OPW
FUEL MANAGEMENT SYSTEMS

ChipKey®

Fueling Management

ChipKey Encoder
Installation & Operation Manual

OPW Fuel Management Systems **Manual No. M07201.0_r5**

OPW Fuel Management Systems -
System and Replacement Parts Warranty Statement

Effective September 1, 2002

System and Replacement Parts Warranty

OPW Fuel Management Systems warrants that all OPW Tank Gauge and Petro Vend Fuel Control systems supplied by OPW Fuel Management Systems to the Original Purchaser will be free from defects in material and/or workmanship under normal use and service for a period of 12 months from the date of installation or 15 months from the date of shipment. Additionally, OPW Fuel Management Systems warrants that all upgrades and replacement parts (new and remanufactured) supplied by OPW Fuel Management Systems will be free from defects in material and workmanship under normal use and service for a period of 90 days from the date of installation or for the remainder of the system's original warranty, whichever is greater, as set forth in the first sentence of this statement. The foregoing warranties will not extend to goods subjected to misuse, neglect, accident, or improper installation or maintenance or which have been altered or repaired by anyone other than OPW Fuel Management Systems or its authorized representative.

The buyer's acceptance of delivery of the goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.

If a claim is made within the warranted time period that any equipment and/or remanufactured part is defective in material or workmanship under normal use and service, such equipment and/or remanufactured part shall be returned to OPW Fuel Management Systems, freight prepaid. If such equipment or remanufactured part is found by OPW Fuel Management Systems in its sole judgment, to be defective in material or workmanship under normal use and service, OPW Fuel Management Systems, shall, at its sole option, repair or replace such equipment and/or remanufactured part (excluding, in all instances, fuses, ink cartridges, batteries, other consumable items, etc.)

The warranties, as set forth above, are made expressly in lieu of all other warranties, either expressed or implied, including, without limitation, warranties of merchantability and fitness for any particular purpose and of all other obligations or liabilities on OPW Fuel Management Systems part. Further, OPW Fuel Management Systems neither assumes, nor authorizes any other person to assume for it, any other liability in connection with the sale of the systems, or any new/replacement part that has been subject to any damage from any act of nature or any *force majeure*.

The term "Original Purchaser" as used in these warranties shall be deemed to mean the authorized OPW Fuel Management Systems distributor to which the system or any new/replacement part was originally sold. These warranties may be assigned by the original purchaser to any of its customers who purchase any OPW Fuel Management Systems systems or new/replacement parts.

The sole liability of OPW Fuel Management Systems, for any breach of warranty, shall be as set forth above. OPW Fuel Management Systems does not warrant against damage caused by accident, abuse, faulty or improper installation or operation. In no event shall manufacturer's liability on any claim for damages arising out of the manufacture, sale, delivery or use of the goods exceed the original purchase price of the goods. In no event shall OPW Fuel Management Systems be liable for any direct, indirect, incidental or consequential damage or loss of product.

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Introduction

The ChipKey

The ChipKey from Petro Vend is a state-of-the-art fuel management and security device. Designed with the latest technology, ChipKeys are tiny, durable databases that can stand up to almost any kind of abuse or environment.

Use ChipKeys with Petro Vend fuel management systems, like our K-3000L, K800 and System2. Like cards, ChipKeys are inserted into a fuel island reader to activate a pump. And like any key, ChipKeys are security devices, preventing unauthorized access.

The ChipKey System can prompt your customers for security numbers, mileages or other numbers via the fuel system keypad. Following these entries, pump numbers can also be entered. ChipKeys can detect incorrect entries, and an optical Odometer Reasonability feature limits customer mileage entries (stored in the ChipKey) to within a range you program.

The ChipKey Encoder

The ChipKey Encoder is a small console that connects directly to most standard ASCII data terminals and to personal computers running a terminal emulation program. The Encoder reads and writes data from and to the ChipKey.

Encoder software is menu-driven; current options are always on-screen where you can select them with a single keystroke. No programming skills or command memorization is needed. Status LEDs on your Encoder show when the ChipKey is ready to be programmed, when programming is complete, if an error occurs and system power ON.

Notes:

Installation

Cabling

The ChipKey Encoder communicates with a data terminal or PC by means of a data cable. This cable has a pre-wired 9-pin RS-232 connector; the pinout of the connector is as follows:

Label	Color	Goes to Pin #:
RxD (receive)	Red	3
TxD (transmit)	Green	2
GND (ground)	Black	5
DTR (data term. ready)	White	4

With all power off, plug the data cable from the Encoder into the communications port of either a data terminal or personal computer. The port is usually a standard 9-pin RS-232 socket located on the back of most terminals and computers. For a unit with a 25-pin RS-232 port, an adapter can be purchased for the cable. For USB connections, a 75-2030 USB serial port can be ordered for use with PC USB ports.

After making this connection, power up the terminal or computer and follow the appropriate configuration section below.

Terminal Configuration

Set your terminal for the following:

Baud Rate	**9600**
Data Bits	**7**
Stop Bits	**1**
Parity	**EVEN**
FDX	**COM1 or COM2 only!**

For VT52 terminals, set the mode to full duplex.

Many terminals let you select emulation (the control characters used). Preferred emulation is VT100. Check the manual for your terminal if you have any questions about this.

PC Configuration

You must run a terminal emulation program on your personal computer in order to operate the Encoder. Emulation programs let your computer simulate a standard (ASCII) data terminal. The emulation program must be set for the following:

Baud Rate	**9600**
Data Bits	**7**
Stop Bits	**1**
Parity	**EVEN**
FDX	**COM1 or COM2 only!**

Many terminals also let you select emulation type (the control characters used). Preferred emulation is VT100. Check your emulation program owner's manual if you have any questions about the configuration process.

Operation

Basic Encoder Operation

After configuring your PC/terminal, turn the encoder ON. The power light should illuminate, and the menu shown below should appear. If you enter the wrong terminal type, you must turn encoder power OFF, then ON, to select another.

```
Terminals supported:
      1 - WYSE 50    2 - ANSI/VT102     3 - VT52

Enter:
```

If no menu appears, press ENTER several times. If you still do not see a menu, check the brightness and contrast adjustments on the monitor, the terminal/PC configuration, the cable connection. Finally, check your power transformer wiring: white and black go to LOAD, and green goes to GND.

Press the number key corresponding to your type of terminal or emulation. The next menu is for ChipKey Format:

```
ChipKey format supported:
      1 - K3000    2 - K800     3 - SYSTEM2

Enter:
```

Enter the number matching your system: (1) for K3000, (2) for K800 or (3) for the System2 fuel control system. The next menu is the basic operation menu. The K3000L menu is the default.

```
K3000 Petro Vend ChipKey Encoder

Enter Option:

'N' to edit all New field                 '1F' to edit individual fields
'R' to Read ChipKey                       'P' to Program ChipKey
'/' to cycle auto inc fields on/off       'I' to Increment select fields
'O' to turn Odom Reason. Off              'S' to toggle format K800
```

When this menu first appears, only Read, Edit and Toggle ("R", "N" and "S") are shown. After reading or entering data to a ChipKey, other options appear. *Do not enter the quotation marks when specifying an option!* Current format appears in the upper left corner of the screen (K3000L in the above screen).

Basic Commands

Edit One Field
Press the key matching a field's label to edit the field. For example, to edit the ChipKey number field, press ae2AE. Fields A – F can only be edited when Odometer Reasonability is on. Press ESC to leave a field before pressing ENTER – the original data is restored. After you press ENTER, data entry must be completed.

Edit All New Fields
To edit all new fields, press (N). The first field appears. Edit if desired, then press ENTER to display the next field.

Enable/Disable Odometer Reasonability Fields
The Odometer Reasonability fields only appear if turned on. Press (O) to enable or disable the Odometer Reasonability fields. Odometer Reasonability prevents fueling if entered mileage falls outside a predefined range. This feature is optional; it is not provided with all ChipKey systems. The prompts, however, are always available.

Encoding (Programming) a ChipKey
Whenever `READY TO PROGRAM` is ON, you can program the ChipKey. Insert the ChipKey in the encoder, then press (P) to begin programming. If encoding was successful you will see `ChipKey encoded – Please remove ChipKey`. The `PROGRAMMING COMPLETE` light will also come ON.

Reading a ChipKey
To read a key, press (R). You should see `Insert ChipKey to be Read`, or press any key to abort. Insert the ChipKey into encoder. Display depends on the format of your ChipKey. New ChipKeys contain no data; therefore, the read function will not work with new keys.

ChipKey Format
The ChipKey encoder supports three formats -- K800, K3000L and SYSTEM2. To switch between them hit the (S) key.

Auto-Increment
When you enable auto-increment (default is ON), certain fields automatically increase by one after a ChipKey is programmed. AUTO-INCREMENT appears next to relevant fields when Auto-Increment is ON. This feature is useful when programming numerous sequential ChipKeys. See Manually Increasing Auto-Increment Fields.

Manually Increasing Auto-Increment Fields
With Auto-Increment ON, select one field. Press (I) to manually increment that field by one.

Encoding Formats

K800 Encoding Format

The K800 ChipKey format is nine digits: a four-digit System (network) Number, a four-digit ChipKey Number, and a one-digit Issue Number. A blank K800 Encoding Sheet is on Page 11.

K800 *Without* Odometer Reasonability

When programming a K800 ChipKey without Odometer Reasonability, the only fields you need to program are the System Number, the ChipKey number, and the Issue Number. All other displayed fields are ignored.

`1 - Enter system number:` The System Number is a four-digit number identifying the specific K800 system. Obtain this number from the K800 System Information Report.

`2 - Enter ChipKey number:` The ChipKey number is a four-digit number from 0001 to 9999. If you enter less than four digits, zeros are padded automatically. You can also use Auto-Increment when entering ChipKey numbers.

`3 – Enter ChipKey:` An Issue Number (from 1-9) is used with a ChipKey Number, and allows multiple K800 keys to have the same ChipKey Number. Example: if ChipKey 1234 Issue 1 is lost, you can issue ChipKey 1234 Issue 2, rendering the Issue 1 key non-functional. Enter 0 to disable this feature.

K-800 *With* Odometer Reasonability

The odometer fields only function in K800 systems equipped with optional ChipKey Odometer Reasonability. With this feature, the ChipKey stores the last odometer reading entered by the user. Using the stored reading, the system determines if the current entry is "reasonable" (that is, within a specified range) before allowing access to fuel. The ChipKey also logs the number of unreasonable odometer entries.

The system can also prompt service warnings and prevent fueling when odometer entries meet or exceed programmed mileage levels.

The Odometer Reasonability feature applies only to Single and Vehicle ChipKeys; Driver ChipKeys do not require the following fields be programmed. *Remember, you do not need to program these fields if you are not using Odometer Reasonability.*

Odometer Reasonability Fields

A – Enter initial mileage: Current vehicle mileage. This value can be up to six digits; leading zeros are added to entries with less than six digits.

B - Enter warning mileage: This is the service warning mileage up to six digits in length. When mileage stored in a ChipKey reaches the service warning mileage, the K800 FIT displays TIME FOR SERVICE before prompting for a pump number. This message is a reminder to customers that their vehicle is due for mileage-related maintenance such as an oil change. Fueling continues normally after the warning. Enter 0 to bypass this feature.

C – Enter no fuel mileage: This is a service overdue mileage of up to six digits. When a customer enters an odometer reading that meets or exceeds the no fuel mileage, SERVICE OVERDUE appears on the K800 FIT and no fueling is permitted. The ChipKey is then considered invalid and must be reprogrammed. Enter 0 to bypass.

D – Enter response method: There are three possible K800 responses to the entry of three unreasonable odometer entries. Enter 0, 1 or 4 to select a method:

- **Method 0** is a bypass. All odometer entries are defined by the system as reasonable. Fueling is always allowed.

- **Method 1** is the most restrictive. After three bad odometer entries, the ChipKey is invalidated and fueling is refused. The K800 system will not accept the ChipKey until it is reprogrammed.

The bad entry counter resets to zero after a good odometer entry. Odometer readings in the ChipKey do NOT update unless an entry is reasonable.

- **Method 4** always permits fueling, but bad entries are logged in two ways: If all three bad entries are different, the K800 transaction is flagged on the receipt and report with a = = = in the mileage field.

The odometer reading in the ChipKey is not updated, but the bad entry log in the ChipKey is reset to zero. Users must enter three more bad odometer readings for their transaction to be flagged again.

If two of the three bad entries are the same, the current odometer is printed in the mileage field and the odometer value in the K800 ChipKey is updated with value that was entered twice. The bad entry counter is automatically reset to zero after a good odometer entry.

`E - Enter min range code:` The "Code" from the Odometer Reasonability Range table (below) that defines a MINIMUM mileage entry. Enter a number 0-15.

`F - Enter max range code:` The "Code" from the Odometer Reasonability Range table (below) that defines a MAXIMUM mileage entry. Enter a number 1-15.

You can select different range codes for the minimum and maximum codes.

Code	Min Miles	Max Miles	Code	Min Miles	Max Miles
0	Disabled	Disabled	8	100	350
1	1	10	9	125	400
2	5	50	10	150	500
3	10	100	11	175	1,000
4	20	150	12	200	1,500
5	40	200	13	250	2,000
6	60	250	14	300	3,000
7	80	300	15	350	9,999

K800 Odometer Reasonability Range Table

Using K800 Formatted ChipKeys in a System2

When using K800-encoded ChipKeys in a Petro Vend System2, note the following:

- Standard System2 Card Record systems use only System Number and ChipKey Number fields.

- System2 Mileage Reasonability software supports all fields *except* the ChipKey Issue field. The Method Number response is defined in System format.

- When entering a K800 ChipKey into a System2 card database, you must enter an eight-digit number made up of the System Number and ChipKey Number (below).

SYSTEM NUMBER				CHIPKEY NUMBER			

The System Number for the K800-formatted ChipKey must match the System2 Network Number. The System2 treats a K800 ChipKey as a proprietary format.

K800 CHIPKEY ENCODING WORKSHEET

REQUIRED FEATURES			OPTIONAL/ODOMETER REASONABILITY				
SYSTEM NUMBER	KEY NUMBER	ISSUE NUMBER	WARNING MILEAGE	NO FUEL MILEAGE	METHOD	ODOMETER	
						MINIMUM	MAXIMUM

K3000L Encoding Format

The K3000L ChipKey format is a nine-digit number consisting of a three-digit hex network (system) number, and a five-digit card number. NOTE: The number is nine digits because a three-digit hex number translates to a four-digit decimal number. See Page 25 for hex-to-decimal (and vice-versa) conversions.

K3000L *Without* Odometer Reasonability

When programming a ChipKey for a K3000L system without Odometer reasonability you do not have to program the odometer fields.

1 – Enter system number: The system number is a three digit hexadecimal number (the digits 0-9 and A-F, see Appendix A) used to identify specific K3000L system for which it will be used. This number can be found on the system data sheet.

2 – Enter ChipKey number: The K3000L ChipKey number can be up to five digits. If you enter less than five digits, preceding zeros are added to the entered number. You can also use the auto-increment feature when entering ChipKey numbers. Number range 00001 – 79.999.

3 – Enter ChipKey type: There are three K3000L ChipKey types; enter ‘1’ for Single, ‘2’ for Driver or ‘3’ for Vehicle.

4 – Enter ID number: Each K3000L ChipKey can also have an ID number of up to nine digits, if you enter less than nine digits, preceding zeros are added to the entered number. This field also supports the auto-increment feature.

5 – Enter prod restriction: The product restriction code for each K3000L ChipKey determines which of up to 16 products (or pumps) are available. The product number depends on the display position; Product 1 is the first on the left, Product 16 is the last on the right. Positions appear in groups of four.

Entering ‘1’ allows K3000L access; ‘0’ prevents access. To enter codes, start with the first position (for the first product) and press the ‘1’ key or the ‘0’ key. The cursor moves to the next position. You must enter a code number for all 16 positions. After final entry, press (ENTER).

6 – Enter quantity restrictions: Quantity restriction codes determine how much fuel a K3000L user may pump. These code are created in the K3000L when it is configured; refer to that system's Operators Guide for a more in-depth explanation of these codes.

7 – Bypass security entry: Bypassing the security entry means the K3000L ChipKey user does not have to enter Bypassing security skips the prompt for a security number. CAUTION: Skipping security gives open access to system and fuel. To bypass security, enter '1'. For security, enter '0'.

8 – Bypass mileage entry: Bypassing the K3000L mileage entry skips the mileage prompt. To bypass mileage, enter '1'. For mileage entry, enter '0'. To use the optional Odometer Reasonability feature, Mileage Bypass must be disabled (enter '0').

9 – Bypass misc. entry: To bypass the K3000L miscellaneous entry prompt, enter '1'. If you want misc. entry, enter '0'.

K3000L *WITH* Odometer Reasonability

With the optional Odometer Reasonability feature, your ChipKey can store the last user-entered odometer reading. Using this reading, the system determines if the current entry is "reasonable" (within the specified range) before allowing access to fuel. The ChipKey also logs the number of unreasonable odometer entries.

The system can prompt service warnings and prevent fueling when odometer entries meet or exceed programmed mileage levels.

The Odometer Reasonability feature works only with Single and Vehicle ChipKeys. Driver ChipKeys do not support the feature. Remember, you do not need to program these fields if you are not using Odometer Reasonability.

A – Enter initial mileage: This is current vehicle mileage. This value can be up to six digits; leading zeros are added to entries with less than six digits.

B – Enter warning mileage: This is the service warning mileage up to six digits. When mileage in a K3000L ChipKey reaches the service warning mileage, the system displays TIME FOR SERVICE before prompting for a pump number. This message is a reminder to customers that their vehicle is due for mileage-related

maintenance such as a oil change. Fueling continues normally after the warning. Enter 0 to bypass this feature.

C – Enter no fuel mileage: This is an up-to six-digit service mileage. When a customer enters an odometer reading that meets or exceeds the no fuel mileage, SERVICE OVERDUE appears on the K3000L and no fueling is permitted. The ChipKey is then considered invalid and must be reprogrammed. Enter 0 to bypass.

D – Enter response method: There are five K3000L responses to three unreasonable entries. Enter a code number from 0 to 4 to select one of these methods:

- **Method 0** is a "bypass". All odometer entries are defined by the system as reasonable. Fueling is always allowed.

- **Method 1** is the most restrictive method: after three bad odometer entries, the K3000L ChipKey is invalidated and fueling is prohibited. The system will not recognize the invalidated ChipKey until it is reprogrammed. The bad entry counter for the ChipKey resets to zero after a good odometer entry. The odometer reading stored in the ChipKey is not updated unless the current odometer entry is reasonable.

- **Method 2** logs unreasonable odometer entries the same way as Method 1, but after the third entry, the K3000L ChipKey is invalidated and the transaction is flagged on the report with <<< in the mileage field. Fueling is allowed but only for the current transaction. The odometer reading stored in the ChipKey is not updated unless the current odometer entry is reasonable.

- **Method 3** logs bad entries in two ways. Fueling is always allowed. If all three bad entries are different, the transaction is flagged on the report with = = = in the mileage field. The odometer reading stored in the K3000L ChipKey is not updated, but the bad entry log in the ChipKey is reset to zero. Users must enter three more bad readings for transaction to be flagged again.

If two or three of the bad entries are the same, >>> is printed in the mileage field and the odometer reading in the ChipKey is updated. The bad entry counter for the ChipKey is automatically reset to zero after a good odometer entry.

- **Method 4** works like Method 3 except the current odometer entry is printed in the mileage field if two or three of the bad entries are the same. The K3000L bad entry counter is automatically reset to zero after a good odometer entry.

If a fueling transaction is terminated early, the ChipKey can be reinserted and reauthorized. The system keeps a record of the last 16 users. Fueling will be allowed for one user if their initial and subsequent odometer entries are identical.

`E - Enter minimum range code:` Number from the Odometer Reasonability Range table (Page 9) to confirm if the entered mileage is above the minimum level. Enter 0 – 15.

`F - Enter maximum range code:` Number from the Odometer Reasonability Range table (Page 9) to confirm entered mileage is below the maximum level. Enter 0 – 15.

You can also select different range codes for the minimum and maximum codes.

Using K3000L ChipKeys in a System2

You can use ChipKeys encoded in K3000L format in a Petro Vend System2, as long as the following are observed:

- Standard Card Record base systems use only system number and the ChipKey number fields.

- ChipKey Mileage Reasonability software uses only system number, ChipKey number, and odometer fields. The method number will have the response defined in System2 format.

- System2 users: Enter a **ten-digit number** consisting of the System Number and ChipKey number in the format below:

SYSTEM NUMBER				CHIPKEY NUMBER					

The K3000L hexadecimal system number must be converted to a four digit decimal number to be programmed into the System2 cardfile. See Appendix A for a conversion table. Example: 12C hexadecimal is decimal 0300. This number must match the System2 network number!

If you are starting up a new System2 and are using the 3000L formatted ChipKeys in a System2, you must convert the System2 four digit decimal number to a three digit hexadecimal number.

System2 Chip Encoding Format

The System2 ChipKey format is a 19-digit number (as shown below) consisting of a four-digit Network (system) Number and a 15-digit Card (ChipKey) Number. A blank Encoding Worksheet is provided on page 23.

System2 *WITHOUT* Odometer Reasonability

The System2 ChipKey format is only supported in the System2 ChipKey Mileage Reasonability software. All other System2s must use K800 or K3000L ChipKey formats. When entering a ChipKey into the System2 card database you must enter this nineteen-digit number.

SYSTEM NUMBER				CHIPKEY NUMBER														

1 – Enter system number: The system number is a four-digit number used to identify the specific System2 for which it will be used. This four-digit number can be found on the paperwork for the system.

2 – Enter ChipKey number: The System2 ChipKey number can be up to 15-digits. If you enter less than fifteen-digits, leading zeros are added. You can also use the auto-increment feature when entering ChipKey numbers.

3 – Enter daily limit: The daily limit is the number of times a day the System2 ChipKey can be used to fuel. Enter a daily limit number 1 – 9 or 0 to disable this option.

System2 WITH Odometer Reasonability

A - Enter initial mileage: The current mileage for a vehicle. This value can be up to six-digits in length; zeros are added to entries less than six-digits long.

B – Enter warning mileage: The service warning mileage. When mileage in the System2 ChipKey reaches this level, the System2 displays a TIME FOR SERVICE message before prompting for the pump number. This message reminds the driver that their vehicle is due for mileage related maintenance (an oil change, for example). Fueling continues following the warning. This value can be up to six-digits; lead zeros are added to entries with less than six digits. Enter 0 to bypass this feature.

C – Enter no fuel mileage: When customers enter odometer readings that meet or exceed the no fuel mileage, the System2 displays 'SERVICE OVERDUE' and fueling is prohibited. The ChipKey is then invalid and must be reprogrammed to be used again. This value can be up to six-digits; leading zeros are added to entries with less than six-digits. Enter 0 to bypass this feature.

D – Enter response method: There are five possible System2 responses to the entry of three unreasonable odometer entries. These methods are explained below. Enter a code number from 0 to 4 to select one of these methods.

Method 0 is a bypass. All odometers entries are defined by the System2 as reasonable. Fueling is always allowed.

Method 1 is the most restrictive method. After three bad odometer entries, the ChipKey is invalidated and fueling is not allowed. The System2 does not accept the ChipKey until it is reprogrammed. The bad entry counter is automatically reset to zero after a good odometer entry. The system will not update the odometer reading on the ChipKey unless it is reasonable.

Method 2 is the same as Method 1, except for the following two ways. After the third bad odometer entry, the system logs the mileage in the System2 transaction as < < < in the mileage field. Fueling is allowed but only for the current transaction.

Method 3 always permits fueling. Bad entries are logged in two ways. If all three bad entries are different, the transaction is flagged on the receipt and on the report with = = = in the mileage field. The odometer reading stored in the System2 ChipKey is not updated, but the bad entry log in the ChipKey is reset to zero. The user must enter three more bad odometer readings for their transaction to be flagged again.

If two of the three bad entries are the same, the symbol > > > is printed in the mileage field and the odometer value in the System2 ChipKey is updated with the value that was entered twice.

Method 4 is like Method 3 *except* that if two of the three bad entries are the same, the twice-entered value is printed in the mileage field and the odometer value in the System2 ChipKey is updated with the value. The bad entry counter is reset to zero after a good odometer entry.

E – Enter min range code: This is the code number referenced from the odometer reasonability range table (as defined in the System2) to see if the entered mileage is above the minimum level. Enter a code number 0 to 15.

F – Enter max range code: This is the code number that will referenced from the odometer reasonability range table (as defined in the System2) to see if the entered mileage below the maximum level. Enter a code number 0 to 15.

You may select different range codes for the minimum and maximum codes. There are defaults in the System2 for this table, which you can change if desired. See your System2 Operator's Guide for details.

For your convenience, fill in the following table with your System2 values:

CODE	MINIMUM	MAXIMUM
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

System2 CHIPKEY ENCODING WORKSHEET

REQUIRED FEATURES			OPTIONAL/ODOMETER REASONABILITY				
SYSTEM NUMBER	KEY NUMBER	TRANS/ DAY	WARNING MILEAGE	NO FUEL MILEAGE	MILEAGE	ODOMETER	
						MINIMUM	MAXIMUM

Notes:

Appendix A
Hex-to-Decimal Conversion

This appendix explains how to convert hexadecimal (hex) number to decimal numbers, and vice versa. Please refer to the examples on how to use the chart.

Example #1: Convert the hex number 3F8 to a decimal number

1. Find the first two digits of the hex number (3F) in the left column of the table.
2. Find the last digit of the hex number (8) in the top row of the table.
3. Where the row and table come together is your decimal number - 1016.

Example #2 : Convert the decimal number 2999 to a hex number

1. Find **2999** in the chart.
2. Follow the row where you found 2999 to the far left column. Find **BB**.
3. Follow the column where you found 2999 up to the top row, to find **7**.
4. Add the column to the row - in this example, add 7 to BB to get **BB7**.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015
01	0016	0017	0018	0019	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	0030	0031
02	0032	0033	0034	0035	0036	0037	0038	0039	0040	0041	0042	0043	0044	0045	0046	0047
03	0048	0049	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	0060	0061	0062	0063
04	0064	0065	0066	0067	0068	0069	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079
05	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	0090	0091	0092	0093	0094	0095
06	0096	0097	0098	0099	0100	0101	0102	0103	0104	0105	0106	0107	0108	0109	0110	0111
07	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125	0126	0127
08	0128	0129	0130	0131	0132	0133	0134	0135	0136	0137	0138	0139	0140	0141	0142	0143
09	0144	0145	0146	0147	0148	0149	0150	0151	0152	0153	0154	0155	0156	0157	0158	0159
0A	0160	0161	0162	0163	0164	0165	0166	0167	0168	0169	0170	0171	0172	0173	0174	0175
0B	0176	0177	0178	0179	0180	0181	0182	0183	0184	0185	0186	0187	0188	0189	0190	0191
0C	0192	0193	0194	0195	0196	0197	0198	0199	0200	0201	0202	0203	0204	0205	0206	0207
0D	0208	0209	0210	0211	0212	0213	0214	0215	0216	0217	0218	0219	0220	0221	0222	0223
0E	0224	0225	0226	0227	0228	0229	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239
0F	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	0251	0252	0253	0254	0255

Sheet 2

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
10	0256	0257	0258	0259	0260	0261	0262	0263	0264	0265	0266	0267	0268	0269	0270	0271
11	0272	0273	0274	0275	0276	0277	0278	0279	0280	0281	0282	0283	0284	0285	0286	0287
12	0288	0289	0290	0291	0292	0293	0294	0295	0296	0297	0298	0299	0300	0301	0302	0303
13	0304	0305	0306	0307	0308	0309	0310	0311	0312	0313	0314	0315	0316	0317	0318	0319
14	0320	0321	0322	0323	0324	0325	0326	0327	0328	0329	0330	0331	0332	0333	0334	0335
15	0336	0337	0338	0339	0340	0341	0342	0343	0344	0345	0346	0347	0348	0349	0350	0351
16	0352	0353	0354	0355	0356	0357	0358	0359	0360	0361	0362	0363	0364	0365	0366	0367
17	0368	0369	0370	0371	0372	0373	0374	0375	0376	0377	0378	0379	0380	0381	0382	0383
18	0384	0385	0386	0387	0388	0389	0390	0391	0392	0393	0394	0395	0396	0397	0398	0399
19	0400	0401	0402	0403	0404	0405	0406	0407	0408	0409	0410	0411	0412	0413	0414	0415
1A	0416	0417	0418	0419	0420	0421	0422	0423	0424	0425	0426	0427	0428	0429	0430	0431
1B	0432	0433	0434	0435	0436	0437	0438	0439	0440	0441	0442	0443	0444	0445	0446	0447
1C	0448	0449	0450	0451	0452	0453	0454	0455	0456	0457	0458	0459	0460	0461	0462	0463
1D	0464	0465	0466	0467	0468	0469	0470	0471	0472	0473	0474	0475	0476	0477	0478	0479
1E	0480	0481	0482	0483	0484	0485	0486	0487	0488	0489	0490	0491	0492	0493	0494	0495
1F	0496	0497	0498	0499	0500	0501	0502	0503	0504	0505	0506	0507	0508	0509	0510	0511
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21	0528	0529	0530	0531	0532	0533	0534	0535	0536	0537	0538	0539	0540	0541	0542	0543
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28	0640	0641	0642	0643	0644	0645	0646	0647	0648	0649	0650	0651	0652	0653	0654	0655
29	0656	0657	0658	0659	0660	0661	0662	0663	0664	0665	0666	0667	0668	0669	0670	0671
2A	0672	0673	0674	0675	0676	0677	0678	0679	0680	0681	0682	0683	0684	0685	0686	0687
2B	0688	0689	0690	0691	0692	0693	0694	0695	0696	0697	0698	0699	0700	0701	0702	0703
2C	0704	0705	0706	0707	0708	0709	0710	0711	0712	0713	0714	0715	0716	0717	0718	0719
2D	0720	0721	0722	0723	0724	0725	0726	0727	0728	0729	0730	0731	0732	0733	0734	0735
2E	0736	0737	0738	0739	0740	0741	0742	0743	0744	0745	0746	0747	0748	0749	0750	0751
2F	0752	0753	0754	0755	0756	0757	0758	0759	0760	0761	0762	0763	0764	0765	0766	0767
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35	0848	0849	0850	0851	0852	0853	0854	0855	0856	0857	0858	0859	0860	0861	0862	0863
36	0864	0865	0866	0867	0868	0869	0870	0871	0872	0873	0874	0875	0876	0877	0878	0879
37	0880	0881	0882	0883	0884	0885	0886	0887	0888	0889	0890	0891	0892	0893	0894	0895
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3A	0928	0929	0930	0931	0932	0933	0934	0935	0936	0937	0938	0939	0940	0941	0942	0943
3B	0944	0945	0946	0947	0948	0949	0950	0951	0952	0953	0954	0955	0956	0957	0958	0959
3C	0960	0961	0962	0963	0964	0965	0966	0967	0968	0969	0970	0971	0972	0973	0974	0975
3D	0976	0977	0978	0979	0980	0981	0982	0983	0984	0985	0986	0987	0988	0989	0990	0991
3E	0992	0993	0994	0995	0996	0997	0998	0999	1000	1001	1002	1003	1004	1005	1006	1007
3F	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023

HEXADECIMAL-DECIMAL INTEGER CONVERSION (Cont.)

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42	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071
43	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087
44	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103
45	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119
46	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135
47	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151
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49	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183
4A	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199
4B	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215
4C	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231
4D	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247
4E	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263
4F	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279
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55	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375
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5B	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471
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5D	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500	1501	1502	1503
5E	1504	1505	1506	1507	1508	1509	1510	1511	1512	1513	1514	1515	1516	1517	1518	1519
5F	1520	1521	1522	1523	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535
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69	1680	1681	1682	1683	1684	1685	1686	1687	1688	1689	1690	1691	1692	1693	1694	1695
6A	1696	1697	1698	1699	1700	1701	1702	1703	1704	1705	1706	1707	1708	1709	1710	1711
6B	1712	1713	1714	1715	1716	1717	1718	1719	1720	1721	1722	1723	1724	1725	1726	1727
6C	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743
6D	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759
6E	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775
6F	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791

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76	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903
77	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
78	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
79	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
7A	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
7B	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
7C	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
7D	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
7E	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
7F	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
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83	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111
84	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127
85	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143
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87	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175
88	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191
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8A	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223
8B	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239
8C	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255
8D	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271
8E	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287
8F	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303
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9A	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2477	2479
9B	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495
9C	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511
9D	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527
9E	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543
9F	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559

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A1	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591
A2	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607
A3	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623
A4	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639
A5	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655
A6	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671
A7	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687
A8	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703
A9	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719
AA	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735
AB	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751
AC	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767
AD	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783
AE	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799
AF	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815
B0	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831
B1	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847
B2	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863
B3	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879
B4	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895
B5	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911
B6	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927
B7	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943
B8	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959
B9	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975
BA	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991
BB	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007
BC	3008	3009	3010	3011	3012	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023
BD	3024	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037	3038	3039
BE	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050	3051	3052	3053	3054	3055
BF	3056	3057	3058	3059	3060	3061	3062	3063	3064	3065	3066	3067	3068	3069	3070	3071
C0	3072	3073	3074	3075	3076	3077	3078	3079	3080	3081	3082	3083	3084	3085	3086	3087
C1	3088	3089	3090	3091	3092	3093	3094	3095	3096	3097	3098	3099	3100	3101	3102	3103
C2	3104	3105	3106	3107	3108	3109	3110	3111	3112	3113	3114	3115	3116	3117	3118	3119
C3	3120	3121	3122	3123	3124	3125	3126	3127	3128	3129	3130	3131	3132	3133	3134	3135
C4	3136	3137	3138	3139	3140	3141	3142	3143	3144	3145	3146	3147	3148	3149	3150	3151
C5	3152	3153	3154	3155	3156	3157	3158	3159	3160	3161	3162	3163	3164	3165	3166	3167
C6	3168	3169	3170	3171	3172	3173	3174	3175	3176	3177	3178	3179	3180	3181	3182	3183
C7	3184	3185	3186	3187	3188	3189	3190	3191	3192	3193	3194	3195	3196	3197	3198	3199
C8	3200	3201	3202	3203	3204	3205	3206	3207	3208	3209	3210	3211	3212	3213	3214	3215
C9	3216	3217	3218	3219	3220	3221	3222	3223	3224	3225	3226	3227	3228	3229	3230	3231
CA	3232	3233	3234	3235	3236	3237	3238	3239	3240	3241	3242	3243	3244	3245	3246	3247
CB	3248	3249	3250	3251	3252	3253	3254	3255	3256	3257	3258	3259	3260	3261	3262	3263
CC	3264	3265	3266	3267	3268	3269	3270	3271	3272	3273	3274	3275	3276	3277	3278	3279
CD	3280	3281	3282	3283	3284	3285	3286	3287	3288	3289	3290	3291	3292	3293	3294	3295
CE	3296	3297	3298	3299	3300	3301	3302	3303	3304	3305	3306	3307	3308	3309	3310	3311
CF	3312	3313	3314	3315	3316	3317	3318	3319	3320	3321	3322	3323	3324	3325	3326	3327

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
A0	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575
A1	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591
A2	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607
A3	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623
A4	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639
A5	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655
A6	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671
A7	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687
A8	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703
A9	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719
AA	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735
AB	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751
AC	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767
AD	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783
AE	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799
AF	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815
B0	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831
B1	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847
B2	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863
B3	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879
B4	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895
B5	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911
B6	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927
B7	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943
B8	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959
B9	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975
BA	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991
BB	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007
BC	3008	3009	3010	3011	3012	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023
BD	3024	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037	3038	3039
BE	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050	3051	3052	3053	3054	3055
BF	3056	3057	3058	3059	3060	3061	3062	3063	3064	3065	3066	3067	3068	3069	3070	3071
C0	3072	3073	3074	3075	3076	3077	3078	3079	3080	3081	3082	3083	3084	3085	3086	3087
C1	3088	3089	3090	3091	3092	3093	3094	3095	3096	3097	3098	3099	3100	3101	3102	3103
C2	3104	3105	3106	3107	3108	3109	3110	3111	3112	3113	3114	3115	3116	3117	3118	3119
C3	3120	3121	3122	3123	3124	3125	3126	3127	3128	3129	3130	3131	3132	3133	3134	3135
C4	3136	3137	3138	3139	3140	3141	3142	3143	3144	3145	3146	3147	3148	3149	3150	3151
C5	3152	3153	3154	3155	3156	3157	3158	3159	3160	3161	3162	3163	3164	3165	3166	3167
C6	3168	3169	3170	3171	3172	3173	3174	3175	3176	3177	3178	3179	3180	3181	3182	3183
C7	3184	3185	3186	3187	3188	3189	3190	3191	3192	3193	3194	3195	3196	3197	3198	3199
C8	3200	3201	3202	3203	3204	3205	3206	3207	3208	3209	3210	3211	3212	3213	3214	3215
C9	3216	3217	3218	3219	3220	3221	3222	3223	3224	3225	3226	3227	3228	3229	3230	3231
CA	3232	3233	3234	3235	3236	3237	3238	3239	3240	3241	3242	3243	3244	3245	3246	3247
CB	3248	3249	3250	3251	3252	3253	3254	3255	3256	3257	3258	3259	3260	3261	3262	3263
CC	3264	3265	3266	3267	3268	3269	3270	3271	3272	3273	3274	3275	3276	3277	3278	3279
CD	3280	3281	3282	3283	3284	3285	3286	3287	3288	3289	3290	3291	3292	3293	3294	3295
CE	3296	3297	3298	3299	3300	3301	3302	3303	3304	3305	3306	3307	3308	3309	3310	3311
CF	3312	3313	3314	3315	3316	3317	3318	3319	3320	3321	3322	3323	3324	3325	3326	3327

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
D0	3328	3329	3330	3331	3332	3333	3334	3335	3336	3337	3338	3339	3340	3341	3342	3343
D1	3344	3345	3346	3347	3348	3349	3350	3351	3352	3353	3354	3355	3356	3357	3358	3359
D2	3360	3361	3362	3363	3364	3365	3366	3367	3368	3369	3370	3371	3372	3373	3374	3375
D3	3376	3377	3378	3379	3380	3381	3382	3383	3384	3385	3386	3387	3388	3389	3390	3391
D4	3392	3393	3394	3395	3396	3397	3398	3399	3400	3401	3402	3403	3404	3405	3406	3407
D5	3408	3409	3410	3411	3412	3413	3414	3415	3416	3417	3418	3419	3420	3421	3422	3423
D6	3424	3425	3426	3427	3428	3429	3430	3431	3432	3433	3434	3435	3436	3437	3438	3439
D7	3440	3441	3442	3443	3444	3445	3446	3447	3448	3449	3450	3451	3452	3453	3454	3455
D8	3456	3457	3458	3459	3460	3461	3462	3463	3464	3465	3466	3467	3468	3469	3470	3471
D9	3472	3473	3474	3475	3476	3477	3478	3479	3480	3481	3482	3483	3484	3485	3486	3487
DA	3488	3489	3490	3491	3492	3493	3494	3495	3496	3497	3498	3499	3500	3501	3502	3503
DB	3504	3505	3506	3507	3508	3509	3510	3511	3512	3513	3514	3515	3516	3517	3518	3519
DC	3520	3521	3522	3523	3524	3525	3526	3527	3528	3529	3530	3531	3532	3533	3534	3535
DD	3536	3537	3538	3539	3540	3541	3542	3543	3544	3545	3546	3547	3548	3549	3550	3551
DE	3552	3553	3554	3555	3556	3557	3558	3559	3560	3561	3562	3563	3564	3565	3566	3567
DF	3568	3569	3570	3571	3572	3573	3574	3575	3576	3577	3578	3579	3580	3581	3582	3583
E0	3584	3585	3586	3587	3588	3589	3590	3591	3592	3593	3594	3595	3596	3597	3598	3599
E1	3600	3601	3602	3603	3604	3605	3606	3607	3608	3609	3610	3611	3612	3613	3614	3615
E2	3616	3617	3618	3619	3620	3621	3622	3623	3624	3625	3626	3627	3628	3629	3630	3631
E3	3632	3633	3634	3635	3636	3637	3638	3639	3640	3641	3642	3643	3644	3645	3646	3647
E4	3648	3649	3650	3651	3652	3653	3654	3655	3656	3657	3658	3659	3660	3661	3662	3663
E5	3664	3665	3666	3667	3668	3669	3670	3671	3672	3673	3674	3675	3676	3677	3678	3679
E6	3680	3681	3682	3683	3684	3685	3686	3687	3688	3689	3690	3691	3692	3693	3694	3695
E7	3696	3697	3698	3699	3700	3701	3702	3703	3704	3705	3706	3707	3708	3709	3710	3711
E8	3712	3713	3714	3715	3716	3717	3718	3719	3720	3721	3722	3723	3724	3725	3726	3727
E9	3728	3729	3730	3731	3732	3733	3734	3735	3736	3737	3738	3739	3740	3741	3742	3743
EA	3744	3745	3746	3747	3748	3749	3750	3751	3752	3753	3754	3755	3756	3757	3758	3759
EB	3760	3761	3762	3763	3764	3765	3766	3767	3768	3769	3770	3771	3772	3773	3774	3775
EC	3776	3777	3778	3779	3780	3781	3782	3783	3784	3785	3786	3787	3788	3789	3790	3791
ED	3792	3793	3794	3795	3796	3797	3798	3799	3800	3801	3802	3803	3804	3805	3806	3807
EE	3808	3809	3810	3811	3812	3813	3814	3815	3816	3817	3818	3819	3820	3821	3822	3823
EF	3824	3825	3826	3827	3828	3829	3830	3831	3832	3833	3834	3835	3836	3837	3838	3839
F0	3840	3841	3842	3843	3844	3845	3846	3847	3848	3849	3850	3851	3852	3853	3854	3855
F1	3856	3857	3858	3859	3860	3861	3862	3863	3864	3865	3866	3867	3868	3869	3870	3871
F2	3872	3873	3874	3875	3876	3877	3878	3879	3880	3881	3882	3883	3884	3885	3886	3887
F3	3888	3889	3890	3891	3892	3893	3894	3895	3896	3897	3898	3899	3900	3901	3902	3903
F4	3904	3905	3906	3907	3908	3909	3910	3911	3912	3913	3914	3915	3916	3917	3918	3919
F5	3920	3921	3922	3923	3924	3925	3926	3927	3928	3929	3930	3931	3932	3933	3934	3935
F6	3936	3937	3938	3939	3940	3941	3942	3943	3944	3945	3946	3947	3948	3949	3950	3951
F7	3952	3953	3954	3955	3956	3957	3958	3959	3960	3961	3962	3963	3964	3965	3966	3967
F8	3968	3969	3970	3971	3972	3973	3974	3975	3976	3977	3978	3979	3980	3981	3982	3983
F9	3984	3985	3986	3987	3988	3989	3990	3991	3992	3993	3994	3995	3996	3997	3998	3999
FA	4000	4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4013	4014	4015
FB	4016	4017	4018	4019	4020	4021	4022	4023	4024	4025	4026	4027	4028	4029	4030	4031
FC	4032	4033	4034	4035	4036	4037	4038	4039	4040	4041	4042	4043	4044	4045	4046	4047
FD	4048	4049	4050	4051	4052	4053	4054	4055	4056	4057	4058	4059	4060	4061	4062	4063
FE	4064	4065	4066	4067	4068	4069	4070	4071	4072	4073	4074	4075	4076	4077	4078	4079
FF	4080	4081	4082	4083	4084	4085	4086	4087	4088	4089	4090	4091	4092	4093	4094	4095

Appendix B

ChipKey Format Compatibility

This table explains which formats of ChipKey are compatible with each other.

Find your ChipKey format in the left column, then read across to see what fueling systems will be able to read it.

For example, a K800 ChipKey is usable in the K3000L and other K800s, but NOT in a System2.

	K3000L	K800	System2
K3000L	YES	NO	NO
K2500	YES	YES[1]	NO
K800	YES[2]	YES	NO
System2	YES[4]	YES	YES[3]

Notes:

1. K2500 Fit software must be greater than X.XXx

2. K3000L ChipKey number must be <10,000 and the issue number is not supported.

3. System2 formatted Keys can only be read in System2s with ChipKey Mileage Reasonability Software.

4. K3000L format used in the System2 cannot exceed key number 79,999!

Notes:

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OPW Fuel Management Systems
6900 Santa Fe Drive
Hodgkins, IL 60525
708-485-4200