User Guide
Fracture Reduction and Deformity Software
Version 4.1

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My user name ___________________________________________

My password ___________________________________________

My email address ________________________________________
Introduction

As the world's most advanced, versatile and clinically proven circular fixator, the TAYLOR SPATIAL FRAME™ system enables uncompromising stability, flexibility and precision. When used with www.spatialframe.com, surgeons can correct even the most difficult trauma injuries or skeletal deformities.

This guide was developed to better help you use the web-based software program. We are committed to helping you with all of your spatialframe.com needs and offer a variety of resources to support you.

For website related assistance or for immediate advice on manipulating a spatial frame, please contact the TSF Application Call Center at 1-877-742-3725 (toll-free) or 1-856-866-3802.

For non-urgent requests, contact the SpatialFrame.com Helpdesk via email at helpdesk@spatialframe.com.

If you would like more information about the TAYLOR SPATIAL FRAME, visit www.taylorspatialframe.com.

Computer system requirements

Recommended browser and display settings In order to accommodate the large quantity of information, the detailed graphical images and the proper sequencing of the correction methods, each screen of the TAYLOR SPATIAL FRAME Web Application has been designed to provide an efficient user interface. To ensure you the best possible experience with this site, we suggest the following display and browser settings.

Display settings
Screen resolution of 1024 x 768 or higher

Supported browsers
Microsoft Internet Explorer 6.0, 7.0 or 8.0
Mozilla Firefox 3.5
Google Chrome 3.0
Safari 4.0

Browser settings
Must support 128-bit SSL encryption
JavaScript enabled
Cookies enabled

Internet connection
A high-speed cable or DSL connection is recommended.
TAYLOR SPATIAL FRAME® image nomenclature

Anterior marker, proximal fragment, 20mm cube

Master tab marker

Origin (if proximal fragment is reference)

Struts

Distal ring

Distal fragment (the color green indicates that this is the moving fragment)

Proximal fragment (the color blue indicates that this is the reference fragment)

Corresponding point (if proximal fragment is reference)

Anterior marker, distal fragment, 20mm sphere
Frame assembly

1 Struts are always numbered as shown in Figure 1 or when looking at the frame from the proximal ring toward the distal ring.

<table>
<thead>
<tr>
<th>Counterclockwise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-red, 2-orange, 3-yellow, 4-green, 5-blue, 6-violet</td>
</tr>
</tbody>
</table>

2 The shared connection point for struts 1 and 2, located on the proximal ring, is the master tab. The master tab is denoted by an orange box in Figure 1.

3 The master tab is always on the proximal ring.

4 The master tab is always directly anterior. If it is not directly anterior, rotary frame offset on www.spatialframe.com must be set at the appropriate degree of internal/external rotation.

5 If distal ring reference is selected, do not flip the frame upside down.

6 If distal ring reference is selected, use the empty tab located on the distal ring between struts 1 and 2 as an anterior reference anti-master tab. Place this tab directly anterior on the distal fragment or enter the appropriate rotary frame offset value in www.spatialframe.com.

7 Always verify the images on ‘initial’ and ‘final’ frame pages prior to printing a prescription for the patient.
Obtaining a password

Passwords are requested by accessing the login page at http://www.spatialframe.com and selecting the Request an Account button found in the New Users box.

The following popup box will appear.

Enter your information into each data field.

Click OK. A confirmation email will be sent to you within 48 hours.
You will receive a confirmation email at the address you used when you registered. The email will contain both your user name and a temporary password. The temporary password is case sensitive. At this point, you are ready to login and begin using the TAYLOR SPATIAL FRAME™ web-based software.

Click on the hyperlink to go to the website and enter the user name and temporary password sent in the email.

Logging in to the site
You can access the TAYLOR SPATIAL FRAME software using any computer connected to the internet from anywhere in the world. Simply type http://www.spatialframe.com into the address line of your internet browser.

Enter your user name and password and then click on Sign in to access the site.
Forgotten password
If you forget your username or password, you can have it restored electronically by clicking on the
Forgot Username or Password link below the Sign In button.

The following popup box will appear.

Password Reset
Please enter you username or email, and a temporary password will be sent
to your email account registered with this site.

User Name: 

E-mail Address: 

For further assistance, contact our helpdesk.
Cases
After logging in to the site, you will see the Cases tab. From this page, you will be able to open an existing case, open cases sent to you from other users, and begin a new case. On each of these screens, you will see the case name, the correction area, the date on which the case was last modified, and the number of days left in the prescription.

Other features
From the cases page, you can also search for cases, sort cases, determine the number of cases viewed, send a case, duplicate a case and delete a case.

Enter data into the search field to locate a case. To clear the search field, highlight the data and hit delete. You may also click on My Cases or Cases From Others to clear the search field. Click on the drop down menu to filter cases by year.

Click on the drop down menu to increase or decrease the number of cases viewed per page. You can view as many as 40 cases per page.

Click on the arrow icon to sort cases in alphabetical order by Case Name or Correction Area. You may also search by Last Modified case or RX Days.

Click to send a case to another registered user.

Click to duplicate a case.

Click to delete case.
**My Cases tab**
The My Cases tab shows a complete list of your saved cases. To open an existing saved case, click on the name of the case under Case Name. Once opened, the case will contain all previously saved information.

Open a case by clicking on the case name.

**Cases From Others tab**
The Cases From Others tab shows a complete list of cases sent to you from other users. To open a case, click on the name of the case under Case Name. Once opened, the case will contain all previously saved information.

Open a case by clicking on the case name.
Create New Case tab
There are two buttons available to create a new case. You may select the gray button on the left hand side of the page or the green button on the right hand side of the page.

Once you click on the Create New Case button, you are ready to begin entering your case information.

First, enter the case name and date. Next, select the correction area by clicking on the skeletal image. Once you have selected an area, you must choose a region (ie proximal, mid-shaft or distal tibia).

When correcting a long bone, you may choose a proximal, mid-or distal region in the diaphysis and a proximal or distal region in the metaphysis.

Important
No input fields should include the patient’s full name or other patient identifiers per HIPPA guidelines.
When correcting a foot, you must choose a Foot Correction Type. In other words, what kind of frame you will be using. There are four foot correction types: 6x6 Miter, 6x6 Butt, 6+6 and Ankle.

The preview box displays an image of the frame type you have selected. The orange lines represent the moving struts and the region(s) you are able to correct with the specified frame type.

**6x6 Miter**
You may select forefoot or midfoot as the correction region. For a hindfoot correction, select a tibia mid-diaphysis and change to dowel view on the deformity page.

**6x6 Butt**
You may select forefoot or midfoot as the correction region.
You may select forefoot or midfoot as the correction region. For a hindfoot correction, select a tibia mid-diaphysis and change to dowel view on the deformity page.

Ankle
There is no region selection for Ankle Contracture.
After selecting the correction area, you will choose an operating mode. There are two modes of application, Total Residual and Chronic.

In the **Total Residual** operating mode, the frame is applied acutely to mimic the fracture or deformity. This is also described as a crooked frame on crooked bone. Radiographic measurements and initial strut lengths are used in conjunction with the computer software to calculate final strut lengths. The patient then adjusts the struts from the initial position to the calculated final strut lengths based on a prescription calculated by the software. When the frame reaches the final strut lengths, the deformity is corrected.

In the **Chronic** operating mode, radiographic measurements are taken to construct a frame that matches the affected limb. In this mode, the struts are set before the frame is applied to the bone. The patient then adjusts the struts back to their neutral position based on a prescription for strut adjustment calculated by the software. When correction is achieved, the struts will be at neutral length.
Once you have entered all required data in the Case Info section, you will move on to the Deformity section. In this section, you will first select your reference fragment. Your reference fragment can either be the proximal or distal portion of the fracture or deformity. This guide illustrates proximal referencing. Distal referencing is no different except the origin now resides on the distal reference fragment and the corresponding point resides on the proximal moving fragment.

You must select the reference fragment before entering deformity measurements. You will not be able to enter deformity measurements until you indicate either proximal or distal reference.
After selecting the reference fragment, you will enter six required deformity measurements. These deformity measurements will describe the deformity as it exists at the time the frame is applied. Not every patient will have a deformity in every plane. Only enter values where a deformity exists. For those planes with no deformity, enter nothing. All deformities must be entered with both a magnitude and a direction. Please refer to the glossary for definitions of each deformity measurement.

Before entering the deformity measurements, a thorough analysis of AP and lateral radiographs and a clinical examination is required.

In cases where there is potential for bony impingement, you may choose to Apply Axial Translation First. Axial translation will be corrected in the prescription before the remaining deformity.

In this box, you will see a graphical representation of the deformity based on the measurements you entered. You may choose to see the representation in dowel view or bone view. The view automatically regenerates each time a measurement is entered.

Important You may use the image to verify that the measurements you have entered mimic the deformity; however, please note that the bone view provides a graphical representation only.
In this step, you will select the rings and struts used to construct the patient's frame. Using the drop down menus, select the type and size of ring for both the proximal and distal ring.

When selecting ring size for a 2/3 ring or a U-Plate, you will see an inner mount option and an outer mount option in the drop down menu. Inner mount and outer mount refer to additional strut attachment locations. In the figure below, the full circles represent the standard strut mounting location. The half circles represent alternate strut mounting locations.
After you have selected the ring types and sizes, you must select struts. There are two strut types, Standard Struts or FAST FX™ Struts. You can use any combination of sizes or types on a frame. Each frame uses six struts.

Standard Struts are the original struts of the system. They can only compress or distract by rotation of the adjustment knob.

FAST FX Struts can be acutely adjusted by unsnapping the jam nut, and then re-locking it, or moved slowly by the rotating adjustment knob.
4. Mount

In the Mount tab, you will describe how the frame is positioned on the bone, or where your reference ring is located with reference to the origin.

In this step, you will enter four required mounting parameters, or reference ring settings. Please refer to the glossary for definitions of each mounting parameter.

Important: You may use the image to verify that the reference ring settings you have entered mimic the frame location on the patient; however, please note that the bone view provides a graphical representation only.
Once the frame is applied, enter the Initial Strut Settings. Read them directly off the laser etched calibration on the struts and enter into the corresponding box. Click the Calculate Final Settings button to view your Final Strut Settings and Final Frame preview.

If using the **Total Residual** mode, you must enter the initial strut lengths here. Once all values are entered, click **Calculate Final Settings** to view final strut settings.

The Final Strut Settings will indicate the setting of each strut on the last day of the correction program.

Final strut settings for individual struts are displayed here.

You can see initial and final frame AP, lateral and axial views by selecting these boxes.

**Important** You may use the image to verify that the deformity and frame location in the software mimic the deformity and frame location on the patient; however, please note that the bone view provides a graphical representation only.
If using the Chronic mode, you will enter the Neutral Frame Height here. The software calculates initial strut settings based on deformity measurements, mounting parameters and neutral frame height and neutral strut length.
The Structure at Risk or SAR step is used to determine the time it will take to correct the deformity. SAR represents a structure (neurovascular bundle, soft tissue envelope, skin graft, or bone ends of the fracture itself) that may be affected by the correction process. In this step, you will identify where the SAR is in relation to the origin in the AP, lateral and axial views.

You must enter a Maximum Safe Distraction Rate before continuing to the next step. 1 mm a day of correction is generally accepted.

SAR is indicated by a yellow circle in the graphical representation. Important: The bone images used in these views are a graphical representation only. It is required that users clinically measure and describe the SAR location.

The duration of the correction time appears here.

The SAR may dictate that a correction proceed at a slower pace. You may override the recommended correction time by checking in the Override Correction Time box and then entering a value in the Desired Correction Time box.
The Prescription shows the schedule the patient is expected to follow for strut adjustments. The colored areas indicate a strut change out.

You may edit your Contact Info and Case Notes. Here you may want to put your clinic contact information as well as your suggestions for strut adjustments, pin and frame care, and the date of the patient's next appointment.

It is advised that you print a copy of the prescription for the patient to take home. A Printable PDF version is available by clicking here.

The view icon allows you to view a model of the frame for a particular day in the prescription.

You may start a New Total Residual from any point in the prescription by clicking on the TR icon. More information on a New Total Residual can be found on page 28.

In the Strut Change-Outs section of the Prescription, you will find a list of the struts requiring a change out, the overlap interval and the type and size of struts you will be changing.

The Prescription Start Date can be modified by entering a value in the data field or by clicking on the calendar icon and selecting a date.
The Report is intended for the doctor to print and maintain a hard copy as a permanent record for the patient’s file. It is a comprehensive list of all the input and output information including deformity measurements, mounting parameters, prescription, strut change out schedule and case notes. A Printable PDF version is available.

<table>
<thead>
<tr>
<th>Deformation Parameters</th>
<th>Fracture Parameters</th>
<th>Mounting Parameters</th>
<th>Strut Parameters</th>
<th>SAR Data</th>
<th>Prescription</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP View Angulation</td>
<td>Lateral View Angulation</td>
<td>AP View Frame Offset</td>
<td>Rectangular Plate</td>
<td>SAR 00</td>
<td>Date: 09/11/10</td>
</tr>
<tr>
<td>20.9° Lateral</td>
<td>10.0° Lateral</td>
<td>10.0 mm Medial to Origin</td>
<td>10.0 mm Medial to Origin</td>
<td>0.0 mm</td>
<td>145.9</td>
</tr>
<tr>
<td>Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>156.5 mm Ring (710-0114)</td>
<td>156.5 mm Ring (710-0114)</td>
<td>0.0°</td>
<td>0.0 mm</td>
<td>145.9</td>
<td></td>
</tr>
<tr>
<td>Strut 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>Medial Fast Fix</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>Strut 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>Strut 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>Strut 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>Strut 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>Strut 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>SAR Data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>145.0</td>
</tr>
<tr>
<td>AP View SAR Offset</td>
<td>Axial SAR Offset</td>
<td>Lateral View SAR Offset</td>
<td>SAR 00</td>
<td>1.0</td>
<td>09/11/10</td>
</tr>
<tr>
<td>0.0 mm</td>
<td>0.0 mm</td>
<td>0.0 mm</td>
<td>0.0 mm</td>
<td>1.0</td>
<td>145.9</td>
</tr>
</tbody>
</table>

(Screen continued on next page)
### Strut Change-Outs

<table>
<thead>
<tr>
<th>Change Out</th>
<th>Strut</th>
<th>Overlap Interval</th>
<th>Strut Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>a (Green)</td>
<td>0</td>
<td>2</td>
<td>7107-0720 → 7107-0710</td>
</tr>
<tr>
<td>b (Blue)</td>
<td>0</td>
<td>4</td>
<td>7107-0720 → 7107-0710</td>
</tr>
<tr>
<td>c (Yellow)</td>
<td>0</td>
<td>11</td>
<td>7107-0720 → 7107-0710</td>
</tr>
<tr>
<td>d (Green)</td>
<td>0</td>
<td>24</td>
<td>7107-0710 → Extra Short Fast Fx @ Strut</td>
</tr>
</tbody>
</table>

### Parts List

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>155mm Ring (7107-0314)</td>
<td>2</td>
</tr>
<tr>
<td>Fast Fx @ Identification Band Kit (7107-0340)</td>
<td>1</td>
</tr>
<tr>
<td>Medium Fast Fx @ Strut (7107-0720)</td>
<td>6</td>
</tr>
<tr>
<td>Short Fast Fx @ Strut (7107-0710)</td>
<td>3</td>
</tr>
<tr>
<td>Extra Short Fast Fx @ Strut (7107-0705)</td>
<td>1</td>
</tr>
</tbody>
</table>

### Case Notes
Saving a case
You can save a case by clicking Save or Save As in the orange menu bar. You must select a correction area and an operating mode before you can save a case.

To save a case, click **Save** or **Save As**.

The following popup box will appear

![Save Case](image)

**Save Case**

Do you want to save the case:

Test

**Cancel**  **OK**

Click OK to save a case.

When saving a case, the following message will be displayed in a pop up advising the user to print a hard copy of the prescription to keep as a permanent record.

![WARNING!](image)

**WARNING!**

**ELECTRONICALLY STORED SPATIAL FRAME FILES ARE WORKSPACE ONLY AND NOT PART OF THE PATIENT TREATMENT RECORD. PRIOR TO SAVING THIS DATA ELECTRONICALLY, YOU ARE ADVISED TO PRINT A HARD COPY FOR YOUR PERMANENT RECORDS.**

**OK**
Closing a case

To close a case, click Close in the orange menu bar.
New Total Residual

If at any point during the prescription you need to revise the deformity measurements, you can do so by creating a new total residual case. To create a New Total Residual, click on the icon circled in the image below. All information previously entered into the original case (Frame components, Mounting Parameters/Reference Ring Settings, and SAR) will be saved except for the deformity measurements.

The following popup box will appear

The New Case Name field will auto populate with existing case name – Second Correction. You can change the case name by clicking inside the box and typing in a new name.
After clicking on the Create New Total Residual button, the second correction will open to the Case Info page and the Case Name field will be populated with the name you entered when you created the new total residual.

In a New Total Residual, the data fields for deformity measurements will be blank. Enter the new deformity measurements as they exist on the day you begin the New Total Residual.
Initial Strut Settings will be the strut settings from the original prescription on the day selected to run the new total residual. If required, these settings can be changed.
Changing account information

Click on the Account tab to change account information such as name, phone number, email address, password, etc. Please keep this information up to date with current information.

Resources

Click on the Resources tab to access a complete list of resources including supporting literature and a calendar of upcoming training courses.
Contact us

For website related assistance, click on the Contact Us tab.

Logging out

You may log out at any time by clicking on the Logout link.
Glossary

**AP view angulation**
Using an AP radiograph, AP view angulation measures the angle, in degrees, between the fragments and is indicated in degrees varus or valgus.

**AP view translation**
Using an AP radiograph, AP view translation measures the distance, in millimeters, that the corresponding point on the moving fragment is medial or lateral to the origin on the reference fragment.

**Lateral view angulation**
Using a lateral radiograph, lateral view angulation measures the angle, in degrees, that the moving fragment is in flexion (apex anterior) or extension (apex posterior).
Lateral view translation
Using a lateral radiograph, lateral view translation measures the distance, in millimeters, that the corresponding point is anterior or posterior to the origin.

Axial view angulation
Axial view angulation measures, in degrees, the internal or external rotation between the reference fragment and the moving fragment. Axial view angulation is a clinical assessment and is determined from the perspective of the reference fragment.

Axial view translation
Using an AP radiograph, axial view translation measures, in millimeters, how short or long the corresponding point is to the origin.
**AP view frame offset**
Using an AP radiograph, AP view frame offset measures the distance, in millimeters, that the center of the reference ring is medial or lateral to the origin.

**Lateral view frame offset**
Using a lateral radiograph, lateral view frame offset measures the distance, in millimeters, that the center of the reference ring is anterior or posterior to the origin.

**Axial view frame offset**
Using an AP radiograph, axial view frame offset measures the distance, in millimeters, that the center of the reference ring (beginning from the center of the ring thickness) is proximal or distal to the origin.

**Rotary frame angle**
Rotary frame angle measures, in degrees, the orientation of the master tab to the direct anterior position. Rotary frame angle is a clinical assessment.
**Structure at Risk (SAR)**

Represents a structure (neurovascular bundle, soft tissue envelope, skin graft or bone ends of the fracture itself) that may be affected by the correction process.