MMS
Manthei Mess systeme

Do you have questions about the Trigger Scan™ System?

To save you time and costs, we enclose some frequently asked questions and answers. If you would like further information please do not hesitate to contact us.

What is included in the system?

- *the Trigger Scan instrument,*
- *lockable carrying case*
- *3 piece spring attachment with 2 cap screws*
- *power adapter*
- *9 pin serial cable*
- *25 pin serial port cable adapter*
- *8" firing pin sensor*
- *24" firing pin sensor*
- *3 allen wrenches*
- *1 calibration tweaker*
- *spare calibration labels.*
- *User Manual*
- *Software installation diskette.*
- *Rifle fixture with a pistol adapter and an adjustable clamp.*

Can I use the TriggerScan instrument without a personal computer?

Absolutely, the instrument has its own microprocessor and functions independently. The only disadvantage of not using the personal computer would be that you could not see, analyze, or print the graphs, but you could still see the results of peak force and lock time on the instrument's LED panel.

I plan to use the instrument with a personal computer. What are the device requirements?

You will need a PC or laptop with a 486/50 or better CPU, which runs Microsoft® Windows 3.1, Windows 95, Windows NT, or above. The software takes up only about 1 Megabyte of your hard drive space. One standard RS-232 serial port is needed to connect to the instrument. The cable is provided.

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What are the power requirements of the instrument?

The instrument comes with a universal power adapter which requires anywhere between 100 and 240 VAC and 50 to 60 Hz at 0.3 A. This adapter provides 18 VDC at 650 mA for the instrument.

Why do you say that TriggerScan is the most advanced trigger testing tool available?

Unlike other trigger gages, TriggerScan not only measures the ***force*** *on the trigger but also the* ***displacement*** *(travel). It further combines the readings of force and travel and determines the amount of* ***work*** *needed to actuate the trigger. This value, previously unmeasurable is of extreme importance in quantifying "what it takes" to fire the gun, and is directly related to the gun's safety of operation. TriggerScan is also the only system providing accurate and affordable means of measuring* ***lock time****.*

How is the graph (Trigger Profile) created?

Datapoints are put on the chart after the moving sensor arm came in contact with the trigger and the force exceeded a threshold value (user selectable). A new datapoint is generated every 0.0005" of movement, which corresponds to 3.2 milliseconds of time. This high resolution allows you to see even the slightest glitches on the trigger's journey. With a lower resolution, such imperfections would remain hidden and Trigger Profile would appear as a smooth line. Some triggers have travel as short as 0.008". They too can be measured with TriggerScan.

How can you measure lock time with a 0.1 ms resolution when datapoints are 3.2 ms apart?

The instrument is sampling the force at a frequency much higher than what is put on the chart. The moment of trigger actuation appears as a sudden drop in the force on the trigger and is very accurately detected by the internal logic of the instrument. The moment of striker impact is detected by electrical probe that slides down the barrel. This method of measuring lock time is proprietary to Dvorak Instruments.

Is a fixture required to support the gun during the test?

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Not necessarily. You can perform a quick test by holding the instrument and the gun manually. However, based on our experience, we strongly suggest that you locate the instrument and the gun in a fixture during the test in order to get the best repeatability of measurement.

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On what kind of firearms can I use the TriggerScan system?

Trigger profiles can be measured on almost any types of firearms. The system rests with a fixed arm against the front of the trigger guard and activates the trigger with a moving sensor arm. The only gun where you might have improvise a little bit is a firearm without a trigger guard (i.e. derringer). On those guns you would have to find an alternative way to fix the instrument during the test cycle. If you plan to measure lock time, make sure that the striker sensor, which has a diameter of 0.25", will be aligned with the barrel's center line. The striker sensor will not fit a .22 cal. bore so you can not test lock time on the M16 with this particular sensor. We plan to have striker sensors for various calibers available in the near future. It is also easy to build sensors yourself.

What kind of test options exist?

There are currently two separate test options: ***Triggers*** *or* ***Springs****.*
The test sequence is basically the same for both options and traces on the chart are displayed in the same fashion. The difference is that in a spring test, the red trace is called "Spring 1" instead of "Single Action", and the blue trace is called "Spring 2" instead of "Double Action". Also the test results automatically generated by the "Analyze" button are labeled as spring related properties such as "stiffness" and "energy stored" rather than trigger related properties.

Can the test results be saved to a data file?

Yes, you can easily save a trigger test in a filename of your choice. Each saved file stores up to two traces (SA and DA), Gun type, Make, Model, Serial number, Trigger type and a Note. Files are saved with a default extension ".trg" and the DOS environment stamps them with the date and time you created them. Size of a trigger file depends on how long the trigger travel was and if you tested both SA and DA or just one. An average trigger file will take up about 14 Kbytes, which means that you can fit about a 100 of these on a floppy diskette or 100,000 of them on your 1.5 GB hard drive.

Is it possible to include annotations on the printouts?

Yes, the printout will include everything that appears on the screen including all currently shown profiles (up to 11 at a time), and Gun type, Make, Model, Serial number, Trigger type and a Note for the selected profile. Every printout is also automatically stamped with the time and date it was printed and with the name of your business, so it becomes a way of advertising your facility.

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How are these instruments calibrated?

Each TriggerScan instrument is calibrated using NIST traceable weights, class F, before shipping. After that, it is the user's responsibility to maintain the instrument's calibration. The calibration procedure is clearly written in the user manual. We recommend a calibration check every 3 months or 500 tests, whichever comes first. The actual calibration will not be needed as often, since the circuitry is built from components with ultra-low drift and is very stable. Travel and lock time readings do not require calibration since they are derived by strictly digital means based on the internal quartz crystal clock.

Can I use the instrument to test release triggers such as found on some trap shotguns?

This feature is now built into the unit. The trace is put on the chart as the trigger is being compressed (sensor arm moving forward), and/ or while it is being released (sensor arm returning home). You have the option to select the test direction in the menu as foreward, backward or both, that will enable profiling of release triggers. We strongly encourage our customers to give us valuable feedback as to what improvements they would like to see in the system. Remember, that with the purchase of TriggerScan, you are eligible for a year of free software updates that we make for the model.

Is there an advantage in using a larger monitor when running the TriggerScan software?

Yes, the resolution of the Trigger Profile graph improves when you use a larger monitor. The software recognizes the video resolution setting and increases the area of the graph while keeping the control buttons and texts at a comfortable size.

Can I measure anything else with TriggerScan besides triggers and compression springs?

Yes, TriggerScan can examine tension or compression characteristics of other items, such as rubber bands, sewing threads, jewelry chains, or fishing lines, as long as they fit within the operating range.

Are the data readings from the system also available in MKS units?

Yes, both graphs and numerical results can be viewed in one of four selected unit combinations:

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pound/inch; ounce/inch; kilogram/millimeter; Newton/millimeter. Unit selection can be changed at any time. Graphs and numbers on the screen are automatically regenerated.

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Do you deliver the system with a database of standard trigger profiles from firearms manufacturers?

Not at present time, getting this information directly from the firearms manufacturers is a bit optimistic. (At present time, many are still using rather primitive trigger pull gages which are not capable of generating accurate trigger profiles as TriggeScan). However, we plan to build this database ourselves: in the near future, we will start collecting trigger profiles acquired by all TriggerScan users worldwide, who want to participate. This information will be compiled into a central database and re-distributed to all of our clients on regular basis. This database will be searchable using various criteria.

How about the product warranty, hardware and software upgrades and repair policy?

The system comes with a six months limited warranty. After that, we will repair the instrument at a nominal cost, if such a need occurs. All of our customers are eligible for free software updates that we make for the particular model within a year from the date of purchase.

Where can I find additional information about the TriggerScan system?

Besides, we provided you with the following documents on this hHomepage

- *Case study - Trigger job on Kel-Tec P-11 pistol*
- *Case study - Mainspring alternation in CZ 75 pistol*
- *Case study - Firing pin alternation in Glock 17 pistol*
- *Case study - Energy distribution in a Smith & Wesson revolver*

A Trigger Scan software demo together with sample trigger profiles of 20 different firearms is available on this CD-Rom as well.

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Alphabetic list of TriggerScan™ users:

We list some of our clients as reference below.

- Colt's Manufacturing Company Inc.
- Deutsches Waffen-Journal, firearms magazine, Germany
- Different armouries of the German police and the Austrian Gendarmerie
- Different forensic laboratories in Germany, Austria, Switzerland, Netherlands, Canada and USA
- Fabbri S.p.A., Italy
- FBI, Firearms Training Academy, Quantico, Virginia
- Immigration and Naturalization Service, Altoona, Pennsylvania
- Marlin Firearms Co. Inc.
- North American Arms
- Pietro Beretta S.p.A. - Brescia, Italy
- Ron Power, gunsmith, Montana
- San Diego crime lab, California
- Savage Arms Co. Inc.
- Shooting Times - gun magazine
- U.S. Department of Army - Aberdeen Proving Grounds
- Visier - firearms magazine, Germany

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