Chapter 27
Counting Mode

27.1 Parts Counting Mode

This section discusses counting operations of the 450 series indicators. Counting operations allow for the ability of the 450 series units to "count" the quantity of parts on the weigh platform. In order for the indicator to accomplish this, a sampling operation has to be performed to establish the average weight of one of the pieces to be counted. The average piece weight value may also be keyed in directly without having to perform a sampling operation.

27.1.1 Counting mode (Key Operation)

In order to activate the counting operations, the unit must be in the "quantity" mode. To access the quantity mode place parameter 30 in the selectable modes of the instrument operation. Pressing the **[SELECT]** key will then simply step through all enabled modes of instrument operation including the quantity mode. Refer to chapter 12. The 455 can easily accomplish entering the quantity mode by pressing **[30] [SELECT]**

Once in the quantity mode, if the **[ENTER]** key **(model 450)** or **[UNITS]** key **(model 455)** is pressed alone (not preceded by a numeric entry, the instrument will perform an auto-tare, establishing a net zero as a starting point. The current net weight will then be actively displayed and the prompt "**Add XX**" will be shown, where "XX" is the default value set at parameter **P182**. If the specified number of parts are then added, then the **[ENTER]** key may be pressed to accept the sample. If a different number of parts are added other than the default sample size set at **P182**, then the actual number of parts added should be keyed in followed by pressing the **[ENTER]** key. The subsequent results depend on the selections made for the auto-enhance and minimum accuracy selections. Refer to those sections for further information.

If a numeric entry precedes the **[ENTER]** key **(model 450)** or **[UNITS]** key **(model 455)** then the instrument does ***not*** perform an auto-tare. The entry is assumed to be the number of parts already present on the scale platform. If when the entry is made the current mode is GROSS or GrTot then the stored tare weight is assumed to be from a previous weighment and is cleared out. Otherwise, any previous tare is assumed to be for a container that is in use and the tare is retained and the current net weight is used to calculate the piece weight based on the entered sample size. This allows for the situation where the tare weight of the container (if any) is consistent and has already been established. Then the parts may be added and the number of parts may be keyed in.

Note however, that the first method is the recommended approach and will eliminate the possibility of inappropriate tare weights from affecting the piece weight calculation.

Note:
When the quantity mode is accessed and the residing piece weight value is "0.00", the prompt "**Must Sampl**" will be displayed. Press **[ENTER]** to proceed into the sample to determine a piece weight mode (proceed to next section) or key in a piece weight value at P34.

27.1.2 Sampling to Determine a Piece Weight

Although the sampling process may be performed in a number of ways, the recommended method is *access the quantity mode*, place an empty box or empty container on the scale platform, and then press **[ENTER]** key **(model 450)** or **[UNITS]** key **(model 455).** The instrument will then perform an auto-tare resulting in a zero net weight. The display will then prompt you to **Add xx** where the "xx" is the sample quantity of parts (sample size) set by parameter P182. (Manufacturer default setting is 10 pieces) The requested number of parts should then be added to the instrument's scale platform. Press the **[ENTER]** key. If the sample's total weight was sufficient, the piece weight will be calculated and the sample quantity will be displayed. Otherwise, you may be prompted to **add** additional parts. Additional parts are requested if minimum accuracies are not met. The exact prompts will depend on whether the auto-enhance and/or minimum accuracy assurance features have been enabled (Parameter 181 and Parameter 183 respectively). The minimum amount of weight required for the sample routine to meet the selected accuracy requirements for the specified scale capacity is considered.

If the weight of the sample is un-detectable or barely detectable then the message **Code 32 ADD MORE!** is displayed briefly. This will most often occur when the

[ENTER] key is pressed without adding any parts. If the parts were in fact placed on the scale, either the parts are too light to count on that capacity platform or a much larger quantity of parts must be hand counted in order to perform the sample.

27.1.3 Negative Sampling to Determine a Piece Weight

In order to perform a negative sample routine, *access the quantity mode*, place a *full* or *partially full* container of parts on the scale and press **[ENTER]** key **(model 450)** or **[UNITS]** key **(model 455)**. The indicator will then perform an auto-tare resulting in a zero net weight. The display will then prompt you to **Add: xx** where the "xx" is the sample quantity of parts (sample size) set by parameter P182. Disregard the "**Add:xx**" prompting, assume **Take:xx** and proceed to *remove* the requested number of parts. The weight difference of the requested number of parts is then calculated by the indicator. Press the **[ENTER]** key. If the sample's total weight was sufficient, the piece weight will be calculated and the sample quantity will be displayed. Otherwise, you may be prompted to **Take** additional parts. The exact prompts will depend on whether the auto-enhance and/or minimum accuracy assurance features have been enabled. The minimum amount of weight required for the sample routine to meet the selected accuracy requirements for the specified scale capacity is considered. Continue to enhance, as desired. Key in the tare weight of the empty container, add the parts removed for sampling back into the container. The quantity displayed will be the total quantity in the container.

If the weight of the sample removed is un-detectable or barely detectable then the message **Code 32 ADD MORE!** is displayed briefly. This actually means "Take" if a negative sampling is to be performed. The instrument does not know if the operator intends to perform a positive or a negative sampling if no weight is removed. This prompt indicates that more weight must be **removed** adding to the overall sample weight. This will most often occur when the **[ENTER]** key is pressed without taking out any parts. If the parts were in fact taken from the scale, either the parts are too light to count on that capacity platform or a much larger quantity of parts must be hand counted out in order to perform the sample.

27.1.4 Use of the Auto-Enhance Feature (Parameter 181)

When the auto-enhance feature is enabled, after a sample operation is performed, the instrument calculates the number of parts which may be added to the scale while keeping the instrument's uncertainty of the number of parts on the platform within +/- 1/3 of a part. If the total number of parts which may be counted without error is more than the number sampled, the indicator will briefly display the maximum number of parts which can be used to perform an auto-enhance. If additional parts are added, while keeping the total displayed quantity **less than or equal to** the displayed maximum enhance amount, as soon as motion ceases the indicator will re-calculate automatically the piece weight based on the new larger quantity. Then the indicator will display the new maximum enhanceable quantity and the process will repeat. However the indicator has a minimum threshold of the piece weight for which enhancements can occur. This minimum enhanceable piece weight is 0.0084% of capacity. If the piece weight is less than this amount then enhancements are not possible and the message **Can't Enhnc** will be displayed.

Whenever a piece weight is keyed in, the indicator will clear it's calculated accuracy register and the last sample register since neither the accuracy nor the sampled quantity of the entered piece weight are known. Therefore, auto-enhancements are not possible with entered piece weights.

27.1.5 Using the Minimum Accuracy Assurance Feature (Parameter 183)

The minimum accuracy feature is designed to insure that parts counting operations will result in a pre-specified minimum accuracy. This is accomplished either by requiring the sampled parts to meet or exceed a minimum weight, or when the enhance feature is enabled, by requiring additional enhancements after the initial sample operation has been performed before a large number of parts may be counted. In the case of the enhance feature being disabled, if the weight of the sampled parts is insufficient to guarantee the required

Required Accuracy	Percent of Capacity	2 lb Platform	10 lb Platform	50 lb Platform	200 lb Platform
90%	0.00504%	0.0001008 lb	0.000504 lb	0.00252 lb	0.01008 lb
91%	0.00576%	0.0001152 lb	0.000576 lb	0.00288 lb	0.01152 lb
92%	0.0063%	0.000126 lb	0.00063 lb	0.00324 lb	0.0126 lb
93%	0.0072%	0.000144 lb	0.00072 lb	0.0036 lb	0.0144 lb
94%	0.00846%	0.0001692 lb	0.000846 lb	0.00432 lb	0.01692 lb
95%	0.0108%	0.0002016 lb	0.001008 lb	0.00504 lb	0.02016 lb
96%	0.0126%	0.000252 lb	0.00126 lb	0.0063 lb	0.0252 lb
97%	0.01683%	0.0003366 lb	0.001692 lb	0.00846 lb	0.03366 lb
98%	0.0252%	0.000504 lb	0.00252 lb	0.0126 lb	0.0504 lb
98.48%	0.033%	0.000666 lb	0.00333 lb	0.01674 lb	0.0666 lb
99%	0.0504%	0.001008 lb	0.00504 lb	0.0252 lb	0.1008 lb
99.20%	0.063%	0.00126 lb	0.0063 lb	0.0315 lb	0.126 lb
99.40%	0.0846%	0.001692 lb	0.00846 lb	0.0423 lb	0.1692 lb
99.60%	0.126%	0.00252 lb	0.0126 lb	0.063 lb	0.252 lb
99.68%	0.1575%	0.00315 lb	0.01575 lb	0.07884 lb	0.315 lb
99.8%	0.252%	0.00504 lb	0.0252 lb	0.126 lb	0.504 lb
99.88%	0.4212%	0.008406 lb	0.04212 lb	0.2106 lb	0.8424 lb
99.96%	1.26%	0.0252 lb	0.126 lb	0.63 lb	2.52 lb

Table 27-1, Minimum Sampled Weight Accuracy Requirements

accuracy (as set by P183) then the operator will be prompted to **Add xx** parts. The specific number represented by the "xx" is the additional number of parts which are need to be hand-counted and added to the scale in order for the accuracy to be achieved. However, if the enhance feature has been enabled, the possible results of a sampling operation can be detailed as follows in the next sections.

27.1.6 Achieved accuracy is less than required

Achieved accuracy is insufficient to allow an enhancement to occur with at least 5 additional pieces: The indicator will prompt the operator with **Add xx** parts, where the quantity "xx" is the number of additional parts required to allow either enhancements to be achieved, or the number required to achieve the required accuracy, whichever is less. Add the specified number of parts and then press **[ENTER]** or add even more parts and key in the TOTAL number of parts on the scale and press **[ENTER]**.

The indicator will display the current quantity on the numeric display and the message **Enhn# xx** will be shown on the alpha display, where the "xx" is the total maximum number of parts that may be on the scale in order for an enhancement to occur. Additional parts may then be added, up to the number shown. As soon as motion ceases, if the quantity displayed is more than the original sampled amount and less than the displayed maximum enhance amount then the piece weight will be re-calculated. Then the achieved accuracy will be re-evaluated. If the required accuracy still has not been achieved, another enhancement will be required and this step will be repeated with a larger maximum enhance amount. If more parts than specified are added, the display will read **Code 53 Accy >Req'd** indicating that the required accuracy has not been achieved and counting may not continue.

27.1.7 Achieved accuracy meets or exceeds setup requirements

Achieved accuracy is insufficient to allow an enhancement to occur: The message **Can't Enhnc** is displayed briefly. This will not normally occur unless the sampled number of parts was very large and / or the piece weight was relatively small.

Filter Selection	Multiplier
8	1
4	1.33
2	2
1	2.66
0.5	3.11
0.25	4
0.13	4.66
0.06	5.55

Table 27-2, Multiplier factors

Sampled amount is sufficient to allow enhancements: The maximum number of parts which can be counted and allow an enhancement to occur is displayed briefly and the quantity is then displayed.

In order for a given accuracy to be achieved, the weight of the sampled parts must meet or exceed a specific minimum. Table 27-1, Minimum Accuracy Weight Requirements shows the required sample weight for various accuracy requirements on a variety of platform capacities. Table 27-1 is calculated for the filter selection of 8 seconds. It also is based on a load cell full scale input of 2 mV/V. If a 1 mV/V full scale cell is used, all minimum weight requirements should be 2 times the the value stated. If a 3 mV/V cell is used, the value should be 2/3 the value shown.

If a different filter selection is used other than the 8 second filter, refer to table 27-2 for minimum weight required multiplication factors. Take the minimum weight required value from the table using the 8 second filter and multiply it by the factor for the specified filter selection. This will yield the minimum weight required for the new filter selected.

Note however, that parts counting based on weight is dependent on a reasonably consistent part weight. Some plastic parts vary in weight from piece to piece by 10% or more. Attempting to count these items with a high degree of accuracy will require a very large hand-counted random sample of the items during the piece weight calculation process. The minimum accuracy assurance is intended to guide the operator in sampling parts with a fairly consistent piece weight.

27.1.8 Counting Parts

There are several approaches toward counting parts with the 450 series instruments. A few of the primary methods are described below:

Method 1: Counting a specific number of parts

Access the quantity mode. Place empty container on platform (optional). Press the **[ENTER]** key **(model 450)** or the **[UNITS]** key **(model 455).**

The indicator tares to a zero net weight. The display shows the current net weight and the prompt: **Add 10** (the actual number is programmable by the setup parameter P182).

Place the specified number of parts on the scale.

Press **[ENTER]**. (Or add any number of parts, key in the number added, then press **[ENTER]**) The indicator then calculates the piece weight of the sample parts. (If the number of parts added were insufficient to achieve the required accuracy (as set by P183), then you will be prompted to add an additional number of parts. Add the specified number of parts and press **[ENTER]**).

Add the additional parts to be counted on the scale.

Method 2: Counting out a specific number of parts with piece weight enhancement.

Access the quantity mode. Place empty container on platform (optional). Press the **[ENTER]** key **(model 450)** or the **[UNITS]** key **(model 455).**

The indicator tares to a zero net weight. The display shows the current net weight and the prompt: "Add 10"

(the actual number is programmable via setup parameter P182).

Place the specified number of parts on the scale.

Press **[ENTER]**. The indicator then calculates the piece weight of the sample parts and momentarily displays the maximum number of parts which may be added for a piece weight enhancement to occur. Then the minimum achieved accuracy is displayed.

If a greater accuracy is desired, add additional parts but not more than the maximum enhanceable quantity. As soon as motion ceases, the indicator will recalculate the piece weight and then briefly display the new maximum number of pieces which can be added and still accurately enhance the piece weight.

Repeat as many times as desired.

Add the additional parts to be counted.

Method 3: Counting the total number of parts on hand with a known container weight

Access the quantity mode.

Place the full container of parts on the weigh platform.

Press **[ENTER]** key **(model 450)** or **[UNITS]** key **(model 455)**. The indicator tares to a zero net weight. The display shows the current net weight and the prompt: **Add 10** (Add means take in this instance). (the actual number is programmable using setup parameter P182).

Remove the specified number of parts from the box.

Press **[ENTER]**. The indicator then calculates the piece weight of the sample parts removed.

Key in (or bar-code scan) the tare weight of the container.

Add the sample parts back in that were removed.

The displayed quantity then is the total number of parts in the container.

27.1.9 Recommended Setup

In order achieve optimum counting results, certain setup parameter selections should be set. These parameters and their recommended settings are specified below.

P112 Zero Track aperture:
Make sure the zero track aperture is not set larger than the weight of parts that will be counted. If the smallest parts to be counted are 0.01 #, and the displayed increment **P111** is 0.05#, make sure the zero track aperture is set to less than 2/10 of a division (0.01 divided by 0.05 = 0.2).

P114 Motion Definition:
The definition for motion affects how much variation in weight can be allowed when the piece weight is calculated. Setting this as low as possible without having constant motion is optimal. Normally a setting of around 0.4 divisions will suffice.

P115 Motion Delay:
A delay of around one second normally works quite well. A longer delay may be desired if a very large filter selection is made.

P116 Filter:
The filter selection can be very instrumental in optimizing the accuracy of the piece weight calculation. GSE recommends a filter setting of 4 seconds. While this will increase the time required to sample and count parts, a significant increase in piece weight accuracy will be achieved. If the environment has more than average vibration an ever higher setting may be beneficial.

P119 Linearization:
For optimum sampling results, it is strongly recommended that a multipoint linearization calibration be performed on your scale. The smallest calibration weight should be near 0.1% of capacity. Subsequent calibration weights will be dependent upon your platform's performance and should be based upon the occurrence of a difference between the displayed and applied weight.

P162 Negative Tare:
Set this selection for "enabled". This will allow a tare to be performed even if the gross weight is slightly less than zero. This may occur if a container is not used.

P163 Tare Rounding:
Disable the tare rounding selection. If tare rounding were enabled it would prevent the indicator from determining the precise weight before the sample parts were added, resulting in a possible source of error in the piece weight calculation.

27.2 Front Panel Key Operation (Counting Related)

All of the instrument front panel keys operate normally for weighing modes.

[ZERO]
This key will zero the indicator, and establish the current signal from the weighing platform as a gross weight of zero. When the **[ZERO]** is executed from the quantity (Qty) mode, the indicator will remain in the quantity mode and any existing tare weight will be cleared. If the **[ZERO]** is executed from any of the other counting modes, the current mode will be changed to the GROSS mode.

[UNITS]
The only counting modes for which the **[UNITS]** key is defined are the piece weight modes, APW and APW*K. During these two modes the **[UNITS]** key will toggle the units through the units as selected in setup modes **P151** through **P154**. In the other counting modes the **[UNITS]** key is ignored on the model 450. The **[UNITS]** key is the **SAMPLE** key on a 455.

[SELECT]
The **[SELECT]** key will advance the indicator's mode to the next mode as programmed in setup mode **P300** thru **P309**. Alternatively, keying a mode number then pressing **[SELECT]** will change the indicator's current mode to be the mode whose number was keyed in.

[ID] **(M455 only)**
The **[ID]** key on the 455 will perform as it does in most other weigh modes, depending on the selection for setup parameter **P720**. If P720 is set for "**APW**", then by pressing the **[ID]** key the indicator allows access to storing, retrieving, keying in, printing and clearing specific or all pieceweights in a database. Once in the database mode the **[SELECT]** key toggles through all the above stated selections. Press the **[ID]** key to step back out of the Pieceweight Database Mode. Refer to the section on Piece Weight Database in this chapter for more information.

NOTE:

The range of parameters P181 thru P184 apply to the 450 series counting operations.

[TARGET] **(M455 only)**
The **[TARGET]** key allows access to the setpoint target registers (associated with P5100 program selection). Refer to Chapter 14, Standard Programs Operations (setpoint related).

[TARE]
The **[TARE]** key can be used to perform auto-tare or keyboard tare operations. When a new tare is stored, if the current mode is the QUANTITY mode, the current mode will remain the quantity mode. If the current mode is any other counting mode, the mode will change to the net mode. This operation is the same as most other weigh modes.

[PRINT] **(M450 only)**
This key is used to cause a transmit of data out the 450's serial port

While accessing the quantity accumulation register, if an entry has been keyed in, the 455 will prompt "MOD Ac?" briefly and then "**ENTER = MOD!**". Press the **[ENTER]** key to store the entered number as the new quantity total. Or press any other key to prevent changing the current quantity total value.
If this key is pressed without an entry, the custom transmit setups (if any) will be transmitted.

If the quantity mode is accessed, the **[ENTER]** key is used to calculate a piece weight based on a sample of parts to be counted.

[CLR]
The **[CLR]** key will cause the prompt "**CLEAR ACs?**" followed by "**ENTER = CLR!**". Pressing **[ENTER]** will clear all the accumulate totals (gross, net, and qty) to zero. Pressing any other key will abort the clearing of the totals.

27.3 Parts Counting Parameter Setup

P181 AEnhn
Auto-Enhance: Setting this parameter to "off" prevents the auto-enhance feature from operating. The "on"selection allows the Indicator to auto-enhance the piece weight whenever the necessary criteria are met.

P182 SmpSz

Default Sample Size: This parameter specifies the sample amount which the operator is prompted to add after entering the quantity mode and pressing the **[ENTER]** key. Any whole number between 1 and 9999 may be entered here. 10 is the factory default.

P183 %Accy
Required Piece Weight Accuracy for Sample Acceptance: The value entered here specifies minimum piece weight accuracy which must be achieved in order for a sample to be accepted. If an applied sample weight is insufficient to achieve the accuracy specified, the operator will be prompted to add a specific number of parts in order to achieve that accuracy. The choices available are no minimum accuracy required (displayed as "none") or 90.0% to 99.96%, in 0.04% increments. Key in the desired percentage then **[ENTER]**. Entries will be rounded down to the next lower available accuracy increment. Enter **[0]** for no accuracy requirement. This results in a minimum sample weight of slightly greater than the zero-track aperture, P112. Press **[ENTER]** to cycle through the available choices starting at the previously selected choice.

P184 AcDsp
Accuracy Displayed: With this parameter set for "on", the accuracy of the current piece weight is shown on the display, above the "Qty" indication, whenever the weight is not in motion. For example, after performing a sample operation the indicator might show " 10. 98.3% Qty". If this parameter is selected as "off" then the top line of the alpha numeric display will only be used to indicate motion.

27.4 Counting Mode Listing

The **[SELECT]** key will advance the indicator's mode to the next mode as programmed in the setup mode P300 - P309. Alternatively, keying a mode number then pressing **[SELECT]** will change the indicator's current mode to be the mode whose number was keyed in. The following eight modes are 450 series counting related. See table 27-3.

MODE NUMBER	DESCRIPTION
30	Quantity
31	Quantity Total
34	Piece Weight
35	Piece Weight x 1000
37	Last Sampled Amount

Table 27-3, Counting Modes

27

30 Quantity

The current net weight is divided by the current piece weight, resulting in the current quantity. This value may not be entered.

31 Quantity Total

This mode displays the current total accumulated quantity. The value displayed is the result of previous additions of the displayed quantity to the previous total quantity.

It operates the same as mode 3, the gross total mode. The largest value that can be displayed is 999,999. If a larger value is achieved, the display will read "Code04 #> Dsply". However the stored total is still active and accumulates may continue to occur. These larger values may be printed without any problem. If the value exceeds 3,000,000 internal rounding will be performed. Theoretically this value is 16,777,216.

34 Piece Weight

This register holds the value of the average piece weight established after a sample routine.

35 Piece Weight x 1000

This register holds the value of the average piece weight times 1000. This value is calculated after the piece weight value is established.

37 Last Sampled Amount

This register holds the quantity of the last sample size used during a sampling routine. An example might be 10 pieces. The factory uses 10 as a default sample size.

27.5 Piece Weight Database Mode (model 455 only)

Pieceweight storage/recall is an application for which the 450 series is very well suited. This application takes into account the two most frequent situations: storing and recalling pieceweights.

In Pieceweight storing **(Store)**, the pieceweight value residing in the pieceweight register is placed in a database associated with an ID number.

In Pieceweight recall **(Get)**, the pieceweight value is recalled from a database associated with an ID number and placed in the pieceweight register.

MENU ITEM	OPERATION
Store APW:	Key in ID# and press **[ENTER]** or press **[ENTER]** alone and you will be prompted to key in ID#. If ID# does not exist, a row will be created with this ID# and pieceweight. Return to the previous display mode.
Get APW:	Key in ID# and press **[ENTER]** or press **[ENTER]** alone and you will be prompted to key in ID#. If ID# does not exist, ***IDnot Found*** will be displayed briefly followed by the prompt ***Must Sampl***. Proceed to follow the sample routine procedure stated earlier or exit by pressing **[ID]** to restart entry of a new ID#. If found, the pieceweight register will be updated with the associated value. Return to previous display mode.
KeyIn APW:	Key in ID# and press **[ENTER]** or press **[ENTER]** alone and you will be prompted to key in ID#. If ID# does not exist, a new *permanent* row will be created in the database. If ID# exist, the existing ID# information will be overwritten with the new data. Return to display mode.
does previous	
Print APWs:	Press **[ENTER]** to print stored piece weights in row/column format with header. Return to previous display mode.
Clear One:	Key in ID# and press **[ENTER]** or press **[ENTER]** alone and you will be prompted to key in ID#. If ID# is found, ***Sure? ???*** will prompt you to confirm your intention to delete that from the database followed by **"Enter = Yes"**. Press **[ENTER]** to clear or press key to abort by pressing **[ENTER]**. Press any other key to abort. Briefly display after deleting and return to previous weight display. If ID# is not found, ***IDnot Found*** and return to previous display mode.
ID# any other ***Done!*** briefly display	
Clear All:	Press **[ENTER]** to delete all ID#'s from the database. ***Sure? ???*** will prompt you to your intention to delete all data followed by **"Enter = Yes"**. Press **[ENTER]** to press any other key to abort. Briefly display ***Done!*** after deleting and display mode.
confirm clear or return to previous	

Figure 27-1, Method of Operation

The APW database capability makes use of the **[ID]** key to permit entry of pieceweight identification (ID) numbers. The IDs associated with a pieceweight are stored within the system via the "**store**" or "**keyin**" pieceweight (APW) mode. The pieceweight values are recalled from the database via the "**Get**" pieceweight (APW) mode.

This feature includes the ability to store, recall, keyin, print all, clear any or all stored pieceweights.

The APW Database Mode feature works in a relatively preset manner. Customized ticket printouts specific to the customer needs can be created but are not tied directly to this mode. The database format is fixed.

27.5.1 Setup

Setup involves enabling the "**APW**" feature.

Enabling "APW" Mode

To enable the "APW" feature, parameter **P720** is set to the selection **"APW"**. Parameter 721 sets the ID register storage size. A size of 1 is the default setting with a 49 character maximum size for ID storage (P21).

27.5.2 Method of Operation

Figure 27-1 shows the modes of operation which are selectable when the **[ID]** key is pressed.
The first menu item as listed below will appear. Pressing the **[SELECT]** key will advance through the menu items. If the last menu item is displayed, pressing **[SELECT]** will "wrap" to the beginning of the menu. Once in the menu, press **[ID]** again to exit to the previous weight display.

27.5.3 Alpha-Numeric "APW" ID's

(M455 only)
The 455 numeric keypad allows for easy numeric APW ID entries. Alpha character entry is possible using the cursor keys. The **[A-Z]** key must be pressed to initiate an alpha entry. The **[◀]** and **[▶]** arrow keys allow for moving back and forth between the next or previous character entries. The **[▲]** and **[▼]** arrow keys allow for scrolling up and down through the ASCII character set.

27.5.4 Data Storage Structure

The ID#'s (P21) and APWs (P34) will be stored in a two column EEPROM database structure.

A 2K EEPROM is used in the standard 450 series to provide adequate storage of database rows. The ability to use an optional 8K EEPROM provides extended data storage capability.

A size of 1 is the default setting with a 49 character maximum size for ID storage (P21).

Each time a *store* or *keyed in APW* operation is performed, a row is stored in the database. If a pre-existing APW ID is entered for any of these operations, the row in the database will be overwritten.

Database structure of stored "APWs" example:

```
ID       Stored Wt

ABC      0.711758 lb
ABD      0.215732 lb
741         0.012 lb
123      0.232100 lb
789      0.111392 lb
1        0.562300 lb
ABC123   0.003201 lb
```

27.5.5 Additional Notes

Printing keyed in APWs on labels can be flagged by enabling parameter P412. Refer to chapter 11, Pre-setable Parameters for more information.

10:04 am 01/03/96
APW ID# 123

165.00 lb Qty
0.15 lb APW
45.96 lb Gross
21.67 lb Tare
24.29 lb Net

27.5.6 Example Setups

EXAMPLE #1: APW (Program is on file at GSE, "apw450se.set")

100%s23640%i%e Access Setup Modes, Allowing Changes

NAME APW ID REGISTER
621%sAPW ID#%e P621.-- APW ID#

SETUP INSTRUMENT FOR APW ID OPERATION
720%s2%e P720.02 Store: APW
721%s8%e P721.08 IDSiz

1st CUSTOM TRANSMIT (Print Ticket)
1999%s%c%e P1000. Custom Transmit #1

.002%e <STX>
%e11%e%e0%e%e Tm/Dt Format = 0
.256%e <CR> <LF>
%e21%e%e0%e%e APW ID# Format = 0
.256%e <CR> <LF>
.010%e <LF>
%e30%e%e0%e%e Qty Format = 0
.256%e <CR> <LF>
%e34%e%e0%e%e APW Format = 0
.256%e <CR> <LF>
%e0%e%e0%e%e Gross Wt Format = 0
.256%e <CR> <LF>
%e2%e%e0%e%e Tare Wt Format = 0
.256%e
%e1%e%e0%e%e Net Wt Format = 0
.256%e
%z