



Multiple Digital Toggle-MDT

Includes:

- MDT
- Sorbothane Pads (2)
- Lock Ease
- MDT Tips (5)
 - A. Single Small Tip (Yellow)
 - B. Single Tip (White)
 - C. Double Tip Large (White)
 - D. Double Tip Small (Green)
 - E. Double Tip Medium (Green)

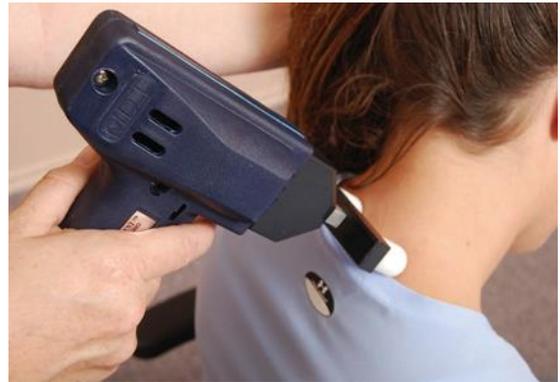


How it works:

The MDT is an electric solenoid driven instrument that is lightweight and versatile. It is designed to complement all adjusting techniques. Based on research under video fluoroscopy, the multiple toggles are timed at 3.3 per second, making them faster than the muscle's ability to react. This is VITAL to an effective and painless adjustment for your patient. Further, it was found that seated adjusting using the MDT was more effective than when the patient was lying down during the adjustment.

Product Maintenance:

ALWAYS check your product before use for signs of wear or damage like cracks, frayed cords, unusual sounds, loose parts, unusual debris, and make sure cooling vents are



Getting Started:

- Always plug any Pettibon electronics into a surge protector.
- The force of the adjustment may be set between the range of 1-200 PSI.
- Adjusting is made easy with the lightweight body and interchangeable tips.
- Suggested Tip Use:
 - A. TIP-SS Single Small Tip (Yellow): Infant, Child, Small Adult, Spinous, Transverse, Atlas
 - B. TIP-S Single Tip (White): Adult Spine, Spinous, Transvers, Atlas, TMJ, Sacro-Illiac
 - C. TIP-DL Double Tip Large (White): Large Adult, Double Transverse Contact, P-A Adjusting
 - D. TIP-DS Double Tip Small (Green): Small Adult, Child, Double Transverse Contact
 - E. TIP-DM Double Tip Medium (Green): Medium Adult, Double Transverse Contact

Warranty Information:

- Extends 6 months from date of purchase.
- Covers manufacturing defects in workmanship and material and the cost of labor and parts if repair is necessary.
- Repairs must be done by the Pettibon System.
- **Warranty is void if:** Instrument is used incorrectly, Instrument has been opened or tampered with, or instrument was purchased from an unauthorized reseller.

The Pettibon System is not liable for any consequence of incidental damage caused by failure of unit or improper use.



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Multiple Digital Toggle Mobilization Instrument™ (MDT) Mobilizations

Two kinds of instruments claim to mobilize the spine:

1. Spring-driven instruments can produce forces no faster than 120 meters per second (maximum mechanical speed). The spring's force weakens as it travels unless the coils are not completely released. Therefore, in some instruments, the force is decreasing when the instrument contacts the patient. Unless the spring retains some coil at impact, the force necessary to cause a joint to move will not be transferred through the soft tissue.
2. Electric, solenoid-driven mobilizing instruments increase in speed, attempting to reach 186,000 miles per second with each toggle. Therefore, the increasing speed of the toggle during impact is effective in compressing tissue and transferring forces through muscles and other soft tissues. This force is effective in causing joint motion.

The Pettibon Multiple Digital Toggle Mobilization Instrument (MDT) is an electric, solenoid-driven instrument designed for multiple tasks. It is particularly effective in applying either a single toggle or multiple toggles with a speed, force, and depth necessary to overcome resistances of soft tissues. It does an excellent job of repositioning and mobilizing various joints of the musculoskeletal system, including spinal vertebrae and joints of the extremities (such as the temporomandibular joints).

The MDT has the following features:

1. It is hand-held and lightweight.
2. It is solenoid-driven.
3. The trigger allows single toggles or timed multiple toggles, delivered at four toggles per second when the trigger is depressed and held. The timing is important; it must be faster than the speed of the muscle's reactive response so that the body accepts the mobilization instead of rejecting it by muscle-reactive responses.
4. Padded, interchangeable, multiple-function stylus tips (two single tips and three double tips for double-transverse contact on the spine for P–A mobilizations) make the instrument adaptable to a range of patients and needs:
 - The smaller single-pronged tip is for contacting small joints (the atlas transverse tip and the spinous) and for use on infants.
 - The larger single-pronged tip is for contacting larger joints and transverse processes of vertebrae.
 - The small double-pronged tip is for double transverse P–A mobilizing of infants.
 - The medium double-pronged is for double transverse P–A mobilizing of average-sized adults.
 - The largest double-prong tip is for double transverse P–A mobilizing of large individuals.
5. The force of the mobilization may be set from 0 to 80psi, the choice of settings allows the doctor to determine the amount of force needed to complete the mobilizing care of each individual patient.
6. The wide range of force settings allows mobilizations of sensitive TMJ joints and the delicate necks of infants, as well as large individuals.



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Shared Loading

This instrument causes shared loading, segmental mobilization with reflex action where other, similar instruments cannot. Shared loading is performed with the head and cervical spine in flexion and possibly rotation but not extension. Shared loading using the MDT alerts the cerebellum to new spine-posture changes; it is crucial that shared loading be performed after all mobilization procedures. Without shared loading, the cerebellum is not forced to consider the postural and structural changes made by mobilizations. Completing the mobilization procedures with shared loading, however, produces immediate, observable changes in posture, indicating cerebellum action that may not be observed when shared loading is not performed.

Shared loading is used to:

- Induce motion into facet (zygapophyseal) joints and ensure that all vertebrae participate in the cervical lordosis curve so that, when the patient wears head weight, facets glide on each other and the cervical spine can easily buckle into lordosis and lateral correction.
- Stimulate the cerebellum to adapt to head and body weighting as well as changed spine and posture.
- Stimulate endorphin production by the central nervous system.
- Stimulate the mechano-receptors of the upper five cervicals; this stimulation has a powerful effect on the patient's limbs, muscles, and posture due to the ascending and descending inter-spinal collateral tracts through the entire length of the spinal cord.
- Stimulate C1, C2, C3, and C4 mechano-receptors; this stimulation has a direct effect on a patient's head posture relative to the lower spine and body, as well as the correcting forces produced by shoulder and hip weights.

Setup for Shared Loading

Seat the patient with the head in forward flexion and rotated away from the acute CD angle (the CD angle is usually on the high-shoulder side in Posture Pattern #1, the side that the head tilts toward in Posture Pattern #2, and the side that the head is translated/shifted away from in Posture Pattern #3). Hold the patient's forehead with one hand and the mobilizing instrument with the other.

Use the medium double-pronged stylus for most patients. Use the small double-pronged stylus for babies and the large double-pronged stylus for exceptionally large patients.

Force Settings

Patients should feel a tingling sensation in the arms and hands from a shared-loading treatment. Sometimes these effects are felt in the legs and feet as well. When the force setting is too great, the patient's arms will jump. If that happens, turn the force setting down until the patient feels the effects but his/her arms no longer jump.

The effect a patient feels at each toggle indicates that the vertebra is moved by the toggle. At least three toggles should be delivered into each vertebra involved in the cervical lordosis, beginning with T2 and continuing up to and including the skull.

Many people will not feel the tingling sensation until you get into the mid and low cervical spine. To set your force properly, start at C4-5 and increase the pressure until the patient feels the sensation into the arms. If the patient feels no sensation, increase the force setting until the patient feels the sensation with each toggle but not to the extent that his/her arms jump.

After the force is set properly, place the instrument at the area of T2 and start the procedure. Although at times the patient may feel it, it is not necessary to feel the sensation into the extremities as you are working in the C7 to T1-2 area.

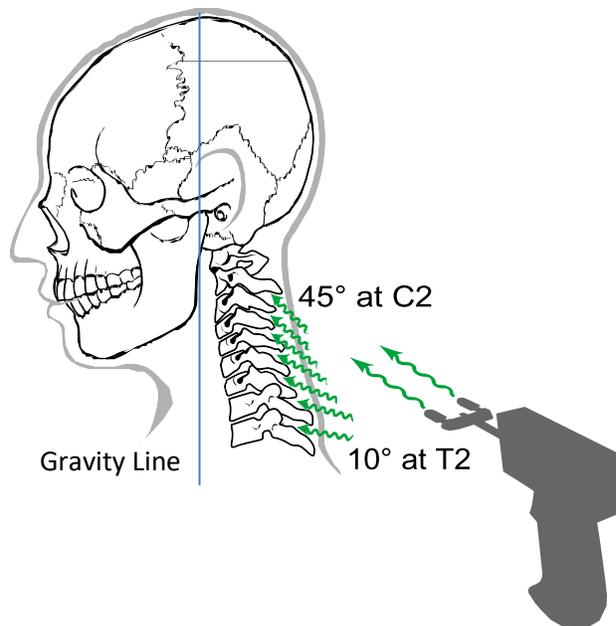
NOTE: Prior to each use of the MDT on each patient, first check the setting of the MDT. This may be done by looking at the setting, or by testing the amount of impact on your hand to ensure that the force has not been accidentally set too strong.

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Line of Drive of the Mobilizing Forces

The line of drive of the mobilizing forces should be directed along the facet (zygapophyseal) joints, which are at an approximate 10-degree angle, inferior to superior at T2 to C7, gradually increasing up to approximately 45 degrees at C2 (Figure 11).

Figure 11:



1. Select the double-pronged stylus of appropriate size. Because of patient sensitivity to this procedure, a Sorbothane® pad may be used.
2. Seat the patient on the table or in a chair with feet on the floor, hands palm up, resting on the patient's thighs.
3. Have the patient drop his/her head down (chin to chest).
4. Stand behind the patient and place the Sorbothane® pad on the patient's neck.
5. Position the stylus tip at T2 with one hand.
6. Place the other hand on the patient's forehead.
7. Explain to the patient that he/she may feel a tingling sensation in the arms, hands, and feet.
8. Instruct the patient to push down with his/her forehead into your hand. (This will activate the flexor muscles and by reciprocal inhibition will relax the extensor muscles).
9. Deliver at least three toggles on each vertebra.
10. Ask the patient whether he/she feels any effects. Adjust the force setting as needed: increase if the patient feels no effect; if the patient's arms jump, decrease until the arms no longer, or barely, twitch.
11. Move up one spinal segment at a time, changing the angle of the force to follow the angle of the facets. This will be a 10-degree angle, inferior to superior, at T2-C7 and gradually increase up to 45 degrees at C2.

Note: The Pettibon System does not teach to then put the head in extension and follow with more thrusts.



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Lower Angle (Unit #2 Relative to C1) Mobilization

The MDT may be used to correct the lower angle (the acute angle formed between Unit #2 and Unit #1).

1. Use the single-pronged stylus of appropriate size.
2. Seat patient on the table with feet on the floor.
3. Position yourself behind the patient.
4. Instruct the patient to grab the top of his/her head and pull it toward the side of obtuse angle displacement. (For example: A patient with an acute lower angle on the right, obtuse angle on the left, will reach the left arm and hand over and grasp the top of the head and pull down and left).
5. Place your forearm under the patient's lower skull on the side of the obtuse angle so that the patient is pulling his/her head over your arm.
6. Palpate for the atlas transverse process and position the tip of the stylus under the end of the transverse so the I-S force will intersect it.
7. Direct the line of drive 30 degrees upward (inferior to superior).
8. Lift with the arm that is under the skull during mobilization to lift the skull and traction the acute angle side while compressing the obtuse angles so the forces can be effective.
9. Continue with toggles until the skull, Unit #1 on Unit #2 releases. You will then usually feel the tapping of the stylus on your lifting forearm.

Upper Acute Angle (Skull-on-Atlas) Mobilization

When the skull is laterally flexed on the atlas, the MDT can be used to begin correcting this displacement by mobilizing the skull-atlas on the acute angle side.

1. Use the small single-pronged stylus.
2. Seat patient on the table or chair with feet on the floor.
3. Position yourself behind or in front of the patient as the acute angle dictates.
4. Instruct the patient to grasp the top of his/her head and pull toward the obtuse angle, thereby tractioning the acute angle open. (For example: A patient with an acute angle on the right reaches to the left side of his/her head with the left hand and pulls toward the left shoulder).
5. Place your forearm under the head on the side of the obtuse angle so that the patient is pulling his/her head over your arm.
6. Palpate the atlas for the transverse process; position the tip of the stylus superior, and anterior or posterior as measured rotation dictates.
7. Direct the line of drive 30 degrees downward (superior to inferior).
8. Raise your arm during mobilization to lift the skull and traction the acute angle open.
9. Continue toggles until the skull has been released and you feel the tapping of the stylus on your forearm through the atlas.
10. Follow all mobilization procedures with head, shoulder, and hip weighting.

Segmental Rotation Displacement of Skull-Atlas

Based on the Base Posterior X-ray, a patient may have a posteriorly or anteriorly rotated atlas on the side of acute skull-atlas lateral deviation (acute upper angle). Obviously, if the skull-atlas deviation is anterior on one side, it will be posterior on the other. This mobilization force will be applied on the posterior side of the atlas rotation only.

1. Use the single-pronged stylus of appropriate size. Seat the patient on the table or chair with feet on the floor.
 2. Position yourself behind the patient.
 3. Instruct the patient to turn his/her head toward the side of posterior rotation as far as possible.
 4. Position the tip of the stylus on the transverse process on the side of posterior rotation.
 5. Direct the line of drive through the transverse process and toward the back of the opposite eye.
 6. Have the patient attempt to turn the head back toward neutral while you hold the head in its rotated position and make the appropriate thrusts with the MDT. This will activate an isometric contraction of the obliquus capitis superior, which will assist the rotation of the atlas back toward neutral as you make the mobilizing thrusts with the MDT.
- Repeat the toggles with the instrument until they produce a firm feeling or you hear a tone change.

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Segmental Displacement (with Ligament Tearing or Stretching) Correction

Alar Ligament Damage

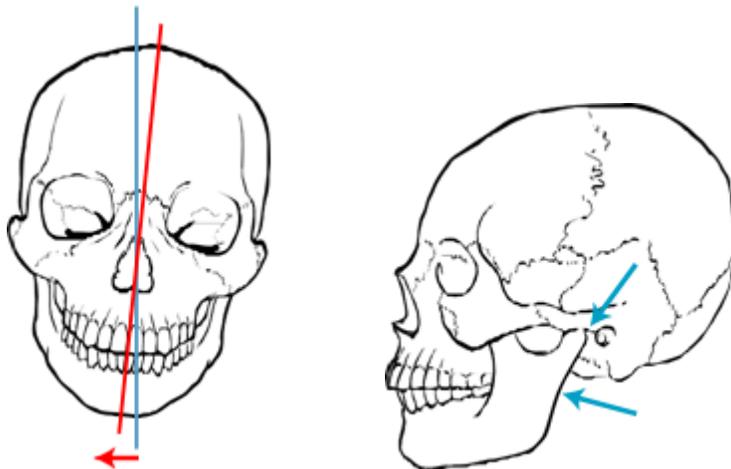
The alar ligaments attach from the top and sides of the odontoid and to the edge of the foramen magnum on each side. If the ligament on one side is damaged, C2 will usually be unstable and the spinous process will rotate to the side opposite the damaged ligament. For instance, if the left alar ligament is damaged, the C2 spinous will rotate to the right. When the patient attempts to extend his/her head straight back, it will usually rotate or fall to the side as it extends. This rotation or falling to the side will be to the side opposite the ligament damage and toward the same side of C2 spinous rotation.

The patient's own muscular system is used to help C2 correction by activating the rectus capiti posterior major muscle on the side of the damaged alar ligament during C2 spinous mobilization.

To perform, do the following:

1. Use the single-pronged stylus of appropriate size.
2. Seat patient on the table or chair with feet on the floor.
3. Position yourself behind the patient.
4. Stabilize the patient's head by placing one hand (on the side of ligament damage, opposite side of C2 spinous rotation) on the patient's forehead.
5. Instruct the patient to flex the head forward, and then to try to turn the head toward your hand as you hold and restrain the motion, thereby activating the muscles that pull the C2 spinous into correction.
6. Do not let the patient's head extend or rotate during this procedure.
7. With the other hand, place the instrument stylus at the C2 spinal laminar junction on the side of rotation.
8. Direct the instrument's line of drive through the spinal laminar junction toward the back of the opposite eye.
9. Hold the head while the patient attempts to turn it and perform the toggle at the same time.
10. Repeat toggles until you feel the toggle force is firm or you hear a tone change.

TMJ Examinations and Mobilization



The temporomandibular joints (TMJs) are extremities of the cervical spine and are therefore a part of it. The TMJs are involved in every posterior-anterior neck trauma, and they are involved in their correction.

Most TMJ problems cause the two sides of the face to be asymmetrical. Symmetry will be regained only after the TMJ problems are corrected. About 80 percent of the time, TMJ problems are corrected automatically when the neck is corrected. Therefore, TMJ mobilization is not usually performed until after the neck is corrected and/or after the TMJ pain becomes expressive.

When the TMJ problem is not corrected by cervical spine correction, the effects of its signs and symptoms can be far-reaching, often causing severe neurological impedances and leg imbalance. The major symptoms usually are debilitating headaches with neck and shoulder pain. TMJ has also been associated with asthma, hearing loss, tinnitus, facial pain, Bell's Palsy, tongue pain and numbness, earache, vertigo, sinus congestion, throat inflammation and infection, painful teeth and gums, visual disorders, and reflex sympathetic dystrophy.



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Correction of skull on C1 and/or Unit #2 on Unit #3 may uncover hidden TMJ problems. TMJ problems and symptoms may also be uncovered in your initial testing to determine if the patient is strong enough to respond to your care and whether you should accept the patient for spinal correction or rehabilitation strengthening first. Eight out of ten people have diagnosable TMJ problems, and it is one of the major causes of headaches in general. The first indication of a latent TMJ problem may be an occipital headache after the Negative Z mobilization has begun correcting the skull-cervical displacement.

To check for TMJ problems, instruct the patient to open his/her jaw slowly. Watch for the jaw to deviate to one side or the other. A lateral deviation indicates the need for a TMJ mobilization using the MDT.

Often this mobilization is very sensitive for the patient, especially if the patient has not been aware of the problem or if the area is inflamed. Therefore, always use the Sorbothane[®] pad for this mobilization.

1. Seat the patient on the table with feet on the floor.
2. Instruct the patient to do joint-lubrication and cartilage-nourishing exercises: 25 up-and-down and side-to-side loading and unloading cycles while opening and closing the mouth as wide and fast as possible.
3. Prepare further by using the Pettibon Tendon Ligament Muscle Stimulator™ (PTLMS) over both TMJs while open and laterally stretched
4. Use the single-pronged stylus of appropriate size and set the MDT's force to a very low setting. (Demonstrate the force you will use by activating the toggle on the patient's palm.)
5. Position yourself behind the patient.
6. Instruct the patient to open his/her mouth; stop him/her at the apex of deviation.
7. Instruct the patient to use one hand to pull the jaw away from the direction of deviation.
8. Palpate for the TMJ.
9. Place the Sorbothane[®] pad over the TMJ and hold with the tip of the stylus.
10. Brace your palm on the cheekbone and use your fingers on the patient's jaw to help pull it away from the side of deviation.
 - a. As an option, you may brace the patient's head and have the patient pull the jaw in the desired direction.
11. Direct the line of drive superior to inferior along the angle of the jaw.
12. Toggle at least three times while pulling the jaw away from deviation.
13. Check the jaw again. After each mobilization, you should notice a decrease in deviation.
14. TMJ patients must be instructed in home care stretching and rehabilitation exercises that further correct their problems.

At times, a patient will have a "double deviation," meaning the jaw will deviate first to one side and then to the other. In this instance, both deviations will need to be addressed.

The patient should be told in your report of findings that, in a small percentage of cases, a patient will experience a TMJ flare-up with a headache during or following spinal correction treatments. Tell the patient to report any headaches and/or TMJ problems so that they can be addressed and eliminated in a timely manner.

Note: Do not allow the patient to leave the office until the leg length is balanced and the patient's symptoms are eliminated or much improved.