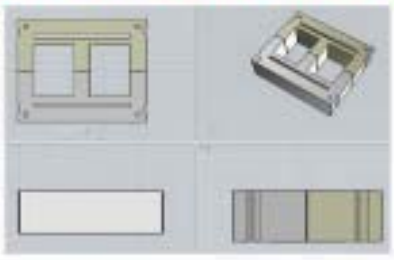
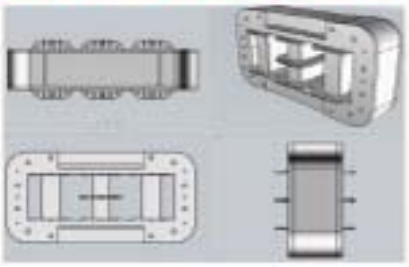
NEW!!

SECONDARY TRANSFORMER DESIGNS





5TH EDITION QEG BUILD MANUAL

JUNE 2016

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INTRODUCTION

It is our most gratifying honor to present modern plans for a quantum energy generator (QEG) to the world based on Nikola Tesla's discoveries, especially at a time when the people are being manipulated and controlled by a corrupt energy economy. Tesla wanted everyone on the planet to have energy and many have followed him with the same aspirations that have also been prevented by powers beyond their control. Today in 2016, the so-called 'free energy' movement is rife with horror stories ranging from government theft of patents, to reputations destroyed, to the murder of a number of brilliant scientists and inventors.

The elite have created the illusion that the people are totally dependent on the big electric companies as the only way to get electricity. The truth is that we have been deprived of this alternative (quantum) energy source for more than 100 years and the elitist grip on the energy supply has not loosened one bit in all that time. In fact, you are probably paying more for electricity than ever before, all things being equal.

Briefly, financial tycoon J.P. Morgan couldn't yield enough earnings from Tesla's energy plan for the world, and so destroyed any chance of that happening through several vicious attacks on Tesla's reputation, livelihood and important discoveries. He effectively got Tesla's ideas out of the way for his own profit and power, and maliciously destroyed the man. Morgan's tactics included removing previously known knowledge about 'open' or 'asymmetrical' systems (Nature's Laws) from school textbooks as he was a very wealthy and influential publisher in his day.

It is no easy task to build a free energy device. First, we must consciously and constantly rise above these tyrannical infringements, create an environment for ourselves and our neighbors, and rediscover Nature's Laws to be able to live and thrive. As more people become familiar with Tesla and his discoveries, we can continue his work and contribute to the realization of his dream for all people on the planet to have access to free energy.

So how can we affect our future now, and free ourselves and the generations to come after us completely from energy tyranny? Building the QEG is one way. It is a journey that requires you

to think deeply about processes that will expand your senses and capabilities. We began with a burning desire to 'get off the grid' and also to do something significant for humanity. Because the entire planet is in turmoil as never before, people are waking up to the inevitability and necessity of being self-sufficient, and hopefully, help others for our continued evolution as a species on the planet.

It is with great love that the QEG is offered to the world, and as you take on the task of building one, it is hoped that this becomes your path also: the mission of free energy for all!

JAMES ROBITAILLE DESCRIBES QEG OPERATING PRINCIPLES (VIDEO)

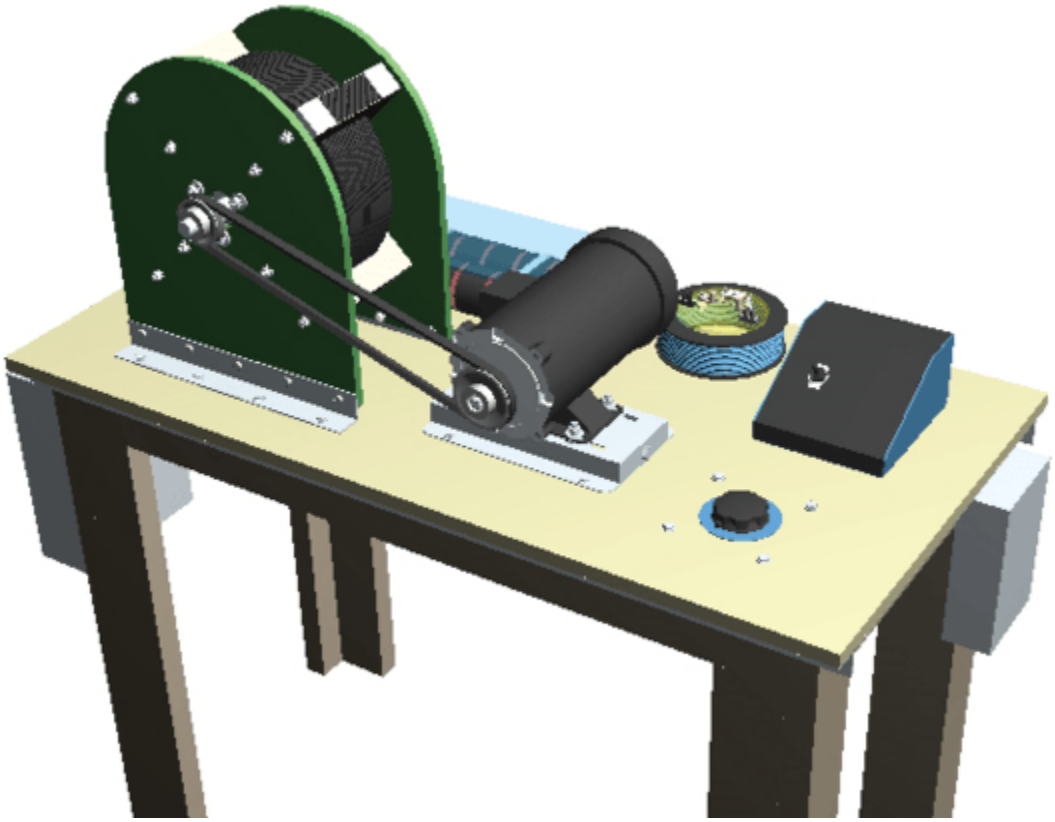


Figure 1 - Ivan Rivas

QEG SYSTEM DESCRIPTION

The Quantum Energy Generator system (QEG) is an adaptation of one of Nikola Tesla's many patented electrical generator/dynamo/alternator designs. The particular patent referenced is No. 511,916, titled simply "Electric Generator", and dated January 2, 1894 (see back of this manual). The adaptation is a conversion from a linear generating system with a reciprocating rod whose period is electrically regulated, to a rotary generating system. The reciprocating rod is replaced by a rotor whose motion is also electrically regulated, by means of tuned parametric resonance (parametric oscillation). The original intent of the patent (electrical regulation of the period (frequency) of a repetitive mechanical motion) is further expanded through subsequent utilization and application of electromechanical self-resonance and radiant energy, in order to make the machine self-sustaining.

The QEG prototype is scaled to produce electrical power in the range of 10-15 kW (kilowatts) continuously, with no conventional fuel or input whatsoever, and can be set up to provide either 120 Volt or 230-240 Volt, 50-60Hz single phase AC output. We are also planning future designs to provide 3-phase power.

Service life of the device is limited only by certain replaceable components, such as bearings, v-belts, and capacitors. The basic machine should operate trouble-free (with minimal maintenance) for as long as any good quality electro-mechanical appliance, such as a quality washing machine or refrigerator. Heavy-duty mechanical components are used throughout for reliability.

The QEG is not a complicated device. It is designed (like Tesla's other 'discoveries') to work in harmony with nature's laws, rather than with the power wasting closed-system symmetric motor and generator designs used in today's mainstream industry.

An effective way to understand the operating principle of the QEG is to think of it as a self-powered toroidal transformer with high-voltage primary, and low voltage secondary. The primary high voltage is self-generated through mechanically pumped parametric resonance. The resonance occurs as a function of the spinning rotor modulating the reluctance/inductance in the primary tank circuit windings. This modulation initiates an oscillation which can develop up to 20,000 volts (20kV) or more in amplitude, with frequency determined by the tank capacitor

value and inductance value in the primary windings. Power is then transferred to the secondary windings during the intervals where the rotor is between pole pieces (unaligned).

The circuitry that develops high power in this device is based on an existing but under-utilized power oscillator configuration, with performance enhanced by driving the core steel into resonance. The ‘quantum’ part of the design utilizes the insertion of radiant energy into the generator core to support additional power output. The resultant power output is a combination of radiant and conventional electricity which, depending on tuning, can drive standard loads equivalent to a conventional 10 to 15kW generator (300-350 Volts, at up 30 Amps or more).

Due to the Lenz effect, conventional alternators (AC generators) consume much more input power than the output power they provide. For example, one brand of power take off (PTO) alternator uses 18,000 watts (24 horsepower) to develop 13,000 watts of output power. In the QEG, input power is used only to maintain resonance in the core, which uses a fraction of the output power (under 1000 watts to produce 10,000 watts), and once development is completed, the QEG will provide this power to its own 1 horsepower motor. This is known as over-unity, or COP over 1 (Coefficient of Performance). Once the machine is up and running at the resonant frequency, it will power itself (self-sustain).

James M. Robitaille (3-Jun-2016)

PATENTS

The lifespan of design patents extend to 14 years, starting from the date of application rather than the date of approval. Patents protect the rights of the inventor, but at the same time the very purpose of issuing patents is to 'promote science and useful arts' wherein the inventor agrees to share the knowledge to the world after a period of exclusive right to commercially exploit the knowledge. Therefore, the inventor retains monopoly over the invention during the pendency of the patent. After expiry, the knowledge becomes public domain that anyone can access and use. The government makes public the description of the product, filed at the time of application. The inventor no longer has exclusive rights over the knowledge or invention, and anyone can access the patent office records and copy the invention.

The QEG is a modern day artistic improvement on Tesla's original engineering work. The main content and claims of Tesla's patents were recorded back in the late 1800s, therefore all main claims and or any improvements to rise around the original patented idea are in public domain.

The QEG is to be considered an improvement to a prior granted art and is not to be considered of enough grounds to obtain the granting of a unique art as is the granting of a patent anywhere on planet earth. An improvement based on newer advanced technology to run, operate, or control the prior granted art should be classified also as non-patentable intellectual art. The QEG, its blueprints, and user manual in its original entirety are to be considered new means for operating the prior granted art based on the research and development of James M. Robitaille, whose purpose and intention is to share it with the world as Nikola Tesla intended.

It is understood that by making the QEG, its blueprints and user manual in its original entirety public and available to all, it is an 'open sharing' of an improvement on a public prior granted art and will be used as proof of prior existence by its permanent timestamp and links in many public and social networks where it has been uploaded, becoming non-changeable.

The QEG, its blueprints and user manual in their original entirety are an improvement on a public prior granted art that has been given to the people of planet earth. It can be replicated and distributed for the use of the people.

NOTICE

TO BE READ AND UNDERSTOOD BY ALL QEG PROJECT CREWS

Fix the World S.A.R.L. (FTW) is not responsible for the actions of others. We can only tell you our experience. We have discovered it is essential that those wishing to build a QEG use careful thinking, patience, and consideration for the greater good.

The inhabitants of planet Earth are entering into a new paradigm and a new way of doing business. In honor of Nikola Tesla, the QEG is a gift freely given to the world, and FTW's involvement is strictly altruistic.

The QEG is an electromechanical device and as such, safety for the individual and end user should always be of prime concern. It is therefore essential that persons assembling the device are experienced in the field of electromechanical assembly. Some level of familiarity with quantum physics would also be very helpful.

IF YOU ARE TRAINED IN TRADITIONAL PHYSICS, AND HAVE NOT BEEN EXPOSED TO ANY QUANTUM ENERGY RESEARCH OR DESIGNS, WE RECOMMEND THAT YOU FIRST BECOME FAMILIAR WITH SOME BASIC QUANTUM ENERGY DEVICES AND HOW THEY WORK (e.g. electrical and mechanical resonance, tuning, and radiant energy).

QEG Cautions-Hazards

Electrical / Mechanical devices are inherently dangerous. Electrical shock can cause burns, serious injury and in some cases death. Mechanical hazards can result in dismemberment and in some cases death.

Due diligence has been applied to ensure that the QEG instructions are complete and correct. All local and country-specific electrical and mechanical code implications, by which a QEG might

be installed and operated, cannot possibly be known by us. Nor is it conceivable that any and all possible hazards and/or results of each procedure or method have been accounted for.

It is for these reasons that the QEG must be either directly installed or supervised by an experienced electrician or electrical technician/engineer, to ensure the installation is done safely and in accordance with local electrical code. However, the QEG is installed the same way as any commercial generator and does not violate any electrical codes. Anyone who uses the QEG installation instructions (including but not limited to any procedure or method of installation) must first satisfy themselves that neither their safety, nor the safety of the end user, will be endangered over the course of the installation and operation of the QEG.

It is imperative to understand you need PROFESSIONAL and EXPERT ADVICE to install a QEG.

HAZARDOUS VOLTAGE AND CURRENT LEVELS ARE PRESENT IN THE QEG CORE AND ASSOCIATED CIRCUITRY WHEN OPERATING! PLEASE USE CAUTION!

MAINTAIN SAFE DISTANCE, AND DO NOT TOUCH ANY CONNECTIONS TO THE CORE, OR MAKE ANY ELECTRICAL ADJUSTMENTS WHILE THE MACHINE IS RUNNING!

Always stop the machine when making connections or adjustments. The tank circuit capacitors do not normally hold a charge when the machine is stopped, but for added assurance, it is a good idea to try to discharge them before handling.

To Discharge Capacitors: PROVIDED THE MACHINE HAS STOPPED, momentarily short out the two primary coil leads (connected to the capacitor bank) with a 100 - 1000Ω, 5 – 10W resistor. If no resistor is on hand, simply lay a screwdriver across the coil leads momentarily.

The instructions in this build manual are designed to show how we have found the building of the device to be successfully accomplished, and any negative outcomes that result are completely

the responsibility of the person/company building it, except in certain cases where FTW may provide an express written guarantee as part of a special private package or agreement.

This notice serves the purpose of communicating the serious nature of building a quantum machine, as we are well aware that there have been severe restrictive agencies involved with their suppression. Quantum free energy isn't taught at University and most designers have heretofore been unsuccessful at mass distribution. It is YOUR RESPONSIBILITY therefore to make certain you are building the QEG with positive intentions for humanity, and lashing out legally or otherwise to FTW, HopeGirl and/or the designer and his family, is a violation of goodwill and will in no way be attended to. We know of no other way to do this but to go back to the "HONOR SYSTEM."

In reading this notice I agree that:

1) I WILL NOT ATTEMPT TO BUILD A QEG UNLESS I DO SO APPROPRIATELY WITH AN ELECTROMECHANICAL ENGINEERING PROFESSIONAL.

2) I WILL NOT COMMISSION (TURN ON) OR INSTALL THE QEG WITHOUT AN ELECTROMECHANICAL ENGINEERING PROFESSIONAL.

3) UNDER THE ABOVE CONDITIONS, I MAY USE THE QEG ASSEMBLY INSTRUCTIONS FOR PERSONAL USE, AND UNDERSTAND THE NEED FOR IMPECCABLE COMMITMENT TO THE BETTERMENT OF HUMANITY. IN THE BEST INTEREST OF THE PEOPLE OF PLANET EARTH, I WILL NOT ATTEMPT TO MISUSE OR MONOPOLIZE THE QEG ASSEMBLY INSTRUCTIONS IN ANY CAPACITY, NOR WILL I ATTEMPT TO MAKE A HUGE PROFIT AT THE EXPENSE OF ANOTHER HUMAN BEING.

IMPORTANT – Please make certain that persons who are to use this equipment thoroughly read and understand these instructions and any additional instructions prior to construction, installation and operation.

WARNINGS

The following are some of the top areas to avoid while producing and distributing the QEG. It has been our experience that these areas will not only make things more difficult, they can kill your QEG production project before it even begins.

GREED It is easy to become overwhelmed by the fantasy of making millions. Greed is a trap common to inventors. The moment you succumb to greed, it can curse your success.

ATTEMPTING TO MAKE A 'STUPID PROFIT' Earning a profit from producing and selling a QEG can be expected and is encouraged. However, there is such a thing as 'stupid profit,' which can best be defined as the boundary crossed when it is no longer a sign of healthy growth, but profit AT THE HARM AND EXPENSE OF OTHERS.

PATENTING OR ATTEMPTING TO CLAIM SOLE OWNERSHIP OF THE QEG – as mentioned in the patent section, the QEG cannot be patented because it has already been patented by Tesla, is in the public domain, and belongs to THE PEOPLE.

MARKETING THE QEG THROUGH MAINSTREAM MEDIA – Most of the thousands of mainstream networks (tv, print, entertainment) are owned by 6 corporations with special interests (banking families), and many of them will not promote or report on the QEG. If by chance they did, it could possibly turn into a smear campaign in an effort to discredit the QEG, and protect the financial interests of the banking families that control the media.

MASS PRODUCTION IN A LARGE CORPORATE ENVIRONMENT – At present, a large corporate environment may have too many restrictions and conflicting interests for the successful reproduction and distribution of QEG's. The same can be said for attempting to produce the QEG in a government-funded facility.

DEPENDING ON A SINGLE FUNDER FOR QEG PRODUCTION - If at all possible, try to obtain a variety of financial supporters for the production of QEG's in your area. Having one single funder who provides all the money leaves your QEG project vulnerable as that funder can change their mind, back out and kill the project in one fell swoop.

FINAL THOUGHTS

The correct construction of the QEG requires patience and careful thought. We made several mistakes in development and have given here the steps that were successful. You will probably still make mistakes – and these will be your greatest learning opportunities as you gain more knowledge about this type of energy.

Before beginning to build, consider how much you would like to outsource to one of the cottage industry community units (CICUs) near you! As FTW continues to roll out the distribution plan, and more connections across the world are made, CICUs are becoming more commonplace and hence, QEG parts are becoming more accessible (many people are building them!) At this time, we recommend Torelco for purchasing a fully processed core (vacuum epoxy impregnation or not) and kit which contains all the rest of the parts needed to build a complete QEG to the point of 1st resonance.

If you are building a QEG you may certainly use your own sources for materials, but we ask that you do not alter the information in this manual (other than for your own use). If you are skilled in the art of electromechanical design please feel free to make improvements/modifications. We have no wish to control how you build this machine. In fact, we hope that you will experiment, develop, and improve the system (we are in a transnational co-development process). We know with increased knowledge you will discover many applications for this technology.

When photographs can be shown to help you visualize a process, they are provided in the manual but please remember, we are not professional manual writers. What we offer you here is the open sourced construction method we successfully used but it comes with great responsibility. Learn as much as you can, use discernment and wisdom, share freely, and you will be privileged to know the secrets of energy creation from the quantum field.

We would like to dedicate the success we've experienced to our first teacher, Sir Timothy Thrapp, and WITTS Ministries, without whose initial guidance none of this would be available so soon. We acknowledge and honor the work WITTS has done bringing alternative technology

forward. We hope that you will consider making a donation to the ministry for their great work, and encourage the ministry to share more of their knowledge with engineers around the world for the benefit of humanity.

PARTS LIST

(updated 20-Jun-2016)

NOTE: All dimensions provided in both Metric and Imperial values where possible

Qty	Part Description	Type, Model # or MFG P/N	Availability
	GENERATOR CORE		
1	**Stator** (See drawing)	140 Laminations 24 gauge (.025") [0.64mm] type M19 Steel w/C5 coating, 3-1/2" stack, Welded, Bonded, or Bolted	- TORELCO - Various electrical steel suppliers
1	**Rotor** (See drawing)	(Cut at same time, from same lamination sheets as stator)	- TORELCO - Various electrical steel suppliers
8	**Spacer Blocks** 1-1/2" [38.1mm] x 1-1/2" [38.1mm] x 4-3/8" [111.125mm] (See drawing)	Aluminum 6061-T6, G10-FR4, Clear Polycarbonate, Accoya® Acetylated Wood	- TORELCO - Discount Steel - EMCO Plastics - Rex Lumber
8	**8" [203.2mm] Bolts,** ¼" [M6] Ø, ¼ -28 [M6x0.75] Thread, Grade 8 [Class 10.9]	Instock Fasteners P/N 1050095555	- TORELCO - Brighton Best
8 pcs. ea.	**Nuts/Washers/Lockwashers**	¼ -28 [M6x0.75] Grade 8 [Class 10.9] Hex Nuts/Flat Washers/Split Lockwashers	- TORELCO - local hardware stores
1	**Shaft** 7/8" [22.225mm] dia. x 11.0" [279.4mm] Long w/Standard 3/16" [4.7625mm] x 3/32" [2.38125mm] Keyway. Alternate shaft length 12" [304.8mm]	Trukey P/N C1045 TGP (turned/ground/polished) (See drawing)	- TORELCO - Keystone Mfg.
1 (50ml bottle)	**Bonding Compound** for bonding Shaft to Rotor (Note: shaft comes pre-assembled to rotor in Torelco kit)	LOCTITE 648 Retaining Compound (Cat. No. 64836)	- TORELCO - Loctite Corp. - MSC Industrial
1 (150ml Aerosol)	**Primer/Activator** (use with bonding compound) (Note: shaft comes pre-assembled to rotor in Torelco kit)	Loctite 7471 (Cat. No.142474)	- TORELCO - Loctite Corp. - MSC Industrial
			-

2	**Bearings**	4-Bolt Flange Mount, 7/8" Bore, P/N FC-7/8-RHP (preferred), or 3-Bolt Flange Mount, 7/8" Bore, P/N SBTRD205-14G	- TORELCO - Simply Bearings Inc. (U.K.) - Big Bearing Store
6	**Bearing Bolts**	5/16" [M8] x 1-3/4" [44.45mm] Carriage Bolts	- TORELCO - local hardware stores
6 pcs. ea.	**Nuts/Washers/Lockwashers**	5/16" [M8] Hex Nuts/Flat Washers/Split Lockwashers	- TORELCO - local hardware stores
2 rolls	**Mica Tape** 1.00" [25.4mm] x 50YD [45.72M]	MICA77956X1X50	- TORELCO - EIS Inc.
~620' [188.976M] (19.8 lbs./1000')	**Magnet Wire #12 gauge**	Round Wire, Type HTAIHSD REA Pulse Shield® Inverter Duty (critical part!)	- TORELCO - EIS Inc. - Superior Essex - REA Magnet Wire Co.
~6000' [1828.8M] (3.1 lbs. [1.406kg] /1000' [304.8M])	**Magnet Wire #20 gauge** (Note: Includes enough wire to build Exciter Coil)	Round Wire, Type HTAIHSD, REA Pulse Shield® Inverter Duty (critical part!)	- TORELCO - EIS Inc. - Superior Essex - REA Magnet Wire Co.
16 pcs.	**Mica Plate – Custom Cut** (See Drawing)	NEMA 6 (36" [.9144M] x 36" [.9144M] x .030" [0.762mm])	- TORELCO - Asheville-Schoonmaker
4 pcs. (18" [457.2mm] each)	**PTFE (Teflon) Sleeving** (tubing) for #20 HTAIHSD Wire	Alpha Wire P/N TFT20011 (natural)	- TORELCO - Mouser Electronics
4 pcs. (18" [457.2mm] each)	**PTFE (Teflon) Sleeving** (tubing) for #12 HTAIHSD Wire	Alpha Wire P/N TFT20019 (black)	- TORELCO - Mouser Electronics
2 rolls	**Tape, White,** 1" [25.4mm] Fiberglass, Hi-Temp (outer wrap)	Intertape P/N RG48	- TORELCO - EIS Inc.
2 rolls	**Tape,** 1" [25.4mm] High Cut-Through Strength Mylar (Polyester), or Kapton	3M P/N 850 (Mylar, 1.9 mil), or Caplinq P/N PIT2A/25.4 (Kapton, 2 mil, tan color)	- TORELCO - EIS Inc.
16 pcs.	**Nomex Corner Insulation – Custom Cut** (See Drawing)	DuPont Type 418 0.010" to 0.025" thk.	- TORELCO - EIS Inc.

	END PLATES AND SHROUDS		
1 sheet ½" [12.7mm] thick x 3' [.9144M] x 4' [1.292M]	**Reinforced Resin Laminated or Cast Sheet Material** (for 2 end plates. See Drawing)	G10/FR4 (preferred), Phenolic types CE or LE, or transparent (clear) Polycarbonate	- TORELCO - EIS Inc. - EMCO Plastics
2 1/8" [3.175mm] thick x 5.875" [149.225mm] dia.	**Reinforced Resin Laminated or Cast Sheet Material** (shrouds) with 7/8" [22.225mm] dia. hole dead center (See Drawing)	G10/FR4 (preferred), Phenolic types CE or LE, or transparent (clear) Polycarbonate	- TORELCO - EIS Inc. - EMCO Plastics
	MOUNTING RAIL		
1	**Angle aluminum**	1-½" [38.1mm] x 1-½" [38.1mm] x 4' [1.2192M] Long. 1/8" [3.175mm] Thick	- TORELCO - Lowe's - Discount Steel - local hardware
	WOOD OR LAMINATE PARTS PLATFORM (BASE)		
1	**Generator Baseplate** If using wood, make from 2 pcs. of ¾" [19.05mm] thick quality plywood. Bond (screw and glue) together with opposing grain direction	18" [457.2mm] (W) x 36" [.9144M] (L) x 1.5" [38.1mm] (Thick)	- TORELCO - EMCO Plastics - EIS Inc.
1	**Core Mounting Shoe**	6.5" [165.1mm] (W) x 15" [381mm] (L) x 1.5" [38.1mm] (Thick)	- TORELCO - EMCO Plastics - EIS Inc.
10 pcs.	**Lag Bolts** (Generator Core to mounting shoe)	¼" [M6] x 2.5" [65mm]	- TORELCO - local hardware
10 pcs. each	**Washers/Lockwashers**	¼" [M6] Flat Washers/Split Lockwashers	- TORELCO - local hardware stores
	DRIVE SYSTEM		
	V-Belts and Pulleys		
1	**V-Belt, Browning or Continental ContiTech AX-42 Torque-Flex, or Gripnotch**	42" section AX (cogged belt)	- TORELCO - MSC Industrial - W.W. Grainger

1	**Pulley, 1 Groove, 3" [76.2mm] x 7/8" (or 5/8") Bore, Type A** (for Motor)	AK30 x 7/8" Bore (bore size could also be 5/8" to match motor shaft)	- TORELCO - MSC Industrial - Maurey
1	**Pulley, 1 Groove 2.50" [63.5mm] x 7/8" Bore, Type A** (for Generator)	AK25 x 7/8"	- TORELCO - MSC Industrial - Maurey
	DRIVE MOTOR		
1	**DC PM Variable Speed,** 1.0 HP, 2500 RPM, 90V or 180V armature (depending on selected system voltage)	5/8" or 7/8" shaft, with sliding or slotted base. Leeson Model # 4D28FK5 (90V armature), #4D28FK6 (180V armature)	- TORELCO - EIS - Automation - Direct.com
4	**Motor Mounting Bolts**	5/16" [M8] x 2-1/4" [60mm] Carriage Bolts	- TORELCO - local hardware
4 pcs. ea.	**Nuts/Washers/Lockwashers**	5/16" [M8] Hex Nuts/Flat Washers/Split Lockwashers	- TORELCO - local hardware stores
1	**Variac**, 120/240V Input, 0-280V Output, 9.5 Amps	STACO Type 1520	- TORELCO - Mouser Elec.
1	**Switch, Start/Run**	Carling #TIGM51-6S-BL-NBL (DPDT Center Off, 15 amp, 240V)	- TORELCO - Mouser Electronics
	CAPACITORS		
1	**Capacitor, Filter,** *optional* anti-hum for drive motor (if needed)	W.W. Grainger #2MDZ6 (40uF, 440 VAC, quick-connect terminals	- TORELCO - W.W. Grainger - MSC Industrial
(72) 8 capacitors x 9 rows for initial value of 0.169uF [169nF]	**Capacitors, Resonant Tank** 0.15uF [150nF], 3000 Volt, Tubular Axial Polypropylene (see class 3 & class 5)	Cornell Dubilier #940C (preferred) High dV/dt for pulse applications	- TORELCO - Arrow Elec. - Digi-Key - Richardson RFPD
	PROTECTION SPARK GAP		
2	**Terminal Lug,** 1-Hole mount	T&B Blackburn #L70	- TORELCO - local hardware
2	**Drill Rod,** ¼" [6.35mm]Ø Type A2, Cut-to-Length (1") [6.35mm]	Metals Depot #05827	- TORELCO - Metals Depot

DESCRIPTION OF COMPONENTS

Major Generator Parts:

- Stator
- Rotor/Shaft
- Insulation Components
- Magnet Wire
- Resonant Tank Capacitors
- Bearings
- End Plates
- Pulleys/V-Belt
- Drive Motor
- Bridge Rectifier
- Variac
- Base/Frame and packaging
- Bi-Toroid Output Transformer

THE STATOR, or generator core, is made using 140 laminations of 24 gauge (0.025") type M19 electrical steel with C5 coating, forming a stack of 3-½ inches, with a 4 pole configuration. The corresponding **ROTOR** has 2 poles. Both STATOR and ROTOR stacks are tig welded in 4 places, however, it is not necessary to weld the lamination stack. This is done only to maintain alignment of the laminations during shipping and handling. The lamination stack can be welded, bonded, or simply bolted together.

End Plates

Fiberglass reinforced epoxy laminate (FR-4/G10) was used for end plate construction, but other types of laminate material can be used, such as Grade CE (cotton/epoxy), or Grade LE (Linen/epoxy). Clear polycarbonate (not acrylic) can also be used if you would like your end plates to be transparent. End plates must be constructed of insulating material, but must also be structurally strong as they support all generator components, including bearings, shaft, rotor and stator. FR4 is the same material used to make circuit boards and is very strong, machinable, and dimensionally stable. Dimensions: End Plates: 0.500" [12.7mm] Thk., 15" [381mm] X 16.5" [419.1mm] with 15" [381mm] radius and 2.450" [62.23mm] center hole. Please note: If using the preferred 4-bolt bearing housings, start with center hole diameter of 2-7/8" (2.875") [73.025mm].

Center hole (and bearing mounting holes) may require further enlargement or slotting to provide sufficient bearing adjustability when centering rotor in stator bore.

Bearings

The bearings should have a narrow inner ring with set screws for attaching to the shaft. Housing is cast iron with a grease zerk for re-lubing the bearing. We used a particular 4-bolt flange type bearing/housing (see parts list) because it is very flat, and worked better for mounting bearings on the *inside* of the end plates (toward the rotor), but 2-bolt or 3-bolt bearings/housings can also be used. Bearings can also be mounted on the outside of the end plates, which may require the shaft to be slightly longer (12" [304.8mm] length should be sufficient in any case.

Resonant (Tank) Capacitors

The primary tank circuit capacitors are a critical part of the system. The initial capacitor bank configuration on our prototype uses 72 tubular film type caps, 0.15uF [150nF] each (see parts list). Each cap is rated for 3000V. The bank is configured with 9 parallel rows of 8 series wired capacitors. Each series string can withstand up to 24,000 Volts, and total capacitance value is adjusted by making and breaking the connections that parallel the rows (see included schematic "initial resonance cap value.pdf", and cross-reference table "tank capacitor values.pdf"). The value of these capacitors will be adjusted to tune the frequency/RPM of the generator. Fine tuning (of small increments of capacitance value) can be accomplished by jumpering (or switching) single capacitors in or out *in series* with any of the 9 series strings of capacitors. This bank can be adjusted for values between about 0.019 and 0.169uF [19 and 169nF]. A value of about 0.169uF [169nF] will establish resonance near 2,400 RPM on the rotor shaft, which is in the ideal speed range for the machine's mechanical setup. The machine in the Witts 40kW demo video is running at about 2450 RPM.

Ours is only a suggested capacitor bank configuration. Other setups may be designed and used according to your preference and budget. The best information we have at this point in development indicates experimental values will be between about 0.03 and 0.3uF [30 and 300nF], and the final capacitor value will probably be between about 0.04 and 0.1uF [40 and 100nF]

Variac

The variac is used to control the drive motor speed (rotor speed) which effectively controls the system power. It's used throughout the construction, development, tuning, and self-looping setup. Use of a variac is important when attempting to self-loop because the variac output is available *instantly* when the input is energized, and switching the motor (and variac) from mains supply to generator output must be done quickly to prevent the machine slowing down and dropping out of resonance before the switchover is complete. Electronic motor drives have a certain amount of delay before output is available after energizing the input. However, once self-looping is established, we'll know how much delay can be tolerated, so an electronic drive may be an option at that point, which would reduce the weight, bulk, and cost of the machine.

End Plate Layout

We used the bare core as a template to drill all the core mounting holes in the proper locations on the end plates. After end plates are cut and finished, place one on a flat work surface that will support up to 130 lbs. [about 60kg]. Place the bare core over the end plate, aligning the center bore of the core with the center hole in the end plate. When mounting the core on the endplates, it should be oriented with the pole pieces at 45° to the generator base for the lowest profile. Make sure the pole pieces are right to the edge of the radius at the top of the end plate. We used an extra-long drill bit to drill the 8 mounting holes. Repeat this process for the other end plate. Alternately, a long ¼" dia. pin with a sharpened end could be used as a center punch to mark hole locations and drill the holes using a drill press, or the CAD drawings could be used to program a CNC milling machine if you have access to a machine shop. If using the core as a template be sure to make assembly marks on the core and the end plate so that the final assembly will have all the parts in the same orientation and the mounting bolts will go through without binding. Be sure to mark the in-facing and out-facing sides of each panel.

CORE ASSEMBLY

We highly recommend ordering your generator set (stator and rotor) from an experienced professional lamination house using the included CAD drawings for fabrication. When your stator/rotor stack is completed (welded/bonded/bolted, and mounting holes drilled), bolt down the 8 spacer blocks using the 8" bolts with ¼" nuts and washers (see parts list), then wrap the core with 2 types of tape: Overlapping 50%, wrap 1 layer of 1" reinforced (high-strength, high cut-through resistance) Mylar or Kapton tape around the steel core (round part), followed by 2 layers of mica tape. Wrap 1 more layer of Mylar or Kapton tape over the mica tape. Make sure all tape is butted right up against the 4 pole pieces. These 4 layers will bring the thickness needed for insulation to about 18 mil.

Installing Mica Plates and Corner Insulation

After you've cut 16 C-shaped mica plates, install them on the top and bottom of each pole piece (front and back). We used a small amount of contact cement to hold them in place for the rest of the processing (see photos), but they can also be taped in place with the reinforced Mylar tape. Mica plates (and corner insulation pieces) are installed after core taping and before winding. Make 16 pcs. of corner insulation from high voltage insulating paper (such as DuPont Nomex type 418 or equivalent) at 0.015 to 0.025" thickness. Install these in the corner between mica insulating plates and mica tape wrap (see drawing). This is provided by Torelco when ordering a fully-processed core. Be very mindful at the corners of the pole pieces making certain there is no opening in the insulation for the wire to fall down into contact with the bare steel. If this happens, the coil will be short-circuited.

Winding the Core

You will need to commission a toroidal winding service. They might agree to process the entire core if you supply the materials (mica tape and plates, corner insulation, spacer blocks, bolts/nuts/washers, Mylar and fiberglass tape, etc.). We also have 2 QEG groups who have built their own toroidal winding machines, and you could also wind by hand, although this would be very time consuming.

Teflon sleeving is installed on the first complete turn of each winding of both the #20 wire and the #12 wire. Two coils of 3100 turns each of #20 wire are wound on opposing sides (left and right), and 2 coils of 350 turns each of #12 wire on the other sides (top and bottom). Be sure you are using the Pulse Shield® (REA) or Ultrashield® (Essex) wire for both the #20 and the #12 wire (Please see included "Housing_View_Winding_Direction" drawing for proper wire lead orientation and winding direction). Proper winding is critical for the machine to be operational! Leave about 3 extra feet of wire at the start of each winding, and also at the finish for lead wires. Use enough sleeving to make sure the lead wires are completely insulated where they come through the rear end panel. Be sure to secure the finish leads of each coil so that they don't unravel during handling. Please note: The outer surface of the finished coils should be at least ¼" [6.35mm] away from being flush with the 6" rotor bore. In other words, a minimum of ¼" spacing should be maintained between the surface of the spinning rotor, and the surface of the windings. This is to prevent arcing to the rotor surface during operation.

Outer Wrap Taping

Wrap a single layer of 1" white fiberglass tape tightly and securely around each of the 4 coils, making sure that all wire is covered and tape is butted up against the 4 pole pieces.

GENERATOR ASSEMBLY STEPS

Rotor/Shaft/Shroud Assembly

Drawings are provided for the shaft in the CAD drawing package. The shaft length can be 11" (minimum), or 12" or more, depending on whether you mount your bearings on the inside or the outside of the end plates. We used Loctite 648 industrial adhesive (with activator) to mount the shaft to the rotor, which is effective for bonding close fitting metal parts.

Drill a 7/8" center hole, and two ¼" mounting holes into the shroud disks (mounting holes are lined up with the holes in the rotor). Slide one disk onto the shaft on each side of the rotor. Bolt both shrouds to the rotor using two 4" or 4-1/4" long ¼ - 28 through-bolts and nuts. Insert bolts in opposite directions according to the drawing. These bolts should not be any longer than necessary or a rotor imbalance can occur. Shrouds are used to quiet the windage noise generated

by the spinning rotor. Optionally, the entire rotor assembly can be balanced at a reputable machine shop for smoothest operation. However, the machine shop should be instructed to remove material from the rotor very carefully, to prevent delaminating.

Bearings

We recommend mounting the bearings to the inside of the front and rear end plates. Center each bearing on the 2.450" hole (or 2.875" hole, depending on which bearing housing is used) in the center of the plate. Drill the holes oversize for the mounting bolts. This is done to provide adjustability in the position of the shaft at final assembly. The bearings will have to be moved slightly to center the rotor in the bore of the generator. The gap between rotor and stator is very small (.010" or less) and the rotor will need to be positioned so it does not rub on the stator bore. Only tighten finger tight at this time.

Core Assembly

We opted to bring the leads from the coils out directly through holes drilled in the rear end plate. You may decide to bring the leads out a different way. Here are the steps for our method:

1) Lay the pre-drilled front end plate (the one *without* the holes for the coil wire leads) on top of 4 wood blocks, 1-1/2" thick x 3-1/2" wide x 6" long (North American standard 2x4, 6" long) arranged in a cross, and placed on a flat work surface that can support up to 130 lbs. [about 60kg]. Position the wood blocks under the end plate evenly without covering any of the pre-drilled holes.

2) With an assistant or two, place the fully processed core (about 90 lbs.) down onto the pre-drilled end plate with the wire leads facing up. Line up the center bore of the core with the center hole in the end plate, then line up the mounting holes. Make sure the wire leads are oriented according to the included "Housing_View_Winding_Direction" drawing. Use a couple of long ¼" rods or 2 of the long mounting bolts and push them through the stator, into 2 mounting holes on opposite sides of the end plate. In this way, line up all 8 mounting holes in the stator with all 8 mounting holes in the end plate, using the long rods or bolts.

3) Leaving the 2 rods (or bolts) in place momentarily to maintain alignment, insert the longer end of the rotor/shaft/shroud assembly through the stator bore and into the front pre-mounted

bearing. Let the rotor assembly drop through the bearing gently to the bottom, then rotate it to align with 2 of the stator poles. Without moving the core, front end plate, or rotor, gently remove the 2 long alignment rods (or mounting bolts). Now take the *rear* end plate (with pre-mounted bearing) and fish the 8 lead wires through the pre-drilled holes, as you lower it over the end of the rotor shaft. Take care not to pinch, bunch up, or crush any of the wire leads as you lower it into place. Once the rear end plate is down in contact with the stator assembly, install the 4 *outer* mounting bolts, washers, and nuts, and tighten securely. The core assembly must now be placed upright to reach the 4 inner mounting bolts. With assistance, place the assembly upright onto the raised portion of the base (mounting shoe), and install the 4 inner mounting bolts.

Core Mounting

4) We used 5 lag bolts across the bottom of the end plates on each side to mount the assembly to the mounting shoe on the wood base/frame. Other methods could be employed for mounting the core assembly to the base, such as using angle aluminum rails across the bottom skirts of the end plates (see CAD drawing layouts).

Drive Motor

5) Mount the drive motor to the base/frame. We opted to remove the 4-bolt pedestal base supplied with the motor, in order to mount it onto the aluminum angle on the front of the base instead. We used one bolt (on the 'C' face) so the motor could simply pivot to provide easy belt tension adjustability, and we built a simple sliding spacer to support the rear of the motor.

6) Once the motor is mounted to the base, install the 3" pulley on the motor shaft using the set screws.

Rotor Adjustment

7) At this point the rotor position should be adjusted so that it spins freely inside the core without rubbing. This is where you may need to adjust the bearing positions repeatedly until the rotor spins freely. (The gap between the rotor and stator is .010" or less, making this step a little delicate). However, once the rotor is tightened in position it does not tend to move. Place the 2-½" pulley on the generator shaft at this time; it can be used to turn the rotor by hand while adjusting its position.

Install V-Belt

8) Place the V-belt over both pulleys and position pulleys as close to the motor and the generator as possible. Both pulleys should be positioned an equal distance from the faces of the motor and generator to assure that the belt runs true.

Variac

9) The variac can be mounted on the base at this time. We used two 1/4 – 20 x 1" bolts with nuts to mount the variac to the aluminum angle. After all the components are mounted on the base, wiring and testing will be performed using the variac. (After set-up and testing is completed, we may be able to replace the variac with an electronic motor control circuit board (SCR drive) for less bulk and weight.

Final Assembly/Wiring

10) With all components mounted on the base, wiring can begin. Please follow the included schematic to make connections. We mounted a 12-position, 40 Amp rated barrier terminal strip on the base to support the external wiring connections (see photos).

Set-up and testing

Wiring Notes: The generator output (secondary) can be wired in series (220, 230-240V), or parallel (110, 115, 120V). For the series connection shown on the schematic, the start leads from each coil are connected together. This connection provides the highest voltage output from the windings. If using a parallel connection for lower voltage/higher current, be careful to connect the four leads with polarity opposed (start lead of one coil connected to finish lead of other coil).

The variac we used can be wired for 120 or 240 volt input, and provides 0-280 volts output, at up to 9.5 amps. This is a versatile variac and can be used with either a 120 or 240 volt system. The output of the variac is connected to a 1000 volt, 25 Amp full-wave bridge rectifier to power the variable speed DC drive motor. Optionally, a 30-50uF, 400-450 Volt filter capacitor can be added across the bridge rectifier to filter out any AC hum in the motor.

Starting with the wiring setup as shown in the schematic, prepare the series/parallel capacitor bank, but do not connect to primaries at this time. This will prevent resonance momentarily.

Connect input power to the variac. We started with a full 240 volt series wired system, but parallel 120 volt wiring can also be used.

Test mechanical assembly by spinning up the motor/rotor/belt and observing operation. Adjust variac voltage from zero to about ¾ through its range. The active rpm range is under 3000 rpm, so we don't need to spin very fast. Assure there is no stack rub (rotor scrubbing on stator), or other mechanical issues that need to be corrected for smooth operation.

*****When proper mechanical operation is assured, connect the series/parallel capacitor bank. The recommended initial configuration of 72 (seventy-two) 0.15 uF (150nF), 3000 volt capacitors gives us .16875uF (168.75nF), that will withstand up to 24,000 volts. This initial value should be in the range to produce resonance at approx. 2400 RPM (about 160Hz). Be sure to apply a load on the output of the generator at all times. We recommend starting with the generator output wired in series, and four (4) 100 Watt/240 Volt incandescent lamps wired in parallel for initial load.

As the machine spins up to resonance, the sound will change, and the rotor speed will lock into the resonant frequency. At this point any further increase of the motor speed control will change the speed only slightly, but the additional mechanical power input will drive the core deeper into resonance, thereby increasing the power output. With a single control, the voltage and current (power) can be increased or decreased.

In the QEG, the exciter coil is precisely tuned to 1.3 MHz resonant frequency. The exciter coil is a form of antenna, which effectively provides a conduction path from the quantum field (zero point) into the generator core. This has the effect of polarizing and electrifying the core, which increases power output. After the QEG is first built, the spark gap on the exciter coil should be adjusted (with power off) to between .005" and .010". Start the generator and let it spark for 2-3 seconds, and repeat this 4 or 5 times. Do this whenever starting the generator for the first few weeks of operation. This procedure is further detailed in the "QEG Tuning & Technical Update, Parts 1, 2, & 3, and QEG Theory of Operation."

FREQUENTLY ASKED QUESTIONS (FAQs)

What is the QEG Project?

The Quantum Energy Generator (QEG) is an open sourced fuel-less generator prototype based on a public domain patented invention of Nikola Tesla. The type of energy that is utilized by the QEG design is different than that of a conventional generator. Once co-development is complete, the generator is designed to be highly efficient and power your home. The QEG was open sourced in March of 2014 and has been in development with many teams around the world since this time.

How much does a QEG cost?

The QEG is a prototype, which means it is still in development and there is not yet a fixed price for a finished product. Any skilled engineer can use the open sourced QEG manual to source the different components from various suppliers around the world.

To build a QEG you'll need to purchase all the parts, have a workspace to build, and have a variety of mechanical tools for testing and measuring. The cost for the space and the tools may vary. A list of helpful tools has been provided.

Cost for parts:

We spent between $6,000- $8,000 just for the parts for each QEG we built. This does not include shipping, tools or other project expenses. We estimate that with further co-development this cost can be significantly reduced and are already seeing this to be the case. For example, Torelco, our supplier in the US, now offers a kit which has made it convenient and cost effective for many builders ($3200). This does not include the core and does not include shipping but Torelco will ship anywhere in the world.

Buying a Core:

You can have a company make your core for you and wind it yourself. Your costs will vary. Torelco, our supplier in the US, offers a fully processed core. As of June 2016, the price for a Torelco Core is $3,095 (epoxied) or $2,945 (non-epoxied). This does not include shipping but Torelco will ship anywhere in the world.

Where can I buy a QEG?

As of June 2016 you cannot buy a ready-made QEG from a supplier yet. You will need to build one yourself or hire someone to build one for you. You can use the manual to source the parts yourself, or you can purchase the finished core assembly and kit from Torelco.

Does the QEG violate the laws of physics?

The QEG is an asymmetrical open system that operates according to the laws of nature. It does not violate the physical laws of thermodynamics as these only apply to a closed symmetrical system. Principles of asymmetrical open systems have been traditionally omitted from higher educational learning programs.

Can you answer a technical question regarding the QEG?

Yes! You may find many of your technical and distribution questions answered in our online forum. In addition, since we receive many requests to answer questions we have arranged a consulting service for this purpose.

How can you be sure that the QEG will not be suppressed?

We cannot guarantee that there will be no attempt to suppress the QEG by the controlling corporations and governments. However we have implemented a strategy different than those that have been tried before us to help this break through the suppression.

All other legitimate free energy devices that have been developed in the last few decades have been stopped from getting out to the public through traps such as:

1) Patents: the US Patent office confiscates them and forbids the inventor to invent.

2) Secrecy: non-disclosure agreements ensure that only a handful of people know about a technology, and therefore it is easier to suppress.

3) Greed: promises of great financial wealth are made (and usually never fulfilled) to manipulate the inventors, keep a device secret and under ownership, and therefore easy to control and suppress.

4) Governmental laws in “police state” countries. In some countries, the governments are attempting to make it illegal for individuals to create their own power. Laws, codes, fines and

regulations around this subject are found predominantly in the “Five Eyes Countries”: USA, UK, Canada, Australia, New Zealand.

The strategy that FTW is implementing is an attempt to thwart these common traps of suppression in an effort to get this device (and others like it) directly into the hands of the people so that it can become a new common standard of energy use. Our strategy is being implemented in the following ways:

1) Open source: No patents, as this device is based on a patent that is in the public domain. Therefore there is no ownership and anyone with the skills can build one without copyright infringement or patent confiscation.

2) Public promotion and full transparency: we do not operate under secrecy or non-disclosure agreements and all information about the device and our research has been publicly reported on the internet. We have used the viral nature of the internet and social media to ensure that millions of people know about the QEG and are following the progress of the project.

3) Crowdfunding: over 1000 people have contributed to help pay for the expenses of the QEG project. This eliminates the risk, and ability to control by any single funding entity.

4) Grassroots: We have implemented the QEG on a grassroots level with individuals around the world. Social media and the internet works fast, governments do not. This way people have direct access to this technology and this project which minimizes governmental interference.

The open sourcing of the QEG project done through the internet by a small family with pure intentions was an unexpected move according to the controlling powers of this world. The QEG family has endured a lot to protect the integrity of this project and to continue to provide information publicly. To date, the QEG project has experienced suppression attempts in the following ways:

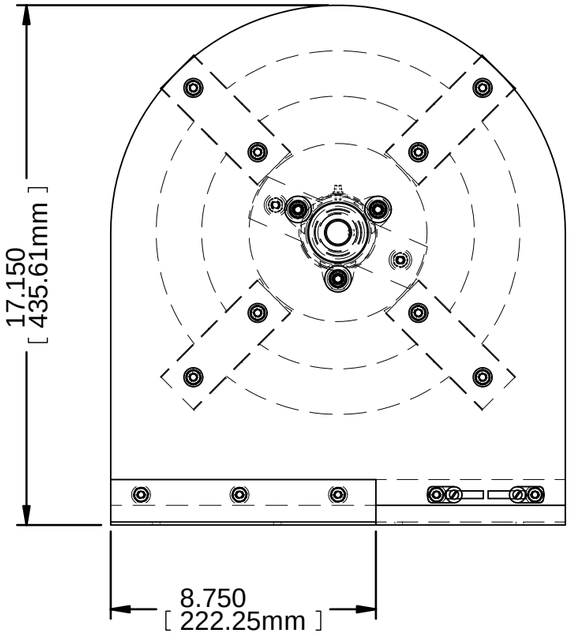
- The QEG is a targeted project for government paid trolls and free energy de-bunkers that protect the corporate energy industry. We have witnessed many online paid troll activities that specifically target the QEG and our family.
- We have received many online empty threats by anonymous psychopathic individuals.
- During the various QEG builds we attended, we were approached by many individuals representing various groups with ulterior motives and dark agendas. These mostly involved promises of wealth, fame and power in exchange for control of the project. Most of these individuals dissolved their relationship with the QEG (or were re-assigned to other projects)

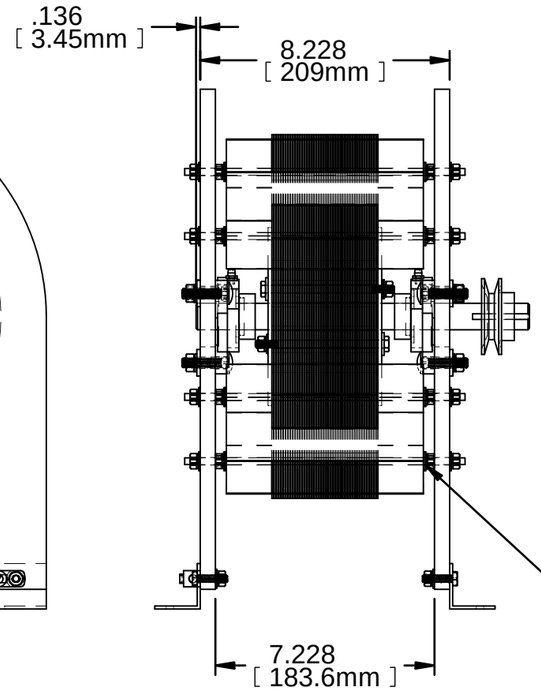
when they realized that our strategy of open sourcing, crowdfunding and co-development makes it almost impossible to buy, own or control the project.

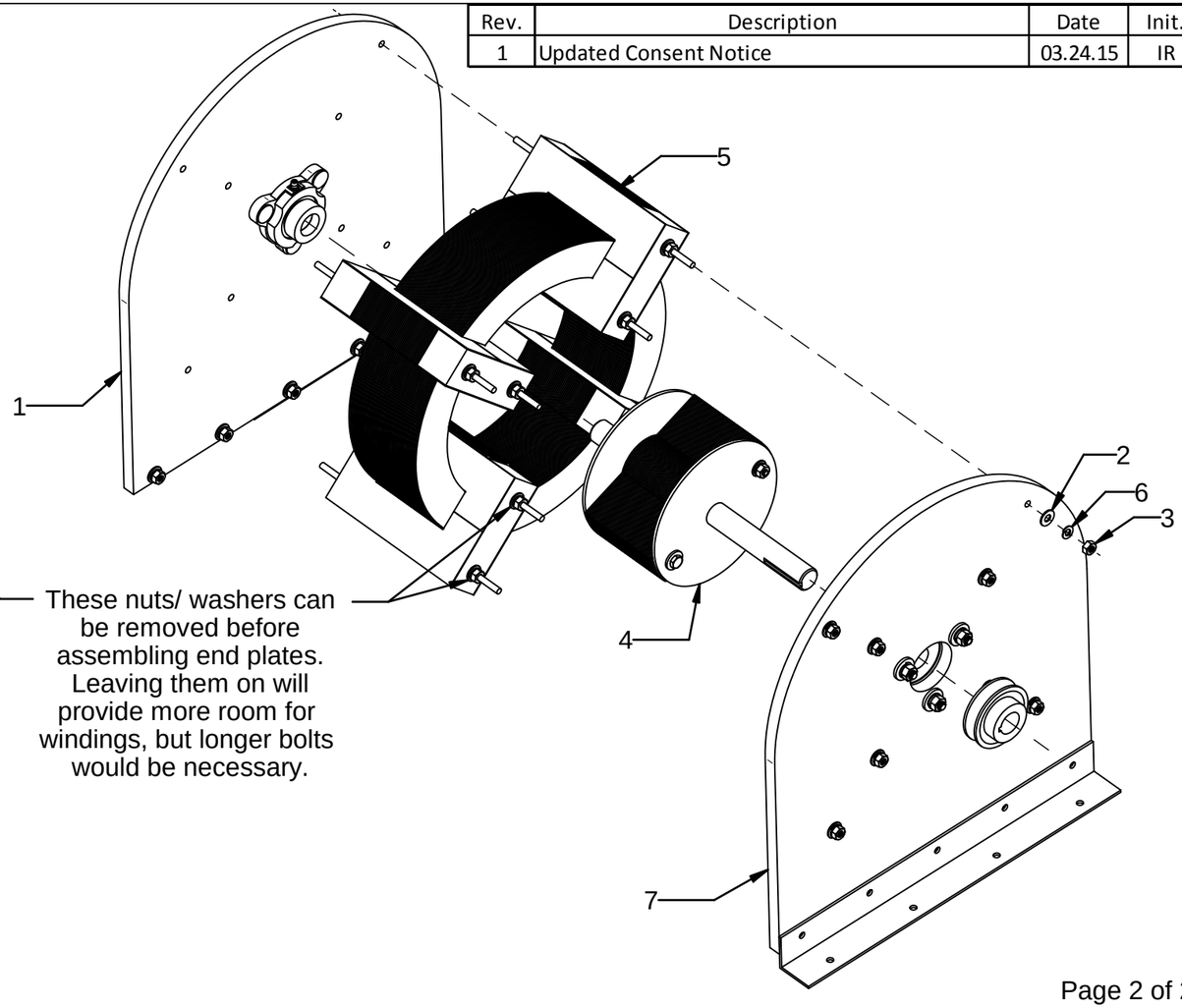
Can I come to your house to see your QEG or can you tell me where I can see one?

Due to the nature of the project, it was compulsory for the QEG family to live and work under continuous public pressure. This is no longer the case and the family is catching up on some much needed rest and healing. We will continue to post in the QEG Academy forums, and the engineers will be available for online consultations, but we will not be making unnecessary public appearances or opening our private home/workshops to the public. Of course, we are only speaking for ourselves. We're sure other builders will be happy to invite genuinely interested people to their workshops, and this is what the QEG Connector is for: get connected to builders in your area!

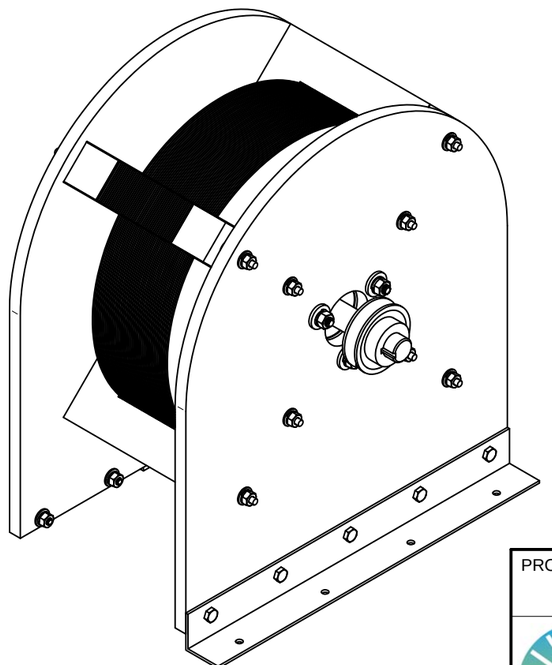
Rev.	Description	Date	Init.
1	Updated Consent Notice	03.24.15	IR







These nuts/ washers can be removed before assembling end plates. Leaving them on will provide more room for windings, but longer bolts would be necessary.



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7	P1037	1	Plate, End, Assy
6	P1015	16	Washer, Split, Lock, 1/4
5	A1008	1	Stator Assy
4	A1007	1	Rotor Assy
3	P1006	16	Nut, Hex, 1/4-20
2	P1005	16	Washer, Flat, #1/4
1	A1016	1	Plate, End, Gap Protection, Assy

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UNLESS OTHERWISE SPECIFIED:
XX +/- .020
XXX +/- .005
XXXX +/- .0005
ANGLES +/- 3 DEG.
FRACTIONAL TOL: +/- 1/64
ALL DIM'S ARE IN INCHES

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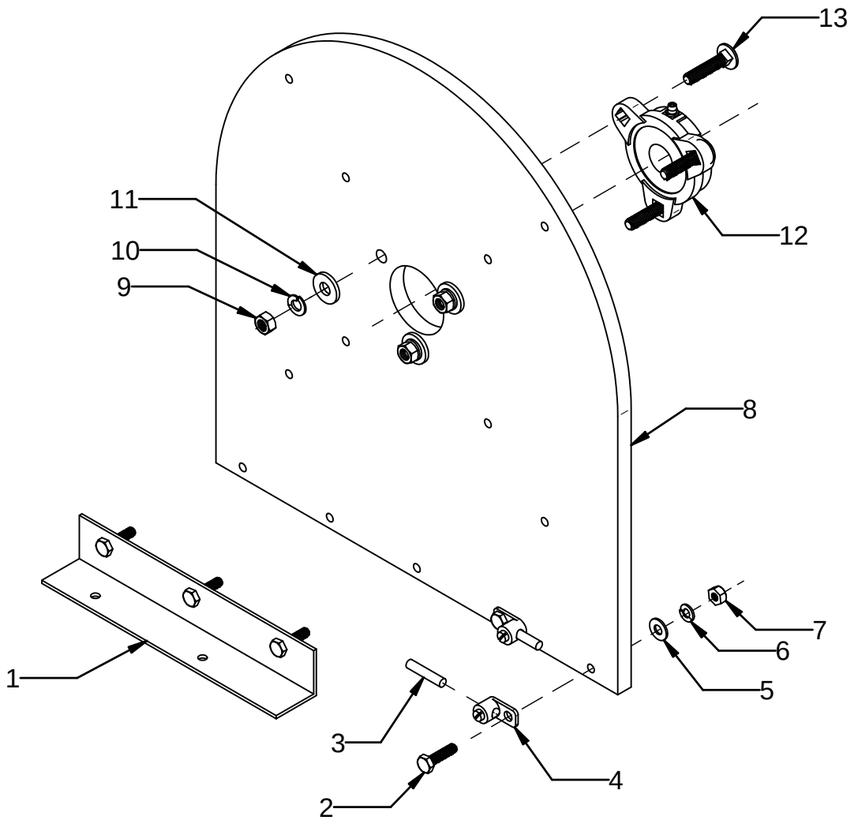
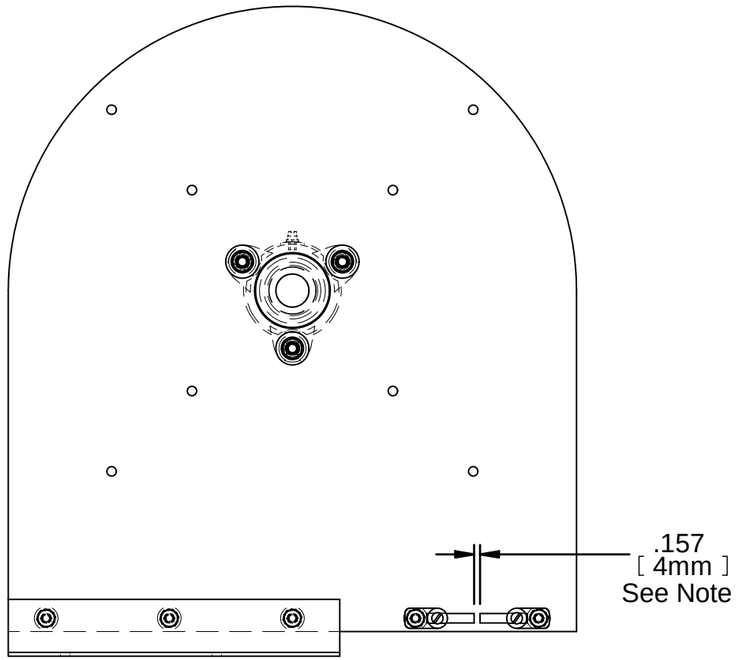
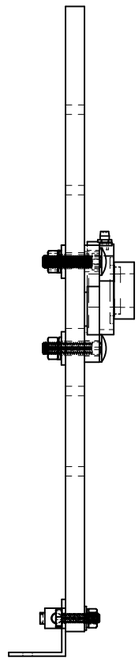
TITLE: 10KW Quantum Energy Generator

MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.24.15	CHECKED BY:	DATE:
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 5	DWG. No: B-1-101-A1000 29	REV. 1

Rev.	Description	Date	Init.
1	Updated Consent Notice, and note	03.24.15	IR







Note

1. Protection Gap for Capacitor Bank; A2 rod offset gap should be between 4mm - 6mm for testing. (basically a spark gap across capacitor bank. Running the machine with no load or too much load can cause arcing and short circuit in the core. Set gap at 4mm initially, then adjust for desired firing voltage. Ex. 4mm = 12kV ... 6mm=18kV, etc. (Gap opening 3mm = 1kV, or 3mm per kV)

#	P/N	Qty	Description
13	P1036	3	Bolt, Carriage, 3/8-16 x 1 1/2"
12	P1035	1	Flange, Bearing, 3 Bolt, SBTRD205-14G 7/8"
11	P1034	3	Washer, Flat, 3/8
10	P1033	3	Washer, Split, Lock, 3/8
9	P1032	3	Nut, Hex, 3/8-16
8	P1014	1	Plate, End
7	P1006	5	Nut, Hex, 1/4-20
6	P1015	5	Washer, Split, Lock, 1/4
5	P1005	5	Washer, Flat, 1/4
4	P1031	2	Connector, Copper, L70
3	P1030	2	Rod, Drill, A2, 1/4" Dia. x 1.25"
2	P1029	7	Screw, Hex, 1/4-20 x 1"
1	P1028	1	Bracket, Angle, L, 1.5" x 1.5" x 8.75"

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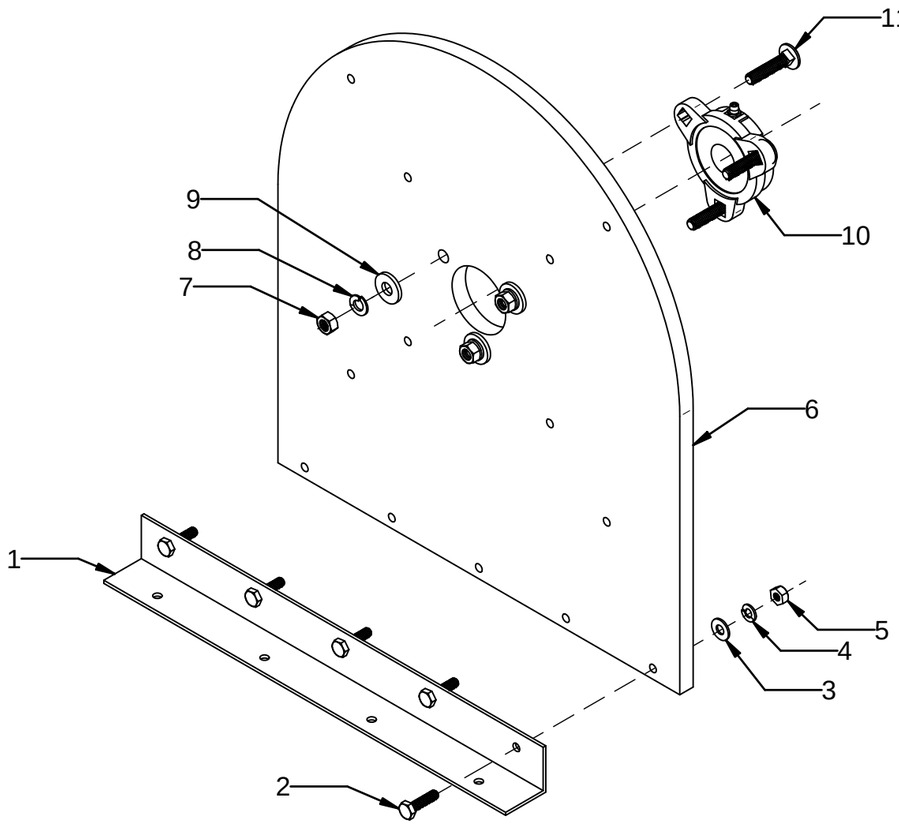
UNLESS OTHERWISE SPECIFIED:
XX +/- .020
XXX +/- .005
XXXX +/- .0005
ANGLES +/- 3 DEG.
FRACTIONAL TOL: +/- 1/64
ALL DIM'S ARE IN INCHES

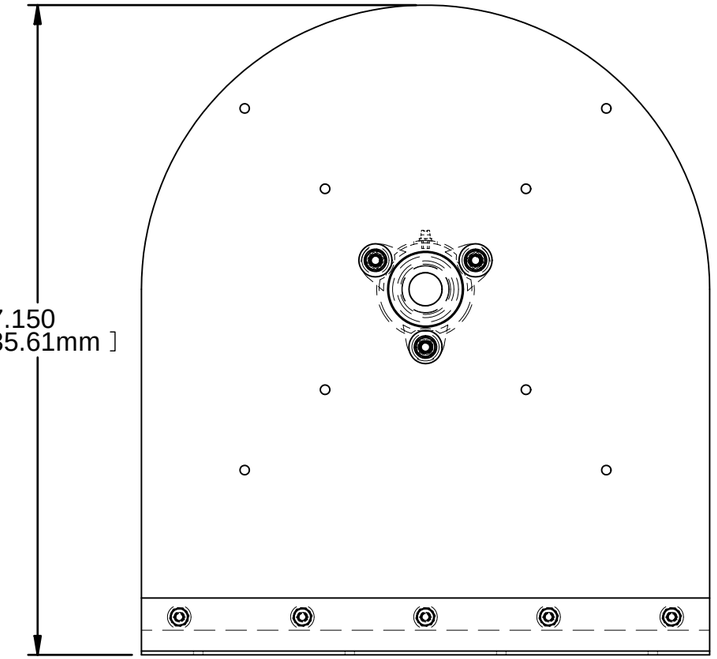
COMPUTER FILE LOC: C:\FTW\101\Mech\A1016, Plate, End, Gap protx.DFT

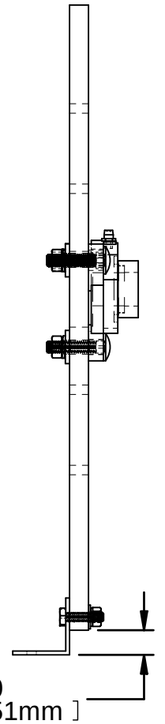
TITLE:
End Plate Assy, Protection Gap Side 10KW Quantum Energy Generator

MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.24.15	CHECKED BY:	DATE:
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 4	DWG. No: B-0-101-A1016 30	REV. 1

Rev.	Description	Date	Init.
1	Updated Consent Notice	03.24.15	IR







#	P/N	Qty	Description
11	P1036	3	Bolt, Carriage, 3/8-16 x 1 1/2"
10	P1035	1	Flange, Bearing, 3 Bolt, SBTRD205-14G 7/8"
9	P1034	3	Washer, Flat, 3/8
8	P1033	3	Washer, Split, Lock, 3/8
7	P1032	3	Nut, Hex, 3/8-16
6	P1014	1	Plate, End
5	P1006	5	Nut, Hex, 1/4-20
4	P1015	5	Washer, Split, Lock, 1/4
3	P1005	5	Washer, Flat, 1/4
2	P1029	5	Screw, Hex, 1/4-20 x 1"
1	P1028	1	Bracket, Angle, L, 1.5" x 1.5" x 15"

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PROJ. NAME: 101 | P/N: A1037

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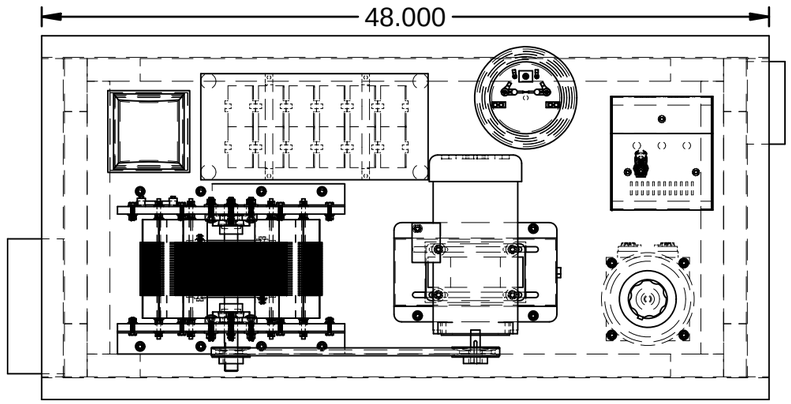
UNLESS OTHERWISE SPECIFIED:
XX +/- .020
XXX +/- .005
XXXX +/- .0005
ANGLES +/- 3 DEG.
FRACTIONAL TOL: +/- 1/64
ALL DIM'S ARE IN INCHES

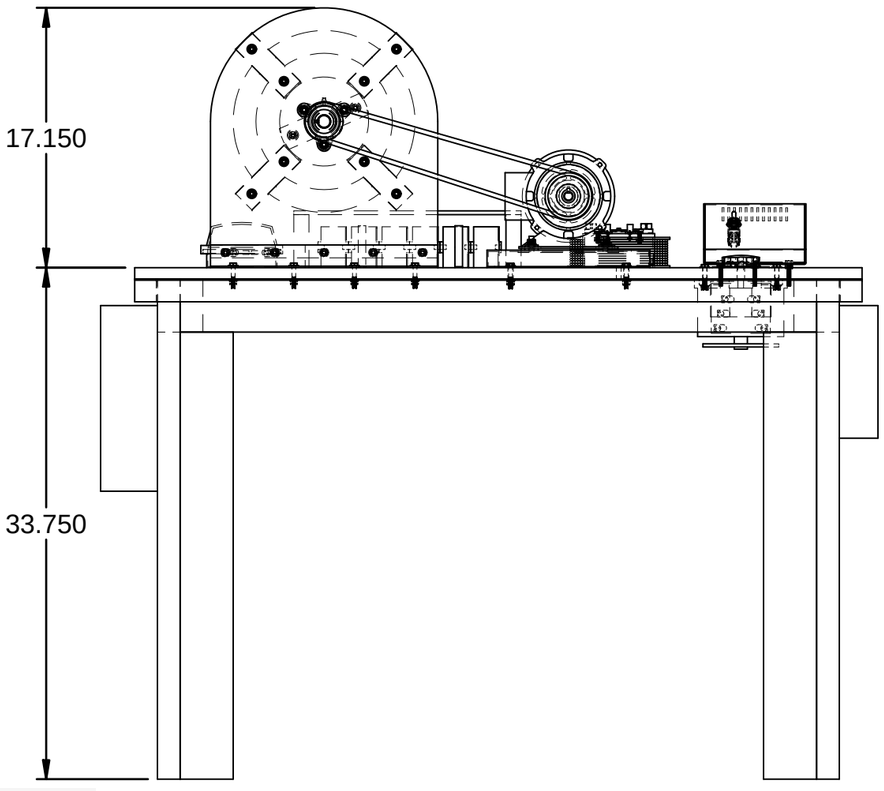
COMPUTER FILE LOC: C:\FTW\101\Mech\A1037, Plate, End, Pully side.DFT

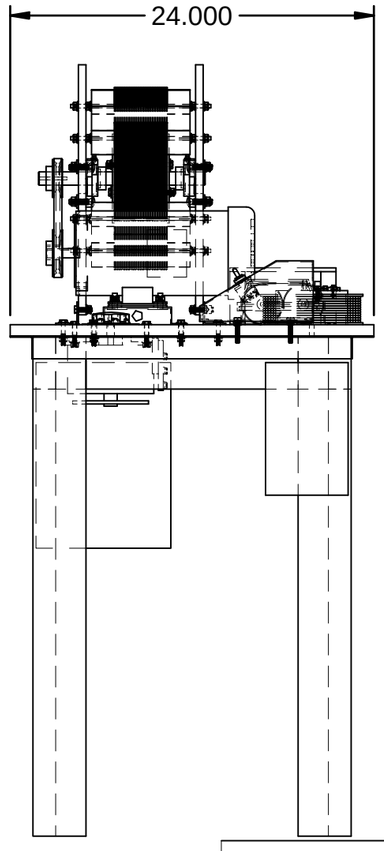
TITLE:
End Plate Assy, Pulley Side
10KW Quantum Energy Generator

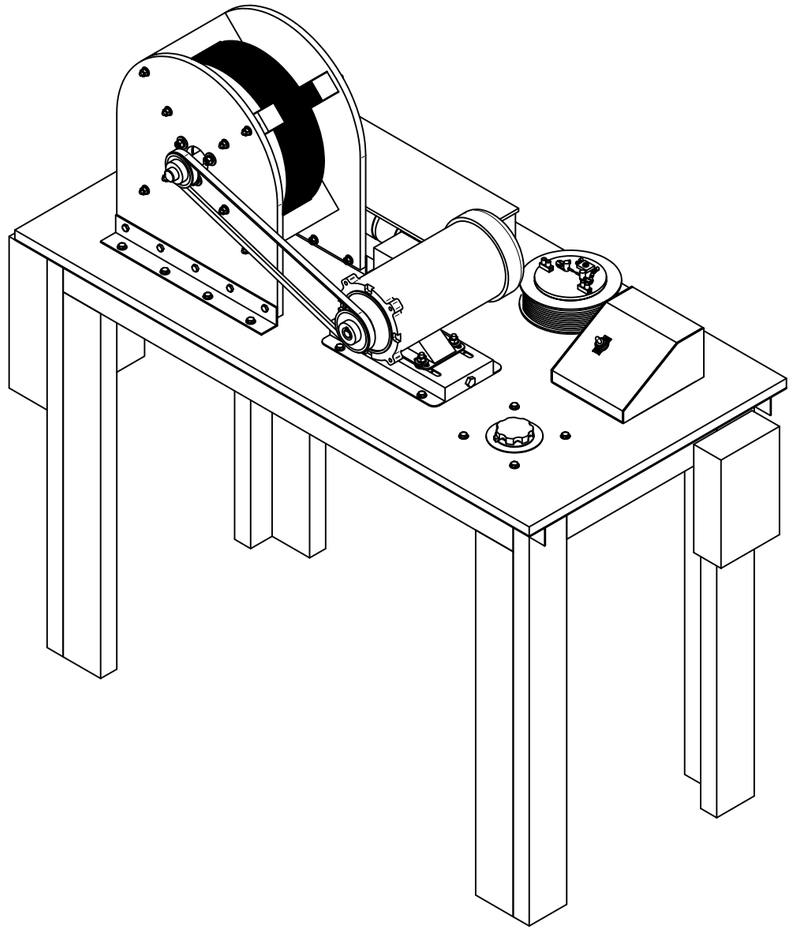
MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.24.15	CHECKED BY:	DATE:
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 4	DWG. No: B-0-101-A1037	REV. 1

Rev.	Description	Date	Init.
1	Updated Exciter Coil Design	03.25.15	IR









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PROJ. NAME: 101	P/N: A1018	UNLESS OTHERWISE SPECIFIED: XX +/- .020 XXX +/- .005 XXXX +/- .0005 ANGLES +/- 3 DEG. FRACTIONAL TOL: +/- 1/64 ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\A1018, QEG, Fixture, pg1.DFT		
			TITLE: QEG Prototype Fixture		
		MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY: / DATE:
		FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY: / DATE:
		WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 10	DWG. No: B-0-101-A1018 32 / REV. 1

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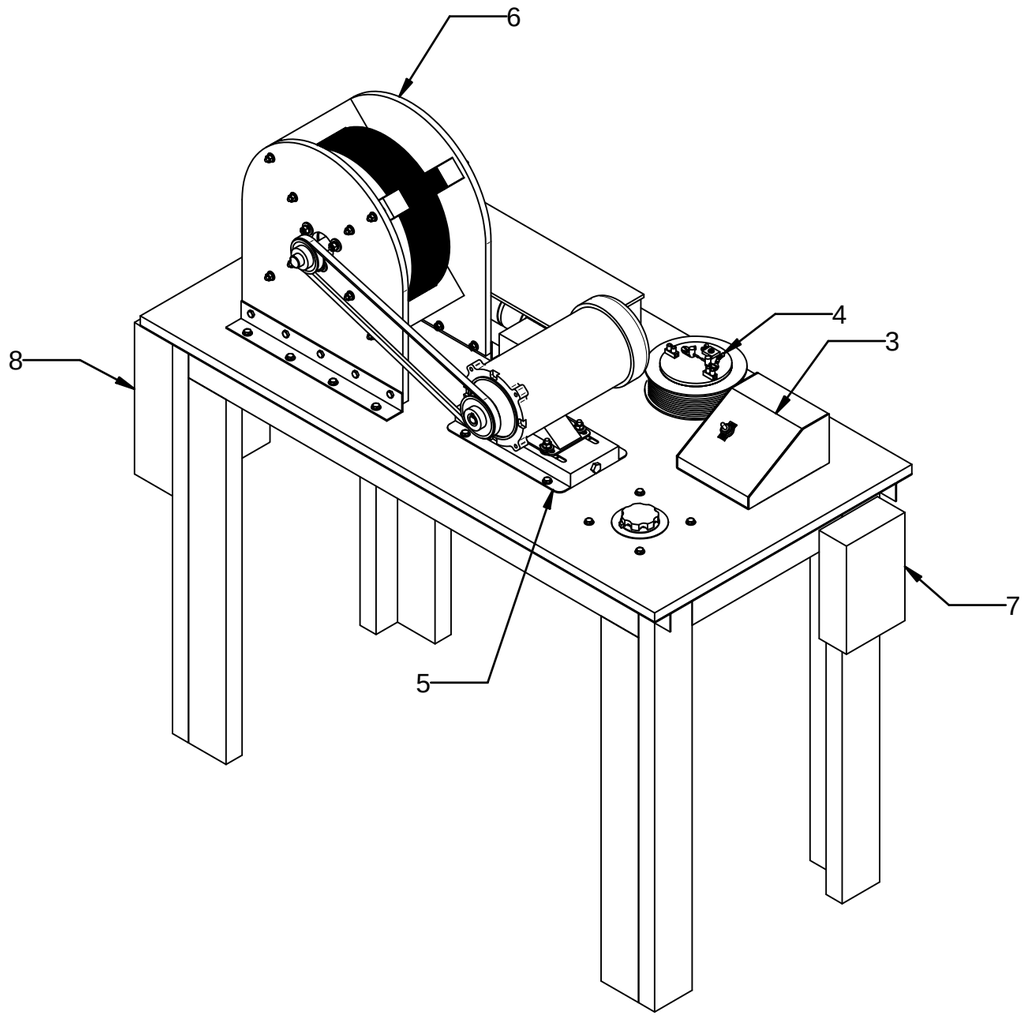
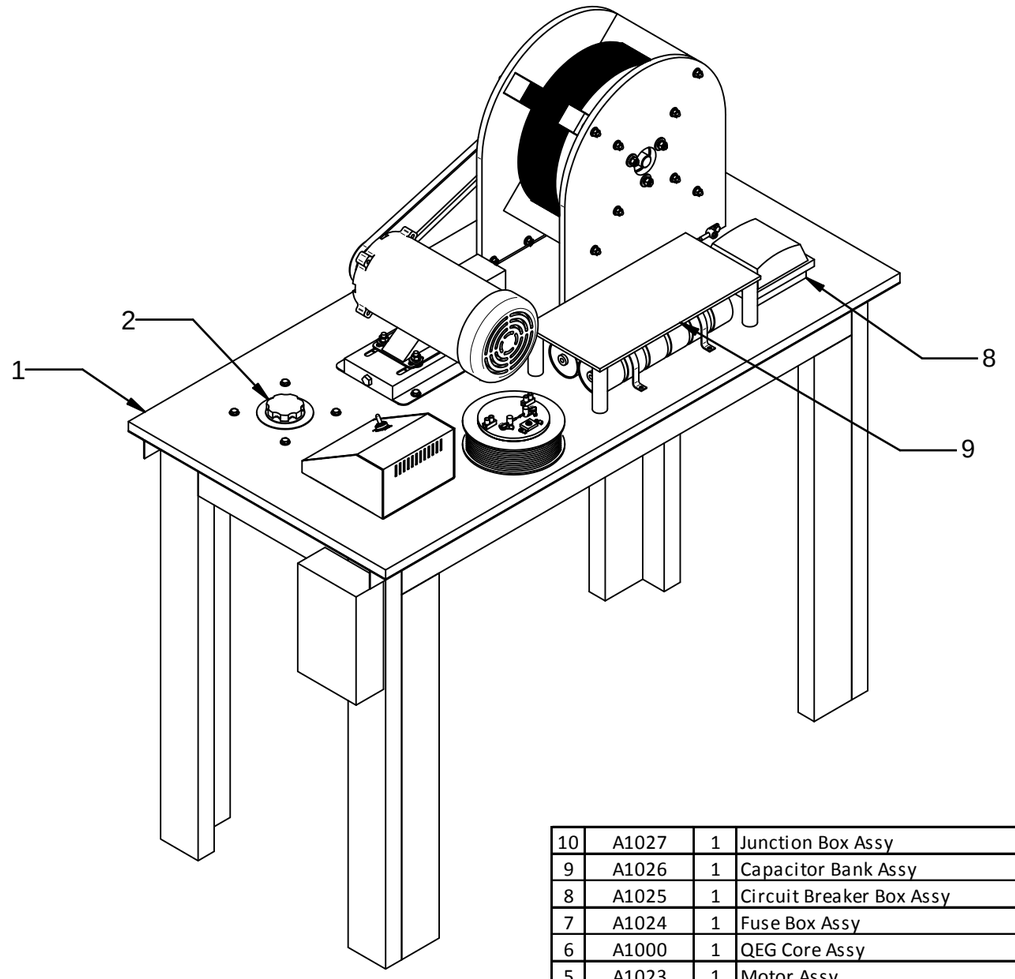
Rev.	Description	Date	Init.
1	Updated Exciter Coil Design	03.25.15	IR





#	P/N	Qty	Description
10	A1027	1	Junction Box Assy
9	A1026	1	Capacitor Bank Assy
8	A1025	1	Circuit Breaker Box Assy
7	A1024	1	Fuse Box Assy
6	A1000	1	QEG Core Assy
5	A1023	1	Motor Assy
4	A1022	1	Exciter Assy
3	A1021	1	Switch Box Assy
2	A1020	1	Variac Assy
1	A1019	1	Wood Bench Assy

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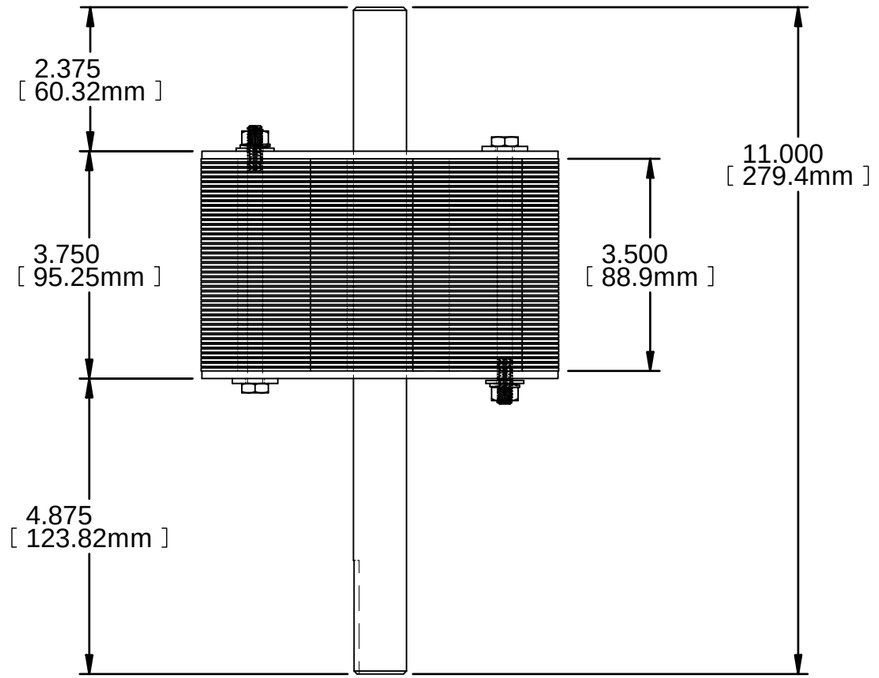
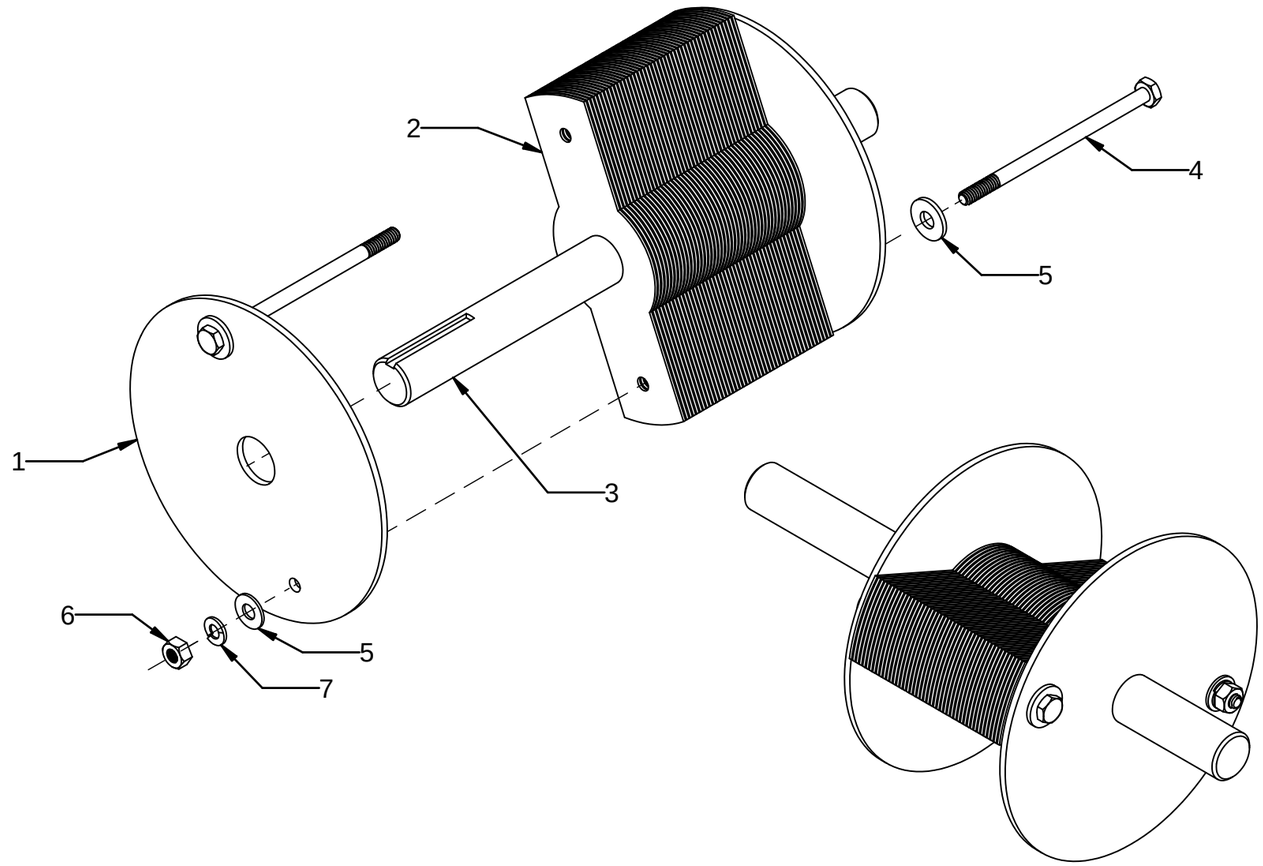
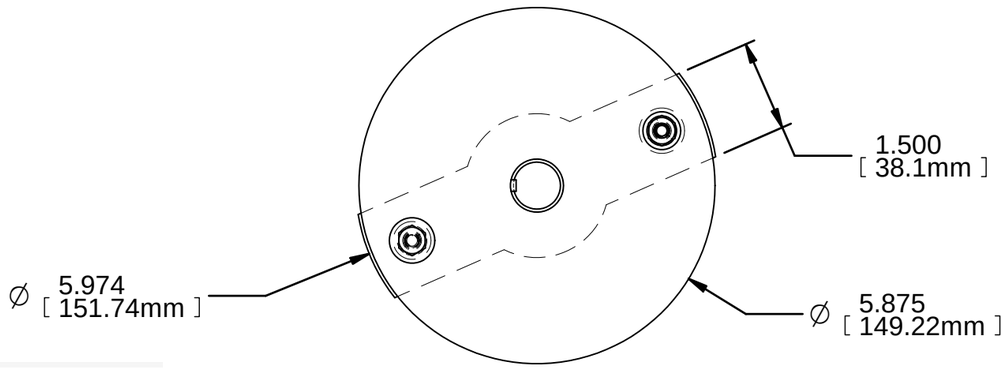
PROJ. NAME: 101	P/N: A1018	UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\A1018, QEG, Fixture, pg2.DFT		
			TITLE: QEG Prototype Fixture		
MATERIAL:		DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY:	DATE:
FINISH:		DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:		Q'TY/ASS'Y: 1	SCALE: 1 : 10	DWG. No: B-1-101-A1018	REV. 1

Rev.	Description	Date	Init.
1	Updated consent Notice, Removed SS from Hardware	03.25.15	IR







#	P/N	Qty	Description
7	P1015	2	Washer, Split, Lock, 1/4
6	P1006	2	Nut, Hex, 1/4-20, Grade 8
5	P1005	4	Washer, Flat, #1/4
4	P1004	2	Bolt, Hex, 1/4-20 x 4-1/4, Grade 8
3	P1003	1	Shafting, 7/8" Dia x 11" Long, w/ standard 3/16" x 3/32" Keyway, C1045 TGP Trukey
2	P1002	140	Lamination, Rotor, 24 Gauge, M19 C5, Electrical Steel
1	P1001	2	Shroud, Mat.: (Fiberglass, Laminate, epoxy, Reinforced, 1/8" thk x 5.875" Diameter

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PROJ. NAME: 101 | P/N: A1007

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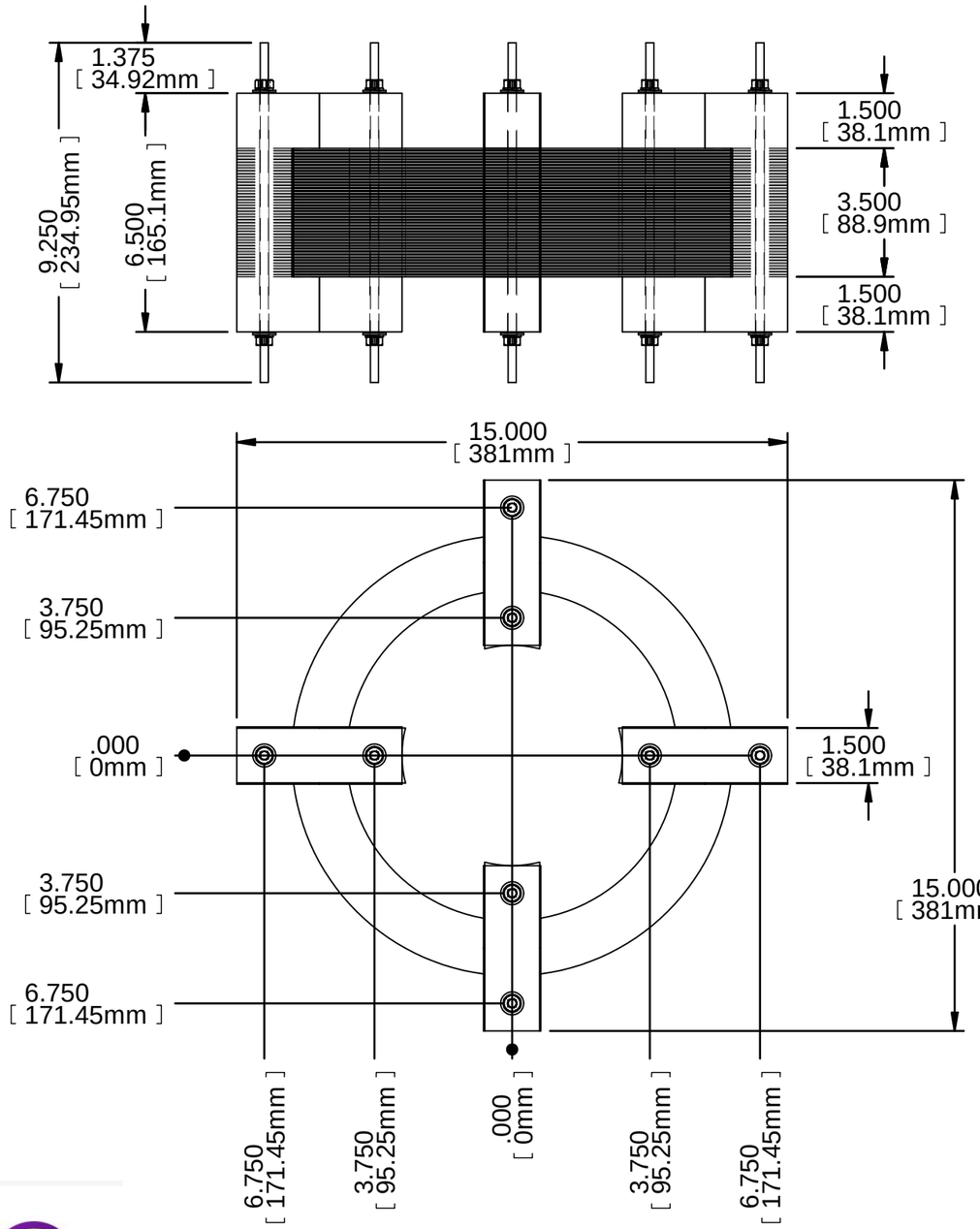
UNLESS OTHERWISE SPECIFIED:
XX +/- .020
XXX +/- .005
XXXX +/- .0005
ANGLES +/- 3 DEG.
FRACTIONAL TOL: +/- 1/64
ALL DIM'S ARE IN INCHES

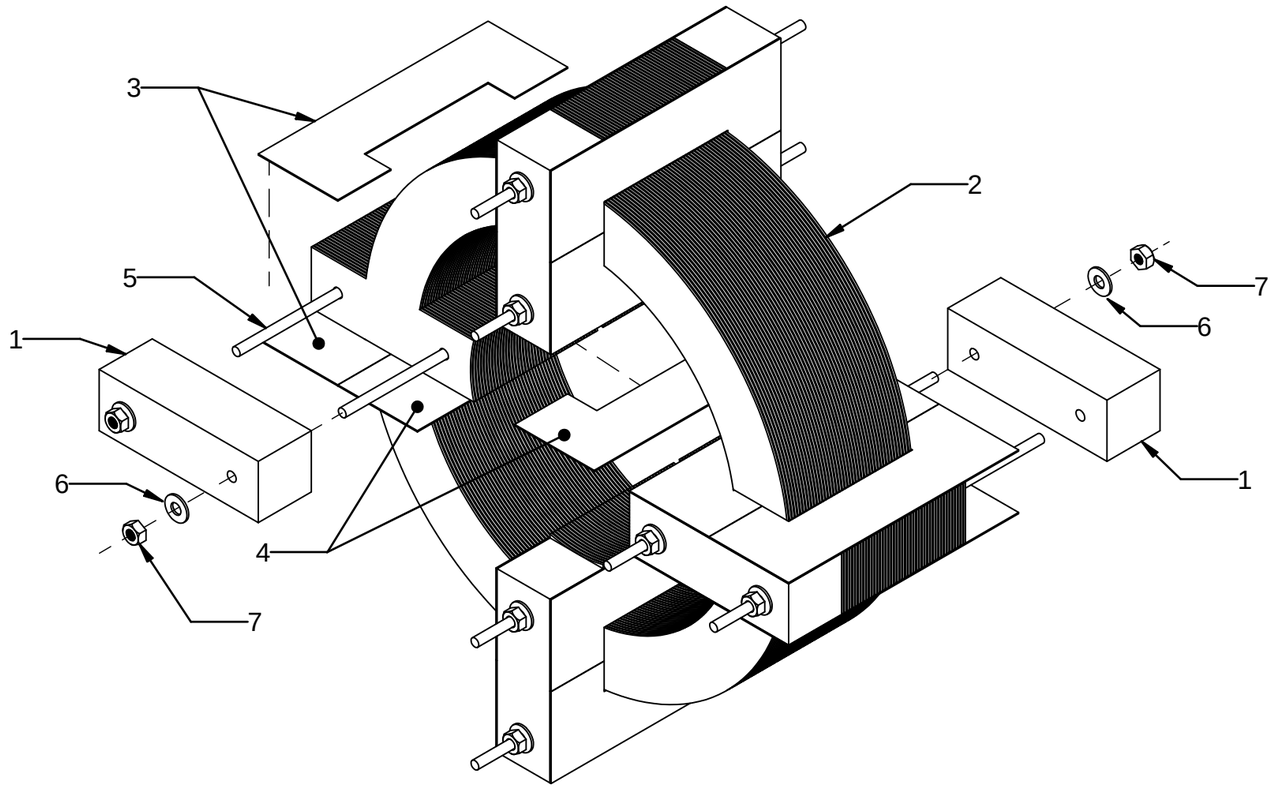
COMPUTER FILE LOC: C:\FTW\101\Mech\A1007, Rotor, Main, GA.DFT

TITLE:
Rotor Assy
10KW Quantum Energy Generator

MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY:	DATE:	
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:	
WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 2.5	DWG. No: B-0-101-A1007	34	REV. 1

Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR





#	P/N	Qty	Description
7	P1006	16	Nut, Hex, 1/4-28 Grade 8
6	P1005	16	Washer, Flat, #1/4
5	P1013	8	Bolt, 1/4-28 x 8.00in, Grade 8, Thread Length 1" (min.) or Fully Threaded Rod
4	P1012	8	Insulation, Pole, Mica Plate, Inner
3	P1011	8	Insulation, Pole. Mica Plate. Outer
2	P1010	140	Lamination, Stator, 24 Gauge, M19 C5, Electrical Steel
1	P1009	8	Spacer, block, 1-1/2" x 1-1/2" x 4-3/8 ", Aluminum, 6061-T6

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PROJ. NAME: 101 | P/N: A1008

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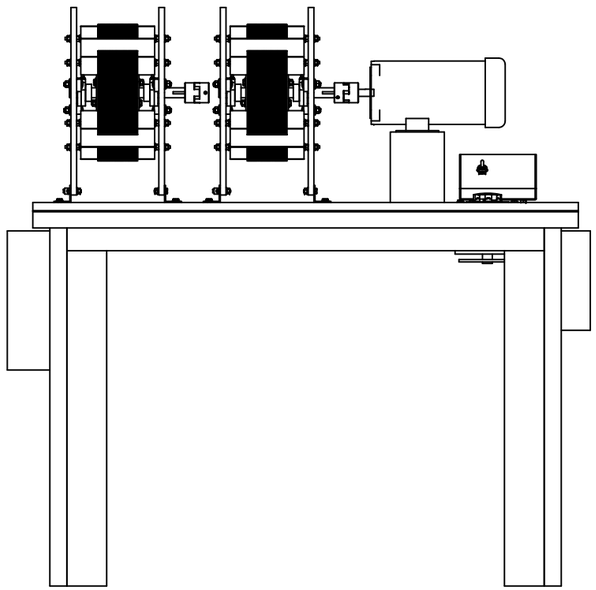
UNLESS OTHERWISE SPECIFIED:
XX +/- .020
XXX +/- .005
XXXX +/- .0005
ANGLES +/- 3 DEG.
FRACTIONAL TOL: +/- 1/64
ALL DIM'S ARE IN INCHES

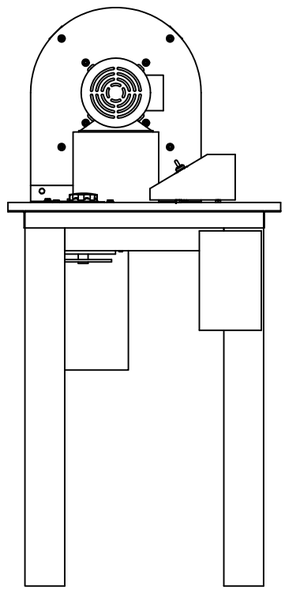
COMPUTER FILE LOC: C:\FTW\101\Mech\A1008, Stator, Main, GA.DFT

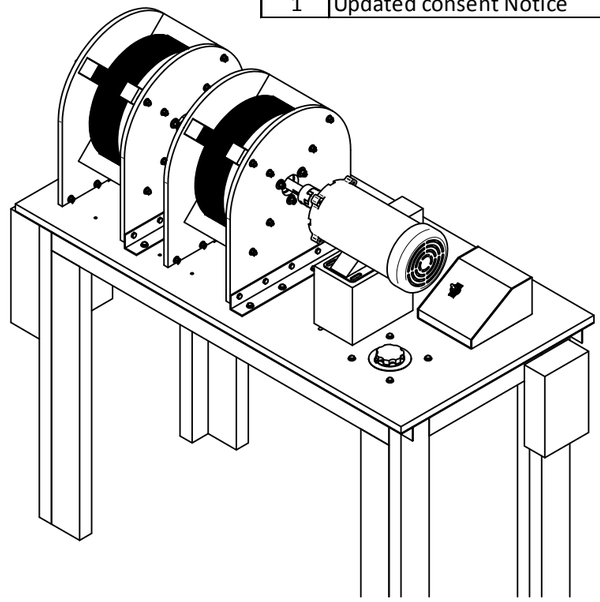
TITLE:
Stator Assy
10KW Quantum Energy Generator

MATERIAL:	DRAWN BY: I. Rivas	DATE: 03.25.15	CHECKED BY:	DATE:
FINISH:	DESIGNED BY:	DATE:	APPROVED BY:	DATE:
WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 4	DWG. No: B-0-101-A1008	REV. 1

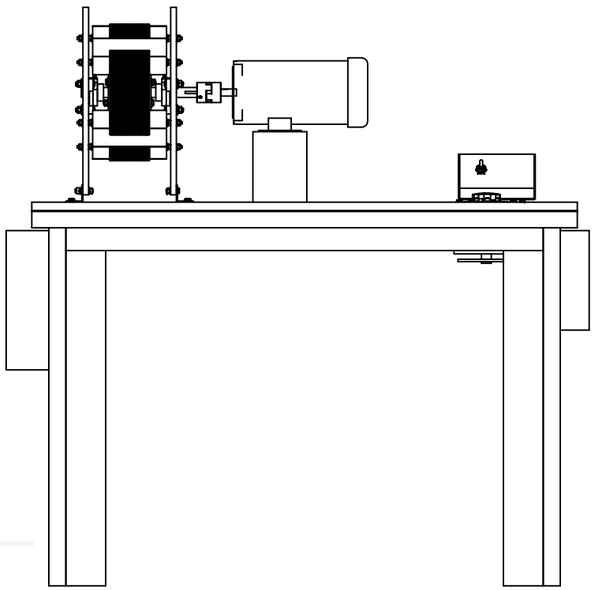
Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR

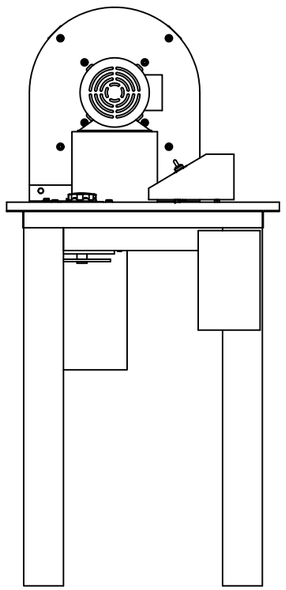


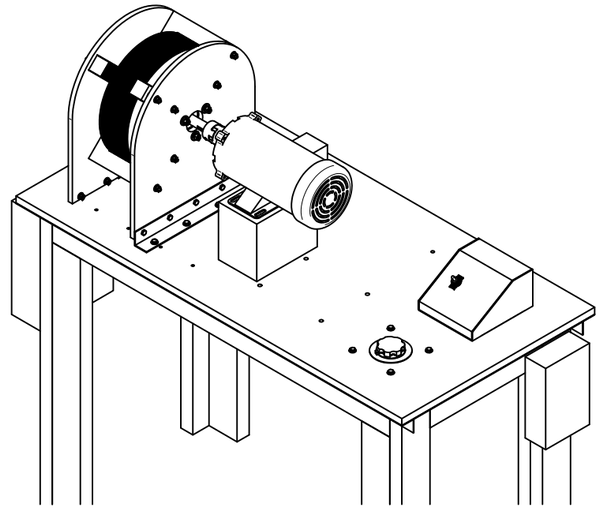




Dual
QEG Core
Mount Option







Single
QEG Core
Mount Option

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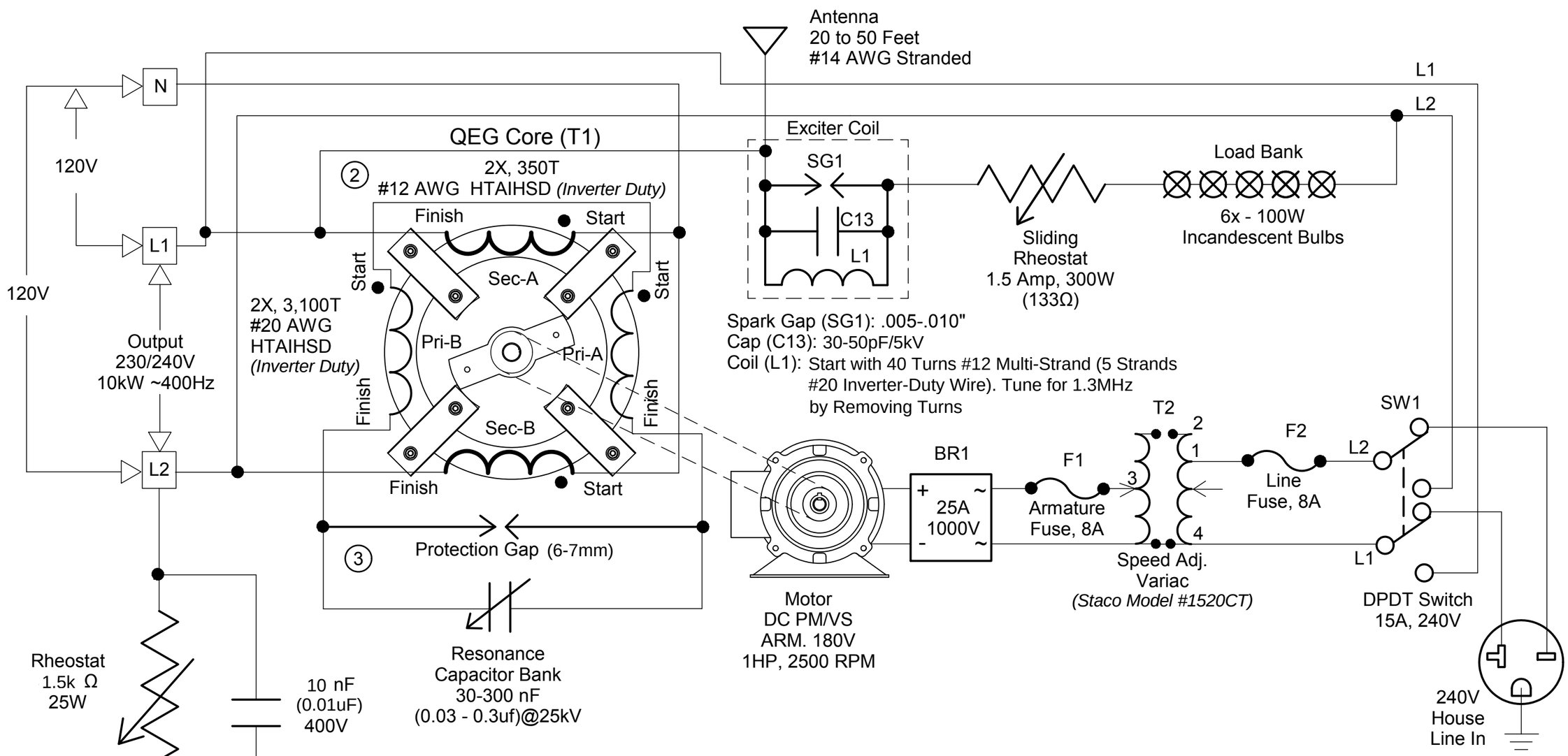
PROJ. NAME: 101	P/N: A1039	UNLESS OTHERWISE SPECIFIED: XX +/- .020 XXX +/- .005 XXXX +/- .0005 ANGLES +/- 3 DEG. FRACTIONAL TOL: +/- 1/64 ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\A1039, QEG Mount Options.DFT		
Quantum Energy Generator CATSKILLS	NEW YORK www.qegfreeenergyacademy.com		TITLE: Single & Dual QEG Core Mount Options		
		MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY: / DATE:
		FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY: / DATE:
		WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 10	DWG. No: B-0-101-A1039 36 / REV. 1

Rev.	Description	Date	Init.
4	Updated consent Notice	03.25.15	IR



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UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\A1000, Schematic, QEG.DFT				
PROJ. NAME: 101	P/N: A1000	TITLE: QEG Schematic			
MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY:	DATE:	
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:	
WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 1	DWG. No: B-3-101-A1000	REV. 4	

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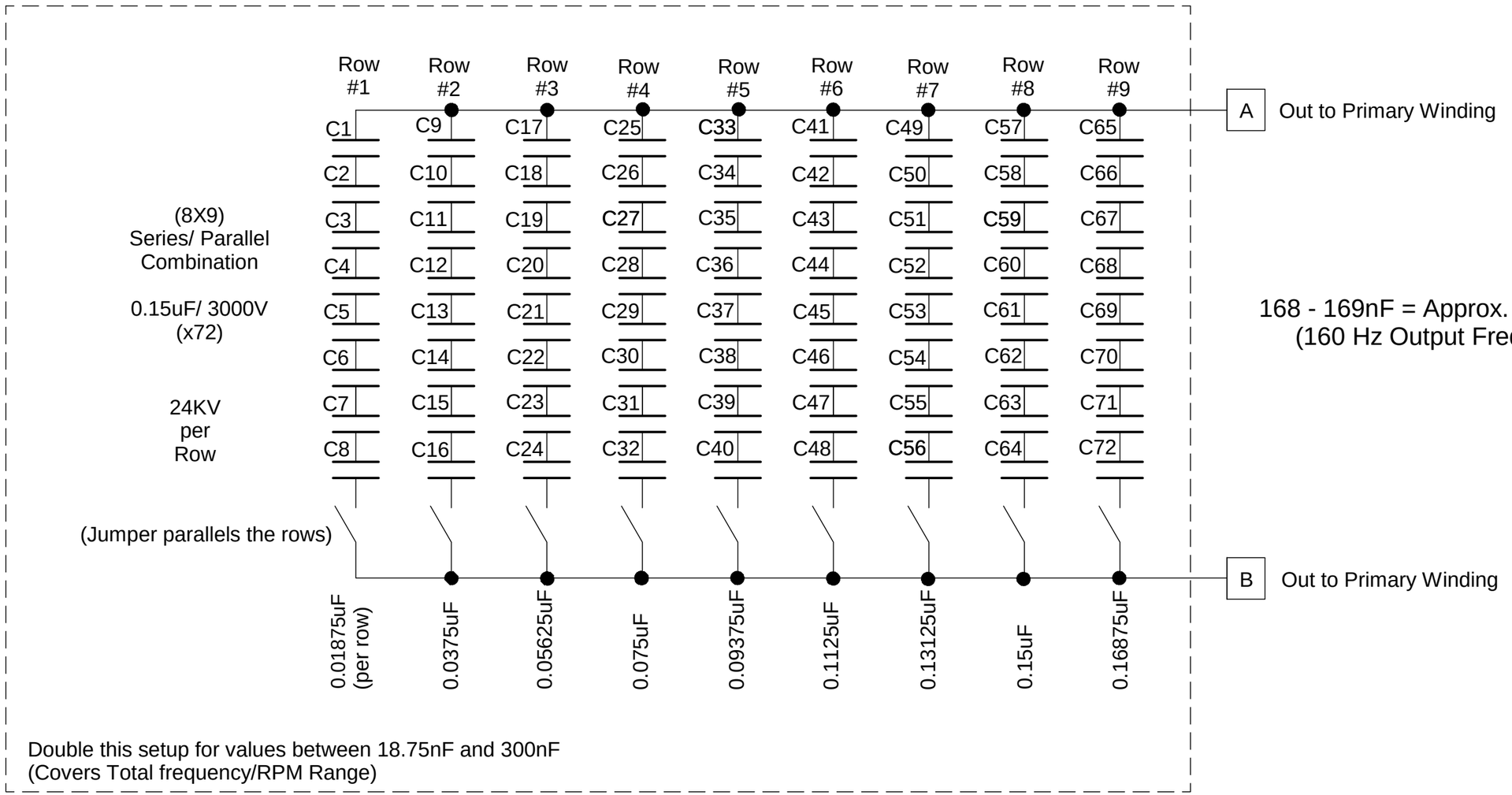
Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR



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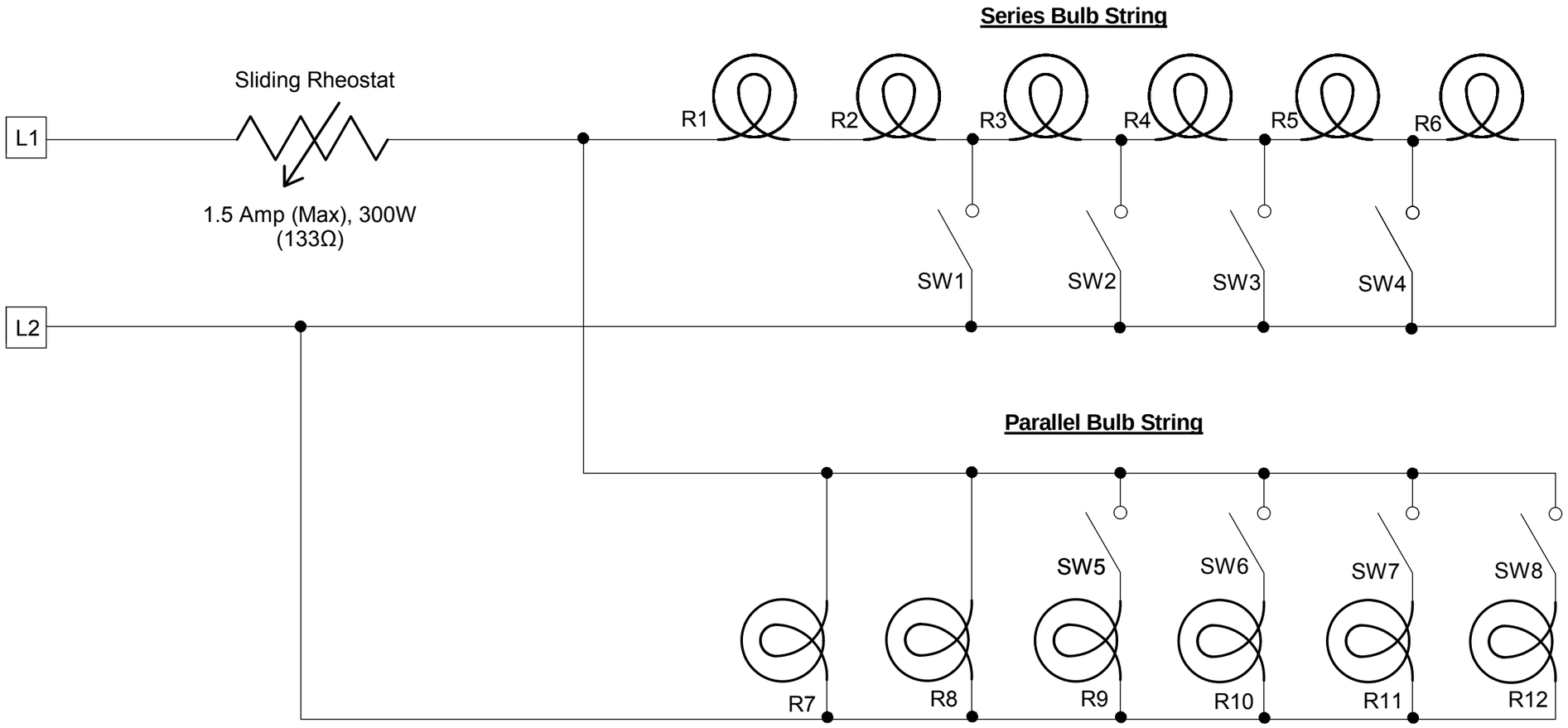
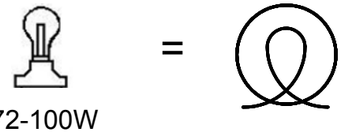
PROJ. NAME: 101	P/N: A1000	UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\A1000, Capacitor Bank.DFT		
Quantum Energy Generator CATSKILLS	NEW YORK www.qegfreeenergyacademy.com		TITLE: Resonance Capacitor Bank Suggested for Experimentation		
		MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY: / DATE:
		FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY: / DATE:
		WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 1	DWG. No: B-5-101-A1000 38 / REV. 1

Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR



Notes:

1. 12x 72-100W Incandescent Bulbs (Halogen Ok)
2. 120/240V Rated - depending on selected System voltage.
3. 

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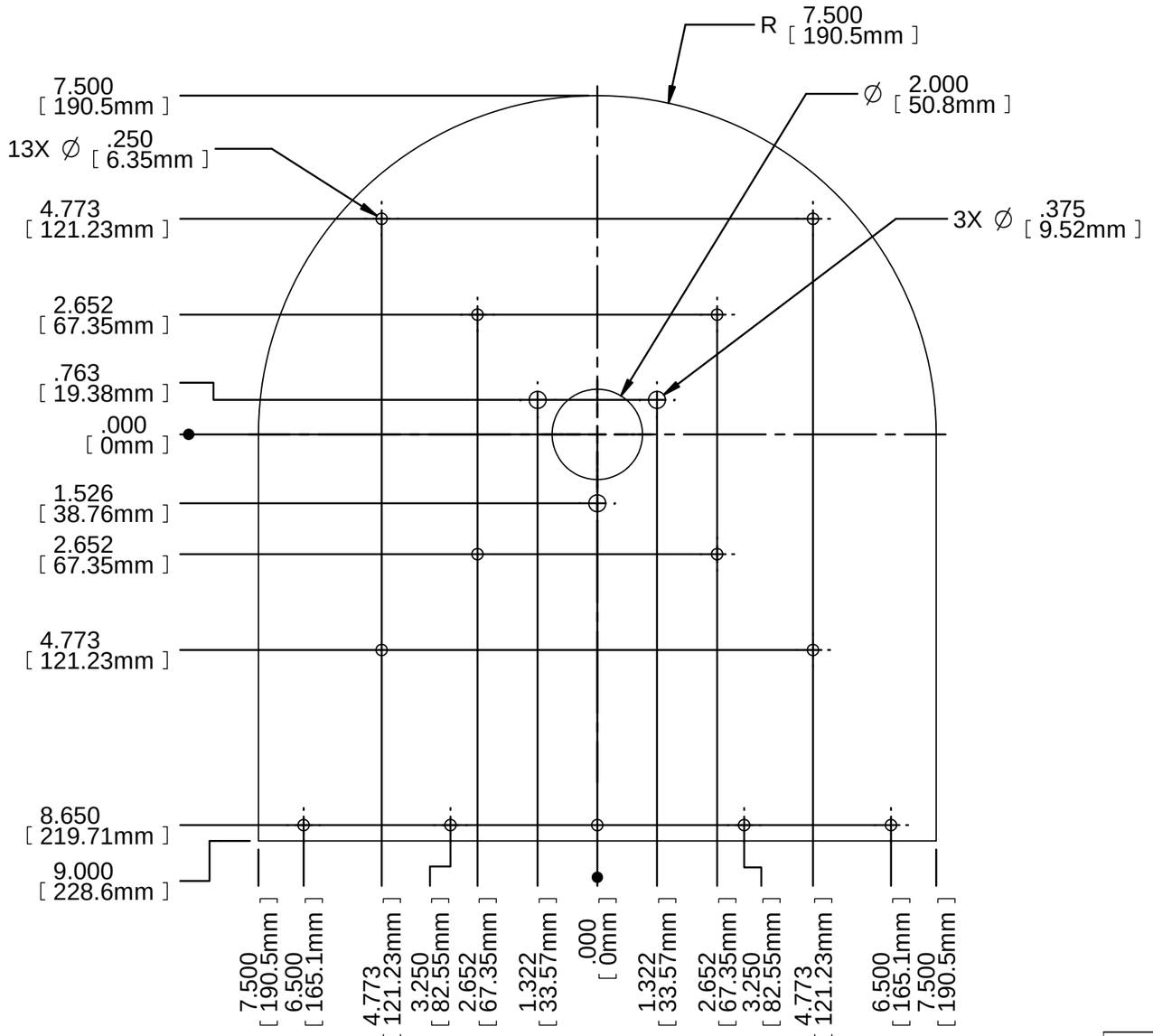
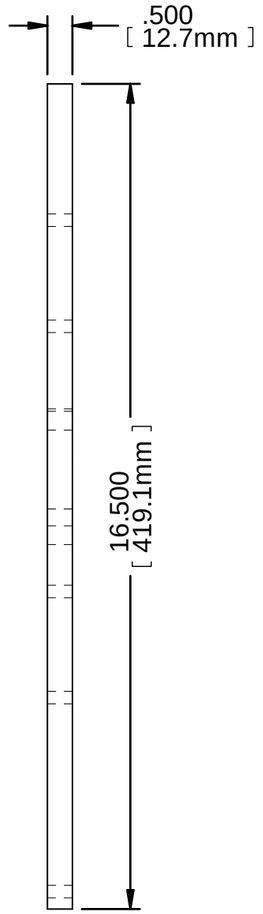
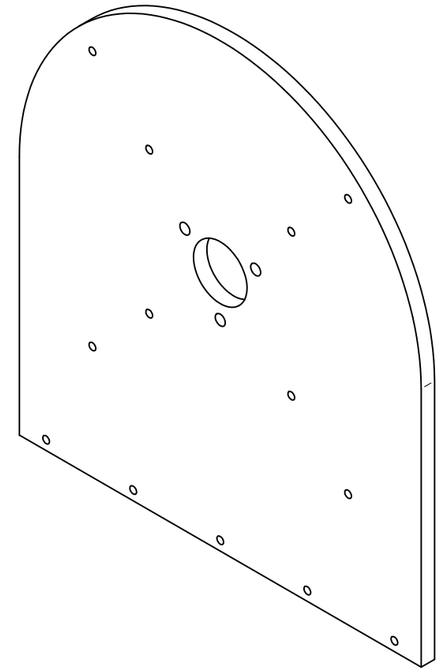
PROJ. NAME: 101	P/N: A1000	UNLESS OTHERWISE SPECIFIED: XX +/- .020 XXX +/- .005 XXXX +/- .0005 ANGLES +/- 3 DEG. FRACTIONAL TOL: +/- 1/64 ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\A1000, Schematic, Load Bank.DFT		
Quantum Energy Generator CATSKILLS	NEW YORK www.qegfreeenergyacademy.com		TITLE: Recommended QEG Experimental Load Bank		
		MATERIAL:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY: / DATE:
		FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY: / DATE:
		WEIGHT:	Q'TY/ASS'Y: 1	SCALE: 1 : 1	DWG. No: B-5-101-A1000 39 / REV. 1

Rev.	Description	Date	Init.
2	Updated consent Notice	03.25.15	IR







① Notes:

1. Material: Can Use G10/FR4, Phenolic Types CE or LE, or Clear Polycarbonate
2. Used with Bearing, 3 Bolt Flange, P/N SBTRD205-14G 7/8" Bore

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PROJ. NAME: 101	P/N: P1014				
UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\P1014, Plate, End, 15x16.5.DFT				
	TITLE: Plate, End, 15in x 16.5in x 1/2in Fiberglass, Laminate, Epoxy, Reinforced				
MATERIAL: See Note	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY:	DATE:	
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:	
WEIGHT:	Q'TY/ASS'Y: 2	SCALE: 1 : 3	DWG. No: B-0-101-P1014	REV. 2	

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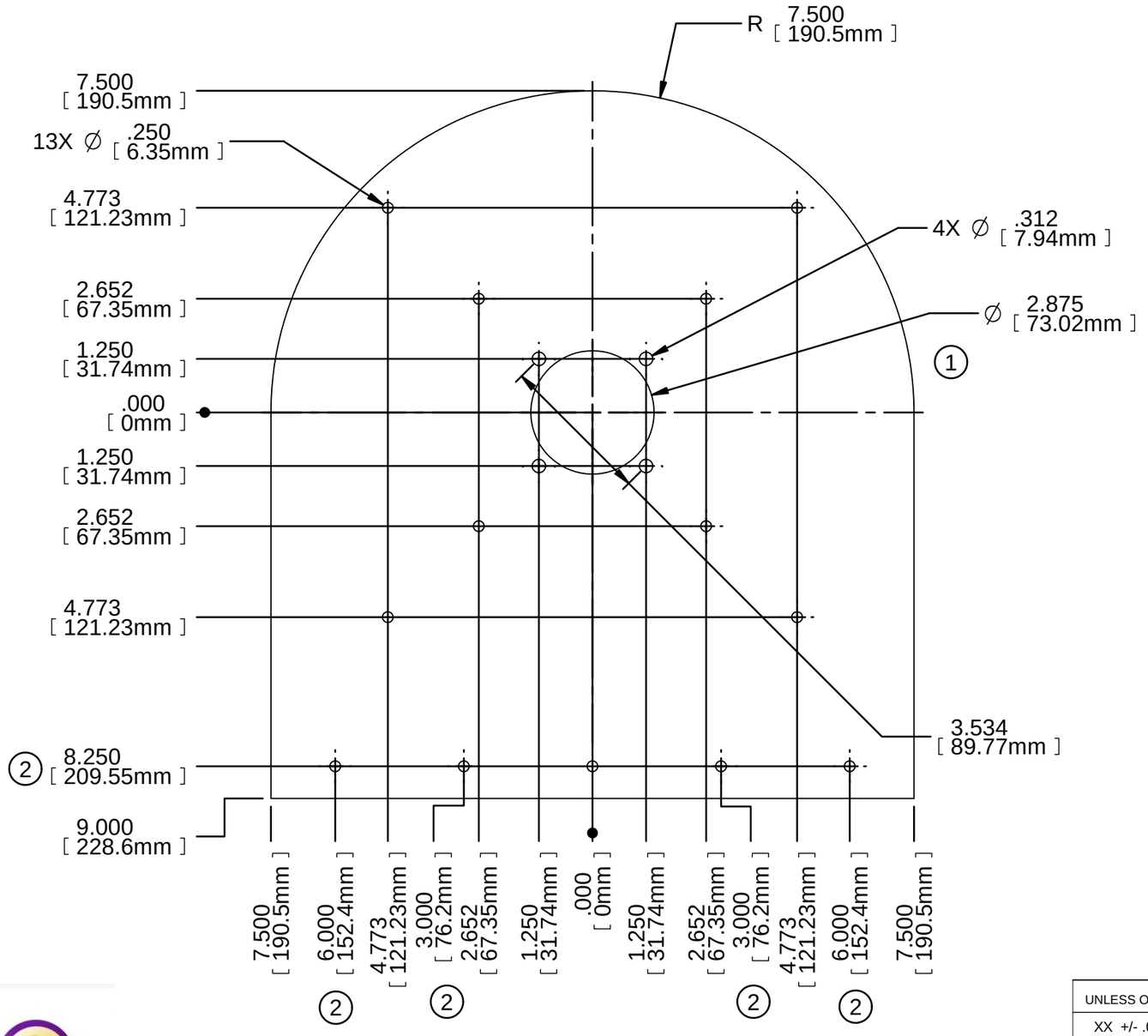
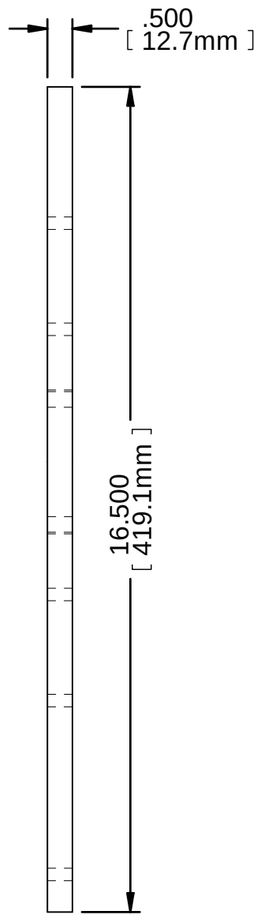
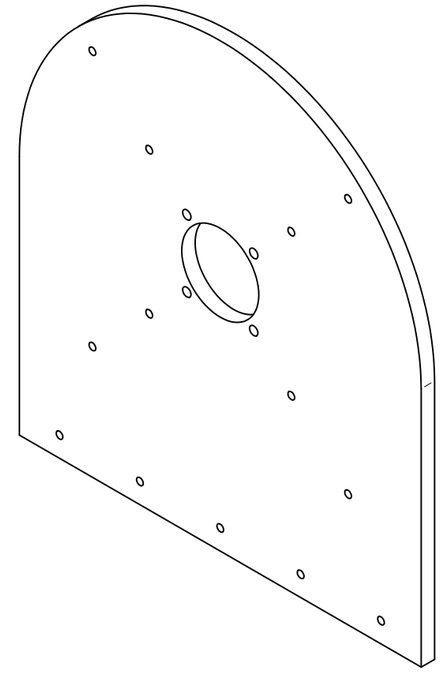
Rev.	Description	Date	Init.
2	8.25 w. 8.65, 6.0 w. 6.5, 3.0 w. 3.25	11.02.15	IR







Notes:

1. Material: Can Use G10/FR4, Phenolic Types CE or LE, or Clear Polycarbonate
2. Used with Bearing, 4-Bolt Flange, P/N FC7/8-RHP, 7/8" Bore

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PROJ. NAME: 101	P/N: P1040	UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\P1040, Plate, End, 15x16.5.DFT		
			TITLE: Plate, End, 15in x 16.5in x 1/2in Fiberglass, Laminate, Epoxy, Reinforced		
MATERIAL: See Note		DRAWN BY: Ivan Rivas	DATE: 11.02.15	CHECKED BY:	DATE:
FINISH:		DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:		Q'TY/ASS'Y: 2	SCALE: 1 : 3	DWG. No: B-0-101-P1040	REV. 2

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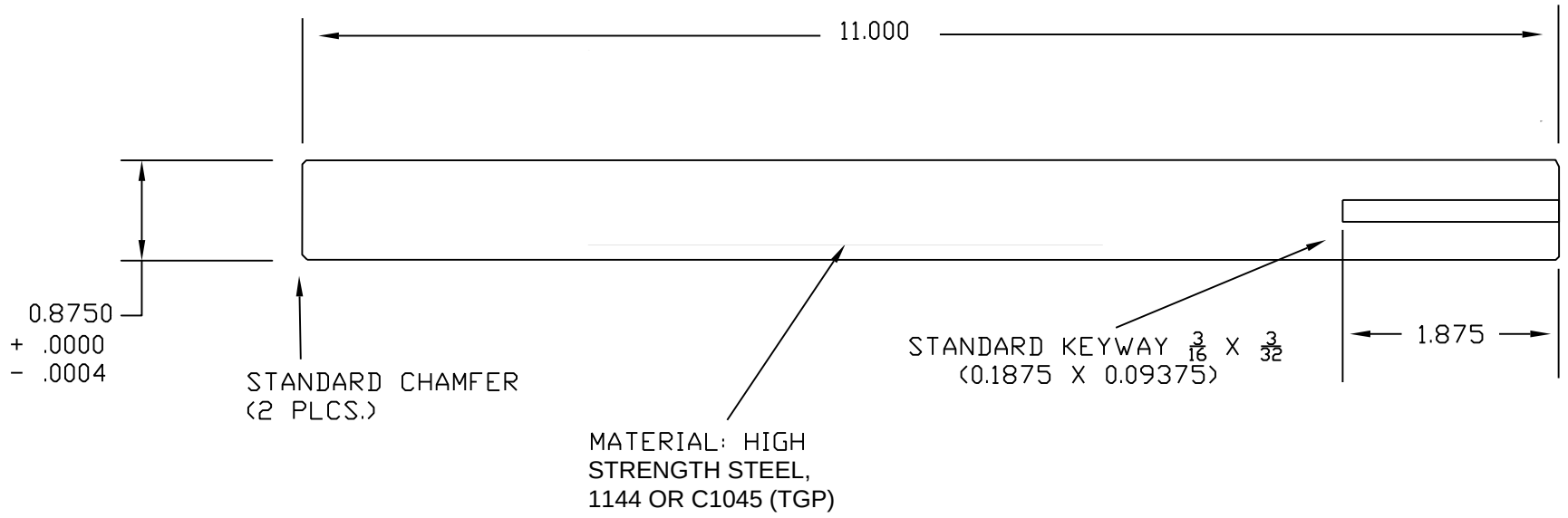
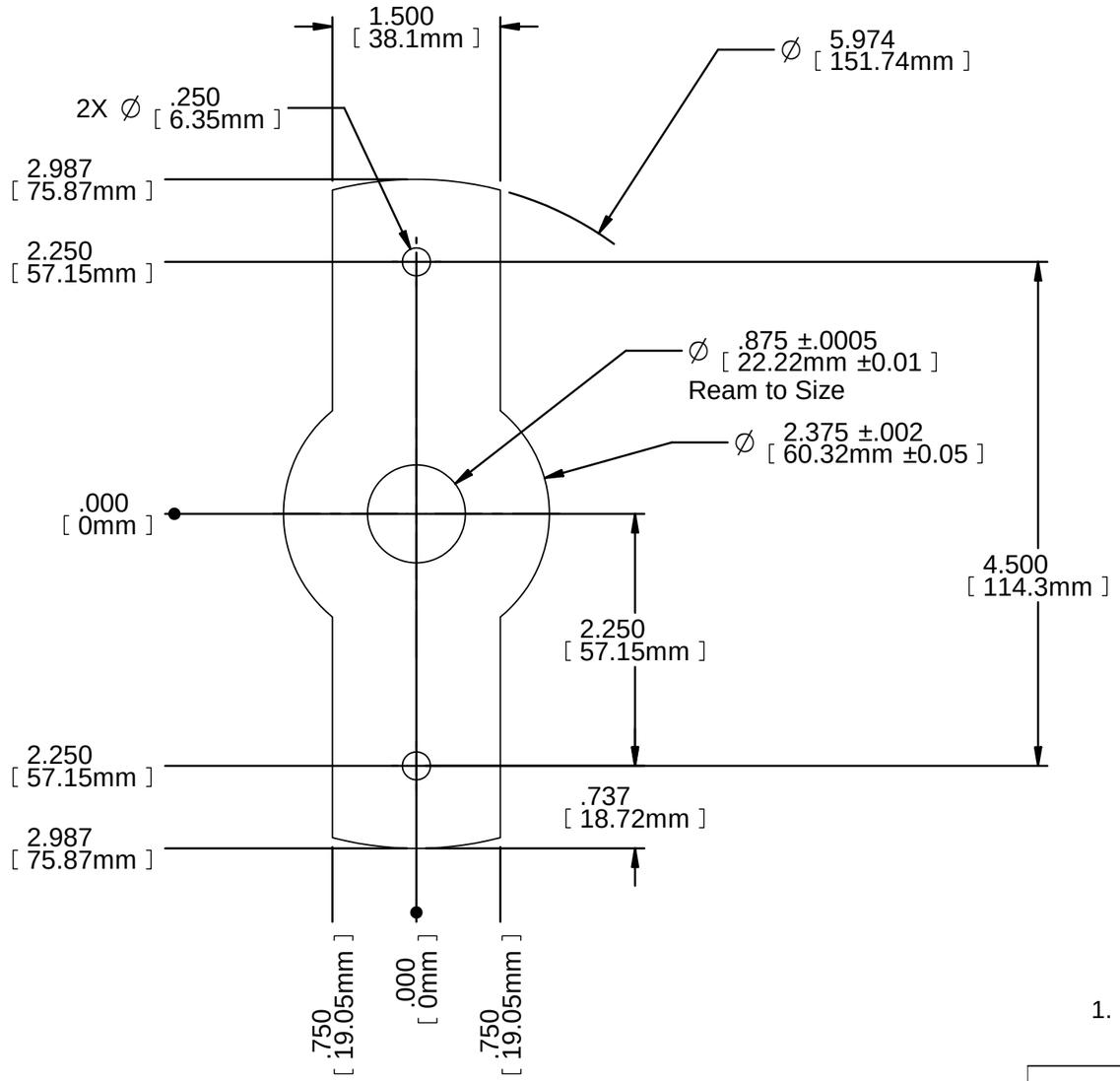
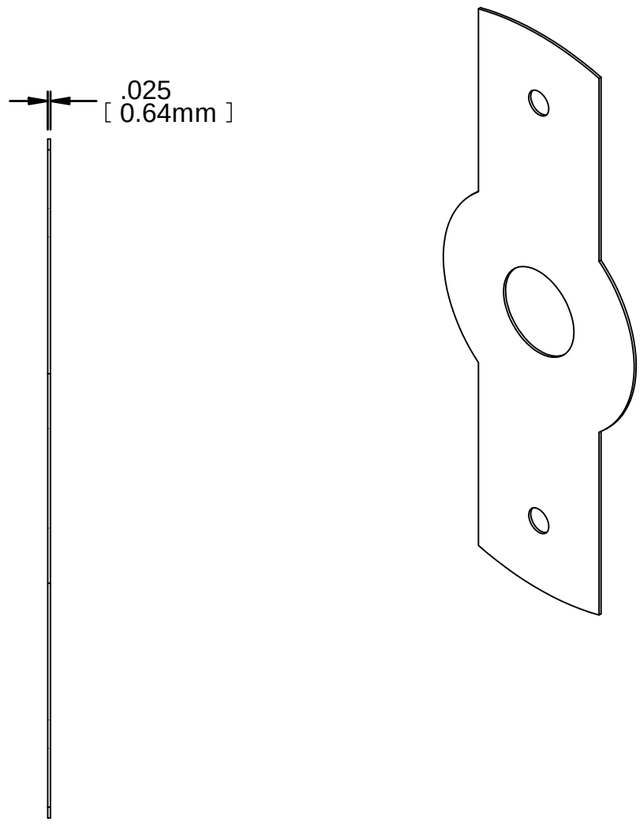
SHAFT DETAIL



Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR





Note:
1. Stack and Bolt, Bond, or Weld Laminations to Height of 3.5" +/-.025" (1 Lamination)

Fix the World
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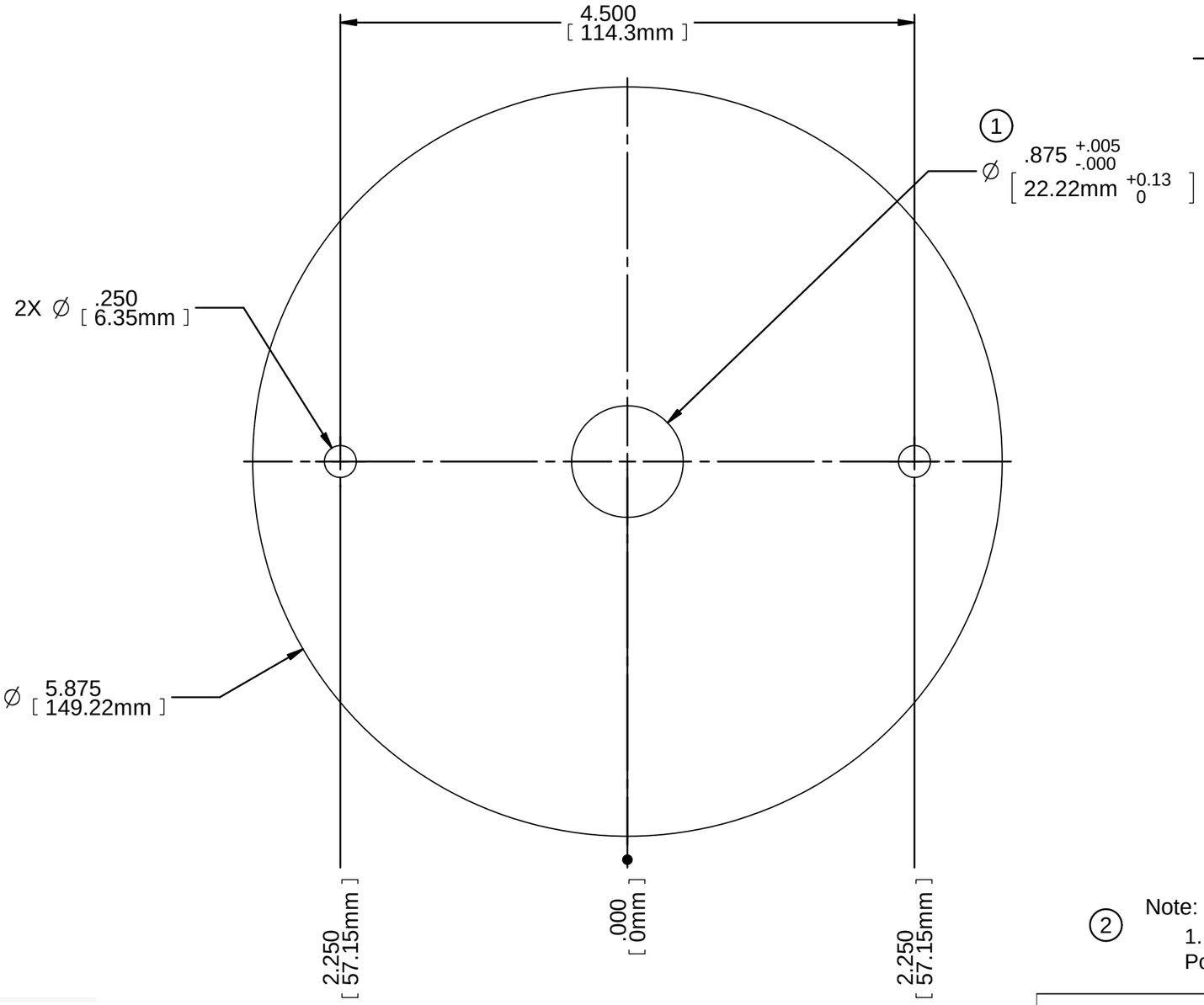
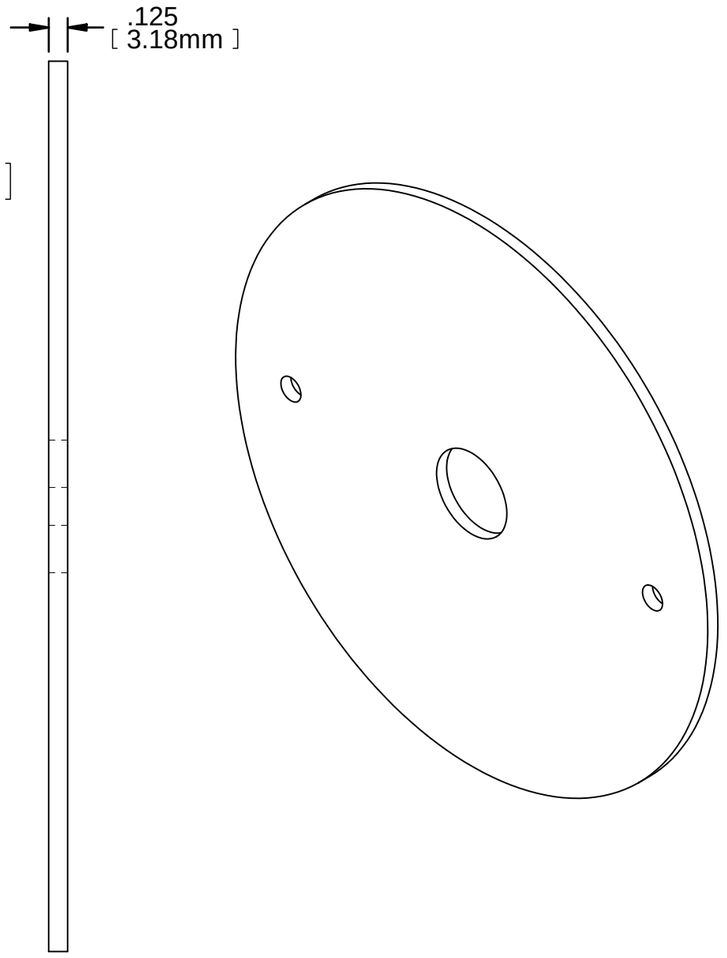
PROJ. NAME: 101	P/N: P1002	UNLESS OTHERWISE SPECIFIED: XX +/- .020 XXX +/- .005 XXXX +/- .0005 ANGLES +/- 3 DEG. FRACTIONAL TOL: +/- 1/64 ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\P1002, Rotor.DFT		
Quantum Energy Generator CATSKILLS	NEW YORK www.qegfreeenergyacademy.com	MATERIAL: 24GA/ M19C5	TITLE: Rotor Generator Magnetic Core		
		FINISH:	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY: / DATE:
		WEIGHT:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY: / DATE:
			Q'TY/ASS'Y: 140	SCALE: 3 : 4	DWG. No: B-0-101-P1002 43 / REV. 1

Rev.	Description	Date	Init.
3	Updated consent Notice	03.25.15	IR





2 Note:

1. Material: Can Use G10/FR4, Phenolic Types CE or LE, or Clear Polycarbonate

Fix the World
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PROJ. NAME: 101	P/N: P1001	UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\P1001, Plate, Rotor.DFT		
			TITLE: Shroud, 1/8in Thk x 5.875in Dia. Fiberglass, Laminate, Epoxy, Reinforced		
		MATERIAL: See Note	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY: / DATE:
		FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY: / DATE:
		WEIGHT:	Q'TY/ASS'Y: 2	SCALE: 1 : 1	DWG. No: B-0-101-P1001 44 / REV. 3

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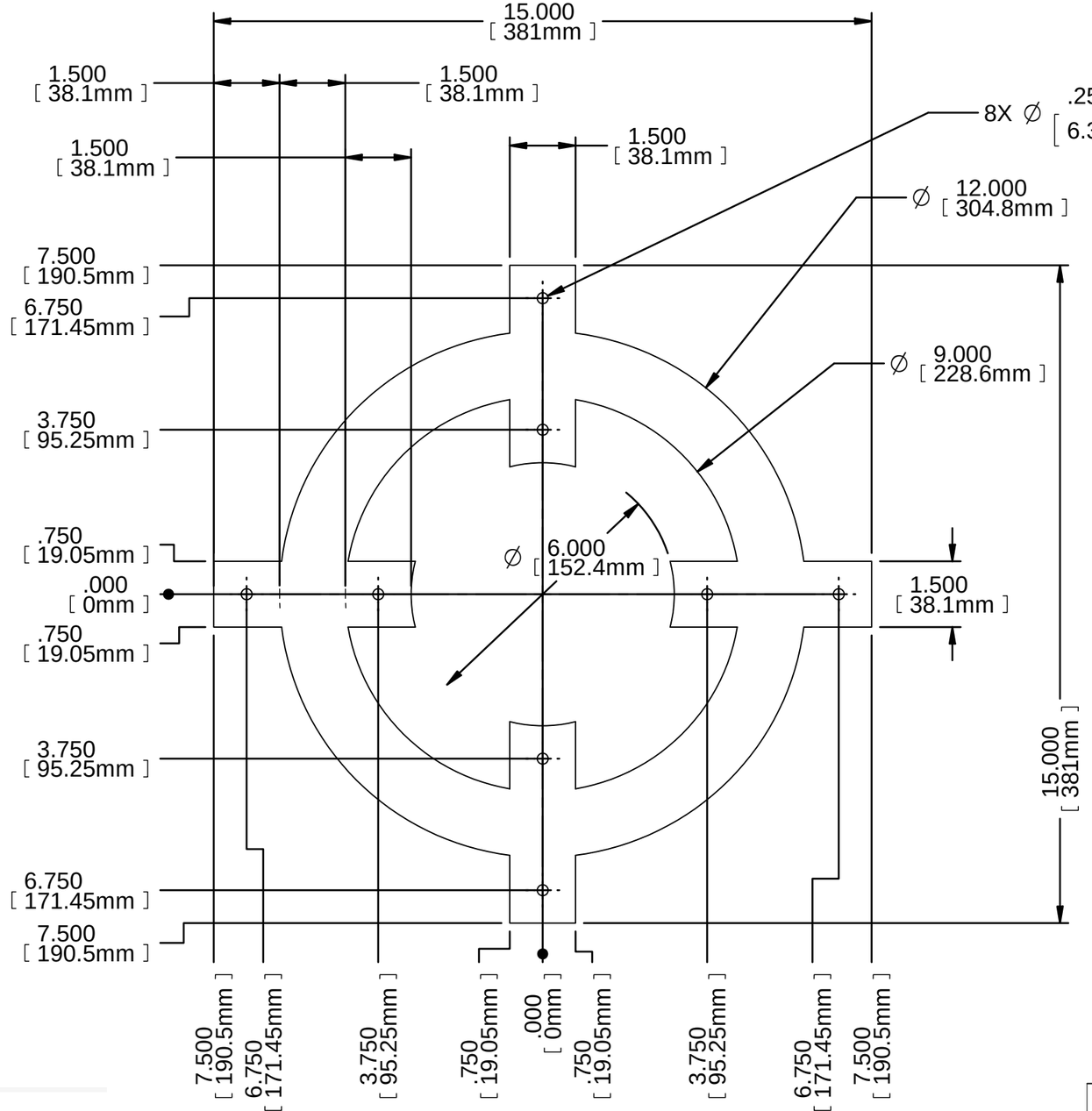
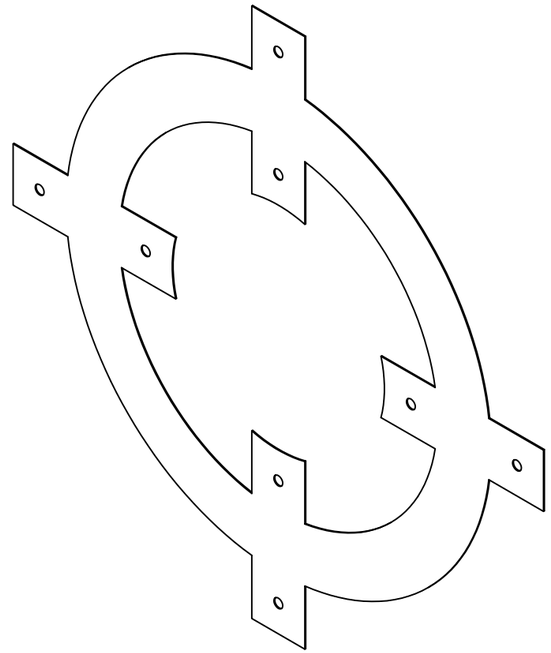
Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR





Note:

1. Stack and Bolt, Bond, or Weld Laminations to Height of 3.5" +/-.025" (1 Lamination)

PROJ. NAME: 101	P/N: P1010	UNLESS OTHERWISE SPECIFIED: XX +/- .020, XXX +/- .005, XXXX +/- .0005, ANGLES +/- 3 DEG., FRACTIONAL TOL: +/- 1/64, ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\P1010, Stator, pg1.DFT		
			TITLE: Stator Generator Magnetic Core		
MATERIAL: 24GA/ M19C5		DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY:	DATE:
FINISH:		DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:		Q'TY/ASS'Y: 140	SCALE: 1 : 3	DWG. No: B-0-101-P1010	REV. 1

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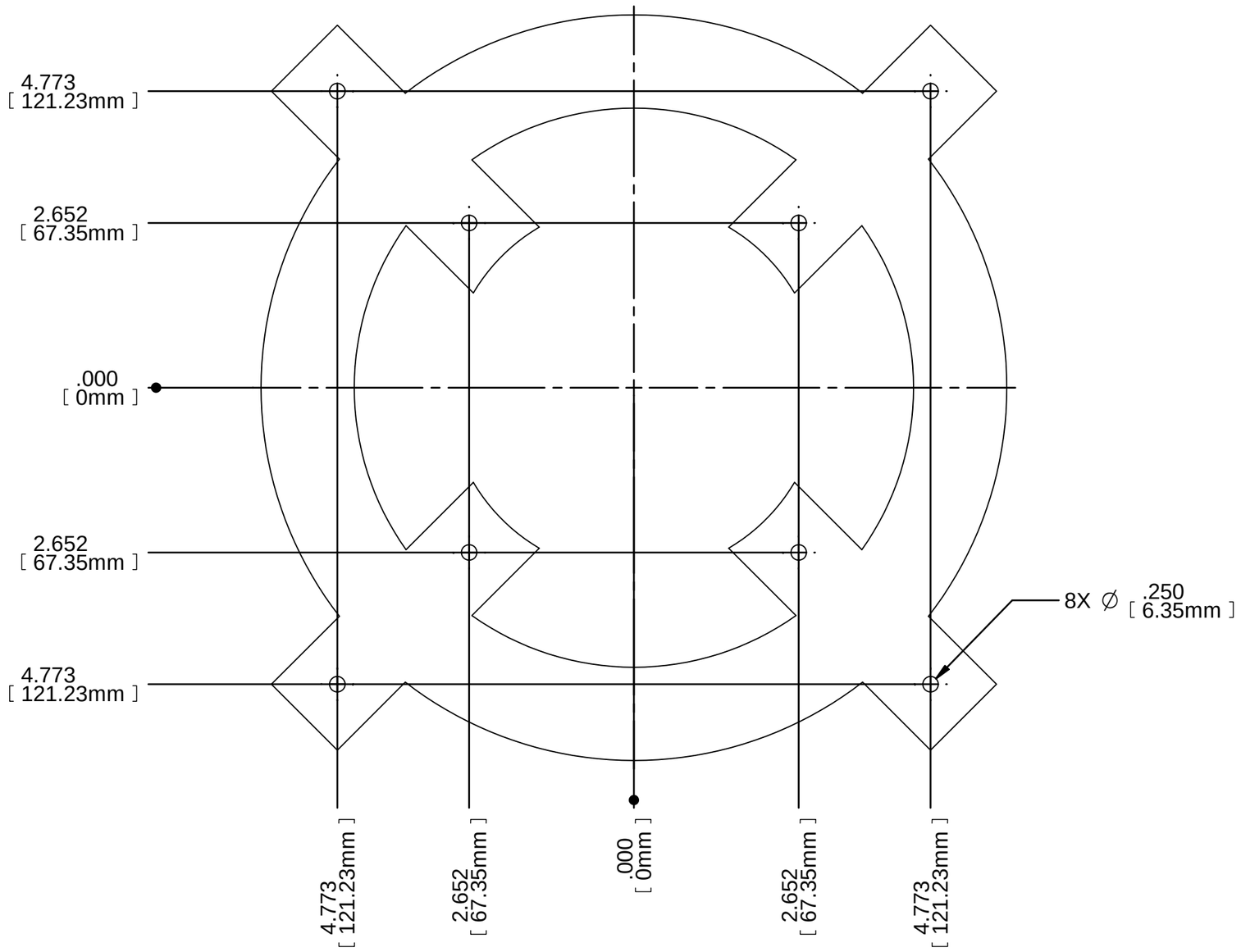
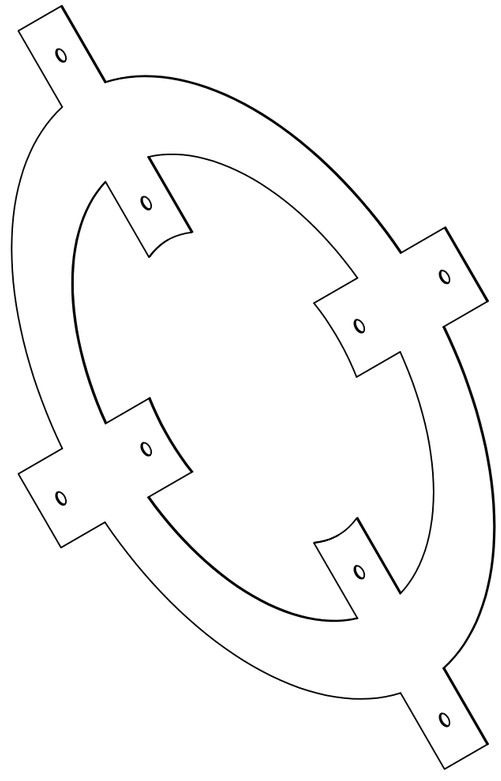
Rev.	Description	Date	Init.
1	Updated consent Notice	03.25.15	IR





PROJ. NAME: 101	P/N: P1010

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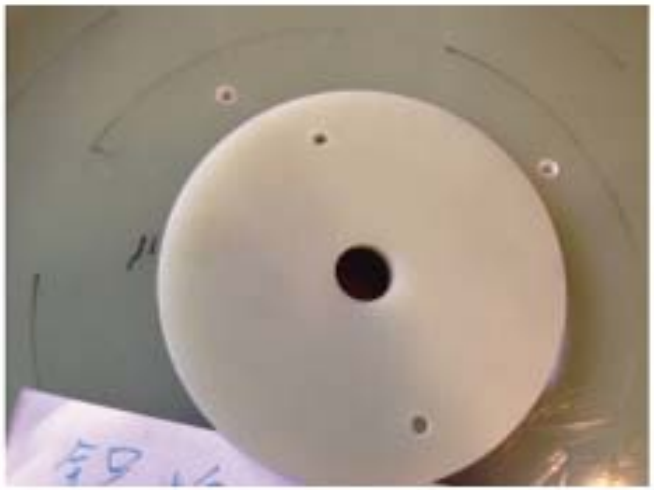
UNLESS OTHERWISE SPECIFIED: XX +/- .020 XXX +/- .005 XXXX +/- .0005 ANGLES +/- 3 DEG. FRACTIONAL TOL: +/- 1/64 ALL DIM'S ARE IN INCHES	COMPUTER FILE LOC: C:\FTW\101\Mech\P1010, Stator, pg2.DFT			
	TITLE: Stator at 45 Deg., Mount Position Generator Magnetic Core			
MATERIAL: 24GA/ M19C5	DRAWN BY: Ivan Rivas	DATE: 03.25.15	CHECKED BY:	DATE:
FINISH:	DESIGNED BY: James Robitaille	DATE:	APPROVED BY:	DATE:
WEIGHT:	Q'TY/ASS'Y: 140	SCALE: 1 : 2	DWG. No: B-1-101-P1010	REV. 1



Shroud (2 needed)

Shaft

Stator

Spacers

DIY Toroidal Winder

End Plate (2 needed)

Stator, Rotor, Shaft

Installing cut mica plates

Installing front end plate

Rotor

Installing outer wrap on core

12 AWG Magnet Wire

Ironhorse Brand Drive Motor

20 AWG Magnet Wire

Rocker Switches

Resonance Capacitors

Bridge Rectifier

(2) 3 bolt flange bearing

OR

(2) 4 bolt flange bearing

Base/Platform

Finished Bore Pulley

OR

Bushed Pulley

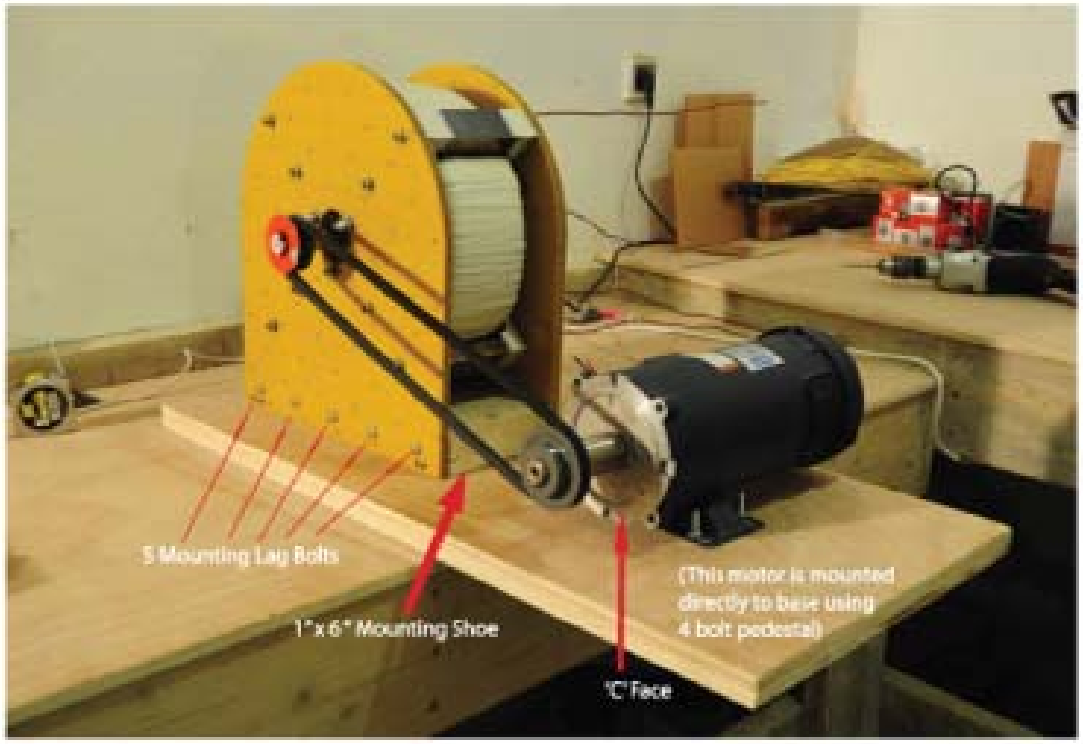
8 Ft. Grounding Rod

Euro Barrier Strip

Core on winding machine

Motor Controller (optional)

Motor Controller Box (optional)



Mica fixed and variable capacitors

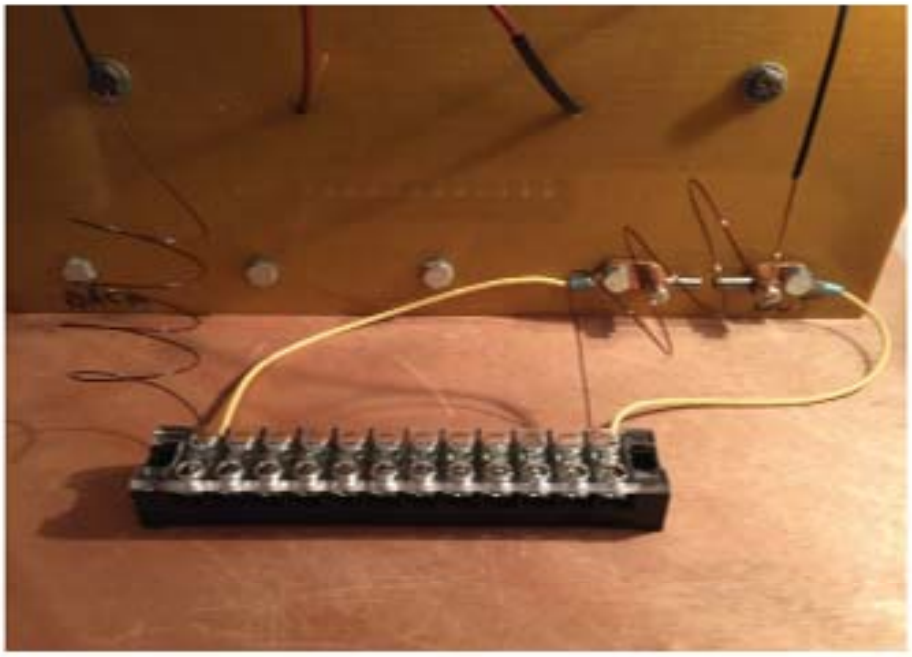
Mica Tape

Bonding Compound/Activator

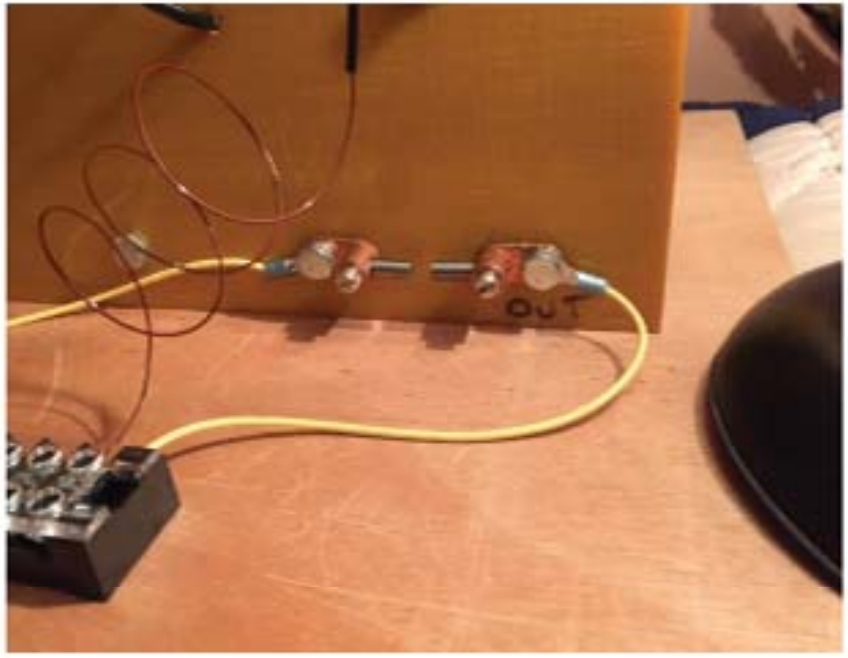
Optional filter cap for motor

Exciter Coil with Litz wire

Load Bank Example



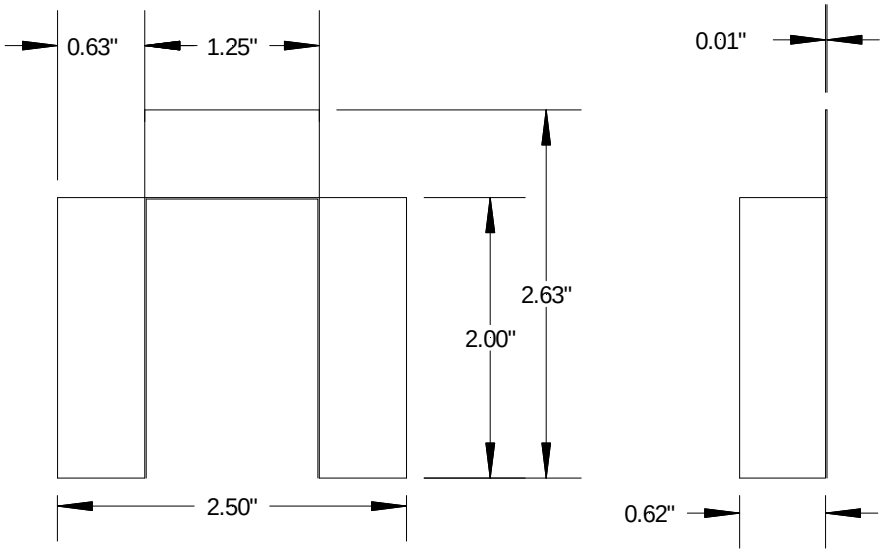
Protection Gap Wiring



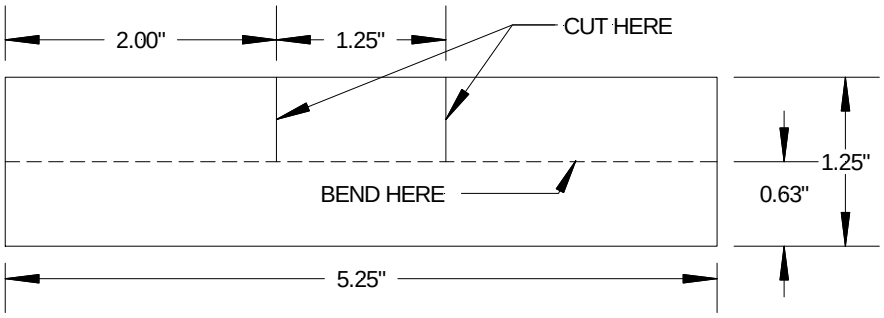
Protection Gap Mounting

NOMEX CORNER INSULATION:

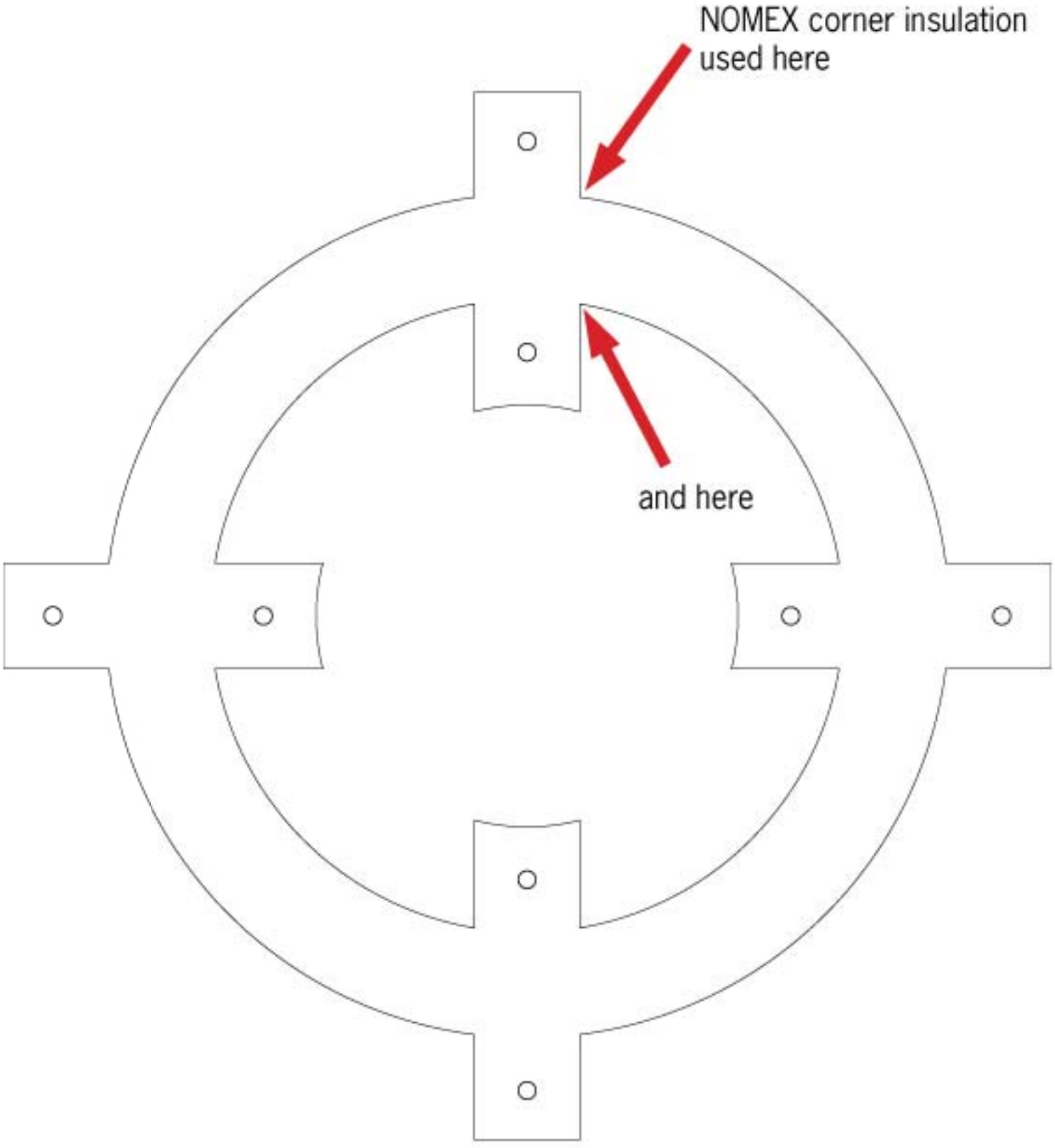
These are pieces (16 per core) of DuPont Nomex Type 418 high-voltage insulating paper, .010 to .025" thickness, used in the corner between winding area of the core and the faces of each pole piece. This is used to keep the wire from falling down to the bare steel in the corner between mica insulating plates and mica tape wrap. This is provided by Torelco when ordering a fully-processed core.



MATERIAL: .010 NOMEX



MATERIAL: .010 NOMEX


NOMEX corner insulation
used here
and here

DuPont™
NOMEX®

NOMEX® TYPE 418 AND 419

TECHNICAL DATA SHEET

NOMEX® Type 418 is designed for high-voltage applications, including motor conductor and coil wrap, transformer ground and layer insulation. It is a calendered product with high inherent dielectric strength (30 to 40 kV/mm), which can be readily impregnated with varnishes where this is desirable. NOMEX® Type 418 is available in 5 thicknesses, from 0.08 to 0.36 mm (3 to 14 mil). This calendered blend of aramid and mica offers increased voltage endurance over NOMEX® Type 410 when subjected to corona attack.

NOMEX® Type 419 is the uncalendered precursor of NOMEX® Type 418, and is available in two thicknesses, 0.18 and 0.33 mm (7 and 13 mil). NOMEX® Type 419 is used in applications which take advantage of the lower density (0.5) which allows improved conformability and saturability.

Electrical properties

The typical electrical property values for NOMEX® Type 418 and NOMEX® Type 419 papers are shown in Table I. The AC Rapid Rise dielectric strength data of Table I, representing voltage stress levels, withstood 10 to 20 seconds at a frequency of 60 Hz. These values differ from long-term strength potential. DuPont recommends that continuous stresses in transformers not exceed 3.2 kV/mm (80 V/mil) to minimize the risk of partial discharges (corona). The Full Wave Impulse dielectric strength data of Table I were generated on flat sheets, such as in layer and barrier applications. The geometry of the system has an effect on the actual impulse strength values of the material.

The dielectric strength data are typical values and not recommended for design purposes. Design values can be supplied upon request.

Please note:

The properties in this data sheet are typical, or average values and should not be used as specification limits. Unless otherwise noted, all properties were measured in air under "standard" conditions (in equilibrium at 23˚C, 50% relative humidity). Note that, like other products of papermaking technology, NOMEX® papers have somewhat different properties in the papermaking machine direction (MD) compared to the cross direction (XD). In some applications it may be necessary to orient the paper in the optimum direction to obtain its maximum potential performance.

Table I – **TYPICAL ELECTRICAL PROPERTIES**

Type		418					419	
Nominal thickness (mil)		3	5	8	10	14	7	13
(mm)		0.08	0.13	0.20	0.25	0.36	0.18	0.33
Dielectric Strength								
AC rapid rise[1]								
(V/mil)		770	890	1020	965	920	395	370
(kV/mm)		30.3	35.0	40.2	38.0	36.2	15.6	14.6
Full wave impulse[2]								
(V/mil)		1600	1600	1600	1700	1500	650	650
(kV/mm)		63	63	63	67	59	26	26
Dielectric constant[3]	50% RH	2.9	3.6	4.0	4.1	3,4	2.0	2.0
at 60 Hz	Dry[4]	2.3	2.5	2.5	2.5	2.1	1.4	1.5
Dissipation factor[3]	50% RH	130	120	140	140	150	140	130
at 60 Hz (x10^{-3})	Dry[4]	6	6	6	6	5	11	14
Volume resistivity[5]	50% RH	$(10)^{13}$	$(10)^{13}$	$(10)^{13}$	$(10)^{13}$	$(10)^{14}$	$(10)^{13}$	$(10)^{13}$
(ohm.cm)	Dry[4]	$(10)^{16}$	$(10)^{16}$	$(10)^{16}$	$(10)^{16}$	$(10)^{15}$	$(10)^{16}$	$(10)^{16}$
Surface resistivity[5]	50% RH	$(10)^{11}$	$(10)^{12}$	$(10)^{12}$	$(10)^{12}$	$(10)^{13}$	$(10)^{13}$	$(10)^{13}$
(ohm/square)	Dry[4]	$(10)^{14}$	$(10)^{15}$	$(10)^{15}$	$(10)^{15}$	$(10)^{15}$	$(10)^{15}$	$(10)^{16}$

[1] ASTM D-149 using 50mm (2 inches) electrodes, rapid rise; corresponds with IEC 243-1 subclause 9.1, except for electrodes set-up of 50mm (2 inches)

[2] ASTM D-3426

[3] ASTM D-150

[4] Values measured at 23°C after one hour drying at 120°C

[5] ASTM D-257

QEG MAGNET WIRE DATA -

PRIMARY WINDINGS - 3100T (X2)

STANDARD AWG SIZE	SQUARE MILLIMETER	NON-STARDARD IEC METRIC SIZE
#20	**0.518591**	0.8128

INSULATING FILM TYPE

HTAIHSD (200° C, POLYESTER POLYAMIDE/IMIDE, **INVERTER DUTY**, NEMA MW35-C

REQUIRED LENGTH/WEIGHT

1 FOOT/TURN (NOMINAL) = 6,200 FEET [1,889.76 M]
@ 3.217 POUNDS / 1,000 FEET = 6.200 X 3.217 = 19.95 POUNDS [9.05 kg]

RECOMMENDED PURCHASE:

21 POUNDS [9.53 kg]
or 6,300 FEET [1,920.24 M]

NOMINAL COATED WIRE DIAMETER	
INCH	MILLIMETER
0.0339	0.8611

SECONDARY WINDINGS - 350T (X2)

STANDARD AWG SIZE	SQUARE MILLIMETER	NON-STARDARD IEC METRIC SIZE
#12	**3.306339**	2.0523

INSULATING FILM TYPE

HTAIHSD (200° C, POLYESTER POLYAMIDE/IMIDE, **INVERTER DUTY**, NEMA MW35-C

REQUIRED LENGTH/WEIGHT

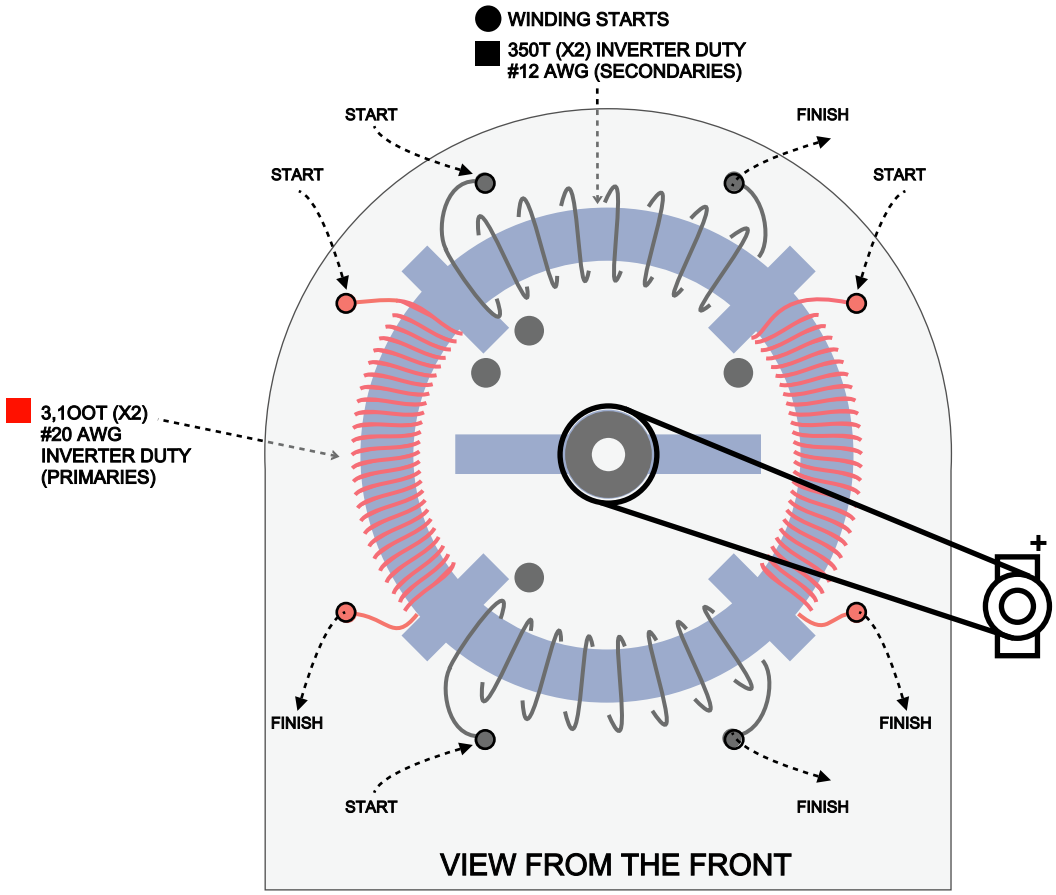
1 FOOT/TURN (NOMINAL) = 700 FEET [213.36 M]
@ 20.13 POUNDS / 1,000 FEET = .700 X 20.13 = 14.1 POUNDS [6.4 kg]

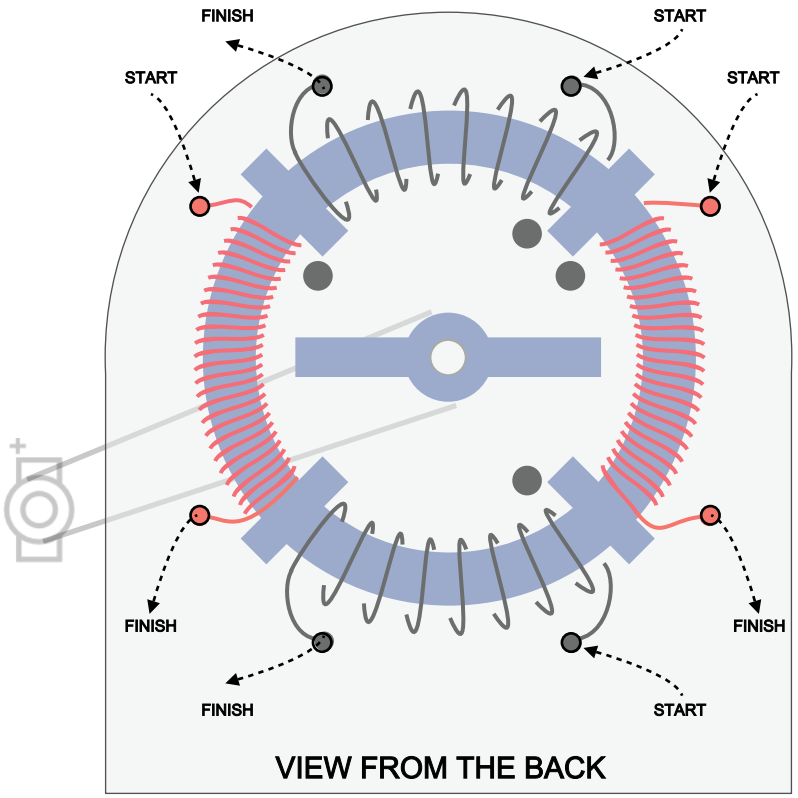
RECOMMENDED PURCHASE:

15 POUNDS [6.8 kg]
or 750 FEET [228.6 M]

NOMINAL COATED WIRE DIAMETER	
INCH	MILLIMETER
0.0838	2.1285

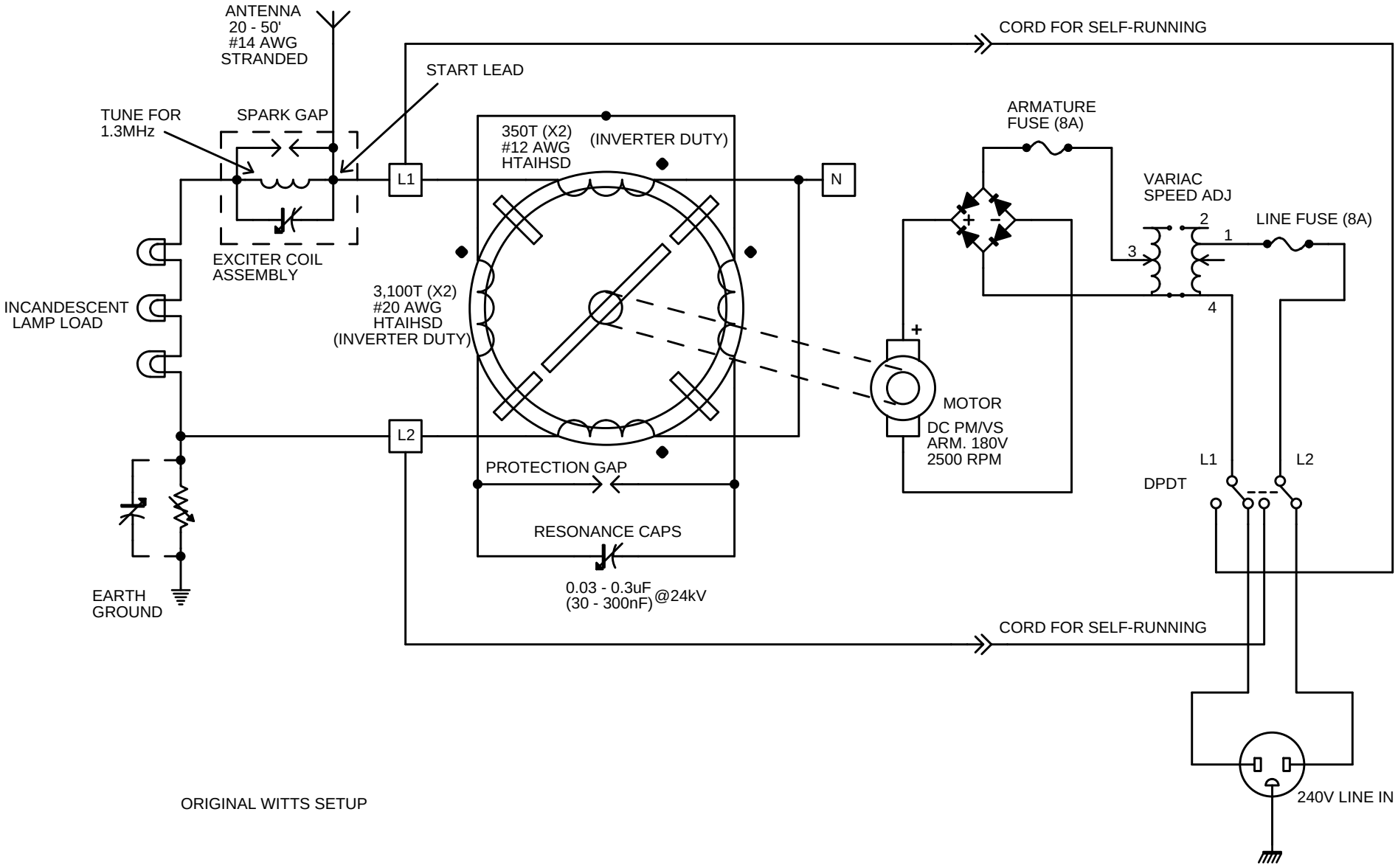
END PANELS WIRING





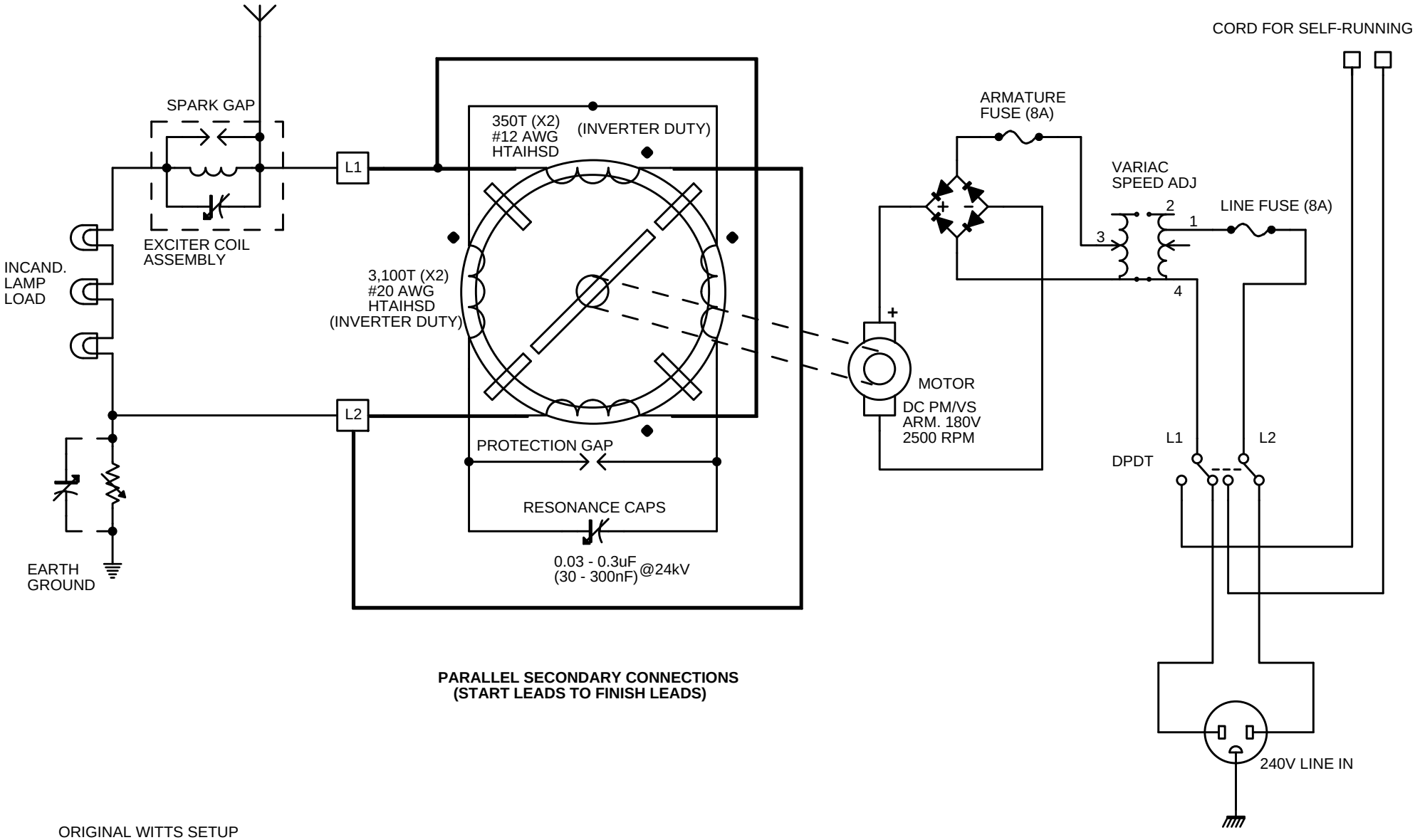
design by Tivon Rivers
www.spacevisuals.com

QEG SCHEMATIC
7 FEB 2015



ORIGINAL WITTS SETUP

PAGE 1 **QEG SCHEMATIC**
2-14-2015



PARALLEL SECONDARY CONNECTIONS
(START LEADS TO FINISH LEADS)

ORIGINAL WITTS SETUP

PAGE 1 **QEG SCHEMATIC**
2-14-2015

TANK CAPACITOR MIX AND MATCH

Discrete Value		Final Value		Total Value of (n) Parallel Rows (nF)				
2000V Rated	**Series Multiplier**	**uF**	**nF**	**X8**	**X9**	**X10**	**X11**	**X12**
0.1uF	X 12	0.008333	8.3	66.4	74.7	83	91.3	99.6
0.15uF	X 12	0.0125	12.5	100	112.5	125	137.5	150
0.2uF	X 12	0.016666	16.6	132.8	149.4	166	182.6	199.2
0.25uF	X 12	0.020833	20.83	166.64	187.47	208.3	229.13	249.96
0.3uF	X 12	0.025	25	200	225	250	275	300
0.35uF	X 12	0.029166	29.16	233.28	262.44	291.6	320.76	349.92
0.4uF	X 12	0.033333	33.3	266.4	299.7	333	366.3	399.6
0.45	X 12	0.0375	37.5	300	337.5	375	412.5	450
0.5uF	X 12	0.041666	41.6	332.8	374.4	416	457.6	499.2
0.55uF	X 12	0.045833	45.83	366.64	412.47	458.3	504.13	549.96
0.6uF	X 12	0.05	50	400	450	500	550	600
0.65uF	X 12	0.054166	54.16	433.28	487.44	541.6	595.76	649.92
0.7uF	X 12	0.058333	58.3	466.4	524.7	583	641.3	699.6
0.75uF	X 12	0.0625	62.5	500	562.5	625	687.5	750
0.8uF	X 12	0.066666	66.6	532.8	599.4	666	732.6	799.2
0.85uF	X 12	0.070833	70.83	566.64	637.47	708.3	779.13	849.96
0.9uF	X 12	0.075	75	600	675	750	825	900
0.95uF	X 12	0.079166	79.16	633.28	712.44	791.6	870.76	949.92
1.0uF	X 12	0.083333	83.3	666.4	749.7	833	916.3	999.6
1.2uF	X 12	0.1	100	800	900	1000	1100	1200
1.5uF	X 12	0.125	125	1000	1125	1250	1375	1500
2.0uF	X 12	0.166666	166	1328	1494	1660	1826	1992
2.2uF	X 12	0.183333	183.3	1466.4	1649.7	1833	2016.3	2199.6
2.5uF	X 12	0.208333	208.3	1666.4	1874.7	2083	2291.3	2499.6
3.0uF	X12	0.25	250	2000	2250	2500	2750	3000
3000V Rated				**X8**	**X9**	**X10**	**X11**	**X12**
0.1uF	X8	0.0125	12.5	100	112.5	125	137.5	150
0.15uF	X8	0.01875	18.75	150	168.75	187.5	206.25	225
0.2uF	X8	0.025	25	200	225	250	275	300
0.25uF	X8	0.03125	31.25	250	281.25	312.5	343.75	375
0.3uF	X8	0.0375	37.5	300	337.5	375	412.5	450
0.35uF	X8	0.04375	43.75	350	393.75	437.5	481.25	525
0.4uF	X8	0.05	50	400	450	500	550	600
0.45	X8	0.05625	56.25	450	506.25	562.5	618.75	675
0.5uF	X8	0.0625	62.5	500	562.5	625	687.5	750
0.55uF	X8	0.06875	68.75	550	618.75	687.5	756.25	825
0.6uF	X8	0.075	75	600	675	750	825	900
0.65uF	X8	0.08125	81.25	650	731.25	812.5	893.75	975
0.7uF	X8	0.0875	87.5	700	787.5	875	962.5	1050
0.75uF	X8	0.09375	93.75	750	843.75	937.5	1031.25	1125
0.8uF	X8	0.1	100	800	900	1000	1100	1200
0.85uF	X8	0.10625	106.25	850	956.25	1062.5	1168.75	1275
0.9uF	X8	0.1125	112.5	900	1012.5	1125	1237.5	1350
0.95uF	X8	0.11875	118.75	950	1068.75	1187.5	1306.25	1425
1.0uF	X8	0.125	125	1000	1125	1250	1375	1500
1.2uF	X8	0.15	150	1200	1350	1500	1650	1800
1.5uF	X8	0.1875	187.5	1500	1687.5	1875	2062.5	2250
2.0uF	X8	0.25	250	2000	2250	2500	2750	3000
2.2uF	X8	0.275	275	2200	2475	2750	3025	3300
2.5uF	X8	0.3125	312.5	2500	2812.5	3125	3437.5	3750
3.0uF	X8	0.375	375	3000	3375	3750	4125	4500

QEG SUGGESTED TOOLS & EQUIPMENT LIST (updated 14-Jun-2016)

(1) Heavy –Duty Rolling Cart (300lb. minimum capacity)
(1) Tabletop Drill Press
(1) Cordless Drill
(1) Drill Bit Set (assorted sizes Metric/Imperial)
(2) Extra Long ¼" (.250") [6.35mm] Drill Bits (general purpose)
(1) Benchtop Grinder
(1) Medium Bench Vise
(1) Heat Gun
(1) Heat Shrink Tubing Set (assorted sizes)
(1) Good Quality 6" Dial or Digital Calipers
(1) Small Grease Gun w/Hi-Temp Grease
(1) Small, Good Quality ¼" & 3/8" Drive Metric & Imperial Socket set
(1) ¼" Drive Extension (6")
(1) Small Set ¼" Drive Imperial Allen Key Bits
(1) Small Set ¼" Drive Metric Allen Key Bits
(1) Good Quality General Purpose Terminal Crimping Tool
(1) Good Electronics Soldering Station w/Spare Tips, Electronic Solder (Rosin Core)
(1) Industrial Size Soldering Gun w/Spare Tips, 180 – 300 Watt
(1) Deburring Tool
(1) Hot Glue Gun w/Glue Sticks
(1) Small Bottle Acetone (or Alcohol)
(1) Hacksaw w/Blades (General Purpose)
(1) Good Quality Small Flush Cutters for Electronics Work
(1) Assorted Hand Tools (rubber mallet, hammers, needle nose pliers, screwdrivers, #3 Phillips, etc.)
(1) Bimetallic Hole Saw 2.450" O.D. (if using 3-hole bearing flange). (See Parts List)
(1) Bimetallic Hole Saw 2.875" O.D. if using (preferred) 4-hole bearing flange. (See Parts List)
(1) Custom-Made 9" [228.6mm] long Metric/Imperial Allen Wrench (Hex Key) to tighten your bearing setscrews/grubscrews onto the shaft when bearings are installed in place. (Cut the 90° angle off an extra-long Allen wrench. Carefully drill an undersized hole dead center in the end of a 3 to 4" [76.2 to 101.6mm] long, 1/4" [M6] diameter bolt. Press the Allen Wrench into the hole in the end of the bolt).

QEG GENERAL WIRING ITEMS LIST

(1) Short Reel 15M (50 feet) 1.5mm 3-Conductor Cordage (Extension Cord Reel)
(1) Short Reel 15M (50 feet) 2.5mm 3-Conductor Cordage (Extension Cord Reel)
(Assortment) Ring & Spade Terminals
(1) 8 foot [2.44M] Copper or Copper Clad Grounding Rod w/Clamp
(1 Roll) Electrical Tape
(1) 12-Outlet Strip for (alternate) Load Bank
(12) 15 Amp Outlet Switch Adaptor for (alternate) Load Bank
(12) Light Socket Adapter for (alternate) Load Bank

(1) Small Fluorescent Tube (15 Watt)
(10) Standard Surface Mount Light Bulb Sockets
(6) 100 Watt, 240 Volt Incandescent Light Bulbs
(6) 100 Watt, 120 Volt Incandescent Light Bulbs

QEG NUTS AND BOLTS (HARDWARE) LIST

(4) M8 (5/16") x 60mm (2-1/4") Carriage Bolts (Motor Mounting)
(12 pcs. each) M8 (5/16") Hex Nuts, Flat Washers, Lockwashers
(8) M8 (5/16") x 40mm (1-1/2") Carriage Bolts (Bearing Mounting)
(8) M10 (3/8") x 40mm (1-1/2") Carriage Bolts (Alternate Bearing Mounting)
(8 pcs. each) M10 (3/8") Hex Nuts, Flat Washers, Lockwashers
(10) M6 (1/4") x 65mm (2-1/2") Lag Screws (Assembled Core to Mounting Shoe)
(10 pcs. each) M6 (1/4") Flat Washers, Lockwashers

QEG INSTRUMENTATION (TEST EQUIPMENT) LIST

(1) Digital Storage Oscilloscope. Minimum 4-Channel, 100MHz, Example: Tektronix Model TDS2014 (100MHz), or TDS 2024B (200mHz)
(1) 1X Scope Probe
(2) 10X Scope Probes
(1) 100X Scope Probe
(1) 1000X (High Voltage) Probe for Scope/DMM, 40kV (example: Fluke Model 80K-40)
(1) Female Banana plug to BNC adapter (for above 1000X High Voltage Probe if needed for scope)
(1) Minimum 5MHz Digital Signal/Function Generator w/output cable
(2) Clamp-On Oscilloscope Current Probes, Minimum 0-40 Amp, AC/DC
(1) Clamp-On Digital Multimeter & Probes
(2) General Purpose DMMs & Probes (Capacitor function is helpful)
(1) Portable Relative RF Field Strength Meter w/antenna (Ideal Range: 500kHz – 200MHz or higher). Example: Coaxial Dynamics Model 7600 (1 MHz - 1GHz) or Model 7601 (1 MHz - 3 GHz)
(1) F.W. Bell Gauss / Tesla Meter
(2) Good Quality LCR Meters (get 2 different brands. Inductance range must be over 20 Henries)
(1) Plug-In Power Usage Monitor/Wattmeter (Digital Multifunction Power Monitor. Buy for use in your specific Country).
(1) Portable Digital Laser Tachometer
(1) Portable Non-Contact Infrared Thermometer
(1) 20 Amp AC Analog Panel Meter
(1) 20 Amp DC Analog Panel Meter
(1) 75-100 Ohm, 300 Watt Rheostat
(1) 2500 Ohm, 50 Watt Rheostat
(1) 1500 Ohm, 25 Watt Rheostat

QEG TUNING / TECHNICAL UPDATE - PART 1 of 3 J. Robitaille Updated **20-Jun-16**

Thanks to all of you amazing souls determined to actually do something to change the conditions on this planet, we've made amazing progress! We've got the QEG material out there, the original user manual released on March 25, 2014, the Anniversary Edition Opensource Build Manual released March 25, 2015, the e-book, many videos, etc. Now working on getting this material translated into 10 languages (this is not just for English speaking countries, it is for ALL the people on the planet), and we have at least 15 groups building QEG's that we know of, most of which have already reached resonance. This is global co-development at its best!

As we've stated several times, once the machine is built up to the point of reaching resonance, it will produce a peak output of about 800 Watts, for input of about 1000 Watts. Your machine may be putting out a bit more or less, but most machines output should be close to this if the finished cores were purchased from Torelco, because the core construction will be similar. While 800W output for 1000W input is very efficient, it is <u>not</u> overunity. And that's ok, because when your machine is built up to the point of resonance and producing power, *<u>you're not finished</u>*!

The next tuning steps are more abstract than getting the basic parametric resonance working, and can be challenging. But if you read through this carefully, think it through, and try to have the concept firmly in mind before starting, you will be successful.

(WITTS says) that on 99% of the successful replications of this machine, the core steel resonant frequency is between 300 and 600Hz. This is because different builders have used different types of steel. But once we find our core steel resonant frequency, it will be close to the same with all cores built by Torelco. **Here's how to find it:**

The core steel has to be activated by tuning to its resonant frequency, and running the machine at that frequency for a period of time. This has to be done *while* the exciter coil is connected in the secondary circuit, tuned to 1.3MHz. These 2 resonances work together to cause the core steel itself to become electrified, producing additional output power.

The core steel resonant frequency will be the frequency where the core has the highest 'Q', and this will be between 300Hz and 600Hz (secondary frequency). We can probably spin the rotor up to 300Hz (4500 RPM) safely if the rotor setup is done with precision, but to run the machine at 600Hz directly would be 9,000 RPM, which would be too fast for this design. So the solution is to run on a harmonic. The ½ harmonic for 300Hz is 150Hz, and for 600Hz is 300Hz. So this is the range of frequencies that must be searched to find the core steel resonant frequency (between 150Hz (2,250 RPM), and 300Hz (4,500 RPM) secondary frequency). After the machine is completely tuned, the exciter coil can be removed from the circuit, and the machine can be slowed down to a normal operating speed, which should be in the neighborhood of 2,500 RPM. The WITTS machine we see in the 40kW demo video is running at 2450 RPM.

As stated above, the correct frequency will be the frequency where the core has the highest 'Q'. This can be found using a fluorescent tube with one end touching the core steel, and the other end grounded.

(please see Core Surface Voltage Test video). **The highest brightness of the fluorescent tube will be the highest 'Q' tuning of the core.** It may be difficult to see the difference in brightness between test steps without a fairly precise test set-up. The fluorescent tube could be mounted in a wood or cardboard box along with a luminance meter to accurately measure the brightness in the presence of ambient light. Harbor Freight stores in the U.S. carry a decent quality, inexpensive digital multimeter (CEN-TECH model P98674, $59.99) that has a built-in luminance meter. This could be used to monitor and compare brightness levels between test steps.

I ran through this series of tests at first using a 40kV high-voltage probe in contact with the core steel, in lieu of the fluorescent tube, just to get a relative energy indication. **However, the fluorescent tube should be used for the actual testing, since the energy on the core surface is not conventional electricity, and the point of highest voltage (read with a standard kV probe) may not be the point of highest brightness of the fluorescent tube.** The core surface voltage is also affected by the load. Heavier loading will generate higher voltages. I used 6 X 100W/230V incandescent lamps wired in parallel for this sequence of tests, then added 3 more lamps and partially repeated the test to verify the effect of increasing the load (see attached spreadsheet "core surface voltage test.xlsx").

It should also be noted here, that as you continue to put run time on your machine, the core steel will become activated and accumulate energy. There was no voltage on the core surface when we first built this machine and went into resonance. It has already accumulated nearly 1,800V on the core surface (with heavy loading) just from running in resonance (see attached spreadsheet).

I started looking a little below 150Hz (149.2Hz) with cap value of 200nF, and added increments of 1.5uF each time. In other words, if you add a 1.5uF/2,000V capacitor in series for each test step, the step size will be about 8nF near 150Hz, and about 4nF as you get up near 300Hz (step size is non-linear due to increase in frequency for each step). I've been up to 4,130 RPM (275Hz) so far.

At this point the voltage on the surface of the core steel was 1,480 V and still rising, so I decided to remove the rotor and get it balanced, to try to get the mechanical setup a bit more precise so I could sustain a higher speed if necessary. So you may need to build/modify your rotor setup for higher accuracy / higher speed. Here's how:

Shrouds should be perfectly round with center hole dead center and snug fit over the shaft. Use self-locking nut(s) on the 2 shroud mounting bolts, and no other hardware (minimum hardware). Stagger the direction of the 2 mounting bolts (head of one bolt on opposite side of rotor from other bolt head) – please see our published QEG CAD Drawing package in the free 3rd Edition QEG Build Manual). Or if using threaded rod, make sure both rods are *precisely* the same length, and perfectly centered. Finally, get the entire rotor assembly professionally balanced by a reputable machine shop, and ask them to be very careful when removing material so as not to delaminate (splay out) the laminations. When reinstalling the rotor, position it very carefully in the stator bore, making sure it is level and square with the stator poles, and the gap is equal on both sides. Use shims between aligned rotor and stator poles if possible while tightening the bearing bolts. You may need to cut a window or slots into the end plates in

order to remove the shims when finished. Assure that the bearing inner race set screws are securely tightened onto the shaft.

Although the original setup will work fine for this tuning, if you have the resources, it would be best for high speed/accuracy/smooth running to eliminate the v-belt and pulleys by turning the motor and generator 90° to face each other, and using a shaft coupler to drive the rotor directly from the motor shaft. (See CAD package for illustration.) Direct drive of the generator from the motor shaft is the best configuration for smoothness and longevity of the machine, eliminating the vibration and the maintenance associated with a v-belt and pulleys. This will also eliminate the side loading on the drive-side bearing.

However, during the tuning procedure, we have to stick with the original configuration, because the exciter coil has to be placed physically in the midst of the magnetic fields circulating around the motor and the generator, in order to take advantage of these fields to assist in starting the exciter coil resonance. Also, if using a direct-drive system with no pulleys, the max. RPM of the rotor will be the same as the drive motor. Indications at this point in development are that the final operating speed will be under 2500 RPM, but in the unlikely event you'd need to go faster than 2500 RPM, you would need a higher-speed motor. So if you're considering a direct-drive system, it will have to be implemented *after* the machine is tuned, and the exciter coil is removed from the circuit.

The direction of rotation is not important with this generator.

An overview of the tuning and detailed exciter coil setup, with conclusion and recommendations, will follow in PART 2. STAY TUNED,

James

Opensourced QEG Build Manual: http://qegfreeenergyacademy.com/about/free-energy-generator-plans/

CORE SURFACE VOLTAGE @ FREQUENCY - TUNING FOR BEST 'Q' / Resonant Frequency of Core Steel											16-May-2015
			LOAD: 6 X 100W / 230V Incandescent (parallel)								
TEST #	INPUT POWER	CAP VALUE	RPM	PRIMARY FREQUENCY	SECONDARY FREQUENCY	CORE SURFACE VOLTAGE	(series) resonance capacitor setup	notes	cap value differential	RPM differential	sec. freq. differential
	REF										
1	700 W	199 nF	2,240	74.6 Hz	149.2 Hz		(5 X 1.0 uF)				
2	700 W	165.4	2,465	82.1 Hz	164.2 Hz		(6 X 1.0 uF)				
3	700 W	148.7	2,606	86.8 Hz	173.2 Hz		(+) 1 X 1.5 uF				
4	700 W	134.9	2,742	91.4 Hz	182.2 Hz		(+) 2 X 1.5 uF				
5	700 W	123.3	2,870	95.6 Hz	191.2 Hz		(+) 3 X 1.5 uF				
6	700 W	113.7 nF	2,994	99.7 Hz	200 Hz	**1,247 V**	(+) 4 X 1.5 uF				
7	700 W	105.4 nF	3,120	104 Hz	208 Hz	**1,282 V**	(+) 5 X 1.5 uF		8.3 nF	120	8 Hz
8	700 W	100.0 nF	3,207	106.8 Hz	213.6 Hz	**1,294 V**	(+) custom set		5.4 nF	87	5.6 Hz
9	700 W	98.3 nF	3,232	107.7 Hz	215.4 Hz	**1,295 V**	(+) 6 X 1.5 uF		7.1 nF	112	7.4 Hz
10	700 W	92.1 nF	3,340	111.3 Hz	222.6 Hz	**1,310 V**	(+) 7 X 1.5 uF		6.2 nF	108	7.2 Hz
11	700 W	86.7 nF	3,446	114.8 Hz	229.6 Hz	**1,350 V**	(+) 8 X 1.5 uF	40 V increase	5.4 nF	106	7 Hz
12	700 W	81.8 nF	3,550	118.3 Hz	236.6 Hz	**1,355 V**	(+) 9 X 1.5 uF		4.9 nF	104	7 Hz
13	700 W	77.5 nF	3,653	121.7 Hz	243.4 Hz	**1,390 V**	(+) 10 X 1.5 uF	35 V increase	4.3 nF	103	6.8 Hz
14	700 W	73.6 nF	3,750	125.0 Hz	250.0 Hz	**1,408 V**	(+) 11 X 1.5 uF		3.9 nF	97	6.6 Hz
15	700 W	70.1 nF	3,845	128.1	256.2 Hz	**1,448 V**	(+) 12 X 1.5 uF	40 V increase	3.6 nF	95	6.2 Hz
16	700 W	65.6 nF	3,979	132.6	265.2	**1,450 V**	(+) 12X1.5+1.0uF	rising with run time	4.5 nF	134	9 Hz
17	700 W	61.1 nF	4,130	137.5	275 Hz	**1,480 V**	(+) 12X1.5+1.88uF	rising with run time	4.5 nF	151	9.8 Hz
18	700 W	58.7						calculated	2.4		
19	700 W	56.5						calculated	2.2		
20	700 W	54.4						calculated	2.1		
21	700 W	52.5						calculated	1.9		
22	700 W	50.8						calculated	1.7		
23	700 W	49.1						calculated	1.6		
24	700 W	47.5						calculated	1.4		
25	700 W	46.1									
	REF		LOAD: 9 X 100W / 230V Incandescent (parallel)								
1	950 W	199 nF				**1,400 V**	(5 X 1.0 uF)				
2	950 W	165.4				**1,503 V**	(6 X 1.0 uF)				
3	950 W	148.7				**1,575 V**	1 X 1.5 uF				
4	950 W	134.9				**1,630 V**	2 X 1.5 uF				
5	950 W	123.3				**1,690 V**	3 X 1.5 uF				
6	950 W	113.7 nF				**1,720 V**	4 X 1.5 uF				
7	950 W	105.4 nF				**1,768 V**	5 X 1.5 uF				
8	950 W	100.0 nF				**1,790 V**	custom set				

9	950 W	98.3 nF					6 X 1.5 uF				
10	950 W	92.1 nF					7 X 1.5 uF				
11	950 W	86.7 nF					8 X 1.5 uF				
12	950 W	81.8 nF					9 X 1.5 uF				
13	950 W	77.5 nF					10 X 1.5 uF				
14	950 W	73.6 nF					11 X 1.5 uF				
15	950 W	70.1 nF					12 X 1.5 uF				
16	950 W	65.6 nF					12X1.5+1.0uF				
17	950 W	61.1 nF					12X1.5+1.88uF				
18	950 W										
19	950 W										
20	950 W										
21	950 W										
22	950 W										
23	950 W										
24	950 W										
25	950 W										

QEG TUNING / TECHNICAL UPDATE - PART 2 of 3 J. Robitaille Updated **20-Jun-16**

As mentioned in Part 1, the exciter coil must be connected (in series between the secondary output and the load) while you are going through the test steps to find the core steel resonant frequency (Part 1).

During the tuning procedure, the exciter coil must be resonant (at 1.3MHz) in the output (load) circuit while the machine is running. In addition, when first tuning up the exciter coil, it must be tuned in-place (while in-between the motor and the generator). This is because the proximity of the large pieces of steel in the drive motor and the generator will affect the inductance of the exciter coil. In other words, if you tune the coil on the bench away from the machine, the resonant frequency will be lower when you place it between the motor and generator to do the tuning steps.

The 2 resonances (core steel & exciter coil) work together to activate, condition, and electrify the core. When the tuning is finished, the core steel itself actually produces electricity!

Here's how to set it all up:

As mentioned in Part 1 of this update, this procedure can be a bit challenging. The exciter coil is actually a 1.3 MHz tuned antenna, and the 20 to 50 foot external antenna wire is an extension of it, used to place a conductor out in the atmosphere, to enhance the radiant signal coming in to the coil. The antenna wire does not have to be resonant, since it is not a radio signal we're bringing in. The load (with rheostat) and ground connection (at L2) should be connected (see schematic) while tuning up the exciter coil.

Build the exciter coil as follows:

This is an air-core coil, so it can be wound on a (non-ferrous) coil form, and the form could then be removed, or left in place, whichever you prefer. We used a piece of 4.75 inch O.D., ¼ inch thick Plexiglass/Perspex tubing, 1 inch high, and glued on two flanges that were cut off an old wire spool to make the coil form. After winding and tuning the coil, if you want to remove the coil form, remove one flange, then slide the finished coil off. You can then wrap the finished coil with fiberglass tape (same as used on the generator coils outer wrap), or electrical tape. The coil does not have to be built with extreme precision, it just needs to be resonant at 1.3MHz in the circuit, while the machine is running. The cross-section of the finished coil should be generally round, as this will yield the highest inductance.

The ideal wire to use to wind this coil, is a custom-made multi-strand, 12 gauge conductor, which will most likely have to be made up by hand. Here's how:

Take 5 strands of the same 20 gauge Pulse Shield® inverter duty magnet wire as used on the 3100 turn primary windings, and twist it into a bundle. You should have about 750 feet of the 20 gauge Pulse Shield® wire on hand to do this. The bundle should have about the same overall diameter as a 12 gauge wire. Twist it just enough to hold the bundle together, maybe 1 twist per foot. No more than that. You can take the 750 foot spool and respool 150 feet of wire onto 5 smaller spools and put the spools on one common axle, then you can use a hand drill to twist the 5 strands together. Clamp the ends of the 5

strands together into the chuck on the drill and have an assistant or two back up with the 5 spools as you twist the strands together. The finished 12 gauge bundle should end up a little less than 150 feet long. This will be long enough to get 100 turns on the coil. You should start the tuning with 100 turns on the coil.

Here is a link to a WITTS 3kW fuelless generator replication demo video, where you can see the actual exciter coil. This working system uses the exact same exciter coil setup as the QEG: https://www.youtube.com/watch?v=JgxL0V_NNcg . The exciter coil is a bit difficult to see in the video, but if you look carefully, stopping and starting the video, you can see it in-between the motor and the generator. It is indeed a flat, multi-layer loop type coil, about 1 inch thick, with about the same inside diameter as a CD (4.7”), and no coil form. This one is wrapped with black electrical tape.

As mentioned earlier, the exciter coil must be physically placed in-between the motor and the generator during tuning, to compensate for the proximity of the large pieces of steel in the motor and generator.

Exciter Coil Tuning

It would be helpful for this step, to have some previous experience with tuning an inductor. There are several methods for tuning an inductor, and it can be a bit tricky, but there are several websites where these techniques are explained in detail. If you need help, you can Google “how to tune an inductor” for a better understanding. We had the best results using the following method: We made a 2-turn transmitting loop, about 5-1/4 inches in diameter, using a 2-foot long piece of #14 jacketed solid copper wire, with a 50 Ω carbon composition (non-inductive) resistor in series. We taped the 2-turn loop flat up against the flange on one side of the coil. The 2-turn loop is connected to the signal generator to loosely couple the signal generator output into the exciter coil. The transmitting loop does not make electrical connection to the coil, it’s simply taped on to the flange adjacent to the coil windings. This is the best way we’ve found to insert the drive signal from the signal generator into the coil.

Your initial spark gap opening should be between 0.005” [0.127mm] and 0.010” [0.254mm], and the initial value of the (mica) tank capacitor should be between about 30 and 50pF (picofarad). This capacitor should be able to withstand up to 5,000 Volts (5kV). If you can’t find a single 5,000 Volt unit, 2 or more capacitors can be connected in series to get this voltage rating. The value of this cap may have to be adjusted toward the end of the tuning, so a variable capacitor (mica compression or air variable type) could be used if it will meet the voltage requirement. The actual tuning of the coil is done by removing turns, and as you approach the resonant frequency of 1.3MHz, the coil may have enough self-capacitance to make this capacitor unnecessary. It is included only as a means of fine-tuning once you get very close to the resonant frequency, and should be applied only if needed, after you have just about the right number of turns. We mounted a 2-position euro barrier terminal block about 8 inches away from the coil on the generator base, and used this to connect the exciter coil, 30-50pF tank capacitor, spark gap, and antenna wire into the circuit (see attached photo “exciter coil setup.jpg”).

Starting with the exciter coil wound with 100 turns of the above multi-strand wire, connect the START (inside) lead to the terminal block connection coming from the L1 terminal of the generator, along with the external antenna feedline, one side of the 30-50pF capacitor, and one side of the spark gap (See

schematic). Now connect the FINISH (outside) lead from the coil to the terminal block connection coming from the top (ungrounded) side of the load bank, along with the other side of the 30-50pF capacitor and spark gap. The other side of the load bank connects to the L2 terminal of the generator, and your ground rod (through the rheostat).

Assure that everything is connected according to the schematic and the above instructions, but do not run the generator yet. We need to get the coil tuned as close to 1.3MHz as possible before running the machine. Although the actual tuning is done with the exciter coil oriented vertically, use the coil laying flat as a measurement to set the distance between the motor and the generator. This should give you about 6 inches in-between, which is enough room to slightly reposition the coil during the final tuning if necessary, in order to optimize the magnetic fields impinging on the exciter coil windings. After the machine is completely tuned, the exciter coil setup can be disconnected and removed, and the motor can be moved closer to the generator if desired (the shortest possible v-belt length is best for continuous running). So, it's a good idea to have the motor on an adjustable sliding base, and have a few different lengths of v-belts on hand.

The exciter coil tuning procedure is thus: Place the coil midway between the motor and generator, with vertical orientation, and temporarily disconnect the exciter coil START lead from the terminal block. Leave everything else connected. Connect the signal generator to the 2-turn loop and set the output for square wave (the coil itself will convert the square wave to sine wave). Set the signal generator frequency at about 2MHz initially, and output level to 75%, or about 10 Volts. Place your R.F. field strength meter somewhere within about a 1-foot radius of the exciter coil, and set it near maximum sensitivity.

Slowly sweep the signal generator frequency from 2MHz downward while looking for an indication on the field strength meter. Note the frequency at which you have the highest indication on the field strength meter (lower the sensitivity or move the meter further away if your reading is off the scale). The exciter coil's initial resonance will likely be well below 1.3 MHz with 100 turns on, so you'll have to remove turns until you get the highest field strength reading right at 1.3MHz. When taking turns off, the resonant frequency will increase. Leave the FINISH lead connected to the terminal block (grounded through the load), and simply unwrap anywhere from 1 to maybe 10 turns at a time to check the frequency. Just leave the excess wire connected (ok to just leave it on the floor away from any metallic objects) but make sure the wire you just unwrapped is going away from the coil at a 90 degree angle, and straighten it out so that no part of the excess wire is coiled up. As long as the excess wire is not coiled, it will not resonate. If you take off up to 10 turns and the frequency is still way too low, cut off that section of wire and repeat the steps of check frequency-cut off excess-remove more turns-check frequency-cut off excess-remove more turns-check frequency etc. Repeat this until you get the coil resonating close to 1.3MHz. Remember to place the exciter coil back in-between the motor and generator while checking frequency.

If you get to the point where 1 turn (plus or minus) makes the difference between the frequency being a little too high or a little too low, you can try to do partial turns to get the frequency dead on without the capacitor. But If you need to use the capacitor, leave the turns count where the frequency is a little too

high, because adding the capacitor will *lower* the resonant frequency. Select (or vary) the value to get it resonant dead on 1.3MHz. It should be within 0.1%, so you can be off by as much as 1,300Hz (1.3kHz). The limits would then be 1.3013MHz (+), and 1.2987MHz (-). Get it as close as you can, then disconnect the signal generator from the 2-turn transmitting loop, but leave the loop taped on to the side of the coil. Re-connect the exciter coil START lead into the 2-position terminal block at this time.

Final Tuning Setup

Leaving everything connected as per the previous step, it's time to connect your fluorescent tube setup, with one end touching the core steel, and the other end grounded (see Part 1 of this update). A standard 9-inch or 12-inch long Type T5, 8-13 Watt linear (straight) fluorescent tube will work well for this testing. You can connect either or both pins on one end to the core steel, and also either or both pins on the other end to ground at your main ground connection (at the input to the 1,500 ohm, 25 Watt ground rheostat). Assure that you have means set up to record the lumen output of the fluorescent tube at each tuning step, as explained in Part 1 of this update.

PLEASE USE CAUTION DURING THE FOLLOWING STEPS! HAZARDOUS VOLTAGE AND CURRENT LEVELS ARE PRESENT ON EVERY TERMINAL IN THE SETUP WHILE THE MACHINE IS IN RESONANCE. MAINTAIN SAFE DISTANCE, AND DO NOT TOUCH ANY CONNECTIONS OR MAKE ANY ELECTRICAL ADJUSTMENTS WHILE THE MACHINE IS RUNNING. ALWAYS STOP THE MACHINE BEFORE MAKING CONNECTIONS OR ADJUSTMENTS.

The next step is to bring the machine up into resonance. Assure that a proper load is connected (between 400 - 600 Watts resistive load, such as incandescent light bulbs), and a variable resistor is connected in series with the load (minimum 300 Watt sliding or rotary rheostat, such as OHMITE® Part No. RNS150). Start with the rheostat set for the full resistance (about 150 ohms) in the load circuit, and make sure to use an insulated knob on the rheostat adjustment shaft or slider.

Set the resonance capacitors initial value around 200nF (see Part 1 of this update), and dial up the variac to bring the machine into resonance. The initial frequency (with 200nF) should be a little below 150Hz (about 2230 RPM). Assure that the resonance/output is stable. If it is not, adjust the load a bit to stabilize. In most cases, *increasing* the load a bit will stabilize the system. You can (slowly and smoothly) adjust the rheostat to increase the load *while running* (don't touch anything but the insulated knob while adjusting). If still more load is needed, stop the machine, return the rheostat to full resistance, and add a light bulb (in parallel). Then bring the machine back up into resonance.

Once the resonance/load is stable, select an input wattage level to use as the reference standard for each of the tuning steps. In other words, adjust the variac to the *same* input wattage level at each test step, and keep the input level as consistent as you can across all of the test steps. We've found that 700 to 800 RMS Watts input, as read on your input Wattmeter, works well for this load setup.

Tuning Procedure:

1) Starting with 200nF, spin the generator up into resonance, and set the input Wattage at your selected reference input level. Record (at least) the fluorescent tube luminance value, RPM, and frequency.
2) Run the machine at this RPM and frequency long enough to get your readings, then shut it down and add a 1.5uF, 2,000 V (min.) capacitor in series with the initial capacitor string for the next step.

Your capacitor value increments can be smaller than 1.5uF if desired. This will make the step sizes larger at the lower RPMs. You'll get smaller increments and more resolution with larger individual capacitor values at the lower RPM end. Also, the step sizes get smaller at the higher RPMs anyway, due to the increase in frequency. So you could switch to 1.2 or 1.0uF about half way through the steps, to try to keep the step sizes more consistent. The idea is to strike a balance between resolution and number of steps. Try not to have a lot of difference in RPM between steps, because you don't want to step right over the peak and miss it. If you use increments of all 1.5uF, it will probably take between 20 – 25 steps to get a little above 300Hz, which should give you sufficient resolution to find the peak brightness of the lamp (see "core surface voltage test.xlsx" attached to Part 1).

3) Repeat steps 1) and 2) above with the next capacitor value. Each time a capacitor is added, the machine will resonate at a higher RPM/frequency.

As described in Part 1 of this update, we are looking for a peak brightness level on the fluorescent tube between about 150Hz/2250 RPM and 300Hz/4500 RPM (secondary frequency). Once found, this point will be the highest "Q" tuning / steel resonant frequency of the core. We have had our generator (in Morocco) up to 275Hz thus far, and the fluorescent tube brightness is still increasing. We temporarily stopped our testing to remove the rotor and get it professionally balanced, so we can safely sustain a higher running speed. We will resume our testing as soon as the machine is back together, and report on our progress.

Once the peak fluorescent tube brightness/highest 'Q' tuning/steel resonant frequency is determined from this tuning procedure, the machine must be run at this frequency for a period of time in order for the core to accumulate energy and become polarized. Since the (tuned) steel resonance and exciter coil resonance work together to electrify the core steel, we need to do the following procedure to insert the radiant energy from the atmosphere into the core.

The next steps are done with the machine running, *and* while running at some level of elevated speed, so – PLEASE USE CAUTION!

In the previous "Exciter Coil Tuning" section, the exciter coil was tuned with the machine stopped, so we now have to check the (exciter coil) tuning while the machine is in operation:

1) Spin the generator up into resonance at the peak fluorescent tube brightness RPM/frequency that was determined in the previous "Tuning Procedure" section.

2) Set your R.F. Field Strength meter for maximum sensitivity, and bring it near the exciter coil setup (no closer than about 1 foot). You should see an indication on the R. F. Field Strength meter if the exciter coil is resonating/radiating. You may see a *lot* of R.F. in the vicinity of the exciter coil, along the antenna feed wire, and basically all over the machine. When we set this up, we had R.F. energy radiating up to 10 feet away. This is what we're looking for.

There are a few ways to verify that the exciter coil is on-frequency while the machine is running. The simplest way would be to use a frequency counter for field use (i.e., with an antenna) that also has R.F. Field Strength indication built in, such as the OPTOELECTRONICS® Model M1 - http://www.optoelectronics.com/#!m1/c10yl . The frequency counter range must include 1.3 MHz, and the meter should have high sensitivity (10-30 mV @ 1.3 Mhz). For this step, the field strength function is less important than the frequency counter function, since you can move the meter as close as necessary to get a stable frequency reading.

The preferred method would be to use a spectrum analyzer, or an oscilloscope that has Math FFT (Fast Fourier Transform) function, such as the TEKTRONIX® Model TDS2024B - https://www.amazon.com/Tektronix-TDS2024B-Oscilloscope-channels-200/dp/B00LF24Q70/ref=sr_1_1?ie=UTF8&qid=1466437884&sr=8-1&keywords=tds+2024b FFT mode provides basic spectrum analysis capabilities that allow you to view the signal peaks within a selected spectrum of frequencies (for example, 500kHz through 2Mhz) simultaneously. You can center the scope's frequency marker on 1.3MHz, and view whether the exciter coil signal peak is above, below, or right on the marker.

Another possible method (I have not tried this myself) would be to set up your signal generator and scope to display a 1.3MHz sine wave signal (on channel 1 of your 2 or 4-channel scope), then connect channel 2/second scope probe to the 2-turn transmitting loop described in the "Exciter Coil Tuning" section above (minus the 50 ohm resistor). Adjust the scope to display both signals simultaneously, and compare the frequency of the 2 signals. They should be the same.

If you are limited on instrumentation, a less precise method would be to simply tune a decent quality AM/Shortwave radio with digital display, such as the GRUNDIG® Model S450DLX Field Radio - http://www.amazon.com/Grundig-S450DLX-Deluxe-Shortwave-Radio/dp/B004FV4ND0/ref=sr_1_26?s=electronics&ie=UTF8&qid=1433267571&sr=1-26 to 1.3MHz (1,300kHz) and listen for a quiet spot (unmodulated 1.3MHz signal). You can tune a little above and below to find the exciter coil signal if it's not right on 1.3MHz.

If the exciter coil frequency is off (with the machine running), and you need to tweak the tuning, here's how to do it:

The best method would be if you used the variable tank capacitor (air-variable, or mica compression types) for fine-tuning in the previous (machine not running) "Exciter Coil Tuning" step. This capacitor can be adjusted while the machine is running, using a non-metallic tuning tool or screwdriver. This is

important, as a metal screwdriver or tool will affect the resonant frequency. Even the proximity of your hand to the exciter coil/capacitor will have some effect on the resonant frequency.

If your (machine running) frequency is too high, adjust the variable capacitor for more capacitance, and if too low, reduce the cap value. If you are using a fixed capacitor (or multiples in series), you'll have to stop the machine and add or remove capacitance, then restart the machine. This may take several iterations to get right. If your original tuning did not require the capacitor (sufficient self-capacitance), depending on how much the frequency is off, you may have to put the capacitor in the circuit. The general method is thus:

1) If the frequency is too low without the capacitor, you may have to take an additional turn off the coil (or ½ a turn).
2) If the frequency is too low with the capacitor, reduce the capacitor's value, or remove it.
3) If the frequency is too high without the capacitor, add a small value of capacitance.
4) I the frequency is too high with the capacitor, increase its value (if using fixed capacitors, add a small value in parallel with the existing capacitor(s). If you have more than one in series, only parallel one of them, because we have to maintain the (minimum) 5kV voltage withstand rating).

If the frequency was fairly close in the earlier (machine not running) tuning step, you should be able to get this right without having to add any turns to the coil at this point.

Procedure for Triggering the Radiant Energy Surges (into the core)

Before beginning, do a test to determine how much and how rapidly you can increase the load without causing the machine to drop out of resonance. Use the 150 ohm, 300 Watt rheostat in the load circuit to do this (not the light bulbs), and make a mental note of these limits.

Conditions:

1) The machine is running at the RPM/frequency of peak fluorescent tube brightness/highest 'Q' tuning (steel resonant frequency).
2) The exciter coil is in the (load) circuit, physically in-between the motor and generator, tuned and resonant at 1.3MHz.
3) No meters or instruments are connected to the machine except the input Watts monitor, and the AC and DC clamp-on ammeters on the ground wire (between ground rod/source, and rheostat).
4) Exciter coil spark gap opening is set very small (about 0.005 inch to start).

(Note: You may already be seeing some arcing in the spark gap and/or energy coming in through the ground wire at this point, since the machine is now tuned and operating).

Steps:

1) If you don't already have some periodic arcing in the spark gap, tweak it a bit with your non-metallic tuning tool or screwdriver. Try to draw an arc for 2 or 3 seconds at a time, every few minutes or so while running. Don't let it arc any longer than that each time, or the spark gap may weld itself together, which will short the exciter coil. (Momentarily shorting the coil is not dangerous since it is in series with the load. It just won't have any effect while shorted).
2) Look for surges of current on the AC and DC ammeters during and immediately after the 2-3 second arcing. Eventually you will start to see surges of energy coming in as indicated on the ammeters. You can also move the exciter coil slightly closer to the motor (not much, maybe ½ an inch at a time) or slightly closer to the generator, alternately, to try to get the surges started. The surges will be small and infrequent at first, but will get more powerful, more frequent, and longer in duration as the radiant energy "learns" your location and finds your signal (via the antenna and ground connection). Also, the 2-3 second arcs in the spark gap will get hotter as the surges increase, so you will have to periodically open the spark gap further and further as the energy builds up and accumulates in the core.
3) Once the energy surges start to come in, here's how you can begin to "trigger" them to accelerate this process: Carefully monitor the ammeters on the ground line while working with the spark gap, and try to catch a surge just as it begins to occur. At this moment, *rapidly* increase the load using the rheostat in the load circuit. Use the limits you determined in the test at the beginning of this section, so the machine does not drop out of resonance with the sudden change in the load. This will most likely take a few tries to get it down to a repeatable process.
4) Do this with every surge you can manage to catch. It will get more predictable over time as you work with it, eventually allowing you to "trigger" the surges by making a rapid step change in the load.

Summary

Of course the next question would be, how long will this process take? We haven't been through the process completely ourselves yet (we have our rotor in the machine shop being balanced), but as mentioned previously, we have been up to 275Hz so far, and the Fluorescent tube brightness is still increasing. The best estimate we have at this point, based on our own research/experiments, and (verified) instructions from WITTS, is that working with the machine maybe four hours a day, you should be able to completely tune it within 2 weeks or less. Once the tuning is complete and the core is fully 'polarized', you can change a few things: The exciter coil/spark gap/capacitor can be removed, and the machine can be run (permanently) on a lower harmonic of the steel resonant frequency. For example, if you've found your peak fluorescent tube brightness/highest "Q' tuning/steel resonant frequency at 300Hz, you can slow the machine down to the ½ harmonic, which would be 150Hz, or about 2,250 RPM. This would be a good, permanent operating speed for the machine when it is put into continuous service.

As we've discussed in the classes and in our published material, once we know the final secondary running frequency (which will *not* be 50 or 60Hz), it will be a relatively simple matter to apply electronics to convert the power output to standard line voltages and frequencies. In fact, we have several circuits,

some electronic, some electromagnetic, that are at the ready for when we complete this tuning process. Most of these circuits were donated by our excellent supporters, and a couple were originated by us.

Conclusion

This update is based on the results of our own latest research and experiments, and is meant to show our supporters and all those who have embraced the project, that we have a clear way forward toward producing overunity with the machine. It is hoped that this will encourage all who have invested time and money in this project to continue on with tuning and finalizing the generator.

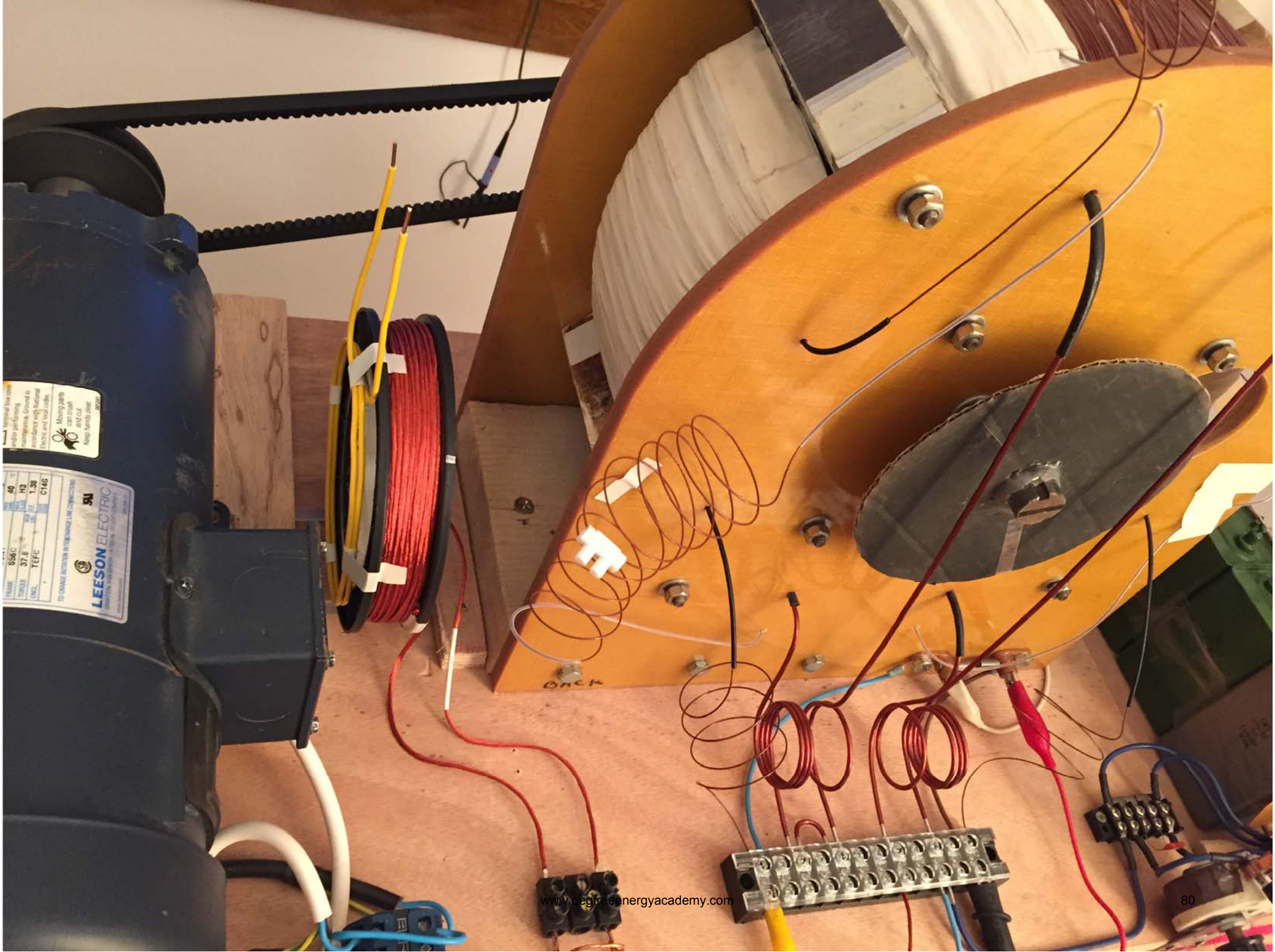
We also really want to encourage the groups who are designing, building and working with the **Mini-QEGs**, that the scaled-down versions of the machine are the **ideal development platform** for doing the procedures in this update. Using these instructions, you should be able to more quickly determine the steel resonant frequency of your cores, since the lower rotor mass of the smaller machines would make it easier to run through a wide range of RPMs, and the smaller components will make it more convenient for testing and making changes. Of course, all the numbers will be different, but the concept is the same. This could potentially shorten development time, and will certainly be very interesting and rewarding work!

In conclusion, I (James) feel that I need to help everyone involved in our project to fully understand the underlying principles of how this machine works as I understand it, and how we are on our way to producing a self-sustaining generator with output power well in excess of the input power. I started writing it to include in this part, but it's going too long. This part is already late, and we need to get this information out to you ASAP. For this reason, I will be posting a **Part 3** to this update in about a week. Part 3 will be titled: **QEG Theory of Operation.**

We sincerely thank you all for your continued support! Nothing is more important to us than supporting our people, as you have supported us!

Stay Tuned!

Blessings, James & the FTW/QEG Team


LEESON ELECTRIC

QEG Tuning & Technical Update – Part 3 of 3, and QEG Theory of Operation

J. Robitaille 30-Jun-2015

The key to obtaining overunity in the QEG, is the vibration of the core steel. The machine must be tuned at the resonant frequency of the core steel to make this work, and the tuning instructions are in Part 1 & 2 of this update.

Between the time we released update 2 and the release of this part (Part 3), we were successful in determining the resonant frequency of our core here in Morocco. If your steel type is the same as ours (M19 at 0.025" lamination thickness), you'll need to be able to run the machine up to slightly over 4,500 RPM for the tuning. So, first you have to make sure your rotor setup will handle that speed. How to do that is also covered in Part 1 of this update.

If you have type M19, you'll find the steel resonant frequency very close to 300Hz (about 4,500 RPM). The resonance capacitors value to resonate at this speed/frequency will be between about 50 and 55nF (0.050 and 0.055uF). When you're running at the steel's resonant frequency, it causes the steel to vibrate (resonate), and 3 things happen:

1) The higher the primary voltage, the more power the machine will put out. When you're running at the core steel's resonant frequency, *the vibration causes the primary voltage to go much higher. Double, or more.* This is (partially) where the overunity comes from. However, at this point care must be taken that the primary high-voltage does not exceed 20kVp (20,000 volts peak). Make sure you have your scope or meter set to read *peak* voltage for this tuning, because when working with insulation systems, the full excursion of the voltage waveform must be included in the measurement (the insulation system is rated to withstand the voltage *peaks*). As you approach the steel resonant frequency, the protection gap will most likely fire off, as the high voltage level will be increasing. The high-voltage level can be controlled to some extent by reducing the load, but if your voltage is still too high with minimum loading, a variable resistor can be added in series between one end of the primary winding and the resonance capacitors. (The resistor should be something like 0-1,500 Ohms @ 25 Watts). Take care not to exceed 20kVp, or you could short out the primary windings (although the proper setting of the protection gap should prevent this). This is a bit tricky because you want to run it with the voltage as high as possible (as close to 20kVp as you can get *without going over*). The protection gap should be set so that it will pass 20kVp, but no more.

2) The vibration changes the microcrystalline structure of the core steel. It becomes ‘conditioned’. What this means is that when you've completed the tuning procedure, you've actually modified the

characteristics of the core steel so that it 'wants to' resonate easily. This is further explained in the 'Theory of Operation' below.

3) While the core is vibrating at it's resonant frequency, it is in the state where it can take on the radiant energy that's inserted through the exciter coil and ground connection (further explained in the 'Theory of Operation' below). It has to be vibrating/resonating for this to work. This is where the rest of the overunity comes from. Remember, Mr. Tesla said "Potential, Vibration, and Frequency"!

Once the tuning is completed, the core will be conditioned such that the rotor can be slowed down to the 1/2 harmonic, and still excite the steel fully into resonance. The 1/2 harmonic would be about 150Hz (secondary frequency). This is a good permanent running speed (about 2,230 RPM). The resonance capacitors value at 150Hz will be about 200nF (0.2uF). The time it takes to sufficiently condition the core (running at 300Hz) will vary, but you can tell when you're done by periodically comparing the high voltage levels (or fluorescent tube brightness levels) with the machine running at 300Hz, and then at 150Hz. The voltage (or brightness) levels should be similar at both speeds if the steel is fully resonating. You'll be finished when you see no further voltage increase (in the high voltage level at 150Hz), after checking between the 2 speeds a few times.

Also, it has come to our attention that the "**Procedure for Triggering the Radiant Energy Surges (into the core)"** in Part 2 of this update, does not specify that the procedure is to be done at the lower, ½ harmonic speed (150Hz/2,230 RPM). This is because 300Hz is beyond the frequency range where efficient power transfer occurs between primary and secondary, and there would not be enough power to drive the exciter coil. The generator must be fully loaded, running at 150Hz during this procedure. We apologize that this was not specified in Part 2.

Theory of Operation - Here is how we understand the system to work:

After almost 2 years of research and development, we have learned that there are 2 important unique features of this generator that will allow us to reach overunity:

1) The machine can be thought of as a self-powered toroidal transformer. Self-powered meaning that it generates its own primary power via mechanically pumped parametric resonance (1^{st} resonance). As the rotor approaches, aligns, and leaves a given pair of stator poles, a magnetic shunt is formed which alters the effective shape of the core as well as the magnetic path length. This produces the desired parametric change in both Reluctance and Inductance which is "parametric pumping". Through transformer action, this provides the basic power output (up to 800 Watts peak for 1000 Watts input). While the system has very low Lenz effect and is comparatively efficient, at this point, it's not producing over unity output, and shouldn't be expected to produce more output than input until the tuning steps are done as described in Part 1 & Part 2 of this update.

2) The other 'secret' feature is that the machine also generates its own radiant energy. This is different from conventional electromagnetic transformers. Normal transformers are governed by the flux coupling term, and are based upon constant reluctance and inductance values with time variant current (and voltages). If we look at the QEG's primary voltage and current signals on the scope, both

waveforms are clear, sharp and well-defined. This is also true if we look at the secondary *voltage* signal. However, when viewing the secondary *current* waveform, it looks noisy and full of spikes, as though there is something wrong with the scope or probe, or a bad connection, but there's nothing wrong with the setup. What we're seeing are radiant spikes. If we zoom out the scope, we see the classic sharp, narrow (less than 1uS width) spikes that characterize radiant energy.

As the magnetic shunts described above form and subsequently disconnect, magnetic snap-back occurs as the magnetic flux loops are broken and forced to reform within the cyclically altering core geometry. The radiant energy effects occur in the secondary output current when magnetic snap-back occurs. This effect is what we use to 'tap in' to the energy present in the medium all around us, using the exciter coil, antenna, and ground connection.

Unique Machine Features Leading to Over-Unity

1) Self-Generated Input Power via Parametric Resonance
2) Very Low Lenz Effect By-Design
3) Generates Radiant Spikes via Magnetic Snap-Back

Core Steel Resonance/Vibration

Now if we focus on the sequence of events during the tuning process, we see that as you accumulate run time operating at the core steel's resonant frequency, the steel becomes 'conditioned' or 'predisposed' to vibrate *at that frequency* much more easily than in its initial (new) condition. This is important because after tuning, we have to slow the machine down to the 1/2 harmonic (150Hz/2,230 RPM), in order to be in the frequency range where efficient power transfer occurs between primary and secondary. Due to the steel type and geometry, power transfer/transformer action is much more efficient at lower speeds/frequencies, such as 150Hz.

The core develops sufficient energy to excite the steel into resonance running at the fundamental frequency (300Hz). However, when the machine is slowed down to the ½ harmonic (150Hz) the exciting energy is also reduced (in half, generally). This is why the core steel must be pre-'conditioned', so that it can still be driven fully into resonance from the lower exciting energy level. The lower energy level at the 150Hz harmonic is not sufficient to drive the core steel into resonance in its initial (new) condition.

Radiant Energy Insertion via Exciter Coil, Antenna, and Ground Connection

The exciter coil is actually a 1.3 MHz tuned antenna, and the 20 to 50 foot external antenna wire is an extension of it, used to place a conductor out in the atmosphere, to 'guide' the radiant signal in to the coil. The antenna wire does not have to be resonant, since it is not a radio signal we're bringing in.

With the generator running in resonance at the core steel's ½ harmonic resonant frequency (150Hz), and the exciter coil connected in the secondary (load) circuit, tuned and resonant at 1.3 MHz, what we have is a radiant energy transceiver. If you have some knowledge of the characteristics of radiant energy (radiant electricity, longitudinal electricity, 'cold' electricity), you'll recall that it is identified by sharp, narrow, DC impulses (spikes), with duration of 1.0uS (1 microsecond) or less. As noted above, the

machine generates these impulses on it's own in the secondary circuit, via magnetic snap-back. Through the resonance of the exciter coil, these impulses are radiated or 'broadcast' into the ether where they 'connect' with the radiant energy resident there. Here is the mechanism:

The significance of the 1.3MHz tuning is that this is the 'frequency' or duration of the radiant impulses. i.e., 1.0 MHz= 1.0 uS (microsecond), and 1.3MHz= 0.77uS. It is known from Mr. Tesla's work that different effects are realized with radiant impulses of varying duration;

"Tesla found that impulse duration alone defined the effect of each succinct spectrum. These effects were completely distinctive, endowed with strange additional qualities never purely experienced in Nature. Trains of impulses, each exceeding 0.1 millisecond duration, produced pain and mechanical pressures. In this radiant field, objects visibly vibrated and even moved as the force field drove them along. Thin wires, exposed to sudden bursts of the radiant field, exploded into vapor. Pain and physical movements ceased when impulses of 100 microseconds or less were produced. With impulses of 1.0 microsecond duration, strong physiological heat was sensed. **Further decreases in impulse brought spontaneous illuminations capable of filling rooms and vacuum globes with white light".**
– excerpted from John Bedini.net

The exciter coil can also be thought of as a sort of notch or band pass filter since it is tuned to pass radiant impulses of a particular duration less than 1uS (0.77uS). Although the radiant energy can be tapped at other frequencies, we were told by WITTS that the 1.3MHz tuning was the easiest.

Due to the x-coil's resonance at the same 'frequency' as the radiant impulses, it acts as a bidirectional 'open gate' to the energy in the surrounding ether. With the x-coil tuned and resonant, the machine's self-generated radiant impulses are now able to radiate into the surrounding space, and along the external antenna wire, where they are 'found' by, and 'connect' to the energy in the ether. The method for bringing the radiant energy surges into the machine is detailed in Part 2 of this update.

It has been shown that radiant energy, or 'longitudinal electricity', travels *through the medium around a conductor,* rather than through the conductor itself, however, it does follow the conductor, therefore it is still subject to the effects of inductance, and will produce power in transformers. Since the radiant surges are inserted into the secondary windings (via x-coil resonance), the effect is that of having a 3rd isolated power source (Parametric Resonance is 1st, and Core Steel Resonance is 2nd).

After the core is conditioned at 300Hz, we are now able to drive the steel into resonance running at the slower ½ harmonic (150Hz/2,230 RPM). The steel resonance is also key for the operation of the x-coil;

When performing the tuning process, the radiant surges are inserted into the secondary windings, where they are used to electrify or 'charge' the core. In order to 'break loose' the energy from the medium (the secondary windings), there must be a disturbance or perturbation of the medium. This 'disturbance' is provided by the vibration of the resonating core steel. The effect is that the energy is 'stripped off' or 'shaken loose' from the windings, and goes into the core steel, causing it to become electrified or 'charged'. This causes a further physical modification of the core steel, in addition to the 'conditioning' discussed above.

Since the radiant energy impulses/surges are DC, we have to provide a return path to complete the circuit with the energy in the ether. This is why a heavy-duty ground connection is necessary during the tuning. After tuning is completed, the exciter coil, spark gap, tank capacitor (if used), and grounding network can be removed, because the core steel retains these new physical characteristics.

The effect of the radiant energy circulating in the system is that we have now 'activated' the core, which provides an overall multiplication or 'amplification' of the generator's output power, since the steel in the stator is common to both the primary and secondary windings. This is the remaining source of over-unity in the QEG.

The technique of resonating the core steel is not unknown, and has recently begun to find its way into mainstream engineering. One of the major companies involved is Baldor Motors in Australia.

This concludes the "QEG Tuning and Technical Update, Parts 1, 2, and 3", and the "QEG Theory of Operation".

Those who have been following our progress with the QEG for any length of time will know that from the initial launch to now, all of the funding for the project has come from you, the people, through several crowdfunding campaigns, and donations, and we wish to express our profound gratitude to all who have contributed. Use of workspaces, test equipment and instrumentation that we employed at the various builds was also donated. We have a few older pieces of equipment, but no lab, or even access to one. In spite of this, we feel we've been able to accomplish amazing things! We have managed to build 4 machines ourselves and assist with a 5th, while bringing the machine through development, documentation, and publishing, and very nearly to completion.

In successfully determining the core steel's resonant frequency, we have cleared the last major hurdle to making the machine self-sustain while providing additional power.

As Always, Many Thanks and Blessings to all our supporters!

James and the FTW/QEG Team

QEG Builder and Student Update – Dual Resonance 1-Mar-2016

Hi Everyone!

It's James. I appreciate you all being patient and giving me the research time to work out the details for self-looping the QEG (and more)!

Just a quick preamble… A few months after we opensourced the preliminary plans for the machine in March of 2014, we were astounded to realize that no one to date had actually been successful in making a viable self-sustaining electric power supply available for people to learn about and build if they wanted to take on the challenge. We could hardly believe it! We were so naïve!

Having studied Tesla and others, we knew the technology was there, but we didn't realize the depth of the suppression, greed and control being exerted by the big energy companies, governments, and corporations in their efforts to maintain the status quo.

Now all of you who had the faith to stand behind this project, will have a tool with which to fight back, and we want to ask you to keep the spirit of the endeavor in mind. If this is truly a first, as it appears to be (at least in an open environment), we all have a responsibility.

In order to destroy any chance that this could go the way of previous suppressed technology, we want to ask you to let us know when you get your machines to the point where they can be demonstrated. We're suggesting a co-ordinated release, by video demonstration of several machines (at least 4 to 5) at the same time, preferably in several countries (also 4 to 5) at once, or in rapid succession. We'll communicate on the details such as platforms to use, time zones etc., as we get the machines ready. Let us know your suggestions on this plan in the meantime.

Now to the update –

We know that at the last, electronics must be applied to be able to use the machine at standard electrical grid voltages and frequencies (50/60Hz, and 110/115/120 – 220/230/240 Volt). The simplest interface would be to rectify the output and go into a grid-tie inverter (up to 600 VDC), however, that would not be the least expensive solution, and being the renegades we are, the best spirit of the machine is to not engage with the grid at all ☺.

Tivon and I are developing a recommended electronics package that we will make available quickly (and inexpensively) for those of you who are not as technical, so don't worry, that part is well known and not difficult. Also, a lot of you are electronics people, and you may want to have a lot of fun designing and building that part yourselves!

So my main job is to get you the power to self-loop and supply additional loads. As most of you know, the information I did get from WITTS was accurate, but incomplete. They are set up to make you come back again and again, but I hold them in good regard, because I believe their goal is also to teach. So I

won't waste time explaining how I went down the wrong road a couple of times. Fortunately, I didn't go too far.

I have not self-looped myself yet, but only because I wanted to write this as soon as I got enough power output, so I could get this to you within the time I promised. I don't have the electronics yet myself, but I'll try to self-loop this weekend anyway, using a shortcut - the new kid on the block – a bi-toroid transformer. This is a very interesting creature – just what the QEG needs. I'll try to buy one, or Matt and I will build one – whatever is faster. Look it up on the internet when you have a chance and I'll talk about it some more later when explaining the tech.

So I've got plenty of power right now to self-loop. Roughly between 2x and 4x what's needed with just preliminary tuning. Here's how-

As you may have suspected, you have to resonate both the primary and the secondary together to get enough amplitude to get the steel ringing. Once you get it going, the input power goes way down, and secondary current and voltage goes way up. Depending on how deeply I push it in to phase lock, I'm getting minimum 512 volts @ 2.33 Amps (w/500 Watts input), and up to 840 volts @ 3.36 Amps (w/600 Watts input). And this with the primary kV's pretty much loafing along (15.4kV p-p/4.14kV RMS). So no more worries of blowing out the core from too much high voltage.

I've updated the schematic and provided it in this package, so you might want to grab that to follow along here. I'm also including a short video clip showing the waveforms and numbers on the scope, and the input wattmeter during a sample run.

I didn't specify Watts in the numbers above, and here's why - Whenever you generate power in the core using parametric resonance, the current lags the voltage, so the power within the respective tank circuit is mostly VARs (reactive power). When resonating the primary only, the secondary voltage and current will be in phase, and conversely, when resonating only the secondary, the primary voltage and current will be in phase, so in the case of resonating only one winding, the core converts the VARs in the resonant tank to real power in the non-resonant winding, but as it turns out, this is *not* how it works.

Since we're now resonating both the primary and the secondary, several things change –

- We now have only VARs in the core (mostly, since power factor is non-zero).
- When tuned, both primary and secondary frequencies match up, at roughly double the frequency of either winding resonated alone (the parametric pumping frequency).
- As mentioned above, the 'steel' begins to resonate (when tuned properly by adjusting capacitor values), amplifying the power in the output winding, while drastically reducing the input power.

The 'steel resonant frequency' is not the steel resonance alone as we assumed – The peak resonance or 'vibration' actually includes 3 components: (1) the natural resonant frequency of the steel itself, (2) the common-mode interwinding capacitances, and (3) the tank circuit characteristics (L/C values). Also, and this is most important, there could never be enough power in the core to excite this resonance if one winding is continuously drawing off power, as it would be driving a load directly. It has to be a reflective

closed resonant loop. The 3 points above are as they should be by design, and here is where the magic happens! It's all in the power amplification due to the 3 component 'steel' or more correctly the 'core' resonance.

The results I'm seeing lead me to believe that any effect on the resonance from epoxy vs. non-epoxy will be very minor if even detectable, and I don't think that we'll even see a huge difference between steel types. I believe all the non-Torelco cores are also non-epoxy, so differences due to the steel types could be adjusted out by adjusting the windings (turns count and wire diameter) if this would even be necessary.

So here we'll talk about how it really works, as seen in the WITTS videos (they are real demonstrations), and how to get the power out.

It becomes obvious that the generator is not designed to drive the load directly from a non-resonant winding, since increasing the load simply increases the input power, changes the resonant frequency, and drives the primary kVs up to dangerous levels.

WITTS told us "the output has to be isolated from the load", and this is obvious if you note in their videos, that the generator is first dialed up into resonance and stabilized with no load applied, then load is added incrementally (the first and largest increment being the motor when it is switched over from grid power to generator power (self-looping). Then further load is added incrementally, with the light bulbs.

Referencing the schematic, I measured the output above using 111.4nF in the primary, and 4.0uF in the secondary. The frequency in the core was about 140Hz @ 2112 RPM. As I said, these measurements were observed after just enough tuning to see about 2x the necessary power to run the motor. Increasing from 500W input on the Wattmeter to 600W, I have almost enough power to meet the guarantee I published for you all (3000W), with just preliminary tuning.

The caps in the primary probably don't need to be 23 or 24kV. 20kV should be plenty with this new information. Also, be careful with the voltage probe that you use to look at the secondary voltage now. It's much higher. You might have to move your Tektronix P6015 40kV probe over to the secondary, or use another 1000:1 probe. I arced my 100:1 voltage probe when I first got the increase (luckily I didn't blow it out)! And the 4.0uF (microfarad, not picofarad) in the secondary loop should be set up to handle up to 2kV.

Next we have to convert the VARs to Watts, so here's where the electronics (and/or bi-toroid transformer) come in. In Watts, the numbers above correspond to roughly 1193W out @ 500W in, and 2822.4W out @ 600W input.

What is needed is to extract the power from the secondary loop without loading it, so as not to disturb the resonance. To my knowledge, the most well-known way to do this is to use a transverter with diode plugs. Basically this technique charges DC caps up to the tank voltage with each cycle, then discharges

the caps into the load via semiconductors at the proper timing intervals. When this is set up, any parasitic elements of the electronics are included in the secondary loop resonant tuning beforehand.

Using transverter circuitry also combines the frequency and voltage control (matching to the local 50/60Hz, and 110/115/120 – 220/230/240V power requirements) with extracting the power from the generator. This is not difficult to do at the low range of power frequencies we are dealing with (≤ 200Hz).

As above, another option that may be simpler and faster is to employ a bi-toroid transformer (BiTT) connected directly in the secondary loop where again, the BiTT primary inductance would be included in the secondary loop resonant tuning. This unique transformer consumes VARs while providing real power to the load, with no reflection to its primary (no disturbance to the resonance). However with this approach, a (fairly simple) inverter would still be needed to control the output voltage/frequency.

I'm including a couple of transverter schematics just for your reference. These are not necessarily the ones we would actually use, but they may be close. Tivon and I are reviewing and will design and test for the proper frequencies and power levels (semiconductor and component sizing and ratings), and make these available for those of you who will need them. There is reference info easily available on the internet about the Thane Heins BiTT, so we leave that to you to look up while we work on specifying one.

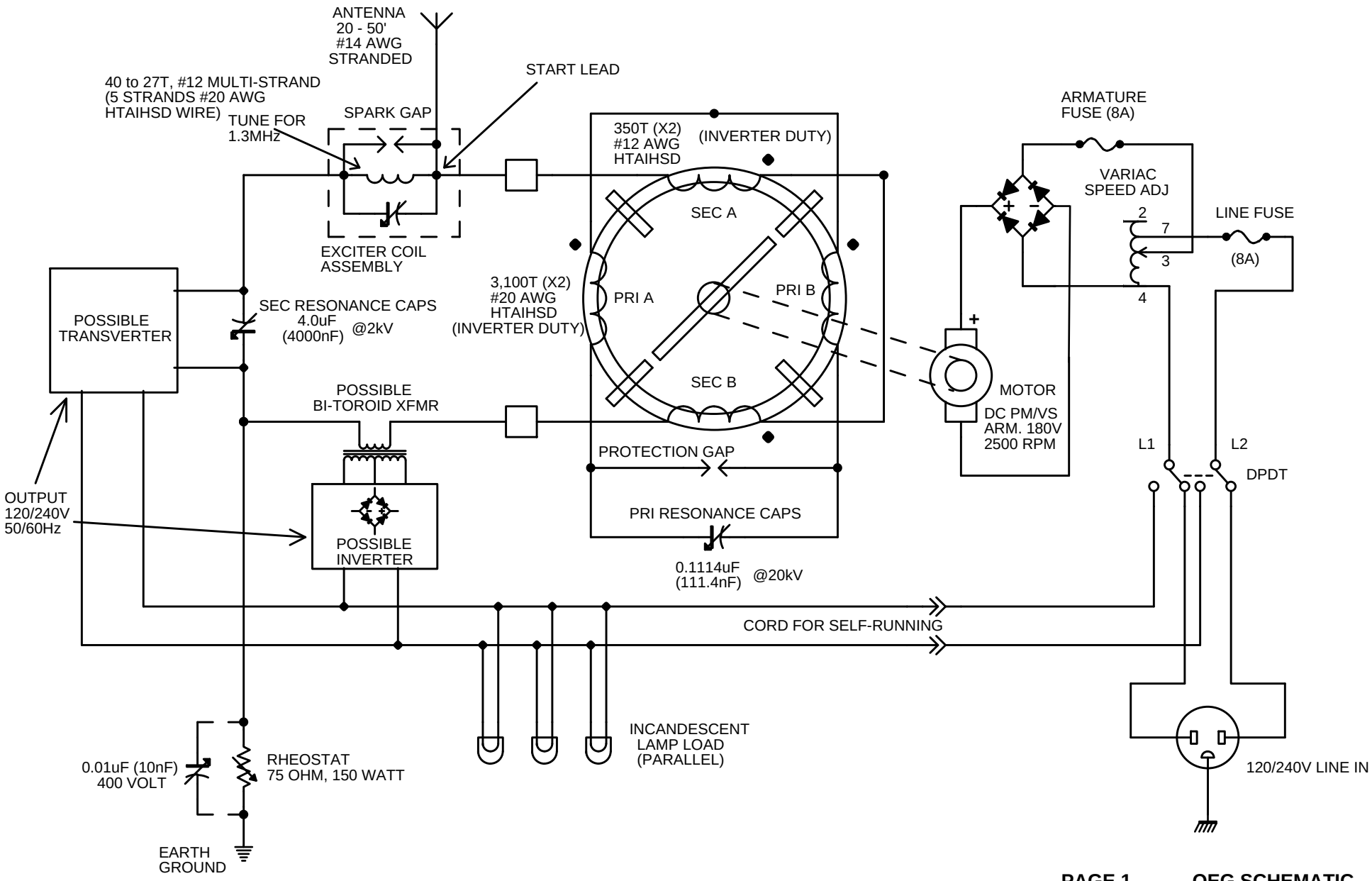
I have the exciter coil connected as in the schematic, and I'm able to get some fairly consistent arcing in the spark gap. I can see a small effect on the waveform so far, but as I said, I started writing this as soon as I got the dramatic increase in the machine's output, so I have more experimenting to do with the exciter coil. I connected it *after* seeing the increase in the generator output, so I'm sure we'll be able to self-loop without it, and it will have its greatest effect with helping the core to support more and more load as we go forward. I also want to experiment with running the generator on a lower harmonic (same frequency but lower speed), although 2112 RPM is a nice reasonable speed. I haven't tried running on the harmonic yet.

In closing, we're now fairly sure that Ronald Brandt (working with WITTS) is responsible for this brilliant (purely resonance) adaptation of some of Tesla's work that we call the QEG (Brandt died in 2015). It's an amazing device, and I'm sure that you could set up either the secondary or the primary as the output winding. There is so much versatility here that can be researched and optimized for particular applications.

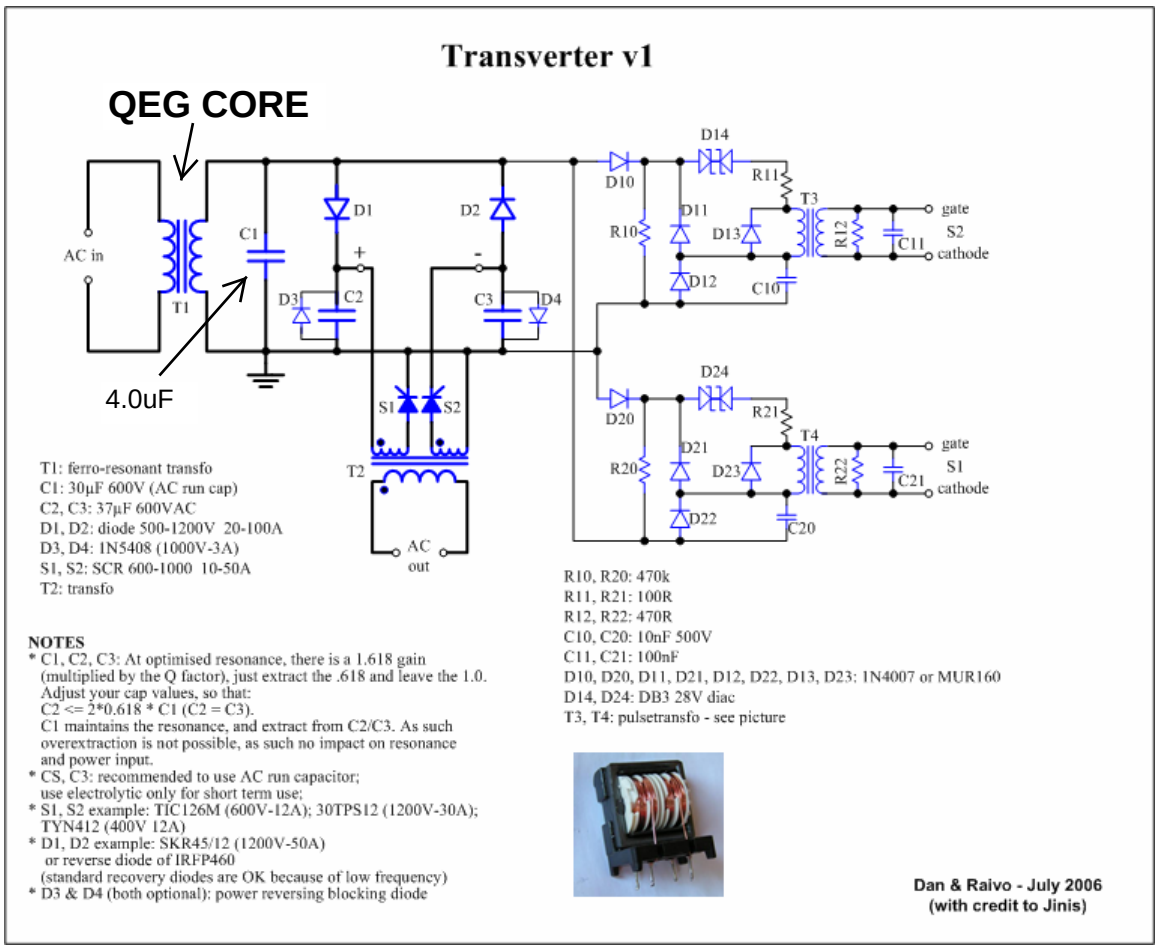
So we're here working on the power extraction for you, and I'll let you know of this weekend's findings. Let me know your questions and how you're all progressing as we get them going!

Blessings to you all!

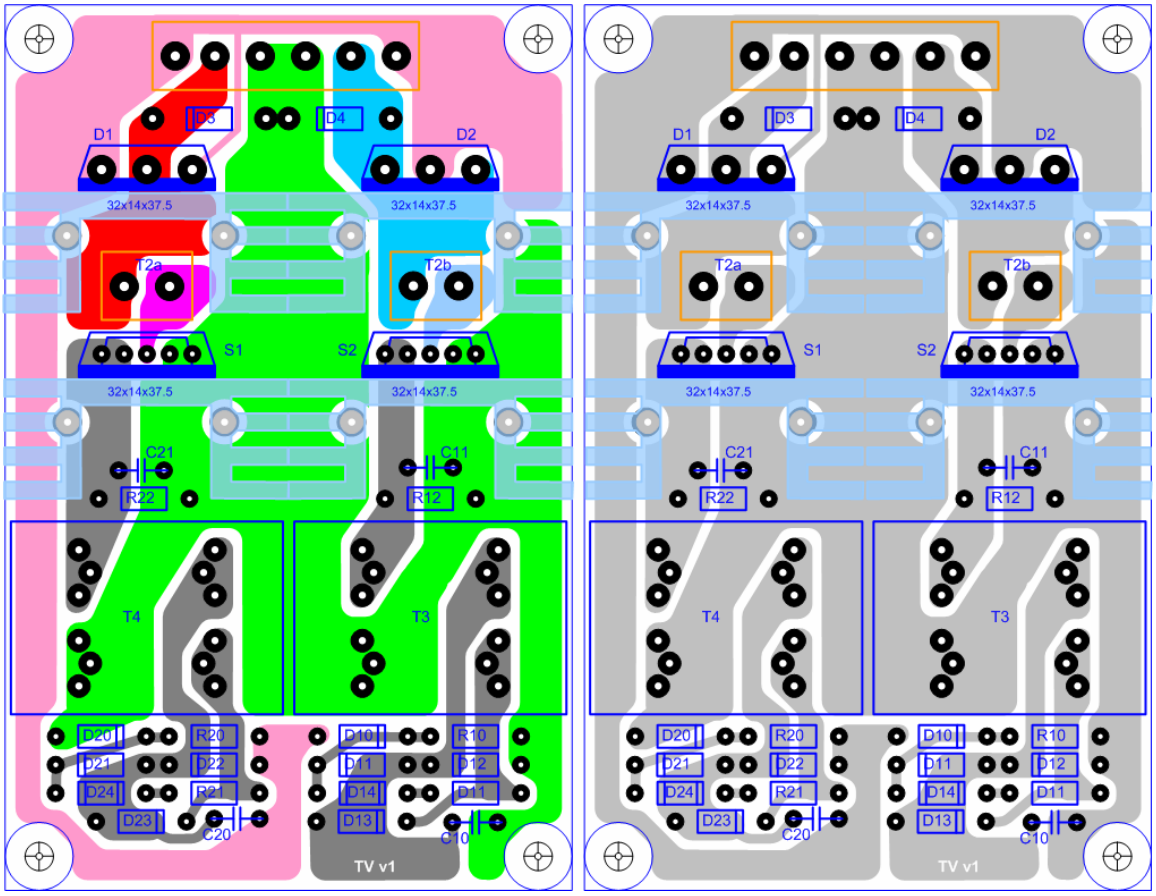
James

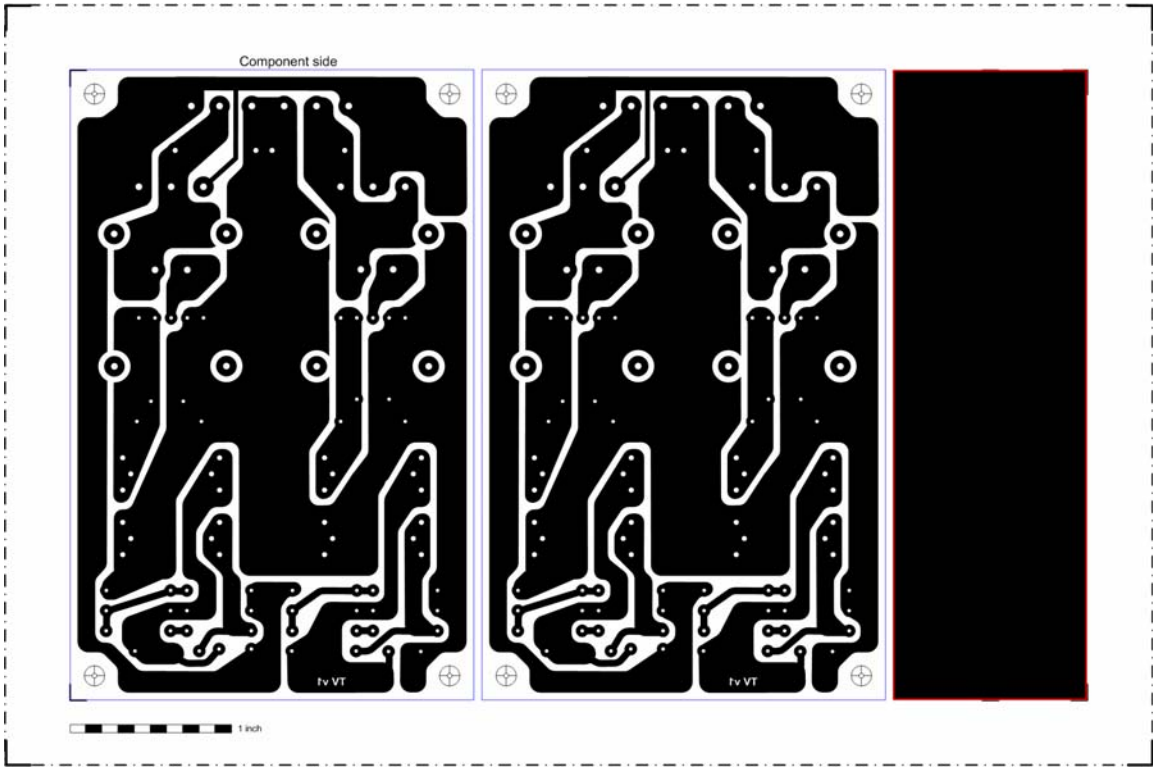


PAGE 1 **QEG SCHEMATIC**
2-14-2015

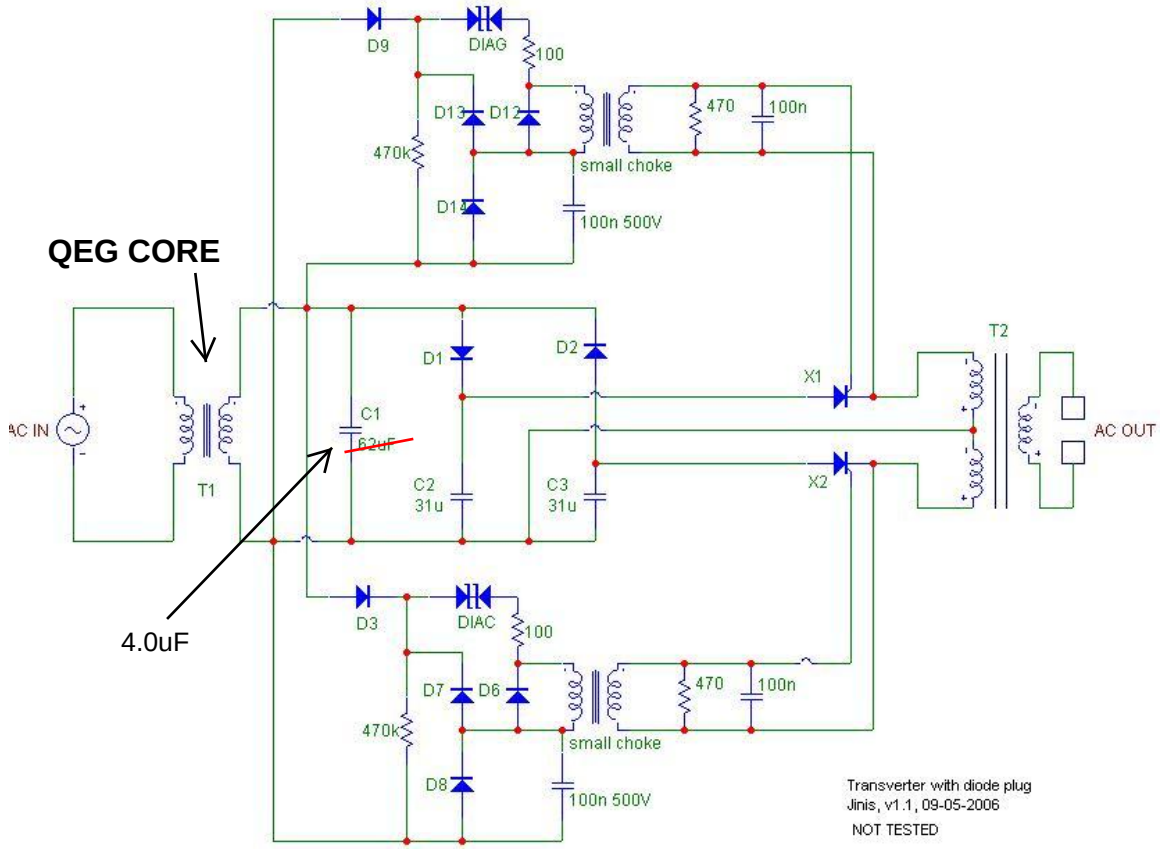

Transverter v1
QEG CORE
AC in
T1
C1
4.0uF
D1
D2
D3
C2
C3
D4
S1
S2
T2
AC
out
D10
D14
R11
T3
R10
D11
D13
R12
C11
gate
S2
cathode
D12
C10
D20
D24
R21
T4
R20
D21
D23
R22
C21
gate
S1
cathode
D22
C20
T1: ferro-resonant transfo
C1: 30µF 600V (AC run cap)
C2, C3: 37µF 600VAC
D1, D2: diode 500-1200V 20-100A
D3, D4: 1N5408 (1000V-3A)
S1, S2: SCR 600-1000 10-50A
T2: transfo
NOTES
* C1, C2, C3: At optimised resonance, there is a 1.618 gain (multiplied by the Q factor), just extract the .618 and leave the 1.0. Adjust your cap values, so that:
C2 <= 2*0.618 * C1 (C2 = C3).
C1 maintains the resonance, and extract from C2/C3. As such overextraction is not possible, as such no impact on resonance and power input.
* CS, C3: recommended to use AC run capacitor; use electrolytic only for short term use;
* S1, S2 example: TIC126M (600V-12A); 30TPS12 (1200V-30A); TYN412 (400V 12A)
* D1, D2 example: SKR45/12 (1200V-50A) or reverse diode of IRFP460 (standard recovery diodes are OK because of low frequency)
* D3 & D4 (both optional): power reversing blocking diode
R10, R20: 470k
R11, R21: 100R
R12, R22: 470R
C10, C20: 10nF 500V
C11, C21: 100nF
D10, D20, D11, D21, D12, D22, D13, D23: 1N4007 or MUR160
D14, D24: DB3 28V diac
T3, T4: pulsetransfo - see picture
Dan & Raivo - July 2006
(with credit to Jinis)

PCB layouts


D1
D3
D4
D2
32x14x37.5
T2a
T2b
S1
S2
C21
C11
R22
R12
T4
T3
D20
R20
D10
R10
D21
D22
D11
R12
D24
R21
D14
D11
D23
C20
D13
C10
TV v1


Component side
tv VT
tv VT
1 inch

Jinis's First schematic



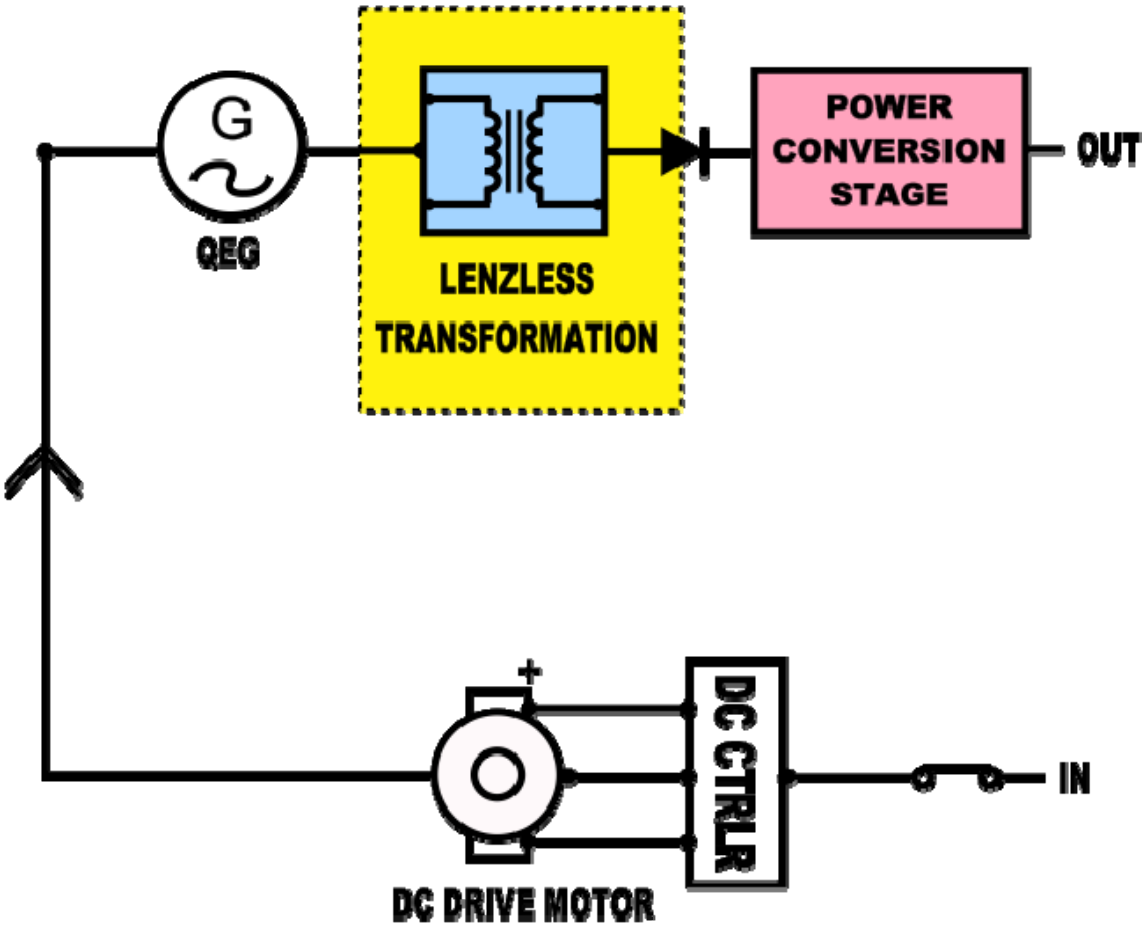
To be updated and continued…

Latest Inverter designs for experiments

Squealing pig

THE LENZLESS TRANSFORMER

Here at QEG Academy, we have been looking at ways to harness the electrical energy that is accumulated in the core of the QEG and TeslaGen v1 as to not impact LC tank resonance or reflect the resistive load back to source. During our research, we have discovered a little known type of electrical transformer that is not commonly used in everyday appliances. A class of transformer called the **Lenzless Transformer**. It has unique properties including the ability to transmit electrical energy in one direction only (electromagnetic valve) without reflecting back to the primary source. In fact, some forms of Lenzless transformers are capable of passively 'consuming' reactive power (power factor = 0) at the primary coils and convert this energy into real power (power factor = 1) on the secondary coils! This has huge implications for efficient power conversion. Our implementation of this technology is to convert the reactive power accumulated in the QEG core into usable electrical energy using this method (see below).



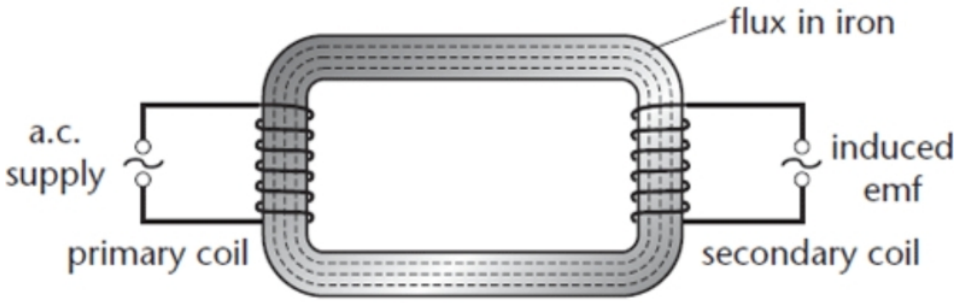
Before continuing however, let me first give a basic review of a conventional transformer, which is an electrical device that transfers electrical energy between two or more circuits through electromagnetic induction. Conventional transformers obey Lenz's Law of electromagnetic induction that states that when an emf is induced according to Faraday's law, the polarity (direction) of that inducted emf is such that it opposes the cause of its production.

Emf = - N (dΦ/dt)

- where **N** = number of turns
- **Φ** = BA = magnetic flux
- **B** = external magnetic field
- **A** = area of the coil

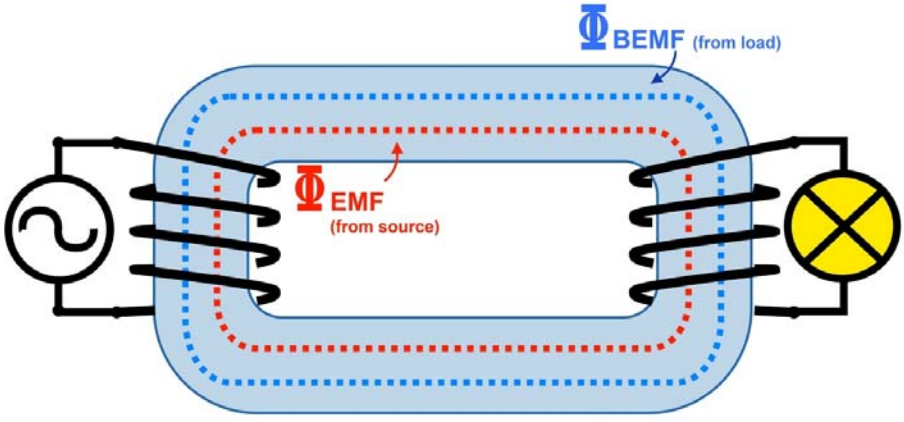
The negative sign shows that, the direction of the induced emf and the direction of the change in the magnetic fields have opposite signs.

An AC electrical source feeds power to the primary coil, and through magnetic induction the induced electromotive force (emf) supplies power to a load via the secondary coil. The ratio of turns between the primary and secondary windings determine the desired voltage and supply current powering the load. The load in turn creates a back emf that is reflected back to the primary winding (and to the power company supplying the electricity).



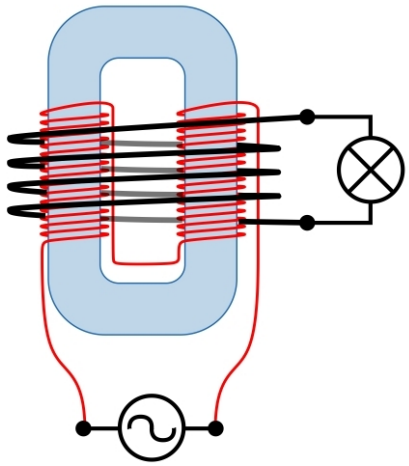
Flux linking two transformer coils

There is always a loss however. The average efficiency of a regular transformer seen in your cell phone charger or microwave oven ranges between 95-99% efficient. This is because of electrical energy losses in the iron and copper windings.

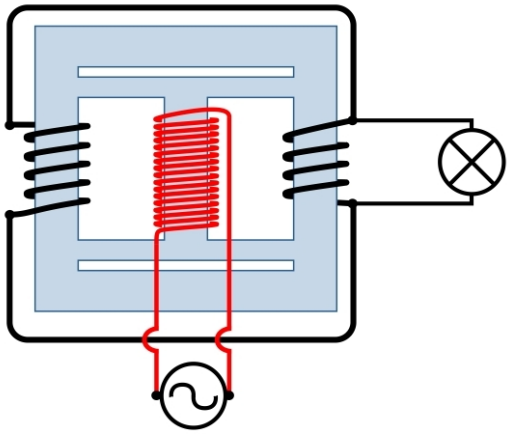


Showing the EMF flux created from the AC source, and the reflected back-emf (BEMF) created from the load. Both fluxes oppose each other, and flow along the same magnetic path within the steel core

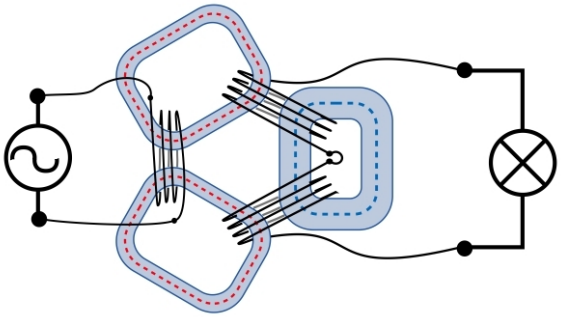
LENZLESS TRANSFORMER TYPES



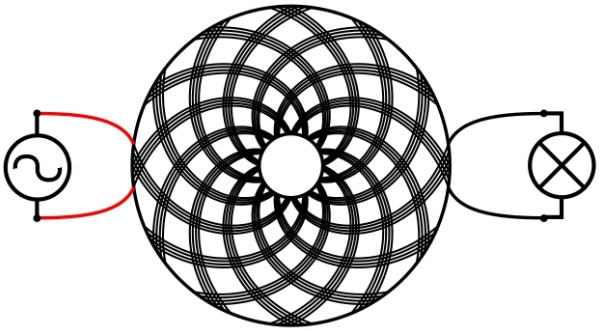
MARKOV TRANSFORMER



BI-TOROID TRANSFORMER



SPLIT-FLUX TRANSFORMER



NUNEZ TRANSFORMER

Lenzless Transformer however, are extremely efficient due to the geometry of the steel core, and various unique methods of winding the primary and secondary coils. Lenz Law still applies. However, the configuration and geometries of these special transformers either cancel the load-generated back emf linking the transformer coils, or divert the back emf from the secondary coils to its own flux loop. Both methods can effectively decouple the 'load sensing' EMF and back-EMF from the circuit driving the primary coil, and boost transformer efficiency which is a necessary property toward having a self-looping system! Lenzless transformers also have the unique property of passively converting reactive power in the primary (when the power factor = 0), into real power running a load on the secondary windings (power factor = 1). When these factors are taken into consideration, conventional efficiencies above 200% is typical.

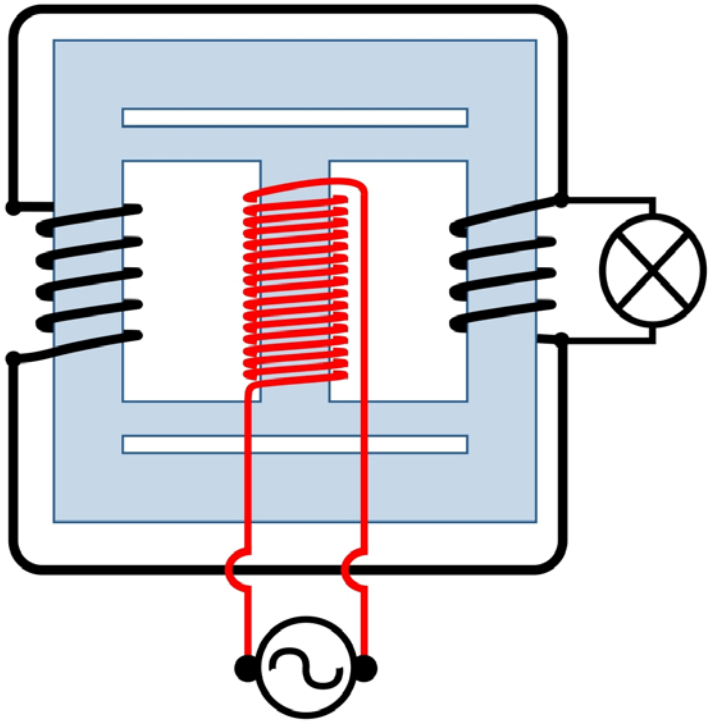
THE CORE OF A BI-TOROID TRANSFORMER

We have identified at least four different types of Lenzless transformers that can be used to transform the electrical energy accumulated within the QEG and miniQEG:

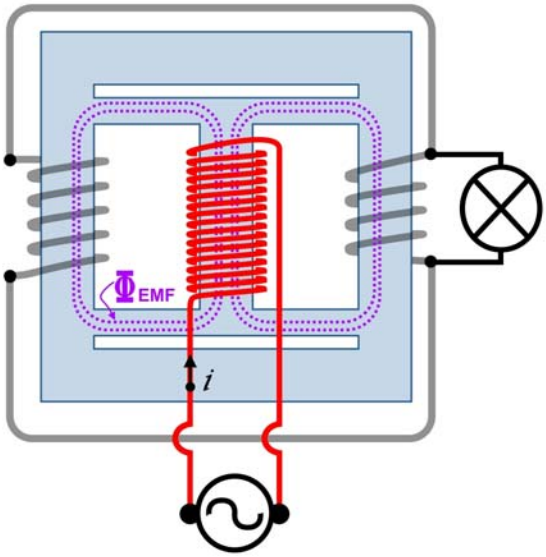
- **Bi-Toroid Transformer**
- **Split Flux Transformer**
- **Nunez Transformer**
- **Markov Transformer**

We will now briefly discuss the general operation of each of the four transformers. This is in no way an exhaustive study on the technology, and not all methods are covered here regarding wiring methods or configurations. Our mission here is to introduce this technology to the reader and motivate further research and development of the QEG using this technology as an optional resource to achieve overunity.

BI-TOROID TRANSFORMER

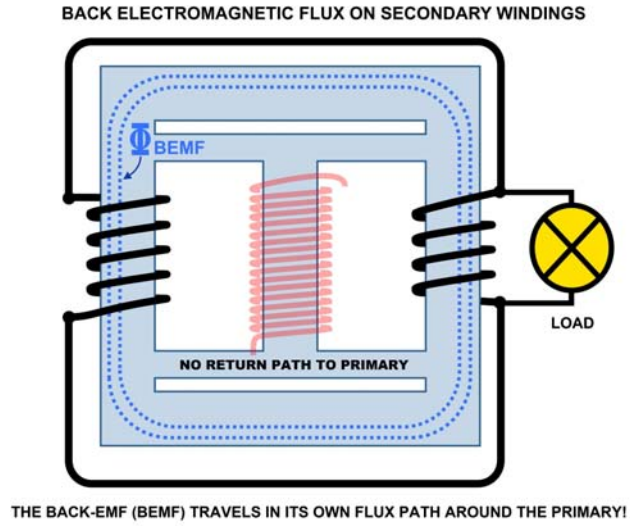


Invented by Thane Heins, he received his Canadian Patent for the Bi-Toroid Transformer CA2594905 and United States patent US20140253271. When an AC source is running across the high inductance primary, a changing magnetic flux is generated in the core as normal.

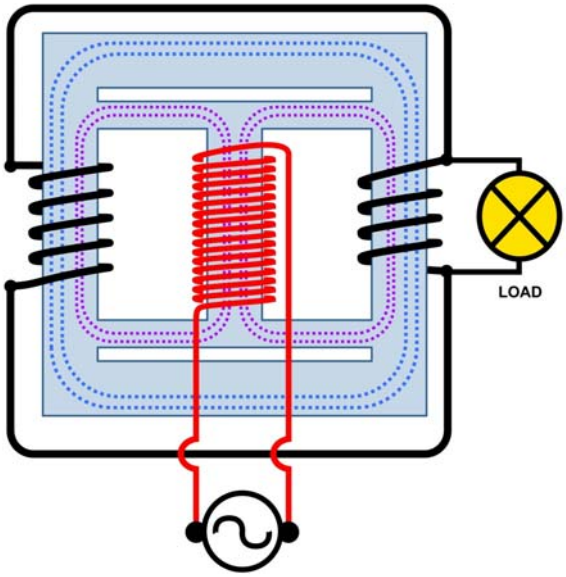


An EMF is then induced across the secondary windings to power the load. However, the induced current in the loaded secondary windings create their own 'back-EMF' (BEMF) to oppose the initial emf flow. The BEMF flux flows through the path of least magnetic

reluctance (resistance), away from the intial EMF created by the primary winding. This flow completely avoids the primary winding. This is what allows one-way electrical energy flow possible in the transformer!

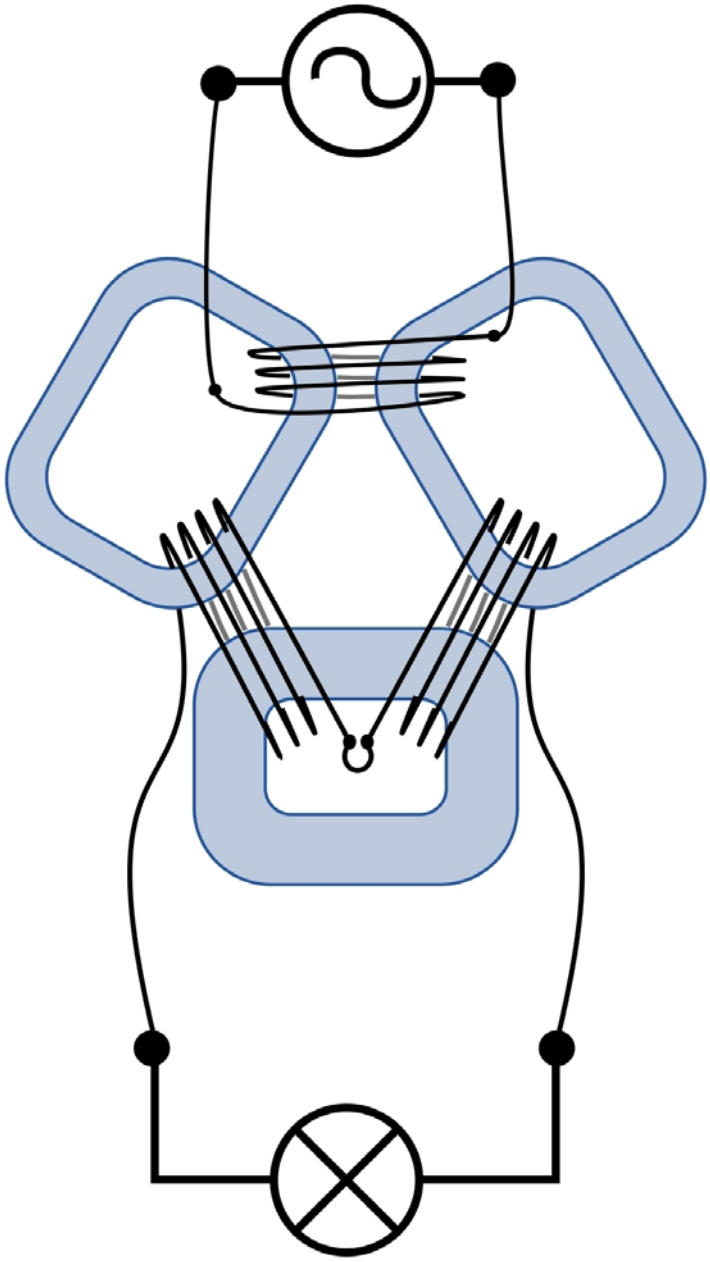


As you can see in the image below, the flux paths of both the EMF and BEMF are not the same!



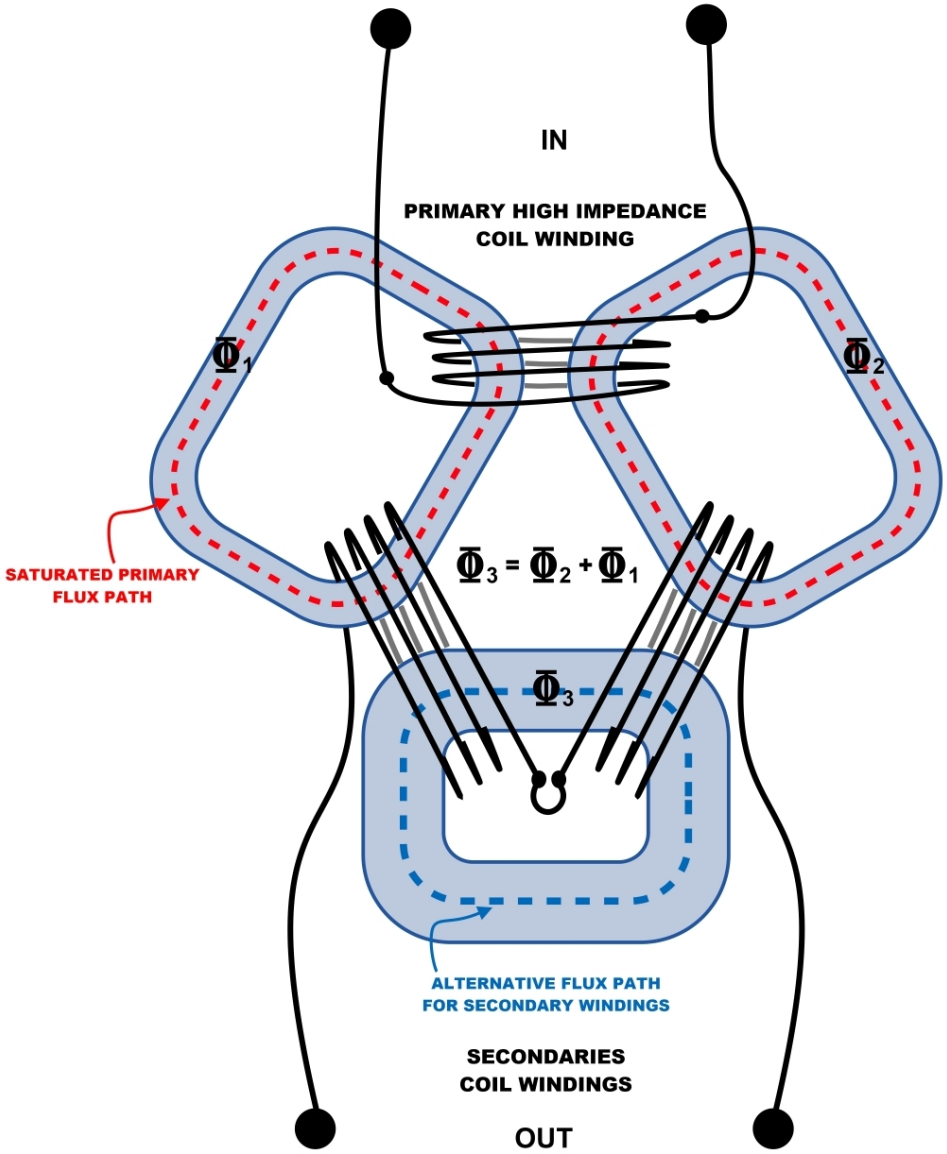
This device has been successfully replicated by researchers worldwide with maximum efficiencies as high as a COP = 27!

SPLIT-FLUX TRANSFORMER



This technology is the brainchild of William Alek. This lenzless solution ingeniously is a unique physical topology that utilizes standard C-cores or toroids mounted in a triangular fashion. AC current is fed through the primary winding, which consists of high inductance turns. Bifilar turns are suggested to increase both generated EMF and self-capacitance across the primary. The generated EMF is now circulating across two separate steel core rings ($\Phi 1$ and $\Phi 2$), composed of either ferrite toriods or amorphous steel C-cores. Saturated by the EMF created from the primary, the two cores are now magnetically saturated. Another pair of separate windings (one for each 'primary' core) pickup the generated EMF

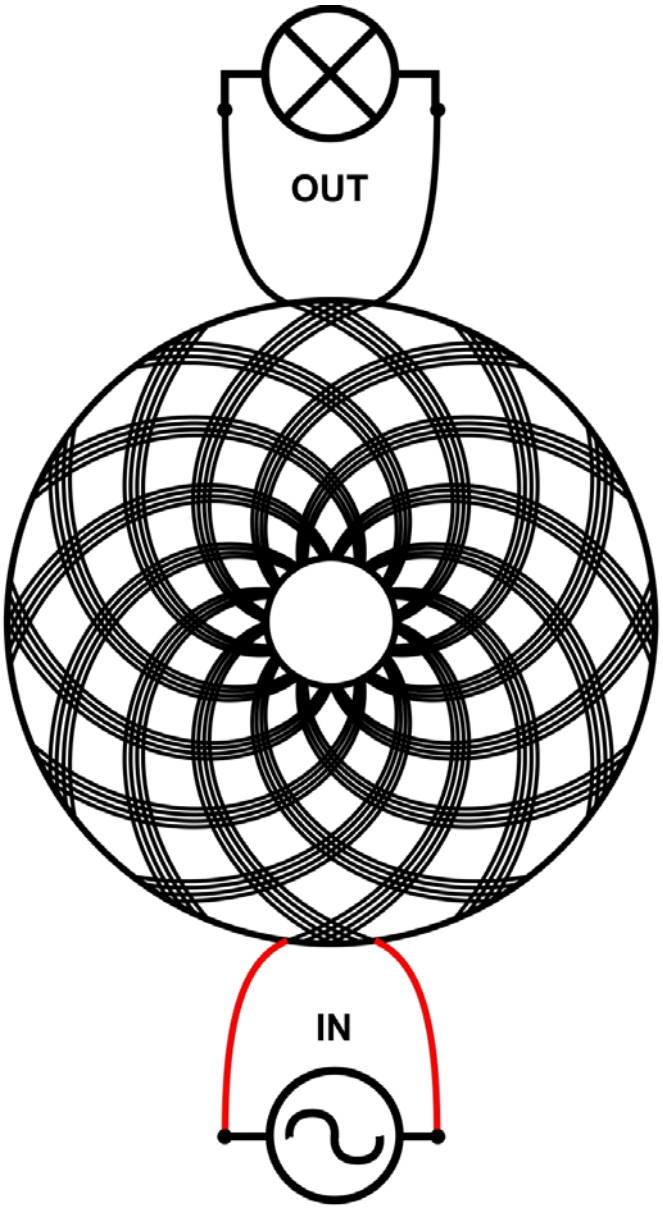
from the primary cores and both a feed a larger, third steel core (Φ_3). See below.



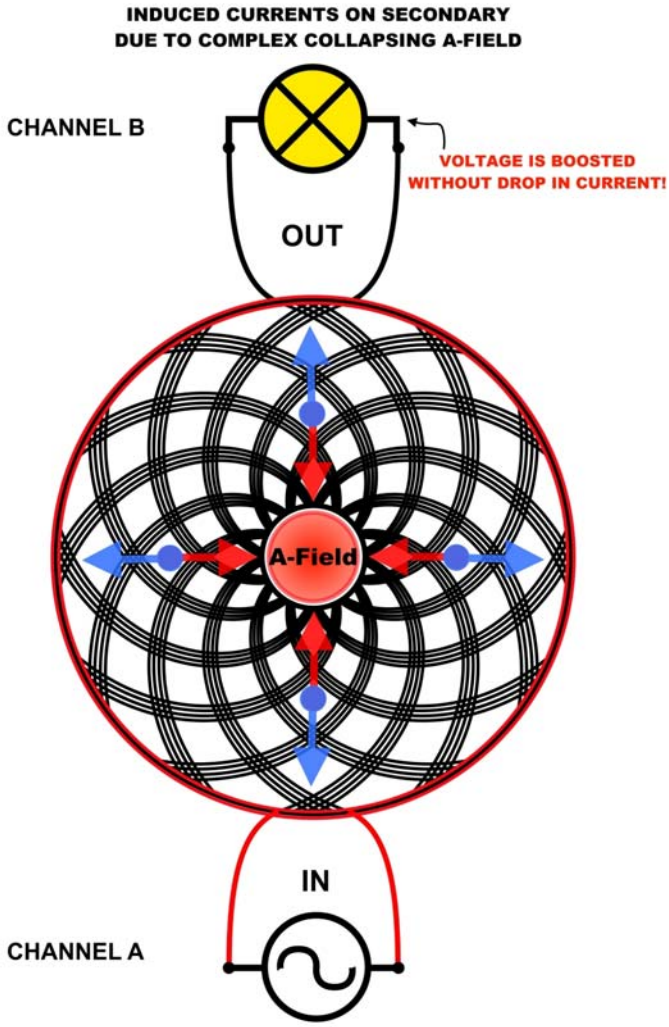
A third steel core functions as the 'magnetic shunt' for the BEMF to flow as induced current flows through the secondary windings.

As you can see from the illustration above, the third core is large enough to handle enough induced BEMF from both smaller primary cores. However, like the Bi-Toroid, the induced BEMF that is generated from the loaded secondary windings flow within its own flux loop inside the third core **Φ_3.** Again, both EMF and BEMF fluxes do not flow in identical paths. The difference here is the steel cores separating the EMF and BEMF fluxes are separate, discrete pieces instead of a single core like the Bi-Toroid. This device too has been successfully replicated by researchers including a QEG builder that has contacted QEG Academy. The performance of the Split-Flux Transformer has a documented COP = 2.49.

NUNEZ TRANSFORMER



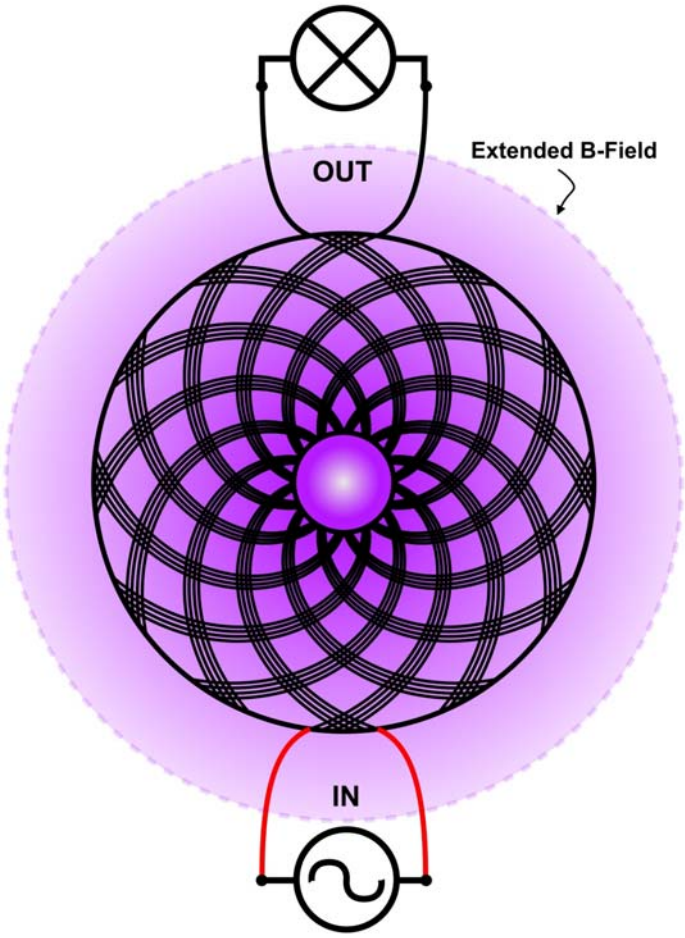
This Nunez Transformer is a departure from the ferrite based transformers that have been covered.This technology is the creation of Daniel and Erica Nunez. Its topology is inspired by three-dimensional vortical and toroidal geometry, and resonates at a much higher frequency as it does not contain a solid ferrite core. Its main features are its windings which are made of multifilar enameled copper wire. The multifilar strands are all connected in-series during winding to create strong electric and magnetic potentials around and beyond the surface of the toroidal form.



These currents also produce both collapsing EMF and BEMF fluxes which buckle and create high voltage spikes. Ozone creation with relatively low voltages and power levels is common. This transformer therefore, does not boost voltage at the expense of current like normal transformer action. Instead, it is possible to drive the coil into resonance and get the reactive power to rise in voltage without a drop in current! The buckling fields along the windings also induce a large complex A-field which the result of these colliding and collapsing magnetic fields. The A-field is most intense toward the center of the torus. Another unusal phenomenon of this high frequency transformer is its ability to create SOUTH-only magnetic monopoles when injected with DC pulses. This seems to be independent of switching polarities. Operation of the coil has also been shown to promote healthy growth of plant seedlings, a nice benefit to the technology while at the same time using it to produce overunity.

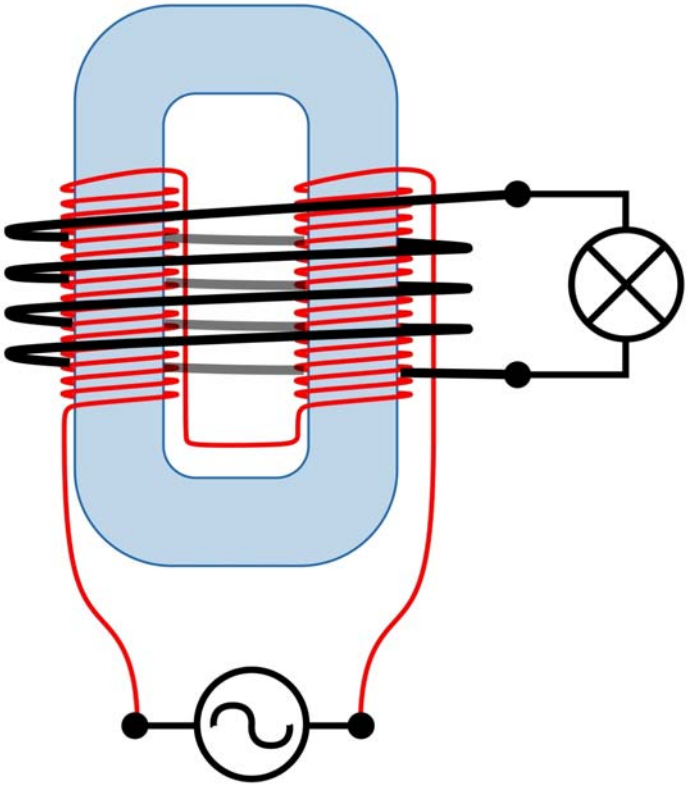
We believe this technology is compatible with the QEG as an amplifier of radiant energy. Energy would be transmitted from Channel A at high frequency,and the high impulse voltages which could be amplified further by the use of a Tesla high turn secondary coil sitting in the center of the coil.
Finally, the Nunez Transformer creates a massive magnetic field that can extend at least

several meters from the coil. There also appears to be a ultra-acoustic pressure field that is extended along the axis through the center of the coil. All of these effects are worthy of further investigation.

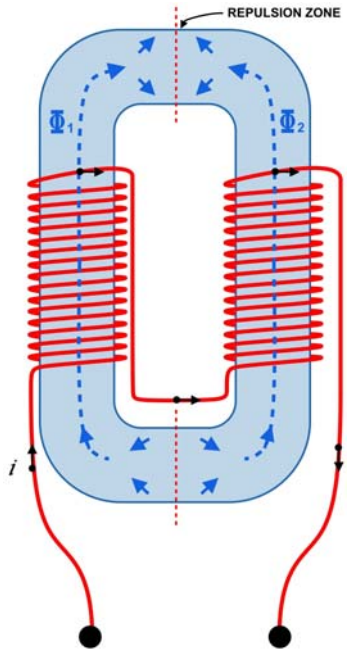


The performance of the Nunez Transformer has a documented COP = 2.

MARKOV TRANSFORMER



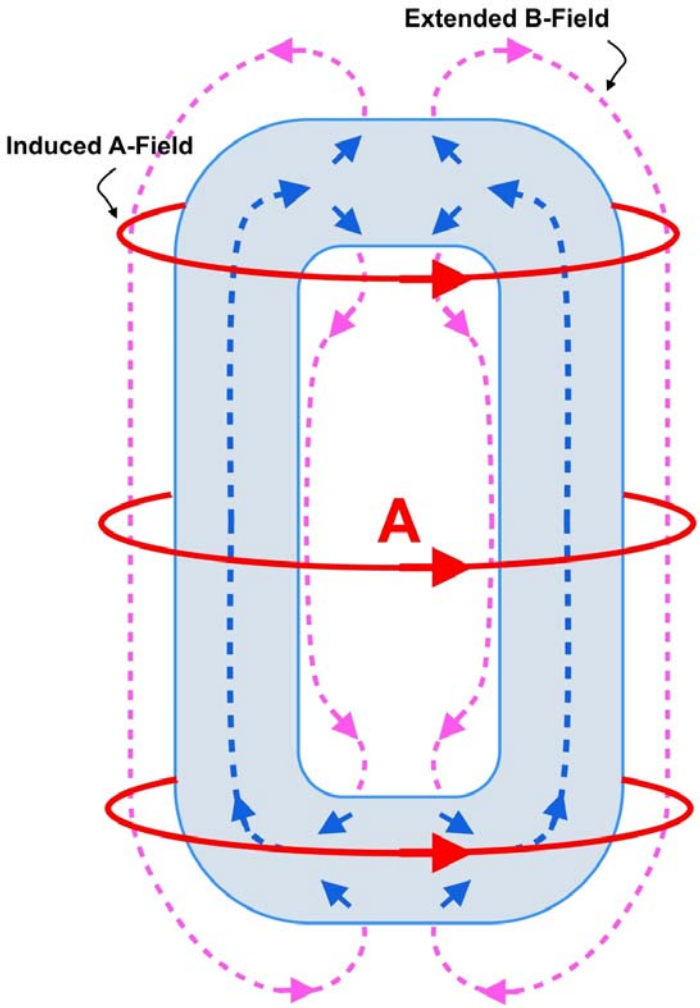
The Markov Transformer is named after its inventor, Gennady Markov. Its also known as the bidirectional current transformer. It is based on the principle that the primary coil has two windings that are connected in such a way as to create a balanced magnetic flux in repulsion mode through the steel core. Below image shows the primary winding only.



Current flows in the primary winding to create repelling field

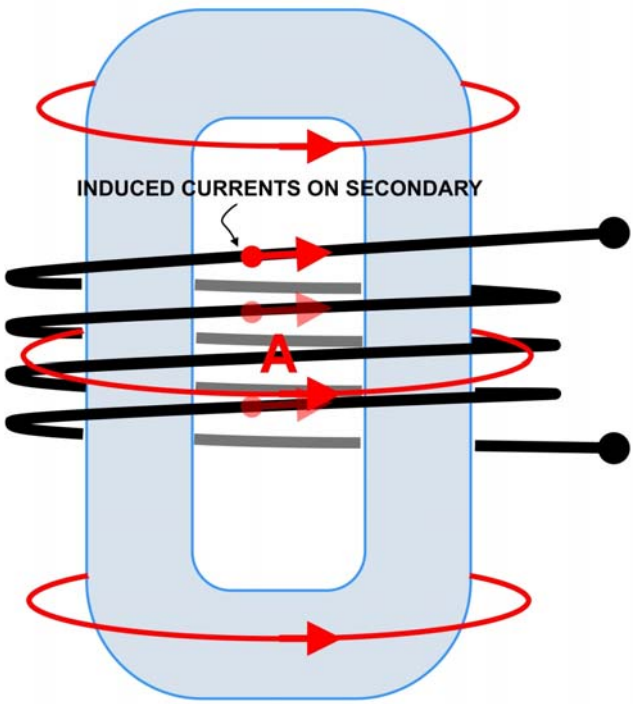
At first glance the transformer looks like it should not work. You may think that mutual repulsion would yield a net zero field across the secondary (not shown). As you are about to see however, induced currents do indeed develop across the loaded secondary windings.

The windings of the same polarities create magnetic fields with opposing flux in the core. The inductance of the core virtually drops to almost zero, and the magnetic flux expands beyond the surface of the steel core material to the surrounding space. Remember this is a time varying magnetic flux (AC source), so produces a time varying energy field at right angles to this flow in space. The direction of this energy field can be found using the Right Hand Rule for electromagnetism. This field is known in physics as the 'A-field'.



THE A-FIELD IS INDUCED BY THE CHANGING EXTERNAL MAGNETIC FLUX

Now, if there was a loop of wire in the path of an A-Field loop, then the induced current would be in the same direction as the A-Field loop. It is this A-Field that induces current in the secondary windings to power the load even though the primaries' EMF cancels within the core material.



You now have a more complete picture of what is happening around this most interesting transformer. This mode of operation also gives the Markov Transformer the ability to function as a highly efficient high frequency lenzless transformer. The size of a Markov Transformer is significantly smaller than its much larger conventional cousin performing the same work!

Finally, like the Bi-Toroid and Split-Flux Transformers mentioned previous, there is no reflection back to the AC source, the flux path between the source EMF and BEMF is eliminated entirely!

CONCLUSION

As you can see, this gives us great reason to explore these innovations as a convenient method for power conversion. We encourage our readers to replicate and incorporate the success of these technologies into their builds, and share with other builders on the QEG Academy forum.

Finally, we thank the discoverers for thier contribution to this technology.

Credit:

PreppersGalleria2013_FreeEnergy.pdf
Canadian Patent CA2594905
United States Patent US20140253271
European Patent EP0844626A1

UNITED STATES PATENT OFFICE.

NIKOLA TESLA, OF NEW YORK, N. Y.

ELECTRIC GENERATOR.

SPECIFICATION forming part of Letters Patent No. 511,916, dated January 2, 1894.

Application filed August 19, 1893. Serial No. 483,562. (No model.)

To all whom it may concern:

Be it known that I, NIKOLA TESLA, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Electric Generators, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

In an application of even date herewith, Serial No. 483,563, I have shown and described a form of engine invented by me, which, under the influence of an applied force such as the elastic tension of steam or a gas under pressure, yields an oscillation of constant period.

In order that my present invention may be more readily understood I will explain the conditions which are to be observed in order to secure this result.

It is a well known mechanical principle that if a spring possessing a sensible inertia be brought under tension, as by being stretched, and then freed, it will perform vibrations which are isochronous, and as to period, in the main, dependent upon the rigidity of the spring, and its own inertia or that of the system of which it may form an immediate part. This is known to be true in all cases where the force which tends to bring the spring or movable system into a given position is proportionate to the displacement.

In the construction of my engine above referred to I have followed and applied this principle, that is to say, I employ a cylinder and a piston which in any suitable manner I maintain in reciprocation by steam or gas under pressure. To the moving piston or to the cylinder, in case the latter reciprocate and the piston remain stationary, a spring is connected so as to be maintained in vibration thereby, and whatever may be the inertia of the piston or of the moving system and the rigidity of the spring relatively to each other, provided, the practical limits within which the law holds true that the forces which tend to bring the moving system to a given position are proportionate to the displacement, are not exceeded, the impulses of the power impelled piston and the natural vibrations of the spring will always correspond in direction and coincide in time. In the case of the engine referred to, the ports are so arranged that the movement of the piston within the cylinder in either direction ceases when the force tending to impel it and the momentum which it has acquired are counterbalanced by the increasing pressure of the steam or compressed air in that end of the cylinder toward which it is moving, and as in its movement the piston has shut off at a given point, the pressure that impelled it and established the pressure that tends to return it, it is then impelled in the opposite direction, and this action is continued as long as the requisite pressure is applied. The length of the stroke will vary with the pressure, but the rate or period of reciprocation is no more dependent upon the pressure applied to drive the piston, than would be the period of oscillation of a pendulum permanently maintained in vibration, upon the force which periodically impels it, the effect of variations in such force being merely to produce corresponding variations in the length of stroke or amplitude of vibration respectively.

In practice I have found that the best results are secured by the employment of an air spring, that is, a body of confined air or gas which is compressed and rarefied by the movements of the piston, and in order to secure a spring of constant rigidity I prefer to employ a separate chamber or cylinder containing air at the normal atmospheric pressure, although it might be at any other pressure, and in which works a plunger connected with or carried by the piston rod. The main reason why no engine heretofore has been capable of producing results of this nature is that it has been customary to connect with the reciprocating parts a heavy fly-wheel or some equivalent rotary system of relatively very great inertia, or in other cases where no rotary system was employed, as in certain reciprocating engines or tools, no regard has been paid to the obtainment of the conditions essential to the end which I have in view, nor would the pressure of such conditions in said devices appear to result in any special advantage.

Such an engine as I have described affords a means for accomplishing a result heretofore unattained, the continued production of electric currents of constant period, by imparting the movements of the piston to a core or

coil in a magnetic field. It should be stated however, that in applying the engine for this purpose certain conditions are encountered which should be taken into consideration in order to satisfactorily secure the desired result. When a conductor is moved in a magnetic field and a current caused to circulate therein, the electro-magnetic reaction between it and the field, might disturb the mechanical oscillation to such an extent as to throw it out of isochronism. This, for instance, might occur when the electro-magnetic reaction is very great in comparison to the power of the engine, and there is a retardation of the current so that the electro-magnetic reaction might have an effect similar to that which would result from a variation of the tension of the spring, but if the circuit of the generator be so adjusted that the phases of the electromotive force and current coincide in time, that is to say, when the current is not retarded, then the generator driven by the engine acts merely as a frictional resistance and will not, as a rule, alter the period of the mechanical vibration, although it may vary its amplitude. This condition may be readily secured by properly proportioning the self induction and capacity of the circuit including the generator. I have, however, observed the further fact in connection with the use of such engines as a means for running a generator, that it is advantageous that the period of the engine and the natural period of electrical vibration of the generator should be the same, as in such case the best conditions for electrical resonance are established and the possibility of disturbing the period of mechanical vibrations is reduced to a minimum. I have found that even if the theoretical conditions necessary for maintaining a constant period in the engine itself are not exactly maintained, still the engine and generator combined will vibrate at a constant period. For example, if instead of using in the engine an independent cylinder and plunger, as an air spring of practically constant rigidity, I cause the piston to impinge upon air cushions at the ends of its own cylinder, although the rigidity of such cushions or springs might be considerably affected and varied by the variations of pressure within the cylinder, still by combining with such an engine a generator which has a period of its own approximately that of the engine, constant vibration may be maintained even through a considerable range of varying pressure, owing to the controlling action of the electro-magnetic system. I have even found that under certain conditions the influence of the electro-magnetic system may be made so great as to entirely control the period of the mechanical vibration within wide limits of varying pressure. This is likely to occur in those instances where the power of the engine while fully capable of maintaining a vibration once started, is not sufficient to change its rate. So, for the sake of illustration, if a pendulum is started in vibration, and a small force applied periodically in the proper direction to maintain it in motion, this force would have no substantial control over the period of the oscillation, unless the inertia of the pendulum be small in comparison to the impelling force, and this would be true no matter through what fraction of the period the force may be applied. In the case under consideration the engine is merely an agent for maintaining the vibration once started, although it will be understood that this does not preclude the performance of useful work which would simply result in a shortening of the stroke. My invention, therefore, involves the combination of a piston free to reciprocate under the influence of steam or a gas under pressure and the movable element of an electric generator which is in direct mechanical connection with the piston, and it is more especially the object of my invention to secure from such combination electric currents of a constant period. In the attainment of this object I have found it preferable to construct the engine so that it of itself controls the period, but as I have stated before, I may so modify the elements of the combination that the electro-magnetic system may exert a partial or even complete control of the period.

In illustration of the manner in which the invention is carried out I now refer to the accompanying drawings.

Figure 1 is a central sectional view of an engine and generator embodying the invention. Fig. 2 is a modification of the same.

Referring to Fig. 1 A is the main cylinder in which works a piston B. Inlet ports C C pass through the sides of the cylinder opening at the middle portion thereof and on opposite sides. Exhaust ports D D extend through the walls of the cylinder and are formed with branches that open into the interior of the cylinder on each side of the inlet ports and on opposite sides of the cylinder. The piston B is formed with two circumferential grooves E F which communicate through openings G in the piston with the cylinder on opposite sides of said piston respectively.

The particular construction of the cylinder, the piston and the ports controlling it may be very much varied, and is not in itself material, except that in the special case now under consideration it is desirable that all the ports, and more especially the exhaust ports should be made very much larger than is usually the case so that no force due to the action of the steam or compressed air will tend to retard or affect the return of the piston in either direction. The piston B is secured to a piston rod H which works in suitable stuffing boxes in the heads of the cylinder A. This rod is prolonged on one side and extends through bearings V in a cylinder I suitably mounted or supported in line with the first, and within which is a disk or plunger J carried by the rod H. The cylinder I is without ports of any kind and is air-tight except as a

small leakage may occur through the bearings V, which experience has shown need not be fitted with any very considerable accuracy. The cylinder I is surrounded by a jacket K which leaves an open space or chamber around it. The bearings V in the cylinder I, extend through the jacket K to the outside air and the chamber between the cylinder and jacket is made steam or air-tight as by a suitable packing. The main supply pipe L for steam or compressed air leads into this chamber, and the two pipes that lead to the cylinder A run from the said chamber, oil cups M being conveniently arranged to deliver oil into the said pipes for lubricating the piston. In the particular form of engine shown, the jacket K which contains the cylinder I is provided with a flange N by which it is screwed to the end of the cylinder A. A small chamber O is thus formed which has air vents P in its sides and drip pipes Q leading out from it through which the oil which collects in it is carried off.

To explain now the operation of the engine described, in the position of the parts shown, or when the piston is at the middle point of its stroke, the plunger J is at the center of the cylinder I and the air on both sides of the same is at the normal pressure of the outside atmosphere. If a source of steam or compressed air be then connected to the inlet ports C C of the cylinder A and a movement be imparted to the piston as by a sudden blow, the latter is caused to reciprocate in a manner well understood. The movements of the piston compress and rarefy the air in the cylinder I at opposite ends of the same alternately. A forward stroke compresses the air ahead of the plunger J which acts as a spring to return it. Similarly on the back stroke the air is compressed on the opposite side of the plunger J and tends to drive it forward. The compressions of the air in the cylinder I and the consequent loss of energy due mainly to the imperfect elasticity of the air, give rise to a very considerable amount of heat. This heat I utilize by conducting the steam or compressed air to the engine cylinder through the chamber formed by the jacket surrounding the air-spring cylinder. The heat thus taken up and used to raise the temperature of the steam or air acting upon the piston is availed of to increase the efficiency of the engine. In any given engine of this kind the normal pressure will produce a stroke of determined length, and this will be increased or diminished according to the increase of pressure above or the reduction of pressure below the normal.

In constructing the apparatus proper allowance is made for a variation in the length of stroke by giving to the confining cylinder I of the air spring properly determined dimensions. The greater the pressure upon the piston, the higher the degree of compression of the air-spring, and the consequent counteracting force upon the plunger. The rate or period of reciprocation of the piston, however, is mainly determined as described above by the rigidity of the air spring and the inertia of the moving system, and any period of oscillation within very wide limits may be secured by properly portioning these factors, as by varying the dimensions of the air chamber which is equivalent to varying the rigidity of the spring, or by adjusting the weight of the moving parts. These conditions are all readily determinable, and an engine constructed as herein described may be made to follow the principle of operation above stated and maintain a perfectly uniform period through very wide limits of pressure.

The pressure of the air confined in the cylinder when the plunger I is in its central position will always be practically that of the surrounding atmosphere, for while the cylinder is so constructed as not to permit such sudden escape of air as to sensibly impair or modify the action of the air spring there will still be a slow leakage of air into or out of it around the piston rod according to the pressure therein, so that the pressure of the air on opposite sides of the plunger will always tend to remain at that of the outside atmosphere.

To the piston rod H is secured a conductor or coil of wire D′ which by the movements of the piston is oscillated in the magnetic field produced by two magnets B′ B′ which may be permanent magnets or energized by coils C′ C′ connected with a source of continuous currents E′. The movement of the coil D′ across the lines of force established by the magnets gives rise to alternating currents in the coil. These currents, if the period of mechanical oscillation be constant will be of constant period, and may be utilized for any purpose desired.

In the case under consideration it is assumed as a necessary condition that the inertia of the movable element of the generator and the electro-magnetic reaction which it exerts will not be of such character as to materially disturb the action of the engine.

Fig. 2 is an example of a combination in which the engine is not of itself capable of determining entirely the period of oscillation, but in which the generator contributes to this end. In this figure the engine is the same as in Fig. 1. The exterior air spring is however omitted and the air spaces at the ends of the cylinder A relied on for accomplishing the same purpose. As the pressure in these spaces is liable to variations from variations in the steam or gas used in impelling the piston they might affect the period of oscillation, and the conditions are not as stable and certain as in the case of an engine constructed as in Fig. 1. But if the natural period of vibration of the elastic system be made to approximately accord with the average period of the engine such tendencies to variation are very largely overcome and the engine will preserve its period even through a considerable range of variations of pressure. The

generator in this case is composed of a magnetic casing F′ in which a laminated core G′ secured to the piston rod H is caused to vibrate. Surrounding the plunger are two exciting coils C′ C′, and one or more induced coils D′ D′. The coils C′ C′ are connected with a generator of continuous currents E′ and are wound to produce consequent poles in the core G′. Any movement of the latter will therefore shift the lines of force through coils D′ D′ and produce currents therein.

In the circuit of coils D′ is shown a condenser H′. It need only be said that by the use of a proper condenser the self induction of this circuit may be neutralized. Such a circuit will have a certain natural period of vibration, that is to say that when the electricity therein is disturbed in any way an electrical or electro-magnetic vibration of a certain period takes place, and as this depends upon the capacity and self induction, such period may be varied to approximately accord with the period of the engine.

In case the power of the engine be comparatively small, as when the pressure is applied through a very small fraction of the total stroke, the electrical vibration will tend to control the period, and it is clear that if the character of such vibration be not very widely different from the average period of vibration of the engine under ordinary working conditions such control may be entirely adequate to produce the desired results.

Having now described my invention, what I claim is—

1. The combination with the piston or equivalent element of an engine which is free to reciprocate under the action thereon of steam or a gas under pressure, of the moving conductor or element of an electric generator in direct mechanical connection therewith.

2. The combination with the piston or equivalent element of an engine which is free to reciprocate under the action of steam or a gas under pressure, of the moving conductor or element of an electric generator in direct mechanical connection therewith, the engine and generator being adapted by their relative adjustment with respect to period to produce currents of constant period, as set forth.

3. The combination with an engine comprising a piston which is free to reciprocate under the action of steam or a gas under pressure, and an electric generator having inducing and induced elements one of which is capable of oscillation in the field of force, the said movable element being carried by the piston rod of the engine, as set forth.

4. The combination with an engine operated by steam or a gas under pressure and having a constant period of reciprocation, of an electric generator, the moving element of which is carried by the reciprocating part of the engine, the generator and its circuit being so related to the engine with respect to the period of electrical vibration as not to disturb the period of the engine, as set forth.

5. The combination with a cylinder and a piston reciprocated by steam or a gas under pressure of a spring maintained in vibration by the movement of the piston, and an electric generator, the movable conductor or element of which is connected with the piston, these elements being constructed and adapted in the manner set forth for producing a current of constant period.

6. The method of producing electric currents of constant period herein described which consists in imparting the oscillations of an engine to the moving element of an electric generator and regulating the period of mechanical oscillation by an adjustment of the reaction of the electric generator, as herein set forth.

NIKOLA TESLA.

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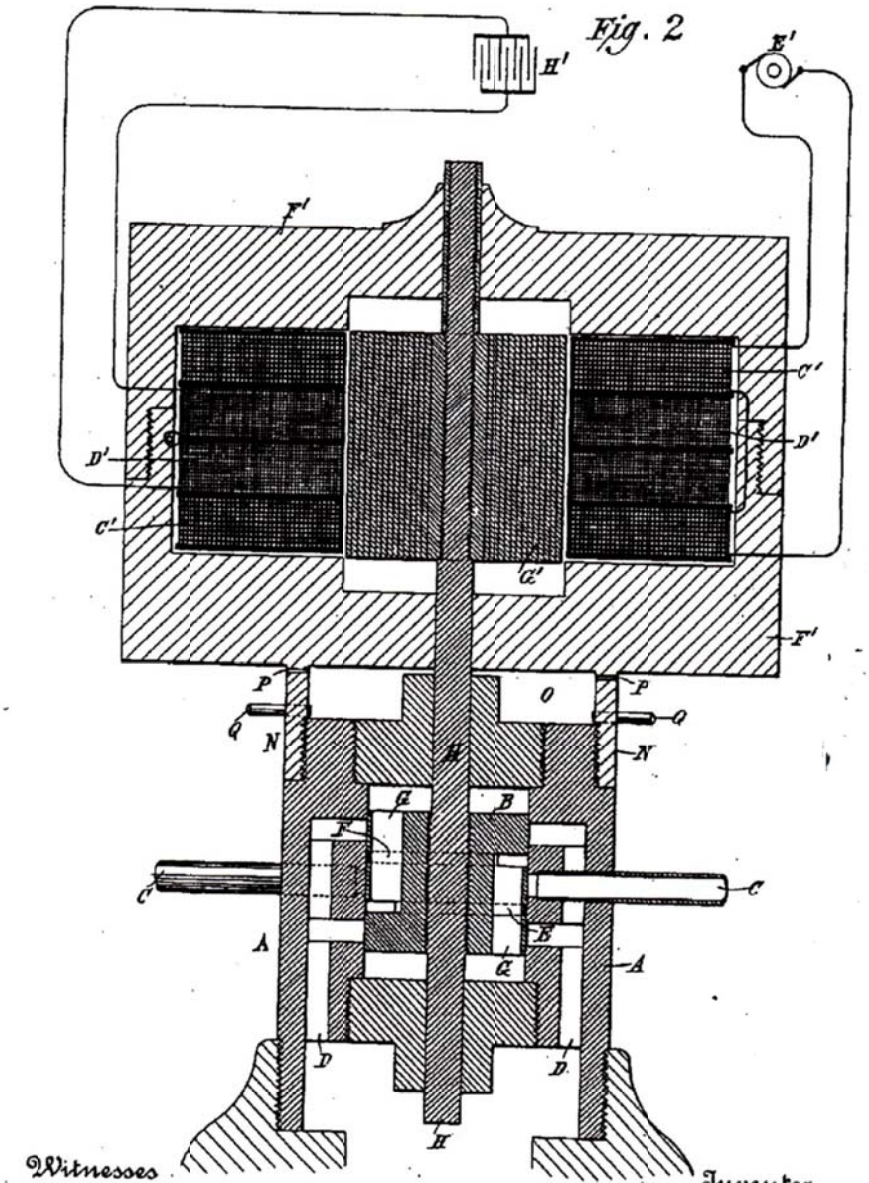
(No Model.) 2 Sheets—Sheet 2.

N. TESLA.

ELECTRIC GENERATOR.

No. 511,916. Patented Jan. 2, 1894.

Fig. 2



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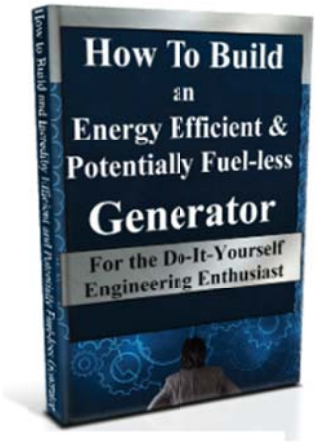
ADDITIONAL RESOURCES



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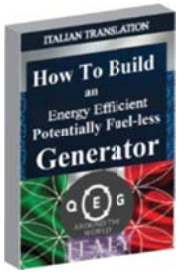

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