

Trinity College Harp string chart

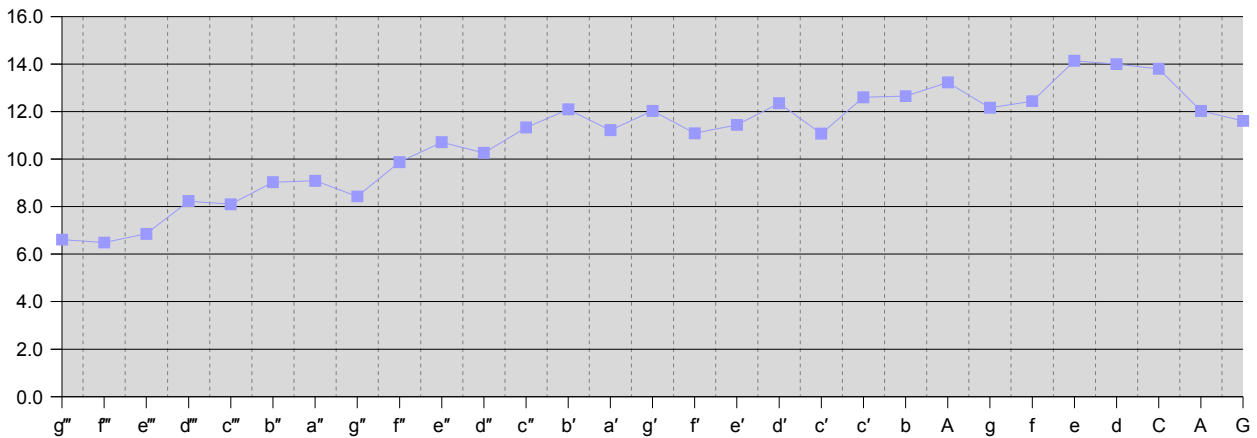
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String no.	freq	Note	Length (cm)	Length (in)	Gauge (mm)	Gauge (in)	Tension (kgf)	Metal	
1	1568	g ^{'''}	7.1	2.8	0.44	0.017	6.6	Yellow brass	
2	1396	f ^{'''}	7.9	3.1	0.44	0.017	6.5	Yellow brass	
3	1318	e ^{'''}	8.6	3.4	0.44	0.017	6.9	Yellow brass	
4	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	0.52	0.02	9.9	Yellow brass	
10	659	e ^{''}	18.2	7.2	0.52	0.02	10.7	Yellow brass	
11	587	d ^{''}	20	7.9	0.52	0.02	10.3	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	0.6	0.024	12.0	Yellow brass	
16	349	f [']	30.3	11.9	0.6	0.024	11.1	Yellow brass	
17	329.5	e [']	32.6	12.8	0.6	0.024	11.4	Yellow brass	
18	293.5	d [']	35.1	13.8	0.65	0.026	12.3	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	0.7	0.028	13.2	Yellow brass	
23	196	g	47.5	18.7	0.65	0.026	12.2	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	0.75	0.03	14.1	Hard Sterling Silver	
26	146.75	d	55.3	21.8	0.8	0.032	14.0	Hard Sterling Silver	
27	130.75	C	58	22.9	0.85	0.033	13.8	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	0.95	0.037	11.6	Hard Sterling Silver	
							Total:	314.9	

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
0.44			23.1
0.44			23.9
0.44	71.6	96.2	24.6
0.48			25.7
0.48			26.8
0.48			28.1
0.48			29.6
0.48	140.9	171.6	30.7
0.52			32.5
0.52			34.2
0.52	102.7	138.7	36
0.56			37.9
0.56			40
0.56	119.8	161.7	41.9
0.6			44.1
0.6			46.3
0.6	139	187.6	48.6
0.65			51.1
0.65			53.3
0.65			55.8
0.65	218.5	276.8	58.3
0.7	61	122	61
0.65	63.5	127	63.5
0.7	66.1	132.2	66.1
0.75	68.8	137.6	68.8
0.8	71.3	142.6	71.3
0.85	74	148	74
0.9	76.8	153.6	76.8
0.95	79.5	159	79.5
	<i>no spares</i>	<i>with spares</i>	<i>each string toggled</i>
	8.54 m brass	11.55 m brass	<i>No spares</i> £142.07
	£2.00 per m	£2.00 per m	£2.50 brass toggle
	subtotal £17.07	subtotal £23.09	29 toggles
	5 m silver	10 m silver	subtotal £72.50
	£25.00 per m	£25.00 per m	TOTAL £214.57
	subtotal £125.00	subtotal £250.00	<i>With spares</i> £273.09
	TOTAL £142.07	TOTAL £273.09	£2.50 brass toggle
	<i>Replace the silver spares with brass</i>		43 toggles
	16.55 m brass	<i>...and add toggles</i>	subtotal £107.50
	£2.00 per m	£2.50 brass toggle	TOTAL £380.59
	subtotal £33.09	43 toggles	
	5 m silver	subtotal £107.50	
	£25.00 per m	TOTAL £265.59	
	subtotal £125.00		
	TOTAL £158.09		

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Queen Mary Harp string chart (30 strings)

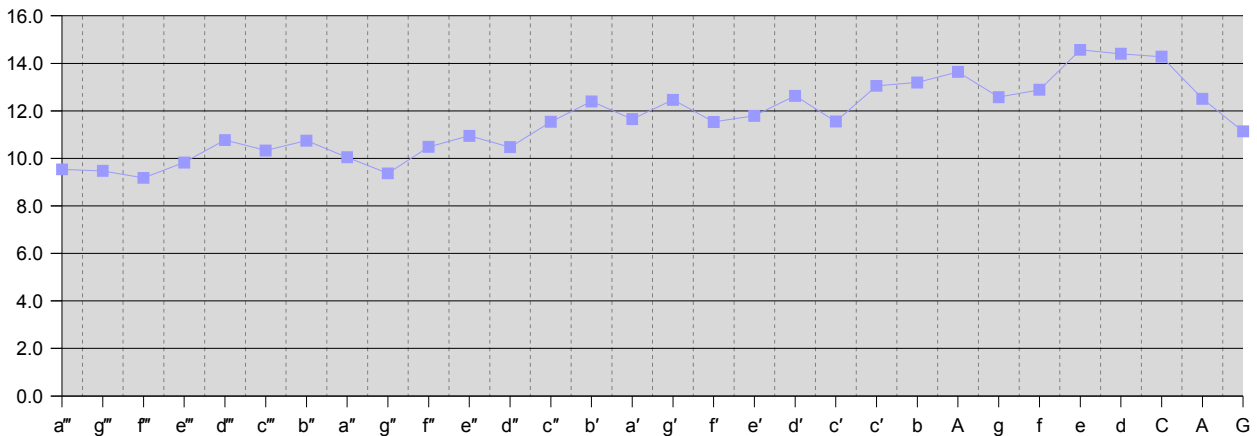


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String no.	freq	Note	Length (cm)	Length (in)	Gauge (mm)	Gauge (in)	Tension (kgf)	Metal	
1	1760	a'''	7.6	3.0	0.44	0.017	9.5	Yellow brass	
2	1568	g'''	8.5	3.3	0.44	0.017	9.5	Yellow brass	
3	1396	f'''	9.4	3.7	0.44	0.017	9.2	Yellow brass	
4	1318	e'''	10.3	4.1	0.44	0.017	9.8	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	0.52	0.02	10.5	Yellow brass	
11	659	e''	18.4	7.2	0.52	0.02	10.9	Yellow brass	
12	587	d''	20.2	8.0	0.52	0.02	10.5	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	0.6	0.024	12.5	Yellow brass	
17	349	f'	30.9	12.2	0.6	0.024	11.5	Yellow brass	
18	329.5	e'	33.1	13.0	0.6	0.024	11.8	Yellow brass	
19	293.5	d'	35.5	14.0	0.65	0.026	12.6	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	0.7	0.028	13.6	Yellow brass	
24	196	g	48.3	19.0	0.65	0.026	12.6	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	0.75	0.03	14.6	Hard Sterling Silver	
27	146.75	d	56.1	22.1	0.8	0.032	14.4	Hard Sterling Silver	
28	130.75	C	59	23.2	0.85	0.033	14.3	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	0.95	0.037	11.1	Hard Sterling Silver	
							Total:	349.0	

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))

Gauge (mm)	no spares cm	including one spare of each gauge cm	individual strings cm
0.44			23.6
0.44			24.5
0.44			25.4
0.44	99.8	126.1	26.3
0.48			27.1
0.48			28.2
0.48			29.2
0.48			30.3
0.48	146.3	177.8	31.5
0.52			33
0.52			34.4
0.52	103.6	139.8	36.2
0.56			38.1
0.56			40.3
0.56	120.8	163.2	42.4
0.6			44.6
0.6			46.9
0.6	140.6	189.7	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	123.4	61.7
0.65	64.3	128.6	64.3
0.7	67	134	67
0.75	69.6	139.2	69.6
0.8	72.1	144.2	72.1
0.85	75	150	75
0.9	78	156	78
0.95	78.2	156.4	78.2
	<i>no spares</i>	<i>with spares</i>	<i>each string toggled</i>
	8.94 m brass	12.01 m brass	<i>No spares</i> £143.93
	£2.00 per m	£2.00 per m	£2.50 brass toggle
	subtotal £17.88	subtotal £24.01	30 toggles
	5.042 m silver	10.084 m silver	subtotal £75.00
	£25.00 per m	£25.00 per m	TOTAL £218.93
	subtotal £126.05	subtotal £252.10	<i>With spares</i> £276.11
	TOTAL £143.93	TOTAL £276.11	£2.50 brass toggle
	<i>Replace the silver spares with brass</i>		44 toggles
	17.05 m brass	<i>...and add toggles</i>	subtotal £110.00
	£2.00 per m	£2.50 brass toggle	TOTAL £386.11
	subtotal £34.09	44 toggles	
	5.042 m silver	subtotal £110.00	
	£25.00 per m	TOTAL £270.14	
	subtotal £126.05		
	TOTAL £160.14		

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Queen Mary Harp string chart (29 strings)

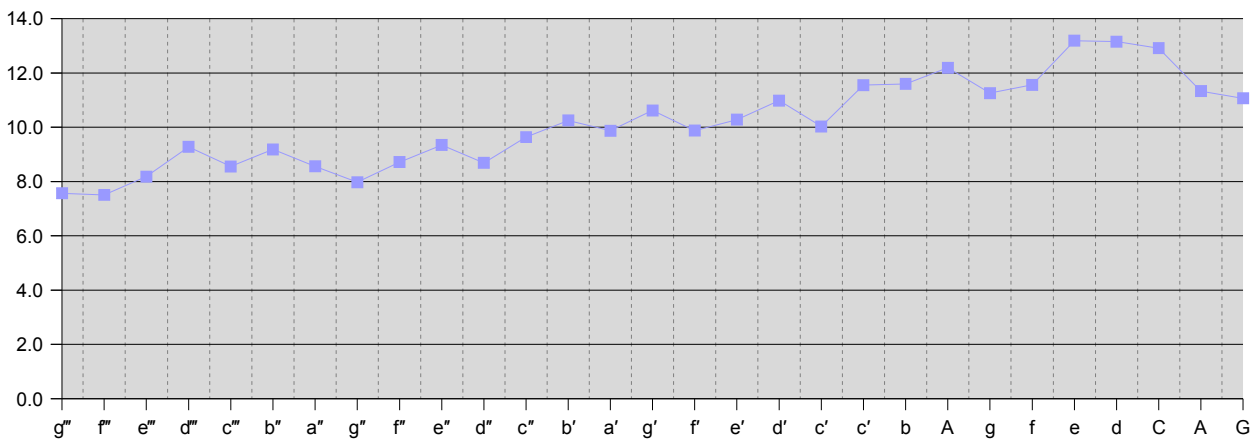


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String no.	freq	Note	Length (cm)	Length (in)	Gauge (mm)	Gauge (in)	Tension (kgf)	Metal	
1	1568	g'''	7.6	3.0	0.44	0.017	7.6	Yellow brass	
2	1396	f'''	8.5	3.3	0.44	0.017	7.5	Yellow brass	
3	1318	e'''	9.4	3.7	0.44	0.017	8.2	Yellow brass	
4	1174	d'''	10.3	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	0.52	0.02	8.7	Yellow brass	
10	659	e''	17	6.7	0.52	0.02	9.3	Yellow brass	
11	587	d''	18.4	7.2	0.52	0.02	8.7	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	0.6	0.024	10.6	Yellow brass	
16	349	f'	28.6	11.3	0.6	0.024	9.9	Yellow brass	
17	329.5	e'	30.9	12.2	0.6	0.024	10.3	Yellow brass	
18	293.5	d'	33.1	13.0	0.65	0.026	11.0	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	0.7	0.028	12.2	Yellow brass	
23	196	g	45.7	18.0	0.65	0.026	11.3	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	0.75	0.03	13.2	Hard Sterling Silver	
26	146.75	d	53.6	21.1	0.8	0.032	13.2	Hard Sterling Silver	
27	130.75	C	56.1	22.1	0.85	0.033	12.9	Hard Sterling Silver	
28	110	A	59	23.2	0.9	0.035	11.3	Hard Sterling Silver	
29	98	G	62	24.4	0.95	0.037	11.1	Hard Sterling Silver	
							Total:	294.9	

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)

Gauge (mm)	no spares cm	including one spare of each gauge cm	individual strings cm
0.44			23.6
0.44			24.5
0.44	73.5	98.9	25.4
0.48			26.3
0.48			27.1
0.48			28.2
0.48			29.2
0.48	141.1	171.4	30.3
0.52			31.5
0.52			33
0.52	98.9	133.3	34.4
0.56			36.2
0.56			38.1
0.56	114.6	154.9	40.3
0.6			42.4
0.6			44.6
0.6	133.9	180.8	46.9
0.65			49.1
0.65			51.5
0.65			54.1
0.65	211.2	267.7	56.5
0.7	59.2	118.4	59.2
0.65	61.7	123.4	61.7
0.7	64.3	128.6	64.3
0.75	67	134	67
0.8	69.6	139.2	69.6
0.85	72.1	144.2	72.1
0.9	75	150	75
0.95	78	156	78
	<i>no spares</i>	<i>with spares</i>	<i>each string toggled</i>
	8.32 m brass	11.25 m brass	<i>No spares</i> £138.57
	£2.00 per m	£2.00 per m	£2.50 brass toggle
	subtotal £16.65	subtotal £22.51	29 toggles
	4.88 m silver	9.75 m silver	subtotal £72.50
	£25.00 per m	£25.00 per m	TOTAL £211.07
	subtotal £121.93	subtotal £243.85	<i>With spares</i> £266.36
	TOTAL £138.57	TOTAL £266.36	£2.50 brass toggle
	<i>Replace the silver spares with brass</i>		43 toggles
	16.13 m brass	<i>...and add toggles</i>	subtotal £107.50
	£2.00 per m	£2.50 brass toggle	TOTAL £373.86
	subtotal £32.26	43 toggles	
	4.88 m silver	subtotal £107.50	
	£25.00 per m	TOTAL £261.69	
	subtotal £121.93		
	TOTAL £154.19		

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