

# Valve Opener

## For Flow Bench Testing

By Performance Trends

Performance Trends' valve opener will automatically set the valve lift and record data during your flow bench testing. It automatically finds the tip of the valve and zero's itself out. It then steps through all valve lifts listed in your test in Performance Trends' Port Flow Analyzer software. At each lift it waits a user specified stabilization time, then records the data and advances to the next lift point.

When the test is complete, the opener closes the valve, and checks to see that no slippage has occurred, and turns off the bench if you have a SuperFlow™ motor controller. Also if you have motor controller, like a SuperFlow™ SF1020 bench, you can start the test and the Port Flow Analyzer software and valve controller can run the entire test. When done, the valve will be closed and the bench turned off. This is one tool that really will save you time and produce more consistent flow test results.



Main features include:

- Compact, rugged design: All aluminum main body is 3.50 x 2.00 x 2.00 inches (90 x 51 x 51 mm)
- Mounting bracket (shown above) adjusts to most any valve angle
- Adapters for Brzezinski slider system available
- 2 inches (51 mm) of stroke provides for easy setup. See back page for Installation Tips.
- The software lets you make over 50 different lifts in most any order of opening or closing the valve, in increments as small a .010 inch (.25 mm).
- USB connection for most any computer (hookup requires 110 or 220 VAC power and USB connector)
- Precision stepper motor has resolution of .0001 (a tenth of a thousandth inch) or .0025 mm.

## Valve Opener Installation Tips

The valve opener lets you automate the process of stepping through the different valve lifts when testing cylinder heads on a flow bench. Here's the basic installation process:

The opener has 2 connections, one to a computer's USB port, and one to power. You should hear the "USB connect" tone when you connect when it is powered up. DO NOT use USB extension cables to lengthen the USB cable, as this can cause communications problems.

You need the Port Flow Analyzer Pro software v3.5 or later. You need a special unlocking code to activate this feature. Once this feature has been activated, you will see "Valve Opener" at the top of the Flow Bench Specs, as shown in Fig 3. **Click on Valve Opener, then Valve Opener USB Driver option to install the software driver necessary for the valve opener.** Then follow the program's instructions.

Then click on Valve Opener Settings as shown in Fig 3 to bring up the Settings screen shown in Fig 5. Click on Valve Opener and set the Type to "Std Type" to tell the program to look for a Valve Opener when you go into the Recording Screen (Fig 4). Other settings shown in Fig 5 are good defaults.

# Valve Opener Installation Tips, cont

When you go into the recording screen, the Valve Lift "box" will be shortened so the program can display the Opener's actual valve lift also (A). The bar below it shows the status of the "Home" switch (B), which darkens when the opener is in its fully retracted "Home" position or in contact with the valve tip.

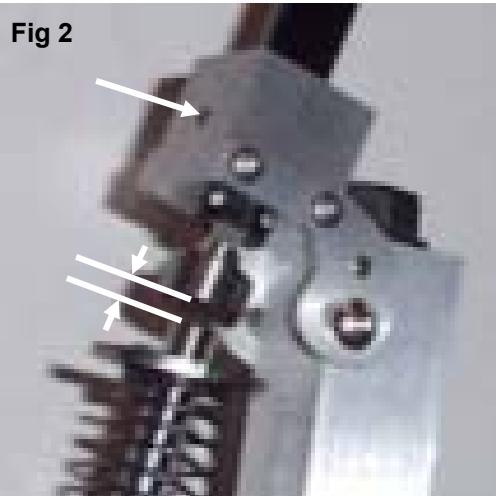
Figure 6 shows new Options Commands for the Valve Opener. The Ctrl-H command is useful to fully retract the Opener to its Home position.

When you install the Opener on the head, be sure to leave at least a .100" gap between the fully retracted Opener and the tip of the valve, Fig 2. Also be sure to use the light "testing spring" supplied, as the opener has limited power.



Also the Opener senses the valve tip electrically. To do this **there must be continuity** (less than 50 ohms resistance) between the valve and the 2" square aluminum body of the Opener. This continuity depends largely on the set screw shown in Figure 2 breaking through the black paint on the "snout" of the valve opener. DO NOT overtighten this screw, but you may have to slightly twist the valve opener as you tighten the screw to break through the paint. A ground strap may be included so you can ground the Opener Body to the cylinder head.

Testing Procedure: When you run a test, the Opener will find its Home (fully retracted) position, then extend out to find the tip of the valve and zero itself out. It will then move to the valve lift for the current "Data Point" you are on. It will wait the "Time Delay" shown in Fig 5, then record data. When finished, it will move to the next row and repeat until it encounters the first row where the Valve Lift is blank. Then it will retract to zero valve lift and see if any slippage has occurred, then retract about .050" more. It will then turn off the flow bench's motors if you have a FlowCom with motor controller and you've set this in Fig 5.



**Click here to install USB Driver for Valve Opener, then follow program instructions.**

**Click here to get screen in Fig 5**

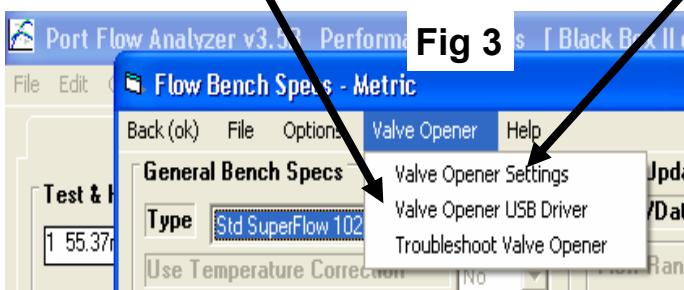


Fig 3

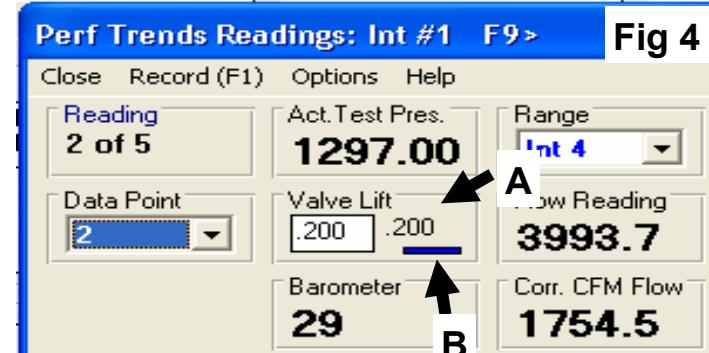


Fig 4

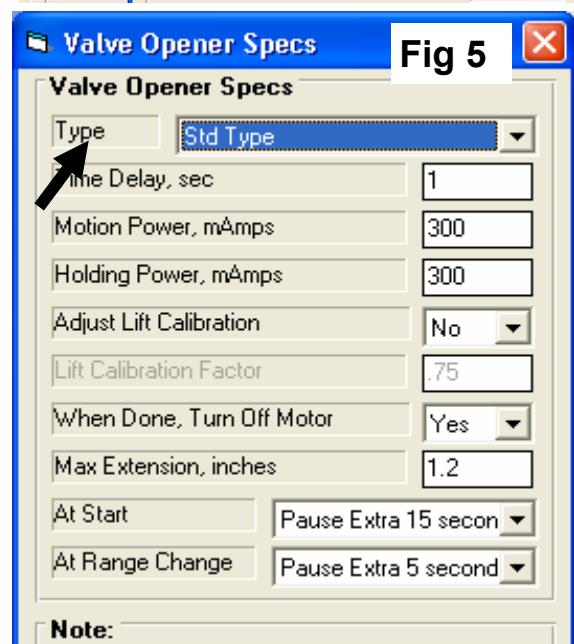


Fig 5

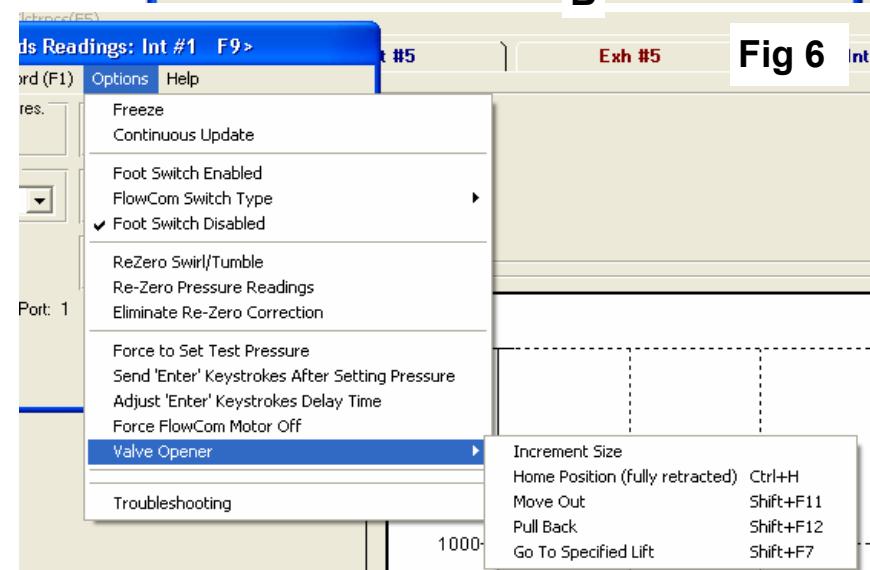


Fig 6

# Valve Opener USB Driver Installation

When you first plug in the valve opener to the USB port, you will likely get the “New Hardware Found” message as shown in Fig 1. Then the “Wizard” comes up as shown in Fig 2, which asks you to install the CD. At this point install the blue Performance Trends CD. If already in the drive, remove it and reinstall it.

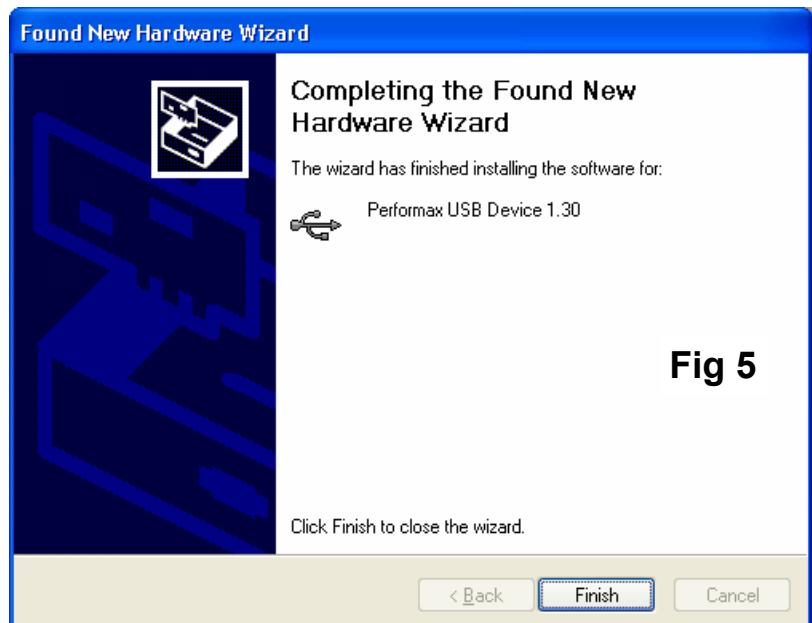
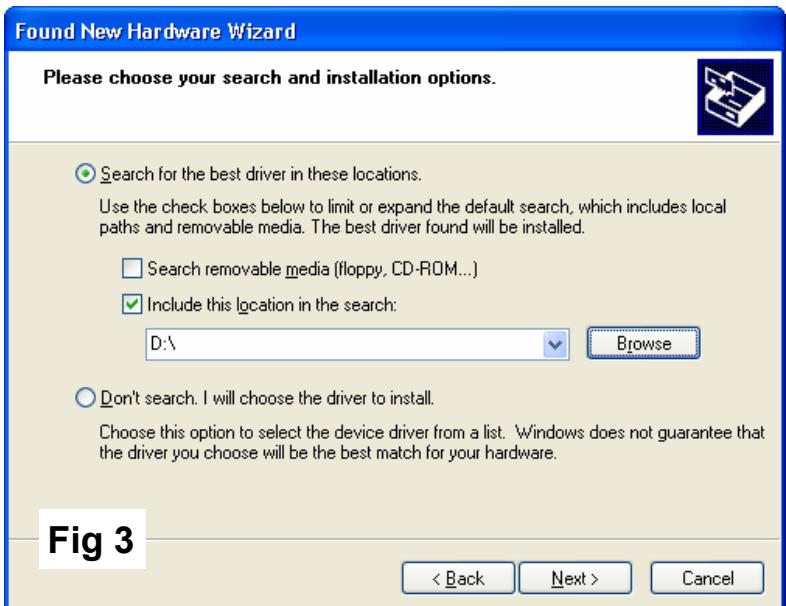


This is typically all you need to do and you will obtain Fig 5, saying the installation is complete.

Occasionally you may need to point the computer to the Performance Trends CD. In Figure 2 you would then choose the 2nd option of “Install from a list or specific location (advanced)”. Then click Next.

On the next screen (Fig 3), click on Browse and browse the computer for the CD drive with the blue Performance Trends CD as shown in Figure 4. Then click OK on Fig 4 and then Next on Figure 3.

Then the computer should respond with Fig 5 saying the installation is complete.



Note: These instructions may vary on different brands of computers and different operating systems.