

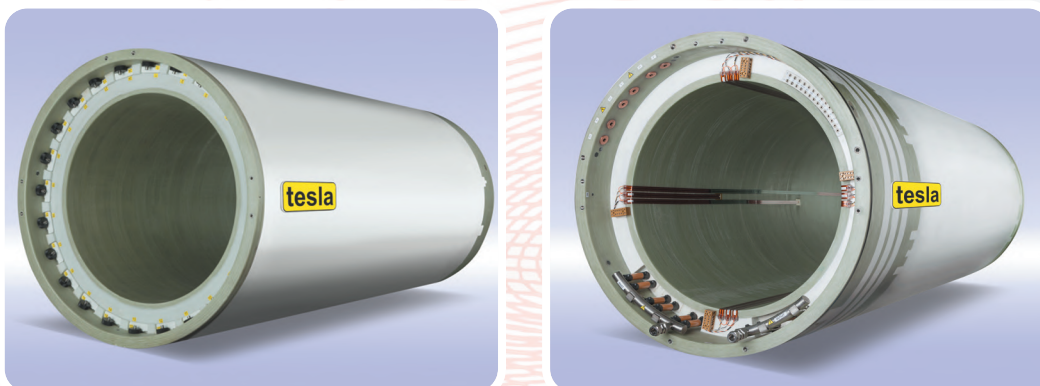


GRADIENT DIVISION

UHF GRADIENT COILS

Ultra-low eddy current signature, exceptional duty cycle and force balanced with main magnet

Tesla has extensive experience designing and making premium quality gradient coils for ultra field MRI, with an impressive portfolio of the highest performance gradient coils for UHF MRI.



Tesla can provide upgrade gradient coils for existing UHF systems as well as new sites, and these coils can be customized to surpass the demanding requirements of cutting edge research projects, and best in class MRI professionals.

Some examples of UHF gradient coils are shown below :-

Gradient Description	Unit	HFC14	HFC16	HFC26	HFC35	HFC45
Internal diameter	mm	606	640	560	560	610
External diameter	mm	820	890	680	810	820
Suitable for magnet bore diameter	mm	> 830	> 900	> 700	> 820	> 830
Suitable for magnet field strength	T	≤ 9.4	≤ 7	≤ 11.7	≤ 11.7	≤ 11.7
Diameter of spherical imaging volume	mm	400	450	256	220	400
Gradient linearity (peak-to-peak)	%	< 20	< 7	< 7	< 10	< 15
Gradient sensitivity (each axis)	$\mu\text{T/m/A}$	> 95	> 102	> 112	> 166	> 101
Peak current I_{max}	A	900	833	900	1200	1200
Peak voltage V_{max}	V	2000	1800	1300	2000	2000
Peak gradient strength @ I_{max} per axis	mT/m	85	85	100	200	120
Peak linear Slew Rate (0-98%) @ V_{max}	T/m/s	> 385	> 200	> 239	> 950	> 250
Max DC current (3 axes simultaneously)	A	225	235	110	215	365
Steady state heat extraction	kW	14.5	19	8.9	30	45
Total number of shim channels	Number	14	12	13	13	13
Integrated Passive Shim Trays	Number	No	24	No	No	No
Integrated RF Screen	Optional	Optional	Optional	Optional	Optional	Optional



ENGINEERING LTD

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GRADIENT DIVISION

SMALLER BORE GRADIENT COILS

Ultra-low eddy current signature, exceptional duty cycle and force balanced with main magnet

With around 40 years of experience in MRI, and over 20,000 gradient coils shipped, Tesla Engineering Ltd. is fully committed to design, supply and field support for smaller gradient coils for new and existing systems. We offer innovative solutions for all types of gradient coils from single project to high volume.



We have a whole range of state-of-the-art designs of gradient coils designed for head, neonatal, and extremity imaging for virtually all magnet and amplifier combinations. New designs are quickly available on request.

Some examples of smaller bore gradient coils are shown below :-

Gradient Description	Unit	MFC27	MFC50	MFC53	HFC26	HFC37
Internal diameter	mm	580	450	360	560	420
External diameter	mm	712	595	504	680	600
Suitable for magnet bore diameter	mm	> 720	> 610	> 510	> 700	> 610
Suitable for magnet field strength	T	≤ 3	≤ 13	≤ 13	≤ 11.7	≤ 13
Diameter of spherical imaging volume	mm	400	300	220	256	260
Gradient linearity (peak-to-peak)	%	< 10	< 5	< 5	< 7	< 16
Gradient sensitivity (each axis)	mT/m/A	> 104	> 101	> 295	> 112	> 129
Peak current I_{max}	A	500	1280	700	900	1200
Peak voltage V_{max}	V	800	1300	940	1300	2100
Peak gradient strength @ I_{max} per axis	mT/m	52	130	206	101	155
Peak linear Slew Rate (0-98%) @ V_{max}	T/m/s	> 126	> 800	> 600	> 239	> 1000
Max DC current (3 axes simultaneously)	A	145	256	94	110	330
Steady state heat extraction	kW	11	14	5.2	8.9	33
Total number of shim channels	Number	≤ 6	5	8	13	8
Integrated Passive Shim Trays	Number	16	No	24	No	No
Integrated RF Screen		Optional	Optional	Optional	Optional	Optional



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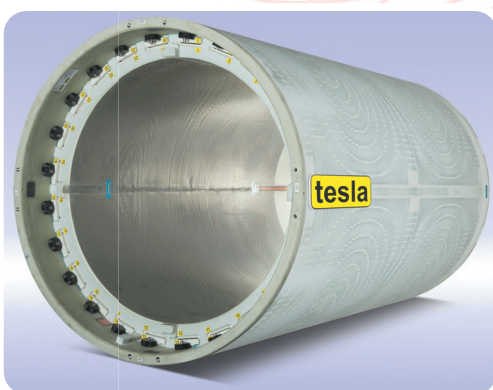


GRADIENT DIVISION

WHOLE BODY CLINICAL GRADIENT COILS

Ultra-low eddy current signature, exceptional duty cycle and force balanced with main magnet

With around 40 years of experience in MRI, and over 20,000 gradient coils shipped, Tesla Engineering Ltd. is fully committed to design, supply and field support for whole body and pre-clinical gradient coils for new and existing systems, for commercial and research applications.



We have a whole range of state-of-the-art designs of gradient coils for clinical imaging from value systems through to ultra wide bore and ultra high field MRI. We have products for virtually all magnet and amplifier combinations. New designs are quickly available on request.

Some examples of clinical gradient coils are shown below :-

Gradient Description	Unit	MFC18	MFC21	MFC36	HFC48
Internal diameter	mm	652	681	670	670
External diameter	mm	932	890	842	840
Suitable for magnet bore diameter	mm	> 940	> 900	> 850	> 850
Suitable for magnet field strength	T	≤ 3	≤ 1.5	≤ 3	≤ 1.5
Diameter of spherical imaging volume	mm	450	500	600	500
Gradient linearity (peak-to-peak)	%	< 7	≤ 9	< 13	< 12
Gradient sensitivity (each axis)	$\mu\text{T/m/A}$	> 68	> 52	> 58	> 56
Peak current I_{max}	A	630	630	700	630
Peak voltage V_{max}	V	2000	900	1400	900
Peak gradient strength @ I_{max} per axis	mT/m	43	32	41	35
Peak linear Slew Rate (0-98%) @ V_{max}	T/m/s	> 225	> 144	> 204	> 151
Max DC current (3 axes simultaneously)	A	210	215	205	195
Steady state heat extraction	kW	16	8.3	13	9.1
Total number of shim channels	Number	6	0	6	0
Integrated Passive Shim Trays	Number	24	24	24	24
Integrated RF Screen		Optional	Optional	Optional	Optional



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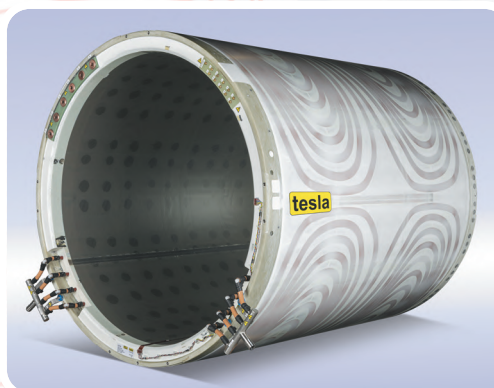


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Some examples of clinical gradient coils are shown below :-

Gradient Description	Unit	LFC6	MFC57	HFC23	HFC25	HFC34	HFC47
Internal diameter	mm	879	900	750	740	770	780
External diameter	mm	1000	1080	924	890	924	924
Suitable for magnet bore diameter	mm	> 1010	> 1090	> 930	>900	> 930	> 930
Suitable for magnet field strength	T	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
Diameter of spherical imaging volume	mm	350 x 250	400	500	500	500	500
Gradient linearity (peak-to-peak)	%	< 13	< 16	< 32	< 27	< 39	< 28
Gradient sensitivity (each axis)	μT/m/A	> 24	> 33	> 64	> 45	> 46	> 51
Peak current I_{max}	A	900	1200	900	1000	900	900
Peak voltage V_{max}	V	1500	2000	1400	1850	1400	1980
Peak gradient strength @ I_{max} per axis	mT/m	22	40	58	46	46	46
Peak linear Slew Rate (0-98%) @ V_{max}	T/m/s	> 150	> 140	> 200	> 240	> 200	> 245
Max DC current (3 axes simultaneously)	A	155	153	225	185	210	178
Steady state heat extraction	kW	8.8	7.4	15	13	14.3	14
Total number of shim channels	Number	5	5	5	5	6	6
Integrated Passive Shim Trays	Number	72	72	36	24	24	36
Integrated RF Screen		Optional	Optional	Optional	Optional	Optional	Optional



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