8188

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:

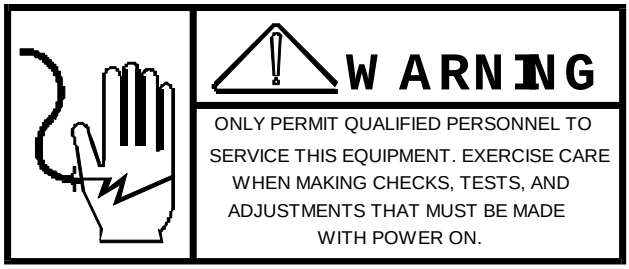
METTLER TOLEDO
Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4400

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 8188 is a precision scale for counting or weighing applications requiring high resolution performance. The 8188 utilizes a highly sensitive electro-magnetic force traducer making the scale ideal for applications involving fine ingredients or small parts. The standard 8188 scale can be programmed as both a counting scale or weighing scale. All programming is completed via the keyboard.

The model 8188 can also be used as a high resolution sample scale when interfaced with the Model 8186 Counting Scale.

For applications that require weighing below the scale, the Model 8188 includes an eye that could accept a hook. The eye is accessible via the round plate on the bottom of the scale.

Statement of Performance

The performance of any count-by-weighing scale is dependent on uniformity of weight per piece, number of pieces in the sample, individual piece weight and the percent of rated load placed on the scale. In application count accuracy is also dependent upon the ability of the operator to read and record the count information accurately.

When programmed as a counting scale, the 8188 significantly reduces count errors induced by the operator. In most applications, it provides better practical accuracy than either hand counting or using mechanical techniques. Count accuracy of ± 1 one part is attainable in many specific cases. However, the most significant variable is uniform weight of the parts to be counted. this variable is not controllable by the scale.

Features

- keyboard setup and calibration
- keyboard selection of pound or gram units
- display resolution in excess of 1 part in 400,000 of scale capacity
- pushbutton and digital tare
- variable sample or digital APW entry
- pushbutton zeroing
- automatic zero maintenance
- RS232C data output

2. SPECIFICATIONS

2.1 Electrical and Physical

WARNING: For continued protection against shock hazard, connect to properly grounded outlet only. Do not remove the ground prong.

1). Environment

The Model 8188 is operable from 32°F (0°C) to 104°F (40°C).

2). Atmosphere

In areas where air currents or drafts are present the scale platter should be properly shielded.

3). Power Requirement

The Model 8188 is operable upon selection, at 100 V, 120V, 220V, and 240V AC (+10% - 15%) 50 Hz to 60 Hz. Power consumption is 15 VA.

CAUTION: All units are shipped fro 120V AC operation. Refer to Section III for alternate voltage operation.

4). RFI

The Model 8188 is not intended for use in areas where a high concentration of Radio Frequency interference is expected.

5). Appearance and Dimensions

The Model 8188 is fog white with a flat black control panel. Interchangeable keyboard overlays are packaged with each unit. The scale is 9.5'' (252 mm) wide x 11'' (2765mm) deep x 3.5'' (93mm) tall. The platter is 7'' x 9'' (180 mm x 235 mm). The unit weighs approximately 16 lb (7.4 kg).

6). Capacity

9.34 lb/4.24 kg

2.2 External Functions

The Model 8188 keyboard controls all weighing, counting and/or data output functions. Interchangeable keyboard overlays are used in conjunction with selectable program codes. Keyboard descriptions are as follows:

1). Program Codes 311 - 318, Parts Counting

ZERO - Used to capture zero. (Located below display).

Tare - Used to store tare weight.

APW - Used in conduction with the numeric keyboard to input sample quantity. If no sample quantity is input, a fixed reference of 10 is store in balance program.

Return - Used to clear stored tare and/or APW.

Clear Entry- Used to clear erroneous keyboard entries.

Recall - Sequential depressions display APW, gross, tare, net and count.

Print - Used to initiate data output.

0 - 9 AND DECIMAL - Used to input numeric data.

2). Program Codes 331-334, Straight Weigh

ZERO - Used to capture zero. (Located below display).

Tare - Used to store tare weight.

lbs - Used to convert display units from grams to pounds.

g - Used to convert display units from pounds to grams.

Return - Used to clear stored tare data.

Clear Entry- Used to clear erroneous keyboard entries.

Print - Used to initiate data output.

0 - 9 AND DECIMAL - Used to input digital tare data.

3). Program Codes 321 - 324, Straight Weighing

ZERO - Used to capture zero. (Located below display).

Tare - Used to store tare weight.

Return - Used to clear stored tare data.

Clear Entry- Used to clear erroneous keyboard entries.

Print - Used to initiate data output.

0 - 9 AND DECIMAL - Used to input digital tare data.

4). Program Codes 329 and 339, Gross Weight

ZERO - Used to capture zero. All other keyboard input is disabled. (Located below display).

2.3 INSTALLATION INSTRUCTIONS

1). Remove unit from shipping carton, checking for loose or damaged parts.

2). Check the line voltage selection plug in the rear of the unit See Fig. 1). Make certain that the arrow points to the required line voltage. If not, remove the plug, orient it properly and replace it into its connector.

3). Install the required keyboard overlay. There are four overlays included with the 8188 (See Fig. 2). On the tab end of the overlay, you will find the numbers of the weighing programs used with that overlay. The overlay
Access Cover (See Fig. 5), and sliding the required overlay into position over the keyboard. Replace the cover and screw.

4). Install, if desired, the dustcover (See below) by removing the protective foils from the pressure sensitive tapes and exerting a slight pressure. Make certain that the cover does not contact the platter.

5). Install the platter and connect the line cord.

4. CALIBRATION

The tools required for calibration include a small slotted screwdriver and two (2) 2kg test weights (part number 029722 020).

1). Apply power and allow one-half hour warmup before beginning.

2). Remove the cap from the Calibration Switch (See Fig. 6).

3). Zero the unit by pressing the Zero Key.

4). With the small screwdriver, gently depress the Calibration Switch. The display should show ''C'' (See Fig. 3). [If the display shows ''CE''
(See Fig. 4), re-zero the scale and press the Calibration Switch again.]

Fig. 3 Ready to Calibrate

Fig. 4 Calibration Error

5). Place 4 kg of weight on the platter. (NOTE: It does not matter whether or not the unit is presently displaying lb or g. The calibration procedure will work properly <u>providing</u> 4 kg is used).

6). Once the weight value is displayed, remove the test weights and press the zero Key.

7). Re-apply the test weights for a final check.

8). Calibration is complete. Replace the cap covering the Calibration Switch.

5. PROGRAMMING PROCEDURE

All programming of the Model 8188 is accomplished through the Zero Key. The following method is used

1). Turn off the Power Switch. (See Fig. 5).

Fig. 5

2). Remove the cap and slide the Locking Switch to the right. (See Fig. 6).

Fig. 6

3). While holding the Zero Key depressed, turn the Power Switch on.

4). When the display shows CH5 (See Fig. 7), release the zero Key. The display will now cycle from C0 through C4..

Fig. 7

Note: If the letter " L" appears at the left of the display instead of the letter ''C'' (See Fig. 8) the Program Locking Switch may not be positioned properly. See step 2 of this section.

Fig. 8

5). When the first digit of your planned code appears, press the Zero Key. (See Fig. 9). the second digit will now begin to cycle. (NOTE: To back up in the sequence, press the Zero Key when a zero appears in the cycling digit.

Fig. 9

6). When the planned number appears, press the Zero key. The third digit will now begin to cycle. (See Fig. 10).

Fig. 10

7). When the planned digit appears, press the Zero Key. The display will now show the three digits you have selected plus the symbol. (See Fig. 11). (NOTE: The third digit will continue to cycle, but the symbol will only illuminate when the code is the one you have selected. In this way, the programming of the unit may be reviewed. This review function will operate for all programming codes.

8). Depress the Zero Key when the cycling digit shows a zero. This will step you backwards to the second digit. When the second digit shows a zero, press the Zero Key. This will step you back to the first digit. At this point, you may either continue to program by selecting the first digit of the desired option code or leave the programming mode by pressing the Zero Key when the first digit of the desired option code or leave the programming mode by pressing the Zero Key when the first digit is zero. Once out of the programming mode, the unit will load the program and options you have selected.

9). When finished, slide the locking Switch to the left and replace the cap.

The programming choices are as follows:

5.1 DISPLAY FILTERING

CODE	DESCRIPTION
C111	Normal filtering
C112	Amplified filtering
C113	Strong filtering
C114	Extreme filtering

The filtering codes help to compensate for vibration and air currents. Stronger filtration will slow the display update rate.

5.2 MOTION RANGE SELECTION

CODE	DESCRIPTION
C121	1/4 Increment
C122	1/2 Increment
C123	1 Increment
C124	2 Increments
C125	4 Increments
C126	8 Increments
C127	16 Increments

C128	32 Increments
C129	64 Increments

No motion is defined as two (2) successive weight readings not changing more than the selected amount.

5.3 DISPLAY FORMAT

CODE	DESCRIPTION
C131	X.XXXXX lb or XXXX.XXg
C132	X.XXXX lb or XXXX.Xg
C133	Last digit will not illuminate until motion has ceased.
C134	All digits will not illuminate until motion has ceased.

When codes C133 and C134 are used, the display format defaults tot the decimal points used in code C131.

5.4 TARE INPUT

CODE	DESCRIPTION
C141	Tare command will be accepted during motion.
C142	Same as C141.

5.5 AUTO ZERO MAINTENANCE

CODE	DESCRIPTION
C151	Auto Zero Maintenance enabled.
C152	Auto zero Maintenance disabled.

5.6 AUTO-RANGING

CODE	DESCRIPTION
C161	Auto-Ranging enabled
C162	Auto-Ranging disabled.

For all present applications, code C162 MUST be programmed.

5.7 PRINT COMMAND

CODE	DESCRIPTION
C211	Print command accepted during motion.
C212	Same as C211.
C213	Continuous printing of weight during motion.
C214	Continuous printing of weight after motion has ceased.

The print options listed here are slightly unusual in that, while the unit will accept a Print command during motion and the display will show some portion of the true weight, the information will not be printed until motion has ceased. At that time, the true weight will be printed and the display will be updated.

Further, it is important to understand the continuous printing options. First, continuos printing means that the printer will continue to print regardless of what is on the platter. When the option of continuous print with motion is selected, the printer will print whatever the scale shows until motion ceases. At that time, the printer will keep printing the final weight. The same is true when weight is removed.

Continuous print after motion has ceased means that with no weight, the printer continuously prints zeros for the weight. When weight is applied, printing ceases until there is no more motion. At that time, the printer will begin to print the displayed weight. Printing of the weight will continue until the weight is removed. Printing will then stop until motion ceases.

5.8 BAUD RATES

CODE	DESCRIPTION
C221	150 Baud
C222	300 Baud
C223	600 Baud
C224	1200 Baud
C225	2400 Baud
C226	4800 Baud
C227	9600 Baud

5.9 PARITY SELECTION

CODE	DESCRIPTION
C231	Parity always a ‘‘1’’.
C232	Parity always a ‘‘0’’
C233	Odd parity
C234	Even parity

5.10 PARTS COUNTING PROGRAM SELECTION

CODE	DESCRIPTION
C311	Parts Counting in grams; minimum sample is 20 grams.
C312	Parts Counting in grams; minimum sample is 10 grams.
C313	Parts Counting in grams; minimum sample is 4 grams.

C314 Parts Counting in grams; minimum sample is 2 grams.
C315 Parts Counting in pounds; minimum sample is .04 lb.
C316 Parts Counting in pounds; minimum sample is .02 lb.
C317 Parts Counting in pounds; minimum sample is .008 lb.
C318 Parts Counting in pounds; minimum sample is .004 lb.

Minimum sample is defined as the amount of weight needed to initiate a count operation. Should the sample be insufficient, the unit will display an ''L'' and a number. The ''L'' stands for LOW and the number represents the number of pieces that must be added to the platter in order to reach the required minimum sample weight.

5.11 STRAIGHT WEIGHTING PROGRAM SELECTION

CODE	DESCRIPTION
C321	Straight Weighing in grams; not lb/g switchable; Gross, Tare and Net printed.
C322	Straight Weighing in grams; not lb/g switchable; Gross, Tare and Net printed and displayed*.
C323	Straight Weighing in grams; not lb/g switchable; Gross, Tare and Net printed.
C324	Straight Weighing in grams; not lb/g switchable; Gross, Tare and Net printed and displayed.

NOTE: Codes 325-328 are invalid codes.

C329 Gross weight ONLY in grams. No keyboard functions..

C331 Straight Weighing in grams; lb/g switchable; Gross, Tare Net printed. Powers up and defaults to grams.

C332 Straight Weighing in grams; lb/g switchable; Gross, Tare Net printed. Powers up and defaults to pounds.

C333 Straight Weighing in grams; lb/g switchable; Gross, Tare Net printed. Powers up and defaults to pounds.

C333 Straight Weighing in grams; lb/g switchable; Gross, Tare Net printed. Powers up and defaults to pounds. ''In order to print and display Gross, Tare and Net, the print Key must be pressed once for each field.

NOTE: Codes 335 - 338 are invalid codes.

C339 Gross weight ONLY in pounds. No keyboard functions.

5.12 PROGRAM LOCK SELECTION

CODE	DESCRIPTION
C411	Lock OFF
C412	Lock ON

The program lock function is sued in conjunction with the locking Switch located on the left side of the unit (see Fig. 6). If the program code is not turned on, the switch will have no function.

5.13 AUTO ZERO RANGE SELECTION

CODE	DESCRIPTION
C421	Auto Zero OFF
C422	Tracking for 8 or less increments.
C423	Tracking for 16 or less increments.
C424	Tracking for 32 or less increments.

6. PROGRAMMING WHEN CONNECTED TO MODEL 8186 COUNTING SCALE

Certain programming selections in the 8188 and 8186 must be chosen or the two units will not communicate properly. The following sections describe the functions that must be selected.

6.1 Programming the Model 8188

The codes listed below are the codes recommended for standard applications. The codes followed by an ‘‘*’’ indicate that function may require a different selection depending upon the application and environment. See Section 5 for a complete description of these codes.

	FUNCTION	CODE	
1.	Display Filtering	C111*	
2.	Motion Range Selection	C123*	
3.	Display Format		C131
4.	Tare Input	C142	
5.	Auto Zero Maint.	C151	
6.	Auto Ranging		C162
7.	Print Command		C213
8.	Baud Rate	C226	
9.	Parity Selection	C233	
10.	Weighing Program	C333	
11.	Program Lock		C412
12.	Auto Zero Range	C421	

After selecting these codes, the programming in the Model 8188 will be complete.

6.2 Programming the Model 8186

Upon entry into the setup mode, the first question asked is ‘‘RS232 Scale?’’*. If the 8188 scale is to be connected, answer this first question with YES. All formatting for connection tot the 8188 scale will be done automatically. The 8188 will be designated as Scale 2 and cannot be changed.

*NOTE: There must be a ‘‘U’’ revision or newer CPU PCB in the 8186. The part number of this PCB is U118502 00A. Serial I/O KOP is also required.

Complete the programming for the 8186 then exit the setup routine . The 8186 will flash the display ‘‘NO DATA RECVD’’ if the communication fails.

7. ERROR CODES

The following are Error Codes that may display during operation of the 8188.

1. E1 - This code means that a keyboard entry was made out of the proper sequence . For example, the APW Key was depressed when the scale was looking for Tare. This error normally clears itself.

2. CE - This codes stands for Calibration Error and usually means that the scale is not zeroed when calibration is attempted.

3. L - This codes stands for ‘LOW’ or Under Zero. In counting applications, the ‘‘L’’ along with a number stands for the additional number of sample pieces required to complete a count operation.

4. H - This codes stands for ‘HIGH’ or Over Capacity.

5. - - - This codes means that the weighing program selected is not valid and a new program must be entered. For example, if code 325 is entered as the weighing program, the unit will display the two dashes.

6. CH1 through CH9

- These are power-up testes that check for proper communication between the microprocessor and their various peripheral devices. Should any of these checks fail, the entire unit will have to be replaced.

8. OPERATION INSTRUCTIONS

Use With Parts Counting Programs 311 thru 318.

8.1 Count Up (Sample Mode)

For counting sequences where the piece weight

PROCEDURE	DISPLAY
1a. Press the “ Zero” key; zero weight displayed.	0.00000

b. If a container is used. place on scale, press " Tare" key.

2. Place sample pieces on the scale. + 0.04458

3. Enter the quantity of the sample using the numeric keys. + 14

4a. Press the " Sample" key, count is displayed. The Model 8188 is now ready to count. + 14

4b. The Model 8188 requires a minimum sample weight (programmed during setup). If an insufficient sample is used (-L), the display indicates the number of additional pieces necessary to achieve the minimum weight requirement. Simply add weight (pieces) to the initial sample. The -L 11 display will change indicating the total count.

+ 25

Note: The Model 8188 program contains a fixed sample reference of 10. A sample quantity of 10 does not require a numeric entry.

8.2 Count Up (Average Piece Weight Entry)

For counting sequences where the piece weight of the part is known.

PROCEDURE	DISPLAY
1a. Press the " Zero" key; zero weight displayed.	
b. If a container is used, place on scale, press ''Tare'' key. If desired, tare weight may not be input manually via the keyboard.	
2. Enter the piece weight of the part manually using the digit keys.	
3. Press the " APW" key; the Model 8188 is now ready to count.	
4. Place pieces on the scale as desired.	

Note: When piece-weight and container weight are both known, a total may be calculated easily by manually inputting both APW and tare via the keyboard.

8.3 Count Down (Sample Mode)

For counting sequences where the piece weight of the part is unknown.

	PROCEDURE	DISPLAY
1.	Press the ‘Zero” key; zero weight displayed.	
2.	Place full container on the scale.	
3.	Press the “ Tare” key, then remove sample pieces from the container.	
4.	Enter the quantity of the sample using the numeric keys.	
5a.	Press the “ Sample” key; count is displayed. The Model 8188 is now ready to count down. Remove pieces from the container until the desired count is attained.	
5b.	The Model 8188 requires a minimum sample weight (programmed during setup.) If an insufficient sample is used (-L), the display indicates the number of additional pieces necessary to achieve the minimum weight requirement. Simply remove weight (pieces) from the container. The display will change indicating the total count.	

Note: The Model 8188 program contains a fixed sample reference of 10. A sample quantity of 10 does not require a numeric entry.

8.4 Count Down (Average Piece Weight Entry)

For counting sequences where the piece weight of the part is known.

	PROCEDURE	DISPLAY
1.	Press the “ Zero” key; zero weight displayed.	
2.	Place full container on the scale.	
3.	Press the “ Tare” key.	
4.	Enter the piece weight of part using the numeric keys.	
5.	Press the “ APW” key; the Model 8188 is now ready to count down. Remove pieces from the container until the desired count is attained.	

9. SERIAL DATA I/O

9.1 Description

The Model 8188 has an RS-232 output as standard. The baud rate is selectable in the setup mode as 150, 300, 600, 1200, 2400, or 4800

baud. Handshaking lines consist of CTS and DSR only. All characters transmitted will be ASCII coded in a 10 bit frame. A character will consist of:

1 Start Bit
7 Data Bits (ASCII)
1 Parity Bit*
1 Stop Bit

Parity is selectable during set-up.

All non-significant leading zeros will be transmitted as spaces. Data output is selectable as either continuous (codes) 213 and 214) or on demand (codes 211 and 212). The output format will differ depending upon which of these modes is selected what weighing program has been selected.

NOTE: One or two lines of erroneous data may be output during a display transition keyboard entry when continuous output has been selected.

1. Continuous Data Output

This mode is selected via code 213 or 214 and is operational throughout normal operation and also during the recall sequence (where applicable). Any error display on the 8188 (such as E1) will also be transmitted. The major differences between codes 213 and 214 are:

- Code 213 transmits the data displayed regardless of motion on the scale. If motion is detected, the data legend (tare, net, pieces, etc.) will not be transmitted with the numeric data. Spaces will be transmitted instead.

NOTE: Spaces will be transmitted while the display is blank in this mode.

- Code 214 transmits only when no motion is present. The data transmitted always consists of the numeric data and the data legend description.

NOTE: No data will be output while the display is blank in this mode.

The format of the data transmitted will depend upon what is displayed on the 8188. See the following charts for these formats. No data will be output during keyboard entry or when º symbol is illuminated on the left of the display.

1a. Data Output During Weighment

Output of Weight or pieces during normal weight/count sequence.

Character Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Character Sent	*	SP	X	X	X	X	X	X	X	X	SP	△	△	△	CR	LF

* - Plus/minus prefix or space.
SP - Space.

X - Numeric data, decimal point or space.
△ - Unit designator or space.

UNIT	△	△	△
grams	g	SP	SP
pounds	I	b	SP
pieces	P	C	S

CR - Carriage Return.
LF - Line Feed

1b. Data Output - Recall or Print Key

Character Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
			S P	*	S P	X	X	X	X	X	X	X	X	S P	△	△	△	C R	L F

Character Sent

- Legend description or space

LEGEND			
gross	SP	SP	SP
tare	T	A	R
net	N	E	T
avg. pc. wt.	A	P	W
pieces	P	C	S

* - Plus/minus prefix or space.
SP - Space.
X - Numeric data, decimal point or space.
△ - Unit designator or space.

UNIT	△	△	△
grams	g	SP	SP
pounds	I	b	SP
pieces	P	C	S

CR - Carriage Return
LF - Line Feed

1c. Special Characters

Character Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
S P	S P	S P	S P	S P	S P	◇	◇	S P	S P	S P	S P	S P	S P	C R	L F

Character Sent

SP - Space

◇ - Error or prompt symbol.

SYMBOL	◇	◇
H	H	SP
L	L	SP
C	C	SP
CE	C	E

E1 - -	E -	1 -

CR - Carriage Return
LF - Line Feed

2. Demand (Print Key) Data Output

This mode is selected via code 211 or 212. A print command will be accepted regardless of motion on the scale however the transmission will not occur until after motion has stopped.

The number of data fields output depends upon the weighting program selected during setup. There are two types of selections for the ‘‘on demand’’ output.

- Codes 322, 324, 332, and 334 will output only one lien of data each time the print key is pressed.

- All other weighing program selections will output all fields when the print key is pressed once.

3. ‘‘ON DEMAND’’ Data Output Format

Character Descriptions

SP - Space
* - Plus/minus prefix or space.
X - Numeric data, decimal point or space.
CR - Carriage Return
LF - Line Feed

3a. Gross Only

1). Pounds Mode

SP	SP	SP	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF

2). Grams Mode

SP	SP	SP	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF

3b. Gross -Tare - Net

1). Pounds Mode

SP	SP	SP	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF

T	A	R	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF

N	E	T	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF

2). Grams Mode

SP	SP	SP	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF
T	A	R	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF
N	E	T	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF

3c. Piece Count

1). Pounds Mode

SP	SP	SP	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF
T	A	R	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF
N	E	T	SP	*	SP	X	X	.	X	X	X	X	X	SP	L	b	SP	CR	LF
A	P	W	SP	*	SP	X	.	X	X	X	X	X	X	SP	L	b	SP	CR	LF
P	C	S	SP	*	SP	SP	X	X	X	X	X	X	X	SP	SP	SP	SP	CR	LF

2). Grams Mode

SP	SP	SP	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF
T	A	R	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF
N	E	T	SP	*	SP	X	X	X	X	X	.	X	X	SP	g	SP	SP	CR	LF
A	P	W	SP	*	SP	X	X	X	.	X	X	X	X	SP	g	SP	SP	CR	LF
P	C	S	SP	*	SP	SP	X	X	X	X	X	X	X	SP	SP	SP	SP	CR	LF

9.2 INTERFACE TO MODEL 8855 PRINTER

The Model 8855 printer requires a special interface cable. This cable will have an interface PCB attached to the printer end. It will be necessary to remove the existing Interface PCB from the 8855 and install the special one. (See Fig. 12). The part number of the Interface Cable is 123654 00A.

NOTE: The 8188 must be programmed for 1200 baud to operate with the 8855.

Model 8855 Bottom View

9.3 INTERFACE TO MODEL 8806 PRINTER

The Model 8806 advanced configuration WILL NOT accumulate when used in conjunction with 8188. Program the 8806 baud rate to correspond to the baud rate selected in the 8188 (300, 1200 or 2400 baud).

8188 J-1		8806 J-7	
5	CTS	20	DTR
2	TXD	3	RXD
20	DTR	5	CTS
14	Signal Shield	7	Logic Ground
1	Shield	1	Logic Ground

NOTE: Use of Toledo Scale Printers requires selection of EVEN parity.
Accessory 123653 00A

9.4 INTERFACE TO MODEL 8186 COUNTING SCALE

In order to properly function, several items must be noted.

1. There must be a " U" revision or newer CPU PCB in the 8186 - part number
U118502 00A

2. The 8186 must have a Serial I/O Kit installed. This is the same kit that is required if a printer is connected to the 8186 - part number A119496 00A.

3. The proper interconnecting cable must be used between the 8186 and 8188 - part number 123657 00A.

Reference Section 6 of this technical manual for proper programming.

10. MAINTENANCE AND CARE

The Model 8188 is designed to require a minimum amount of maintenance and service.

It is suggested that assistance from qualified Service personnel be requested in the event a problem should arise that is beyond the scope of this manual.

To clean the Model 8188, use a soft clean cloth that has been dampened with a mild window type cleaner. DO NOT use any type of industrial solvent. DO NOT spray cleaner directly onto the unit.

Dust Cover P/N	KN	769668020