Bruker BioSpin

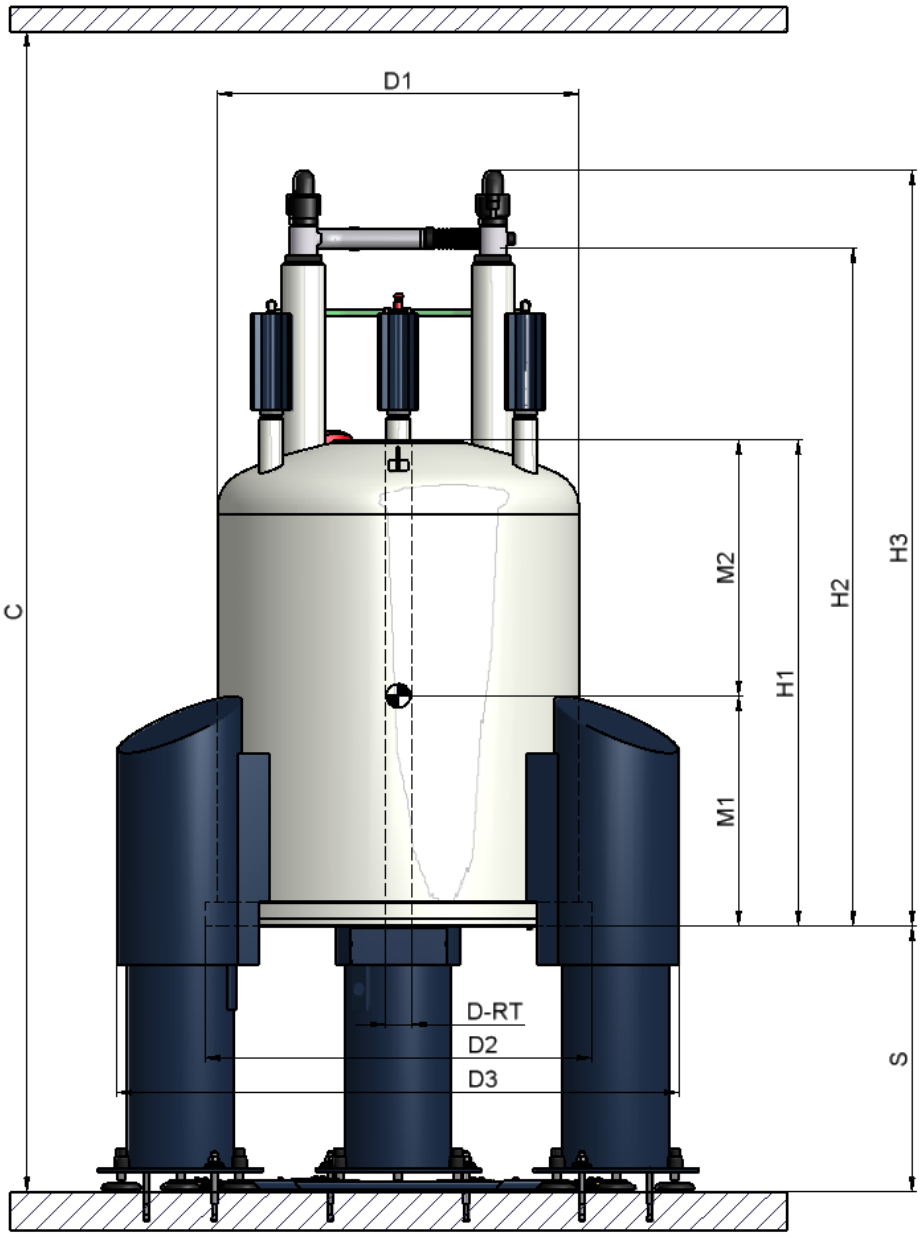
## Magnet Sales Information

# 500 MHz / 54 mm

# ASCEND™


Magnet System 500/54 ASCEND™
Part Number Z115311

# Geometrical Dimensions



## Geometrical Dimensions

| | | Description |
|---|---|---|
| C = | 2520 mm | Operational ceiling height |
| D-RT = | 54 mm | Diameter room temperature bore tube |
| D1 = | 745 mm | Diameter cryostat upper part |
| D2 = | 795 mm | Diameter cryostat bottom plate |
| H1 = | 1005 mm | Height of cryostat from bottom flange – upper flange |
| H2 = | 1391 mm | Height of cryostat from bottom flange to Helium tower<br>Minimum height for transportation |
| H3 = | 1564 mm | Height of cryostat from bottom flange to Helium manifold |
| S = | 570 mm | Height between floor and magnet bottom flange |

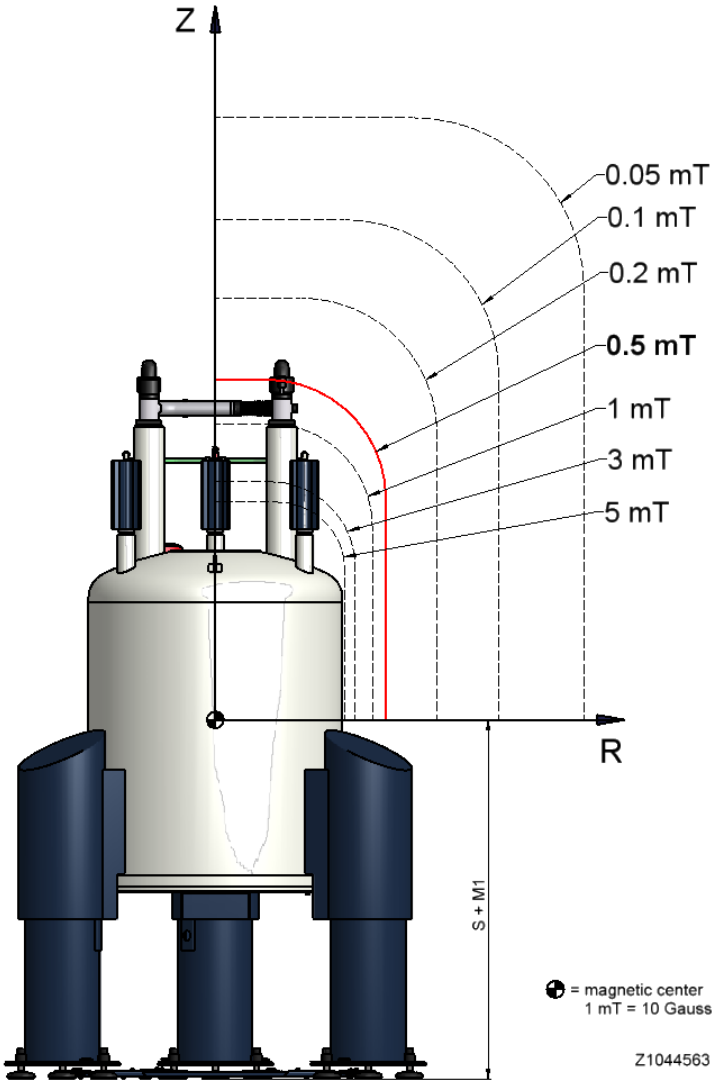
## System Data

| | |
|---|---|
| Minimum operational ceiling height (Helium transfer line 29085) | 2520 mm |
| Minimum ceiling height with standard Helium transfer line 53962 | 2805 mm |
| Required space (footprint) | ~ 1.4 $m^2$ |
| System weight (empty, without magnet stand) | 440 kg |
| Magnet stand easy type / Optional damping cylinders | 32 kg / 120 kg |
| System weight (filled completely, with magnet stand) | 650 kg / 740 kg |

## NMR Magnet Specifications

| | |
|---|---|
| Type | BZH 500'70 ASCEND™ |
| NMR-frequency ($^1$H) | 500 MHz |
| Operating field | 11.74 Tesla |
| Field stability (guaranteed value in persistent mode) | < 10 ppb/hr (< 5.0 Hz/hr) |
| Axial range with homogeneity better than 10ppm | ~ 55 mm |
| Radial stray field (horizontal distance of the 0.5mT (5G) line from the magnetic centre) | < 0.60 m |
| Axial stray field (vertical distance of the 0.5mT (5G) line from the magnetic centre) | < 1.20 m |
| Cryo shims | X, Y, Z, $Z^2$, $Z^3$, XZ, YZ, X-Y, $X^2$-$Y^2$ |
| Electromagnetic Disturbance Suppression EDS** typical | > 99 % |

# Fringe Field Plot




| Fringe field contour | Radial [R] | Axial [Z] |
|---|---|---|
| 200 mT (Directive 2004/40/EC) | Inside cryostat | Inside cryostat |
| 5 mT | 0.47 m | 0.80 m |
| 3 mT | 0.50 m | 0.87 m |
| 1 mT | 0.56 m | 1.06 m |
| **0.5 mT (5 Gauss)** | **0.60 m** | **1.20 m** |
| 0.2 mT | 0.74 m | 1.48 m |
| 0.1 mT | 0.96 m | 1.75 m |
| 0.05 mT (~Earth magnetic field) | 1.26 m | 2.09 m |

## Cryostat Specifications

| | |
|---|---|
| Type | D 315/54 ASCEND™ |
| Room temperature bore | 54 mm |
| Approx. Helium evaporation rate under stabilized conditions (T=20°C, p=1030 mbar) | <13 ml liquid Helium/hour |
| Liquid Helium refill volume/total volume | ~ 57 /85 litres |
| Helium hold time | > 180 days |
| Approx. Nitrogen evaporation rate under stabilized conditions (T=20°C, p=1030 mbar) | <230 ml liquid Nitrogen/hour |
| Liquid Nitrogen refill volume/total volume | ~ 85/106 litres |
| Nitrogen hold time | > 15 days |

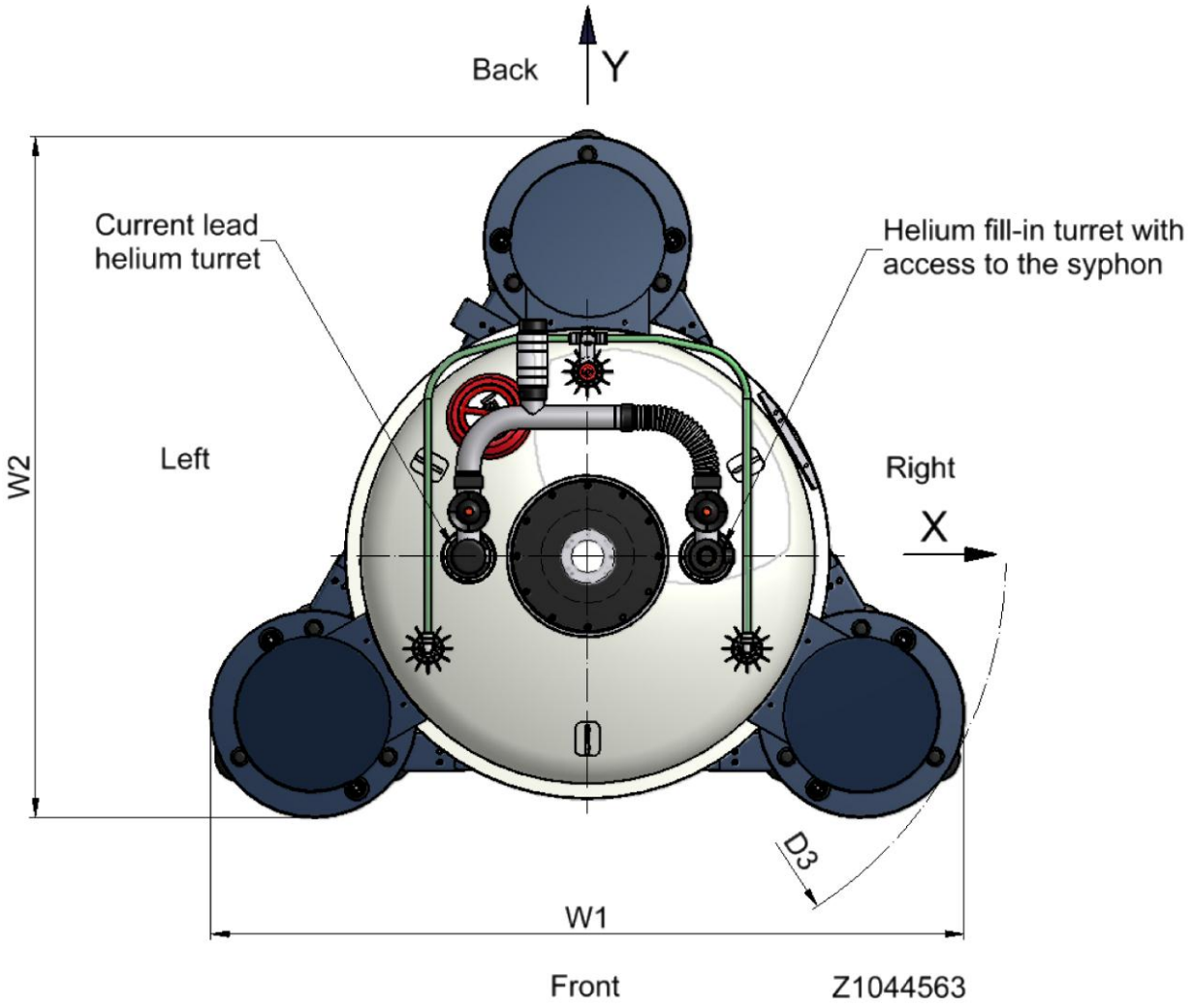
## Accessories

| | | |
|---|---|---|
| Magnet stand H80 570-720 **EMI** Easy<br>**Easy** installation of magnet system with **E**lasto**m**eric **I**solators<br>Frequencies damped > 14 Hz / resonance frequency = 9.5 Hz | Standard | Z123639 |
| Magnet stand F80-570 **ADI** (height 570 mm)<br>**A**ir Spring **D**amped **I**solators with vertical damping<br>Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz | Optional<br>AH0063 | Z112742 |
| Magnet stand F80-700 **ADI** (height 700 mm)<br>**A**ir Spring **D**amped **I**solators with **vertical** damping<br>Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz | Optional if S2 Probes are used | Z112741 |
| Magnet stand F80-570 **API** (height 570 mm)<br>**A**ir **P**iston Damped **I**solators with **vertical** and **horizontal** damping<br>Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz | Optional | Z117691 |
| Magnet stand F80-700 **API** (height 700 mm)<br>**A**ir **P**iston Damped **I**solators with **vertical** and **horizontal** damping<br>Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz | Optional if S2 Probes are used | Z117692 |
| **API** cylinders upgrade when magnet stand F80 is existing<br>**A**ir **P**iston Damped **I**solators with **vertical** and **horizontal** damping<br>Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz | Optional<br>AH0065 | Z114651 |
| Electronic atmospheric pressure device with adjustable set point* | | Z102597 |
| Nitrogen level sensor for BSMSII (SCB3) bendable (not good for BSNL) | Included | Z122394 |

## Equipment for Cryogen Transfer

| | | |
|---|---|---|
| Helium transfer line* D3xx (1455/2060/655) | AH0070 | 53962 |
| Helium transfer line* with bendable extensions (1455/2060/380) for minimum operational ceiling height (2850 mm) | | 29085 |

# Top View




## Geometrical Dimensions with F80 Magnet Stand

| | | |
|---|---|---|
| Width of magnet stand | W1 | 1236 mm |
| Depth of magnet stand | W2 | 1116 mm |
| Diameter of magnet stand = 2 x radius | D3 | 1375 mm |

## Transport

| | | |
|---|---|---|
| Overall system dimensions for transportation | | |
| Magnet box | L x D x H | 114 x 93 x 198 $cm^3$ |
| Magnet stand box (Optional LC Stand) | L x D x H | 97 x 76 x 120 $cm^3$ |
| Magnet stand box (Standard stand) | L x D x H | 125 x 77 x 60 $cm^3$ |
| Minimum system dimensions of magnet, unpacked (without manifold) | | ∅ 79.5 cm, H 139 cm |
| Magnet System weight for transportation | | ~ 670 kg |
| Magnet stand box weight for transportation (standard stand / optional) | | ~ 80 / 160 kg |

## Installation

| | |
|---|---|
| Liquid Nitrogen needed for cooling down | 400 litres |
| Liquid Helium needed for cooling down | 200 litres |
| Liquid Helium needed for energizing, cryo shimming and quench reserve | 300 litres |
| Nitrogen gas for flushing | 1 cylinder 50 l/200 bar |
| Helium gas for flushing | 1 cylinder 50 l/200 bar |

* A detailed description of the marked objects can be found in chapter „Accessories“.

**Electromagnetic Disturbance Suppression **EDS™**:

Ascend™ magnets efficiently suppress external electromagnetic field disturbances using a proprietary Bruker technology **EDS™** . Sources of such disturbances are corridor traffic, elevators, power lines, outside vehicular traffic and railway lines.

Definition:

The **EDS™ factor** for spatially homogeneous disturbances is defined as the fraction of the external disturbance suppressed by the magnet in the magnetic centre at a given disturbance frequency. Thereby, no digital lock system or other field compensation device is used.

Detailed specification for magnet system 500/54 Ascend™:

| Disturbance frequency | EDS™ factor |
|---|---|
| < 0.01 Hz | > 99 % |
| 0.01 - 1 Hz | > 97 % |
| 1 - 5 Hz | > 98 % |
| > 5 Hz | > 99 % |
| 16.667 Hz (railways) | > 99.9 % |
| 50 Hz (power lines) | > 99.9 % |
| 60 Hz (power lines) | > 99.9 % |

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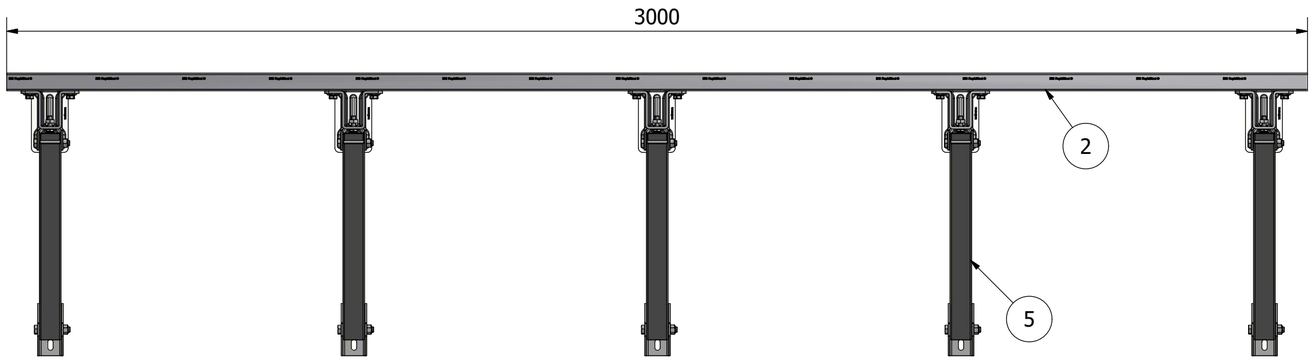
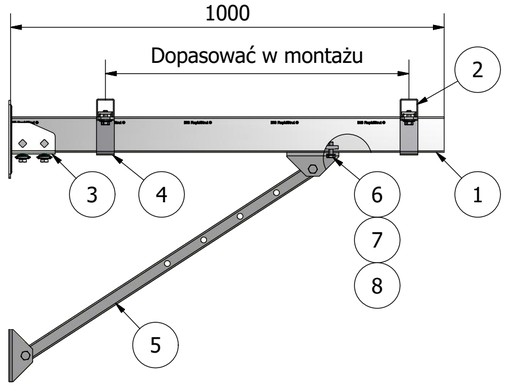
| LISTA CZĘŚCI | | |
|---|---|---|
| ELEMENT | NUMER KATALOGOWY | OPIS |
| 1 | 65018687 | BIS RapidStrut 41x82x2,5 BUP |
| 2 | 65018647 | BIS RapidStrut 41x41x2.5 BUP |
| 3 | 665885400 | BIS RapidStrut® Uchwyty ścienne G2 BUP |
| 4 | 665885408 | BIS RapidStrut łacznik siodłowy 41x82 |
| 5 | 6621083 | BIS Wspornik do konsol ściennych regulowany |
| 6 | 61481030 | BIS Śruba M10x30 |
| 7 | 65381010 | BIS podkładka M10 BUP |
| 8 | 65188010 | BIS Nakrętka ślizgowa nie zmont. M10 |




UWAGI:

1. Kotwić do ściany za pomocą kotwy chemicznej WVSF200 (nr. kat. 6099125E) i trzpieni M10 (nr. kat. 60991013).

| | | | | |
|---|---|---|---|---|
| Opracował: mgr inż. Grzegorz Sobczyk | Sprawdził: Przed montażem należy sprawdzić rysunek i zweryfikować z ofertą. | Date 04.06.2020 | Skala: – | Format: A3 |
| walraven | Tytuł: Stelaż centrali mocowany do ściany | | Nr rys: 200604-1 | |
| | Obiekt: – | | Arkusz 1 / 1 | |