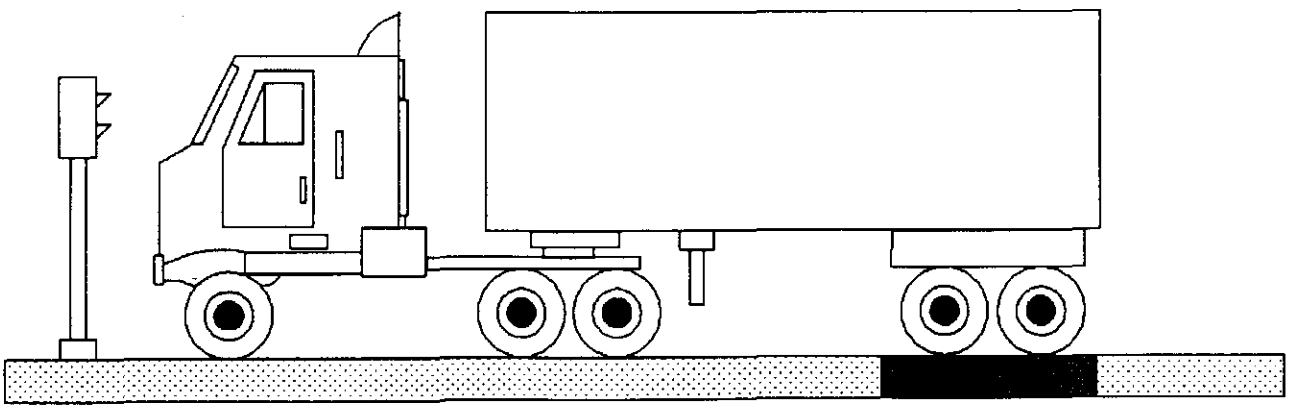
traffic lites must both be in Auto; 8146 looks for opto input which is only turned on when switches are in AUTO.

METTLER TOLEDO

TSM813F

8146

AXLE SCALE CONTROLLER



8146 F5.10 MUST BE 2-5

AUGUST 1994

****

SEQUENCE OF OPERATION

****

Throughout this sequence the displays and prompts will have brackets surrounding them to emphasize operator prompts and inputs.

[bracketed data = operator prompts] <angled bracket = keyboard inputs>

Note that when this program is added to the operation of the 8146, the SETPOINT, HOST, SUM, RATE and the BAR CODE functions were removed. Any references to these functions in the 8146 Technical Manual must be disregarded. The Continuous and Demand output functions are both used in the system (SETUP Functions F5.1 & F5.2 are for Printer Setup ONLY, F5.7 is not used and the Continuous Data Output is fixed at 4800 Baud. After all Axles have been weighed, the system can be configured to display the Total Axle Weight for a preset time delay.

The CUSTOM TICKET site file has changed significantly from the standard 8146 file (see Appendix A) however, the setup procedure remains the same, except that the EXPAND print function has been modified to allow most generic printers to be used. A User configurable "End Print String" has also been added for use with Printers with a ticket cutting device. (See Axle Controller Setup)

SPECIAL NOTE: Relabel "lb/kg" key to "RE-WEIGH".

Power-Up:

[TSM813F]
The Program version is displayed. Press <Enter> to proceed to the next step.

[Time? HH:MM:SS]
Enter the Time Using the Following Format:
<Hours><SP><Minutes><SP><Seconds><Enter>
The program will then proceed to the next step.

[Date? MM/DD/YY]
Enter the Date Using the Following Format:
<Month><SP><Day><SP><Year><Enter>

Traffic Light Box must be connected & must have lights in AUTO before [READY] will display on 8146

****

UNATTENDED OPERATION FOR FIXED AXLE OR AUTO AXLE MODE

****

(Traffic light is GREEN. No vehicle is on the platform.)

1. VEHICLE FIRST AXLE CONTACTS PLATFORM.
   Indicator goes upscale past "THRESHOLD".
   Both lights turn RED. Driver stops.

NOTE: Drivers reaction time to the changing light at a time when the wheels first contact platform will carry the vehicle fully onto the platform before a full halt is achieved.

2. PROGRAM LOOKS FOR NO MOTION WITH WEIGHT ABOVE THRESHOLD. Once achieved, weight is stored and the exit traffic light turns GREEN. (Entrance light meanwhile stays red.)

3. PROGRAM NOW LOOKS FOR A WEIGHT CHANGE greater than 1,000 to 10,000 LBS ("EXCursion WGT") To establish the point where the weighed axle leaves the platform. (or next to be weighed axle enters platform.)

4. PROGRAM NOW OPEN LOOP TIME DELAYS For .1 to 10 seconds to bypass the transitional weight readings. ("EXCursion TIMER")

5. PROGRAM NOW LOOKS FOR AN "EXCursion DEViation" weight of less than 100 to 1000 LBS while above "THRESHOLD". Once detected, the exit light turns red and the Driver stops.

6. Program repeats starting at step 2 for all remaining axles in the "AUTO AXLE" mode if the weight stays above the "THRESHOLD" or for a pre-selected number of axles if the program is in the "FIXED AXLE" mode.

7. If weight goes below the "THRESHOLD" in either mode for 10-100 seconds ("CYCLE TIMER" time delay) an automatic printout of each axle plus the sum of all axles and fee occurs. Entrance traffic light turns green only when weight is within the "ZERO WGT" range of the scale and the printout has occurred. The logic then resets and waits for a new vehicle.

****

UNATTENDED OPERATION FOR FIXED AXLE OR AUTO AXLE MODE

****

(Traffic light is GREEN. No vehicle is on the platform.)

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   Indicator goes upscale past "THRESHOLD".
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3. PROGRAM NOW LOOKS FOR A WEIGHT CHANGE greater than 1,000 to 10,000 LBS ("EXCursion WGT") To establish the point where the weighed axle leaves the platform. (or next to be weighed axle enters platform.)

4. PROGRAM NOW OPEN LOOP TIME DELAYS For .1 to 10 seconds to bypass the transitional weight readings. ("EXCursion TIMER")

5. PROGRAM NOW LOOKS FOR AN "EXCursion DEViation" weight of less than 100 to 1000 LBS while above "THRESHOLD". Once detected, the exit light turns red and the Driver stops.

6. Program repeats starting at step 2 for all remaining axles in the "AUTO AXLE" mode if the weight stays above the "THRESHOLD" or for a pre-selected number of axles if the program is in the "FIXED AXLE" mode.

7. If weight goes below the "THRESHOLD" in either mode for 10-100 seconds ("CYCLE TIMER" time delay) an automatic printout of each axle plus the sum of all axles and fee occurs. Entrance traffic light turns green only when weight is within the "ZERO WGT" range of the scale and the printout has occurred. The logic then resets and waits for a new vehicle.

****

UNATTENDED OPERATION FOR FIXED AXLE OR AUTO AXLE MODE

****

(Traffic light is RED. 8146 displays "INSERT MONEY".

1. Vehicle approaches. Driver stops and inserts money into acceptor. When sufficient funds have been received for at least 1 axle, lights turn green. If the driver then drives onto and then off of the scale without stopping, the logic will reset (keeping the money).

NOTE: The driver should insert sufficient funds for all intended axles at this time. Logic will allow for a weighment of the prepaid number of axles. The logic will IGNORE money after the vehicle first drives onto scale.

2. Program will sequence identical to steps 2-7 in fixed and auto axle modes above for the prepaid number of axles.

****

ATTENDED OPERATION - PROMPTED AXLE MODE

****

Operation is similar to the unattended paid axle mode except that instead of money acceptance the 8146 prompts the operator for # of axles and ,if selected, for ID entry.

1. 8146 displays [# OF AXLES]. Operator enters 1 to 99 axles to be weighed and presses ENTER.

2. 8146 displays [ID] if selected for "PROMPTED ID" before weighment. Otherwise step 2 is bypassed. Operator enters up to 12 alpha/numeric characters and presses the <ENTER> pushbutton.

   Press the <PRINT> key to print out a duplicate ticket. The word "DUPLICATE" will be printed out on the ticket.

   Press the <RE-WEIGH> key to use the "RE-WEIGH FEE" for the next transaction. The program will display "*RE-WEIGH MODE*" for 2 seconds and the program will then return to the "ID" prompt.
   The "RE-WEIGH FEE" is entered in the "SETUP MODE".

3. Entrance traffic lights turn GREEN and the 8146 displays [* READY *]. Driver drives onto scale. Meanwhile both of the entrance traffic lights turn RED.

4. Program will sequence identical to steps 2-6 in fixed axle mode.

5. When the entered axles have been weighed, 8146 prompts [REMOVE VEHICLE]. Exit light turns green.

6. Driver leaves the scale. Scale goes to within [ZERO WGT] value.

7. 8146 displays [ID] if selected for "PROMPTED ID" after weighment. Otherwise step 7 is bypassed. Operator enters up to 12 alpha/numeric characters and presses the <ENTER> pushbutton.

8. Printer cycles and then the exit light turns RED.

9. Cycle repeats at step 1.

****

MANUAL OPERATION

****

At any time during the attended or unattended automatic cycle, the operator may change the entrance and/or exit selector switches to red or green. When this happens, the automatic cycle halts. The operator will then continue the operation in a manual fashion. To record an axle they will press the <PRINT> key and the custom 8146 will acknowledge with [RECORDING AXLE...]. When all axles have been manually weighed, the operator must press <SUM> to obtain a total weight and a fee printout of the entire transaction (including the portion stored during the automatic cycle).

****

EXITING AXLE CONTROLLER SYSTEM

****

The 8146 Axle Controller has been factory programmed to operate in the Axle Controller mode, however other 8146 functions can be accessed by exiting the Axle Controller mode and choosing a new path. The following procedure explains how to exit the axle mode;

[* MANUAL MODE *] or [* READY *]
The operator presses the <SELECT SCALE> key.

The operator presses the <SETUP> key (system will prompt for password and automatically enter axle setup mode)

The operator presses the <REPORT> key (system will prompt for password and automatically enter axle setup)

[ENTER PW:_____]
The operator enters in the password.

[NEW PASSWORD]
The operator can change the current password by pressing <Y> or can continue on by pressing <N>.

[ENTER PW:_____]
The operator keys in a new password then presses <ENTER>.

[Select Function]
The operator can now choose a new path of operation by pressing any of the following key sequences;

<F> <1> Access Axle mode
<F> <2> Access Axle mode setup
<F> <3> Access Axle mode reports
<F> <4> Access Standard 8146 mode and calibration

****

<F> <2> AXLE MODE SETUP VARIABLES

****

TE: The message [INVALID SETUP] will occur until all numerical entry prompts have non-zero values in them.

1. Prompt begins asking for setup parameters.

2. Once all setup parameters have been addressed the system returns to the Truck Processing Mode. (Operating in selected mode defined by customer in setup)

****

SETUP PARAMETERS Must re-enter parameters, cannot tab through.

****

[ZERO WGT]
The weight point upscale that the vehicle, when driving off the scale, must go below to trigger a total printout.

[THRESHOLD]
The weight point upscale above which an automatic cycle shall operate. Range - 1,000 to 10,000 lbs.

[EXC WGT]
The excursion variance in weight that will be used to trigger an axle transition point as it leaves the scale. Range 1,000 to 10,000 lbs.

[EXC TIMER]
The time after the exit weight excursion is sensed and before the excursion deviation weight starts. The purpose is to ignore the rather large weight spike that occurs at this point in the cycle. Range 0.01 to 10 seconds. (2 seconds recommended)

[EXC DEV]
This is the sample (averaging) of weight that when compared to the average of successive weighments, establishes a point where minimum weight change above the threshold is seen. A standard deviation is calculated here with the # OF SAMPLES representing the sample quantity. Range 100 to 1,000 lbs.

[# OF SAMPLES]
The quantity of weighments that is averaged in the "EXC DEV" sample averaging process to determine when to switch the light to red and stop the vehicle.

[CYCLE TIMER]
The delay that starts when weight goes below the ZERO WGT. When timeout occurs, a TOTAL printout and reset cycle takes place. Range 10 to 100 seconds.

[SCBD TOT TMR?xxx]
The amount of time that the Total Axle Weight is displayed on the ScoreBoard after all of the axles have been weighed. Enter a value of "0" to disable this feature. Range 0 to 999 seconds.

****
SETUP PARAMETERS (Continued)
****

[EDIT HEADERS]
The operator can choose to edit the 5 fixed header messages that are selectable from the ticket site file. If the edit option is selected then the system will prompt with five lines of 16 characters per line max.

[EDIT TRAILERS]
The operator can choose to edit the 4 fixed trailer messages that are selectable from the ticket site file. If the edit option is selected then the system will prompt with four lines of 16 characters per line max.

[PAID AXLE MODE?]
Press <Y> or <N> to determine if the operation is a paid axle mode where a money acceptor is used.

If you press N the prompt goes directly to "PAID TRUCK MODE?"

If you press Y the prompt goes directly to "PULSES/AXLE"

[PAID TRUK MODE?]
Press <Y> or <N> to determine if the operation is a paid truck mode where a money acceptor is used.

If you press N the prompt goes directly to "AUTO AXLE MODE?"

If you press Y the prompt goes directly to "PULSES/TRUCK"

[PULSES/TRUCK:]
Enter the money acceptor pulse output/dollar ratio to record the proper $ credit. Skip the next prompt.

[PULSES/AXLE:]
Enter the money acceptor pulse output/dollar ratio to record the proper $ credit.

[COIN OP TMR] will appear. Enter the time in seconds that will be allowed to elapse before a cycle reset takes place. This is used to reset the cycle if the driver never enters the scale after paying for it.

[AUTO AXLE MODE?]
Press <Y> to weigh as many axles as truck has. Total cycle will occur after driver leaves the scale.

Press <N> to weigh a predetermined number of axles.

****

SETUP PARAMETERS (Continued)

****

[FIXD AXLE MODE?]
Press <Y> to fix the axle quantity to be totaled.

If you press <N> then the default is [PROMPTED AXLE MOD] where the operator will be prompted to enter the axle quantity each time.

[# OF AXLES]
Enter the quantity of axles to be totaled if the above [FIXD AXLE MODE] question is Y.

[CHARG BY TRUCK?]
Press <Y> to charge one fee per Truck.
Press <N> to charge one fee per Axle. Skip the next Prompt.

[TRUCK FEE?]
Enter the price per Truck.

[RE-WEIGH FEE?]
Enter the RE-WEIGH price per Truck. Skip the next Prompt.

[AXLE FEE]
Enter the price per axle.

[FIXED ID?]
Press <Y> to keep the same ID until manually changed.
If <N> is pressed the prompt goes to the following item.

[ID?]
Enter one line of alpha/numeric ID here - 12 characters maximum only if in the fixed ID mode. The following prompt is then skipped.

[PROMPTED ID?]
Press <Y> and an "ID" message (1 line - 12 characters max.) must be entered before each weighment.
If you press <N> the default is no ID and the printing of ID is bypassed.

[(B)EGIN/(E)ND?]
Press <B> and <ENTER> to prompt for the ID before weighing the truck.
Press <E> and <ENTER> to prompt for the ID after weighing the truck.

[EXPAND:_____]
The operator enters in the necessary code for the printer to operate in expanded character mode. (0000000E) for the 8843 printer.

[NORMAL:_____]
The operator enters in the necessary code for the printer to operate in normal character mode. (00000014) for the 8843 printer.

[END STR:xxxxxxxx]
The operator enters the necessary code for the Printer to perform any special functions at the end of a ticket, such as Cycling a Cut Off device. (1A0D0B18) for Eaton Printer Cut Off Command.

****

SETUP PARAMETERS (Continued)

****

[REPEAT PRINT? x]
Press <Y> or <1> to Enable the "Repeat Print" feature.
Press <N> or <0> to Disable the "Repeat Print" feature.

[PRINT SETUP?]
Press <Y> to preserve the above answers as a printed record.
If you press <N> the prompt goes to SELECT FUNCTION.

****

<F> <3> AXLE MODE REPORTS

****

SUMMARY REPORT ?]
The operator keys a <Y> to print the following report, or a <N>
to exit back to the Axle Mode.

SUMMARY REPORT FOR CHARGE PER AXLE:

SUMMARY REPORT

MM/DD/YY HH:MM:MM
TOTAL AXLES RECORDED:
TOTAL FUNDS COLLECTED:
LAST CLEARED: MM/DD/YY

SUMMARY REPORT FOR CHARGE PER TRUCK:

SUMMARY REPORT

MM/DD/YY HH:MM:MM
TOTAL TRUCKS RECORDED:
TOTAL WEIGH COLLECTED: $xxxxx.xx
TOTAL RE-WEIGH COLLECTED: $xxxxx.xx
LAST CLEARED: MM/DD/YY

CLEAR TOTALS ?]
The operator keys a <Y> to clear the totals or a <N> to
return to the Axle mode.

****

<F> <4> 8146 MODE

****

[8146 MODE]
The operator keys in a <Y> to access the 8146 mode or a <N> to return to the [SELECT FUNCTION] prompt.

After entering into the 8146 mode you must press the <SUM> key to exit to the [SELECT FUNCTION] prompt.

****

OPERATION SUMMARY - AXLE SCALE

****

The entire operation of this system breaks down into three unattended modes:

Fixed axle mode (with or without fixed ID)
Auto axle mode (with or without fixed ID)
Paid axle mode (with or without fixed ID)
Paid truck mode (with or without fixed ID)

and two attended modes:

Prompted axle mode (with fixed ID, prompted ID or no ID
Fixed axle mode (with prompted ID only)

Notice that the setup PAID AXLE?, AUTOMATIC AXLE?, and PROMPTED ID? parameters are the basis upon whether the system will be attended or unattended.

When in the Run Mode, only one of the four entry prompts below will appear:

[*READY*]
Automatic axle mode with fixed or no ID and waiting for threshold to be passed.

[*INSERT MONEY*]
Paid axle mode and waiting for money acceptor input.

[*ID*]
Fixed or auto axle mode waiting for prompted ID entry.

[*MANUAL MODE*]

The In Process prompts are as follows:

[MOVE VEHICLE] Occurs after a weighment is stored and the operator must move on to the next axle.

[MOTION CHECK] Occurs just before a weighment is stored if there is too much motion on the scale to obtain an accurate reading. (Motion sensitivity is adjusted in the 8146 setup parameters). After no motion occurs, weight is stored and [MOVE VEHICLE] prompt appears.

[REMOVE VEHICLE] Occurs after the last axle is weighed. This prompt will be displayed in the [PAID AXLE] or the [AUTO AXLE MODE] only.

[RECORDING AXLE...] Occurs after the <PRINT> button is pushed in the Manual Mode of operation, to signal the operator that the axle controller has recorded the weight.

[PRINTING] This prompt is displayed only when the logic is sending data to the printer.

****

APPENDIX A

****

For Custom Ticket Site file setup procedure see 8146 section F5.8.
Note this table supersedes 8146 ticket table.

DATA CODE NUMBER	DESCRIPTION TYPE	DATA FIELD IN CHARACTERS	FIELD LENGTH
01	One Null Character	CONSTANT	1
02	lb	CONSTANT	2
03	kg	CONSTANT	2
04	Time	CONSTANT	4
05	Date	CONSTANT	4
06	Weight	CONSTANT	6
07	ID	CONSTANT	2
08	CN	CONSTANT	2
09	$	CONSTANT	1
10	Fee	CONSTANT	3
11	Total	CONSTANT	5
12	HEADER 1	VARIABLE	16
13	HEADER 2	VARIABLE	16
14	HEADER 3	VARIABLE	16
15	HEADER 4	VARIABLE	16
16	HEADER 5	VARIABLE	16
17	TRAILER 1	VARIABLE	16
18	TRAILER 2	VARIABLE	16
19	TRAILER 3	VARIABLE	16
20	TRAILER 4	VARIABLE	16
21	VARIABLE ID	VARIABLE	12
22	Print Time	VARIABLE	8
23	Print Date	VARIABLE	8
24	Consecutive Number	VARIABLE	9
25	Axle Message	VARIABLE	16
26	Fee Amount	VARIABLE	6
27	Units	VARIABLE	2
28	Axle #1 Message	VARIABLE	7
29	Axle #2 Message	VARIABLE	7
30	Axle #3 Message	VARIABLE	7
31	Axle #4 Message	VARIABLE	7
32	Axle #5 Message	VARIABLE	7
33	Axle #6 Message	VARIABLE	7
34	Axle #7 Message	VARIABLE	7
35	Axle #8 Message	VARIABLE	7
36	Axle #9 Message	VARIABLE	7
37	Axle #1 WGT	VARIABLE	8
38	Axle #2 WGT	VARIABLE	8
39	Axle #3 WGT	VARIABLE	8
40	Axle #4 WGT	VARIABLE	8
41	Axle #5 WGT	VARIABLE	8

****

APPENDIX A (CONTINUED)

****

or Custom Ticket Site file setup procedure see 8146 section F5.8.
Note this table supersedes 8146 ticket table.

DATA CODE NUMBER	DESCRIPTION TYPE	DATA FIELD IN CHARACTERS	FIELD LENGTH
42	Axle #6 WGT	VARIABLE	8
43	Axle #7 WGT	VARIABLE	8
44	Axle #8 WGT	VARIABLE	8
45	Axle #9 WGT	VARIABLE	8
46	Axle Total	VARIABLE	8
47	"DUPLICATE" or " "	VARIABLE	9
48	"STANDARD FEE" or "RE-WEIGH FEE"	VARIABLE	12