PEDIATRIC EXTREMITY LONG BONE 3T

INSTRUCTIONS AND PATIENT PREPARATION

Instructions	No NPO requirements. Free-breathing.
Position	Lower extremity: feet first, supine. Upper extremity: head first, supine.
Coil	dStream Torso coil, plus any extremity coil (knee, foot/ankle, wrist, or flex coil)
Landmark	Center at area of interest

CONTRAST AGENT PARAMETERS

Contrast Agent	Dose	Injection Rate	Dose Timing Method and Scan Delay
Gadopiclenol (VUEWAY)	0.1 mL/kg (single dose, weight-based)	Hand injection	IV placed prior to start of MRI
Saline Flush	5-10 mL	Hand injection	Following contrast
Comments	Single dose of VUEWAY 0.1 mL/kg based on patient weight; hand inject followed by 5-10 mL saline flush. Report agent administered and dose.		

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

MR Gadopiclenol (VUEWAY®) Protocol for Philips MRI Scanners
Pediatric

IMAGING FORUMS, INC.

INFO PAGE

Scan Description	Survey	CO STIR LFOV	CO T1 LFOV	AX T2 FS	AX T1W mDIXON	SG T2 DIXON	AX T1W mDIXON POST CONTRAST	CO T1 FS POST CONTRAST	SG T1 FS POST CONTRAST
Total scan duration	00:30.7	01:57.0	01:46.0	02:09.2	02:29.9	03:36.6	02:29.9	02:02.6	01:31.6
Rel. SNR	0.894190431	0.345060527	0.327043176	0.607498109	0.409745902	0.369419128	0.409745902	0.375526816	0.303513587
Act. TR(ms)	—	—	519	4614	559	2927	559	557	487
Act. TE(ms)	—	80	15	65	20	100	20	15	15
Act. TR/TE(ms)	9.9 / 5.3	—	—	—	—	—	—	—	—
Act. TR/TI(ms)	—	11701 / 210	—	—	—	—	—	—	—
Act. TR/TE1/delta TE(ms)	—	—	—	—	—	—	—	—	—
ACQ matrix M x P	256 x 128	444 x 125	580 x 201	268 x 207	268 x 237	620 x 351	268 x 237	624 x 218	624 x 220
ACQ voxel MPS (mm)	1.95 / 3.91 / 10.0	1.24 / 1.53 / 3.00	0.88 / 0.89 / 3.00	0.75 / 0.97 / 4.00	0.75 / 0.84 / 4.00	0.89 / 0.98 / 3.00	0.75 / 0.84 / 4.00	0.88 / 0.89 / 3.00	0.88 / 0.89 / 3.00
REC voxel MPS (mm)	1.95 / 1.95 / 10.0	0.69 / 0.69 / 3.00	0.76 / 0.76 / 3.00	0.25 / 0.25 / 4.00	0.50 / 0.50 / 4.00	0.86 / 0.86 / 3.00	0.50 / 0.50 / 4.00	0.72 / 0.72 / 3.00	0.72 / 0.72 / 3.00
Scan percentage (%)	50	80.7692337	98.6301346	77.2151871	88.4328384	90.4639206	88.4328384	98.7341766	99.5475082
Packages	—	2	4	2	4	2	4	4	4
TFE shots	—	—	—	—	—	—	—	—	—
TFE dur. shot / acq (ms)	—	—	—	—	—	—	—	—	—
TFE shot interval (ms)	—	—	—	—	—	—	—	—	—
Min. TI delay	—	—	—	—	—	—	—	—	—
Min. slice gap (mm)	—	3	3	4	4	3	4	3	3
EPIfactor	—	—	—	—	—	—	—	—	—
Act.slicegap (mm)	—	—	0.300000012	0.400000006	0.400000006	—	0.400000006	0.300000012	0.300000012
Act. WFS (pix) / BW (Hz)	1.161 / 374.2	—	—	—	—	—	—	—	—
Min. WFS (pix) / Max. BW (Hz)	0.561 / 775.0	—	—	—	—	—	—	—	—
Min. TR/TE(ms)	—	—	—	—	—	—	—	—	—
Min. TR/TE1/delta TE(ms)	—	—	—	—	—	—	—	—	—
WFS (pix) / BW (Hz)	—	1.736 / 250.3	1.250 / 347.6	1.998 / 217.4	1.593 / 272.8	1.648 / 263.5	1.593 / 272.8	1.345 / 323.1	1.345 / 323.1
TSE es / shot(ms)	—	7.3 / 153	7.5 / 23	8.1 / 122	11.0 / 33	11.8 / 188	11.0 / 33	7.5 / 23	7.5 / 23
TEeff / TEequiv(ms)	—	—	—	65 / 53	20 / 20	100 / 92	20 / 20	—	—
Min. TR(ms)	—	—	—	4614	559	—	559	—	—
Min. TR/TI(ms)	—	—	—	—	—	—	—	—	—
BW in EPI freq. dir. (Hz)	—	—	—	—	—	—	—	—	—
SPIR offset act./default (Hz)	—	—	—	—	—	—	—	—	—
Local torso SAR	< 30 %	< 76 %	< 100 %	< 76 %	< 100 %	< 100 %	< 100 %	< 100 %	< 100 %
Whole body SAR / level	< 1.0 W/kg / normal	< 2.5 W/kg / 1st level	< 3.2 W/kg / 1st level	< 2.4 W/kg / 1st level	< 3.2 W/kg / 1st level	< 3.2 W/kg / 1st level	< 3.2 W/kg / 1st level	< 3.2 W/kg / 1st level	< 3.2 W/kg / 1st level
SED	0.0 kJ/kg	< 0.3 kJ/kg	< 0.3 kJ/kg	< 0.3 kJ/kg	< 0.5 kJ/kg	< 0.7 kJ/kg	< 0.5 kJ/kg	< 0.4 kJ/kg	< 0.3 kJ/kg
Coil Power	28 %	73 %	96 %	72 %	96 %	96 %	96 %	95 %	95 %
Max B1+rms	1.25 uT	2.01 uT	2.29 uT	1.99 uT	2.29 uT	2.29 uT	2.29 uT	2.28 uT	2.28 uT
PNS / level	6 % / normal	38 % / normal	43 % / normal	42 % / normal	57 % / normal	45 % / normal	57 % / normal	45 % / normal	42 % / normal
dB/dt	16.1 T/s	39.3 T/s	45.0 T/s	42.4 T/s	95.9 T/s	48.6 T/s	95.9 T/s	47.8 T/s	45.4 T/s
Sound Pressure Level (dB)	-14.8384056	1.34062743	2.44007373	3.71812177	5.74260378	4.70901155	5.74260378	3.095649	3.2220366
Boil-off (hPa/h)	—	—	—	—	—	—	—	—	—
Max Boil-off (hPa/h)	—	—	—	—	—	—	—	—	—
Boil-off (hPa)	—	—	—	—	—	—	—	—	—

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

MR Gadopiclenol (VUEWAY®) Protocol for Philips MRI Scanners
Pediatric

IMAGING FORUMS, INC.

GEOMETRY

Scan Description	Survey	CO STIR LFOV	CO T1 LFOV	AX T2 FS	AX T1W mDIXON	SG T2 DIXON	AX T1W mDIXON POST CONTRAST	CO T1 FS POST CONTRAST	SG T1 FS POST CONTRAST
Nucleus	—	—	—	—	—	—	—	—	—
SmartSelect	yes	yes	yes	yes	yes	yes	yes	yes	yes
Coil 1 (exclude)	—	None	None	None	None	None	None	None	None
Uniformity	CLEAR	CLEAR	Body-tuned	Synergy	CLEAR	CLEAR	CLEAR	Body-tuned	Body-tuned
FOV AP (mm)	500	119	98.6999969	200	200	343.75	200	98.6999969	194.791672
FOV FH (mm)	—	550	510	175.600006	175.600006	550	175.600006	550	550
FOV RL (mm)	500	192.5	179.107147	200	200	107	200	194.791672	92.0999985
stack RL (mm)	—	—	—	—	—	—	—	—	—
ACQ voxel size AP (mm)	3.90625	—	—	0.913241982	0.823045254	0.889999986	0.823045254	—	0.883413434
ACQ voxel size FH (mm)	—	1.24000001	0.879999995	—	—	0.889999986	—	0.879999995	0.879999995
ACQ voxel size RL (mm)	1.953125	1.24131942	0.883413434	0.75	0.75	—	0.75	0.883413434	—
Slice thickness (mm)	10	3	3	4	4	3	4	3	3
Recon voxel size AP (mm)	1.953125	—	—	0.25	0.5	0.859375	0.5	—	0.716145813
Recon voxel size FH (mm)	—	0.6875	0.758928597	—	—	0.859375	—	0.716145813	0.716145813
Recon voxel size RL (mm)	1.953125	0.6875	0.758928597	0.25	0.5	—	0.5	0.716145813	—
Fold-over suppression	no	no	no	no	no	no	no	no	no
Slice oversampling	—	—	—	—	—	—	—	—	—
oversample factor	—	—	—	—	—	—	—	—	—
ENCASE enable	—	—	—	—	—	—	—	—	—
RF select. FOS	—	—	—	—	—	—	—	—	—
Reconstruction matrix	256	800	672	800	400	640	400	768	768
SENSE	no	yes	yes	yes	no	no	no	yes	no
Preduction (AP)	—	—	—	1.70000005	—	—	—	—	—
MB SENSE	—	—	—	—	—	—	—	—	—
CS-SENSE	no	no	no	no	yes	yes	yes	no	yes
reduction	—	—	—	—	2.5	2.5	2.5	—	1.70000005
denoising	—	—	—	—	system default	system default	system default	—	system default
k-t Acceleration	no	no	no	no	no	no	no	no	no
Stacks	4	1	1	1	1	1	1	1	1
current	—	—	—	—	—	—	—	—	—
type	parallel	parallel	parallel	parallel	parallel	parallel	parallel	parallel	parallel
slices	3	30	30	40	40	27	40	30	28
slice gap	user defined	user defined	default	default	default	user defined	default	default	default
gap (mm)	10	1	—	—	—	1	—	—	—
slice orientation	transverse	coronal	coronal	transverse	transverse	sagittal	transverse	coronal	sagittal
fold-over direction	RL	RL	RL	AP	AP	AP	AP	RL	AP
fat shift direction	F	F	F	L	L	F	L	F	F
Minimum number of packages	—	1	4	1	1	1	1	4	4
Multi-chunk	—	—	—	—	—	—	—	—	—
Slice scan order	default	interleaved	default	default	default	default	default	default	default
Stack scan order	ascend	—	—	—	—	—	—	—	—

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

Stack sort order	no	—	—	—	—	—	—	—	—
O-MAR	—	no	no	no	no	no	no	no	no
Large table movement	no	no	no	no	no	no	no	no	no
Plan Align	no	no	no	no	no	no	no	no	no
REST slabs	0	0	0	0	0	0	0	0	0
type	—	—	—	—	—	—	—	—	—
thickness (mm)	—	—	—	—	—	—	—	—	—
position	—	—	—	—	—	—	—	—	—
gap	—	—	—	—	—	—	—	—	—
power	—	1	—	1	—	—	—	—	—
Interactive positioning	no	no	no	no	no	no	no	no	no
Allow table movement	—	—	—	—	—	—	—	—	—
Patient position	head first	head first	head first	head first	head first	head first	head first	head first	head first
Patient body position	head first	head first	head first	head first	head first	head first	head first	head first	head first
Patient orientation	supine	supine	supine	supine	supine	supine	supine	supine	supine
Patient body orientation	supine	supine	supine	supine	supine	supine	supine	supine	supine

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

MR Gadopiclenol (VUEWAY®) Protocol for Philips MRI Scanners
Pediatric

IMAGING FORUMS, INC.

CONTRAST

Scan Description	Survey	CO STIR LFOV	CO T1 LFOV	AX T2 FS	AX T1W mDIXON	SG T2 DIXON	AX T1W mDIXON POST CONTRAST	CO T1 FS POST CONTRAST	SG T1 FS POST CONTRAST
Scan type	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging	Imaging
Scan mode	M2D	MS	MS	MS	MS	MS	MS	MS	MS
technique	FFE	IR	SE	SE	SE	SE	SE	SE	SE
Modified SE	—	—	no	no	no	no	no	no	no
3D non-selective	—	—	—	—	—	—	—	—	—
loop order	—	—	—	—	—	—	—	—	—
Contrast enhancement	T1	—	—	—	—	—	—	—	—
Acquisition mode	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian	cartesian
Fast Imaging mode	none	TSE	TSE	TSE	TSE	TSE	TSE	TSE	TSE
3D VIEW	—	—	—	—	—	—	—	—	—
shot mode	—	multishot	multishot	multishot	multishot	multishot	multishot	multishot	multishot
TFE factor	—	—	—	—	—	—	—	—	—
TSE factor	—	21	3	15	3	16	3	3	3
startup echoes	—	0	0	0	0	0	0	0	0
shot interval	—	—	—	—	—	—	—	—	—
profile order	—	linear	linear	linear	asymmetric	linear	asymmetric	linear	linear
turbo direction	—	—	—	—	—	—	—	—	—
DRIVE	—	no	no	no	no	no	no	no	no
ultrashort	—	no	no	no	no	no	no	no	no
shift	—	—	—	—	—	—	—	—	—
fid reduction	—	default	default	default	default	default	default	default	default
Echoes	1	1	1	1	1	1	1	1	1
partial echo	no	no	no	no	no	no	no	no	no
shifted echo	no	—	—	—	—	—	—	—	—
TE	shortest	user defined	user defined	user defined	user defined	user defined	user defined	user defined	user defined
(ms)	—	80	15	65	20	100	20	15	15
echospacing	—	—	—	—	user defined	—	user defined	—	—
(ms)	—	—	—	—	11	—	11	—	—
flyback	—	—	—	—	—	—	—	—	—
Flip angle (deg)	50	—	90	90	90	90	90	90	90
Refocusing control	—	no	no	constant	constant	constant	constant	no	no
angle (deg)	—	—	—	100	140	130	140	—	—
bright fat reduction	—	—	—	no	no	no	no	—	—
TR	shortest	shortest	shortest	range	range	shortest	range	shortest	shortest
(ms)	—	—	—	—	—	—	—	—	—
minimum (ms)	—	—	—	3000	500	—	500	—	—
maximum (ms)	—	—	—	6000	700	—	700	—	—
Halfscan	no	no	no	no	no	no	no	no	no
factor	3	—	—	—	—	—	—	—	—
factor Y	—	—	—	—	—	—	—	—	—
factor Z	—	—	—	—	—	—	—	—	—

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

Water-fat shift	maximum	maximum	minimum	user defined	user defined	maximum	user defined	minimum	minimum
(pixels)	—	—	—	2	1.60000002	—	1.60000002	—	—
IR delay (ms)	—	210	—	—	—	—	—	—	—
dual	—	no	—	—	—	—	—	—	—
power	—	1	—	—	—	—	—	—	—
RF Shims	fixed	fixed	fixed	fixed	fixed	fixed	fixed	fixed	fixed
Shim	default	default	default	auto	auto	default	auto	default	default
mDIXON	no	no	no	no	yes	yes	yes	no	no
Fat suppression	no	no	no	SPAIR	no	no	no	SPIR	SPIR
strength	—	—	—	—	—	—	—	medium	medium
power	—	—	—	1	—	—	—	—	—
inversion delay	—	—	—	auto	—	—	—	—	—
suppr. level	—	—	—	strong	—	—	—	—	—
frequency offset	—	—	—	user defined	—	—	—	default	default
offset (Hz)	—	—	—	220	—	—	—	—	—
Grad Rev Fat suppr	—	no	no	no	no	no	no	no	no
Water suppression	no	no	no	no	no	no	no	no	no
TFE prepulse	—	—	—	—	—	—	—	—	—
slice selection	—	—	—	—	—	—	—	—	—
delay	—	—	—	—	—	—	—	—	—
(ms)	—	—	—	—	—	—	—	—	—
BB pulse	—	no	no	no	no	no	no	no	no
MTC	no	no	no	no	no	no	no	no	no
T2prep	—	—	—	—	—	—	—	—	—
echo time(ms)	—	—	—	—	—	—	—	—	—
refocusing pulses	—	—	—	—	—	—	—	—	—
APT	—	—	no	no	no	no	no	no	no
Custom prepulse	no	no	no	no	no	no	no	no	no
MDME	no	no	no	no	no	no	no	no	no
Diffusion mode	no	no	no	no	no	no	no	no	no
sequence	—	—	—	—	—	—	—	—	—
gradient expert mode	—	—	—	—	—	—	—	—	—
gradient overplus	—	—	—	—	—	—	—	—	—
direction	—	—	—	—	—	in-plane	—	—	—
nr of b-factors	—	—	—	—	—	—	—	—	—
b-factor order	—	—	—	—	—	—	—	—	—
max b-factor	—	—	—	—	—	—	—	—	—
average high b	—	—	—	—	—	—	—	—	—
T1 mapping	no	no	no	no	no	no	no	no	no
Transmit channels	both	both	both	both	both	both	both	both	both
SAR mode	low	high	high	high	high	high	high	high	high
B1 mode	default	default	default	default	default	default	default	default	default
SAR allow first level	yes	yes	yes	yes	yes	yes	yes	yes	yes

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

Patient pregnancy	no	no	no	no	no	no	no	no	no
Patient WB SAR [W/kg]	0	0	0	0	0	0	0	0	0
Patient Head SAR [W/kg]	0	0	0	0	0	0	0	0	0
Patient max. dB/dt [T/s]	0	0	0	0	0	0	0	0	0
Max slewrate [T/m/s]	0	0	0	0	0	0	0	0	0
Max. B1+rms [uT]	0	0	0	0	0	0	0	0	0
PNS mode	low	low	low	moderate	low	low	low	low	low
Gradient mode	regular	default	default	default	maximum	default	maximum	default	default
SofTone mode	user defined	no	no	no	no	no	no	no	no

MOTION

Scan Description	Survey	CO STIR LFOV	CO T1 LFOV	AX T2 FS	AX T1W mDIXON	SG T2 DIXON	AX T1W mDIXON POST CONTRAST	CO T1 FS POST CONTRAST	SG T1 FS POST CONTRAST
Cardiac synchronization	no	no	no	no	no	no	no	no	no
Heart rate > 250 bpm	no	no	no	no	no	no	no	no	no
Respiratory compensation	no	no	no	no	no	no	no	no	no
Navigator respiratory comp	no	no	no	no	no	no	no	no	no
Flow compensation	no	no	no	no	no	yes	no	no	no
Temporal slice spacing	—	—	default	default	default	default	default	default	default
Motion smoothing	—	no	no	yes	yes	no	yes	no	no
fMRI echo stabilisation	no	—	—	—	—	—	—	—	—
NSA	2	1	1	1.5	1	2	1	1	1
MRE enable	no	no	no	no	no	no	no	no	no

DYNAMIC ANGIO

Scan Description	Survey	CO STIR LFOV	CO T1 LFOV	AX T2 FS	AX T1W mDIXON	SG T2 DIXON	AX T1W mDIXON POST CONTRAST	CO T1 FS POST CONTRAST	SG T1 FS POST CONTRAST
Angio / Contrast enh.	no	—	—	—	—	—	—	—	—
Quantitative flow	no	—	—	—	—	—	—	—	—
CENTRA	—	—	—	—	—	—	—	—	—
Manual start	no	no	no	no	no	no	no	no	no
Dynamic study	no	no	no	no	no	no	no	no	no
Arterial Spin labeling	no	no	no	no	no	no	no	no	no

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.

MR Gadopiclenol (VUEWAY®) Protocol for Philips MRI Scanners
Pediatric

IMAGING FORUMS, INC.

POST PROCESSING

Scan Description	Survey	CO STIR LFOV	CO T1 LFOV	AX T2 FS	AX T1W mDIXON	SG T2 DIXON	AX T1W mDIXON POST CONTRAST	CO T1 FS POST CONTRAST	SG T1 FS POST CONTRAST
Preparation phases	auto	auto	auto	auto	full	auto	full	auto	auto
Interactive F0	no	no	no	no	no	no	no	no	no
Quick Survey	default	default	default	default	default	default	default	default	default
SmartPlan survey	no	no	no	no	no	no	no	no	no
B0 field map	no	no	no	no	no	no	no	no	no
B1 field map	no	no	no	no	no	no	no	no	no
MIP/MPR	no	no	no	no	no	no	no	no	no
SWIp	no	—	—	—	—	—	—	—	—
Images	no	no	no	no	—	—	—	no	no
Autoview image	M	M	M	M	—	—	—	M	M
Calculated images	no	—	no	no	—	—	—	no	no
Reference tissue	Skeletal muscle	Skeletal muscle	Skeletal muscle	Skeletal muscle	Skeletal muscle	Skeletal muscle	Skeletal muscle	Skeletal muscle	Skeletal muscle
Recon compression	No	No	No	No	No	No	No	No	No
Preset window contrast	soft	soft	soft	soft	soft	soft	soft	soft	soft
Reconstruction mode	immediate	immediate	immediate	immediate	immediate	immediate	immediate	immediate	immediate
Save raw data	no	no	no	no	no	no	no	no	no
Hardcopy protocol	no	no	no	no	no	no	no	no	no
Image filter	system default	system default	system default	system default	system default	system default	system default	system default	system default
Uniformity correction	no	no	no	no	no	no	no	no	no
Geometry correction	default	default	default	default	default	default	default	default	default
EPI geometry correction	—	—	—	—	—	—	—	—	—
ADC correction	—	—	—	—	—	—	—	—	—
Elliptical k-space shutter	—	—	—	—	—	—	—	—	—
Free rotatable	no	no	no	no	no	no	no	no	no

Disclaimer: The MR Protocols information is provided by independent physicians and technologists and is not intended to provide definitive or complete medical instructional or treatment information. Products referenced herein should be used consistently with their package inserts, and any devices referenced herein should be used consistently with the operation instructions provided by their respective manufactures. Northwest Imaging Forums, Inc. and Bracco Diagnostics Inc. do not offer medical advice and shall not be responsible for any person's reliance on this protocol.

Supported by an educational grant from Bracco Diagnostics Inc.