

Banlaw LubeCentral™
Banlaw Evacuation Couplings

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 & environment (HS&E) risks or property damage.



Figure 1 – “BEC-B” Banlaw Evacuation Coupling & Dust Plug

1 PRODUCT DESCRIPTION

The **Banlaw Evacuation Coupling** is a product specifically designed for the evacuation (i.e. drainage) of liquids from the latest range of Banlaw BPL series Receiver couplings. The Evacuation Couplings (BEC-B and BEC-B-CT) are only compatible with Banlaw BPL Receivers with the character “E” within their part number – e.g. BPLR4BE – visually distinguishable by the “common” ball lock groove as per example shown in Figure 3. The Evacuation Coupling is not compatible with the earlier generation BPL Receivers, as per example shown in Figure 2.

The use of the Evacuation Coupling avoids the “messy” and potentially hazardous need to change over Nozzle (female) fluid couplings from a “common” fluid evacuation line used for the recovery of liquids – i.e. oils and coolants – from an array of BPL receivers.

“ONE EVACUATION COUPLING SUITS ALL COMPATIBLE BANLAW RECEIVERS”

2 IMPORTANT RESTRICTIONS ON THE USE OF THIS PRODUCT



1. The safe installation and subsequent operation of a Banlaw product relies on the completion of all necessary **“due diligences”** specifically for the assessment of the Banlaw product(s) being suitable for the intended application(s). Such an assessment is best achieved through the cooperation of the supplier/OEM (Banlaw) and the customer or end-user. Once such an assessment deems the Banlaw product(s) to be suitable, the customer or end-user shall ensure effective **“change management”** applies should any prominent or influential aspect of the application (upon which the initial assessment was based) be subject to change and may affect the ongoing suitability (i.e. safety and proper function) of the Banlaw product.
2. The Banlaw LubeCentral™ Evacuation Couplings and BPL Couplers incorporate **external** components manufactured from **aluminium**. Products containing external (exposed) aluminium are typically unsuitable for use within an underground coal mine, or otherwise within an area where the use of external aluminium components (or other materials within the product) are prohibited for use in accordance with applicable governances.



1. In accordance with the EU Pressure Equipment Directive (PED 97/23/EC), no Banlaw LubeCentral product is to be used with a Group 1 (dangerous) substance within the EU. (As per Banlaw’s internal assessment of the PED during October 2010). Unless noted otherwise by Banlaw, a Banlaw Evacuation Coupling and LubeCentral™ BPL Couplers have not been assessed under any other Regulatory or Industry Standard, Code, Directive, Guideline or other governance which may apply to the use of this product in specific applications. Please consult Banlaw prior to installation if in doubt.
2. To avoid potentially serious safety hazards, no attempt should be made to *connect* or *disconnect* the couplings during fluid flow or whilst the fluid within the couplings remains pressurised#. A maximum# of 50kPa(g) (7.3psig) residual pressure is the recommended limit.
3. The Banlaw LubeCentral™ Evacuation Coupling and BPL Couplers are designed for use with incompressible non-flammable liquids (e.g. oils and coolants) commonly found in the mining, construction, rail and similar industries. **Please contact Banlaw prior to the use of this product with other (foreign) liquids.**
4. The reverse (back) flow of liquid through the Evacuation Coupling is restricted by an internal check valve. No attempt should be made to enforce a reverse flow situation. The presence of reverse flow may indicate a faulty internal check valve, or contamination interfering with the check valve.
5. Contamination ingress into fluid streams via dirty fluid couplings is a key cause of unplanned plant equipment breakdown and inefficient and improper operation. **Ensure dust caps or dust plugs are used on fluid**

couplings and are refitted to their respective coupling after use. Wipe off any excess contamination prior to engaging couplings. Proper care of couplings will also maximise their service life and reduce the incidence of fluid leakage.

6. Particularly for the “Arctic” BEC-B-CT and BPL coupler range, changes in the physical properties (e.g. thickening, agglomeration, etc.) of a fluid at low temperatures may cause reduced functionality of the couplers.

Note:

This product is unsuitable for use with; AdBlue (DEF), acids, corrosives, solvents, diesel fuels, compressible (i.e. gaseous) fluids, compressed air, or with an alternative fluid (or substance) whose properties may affect the safety, function or reliability of the product. Please consult with Banlaw to confirm fluid compatibility if in doubt.

Figure 2 illustrates an example (Size 4) of an earlier Banlaw flush-face receiver (with the optional moulded plastic dust cap) – these Receivers are **not compatible with the Evacuation Coupling**. Sales of this earlier range of receivers were phased out (ceased) during the 4th quarter of 2015. The BPL “Size 1” Couplers – typically used for coolants – remain unchanged and are also incompatible with the Evacuation Coupling.



Figure 2 - Earlier Banlaw Flush-Face Receiver (Size 4 shown)

Figure 3 illustrates an example (Size 4) of a “new” (current) Banlaw flush-face receiver – **compatible with the BEC-B** - with the supplied anodised aluminium dust cap. Sales of the current range of receivers were phased in (started) during the 3rd quarter of 2015. All Evacuation Coupling compatible receivers incorporate a “common” ball lock groove to accommodate the coupling.



Figure 3 - Latest "BEC-B Compatible" Flush-Face Receiver & Cap (Size 4 shown)

The design of the Banlaw flush-face nozzle (female) couplings has not changed, and these nozzles remain compatible with the earlier receivers in addition to the range of new “BEC-B compatible” receivers.

3 PRODUCT SPECIFICATIONS & FEATURES

Operating Temp. Range °C (°F)	BEC-B; -10°C (14°F) to 55°C (131°F) BEC-B-CT; -40°C (-40°F) to 55°C (131°F)
Max. Recommended Temp.	120°C (248°F) – <i>Appropriate PPE Required</i>
Operating Pressure Range	-100 to 500kPa(g) (-14.5 to 72.5psig)
Fluid Flowrate Range	Dependent on fluid type. As a guide, the maximum recommended fluid flowrate is approx. 60LPM (16GPM).
Principal Material Composition	Aluminium, FKM (Viton), Steel, NBR (Nitrile), Fluorosilicone
Process Connection (inlet)	Dry-Break (N/C) Poppet Valve with Ball-Lock Mechanism
Process Connection (outlet)	1” NPT (F)
Compatible Fluid Types	“Common” incompressible mineral and synthetic industrial lubricating and hydraulic oils and coolants (non-food grade)
Mass	1.6kg (3.5lb)

Table 1 - BEC-B and BEC-B-CT Specifications

Please contact Banlaw should you require additional technical information.

Key features of the Evacuation Coupling include;

- **Dry-Break;** provides a safe and reliable sealed connection with all compatible Banlaw BPL Receivers.
- **Internal Check Valve;** to prevent reverse flow, i.e. the flow of waste fluid back into its source – refer Figure 4. This normally-closed spring-biased check valve is actuated by differential fluid pressure across the valve.

- **Robust Construction;** wearing parts manufactured from steel and not aluminium or plastic.
- **Optimised Flow Path;** the liquid flow passage through the Evacuation Coupling has been designed to minimise the resistance to flow, and thus optimise the flowrate capability.

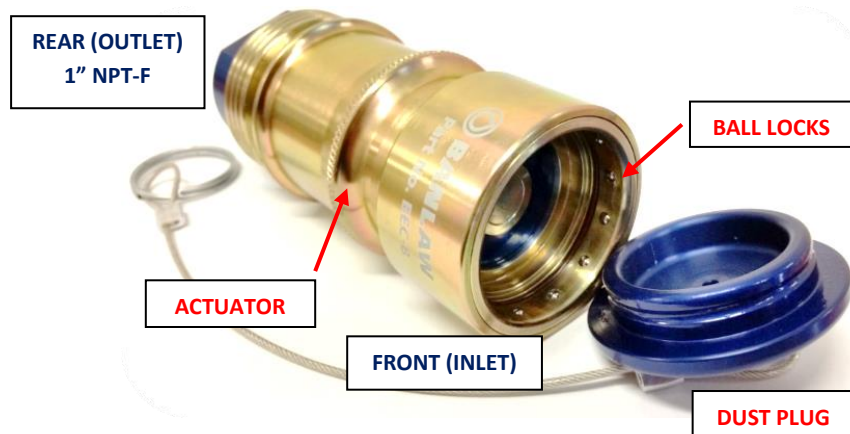


Figure 4 - Key Features

4 INSTALLATION

4.1 Pre-Installation Guidelines



- Any proposed installation/application/operation of a Banlaw Evacuation Coupling shall satisfy the Specifications detailed in section 3, and other requirements within this document.
- This Product shall only be used by **competent persons**, trained and/or directly supervised in its safe and proper operation.
- A safe means shall be provided to bleed residual fluid pressure and vacuum from within the Evacuation Coupling and mating Receiver coupling prior to connection and disconnection. Failure to do such may cause difficulty in coupling function and introduce hazards such as the pressurised ejection of liquid from between the mating couplers.
- The manual effort required to connect and disconnect the Evacuation Coupling has been minimised as far as is practicable, however the operation of the Couplers must consider **ergonomics** to avoid potentially serious work health & safety (WHS) hazards. I.e. the way in which the Couplers are used for **each** intended application must be part of a pre-installation due diligence assessment. Difficulty in the manual handling of the couplers and the remaining fluid transfer system equipment may not only introduce such WHS hazards, but also create a neglect to perform the required fluid transfer operation due to such difficulties. Key manual handling tasks are likely to include;
 - Carriage of the Evacuation Coupling and attached fluid evacuation hose to & from the storage location and the fluid service point (i.e. BPL Receiver location).
 - If fitted, operation of the manual valve adjacent the Evacuation Coupling outlet.
 - Connection of the Couplers, particularly at extended reach.
 - Disconnection of the Couplers, particularly at extended reach.

The use of an isolation valve (e.g. manual ball valve) *adjacent the* Evacuation Coupling *outlet* is recommended to provide a means of isolating evacuation (pump) vacuum from the Coupling prior to connection and disconnection from the receiver.

Figure 5 below illustrates an example of a waste fluid evacuation system using the Evacuation Coupling. Unlike the traditional means of “fluid evacuation”, the Evacuation Coupling does *not* require replacement with alternate nozzle couplings to securely connect onto the range of Banlaw “BEC-B compatible” receivers.

A swivel fitted between the Evacuation Coupling and suction hose may improve ease of use.

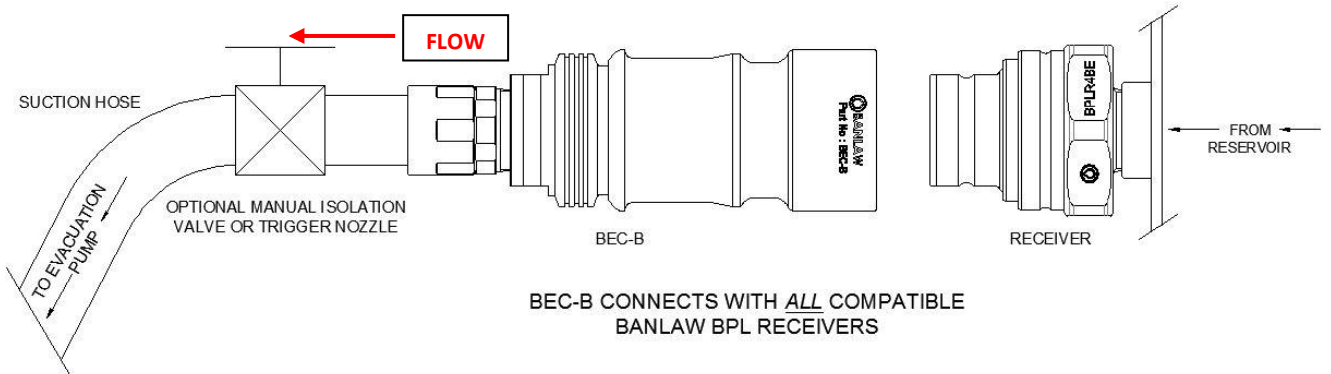


Figure 5 - Example of a waste fluid evacuation system using the BEC-B



To improve ease of use (ergonomics) in the event the BPL Receiver is installed at a height above (human) chest height (i.e. approx. 1.2m, 4’), end-users may benefit from the installation of an *elbow* (e.g. 30°, 45° or 90°) between the Receiver outlet and its process connection – refer example in Figure 6.

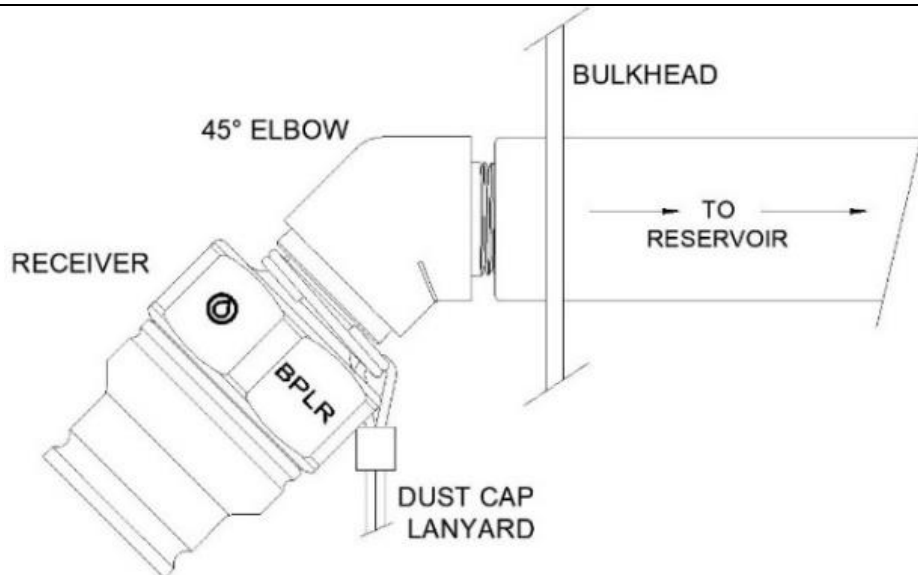


Figure 6 - Example of a BPL Receiver with Elbow

4.2 Installation Guidelines

Note:

**General Installation Notes;**

1. Conduct a **Job Hazard Analysis (JHA)** *prior* to install to mitigate health, environmental and equipment hazards. Use appropriate PPE.
2. Do **NOT** install any parts that are damaged or are otherwise faulty.
3. Do **NOT** install parts which are not compatible with mating parts.
4. Conduct all necessary measures to **prevent the ingress of contamination** into the BEC-B and other parts.
5. Only engage threads of the same thread type. Ensure all threaded connections are clean and in good condition. Avoid over-tightening.
6. An appropriate thread sealant is recommended on NPT threaded process connections. Use **sparingly** and avoid excess use of Loctite and similar products – *residual thread sealants etc. may cause contamination and malfunction of the Couplers.*
7. Use consumables (e.g. Loctite products) strictly in accordance with the OEM Safety Data Sheet (SDS) and operating guidelines. Do not use consumables beyond their expiry date.
8. Ensure all likely **energy sources** – e.g. fluid pressure – are appropriately isolated and/or eliminated **prior** to installation of the BEC-B and other parts.
9. Ensure the **Dust Plug** lanyard “split ring” is secured to the threaded process (outlet) connection of the BEC-B during installation.
10. For the **“Arctic”** BEC-B-CT, it is recommended the Coupler is flushed using the proposed arctic grade fluid to remove any other remnant fluid from within a Coupler which may solidify once exposed to low temperature.

5 BASIC OPERATING INSTRUCTIONS



- Do ***NOT*** attempt to either connect or disconnect the Evacuation Coupling whilst ever residual fluid pressure or vacuum remains within a Coupling (i.e. BEC-B or Receiver).
- Do ***NOT*** attempt to connect (use) the Evacuation Coupling with any non-compatible fluid Coupler or other fitting.
- Do ***NOT*** operate an Evacuation Coupling or any other fluid evacuation equipment that is damaged or otherwise faulty and potentially unsafe for use.
- Do ***NOT*** make any attempt to connect the Evacuation Coupling without first removing contamination from the mating surfaces of each Coupler.
- Do ***NOT*** make any attempt to open an Evacuation Coupling by any means other than connecting with a mating BPL Receiver. For example, no attempt shall be made to bleed residual fluid pressure from an Evacuation Coupling by manually opening the Coupler using a tool or foreign object or loosening the process connection to the Evacuation Coupling – instead use a dedicated bleed valve.
- Please ensure the ***reservoir venting (breather) system*** is adequately rated for and otherwise in proper working order to cater for the required flowrate of intake air during evacuation to avoid any damage to the reservoir due to excessive external pressurisation (i.e. high internal vacuum) beyond the design rating of the vessel(s).

How the Evacuation Coupling is connected (engaged) and disconnected (disengaged) is the same as other similar industry fluid couplings incorporating a ball-lock style latching mechanism – e.g. common fluid power (hydraulic) Couplers.

COUPLING CONNECTION PROCESS

1. Unless specific site (application) liquid evacuation procedures dictate otherwise, ensure the liquid evacuation pump is **OFF** (i.e. not running) prior to Coupler connection.
2. Retrieve the Evacuation Coupling and attached suction hose from their designated storage holster. Inspect all such equipment for signs of fluid leakage, damage or other defects. Safely **carry** the equipment over to the matching BPL Receiver – do ***NOT*** drag the Evacuation Coupling along the ground.
3. Using the designated fluid pressure bleed procedure, bleed all measurable pressure and vacuum from within the Couplings (Evacuation Coupling and mating Receiver).
4. Remove the Dust Cap from the Receiver and retract the Evacuation Coupling Actuator to remove its Dust Plug.
5. Align the front of the Evacuation Coupling with the Receiver – refer Figure 7.

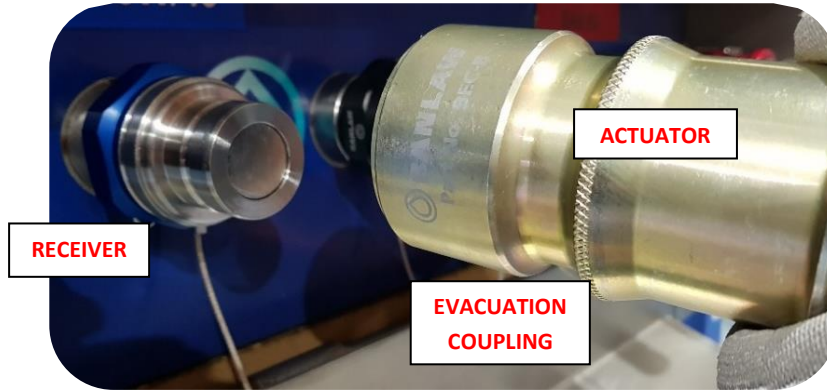


Figure 7 - Preparing for Connection

- Manually retract the Actuator of the Evacuation Coupling, align the front recess of the Evacuation Coupling with the Receiver, and in one steady motion, push the Evacuation Coupling onto the Receiver – refer Figure 8.

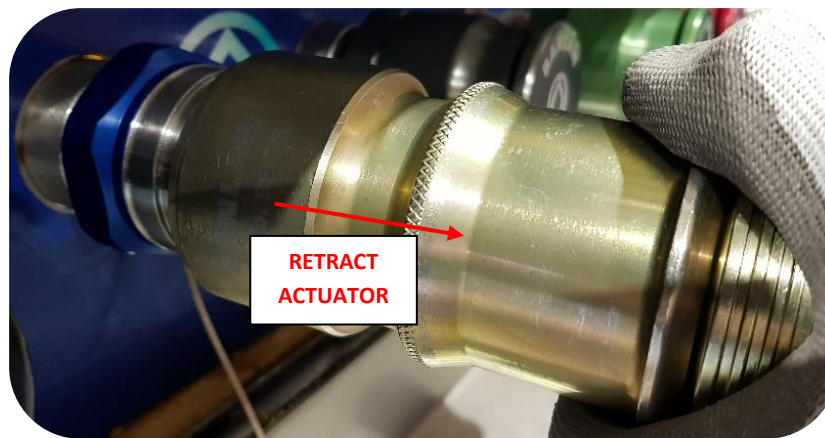


Figure 8 - Connecting the Coupling and Receiver

- Once fully engaged with the Receiver, release the Actuator and allow it to return forward under the action of the spring. Push the Actuator to ensure it is fully forward – refer Figure 9 – to ensure the ball lock mechanism is engaged.

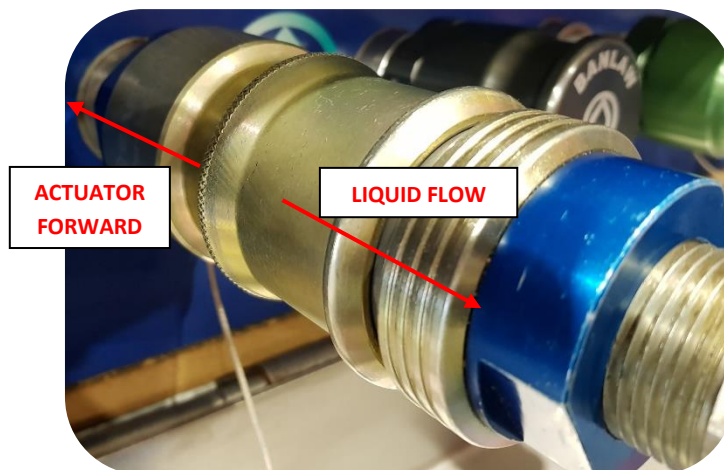


Figure 9 - Coupling and Receiver Connected

- Once connected, pull back on the rear (tail end) of the Evacuation Coupling to ensure a secure connection – do not pull back on the Actuator. If the Evacuation Coupling detaches from the Receiver, repeat steps 5 to 8.

9. Actuate the appropriate valves and start the liquid evacuation pump to begin the liquid transfer. Supervise (monitor) this process. In the event of a problem, refer section 7.

COUPLING DISCONNECTION PROCESS

10. Once the liquid transfer is completed and **prior** to disconnecting the Couplers, **stop** (turn OFF) the liquid supply pump, and if fitted, **close** the manual isolation valve at the Evacuation Coupling outlet.
11. Using the designated fluid pressure bleed procedure, bleed all measurable pressure and vacuum from within the Couplings.
12. Retract and hold back the Actuator and **steadily** remove the Evacuation Coupling from the Receiver. Pull back on the Evacuation Coupling with one steady and smooth movement. **Hold the Actuator back during the entire disconnection process.**
13. Once disengaged, release Actuator. Ensure both the Evacuation Coupling and Receiver return to their “normally closed” (sealed) state. If not, promptly repeat (only) steps 6, 12 and 13. If either coupler still fails to close, promptly isolate any fluid supply to the faulty Coupler. Place any faulty coupling “Out of Service” to prevent further use until its replacement.
14. **Replace** the Receiver Dust Cap. Ensure any bleed valves are closed and the fluid transfer system is otherwise left in a safe idle state.



Figure 10 - Dust Cap on Receiver

15. Replace the Evacuation Coupling Dust Plug and safely return the Coupling by carrying it to its designated storage location, i.e. do **NOT** drag the Coupling along the ground or allow impact with any object.
16. **Ensure work area and all equipment are left clean and in a safe state.**
17. Ensure any faults or incidents identified during the fluid transfer are promptly reported for attention.

6 MAINTENANCE GUIDELINES

This Maintenance Guide is general and is not meant to replace or override maintenance guidelines that arise out of a *due diligence* assessment of the Banlaw Evacuation Coupling and BPL series Fluid Transfer Couplers for a specific liquid transfer application. For more detailed advice please contact Banlaw or your nearest authorised Banlaw distributor.

The following *preventative maintenance* guidelines apply to the Evacuation Coupling and BPL series Couplers;

- Inspect each Coupler and other liquid evacuation equipment prior to use for damage, excessive leakage or some other defect which may affect the safe use of the system.
- **Do NOT store the Evacuation Coupling laying on the ground, or otherwise in an area prone to excessive contamination or possible damage.** Ensure there is provision to safely store the Evacuation Coupling off the ground, and with the attached hose not left laying within plant equipment or operator thoroughfares.
- **Prior** to use, wipe away residual liquid and contamination from all mating surfaces of the couplers (Coupling & Receiver). This will help to avoid accelerated wear & tear of the couplers.
- Use the Evacuation Coupling Dust Plug and BPL Receiver Dust Caps. The use of the Plug and Caps will also reduce the risk of damage to a Coupler from impact when not in use.
- **Avoid applying excessive axial or bending (cantilevered) forces to the Evacuation Coupling and mating Receiver,** as this may cause the unplanned disconnection of the Couplings and accelerated wear, tear and damage to the Couplings. Excessive forces may be generated by such things as the weight of a relatively long (or large) hose connected to the Evacuation Coupling, or hose tension applied by a hose reel not in the **locked** (latched) position.
- **Closely** inspect the front area of the BPL **Receiver** (Figure 11) and Evacuation Coupling (Figure 13) for excessive wear or damage;
 - **BPL Receivers;**
 - Wear to the “front” ball lock groove, used by the mating BPL Nozzle.
 - Wear to the “rear” ball lock groove, used by the Evacuation Coupling.
 - Damage and excessive wear to leading edge and front face.
 - Fluid leakage from front face.
 - Failure of the Poppet to return “flush” (fully forward, closed).

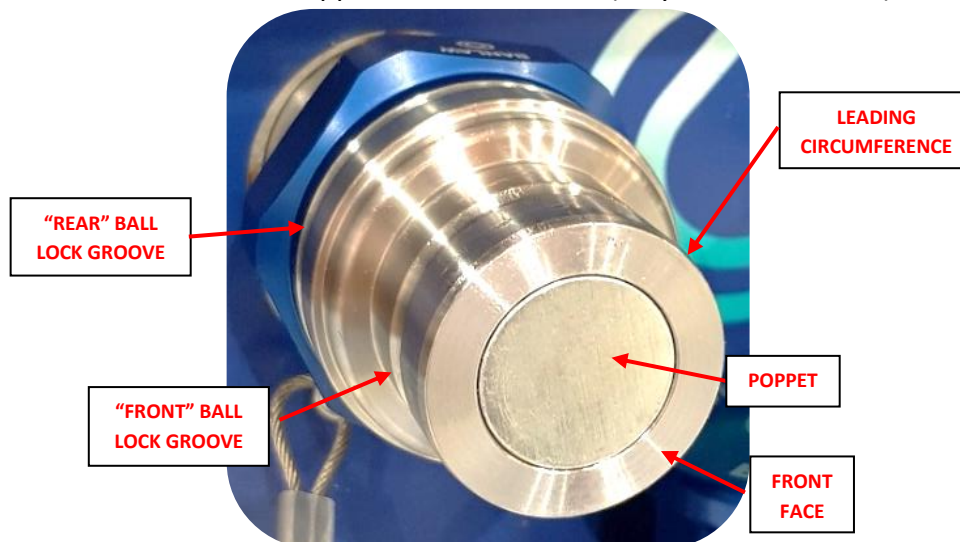


Figure 11 - Critical Areas of Damage on BPL Receivers

- **Evacuation Coupling;**
 - Damage and excessive wear to leading edge and front face. Importantly, distortion of the leading edge of the Actuator may affect its required motion (action) and jeopardise the function and safety of the ball lock mechanism.
 - Missing or damaged front O’ring seal causing leakage during fluid transfer – replacement O’ring details in section 7.
 - Fluid leakage from front face or from between Actuator and Tail.

- Failure of either Piston to return “flush” (fully forward, closed).
- Failure of internal check valve to return to its normally closed position.
- Damage or wear to ball locks.

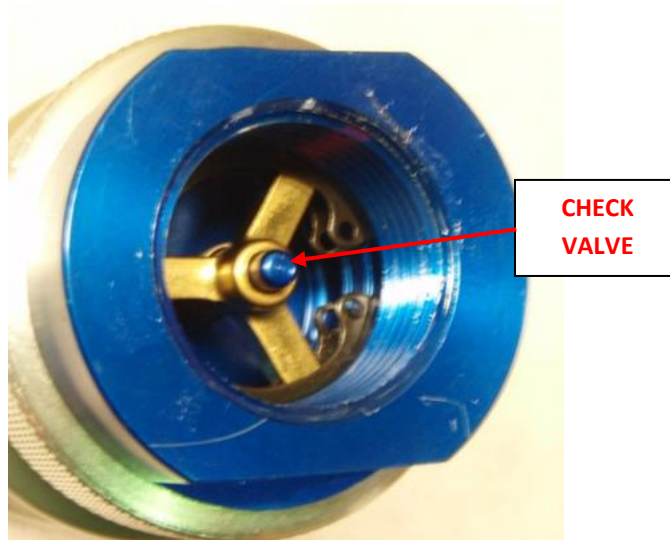


Figure 12 - Rear (Outlet) of Evacuation Coupling showing Internal Check Valve (Closed)

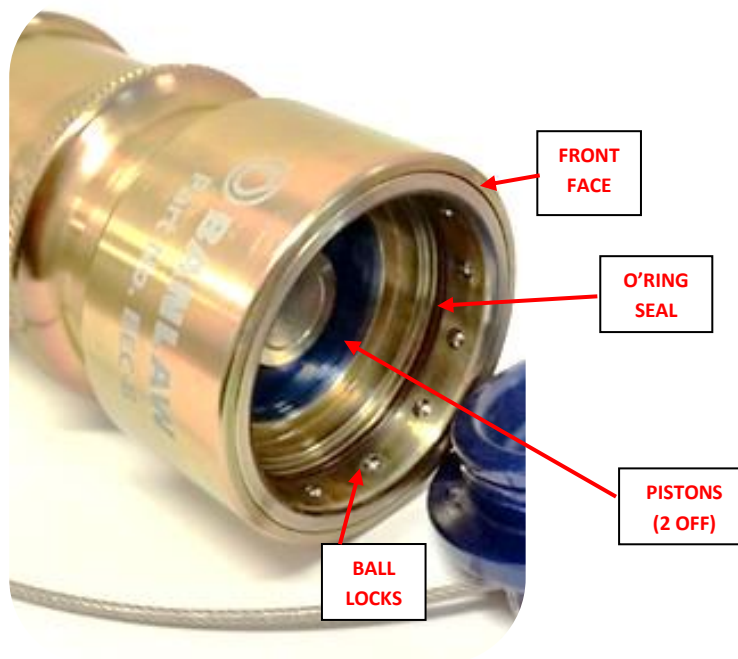


Figure 13 - Critical Areas of Damage on the Evacuation Coupling

Promptly replace any faulty BPL couplers prior to their next required use or place the coupler(s) “Out of Service” until replacement.

6.1 Evacuation Coupling Spare Parts

The following genuine Banlaw spare parts are available to suit this product. **The use of non-genuine parts, or the improper dismantling, misuse or tampering of this product may cause unsafe function, serious safety hazards, and void Banlaw warranty.** Please see www.banlaw.com for warranty details and a full list of distributors near your area to source genuine Banlaw replacement spares and new products.

Item Description	Banlaw Part Number	Suits
BEC-B Dust Plug	BEC-P	BEC-B and BEC-B-CT
Front O’Ring Seal (Body)	BEC019 (Viton)	BEC-B
	BEC019-FS (Fluorosilicone)	BEC-B-CT

Table 2 - BEC-B Spare Parts

7 TROUBLESHOOTING GUIDELINES

This section provides troubleshooting recommendations for the Evacuation Coupling when installed, operated and maintained in accordance with Banlaw guidelines.

Problem	Probable Cause and Solution
Evacuation Coupling cannot properly connect with the Receiver, or uncouples from Receiver during liquid transfer	<ul style="list-style-type: none"> • Incorrect style of Receiver. Use only compatible Banlaw BPL Receivers with the Evacuation Coupling. • Damage to or excessive wear of (rear) ball lock groove on BPL Receiver or to the ball lock mechanism within the Evacuation Coupling. Identify root cause and replace the faulty Coupling. • High residual fluid pressure within the Evacuation Coupling and/or Receiver. Safely bleed pressure and engage Couplings. • Jammed mechanism within either the Evacuation Coupling or Receiver. Identify root cause and replace the faulty Coupling. • Incorrect connection technique – refer section 5. • Damaged Evacuation Coupling Actuator, or some other cause restricting its full reciprocating travel (back & forward) to operate the ball locks.
Restricted or no liquid transfer possible through the (connected) couplings	<ul style="list-style-type: none"> • Foreign object blocking flow path. Identify root cause and rectify. • Insufficient net positive suction head available (NPSHA) at the pump inlet. Review liquid evacuation system design to improve NPSHA or replace pump with a type capable of tolerating lower NPSHA. • Inline strainer or some other filtering element requires cleaning or replacement. • Non-suction rated style of hose used, causing hose contraction – replace hose with a suction rated hose. • Liquid too viscous. Evacuate liquid when warmer (i.e. at lower viscosity) or use alternate means of drainage.
Leakage from Evacuation Coupling when not in use	<ul style="list-style-type: none"> • Faulty internal seal – replace Evacuation Coupling. • One of the pistons is failing to close. Identify root cause (e.g. contamination) and rectify. If Evacuation Coupling faulty, replace.

Problem	Probable Cause and Solution
Leakage from between Evacuation Coupling and Receiver when connected	<ul style="list-style-type: none"> • Faulty internal seal – replace Evacuation Coupling; <ul style="list-style-type: none"> ○ The O’ring seal within the front of the Evacuation Coupling – refer Figure 13 and section 6.1 – is especially vulnerable to damage and may require regular replacement; <ul style="list-style-type: none"> ▪ BS033 Viton (or NBR) for BEC-B. ▪ BS033 Fluorosilicone for BEC-B-CT. • Contamination causing poor sealing. Attempt to rectify by flushing the Evacuation Coupling with a (compatible) clean liquid. • Couplings improperly connected – refer section 5. • Damage to a sealing face within the Evacuation Coupling or on the Receiver. Identify, repair damage, or replace damaged coupling.
Reverse (back) flow possible through Evacuation Coupling	<ul style="list-style-type: none"> • Contamination preventing internal check valve from closing - Figure 12. Remove Evacuation Coupling and investigate. • Faulty internal check valve – replace Evacuation Coupling.

END OF DOCUMENT



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