Physics 1100

The Mechanical Equivalent of Heat

Here is some data needed for your analysis.

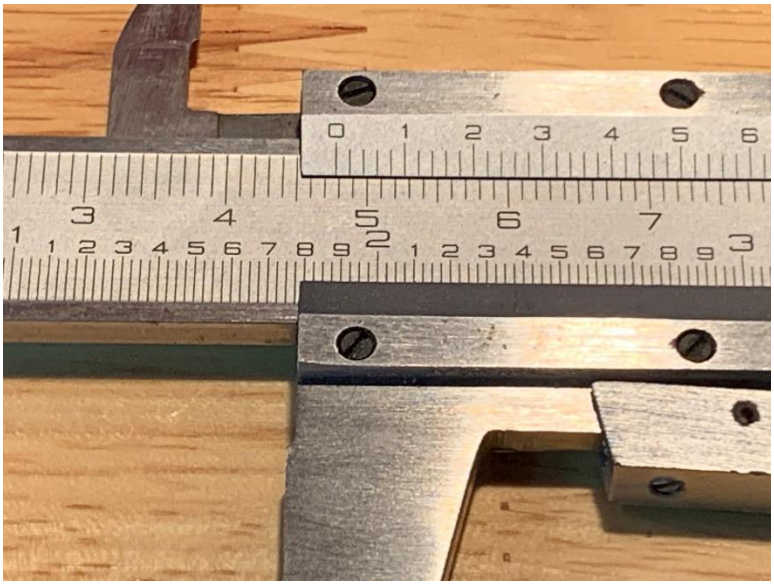
Object	**Mass**
Cylinder	202.7 grams
Can (hanging mass)	9.95 kg

This is a photograph of the cylinder that we are transferring energy into.

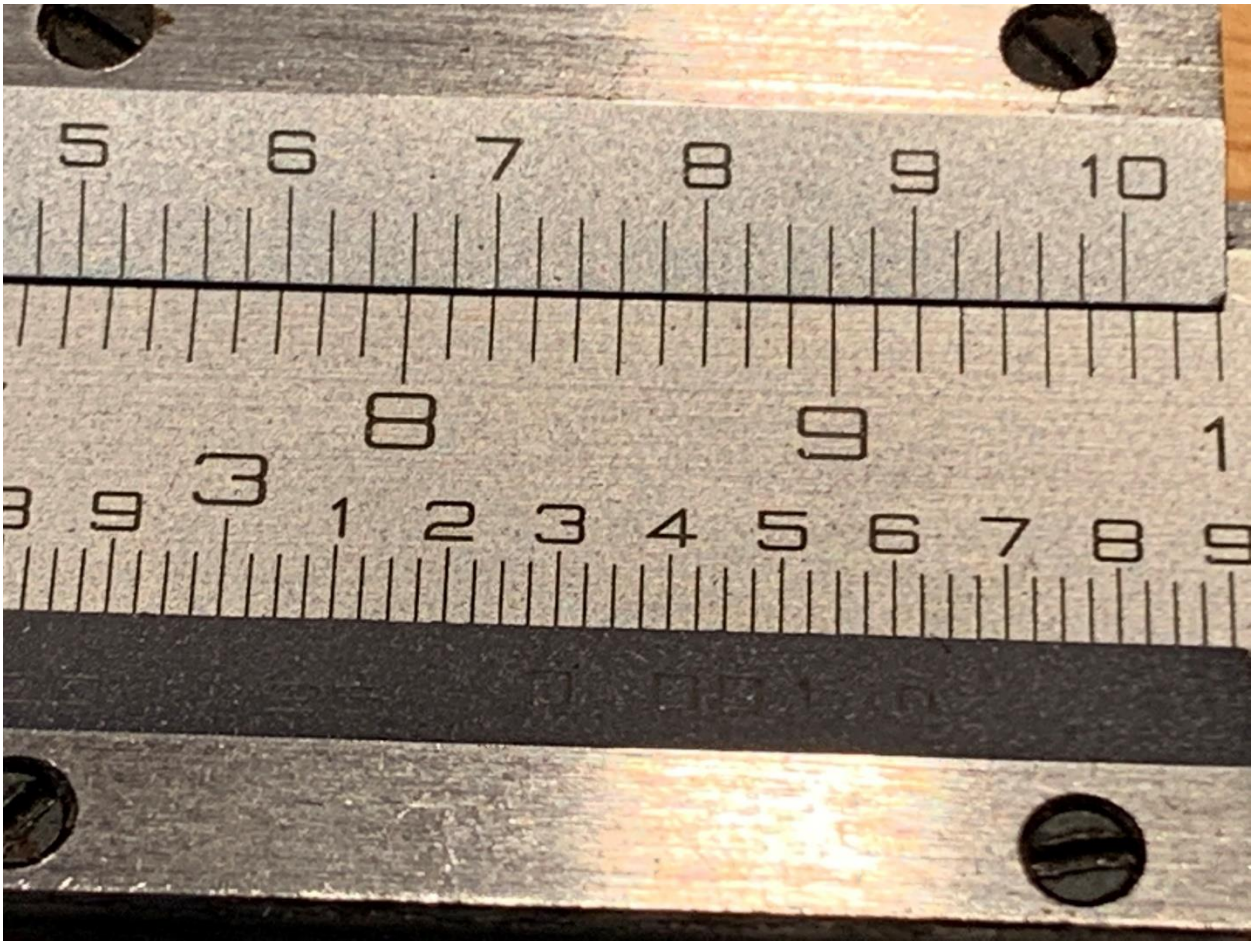
The outer diameter (of its center portion) is of interest. This is where our rope is seated. A pair of Vernier calipers were used to measure this diameter.

The following two photos allow you to obtain this length.

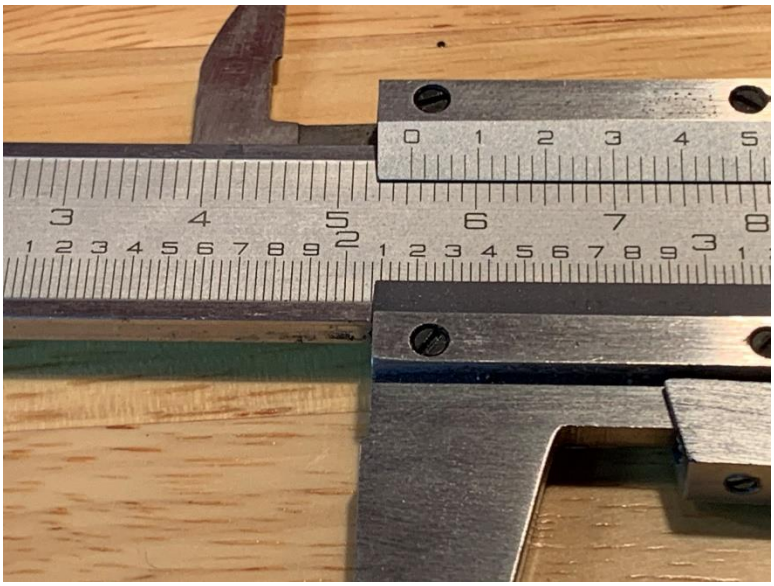
Use this photo to determine the first two digits.

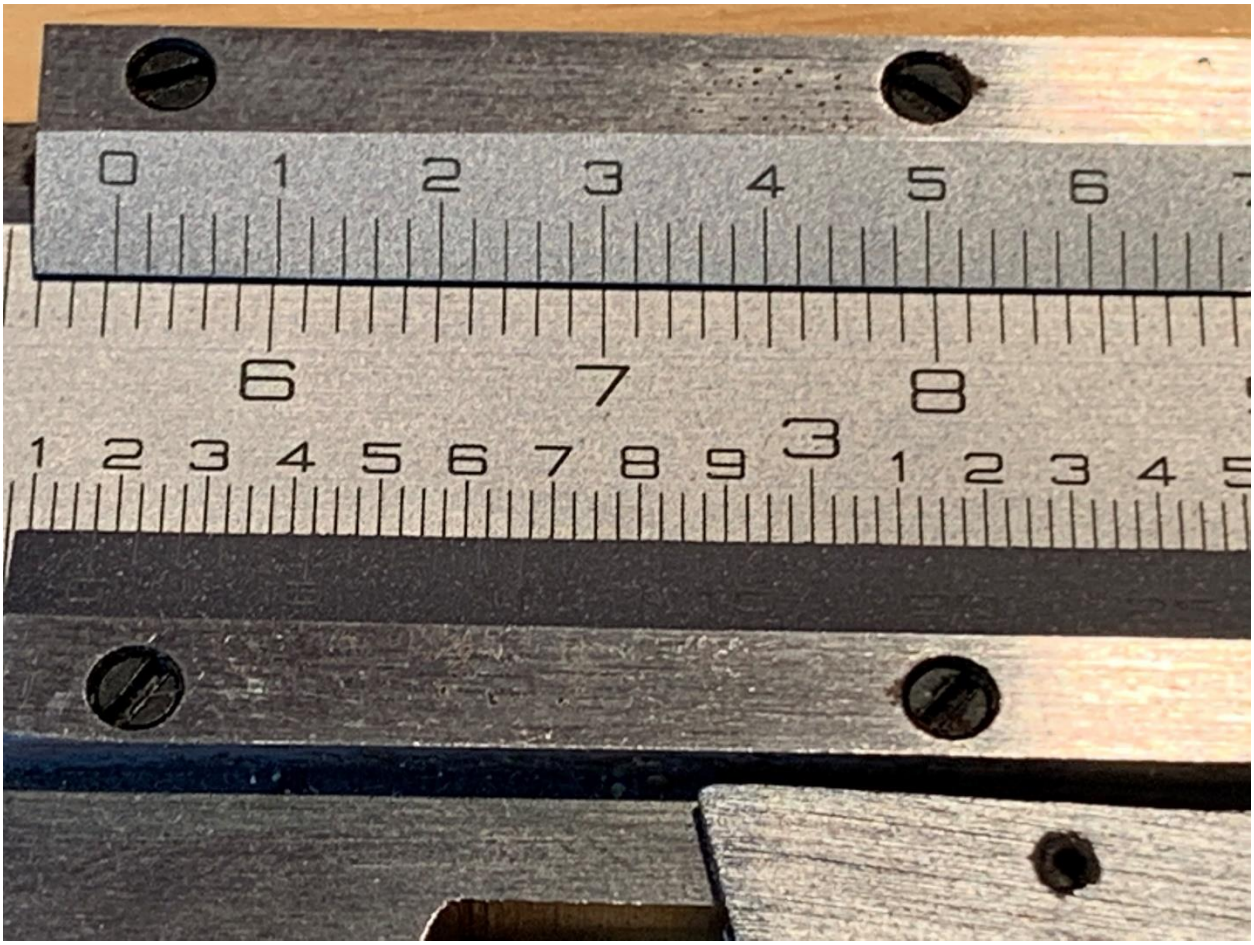


Then determine the next two digits with this-close up of the sliding scale.

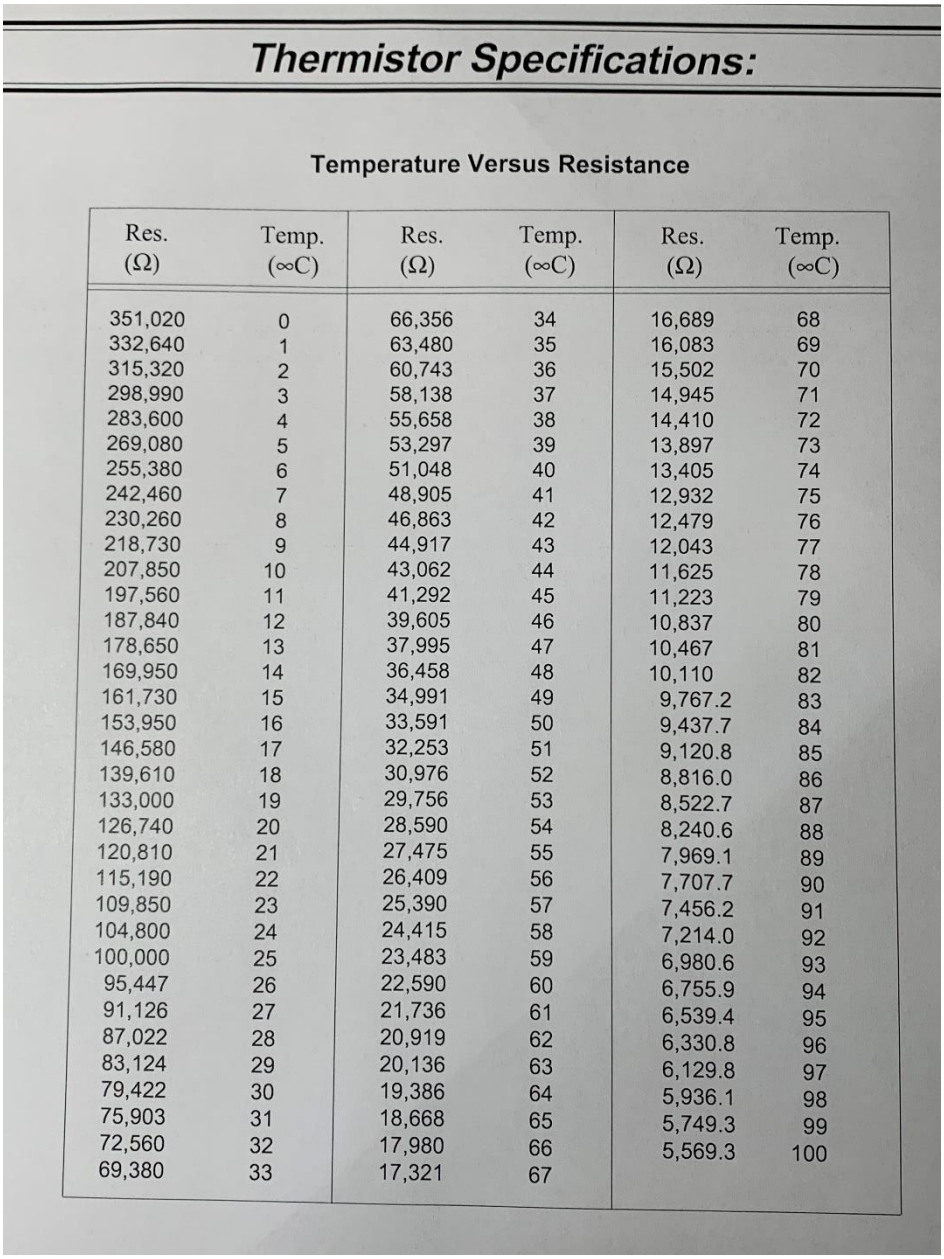


Next, rope was wound around the cylinder so that the diameter of the cylinder plus rope could be determined. Use the following two photos to measure this new diameter.





Here's a photo of temperature versus resistance that is printed on the side of our unit.



Thermistor Specifications:

Temperature Versus Resistance

Res. (Ω)	Temp. (∞C)	Res. (Ω)	Temp. (∞C)	Res. (Ω)	Temp. (∞C)
351,020	0	66,356	34	16,689	68
332,640	1	63,480	35	16,083	69
315,320	2	60,743	36	15,502	70
298,990	3	58,138	37	14,945	71
283,600	4	55,658	38	14,410	72
269,080	5	53,297	39	13,897	73
255,380	6	51,048	40	13,405	74
242,460	7	48,905	41	12,932	75
230,260	8	46,863	42	12,479	76
218,730	9	44,917	43	12,043	77
207,850	10	43,062	44	11,625	78
197,560	11	41,292	45	11,223	79
187,840	12	39,605	46	10,837	80
178,650	13	37,995	47	10,467	81
169,950	14	36,458	48	10,110	82
161,730	15	34,991	49	9,767.2	83
153,950	16	33,591	50	9,437.7	84
146,580	17	32,253	51	9,120.8	85
139,610	18	30,976	52	8,816.0	86
133,000	19	29,756	53	8,522.7	87
126,740	20	28,590	54	8,240.6	88
120,810	21	27,475	55	7,969.1	89
115,190	22	26,409	56	7,707.7	90
109,850	23	25,390	57	7,456.2	91
104,800	24	24,415	58	7,214.0	92
100,000	25	23,483	59	6,980.6	93
95,447	26	22,590	60	6,755.9	94
91,126	27	21,736	61	6,539.4	95
87,022	28	20,919	62	6,330.8	96
83,124	29	20,136	63	6,129.8	97
79,422	30	19,386	64	5,936.1	98
75,903	31	18,668	65	5,749.3	99
72,560	32	17,980	66	5,569.3	100
69,380	33	17,321	67		