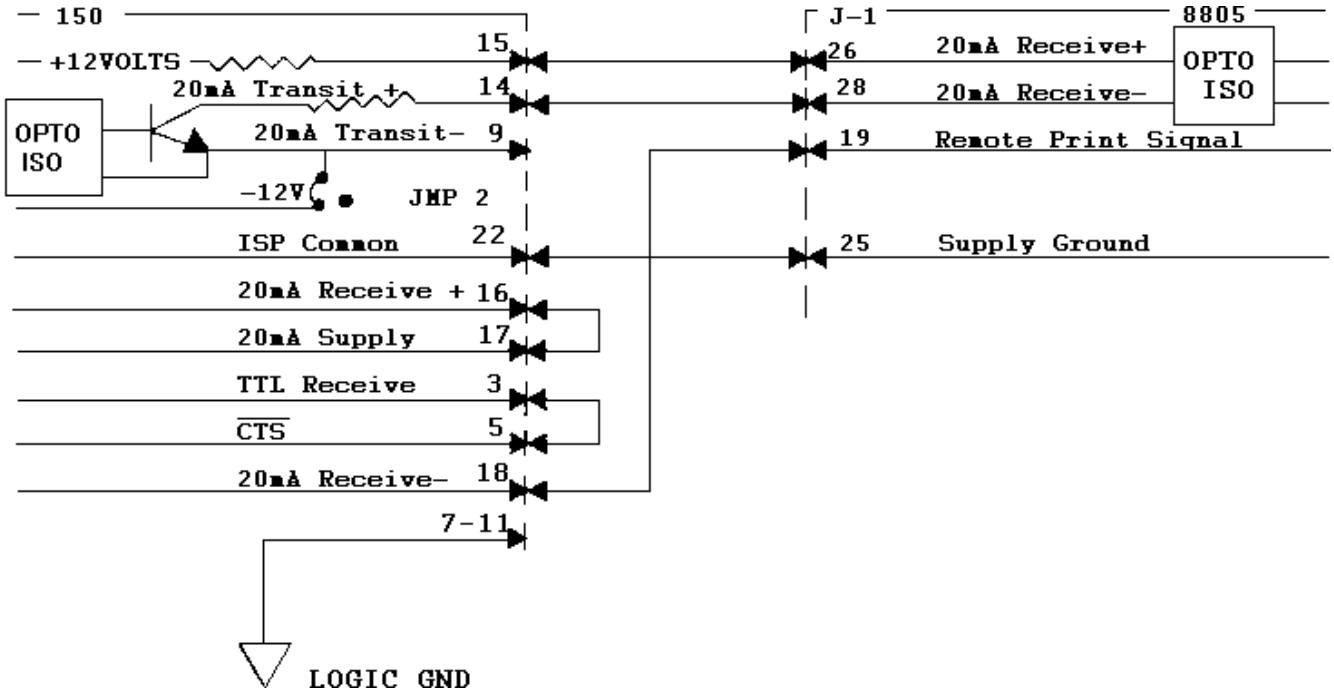
MODEL	TYPE	LENGTH	PART NUMBER
8805	Desk	6'	C113208 00A
8805	Desk	20'	C113220 00A
8820/8830	Desk	6'	113209 00A
8820.8830	Desk	20'	113221 00A
8855	Desk	6'	A114283 00A
8855	Desk	20'	A114406 00A

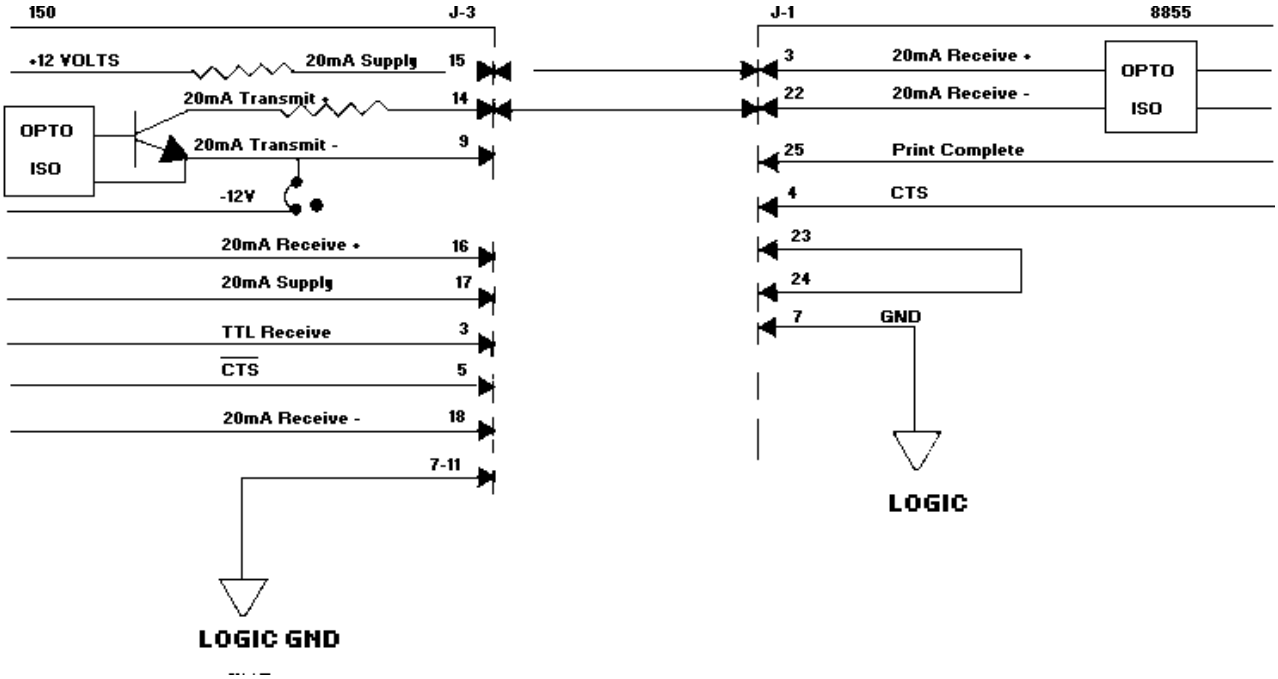
To Indicator:

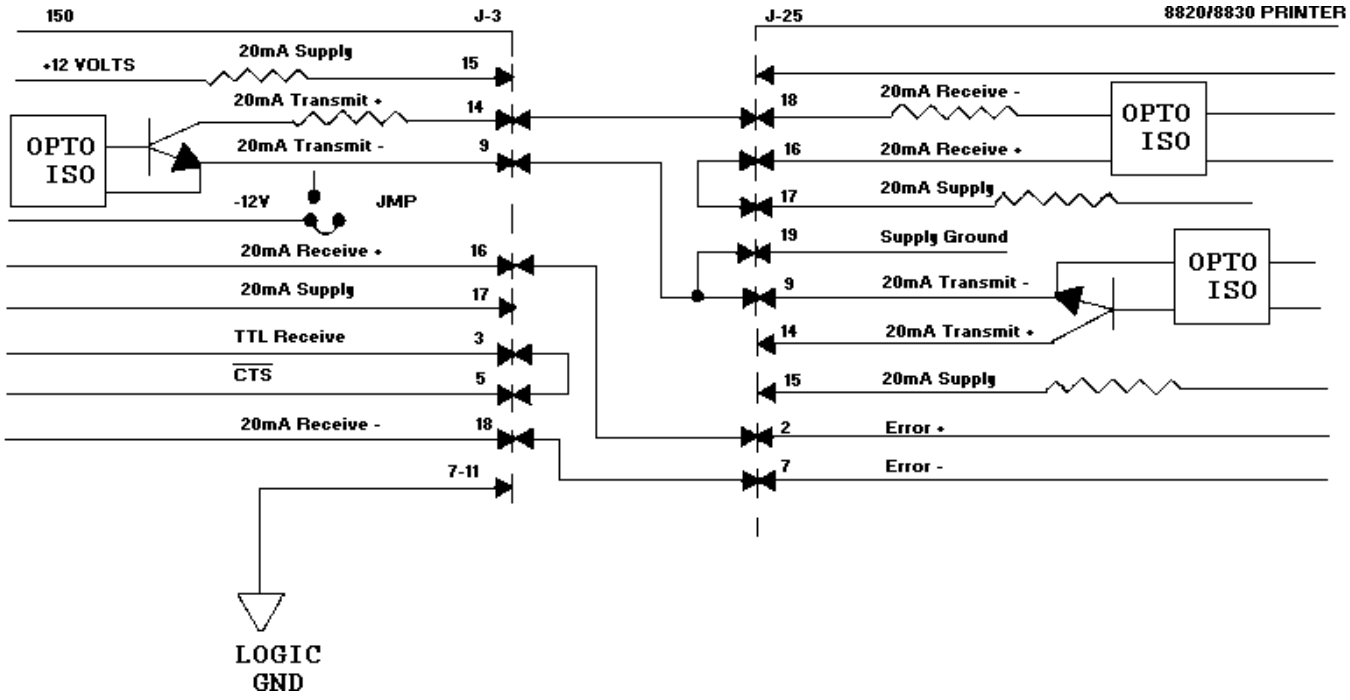
8132 to 150 data cable-- Part Number 112437 00A.

TYPICAL CONNECTIONS FOR ATTACHMENT

The 150 uses a 20 milliamp current loop output (ASCII) for printers and other devices. The output is designed so that it can be used with various types of interconnections to other devices. It may be used with an internal or external power source, depending on the external device used.




150
J-3
J-1
8855
+12 VOLTS
20mA Supply
15
20mA Transmit +
14
OPTO
ISO
20mA Transmit -
9
-12V
20mA Receive +
16
20mA Supply
17
TTL Receive
3
CTS
5
20mA Receive -
18
7-11
LOGIC GND
3
20mA Receive +
22
20mA Receive -
OPTO
ISO
25
Print Complete
4
CTS
23
24
7
GND
LOGIC


150
J-3
J-25
8820/8830 PRINTER
+12 VOLTS
20mA Supply
15
20mA Transmit +
14
OPTO
ISO
20mA Transmit -
9
-12V
JMP
20mA Receive +
16
20mA Supply
17
TTL Receive
3
CTS
5
20mA Receive -
18
7-11
LOGIC
GND
18
20mA Receive -
OPTO
ISO
16
20mA Receive +
17
20mA Supply
19
Supply Ground
9
20mA Transmit -
OPTO
ISO
14
20mA Transmit +
15
20mA Supply
2
Error +
7
Error -

7. PARTS REPLACEM|NT

RECOMMENDED SPARE PARTS

Recommended list of spare parts consist of the following items.

QUANTITY	PART NUMBER	DESCRIPTION
1	B112393 00A	Power -- I/O PCB
1	M112395 00A	Computer PCB
1	A112434 00A	Keyboard Assembly
1	A112399 00A	Display PCB -- 16 Segment
1	A112408 00A	Keyboard -Display Interface PCB
3	112145 00A	Fuse, 1/2 A Slo Blo
3	095921 00A	Fuse, .25A Slo Blo

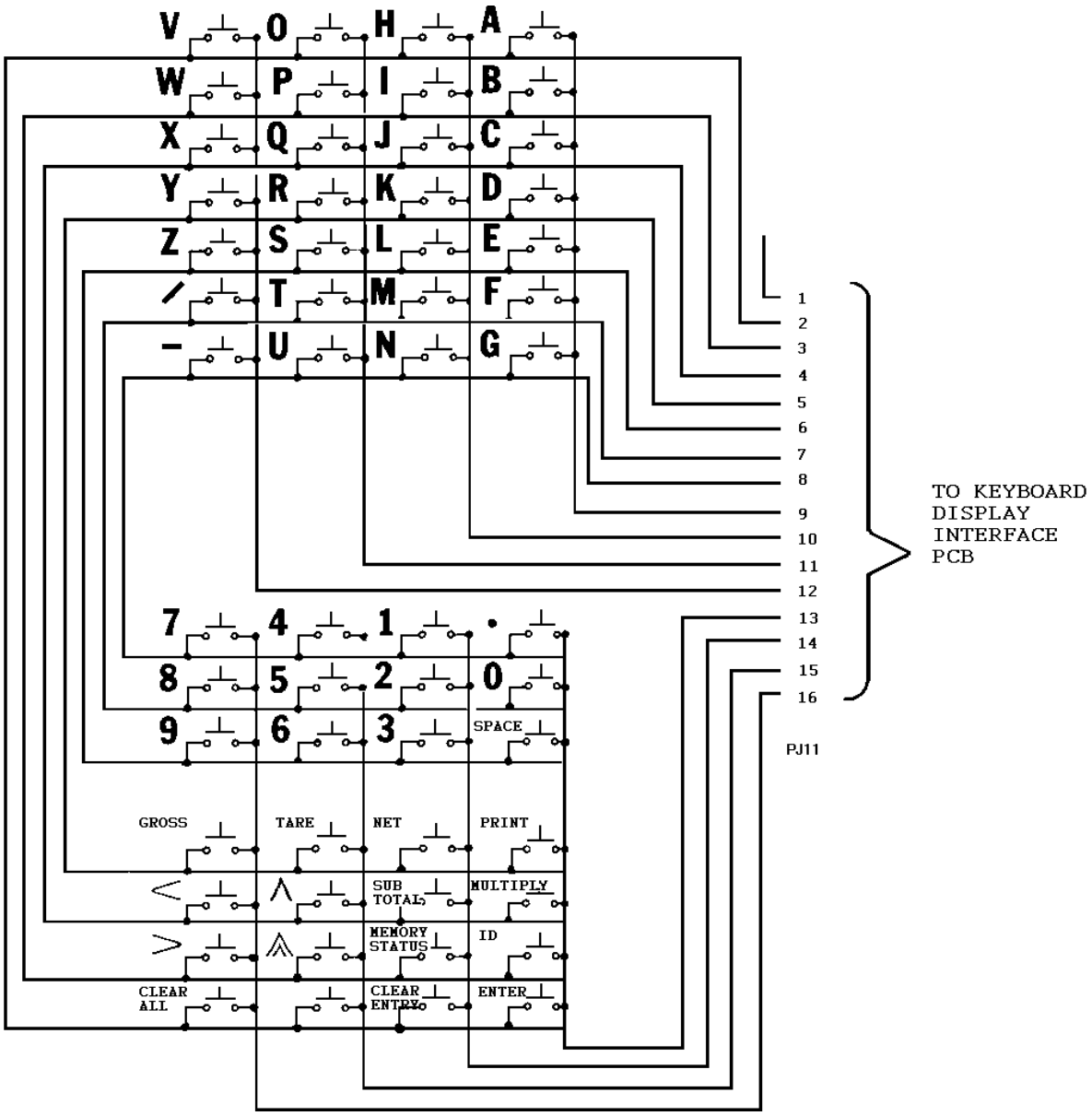
Other items that will aid in the servicing of your Toledo equipment.

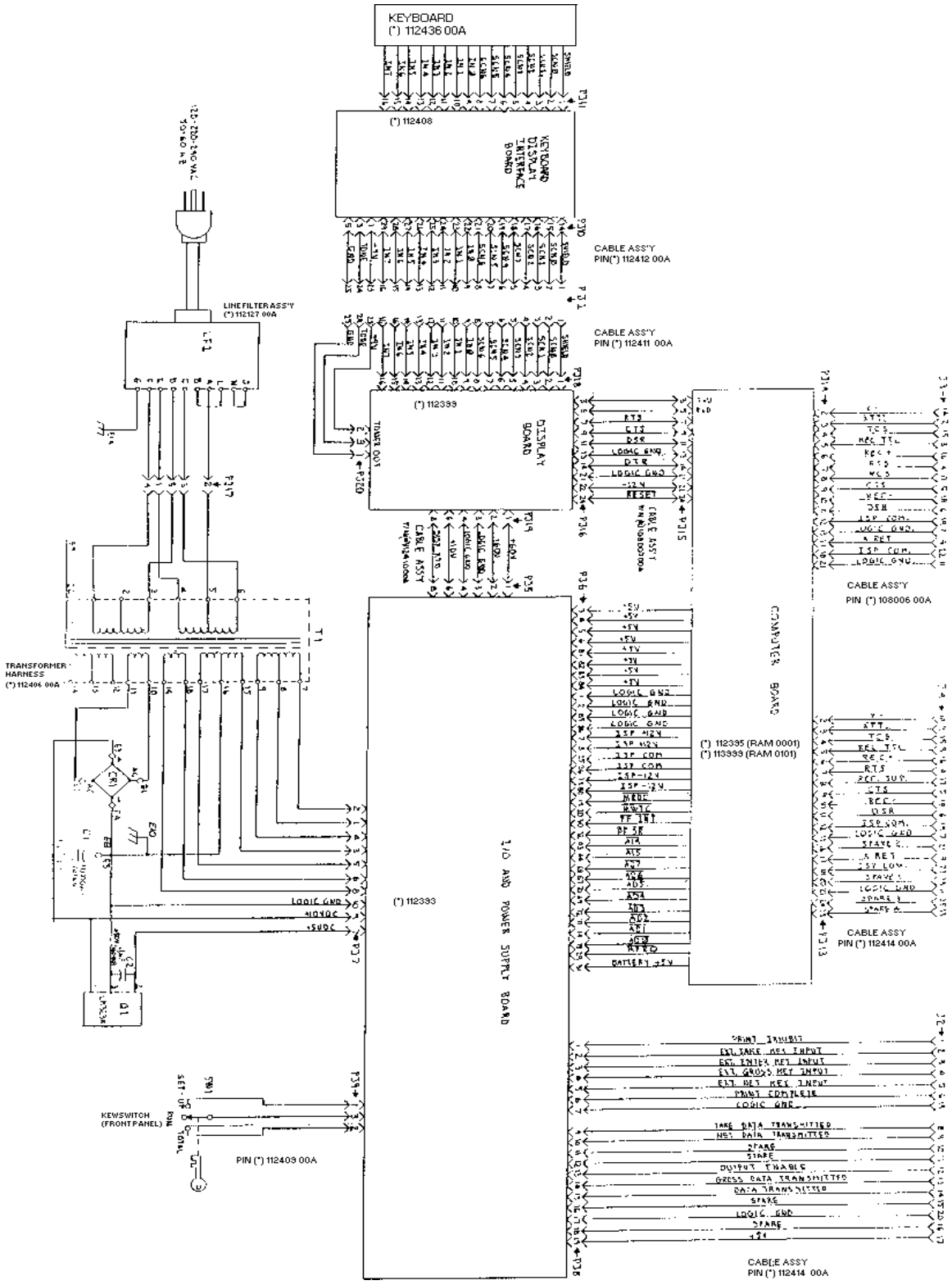
QUANTITY	PART NUMBER	DESCRIPTION
1	085481 020	Volt -Ohm Meter Triplett 630
As Required	112736 00A	'Velostat' Static Bag 8" x 10"
As Required	112737 00A	'Velostat' Static Bag 12" x 16"

In addition to these items, it is also recommended that a parts catalog also be ordered so that items not listed above may be properly identified for prompt delivery.

The Parts Catalog number is PC 000150 I00.

ASCII CHAR.	DECIMAL	HEX	76543210	ASCII CHAR.	DECIMAL	HEX	76543210
NULL	0	00	00000000	@	64	40	01000000
SOH	1	01	00000001	A	65	41	01000001
STX	2	02	00000010	B	66	42	01000010
ETX	3	03	00000011	C	67	43	01000011
EOT	4	04	00000100	D	68	44	01000100
ENQ	5	05	00000101	E	69	45	01000101
ACK	6	06	00000110	F	70	46	01000110
BELL	7	07	00000111	G	71	47	01000111
BACKSPACE	8	08	00001000	H	72	48	01001000
TAB	9	09	00001001	I	73	49	01001001
LineFeed	10	0A	00001010	J	74	4A	01001010
Vert. Tab	11	0B	00001011	K	75	4B	01001011
Form Feed	12	0C	00001100	L	76	4C	01001100
Carr.Return	13	0D	00001101	M	77	4D	01001101
Shift Out	14	0E	00001110	N	78	4E	01001110
Shift In	15	0F	00001111	O	79	4F	01001111
Data Link Esc	16	10	00010000	P	80	50	01010000
DC1	17	11	000010001	Q	81	51	01010001
DC2	18	12	00010010	R	82	52	01010010
DC3	19	13	00010011	S	83	53	01010011
DC4	20	14	00010100	T	84	54	01010100
NAK	21	15	00010101	U	85	55	01010101
SYNCH IDLE	22	16	00010110	V	86	56	01010110
End Trans. Block	23	17	00010111	W	87	57	01010111
CANCEL	24	18	00011000	X	88	58	01011000
End Of Medium	25	19	00011001	Y	89	59	01011001
SUBSTITUTE	26	1A	00011010	Z	90	5A	01011010
ESCAPE	27	1B	00011011	[	91	5B	01011011
FS (Cursor Right)	28	1C	00011100	\	92	5C	01011100
GS (Cursor Left)	29	1D	00011101	]	93	5D	01011101
RS (Cursor Up)	30	1E	00011110	^	94	5E	01011110
US (Cursor Down)	31	1F	00011111	_	95	5F	01011111
SPACE	32	20	00100000	`	96	60	01100000
!	33	21	00100001	a	97	61	01100001
"	34	22	00100010	b	98	62	01100010
#	35	23	00100011	c	99	63	01100011
$	36	24	00100100	d	100	64	01100100
%	37	25	00100101	e	101	65	01100101
&	38	26	00100110	f	102	66	01100110
'	39	27	00100111	g	103	67	01100111
(	40	28	00101000	h	104	68	01101000
)	41	29	00101001	i	105	69	01101001
*	42	2A	00101010	j	106	6A	01101010
+	43	2B	00101011	k	107	6B	01101011
,	44	2C	00101100	l	108	6C	01101100
-	45	2D	00101101	m	109	6D	01101101
.	46	2E	00101110	n	110	6E	01101110
/	47	2F	00101111	o	111	6F	01101111
0	48	30	00110000	p	112	70	01110000
1	49	31	00110001	q	113	71	01110001
2	50	32	00110010	r	114	72	01110010
3	51	33	00110011	s	115	73	01110011
4	52	34	00110100	t	116	74	01110100
5	53	35	00110101	u	117	75	01110101
6	54	36	00110110	v	118	76	01110110
7	55	37	00110111	w	119	77	01110111
8	56	38	00111000	x	120	78	01111000
9	57	39	00111001	y	121	79	01111001
:	58	3A	00111010	z	122	7A	01111010
;	59	3B	00111011	{	123	7B	01111011
<	60	3C	00111100	|	124	7C	01111100
=	61	3D	00111101	}	125	7D	01111101
>	62	3E	00111110	~	126	7E	01111110
?	63	3F	00111111		127	7F	01111111


V O H A
W P I B
X Q J C
Y R K D
Z S L E
/ T M F
- U N G
7 4 1 .
8 5 2 0
9 6 3 SPACE
GROSS TARE NET PRINT
< ^ SUB TOTAL MULTIPLY
> ^^ MEMORY STATUS ID
CLEAR ALL CLEAR ENTRY ENTER
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
PJ11
TO KEYBOARD DISPLAY INTERFACE PCB


KEYBOARD
(*) 112436 00A
(*) 112408
KEYBOARD DISPLAY MAINTENANCE BOARD
CABLE ASS'Y
PIN(*) 112412 00A
LINE FILTER ASS'Y
(*) 112127 00A
CABLE ASS'Y
PIN (*) 112411 00A
(*) 112399
DISPLAY BOARD
CABLE ASS'Y
PIN (*) 108006 00A
REMOTE CONNECTOR
COMMUNICATION BOARD
(*) 112395 (RAM 0001)
(*) 113393 (RAM 0101)
TRANSFORMER HARNESS
(*) 112406 00A
(*) 112393
I/O AND POWER SUPPLY BOARD
CABLE ASS'Y
PIN (*) 112414 00A
KEYSWITCH
(FRONT PANEL)
PIN (*) 112403 00A
CABLE ASS'Y
PIN (*) 112414 00A

FOR YOUR NOTES