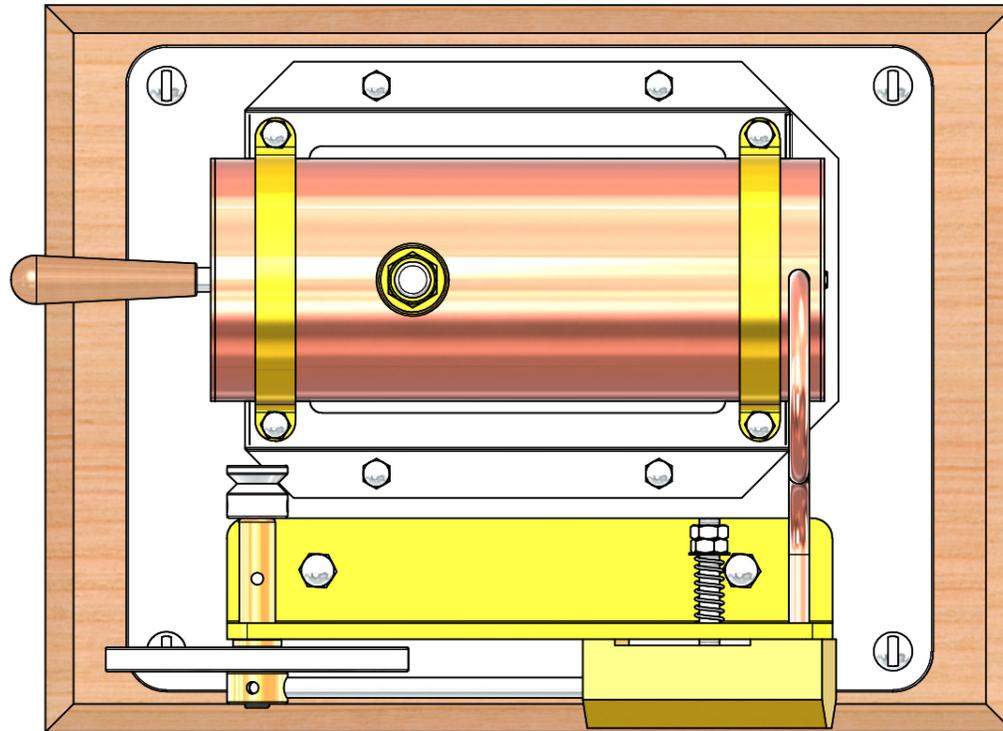


QTY.	PART NUMBER
1	09A-63-00-1-01-BASE BLOCK
1	09A-63-00-1-02-BOILER+BOILER STAND
1	09A-63-00-1-03-FIRE BOX
1	09A-63-00-1-04-SAFETY VALVE
1	09A-63-00-1-05-STEAM SUPPLY PIPE
1	09A-63-00-2-01-CRANK SHAFT+DISC
1	09A-63-00-2-02-CYLINDER
1	09A-63-00-2-03-PISTON
2	09A-63-00-M3x5 A-K GRUB SCREW
5	09A-63-00-M4 DOME NUT
2	09A-63-00-M4 NUT
5	09A-63-00-M4x10 A-K C-SINK SCREW
2	09A-63-00-M4x12 A-K C-SINK SCREW
4	09A-63-00-M4x4 DOME HEAD SCREW
2	09A-63-00-M5 DOME NUT
4	09A-63-00-M5 NUT
2	09A-63-00-M5 WASHER
2	09A-63-00-M5x4.4 A-K C-SINK SCREW
4	09A-63-00-M6x2.5-ROUND HEAD WOOD SCREW
2	09A-63-00-M6 NUT

DUE TO THE LACK OF INFORMATION ON THE ORIGINAL DRAWING(S), SUCH AS VIEWS, DIMENSIONS, SECTIONS ETC AND/OR CLARITY OF COMPONENTS, OMITTED PARTS/COMPONENTS, SOME OF THE COMPONENTS MIGHT NOT BE AS CONSTRUCTED ORIGINALLY OR AS THE ORIGINAL DESIGNER INTENDED

IMPORTANT NOTE:
BEFORE STARTING: IT IS STRONGLY ADVISED THAT THE BOILER AS SHOWN ON THESE DRAWINGS SHOULD BE INSPECTED BY AN AUTHORISED PROFESSIONAL ENGINEER AND THE WORKING AND MAXIMUM BOILER PRESSURE TO BE CALCULATED. MAKE SURE THE BOILER FULLY COMPLIES WITH THE LOCAL RULES AND REGULATIONS OF MODEL BOILERS. A COMPLIANCE AND SAFETY/TEST CERTIFICATE SHOULD BE OBTAINED.



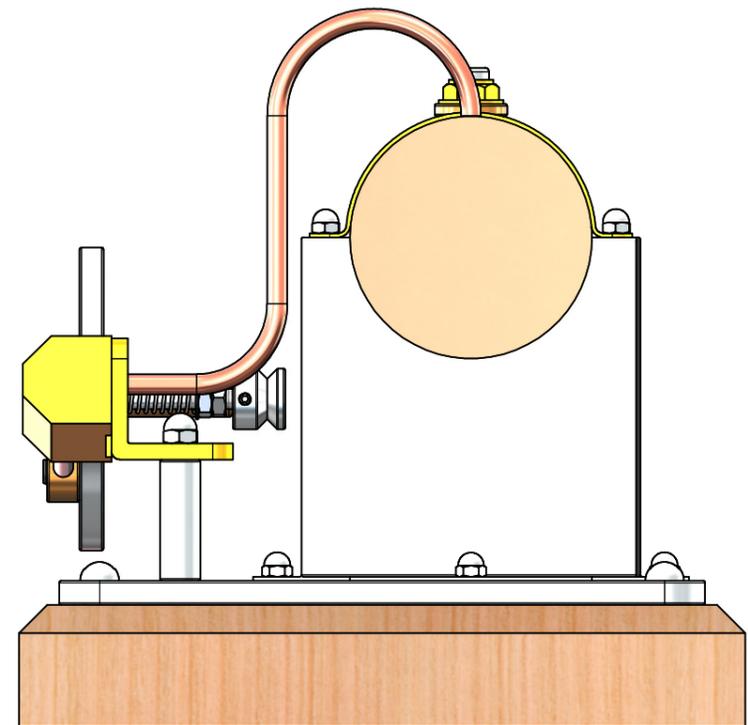
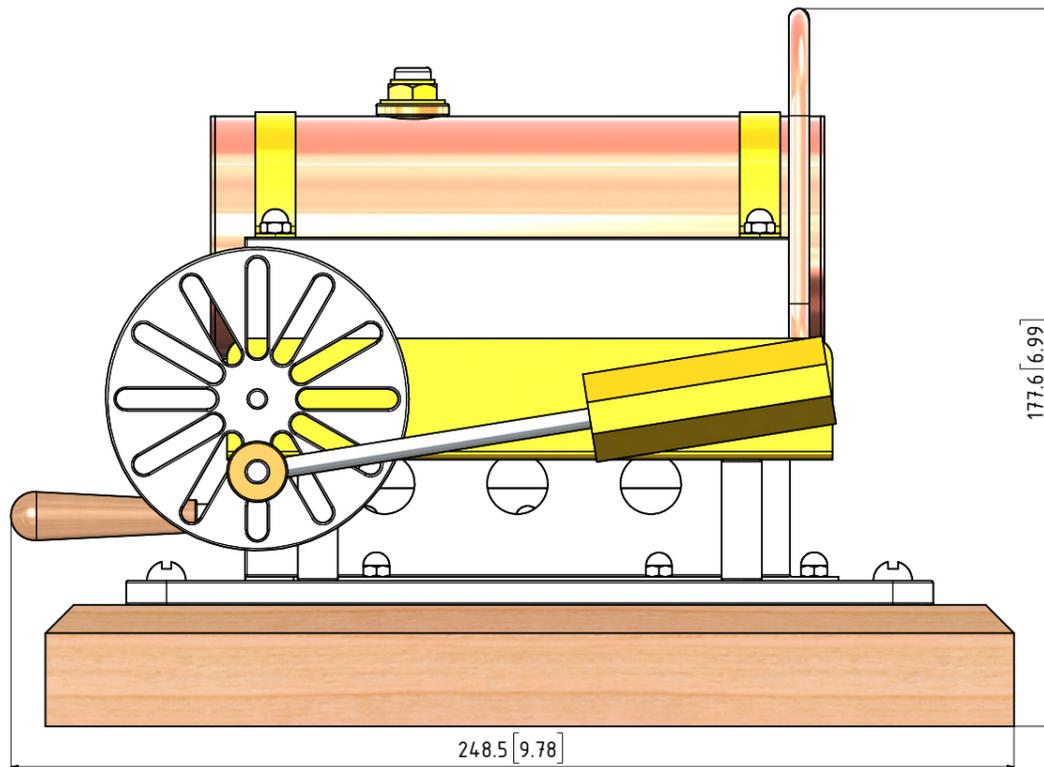
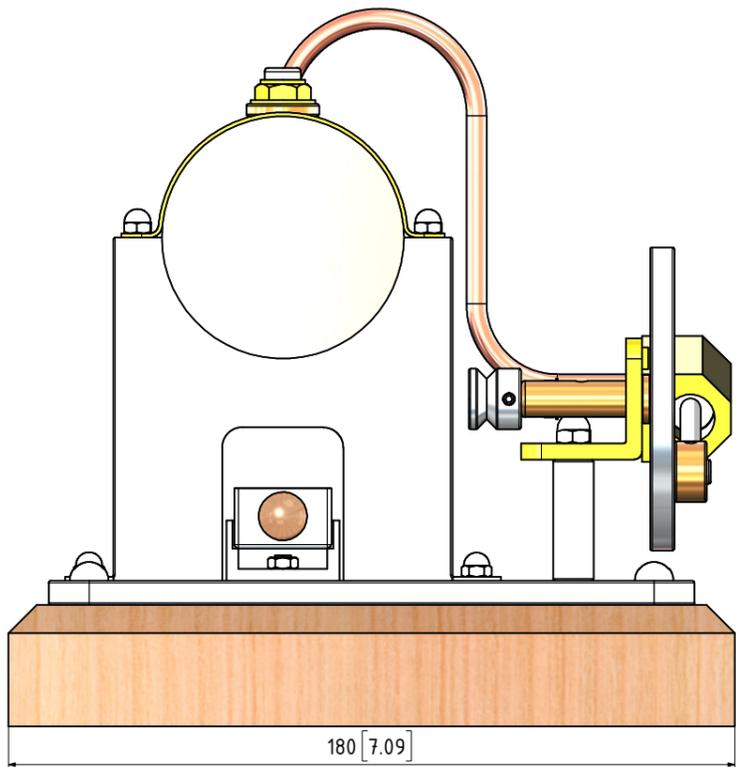
- GENERAL NOTES:
- ALL DRAWINGS ARE IN METRIC MEASUREMENTS
 - WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
 - PREFERABLY ALL TAPPED HOLES AND MATCHING SCREWS AND/OR BOLTS TO BE METRIC FINE (MF)
 - MATERIALS SPECIFIED ON THE DRAWINGS ARE INDICATIVE ONLY. THE BUILDER CAN MAKE HIS/HER OWN MATERIAL CHOICE.
 - ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.
 - COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.
 - 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.
 - 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.
 - THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.
 - A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.
 - THE MANNER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.
 - USE LOCTITE, ON SCREW OR PRESS FIT CONNECTIONS OR SURFACES, WERE DEEMED NECESSARY TO PREVENT PARTS FROM LOOSENING.
 - WASHERS AND/OR SPRING WASHERS SHALL BE USED WHERE DEEMED NECESSARY.
 - USE SEALING GASKETS WERE DEEMED NECESSARY.
 - REMOVE ALL SHARP EDGES
 - ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.

MATERIAL ABBREVIATIONS:

- ALU = ALUMINIUM
 - HALU= HARD ALUMINIUM
 - BRS = BRASS
 - PBRZ= PHOSPHORE BRONZE
 - BRZ = BRONZE OR GUNMETAL (BRZ/GM)
 - OLT = OILITE
 - CI = CAST IRON
 - CU = COPPER
 - GRA = GRAPHITE
 - MS = MILD STEEL/BRIGHT MILD STEEL
 - SS = 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

OTHER ABBREVIATIONS

- AS = AS SHOWN
- DP = DEEP
- DAA= DRILL AFTER ASSEMBLY
- D&TAA= DRILL AND TAP AFTER ASSEMBLY
- CF = CLOSE FIT (SIZE FOR SIZE)
- PF = PRESS FIT
- PFAA= PRESS FIT AFTER ASSEMBLY
- PCD = PITCH CIRCLE DIAMETER
- RM = REAM
- HEX = HEXACON, 6SIDED
- CP = COMPRESSED
- KNL = KNURLED
- CSK = COUNTERSINK
- PL = PLACES
- DWL= DOWEL
- SPF= SPOTFACE
- (T)HESOP=(TAPPED)HOLES EQUALLY SPACED ON PCD
- (T)HESOC=(TAPPED)HOLES EQUALLY SPACED ON CIRCUMFERENCE
- OD = OUTSIDE DIAMETER
- ID = INSIDE DIAMETER
- MAX/MIN = CRITICAL DIMENSION
- [SA-xxx]= SUB ASSEMBLY-xxx



NOTES: I FOUND THE ORIGINAL DRAWINGS AND CONSTRUCTION NOTES ON THE INTERNET. THE PROJECT HEADING WAS: "OPITEC, 112.420, STEAM ENGINE BY MICHAEL CLEVER AND ROLF KIEFER". THE ENGINE SHOWN ON THESE DRAWINGS IS ENLARGED 1.5x. SOME ALTERATIONS HAVE BEEN MADE

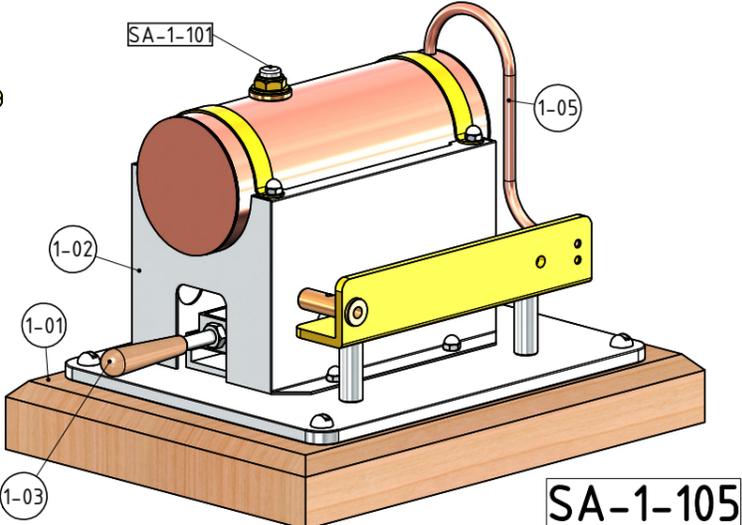
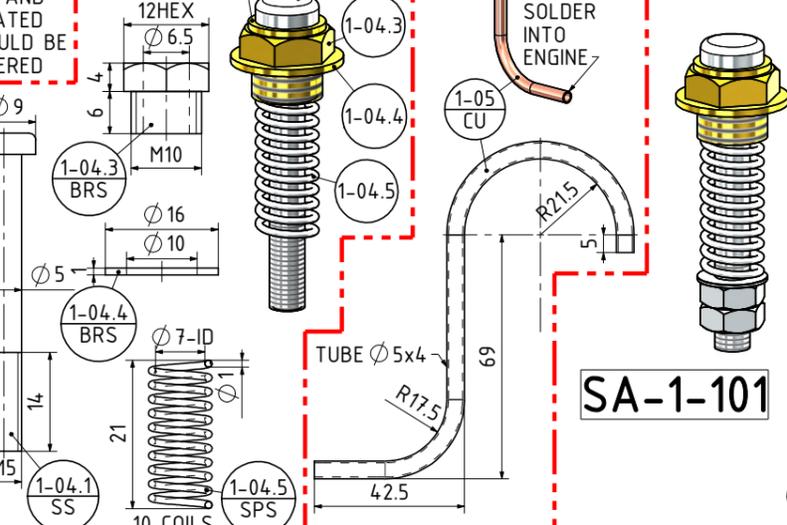
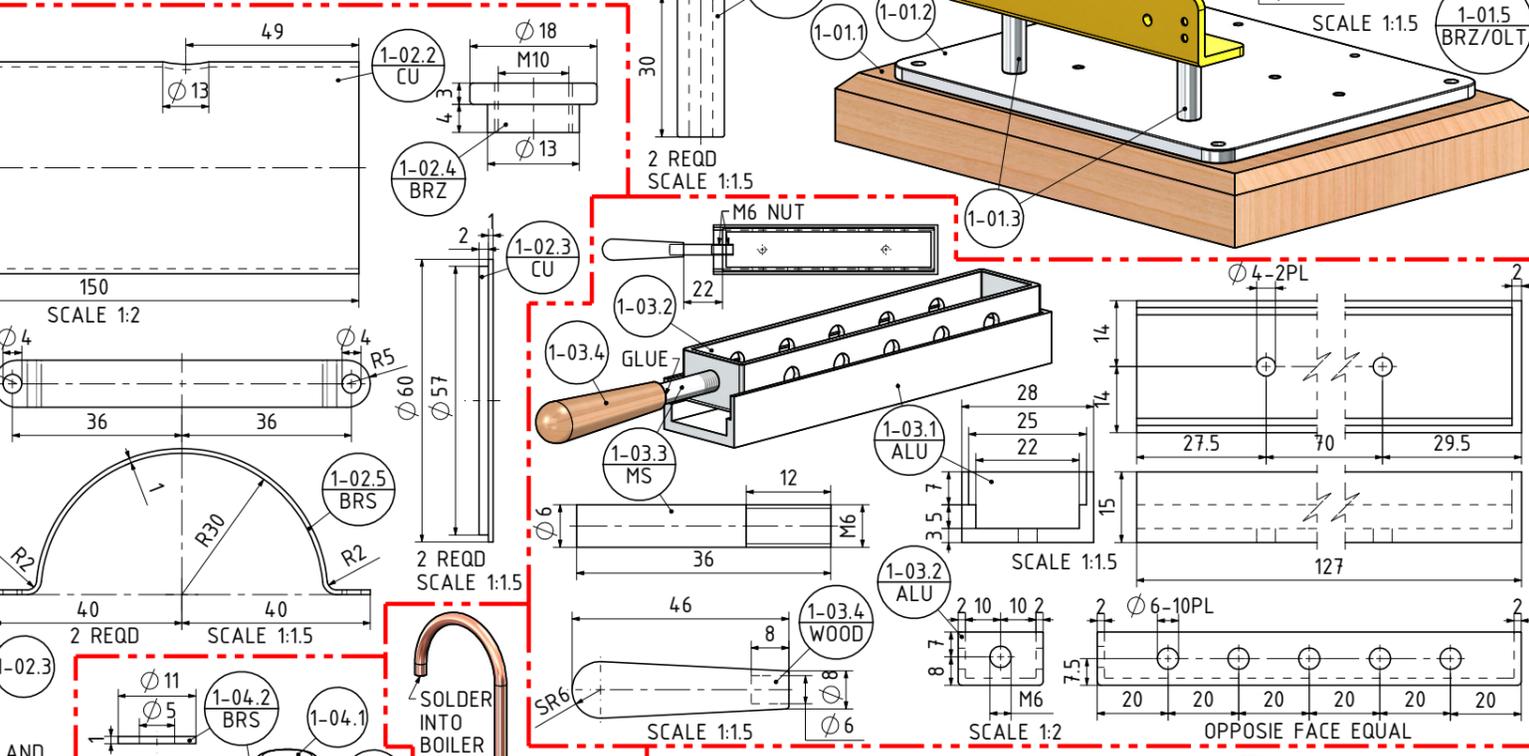
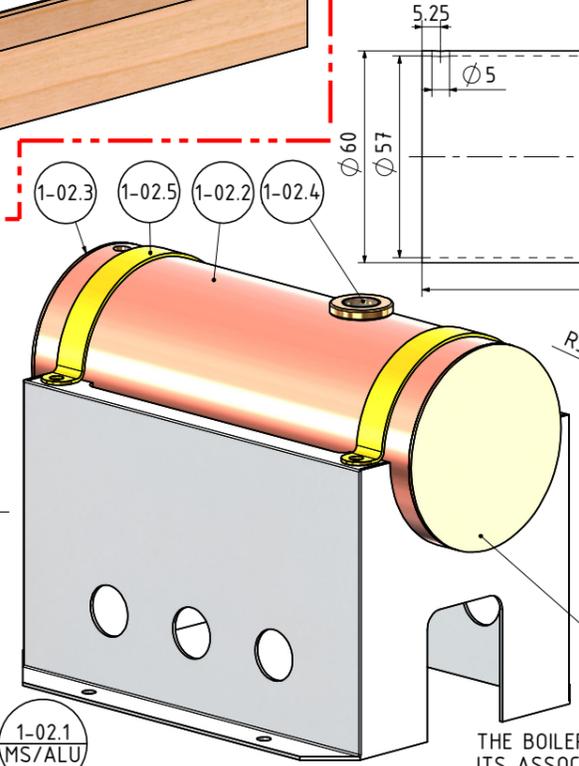
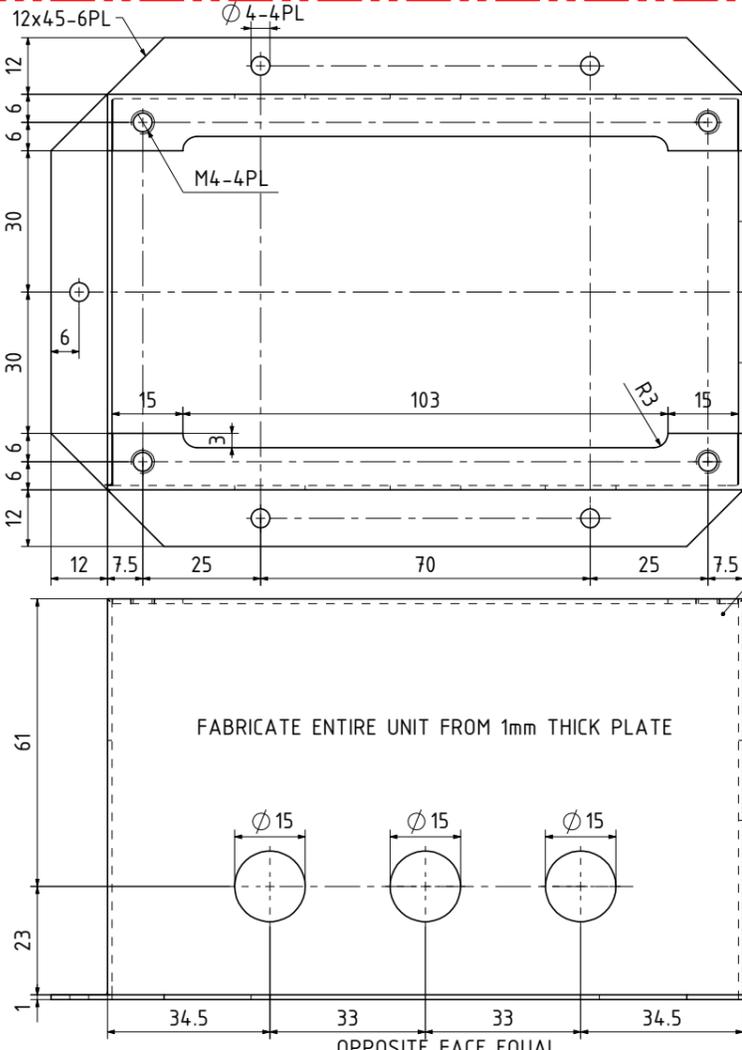
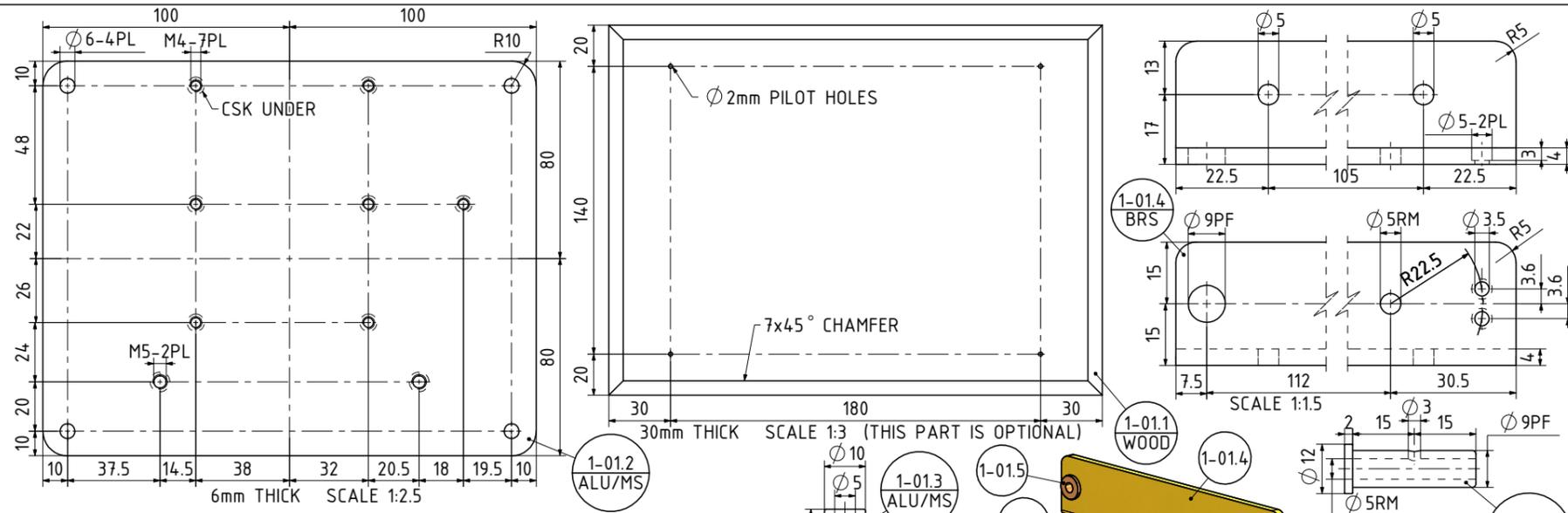
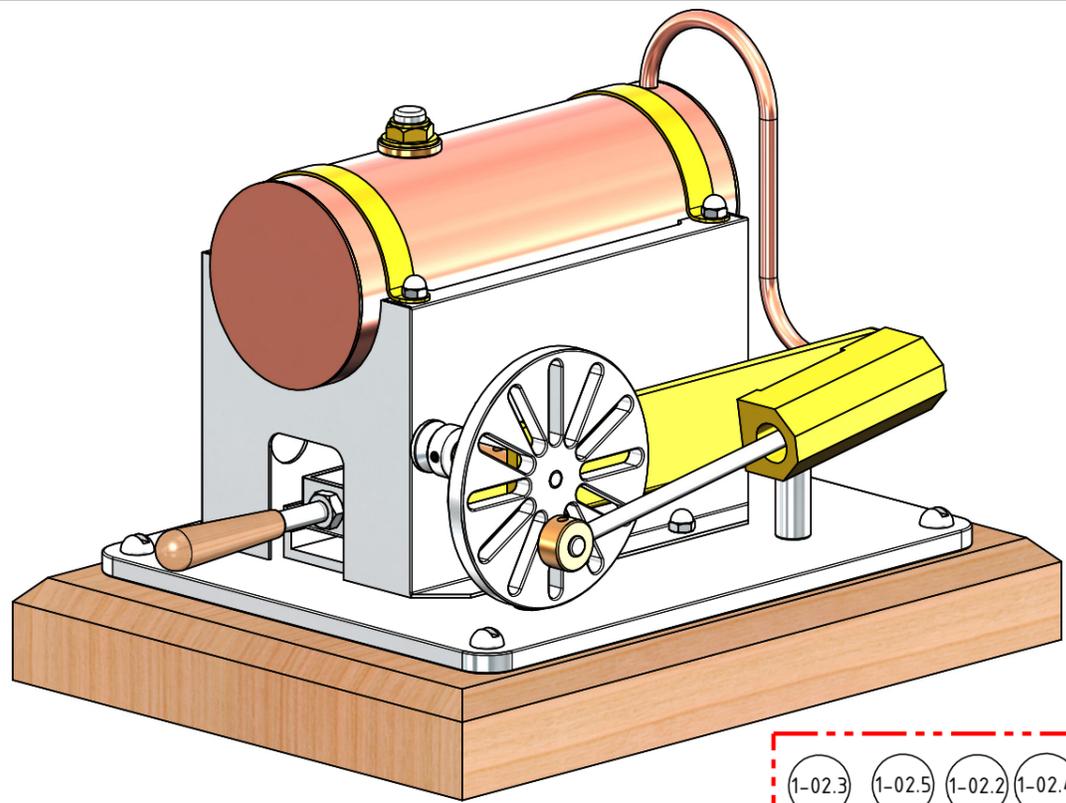
TITLE
A STEAM PLANT WITH AN 1 CYLINDER OSCILLATING ENGINE FOR BEGINNERS.

DRAWING CONTENTS
GENERAL ARRANGEMENT, NOTES, BILL OF MATERIALS

PROJECT No 09A-63-00
JDW DRAUGHTING SERVICES
J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPA KURA
2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz.

PROJECTION
JDWDS
DATE AUGUST 2025
SHEET: 01 OF 03

MODEL SCALE: 1:1
DWG SCALE: 1:1 @A3 OR AS SHOWN
Copyright © J.A.M. DE WAAL PAPA KURA NZ
A3 No:09A-63-00-SHT-01



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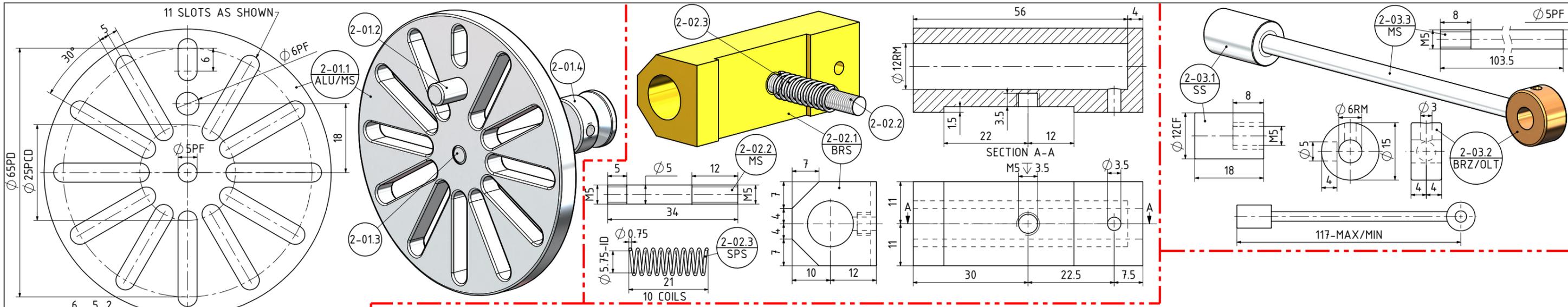
TITLE
**A STEAM PLANT WITH AN 1 CYLINDER
 OSCILLATING ENGINE FOR BEGINNERS.**

DRAWING CONTENTS
**ISOMETRIC VIEW,
 PARTS AND ASSEMBLIES**

PROJECT No 09A-63-00
 JDW DRAUGHTING SERVICES
 J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPAOKURA
 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB:
 0211791000 E-MAIL: dewaal@xtra.co.nz.

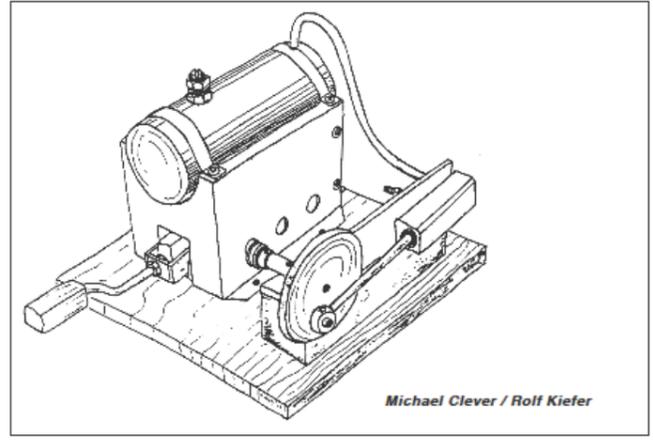
PROJECTION **JDWDS** MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
 DATE AUGUST 2025 Copyright © J.A.M. DE WAAL PAPAOKURA NZ
 SHEET: 02 OF 03 **A3** No:09A-63-00-SHT-02

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OPITEC

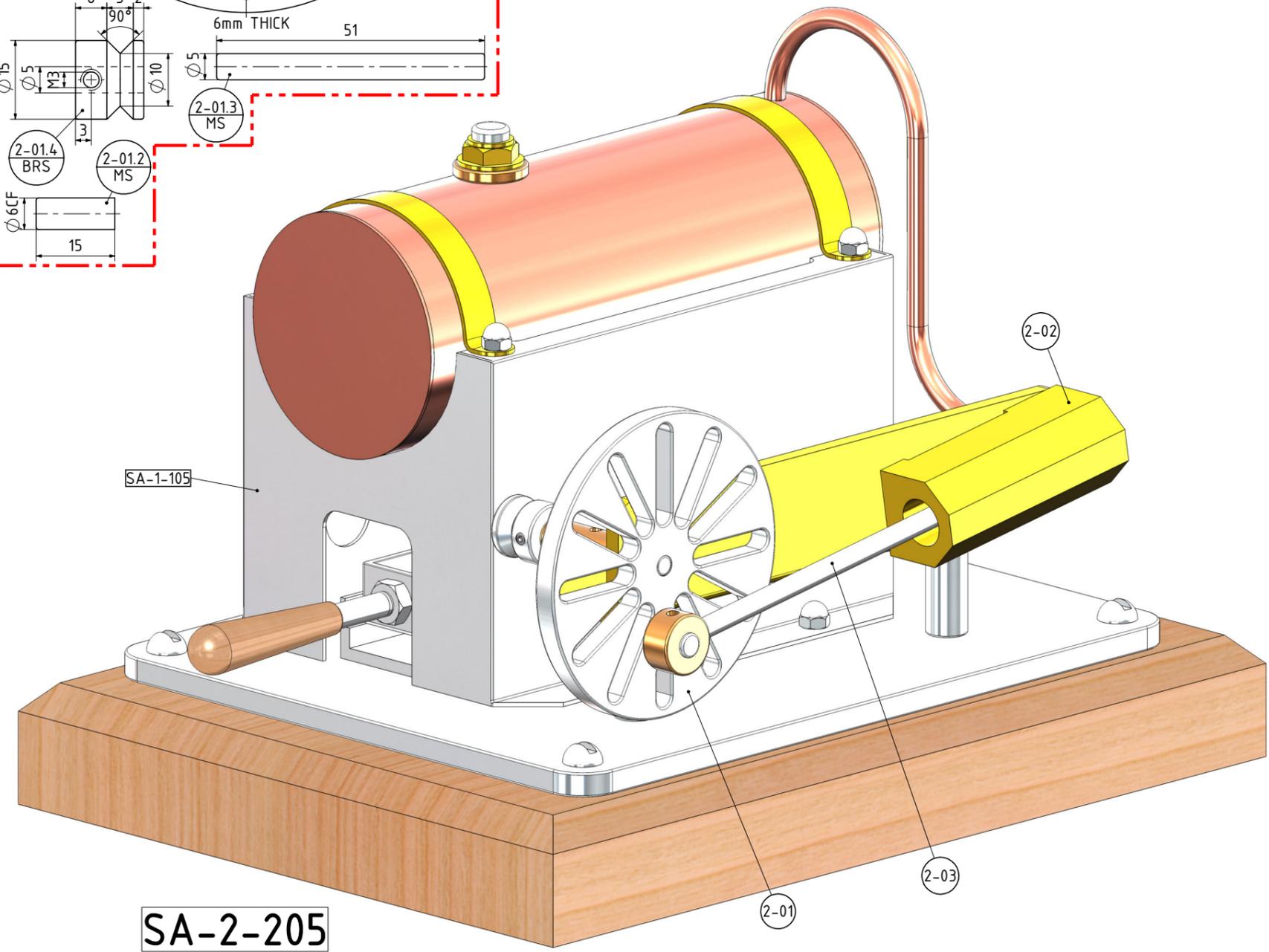
112.420 Steam Engine



Technical Data:

Boiler:		Machine:	
Boiler Volume:	110 cm ³	Piston:	8 mm
Working Pressure:	1,5 bar	Stroke:	24 mm
Tested to:	4,5 bar	Idling Speed:	ca. 800 rpm
Water:	50 - 60 ml	Construction Year:	

Please Note
The OPITEC range of projects is not intended as play toys for young children. They are teaching aids for young people learning the skills of Craft, Design and Technology. These projects should only be undertaken and tested with the guidance of a fully qualified adult. The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Danger of suffocation!



SA-2-205

ORIGINAL COVER SHEET

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TITLE
**A STEAM PLANT WITH AN 1 CYLINDER
OSCILLATING ENGINE FOR BEGINNERS.**

DRAWING CONTENTS
PARTS AND ASSEMBLIES

PROJECT No 09A-63-00
JDW DRAUGHTING SERVICES
J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPAOKURA
2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB:
0211791000 E-MAIL: dewaal@xtra.co.nz.

PROJECTION
JDWDS MODEL SCALE: 1:1
DATE AUGUST 2025 DWG SCALE: 1:1 @A3 OR AS SHOWN
SHEET: 03 OF 03 Copyright © J.A.M. DE WAAL PAPAOKURA NZ
A3 No:09A-63-00-SHT-03

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