



## Bead Diagnostic Instrument (BDI)



## Quick Start Guide

Issue 2 FW1.3a

## INTRODUCTION

---

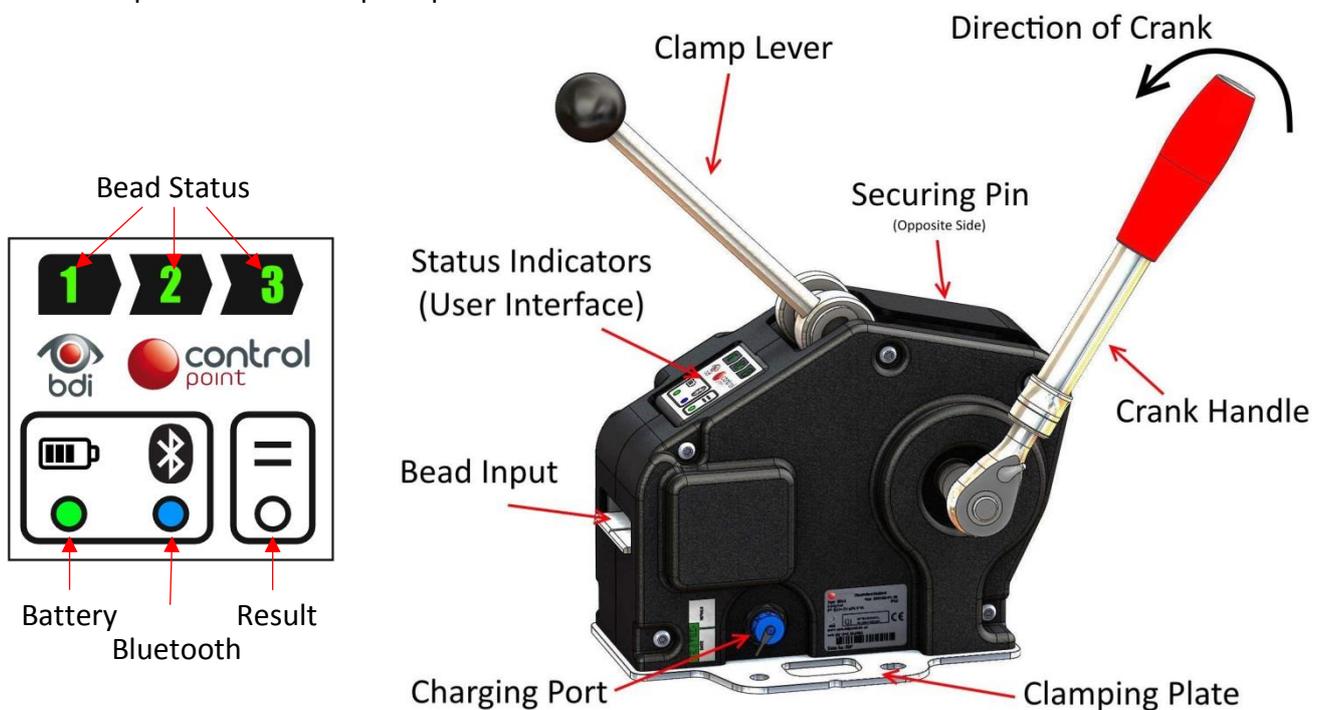
The BDI is a piece of test equipment used to perform a quality test on the bead from butt-fused pipe joints. Removing and testing the bead created during butt fusion has been shown to have a strong correlation to defects within the joint itself.

The BDI can be operated in two modes, either as a stand-alone unit to give an indication of bead condition, or in conjunction with a smartphone to provide a permanent logged record of the bead test. The latter allows full traceability and more detailed analysis.

## THE BDI

---

The diagram below shows the important parts of the BDI unit. Please note that the unit should not be operated with any covers removed. If the unit is damaged in any way or any parts are missing do not use and report the fault for prompt attention.



The unit should be clamped firmly to a fixed surface such as a bench or 'Workmate' type stand. Acceptable fixing methods include bolts or G-clamps. Ensure the crank handle can be operated without fouling and that there is space behind the unit for the bead to exit from the rear.

## POWER AND CHARGING

---

The unit is charged by connected the supplied USB cable from the charging port to the USB charger supplied. Charging can also be achieved from a PC USB port or, for example, a USB charger for a vehicle accessory socket. Do not connect to a supply greater than 5V DC.

The Battery Status light is not lit in normal operation. When power is connected, it will show orange to indicate the battery is charging and will flash green once charging is complete. With no power

## BDI Quick Start Guide

connected it will flash orange to show the battery is low and red once it is fully depleted. The unit will also not allow tests to be performed with a fully discharged battery.

### USER INTERFACE

The BDI has three 'process status' lights, a test result indicator as well as battery and Bluetooth connection indicators, as per the diagram on the previous page. The Bluetooth light will illuminate when a smartphone is paired with and connected to the device. Battery indicator operation was described in the previous section.

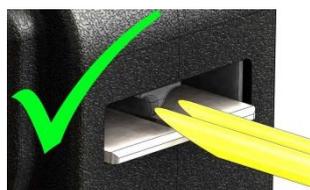
The unit is powered up by changing the position of the clamp lever. A self-test will be performed at this stage and also when the unit is reset after each bead test. The indicators at this stage show any faults with the unit:



If a sensor fault is indicated and a bead is present in the machine it should be removed. The clamp position sensor fault can be triggered if the lever is down when the self-test is performed, raising it will clear this fault. If these steps do not clear the fault then contact your distributor for assistance.

### OPERATING PROCEDURE

Once the unit indicates it is ready to start testing, the bead can be inserted. If the test is to be logged then the BDI Smartphone App should be opened and connected to the unit at this point.



1: Insert bead in to front of machine as shown. Align groove in bead with central runner.



2: Push bead in until light 1 turns green, using crank if necessary.



3: Slowly advance the bead through until light 2 turns green.

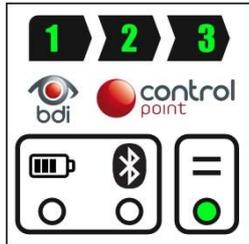


4: Engage the clamp lever. All lights will flash green indicating the unit is ready to test.

## BDI Quick Start Guide

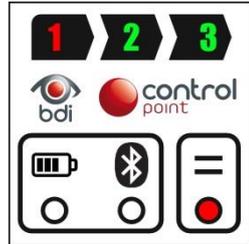
Once the bead is loaded in to the BDI it should be cranked through at a steady pace.

The result light will remain blank until the end of the testing process, unless a bead split is detected or a problem with the testing process occurs. At the end of the test, a green indication will be given to highlight that no problems were found with the bead, or a red indication, along with one or more red status lights as shown below, will give further detail as to the cause of the test failure.



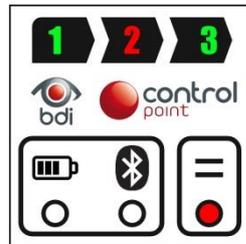
### Test passed.

No splits or problems encountered.



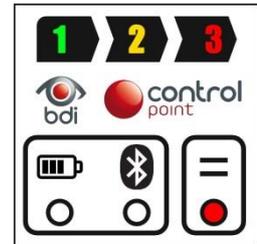
### Test failed.

A split in the bead was detected.



### Test failed.

An error in the test procedure was detected



### Test failed.

A hardware fault was detected with the BDI.

More than one status light going red indicates multiple problems during a test. If a hardware fault is detected then errors in the test procedure cannot reliably be detected so this light goes orange.

At the end of a test, lifting the lever will reset the unit and clear the previous test result. The lever can be lowered at any point before the next bead is inserted to recall this result. If the smartphone app has been used to log the test then this data will remain available even after the unit is powered down, however you will not be able to initiate another logged test until it has been uploaded. The BDI can still be used in manual mode however.

## FAULT FINDING

---

If any of the Bead Status lights flash red this indicates an unexpected condition.

Light 1 flashing red indicates a bead has been detected in the machine when it should not be.

Light 2 flashing red indicates a fault has been detected on the split sensor.

Light 3 flashing red indicates the lever is not in the expected position.

Generally, if a bead is inserted before the unit is powered on then it will trigger these warnings. The bead should be removed with the lever raised then reinserted. If the sensor failure persists then try cleaning the machine internals as the sensor may be obscured by plastic swarf.

If Lights 1-3 and result all turn red this indicates an internal check has failed and the machine cannot be used. It must be returned to the supplier for service to correct this fault.

If the BDI fails to charge, ensure the cable is firmly inserted in to the charging socket. If necessary try a new cable and a new USB charger.

If none of the above resolves the fault or any other problems occur, please contact your supplier to arrange rectification.

## BDI Quick Start Guide

If in doubt, call ControlPoint on 01246 262080 – We are here to help!

### MAINTENANCE

---

In general the BDI does not have any user serviceable parts. It is recommended that the unit internals be periodically cleaned of debris using a compressed air spray. Do not use an air line or any spray which may contain oil or solvents and do not use sharp tools or any abrasive material.

### SMARTPHONE APP

---

The BDI can be used with a smartphone to provide a solution for logging bead test information which will be accessible via Joint Manager.

The app is available on Android via the Play Store, iOS via the Apple Store and for Windows Mobile via the Windows Marketplace. The following QR codes can be used with a scanning app to locate the appropriate version for your phone.



BDI App for Android



BDI App for iOS



BDI App for Windows

If the bead test is to be logged then the app must connect to the BDI and initialize before the physical test takes place. The process involves logging in, connecting to the BDI then entering project details and optionally adding pre-test photos.

The following instructions are based on the Android version of the BDI app. While the principles remain the same across all platforms there may be differences in the display or the exact steps to be taken. In general platform-specific methods are used so a general familiarity with the phone is useful.

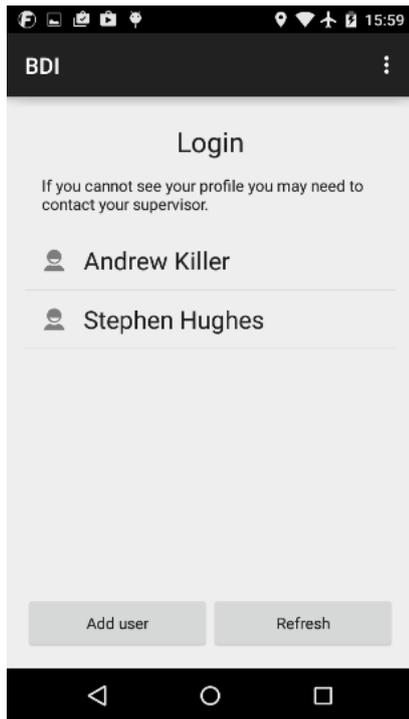
#### Logging In

The BDI app uses the standard ControlPoint welder log-in system. Operators are added using the 'Add User' button and are assigned a local password. To log in simply tap the name of the operator and enter this password. You will be prompted as to which profile you wish to use for this session.

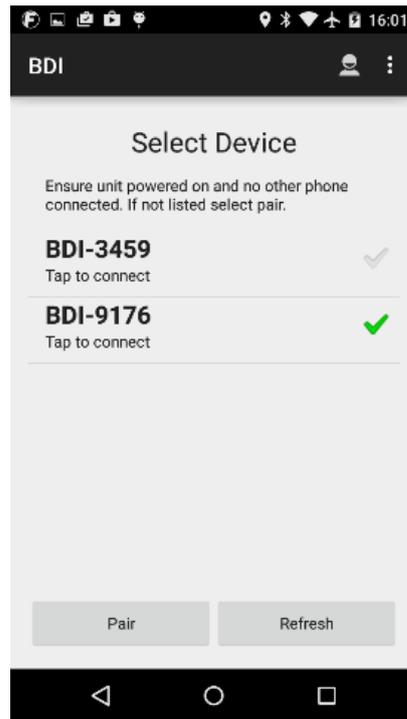
#### Connect to BDI

The Select Device section displays a list of BDI devices which are already 'paired' (known) to the phone. A green tick designates that the device is powered on, within range, and available for connection. Simply tap on the device you wish to use to make a connection. The BDI name will include the serial number shown on the label on the right hand side of the casing. The app will attempt to connect then move on to the Job Details section.

## BDI Quick Start Guide



*User Log-in section*



*Select Device section*

### Pair to new device

If the device you wish to use is not shown in this list then tap the 'Pair' button. This will open the phone-specific Bluetooth pairing dialogue. Refer to the smartphone manufacturer's instructions on how to pair a new device. Most devices offer a list of devices within range or prompt you to 'Scan for available devices' to produce this list. Once you have identified the BDI in question simply tap on the name and the phone will start the pairing process.

Please note that for iOS phones you need to exit the BDI app to pair Bluetooth devices.

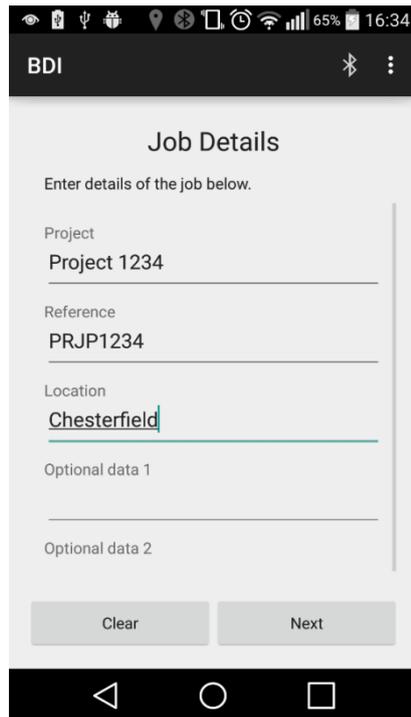
Once you have paired the BDI you can return to the app using the back (left arrow) button. The device will now show in the 'Select Device' list and can be selected as above.

### Enter Job Details

Information such as the project name, reference, location and any notes can be entered in this section. All this information will be added to the test record on Joint Manager and can be used to analyse multiple tests across a project.

To edit any information here simply tap the area to be edited and use the on-screen keyboard.

## BDI Quick Start Guide



BDI

### Job Details

Enter details of the job below.

Project  
Project 1234

Reference  
PRJP1234

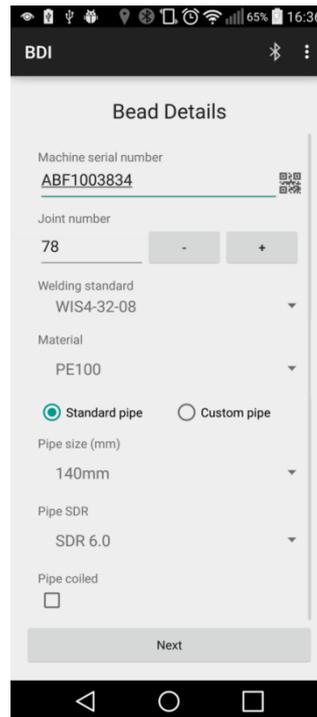
Location  
Chesterfield

Optional data 1

Optional data 2

Clear Next

*Job Details' section*



BDI

### Bead Details

Machine serial number  
ABF1003834

Joint number  
78

Welding standard  
WIS4-32-08

Material  
PE100

Standard pipe  Custom pipe

Pipe size (mm)  
140mm

Pipe SDR  
SDR 6.0

Pipe coiled

Next

*Bead Details Section*

### Enter Bead Details

Details of the pipe, butt-fusion machine, welding standard and joint number are recorded here. This information is used to link the bead test with a welding operation and to validate the bead test.

### Performing the Bead Test

Once all details have been entered, tap the 'Next' button to initialize the BDI to perform the test. You will be prompted to take an optional pre-test photo then the app will display a 'Live Data' screen which mirrors the operation of the BDI unit.

At this stage the phone can be put to one side until the test is complete. Follow the bead testing procedure detailed above then return to the app, re-connecting to the BDI unit if necessary.

The app will receive the result of the test and will prompt you to agree with the test result. An optional photo can be added at this point then the app will download the test log from the BDI unit and transmit it to Joint Manager.

## **BDI Quick Start Guide**

**Email: [info@controlpoint.co.uk](mailto:info@controlpoint.co.uk)  
Web: [www.controlpoint.co.uk](http://www.controlpoint.co.uk)**