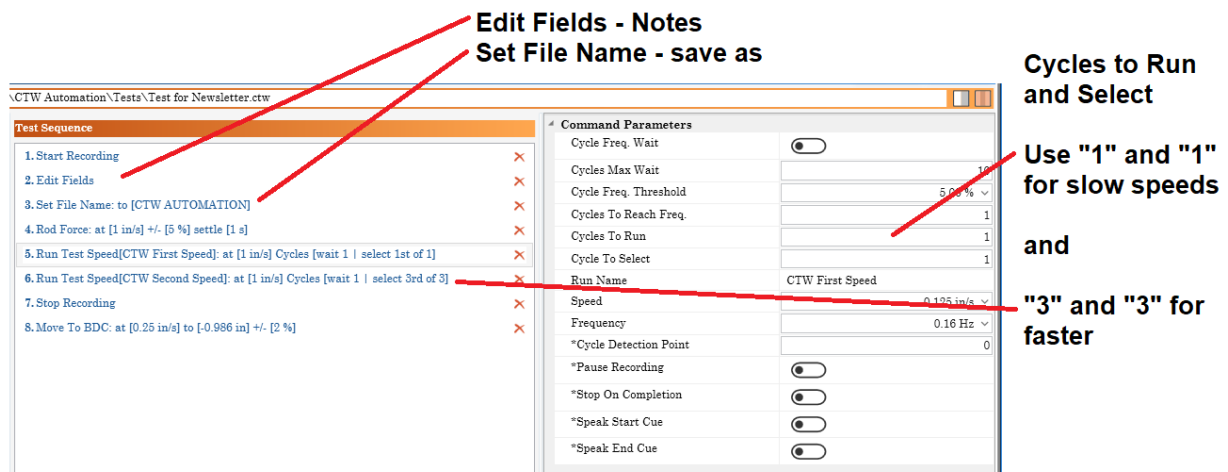


July-2023

CTW Automation presents.....features and items that can be used in CTW Probe software that cannot be done in Shock6. While Probe does almost everything that Shock6 does, these are features that Shock6 cannot perform.

CTW Probe software vs. Shock6

1. You can use CTW Probe software while the dyno is running a Test. Unlike Shock6, the program does not lock during this time. This allows the User to look at graphs and data, open new files and keep using the software while the machine is collecting new data.
2. You can enter Notes (Command – Edit Fields) and also enter - Save the filename (Command - Set File Name) while the Dyno / Test is running. This saves an incredible amount of time and limits distractions from happening. When the Test is done, the graphs automatically appear on the screen. Shock6 demanded the User enter the notes before the Test was started and then save the file name after the Test was finished and then waiting until the dyno moved and stopped at BDC. With CTW Probe, you can get the graph before the dyno even stops.
3. Each Test Speed can be set to run a different numbers of cycles. In Shock6, this is locked and fixed which means that for a slow speed Test, you have to run the same number of cycles as the faster speeds and this takes a very long time when running at 20 mm/sec or 1.0 in/sec. Now, you can run "1" cycle for the slower speeds and then increase to 2 or 3 for the faster speeds. This saves many minutes of time for each Test.



Edit Fields - Notes
Set File Name - save as

Cycles to Run and Select

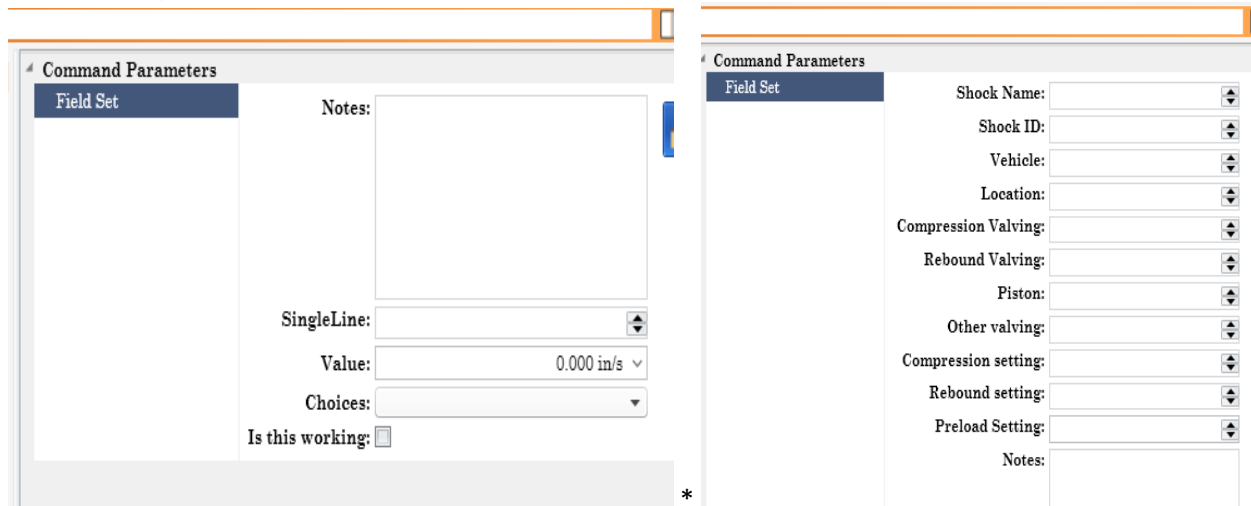
Use "1" and "1" for slow speeds and "3" and "3" for faster

The screenshot shows the CTW Automation software interface. On the left, the 'Test Sequence' panel lists 8 steps, including '1. Start Recording', '2. Edit Fields', '3. Set File Name: to [CTW AUTOMATION]', '4. Rod Force: at [1 in/s] +/- [5 %] settle [1 s]', '5. Run Test Speed[CTW First Speed]: at [1 in/s] Cycles [wait 1 | select 1st of 1]', '6. Run Test Speed[CTW Second Speed]: at [1 in/s] Cycles [wait 1 | select 3rd of 3]', '7. Stop Recording', and '8. Move To BDC: at [0.25 in/s] to [-0.986 in] +/- [2 %]'. On the right, the 'Command Parameters' panel shows settings for 'Cycle Freq. Wait', 'Cycles Max Wait', 'Cycle Freq. Threshold' (5.00%), 'Cycles To Reach Freq.', 'Cycles To Run' (1), 'Cycle To Select' (1), 'Run Name' (CTW First Speed), 'Speed' (0.105 in/s), 'Frequency' (0.16 Hz), and various control options like 'Cycle Detection Point', 'Pause Recording', 'Stop On Completion', 'Speak Start Cue', and 'Speak End Cue'. Red arrows point from the annotations to the 'Edit Fields' step, the 'Set File Name' step, the 'Cycles To Run' field, and the 'Cycles To Select' field.

Examples using the various Commands to save time

4. Each Test you create is a unique file. You can share it to another Probe user, you can e-mail it to a friend, you can have a Network location that all Users can access and run the Test. This is very important for service centers and manufactures with multiple dynos.
5. You can "lock" your Tests files so that Users cannot alter them. Service centers and manufactures can ensure that the Test they require has been made, saved and locked.
6. You can create you own Notes based on (5) variables.
 - a. Single line
 - b. Multiple lines
 - c. Drop down menu
 - d. Number entry
 - e. Check box

(6 continued)



(5) Options for Notes

Roehrig Note Section re-created in Probe

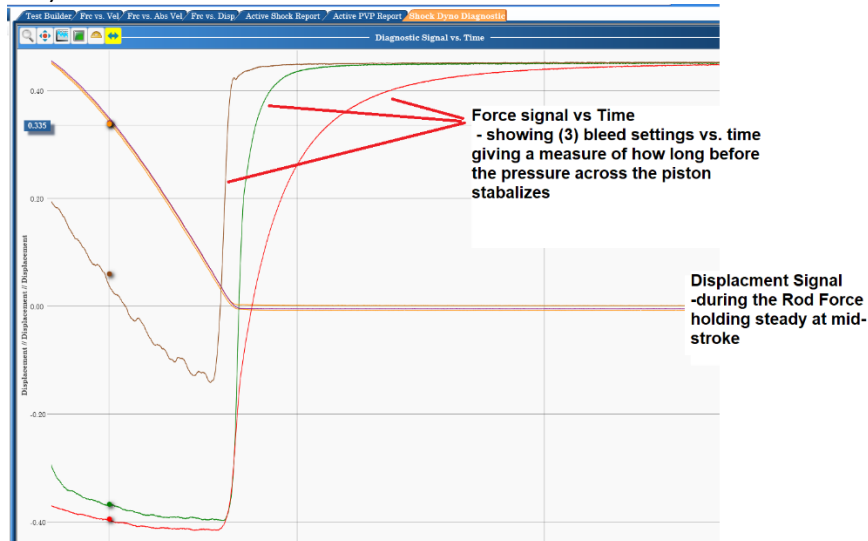
7. You can have many Notes files saved and use when needed. You can have a specific Notes file for each unique damper build. You can share these with other Users or other stations within a service center or manufacture. CTW has even made and sent these to users.
8. You can use different Shaft / Rod diameters thus eliminating the need to remember to change them. You can add this command, Set Rod Diameter, in (2) ways. You can build specific Tests for each different Rod Diameter you use. Helpful for service centers that have a wide variety. You can also use this command to prompt the User to enter the shaft diameter.
 - a. Shock6 locked the shaft diameter within a global constant that was not convenient to alter.
9. Ability to run a different Rod Force speed in each Test, thus allowing the User to have a Low bleed Test and a higher bleed test. This saves time, again.
 - a. Shock6 made this a global constant rather than a local one.

YOU GET MORE DATA!!

10. You can view the Rod Force (gas test) data and graph for the first time.
11. You can run and then view a Multi-Point Rod Force and see how your damper changes over the displacement from BDC to TDC including rod force and friction.
12. You can view the Seal drag data for the first time.
 - a. 10, 11 and 12 are huge in further examining and understanding your damper. For the first time, outside of a linear actuator, you can get information that includes break away friction, dynamic friction and a measurement of bleed based on settling time. Massive!!

YouTube Link: [Examining Bleed in your Damper with CTW Probe](#)

(10-11-12 continued)



View of Force signal vs Time for (3) different bleeds

13. You can view at least (15) items/constants in the Legend area and quickly hide them when not needed. These include "Rod Force", "Gas Pressure", "Speed", "Stroke", etc.

The screenshot shows the 'Test Data' window with a table of test parameters and a 'Legend Area' below it. The table has columns for View, Gas Pressure, Stroke, Id, RF, Rod Diameter, Rod Force, and Speed. The Legend Area lists various constants with checkboxes to toggle their visibility.

View	Gas Pressure	Stroke	Id	RF	Rod Diameter	Rod Force	Speed
<input checked="" type="checkbox"/>	5.6 PSI	1.006 in	PVP - PRO PVP -10	<input checked="" type="checkbox"/>	0.375 in	0.6 lbs	5.000 in/s
<input checked="" type="checkbox"/>	5.6 PSI	1.006 in	1,000 in/s:0.503 in - PRO PVP -10	<input checked="" type="checkbox"/>	0.375 in	0.6 lbs	1,000 in/s
<input checked="" type="checkbox"/>	5.6 PSI	1.006 in	3,000 in/s:0.503 in - PRO PVP -10	<input checked="" type="checkbox"/>	0.375 in	0.6 lbs	3,000 in/s
<input checked="" type="checkbox"/>	5.6 PSI	1.006 in	5,000 in/s:0.503 in - PRO PVP -10	<input checked="" type="checkbox"/>	0.375 in	0.6 lbs	5,000 in/s
<input checked="" type="checkbox"/>	-11.7 PSI	1.006 in	PVP - PRO PVP -1	<input checked="" type="checkbox"/>	0.375 in	-1.3 lbs	5,000 in/s
<input checked="" type="checkbox"/>	-11.7 PSI	1.006 in	1,000 in/s:0.503 in - PRO PVP -1	<input checked="" type="checkbox"/>	0.375 in	-1.3 lbs	1,000 in/s
<input checked="" type="checkbox"/>	-11.7 PSI	1.006 in	3,000 in/s:0.503 in - PRO PVP -1	<input checked="" type="checkbox"/>	0.375 in	-1.3 lbs	3,000 in/s
<input checked="" type="checkbox"/>	-11.7 PSI	1.006 in	5,000 in/s:0.503 in - PRO PVP -1	<input checked="" type="checkbox"/>	0.375 in	-1.3 lbs	5,000 in/s
<input checked="" type="checkbox"/>	13.5 PSI	1.006 in	PVP - PRO PVP -25	<input checked="" type="checkbox"/>	0.375 in	1.5 lbs	5,000 in/s
<input checked="" type="checkbox"/>	13.5 PSI	1.006 in	1,000 in/s:0.503 in - PRO PVP -25	<input checked="" type="checkbox"/>	0.375 in	1.5 lbs	1,000 in/s
<input checked="" type="checkbox"/>	13.5 PSI	1.006 in	3,000 in/s:0.503 in - PRO PVP -25	<input checked="" type="checkbox"/>	0.375 in	1.5 lbs	3,000 in/s

Legend Area - viewable constants:

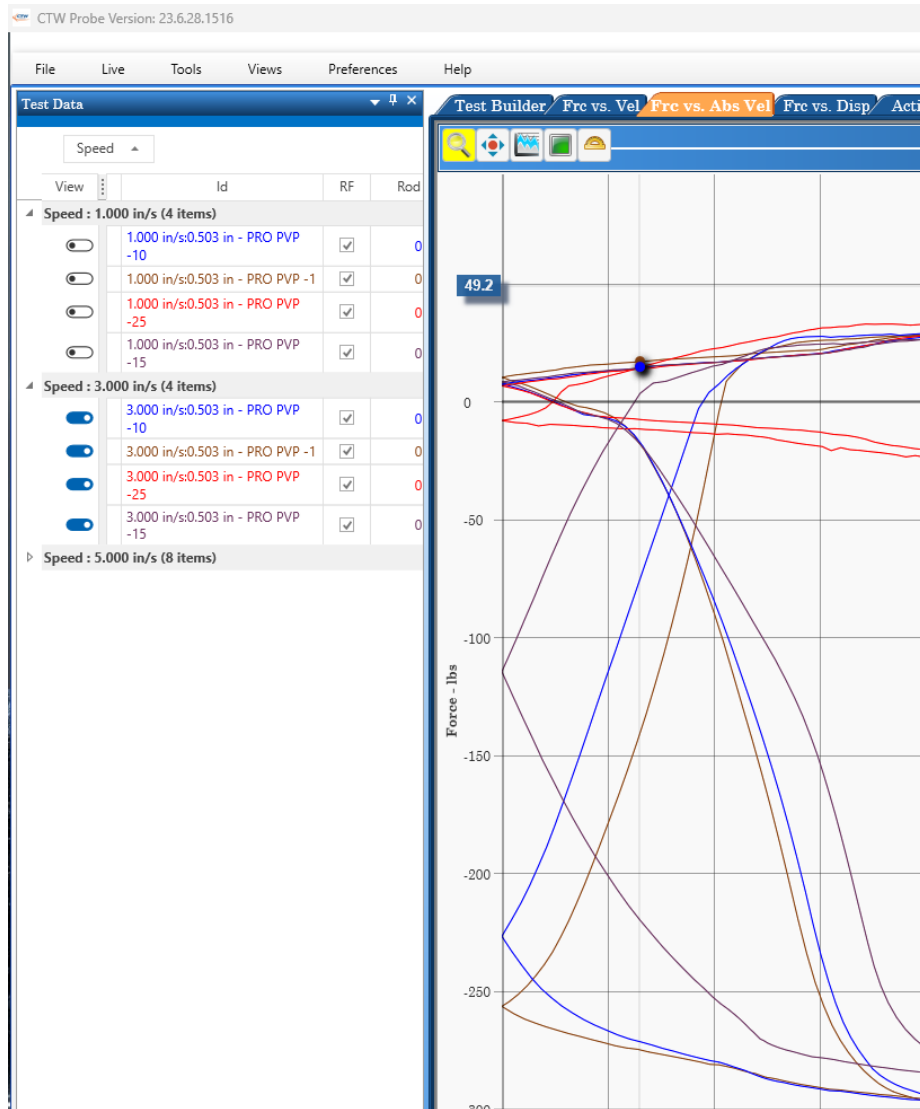
- File
- File Path
- Run Date
- Amplitude
- Amplitude [-]
- Amplitude [+]
- Frequency
- Gas Pressure
- Sample Frequency
- Speed [-]
- Speed [+]
- Stroke
- Id
- RF
- Rod Diameter
- Rod Force
- Seal Drag
- Speed

Legend Area – viewable constants



14. The Graph on the screen is the actual cycle for the data.
 - a. Hard to believe but Roehrig Shock6 could report data from a different cycle than the one on the screen. I have had to answer this problem so many time over the years. NO MORE!
15. It only takes “2” mouse clicks to start a Test, and that includes the warning screen.
 - a. Shock6 required “4”.
16. CTW Probe has Frequency based filters.
17. There is a built in FFT feature.
18. You can use multiple monitor screens to maximize the graphs and data. Each window within CTW Probe can be isolated and moved across multiple screens to be viewed as the user wants.
19. Using the Live Control tab, the User can watch the Test proceed in real time and then abort if not producing the graph you want.
20. Using the Live Control with the Live Cycles tab, you can save any live data trace that is captured. It can be saved, named and opened just like an actual data file.
21. You can create a Test, that runs several Tests built within the main Test. This can be helpful for running at different preloads (positions), different settings on the damper and to attempt a durability and/or temperature data collection.
22. You can use the Command – Auto Export within any Test automatically create an additional file in these formats: Matlab / Excel / CSV / JSON / HTML.
23. You can use the Command - Temperature Cooldown to allow the software to wait until the damper cools down before proceeding to the next speed.
24. You can turn off the data collection on any Test Speed, thus creating a type of durability. You could run a Test speed, then run a second one for a large number of cycles but turn off the data capture and then run an additional speed to get a before and after without having excess data. This keeps file sizes smaller and more manageable.
25. You can add a “pause” between speeds. This allows the User to make changes.
26. You can add a “prompt” between speeds that indicates the user make a change, such as when moving through multiple bleed settings. This can be done in several ways including having the dyno remain moving to save time.
27. You can turn ANY Test into a PVP without having to start all over and go through a wizard.
28. You can copy / paste / duplicate parts of the Test for easy creation and addition.
29. You can use the Duplicate Wizard to build a multiple speeds Test quickly.
30. You can remove Graph types if not used, reduce clutter. While we have all graph types available in Shock6, we can turn them “off” to reduce clutter.
31. You have a Scope Function to view the live signals.
32. In the Legend area, you can sort by a Field type. This is very helpful when dealing with many PVP’s. For instance, if you want to see all the 5 in/sec runs from (6) PVP files, then simply sort by speed and turn on all (6) at one time.

(32 continued)



Sorting by "Speed" in the legend area

- 33. There are going to be more and more features added to CTW Probe along the way.
- 34. CTW Automation continues to develop CTW Probe software for the Shock Dyno and Linear Actuators. An updated version is produced and published every 4 months. These updates are for better performance, new features and the constant expansion of the Probe software.