Thank you for purchasing this high quality Banlaw product. Please read through and understand the information in this Product Data Sheet (PDS) BEFORE installation or operation of the product to avoid potential health, safety and environment (HS&E) risks or property damage.

Figure 1 Banlaw SecureFill Dry Break Auto ID Wireless Swivel (BRT33WSA)

1 PRODUCT DESCRIPTION

The Banlaw SecureFill Dry-Break Auto ID Wireless Swivel, hereafter referred to as the Wireless Swivel, represents an innovative evolution of the Banlaw Dry Break "Auto ID" system. The use of wireless technology provides the same fuel security as the wired FuelTrack Dry-Break Auto ID system with up to twice the range of the wired Auto ID system.

The Wireless Swivel acts as a conventional swivel and an interface to the ID tag in the attached receiver. The tag ID is communicated from the Wireless Swivel to the ResTrack System via the Wireless Controller HID. The use of contact-based identification greatly improves reliability while maintaining security. The Wireless Swivel is only compatible with Banlaw Auto ID Nozzles, Receivers, and the ResTrack Resource Management System.

The Wireless Swivel is screwed into the nozzle and provides a rotating mechanical connection between the hose and the nozzle. The Wireless Swivel detects the ID tag in the receiver and communicates the unique Tag ID to the ResTrack System via the wireless gateway. The Contact-based identification between the swivel and the Auto ID receiver greatly improves reliability and security and is fully compatible with previous generation Banlaw Auto ID nozzles.

The Electronics module (BRTWSMA) on the swivel assembly can be replaced when necessary. The Wireless Swivel is designed for Ultra-low power consumption for extended battery life.

Two LED's (green & red) on the Wireless Swivel communicate system status to the operator.

1.1 Operation

The Wireless Swivel operates continuously and when not in use enters a sleep mode to conserve battery power. An internal accelerometer senses movement and wakes the swivel. The status of the Wireless Swivel can be determined from the two status LEDs visible through the LED status window, see Figure 2 below.

Figure 2 Location of LED status window and magnet reset zone.

The table below shows status LEDs indication

Red LED	Green LED	Status
Fast red and green flashing pattern		After the control board boots up, the controller searches for wireless firmware update for approximatly 5 seconds. If the controller detects a firmware update, wireless firmware download starts and both red and green LEDs flash. When firmware download is complete, the controller is reset to load the new firmware.
Flashing rapidly for 1 sec	Flashing rapidly for 1 sec	Application firmware has started.
Continuously flashing at 1.5 / sec		Wireless swivel control board is waiting for Auto-ID receiver contact.
Flashing quickly twice		Auto-ID receiver has disconnected. The nozzle is disconneted from receiver.
	Continuously flashing 1.5 times / sec	Wireless swivel control board is sending Auto-ID receiver data to a gateway device. The nozzle is connected to an Auto-ID receiver
	Flashing quickly 2 times	Auto-ID receiver has been connected.
OFF	OFF	Wireless swivel control board is sleeping (shake the Wireless Swivel to wake up)

Reseting the Wireless Swivel. The Wireless Swivel is a potted assembly and has no mechanical reset switch. However the control board has a magnetic reset switch that can be envoked if a reset is required. To reset the control board place a magnet over the reset zone (shown in Figure 2). Reset can be verified by viewing the status LEDs.

2 IMPORTANT RESTRICTIONS ON THE USE OF THIS PRODUCT

The safe installation and operation of this Banlaw Wireless Swivel rely on the completion of an assessment of the systems suitability for the intended application. This assessment is best achieved through the cooperation of the end-user and Banlaw. Once the assessment is completed and deems the system to be suitable, the end-user must ensure effective change management should any requirement on which the assessment was based on changes.

This Banlaw document does not contain an exhaustive list of Regulatory requirements related to the use of the system in all international countries and regions. It is the responsibility of the end user to ascertain the relevant Regulatory and Statutory requirements that apply in the country or region in which the system is to be used.

This document is not meant to substitute or override any such Regulatory and Statutory requirements, nor is this document meant to inform the end user of all such requirements that *may* apply to the use of this Banlaw system.

The information within this Banlaw document was correct at the time of writing. End-users are responsible for obtaining and assessing any labels, documents or other media for a third-party product supplied by Banlaw to confirm the required approvals, certifications and specifications of the product are appropriate for the intended application.

Regional Regulations/Codes/Standards/Guidelines etc. may cover the use of certain features of hardware on mining plant.

- Banlaw Pty Ltd proprietary product is approved under FCC governances. Additional and/or different product certification/approval requirements may apply under alternative governances.
- Certification and/or Approval governances will apply to the use of wireless communication device within a hazardous area (i.e. explosive atmosphere). End-users are responsible for only the use of suitably certified products within such areas.

3 NOZZLE HOLSTER INTEGRATION

The wireless swivel will transmit a wireless signal whilst ever in contact with an iButton. In order to prolong the life of the battery in the Wireless Swivel Module, it is highly recommended that the iButton which is fitted into every Nozzle Holster (manufactured up until June 2022) is removed or decommissioned. Leaving the iButton in the nozzle holster will not cause system issues. It will only needlessly shorten usable battery life of the module as it will not be able to enter “sleep” mode.

To check if the nozzle holster is fitted with an active iButton, connect a Banlaw FuelTrack Nozzle fitted with a functional Wireless Swivel to the nozzle holster. The LED built into the Wireless Swivel will change from flashing RED to Green once contact is established between the nozzle and the holster if a healthy iButton is fitted in the holster. If the light does not flash green, there is either no iButton, or it has been decommissioned.

If the iButton is still active, there are 2 ways to decommission the iButton:

1. Poppet Stem Replacement.
2. Replacement of Holster front end.

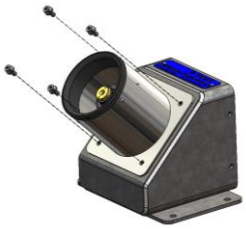


Figure 3: Remove 4 OFF Screws.

Figure 4: Front End Removal

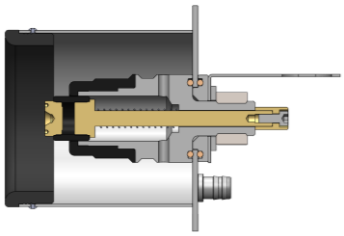


Figure 5: Front End Section View

Poppet Stem Replacement

This method involves the removal of the poppet stem and replacing it with a new stem which is assembled without an iButton. This part is available to order from Banlaw.

- For 800 Series Nozzle Holsters, order Part No# **BFTNH213KIT.**
- For 1000 Series Nozzle Holsters, order Part No# **BFTNH214KIT.**

Contact Banlaw for a copy of BPA 47 for a step-by-step guide on replacing the poppet stem.

Front End Replacement

This method involves replacing the entire front-end assembly with a new one which is manufactured without an iButton.

- For 800 Series Nozzle Holsters, order Part No# **BFTNH23KIT.**
- For 1000 Series Nozzle Holsters, order Part No# **BFTNH43KIT.**

The process for removal is limited to the first 4 steps of BPA 47 and replacement in the reverse order.

4 LOW FREQUENCY RECEIVER AND TRANSMITTER REGULATORY INFORMATION

US - FCC Warning Statement
FCC ID : 2A28Y-BRTWSMA

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Canada- ISED Warning statement
IC : 28132-BRTWSMA

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionne ment.

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps.

The transmitter module may not be co-located with any other transmitter or antenna.

Le module émetteur peut ne pas être complanté avec un autre émetteur ou antenne.

CAN ICES-003(B)/NMB-003(B)

Australia and New Zealand Conformance Statement

This product conforms to Australia and New Zealand Radio Requirements.

5 SPECIFICATIONS

Product Name	SecureFill Dry Break Auto ID Wireless Swivel
Display	2 status LEDs
Weight	1.38 Kg
Flow Rate	1000lpm / 264US gal/min
Maximum Safe Working Pressure	1,000kPa (10 bar) / 145psi
RF Frequency	433.92 MHz
Internal Sensors	Accelerometer Magneto resistive sensor (magnetic reset switch)
Operating Range	25 meters (direct line of sight)
Operating Voltage	3.6 VDC x 5.2Ah Lithium-Thionyl Chloride battery pack Compliant with IEC60086-4, IEC60079-11 and UL1642 certified
Battery Life	~ 2-years battery life @ 120 minutes per day operation @20°C
Operating Temperature	-25°C <T°C<85°C
Storage Temperature	-25°C <T°C<85°C
IP Rating	IP66

3.1 Dimensions

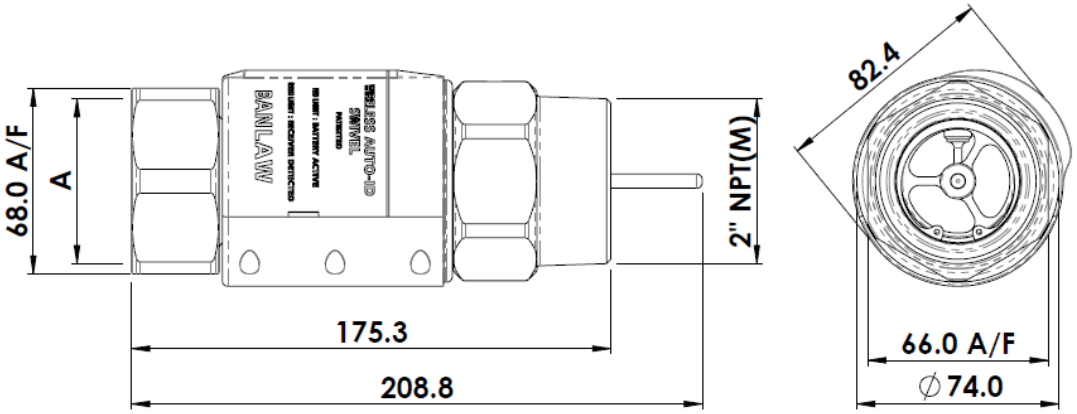


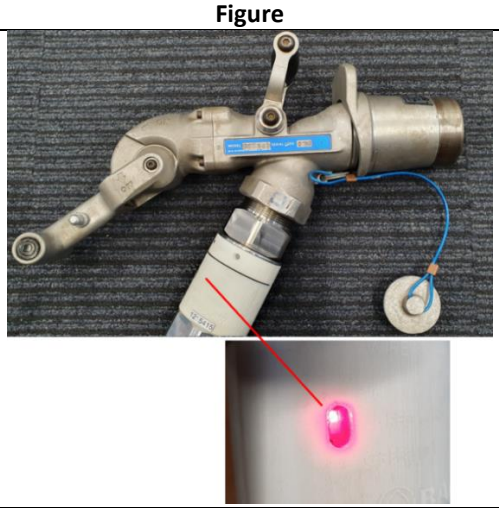
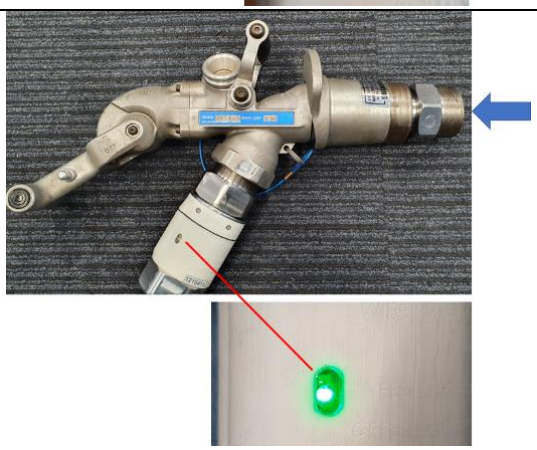
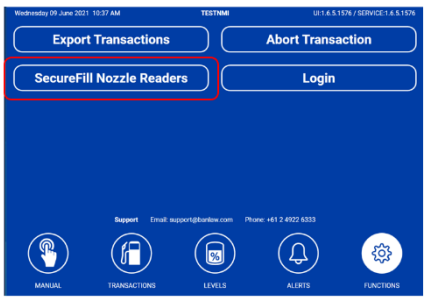
Figure 6: Dimensions of SecureFill Dry Break Auto ID Wireless Swivel (mm)

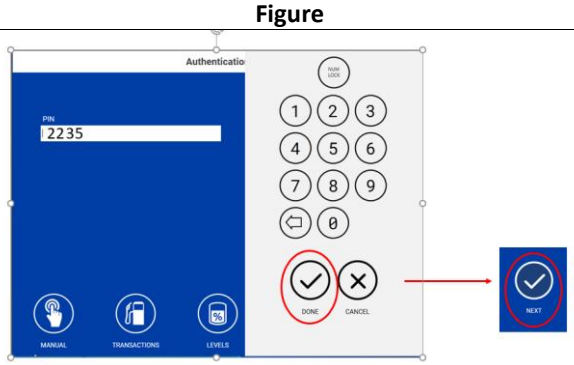
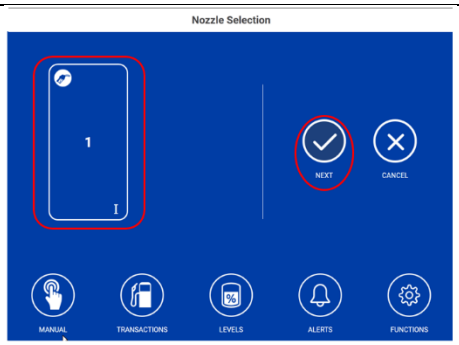
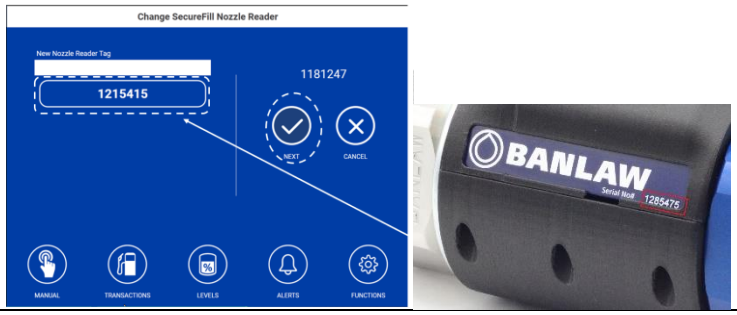
Part No	Dimension "A"
BRT33WSA	1-1/2" NPT(F)
BRT34WSA	2" NPT(F)

6 CONFIGURATION

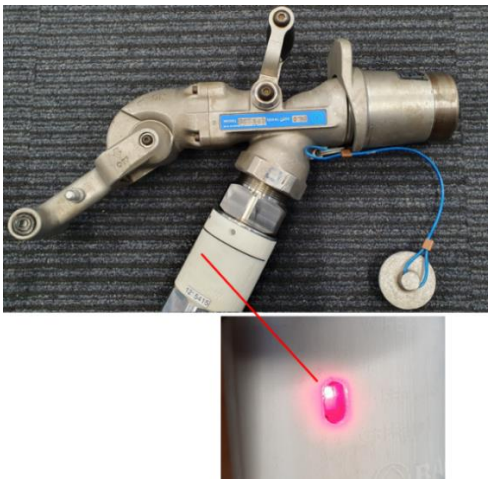
The Wireless Swivel requires no configuration prior to installation.

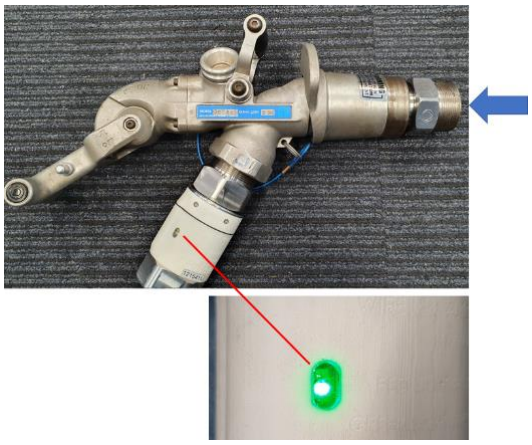
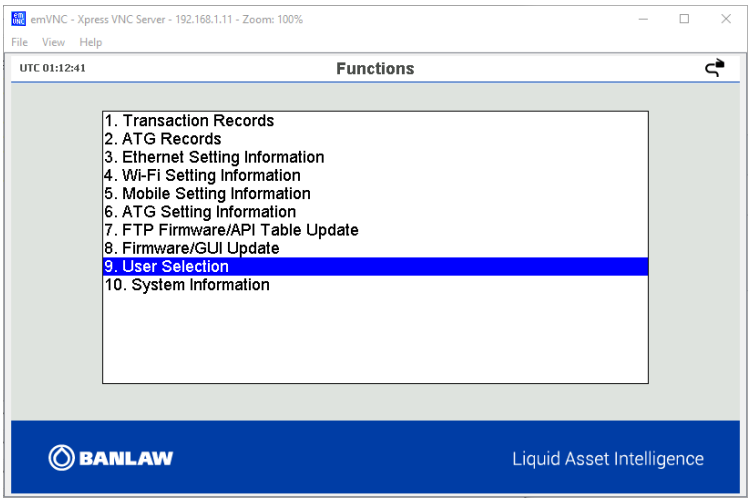
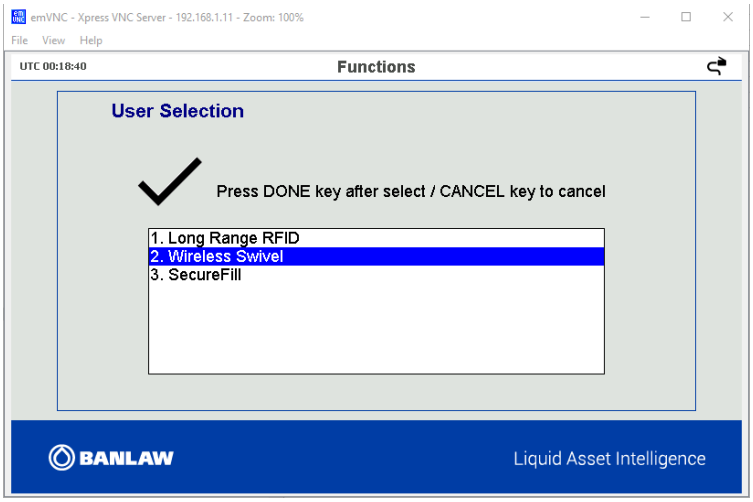
6.1 Wireless Swivel - Advanced Controller Registration

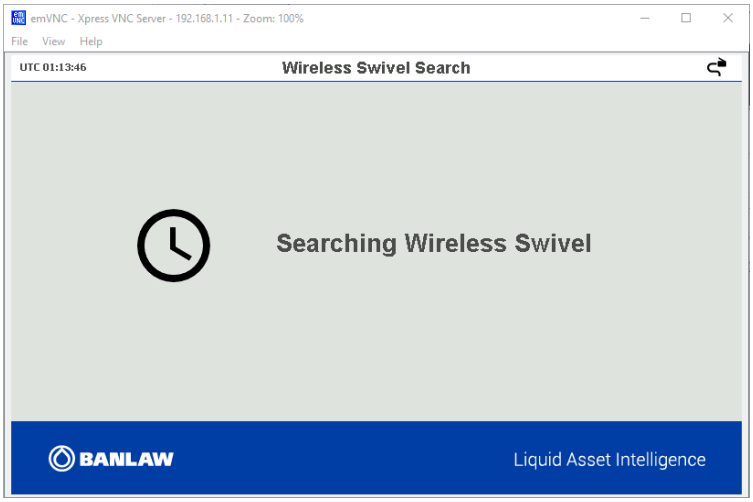
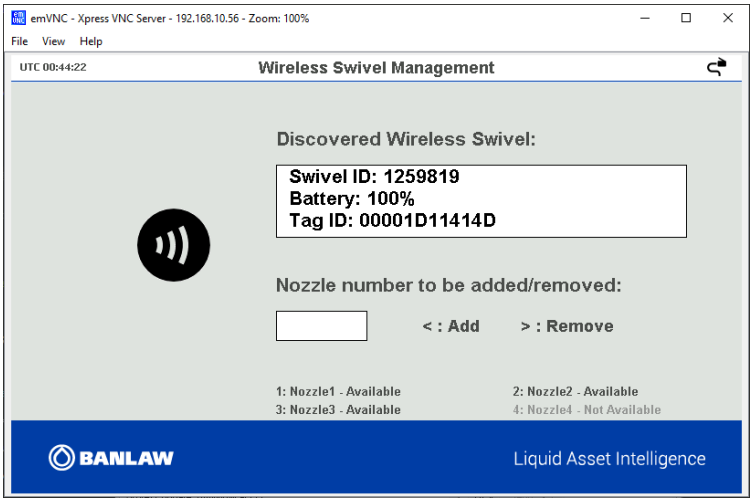
Step	Figure
Attach the Wireless Swivel to a FuelTrack nozzle. The LED should blink red. (This indicates the swivel is powered)	
Attach the nozzle to the receiver (see Blue arrow). The LED will blink green. If the LED is still red actuate the nozzle handle. (This connects the swivel to the nozzle Auto ID button). **Note:** If any problems are encountered refer to troubleshooting guide. **Note:** Do not connect to a receiver if there is potential for a fuel spill.	
Click the "Functions" button on the Advanced controller	
Select the "SecureFill Nozzle Reader" option.	

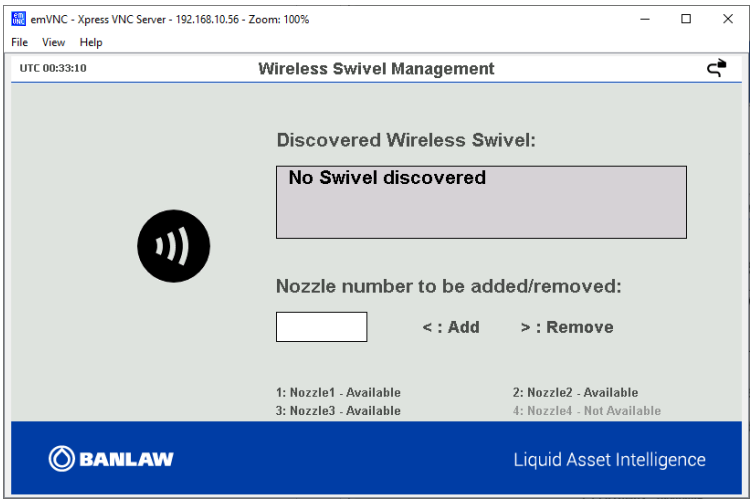
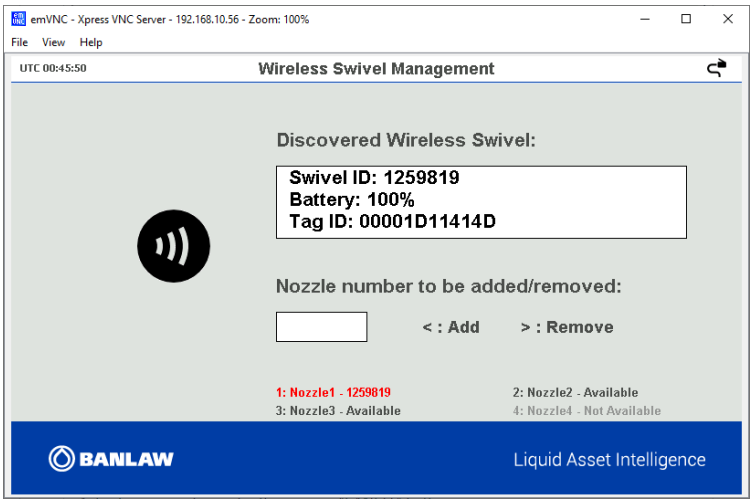
Step	Figure
Enter a Supervisor (Level 2) Pin number. Select “Done” then “Next”.	
Select the nozzle that the Wireless Swivel is to control. In this case it will be nozzle 1. Select “Next”	
The Wireless Swivel’s serial number is shown on the list. Select that serial number and click next to complete the process. **Note:** If the required number is not displayed refer to the troubleshooting guide. **Note:** The serial number is marked on the Wireless Swivel.	
The Wireless Swivel is now paired to the nozzle. Auto ID receivers will now be read into the controller and begin a transaction.	

6.2 Wireless Swivel - Xpress Controller Registration

Step	Figure
Attach the Wireless Swivel to a FuelTrack nozzle. The LED should blink red. (This indicates the swivel is powered)	

Step	Figure
Attach the nozzle to the receiver (see Blue arrow). The LED will blink green. If the LED is still red actuate the nozzle handle. (This connects the swivel to the nozzle Auto ID button). Note: If any problems are encountered refer to troubleshooting guide. Note: Do not connect to a receiver if there is potential for a fuel spill.	
Press "FUNCTIONS" button on touch glass and select #9 "User Selection"	
Select "Wireless Swivel"	

Step	Figure
Xpress starts searching for 3 seconds	
Wireless swivel, battery %, and tag are displayed. **Note:** If the required number is not displayed refer to the troubleshooting guide.	
Verify that swivel ID matches the Serial Number on the Swivel housing and the Tag ID matches the ID on the receiver.	

Step	Figure
If the swivel is not discovered, Wireless Swivel Management screen will look like on the screenshot.	
• To add the discovered Wireless Swivel, type in nozzle number to be assigned and press “<“ button. • To remove the assigned Wireless Swivel from the nozzle, type in nozzle number and press “>” button. • To save changed settings, press “DONE” button • To skip saving changed settings, press “CANCEL” button.	
After saving the changes, Xpress will automatically reboot and the Wireless Swivel will be paired to the nozzle. System is ready to resume normal operation.	

7 INSTALLATION GUIDE

CAUTION

Prior to commencing the installation conduct a Health Safety and Environment (HS&E, WHS) risk assessment (e.g. SWMS or JHA). For a typical installation, particular attention is drawn to the following areas:

- Isolation and bleeding of residual fuel pressure.
- Appropriate personal protective equipment (PPE).
- Use of appropriate tools and equipment.
- Use of trained, qualified and competent personnel.
- Barricade the area (if required) to restrict unauthorised personnel and vehicle access.
- Place Personal Locks, Tags etc. on equipment required to be positively isolated.
- The presence of a spill kit designed to manage fuel spills.
- The presence and good working order of fire suppression devices such as fire extinguishers.
- If performing any work within a zone/area classified as hazardous (i.e. explosive atmosphere), strictly adhere to all necessary precautions etc. applicable to work in such areas. Such precautions are likely to include the use of specialist (certified) equipment.
- Assessment of and adherence to all relevant Regulatory and Statutory guidelines.
- Assessment of and adherence to all relevant product OEM installation guidelines.

This section describes the installation procedure of Wireless Swivel:

- Screw the hose tail into the Wireless Swivel.
- Screw the Nozzle onto the Wireless Swivel.
- Apply Loctite 567 thread sealant to the threaded hose-swivel-nozzle joints. Make sure all threads are clean and dry before applying the Loctite.

On completion of the installation the Wireless Swivel must be registered with the Depot, see section 4.

Note:

Loctite products should be applied sparingly to the swivel threads for the Banlaw FuelTrack™ system installation. Excessive use of Loctite products between the threads may cause an electrical resistance which may provide a significant enough voltage drop to cause the FuelTrack™ system to not detect a positive connection. In case the conditions do not allow the thread to be clean and dry, thread tape can be used instead. Excessive use of thread tape may cause an electrical resistance which may provide a significant enough voltage drop to cause the FuelTrack™ system to not detect a positive connection.

Figure 7: Probe extending from the Wireless Swivel.

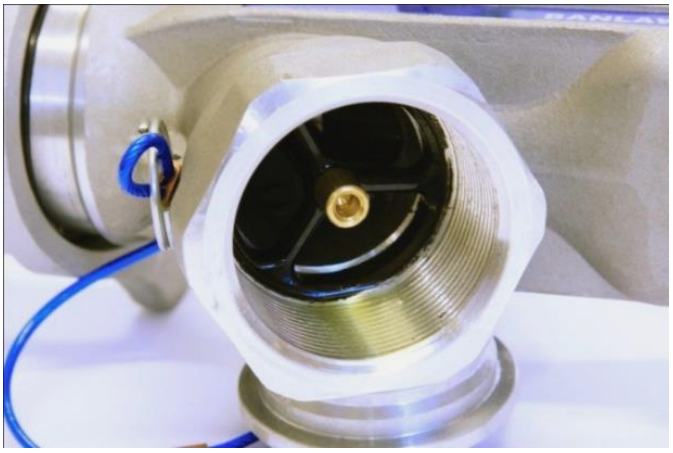


Figure 8: Banlaw FuelTrack nozzle inlet, showing internal data probe contact.

Note:

Due to the numerous requirements that apply to a Banlaw product, the client shall liaise with Banlaw prior to the use of the product within an application that is deemed to be "uncommon". The majority of Banlaw clients should already be familiar with Banlaw products, and the applications for which each product/system are suited.

CAUTION

Failing to properly and identify, investigate, assess and conform with all requirements for a Banlaw product application *may* pose serious risks, hazards and consequences.

"IF IN DOUBT, ASK!"

8 MAINTENANCE

WARNING
DANGER

It is typically a *legal* responsibility of the person(s) who have identified the hazard to isolate the system whose use is likely to result in an unacceptable risk to health, safety and environment. Complete the applicable procedure for the proper and positive isolation of the system and inform worksite management immediately.

Note:

The scope of this section is restricted to recommended service and maintenance requirements for the Wireless Swivel. It is the responsibility of the end-user to identify and adequately conduct any necessary service and maintenance for other equipment and items within the fluid transfer system.

The maintenance options for the swivel are:

8.1 Mechanical failure

The Banlaw Steel Swivel is a non-serviceable item, and no attempt should be made to repair the Swivel. Should fuel leakage be detected from between the Swivel Body and Swivel Inner part, it is likely that the other components have worn sufficiently to cause the seal failure. The defective Swivel should be replaced and recycled immediately.
The mechanical replacement product in case of a failure is BRT34WS01 (2" NPT version) and BRT33WS01 (1.5" NPT version). Demount the Module described in 7.2 and replace the mechanical body.

8.2 Electronics failure

The electronics assembly can be replaced if it fails. Use the following procedure:

- Obtain a replacement Wireless Swivel Module (BRTWSMA)

- Remove either 6 or 8 screws (dependent on Wireless Swivel Module generation) – refer Figure 9 below,
- Separate module halves,
- Remove module,
- Attach new module,
- Replace 6 screws,
- Verify that the red LED flashes when the swivel is moved,
- Connect the swivel to a nozzle as per section 5. Configuration of this document and register the swivel following the steps for either the Advanced Controller or the Xpress Controller

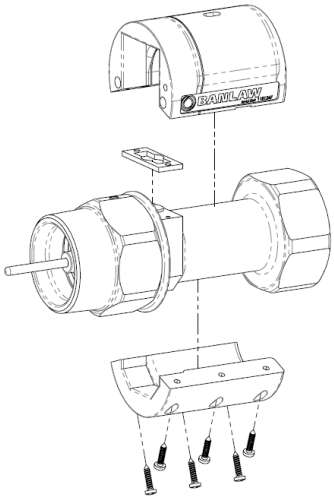


Figure 9 Exploded view of the Wireless Swivel

Note:

Batteries used in this system contain lithium-thionyl chloride. Please follow appropriate battery disposal or recycling practices for used batteries of this type.

9 TROUBLESHOOTING

If the Wireless Swivel stops transmitting vehicle's information, please follow the below troubleshooting guide.

ISSUE	POSSIBLE SOLUTION(S)
No LED activity	1. Wireless Swivel is asleep, move assembly and observe red LED flashes at 1.5 times / second. If there is still no LED activity, then proceed to step 2.
No LED activity after movement	2. If the Wireless Swivel fails to activate after movement, reset the Wireless Swivel using a magnet. 3. Place a magnet on the magnet reset zone (see figure 2) and remove rapidly. Observe red and green LEDs flash rapidly for a second. Then no activity for approx. 6 seconds then red LED flashes at 1.5 times / second.
No LED activity after reset	4. If there is still no LED activity either the battery is discharged, or the electronics has failed. Replace the electronic module.
Advanced or Xpress controller fails to identify the Wireless Swivel	5. Observe Wireless Swivel LED activity and troubleshoot as per steps 1 to 4. If the swivel is still not recognised, replace the swivel. 6. If the fault persists, troubleshoot the Advanced or Xpress Controller as per Controller Installation and Maintenance Procedure.

10 OPTIONAL ACCESSORIES & SPARE PARTS

Item/Description	Banlaw Part Number
Electronics module	BRTWSMA
Mechanical body 1.5"	BRT33WS01
Mechanical body 2"	BRT34WS01

Banlaw does not recommend nor endorse the use of non-genuine replacement (spare) parts. The use of spare parts not endorsed by the product OEM is likely to void a product warranty and may jeopardise the safety, performance/function, reliability, and regulatory certifications/approvals of the product.

Banlaw makes no guarantees and assumes no liability for circumstances arising out of the accuracy and completeness of third-party product specifications included within this document. The verification, validation, and publishing of specifications for any product remain the responsibility of the product OEM.

END OF DOCUMENT

Website – www.banlaw.com