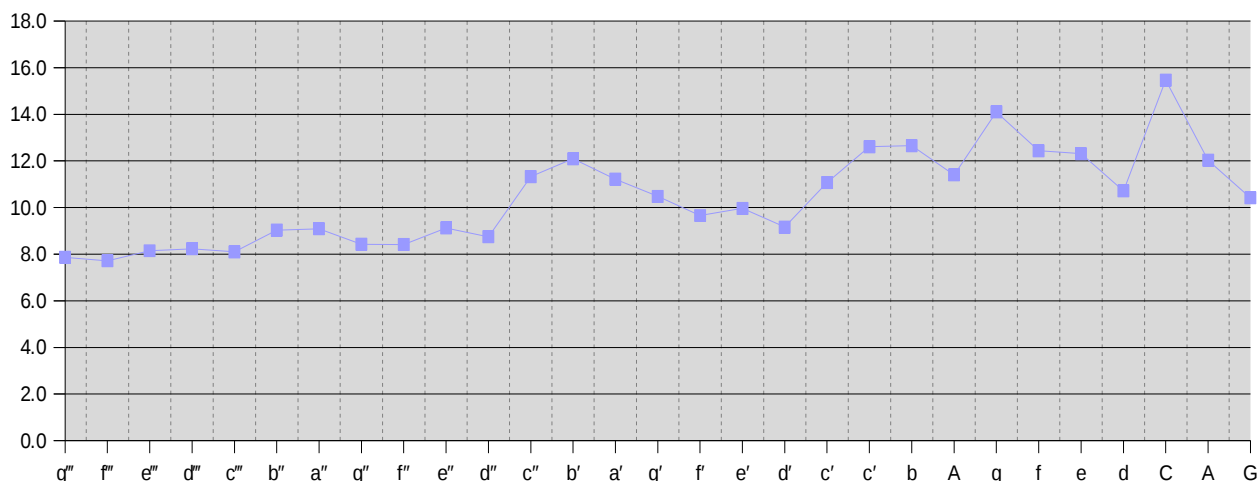


String no.	freq	Note	Length (cm)	Length (in)	Gauge (mm)	Gauge (in)	Tension (kgf)	Metal	
1	1568	g'''	7.1	2.8	0.48	0.019	7.9	Yellow brass	
2	1396	f'''	7.9	3.1	0.48	0.019	7.7	Yellow brass	
3	1318	e'''	8.6	3.4	0.48	0.019	8.2	Yellow brass	
4	1174	d'''	9.7	3.8	0.48	0.019	8.2	Yellow brass	
5	1046	c'''	10.8	4.3	0.48	0.019	8.1	Yellow brass	
6	986	b''	12.1	4.8	0.48	0.019	9.0	Yellow brass	
7	880	a''	13.6	5.4	0.48	0.019	9.1	Yellow brass	
8	784	g''	14.7	5.8	0.48	0.019	8.4	Yellow brass	
9	698	f''	16.5	6.5	0.48	0.019	8.4	Yellow brass	
10	659	e''	18.2	7.2	0.48	0.019	9.1	Yellow brass	
11	587	d''	20	7.9	0.48	0.019	8.7	Yellow brass	
12	523	c''	21.9	8.6	0.56	0.022	11.3	Yellow brass	
13	493	b'	24	9.5	0.56	0.022	12.1	Yellow brass	
14	440	a'	25.9	10.2	0.56	0.022	11.2	Yellow brass	
15	392	g'	28.1	11.1	0.56	0.022	10.5	Yellow brass	
16	349	f'	30.3	11.9	0.56	0.022	9.7	Yellow brass	
17	329.5	e'	32.6	12.8	0.56	0.022	10.0	Yellow brass	
18	293.5	d'	35.1	13.8	0.56	0.022	9.2	Yellow brass	
19	261.5	c'	37.3	14.7	0.65	0.026	11.1	Yellow brass	
20	261.5	c'	39.8	15.7	0.65	0.026	12.6	Yellow brass	
21	246.5	b	42.3	16.7	0.65	0.026	12.7	Yellow brass	
22	220	A	45	17.7	0.65	0.026	11.4	Yellow brass	
23	196	g	47.5	18.7	0.7	0.028	14.1	Hard Sterling Silver	
24	174.5	f	50.1	19.7	0.7	0.028	12.4	Hard Sterling Silver	
25	164.75	e	52.8	20.8	0.7	0.028	12.3	Hard Sterling Silver	
26	146.75	d	55.3	21.8	0.7	0.028	10.7	Hard Sterling Silver	
27	130.75	C	58	22.9	0.9	0.035	15.5	Hard Sterling Silver	
28	110	A	60.8	24.0	0.9	0.035	12.0	Hard Sterling Silver	
29	98	G	63.5	25.0	0.9	0.035	10.4	Hard Sterling Silver	
							Total:	302.0	

Tension



String lengths (and therefore tensions) are approximate, based on the most accurate measurements yet available, from Paul Dooley 'Reconstructing the medieval Irish harp', *Galpin Society Journal* LXVII, 2014, used with permission

Gauge (mm)	no spares cm	including one spare of each gauge cm	individual strings cm
0.48			23.1
0.48			23.9
0.48			24.6
0.48			25.7
0.48			26.8
0.48			28.1
0.48			29.6
0.48			30.7
0.48			32.5
0.48			34.2
0.48	315.2	351.2	36
0.56			37.9
0.56			40
0.56			41.9
0.56			44.1
0.56			46.3
0.56			48.6
0.56	309.9	361	51.1
0.65			53.3
0.65			55.8
0.65			58.3
0.65	228.4	289.4	61
0.7			63.5
0.7			66.1
0.7			68.8
0.7	269.7	341	71.3
0.9			74
0.9			76.8
0.9	230.3	309.8	79.5
	<i>no spares</i>	<i>with spares</i>	<i>each string toggled</i>
	8.54 m brass	10.02 m brass	<i>No spares</i> £142.07
	£2.00 per m	£2.00 per m	£2.50 brass toggle
	subtotal £17.07	subtotal £20.03	29 toggles
	5 m silver	6.508 m silver	subtotal £72.50
	£25.00 per m	£25.00 per m	TOTAL £214.57
	subtotal £125.00	subtotal £162.70	
	TOTAL £142.07	TOTAL £182.73	<i>With spares</i> £182.73
			£2.50 brass toggle
	<i>Replace the silver spares with brass</i>		43 toggles
	15.02 m brass	<i>...and add toggles</i>	subtotal £107.50
	£2.00 per m	£2.50 brass toggle	TOTAL £290.23
	subtotal £30.03	43 toggles	
	5 m silver	subtotal £107.50	
	£25.00 per m	TOTAL £262.53	
	subtotal £125.00		
	TOTAL £155.03		

Queen Mary Harp string chart (30 strings)



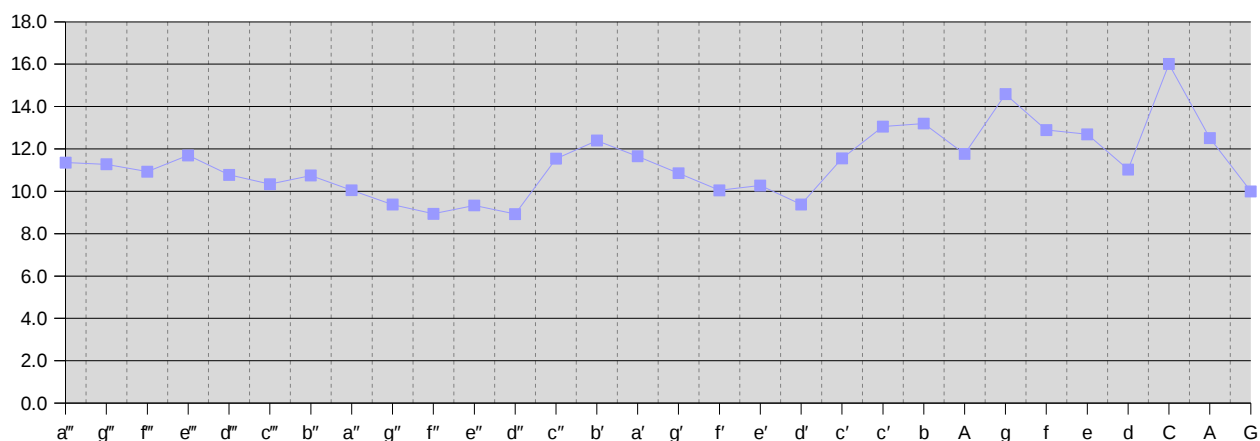
For replicas with shorter trebles, requiring the 30th pin and loop in the bass.

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String no.	freq	Note	Length (cm)	Length (in)	Gauge (mm)	Gauge (in)	Tension (kgf)	Metal
1	1760	a ^{'''}	7.6	3.0	0.48	0.019	11.4	Yellow brass
2	1568	g ^{'''}	8.5	3.3	0.48	0.019	11.3	Yellow brass
3	1396	f ^{'''}	9.4	3.7	0.48	0.019	10.9	Yellow brass
4	1318	e ^{'''}	10.3	4.1	0.48	0.019	11.7	Yellow brass
5	1174	d ^{'''}	11.1	4.4	0.48	0.019	10.8	Yellow brass
6	1046	c ^{'''}	12.2	4.8	0.48	0.019	10.3	Yellow brass
7	986	b ^{''}	13.2	5.2	0.48	0.019	10.7	Yellow brass
8	880	a ^{''}	14.3	5.6	0.48	0.019	10.0	Yellow brass
9	784	g ^{''}	15.5	6.1	0.48	0.019	9.4	Yellow brass
10	698	f ^{''}	17	6.7	0.48	0.019	8.9	Yellow brass
11	659	e ^{''}	18.4	7.2	0.48	0.019	9.3	Yellow brass
12	587	d ^{''}	20.2	8.0	0.48	0.019	8.9	Yellow brass
13	523	c ^{''}	22.1	8.7	0.56	0.022	11.5	Yellow brass
14	493	b [']	24.3	9.6	0.56	0.022	12.4	Yellow brass
15	440	a [']	26.4	10.4	0.56	0.022	11.7	Yellow brass
16	392	g [']	28.6	11.3	0.56	0.022	10.9	Yellow brass
17	349	f [']	30.9	12.2	0.56	0.022	10.0	Yellow brass
18	329.5	e [']	33.1	13.0	0.56	0.022	10.3	Yellow brass
19	293.5	d [']	35.5	14.0	0.56	0.022	9.4	Yellow brass
20	261.5	c [']	38.1	15.0	0.65	0.026	11.6	Yellow brass
21	261.5	c [']	40.5	16.0	0.65	0.026	13.1	Yellow brass
22	246.5	b	43.2	17.0	0.65	0.026	13.2	Yellow brass
23	220	A	45.7	18.0	0.65	0.026	11.8	Yellow brass
24	196	g	48.3	19.0	0.7	0.028	14.6	Hard Sterling Silver
25	174.5	f	51	20.1	0.7	0.028	12.9	Hard Sterling Silver
26	164.75	e	53.6	21.1	0.7	0.028	12.7	Hard Sterling Silver
27	146.75	d	56.1	22.1	0.7	0.028	11.0	Hard Sterling Silver
28	130.75	C	59	23.2	0.9	0.035	16.0	Hard Sterling Silver
29	110	A	62	24.4	0.9	0.035	12.5	Hard Sterling Silver
30	98	G	62.2	24.5	0.9	0.035	10.0	Hard Sterling Silver
							Total:	339.1

Tension



including

Gauge (mm)	no spares cm	one spare of each gauge cm	individual strings cm
0.44			23.6
0.44			24.5
0.44			25.4
0.44			26.3
0.48			27.1
0.48			28.2
0.48			29.2
0.48			30.3
0.48			31.5
0.52			33
0.52			34.4
0.52	349.7	385.9	36.2
0.56			38.1
0.56			40.3
0.56			42.4
0.6			44.6
0.6			46.9
0.6			49.1
0.65	312.9	364.4	51.5
0.65			54.1
0.65			56.5
0.65			59.2
0.7	231.5	293.2	61.7
0.65			64.3
0.7			67
0.75			69.6
0.8	273	345.1	72.1
0.85			75
0.9			78
0.95	231.2	309.4	78.2
	<i>no spares</i>	<i>with spares</i>	<i>each string toggled</i>
	8.94 m brass	10.44 m brass	<i>No spares</i> £143.93
	£2.00 per m	£2.00 per m	£2.50 brass toggle
	subtotal £17.88	subtotal £20.87	30 toggles
	5.042 m silver	6.545 m silver	subtotal £75.00
	£25.00 per m	£25.00 per m	TOTAL £218.93
	subtotal £126.05	subtotal £163.63	
	TOTAL £143.93	TOTAL £184.50	<i>With spares</i> £184.50
			£2.50 brass toggle
	<i>Replace the silver spares with brass</i>		44 toggles
	15.48 m brass	<i>...and add toggles</i>	subtotal £110.00
	£2.00 per m	£2.50 brass toggle	TOTAL £294.50
	subtotal £30.95	44 toggles	
	5.042 m silver	subtotal £110.00	
	£25.00 per m	TOTAL £267.00	
	subtotal £126.05		
	TOTAL £157.00		

Order your strings at www.earlygaelicharp.info/emporium/wire

Queen Mary Harp string chart (29 strings)



For replicas missing the 30th pin and loop, or for replicas with longer trebles

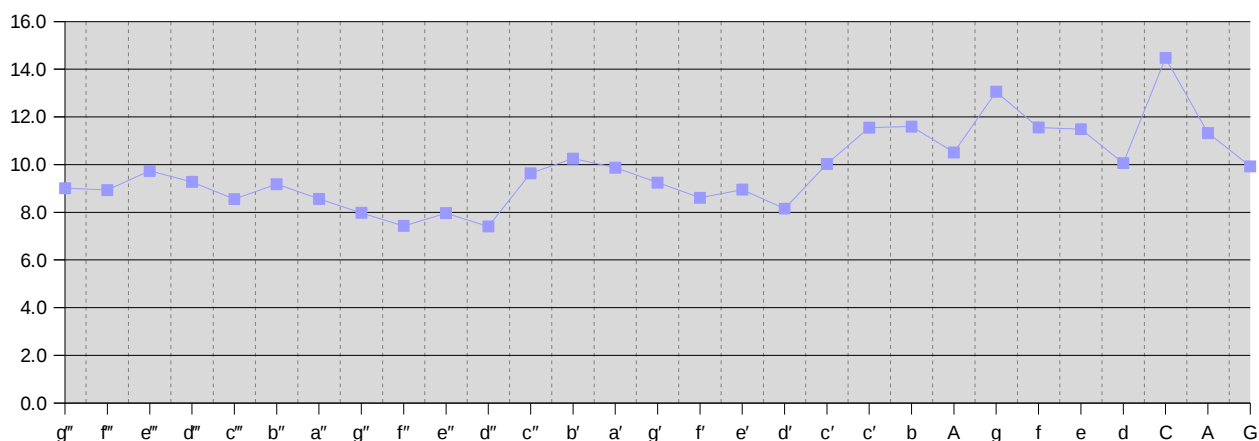
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String no.	freq	Note	Length (cm)	Length (in)	Gauge (mm)	Gauge (in)	Tension (kgf)	Metal
1	1568	g ^{'''}	7.6	3.0	0.48	0.019	9.0	Yellow brass
2	1396	f ^{'''}	8.5	3.3	0.48	0.019	8.9	Yellow brass
3	1318	e ^{'''}	9.4	3.7	0.48	0.019	9.7	Yellow brass
4	1174	d ^{'''}	10.3	4.1	0.48	0.019	9.3	Yellow brass
5	1046	c ^{'''}	11.1	4.4	0.48	0.019	8.6	Yellow brass
6	986	b ^{''}	12.2	4.8	0.48	0.019	9.2	Yellow brass
7	880	a ^{''}	13.2	5.2	0.48	0.019	8.6	Yellow brass
8	784	g ^{''}	14.3	5.6	0.48	0.019	8.0	Yellow brass
9	698	f ^{''}	15.5	6.1	0.48	0.019	7.4	Yellow brass
10	659	e ^{''}	17	6.7	0.48	0.019	8.0	Yellow brass
11	587	d ^{''}	18.4	7.2	0.48	0.019	7.4	Yellow brass
12	523	c ^{''}	20.2	8.0	0.56	0.022	9.6	Yellow brass
13	493	b [']	22.1	8.7	0.56	0.022	10.3	Yellow brass
14	440	a [']	24.3	9.6	0.56	0.022	9.9	Yellow brass
15	392	g [']	26.4	10.4	0.56	0.022	9.2	Yellow brass
16	349	f [']	28.6	11.3	0.56	0.022	8.6	Yellow brass
17	329.5	e [']	30.9	12.2	0.56	0.022	9.0	Yellow brass
18	293.5	d [']	33.1	13.0	0.56	0.022	8.2	Yellow brass
19	261.5	c [']	35.5	14.0	0.65	0.026	10.0	Yellow brass
20	261.5	c [']	38.1	15.0	0.65	0.026	11.6	Yellow brass
21	246.5	b	40.5	16.0	0.65	0.026	11.6	Yellow brass
22	220	A	43.2	17.0	0.65	0.026	10.5	Yellow brass
23	196	g	45.7	18.0	0.7	0.028	13.1	Hard Sterling Silver
24	174.5	f	48.3	19.0	0.7	0.028	11.6	Hard Sterling Silver
25	164.75	e	51	20.1	0.7	0.028	11.5	Hard Sterling Silver
26	146.75	d	53.6	21.1	0.7	0.028	10.1	Hard Sterling Silver
27	130.75	C	56.1	22.1	0.9	0.035	14.5	Hard Sterling Silver
28	110	A	59	23.2	0.9	0.035	11.3	Hard Sterling Silver
29	98	G	62	24.4	0.9	0.035	9.9	Hard Sterling Silver
30	87.25	F	61	24.0	0.9	0.035	7.6	Hard Sterling Silver

Total: 284.4

Tension



String lengths (and therefore tensions) are approximate, based on the most accurate measurements yet available, from

Karen A. Loomis, *The organology of the Queen Mary and Lamont harps*, PhD thesis, The University of Edinburgh, 2014, p.142

Online at [https://www.era.lib.ed.ac.uk/handle/1842/19551\(cc by-nc-sa\)](https://www.era.lib.ed.ac.uk/handle/1842/19551(cc%20by-nc-sa))

including

Gauge (mm)	no spares cm	one spare of each gauge cm	individual strings cm
0.48			23.6
0.48			24.5
0.48			25.4
0.48			26.3
0.48			27.1
0.48			28.2
0.48			29.2
0.48			30.3
0.48			31.5
0.48			33
0.48	313.5	347.9	34.4
0.56			36.2
0.56			38.1
0.56			40.3
0.56			42.4
0.56			44.6
0.56			46.9
0.56	297.6	346.7	49.1
0.65			51.5
0.65			54.1
0.65			56.5
0.65	221.3	280.5	59.2
0.7			61.7
0.7			64.3
0.7			67
0.7	262.6	332.2	69.6
0.9			72.1
0.9			75
0.9	225.1	303.1	78
0.9	302.1	379.1	77
	<i>no spares</i>	<i>with spares</i>	<i>each string toggled</i>
	8.32 m brass	9.75 m brass	<i>No spares</i> £138.57
	£2.00 per m	£2.00 per m	£2.50 brass toggle
	subtotal £16.65	subtotal £19.50	29 toggles
	4.88 m silver	6.35 m silver	subtotal £72.50
	£25.00 per m	£25.00 per m	TOTAL £211.07
	subtotal £121.93	subtotal £158.83	
	TOTAL £138.57	TOTAL £178.33	<i>With spares</i> £178.33
			£2.50 brass toggle
	<i>Replace the silver spares with brass</i>		43 toggles
	14.63 m brass	<i>...and add toggles</i>	subtotal £107.50
	£2.00 per m	£2.50 brass toggle	TOTAL £285.83
	subtotal £29.26	43 toggles	
	4.88 m silver	subtotal £107.50	
	£25.00 per m	TOTAL £258.68	
	subtotal £121.93		
	TOTAL £151.18		

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