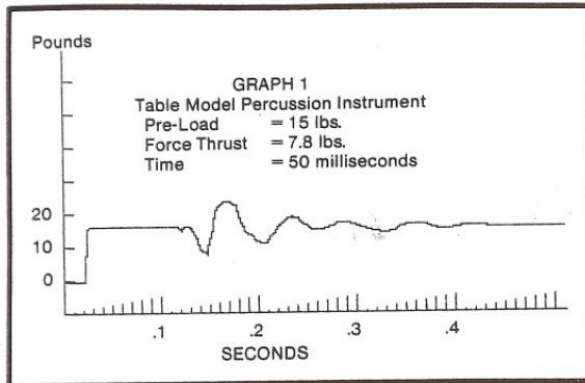
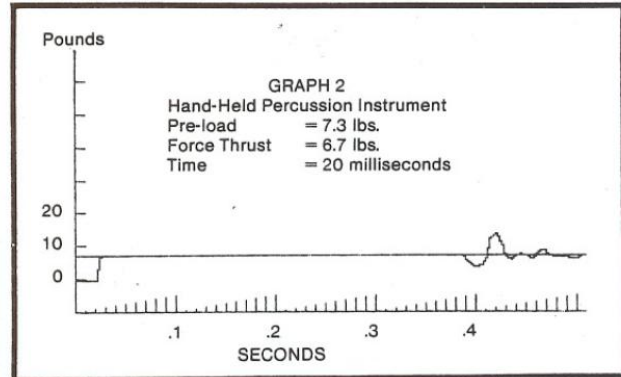


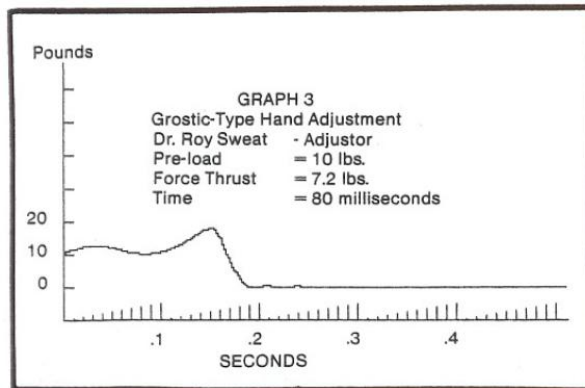
Measured Forces during an Upper Cervical Adjustment



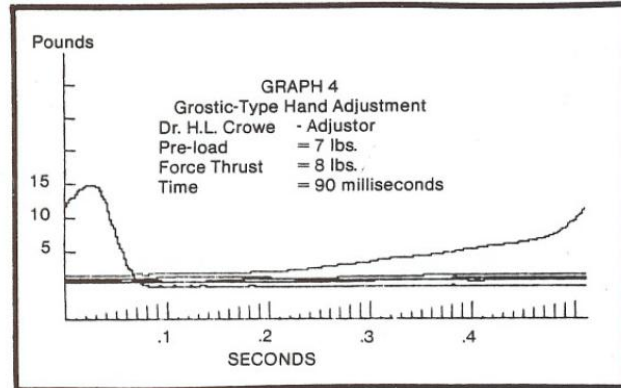
Graph 1



Graph 2

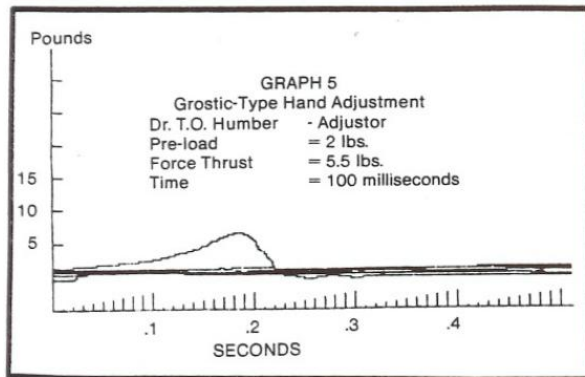


Graph 3

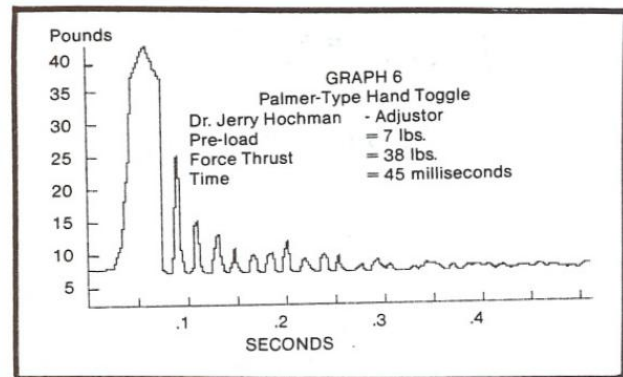


Graph 4

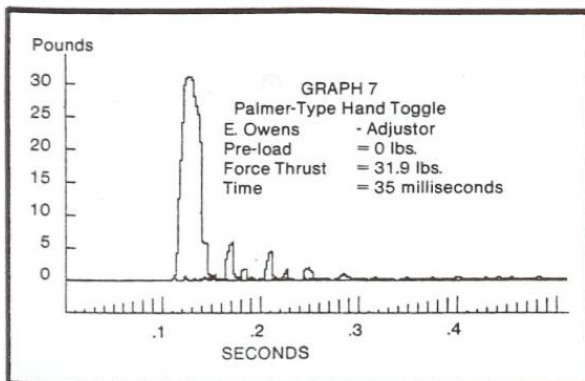
Above and below are transducer tests from a paper from Dr. Sweat in 1984 (or there about). It seems that T. O. Humber had about the best "Grostick" hand adjustment of group (see below).



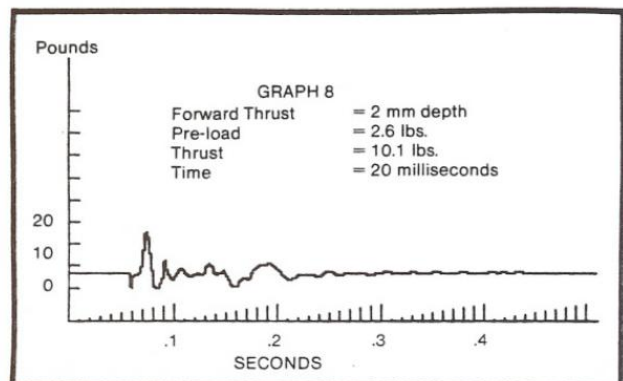
Graph 5



Graph 6

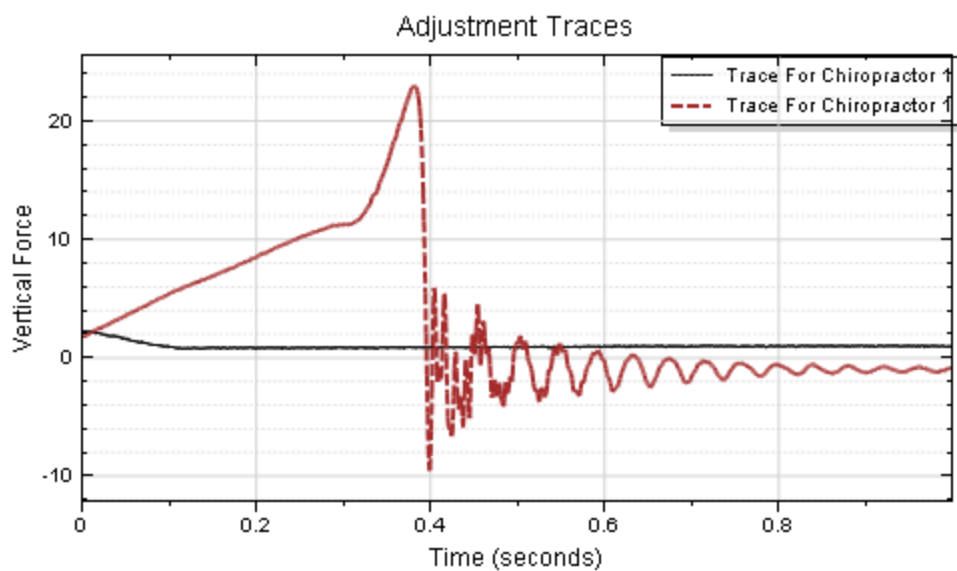


Graph 7



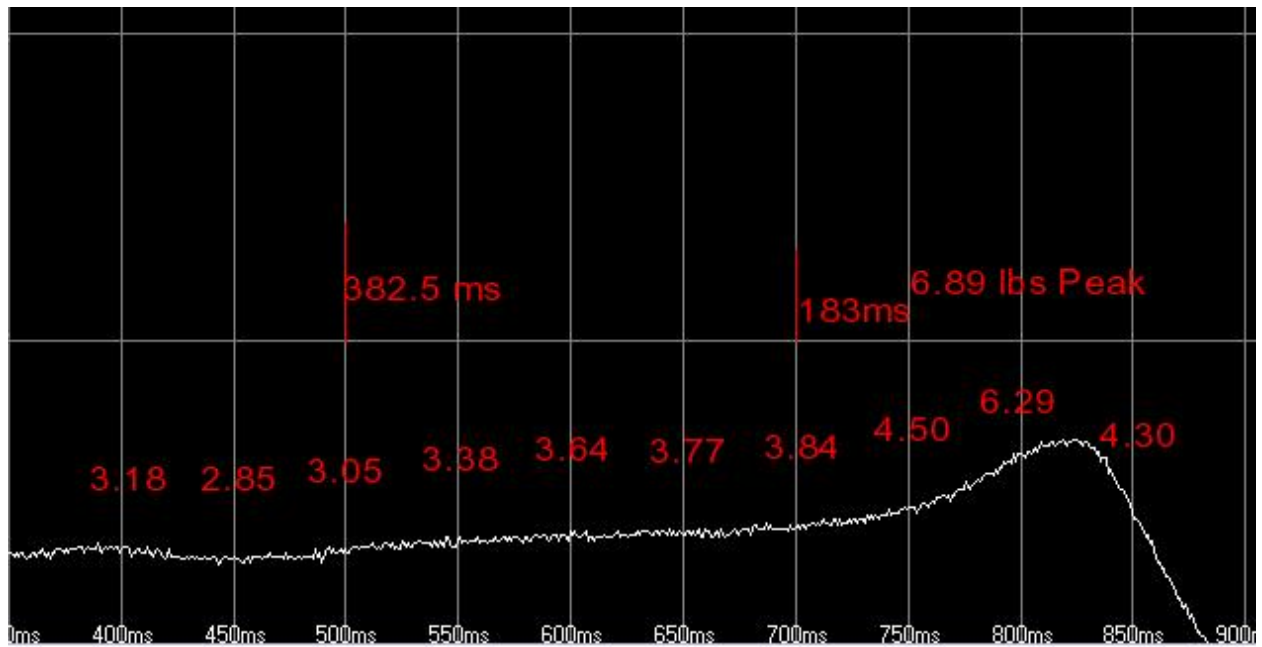
Graph 8

Below: Early Torque Table Force Patterns (2 lbs Pre-load and 20 lbs. Adj. Force = 22 lbs. Total Force)

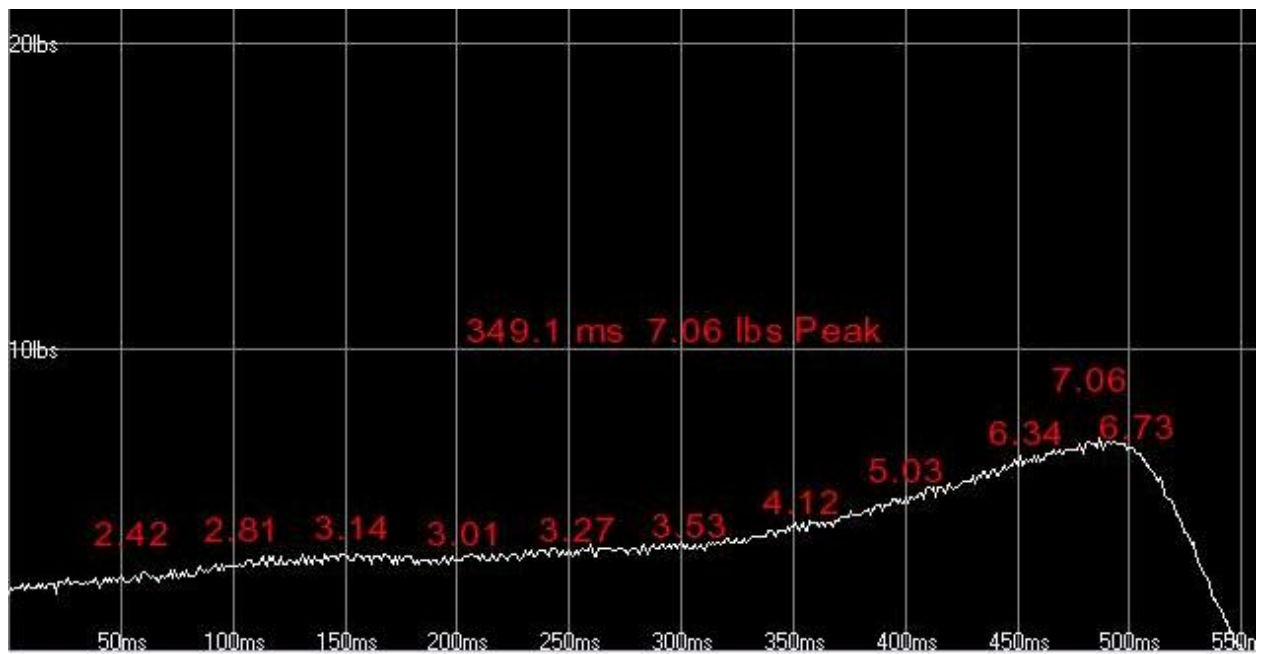


Dr. Bo Hand Adjustment 1 (3.05 lbs pre-load + 3.24 lbs. Adj. Force = 6.89 lbs Total Force):

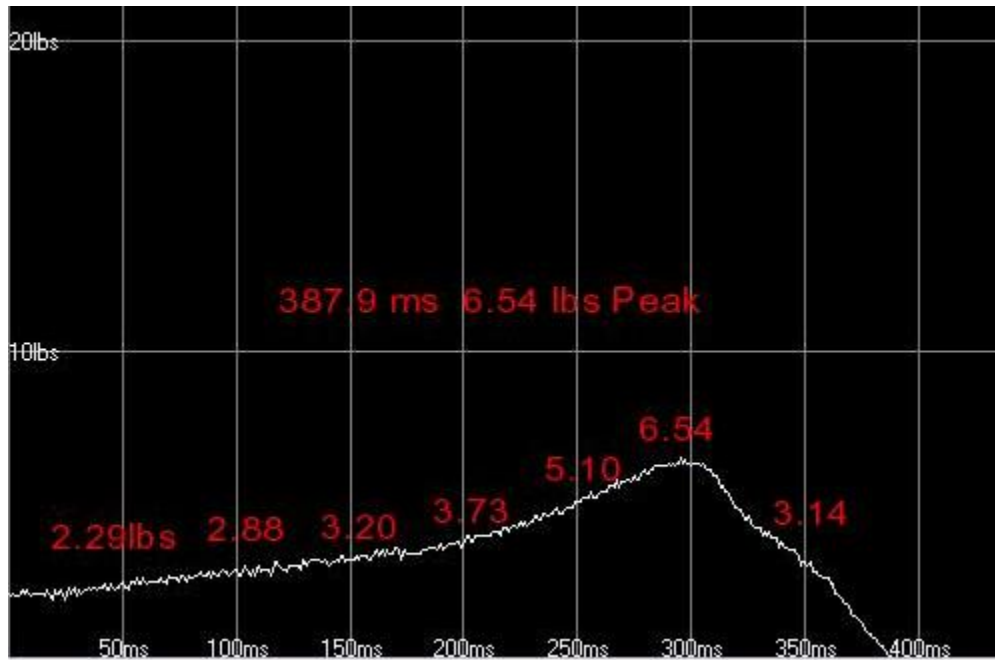
(Note: 100ms = 0.1 seconds)



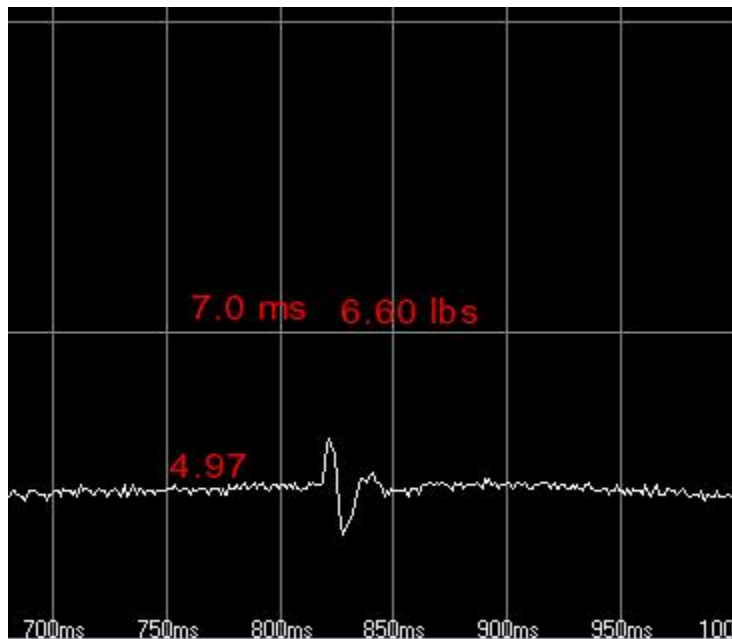
Dr. Bo Hand Adjustment 2 (3.01 lbs. Pre-load + 4.05 lbs Adj. Force = 7.06 lbs Total Force):



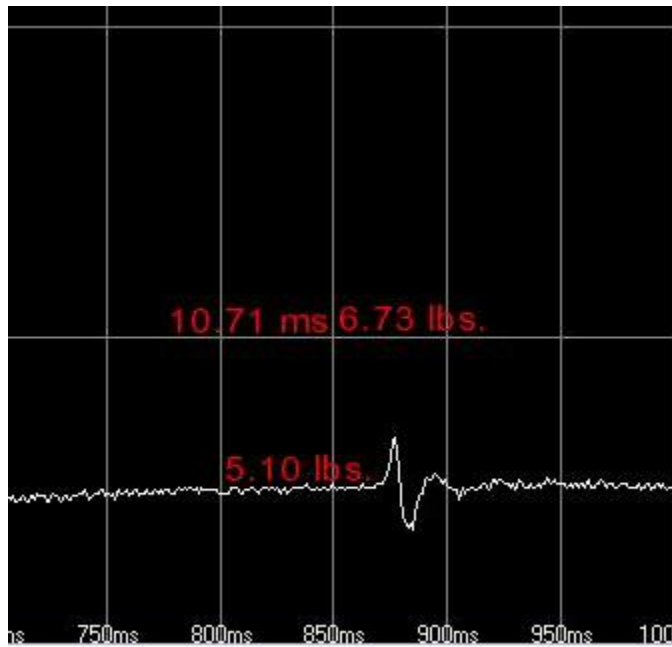
Dr. Bo Hand Adjustment 3 (2.29 lbs. Pre-stress + 4.25 lbs Adj. Force = 6.54 Total Force):



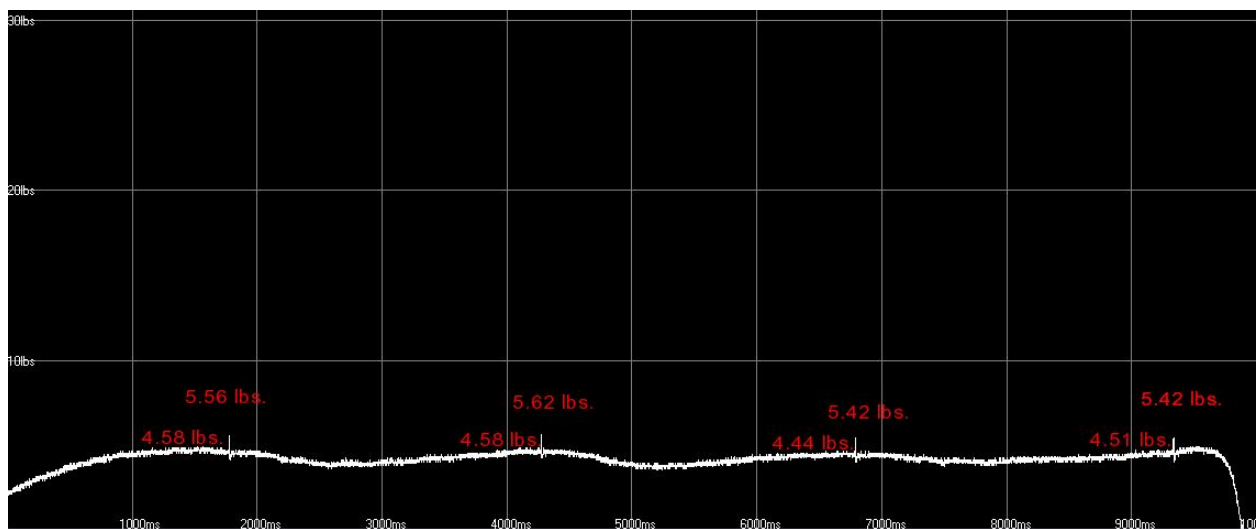
Dr. Bo Hand Held Instrument Adjustment 1 (4.97 lbs pre-load + 1.6 lbs instrument = 6.60 lbs total):



Dr. Bo Hand Held Instrument Adjustment 2 (5.10 lbs Pre-Stress + 1.63 lbs. Adj. Force = 6.73 Total Force)



Dr. Bo Hand Held Instrument 4 Adjs. over 10 Seconds (Instrument 1 lbs. + Pre-Stress 4.5 lbs = 5.5 lbs Total Force):



Research Questions:

1. What are the average forces of the Grostic style hand adjustment?

Methods: Thirty Grostic Style Hand adjustments were delivered to the Titronic Adjustment Simulator (transducer) over a period of 33 minutes. It takes about 1 minute to copy and save the screen image after each thrust. There is no simultaneous feedback during the adjustment simulation so the thrusts are based on the doctor's normal feel for the adjustment.

Results: The average (N=30) Total Force registered was 6.18 lbs. The average Pre-Load was 2.24 lbs. The average force of the thrust was 3.94 lbs. The average duration of the thrust (N=5) was 353.2 ms. (Table 1)

2. What are the variations in the forces of the Grostic hand adjustment from one adjustment to the next?

The standard deviation (SD) for Total Forces was 1.11 lbs. The SD for Pre-load was 0.62 lbs. The SD for the adjustment force was 0.89 lbs. The 95% CI for Total Force is 4 to 8.36 lbs (in other words ± 2.18 lbs).

3. What are the average forces while using the Orthospinology hand held instrument?

Methods: Twenty-four Hand Held Instrument adjustment thrusts were delivered and saved over 15 minutes. No feedback from the computer occurs during the adjustment process so the thrusts are based on the normal feel for the adjustment.

Results: The average (N=24) Total Force was 5.73 lbs. The average Pre-Load was 4.35 lbs. The average force from the instrument was 1.39 lbs. The average duration of the thrust (N=5) was 8.99 ms.

4. What are the variations in forces for multiple adjustments using Orthospinology hand held instrument?

The standard deviation (SD) for Total Forces was 0.64 lbs. The SD for pre-load was 4.35 lbs. The SD for the force of the instrument was 0.33 lbs. (This is likely due to averaging since the instrument should deliver virtually the same force each time.) The Total Force 95% CI was 4.48 to 6.98 lbs.

5. What are the average forces used for the Laney Torque Table?
6. What are the variations of forces used in the Laney Torque Table?

Table 1: Recorded and calculated forces during the Hand, Hand-Held Instrument and Table-mounted instrument adjustments.

Method of Adjustment Delivery	Peak lbs. Total Force measured (SD)	lbs. Pre-Load measured (SD)	Calculated lbs. Force from Thrust (SD)	Duration of the Force msec. (SD)
Grostatic Style Hand	6.18 (1.11)	2.24 (0.62)	3.94 (0.89)	353.2 (62.4)
Orthospinology Hand Held Instrument	5.73 (0.64)	4.35 (0.73)	1.39 (0.33)	8.99 (1.50)
Laney Torque Table	22?	2?	20?	400?