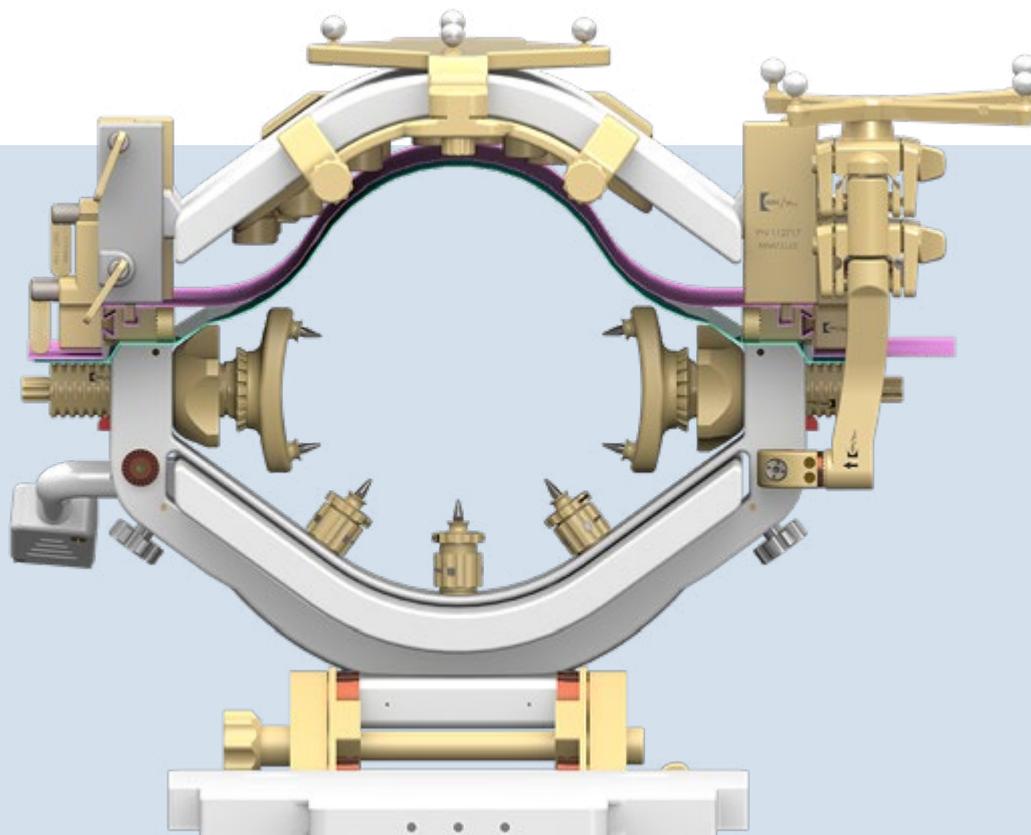
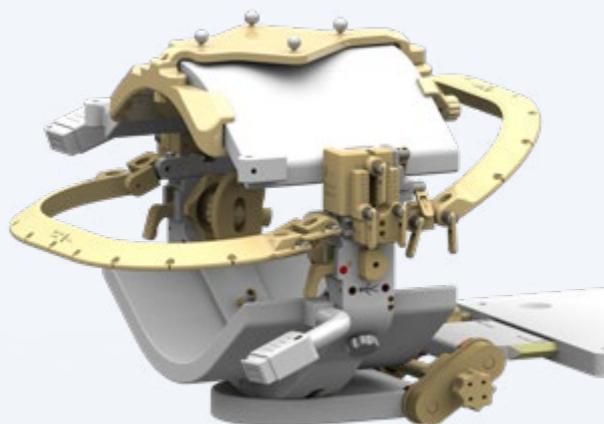


NORAS iMRI NEUROSURGERY SOLUTION

**OR Head Holder „Flexibility“ &
8-Channel Head Coil Set**

Available for

**Siemens Magnetom Aera 1.5T /
Skyra 3T / Vida 3T & Vida fit 1.5T /
Sola 3T & Sola fit 1.5T
&
Philips Ingenia 1.5T and 3T**



Dedicated NORAS Neurosurgical Solutions for iMRI

NORAS offers 1.5T and 3T eight-channel head coils for imaging in the neurosurgical OR environment. These dedicated iMRI coils fulfill hygiene rules, with all components being easy to clean and disinfect. The two-part construction of the OR Head Coil allows the removal of both coil sections during the preparation phase as well as during the intervention. This enables easy patient positioning and excellent access to the FOI (field of interest). While attached, the two coil halves form an eight-channel volume array with very good field homogeneity and image quality.

The OR Head Holder ensures the secure immobilization of the patient's head during the surgical intervention. Furthermore, the OR Head Holder serves as fixation of both coil halves.

The system design ensures a sterile "chamber" between two OR drapes. Hence, none of the cables or any of the coils need to be sterilized.

Several operating tools can be attached to the NORAS Head Holder, such as the Budde® Halo, LEYLA or GREENBERG™ retractors. BrainLab's VarioGuide™ Biopsy Arm can also be attached using the Vario Guide™ adapter.

The optional All Purpose Arch serves as a hand rest, as fixation of surgical equip-

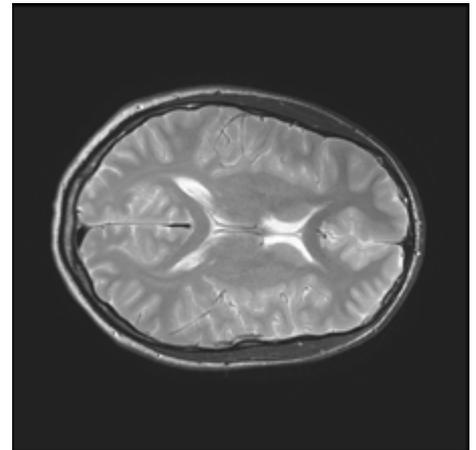
ment and as fixation of the scalp with the help of MR-compatible "fish hooks" and rubber straps.

The optional Multifunctional Bar System enables the scalp to be sewed using MR-compatible hooks. This system is also compatible to the GREENBERG™ surgical instruments. This will save time and effort as the surgeon does not have to close the skull for each intraoperative MR scan.

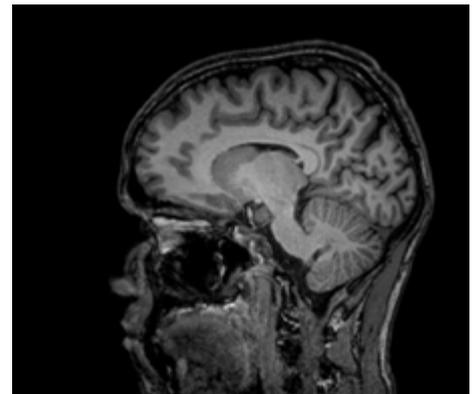
The NORAS OR Head Coil & Head Holder are currently available for Siemens and Philips 1.5T and 3T MR systems. They support the navigation systems of BrainLab and Medtronic.

The NORAS OR Head Holder Flexibility is compatible with the following OR tables:

- Trumpf - TruSystem 7500 (EU- and US-Version)
- Maquet - Alpha Maquet Plus (EU- and US-Version)
- Maquet - Magnus (EU- and US-Version)



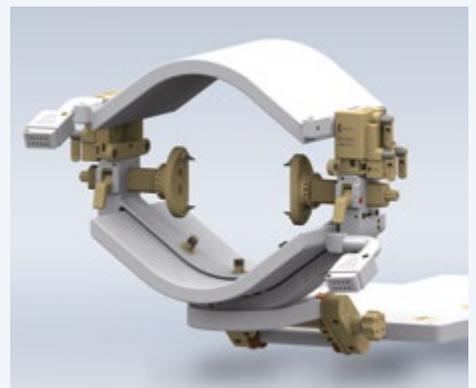
8 Ch volume array with homogeneous illumination and high SNR throughout the whole brain



NORAS iMRI Neurosurgery Solution Flexibility

The NORAS OR Head Holder Flexibility is height-adjustable, which enables excellent patient positioning in 70 cm bore systems Philips Ingenia and Siemens MAGNETOM Aera & Skyra. Additionally, there is the possibility to move the setup in Z-direction, along the head-feet-direction, which is very convenient when positioning the patient on the transfer board.

The NORAS OR Head Holder Flexibility allows supine, prone, lateral left/right positioning of the patient and supports wake craniotomy left/right. The NORAS OR Head Holder Flexibility is designed as a three-point fixation in the lateral level. The surgeon can increase the number of fixation points from three up to seven.



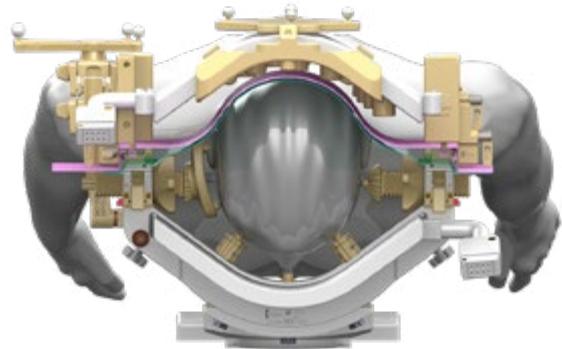
Features of the NORAS iMRI Neurosurgery Solutions

Sterile Concept

NORAS MRI products has developed a "Sterile Concept" for the NORAS OR Head Holder and Head Coils. This was done in cooperation with the Neurosurgical University Hospital of the University Clinical Center Heidelberg, the Neurosurgical Clinic of the University of Ulm at BKH Guenzburg and the Neurosurgery Center of the ASKLEPIOS Clinic North – Hamburg/Heidelberg. Due to this concept, there is no need to sterilize the coils and cables.

During the development process, NORAS emphasized that the coils and cables as well as most components of the Head Holder can be used in an unsterile environment. The basic concept is to create a sterile chamber in between the patient's head and the top coil with two sterile OR drapes.

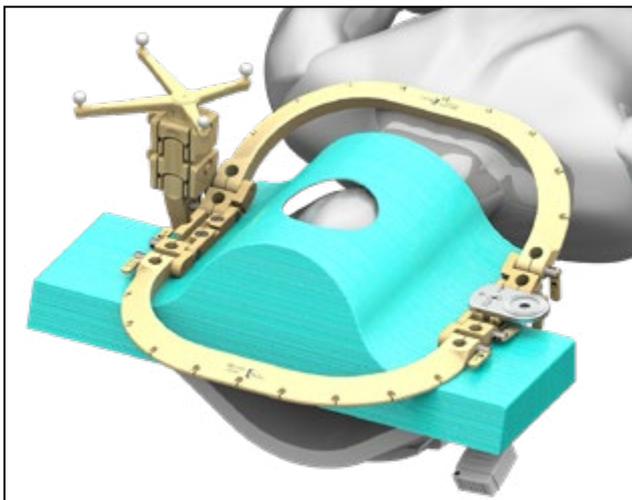
A compatible version of the reference star and head holder adapter has been developed in collaboration with BrainLab AG. The reference star can now be tightly attached to the head holder without perforating the sterile OR drapes. This sterile concept is offered to all existing customers as an upgrade kit „Heidelberg“.



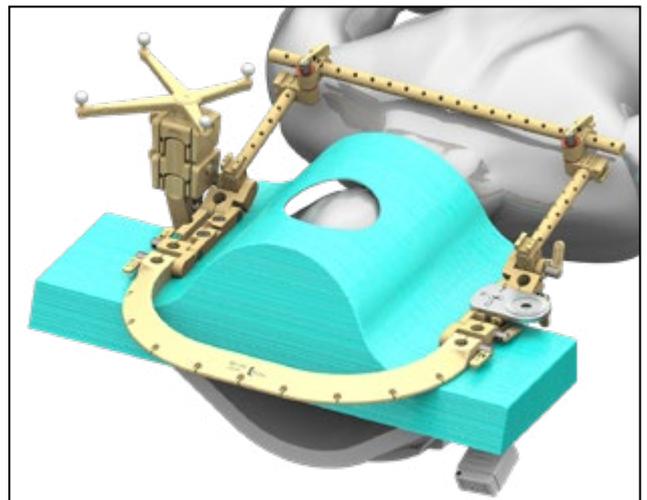
The sterile area is located between the two drapes. Just the lower drape, in the picture turquoise, is getting perforated (the screws of the clamps penetrate the lower drape). The second drape, in the picture violet, is not being penetrated at all. The coils and cables can stay non-sterile.

Variable Setup Concept

During the development of the sterile concept, further customer requests have been implemented, e.g. the All Purpose Arch for fixing the scalp or for the use as a hand rest. Furthermore, the archs are compatible with Sugita® Retractors. The Multifunctional Bar System can also be used for fixation of the scalp and is compatible with GREENBERG™ retractors. In addition, dovetail guides for Budde® Halo retractors and for the LEYLA Flexible Snake Arms in connection with the LEYLA adapter have been implemented.



Setup with two optional All Purpose Archs, VarioGuide™ Adapter and BrainLab Drape Link Reference Star.



Setup with All Purpose Arch, Multifunctional Bar System, VarioGuide™ Adapter and BrainLab Drape Link Reference Star.

Fixation Concept



Flexible Pinning Possibilities

There are now three mounting points for height-adjustable bottom pins. For the upper pins, a combination of one 2-point fixation and a 1-point fixation or two 2-point fixations can be mounted on each side of the head frame. This enables flexible pinning combinations in consideration of all patient positioning options.



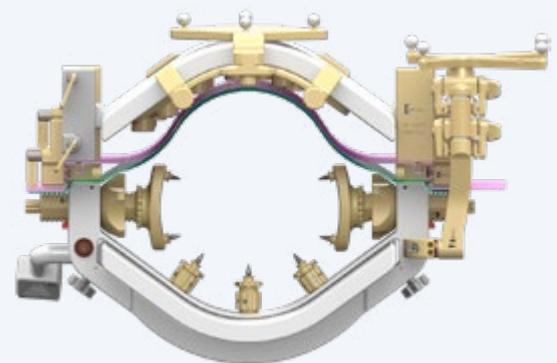
Clamping Device with Force Indicator

The Clamping Device with Force Indicator allows the surgeon to apply a defined pinning force during fixation of the patient's head. Once the desired force is reached, the fixation rod is tightened up by a lock lever and the clamping device can be removed.

Upgrade-Kit Heidberg for NORAS iMRI Neurosurgery Solutions

We recommend all our existing customers with NORAS OR Head Holders SI7000, SI7000-MQ, SI7300 and 113056 & 113066 (Version 4) to upgrade their system with the Heidberg solution.

This kit consists of all mechanical parts which are located above the mounting point of the head frame, as shown in the picture on the right. Therefore, all the features provided by the NORAS OR Head Holder Flexibility are included. However, the height-adjustability of the head frame itself and the possibility to move the setup in Z-direction is only available for the NORAS OR Head Holder Flexibility.



NORAS – Your partner for innovative solutions in MR Imaging

Since more than 30 years NORAS MRI products GmbH is a reliable partner for high resolution imaging in MR-based diagnostics and intervention. Kindly get in touch with us in order to learn more about the application areas of our solutions for your MR-based tasks.

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