

Bulk Fluid Transfer Couplings
BNC40 & BRC40
BNC40-CT & BRC40-CT

Thank you for purchasing this high quality Banlaw product. Please read 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 BNC40 (with plug) and BRC40 (with cap)

1 PRODUCT DESCRIPTION

Banlaw's Bulk Fluid Transfer Couplings are designed to provide a safe, robust and reliable method for the bulk transfer of common fuels and fluids used in the mining, rail, ports and similar heavy industries. The BNC40 Nozzle is designed to address some of the specific requirements of these industries;

- Ability to connect/disconnect under residual line pressure.
- Extra safety features for unsupervised operation.
- Robust design for use in relatively harsh environmental and operating conditions.

2 SPECIFICATIONS

This section includes conditions which apply to the installation, operation and maintenance of the Banlaw BNC40 and BRC40 couplings and their nominated Banlaw accessories. The following Operating and Technical Specifications apply to the Banlaw BNC40 and BRC40 bulk fluid transfer couplings;

Minimum permissible tank refuelling flowrate (1 off Banlaw vent)	Not Applicable
Maximum recommended flowrate (diesel)	500LPM (132GPM) – bi-directional flow
Operating Temperature Range	-10 to 55°C (14 to 131°F)
Cold Temperature Variant (-CT)	-40 TO 55°C (-40 TO 131°F)
Maximum recommended SWP	8,000kPa (1,160psi) (Non CT Variant only)
Minimum potential burst pressure	35,000kPa (5,076psi) (Non CT Variant only)
Latching mechanism	Ball-locks (within BNC40 Nozzle)
Principal materials of construction	Stainless steel, Zinc electroplated mild steel, Brass (within BRC40 receiver only), Acetal (BRC40-C Dust Cap only), Aluminium (AUS21A-P Dust Plug only)
Seal (elastomer) materials	Viton, Nitrile (NBR),Bronze filled PTFE. Fluorosilicone (-CT only)
Liquid (fluid) types	the following common incompressible fluid types are suitable for use with the BNC40 and BRC40 couplings: <ul style="list-style-type: none"> • Diesel fuels, including commercial bio-diesel blends. • Common lubricating oils. • Common hydraulic oils. • Common coolants.
Process connections	1-1/2" BSPP (F) on both the Nozzle and Receiver

3 KEY PRODUCT FEATURES

For the transfer of fluids, the Banlaw BNC40 and BRC40 couplings provide the following key features:

- The connect under residual pressure feature of the BNC40 nozzle. This feature allows the nozzle to be connected to the mating BRC40 receiver whilst residual fluid pressure is retained within the nozzle. For example, thermal expansion.
- Normally closed dry-break configuration minimises leakage during connection and disconnection of the couplings which may be caused by thermal expansion.
- Industry proven ball-lock style latching mechanism to provide a secure, reliable and safe means for maintaining engagement of the nozzle and receiver.



Figure 2 - "Industry proven" ball-lock latching mechanism

- Back-up (secondary) fluid seals on both Receiver and Nozzle for a more reliable sealed connection.
- Dust seal on Receiver body to reduce the ingress of surrounding contamination into the mating region of the nozzle and receiver during fluid transfer, providing enhanced protection for fluid seals within the nozzle.
- "Twist to Lock" feature of the nozzle actuator, providing a more secure connection with the receiver and to virtually prevent the unwanted (undesired, accidental) disconnection of the couplings. This feature also provides additional assurance the couplings are fully engaged, as the "Twist to Lock" feature cannot be activated unless couplings are fully engaged during connection;



Note:

It is not mandatory that the nozzle actuator is placed into the "LOCK" position to ensure a secure connection. The couplings can be securely engaged with the actuator remaining in the "ENGAGED" position.



Figure 3 - Basic connect and disconnect instructions on BNC40 actuator ("Twist to Lock" feature)

- Unique to Banlaw. Will not to engage with other couplings.
- Basic instructions for connection and disconnection of the couplings are etched onto the nozzle actuator, providing improved guidance on their correct use.
- The BNC40 and BRC40 couplings are designed to operate in harsh environments. All structural and otherwise critical parts are manufactured from steel. This was a key requirement of the original design objectives for the couplings, due to the robust construction required for railway locomotive inline refuelling couplings. Fluid seals are selected/ designed to best suit their specific application, with Viton being the common seal material used. Seal designs/profiles prone to accelerated wear & tear are not used, providing proper seal function over an extended service life.



Any attempt to connect or disconnect the BNC40 nozzle and BRC40 receiver with the fluid supply pump running (and not isolated from the nozzle or receiver) may introduce hazards including;

- The pressurised discharge (ejection) of fluid from between the BNC40 nozzle and BRC40 receiver during connection;
 - Safety risk for personnel operating the couplings or within the vicinity.
 - Contaminated working environment, increasing certain risks such as slips and falls.
 - Fire/explosion should any discharged fluid be ignited by a nearby heat/ignition source.
- Increased effort required to connect the couplings, leading to physical strain (injury), or slips and falls.
- Rapid and unexpected backward movement of the BNC40 nozzle during connection, leading to physical strain (injury).



The connect under residual pressure feature of the couplings is dependent on the following key conditions;

- The pump supplying fluid to the nozzle must not run prior to nozzle connection or disconnection. If the pump is running during connection or disconnection of the Banlaw couplings, a valve or some other positive means of flow control must be closed between the pump and the BNC40 nozzle.
- Fluid within the BRC40 receiver is not pressurised above a level normally associated with the connection of the receiver to a « free to air » (vented) fluid tank. Any measurable fluid pressure above this level will increase the physical effort required to connect the couplings.

4 INSTALLATION GUIDELINES

This section contains important information related to requirements for pre-installation, installation and commissioning of the Banlaw BNC40 and BRC40 couplings. The BNC40 and BRC40 coupling installation requires no specialist tooling and equipment.

A suitable thread sealant is recommended on all mating threads. As a guide, Banlaw recommends Loctite 567 thread sealants for most applications. Please ensure all threaded connections are clean and dry prior to application of a thread sealant, and that all threads are tightened appropriately but not over-tightened.

When installing either coupling onto the threaded process connection, to avoid potential damage to the couplings please ensure;

1. Appropriate tools are used. If at all possible, do not use adjustable tools likely to mark/damage the coupling.
2. Support the Nozzle – off the ground – in a clean area to avoid any contamination.

5 PRINCIPLES OF OPERATION

- 1 ENSURE LIQUID DISPENSING SYSTEM IS SAFE AND AVAILABLE FOR USE

- 2 SAFELY BLEED RESIDUAL PRESSURE WITHIN NOZZLE (DISPENSING SIDE)

- 3 SAFELY BLEED RESIDUAL PRESSURE WITHIN RECEIVER (RECIPIENT SIDE)

- 4 REMOVE RECEIVER DUST CAP AND NOZZLE DUST PLUG

- 5 WIPE FRONT OF EACH COUPLER CLEAN WITH A RAG

- 6 FULLY (CONCENTRICALLY) ALIGN NOZZLE WITH MATING RECEIVER AND ENSURE REFERENCE MARK ON NOZZLE ALIGNS WITH THE ENGAGED MARKING ON THE NOZZLE

- 7 RETRACT NOZZLE ACTUATOR TO THE FREE POSITION & PUSH NOZZLE ONTO RECEIVER UNTIL FULLY CONNECTED

- 8 PUSH ACTUATOR FORWARD & PULL BACK ON NOZZLE "TAIL" TO ENSURE SECURE CONNECTION

- 9 WITH THE ACTUATOR IN THE "ENGAGED" POSITION, ROTATE THE ACTUATOR CLOCKWISE AND PUSH FORWARD INTO THE "LOCK" POSITION.

- 10 START LIQUID DISPENSING PUMP/SYSTEM

- 11 COMPLETE THE REQUIRED LIQUID TRANSFER

- 12 TURN OFF LIQUID DISPENSING PUMP AND SAFELY BLEED RESIDUAL PRESSURE WITHIN COUPLERS

- 13 HOLDING WEIGHT OF NOZZLE, RETRACT NOZZLE ACTUATOR. IF NECESSARY ALIGN REFERENCE MARK WITH THE ENGAGED LINE & DISCONNECT COUPLERS BY PULLING ACTUATOR BACK

- 14 REPLACE RECEIVER DUST CAP AND NOZZLE DUST PLUG

- 15 RETURN NOZZLE AND ATTACHED EQUIPMENT TO STORAGE LOCATION

- 16 ENSURE THE LIQUID DISPENSING SYSTEM AND WORK AREA ARE LEFT IN A CLEAN & SAFE STATE

Note:

When in the "ENGAGED" position, the "FREE" arrow and grub screw shall be aligned with the reference mark. In the "ENGAGED" position, the actuator can be (partially) rotated about the "ENGAGED" plane with respect to the nozzle tail. If the actuator cannot be rotated about this plane, the actuator is not fully in the "ENGAGED" position.

6 MAINTENANCE GUIDELINES

This section covers maintenance requirements and available spare parts for the BNC40 nozzle and BRC40 receiver fluid couplings. For further information, please refer to the following Banlaw documents;

- EBL-11 – “Preventative Maintenance – Mining and Heavy Industry”.
- EBL-13 – “Preventative Maintenance – Rail and Port Industries”.
- PRH-REF-8 – “Diesel Refuelling Accessories”.

6.1 Spare Parts

The following Table details the genuine Banlaw spare parts to suit the BNC40 and BRC40 fluid transfer couplings. As per section 6.3, other spare parts – not listed in the table below – are only available to accredited Banlaw repair agents.

Banlaw Part Number	Description
AUS21A-P	Nozzle Dust Plug Assembly
BRC40-C	Receiver Dust Cap Assembly
BRC40-C-CT	Receiver Dust Cap Assembly- Cold Temperature
AUS21A026	External O’ring for BRC40 Receiver BS140 (NBR)
AUS21026-CT	External O’ring for BRC40-CT Receiver BS140 (Fluorosilicone)

To maintain the safety, performance and reliability of Banlaw products;

- Only genuine Banlaw spare parts are to be used.
- Servicing/repairs should only be conducted by Banlaw or an accredited Banlaw repair agent.

Products should not be modified in any manner not endorsed by Banlaw.

6.2 Preventative Maintenance

Banlaw couplings should be checked for any obvious defects, fluid leakage etc. prior to use of the system and during use of the system. In addition to this, site protocol and other governing requirements may dictate periodic inspection and testing of certain system items and equipment.

The BNC40 nozzle and BRC40 receiver must be routinely inspected for any damage or other issue which may cause malfunction or allow the improper use of the couplings. Any coupling deemed to pose an unsatisfactory health and safety risk must be promptly removed from service and replaced.

The BRC40 receiver is a non-serviceable assembly, meaning any servicing of the coupling is not supported nor endorsed by Banlaw. In the event of a fault with the BRC40 receiver, the entire assembly must be replaced – no attempt should be made to replace parts or to otherwise rectify a fault.

The BNC40 nozzle is a non-serviceable assembly, meaning any servicing of the coupling is not supported nor endorsed by Banlaw. In the event of a fault with the BRC40 receiver, the entire assembly must be replaced – no attempt should be made to replace parts or to otherwise rectify a fault.

To provide reduced incidence of contamination ingress, and to maximise the safety, performance and service life of the BNC40 and BRC40 couplings, the continued and “disciplined” use of the Dust Plug (nozzle) and Dust Cap (receiver) are highly recommended. Any warranty claim may be denied in the event the Dust Plug, Dust Cap or Nozzle Mounting Anchor (Part No# BP800050) are not used.

6.3 Product Servicing

The Banlaw Bulk fluid transfer Nozzle and Receiver are non-serviceable with the exception of the replacement of the Nozzle Dust Plug on the nozzle, and the Receiver Dust Cap and external O’ring on the receiver as outlined in Spare Parts.

7 IMPORTANT RESTRICTIONS ON THE USE OF THIS PRODUCT



- The Banlaw BNC40 and BRC40 couplings – whilst connected - do not incorporate any integral automatic shut-off feature, where the flow of fluid – in either direction – can be terminated or modulated by any means. Whilst these couplings remain engaged, alternative means of terminating the flow of fluid is required. For example, when these couplings are used to refill a fluid storage tank, proper and appropriate means must be in place to ensure the tank is not overfilled, e.g. a suitable overfill protection (OFP) process or system must be maintained at all times for the tank. Fluid flow through the BNC40 and BRC40 couplings will only be prevented after the couplings are fully disconnected, and have returned to their normally closed (dry-break) state.
- The BNC40 and BRC40 couplings are not designed nor recommended by Banlaw for use;
 - Within a fluid power transmission (hydraulic) circuit, unless a risk assessment conducted by the client – with consideration of this Banlaw document – otherwise deems the couplings suitable for use.
 - For the transfer/handling of any *compressible* fluid.



- The Banlaw BNC40 and BRC40 couplings are unsuitable for use with Ad-Blu (DEF).
- The BNC40 and BRC40 have not been tested nor verified for use with greases.



In this document whenever there is a reference to BNC40 and BRC40 it can be read as applicable to the BNC40-CT and BRC40-CT. Where there is a significant difference the -CT variant will be separately referenced.

END OF DOCUMENT



BANLAW

Fluid Asset Intelligence

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