

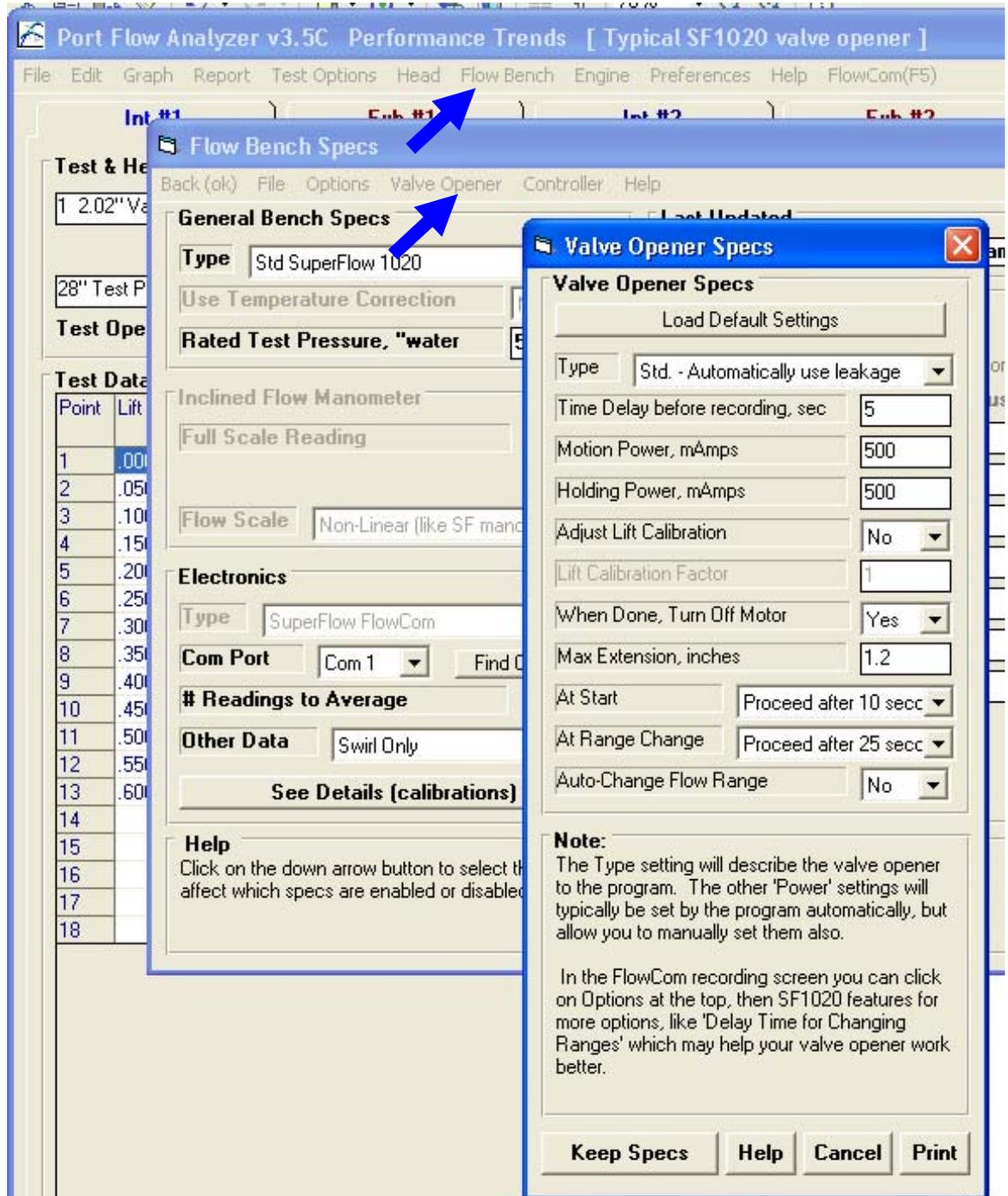
Valve Opener Testing

To get to the Valve Opener settings, click on Flow Bench at the top of the main screen, then Valve Opener in the Flow Bench Specs screen.

Choose a "Type" other than "None" to turn on the valve opener functions. Click the Load Default Settings to enter values which are reasonable for most situations.

Most customers will use the Valve Opener with the Superflow SF1020 flow bench, where the Port Flow Analyzer will control the entire testing process from start to finish. For this process to work, you need to be aware of the common pitfalls which can occur. These are usually caused by the software going to the next step before the SF1020 is ready, like after a range change. You will see "At Start" and "At Range Change" settings at the bottom. If you are having problems, try increasing these delays.

If you are NOT using the SF1020 bench, these 2 settings should be set to the first option of "Prompt User to OK".



The SF1020 bench and Valve Opener system work the best if the schedule of flow ranges to use is laid out before you start testing. Then you would choose "No" for "Auto-Change Flow Range" at the bottom of the settings. This is strongly recommended as the way for you to test.

Valve Opener Testing, cont

Here is a typical schedule of flow ranges called "Full CFM" for a test where the head will not flow more than 300 CFM. It also includes a data point at .000 lift. The flow you measure with the valve closed is usually called the leakage value.

Say you measure 2.5 CFM with the valve closed. The assumption is this 2.5 CFM will be present at all valve lifts and is coming from leakage somewhere. The program will ask if you want this .000 lift CFM measured to be used as leakage. If you say Yes, this 2.5 CFM will be loaded into the "Leakage" field above the worksheet. Then 2.5 CFM will be subtracted from all the other CFM data you measure.

Because the Leakage will be subtracted from all readings, it is critical for it to be accurate. Therefore you want to measure it as precisely as possible at the lowest flow range. On the SF1020, this is the 25 CFM range as shown to the right.

As soon as you go to a higher lift for this particular 300 CFM head, you will be beyond the 25 CFM range, so we've scheduled in a 100 CFM range for 2 valve lifts. Then the rest of the test is done at the 300 CFM range.

There are 2 range changes for this test and range changes are where things can get disrupted and time can be lost. A range change with powering motors down and back up may take 60 seconds or more.

One range change is just for measuring leakage. Many users do not measure leakage. For example, if the leakage number you get is from flow by the valve being tested it should not be subtracted out from all the other flows. And if the leakage value is not repeatable, then that will put that non-repeatability into all the other CFM measurements for this valve and port.

Here is a schedule without leakage and without the range change from 25 to 100 CFM. This will produce a much quicker test, and possibly more repeatable as long as you are careful about keeping leaks to a minimum.

Here are the flow ranges for the SF1020 bench:
 Range 1: 25 cfm, Range 2: 50 cfm, Range 3: 100 cfm, Range 4: 150 cfm, Range 5: 200 cfm, Range 6: 300 cfm, Range 7: 400 cfm, Range 8: 500 cfm, Range 9: 700 cfm, Range 10: 1000 cfm

Not that because your bench is precisely calibrated, the 300 CFM range may actually be 302.4 CFM. This value will be read from the FlowCom and entered into this table, replacing the "300" you see in these schedules. However the software is smart enough to know that when you enter a Full CFM number somewhat close to your bench's actual number is, that is the range you want.

Port Flow Analyzer v3.5C Performance Test

File Edit Graph Report Test Options Head Flow Bench

Int #1 Exh #1

Test & Head Conditions

1 2.02" Valve 11:35 am 02/01/2020

4.03" Bore Adapter

28" Test Pres. Leakage 0

Test Operator Mark

Test Data

Point	Lift "	Full CFM	Test Pres "	Flow Pres %	CFM	Swirl
1	.000	25				
2	.050	100				
3	.100	100				
4	.150	300				
5	.200	300				
6	.250	300				
7	.300	300				
8	.350	300				
9	.400	300				
10	.450	300				
11	.500	300				
12	.550	300				
13	.600	300				
14						

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5	.250	300				
6	.300	300				
7	.350	300				
8	.400	300				
9	.450	300				
10	.500	300				
11	.550	300				
12	.600	300				
13						