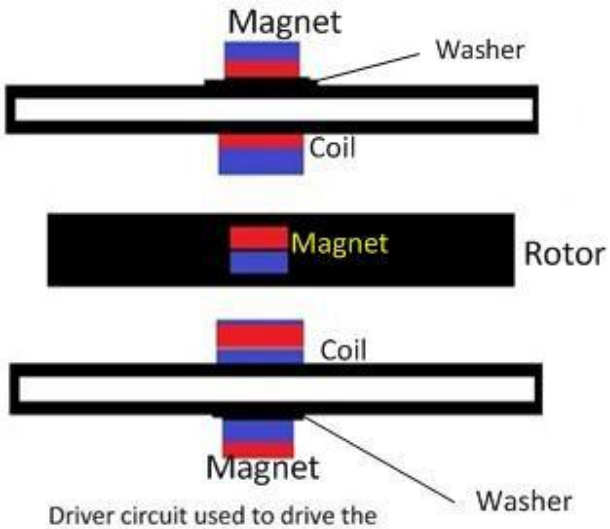
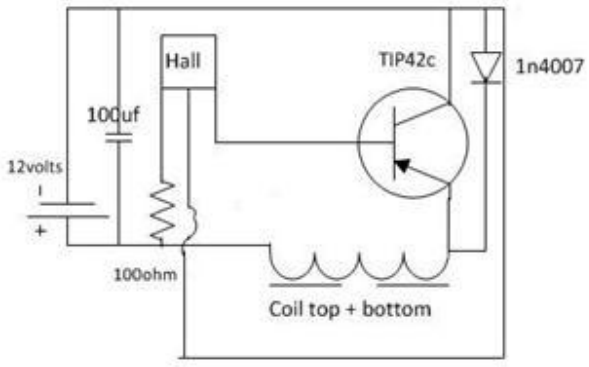
The Muller Generator

by Green Energy Guides

Side view Muller Generator



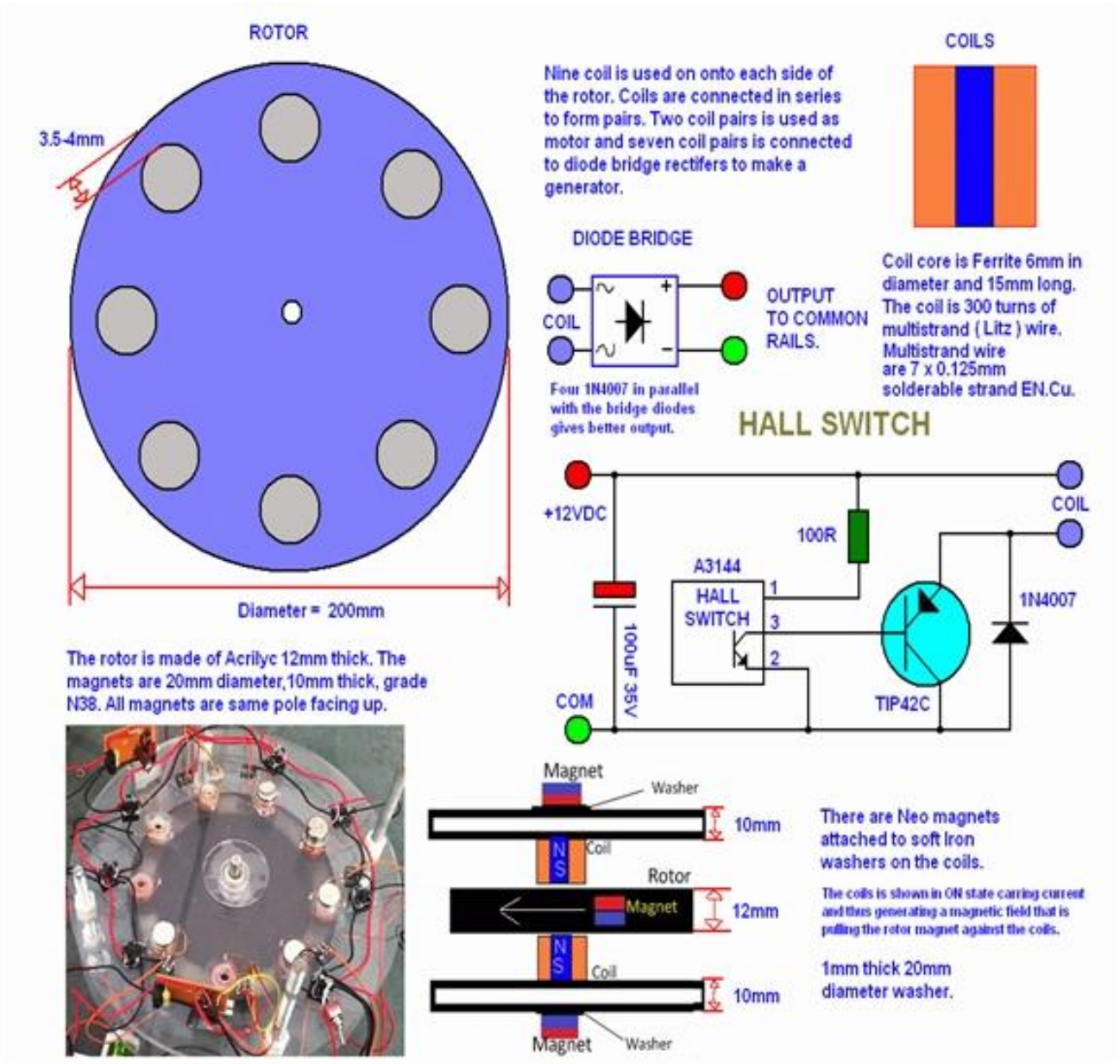
Driver circuit used to drive the magnet rotor



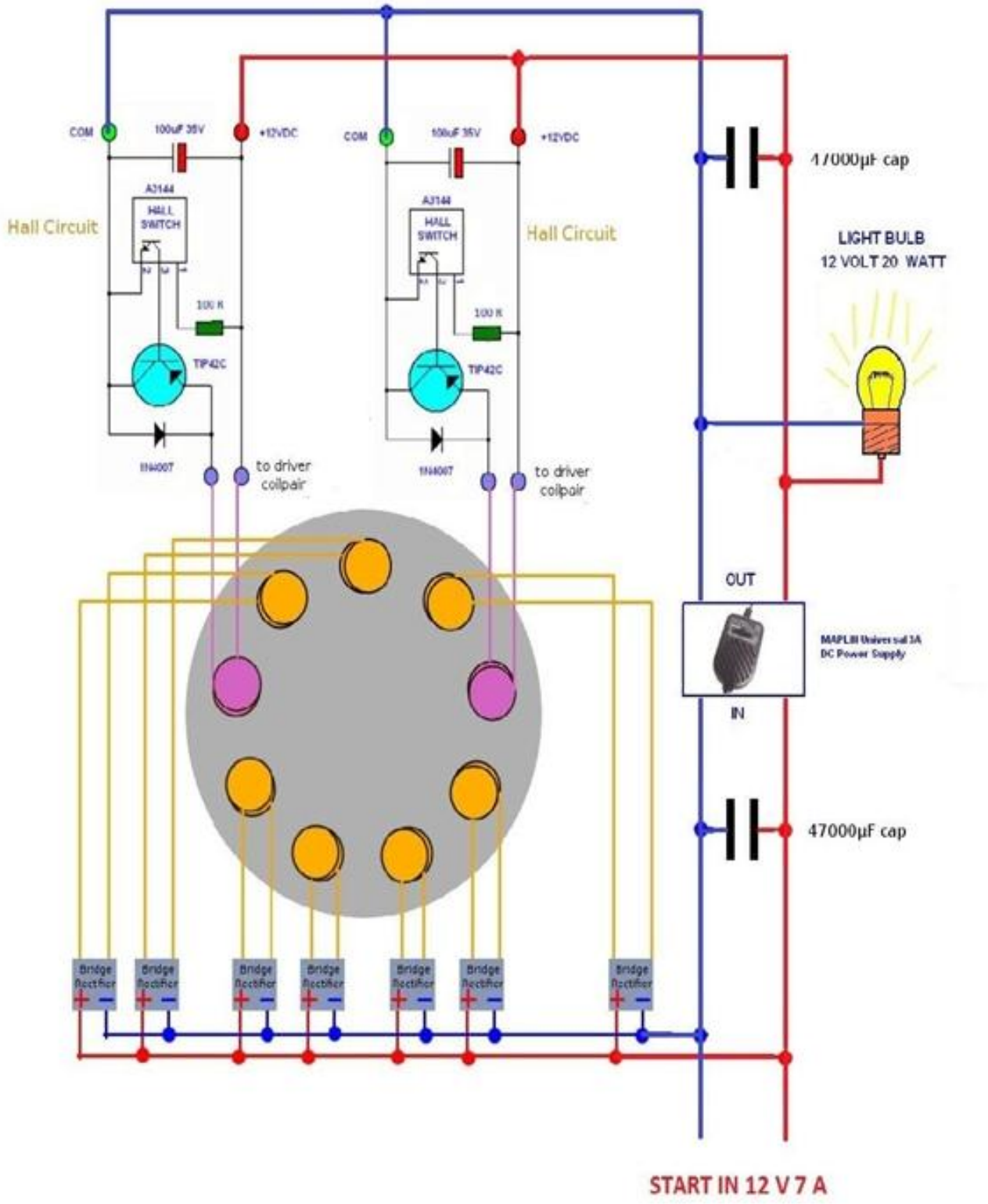
Only 2 coils (pairs) are driving.
All other coils are connected to bridge rectifiers, each set of coils goes to a rectifier then all are connected in parallel not in series as someone said before.
Each coil has 300 turns of 0.8mm multistrand, one set of coils is 600 turns in total. The core is ferrite 6mm diameter 15mm long.

Use any number of magnets but make sure that at anyone time you have a magnet in position to compensate the drag created by the coil.
use a motor to drive the rotor and make sure you start testing with a load connected then adjust the magnet up and down to eliminate the drag as much is possible and get best output. More easier than this is not possible and I have posted that info long time back.
Please keep me updated with your progress.

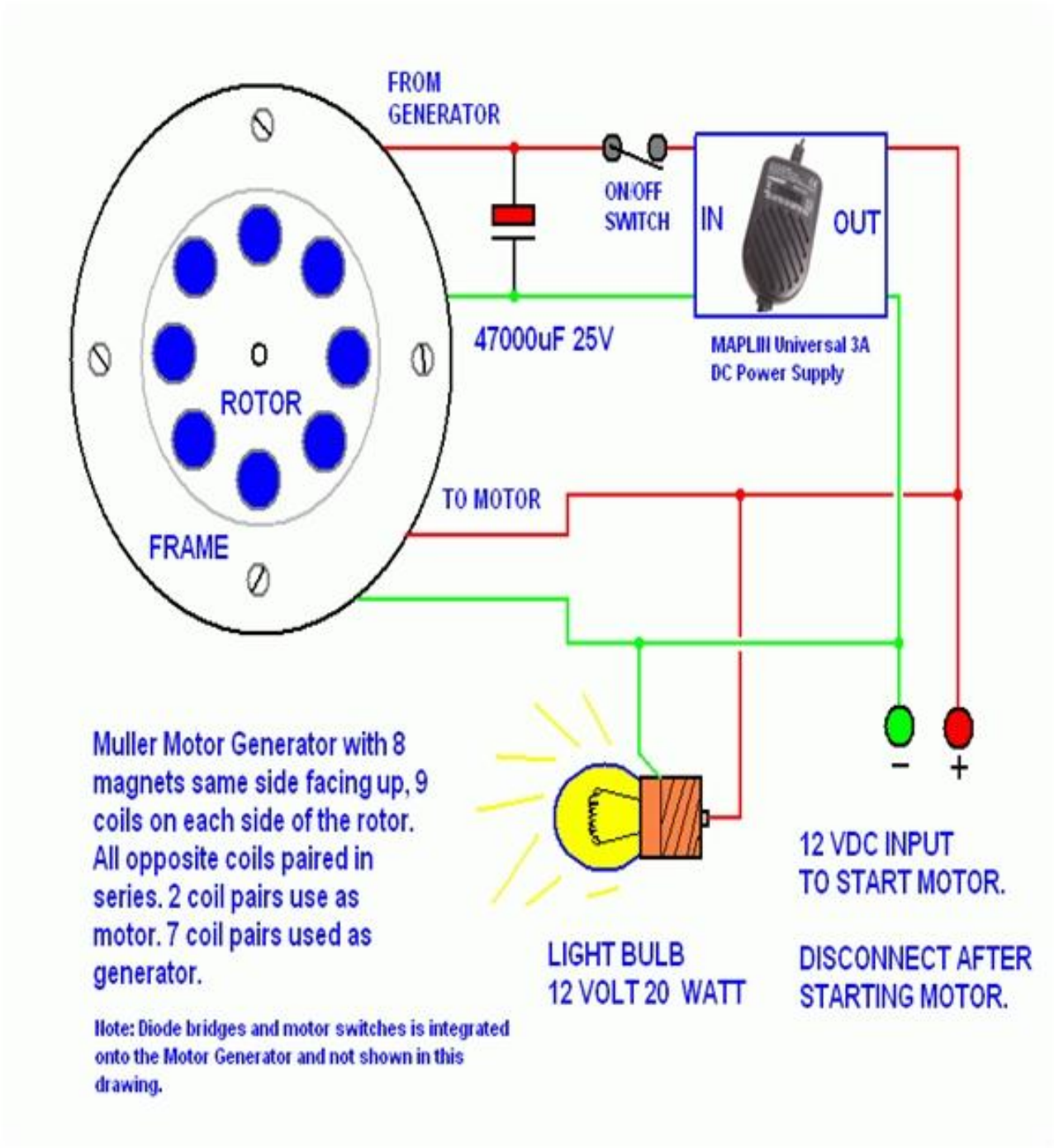
This is a overview of the setup:



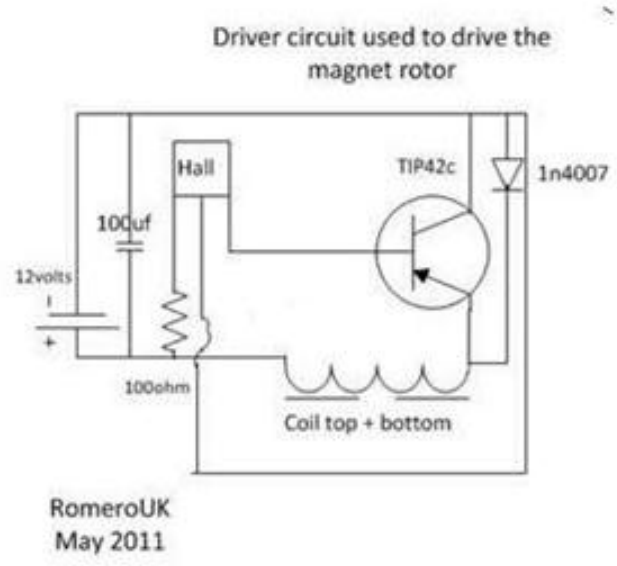
Here is the complete wiring diagramm:



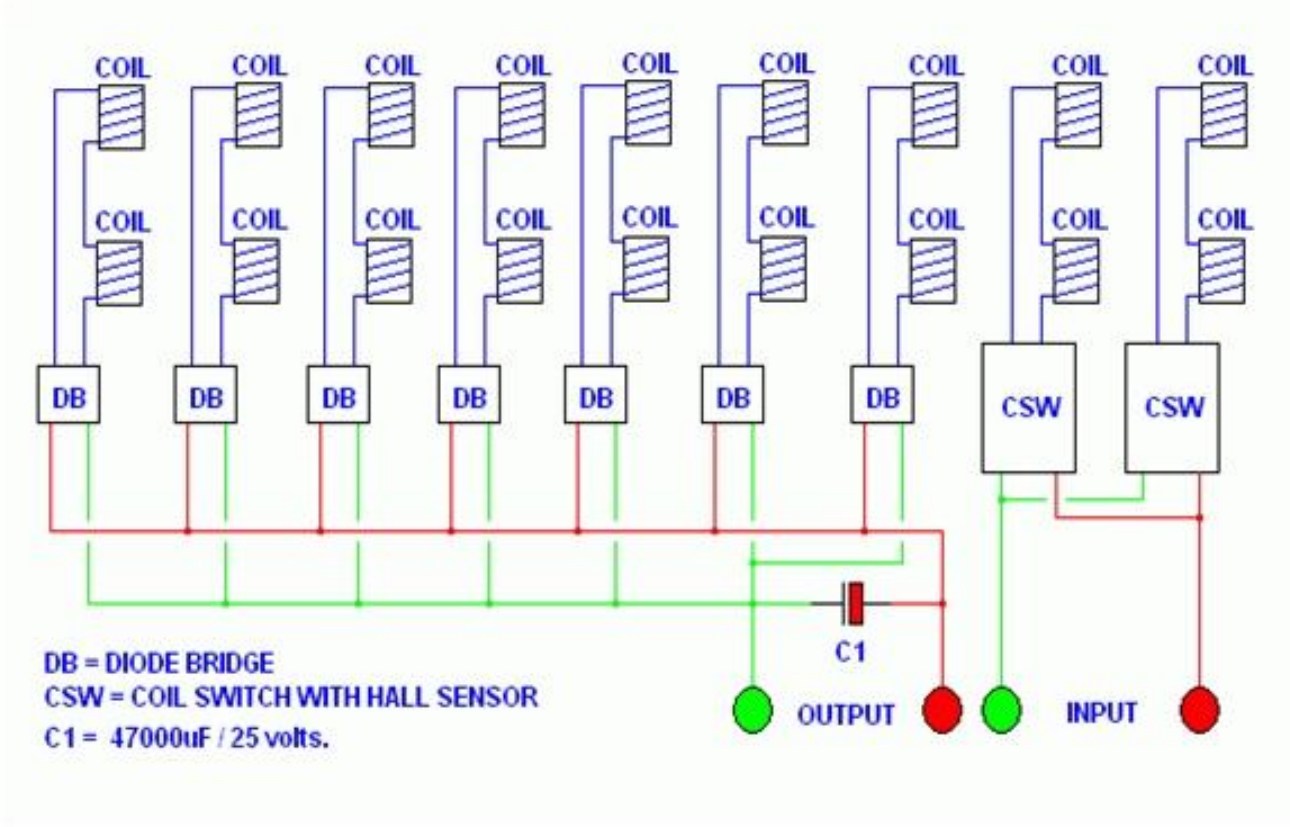
And here is the looping setup:



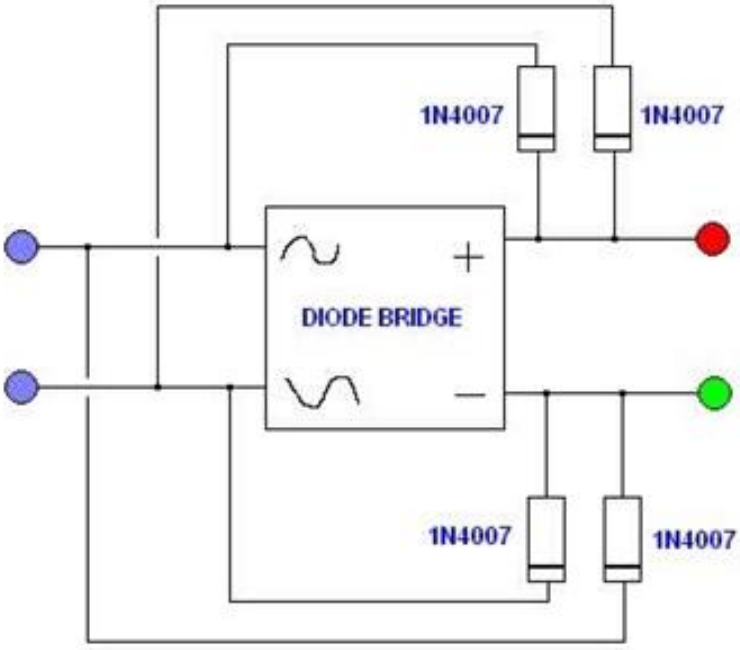
This is the driver circuit for the 2 driver coilpairs:

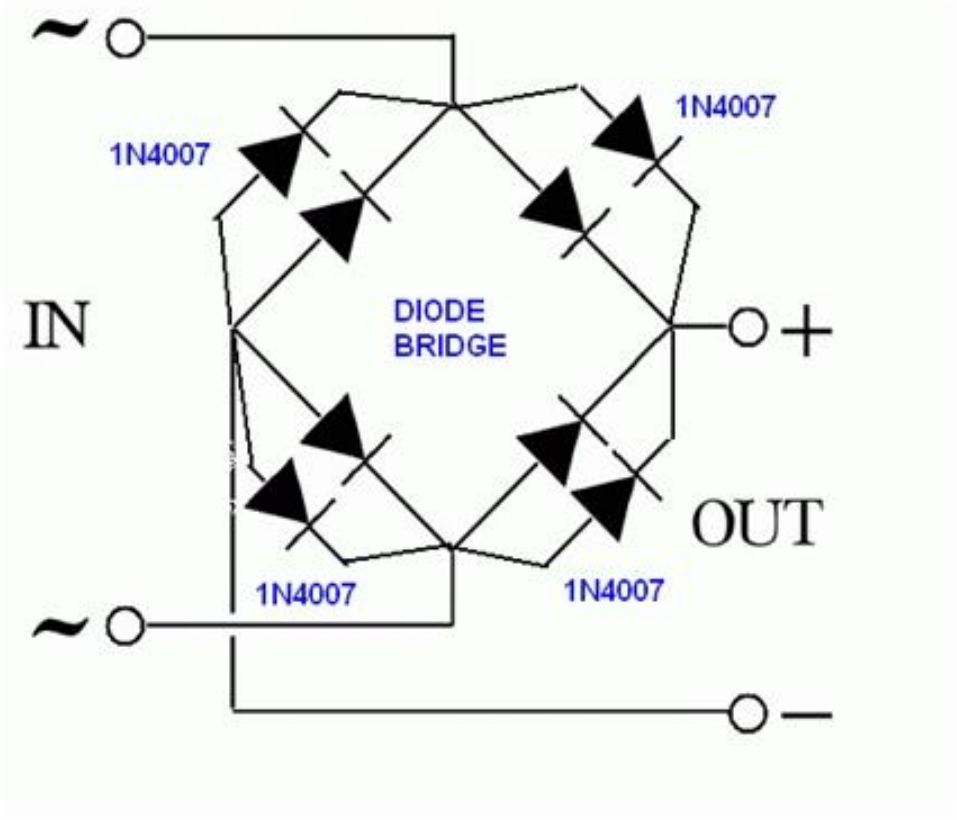


This is the setup of all the coil pairs (7 pickup coilpairs and 2 driver coilpairs)

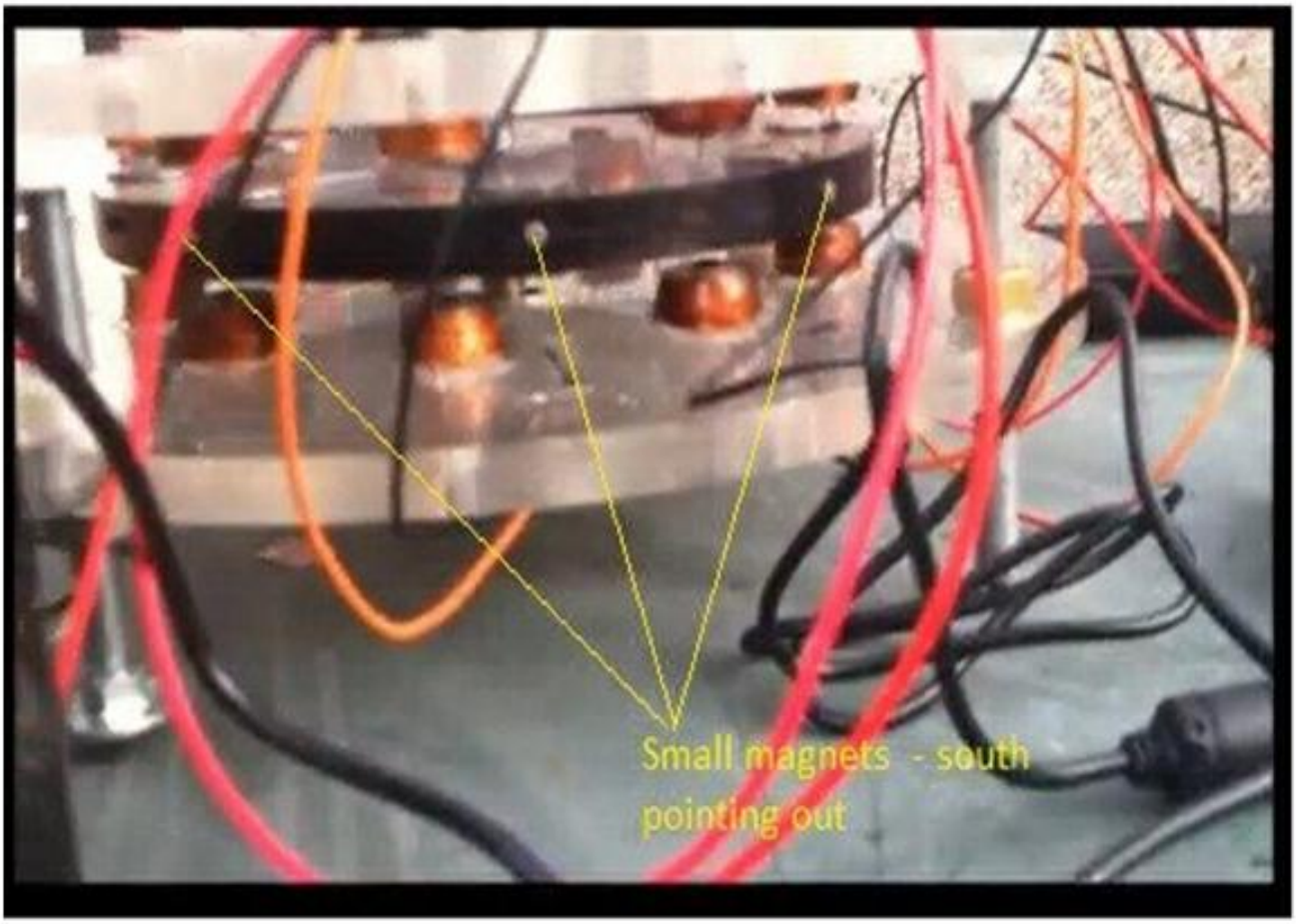


This is the enhanced bridge recticier with additional 4 x 1N4007 diodes for more output

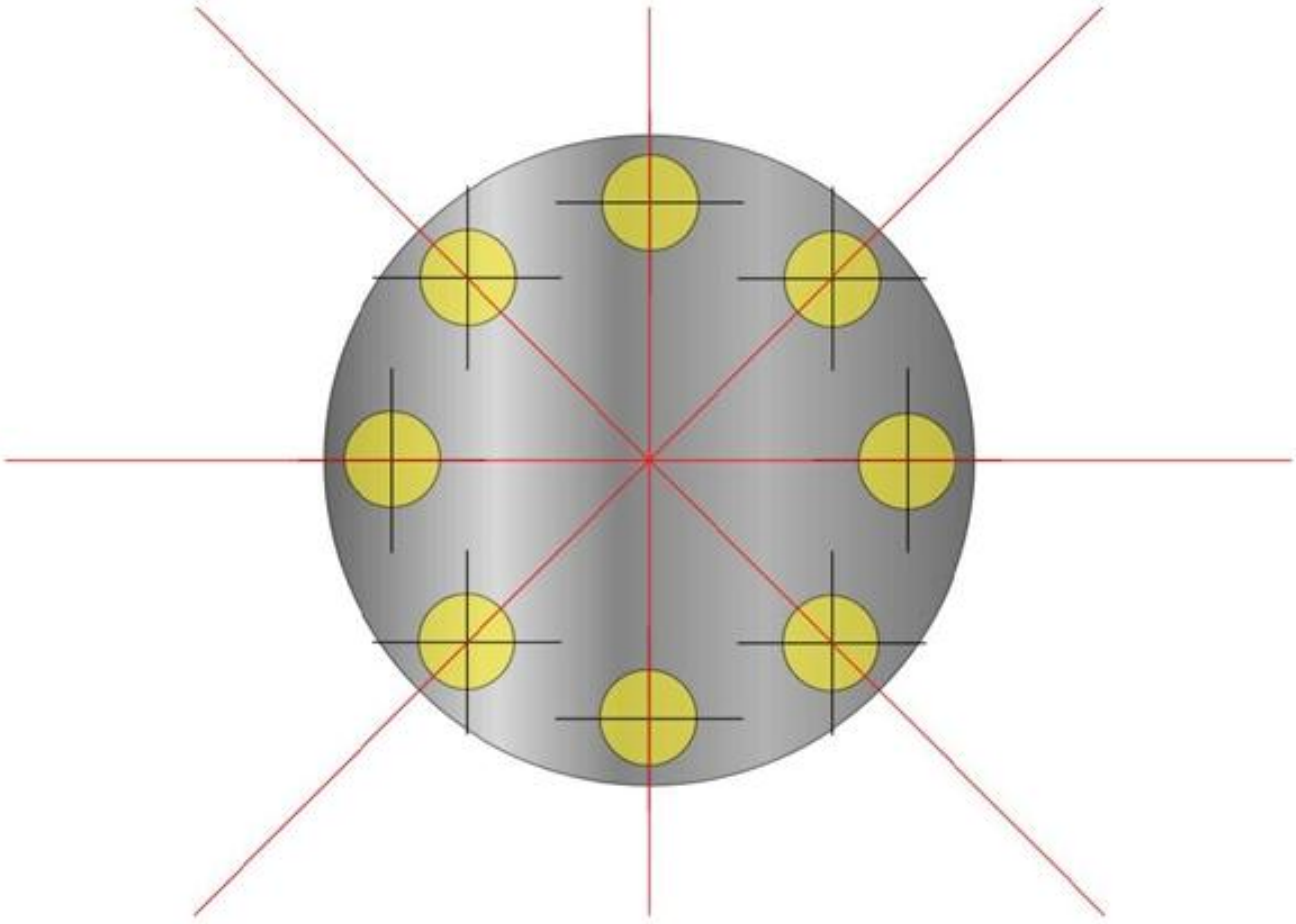




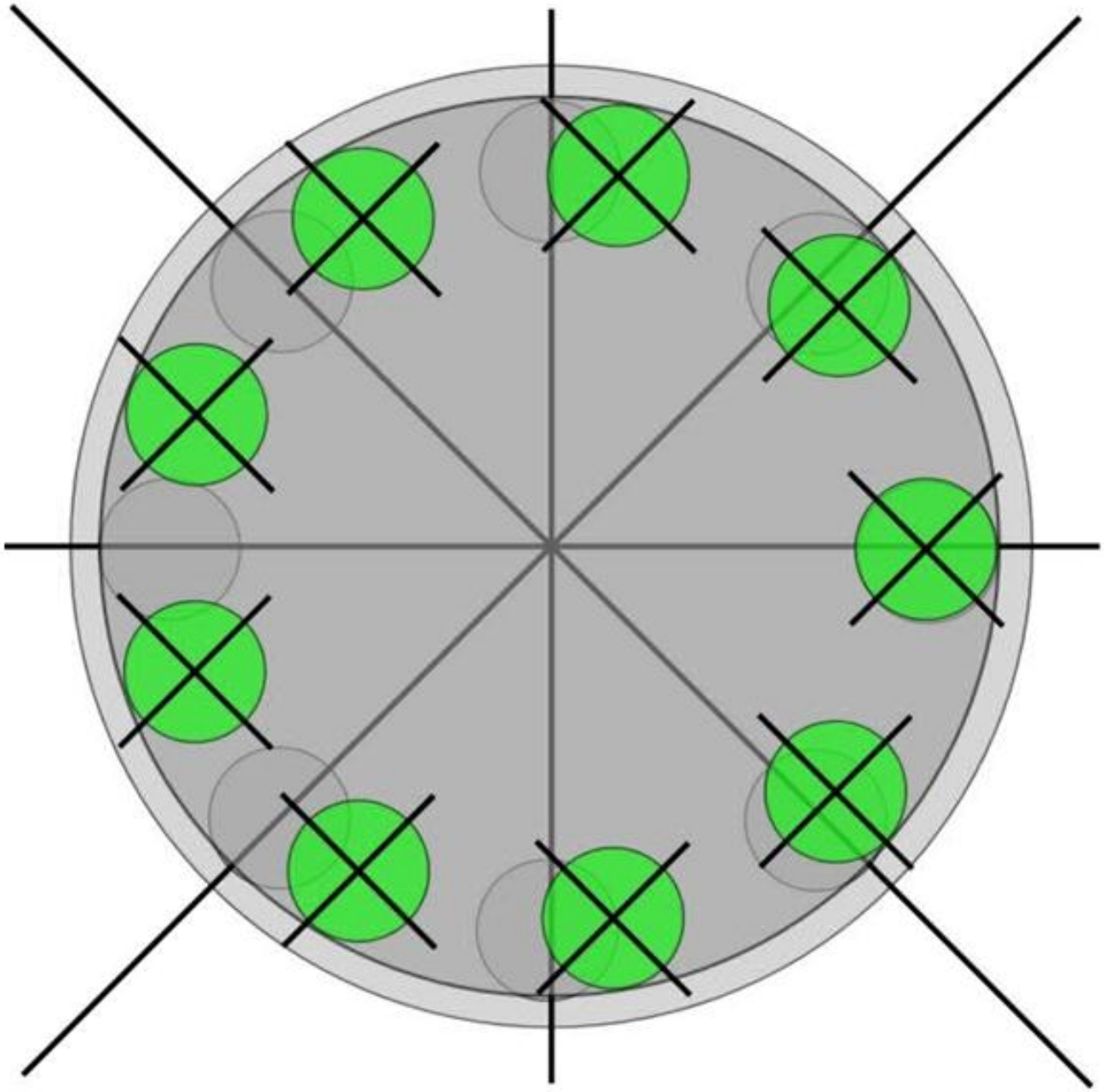
This is the sideview of the black rotor disc with 8 small additional magnets for the hall sensor triggering.



This is the setup of the rotor disc with its 8 holes for the rotor magnets:



This is the top view of the stator plate with its 9 green holes for the coil pairs.
(Beneath is seen the rotor disc in grey color with the 8 rotor magnet holes)



Here is shown the substitution hall circuit for the triggering circuit:

Melexis
Microelectronic Integrated Systems

US5781

Unipolar Hall Switch – Medium Sensitivity

Features and Benefits

- Wide operating voltage range from 3.5V to 24V
- Medium sensitivity
- CMOS technology
- Chopper-stabilized amplifier stage
- Low current consumption
- Open drain output
- Thin SOT23 3L and flat TO-92 3L both RoHS Compliant packages

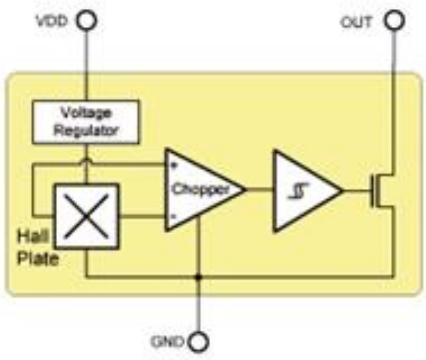
Application Examples

- Automotive, Consumer and Industrial
- Solid-state switch
- Interrupter
- Current detector
- Proximity detection

Ordering Information

Part No.	Temperature Code	Package Code
US5781	E (-40°C to 85°C)	SE (TSOT-3L)
US5781	E (-40°C to 85°C)	UA (TO-92)
US5781	L (-40°C to 150°C)	SE (TSOT-3L)
US5781	L (-40°C to 150°C)	UA (TO-92)

1 Functional Diagram



2 General Description

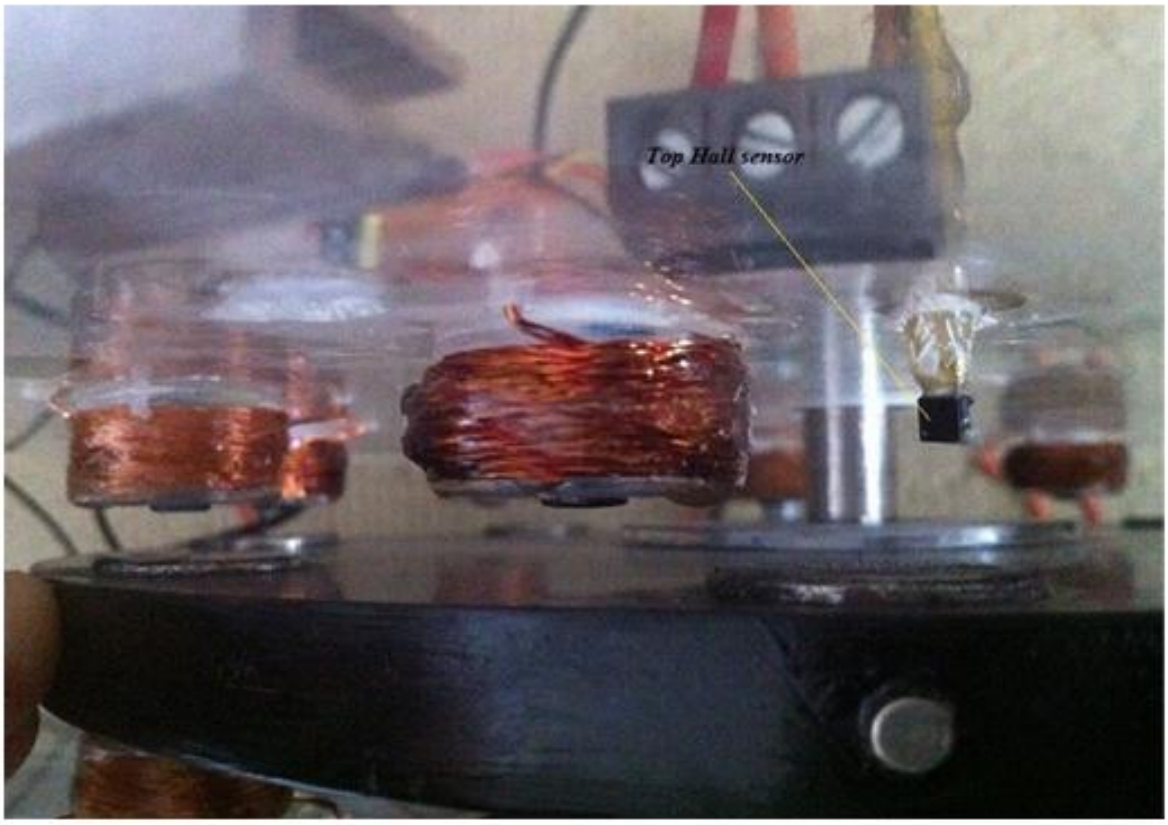
The Melexis US5781 is a unipolar Hall-effect switch designed in mixed signal CMOS technology.

The device integrates a voltage regulator, Hall sensor with dynamic offset cancellation system, Schmitt trigger and an open-drain output driver, all in a single package.

Thanks to its wide operating voltage range and extended choice of temperature range, it is suitable for use in automotive and solid state switch applications.

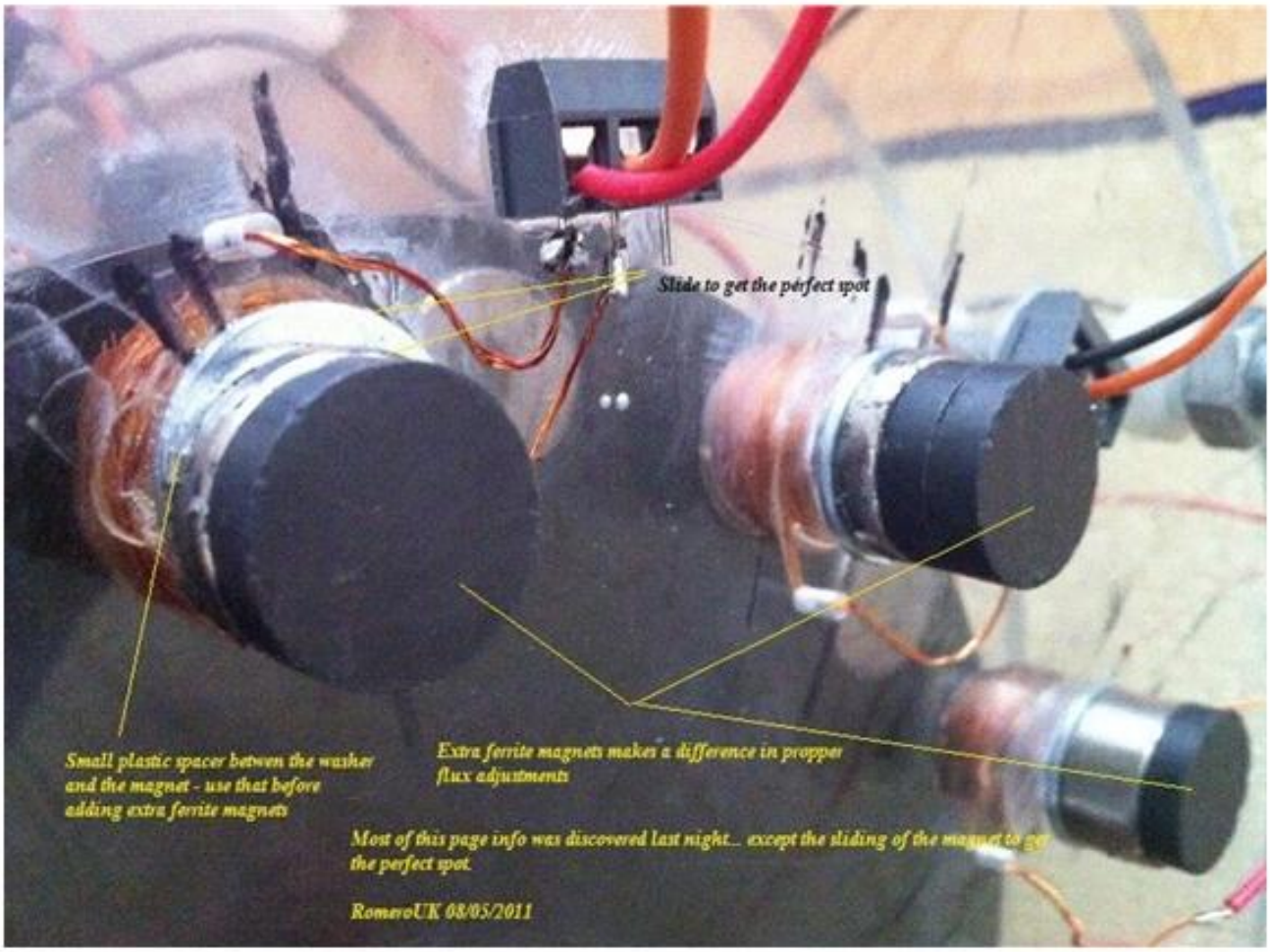
The device is delivered in a Thin Small Outline Transistor (TSOT) for surface mount process and in a Plastic Single In Line (TO-92 flat) for through-hole mount.
Both 3-lead packages are RoHS compliant.

Rotor with coils above and hall sensor



Second hall sensor uses the 8 outer magnets.

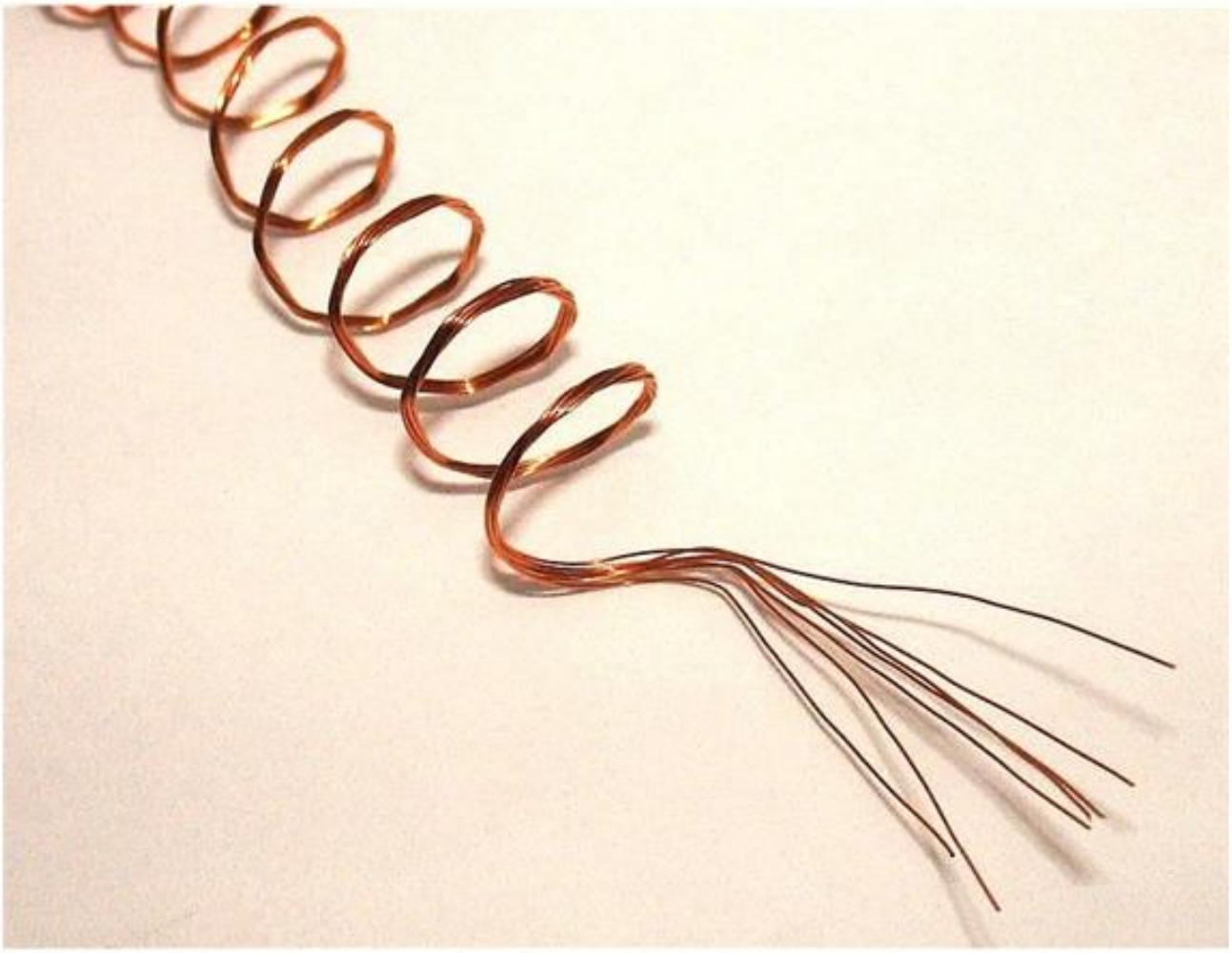
Top view of the stator magnets ontop the washers for premagnetisation of the ferrite cores.



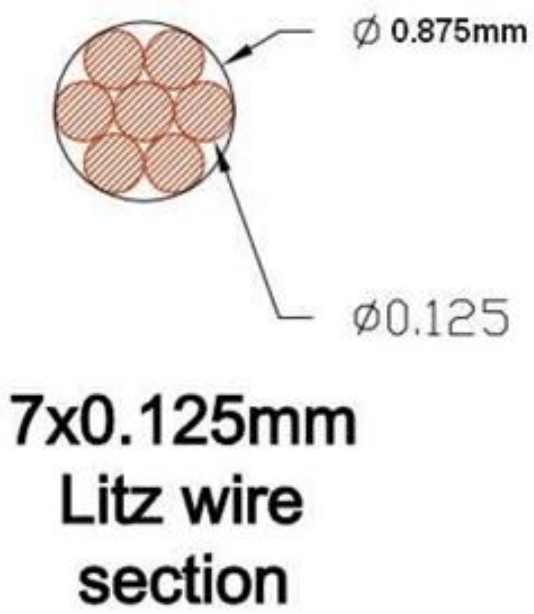
Just a normal electrolytic capacitor, no hidden batteries !

The DC to DC converter is this type:

Here is a picture of a simular Litz wire:



These are the dimensions of the wire used:



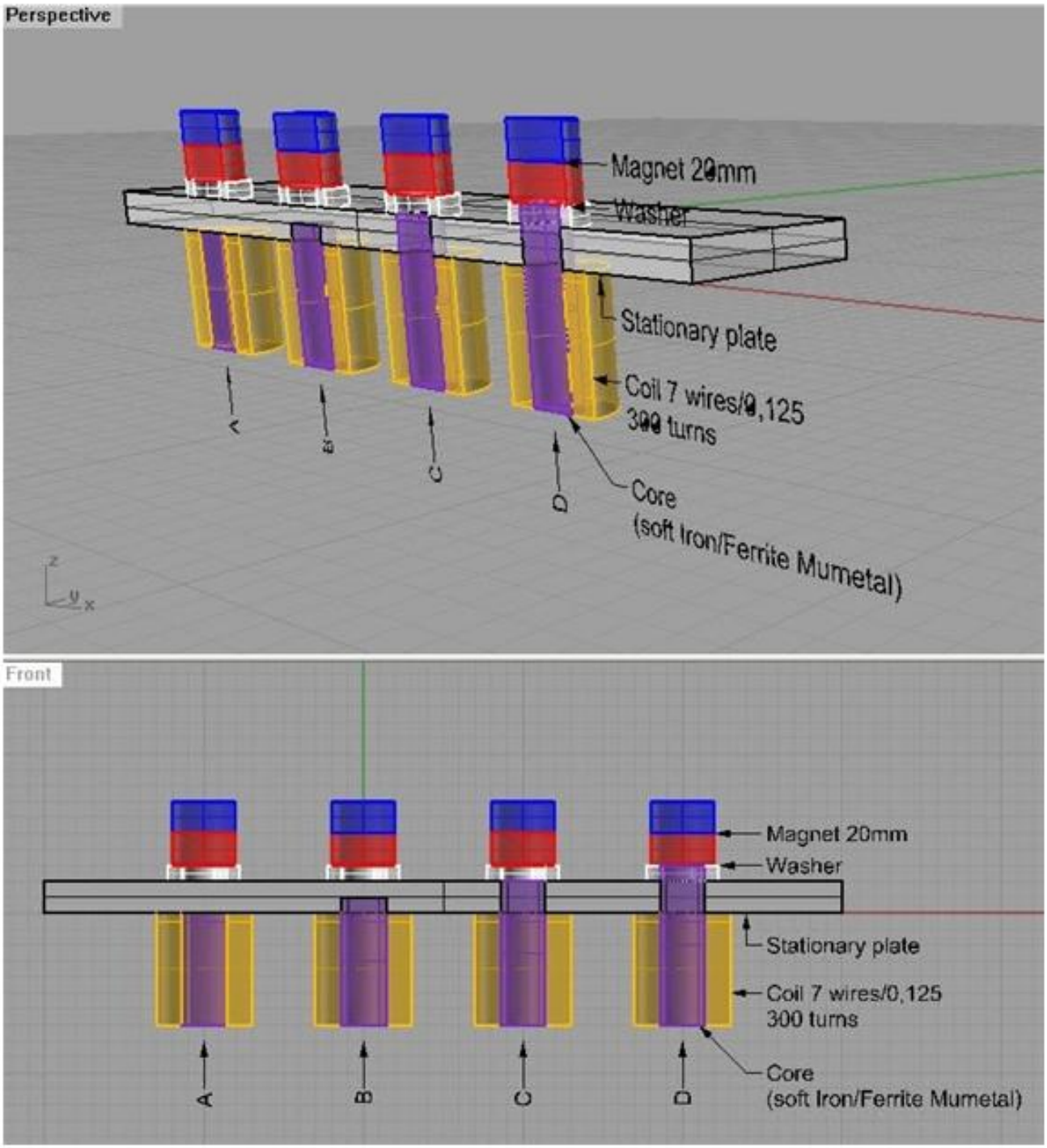
7 X 0.125MM SOLDERABLE STRAND EN.Cu = 0.875mm
Ref: ST01250007-500

Here is a wire comparison table:

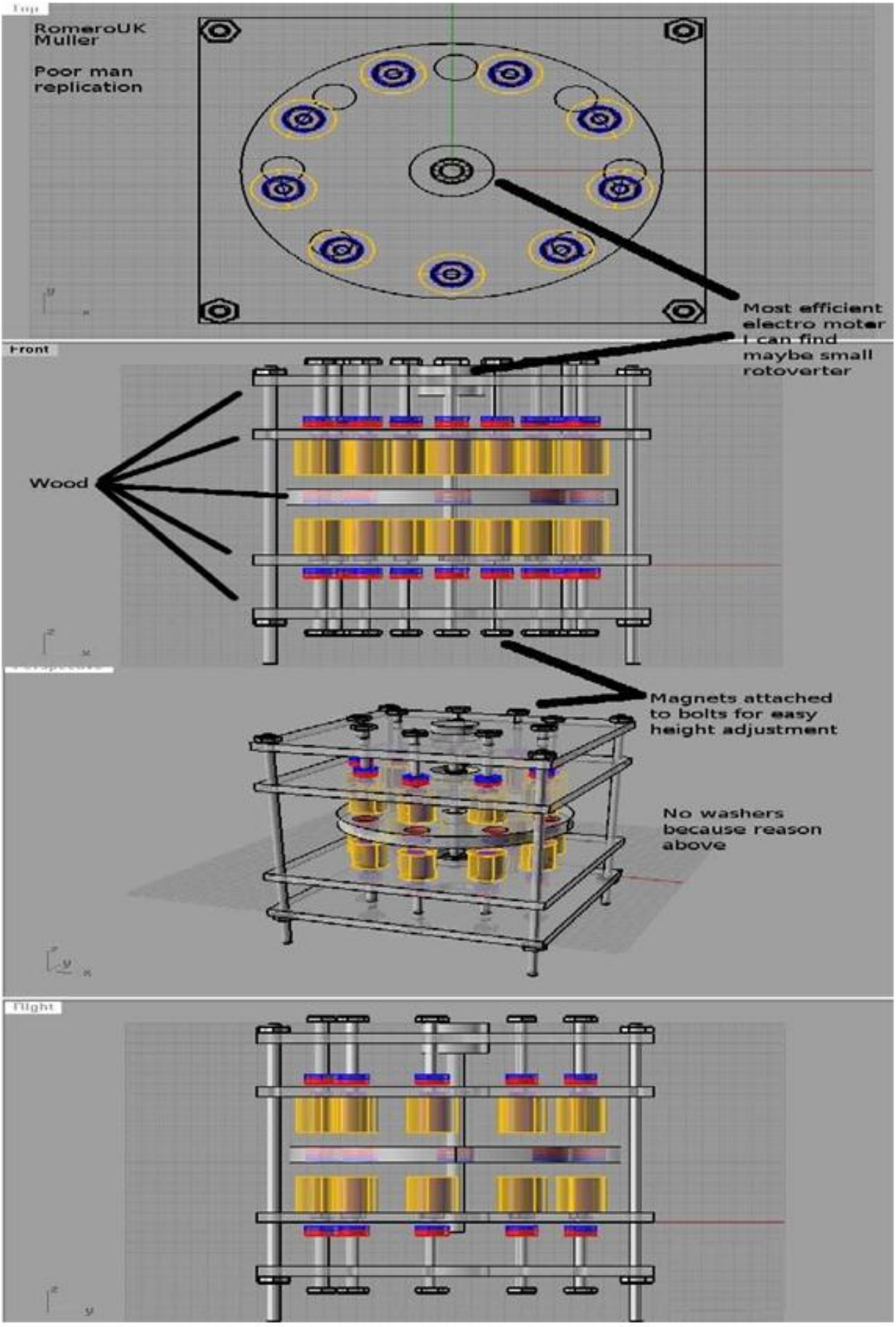
Erfahrungswerte zur Strombelastbarkeit												
Ø	querschnitt				Ø	Ø	Ø	stromdicht	Y	Δ	Y bifila	Δ bifilar
[mm]	[mm2]	doppelt	3x	4x	doppelt	3x	4x	[A/mm2]	[A]	[A]	[A]	[A]
0,2	0,0314	0,0628	0,0942	0,1257	0,28	0,35	0,40	111,4	3,5	6,0	7,0	11,9
0,25	0,0491	0,0982	0,1473	0,1963	0,35	0,43	0,50	91,7	4,5	7,7	9,0	15,3
0,3	0,0707	0,1414	0,2121	0,2827	0,42	0,52	0,60	84,9	6,0	10,2	12,0	20,4
0,4	0,1257	0,2513	0,3770	0,5027	0,57	0,69	0,80	68,0	8,5	14,5	17,1	29,1
0,45	0,1590	0,3181	0,4771	0,6362	0,64	0,78	0,90	66,5	10,6	18,0	21,2	36,0
0,5	0,1963	0,3927	0,5890	0,7854	0,71	0,87	1,00	65,2	12,8	21,8	25,6	43,5
0,56	0,2463	0,4926	0,7389	0,9852	0,79	0,97	1,12	60,5	14,9	25,3	29,8	50,7
0,6	0,2827	0,5655	0,8482	1,1310	0,85	1,04	1,20	58,0	16,4	27,9	32,8	55,8
0,65	0,3318	0,6637	0,9955	1,3273	0,92	1,13	1,30	55,1	18,3	31,1	36,6	62,2
0,7	0,3848	0,7697	1,1545	1,5394	0,99	1,21	1,40	52,5	20,2	34,3	40,4	68,7
0,75	0,4418	0,8836	1,3254	1,7671	1,06	1,30	1,50	49,8	22,0	37,4	44,0	74,8
0,8	0,5027	1,0053	1,5080	2,0106	1,13	1,39	1,60	47,3	23,8	40,5	47,6	80,9
0,85	0,5675	1,1349	1,7024	2,2698	1,20	1,47	1,70	45,1	25,6	43,5	51,2	87,0
0,9	0,6362	1,2723	1,9085	2,5447	1,27	1,56	1,80	43,1	27,4	46,6	54,8	93,2
0,95	0,7088	1,4176	2,1265	2,8353	1,34	1,65	1,90	41,2	29,2	49,6	58,4	99,3
1	0,7854	1,5708	2,3562	3,1416	1,41	1,73	2,00	39,5	31,0	52,7	62,0	105,4
1,06	0,8825	1,7649	2,6474	3,5299	1,50	1,84	2,12	37,5	33,1	56,3	66,2	112,5
1,12	0,9852	1,9704	2,9556	3,9408	1,58	1,94	2,24	35,8	35,3	60,0	70,6	120,0
1,18	1,0936	2,1872	3,2808	4,3744	1,67	2,04	2,36	34,1	37,3	63,4	74,6	126,8
1,25	1,2272	2,4544	3,6816	4,9087	1,77	2,17	2,50	32,7	40,2	68,3	80,3	136,5
1,32	1,3685	2,7370	4,1054	5,4739	1,87	2,29	2,64	30,5	41,8	71,1	83,6	142,1
1,4	1,5394	3,0788	4,6181	6,1575	1,98	2,42	2,80	29,6	45,6	77,5	91,2	155,0
1,45	1,6513	3,3026	4,9539	6,6052	2,05	2,51	2,90	28,6	47,3	80,4	94,6	160,8
1,5	1,7671	3,5343	5,3014	7,0686	2,12	2,60	3,00	27,7	48,9	83,1	97,8	166,3
1,55	1,8869	3,7738	5,6608	7,5477	2,19	2,68	3,10	26,8	50,6	86,1	101,3	172,2
1,6	2,0106	4,0212	6,0319	8,0425	2,26	2,77	3,20	26,2	52,7	89,6	105,4	179,2
1,7	2,2698	4,5396	6,8094	9,0792	2,40	2,94	3,40	24,9	56,5	96,1	113,0	192,1
1,8	2,5447	5,0894	7,6341	######	2,55	3,12	3,60	23,5	59,9	101,8	119,8	203,7

How are the violet colored ferrite cores setup ?

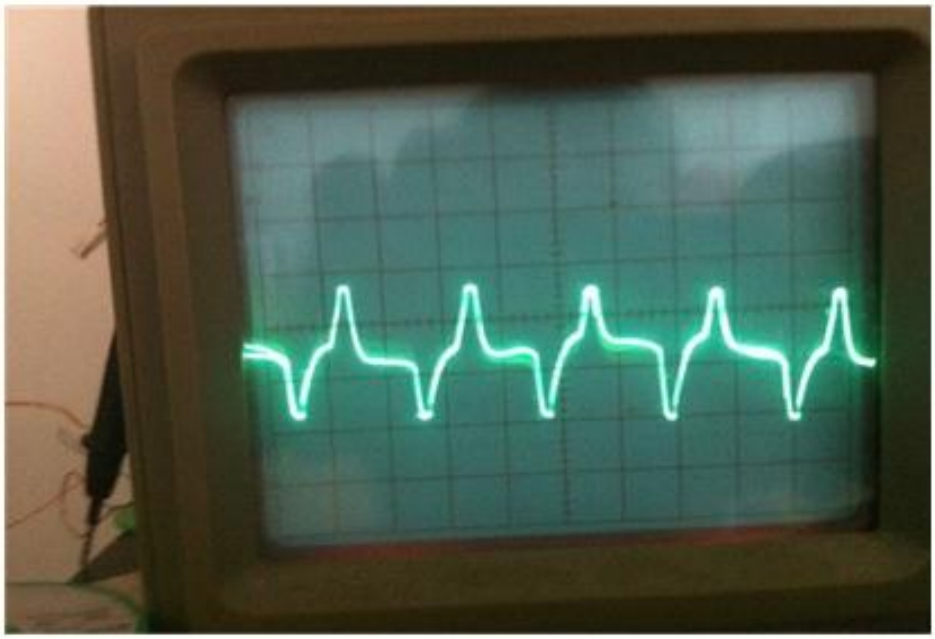
It is like setup number B !



Here is a simpler setup where you can adjust the stator magnets via some screws:



And here is a scopeshot of the voltage at one coilpair open circuit. You see the typical sin^2 pulses.



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