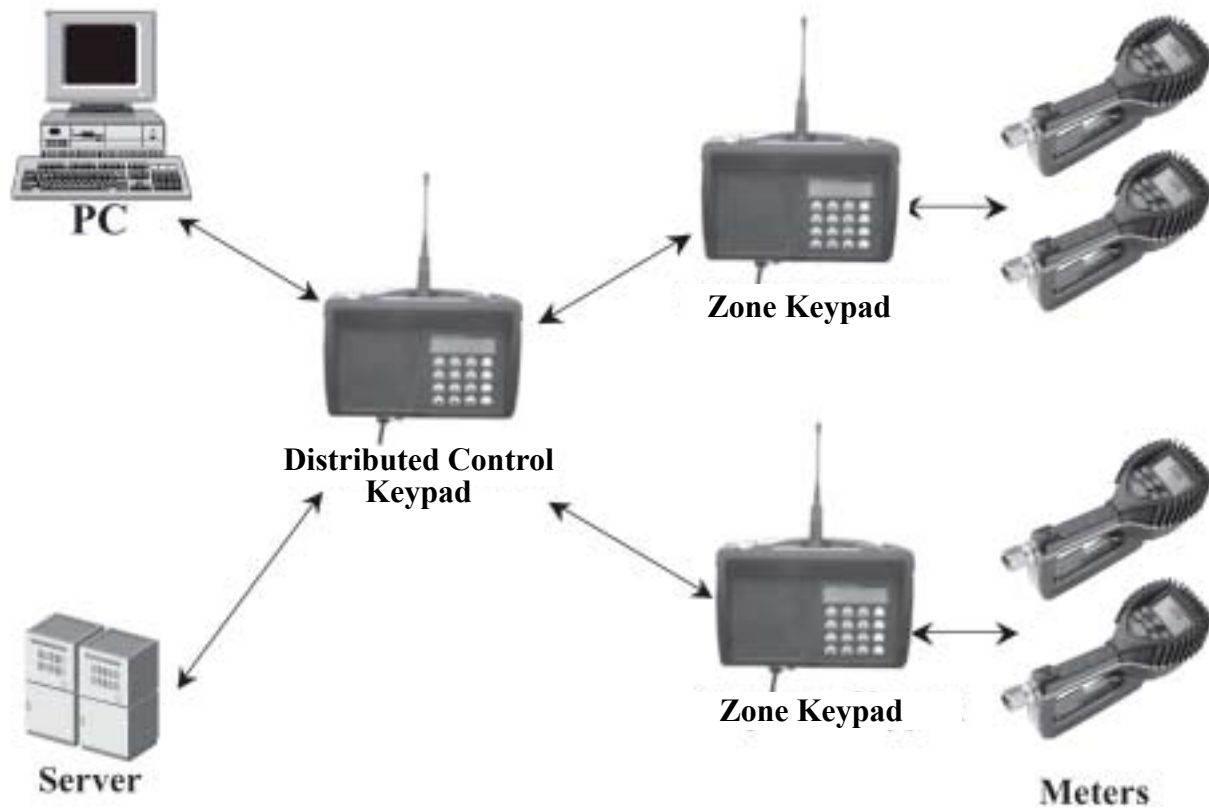




---

# FUSION DISTRIBUTED CONTROL FLUID MANAGEMENT SYSTEM

Model 3110-013



Thoroughly read and understand this manual before installing, operating or servicing this equipment.

# Disclaimer

The user/purchaser is expected to read and understand the information provided in this manual, follow any listed Safety Precautions and Instructions and keep this manual with the equipment for future reference.

The information in this manual has been carefully checked and is believed to be entirely reliable and consistent with the product described. However, no responsibility is assumed for inaccuracies, nor does Balcrank Products, Inc. assume any liability arising out of the application and use of the equipment described.

Should the equipment be used in a manner not specified by Balcrank Products, Inc., the protection provided by the equipment may be impaired.

## Questions or Service Assistance

If you have questions regarding the product or this document contact:

Balcrank Products, Inc.  
115 Reems Creek Rd.  
Weaverville, NC 28787

Telephone: (828) 645-4261  
(800) 747-5300

Fax: (828) 658-0840  
(800) 763-0840

On the Web: [www.balcrank.com](http://www.balcrank.com)  
or call your local Balcrank Products, Inc. representative.

## Product Identification Information

Record the product identification numbers from the nameplate here.

Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_

Tag Number \_\_\_\_\_ (if applicable)

## **Index**

Introduction .....	4
Master Keypad to Host/PC Connection .....	5
System Overview .....	6
System Operation .....	7
System Information .....	10
System Reports.....	12
User Management.....	14
File Management .....	16
System Setup.....	21
System Entity .....	26
System Product Tree Configuration .....	29
System Network Tree Configuration .....	30
System Network Installation Process.....	32
Process to Modify/Add/Delete Users .....	34
Process to Test MK/PC Communications.....	35
Process to Add/Delete a Hose – Meter.....	36
Trouble Shooting Guide .....	37
Communications Flow.....	41

## **Introduction**

The Balcrank Distributed Control Fluid Management System is designed to control and monitor the consumption and inventory balances of automotive fluid products with minimal installation and programming costs. Balcrank has utilized its years of expertise in the Automated Meter Reading market to develop a control system utilizing RF communications.

The Distributed Control RF Fluid management system requires one Distributed Control keypad and one Zone keypad. The Distributed Control keypad handles serial communication between the PC/Host Server and RF communication to the Zone keypads in the system. The system verifies operator pin number, validates work order number, dispense fluid quantities and valid hose for fluid required.

The Distributed Control keypad can communicate with up to 12 Zone keypads that can be positioned to best support the workflow of the facility. The system supports up to 16 tanks and 16 fluids as part of the system configuration. The system supports 250 unique operator IDs and pin numbers

The system utilizes spread spectrum frequency hopping RF technology to prevent communication problems with other equipment in the facility. The RF system will look for a clear channel for transmission to insure that there is reliable communications at all times. Communication distances are typically up to 300 feet or more and there is a remote antenna available for situations where multiple buildings are involved in the installation.

The PC is used to configure the system, maintain system data and enter work orders. The service desk would utilize the PC to enter a work order selecting the fluid and quantity required. The PC can stack as many work orders as required, based only on the local storage of the PC. There is no need to predetermine where the work is going to occur. This allows the flexibility to service a vehicle at any open bay and select a hose to use when the work is going to be performed. When the work order is going to be performed the service personnel simply enters their pin number, work order and hose that is going to be used at the Zone keypad.

There are a number of system utilization reports by user; fluid type, tank or meters available for the management of the system.

A unique, patented feature of the control system is that the dispense trigger of the RF meter is locked until authorization from the keypad is received. After the dispense is completed, the user can top off the dispense and the actual amount used is sent back to the keypad and the meter returns to the locked status. Additionally, the meter can be installed on portable dolly systems offering control and monitoring of often high- cost lubrication products.

## **Distributed Control Keypad to Host/PC Connections:**

There are two cables with 9 pin connectors attached to the Distributed Control keypad.

The 9-pin connector on the bottom of the Distributed Control Keypad is for connection to the PC.

The cable marked with an “O” is for connection to an optional printer.

The cable without any markings is for the host connection. All cables have the same pin outs listed below.

Connections:

Distributed Control Keypad Plugs (9-pin)  
RS-232

RS-232 PC or Host plug (9-pin)

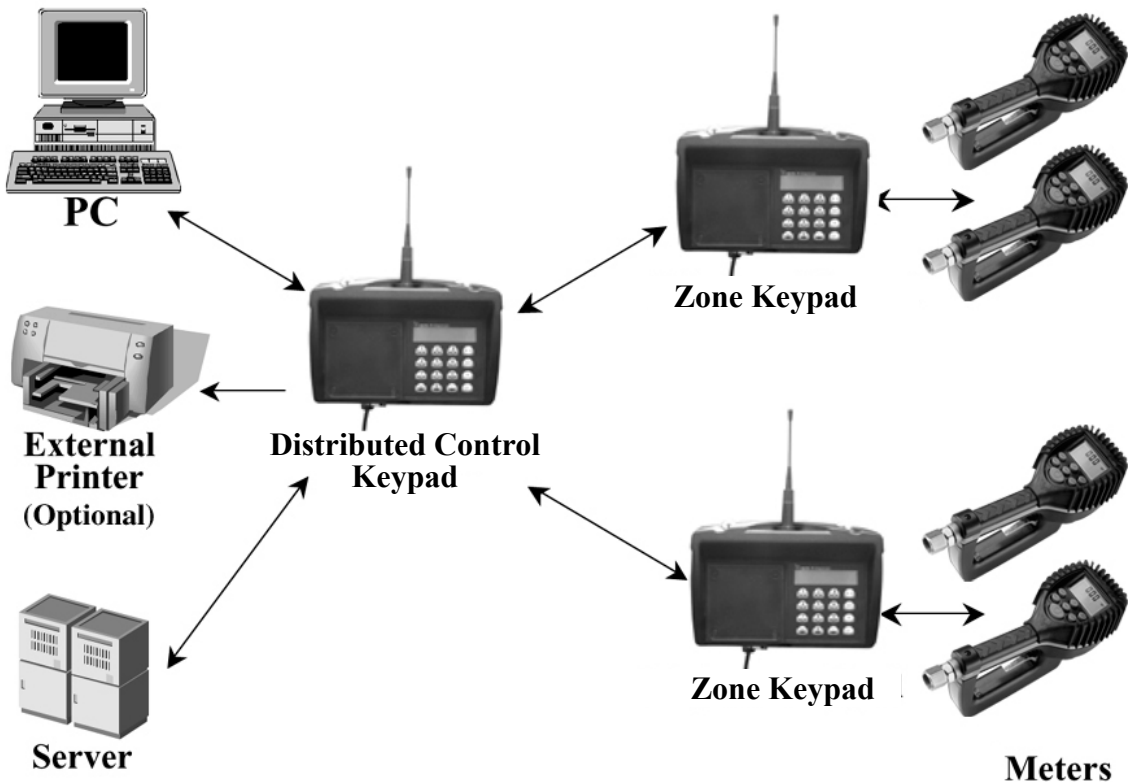
PIN No. 2 (TXD).....	PIN No. 3 (RXD)
PIN No. 3 (RXD) .....	PIN No. 2 (TXD)
PIN No. 7 (GND).....	PIN No. 7 (GND)

Max. cable length: at 1200 Baud = 150 m.  
at 9600 Baud = 100 m.

## **Distributed Control Keypad**



## System Overview



The Distributed Control keypad acts as the communications director for the RF communications. It handles all communications between the Zone keypads and the PC or Host. There are no Operator menus associated with the Distributed Control Keypad.

### **System Configurations:**

- Distributed Control/Dispense with PC Operation

In this configuration the PC is used to configure the system entities and install the network. The PC will be used to enter work orders for processing and provide the queuing for future processing. When operator processes a work order the PC will validate the work order number and provide the fluid and amount to be dispensed. The results of the dispense will then be stored on the PC.

- Distributed Control/Dispense with Host Operation

In this configuration the PC is used to configure the system entities and install the network. The results of the dispense will then be stored on the PC. The Host will be used to enter work orders for processing and provide the queuing for future processing. When operator processes a work order the Host will validate the work order number and provide the fluid and amount to be dispensed.

Note: Dispense keypads can be used to access only the meters that are associated with that dispense keypad. All system users can access each of the dispense keypads.

An external printer can be added to either configuration.

## System Operation

### System Logon Screen



To Logon on to the OMS Distributed Control System, enter the 4-digit system password and click the LogOn button.

**The system password is initially set to 0000 and can be changed using the system initialization screen if desired.**

## Work Orders Screen

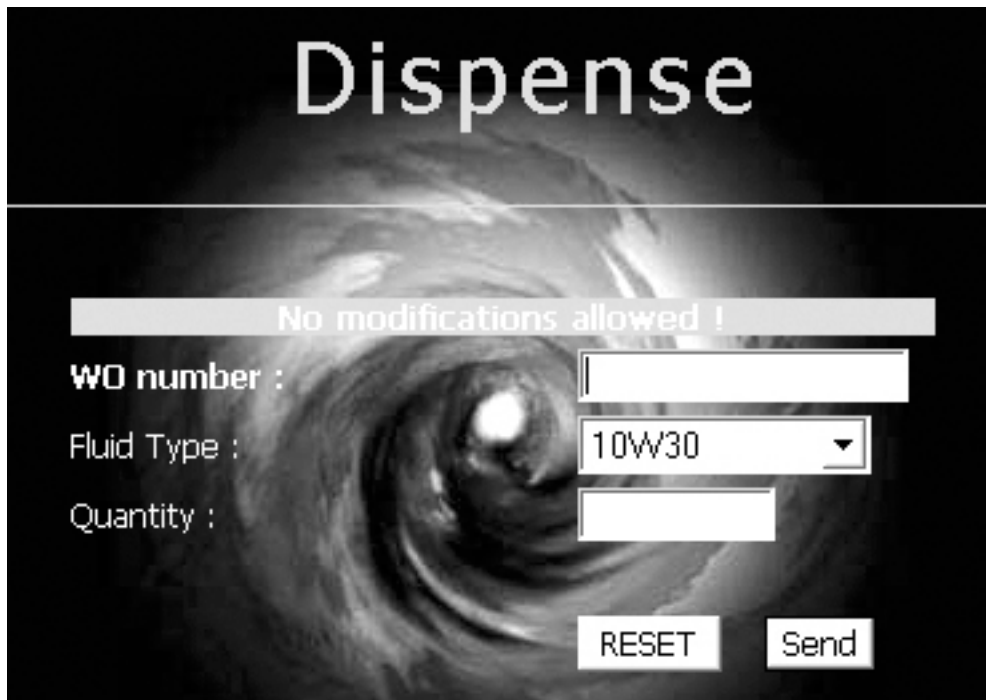
The screenshot shows a web interface titled "REPORT BY WO". At the top, there are four dropdown menus: "User : All", "Fluid : All", "Hose : All", and "WO : All". To the right of these are two text input fields labeled "From :" and "To :", followed by an "OK" button. Below the filters, a status bar displays "14-Jun-07 REPORT BY WO 11:06". Underneath, there is a button labeled "Error code definitions" and a message "0 record(s)". A table header is visible with columns: "Id WO", "Date - Time", "AN Field", "Qty", "Error1", "Error2", "Error3", "User", "Fluid", and "Hose". Below the header, another "0 record(s)" message is displayed.

After logon is complete the work orders screen will be displayed. The Main menu will be displayed along the left side of the screen. To see more of the main menu selections you can scroll up and down using the bar on the right side of the screen. To select an option from the Main menu, click on the desired item. To return to the Work Order screen, click on the LOGO in the upper left hand corner of the current display screen at any time.

The Work Order screen allows you to select the time frame of historical information to be displayed. Use the pull down menu to select a different display options and click OK.



## Dispense Screen



The screenshot shows a screen titled "Dispense" with a background image of a turbine. A grey banner at the top reads "No modifications allowed!". Below this are three input fields: "WO number:" with an empty text box, "Fluid Type:" with a dropdown menu showing "10W30", and "Quantity:" with an empty text box. At the bottom right are two buttons: "RESET" and "Send".

The dispense screen is used to enter work orders into the system. This would be the normal operation screen used.

### Operation:

1. Enter the work order number
2. Select the desired fluid type from the pull down menu
3. Enter the fluid quantity
4. Click the Send Button

To abort the Work Order entry in process, click the reset button.

Note: The quantity is based on the Tank Unit. The meter must be programmed to dispense in the same unit as the tank.

The queuing feature of the system allows for work orders to be entered into the system and have the dispense performed at some point in the future. There is no need to pre-determine or select the hose to be used for dispense before it is going to occur. The operator will select the work order to be worked on from the zone keypad. The hose selected at that time will be verified for the correct fluid and the dispense quantity will be sent to the meter.

See the Zone Keypad SBxxxx for complete dispense operation.

## System Information

### Work Orders Screen

User : All Fluid : All Hose : All WO : All From : To : OK

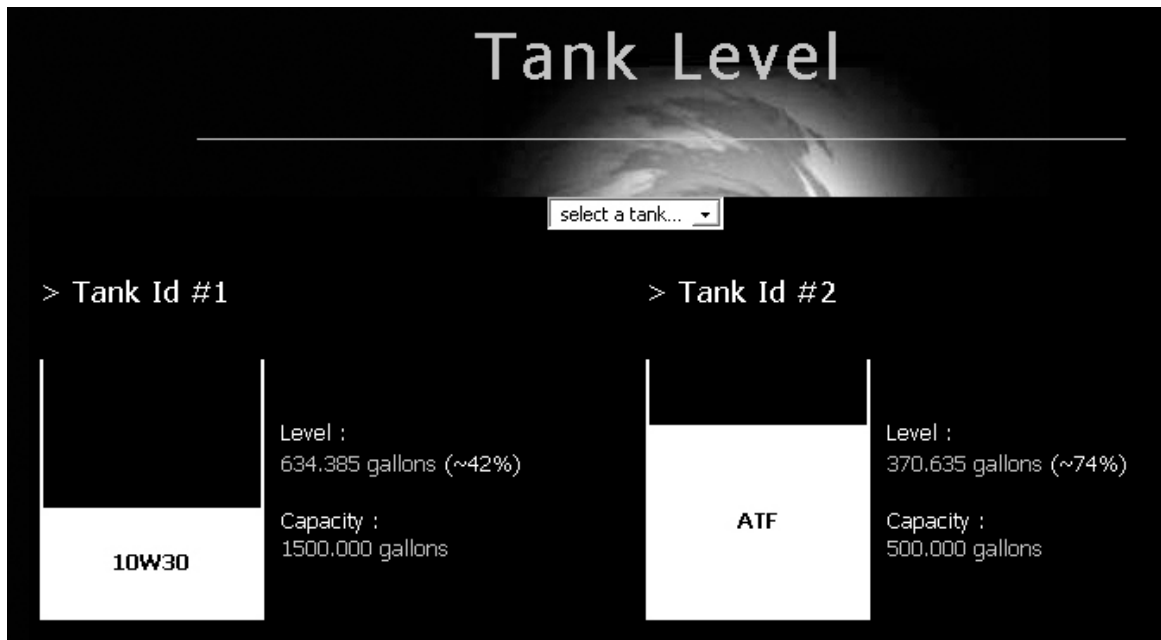
14-Jun-07 REPORT BY WO 11:06

0 record(s) Error code definitions

Id WO	Date - Time	AN Field	Qty	Error1	Error2	Error3	User	Fluid	Hose
0 record(s)									

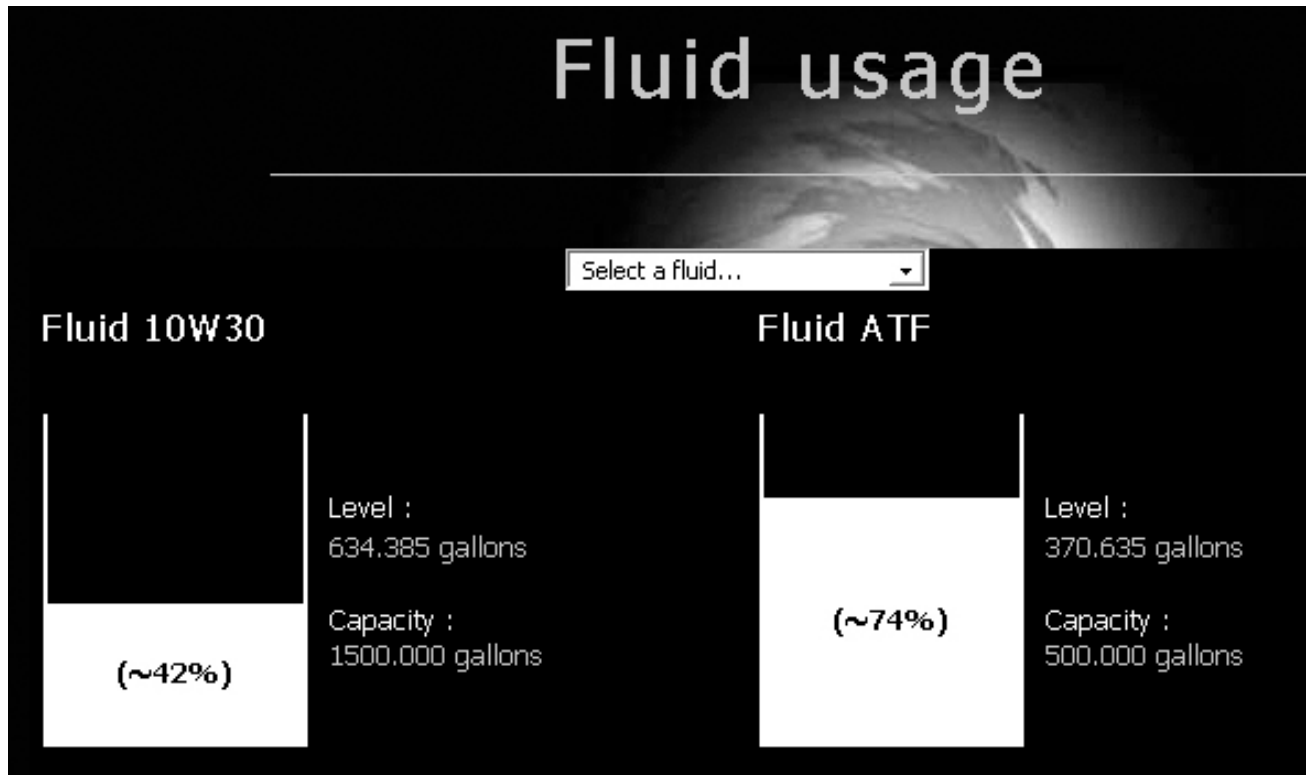
The Work Order screen allows you to select the time frame of historical information to be displayed. Use the pull down menu to select a different display option.

### Tank Level Screen



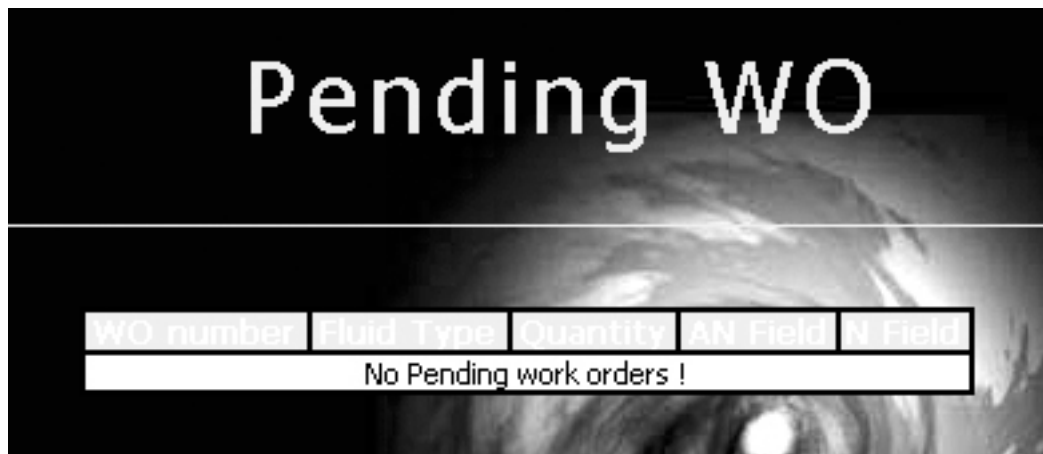
The Tank Level screen is for informational purposes only. It shows graphically the level of the fluid in the tank, fluid type and tank capacity.

## Fluid Usage



The fluid usage screen is for informational purposes only. It shows graphically the total volume of fluid available. For example, if two tanks have the same fluid, the tank capacities are summed and the percentage of fluid available is based on the summed value.


## Pending WO Screen



The pending work order screen shows all the orders in the system that are available to be worked on. After a work order is completed the work order will be removed from Pending WO and the results of the dispense will be added to the work order history file. Work order history can be accessed by clicking on the LOGO in the upper Left hand corner of the display.

## System Reports

### Report initialization



# REPORT Initialization

12-Dec-03 Report Initialization 14:53

Tank Id	Fluid Name	Quantity	Unit
1	10W30	2537.542	QUART
2	ATF	1482.540	QUART
3	15W40	1926.900	QUART
4	ANTIFREEZE	1986.690	QUART

4 transactions

Dispense K. Id	Hose Id	Fluid Name
2	1	ATF
1	2	10W30
2	11	ATF
1	12	10W30
2	19	ATF
2	21	ATF
1	22	10W30
2	23	ATF
3	29	15W40
2	30	ATF
3	31	15W40
4	34	ANTIFREEZE

12 transactions

Pin Id	User Name
0000	SUPERVISOR
0065	JASON WOLK
0070	JOEL GUZMAN
0071	JOE CAMP
0075	JASON HUGET
0076	ROBERT GAUTHIER
0080	REYES CLAUDIO
0081	STEVEN OAKLEY
0101	DOUG SMITH
0104	MIKE DAWKINS
0151	GHANI HABEEB
0152	JEFF NEUTZE
0161	STEVE KNIGHT
0162	RODNEY TIDWELL

14 transactions

This display provides a simple display of the system entity and associated data.

The first section shows the relationship of the Tank Id to the fluid type, the quantity in the tank along with unit of measure for dispensing from the tank.


The second section shows the id of the Zone keypad and the Hose/Meter id numbers associated to the Zone keypad. It also shows the fluid that is to be dispensed from the Hose/Meter.

The third section shows the system users and their four-digit pin id number.

No data can be modified from this screen.

To return to the main menu options, click on the LOGO in the upper left hand corner.

## Report Configuration Screen



# REPORT CONFIGURATION

*12-Dec-03 Report Configuration 14:57*

Master Keypad			
Keypad Timeout	Display Timeout	External Printer	Buzzer
20	2	N	Y

Dispense Keypad										
Dispense Keypad	Mileage	N Field Info	AN Field	Keypad Timeout	Hose inactive timeout	Display Timeout	Int. Printer	Buzzer	Master Keypad Timeout	Miscellaneous WO
1	2	N	N	10	1200	2	N	Y	30	999999

Host					
Baudrate	Bytesize	Parity	Stopbits	Nb Retry	Timeout
1200	8	o	1	3	15

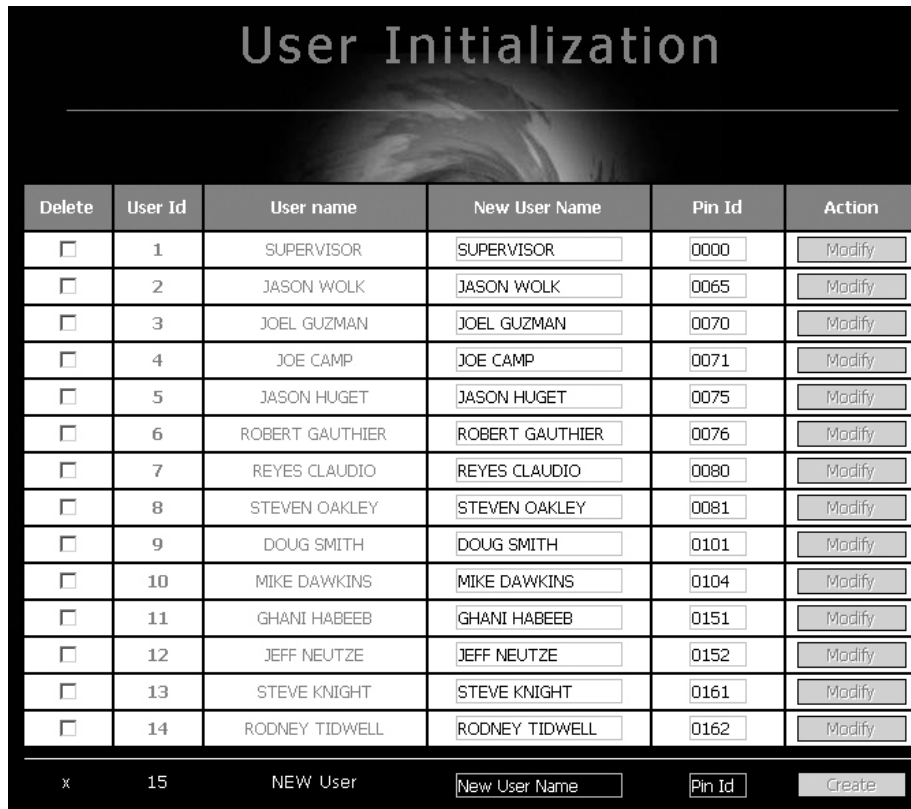
This display provides a simple display of the system configuration data.  
**Refer to Section: System Initialization for detailed information.**

No data can be modified from this screen.

To return to the main menu options, click on the LOGO in the upper left hand corner.

## User Management

### User Initialization Screen



The screenshot shows a 'User Initialization' screen with a table of users and a 'NEW User' form at the bottom. The table has columns for Delete, User Id, User name, New User Name, Pin Id, and Action. The 'NEW User' form has fields for User Id (15), User name (NEW User), New User Name, Pin Id, and a Create button.

Delete	User Id	User name	New User Name	Pin Id	Action
<input type="checkbox"/>	1	SUPERVISOR	<input type="text" value="SUPERVISOR"/>	<input type="text" value="0000"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	2	JASON WOLK	<input type="text" value="JASON WOLK"/>	<input type="text" value="0065"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	3	JOEL GUZMAN	<input type="text" value="JOEL GUZMAN"/>	<input type="text" value="0070"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	4	JOE CAMP	<input type="text" value="JOE CAMP"/>	<input type="text" value="0071"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	5	JASON HUGET	<input type="text" value="JASON HUGET"/>	<input type="text" value="0075"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	6	ROBERT GAUTHIER	<input type="text" value="ROBERT GAUTHIER"/>	<input type="text" value="0076"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	7	REYES CLAUDIO	<input type="text" value="REYES CLAUDIO"/>	<input type="text" value="0080"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	8	STEVEN OAKLEY	<input type="text" value="STEVEN OAKLEY"/>	<input type="text" value="0081"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	9	DOUG SMITH	<input type="text" value="DOUG SMITH"/>	<input type="text" value="0101"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	10	MIKE DAWKINS	<input type="text" value="MIKE DAWKINS"/>	<input type="text" value="0104"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	11	GHANI HABEEB	<input type="text" value="GHANI HABEEB"/>	<input type="text" value="0151"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	12	JEFF NEUTZE	<input type="text" value="JEFF NEUTZE"/>	<input type="text" value="0152"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	13	STEVE KNIGHT	<input type="text" value="STEVE KNIGHT"/>	<input type="text" value="0161"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	14	RODNEY TIDWELL	<input type="text" value="RODNEY TIDWELL"/>	<input type="text" value="0162"/>	<input type="button" value="Modify"/>

x	15	NEW User	<input type="text" value="New User Name"/>	<input type="text" value="Pin Id"/>	<input type="button" value="Create"/>
---	----	----------	--	-------------------------------------	---------------------------------------

The purpose of this screen is to manage user information for the system. From this screen you can add and delete a user or update current user information. The system can have up to 250 users with User id 1 being reserved for the supervisor PIN id.

**The supervisor PIN id is used for access to management screens on the Distributed Control and Zone keypads.**

To Create/Add a new user to the system, in the box next to NEW User, type in the user name and the desired four-digit pin number and click create.

**Leading zeros must be included in the Pin id number.**

The user name can be up to 16 characters in length.

**Note: 8888 is a reserved PIN id and cannot be assigned to a user.**

To delete a user click the delete box next to the user to be deleted and the user will be removed. The user will be deleted when the box is checked.

**CAUTION:** To modify an existing user name, enter the information into the new User Name box next to the name to be changed and click the Modify button.

To change a user password, type in the new password in the Pin id box to be changed and click modify.

**CAUTION:** Changing of a user password requires that the system be updated through the Send User function from the KPS system.

## **Process to Modify /Add / Delete Users**

### **On The PC Application Software:**

1. Purge all Pending WOs
2. Enter the Entity >> User
3. Modify or Add or Delete
  - a. New USER NAME
    - i. Up to 16 AN Characters
    - b. PIN ID = 4 Numeric Digits

### **Open The KPS program:**

1. Double click on the KPS icon on bottom corner of the screen.
2. Under Edit click on the SEND USERS button
3. Minimize the KPS program (Note: DO NOT EXIT (X) the program)

The Program will automatically download all user information to the Zone Keypads.

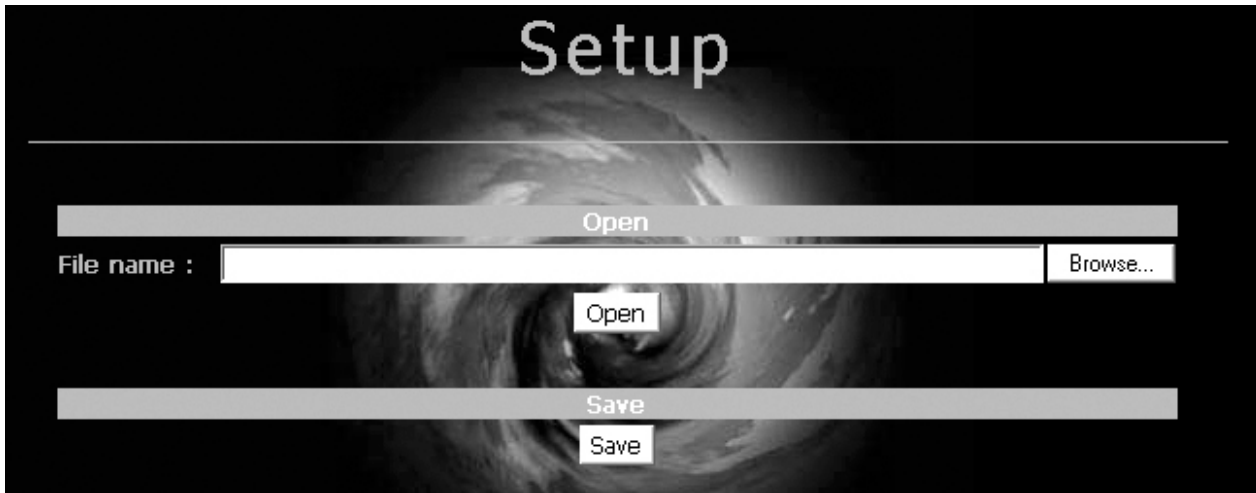
It is suggested this process take place at the end of the day.

After completion of the update, the new users will be added and the normal Dispense Order process can resume.

**Also, it is recommended that you enter additional Operator PIN Ids for use as temporary numbers for new employees. This is suggested so there is not a need to update users every time a new employee is brought into the organization. Update users may be regularly scheduled.**

## File Management

### Setup Screen



Standard popup menu for opening a file

The **File/Setup/Open** files contains the following parameters:

- DISTRIBUTED CONTROL KEYPAD CONFIGURATION
- ZONE KEYPAD CONFIGURATION
- GENERAL SETUP
- FLUIDS
- TANKS
- FLUID-TANK RELATIONSHIPS
- ZONE KEYPADS
- HOSES
- HOSE-TANK-FLUID-DISPENSE KEYPAD RELATIONSHIPS
- USERS – SUPERVISOR AND OPERATORS
- HOST PROTOCOL

Using the browse feature go to the folder:

All Saved files are located in the following directory:

C:/program files/Badger/HighEnd Admin/High End/Export/\*.\*

This is the location the user will go to when retrieving files that were previously stored.

Note: It is highly recommended the user save the setup file to a floppy disk after the initialization of the system is complete.

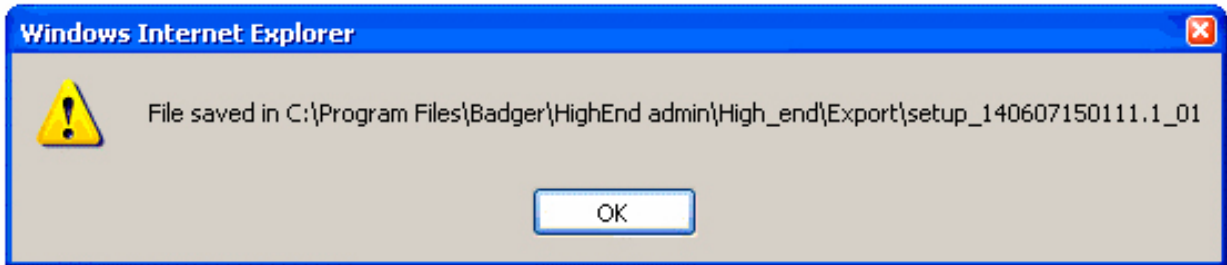
The **File/Setup/Save** files contains the following tables:

- DISTRIBUTED CONTROL KEYPAD CONFIGURATION
- ZONE KEYPAD CONFIGURATION
- GENERAL SETUP
- FLUIDS
- TANKS
- FLUID-TANK RELATIONSHIPS

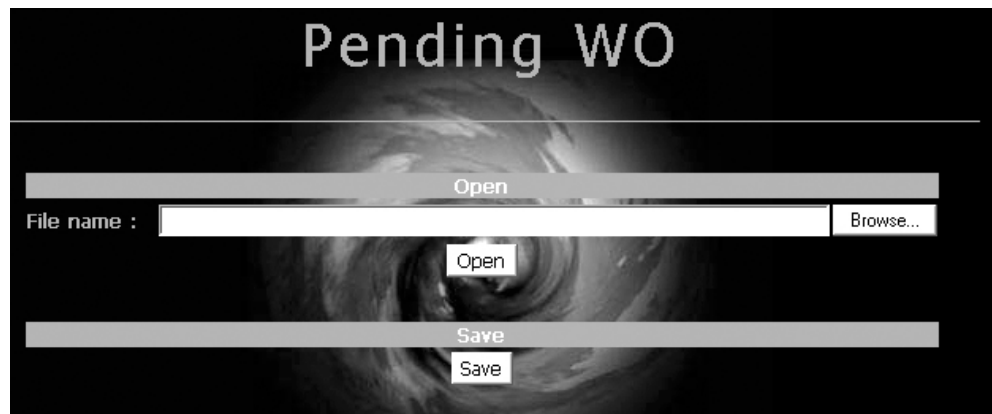


- ZONE KEYPADS
- HOSES
- HOSE-TANK-FLUID-DISPENSE KEYPAD RELATIONSHIPS
- USERS – SUPERVISOR AND OPERATORS
- HOST PROTOCOL

The pop-up illustrated below provides the information for the folder and file name for the SAVED SETUP FILE.



### Pending WO Screen



Standard popup menu for opening a file

The **File/On going WO/Open** files containing the following tables:

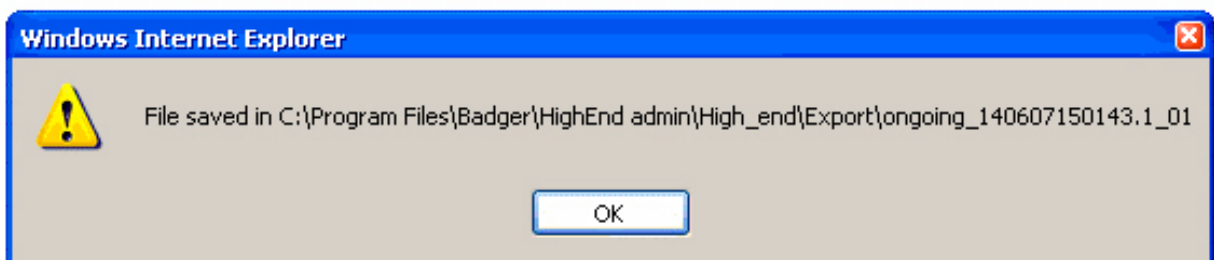
- ALL PENDING WO

By opening the files, the software will automatically erase and update all the tables content.

Standard popup menu for saving a file

The **File/On going WO/Save** files contains the following tables:

- ALL PENDING WO



## WO Screen



Standard popup menu for opening a file

The **File/WO/Open** files containing the following tables:

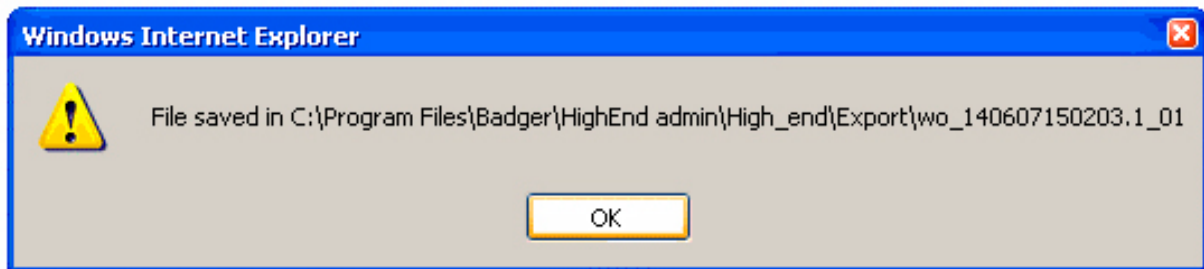
- WORK ORDER RESULTS

By opening the files, the software will automatically erase and update all the tables content.

Standard popup menu for saving a file

The **File/WO/Save** files contains the following tables:

- WORK ORDER RESULTS



## Database Screen



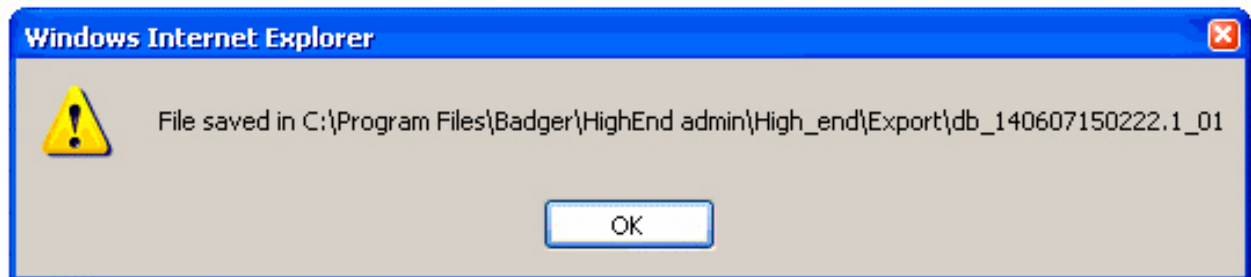
Standard popup menu for opening a file

The **File/Database/Open** files containing ALL the tables

By opening the files, the software will automatically erase and update all the tables content.

Standard popup menu for saving a file

The file/setup/open files contains ALL the tables:



Standard popup menu for saving a file

The file/setup/open files contains the following tables:

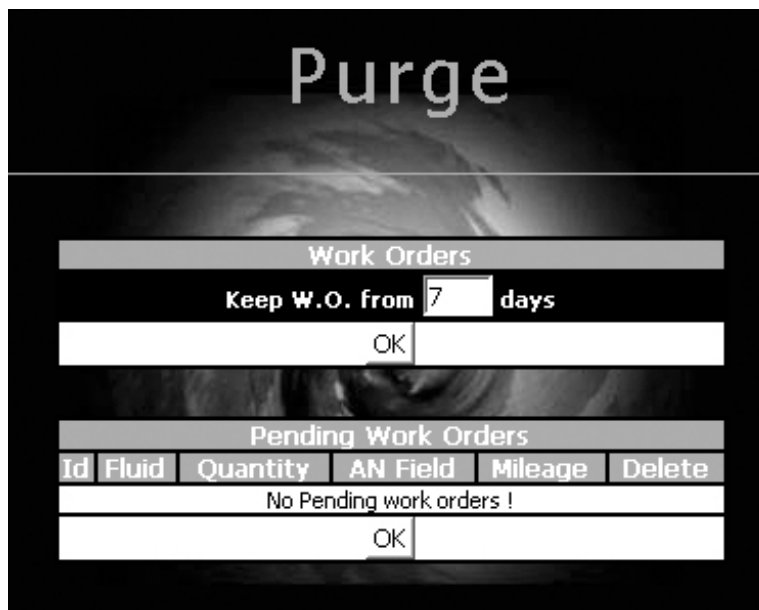
- WORK\_ORDERS

The file format will be in ASCII format to be compatible with EXCEL (\*.csv format)

## Export Screen



## Purge Screen



The purge screen is for the maintenance of Work Order history and Pending Work Orders.

To Purge Work Order history enter the number of days you wish to KEEP and click the OK button. Order history older than the number of days selected will be deleted from the database. Be sure that you have selected the time frame you want to keep before clicking the OK button.

**It is recommended that you save the Work Order results using File Export prior to purging.**

To Delete a Pending work order click the id Box of the work order to be deleted and then click the OK button. This would be used for work orders that were cancelled or entered in error. If a work order is deleted in error it can be reentered on the dispense screen.

## System Setup

### System Initialization Screen

System initialization

---

Actual System Password : 0000  
System PC Password :   
Confirm System PC Password :

---

Location   
Tank Unit

---

Language :

---

Server date 30-Dec-03 - 10:32  
System date 08-Sep-02 - 20:45

---

PTB Approval YES

The OMS system password is a four-digit number. The logOn password is originally set to 0000 and can be changed by typing in a new value into the System PC Password box and the Confirm box and then clicking on the validate button. The password will change and new password will be displayed on the screen.

Location is a pull down selection and should reflect the geographical region or frequency that you are operating the system in. Europe is for 868 mhz operation and the US is for 915 mhz operation. The correct selection is required for proper communications to occur.

The tank unit is a pull down list to select the tank-tracking units of measure. Select the desired tank tracking units and click validate to change the setting.

The language selection is a pull down menu that allows you to select a language file for the PC screens. To change the language, select the desired language and click validate.

## Configuration Screen

# Configuration

Master Keypad	
Keypad Timeout [15-255]	<input type="text" value="20"/>
Display Timeout [2-255]	<input type="text" value="2"/>
External Printer	<input type="text" value="N"/>
Buzzer	<input type="text" value="Y"/>

Dispense Keypad	
Mileage	<input type="text" value="MILES"/>
N Field Info	<input type="text" value="N"/>
AN Field	<input type="text" value="N"/>
Timeout [10-255]	<input type="text" value="10"/>
Hose inactive timeout [10-65535]	<input type="text" value="1200"/>
Display Timeout [2-255]	<input type="text" value="2"/>
Int. Printer	<input type="text" value="N"/>
Buzzer	<input type="text" value="Y"/>
Keypad Timeout [1-255]	<input type="text" value="30"/>
Miscellaneous WO	<input type="text" value="999999"/>

Host	
Baudrate	<input type="text" value="1200"/>
Bytesize	<input type="text" value="8"/>
Parity	<input type="text" value="0"/>
Stopbits	<input type="text" value="1"/>
Nbretry	<input type="text" value="3"/>
Timeout [10-65535]	<input type="text" value="15"/>

RESET

UPDATE

NOTE: Host communication is not covered in this manual.

## Master Keypad Parameters

Label	Database	Comments/Rules
<b>Keypad timeout</b>	Distributed Control (DC) Keypad Serial Communications Timeout:  <ul style="list-style-type: none"> <li>- DC Keypad Timeout for communications with the PC.</li> <li>- If this Timeout occurs the Zone Keypad will display the error message: "Master/Host Interface is Down/Occupied"</li> </ul>	Enter a decimal value from 15-255. One second increments Default is 20 seconds
<b>Display timeout</b>	Distributed Control (DC) Keypad Display Timeout:  <ul style="list-style-type: none"> <li>- Timeout to control the amount of time certain screen will appear on the DC Keypad before the DC Keypad will move to the next screen. Pressing "Enter" on the DC Keypad will override this time and the next screen will appear.</li> </ul>	Enter a decimal value from 2-255. One second increments Default is 2 seconds
<b>External printer</b>	Distributed Control (DC) Keypad External Printer:  <ul style="list-style-type: none"> <li>- Is an External Printer attached to the DC Keypad</li> <li>- YES selection: The DC Keypad will automatically generate a one-line ticket printout for each work order result.</li> </ul>	YES/NO selection
<b>Buzzer</b>	Distributed Control (DC) Keypad Buzzer:  <ul style="list-style-type: none"> <li>- YES selection: A beep will sound after every button press on the DC Keypad keyboard.</li> </ul>	YES/NO selection

Label	Database	Comments/Rules
<b>Mileage type</b>	Zone Keypad Mileage Type: - Will the Vehicle Mileage be tracked in KM or Miles	KM/MILES selection
<b>N Field information</b>	Zone Keypad N Field information: - Will the 8 digit Numeric Free Field be used  If yes is selected for N Field and AN Field:  1. These two fields will appear in the Dispense Screen for data entry. 2. These two fields will appear on the Dispense Keypad every dispense request.	YES/NO selection
<b>AN Field information</b>	Zone Keypad AN Field information: - Will the 10 character alphanumeric Free Field be used  If yes is selected for N Field and AN Field:  3. These two fields will appear in the Dispense Screen for data entry. 4. These two fields will appear on the Dispense Keypad every dispense request.	YES/NO selection
<b>Timeout</b>	Zone Keypad Timeout: - This timeout is the amount of the Zone Keypad will sit idle (no buttons pushed) during the dispense request process prior to return to the main screen. - If this timeout is reached prior to completing the request the USER must reenter PIN to begin WO request.	Enter a decimal value from 10-255. One second increments Default is 10 seconds
<b>Hose inactive timeout</b>	Zone Keypad Hose Inactive Timeout: - The Hose Inactive timeout controls the amount of time the Hose may sit idle before it will automatically close out the Work Order and Lockout. - This time begins on the Hose when it receives the dispense quantity from the dispense keypad.  <b>NOTE: Please allow enough time for TOP-OFF to occur RECOMMENDED TIMEOUT IS 300-500.</b>	<b>Enter a decimal value from 10-65535. One second increments Default is 400 seconds</b>



<b>Label</b>	<b>Database</b>	<b>Comments/Rules</b>
<b>Display timeout</b>	Zone Keypad Display Timeout: <ul style="list-style-type: none"> <li>- This timeout controls the amount of time the Fluid name is displayed during the Dispense Process.</li> <li>- Pressing the Enter Key on the Zone Keypad will override this timeout</li> </ul>	Enter a decimal value from 2-255. One second increments  Default is 2 seconds
<b>Internal printer</b>	Zone Keypad Internal Printer: <ul style="list-style-type: none"> <li>- If YES is selected the Zone Keypad will automatically printer a ticket receipt of each dispense result.</li> </ul>	YES/NO selection  Default is NO
<b>Buzzer</b>	Zone Keypad Buzzer: <ul style="list-style-type: none"> <li>- YES selection: A beep will sound after every button press on the Distributed Control Keypad keyboard.</li> </ul>	YES/NO selection  Default is YES
<b>Keypad timeout</b>	Zone Keypad Timeout: <ul style="list-style-type: none"> <li>- This timeout controls the amount of time the Zone Keypad will wait for the Distributed Control Keypad to acknowledge a request/result. If this Timeout is exceeded an error message will be displayed on the Zone Keypad.</li> </ul>	Enter a decimal value from 1-255. One second increments  Default is 30 seconds
Miscellaneous WO	Zone Keypad Miscellaneous WO: <ul style="list-style-type: none"> <li>- IF This number is entered on the Zone Keypad it will automatically move to the next screens in the WO process.</li> </ul>	Enter six alphanumeric characters. Examples: 999999 or ABCDE4
Update	Update Configuration Parameters	Press this button to update all configuration parameters
Reset	Reset Configuration Parameters	Press this button to reset all configuration parameters to defaults

## System Entity

### Fluid Screen

**Initialization FLUID**

Delete	Fluid Id	Name	New Name	Action
<input type="checkbox"/>	1	10W30	<input type="text" value="10W30"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	2	ATF	<input type="text" value="ATF"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	3	15W40	<input type="text" value="15W40"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	4	ANTIFREEZE	<input type="text" value="ANTIFREEZE"/>	<input type="button" value="Modify"/>
x	5	NEW FLUID	<input type="text" value="NEW FLUID LABEL"/>	<input type="button" value="Create"/>

Up to 16 fluids can be defined in the system.

The fluid id is a two-digit number controlled by the system and is assigned when a new fluid is added. The fluid name can up to 16 alphanumeric characters in length

To Add a new fluid type the fluid name in the new fluid label box and click create. The new fluid will be added and will appear on the screen next to its fluid id number.

To Modify an existing fluid name type the new name in the box next to the one to be modified and click the modify button. The name of a fluid that is associated with a tank cannot be changed

To delete a fluid check the box next to fluid you wish to remove and it will be deleted. A fluid that is associated with a tank cannot be deleted.

### Tank Screen

**Tank**

Delete	Id	Level (GALLON)	New Level (GALLON)	Unit	New Unit	Capacity (GALLON)	New Capacity (GALLON)	Action
<input type="checkbox"/>	1	634.385	<input type="text" value="634.385"/>	QUART	<input type="text" value="Choose..."/>	1500.000	<input type="text" value="1500.000"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	2	370.635	<input type="text" value="370.635"/>	QUART	<input type="text" value="Choose..."/>	500.000	<input type="text" value="500.000"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	3	481.725	<input type="text" value="481.725"/>	QUART	<input type="text" value="Choose..."/>	500.000	<input type="text" value="500.000"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	4	496.673	<input type="text" value="496.673"/>	QUART	<input type="text" value="Choose..."/>	500.000	<input type="text" value="500.000"/>	<input type="button" value="Modify"/>
x	5	00000.000	<input type="text" value="00000.000"/>	NEW UNIT	<input type="text" value="Choose..."/>	00000.000	<input type="text" value="00000.000"/>	<input type="button" value="Create"/>

Up to 16 Tanks can be defined in the system.

The Tank id is a two-digit number controlled by the system and is assigned when a new Tank is added.

To add a new tank, select the unit of measure for dispensing from the new unit pull down menu just below the list of tanks. Then enter the tank capacity and click the create button. The tank capacity is a 5/3 format.

To change the current level of a tank, type in the level in the new level box and click modify. The actual level of the tank can be update only after the tank has been associated with a fluid. The tank level is a 5/3 format.

To delete a tank click on the delete box next to the tank to be remove and it will be deleted. A tank that is associated with a fluid cannot be deleted.

### Hose/Meter Screen

**Hose Initialization**

Delete	Hose Id	Meter Address	New Meter Address	Action
<input type="checkbox"/>	1	0.050.593.862	<input type="text" value="0.050.593.862"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	2	0.050.593.796	<input type="text" value="0.050.593.796"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	3	0.050.593.851	<input type="text" value="0.050.593.851"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	4	0.050.528.519	<input type="text" value="0.050.528.519"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	11	0.050.593.816	<input type="text" value="0.050.593.816"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	12	0.050.528.390	<input type="text" value="0.050.528.390"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	19	0.050.593.815	<input type="text" value="0.050.593.815"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	21	0.050.528.418	<input type="text" value="0.050.528.418"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	22	0.050.593.980	<input type="text" value="0.050.593.980"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	23	0.050.593.971	<input type="text" value="0.050.593.971"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	29	0.038.273.049	<input type="text" value="0.038.273.049"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	30	0.050.593.965	<input type="text" value="0.050.593.965"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	31	0.050.593.949	<input type="text" value="0.050.593.949"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	34	0.050.528.440	<input type="text" value="0.050.528.440"/>	<input type="button" value="Modify"/>

5      New Meter Address           

Up to 250 Meters can be defined in the system. Hose and Meter are synonymous terms. The Hose id is a four-digit number controlled by the system and is assigned when a new Meter is added.

**The Meter address is found on a tag inside the battery compartment of the meter. The format of the address is x.xxx.xxx.xxx and is a 10-digit number. When the address is entered the decimal points must be entered in the correct position as found on the address tag.**



To Add a meter to the system enter the meter address in the new hose address box and click the create button. The system will assign it the Hose id number automatically.

To delete a meter click the delete box next to the meter to be removed from the system. A meter that is associated in the network tree cannot be deleted.

**Note: A meter that is associated in the network tree cannot be modified. To replace a meter that currently is in the system requires that you first remove it from the network tree. You can then modify the current hose address with the address of the replacement meter. Then you will need to go back to the network tree and add the hose back into the network tree.**

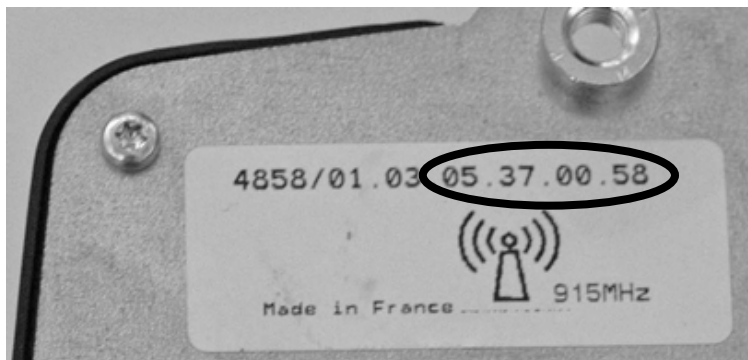
## Zone Keypad Screen

# Dispense Keypad Initialization

Delete	Dispense K. Id	Dispense K. Address	New Dispense K. Address	Action
<input type="checkbox"/>	1	0.052.756.646	<input type="text" value="03.25.00.A6"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	2	0.052.756.624	<input type="text" value="03.25.00.90"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	3	0.052.756.642	<input type="text" value="03.25.00.A2"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	4	0.052.756.631	<input type="text" value="03.25.00.97"/>	<input type="button" value="Modify"/>
<input type="checkbox"/>	5	NEW Dispense K. @	<input type="text" value="NEW Dispense K. @"/>	<input type="button" value="Create"/>

Up to 12 Zone keypads can be defined in the system. The Zone keypad id is a four-digit number controlled by the system and is assigned when a new keypad is added.

The keypad address is found on a tag on the backside of the keypad. The format of the address is xx.xx.xx.xx and is an 8 character alphanumeric address. The last 8 characters on the tag (circled in the image below) is what is used for input into the Dispense Keypad Initialization screen (shown above). When the address is entered the decimal points must be entered in the correct position as found on the address tag.



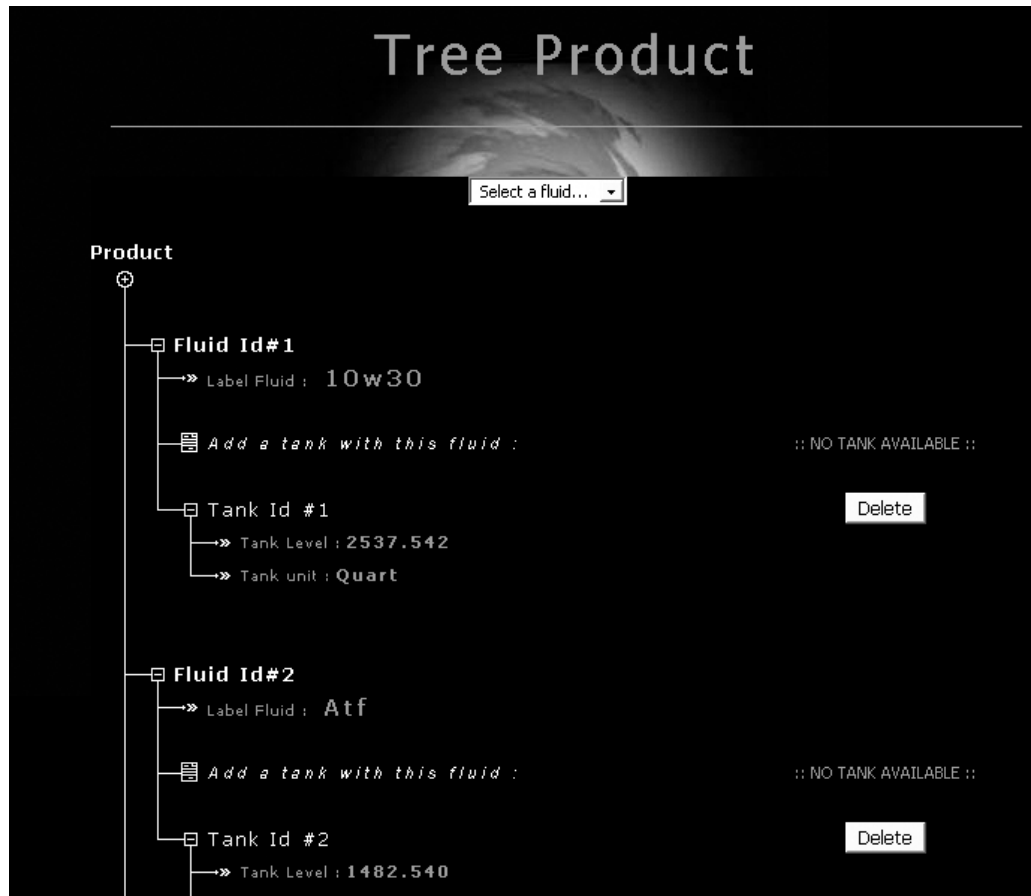
To Add a keypad to the system enter the keypad address in the new dispense keypad address box and click the create button. The system will assign it the keypad id number automatically.

To delete a keypad click the delete box next to the keypad to be removed from the system. A keypad that is associated in the network tree cannot be deleted.

**Note: A keypad that is associated in the network tree cannot be modified. To replace a keypad that currently is in the system requires that you first remove it from the network tree. You can then modify the current keypad address with the address of the replacement keypad. Then you need to go back to the network tree and add the keypad back into the network tree. You will also need to re-associate the other items that were in the tree when the Zone keypad was deleted. It is recommended that you document what was associated in the tree prior to deleting a keypad.**

## System Product Tree Configuration

### Tree Product Screen



The product tree is used to link the Fluid id to the tank that the fluid resides in.

Tanks are first defined in the entity tank detailing the size of the tank and unit of dispense for the fluid in the tank. The fluid types must also be defined under the entity fluid screen before they will show up in the product tree.

The product tree will display the fluid id number and the fluid name for all fluids that are set up.

To associate a tank to a fluid, select the tank from the pull down list next to add a tank with this fluid under the desired fluid branch. Then click the add button. The tank id, tank level and dispensing unit will then be displayed below the fluid id.

When a tank has been associated to a fluid it will no longer appear in the pull down list. Multiple tanks can be selected under a fluid. When all tanks are associated to a fluid the pull down list will no longer be available.

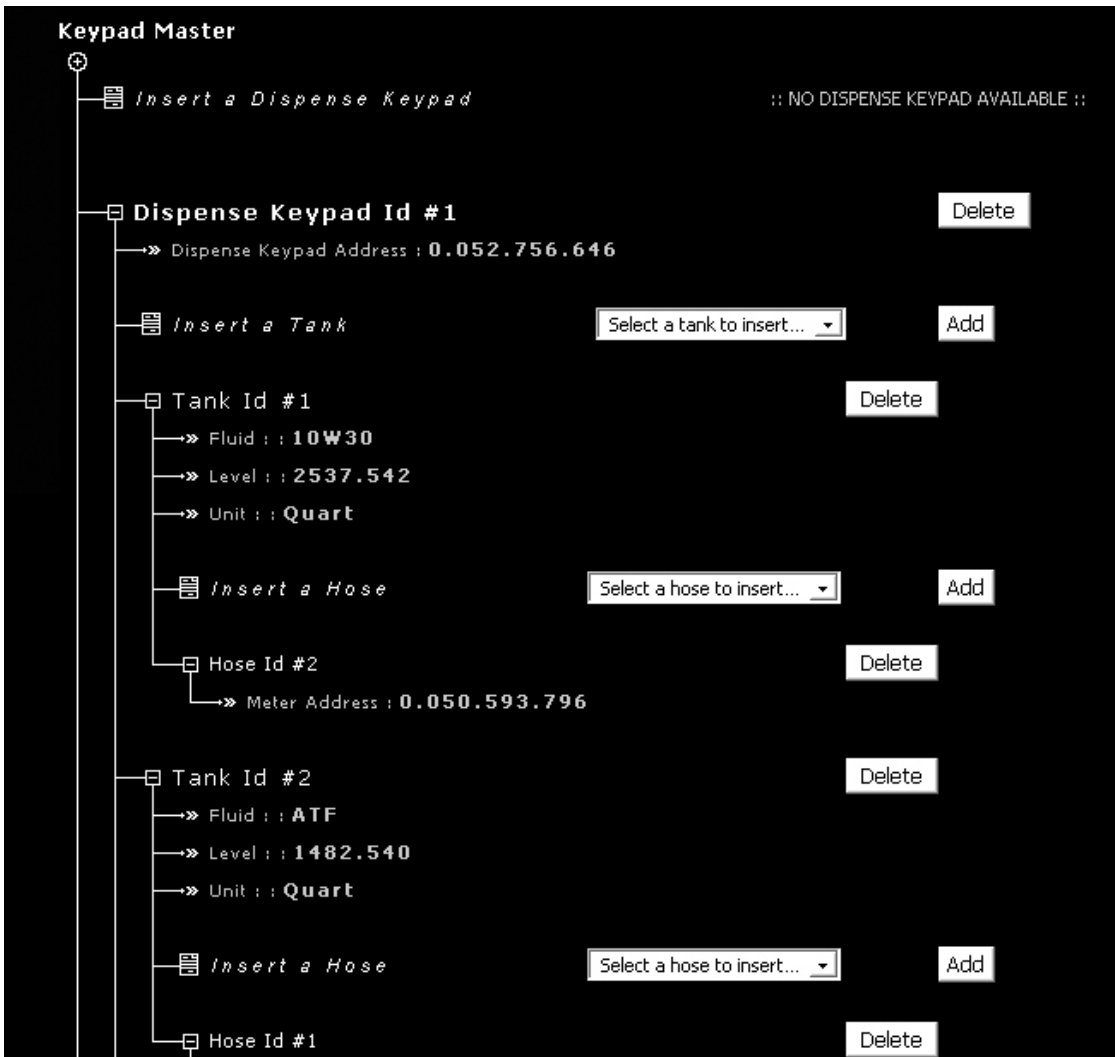
A tank can be removed from the tree by clicking the delete button next the tank id on the screen. This only removes the tank from the association to the fluid. The tank is still in the system and can be associated to a different fluid.

#### Notes:

1. The Tank Level may only be updated after the Tank has been associated with a Fluid.
2. A Tank can only be attached to a Zone Keypad after the Tank has been associated with a Fluid.

## System Network Tree Configuration

### Tree Network Screen



The network tree is used to link the Zone keypads, fluid tanks and meters logically for a system configuration. The network tree graphically shows the association of the Zone keypad id to the tank id and the hose/meter id for each Zone keypad in the system.

A hose/meter id can only be associated to one Zone keypad. In operation a hose/meter can only be selected from the one Zone keypad it is associated to.

A Zone keypad must first be defined in the entity Zone keypad table by entering the unique id number found on the back of the keypad. Tank and meter ids must also have been previously added in the entity portion of the system before they can be selected in the network tree.

**The first step is add the Zone keypad or keypads that are going to be in the system to the network tree.**

To add a dispense keypad to the network tree, use the pull down next to the *insert dispense keypad branch* on the screen and then click the add button. If no dispense keypad is available to be added, the pull down list will not be present. To remove a dispense keypad from the network

tree click the delete button next to the keypad to be removed. The keypad will be removed from the tree only.

**After the dispense keypads are selected the next step is to select the tanks that are to be associated to the individual dispense keypad.**

To select a tank under a dispense keypad use the pull down list next to the *insert a tank branch*. If no tank is available the pull down list will not be present. You must select the tank under each keypad that you want it associated to. To remove a tank from the network tree, click the delete button next to the tank to be removed. The tank will be removed from the tree only.

**NOTE: You must associate each tank to each Zone keypad where a hose/meter will be used to dispense fluid from that tank.**

**The next step is to associate the hose/meter that is going to be accessed from the Zone keypad. The key thing to remember is that a hose/meter id can only be associated to one Zone keypad. When the hose/meter is selected from the list it will no longer be included in the pull down list. In system operation a hose/meter can only be selected from the Zone keypad it is associated to.**

To add a hose/meter to the network tree, use the pull down next to the *insert a hose* on the screen and click the add button. When a hose id is selected it will be removed from the list. If no hoses are available the pull down list will not be present. To remove a hose from the network tree click the delete button next to the hose to be removed. The hose will be removed from the tree only.

Notes:

1. After an entity is added to the network it is no longer available for selection through the pulldown menus.
2. When an entity is deleted from the network it will again appear for selection through the pulldown menus.
3. The Tank level will be displayed on the network tree in the unit of measure of the dispense unit selected.

## System Network Installation Process

The following outlines the process to communicate the network parameters from the PC to the Distributed Control Keypad and Zone Keypads.

Most network parameters are set via RF communications.

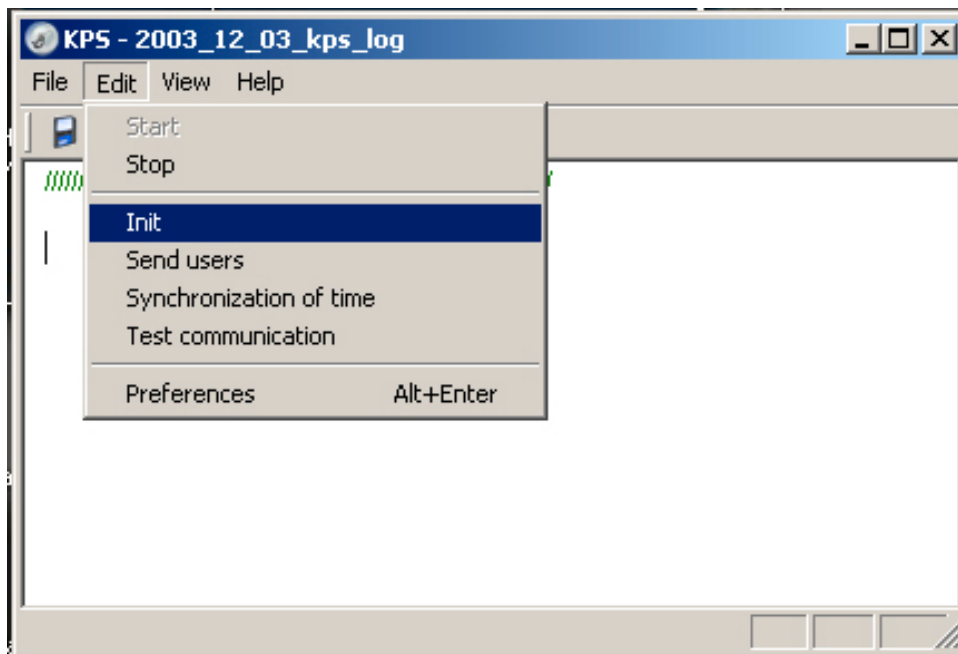
### PC / Keypad Server Program:

When all Entities (Tanks, Fluids, Users, Hoses, Zone Keypads) are entered and the product and network trees are completed, the following outlines the initialization of the network using the Keypad Server Program (KPS). The KPS is the communications interface program between the Distributed Control Keypad and the PC.

1. The KPS icon is located at the bottom right hand corner of the screen.



2. Double click on the icon and the program will appear.
3. Go to Edit and Init



4. The Initialization Process will automatic begin.
5. The Process is complete when the following is displayed in the KPS program dialog box:

```
09/08/03 13:39:54 : Flow #78 : Ending Master configuration : Ok
09/08/03 13:39:54 : Sending frame : 02 78 00 00 79 03
09/08/03 13:39:54 : //////////////// [ trame n°75 | Octets emis : 1770 | Octects utile : 1770 ]////////////////
09/08/03 13:39:54 : Reading frame : 02 76 00 77 03
09/08/03 13:39:54 : Flow #76 : Receiving acknowledge from Master : Ok
09/08/03 13:39:54 : Reading frame : 02 77 00 78 03
```



09/08/03 13:39:54 : Flow #77 : Receiving acknowledge of end process : Ok

09/08/03 13:39:54 : Starting listener

09/08/03 13:39:54 : Listener is down

09/08/03 13:39:54 : Flow #7C : [[[ Network configuration terminated! ]]]

: Ok

09/08/03 13:39:54 : Starting listener

09/08/03 13:39:54 : Listener is down

09/08/03 13:39:55 : Starting listener

09/08/03 13:39:55 : Listener is down

09/08/03 13:39:55 : Starting listener

6. Minimize the KPS: The icon should be located at the bottom right hand corner of the screen.

This system is now ready for operation.

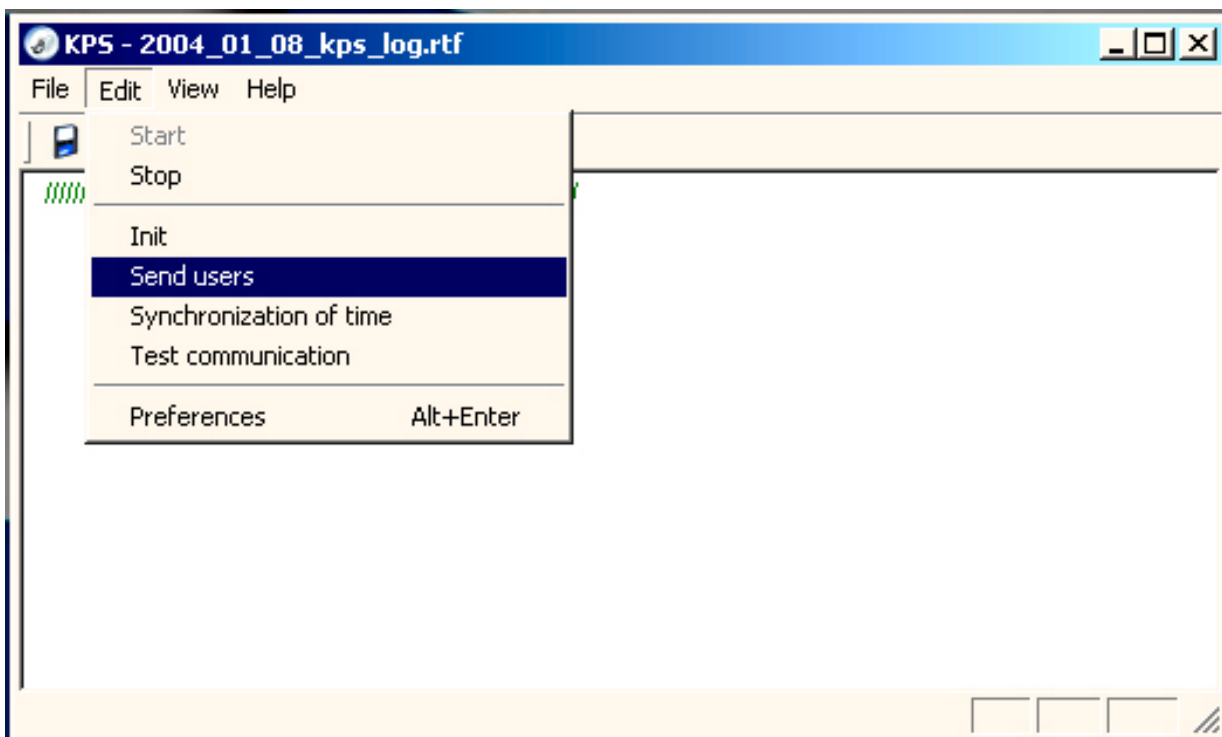
## Process to Modify/Add/Delete Users

### On The Application Software:

1. Purge all Pending WOs
2. Enter the Entity >> User
3. Modify or Add or Delete
4. New USER NAME
5. Up to 16 AN Characters
6. PIN ID = 4 Numeric Digits

### Open The KPS program:

1. Double click on the KPS icon on bottom corner of the screen.
2. Under Edit click on the Send Users
3. Minimize the KPS program (Note: DO NOT EXIT (X) the program)



The Program will automatically Re-initialize and download all of the USER information to the Zone Keypads.

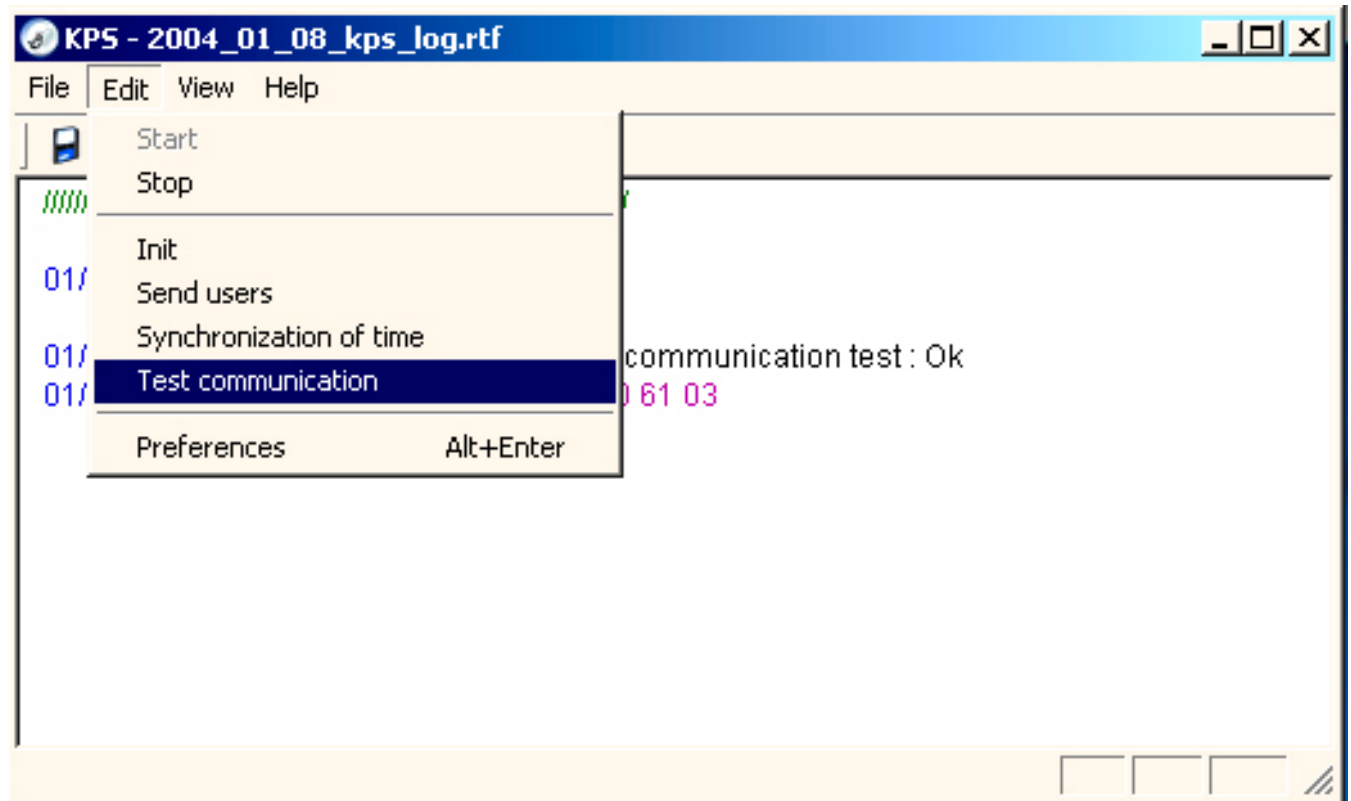
It is suggested this process take place at the end of the day. After completion of the programming, the normal Dispense Order process may be followed.

It is suggested that you add additional Operator PIN Ids for use as temporary numbers for new employees. This is suggested so there is not a burden to Re-initialize every time a new employee is brought into the organization. This Re-initialization may then be regularly scheduled, say once/month.

## Process to Test MK/PC Communications

### Open The KPS program:

1. Double click on the KPS icon on bottom corner of the screen.
2. Under Edit click on the **Test Communications**
3. Minimize the KPS program (Note: DO NOT EXIT (X) the program)



The Program will automatically send a test communications frame to the Distributed Control Keypad.

If there is a problem in the communications the display will show a **RED ERROR MESSAGE**. If this should occur:

1. Check the RS-232 cable connection.
2. Enter the **Preferences** options in the KPS:
  - a. Make sure the port connections is COM1

## **Process to Add/Delete A Hose – Meter**

### **On The Application Software:**

1. Delete hose/meter from the Network Tree
2. Enter the Entity >> Hose – Meter
3. Delete the Hose/Meter to be replaced.
4. Enter the new Hose/Meter number.
  - a. The Hose address is the X.XXX.XXX.XXX number on the label visible when battery door is detached from the meter.
5. Press MODIFY
6. Insert Hose/Meter in the Network Tree

### **Open The KPS program:**

1. Double click on the KPS icon on bottom corner of the screen.
2. Under Edit click on the INIT
3. Minimize the KPS program (Note: DO NOT EXIT (X) the program)

The Program will automatically Re-initialize and download all of the system information to the Zone Keypads.

It is suggested this process take place at the end of the day.

After completion of the programming, the normal Dispense Order process may be followed.

## Trouble Shooting Guide

### PC Communications Error

#### Symptom:

When the operator enters a WO number for validation the Dispense Keypad (DK) displays:

Master / Host is  
Down

#### Trouble Shooting Action:

1. Verify that the RS-232 cable is properly connected and secured to the PC and the Distributed Control Keypad (DCK).
2. Verify that the Keypad Server Program (KPS) is running:



A small icon located on the lower right corner of the screen indicates the status of the KPS program.

When the KPS program is running the icon will look like this 



If KPS is not running the KPS icon will have a **RED** slash through it  or there will be no icon displayed in the lower right corner.

If the KPS icon has a RED slash through it, simply right click with the mouse on the KPS icon and then left click on Start.

If no KPS icon is present go to Start/Programs/Homerider Systems/KPS/Launch KPS and left click to bring the KPS program window to the screen.

- Then left click on the green icon to start the KPS program.
- Then minimize the KPS window and verify that the KPS icon is displayed in the lower right corner of the screen.

## **Running Dispense Keypad in Emergency Mode**

### **Symptom:**

When the operator enters a WO number for validation the Zone Keypad (DK) displays:



COMM  
ERROR

### **Action:**

When the PC/Host connection has failed or the communications between the Distributed Control Keypad and Zone Keypad has failed the Zone Keypad may be put into an Emergency Mode of operation. While in this mode the DK will request WO validation from the MK; however, the DK will continue with the WO process if there is no communications with the MK.

To Enter the Emergency Mode:

1. Enter the Supervisor PIN ID on the DK.
2. Enter the CNF Menu
3. Continue to press Enter until the screen is displayed



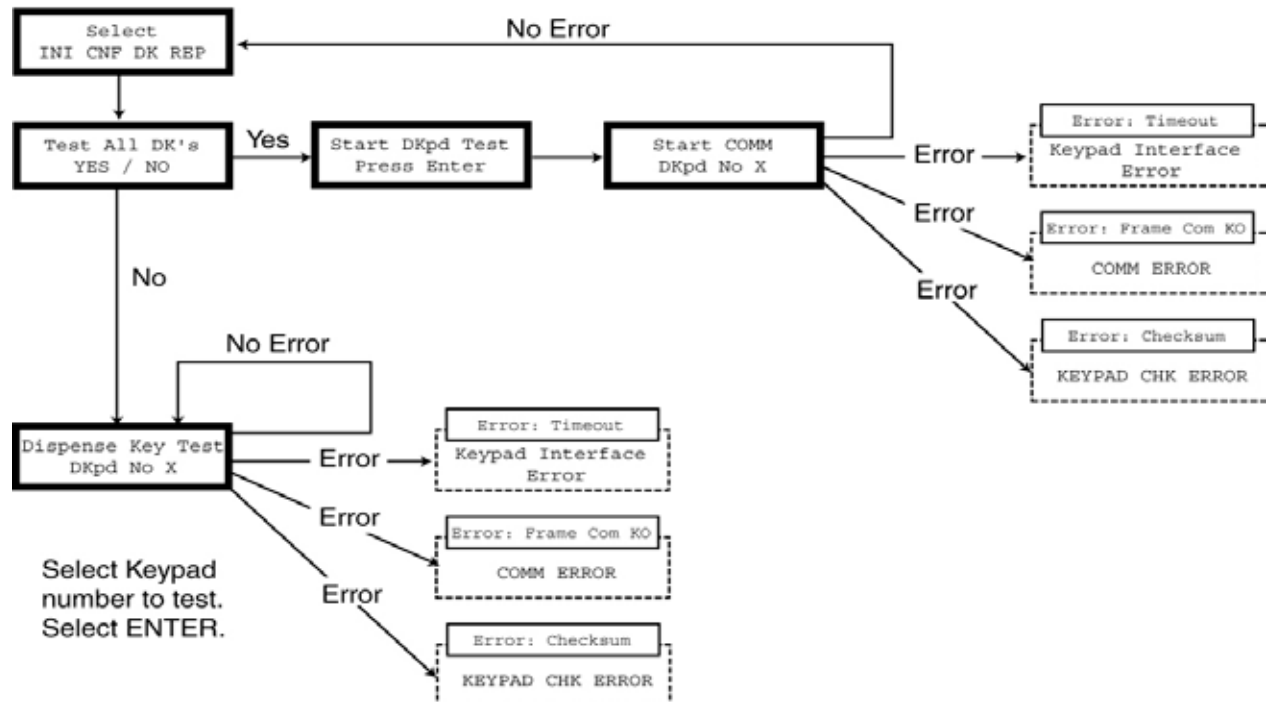
Emergency Mode  
ON / OFF

4. Move the cursor to OFF and press Enter. The DK will test the communications with the MK and automatically enter the Emergency Mode of operation if there is no communications with the MK
5. The Operator may now complete WO from the DK.

## To perform communications test with dispense keypads

On the Distributed Control keypad, enter the supervisor Pin ID (default 0000) and press enter.

### Distributed Control - DK Menu



## Running Distributed Control Keypad in Emergency Mode

### Symptom:

When the operator enters a WO number for validation the Zone Keypad (DK) displays:

Master / Host is  
Down

### Action:

When the PC/Host connection with the Distributed Control Keypad has failed the Distributed Control Keypad may be put into an Emergency Mode of operation.

To Enter the Emergency Mode:

1. Enter the Supervisor PIN ID on the MK.
2. Enter the CNF Menu
3. Continue to press Enter until the screen is displayed.

WO Validation  
No Host PC

4. Move the cursor to **No** and press Enter.

WO archive  
None Mem Print

5. Move the cursor to None and press Enter.

Archive on PC?  
YES / NO

6. Move the cursor to YES and press Enter.

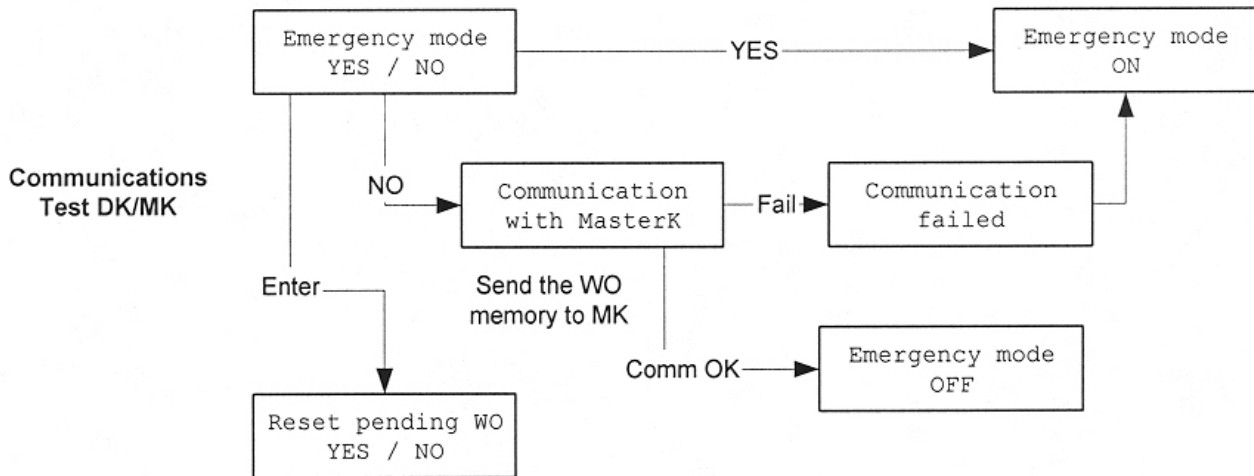
7. The Operator may now complete WOs from the DK.

The MK will retain all WO results until communications is restored with the PC/Host.

To return to normal operation return the "Host Link Off" parameter to PC.

The DK will automatically return to Normal Mode of operation when communications is reestablished with the MK. All WO result data will be automatically transmit to the MK and PC at that time.

### Zone Keypad Communications Test



To test DK communication with MK:

1. Enter the Supervisor PIN ID on the DK.
2. Enter the CNF Menu
3. Continue to press Enter until the screen is displayed

Emergency Mode  
ON / OFF

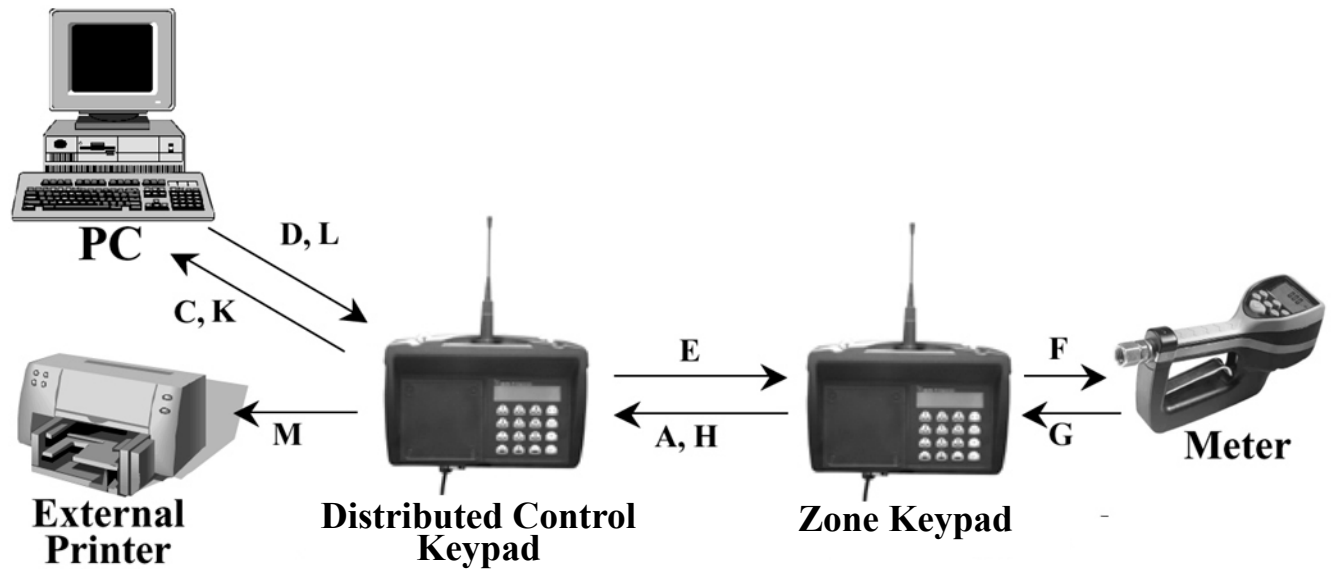
4. Move the cursor to OFF and press Enter. The DK will test the communications with the MK and automatically enter the Emergency Mode of operation if there is no communications with the MK

The Operator may now complete the WO from the DK.



## Communications Flow

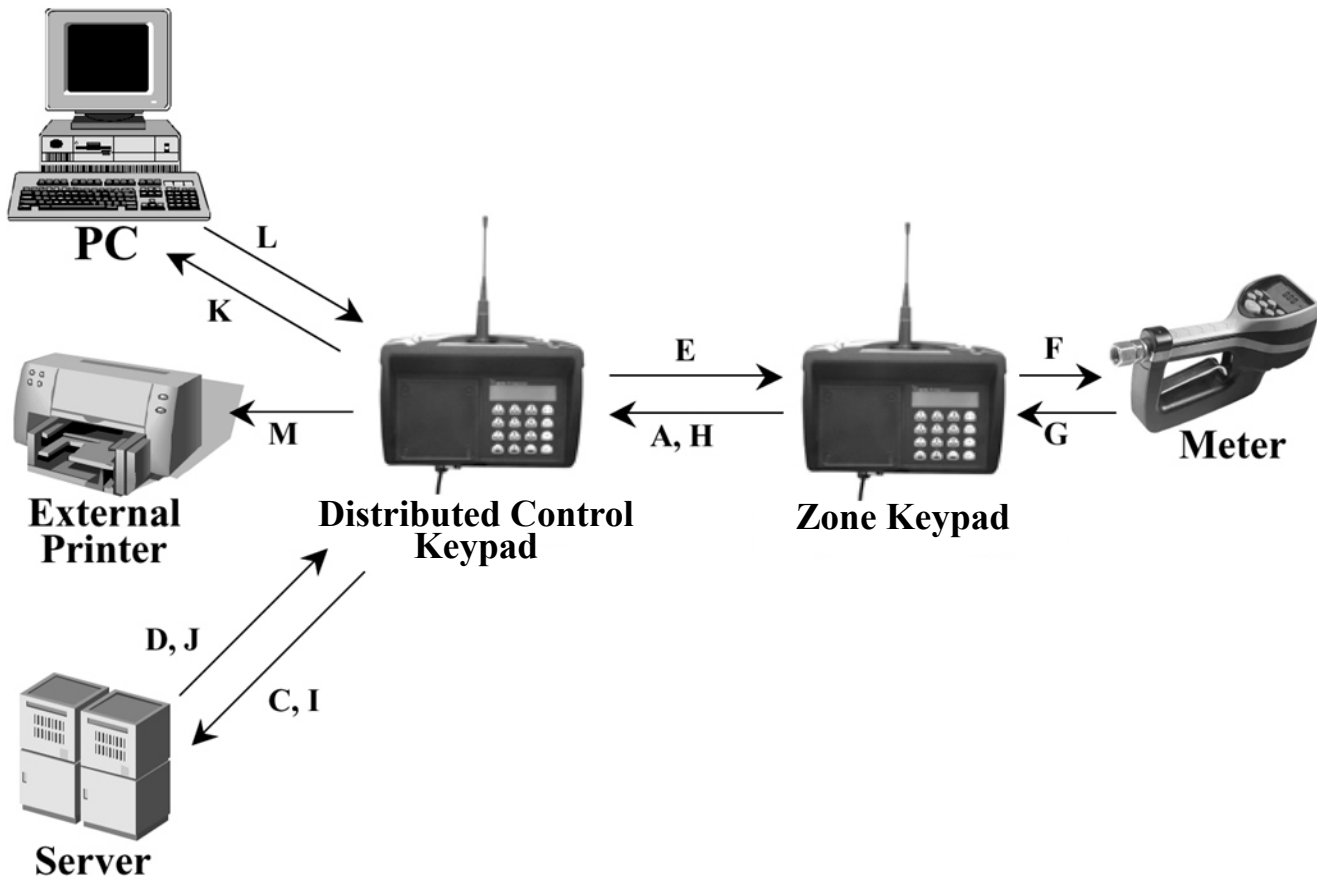
### Distributed Control/Zone with PC



#### PC Dispense Order Communications:

- Flow A:** Zone (ZKP) sends a WO# to the Distributed Control (DCKP)
- Flow C:** DCKP sends the WO# to the PC
- Flow D:** PC sends a validation to DCKP
- Flow E:** DCKP sends a validation to ZKP
- Flow F:** ZKP sends dispense to Meter
- Flow G:** Meter sends result to ZKP
- Flow H:** ZKP sends result to DCKP
- Flow K:** DCKP sends result to PC
- Flow L:** PC sends a validation to DCKP
- Flow M:** MK sends work order ticket to printer

## Distributed Control/Zone with PC + Host Terminal



### Host Dispense Order Communications:

- Flow A:** Zone (ZKP) sends a WO# to the Distributed Control (DCKP)
- Flow C:** DCKP sends the WO# to the Host
- Flow D:** Host sends a validation to DCKP
- Flow E:** DCKP sends a validation to ZKP
- Flow F:** ZKP sends dispense to Meter
- Flow G:** Meter sends result to ZKP
- Flow H:** ZKP sends result to DCKP
- Flow I:** DCKP sends result to Host
- Flow J:** Host sends a validation to DCKP
- Flow K:** DCKP sends result to PC
- Flow L:** PC sends a validation to DCKP
- Flow M:** MK sends work order ticket to printer



## Balcrank Lubrication Equipment Warranty Statement

All Balcrank equipment sold by authorized Balcrank distributors is warranted to their original customer to be free from defects in materials and workmanship for a period of one year from the date of sale to that customer. Selected Balcrank equipment carries warranty terms for a more extended period as defined in the Balcrank Lubrication Equipment & Accessories User Price List, wherein a "lifetime" warranty represents a warranty period of thirty years. Within the initial one-year warranty period, Balcrank will repair or replace all Balcrank equipment determined by Balcrank to have defective materials or workmanship. For equipment carrying more extended warranties, Balcrank will repair or replace the product including parts and labor during the first full year and will provide parts only for the remainder of the warranty period.

This warranty applies only to equipment installed and operated according to applicable Balcrank Service Bulletins and Installation Instructions.

Any equipment claimed to be defective must be returned, freight prepaid, to an Authorized Balcrank Service Center (ASC). Upon receiving candidate warranty equipment from a customer, ASC will: 1) diagnose to determine the warrantable condition of the equipment, 2) submit, prior to repair or replacement, a request to Balcrank for warranty authorization, then 3) in cooperation with Balcrank, proceed with repair locally or forward the equipment to Balcrank and obtain replacement. If the part(s) or equipment items are found defective upon inspection by Balcrank, they will be repaired or replaced, and then will be returned to the ASC. If Balcrank finds the claimed part(s) or equipment not to be defective, the ASC will receive written authorization from the original customer, and then repair them for a reasonable charge to the customer, which will include all applicable parts, labor, and return transportation costs.

Optionally, the customer may submit certain eligible products directly to Balcrank for warranty return by using Balcrank Lubrication Equipment Direct Service Warranty Procedure. Eligible products are defined in the Balcrank Lubrication Equipment & Accessories User Price List. Refer to the Balcrank web site [www.balcrank.com](http://www.balcrank.com) for a copy.

Any equipment returned to Balcrank must have the Warranty Service Claim number (WSC#) clearly marked on the outside of the carton. Balcrank's sole responsibility is for defects in material and workmanship, and Buyer's sole and exclusive remedy hereunder, shall be limited to repair or replacement of the defective part or equipment.

This warranty does not cover, nor shall Balcrank be liable for repair or replacement of parts or equipment resulting from general wear and tear through use, or damage or failure caused by improper installation, abuse, misapplication, abrasion, corrosion, insufficient or improper maintenance, negligence, accident, alteration, or substitution of non-Balcrank parts.

Furthermore, the Warranty for Lubrication Equipment and Accessories does not cover the following specific conditions:

- Failure or damage to equipment caused by dirt or debris in compressed air lines and fluid lines. This includes, but is not limited to, clogged inlet filters, strainers, or regulators; fluid meters; control handles; fluid tips; and valves.
- Failure of normal wear parts including but not limited to: o-rings, packings, seals and valves unless originally improperly installed by the factory.
- Products placed in applications for which their use was not intended. Examples include but are not limited to Lubricant pump being used to pump solvents, or placing equipment intended strictly for indoor use outdoors
- Damage to equipment resulting from operation above and beyond Balcrank's recommendations.
- Leaks at air and fluid fittings and connections.
- Damage caused by thermal expansion whenever adequate pressure relief was not included in the system.
- Loose suction tubes on pumps.
- Incorrect hose reel spring tension, requiring adjustment.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL BALCRANK BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, OR OTHER DAMAGES OF SIMILAR NATURE, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST PRODUCTION, PROPERTY DAMAGE, PERSONAL INJURY, WHETHER SUFFERED BY BUYER OR ANY THIRD PARTY, IRRESPECTIVE OF WHETHER CLAIMS OR ACTIONS, LEGAL OR EQUITABLE, FOR SUCH DAMAGES ARE BASED UPON CONTRACTS, WARRANTY, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE. ANY CLAIM OR ACTION FOR BREACH OF WARRANTY MUST BE BROUGHT WITHIN TWO (2) YEARS FROM THE DATE OF SALE TO THE ORIGINAL CUSTOMER.

Balcrank® Corporation  
Weaverville, NC 28787  
800-747-5300  
800-763-0840 Fax  
[www.balcrank.com](http://www.balcrank.com)

Distributed by:

Revision Log:

New Release - 12/07  
Rev. A - Updated warranty statement

SERVICE BULLETIN SB3063  
Rev A 12/08  
832442