KleeBlue™

DEF Storage & Dispensing Systems

Diesel Exhaust Fluid

Regal™ Fleet & Retail Pedestal Dispensers

Includes Models SBD KB1050AR and SBD KB1092AR

Retail Version, Model SBD KB1092AR

Installation & Operation Manual

C SA US

Meets ISO 22241 and PEI RP1100

Table of Contents

⚠ WARNING

TURN POWER OFF
Before performing maintenance, be sure to turn system power off to avoid electric shock.

EYE PROTECTION
Pressurized systems may cause hazardous leaks and spray that may be dangerous for your eyes. Always wear eye protection.

INJURY
Wear gloves for protection from hazardous liquids that may cause irritation or burns.

READ
Read and understand manuals thoroughly. If you have any questions, please consult the factory.

DEF Purity CAUTION

DEF is WATER based and must be kept PURE and UN-CONTAMINATED

Use only compatible wetted materials for storing and dispensing DEF. Compatible materials include:

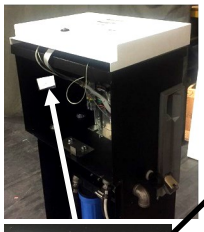
- 300 series Stainless Steel
- Polypropylene and Polyethylene
- EPDM and Viton gaskets and seals
- Special, approved hose.

DO NOT USE: Cast Iron, black iron, carbon steel, plated steel, aluminum, plated aluminum, copper, brass, bronze, zinc, lead, magnesium, silver, PVC, CPVC, or ABS plastics. See ISO 22241 and PEI RP1100 for additional information.

Thread Sealant: Threaded connections should be made as follows:

1. Coat the male thread with Loctite® 7649 Activator/primer. Allow to dry for 2 minutes.
2. Apply a liberal amount of Loctite® 567 Thread Sealant to the male thread only. Assemble the threaded components, and tighten well.
3. Allow to cure for at least 6 hours before running DEF through the connection.

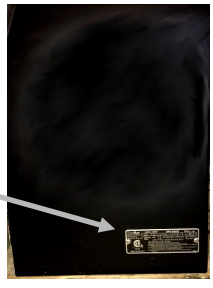
Receipt, Inspection, and Identification



Upon receipt of the KleerBlue Regal™ Pedestal Dispenser, inspect for any damage before signing the shipper's receipt. Notify the delivery company about possible damage and refuse receipt of the shipment.

Each Dispenser is identified with a dispenser Serial Number and Model Number, as shown.

Retail dispensers also have a name plate or card that gives the certificate of Conformance number as required by Weights and Measures. This plate can be found in the electrical cabinet.



CSA Listed dispensers have a CSA Identification label attached on the outside of the dispenser as shown.

General Description

The KLEER-BLUE™ Diesel Exhaust Fluid (DEF) Regal™ Pedestal Dispenser is specially designed to dispense DEF into DEF tanks on vehicles with diesel powered engines that are fitted with Selective Catalytic Reduction (SCR) pollution control systems. Each Dispenser unit is housed in an industrial grade, powder coated cabinet and is fitted with field proven digital display electronics. The 3R rated dispenser cabinets used in this design are intended to protect the electronics and plumbing from direct exposure to weather in locations that **do not** get cold enough to freeze DEF (DEF normally freezes at +12°F, -11°C). They can also be used in well ventilated indoor applications

Standard Regal™ Dispenser Specifications (Retail and Fleet)

- Industrial grade, 'Galvannealed' steel cabinet with powder coated finish.
- Durable 3/4" ID DEF compatible discharge hose .
- High efficiency, 1-micron, replaceable cartridge filter.
- High visibility electronic register**:**
  - ⇒ Emulates most standard dispenser protocols and integrates with most standard POS systems
  - ⇒ Backlit digital LCD sales, volume (gallons or liters), and price displays
  - ⇒ Volume only for Fleet applications, or if desired for retail.
  - ⇒ Non-volatile memory
- Easy access covers for pump and electronics: one lockable latch opens both compartments.
- Prepay/preset/Non-resettable totalizer
- Delivers flow rate of 8-10 gpm (30-38 lpm), depending on pump, nozzle, and hose length used.
- Operating Temperature: 12°F / -11°C to 130°F / 54°C (DEF freezes at 12°F)
- Supply Inlet: 3/4-inch NPT.
- CSA Certificate of Compliance #2524925, CSA C22.2 No.14-13, UL 508 17th Ed.

Options:

- Spring-loaded hose retractor spool (use with 15 ft hose)
- Pulse output option
- DEF SS Automatic Nozzle
- SS 3/4" NPT Breakaway Swivel
- SS 3/4" NPT 45° Swivel
- Protocol option for Gilbarco, Wayne, Bennett, Tokheim.

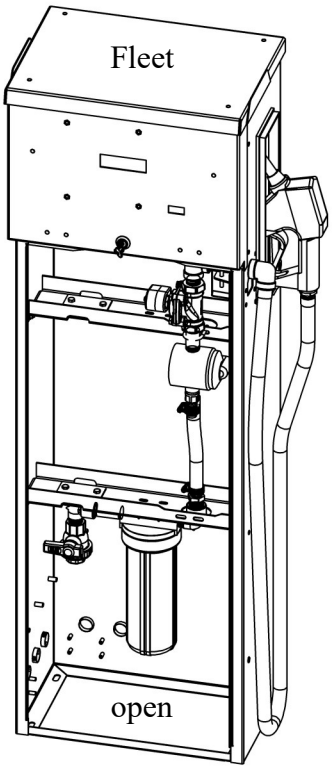
Regal™ Retail Dispenser-Specific Specifications

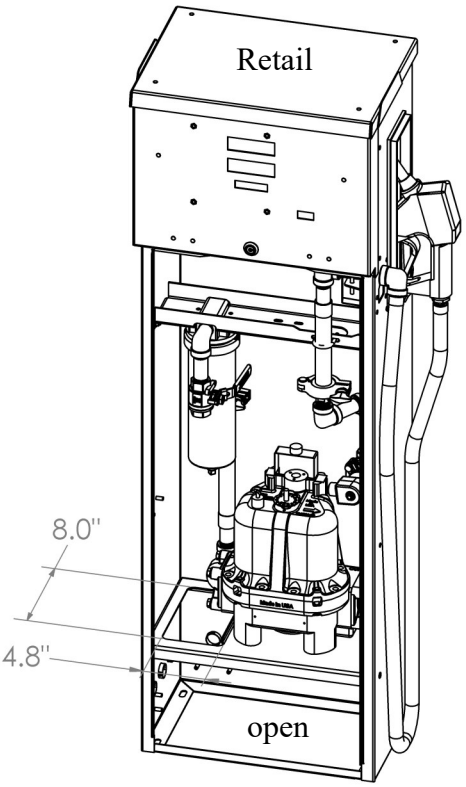
- Field Proven, stainless steel, Total Control Systems™ 682 positive displacement retail piston meter.
- Weights and Measures approved NTEP Certificate of Conformance #09-082.
- Backlit digital LCD displays sales, volume (gallons or liters), and price. Volume only displays also available.
- Stainless Steel 1-micron filter.

Regal™ Fleet Dispenser-Specific Specifications

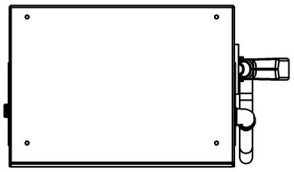
- Durable, stainless steel, Oval Gear fleet meter.
- Backlit digital LCD displays volume (gallons or liters) only.
- Polypropylene 1-micron filter.

Regal™ Dispenser Dimensions



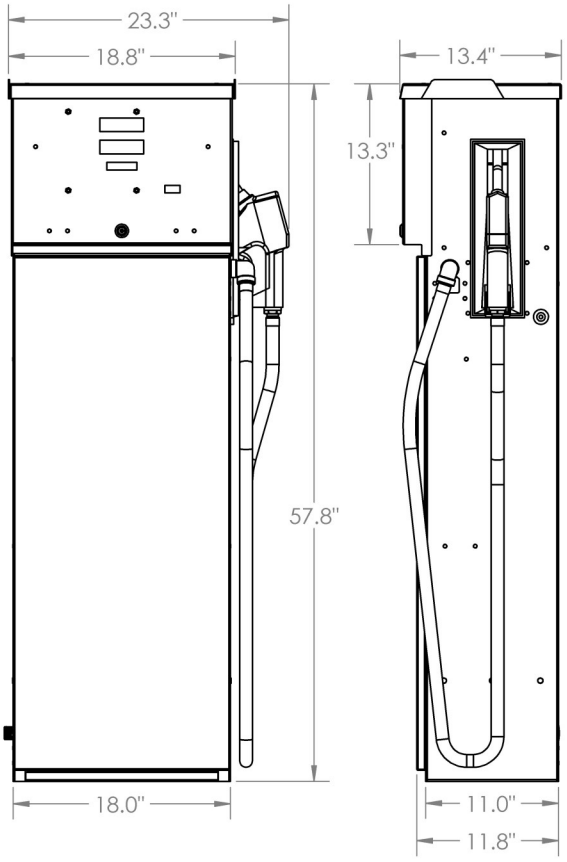


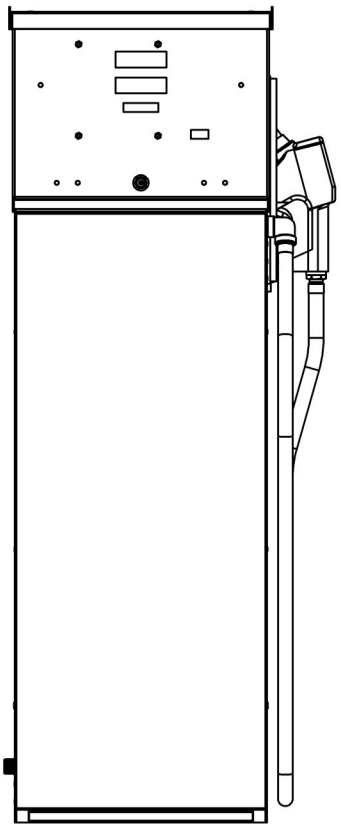
All dimensions are in inches.

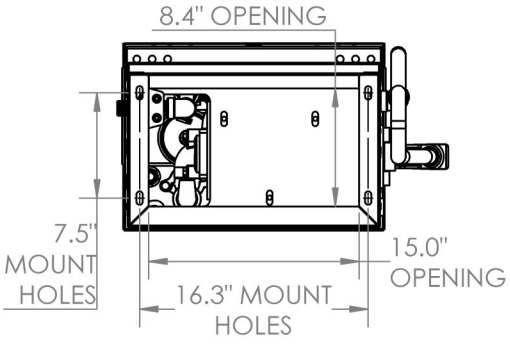


Shipping Weights:

1. Regal Retail Dispenser = 245 lbs
2. Regal Fleet Dispenser = 175 lbs







Regal™ Dispenser General Operating Instructions

DO NOT *dispense DEF into the vehicle diesel tank! DEF is held in a separate tank!*

1) If applicable, authorize the dispenser with the card reader or control system.
2) Remove nozzle from nozzle retainer. Pump will automatically turn on, and the display will reset.
3) Place nozzle in DEF reservoir on vehicle. Note: DEF tank usually has a Blue Cap.

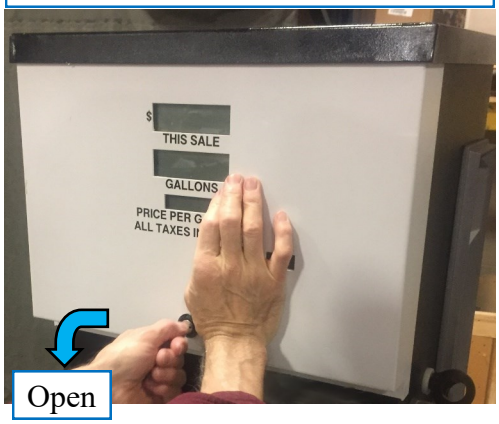
****** DO NOT dispense DEF into the vehicle diesel tank!******

4) Squeeze handle to dispense.
5) When filling is complete, place nozzle back in nozzle retainer. Pump will shut off when nozzle is in retainer.

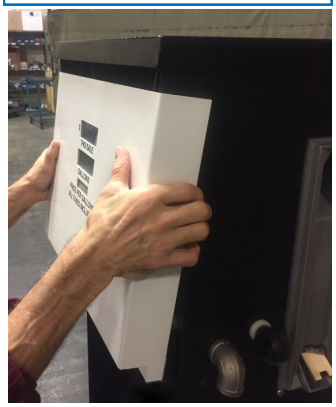
Regal Disassembly/Assembly

To Remove Display Face and Bottom Cover:

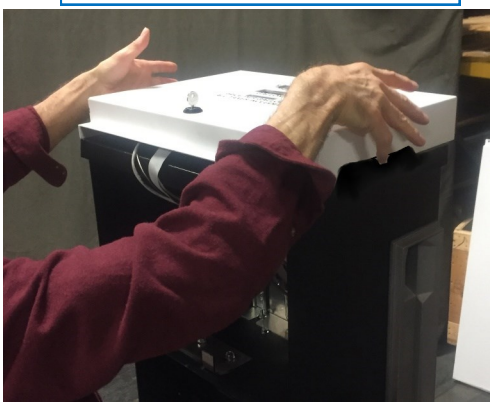
(1) Push on face with one hand, turn key to left with other.



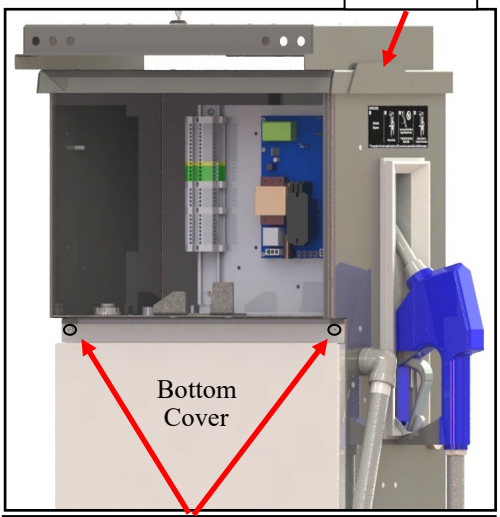
(2) Grasp Display Face and slide down.



(3) Place Display face on top of Regal



Tabs hold display

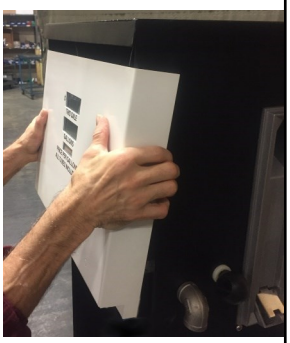


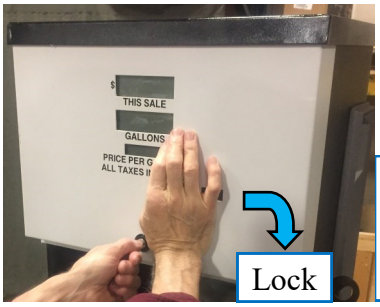
(4) Remove 2 screws, then lean Bottom Cover forward and unhook from the bottom.

To Replace Bottom Cover and Display Face:

(1) Replace Bottom Cover and snug up 2 screws. Do NOT over tighten the screws.

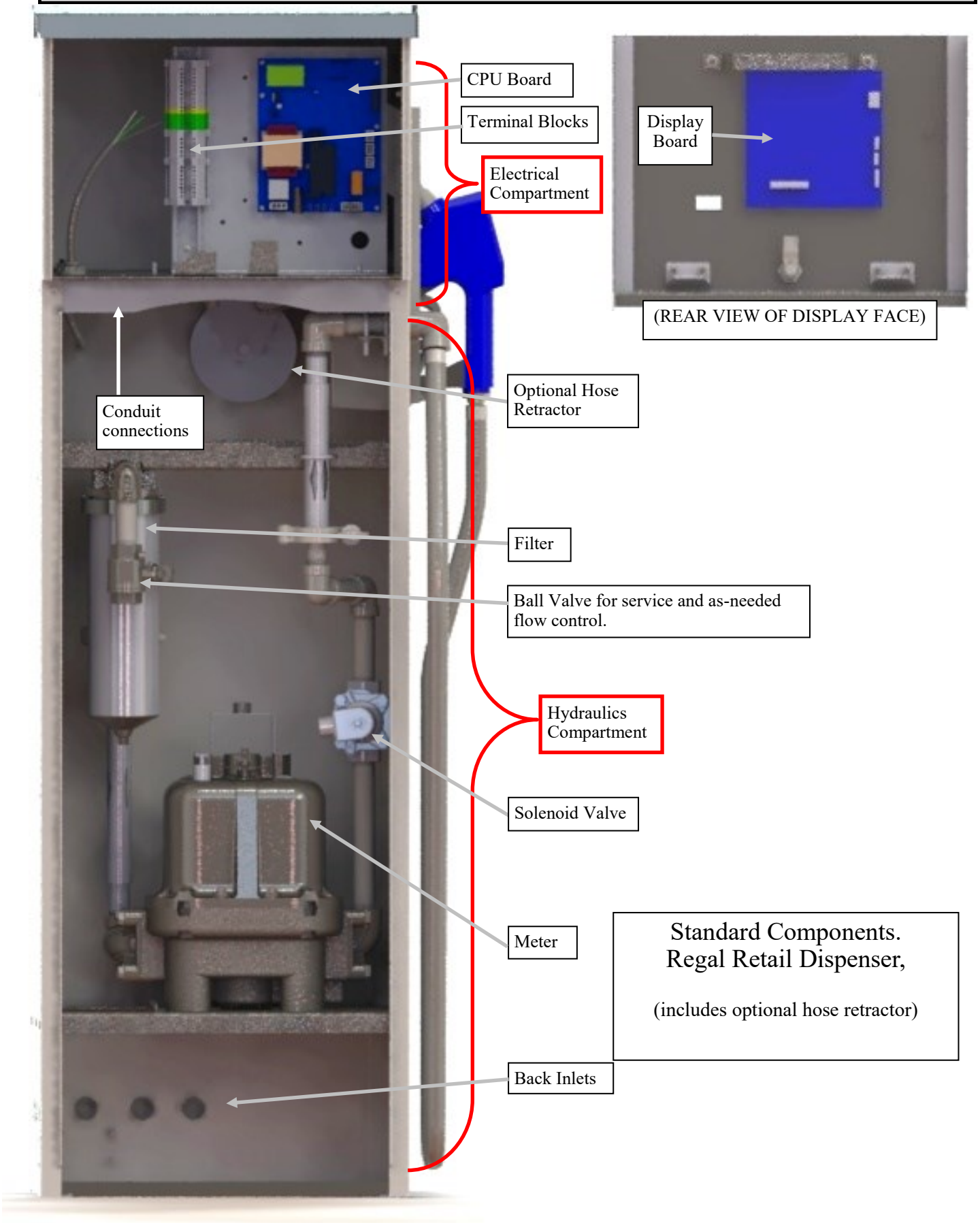
(2) Make sure wires and ribbon cable are out of the way. Slide Display Face up into Top until you can't push it up further.





(3) Push the bottom of the Display Face up and in, then lock it by turning the key to the right.

Regal™ Dispenser Major Components



Standard Components.
Regal Retail Dispenser,

(includes optional hose retractor)

Mechanical Installation Instructions

WARNING: ELECTRICAL HAZARD

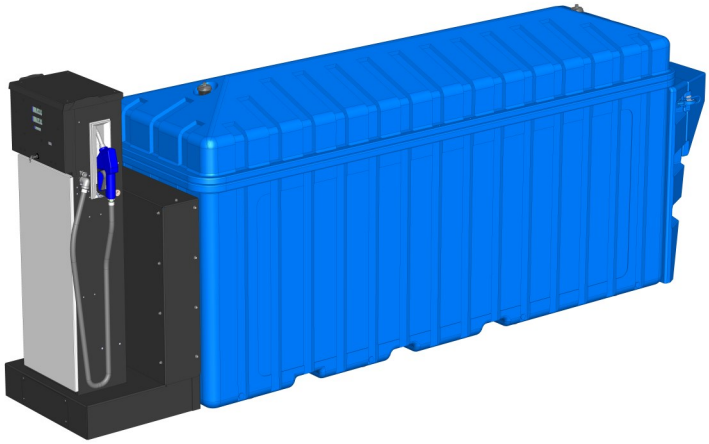
SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
ONLY CERTIFIED CONTRACTORS SHOULD INSTALL SYSTEM.

Installation near "DIESEL ONLY" dispensers is allowed.
Do not install within 20 feet of a gasoline dispenser or gasoline storage tank

A. When Dispenser is coupled to a KleerBlue™ Insulated DEF tank (400 or 1000 gallons):

- See the Installation Instructions section of the KleerBlue™ Tank Owners Manual for detailed instructions for setting and anchoring the tank and dispenser system.
- Tank and Dispenser can sit directly on the concrete pad.
- All electrical and plumbing connections between the tank and dispenser are done at the factory.

Regal™ Dispenser shown with **1,000** gal. tank on "P" (parallel) transition frame (model #**SBD 2029-L)**



Regal™ Dispenser shown with 400 gal. tank on "T" (island) transition frame (model #**SBD 2019).**

NOTE: <u>Always</u> place bollards or similar features around dispenser installations to prevent accidental impact from vehicles.

Mechanical Installation Instructions - continued

WARNING: ELECTRICAL HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
ONLY CERTIFIED CONTRACTORS SHOULD INSTALL SYSTEM.

Installation near "DIESEL ONLY" dispensers is allowed.
Do not install within 20 feet of a gasoline dispenser or gasoline storage tank

B. When mounting Dispenser on an Island or Remote location:

1) Dispenser must be permanently mounted to concrete or a durable, noncombustible structure. See page 5 for dispenser mounting dimensions, including location of openings in lower compartment of the dispenser for incoming electrical conduit and fluid piping.

2) The DEF fluid can be supplied to the dispenser through the bottom, side, or back of the dispenser. Inlet is 3/4 NPT.

3) When joining NPT fittings, use the following procedure for best results with DEF.
   - Coat the male threads with Loctite® 7649 Activator/primer. Allow to dry for at least 2 minutes.
   - Apply a liberal amount of Loctite® 567 thread sealant (or equivalent) to the MALE threads only. Assemble and tighten well.
   - Allow to cure for 6-24 hours before dispensing DEF.

6) Holes made into the cabinet should be sealed to prevent rodents and insects from getting into the dispenser.

Fleet version of KB Regal Dispenser shown.

4 Mounting bolts holes are provided on the inside bottom of Regal Dispenser

NOTE: <u>Always</u> place bollards or similar features around dispenser installations to prevent accidental impact from vehicles.

Electrical Installation Instructions

WARNING: ELECTRICAL HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
ONLY A LICENSED ELECTRICIAN SHOULD CONNECT POWER TO SYSTEM.

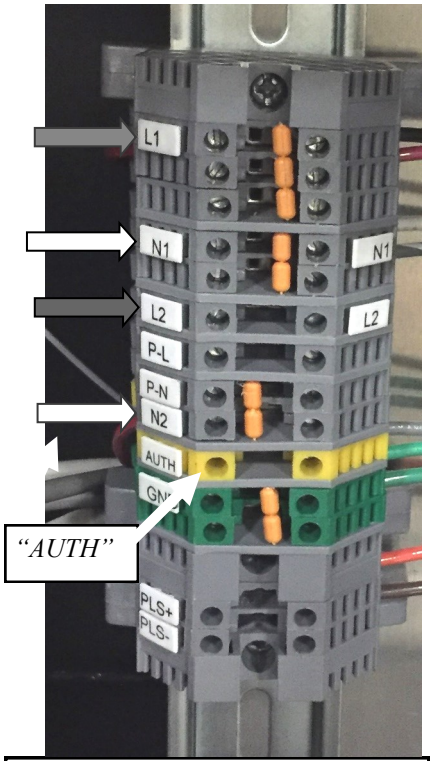
- **Power to Dispenser must be housed in conduit. All electrical connections outside of dispenser must be made in approved electrical junction boxes.**
- **Power wires inside the dispenser below the Electrical Compartment must be housed in conduit or liquid-tight flexible conduit.** Wires pass up through conduit nipples from the lower Hydraulics Compartment into the Electrical Compartment, in which all electrical connections are made.
- Use 75C rated copper conductors only for power wiring. Select the proper wire size according to NEC and all applicable local codes and standards.
- Protect the contents of the cabinet from metal chips and other debris while drilling the conduit openings. Failure to observe this precaution could result in damage to the equipment.

A. When Dispenser is coupled to a KleerBlue™ DEF 400 or 1000 gallon Mini-Bulk tank (eg: model SBD KB2019)

- Power Requirement is two dedicated 115VAC, 60 Hz, 20-amp circuits. Power is connected to the left side of the terminal block.

(1) Connect a 20-amp dedicated 120VAC circuit to L1 (Line voltage), N1 (common), and a ground. This is used to power the dispenser electronics and the solenoid valve.

(2) Connect a second 20-amp dedicated 120VAC circuit to L2 (Line voltage), N2 (common), and ground. This is used to power the pump.



Regal Terminal Block (fleet version)

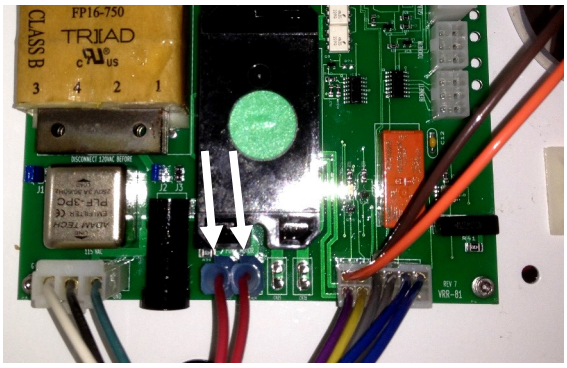
A.1. When Connecting a Card Reader to the REGAL:

(1) The terminal marked "AUTH" is designed to accept a 120VAC signal from the card reader, indicating the customer's card has been authorized. The Regal dispenser is shipped in the "stand alone" mode, with a red jumper power wire on the AUTH terminal. Remove the red jumper wire, and attach the 120 VAC card reader signal wire here. *Note:* There is no "load" from the dispenser on this voltage. The 120VAC signal from the card reader simply tells the dispenser to authorize the transaction.

(2) If your card reader requires "current-sense" (like the Petro Vend K800 Hybrid Fuel Control System), you will need to connect the 120VAC signal to both the "AUTH" terminal and 1 small 120VAC load. Contact KleerBlue Solutions for recommendation.

(3) The communication terminals are located at the bottom of the terminal block. Contact KleerBlue Solutions for more information on how to use this feature.

Communication terminals.



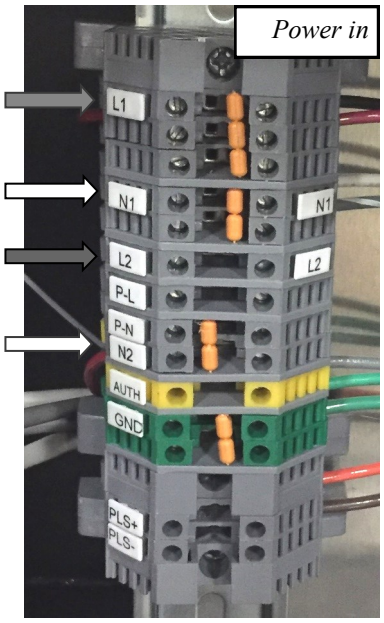
(4) Two Red, insulated wires on the CPU board are on the Left two spots, noted as CN33 and CN24, indicated by two arrows.

Electrical Installation Instructions - continued

WARNING: ELECTRICAL HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
ONLY A LICENSED ELECTRICIAN SHOULD CONNECT POWER TO SYSTEM.

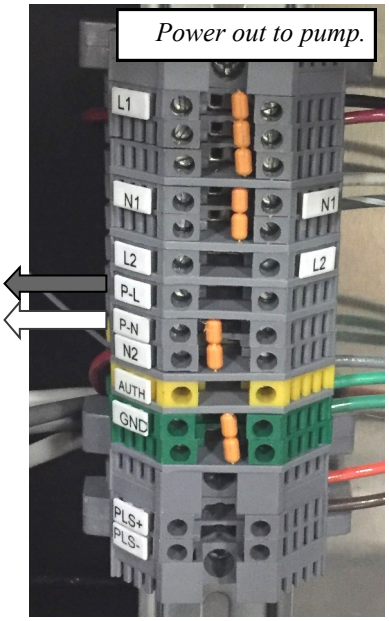
B. When Dispenser is remote from the tank, or when coupled to a 3rd-party DEF Minibulk Storage Unit:



- Power Requirement is generally two dedicated 115VAC, 60 Hz, 20-amp circuits. If pump power is supplied from another source, one circuit is required. Power is connected to the left side of the terminal block (Fig. 10a).

(1) Connect a 20-amp dedicated 120VAC circuit to L1 (Line voltage), N1 (common), and a ground. This is used to power the dispenser electronics and the solenoid valve.
(2) Connect a second 20-amp dedicated 120VAC circuit to L2 (Line voltage), N2 (common), and ground. This is used to power the pump.

*** If power is supplied to the pump from another source, then the a jumper can be installed from L1 to L2, and from N1 to N2.



Power Out:

(3) Power out to start the pump comes from P-L (Line voltage) and P-N (Neutral) and a ground wire "GND".

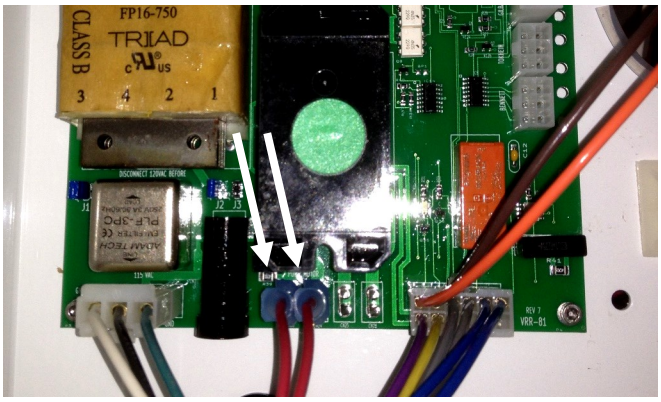
(4) If activating a low amperage pump relay or motor starter, it is important to ensure the red wires on the CPU board are in the correct position:

Electrical Installation Instructions - continued

C. When powering a pump directly from the KleerBlue™ Regal Dispenser:

When the Regal Dispenser is used to directly power a pump, the two Left terminals on the CPU board are used.

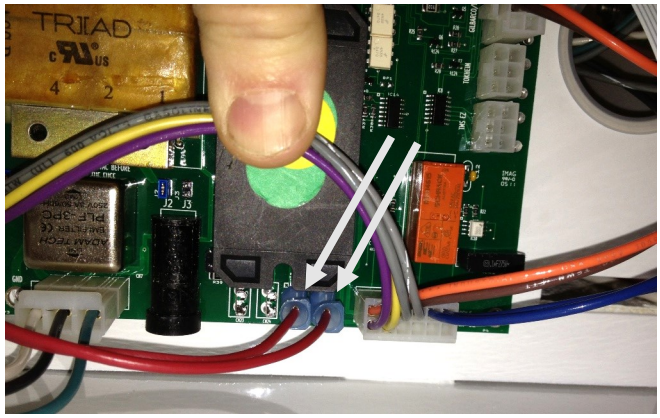
- Max 16 amps at 120VAC, 60 Hz.



Power Direct to Pump Version:
Red, insulated wires are on the left two spots, noted as CN33 and CN24, indicated by two arrows.

D. When activating a low amperage pump relay with the Regal Dispenser:

When the Regal Dispenser is used to activate a relay, rather than the pump directly, the two right terminals on the CPU board are used.



Power to Low Amperage Relay Version:
Red, insulated wires must be on the right 2 spots ,
noted as CN25 and CN26, indicated by two arrows.

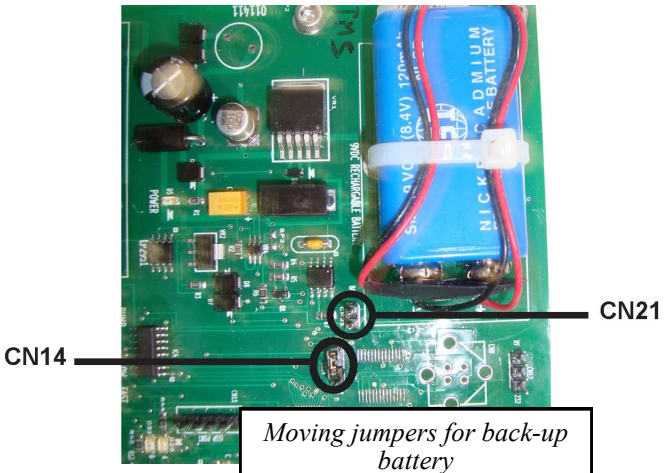
This concludes Electrical Installation Instructions.

Startup (Initial Operation)

It is important to ensure that all dispenser components operate correctly by observing the following procedures when operating the dispenser for the very first time:

A. Connect the 9V Backup Battery

FAILURE TO PERFORM THIS STEP MAY DAMAGE CPU BOARD AND VOIDS SYSTEM WARRANTY!!



Moving jumpers for back-up battery

1) Ensure that all wiring has been completed on the dispenser.
2) On the CPU board, locate the jumper labeled **CN14.**
3) Hook up the back-up 9-V battery by removing jumper from **CN14** and replacing it on **CN21**.
4) Close and latch display face of the electrical compartment.
5) Turn on power to the system.

B. Purge the Dispenser

1) Make sure there is DEF in the DEF Storage Tank.
2) Activate the pump following General Operating Instructions on page 6 of this manual.
3) If using a nozzle with "mis-fill prevention," (OPW®, Husky® nozzles) you will need a special magnet on the spout to operate the nozzle.
4) The OPW and Husky nozzles are sensitive to air in the system when priming. "Feather" the nozzle handle to bleed all the air out of the system.
5) The OPW & Husky nozzles may require flow to be reduced for proper operation. If necessary, reduce flow by closing the ball valve on the inlet to the dispenser about ½ way. Adjust as needed.
6) Upon completion of start-up procedure, you should observe DEF flow of 6-10 gpm under normal operating conditions.
7) There will be residue of De-ionized water in the dispenser from testing at the factory. Therefore, when using for the first time, properly ***dispose of the first 2 gallons*** (or more if needed) dispensed to ensure that the dispenser is purged of DI water.

C. Dispenser Calibration

- Dispenser is pre-calibrated at the factory and ready for use. If needed, see page 18 for instructions on how to calibrate the dispenser.

Maintenance and Repair

⚠ WARNING
ELECTRICAL HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.

SHUT OFF ALL POWER TO SYSTEM BEFORE PERFORMING MAINTENANCE OR REPAIR.

⚠ WARNING
PRESSURIZED FLUID HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM PRESSURE IN SYSTEM.

RELIEVE SYSTEM PRESSURE TO ZERO BEFORE PERFORMING MAINTENANCE OR REPAIR.

WARNING

Maintenance and repair must be performed by a licensed electrician or certified contractor.

DEF ONLY
DIESEL EXHAUST FLUID

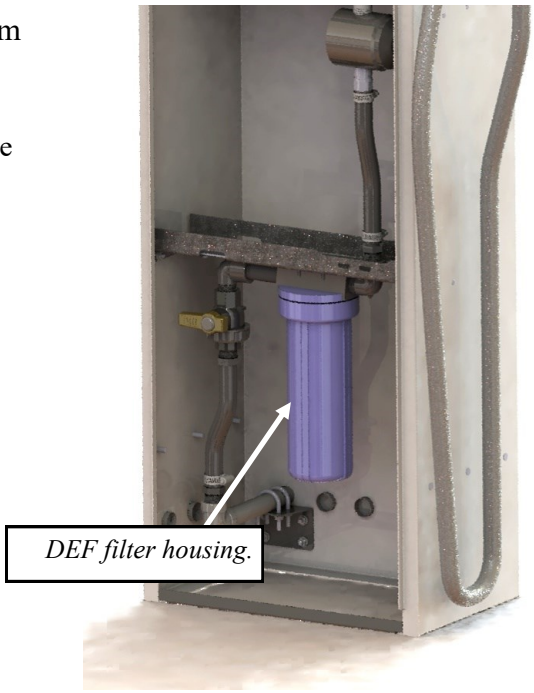
ONLY DEF SHOULD BE DISPENSED THROUGH THIS EQUIPMENT !

- *Keeping accurate maintenance records can be an excellent tool in determining the frequency of inspection or maintenance for a system.*
- *Personal safety protection, environmental hazards, and government regulations need to be the foremost priority. Only fully trained personnel should be involved in maintenance.*
- *Refer to the Tank owners manual for maintenance/repair instructions for the Tank System (if present).*

The following is a list of maintenance recommendations to keep the KleerBlue™ Regal Dispenser in optimal condition:

1. Periodically inspect the dispensing hose for cracks or tears. Replace damaged hose. Use only DEF compatible hose and fittings. See Page 3 of this manual for a list of compatible materials.
2. Inspect display face seal integrity. Damaged seals and/or display face should be repaired or replaced.
3. Change the DEF filter element annually (see instructions, item 7, next page).
4. Wipe up any spilled DEF that might be inside the cabinet. DEF fumes can be hard on the electrical equipment over time. Clean the cabinet by wiping with a soft cloth using water and mild soap. Clean up any spills caused by maintenance or repairs.

***DO NOT* power-wash the dispenser.** *To keep the dispenser looking nice, wipe the outside with a clean, soft cloth using mild soap.*



Maintenance and Repair - continued

⚠ WARNING
ELECTRICAL HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
SHUT OFF ALL POWER TO SYSTEM BEFORE PERFORMING MAINTENANCE OR REPAIR.

⚠ WARNING
PRESSURIZED FLUID HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM PRESSURE IN SYSTEM.
RELIEVE SYSTEM PRESSURE TO ZERO BEFORE PERFORMING MAINTENANCE OR REPAIR.

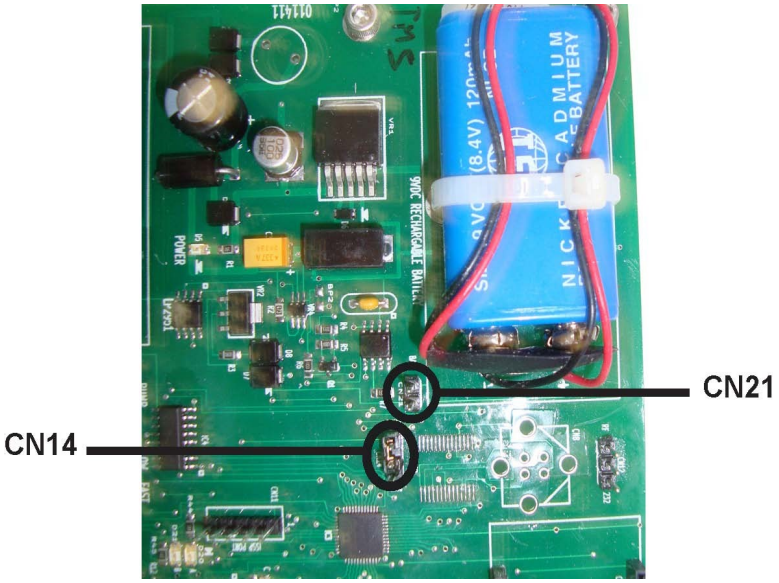
WARNING

Maintenance and repair must be performed by a licensed electrician or certified contractor.

6. Tighten or replace any leaking joints. NPT threaded joints should made as follows:
   - Clean the threads well
   - Coat the male threads with Loctite® 7649 Activator. Allow to dry for 2 minutes
   - Apply a liberal amount of Loctite® 567 thread sealant (or equivalent) to the MALE threads only. Assemble and tighten well.
   - Allow to cure for 6-24 hours before dispensing DEF.

7. To change the filter element:
   - Open the dispensing nozzle and dispense into an approved container to relieve pressure downstream.
   - Place a pan or container below the filter (to catch drips) and slowly loosen the filter housing.
   - Remove the old filter cartridge and install a new one (part #SBD 1MICRON)
   - Place the filter housing back in position and thread the filter housing in place. Tighten snugly.
   - Run the dispenser and check for leaks before replacing the front panel.

8. ***NOTE:*** If the dispenser is powered down for more than a few hours, the back up battery should be disconnected after powering down the system to prolong the battery life. This is easily done by moving a jumper on the CPU board. Before powering up the system, the battery should be reconnected, as follows:
   - After powering down the dispenser, disconnect the back-up, 9-V battery by removing jumper on **CN21** and placing it on **CN14 .**
   - Before powering up the dispenser, remove the jumper from **CN14** and replacing it on **CN21**.



Troubleshooting Guide

⚠ WARNING: ELECTRICAL HAZARD
SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
SHUT OFF ALL POWER TO SYSTEM BEFORE PERFORMING MAINTENANCE OR REPAIR.

⚠ WARNING: PRESSURIZED FLUID HAZARD
SERIOUS INJURY OR DEATH MAY RESULT FROM PRESSURE IN SYSTEM. RELIEVE SYSTEM PRESSURE TO ZERO BEFORE PERFORMING MAINTENANCE OR REPAIR.

⚠ WARNING
Maintenance and repair must be performed by a licensed electrician or certified contractor.

* See the DEF Storage Tank Owners Manual for additional information.

Problem	Possible Cause	Solution
DEF won't dispense.	Pump not getting power.	Power to pump comes from the dispenser. Check dispenser power, pump circuit breaker in dispenser, and circuit to pump.
	Pump overheated and pump thermal protector shut off power (KleerBlue Minibulk systems).	The pump in the KleerBlue Minibulk system is thermally protected from damage due to overheating. The thermal protector will reset after ~20 minutes.
	Tank is empty.	Add DEF fluid to tank.
	Hose in dispenser is kinked	Check hose and hose reels for proper hose alignment.
	Filter in dispenser is plugged.	Replace dispenser filter element.
	Meter in dispenser is jammed.	Dried DEF crystallizes and becomes hard, and might jam the meter. Fresh DEF should re-dissolve crystals. See Meter Owners Manual.
	DEF fluid is frozen in the piping coming from the tank, or in the dispenser hose/nozzle.	The Regal dispenser is designed for areas that do NOT experience temperatures below 12°F (-11°C)
	Pump in the DEF storage tank is not working.	If it is confirmed that power is getting to the pump, then the pump may need to be replaced.
Slow DEF fluid dispensing.	Hose in dispenser is kinked or pinched.	Inspect hose and hose reel. Replace worn hoses and nozzles.
	Tank is nearly empty.	Add DEF fluid to tank.
	Filter in dispenser is plugged.	Replace dispenser filter element.
	Meter or valve in dispenser is plugged or worn.	Inspect meter and valve for proper performance. See meter owners manual for details.
	Pump inlet screen is plugged with debris.	Only clean DEF should be placed in tank. Clean pump inlet screen.

Continued on next page…

Troubleshooting Guide - continued

⚠ WARNING: ELECTRICAL HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM ELECTRICAL SHOCK.
SHUT OFF ALL POWER TO SYSTEM BEFORE PERFORMING MAINTENANCE OR REPAIR.

⚠ WARNING: PRESSURIZED FLUID HAZARD

SERIOUS INJURY OR DEATH MAY RESULT FROM PRESSURE IN SYSTEM. RELIEVE SYSTEM PRESSURE TO ZERO BEFORE PERFORMING MAINTENANCE OR REPAIR.

⚠ WARNING

Maintenance and repair must be performed by a licensed electrician or certified contractor.

* See the DEF Storage Tank Owners Manual for additional information.

Problem	Possible Cause	Solution
During the calibration procedure, the display shows "Range" after entering the number of cubic inches over 5.00 gal, indicating that the number of pulses from the meter is not within the acceptable "range" for the total gallons entered.	Air in the hose or pump line.	Prime the system first before starting the calibration procedure.
	Proving can is not accurate.	Use only stainless steel calibrated proving can with graduation in cubic inches.
	Pulser on meter not connected properly.	Make sure wires are properly connected.
	Retail Version - pulser collar on shaft is loose.	Tighten pulser collar set screw on top of TCS 682SS meter.
	Pulser not functioning properly.	Contact SBD Technical Support at number shown on back of this manual.
Product will dispense without counting on the display.	Pulser wire is loose or disconnected at meter.	Connect pulser wire on meter.
Display shows only a single 0	PCB has reset to "blank-board" settings due to a voltage spike, or an improper shut-down due to battery backup not being connected, or battery is dead.	Hook-up or replace 9 volt battery (must be identical, rechargeable battery). Set features to recommended defaults shown under **Section A** of "**Display Settings & Programming Functions**," page 19. Note that password may now be "0000". Recalibrate meter per instructions in "**Calibration**," page 18.

Revision 8 and Higher Calibration Procedure

KleerBlue™ Dispensers are pre-calibrated at the factory for DEF, and will remain accurate for many thousands of gallons of dispensed DEF.

I) **RETAIL Dispenser:** The calibration switch is sealed and can only be legally modified by a certified Weights and Measures Technician.

II) **FLEET Dispenser:** In the event that the calibration needs to be adjusted, the procedure should be done by a technician familiar with KleerBlue electronics or similar systems.

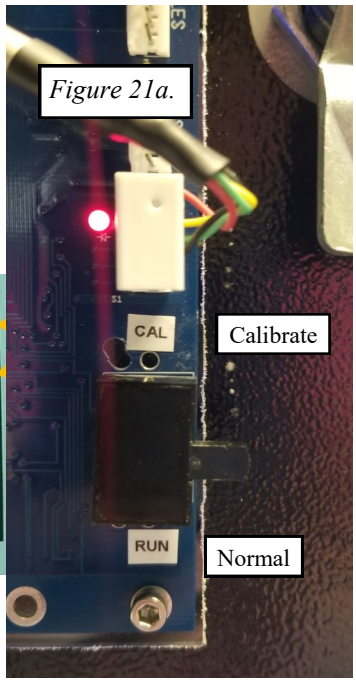


Figure 21a.

Key Pad

1. Use a certified 5-gallon stainless steel proving can. The can should be "wetted" before use with DEF, then drained for 1 minute.
2. Purge system of air by dispensing a couple of gallons of DEF into a vehicle DEF tank or an approved container. Also for retal dispensers with the TCS 682SS meter, open vent on top to purge all air from the area while pump is running. Replace the hose and nozzle and close and latch the hose/nozzle door.
3. Open the upper side panel access door. Remove the lock (if present), then switch the calibrate switch UP to "calibrate" (see Figure 21a).
4. Install the key pad onto the display board and press "PROG"
5. The Display will say "PASS". Enter system password (Default 1239) and then "ENTER"
6. Display will show "5 GAL" (Figure 21b) Press "ENTER" (other prover sizes can be selected by repeatedly pressing "F3". Other sizes are 20 Liter*, 50 GAL and 100GAL) Press "ENTER"
7. Display will show "FILCAn" (Figure 21c). Open door and dispense 5 gallons (or preover volume selected in previous screen) into the test measure.
8. Replace nozzle and hose in cabinet, and close and latch the door.
9. On the key pad, press "ENTER". The display will read "F1 Abo" briefly then "F2 bEL"" (see Figure 21d)
10. Allow the DEF fluid to settle for 30 seconds in the proving can. Read the scale on the proving can, and note how many cubic inches over/under 5.00 gallons are in the can.
11. Press "F1" on the Keypad (F2 if the proving can is under 5.00 gallons), then enter the number of cubic inches rounded to nearest whole cu in then press "ENTER" to accept.
12. If the calibration was successful, the display will read "PASS" (Figure 21e) briefly then the new adjusted k-factor. If it was NOT successful then the display will briefly read "FAIL" (Figure 21f)then show the failed pulse count. Repeat the process beginning Step 1 if the process fails. Refer to "Troubleshooting Guide" section of this manual if this process repeatedly fails.
13. Disconnect the keypad, and move the switch DOWN to "RUN" for normal operation. Replace the washer and screw (if present).

Figure 21b.

Figure 21c

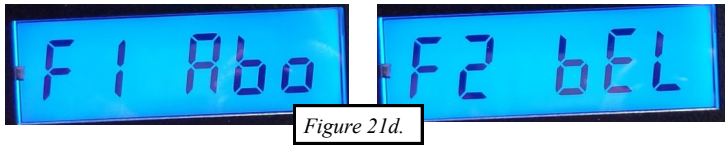


Figure 21d.

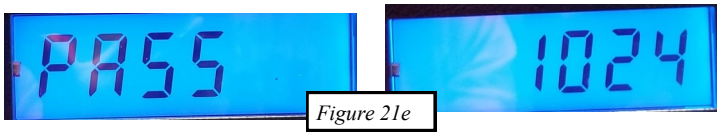


Figure 21e

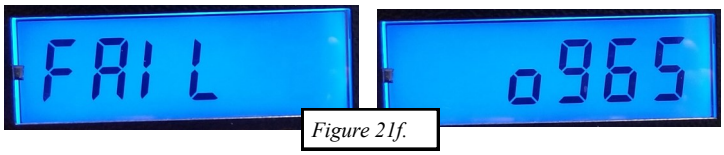


Figure 21f.

*For liter applications Contact Technical Support to be sure FRAM Variable 83 "plsunit" is set to 1.

Display Settings & Programming Functions

A. Functions Available through User Keypad:

1. **PrICE** Current Price
2. **StoPAt** Max Volume Delivery
3. **PASS** System Password (default = 1239)
4. **onLInE**
5. **Id** Pump Address
6. **tI oUt** No Pulse Timeout
7. **PrESS** Hose Pressurization Time in 1/10th Seconds
8. **SLo dn** Slow Down Amount Prior to End Of Preset
9. **dP PPU** PPU Decimal Position
10. **dP GAL** Volume Decimal Position
11. **dP doL** Money Decimal Position
12. **PLSoUt** Pulse Output

B. Programming Functions:

NOTE: The programming menu option will initially appear for one second, followed by the programmed value.

Press "PROG" key. The screen will ask for a password. Enter the password (Default is "1239") and press the "ENTER" button.

Input "1239" then press "ENTER"

"F1" key will advance forward through the user programmable options. "F2" key will move backward through the options. Pressing "CANCEL" will exit from these options.

1. **PrICE** This option allows changing of a displayed price per unit. Enter a new price and press "ENTER"

2. **StoPAt** This option sets the maximum volume for a delivery. This function can be overridden by a command from a console when online.

3. **PASS** This option sets the User Access Password. (Default is 1239) Contact factory if this password has been lost or forgotten or perform a factory reset. A one time access code can be granted to reset this password for a fee.

Display Settings & Programming Functions - continued

4. **online** This option sets the dispenser to be on line with a console or offline for standalone operation
   0 = Standalone
   1 = Online

Enter the desired number, then press “ENTER”. Press”F1” to advance to the next screen.

5. **Id** This option sets the protocol id (address) of the fueling position
Enter the desired number, then press “ENTER”. Press”F1” to advance to the next screen.

6. **tI oUt** This option sets the no pulse timeout.. The value is in minutes
Enter the desired number, then press “ENTER”. Press”F1” to advance to the next screen.

6. **PrESS** This option sets the amount of time to open the slov valve prior to reset. It is used to pressurize a long hose to prevent “run-up”. The value is in 1/10th seconds. (Example: 1/2 second would be 050)
Enter the desired number, then press “ENTER”. Press”F1” to advance to the next screen.

8. **SLo dn** This sets the first trip amount. The KB and SBD dispenser DOES NOT currently use this feature. The value is 1/10th the desired value. (Example: 1/4 gallon would be 025)
Enter the desired number, then press “ENTER”. Press”F1” to advance to the next screen.

3. **dP PPU** This option sets the desired PPU decimal position. (Default 3)

3. **dP GAL** This option sets the desired PPU decimal position. (Default 3)

Display Settings & Programming Functions - continued

dP doL This option sets the desired PPU decimal position. (Default 2)

5. **PLSoUt** This option sets the pulse output scale.. Below defaults assume default decimal point positions.

0= penny (lowest sale digit)	(Default = One pulse per penny)
1= lowest of volume	(Default = 1000 Pulses per unit)
2= 2nd lowest of volume	(Default = 100 Pulses per unit)
3= 3rd lowest of volume	(Default = 10 Pulses per unit)
4= 4th lowest of volume	(Default = 1 Pulses per unit)

Enter the desired number, then press “ENTER”. Press”F1” to advance to the next screen.

C. Viewing system Information

Certain information and totals can be accessed through the keypad by pressing “F3” or by swiping a magnet in to the left of the gallons display. Each “press” or “swipe” will advance through the available information listed below

Leading five digits of the non-resettable money totals

Example: 0000033.134 dollars

Last five digits of the non-resettable money totals

Leading five digits of the non-resettable volume totals

Example: 0000026.447 gallons

Last five digits of the non-resettable volume totals

Display Settings & Programming Functions - continued

CPU Firmware Version

Factory Programmed k-factor

Adjusted k-factor

Reason for last sale completion

0 sale in progress

1 handle lowered

2 preset reached

3 power fail

4 display communications timeout

5 console communications timeout

6 Sale timeout

7 dispenser too cold

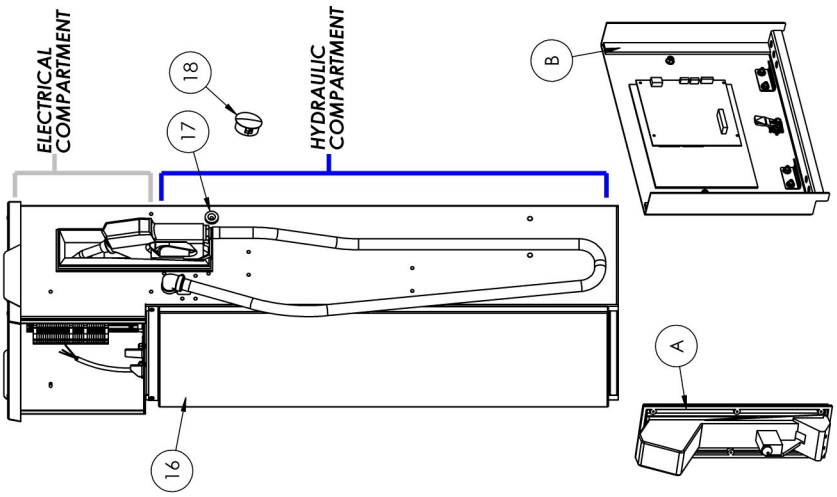
8 pulser security bit

9 pulser error from display bd

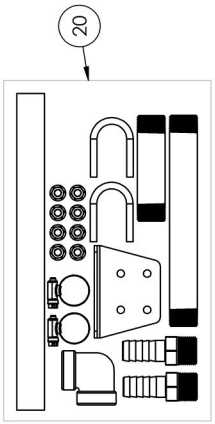
10 stopped by protocol command

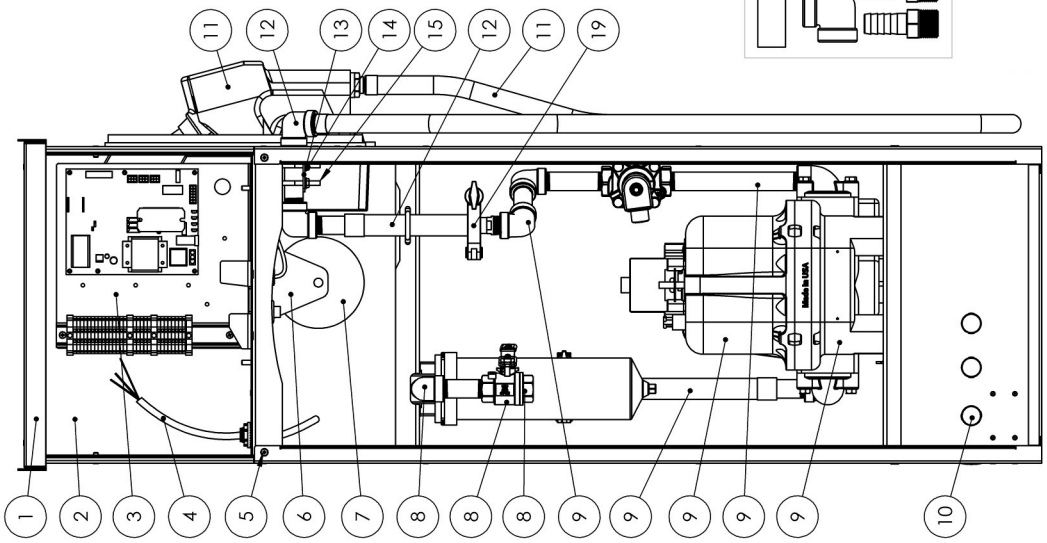
11 authorization from POS removed “ pump stop command”

Parts Lists: KleerBlue™ REGAL Retail Dispenser

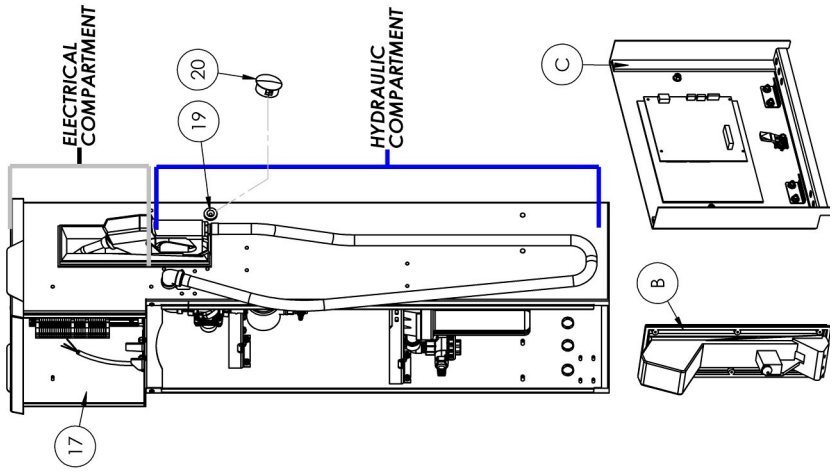


ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	SBD 954112	Top	1
2	SBD 954111-R	Retail Housing Assy	1
3	SBD 952757	CPU & Terminal Assy	1
4	Power Wire	For Testing	1
5	SBD 910132	#10 Pancake Screw	2
6	SBD 954117	Bracket, Hose Retractor	Opt
7	SBD 952081	Hose Retractor Spool	Opt
8	SBD_954138	Retail Filter Sub-Assy	1
9	SBD 954126	Retail Meter Sub-Assy	1
10	SBD 911127	3/4" Hole Plug, Snap-in	6
11	Nozzle and Hose	DEF Nozzle and Hose	1
12	SBD 954141	Outlet Sub-Assy, Retail	1
13	S4L 3/4	Bracket, Nipple	1
14	SBD 952541	1/4-20 Flange Locknut	12
15	SBD 954122	1/4" U-Bolt	3
16	SBD 954116	Front Panel	1
17	SBD 952276	Bushing Guide for Cable	Opt
18	SBD 911128	Plastic plug for 7/8" hole	1
19	SBD 952768-C	Clamp	1
20	SBD 954143	Inlet Kit, Regal Retail	1
A	SBD 952926	Gasket 1/2x1/8	3ft
B	SBD 954128	Gasket 1" x 1/4"	3 ft

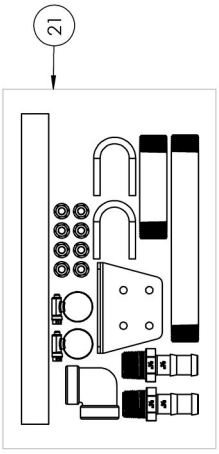


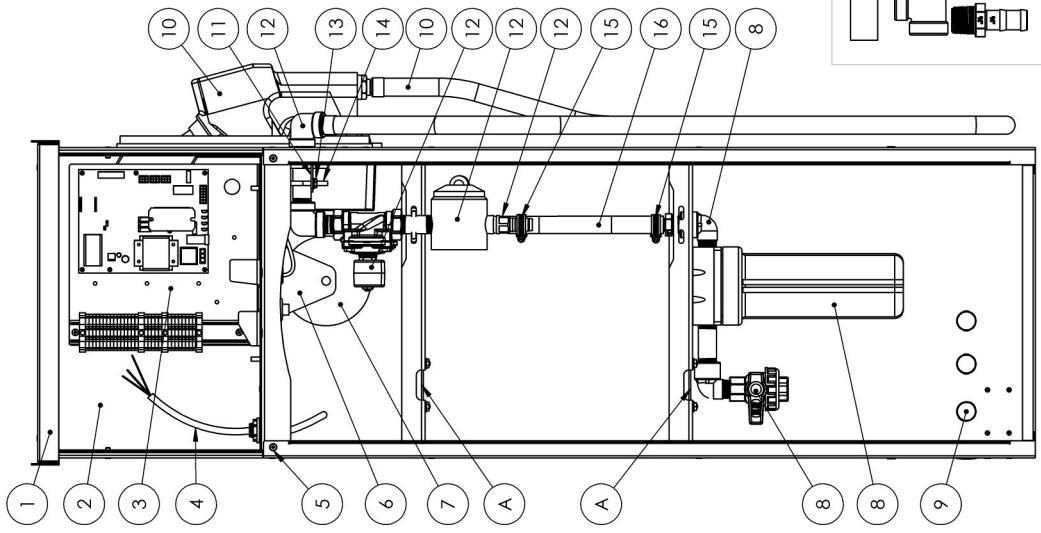


Parts Lists: KleerBlue™ REGAL Fleet Dispenser



ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	SBD 954112	Top	1
2	SBD 954111	Fleet Housing Assy	1
3	SBD 952757	CPU & Terminal Assy	1
4	Power Wire	For Testing	1
5	SBD 910132	#10 Pancake Screw	2
6	SBD 954117	Bracket, Hose Retractor	Opt
7	SBD 952081	Hose Retractor Spool	Opt
8	SBD 954139	Plastic filter Assy	1
9	SBD 911127	3/4" Hole Plug, Snap-in	6
10	Nozzle and Hose	DEF Nozzle and Hose	Opt
11	S4L 3/4	Bracket, Nipple	1
12	SBD 954140	Meter, Sol-Valve, Out Assy	1
13	SBD 952541	1/4-20 Flange Locknut	36
14	SBD 954122	1/4" U-Bolt	3
15	SCC 012	Hose Clamp, SS, #12	2
16	SBD DEF3/4HOSE	3/4" DEF Hose per foot	1
17	SBD 954115-F	Fleet display Face Assy	1
18	SBD 954116	Front Panel	1
19	SBD 952276	Bushing Guide for Cable	Opt
20	SBD 911128	Plastic Plug for 7/8" hole	1
21	SBD 954142	Inlet Kit, Regal Fleet	1
A	SBD 954136	Filter Plate for Fleet Disp.	2
B	SBD 952926	Gasket 1/2" x 1/8" thick	3ft
C	SBD 954128	Gasket 1" x 1/4" thick	3ft





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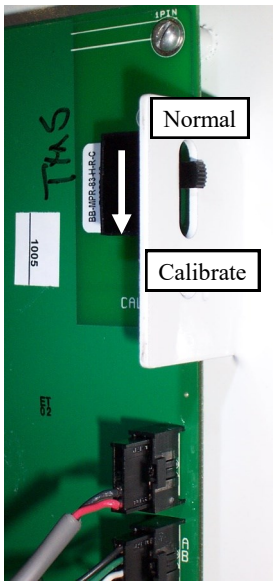
Appendix: Revision 7 and lower Calibration Procedure

KleerBlue™ Dispensers are pre-calibrated at the factory for DEF, and will remain accurate for many thousands of gallons of dispensed DEF.

I) **RETAIL Dispenser:** The calibration switch is sealed and can only be legally modified by a certified Weights and Measures Technician.

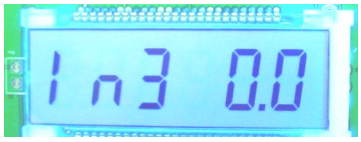
II) **FLEET Dispenser:** In the event that the calibration needs to be adjusted, the procedure should be done by a technician familiar with KleerBlue electronics or similar systems.

Key Pad



1. Use a certified 5-gallon stainless steel proving can. The can should be "wetted" before use with DEF, then drained for 1 minute.
2. Purge system of air by dispensing a couple of gallons of DEF into a vehicle DEF tank or an approved container. Replace the hose and nozzle and close and latch the hose/nozzle door.
3. Open the upper side panel access door. Remove the lock (if present), then switch the calibrate switch down to "calibrate".
4. Install the key pad onto the display board.

5. The Display will say "5 GAL".
6. Open the nozzle/hose door and dispense 5.00 gallons into the proving can. It is best if you dispense slightly over 5 gallons, but not more than 9 cubic inches over.
7. Replace nozzle and hose in cabinet, and close and latch the door.
8. Allow the DEF fluid to settle for 30 seconds in the proving can. Read the scale on the proving can, and note how many cubic inches over 5.00 gallons are in the can.
9. On the key pad, press "ENTER". The display will read "F1 F2".



10. Press "F1" on the Keypad (F2 if the proving can is under 5.00 gallons), then enter the number of cubic inches over 5.00 from task #8 above (this example shows 1.3 cubic inches over).

11. On the Key Pad, press "ENTER" to accept.
12. If the calibration was successful, the display will read "COMPLETE".
13. Disconnect the key-pad, and move the switch up for normal operation.

14. If the calibration was NOT successful, the display will indicate "Range". Go the "**Troubleshooting Guide"** section of this manual if this occurs.

Display Settings & Programming Functions

A. Functions Available, and Default Settings from the Factory:

1. **Password.** Default = 2716.
2. **Timeout.** Default = 15
3. **Gallon/Liter.** Default = 0 (Gallons)
4. **Pulse Output.** Default setting = 2 (100 pulses/gallon).
5. **Volume Decimal Point.** Default setting = 3 (x.xxx).
6. **Slow Down.** (not applicable, default set to 0.120).
7. **Maximum Volume Allowed.** Default = 999.000
8. **5 Second.** Default = 0 (off)
9. **Hose Pressurization.** Default = 1 (on).
10. **Calibration.** Default calibration is for DEF.

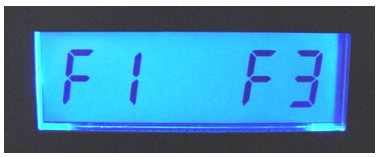
B. Programming Functions (for Volume Only/Single Window Versions):

NOTE: The programming menu option will initially appear for one second, followed by the programmed value.

1. Press the "PROG" key and hold for 3 seconds. F1 and F3 will be displayed.

"F1" Refers to the "F1" button on the keypad. Successive pressing of the "F1" button will scroll the programming forward.

Pressing the "F3" button will display non-resettable volume totals.



2. Press "F1" key. The screen will ask for a password. Enter the password (Default is "2716") and press the "ENTER" button. Press"F1" to advance to the next screen.

Input "2716," then press "ENTER"

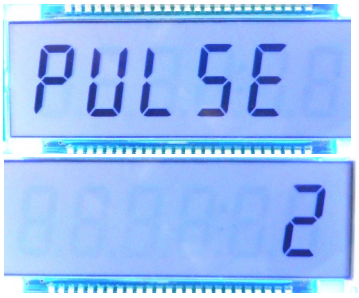
3. "TIMEOUT" is the amount of time after the last pulse that the motor and valve will receive power. The default is 15 (15 minutes). Continuous run is "00". The value can be set from 0-99 minutes. Set the value then press "ENTER". Press"F1" to advance to the next screen.

Display Settings & Programming Functions - continued

4. "GAL" "L" sets the volume display to read in Gallons or Liters.
   0 = Gallon
   1 = Liter

Enter the desired number, then press "ENTER". Press"F1" to advance to the next screen.

NOTE: FOR LITERS CUSTOMERS, CALIBRATION MUST BE PER FORMED IN GALLONS THEN CHANGED BACK TO LITERS .



5. If the dispenser is set up for Pulse Output, the next window will say "PULSE", then change to the number of pulses per unit (gallon). The default is 2, which indicates 100 pulses per unit. Other options are 0 = 100 pulses per unit, 1 = 1000 pulses per unit, 2 = 100 pulses per unit, 3 = 10 pulses per unit. Enter the desired number and press "ENTER". Press "F1" to advance.

6. The display will momentarily show "VOLUME". It will then change to the number of decimal points for the volume display. Enter the desired number of decimal points, and press "ENTER".
   - 3 = X.XXX
   - 2 = X.XX
   - 1 = X.X
   - 0 = X
   - Press "F1" to advance to the next screen.

NOTE: When calibrating, the decimal places MUST BE SET TO 3! After calibrating, the decimal places can be changed to 1 or 2 if desired.

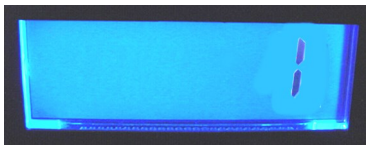
7. The display will momentarily show "SLOWDOWN". It will then change to allow entry of a "slow-down" amount. The KB dispenser DOES NOT use this feature. Press "F1" to advance to the next screen.

8. The display will momentarily show "MAXVOL". It will then change to allow entry of a "maximum volume allowed to be dispensed before cut-off". The example here shows the maximum volume allowed at one time to be 555 gallons. Press "F1" to go to the next screen.

Display Settings & Programming Functions - continued

9. The display will momentarily show “5 SEC”. It will then change to show “0”. This feature can activate a 5 second no-pulse timer, and is used for systems that dispense with a coupler on the hose that attaches to a vehicle, such as is found on New Flyer buses. If activated, the feature will shut off the pump after 5 seconds of no pulses from the meter.

- If you are using a nozzle to dispense DEF, leave this feature on “0”.
- If you have a coupler on the end of the hose and will be filling New Flyer Buses, change the display to “1” to activate the 5-second time out feature.



10. The display will momentarily show “PRESSURE”. It will then change to allow selection of Hose Pressurization or not.

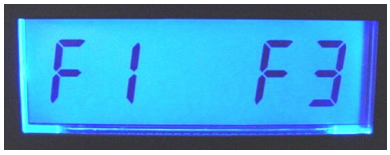
- 0 = No hose pressurization. Use if hose is 15ft long or less
- 1 = Pre-pressurization. Use if hose is longer than 15ft.

Enter the desired number and press “ENTER”. Press F1 to advance.

11. Press the “CANCEL” button 2 times, and the dispenser will exit the program mode.

The **Non-Resettable Total** maximum is 9,999,999 (10 million gallons). To access the Non-Resettable Totals, perform the following:

- Attach the keypad.
- Press the “PROG” key to enter the program mode. The display will show F1 and F3.
- Press the “F3” button on the keypad.
- The display will show the first 4 whole numbers of the non-resettable volume. Press “F3” a second time and the last 3 whole digits will be displayed, along with the decimals.
- In the example shown, the total is 0,000,010.275, or 10.275 gallons.
- Press the “CANCEL” button 2 times to exit the program mode. Unplug the keypad and put it in a safe place.



Press the “Cancel” button twice *to* get back to normal operating mode.

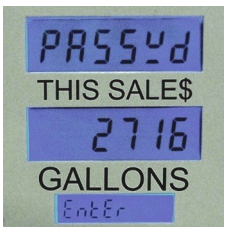
Display Settings & Programming Functions - continued

C. Retail Version with 3 Display Windows: Additional Features

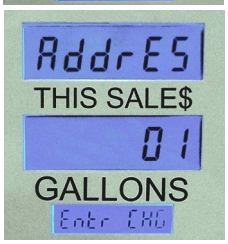
The program for the 3-window retail display is slightly different with some options not available on the "Fleet", non-retail version, as follows:

1. To enter the program mode, attach the small key pad to the display board. Press the "PROG" key and hold for 3 seconds. F1 and F3 will be displayed.

2. Press "F1" key. The screen will ask for a password. Enter the password (Default is 2716) and press the "ENTER" button. Press"F1" to advance to the next screen.



3. The screen will display "ADDRESS". This number represents the pump Identification (ID). The default is 01. Press "F1" twice to advance to the next screen.

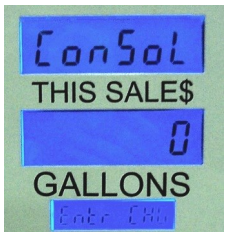


4. The screen will display "CONSOL".

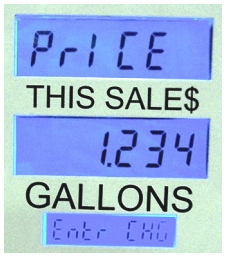
   0 = "Stand Alone" mode (default)

   1 = Console Mode.

   Press "F1" to advance to the next screen.



5. The screen will display "PRICE". Enter the DEF price per gallon here. Press "F1" to advance to the next screen.



6. The display will show "SLOWDOWN". The KB dispenser DOES NOT use this feature. Press "F1" to advance to the next screen (not shown on this page).

7. The display will show "PRESSURE".

   0 = Off. Set to 0 when the discharge hose is 15' long or shorter.

   1 = On. Set to 1 when the discharge hose is longer than 15 feet.

   Press "F1" to advance to the next screen.

8. The display will momentarily show "TIMEOUT". Set to 15. Press enter, then press "F1" to advance to the next screen.

9. Press the "CANCEL" button twice to exit the program mode.

KleerBlue™ Solutions

Exclusive Limited Warranty

Subject to the terms and limitations set forth in this limited warranty ("Warranty"), KleerBlue Solutions ("KleerBlue") warrants to the original purchaser ("Purchaser") of the **KleerBlue Regal™ Dispenser** ("Equipment"), to be free, under normal use and service, from defects in materials and workmanship **for a period of one (1) year** from date of original invoice. KleerBlue's entire liability under this Warranty is limited to either repairing or replacing, at KleerBlue's option; provided that Equipment is returned to KleerBlue transportation charges prepaid, and that upon KleerBlue's examination, Equipment or workmanship is determined to have been defective upon delivery to the Purchaser.

Labor and travel costs incurred by a KleerBlue-approved and qualified service provider, servicing only KleerBlue equipment, are covered under this warranty. Labor charges must not exceed "normal charges schedule" established by KleerBlue. Travel time must not exceed 4 hours total per incident. Service provider can charge their standard rates less a 25% discount to KleerBlue. All such labor to be performed must first be PRE-APPROVED by KleerBlue Solutions with a site-specific **Service Authorization Number**.

For this Limited Warranty to take effect, Purchaser must submit completed DEF Installation Checklist, supplied in the equipment Installation and Operating Manual, to KleerBlue Solutions, to the email or street address noted below.

Claim Procedures

In order to obtain performance by KleerBlue of its obligations under this warranty, the Purchaser must first contact KleerBlue Solutions in order to report the problem. **Only KleerBlue Solutions Customer Service can approve or authorize warranty claims**. Purchaser must supply the following information:

1. Contact name, address, and telephone number for site where KleerBlue Equipment is located
2. Original invoice or model and serial number of the Equipment
3. A description of the problem and how it occurred.

If the Equipment is to be returned to KleerBlue, a **Return Goods Authorization Number** ("RGA Number") must be created by a KleerBlue customer service representative prior to return shipment. KleerBlue reserves the right to request photos of the defect before authorizing return or repair.

Limitations

There are no other warranties of any kind expressed or implied. KleerBlue specifically disclaims any warrant of merchantability or of fitness for any particular purpose. KleerBlue's sole obligation, which shall represent the buyer's sole and exclusive remedy, shall be to repair or at KleerBlue's option to replace any Equipment, or component thereof, determined to be defective. In no event shall KleerBlue be held liable for any special, direct, indirect, incidental, consequential or other damages of similar nature incurred, nor any liability to be assumed except as expressly provided herein; there is no other express or implied warranty.

Exclusions

This Warranty does not cover any equipment not manufactured by KleerBlue; such items are subject to warranties provided by their respective manufacturers. This warranty does not extend to Equipment which has been subjected to improper installation, misuse, negligence, or accident, or if installed and/or operated in any manner other than in accordance with KleerBlue's **Installation and Operating Instructions**, nor does it extend to Equipment which has been modified in any way without express authorization from KleerBlue. This warranty applies only to KleerBlue Equipment sold in the United States and Canada.

Design and Equipment

KleerBlue reserves the right to make changes in design or add any improvement to its Equipment at any time without incurring any obligations to install the same on Equipment previously sold or placed on order.

Returning Equipment to KleerBlue

Equipment returned to KleerBlue must be clearly labeled with a RGA Number prior to return shipment. Equipment returned to KleerBlue without a RGA Number will not be processed. All Equipment to be returned must be shipped freight prepaid by the Purchaser to KleerBlue at the address shown below, or to the location specified by the KleerBlue customer service representative.

KLEERBLUE SOLUTIONS
1601 Buchanan Road, Evansville, IN 47720
(800) 320-2122
For Sales Information, contact: sales@kleerbluesolutions.com
For Service Information, contact: service@kleerbluesolutions.com

KleerBlue™
DEF Storage & Dispensing Systems

DEF Dispenser Installation Checklist

Dispenser SN:	Installation Co:
Customer:	Technician:
Site Address:	Date:

Refer to the KleerBlue Dispenser Installation & Operating Manual (OM) for details.

- ☐ **REVIEW** KleerBlue DISPENSER INSTALLATION & OPERATION MANUAL (OM).
- ☐ **PERMITS:** Obtain all local and state permits as required.
- ☐ **Inspect DISENSER:** inspect for dents and scratches before signing shipping receipt. Notify delivery company of any observed damage, and refuse acceptance of shipment if damage is present.
- ☐ **SET DISPENSER:** Carefully unload unit with a forklift, picking up from the bottom of dispenser, and set into place on concrete pad.
- ☐ **ANCHOR DISPENSER:** Using concrete anchors, anchor the dispenser to the concrete surface being used.
- ☐ **POWER:** Install all required electrical power with emergency shutoff and sign per code if required. Conduits should be installed according to national and local codes. All penetrations into the dispenser must be sealed with sealing type conduit fittings to protect the dispenser interior from weather. Do not install conduit through the top of the dispenser; rather, route through the dispenser bottom or side.
- ☐ **EXTERNAL PIPING:** DEF must be kept PURE! Check piping materials (see OM for list of acceptable materials).
- ☐ **DISPENSER STARTUP (see operating manual for complete procedure):**
  - ◊ Fill the DEF storage tank with DEF.
  - ◊ Authorize the dispenser and dispense DEF into container. Initial 2 gallons of product dispensed must be disposed of.
  - ◊ Note that some nozzles require a magnetic interlock before they will dispenser. The magnet is found in the DEF Tank Fill Port on the diesel vehicle. Magnets for testing can be ordered from KleerBlue, part # SBD OPWMFPD.
  - ◊ For retail dispensers, bleed the air out of the top of the TCS 682 meter.
- ☐ **CLEAN UP:** Clean up all debris. Check junction / control box interiors. Sweep entire installation area.
- ☐ **TAKE PHOTOS:** Take digital photos of completed project. Submit photos with signed installation checklist. (Photos required from all four sides/angles, after all debris has been removed).
- ☐ **TRAINING:** Local Service Manager must be trained on the functionally of the system. Signature from the installer and the representative is required for warranty to be valid. Provide all keys to Service Manager

CONTRACTOR: _____ DATE:_____/_____/_____

CUSTOMER: _____ DATE::_____/_____/_____

THIS COMPLETED FORM & PHOTOS MUST BE SUBMITTED TO REGISTER EQUIPMENT FOR WARRANTY.

SUBMIT TO:

sales@kleerbluesolutions.com

-or-

KleerBlue Solutions

2515 Charleston Place, Fort Wayne, IN 46808 • (800) 320-2122 •

KleerBlue™

DEF Storage & Dispensing Systems

KleerBlue Solutions

Evansville, Indiana

Fort Wayne, Indiana

Phone (800)320-2122

www.kleerbluesolutions.com