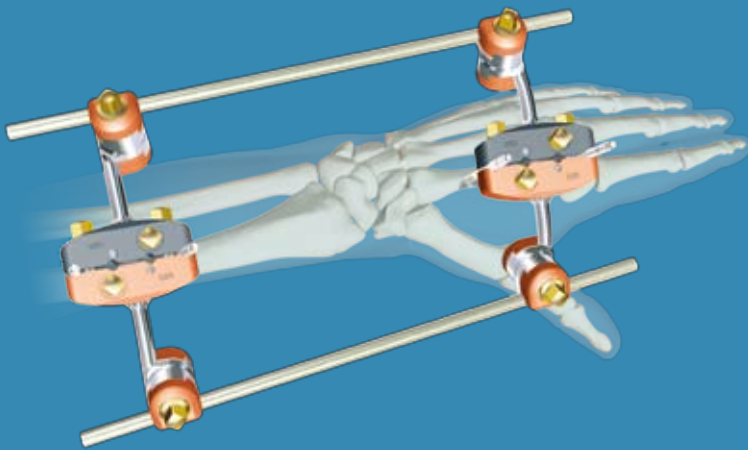


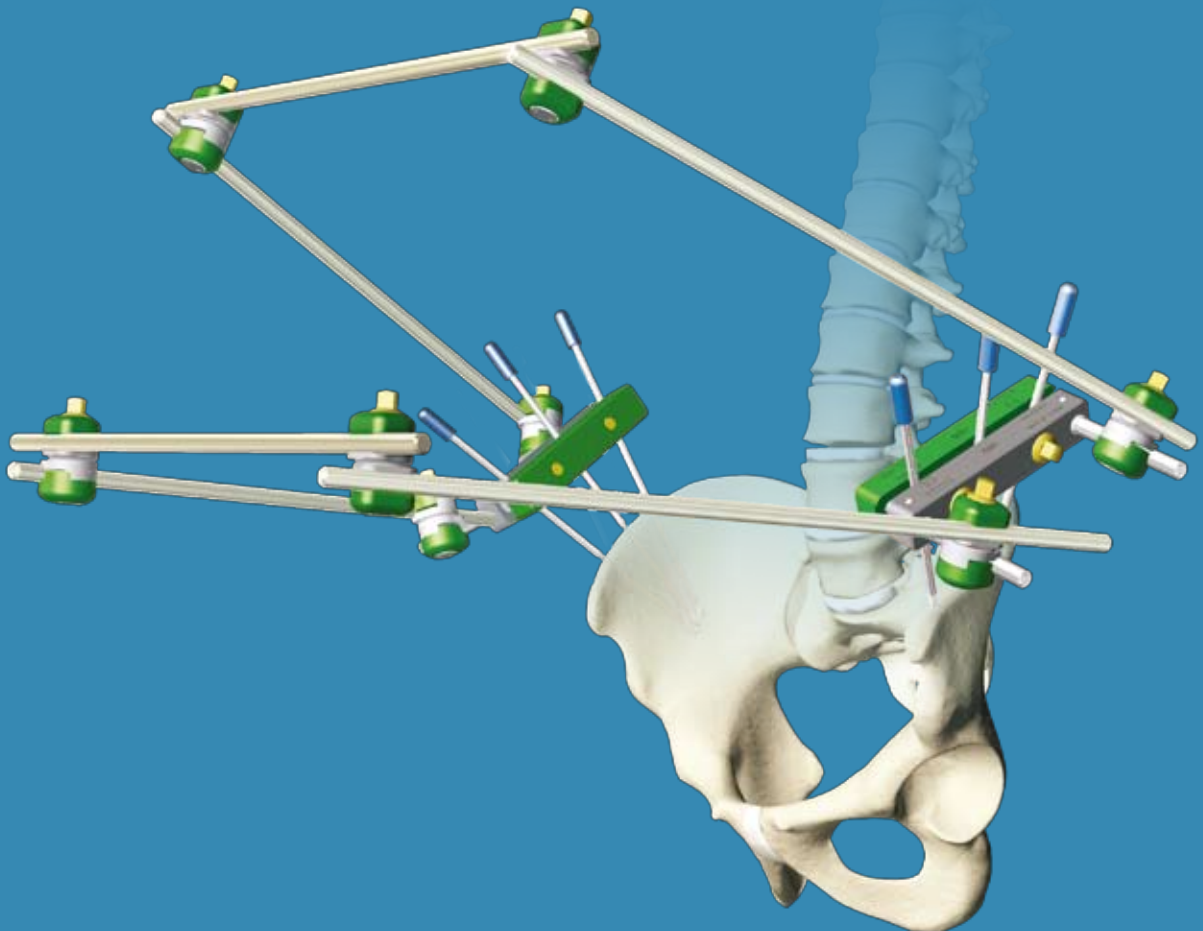
# Hoffmann II MRI

## External Fixation Systems



Hoffmann II MRI  
Hoffmann II Compact MRI

- Modular Systems for
- Upper Extremity
  - Lower Extremity
  - Pelvis



# Introduction

In the ever changing world of medicine, new technology is advancing the treatment of the patient. The Magnetic Resonance Imaging (MRI) scanner uses electromagnetic fields to make exact images of the human body. More and more hospitals are investing in MRI suites and using the MRI scanners on a routine basis to more accurately assess their patients.

For this reason, Stryker offers a line extension of External Fixation which may be used safely in MRI scanners up to 3.0 Tesla<sup>1</sup>. This means that the patient can be placed in the MRI scanner with the fixator in situ without additional risk for the patient or the MRI scanner itself.

With non MRI safe fixators, the patient can be injured in two ways. The static magnetic field generated by MRI systems will attract ferromagnetic objects with considerable force.

This can lead to displacement of the components which can cause serious injuries to the patient and damage to the scanner. In addition to this, conductive devices may experience heating by the induction of electromotive forces when subjected to gradient magnetic fields. This can lead to temperature increases of the fixator pins which can be significant and reach critical levels. These increases may cause patient discomfort and may even lead to bone necrosis.

The engineers at Stryker have created MRI systems which are made of non-ferromagnetic and non-conductive materials. This allows the surgeon to build a construct with limited risk for the patient in an MRI environment up to 3.0 Tesla and is therefore rated MR-Conditional.



Image is showing the magnet resonance tomograph Magnetom Avanto © by Siemens AG Medical

<sup>1</sup> 1.5 and 3.0 Tesla Test Data with specific conditions on file at Stryker Trauma AG

# Features & Benefits

Versatility and Ease-of-Use are the keys to an effective external fixator. Whether it is middle-of-the-night trauma, or a complicated fracture with associated soft-tissue damage, the Hoffmann II MRI product family gives the surgeon the right tools to

resolve even the most difficult cases. The Hoffmann II MRI System is MR-Conditional up to 3 Tesla. Refer to tested configurations shown on the Wallchart for Radiologists (REF 5075-1-602).

With the patented\* **“Snap-Fit” Technology**, stable frame building is simple. It is possible to reduce the fracture, make post-operative corrections, and treat soft-tissue damage with the frame in situ.

There are just a handful of **High Quality Instruments** in the system. This makes the product very manageable in the Operating Room.

The non-ferromagnetic components are **Color-Coded**. These components are MR-Conditional up to 3 Tesla with the tested frame configurations including Apex Pins.

**Patented Light-Weight and Advanced** composite materials are non-ferromagnetic and non-conductive. You can create a **Low-Profile, Radiolucent Frame** which can be used in MRI Scanners up to 3 Tesla.

With full **Independent Pin Placement**, you can easily build a frame to treat fractures close to a joint or to stay clear of damaged soft-tissue areas.

**Note:**  
Refer to the Apex, Standard Hoffmann II and Hoffmann II Compact Systems for a detailed Operative Technique, since these systems function in the same way in the operating theater.  
Refer to Wallchart for Cleaning Staff (REF 5075-1-601) and Wallchart for Radiologists (REF 5075-1-602).

\* US Patents 6,080,153; 5,752,954 and EP 0 700 664

# Technical Details - Hoffmann II MRI

## Color Code Guidelines for Safe MRI Procedures

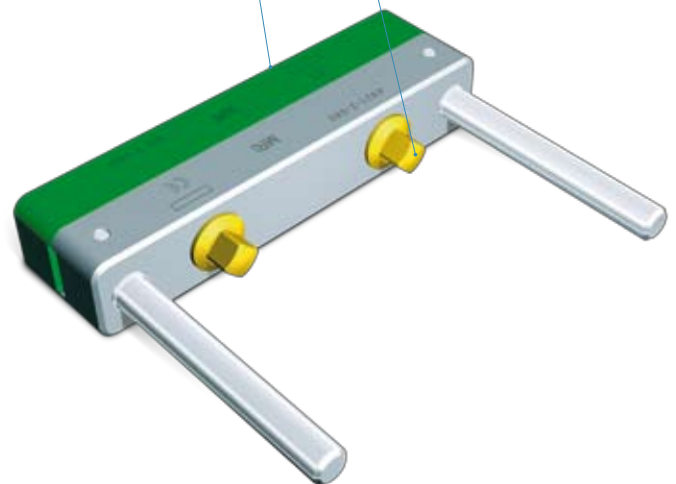
The color coding of the Hoffmann II MRI system will help you ensure that the frame you build may be used for MRI procedures. Since the dimensions are virtually the same between the Hoffmann II and Hoffmann II MRI, it is important to understand and follow the color code scheme to avoid any possible mix-up of components leading to patient injury.



All of the tightening bolts have a GOLD head

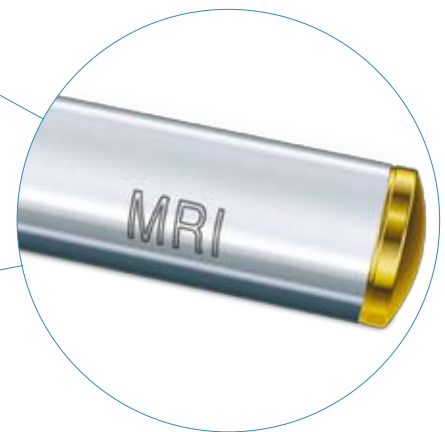
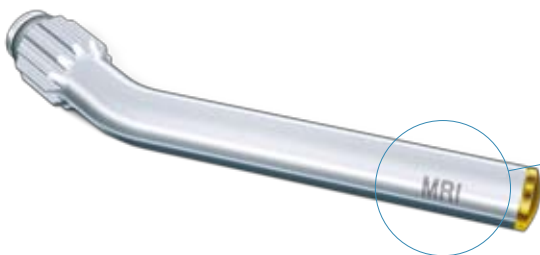


All of the clamps and couplings contain the color GREEN.



All of the 30° Angled Posts have a GOLD tip

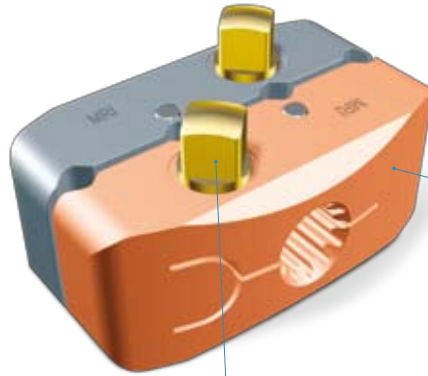
All MRI components have "MRI" engraved on them.





# Technical Details - Hoffmann II Compact MRI

Hoffmann II Compact MRI also has color coding to distinguish it from the standard Hoffmann II Compact System.



The 4-Hole Pin Clamp and couplings contain the color ORANGE.



Peri-Articular Pin Clamp has a GOLD post.



All of the tightening bolts have a GOLD head.



All MRI components have "MRI" engraved on them.



All of the 30° Angled Posts have a GOLD tip



# Technical Details



The rods are color-coded in YELLOW for easy recognition. The Hoffmann II MRI System uses ø8mm rods, and the Hoffmann II Compact MRI uses ø5mm rods.



## MRI Carbon Connecting Rods and Tubes

The yellow Carbon Connecting Rods in the MRI systems have been specially designed to be non-conductive and non-ferromagnetic. They are coated with a electricity-insulating material. This means that no induced current can be carried through any frame built with MRI components.

### Note:

To ensure non-conductivity, the rods are single-use.

### Note:

The Standard Hoffmann II and Hoffmann II Compact Carbon (black) and Aluminium Rods are MRI unsafe because they are made from conductive materials. The Stainless Steel Rods are MRI unsafe because they are both conductive and ferromagnetic.



The Hoffmann II Compact MRI System offers a ø15mm Compression/ Distraction Tube, which is color coded in ORANGE.

The Hoffmann II MRI System offers two types of Ø20mm tubes: a Compression/Distraction Tube and a Dynamization Tube. They are color coded in GREEN.

# Technical Details

## Apex Pins

Apex Pins have always been and will continue to be MR-Conditional for procedures up to 3.0 Tesla. All of Stryker's pins are made of high-quality non-ferromagnetic surgical stainless steel or titanium.

There are four different types of pins that can be used with Stryker external fixation components.

### Note:

The MRI Hoffmann II Systems can only be qualified as MR-Conditional when using Stryker's Apex Pins to build frames.



These pins come in a variety of diameters, total lengths, and thread lengths.



Self-Drilling Pin



Blunt Pin



Cancellous Pin



Transfixing Pin

### Related Stryker Products\*\*

The system can be used together with other Stryker systems to give the surgeon the **Full Package** of fracture treatment.



ASNIS III Cannulated Screws



AxSOS Systems



T2 Nailing Systems

**\*\* These devices are not tested concerning MRI Environment!**

# Ordering Information - Components

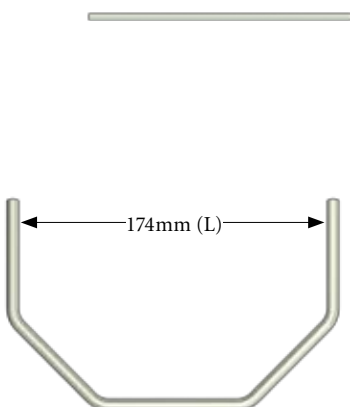


REF	Description	
<b>Hoffmann II MRI Components</b>		
4921-2-020	5-Hole Pin Clamp	for Ø4, Ø5, and Ø6mm pins
4921-2-060	10-Hole Pin Clamp	for Ø4, Ø5, and Ø6mm pins
4921-2-080	Pelvic Clamp	for Ø4, Ø5, and Ø6mm pins
4921-1-010	Rod to Rod Coupling	for Ø8mm rods or posts
4921-1-020	Pin to Rod Coupling	for Ø4-5mm pins/Ø8mm rods or posts
4921-1-030	Inverted Pin to Rod Coupling	for Ø8mm rods or posts/Ø4-5mm pins
4921-1-100	Tube to Rod Coupling	for Ø20mm tubes/Ø8mm rods or posts
4921-2-140	30° Angled Post	Ø8mm
4921-2-120	Straight Post	Ø8mm



<b>Hoffmann II MRI Ø20mm Tube</b>		
4921-0-000	Dynamization Tube	
4921-0-015	Compression/Distraction Tube	



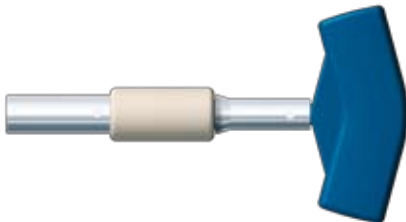
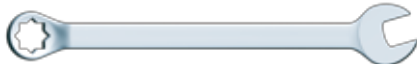




## Ø8mm MRI Rods (yellow)



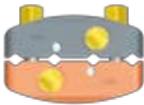









5028-8-065	Carbon Connecting Rod	65mm
5028-8-100	Carbon Connecting Rod	100mm
5028-8-150	Carbon Connecting Rod	150mm
5028-8-200	Carbon Connecting Rod	200mm
5028-8-250	Carbon Connecting Rod	250mm
5028-8-300	Carbon Connecting Rod	300mm
5028-8-350	Carbon Connecting Rod	350mm
5028-8-400	Carbon Connecting Rod	400mm
5028-8-450	Carbon Connecting Rod	450mm
5028-8-500	Carbon Connecting Rod	500mm
5028-7-030	Semi-Circular Carbon Rod	174mm (L)








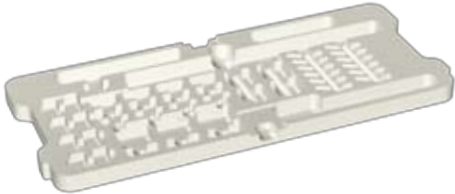

# Ordering Information - Instruments

	REF	Description
<b>Hoffmann II Instruments for MRI System (not for use in the MRI suite)</b>		
	4920-9-010	Stabilization/Reduction Wrench
	4920-9-020	Thumbwheel
	4920-9-030	7mm T-Wrench/ø5-6mm Pin Inserter
	4920-9-036 (5054-8-009)	7mm Spanner Wrench
	4921-9-984	Storage Case Lid
	4921-9-983	Storage Case Upper Insert
	4921-9-982	Storage Case Lower Insert
	4921-9-981	Storage Case Base

# Ordering Information - Components

	REF	Description	
<b>Hoffmann II Compact MRI Components</b>			
	4941-2-020	4-Hole Pin Clamp	for ø3 and ø4mm pins
	4941-2-200	Peri-Articular Pin Clamp	for ø3mm pins
	4941-1-010	Rod to Rod Coupling	for ø5mm rods or posts
	4941-1-020	Pin to Rod Coupling	for ø5mm rods or posts/ø3-4mm pins
	4941-1-058	Rod to Rod Coupling	for ø8mm rods or posts/ø5mm rods or posts
	4941-1-100	Tube to Rod Coupling	for ø15mm tube/ø5mm rods or posts
	4941-2-140	30° Angled Post	ø5mm
	4941-2-120	30° Angled Post	ø5mm
<b>Hoffmann II Compact MRI ø15mm Tube</b>			
	4941-0-015	Compression/Distracton Tube	
<b>ø5mm MRI Rods (yellow)</b>			
	5048-5-065	Carbon Connecting Rod	65mm
	5048-5-100	Carbon Connecting Rod	100mm
	5048-5-150	Carbon Connecting Rod	150mm
	5048-5-200	Carbon Connecting Rod	200mm
	5048-5-250	Carbon Connecting Rod	250mm
	5048-5-300	Carbon Connecting Rod	300mm

# Ordering Information - Instruments

REF	Description
<b>Hoffmann II Compact Instruments for MRI System (not for use in the MRI suite)</b>	
	4940-9-010 Stabilization/Reduction Wrench
	4920-9-020 Thumbwheel
	4940-9-030 5mm Wrench/ø3-4mm Pin Driver
	4940-9-036 5mm Spanner Wrench (5150-9-005)
	4941-9-923 Storage Case Lid
	4941-9-922 Storage Case Insert
	4941-9-921 Storage Case Base

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## Joint Replacements

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## Trauma, Extremities & Deformities

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## Craniomaxillofacial

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## Spine

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## Biologics

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## Surgical Products

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## Interventional Pain

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## Navigation

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## Communications

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## Imaging

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## Patient Handling Equipment

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## EMS Equipment

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