

DNA Shearing Quick Guide:

M220 Focused-ultrasonicator and Holder XTU

This Quick Guide provides DNA Shearing protocols with the Covaris M220 Focused-ultrasonicator. For optimal DNA Shearing performances at each specified volume, universal Holder XTU should be used with the correct combination of microTUBE and Insert. Holder miniTUBE should be used with miniTUBE.

15 µl sample volume- from 150 to 550 bp

Insert: M220 Holder XTU Insert microTUBE 15 µl (PN 500420)

Vial: microTUBE-15 AFA Beads Screw-Cap (PN 520145)

Target BP (Peak)	150	250	350	550
Peak Incident Power (W)	30	30	30	30
Duty Factor	20%	20%	20%	20%
Cycles per Burst	50	50	50	50
Treatment Time (s)	250	80	42	23
Temperature (°C)	20	20	20	20
Sample volume (µl)	15	15	15	15



To ensure reproducible DNA shearing, it is required to centrifuge samples before processing DNA in a microTUBE-15. Please read Appendix A for detailed instructions.

50 µl sample volume- from 150 to 800 bp

Insert: M220 Holder XTU Insert microTUBE 50 µl (PN 500488)

Vial: microTUBE-50 AFA Fiber Screw-Cap (PN 520166)

Target BP (Peak)	150	200	250	300	350	400	550	800
Peak Incident Power (W)	75	75	75	75	75	75	75	75
Duty Factor	10%	10%	10%	10%	10%	10%	10%	5%
Cycles per Burst	200	200	200	200	200	200	200	200
Treatment Time (s)	360	195	130	90	70	60	40	50
Temperature (°C)	20	20	20	20	20	20	20	20
Sample volume (µl)	50	50	50	50	50	50	50	50



Even if the Water Level check button is green in SonoLab, please check that water is in contact with Insert when using microTUBE-50.

130 µl sample volume- from 150 to 1,500 bp

Insert: M220 Holder XTU Insert microTUBE 130 µl (PN 500489)

Vial: microTUBE AFA Fiber Snap-Cap (PN 520045)

Target BP (Peak)	150	200	300	400	500	800	1,000	1,500
Peak Incident Power (W)	50	50	50	50	50	50	50	50
Duty Factor	20%	20%	20%	10%	10%	5%	2%	2%
Cycles per Burst	200	200	200	200	200	200	200	200
Treatment Time (s)	330	150	65	70	50	52	90	20
Temperature (°C)	20	20	20	20	20	20	20	20
Sample volume (µl)	130	130	130	130	130	130	130	130




200 µl sample volume- 2,000; 3,000 and 5,000 bp

Holder: M220 Holder miniTUBE (PN 500302)

Vials: miniTUBE Clear (PN 520064) or miniTUBE Blue (PN 520065) or miniTUBE Red (PN 520066)

Target BP (Peak)	2,000	3,000	5,000
miniTUBE	Clear	Blue	Red
Peak Incident Power (W)	8	6	8
Duty Factor	20%	20%	20%
Cycles per Burst	1,000	1,000	1,000
Treatment Time (s)	900	600	600
Temperature (°C)	7	20	20
Sample Volume (µl)	200	200	200



To fragment DNA to size larger than 5 kb, Covaris offers the **g-TUBE**: a single-use device that shears genomic DNA into selected fragments sizes ranging from 6 kb to 20 kb. The only equipment needed is a compatible bench-top centrifuge.

Values mentioned in this Quick Guide are nominal values. The tolerances are as follow:

- Temperature +/-2°C
- Sample volume
 - o microTUBE-15: from 15 to 20 µl, +/- 1 µl
 - o microTUBE-50: 50 µl, +/- 3 µl
 - o microTUBE Snap-Cap: 130 µl, +/- 5 µl
 - o miniTUBE: 200 µl, +/- 10 µl

Sample preparation guidelines:

- **DNA input:** From 100 ng to 5 µg purified DNA (1 µg for the microTUBE-15)
- **Buffer:** Tris EDTA, pH 8.0
- **DNA quality:** Genomic DNA (> 10 kb). For lower quality DNA, Covaris recommends setting up a time dose response experiment for determining appropriate treatment times.

Recommended settings are subject to change without notice.

See following link <http://www.covarisinc.com/resources> for updates to this document.

Supplies

Covaris AFA Tubes	microTUBE-15 AFA Beads Screw-Cap (25)	520145
	microTUBE-50 AFA Fiber Screw-Cap (25)	520166
	microTUBE AFA Fiber Snap-Cap (25)	520045
	miniTUBE Clear (25)	520064
	miniTUBE Blue (25)	520065
	miniTUBE Red (25)	520066
Preparation station	microTUBE Prep Station Snap & Screw Cap	500330
Holder	M220 Holder XTU	500414
	M220 Holder miniTUBE	500302
Inserts	M220 Holder XTU Insert microTUBE 15 µl	500420
	M220 Holder XTU Insert microTUBE 50 µl	500488
	M220 Holder XTU Insert microTUBE 130 µl	500489
Starter Kit	M220 NGS 15 to 130 ul microTUBE Starter Kit Includes: M220 Holder XTU M220 Holder XTU Insert microTUBE 15 µl M220 Holder XTU Insert microTUBE 50 µl M220 Holder XTU Insert microTUBE 130 µl microTUBE-15 AFA Beads Screw-Cap (25) microTUBE-50 AFA Fiber Screw-Cap (25) microTUBE AFA Fiber Snap-Cap (25) Centrifuge microTUBE Adapters (25) microTUBE Prep Station Snap & Screw Cap	500417
	M220 NGS miniTUBE Starter Kit Includes: M220 Holder miniTUBE miniTUBE Clear (25) miniTUBE blue (25) miniTUBE red (25) miniTUBE Prep Station & Stand	500297
Instrument cleaning	M220 Fill & Drain Accessory Kit	500299
	M220 Swab Cleaning Kit	500298
AFA-grade Water	800 ml of AFA-grade water	520101
Centrifuge Adapter	Centrifuge microTUBE Adapters (25)	520059

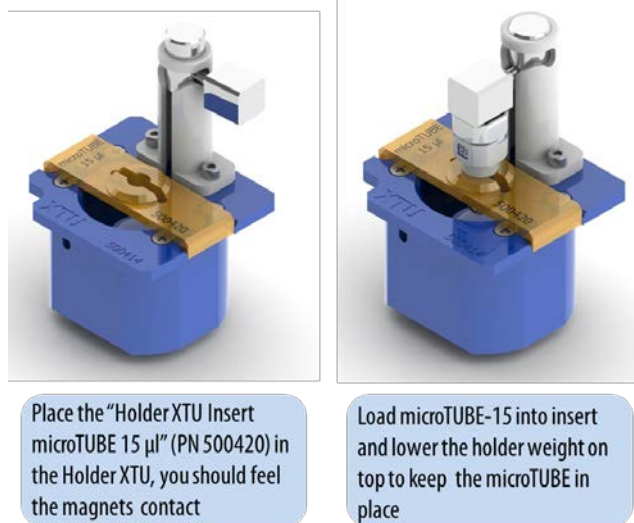
Appendix A – Using microTUBE-15 with Holder XTU

1. Sample loading and centrifugation



2. Sample processing

Load microTUBE-15 as described and use settings provided in page 1



3. Sample recovery

