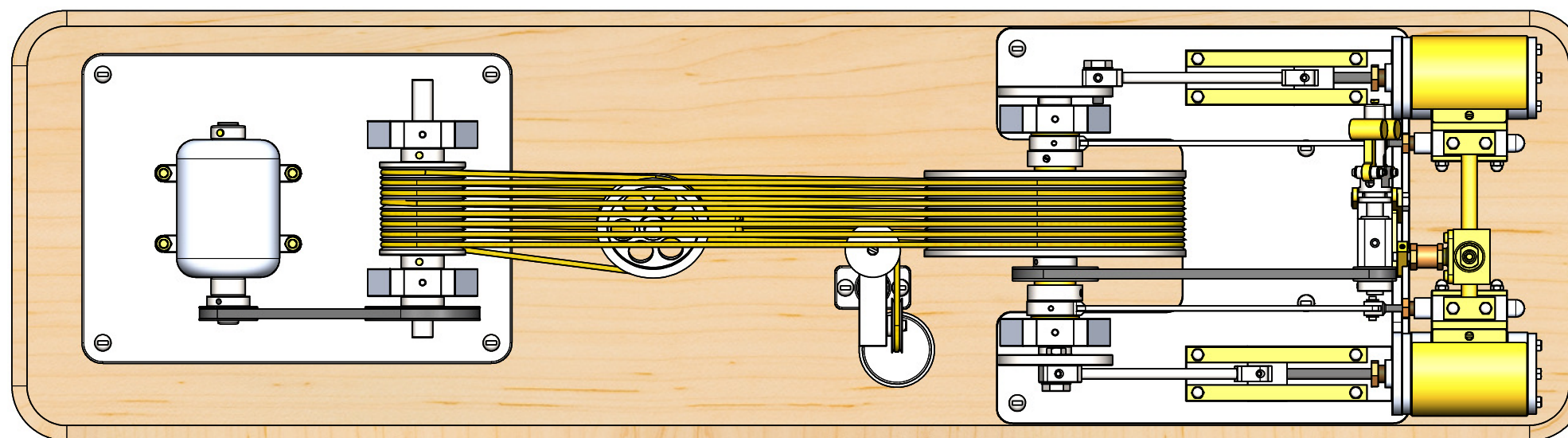
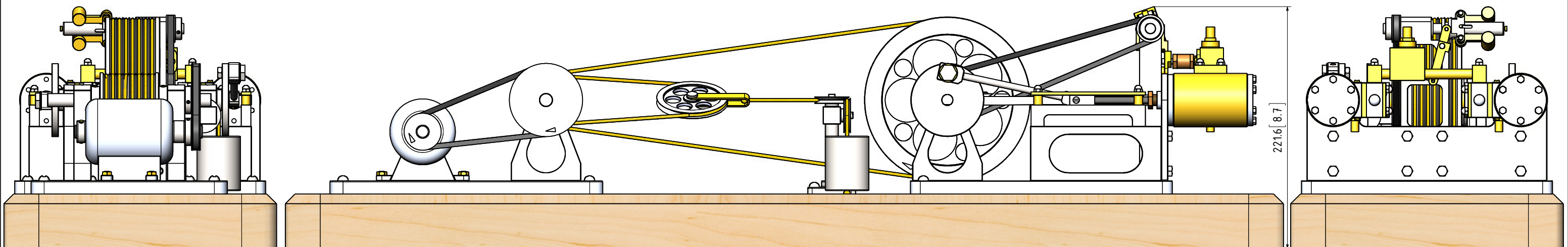


OTHER ABBREVIATIONS
 DP = DEEP
 PF = PRESS FIT
 PCD = PITCH CIRCLE DIAMETER
 RM = REAM
 HEX = HEXAGON, 6SIDED
 CP = COMPRESSED
 KNL = KNURLED
 CSK = COUNTERSINK
 PL = PLACES
 CF = CLOSE FIT (SIZE FOR SIZE)
 DAA= DRILL AFTER ASSEMBLY
 PFAA= PRESSFIT AFTER ASSEMBLY
 LCT = USE LOCTITE
 LPF = LIGHT PRESS FIT
 SA-xxx= SUB ASSEMBLY-xxx

NOTES:
 0. ALL DRAWINGS ARE IN METRIC MEASUREMENTS
 1. ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.
 2. WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
 3. PREFERABLY ALL TAPPED HOLES AND MATCHING SCREWS AND/OR BOLTS TO BE METRIC FINE (MF)
 4. MATERIALS SPECIFIED ON THE DRAWINGS ARE INDICATIVE ONLY. THE BUILDER CAN MAKE HIS/HER OWN MATERIAL CHOICE.
 5. N/A
 6. ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.
 7. COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.
 8. WHERE PREFERRED SCREW OR RIVETED CONNECTIONS CAN BE OMITTED AND PARTS CAN BE BONDED TOGETHER BY USING EITHER HIGH STRENGTH GLUE, EPOXY RESIN, OR SOLDER.
 9. PARTS WHICH ARE DIRECTLY EXPOSED TO STEAM AND/OR WATER SHOULD BE CONSTRUCTED USING NON-FERROUS OR NON CORROSIVE MATERIAL SUCH AS BRASS, BRONZE, GUNMETAL, STAINLESS STEEL, COPPER OR MONEL.
 10. THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.
 11. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.
 12. A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.
 13. THE MANNER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.



MATERIAL ABBREVIATIONS:
 ALU = ALUMINIUM OR DURAL(MIN)
 BRS = BRASS
 BRZ = BRONZE OR GUNMETAL (BRZ/GM)
 CI = CAST IRON
 CU = COPPER
 GRA = GRAPHITE
 MS = MILD STEEL/BRIGHT MILD STEEL
 S/S = SILVER STEEL OR STAINLESS STEEL
 SPS = SPRING STEEL
 PEEK= POLYETHER ETHER KETONE
 SYN = SYNTHETIC MATERIAL SUCH AS VETON, NYLON, TEFLON OR RUBBER
 IN GENERAL SYNTHETIC MATERIALS SHOULD BE ABLE TO WITHSTAND THE HEAT AND PRESSURE(S) APPLIED TO THEM.
 nnn/nnn MEANS THAT EITHER MATERIAL CAN BE USED



221.6 [8.7]

QTY.	PART NUMBER
1	EVG-P39-01-WOOD BASE
1	EVG-P39-02-STEAM ENGINE BASE PLATE
2	EVG-P39-03-CROSSHEAD GUIDE BASE SUPPORT BLOCK
4	EVG-P39-04-CROSSHEAD GUIDE BASE
4	EVG-P39-05-CROSSHEAD GUIDE SLIDE RAIL
8	EVG-P39-06-CROSSHEAD GUIDE SLIDE RAILSPACER
4	EVG-P39-07-LONG BEARING STAND
1	EVG-P39-08-CYLINDER MOUNTING PLATE
2	EVG-P39-09-CYLINDER
2	EVG-P39-10-CYLINDER FRONT COVER
2	EVG-P39-11-CYLINDER REAR COVER
2	EVG-P39-12-VALVE CHEST PORT PLATE
2	EVG-P39-13-VALVE CHEST
2	EVG-P39-14-VALVE CHEST COVER
2	EVG-P39-15-PISTON ROD PACKNUT
2	EVG-P39-16-VALVE ROD PACKNUT
2	EVG-P39-17-CYLINDER LAGGING
2	EVG-P39-18-STEAM OUTLET PIPE
2	EVG-P39-19-VALVE CHEST MANIFOLD
1	EVG-P39-20-VALVE CHEST MANIFOLD TUBE
4	EVG-P39-21-VALVE CHEST MANIFOLD STUD
1	EVG-P39-22-THROTTLE VALVE BODY
1	EVG-P39-23-THROTTLE VALVE BODY COVER
1	EVG-P39-24-THROTTLE BODY PACKNUT
1	EVG-P39-25-THROTTLE BODY LOCKING NUT
1	EVG-P39-26-GOVERNER MOUNTING PLATE
1	EVG-P39-27-GENERATOR BASE PLATE
1	EVG-P39-28-CRANK SHAFT
2	EVG-P39-29-CRANK DISC
2	EVG-P39-30-ECCENTRIC SHEAVE
2	EVG-P39-31-ECCENTRIC SPACER
2	EVG-P39-32-CRANK PIN
1	EVG-P39-33-ROPE SHEAVE FLYWHEEL
1	EVG-P39-34-GOVERNER PULLEY FLYWHEEL END
2	EVG-P39-35-FLWHEEL SPACER
2	EVG-P39-36-PISTON
2	EVG-P39-37-PISTON ROD
2	EVG-P39-38-PISTON CROSSHEAD
2	EVG-P39-39-CON-ROD
2	EVG-P39-40-CROSSHEAD PIN
2	EVG-P39-41-CRANK PIN SPACE
2	EVG-P39-42-SLIDE VALVE
2	EVG-P39-43-SLIDE VALVE NUT
2	EVG-P39-44-VALVE SPINDLE
2	EVG-P39-45-ECCENTRIC STRAP
2	EVG-P39-46-VALVE SPINDLE PIN
1	EVG-P39-47-GOVERNER MAIN SHAFT
1	EVG-P39-48-GOVERNER MAIN SHAFT PULLEY
1	EVG-P39-49-GOVERNER BELT
1	EVG-P39-50-GOVERNER ROTATING BODY
2	EVG-P39-51-GOVERNER SWINGING WEIGHT ARM
1	EVG-P39-52-GOVERNER SPRING CUP
2	EVG-P39-53-GOVERNER SWINGING WEIGHT ARM PIN
1	EVG-P39-54-GOVERNER PRESSURE SPRING
1	EVG-P39-55-GOVERNER Y-FORK PART-1
1	EVG-P39-56-GOVERNER Y-FORK PART-2
1	EVG-P39-57-GOVERNER CROSS LINK PLATE
1	EVG-P39-58-GOVERNER THROTTLE VALVE CRANK
1	EVG-P39-59-THROTTLE VALVE
1	EVG-P39-60-STEAM INLET PIPE
1	EVG-P39-61-COUNTERWEIGHT BASE PLATE
1	EVG-P39-62-COUNTERWEIGHT PILLAR
1	EVG-P39-63-COUNTERWEIGHT PULLEY WHEEL SUPPORT BEAM
2	EVG-P39-64-M4x15 COUNTERWEIGHT PULLEY WHEEL SCREW
2	EVG-P39-65-COUNTERWEIGHT PULLEY WHEEL
1	EVG-P39-66-COUNTERWEIGHT
1	EVG-P39-67-MULTY GROOVE PULLEY SHAFT
1	EVG-P39-68-MULTY GROOVE PULLEY
1	EVG-P39-69-PULLEY MULTY GROOVE PULLEY END
1	EVG-P39-70-ROPE TENSIONING PULLEY
1	EVG-P39-71A-ROPE TENSIONING PULLEY BRACKET
1	EVG-P39-71B-ROPE TENSIONING PULLEY PIN
1	EVG-P39-72-TENSIONING ROPE
1	EVG-P39-73-ROPE BELT
1	EVG-P39-74-GENERATOR
1	EVG-P39-75-GENERATOR PULLEY+SHAFT
1	EVG-P39-76-GENERATOR BELT
6	EVG-P39-M3x6 GRUB SCREW
7	EVG-P39-M3x8 PAN HEAD SCREW
20	EVG-P39-M4 DOME NUT
4	EVG-P39-M4x7 GRUB SCREW
4	EVG-P39-M4x10 GRUB SCREW
2	EVG-P39-M4x12 PAN HEAD SCREW
24	EVG-P39-M4x14 HEX BOLT
8	EVG-P39-M4x34 THREADED ROD
8	EVG-P39-M4x46 THREADED ROD
4	EVG-P39-M5 NUT
4	EVG-P39-M5x20 C-SINK SCREW
1	EVG-P39-M6 NUT
4	EVG-P39-M6x16 HEX BOLT
12	EVG-P39-M6x20 C-SINK SCREW
4	EVG-P39-M6x26 HEX BOLT
10	EVG-P39-M6x30 WOOD SCREW

TITLE
2x1 CYL. HORIZONTAL STEAM ENGINES WITH
ROPE DRIVEN GENERATOR (ROPE DRIVE)

DRAWING CONTENTS

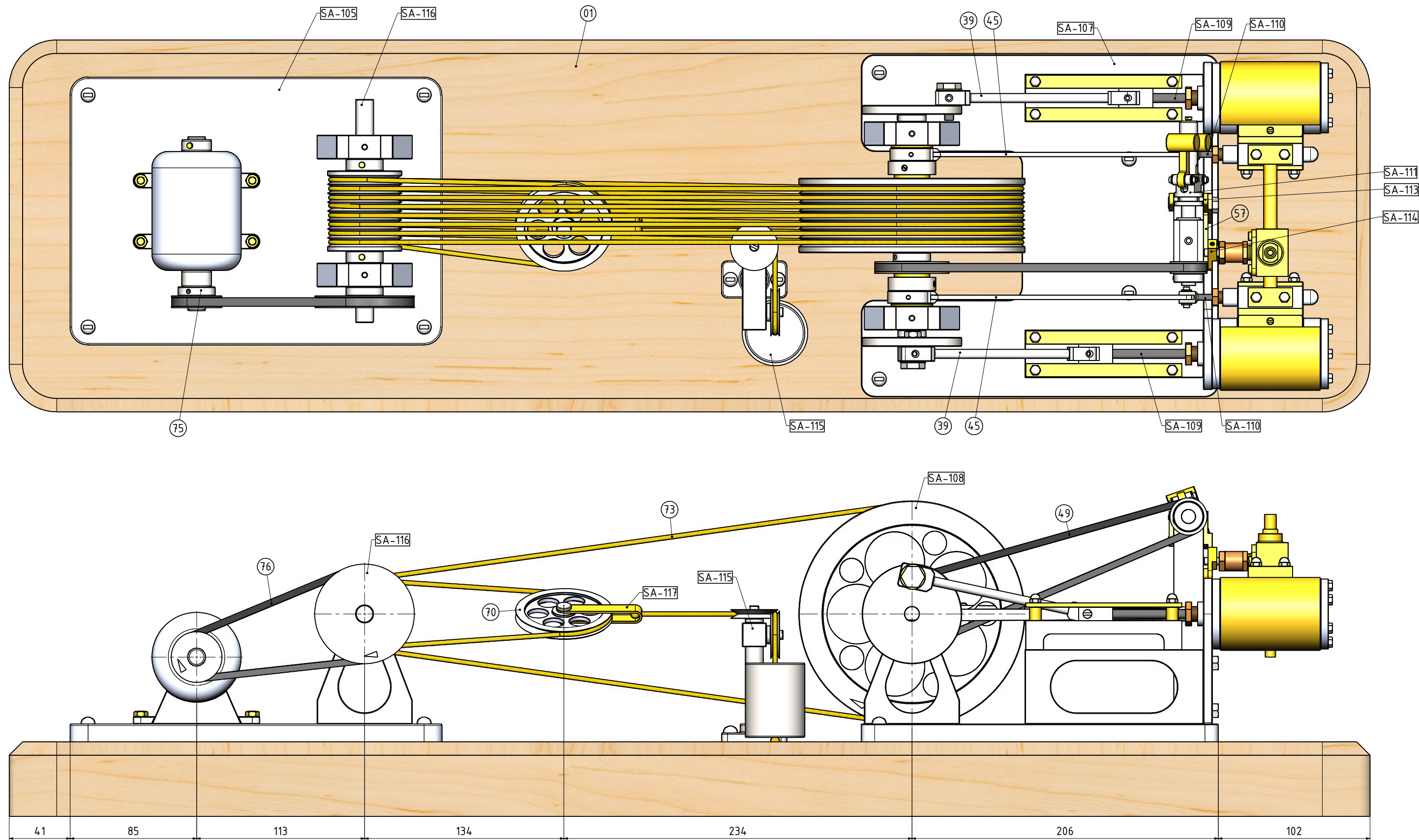
BILL OF MATERIALS PARTS AND ASSEMBLIES

PROJECT No 10-39-00

JDW DRAUGHTING SERVICES

J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAKAPURA 2110
NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 021179100
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PROJECTION	 JDWDS	MODEL SCALE: 1:1
DATE		DWG SCALE: 1:1 @A3 OR AS SHOWN
0	MARCH-2016	Copyright © J.A.M. DE WAAL PAPA KURA NZ
	SHEET: 02 OF 05	A3 No: EVG-P39-02



NOTES: THE ORIGINAL DRAWINGS AND ARTICLE OF THIS ENGINE WERE BY ELMER VERBURG AND PUBLISHED IN A BOOK AS CHAPTER 39. THE ORIGINAL DRAWINGS WERE POSTED ON: WWW.JOHN-TOM.COM (THIS ENGINE IS 2 TIMES LARGER THAN THE ORIGINAL)

TITLE
**2x1 CYL. HORIZONTAL STEAM ENGINES WITH
 ROPE DRIVEN GENERATOR (ROPE DRIVE)**

DRAWING CONTENTS
PARTS AND ASSEMBLIES

PROJECT No 10-39-00
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PROJECTION

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