MEASUREMENT PARAMETERS, PROCEDURES, OBSERVATIONS, CONCLUSIONS

MEASUREMENT SET 1 PARAMETERS

a. The first set of measurements were of the force required to “close the gap” between magnet RO (rotating magnet) and magnet SL (sliding magnet), by the sliding of magnet SL upon a track. This would be an INPUT OPERATION if within a cyclical operation of the device.

b. Magnet SL was moved along the track upon which it can slide into it's farthest position from magnet RO (22.4282 mm). This distance is the same as the distance a weight upon pulley RO string can travel during a 90 degree rotation of magnet RO.

c. Magnet RO was rotated so that it's long axis was parallel to the long axis of magnet SL. Magnet RO was then restrained in this rotated position (clamped).

d. The long axis of magnets RO and SL are each centered along it's long axis, to the center of the others long axis, at all times during the measurements.

e. The track upon which magnet SL can slide, by design inherently prevents any rotation of SL.

f. The faces of the magnets RO and SL that are closest to one another are always parallel in two planes.

g. Magnet SL is attached to the SL rails. The SL rails slide within the SL rail guides. The SL rails are joined to the SL pulley by a string (the SL rail string), which is wrapped upon the SL pulley.

h. There is a second string (weight SL string) which is wrapped upon and attached to the pulley SL. The SL weight string is wrapped upon pulley SL in the opposite direction of the SL rail string. A weight (weight SL) which is attached to the end of the weight SL string that is distal from the SL pulley, will cause rotation of the SL pulley, as the weight SL string unwraps from the SL pulley. Said rotation of the SL pulley will cause the SL rail string to be simultaneously pulled (wrapped) onto the SL pulley, thus causing the sliding of the SL track and of the magnet SL toward magnet RO.

i. Pulley SL rotates upon an axle (axle SL). Also joined to axle SL, is the SL scale needle. The SL scale needle will travel in an arc of 90 degrees, when the magnet SL slides from it's most distant position (22.4282 mm) from RO to it's nearest position (0.01 mm).

j. Under these conditions, the sliding of magnet SL toward magnet RO will be in opposition to the magnetic forces between magnets SL and RO.

k. For orientation of the poles of magnets RO and SL please see the previous drawings, texts and photos.

l. Other parameters are included in the previous drawings and texts.

MEASUREMENT SET 1 PROCEDURES

a. Weight was added to the weight SL string in increments of either 25 or 50 grams and the rotation of the SL scale needle observed and recorded, until the magnet SL had slid 22.4282 mm and to within 0.01 mm of magnet RO. The final reading from the SL degree scale was 94 degrees, due to stretching of the SL rail string.

b. Mechanical vibration was applied to the measurement unit, to facilitate the rapid overcoming of friction between the various components.

c. This process was repeated 5 times for each increment of weight. The averages of the degree scale readings for each weight increment set were then calculated.

d. The average of the degree scale readings for each weight increment set, was then multiplied by the factor 0.238. The product of this multiplication, is the average amount of displacement of the SL weight and/or SL magnet in mm, for each averaged measurement set. (22.4282 mm / 94 degrees = 0.238.... mm per degree)

e. The measurements were then graphed as weight increments in grams versus magnet displacements in mm.

MEASUREMENT SET 1 OBSERVATIONS

a. More weight upon weight SL string caused more sliding of magnet SL.

b. More weight was required upon weight SL string in order to cause sliding motion, as magnet SL approached magnet RO.

MEASUREMENT SET 1 OBSERVATIONS

c.

SL 0 - 94 deg. RO parallel to SL mags in place		Measurement # 1ST	2ND	3RD	4TH	5TH
25 g.	deflection	reverse movement	reverse movement	reverse movement	reverse movement	reverse movement
50 g.	deflection	12.5	12.5	10	10	12.5
75 g.	deflection	27.5	27	26	26	26
100 g.	deflection	35	36	35	35	35
125 g.	deflection	42.5	43	43	41	42.5
150 g.	deflection	47	47	47	48	47.5
175 g.	deflection	52	52	52	52	52
200 g.	deflection	55	55	54.5	55	55
225 g.	deflection	57.5	57.5	57.5	57.5	57.5
250 g.	deflection	61	61	61	61	61
300 g.	deflection	66	66	66	66	66.5
350 g.	deflection	70	70	70	70.5	70.5
400 g.	deflection	73	73.5	73	73	73
450 g.	deflection	76	77	77	77	77.5
500 g.	deflection	79	79	79	79	79
550 g.	deflection	81.25	81.5	82	82	81
600 g.	deflection	83.75	84	83.75	83.75	83.75
650 g.	deflection	85	85	85	85	85
700 g.	deflection	86	87	86.75	86.5	86.5
750 g.	deflection	88.75	88.75	88.75	88.75	88.75
800 g.	deflection	90	90	90	90	90
850 g.	deflection	92.5	93	92.5	92.5	93
900 g.	deflection	94	94	94	94	94

MEASUREMENT SET 1 OBSERVATIONS
translation of degrees into mm

d.

SL 0 - 94 deg.
RO parallel to SL
mags. in place.

AVERAGES AND SL WEIGHT TRAVEL

25 g.	average deflection	reverse	X *0.238 =< 0 mm
50 g.	average deflection	11.5	X *0.238 = 2.743 mm
75 g.	average deflection	26.5	X *0.238 = 6.322 mm
100 g.	average deflection	35.2	X *0.238 = 8.398 mm
125 g.	average deflection	42.4	X *0.238 = 10.116 mm
150 g.	average deflection	47.3	X *0.238 = 11.285 mm
175 g.	average deflection	52	X *0.238 = 12.407 mm
200 g.	average deflection	54.8	X *0.238 = 13.075 mm
225 g.	average deflection	57.5	X *0.238 = 13.719 mm
250 g.	average deflection	61	X *0.238 = 14.554 mm
300 g.	average deflection	66.1	X *0.238 = 15.711 mm
350 g.	average deflection	70.2	X *0.238 = 16.749 mm
400 g.	average deflection	73.1	X *0.238 = 17.441 mm
450 g.	average deflection	76.9	X *0.238 = 18.348 mm
500 g.	average deflection	79	X *0.238 = 18.849 mm
550 g.	average deflection	81.5	X *0.238 = 19.445 mm
600 g.	average deflection	83.8	X *0.238 = 19.994 mm
650 g.	average deflection	85	X *0.238 = 20.280 mm
700 g.	average deflection	86.55	X *0.238 = 20.650 mm
750 g.	average deflection	88.75	X *0.238 = 21.175 mm

MEASUREMENT SET 1 OBSERVATIONS
translation of degrees into mm

e.

SL 0 - 94 deg.
RO parallel to SL
mags. in place.

AVERAGES AND SL WEIGHT TRAVEL

800 g. average deflection	90	X *0.238 = 21.473 mm
850 g. average deflection	92.5	X *0.238 = 22.070 mm
900 g. average deflection	94	X *0.238 = 22.4282 mm

* NOTE: 0.238 is rounded off from 0.2385978......
0.2492 (for the RO scale) is also rounded off.

90 degrees = 1/4 of the circumference of either the RO or the SL pulley. This = 0.883 in. or 22.4282 mm. This is the distance pulleys and weights RO and SL eventually travel during the measurements.

22.4282 mm / 94 = 0.238..... mm for the SL scale since the SL scale traveled 94 degrees.

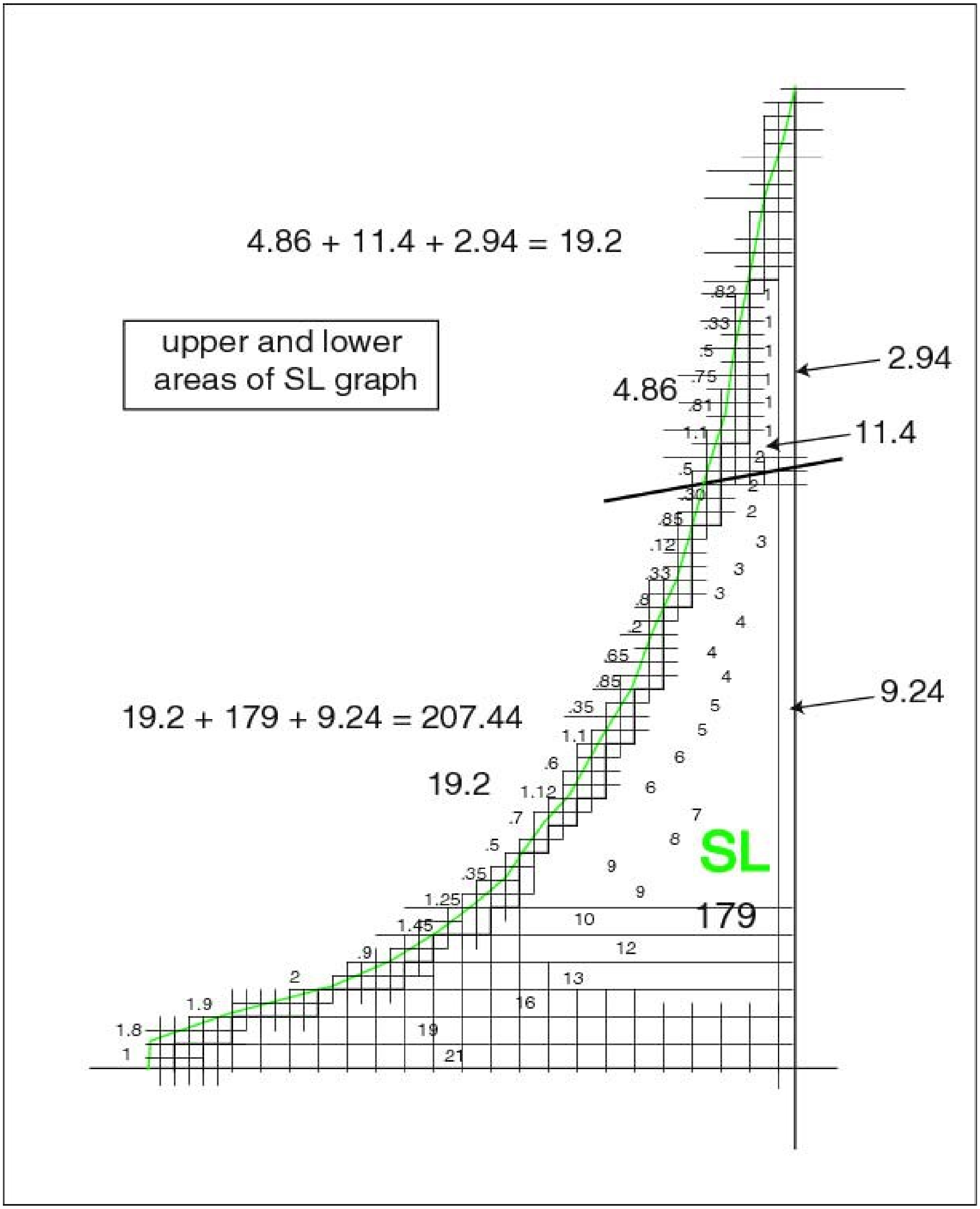
Multiply the degrees on the SL scale by 0.238597..... to get the distance traveled by either pulley or weight SL in mm.

22.4282 mm / 90 degrees = 0.249202..... mm for the RO scale

Multiply the degrees read from the RO scale by 0.2492.... to get the distance traveled by either the pulley RO or weight RO in mm.

MEASUREMENT SET 1 OBSERVATIONS GRAPH

e.



MEASUREMENT SET 2 PARAMETERS

a. The second set of measurements were of the force required to “close the gap” between magnet RO (rotating magnet) and magnet SL (sliding magnet), by the rotation of magnet RO. This would be the OUTPUT OPERATION if within a cyclical operation of the device.

b. Magnet SL was moved along the track upon which it can slide into close proximity with magnet RO (approximately 0.01 mm between magnet faces).

c. Magnet SL was restrained in this close proximity, from sliding away from magnet RO (clamped).

d. The track upon which magnet SL can slide, by design inherently prevents any rotation of SL.

e. The faces of the magnets RO and SL that are closest to one another are always parallel in two planes.

f. The long axis of magnets RO and SL are each centered along it's long axis, to the center of the others long axis, at all times during the measurements.

g. Magnet RO rotates upon axle RO, in sink with pulley RO and in sink with the needle upon scale RO.

h. At the beginning of this measurement process, the long axis of magnet RO is at a rotation of 90 degrees from the long axis of magnet SL.

i. The distance that the RO weight travels during a 90 degree rotation of the RO magnet is 22.4282 mm. This is 1/4 of the circumference of the RO pulley.

j. The rotation of magnet RO under these conditions would be in OPPOSITION to magnetic forces between magnets RO and SL.

k. For orientation of the poles of magnets RO and SL please see the previous drawings, texts and photos.

l. Other parameters are included in the previous drawings and texts.

MEASUREMENT SET 2 PROCEDURES

a. A string (string RO) was attached to and wrapped around pulley RO in such a manner that weight upon the string would cause magnet RO to rotate.

b. The rotation of magnet RO would be indicated upon scale RO since pulley RO, magnet RO, and the indicator needle for scale RO are attached to a common axle (RO axle).

c. Sufficient rotation of pulley RO would cause the long axis of magnet RO to rotate 90 degrees and there by become aligned with the long axis of magnet SL.

d. Said rotation would be in opposition to magnetic forces between magnets RO and SL.

e. Weight is added to the pulley RO string in 18 increments of either 25 or 50 grams and the rotation of magnet RO recorded, until magnet RO had rotated 90 degrees.

MEASUREMENT SET 2 OBSERVATIONS

a. More weight upon pulley RO string caused more rotation of magnet RO.

b. More weight was required upon pulley RO string in order to cause rotation as the long axis of magnet RO approached alignment with the long axis of magnet SL.

MEASUREMENT SET 2 OBSERVATIONS

c.

RO 0 - 90 deg. SL close mags.in place		Measurement # 1ST	2ND	3RD	4TH	5TH
25 g.	deflection	0	0	0	0	0
50 g.	deflection	0	0	0.5	0	0
75 g.	deflection	0.5	0.75	0.75	0.75	0.5
100 g.	deflection	1.75	1.75	1.75	2	2
125 g.	deflection	2.5	2.5	2.5	2.5	2.5
150 g.	deflection	12.5	12.75	13.25	14	12
175 g.	deflection	25	24	25	23	23.5
200 g.	deflection	30	29	30	30	29
225 g.	deflection	34	33.5	35	35	34
250 g.	deflection	38	40	39	39	38.5
275 g.	deflection	42.5	42.5	42.5	42.5	42.75
300 g.	deflection	47	47	47	47	46.5
350 g.	deflection	52.5	52.5	52.5	52.5	52.5
400 g.	deflection	57	57	57	57	57
450 g.	deflection	61	61.25	61.5	61.25	61.5
500 g.	deflection	65	65	65	65	65
525 g.	deflection	68	68	68	68	68
550 g.	deflection	90	90	90	90	90

MEASUREMENT SET 2 OBSERVATIONS

translation of degrees into mm

d.

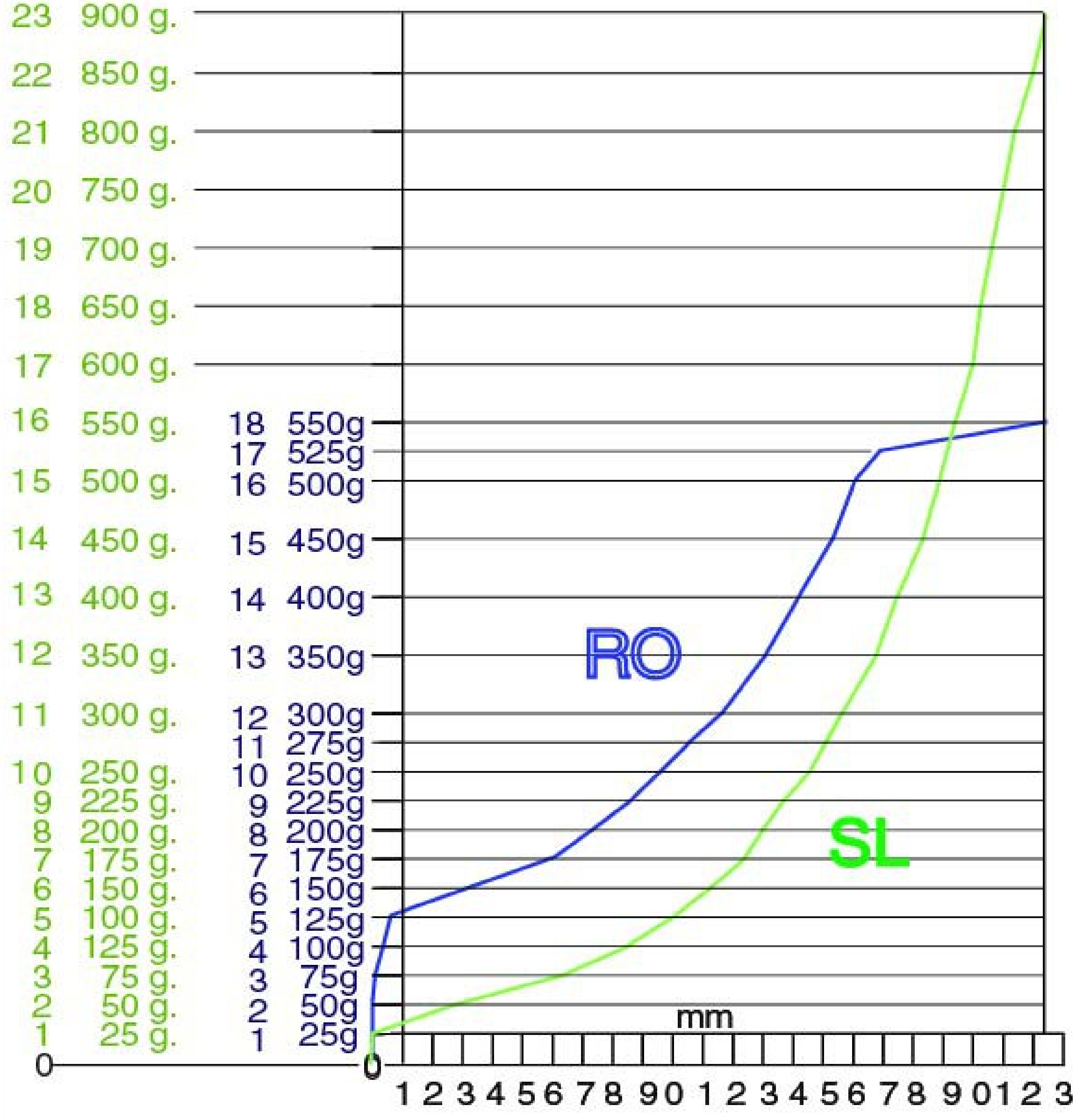
RO 0 - 90 deg.
mag. SL close

DEGREE AVERAGES AND RO WEIGHT TRAVEL IN mm

25 g.	average deflection	0	X *0.2492 = 0 mm
50 g.	average deflection	0	X *0.2492 = 0 mm
75 g.	average deflection	0.65	X *0.2492 = 0.161 mm
100 g.	average deflection	1.85	X *0.2492 = 0.461 mm
125 g.	average deflection	2.5	X *0.2492 = 0.623 mm
150 g.	average deflection	12.9	X *0.2492 = 3.214 mm
175 g.	average deflection	24.1	X *0.2492 = 6.005 mm
200 g.	average deflection	29.6	X *0.2492 = 7.376 mm
225 g.	average deflection	34.3	X *0.2492 = 8.547 mm
250 g.	average deflection	38.9	X *0.2492 = 9.693 mm
275 g.	average deflection	42.55	X *0.2492 = 10.603 mm
300 g.	average deflection	46.9	X *0.2492 = 11.687 mm
350 g.	average deflection	52.5	X *0.2492 = 13.083 mm
400 g.	average deflection	57	X *0.2492 = 14.204 mm
450 g.	average deflection	61.3	X *0.2492 = 15.275 mm
500 g.	average deflection	65	X *0.2492 = 16.191 mm
525 g.	average deflection	68	X *0.2492 = 16.945 mm
550 g.	average deflection	90	X *0.2492 = 22.428 mm

NOTE: 0.2492 rounded off from 0.249202......

MEASUREMENT SET 2 OBSERVATIONS
GRAPH



MEASUREMENT SET 3 PARAMETERS

a. The third set of measurements were of the force required to "open the gap" between magnet RO (rotating magnet) and magnet SL (sliding magnet), by the sliding of magnet SL upon a track, while the long axis of magnet RO is at 90 degrees to the long axis of magnet SL. This would be a FIRST RETURN OPERATION of the SL magnet if within a cyclical operation of the device.

b. Measurements were made of attracting force between magnet RO and SL at three distinct distances. These distances were 0.01 mm or 0 degrees on the SL scale, 1.246 mm or 5 degrees on the SL scale, and 2.492 mm or 10 degrees on the SL scale.

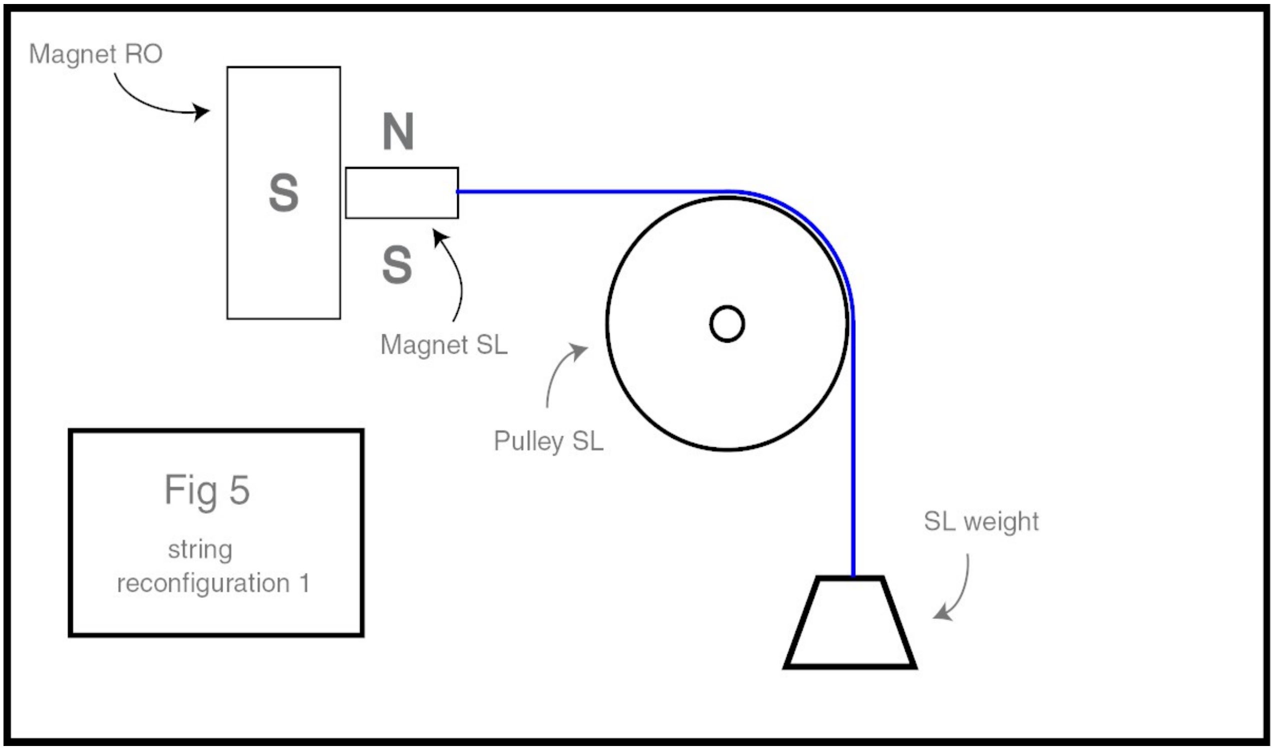
c. The long axis of RO is at a rotational position of 90 degrees to the long axis of SL. RO is clamped into this position.

d. The faces of the magnets RO and SL that are closest to one another are always parallel in two planes.

e. The track upon which SL can slide, by design, inherently prevents any rotation of SL.

f. In order to measure the force needed to pull magnet SL from magnet RO under these conditions, it was necessary to reconfigure the connections of the SL weight string and to disconnect the SL rail string. These reconfigurations are described in the following drawing and description (fig 5. string reconfiguration 1).

MEASUREMENT SET 3 PARAMETERS



MEASUREMENT SET 3 PARAMETERS

g. Magnet SL slides upon it's track and is connected by the (reconfigured 1, SL weight string) to the SL weight. The reconfigured 1, SL weight string is wrapped upon pulley SL. Any fall of the SL weight will thus cause the rotation of pulley SL.

h. Pulley SL rotates upon an axle (axle SL). Also joined to axle SL, is the needle upon scale SL. The needle upon scale SL will travel in an arc of 90 degrees when the magnet SL slides from it's it's nearest position to magnet RO (0.01 mm) to it's most distant position from magnet RO (22.4282 mm).

i. For orientation of the poles of RO and SL please see the previous drawings, texts and photos.

j. Other parameters are included in the previous drawings and texts.

MEASUREMENT SET 3 PROCEDURES

a. The SL magnet was moved into a first close proximity to magnet RO (0.01 mm). Weight was added to the (reconfigured 1 SL weight string), in increments of 11.7 grams and the measurement device vibrated to test the amount of force required to cause magnet SL to begin to slide along it's track. The results were recorded. Because the magnetic attraction is decreasing as magnet SL moves farther from magnet RO, only the force needed to initiate the movement at specific distances is measured.

b. The SL magnet was moved into a second close proximity to magnet RO (5 degrees upon the SL scale or 1.246 mm). Weight was added to the (reconfigured 1 SL weight string, in increments of 11.7 grams and the measurement device vibrated to test the amount of force required to cause magnet SL to begin to slide along it's track. The results were recorded. Because the magnetic attraction is decreasing as magnet SL moves farther from magnet RO, only the force needed to initiate the movement at specific distances is measured.

c. The SL magnet was moved into a third close proximity to magnet RO (10 degrees upon the SL scale or 2.492 mm). Weight was added to the (reconfigured 1 SL weight string, in increments of 11.7 grams and the measurement device vibrated to test the amount of force required to cause magnet SL to begin to slide along it's track. The results were recorded. Because the magnetic attraction is decreasing as magnet SL moves farther from magnet RO, only the force needed to initiate the movement at specific distances is measured.

MEASUREMENT SET 3 OBSERVATIONS

a. Less than 35.1 grams was required to initiate and continue the full sliding of the magnet SL from a distance of 0.01 mm from magnet RO.

b. Less than 23.4 grams was required to initiate and continue the full sliding of the magnet SL from a distance of 1.246 mm from magnet RO.

c. Less than 11.7 grams was required to initiate and continue the full sliding of the of magnet SL from a distance of 2.492 mm from magnet RO.

MEASUREMENT SET 4 PARAMETERS

a. The fourth set of measurements were of the force required to rotate the long axis of magnet RO from a position of 90 degrees off from the long axis of magnet SL, until it was parallel to the long axis of magnet SL, while magnet SL was 22.4282 mm distant from magnet SL. This would be a SECOND RETURN OPERATION if within a cyclical operation of the device.

b. Magnet SL was moved along the track upon which it can slide into it's farthest proximity from magnet RO (22.4282 mm) between magnet faces).

c. Magnet SL was restrained in this distant proximity, from sliding (clamped).

d. The track upon which magnet SL can slide, by design inherently prevents any rotation of magnet SL.

e. The faces of the magnets RO and SL that are closest to one another are always parallel in two planes.

f. The long axis of magnets RO and SL are each centered along it's long axis, to the center of the others long axis, at all times during the measurements.

g. Magnet RO rotates upon axle RO, in sink with pulley RO and in sink with the needle upon scale RO.

h. Magnet RO is by design, inherently restrained in it's rotation, to an arc of 90 degrees.

i. For orientation of the poles of magnets RO and SL please see the previous drawings, texts and photos.

j. Other parameters are included in the previous drawings and texts.

MEASUREMENT SET 4 PROCEDURES

a. A string (string RO) was wrapped around pulley RO in such a manner that weight upon the string would cause the long axis of magnet RO to rotate from 90 off from the long axis of magnet SL towards a parallel alignment with the long axis of magnet SL. Sufficient rotation of pulley RO would cause the long axis of magnet RO to rotate 90 degrees and there by become aligned with the long axis of magnet SL.

b. Said rotation would be in opposition to a small amount of magnetic forces between magnets RO and SL, because magnets RO and SL are 22.4282 mm distance from each other.

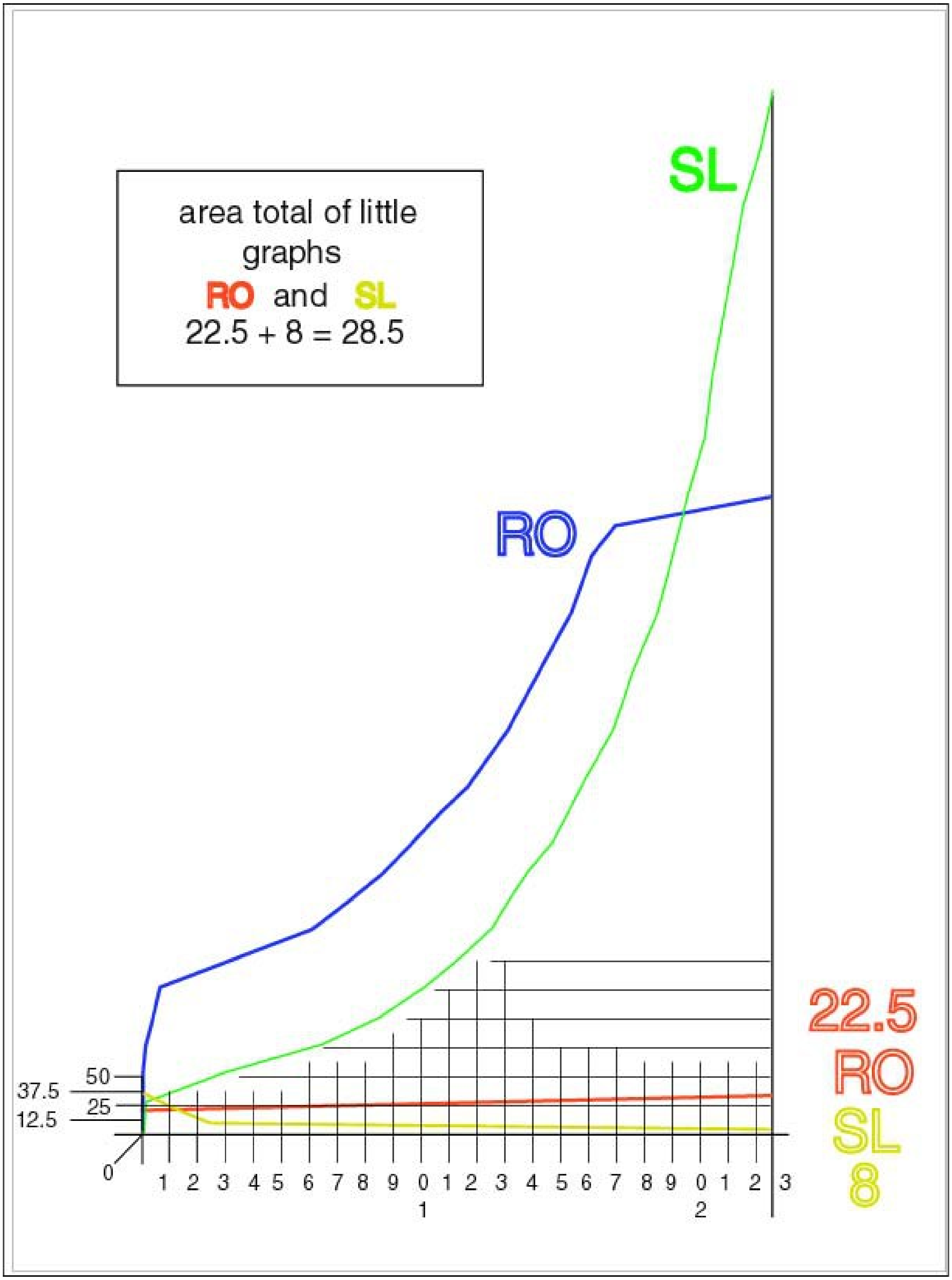
c. Weight is added to the pulley RO string in increments of 11.7 grams. The measurement device was vibrated and the rotation of magnet RO recorded.

MEASUREMENT SET 4 OBSERVATIONS

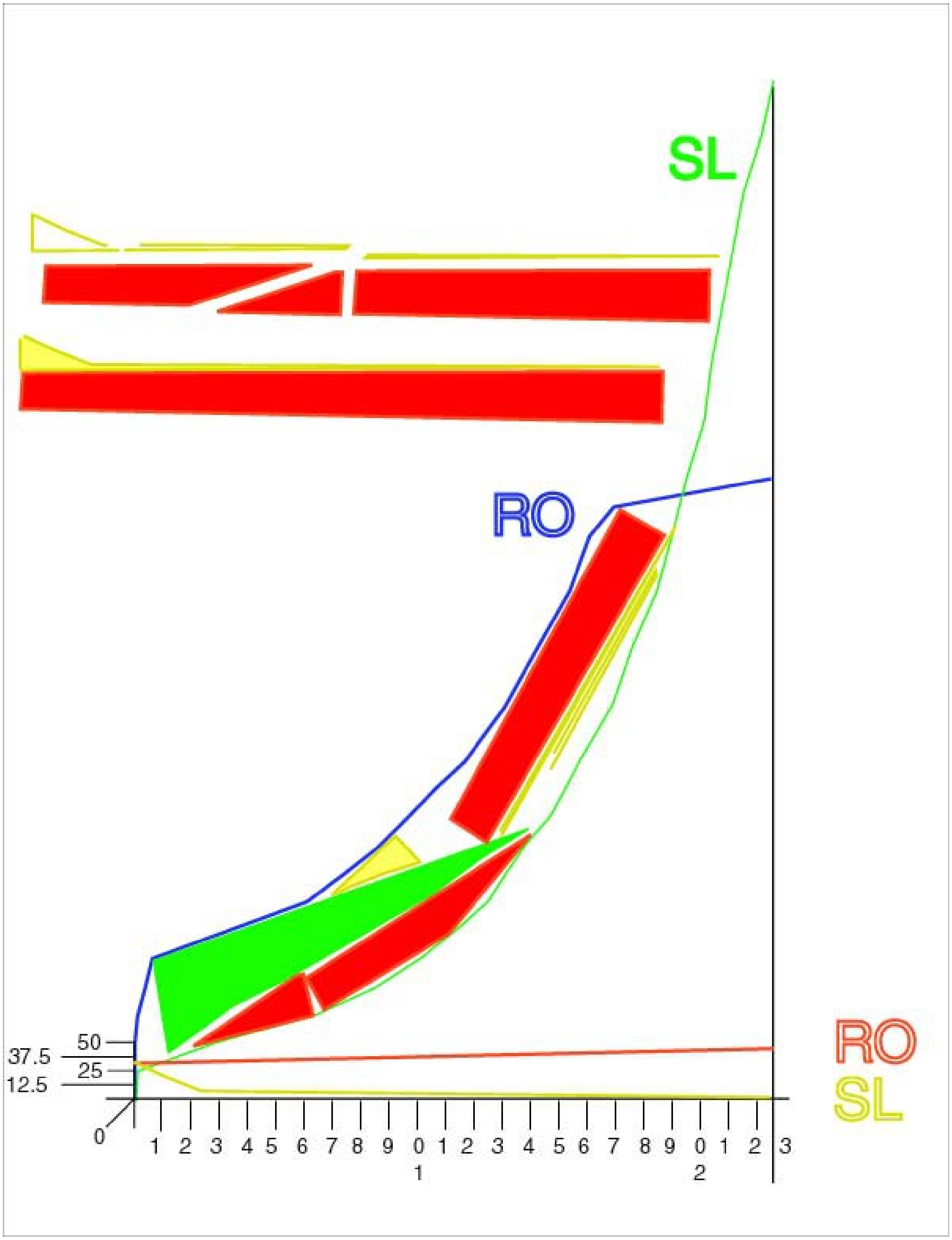
a. A weight of 23.4 grams on the RO weight string caused a 5 degree deflection upon the RO scale

b. A weight of 35.1 grams on the RO weight string caused a 90 degree (full) deflection upon the RO scale

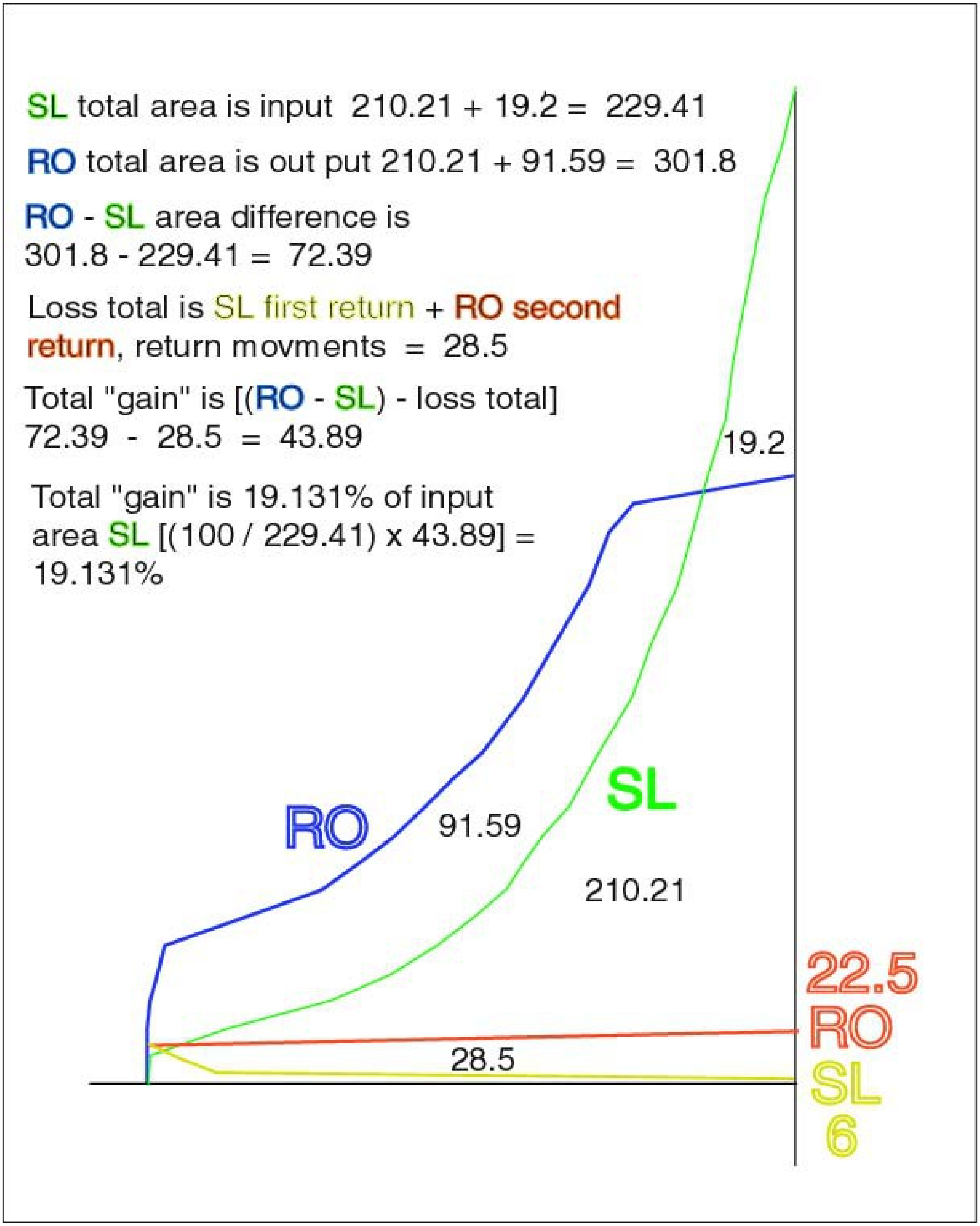
MEASUREMENT SETS 3 AND 4 OBSERVATIONS
RETURN FORCE GRAPHS



ALL GRAPHS COMPARISON 1



ALL GRAPHS COMPARISON 2



CONCLUSIONS

1. It required less force to close the gap between magnets RO and SL by the sliding of magnet SL, than the force required to “close the gap” by the rotation of magnet RO.
2. The force that was required for the two return movements that enable cyclical repetition of a cycle between the magnets was less than the difference between the input and output forces.
3. Work can be done by two magnets in a cyclically repeating manner.