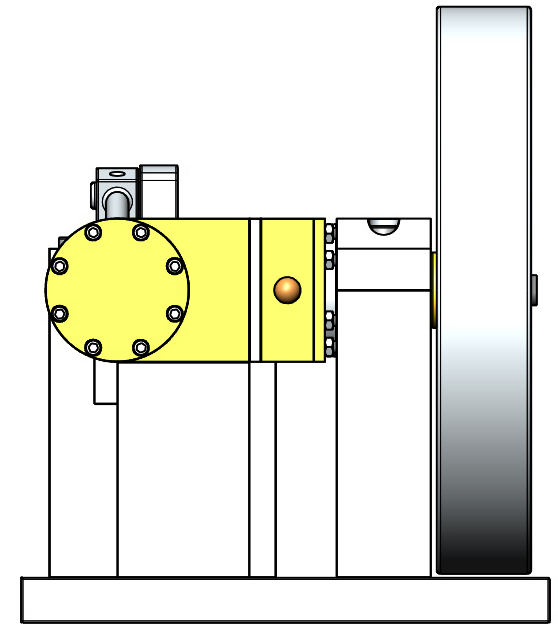
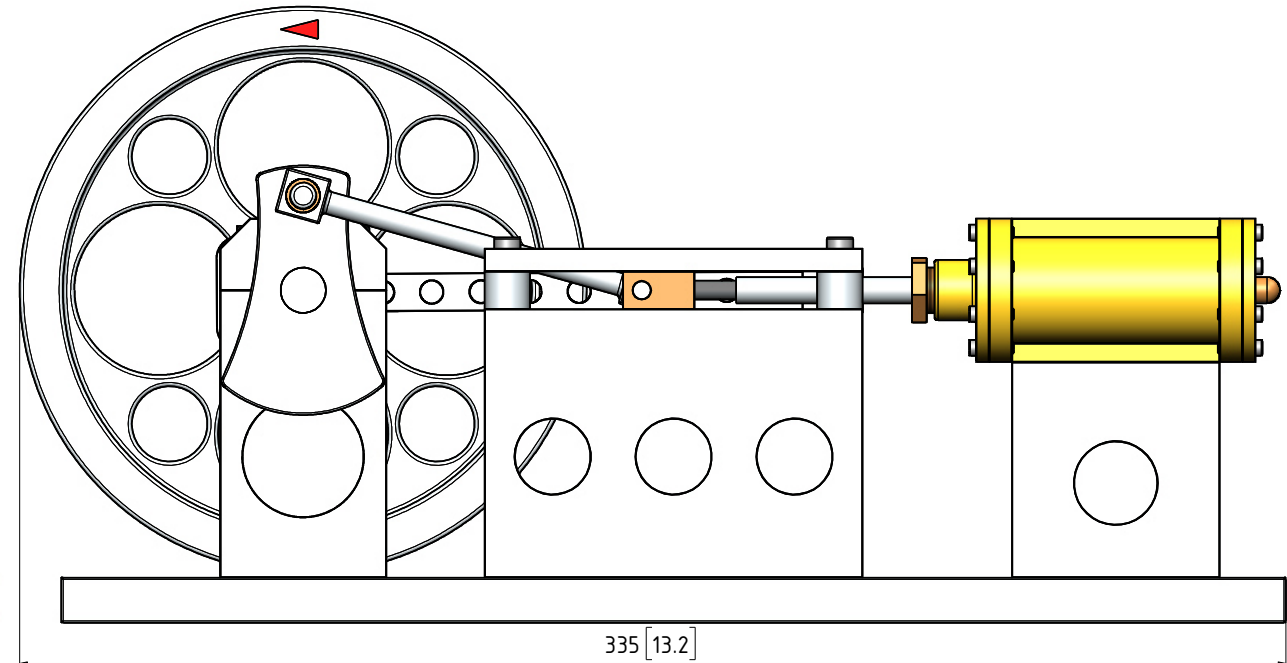
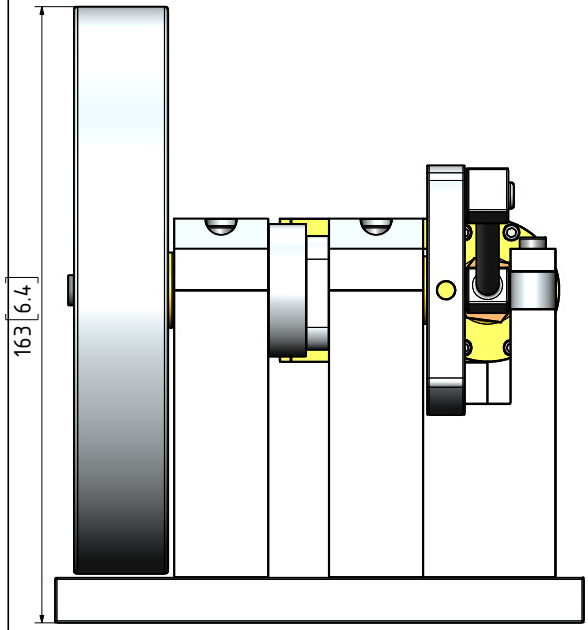
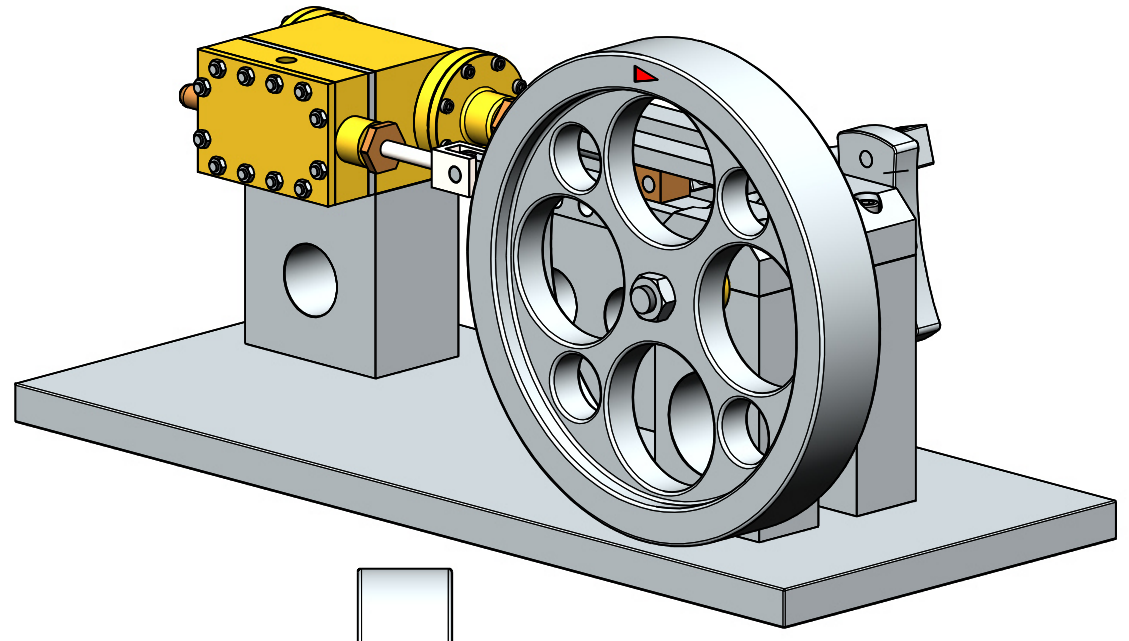
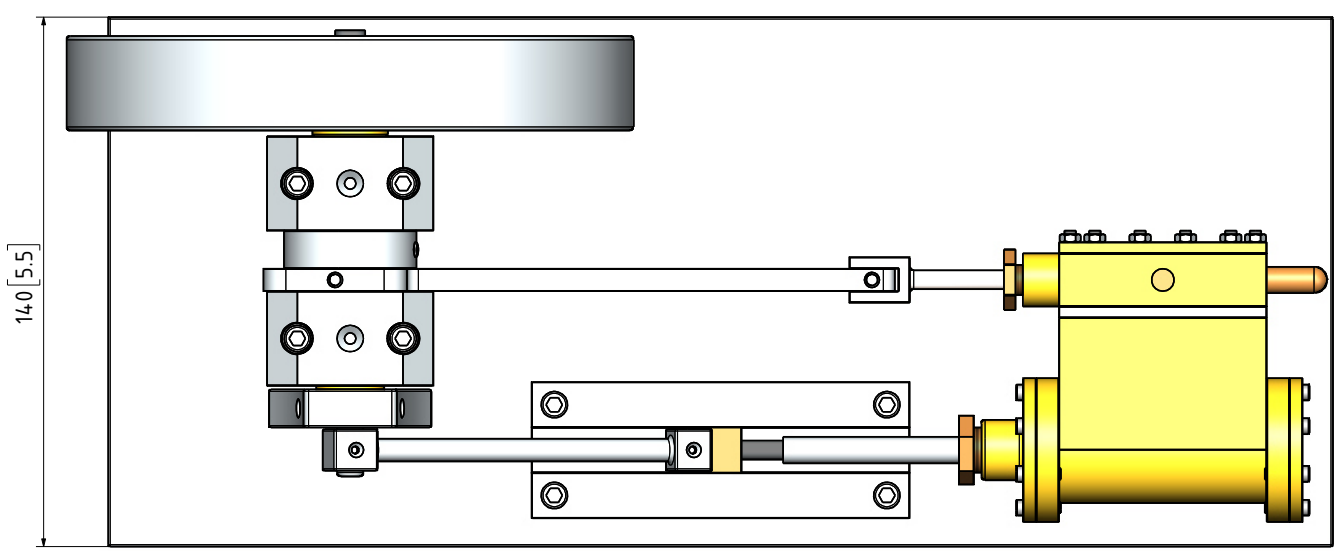


QTY.	PART NUMBER
1	09B-24-00-1-01-BASE PLATE
1	09B-24-00-1-02-CYLINDER+VALVE CHEST
1	09B-24-00-1-03-CYLINDER FRONT COVER
1	09B-24-00-1-04-CYLINDER REAR COVER
1	09B-24-00-2-01-CRANKSHAFT+FLYWHEEL
1	09B-24-00-2-02-ECCENTRIC SHEAVE
1	09B-24-00-2-03-PISTON+CROSSHEAD
1	09B-24-00-2-04-CON-ROD
1	09B-24-00-2-05-SLIDE VALVE+ROD
1	09B-24-00-2-06-ECCENTRIC STRAP
12	09B-24-00-M3 NUT
12	09B-24-00-M3x10 A-K CYL HEAD SCREW
8	09B-24-00-M3x18 A-K CYL HEAD SCREW
12	09B-24-00-M3x34 THREADED ROD
1	09B-24-00-M4x12 A-K GRUB SCREW
6	09B-24-00-M5x20 A-K CYL HEAD SCREW
8	09B-24-00-M5x26 A-K C-SINK SCREW
4	09B-24-00-M5x30 A-K CYL HEAD SCREW
1	09B-24-00-M8 NUT

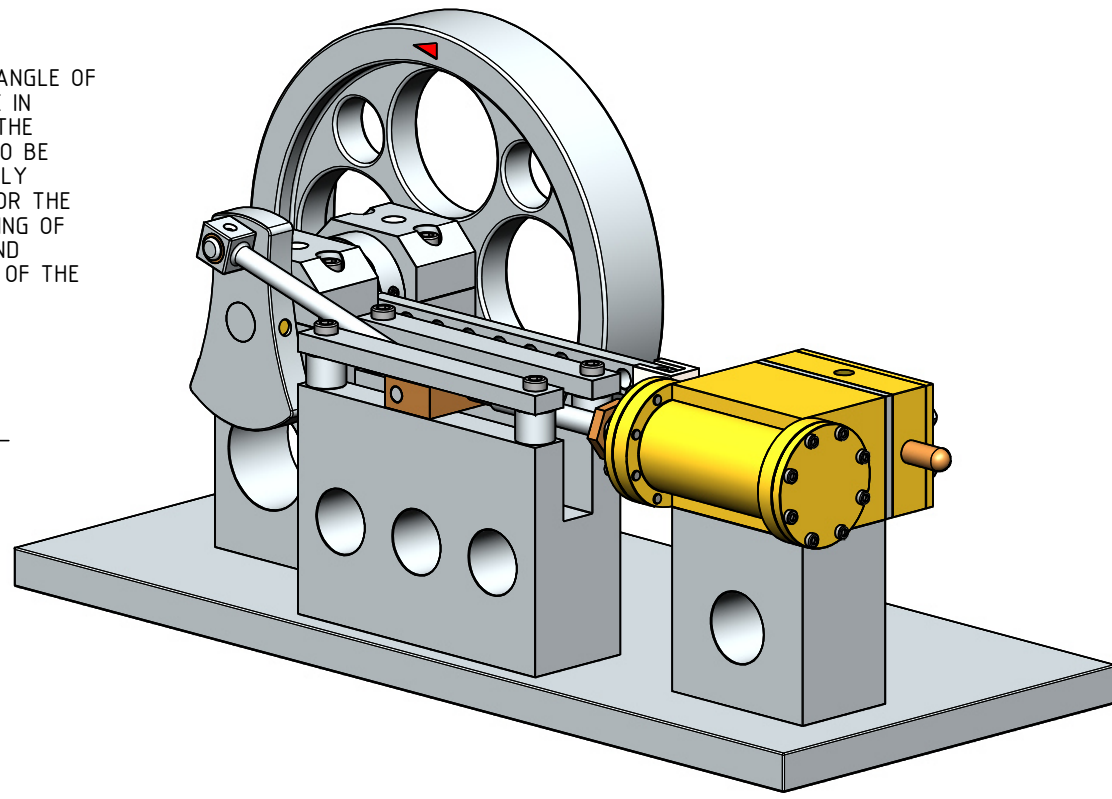
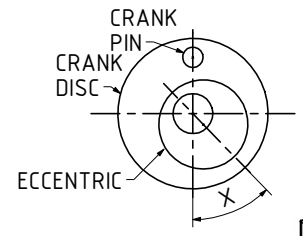


NOTES:  
0. ALL DRAWINGS ARE IN METRIC MEASUREMENTS  
1. ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.  
2. WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.  
3. PREFERABLY ALL TAPPED HOLES 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. ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.  
6. COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.  
7. 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.  
8. 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.  
9. THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.  
10. A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.  
11. THE MANNER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.  
12. USE LOCTITE, ON SCREW OR PRESS FIT CONNECTIONS OR SURFACES, WERE DEEMED NECESSARY TO PREVENT PARTS FROM LOOSENING.  
13. WASHERS AND/OR SPRINGWASHERS SHALL BE USED WHERE DEEMED NECESSARY.  
XX. 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  
BRZ = BRONZE OR GUNMETAL (BRZ/GM)  
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 SOULD 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  
[SA-xxx]= SUB ASSEMBLY-xxx

THE OFF SET ANGLE OF THE ECCENTRIC IN RELATION TO THE CRANK AXIS TO BE EXPERIMENTALLY DETERMINED FOR THE SMOOTH RUNNING OF THE ENGINE AND SATISFACTION OF THE BUILDER



NOTES: THE ORIGINAL DRAWINGS WERE GIVEN TO ME. THIS ORIGINAL STEAM ENGINE WAS DESIGNED BY PATRICK J. VERNER, WEBSITE STEAMENGINES.ROG. PROJECT#2

TITLE  
**A SIMPLE HORIZONTAL MILL STEAM ENGINE**  
**BORE 25mm STROKE 50mm**

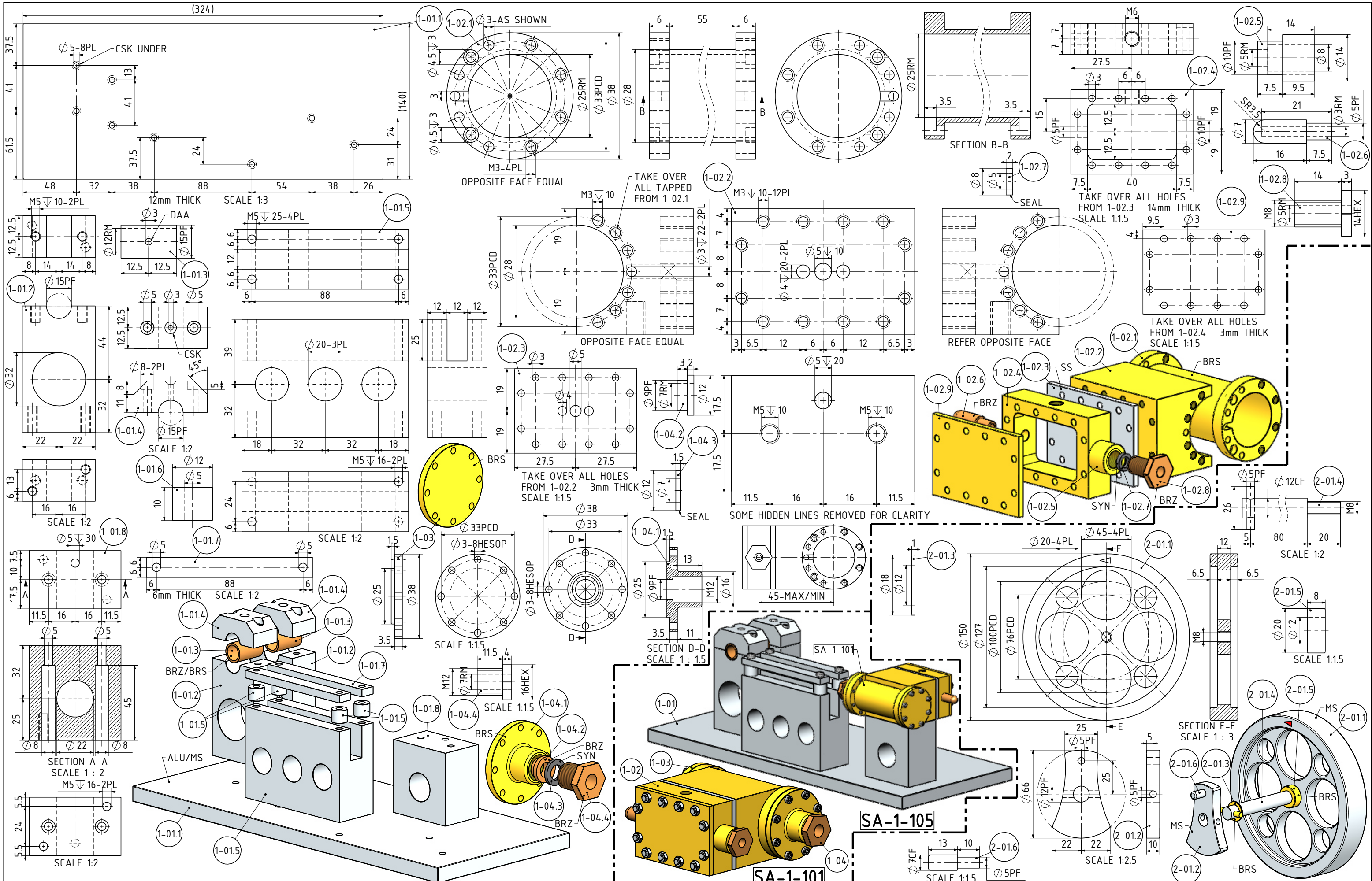
DRAWING CONTENTS  
**GENERAL ARRANGEMENT, ISOMETRIC VIEWS, NOTES, BILL OF MATERIALS**

PROJECT No 9B-24-00  
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  
  
DATE MAY 2020  
SHEET: 01 OF 03

MODEL SCALE: 1:1  
DWG SCALE: 1:1 @A3 OR AS SHOWN  
Copyright © J.A.M. DE WAAL PAPAOKURA NZ  
**A3 No: 9B-24-00-SHT01**

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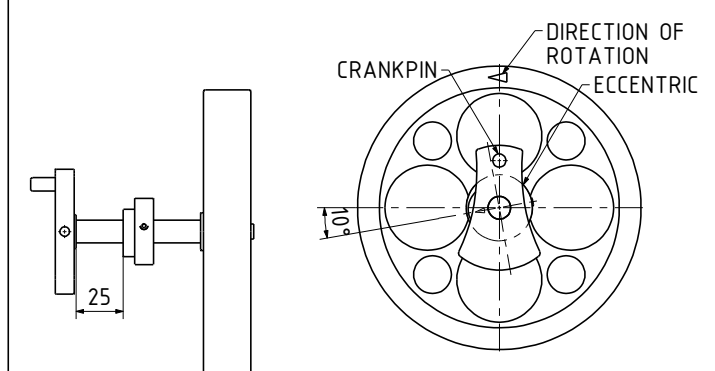
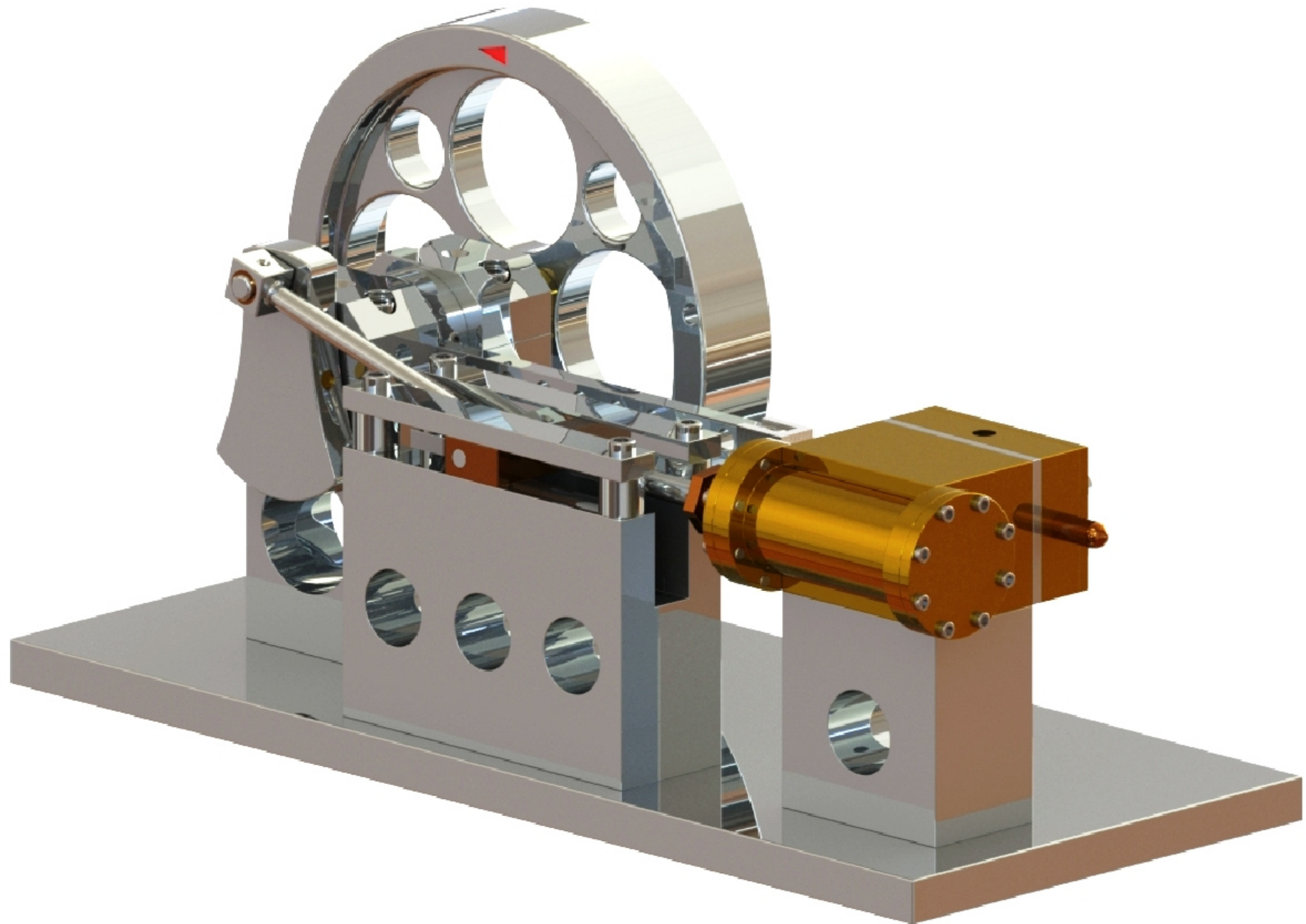
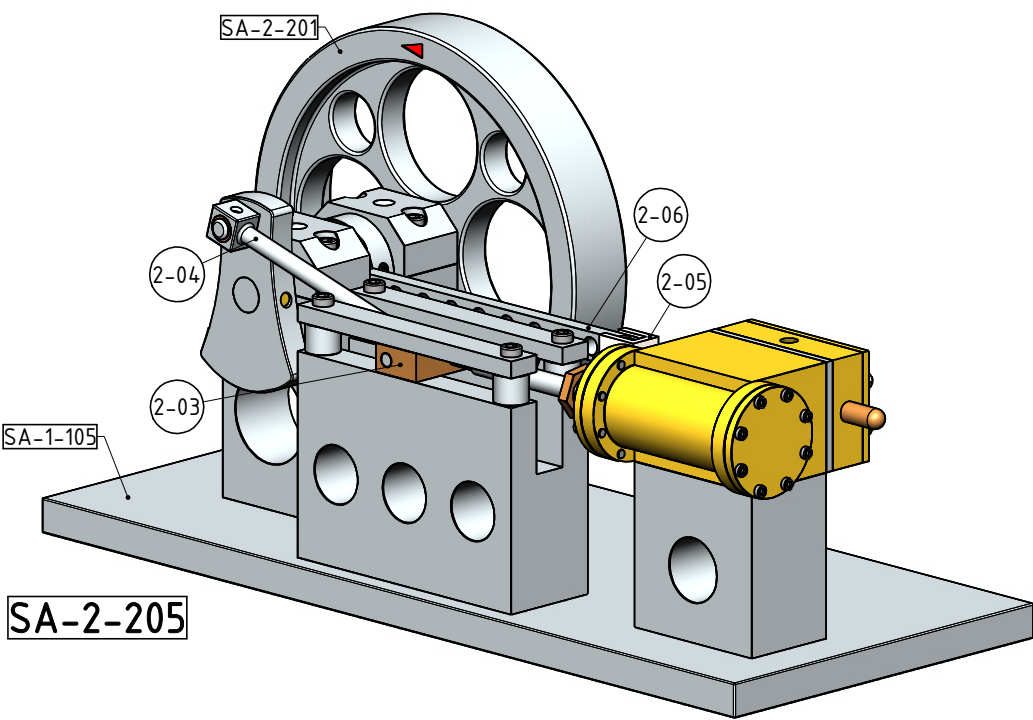
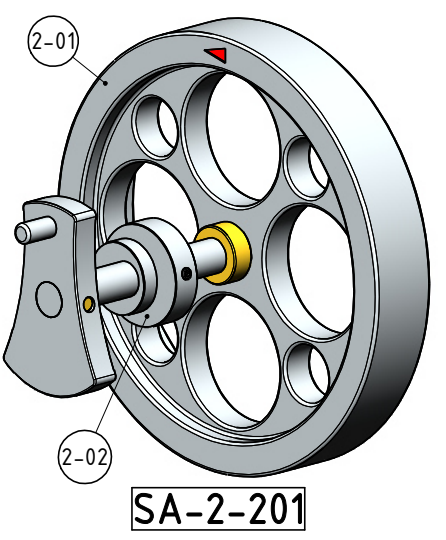
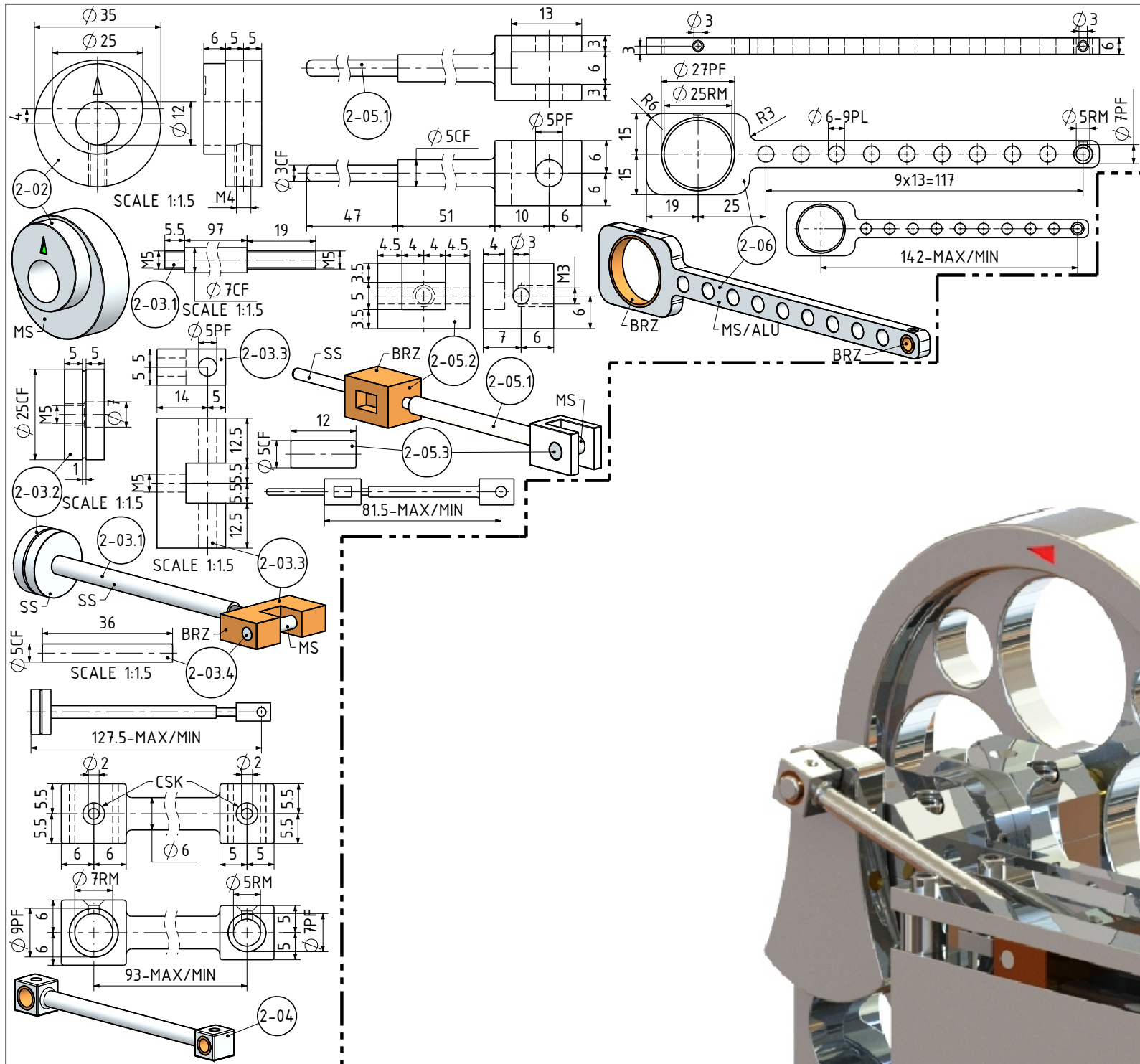
TITLE  
**A SIMPLE HORIZONTAL MILL STEAM ENGINE**  
**BORE 25mm STROKE 50mm**

DRAWING CONTENTS  
**PARTS AND ASSEMBLIES**

PROJECT No 9B-24-00  
 JDW DRAUGHTING SERVICES  
 J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPAOKURA  
 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB:  
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PROJECTION	<b>JDWDS</b>	MODEL SCALE: 1:1
DATE	MAY 2020	DWG SCALE: 1:1 @A3 OR AS SHOWN
SHEET: 02 OF 03		Copyright © J.A.M. DE WAAL PAPAOKURA NZ
		<b>A3 No: 9B-24-00-SHT02</b>

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TITLE  
**A SIMPLE HORIZONTAL MILL STEAM ENGINE**  
 BORE 25mm STROKE 50mm

DRAWING CONTENTS  
**PARTS AND ASSEMBLIES**

PROJECT No 9B-24-00  
 JDW DRAUGHTING SERVICES  
 J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAKAPURA  
 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB:  
 0211791000 E-MAIL: dewaal@xtra.co.nz.

PROJECTION  
**JDWDS**  
 DATE MAY 2020  
 SHEET: 03 OF 03

MODEL SCALE: 1:1  
 DWG SCALE: 1:1 @A3 OR AS SHOWN  
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**A3 No: 9B-24-00-SHT03**

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