



## Magnet Sales Information

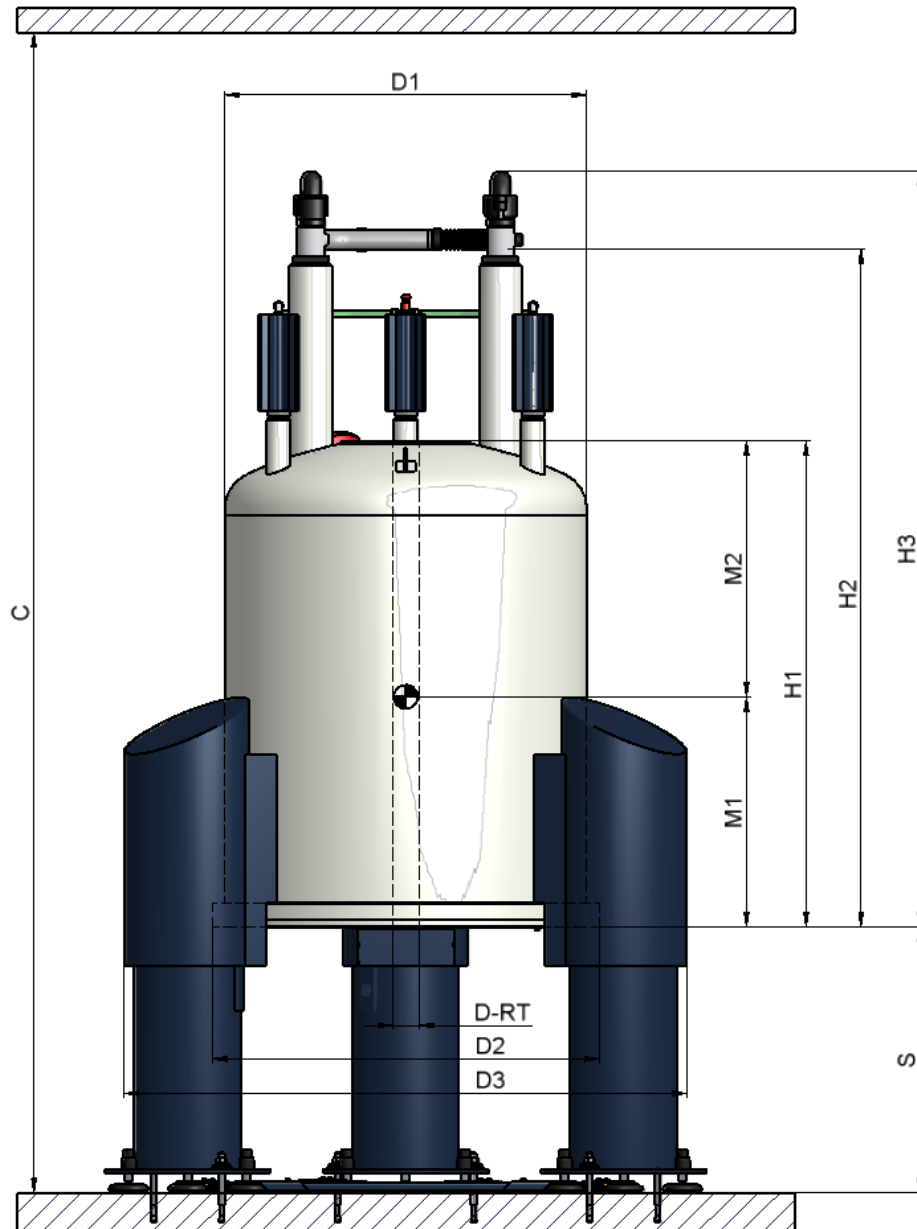
# Ascend™ 400 MHz / 54 mm



Magnet System Ascend™ 400 MHz / 54 mm

Part Number Z115310

### Geometrical Dimensions



⊕ = magnetic center  
1 mT = 10 Gauss

Z1044563

## 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
D3 =	1295 mm	Diameter magnet stand
H1 =	1005 mm	Height of cryostat from bottom flange to upper flange
H2 =	1391 mm	Height of cryostat from bottom flange to Helium tower 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

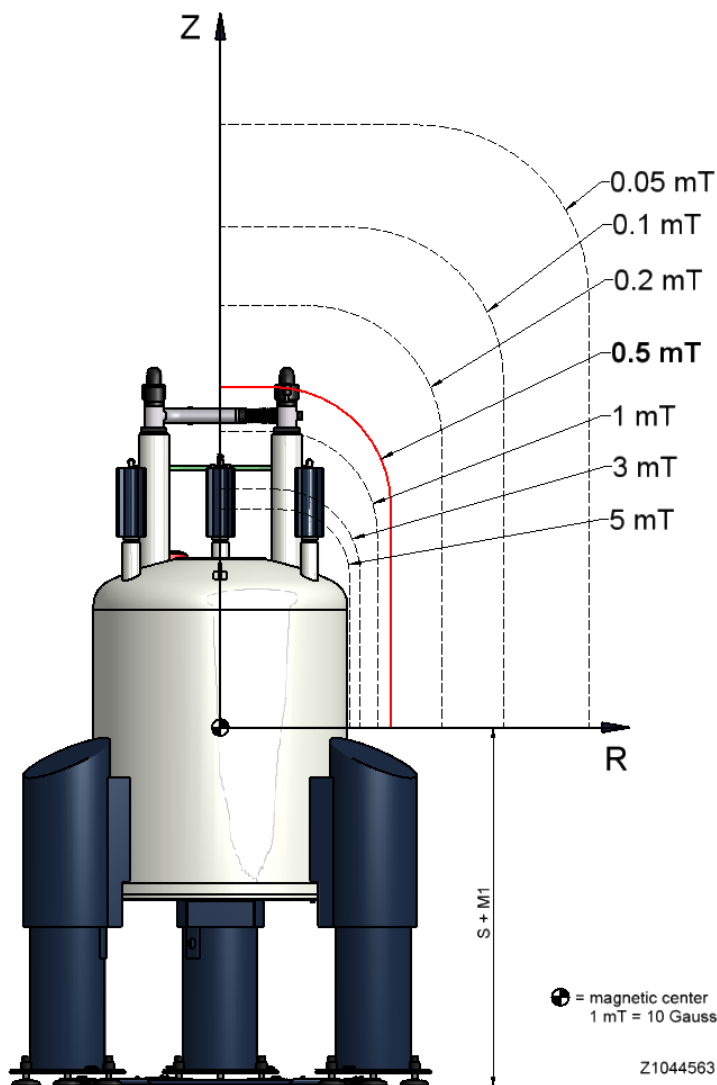
## System Data

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 <sup>2</sup>
System weight (empty, without magnet stand)	385 kg
Magnet stand	120 kg
System weight (filled completely, with magnet stand)	572 kg

## NMR Magnet Specifications

Type	BZH 400'70 ASCEND™
NMR-frequency ( <sup>1</sup> H)	400 MHz
Operating field	9.39 Tesla
Field stability (guaranteed value in persistent mode)	< 10 ppb/hr (< 4.0 Hz/hr)
Axial range with homogeneity better than 10ppm	~ 55 mm
Radial fringe field (horizontal distance of the 0.5mT (5G) line from the magnetic centre)	< 0.50 m
Axial fringe field (vertical distance of the 0.5mT (5G) line from the magnetic centre)	< 1.00 m
Cryo shims	X, Y, Z, Z <sup>2</sup> , Z <sup>3</sup> , XZ, YZ, XY, X <sup>2</sup> -Y <sup>2</sup>
Electromagnetic Disturbance Suppression EDS** typical	> 99 %

## Fringe Field Plot



Fringe Field Plot	Radial [R]	Vertical [Z]
200 mT (Directive 2013/35/EU)	Inside cryostat	Inside cryostat
5 mT	0.38 m	0.64 m
3 mT	0.41 m	0.70 m
1 mT	0.46 m	0.87 m
<b>0.5 mT (5 Gauss)</b>	<b>0.50 m</b>	<b>1.00 m</b>
0.2 mT	0.65 m	1.24 m
0.1 mT	0.83 m	1.47 m
0.05 mT (~Earth magnetic field)	1.08 m	1.77 m

## Cryostat Specifications

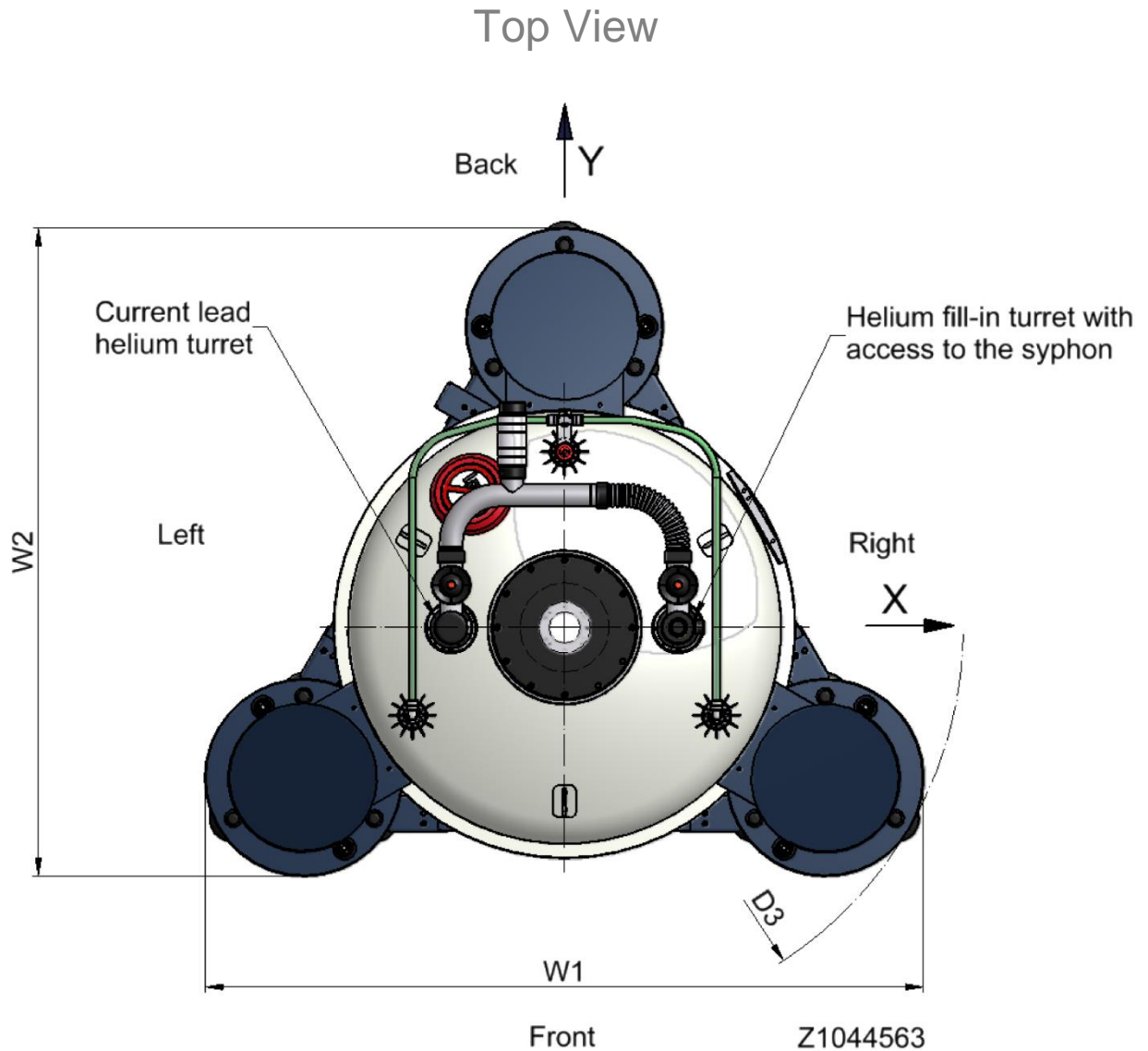
Type	D 315/54 ASCEND™
Room temperature bore	54 mm
Approx. Helium evaporation rate under stabilized conditions (T=20°C, p=1030 mbar)	<13 ml liquid Helium/hour
Liquid Helium refill volume/total volume	~ 93.5 /102 litres
Helium hold time	> 300 days
Approx. Nitrogen evaporation rate under stabilized conditions (T=20°C, p=1030 mbar)	<220 ml liquid Nitrogen/hour
Liquid Nitrogen refill volume/total volume	~ 85/106 litres
Nitrogen hold time	> 16 days

## Accessories

Magnet stand F80-570 <b>EMI</b> Elastomeric Isolators Frequencies damped > 14 Hz / resonance frequency = 9.5 Hz	Standard	Z130990
Magnet stand F80-700 <b>EMI</b> <b>Easy</b> installation of magnet system with <b>Elastomeric Isolators</b> Frequencies damped > 14 Hz / resonance frequency = 9.5 Hz	Optional	Z113844
Magnet stand F80-570 <b>ADI</b> (height 570 mm) Air Spring Damped Isolators with <b>vertical</b> damping Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz	Optional AH0063	Z112742
Magnet stand F80-700 <b>ADI</b> (height 700 mm) Air Spring Damped Isolators with <b>vertical</b> damping Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz	Optional	Z112741
Magnet Stand F80-570 <b>API</b> (height 570 mm) Air Piston Damped Isolator with <b>vertical</b> and <b>horizontal</b> damping Frequencies damped > 3.8 Hz / resonance frequency 2.6 Hz	Optional AH0065	Z117691
Magnet Stand F80-700 <b>API</b> (height 700 mm) Air Piston Damped Isolator with <b>vertical</b> and <b>horizontal</b> damping Frequencies damped > 3.8 Hz / resonance frequency 2.6 Hz	Optional	Z117692
<b>API</b> cylinders upgrade when magnet stand F80 is existing Air Piston Damped Isolators with <b>vertical</b> and <b>horizontal</b> damping Frequencies damped > 3.8 Hz / resonance frequency = 2.6 Hz	Optional	Z114651
Electronic atmospheric pressure device with adjustable set point*	Optional	Z102597
Nitrogen level sensor for BSMSII (SCB3) (not working with 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



### Geometrical Dimensions

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 <sup>3</sup>
Magnet stand box (Optional LC stand)	L x D x H	97 x 76 x 120 cm <sup>3</sup>
Magnet stand box (Standard stand)	L x D x H	125 x 77 x 60 cm <sup>3</sup>
Minimum system dimensions of magnet, unpacked (without manifold)		Ø 79.5 cm, H 159 cm
System weight for transportation		~ 415 kg
Magnet stand box weight for transportation		~ 160 kg

## Installation

Liquid Nitrogen needed for cool down	400 litres
Liquid Helium needed for cool down	200 litres
Liquid Helium needed for energizing, cryo shimming and quench reserve	300 litres
Nitrogen gas for flushing, minimum grade 4.6	1 cylinder 50 l/200 bar
Helium gas for flushing, minimum grade 4.6	1 cylinder 50 l/200 bar

\* A detailed description of the marked objects can be found in „Magnet Accessories“ ZTKS0041.

\*\*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 400/54 Ascend™:

Disturbance frequency	EDS™ factor
< 0.01 Hz	> 98 %
0.01 - 1 Hz	> 96 %
1 - 5 Hz	> 95 %
> 5 Hz	> 98 %
16.667 Hz (railways)	> 99.5 %
50 Hz (power lines)	> 99.9 %
60 Hz (power lines)	> 99.9 %

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