

Protocol: adult_head_BRAIN MS

PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Gradient Echo
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	Seq, Fast
Plane	3-PLANE	SCAN RANGE	
Series Description	LOC	FOV	30.0
SCAN TIMING		Slice Thickness	5.0
Number of Echoes	1	Slice Spacing	5.0
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	256
GATING/TRIGGER		Phase	128
Auto Trigger Type	Off	Freq DIR	Unswap
MULTI-PHASE		NEX	1.00
Seperate Series	0	Phase FOV	1.00
Mask Phase	0	Auto Shim	Auto
Mask Pause	0	Phase Correction	No
DIFFUSION		FMRI	
Recon All Images	On	PSD Trigger	Internal
CONTRAST		Slice Order	Interleaved
Contrast Yes/No	No	View Order	Bottom/Up
		# of Repetitions REST	0
		# of Repetitions ACTIVE	0
		SAT	
		Tag Type	None
		TRICKS	
		Pause On/Off	On
		Auto Subtract	0
		Auto SCIC	Off
		OTHERS	
		Protocol Notes	<i>This protocol is built based on Express coil suite. Please select the appropriate coil which is available in your site and optimize the parameters accordingly.</i>

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	3D
Patient Position	Supine	Pulse Sequence	SPGR
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, ZIP2, Calib
Plane	AXIAL	SCAN RANGE	
Series Description	3D Calibration	FOV	30.0
SCAN TIMING		Slice Thickness	10.0
Number of Echoes	1	ACQ TIMING	
IMAGE ENHANCE		Freq DIR	R/L
Filter Choice	None	Auto Shim	Auto
GATING/TRIGGER		Phase Correction	No
Auto Trigger Type	Off	FMRI	
MULTI-PHASE		PSD Trigger	Internal
Seperate Series	0	Slice Order	Interleaved
Mask Phase	0	View Order	Bottom/Up
Mask Pause	0	# of Repetitions REST	0
DIFFUSION		# of Repetitions ACTIVE	0
Recon All Images	On	SAT	
CONTRAST		Tag Type	None
Contrast Yes/No	No	TRICKS	
		Pause On/Off	On
		Auto Subtract	0
		Auto SCIC	Off

3D Calibration

3D Calibration

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, TRF, Fast, ZIP512, ARC, T2flair
Plane	OBLIQUE	SCAN RANGE	
Series Description	SAG T2 FLAIR 3mm	FOV	25.0
SCAN TIMING		Slice Thickness	3.0
Flip Angle	160	Slice Spacing	0.0
TE	120.0	ACQ TIMING	
Number of Echoes	1	Freq	320
TR	9000.0	Phase	192
TI	2573	Freq DIR	Unswap
Echo Train Length	14	Fat Shift DIR	Normal
Receiver Bandwidth	19.23	NEX	1.00
IMAGE ENHANCE		Phase FOV	1.00
Filter Choice	None	Auto Shim	Auto
GATING/TRIGGER		Phase Correction	No
Auto Trigger Type	Off	USER CVS	
FMRI		User CV22	1.00
PSD Trigger	Internal	MULTI-PHASE	
Slice Order	Interleaved	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	DIFFUSION	
SAT		Recon All Images	On
Tag Type	None	CONTRAST	
TRICKS		Contrast Yes/No	No
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	Off		

SAG T2 FLAIR 3mm

SAG T2 FLAIR 3mm

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Spin Echo
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	EPI, DIFF, Asset
Plane	AXIAL	SCAN RANGE	
Series Description	AX DWI	FOV	24.0
SCAN TIMING		Slice Thickness	5.0
TE	Minimum	Slice Spacing	1.0
Number of Echoes	1	ACQ TIMING	
TR	6188.0	Freq	128
Number of Shots	1	Phase	160
IMAGE ENHANCE		Freq DIR	R/L
Filter Choice	None	Phase FOV	1.00
GATING/TRIGGER		Auto Shim	Auto
Auto Trigger Type	Off	Phase Correction	Yes
FMRI		USER CVS	
PSD Trigger	Internal	User CV0	1.00
Slice Order	Interleaved	User CV1	1.00
View Order	Bottom/Up	User CV5	1.00
# of Repetitions REST	0	User CV7	1.00
# of Repetitions ACTIVE	0	User CV17	1.00
SAT		TR Min	4000.0
Tag Type	None	TR Max	8000.0
TRICKS		MULTI-PHASE	
Pause On/Off	On	Seperate Series	0
Auto Subtract	0	Mask Phase	0
Auto SCIC	2	Mask Pause	0
		DIFFUSION	
		Optimized TE	Yes
		Diffusion Directions	All
		Number of Diffusion Directions	3
		Number of T2 Images	1
		Dual Spin Echo	Off
		Recon All Images	On
		CONTRAST	
		Contrast Yes/No	No

AX DWI

AX DWI

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	FC, EDR, TRF, Fast, ZIP512, T2flair
Plane	OBLIQUE	SCAN RANGE	
Series Description	Ax T2 FLAIR	FOV	24.0
SCAN TIMING		Slice Thickness	4.0
Flip Angle	160	Slice Spacing	1.5
TE	120.0	ACQ TIMING	
Number of Echoes	1	Freq	288
TR	9000.0	Phase	192
TI	2373	Freq DIR	A/P
Receiver Bandwidth	31.25	Fat Shift DIR	Normal (A)
IMAGE ENHANCE		NEX	1.00
Filter Choice	None	Auto Shim	Auto
GATING/TRIGGER		Phase Correction	Yes
Auto Trigger Type	Off	Flow Direction Compensation	Slice
FMRI		USER CVS	
PSD Trigger	Internal	User CV3	2.00
Slice Order	Interleaved	User CV11	1.00
View Order	Bottom/Up	User CV21	1.00
# of Repetitions REST	0	MULTI-PHASE	
# of Repetitions ACTIVE	0	Seperate Series	0
SAT		Mask Phase	0
SAT Location	S	Mask Pause	0
SAT Location	I	DIFFUSION	
Tag Type	None	Recon All Images	On
TRICKS		CONTRAST	
Pause On/Off	On	Contrast Yes/No	No
Auto Subtract	0		
Auto SCIC	2		

Ax T2 FLAIR

Ax T2 FLAIR

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AX T2 PROP	PATIENT POSITION		IMAGING PARAMETERS		AX T2 PROP
	Coil Configuration	8HRBRAIN	Gradient Mode	NA	
	Plane	Oblique	SCAN RANGE		
	SCAN TIMING		FOV	24.0cm	
	Flip Angle	160.0Degrees	Slice Thickness	4.0mm	
	TE	84.192ms	Slice Spacing	1.5mm	
	TR	4.348s	MRECHO		
	Echo Train Length	24	Gating Disable	true	
	Receiver Bandwidth	62.5KHz			
	ACQ TIMING				
	Freq	320			
	Phase	40			
	Freq DIR	A/P			
	Fat Shift DIR	Normal (A)			
NEX	3.0				
Phase FOV	24.0cm				

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Gradient Echo
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR
Plane	OBLIQUE	SCAN RANGE	
Series Description	Ax T2* GRE	FOV	24.0
SCAN TIMING		Slice Thickness	5.0
Flip Angle	25	Slice Spacing	1.0
TE	15.0	ACQ TIMING	
Number of Echoes	1	Freq	288
TR	484.0	Phase	192
Receiver Bandwidth	19.23	Freq DIR	A/P
IMAGE ENHANCE		NEX	1.00
Filter Choice	None	Phase FOV	1.00
GATING/TRIGGER		Auto Shim	Auto
Auto Trigger Type	Off	Phase Correction	No
FMRI		USER CVS	
PSD Trigger	Internal	TR Min	200.0
Slice Order	Interleaved	TR Max	11000.0
View Order	Bottom/Up	MULTI-PHASE	
# of Repetitions REST	0	Seperate Series	0
# of Repetitions ACTIVE	0	Mask Phase	0
SAT		Mask Pause	0
Tag Type	None	DIFFUSION	
TRICKS		Recon All Images	On
Pause On/Off	On	CONTRAST	
Auto Subtract	0	Contrast Yes/No	No
Auto SCIC	2		

Ax T2* GRE

Ax T2* GRE

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	TRF, Fast
Plane	OBLIQUE	SCAN RANGE	
Series Description	Ax T1 FSE	FOV	24.0
SCAN TIMING		Slice Thickness	4.0
Flip Angle	160	Slice Spacing	1.5
TE	Min Full	ACQ TIMING	
Number of Echoes	1	Freq	320
TR	519.0	Phase	224
Echo Train Length	3	Freq DIR	Unswap
Receiver Bandwidth	20.83	Fat Shift DIR	Normal
IMAGE ENHANCE		NEX	1.00
Filter Choice	None	# of Acq. Before Pause	0
GATING/TRIGGER		Phase FOV	1.00
Auto Trigger Type	Off	Auto Shim	Auto
FMRI		Phase Correction	No
PSD Trigger	Internal	USER CVS	
Slice Order	Interleaved	User CV22	1.00
View Order	Bottom/Up	TR Min	500.0
# of Repetitions REST	0	TR Max	700.0
# of Repetitions ACTIVE	0	MULTI-PHASE	
SAT		Seperate Series	0
Tag Type	None	Mask Phase	0
TRICKS		Mask Pause	0
Pause On/Off	On	DIFFUSION	
Auto Subtract	0	Recon All Images	On
Auto SCIC	Off	CONTRAST	
		Contrast Yes/No	No

Ax T1 FSE

Ax T1 FSE

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Plane	OBLIQUE	Imaging Options	EDR, TRF, Fast, ZIP512, FR
Series Description	COR T2 frFSE	SCAN RANGE	
SCAN TIMING		FOV	24.0
Flip Angle	160	Slice Thickness	5.0
TE	102.0	Slice Spacing	1.0
Number of Echoes	1	ACQ TIMING	
TR	4959.0	Freq	256
Echo Train Length	21	Phase	224
Receiver Bandwidth	31.25	Freq DIR	Unswap
IMAGE ENHANCE		Fat Shift DIR	Normal
Filter Choice	B	NEX	1.00
GATING/TRIGGER		Phase FOV	0.85
Auto Trigger Type	Off	Auto Shim	Auto
FMRI		Phase Correction	No
PSD Trigger	Internal	USER CVS	
Slice Order	Interleaved	User CV22	1.00
View Order	Bottom/Up	TR Min	2500.0
# of Repetitions REST	0	TR Max	11000.0
# of Repetitions ACTIVE	0	MULTI-PHASE	
SAT		Seperate Series	0
Tag Type	None	Mask Phase	0
TRICKS		Mask Pause	0
Pause On/Off	On	DIFFUSION	
Auto Subtract	0	Recon All Images	On
Auto SCIC	Off	CONTRAST	
		Contrast Yes/No	No

COR T2 frFSE

COR T2 frFSE

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	3D
Patient Position	Supine	Pulse Sequence	BRAVO
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, ZIP2, ARC, IrP
Plane	AXIAL	SCAN RANGE	
Series Description	AX 3D BRAVO	FOV	25.6
SCAN TIMING		Slice Thickness	2.0
Flip Angle	12	Location per Slab	90
Number of Echoes	1	Overlap Locations	0
TI	450	ACQ TIMING	
Receiver Bandwidth	31.25	Freq	256
IMAGE ENHANCE		Phase	256
Filter Choice	None	Freq DIR	A/P
GATING/TRIGGER		NEX	1.00
Auto Trigger Type	Off	Phase FOV	1.00
MULTI-PHASE		Auto Shim	Auto
Seperate Series	0	Phase Correction	No
Trigger Delay without AV	0	FMRI	
Mask Phase	0	PSD Trigger	Internal
Mask Pause	0	Slice Order	Interleaved
TRICKS		View Order	Bottom/Up
Pause On/Off	On	# of Repetitions REST	0
Auto Subtract	0	# of Repetitions ACTIVE	0
Auto SCIC	Off	DIFFUSION	
OTHERS		Recon All Images	On
Protocol Notes	Do not use IR prepared with post contrast series. IR Prepared defaults to an on state. For optimum image quality, it is critical that IR prep remain on for non-contrast enhanced series.	CONTRAST	
		Contrast Yes/No	No

AX 3D BRAVO

AX 3D BRAVO

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Head First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Spin Echo
Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	Fast, SS
Plane	OBLIQUE	SCAN RANGE	
Series Description	---CONTRAST---	FOV	22.0
SCAN TIMING		Slice Thickness	5.0
TE	Minimum	Slice Spacing	1.0
TR	Minimum	ACQ TIMING	
Receiver Bandwidth	83.33	Freq	128
IMAGE ENHANCE		Phase	128
Filter Choice	None	Freq DIR	A/P
GATING/TRIGGER		NEX	1.0
Auto Trigger Type	Off	# of Acq. Before Pause	0
FMRI		Phase FOV	1.00
PSD Trigger	Internal	Auto Shim	Auto
Slice Order	Interleaved	Phase Correction	No
View Order	Bottom/Up	USER CVS	
# of Repetitions REST	0	User CV2	240.00
# of Repetitions ACTIVE	0	User CV13	1.00
SAT		TR Min	0.0
Tag Type	None	TR Max	0.0
TRICKS		MULTI-PHASE	
Pause On/Off	On	Seperate Series	0
Auto Subtract	0	Mask Phase	0
Auto SCIC	Off	Mask Pause	0
		DIFFUSION	
		Recon All Images	On
		CONTRAST	
		Contrast Yes/No	No

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AX 3D BRAVO	PATIENT POSITION		IMAGING PARAMETERS		AX 3D BRAVO	
	Patient Entry	Head First	Imaging Mode	3D		
	Patient Position	Supine	Pulse Sequence	BRAVO		
	Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, ZIP2, ARC, IrP		
	Plane	AXIAL	SCAN RANGE			
	Series Description	AX 3D BRAVO	FOV	25.6		
	SCAN TIMING		Slice Thickness	2.0		
	Flip Angle	12	Location per Slab	90		
	Number of Echoes	1	Overlap Locations	0		
	TI	450	ACQ TIMING			
	Receiver Bandwidth	31.25	Freq	256		
	IMAGE ENHANCE		Phase	256		
	Filter Choice	None	Freq DIR	A/P		
	GATING/TRIGGER		NEX	1.00		
	Auto Trigger Type	Off	Phase FOV	1.00		
	MULTI-PHASE		Auto Shim	Auto		
	Seperate Series	0	Phase Correction	No		
	Trigger Delay without AV	0	FMRI			
	Mask Phase	0	PSD Trigger	Internal		
	Mask Pause	0	Slice Order	Interleaved		
	TRICKS		View Order	Bottom/Up		
	Pause On/Off	On	# of Repetitions REST	0		
	Auto Subtract	0	# of Repetitions ACTIVE	0		
	Auto SCIC	Off	DIFFUSION			
	OTHERS		Recon All Images	On		
	Protocol Notes	Do not use IR prepared with post contrast series. IR Prepared defaults to an on state. For optimum image quality, it is critical that IR prep remain on for non-contrast enhanced series.		CONTRAST		
			Contrast Yes/No	Yes		

Protocol: adult_head_BRAIN MS

Ax T1 FSE +C	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	2D
	Patient Position	Supine	Pulse Sequence	FSE-XL
	Coil Configuration	HD 8Ch High Res Brain Array by Invivo	Imaging Options	FC, EDR, TRF, Fast, MRF
	Plane	OBLIQUE	SCAN RANGE	
	Series Description	Ax T1 FSE +C	FOV	24.0
	SCAN TIMING		Slice Thickness	5.0
	Flip Angle	160	Slice Spacing	1.0
	TE	Min Full	ACQ TIMING	
	Number of Echoes	1	Freq	288
	TR	445.0	Phase	192
	Echo Train Length	2	Freq DIR	A/P
	Receiver Bandwidth	31.25	Fat Shift DIR	Normal (A)
	IMAGE ENHANCE		NEX	1.00
	Filter Choice	None	# of Acq. Before Pause	0
	GATING/TRIGGER		Phase FOV	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	FMRI		Phase Correction	No
	PSD Trigger	Internal	Flow Direction Compensation	Slice
	Slice Order	Interleaved	USER CVS	
	View Order	Bottom/Up	TR Min	350.0
	# of Repetitions REST	0	TR Max	750.0
	# of Repetitions ACTIVE	0	MULTI-PHASE	
	SAT		Seperate Series	0
	SAT Location	I	Mask Phase	0
Tag Type	None	Mask Pause	0	
TRICKS		DIFFUSION		
Pause On/Off	On	Recon All Images	On	
Auto Subtract	0	CONTRAST		
Auto SCIC	2	Contrast Yes/No	Yes	

Ax T1 FSE +C