

**TRAUSON®**

# GSS TANLOR-I

Surgical Technique



*Products you can trust at a price you can afford*

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## Warning

This instruction is for reference only.  
Operation must be performed under the guides of professional doctors.

## Introduction

Anterior internal fixation of the thoracic and thoracolumbar spine is a growing trend in spinal surgery. In the thoracic and thoracolumbar spine, anterior fixation is indicated for burst fractures with significant canal compromise, vertebral body tumors requiring corpectomy and other indications requiring anterior stabilization. Primary advantages of anterior internal fixation include the ability to provide complete canal clearance and decompression of bony fragments and/or total resection of a tumor. Additionally, anterior thoracic and thoracolumbar (ATL) surgery allows for fusion of a minimal number of motion segments, thus allowing for more normal spine mechanics.

The specific goal in the development of the GSS TANLOR-I Spinal System was to design a rod-based system primarily for the management of thoracic, thoracolumbar, and lumbar burst fractures and tumors that permits anterior load sharing, allows for distraction to perform reduction and compression of the bone graft, is CT/MRI compatible, and easy to implant.

## Indications

- Severe vertebral body fractures
- Tumor
- Correction of anterolateral lordotic deformities
- Lumbar scoliosis
- Pseudoarthrosis

## Contraindications

- Active infection.
- Allergy to the implant material
- Severe osteoporosis patient

## Features & Benefits

- Low profile, anatomical contoured implants and smooth surface allow for increased versatility and reduce potential for irritation
- Fixed angled screws are top opening and tightening



## Implants

Basic implants consist of vertebral body staples, fixed angle screws, Crosslink Plate, and 5.5mm diameter rods.

### Vertebral Body Staples

Vertebral Body Staples-This unique design offers contour in two planes to provide exceptional fit and a lower overall profile. The ventral surface is shaped to fit not only the sagittal curvature of the vertebral body but the concavity between the superior and inferior endplates of each instrumented vertebra. The dorsal surface has a smooth surface to minimize irritation to vascular structures and soft tissues. Additionally, the dual spikes are contained within the interior of the plate as a safety feature. The offset spikes provide excellent stability during implantation and system rigidity post-operatively. Staples are offered in three sizes to insure precise fit for diverse patient populations.



Vertebral Body Staples-Rostral/Caudal

### GSS TANLOR-I Fixed Angle Screws

GSS TANLOR-I Fixed Angle Screws-The top-loading, top-tightening design facilitates a simplified construct assembly. Open 5.5mm, 6.0mm, 6.5mm and 7.0mm diameter screws are used and offer better fit at all instrumented levels. Additionally, 7.5mm diameter screws may be used as a "rescue screw" in the medium and large vertebral body staple.



GSS TANLOR-I FAS

### GSS TANLOR-I Crosslink Plates

GSS TANLOR-I Crosslink Plates-This unique cross connector is specially designed for anterior approach of thoracic and thoracolumbar spine. The design allows the one-piece implant to be easily applied to the dual rod construct for a top-loading approach and vertical tighten.



GSS TANLOR-I Crosslink Plate

## Instruments



Quick Connect Handle



Quick Connect T-handle



Awl Guide



Awl Guide



Awl



Tap, Ø4.5



Tap, Ø5.5



Tap, Ø6.5



Tap, Ø7.5



Single Axial Screwdriver



Plug Starter



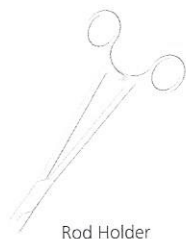
Plug Driver



Ring Counter Torque



Rod Template



Rod Holder



Rod Pusher



Angled Awl



In-situ Bender Right



In-situ Bender Left



Spreader (Left/Right)



Awl



Parallel Distractor



Parallel Compressor



Rod Bender



Power Grip



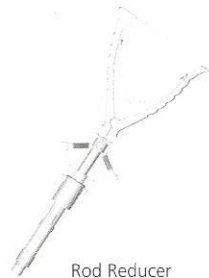
Graft Measuring Caliper



Crosslink Measuring Tool



Crosslink Set Screwdriver



Rod Reducer



Torque Limited Driver

## Surgical Technique

### Step1. Patient positioning, surgical exposure, and corpectomy

When treating thoracic and thoracolumbar fractures or tumors with anterior instrumentation, the approach is usually from the patient-left side, but if indications warrant, the operation can be accomplished from the patient-right side. The preoperative axial MRI or CT should be checked to ensure the aorta is midline. Occasionally a left deviation of the aorta will necessitate a right-sided approach. It is important to ensure the patient is positioned in a true lateral position and that the position is maintained throughout the procedure (Fig 1)

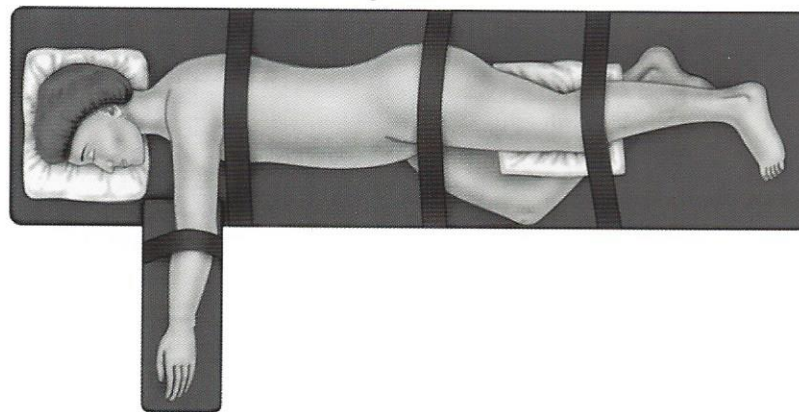


Fig-1

### Measuring the Coronal Diameter of the Vertebral Body

Measure the coronal diameter of the vertebral body above and below the corpectomy (Rod Template calibrated at 1.0cm intervals could be used). This distance is used to determine the length of the screws to be used(Fig 2). This may also be done using the graduated scale on the preoperative MRI/CT films (Fig 3).

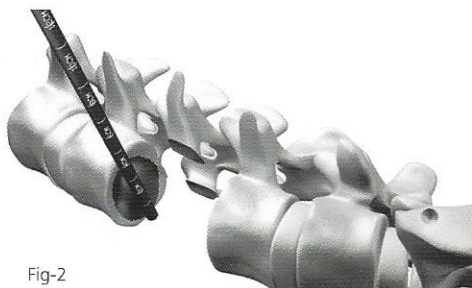


Fig-2

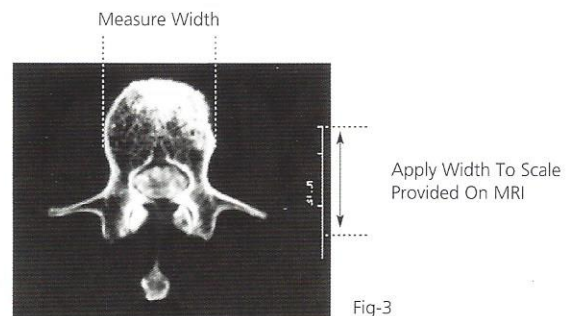


Fig-3



## Step2. Placement of the vertebral body staples

The appropriate-sized staple is selected (Fig 4). Staples are available in three sizes (Large, Medium and Small). The largest staple that will fit within the confines of the vertebral body should be used.

Choose the appropriate Awl Guide for the selected staple. These guides attach to the Guide Shaft (Fig 5) and allow for the staple to be retained. The staple is positioned and impacted in the usual manner. (Fig 6). With the Awl Guide attached to the staple, the awl will create a trajectory for the posterior screw that is 10° anterior. Using the guide for the anterior position will create a pilot hole 0° posterior (Fig 7, 8). After creating both pilot holes, the Awl Guide/Guide Shaft assembly is detached from the staple by unthreading the Guide Shaft from the center retaining hole. When correctly placed, the staples will insure that the anterior rod will be longer than the posterior rod.



Fig-4



Fig-5

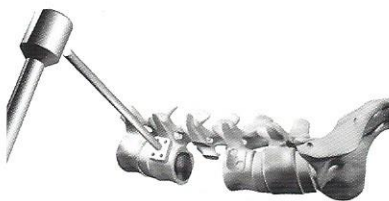


Fig-6

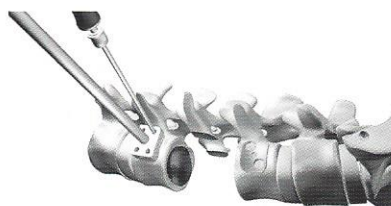


Fig-7

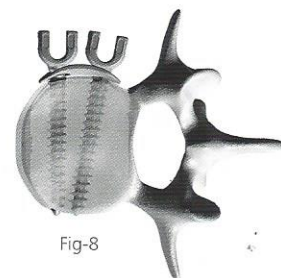


Fig-8

## Step3. Screw placement

The GSS TANLOR-I Fixed Angle Screws are then driven until the head of the screw makes contact with the staple (Fig 9). Care should be taken to ensure that the screw openings are aligned from segment to segment allowing for rod introduction (Fig 10). Each screw should extend approximately two millimeters beyond the far cortex to ensure bicortical fixation.

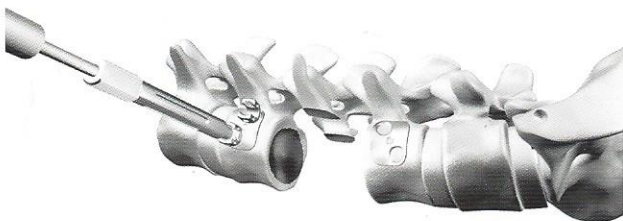


Fig-9

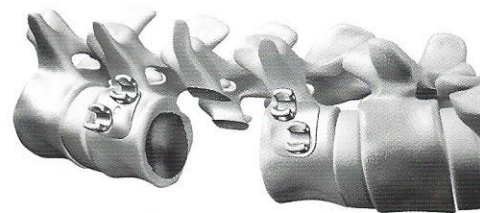


Fig-10



## Surgical Technique (Continued)

### Step4. Fracture reduction

A vertebral body Spreader or the provided Parallel Distractor may be used against the heads of the rostral and caudal screws. Insert the arms of the Spreader into the screw heads. Insert a Set Screw over each arm of the Spreader using the Plug Starter. Each Set Screw should be provisionally tightened. A distractive force is placed against the heads until the desired reduction is achieved (Fig 11). Once reduction has been achieved, the Graft Measuring Caliper may be used to determine the required graft length. (Fig 12)

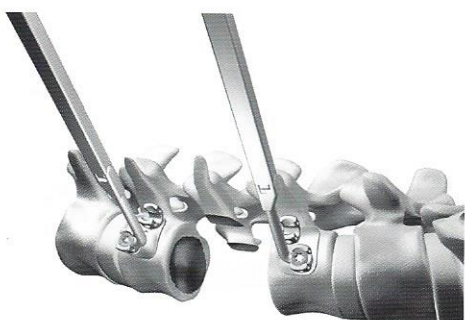


Fig-11

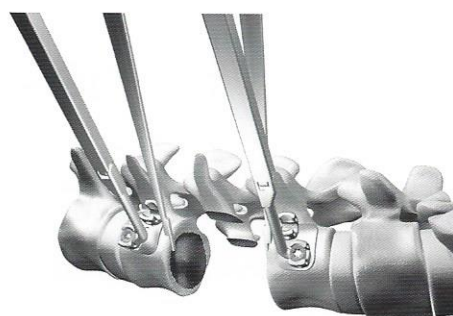


Fig-12

### Step5. Implanting the bone graft

After careful selection, measurement, and placement of the graft into the corpectomy site, distraction is released (Fig 13). Depress the ratchet lever on the Spreader until the graft comes in full contact with the superior and inferior endplates. Remove the set screws and the Spreader from the surgical site.

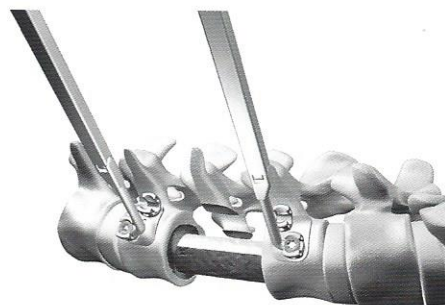


Fig-13

### Step6. Placing the spinal rods

Measure the required rod length using the Graft Measuring Caliper or using the Rod Template. Measure the posterior rod first. Select a pre-cut rod or cut a rod to length and place in the posterior screws (Fig 14). Set Screws are applied and "finger tightened". This process is repeated for the anterior rod. Once the proper alignment is achieved, tighten either the rostral or caudal Set Screw provisionally.

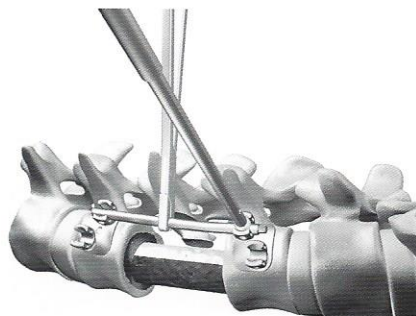
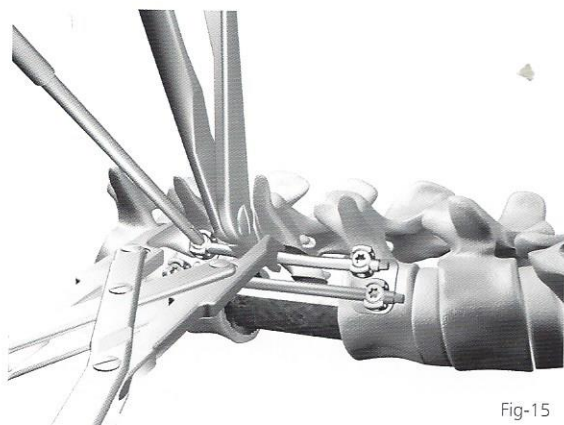


Fig-14

### Step7. Final tightening

The Parallel Compressor is placed on the outside of the Power Grip and the unsecured screw (Fig 15). A compressive force is applied to the construct to lock the anterior graft in place. Tighten the remaining posterior Set Screw. Repeat this procedure for the anterior rod. Once the final position is confirmed, all set screws are tighten finally (Fig 16). We advise using the Torque Limited Driver to tighten the set screws finally (Fig-16a.b).



## Surgical Technique (Continued)

### Step 8. Placing the crosslink plates

The Crosslink Plates are added to the construct to provide torsional stability. Two Crosslink Plates are recommended for each construct. Use the Crosslink Plate Measuring Tools to determine the required implant size (Fig 17). Plates are offered in one millimeter increments from 14mm to 20mm and in two millimeter increments from 20mm to 24mm. Grasp the selected Crosslink Plate with the Crosslink Holder and place on the spinal rode (Fig 18).

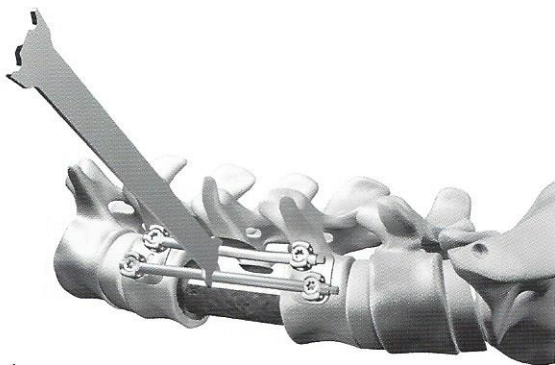


Fig-17

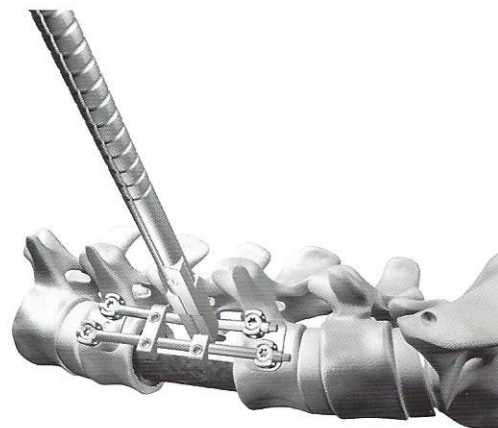


Fig-18

Crosslink Plate Set Screws are oriented vertically (Fig 19). Any surgical exposure is very easy to tighten the Set Screws. If two Crosslink Plate will be used, place the first in the rostral 1/3 of the construct and the second in the caudal 1/3 of the construct (Fig 20).

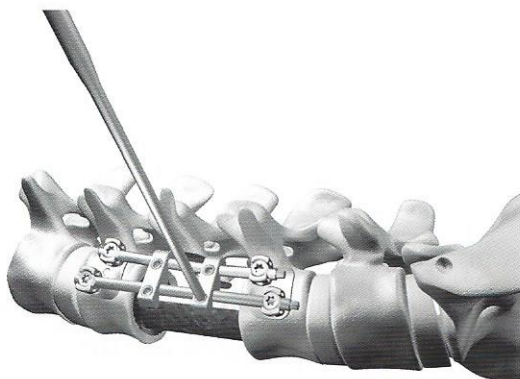


Fig-19

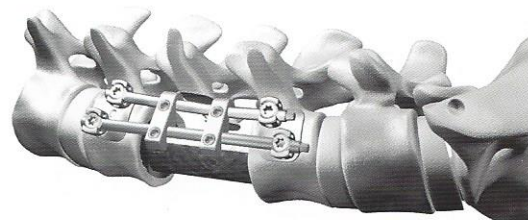


Fig-20



## Implants Ordering Information

### Fixed-angle Screw

P/N	Dia	Length	Material
45090035E	Ø4.5×35	35mm	TA
45090040E	Ø4.5×40	40mm	TA
45091035E	Ø5.0×35	35mm	TA
45091040E	Ø5.0×40	40mm	TA
45092035E	Ø5.5×35	35mm	TA
45092040E	Ø5.5×40	40mm	TA
45092045E	Ø5.5×45	45mm	TA
45092050E	Ø5.5×50	50mm	TA
45092055E	Ø5.5×55	55mm	TA
45093035E	Ø6.0×35	35mm	TA
45093040E	Ø6.0×40	40mm	TA
45093045E	Ø6.0×45	45mm	TA
45093050E	Ø6.0×50	50mm	TA
45094035E	Ø6.5×35	35mm	TA
45094040E	Ø6.5×40	40mm	TA
45094045E	Ø6.5×45	45mm	TA
45094050E	Ø6.5×50	50mm	TA
45094055E	Ø6.5×55	55mm	TA
45095035E	Ø7.0×35	35mm	TA
45095040E	Ø7.0×40	40mm	TA
45095045E	Ø7.0×45	45mm	TA
45095050E	Ø7.0×50	50mm	TA
45095055E	Ø7.0×55	55mm	TA
45096035E	Ø7.5×35	35mm	TA
45096040E	Ø7.5×40	40mm	TA
45096045E	Ø7.5×45	45mm	TA
45096050E	Ø7.5×50	50mm	TA
45096055E	Ø7.5×55	55mm	TA

### Crosslink Plate

P/N	Length	Material
45179014E	L=14	TA
45179015E	L=15	TA
45179016E	L=16	TA
45179017E	L=17	TA
45179018E	L=18	TA
45179019E	L=19	TA
45179020E	L=20	TA
45179022E	L=22	TA
45179024E	L=24	TA

### Rod

P/N	Dia	Length	Material
45112050E	Ø5.5mm	L=50	TA
45112060E	Ø5.5mm	L=60	TA
45112070E	Ø5.5mm	L=70	TA
45112080E	Ø5.5mm	L=80	TA
45112090E	Ø5.5mm	L=90	TA
45112100E	Ø5.5mm	L=100	TA
45112110E	Ø5.5mm	L=110	TA
45112120E	Ø5.5mm	L=120	TA
45112130E	Ø5.5mm	L=130	TA
45112140E	Ø5.5mm	L=140	TA
45112150E	Ø5.5mm	L=150	TA
45112200E	Ø5.5mm	L=200	TA
45112250E	Ø5.5mm	L=250	TA
45112300E	Ø5.5mm	L=300	TA
45112400E	Ø5.5mm	L=400	TA

### Vertebral Body Staples, Rostra(L)

P/N	Length	Material
45102145E	L=14.5	TA
45102155E	L=15.5	TA
45102165E	L=16.5	TA

### Vertebral Body Staples, Caudal(R)

P/N	Length	Material
45103145E	L=14.5	TA
45103155E	L=15.5	TA
45103165E	L=16.5	TA

### Vertebral Body Staples, Single Hole

P/N	Specification	Material
45104000E	Large	TA
45105000E	Medium	TA
45106000E	Small	TA

## Instruments Ordering Information

P/N	Description	Quantity
11501036E	Awl-1	1
11302013E	Rod Template	1
11501033E	Guide Shaft	1
11501008E	Angled Awl	1
11501032E	Awl-2	1
11501009E	Tap, Ø7.5	1
11302004E	Tap, Ø6.5	1
11302003E	Tap, Ø5.5	1
11304100E	Tap, Ø4.5	1
11402018E	Crosslink Set Screwdriver, SW3.5	1
11302015E	Rod Pusher	1
11501002E	Awl guide, large	1
11501003E	Awl guide, medium	1
11501004E	Awl guide, small	1
11501018E	Graft Measuring Caliper	1
11501011E	Plug Starter	2
11501014E	In-situ Bender, Left	1
11501015E	In-situ Bender, Right	1
11501013E	Ring Counter Torque	1

P/N	Description	Quantity
11501029E	Rod Holder	1
11302002E	Quick Connect T-handle	1
11302034E	Quick Connect Handle	1
11501034E	Spreader, Left	1
11501035E	Spreader, Right	1
11501010E	Single Axial Screwdriver	1
11501012E	Plug Driver	2
11501019E	Crosslink Measuring Tool, 14	1
11501020E	Crosslink Measuring Tool, 15-16	1
11501021E	Crosslink Measuring Tool, 17-18	1
11501022E	Crosslink Measuring Tool, 19-20	1
11501023E	Crosslink Measuring Tool, 22-24	1
11302021E	Power Grip	1
11501016E	Rod Reducer	1
11302020E	Rod Bender	1
11302019E	Parallel Compressor	1
11302018E	Parallel Distractor	1
11902800E	Torque limiting Screwdriver	1
11501031E	Instrument Case	1