

# CircularFixator Reference Manual

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Chapter 1

CircularFixator Hierarchical Index

1.1 CircularFixator Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Coords . . . . .	7
FixatorFrame . . . . .	8
FixatorMechanism . . . . .	10
FixatorStrut . . . . .	11



# Chapter 2

## CircularFixator Class Index

### 2.1 CircularFixator Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<b>Coords</b>	7
<b>FixatorFrame</b>	8
<b>FixatorMechanism</b>	10
<b>FixatorStrut</b>	11





# Chapter 3

## CircularFixator File Index

### 3.1 CircularFixator File List

Here is a list of all files with brief descriptions:

<b>fixatorframe.cpp</b>	13
<b>fixatorframe.h</b>	14
<b>fixatormechanism.cpp</b>	15
<b>fixatormechanism.h</b>	16
<b>fixatorstrut.cpp</b>	17
<b>fixatorstrut.h</b>	18



## Chapter 4

# CircularFixator Class Documentation

### 4.1 Coords Struct Reference

```
#include <fixatorframe.h>
```

#### Public Attributes

- Vector3 **centreCoords**
- Vector3 **frameCoords** [6]
- Vector3 **jointCoords** [6]
- Vector3 **boneCoords** [2]

#### 4.1.1 Member Data Documentation

4.1.1.1 Vector3 Coords::boneCoords[2]

4.1.1.2 Vector3 Coords::centreCoords

4.1.1.3 Vector3 Coords::frameCoords[6]

4.1.1.4 Vector3 Coords::jointCoords[6]

The documentation for this struct was generated from the following file:

- **fixatorframe.h**

## 4.2 FixatorFrame Class Reference

```
#include <fixatorframe.h>
```

### Public Member Functions

- **FixatorFrame** ()
- void **setParameters** (int **id**, double **innerRadius**, double **outerRadius**, double **thickness**, double **jointOffset**, double **jointSize**)
- void **setLocalFrameCoords** (int jointId, Vector3 frameCoords)
- void **setLocalBoneCoords** (Vector3 end1, Vector3 end2)
- void **transformLocal** (Vector3 **rotation**, Vector3 translation)
- void **transformGlobal** (Vector3 **rotation**, Vector3 translation)

### Public Attributes

- int **id**
- double **innerRadius**
- double **outerRadius**
- double **thickness**
- double **jointOffset**
- double **jointSize**
- **Coords local**
- **Coords global**
- Vector3 **rotation**

### 4.2.1 Constructor & Destructor Documentation

#### 4.2.1.1 FixatorFrame::FixatorFrame ()

### 4.2.2 Member Function Documentation

#### 4.2.2.1 void FixatorFrame::setLocalBoneCoords (Vector3 *end1*, Vector3 *end2*)

#### 4.2.2.2 void FixatorFrame::setLocalFrameCoords (int *jointId*, Vector3 *frameCoords*)

#### 4.2.2.3 void FixatorFrame::setParameters (int *id*, double *innerRadius*, double *outerRadius*, double *thickness*, double *jointOffset*, double *jointSize*)

#### 4.2.2.4 void FixatorFrame::transformGlobal (Vector3 *rotation*, Vector3 *translation*)

#### 4.2.2.5 void FixatorFrame::transformLocal (Vector3 *rotation*, Vector3 *translation*)

### 4.2.3 Member Data Documentation

#### 4.2.3.1 Coords FixatorFrame::global

#### 4.2.3.2 int FixatorFrame::id

#### 4.2.3.3 double FixatorFrame::innerRadius

#### 4.2.3.4 double FixatorFrame::jointOffset

#### 4.2.3.5 double FixatorFrame::jointSize

#### 4.2.3.6 Coords FixatorFrame::local

#### 4.2.3.7 double FixatorFrame::outerRadius

#### 4.2.3.8 Vector3 FixatorFrame::rotation

#### 4.2.3.9 double FixatorFrame::thickness

The documentation for this class was generated from the following files:

- `fixatorframe.h`
- `fixatorframe.cpp`

## 4.3 FixatorMechanism Class Reference

```
#include <fixatormechanism.h>
```

### Public Member Functions

- **FixatorMechanism** ()
- void **transformFrameLocal** (int *frameId*, Vector3 *rotation*, Vector3 *translation*)
- void **transformFrameGlobal** (int *frameId*, Vector3 *rotation*, Vector3 *translation*)
- void **setStrutLengths** (double *strutLength*[6], double *approximateZ*)

### Public Attributes

- **FixatorFrame** *frame* [2]
- **FixatorStrut** *strut* [6]

### 4.3.1 Constructor & Destructor Documentation

#### 4.3.1.1 FixatorMechanism::FixatorMechanism ()

### 4.3.2 Member Function Documentation

#### 4.3.2.1 void FixatorMechanism::setStrutLengths (double *strutLength*[6], double *approximateZ*)

#### 4.3.2.2 void FixatorMechanism::transformFrameGlobal (int *frameId*, Vector3 *rotation*, Vector3 *translation*)

#### 4.3.2.3 void FixatorMechanism::transformFrameLocal (int *frameId*, Vector3 *rotation*, Vector3 *translation*)

### 4.3.3 Member Data Documentation

#### 4.3.3.1 FixatorFrame FixatorMechanism::frame[2]

#### 4.3.3.2 FixatorStrut FixatorMechanism::strut[6]

The documentation for this class was generated from the following files:

- **fixatormechanism.h**
- **fixatormechanism.cpp**

## 4.4 FixatorStrut Class Reference

```
#include <fixatorstrut.h>
```

### Public Member Functions

- **FixatorStrut** ()
- void **setParameters** (int strutId, double **minLength**, double **maxLength**, double **diameter**)
- void **connect** (Vector3 \***jointCoords0**, Vector3 \***jointCoords1**)
- double **length** ()
- bool **inRange** ()

### Public Attributes

- int **id**
- double **minLength**
- double **maxLength**
- double **diameter**
- Vector3 \* **jointCoords0**
- Vector3 \* **jointCoords1**
- double **strutLength**

#### 4.4.1 Constructor & Destructor Documentation

4.4.1.1 `FixatorStrut::FixatorStrut () [inline]`

#### 4.4.2 Member Function Documentation

4.4.2.1 `void FixatorStrut::connect (Vector3 * jointCoords0, Vector3 * jointCoords1)`

4.4.2.2 `bool FixatorStrut::inRange ()`

4.4.2.3 `double FixatorStrut::length ()`

4.4.2.4 `void FixatorStrut::setParameters (int strutId, double minLength, double maxLength, double diameter)`

#### 4.4.3 Member Data Documentation

4.4.3.1 `double FixatorStrut::diameter`

4.4.3.2 `int FixatorStrut::id`

4.4.3.3 `Vector3* FixatorStrut::jointCoords0`

4.4.3.4 `Vector3 * FixatorStrut::jointCoords1`

4.4.3.5 `double FixatorStrut::maxLength`

4.4.3.6 `double FixatorStrut::minLength`

4.4.3.7 `double FixatorStrut::strutLength`

The documentation for this class was generated from the following files:

- `fixatorstrut.h`
- `fixatorstrut.cpp`



## Chapter 5

# CircularFixator File Documentation

### 5.1 fixatorframe.cpp File Reference

```
#include "fixatorframe.h"  
#include "Vector3.H"
```

## 5.2 fixatorframe.h File Reference

```
#include "Vector3.H"
```

### Classes

- struct **Coords**
- class **FixatorFrame**

## 5.3 fixatormechanism.cpp File Reference

```
#include <math.h>
#include <values.h>
#include "fixatormechanism.h"
```

### Functions

- double **interpolate** (int *range*, int *index*, double *min*, double *max*)

#### 5.3.1 Function Documentation

5.3.1.1 double **interpolate** (int *range*, int *index*, double *min*, double *max*)

## 5.4 fixatormechanism.h File Reference

```
#include "Vector3.H"  
#include "fixatorframe.h"  
#include "fixatorstrut.h"
```

### Classes

- class **FixatorMechanism**

## 5.5 fixatorstrut.cpp File Reference

```
#include "fixatorstrut.h"
```

## 5.6 fixatorstrut.h File Reference

```
#include "Vector3.H"
```

### Classes

- class **FixatorStrut**

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