

Operating Instructions

The **Smartbore™** system allows micron adjustments to be made to a cutting tool without removing it from the machine spindle. The principal components are:

- the **Smartbore** cartridge (located on the tool)
- the **Smartbore** Adjuster

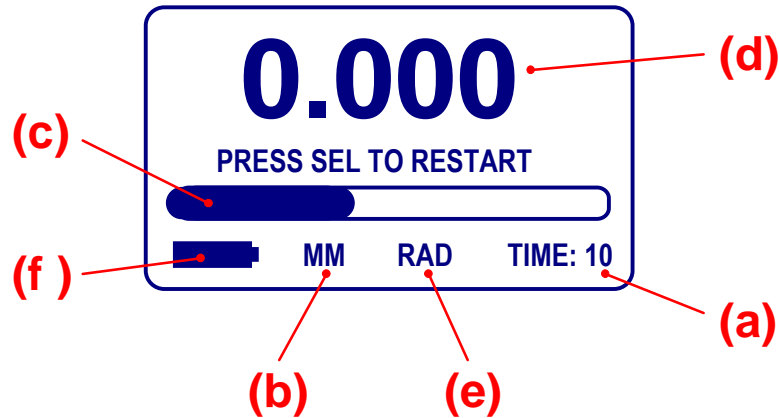


Making an adjustment

1. Press the *ON* button on the Adjuster. The screen will display a 'Plug into Cartridge' message.
2. Ensure that the **Smartbore** cartridge is free of coolant and metal particles, then push the Adjuster nose piece into the mating slot in the side of the cartridge.
3. Keep pushing the Adjuster rear handle until the Torx™ head is securely located in the cartridge adjustment screw. A 'wait' message will appear and also a 3 second countdown while the micron position sensing hardware stabilises.
4. Following the countdown the Adjuster becomes fully operational. Adjustments made (by turning the Adjuster handle) are shown on the display in increments of 1/1000th of a millimetre, or the imperial equivalent.
5. Once the adjustment has been made, remove the Adjuster from the cartridge. The display will now show an 'Unplugged' message for 10 seconds after which it will switch off automatically. The final adjustment reading will also be displayed during this time.
6. Pressing *SEL* when the 'Unplugged' screen appears will quickly reset the Adjuster, so it's ready to use on a different **Smartbore** cartridge.

Smartbore™ Adjuster Main Screen

When in operation, the Main Screen appears as shown:



- (a) The **Countdown Timer** automatically switches off the Adjuster if it is not inserted into a **Smartbore** cartridge. When the Adjuster is first activated by pressing the *ON* button, a 30 second time timeout is set. When the Adjuster is withdrawn from a **Smartbore** cartridge or if *MENU* is pressed, the timeout is set to 10 seconds.
- (b) The **Measurement System** can be toggled between 'MM' and 'INCH' by using the *MENU* button to cycle to the appropriate location in the menu facility and the *SEL* button to make the required change.
- (c) The **Adjustment Range Bar** provides a graphical representation of the current adjustment position within the physical adjustment range of the **Smartbore** cartridge.
- (d) The **Adjustment Indicator** displays the precise change in the position of the cutting edge as the unit is adjusted, relative to the initial start position.
- (e) The **Adjustment Type** can be toggled between 'RADIUS' and 'DIAMETER' by using the *MENU* button to cycle to the appropriate location in the menu facility and the *SEL* button to make the required change.
- (f) When the **Battery Indicator** displays only one segment and/or starts flashing, the Adjuster requires recharging.

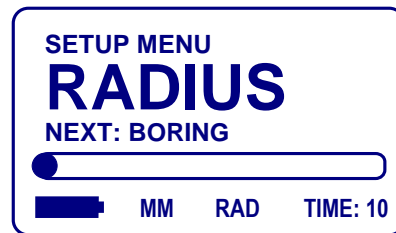
A warning message is displayed if the cartridge is accidentally adjusted beyond its 0.6mm (on diameter) adjustment range.

Smartbore™ Setup facility

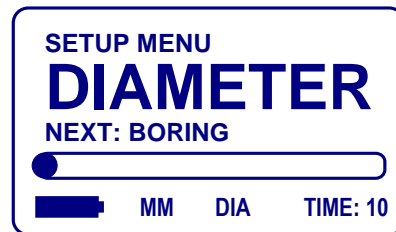
The *MENU* and *SEL* buttons are used to access a setup menu and change how the Adjuster Main Screen measurements are displayed. For example, in metric or imperial units, on radius or diameter, etc.

For example, to change the measurement display from radius to diameter, press the *ON* button to activate the Adjuster and follow the procedure below when the **Smartbore** Logo disappears.

Press the *MENU* button three times and the setup menu screen will look like this:



Press *SEL* to toggle the setting to DIAMETER. Press *MENU* three more times to confirm the change and exit the setup menu.



The following settings can be accessed by repeatedly pressing the *MENU* button:

'SHUTDOWN' - pressing *SEL* turns the Adjuster off.

'METRIC'/'INCH' - pressing *SEL* toggles the Main Screen measurement system to display the adjustment in either millimetres or inches.

'RADIUS'/'DIAMETER' - pressing *SEL* toggles the Main Screen to display the adjustment as radius or diameter.

'BORING'/'OVERTURNING' - selecting 'OVERTURNING' inverts the Adjustment Indicator so that a clockwise handle turn displays a decreasing measurement. This is useful when the **Smartbore** cartridge is being used on an overturning tool, as an increase in cartridge height will reduce the diameter of the overturned workpiece.

'PART NO.' - pressing *SEL* displays the Adjuster part number and software version. Pressing *MENU* once more will exit the setup menu.

Hardware and Setup Information

The **Smartbore Adjuster** contains delicate electronic components and should be handled with care.

- **It should not be subjected to shock loads or immersed in liquids**
- **It should be stored in a clean, dry place when not in use**

Recharging

The Adjuster Recharger Kit SB-CHR07 is supplied with the Adjuster. The Kit contains a range of interchangeable AC adaptors that are compatible with the mains power outlets in most countries. It is essential that the instructions for use described in the safety leaflet supplied with the Recharger Kit are followed.

The **Smartbore** Adjuster must only be recharged with the SB-CHR07 unit.

To recharge the unit, follow the instructions below.

1. Insert the d.c. power plug into the Adjuster recharge port.
2. Plug in or switch on the Recharger unit.
3. The Adjuster is fully charged when the Recharger displays a constant green indicator light.

A typical charging period lasts approximately 2 hours for a completely discharged unit. The Recharger should not be left connected to an Adjuster or Reader for longer than 24 hrs. It is not possible to operate the unit during recharge.

In the unlikely event that either the Adjuster does not switch off automatically after an adjustment session, the unit can be switched off by inserting the Recharger plug into the recharge socket. The unit will operate normally again when the plug is removed.

Smartbore Cartridge

The **Smartbore** cartridge has been designed to withstand a working environment that will expose it to extreme physical stresses and to metal-cutting lubricants and coolants. However, the following guidelines for best care and use that are specific to this product apply:

- **The unit must not be exposed to excessive heat or petrochemical cleaning and degreasing agents or organic solvents.**
- **On no account must the cartridge adjusting screw be removed or forced beyond the calibrated range indicated by the Adjustment Range Bar. Doing so will cause permanent damage.**
- **The cartridges must be regularly charged with grease in accordance with the schedule supplied with the cartridge. This is particularly important when machining cast iron. Correct greasing prevents the internal build-up of metal dust which can eventually cause the mechanism to malfunction.**

U.S. Patent 8,028,435
E.U. Patent 1758710