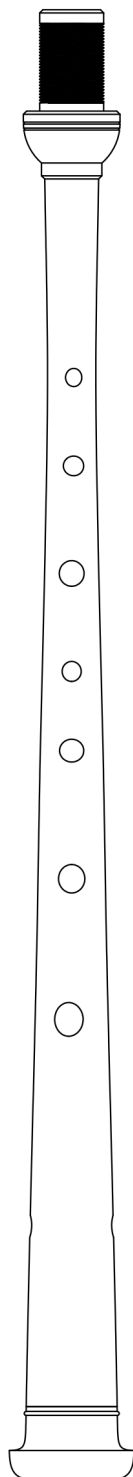


Border Pipes Chanter – Getting Started Guide

Version 0.2



This manual provides a comprehensive introduction to the design and operation of the Border pipes chanter. It is intended to assist the player in understanding the key features, proper handling, tuning considerations and maintenance procedures. The chanter is engineered for concert pitch A ($A = 440\text{ Hz}$) and offers an extended range of notes and innovative design elements to enhance playability.

1. Pitch and Pressure Range

The chanter is tuned for A at 440 Hz. Its pressure window is designed between 11 and 18 inches of water (2737–4479 pascals). Please note that chanter performance is not guaranteed outside this specified range.

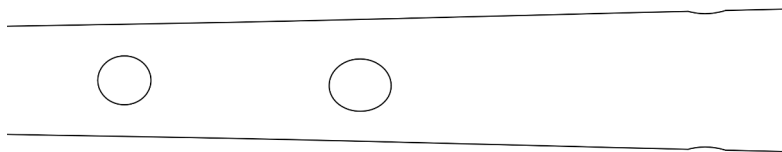
2. Note Range and Fingering Options

2.1 Standard and Accidental Notes

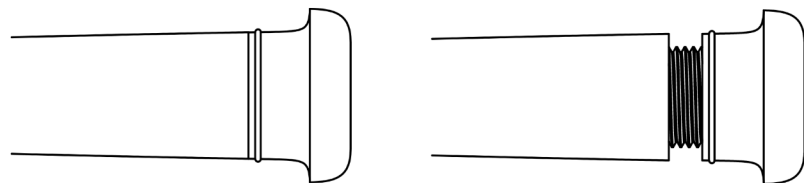
The chanter covers the standard nine notes, from bottom G to high A, in an A mixolydian scale tuned close to just intonation. Finger holes have been intentionally offset to enhance comfort while retaining the subtlety of a clean birl. In addition, the design allows for accidental notes between low A \sharp and high G \sharp . These accidentals are accessible through cross fingerings or fork fingerings, which involve raising the left finger while playing standard notes.

2.2 Specially Designed Notes

- **Low G:** The low G note is intentionally designed with an oval shape, allowing half-holing to produce low G \sharp more easily than in a regular design.



- **High B:** This note is achieved by applying increased bag pressure while employing the fingering for a low B. The turning of the note may be adjusted by screwing the bell. A longer chanter produces a higher second harmonic, and vice versa. If the screw is too loose to remain fixed, PTFE tape is recommended to secure its position.



- **Low F \sharp :** For right-handed models, low F \sharp is produced by closing the right tone hole towards the inner side of the player's leg using a low G fingering. For left-handed models, the process is mirrored accordingly. The tuning of low F \sharp is also influenced by adjusting the bell length.

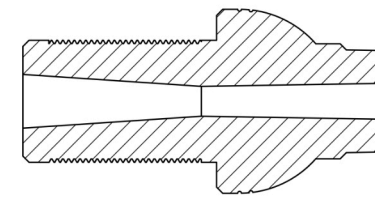
For further details on the fingering system, please refer to the fingering chart provided after this manual.

3. Reed and Tuning Considerations

A cane reed in a bellows-driven setup can last for decades. It is advisable to inspect the instruments upon arrival and perform fine tuning or reed modifications after one or two days in the new environment.

3.1 Reed Socket Design

The reed socket features a smaller taper than found in other modern Border pipes. This design minimises the gap between the reed's staple and the bore, thereby reducing the occurrence of split tones on low G and low A. Should split tones persist, it is advised to wrap additional hemp around the staple's end.



3.2 Environmental Tuning

The chanter is fine tuned in Belfast under typical conditions of 18°C and 60–70% moisture. Variations in ambient temperature and humidity may affect reed behaviour. Should the reed sound too flat, adjusting the blades to sharpen the top hand more than the bottom hand—effectively moving the reed approximately 1 mm out of the socket—may resolve the issue. An alternative, though irreversible, method involves trimming the reed tips. Owing to the fragility of the cane reed, careful handling is essential.

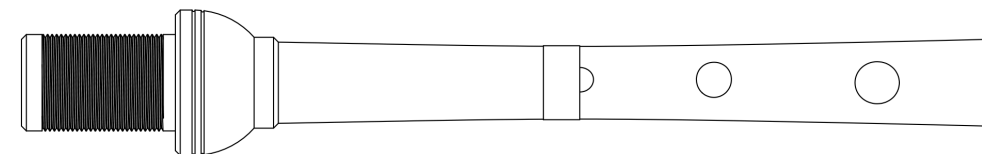
4. Chanter Construction and Retrofitting

4.1 Retrofitting Considerations

Retrofitting the chanter may lead to tuning challenges due to alterations in the bag and neck dimensions. To mitigate resonance from the bag, consider fitting a sponge scourer at the bag end of the chanter stock.

4.2 High G Versatility

The high G note is designed to be versatile; it may be fingered as either the Pibroch G (as in recorder or Euro Pipes/16 pouces) or the standard highland G. This dual approach can occasionally result in note instability. In such cases, it is recommended that the player tape the tone hole accordingly.



4.3 Manufacturing Standards

Due to the manufacturing technique, slight variations in colour or finish may be observed. However, such differences are not acceptable as reasons for returning the instrument.

5. Reed Compatibility, Storage and Maintenance

5.1 Reed Adaptability

The instrument has been tested with different reeds for optimal performance:

- **Standard Nigel Richard (Garvie) design reeds:** These are required to be in A.
- **G1's reed for Fred Morrison's design:** which may require slight adjustments on the scraping, and these also need to be in A.
- **Synthetic reeds (Euro pipes 16 pouces):** For synthetic reeds, G chanter reeds are applied, which provide a larger range without the need to unscrew the foot. Note that for high G, the Pibroch G fingering must be used.

5.2 Storage and General Maintenance

While the instruments are weather resistant under normal temperature and moisture variations, the reed remains delicate. For storage, an optimal condition is a hard shell case placed away from radiators or other heat sources. As the instrument is constructed from nylon—a porous material—it is important to avoid exposure to liquids long-term, as high moisture may lead to mould formation between layers. Should mould occur, the instrument may be boiled in water for 5 minutes and then cleaned with isopropyl alcohol (IPA). Metal ferrules and mounts are affixed using an adhesive that may lose its bond above 70°C.

5.3 Joints, hemp and linen

For fixed joints, black waxed hemp (linen with clobber's wax) is advised for better sealing and a uniform appearance. For sliding joints and reed fitting, waxed or polished linen under 18/3 or single shoe is recommended.

5.4 Reed Aperture Adjustment with Pliers

When opening or closing the reed aperture, a pair of pliers is recommended. Apply gentle and even pressure on the bridle to reshape the aperture, taking care not to exert excessive force which might crack the reed. This procedure is separate from general instrument maintenance and should be performed with caution.

6. Intellectual Property and Further Development

The drawings and STL files for the chanter are as source-available; Everyone have full access to the source, user has the right to modify and share modification. Under this license, no free ride for large manufactures or megacorps. The user also cannot remove the attribution from it. Please refer to the full text of the source first license 1.1 (<https://sourcefirst.com/>) for further details. Should the player be interested in further development, licensing, OEM opportunities or additional inquiries, please contact the maker directly at zexuan_qiao@outlook.com.

7. Summary

This guide is intended to assist in the optimal use and maintenance of your Border pipes chanter. For detailed fingering instructions and additional technical drawings, please refer to the supplementary materials provided separately.

Zexuan Qiao 22/04/2025

