

GENERAL 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 SPRING WASHERS SHALL BE USED WHERE DEEMED NECESSARY.
 14. REMOVE ALL SHARP EDGES
 XX. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.

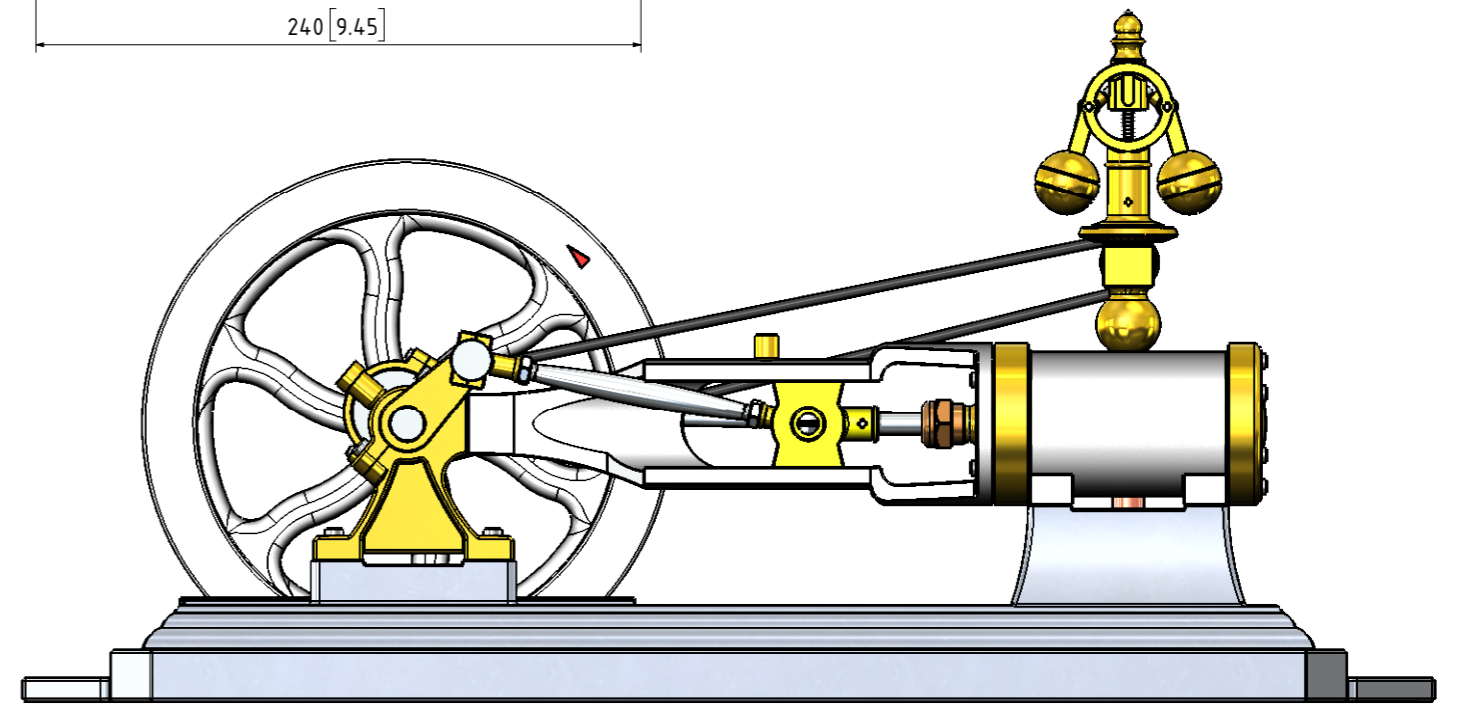
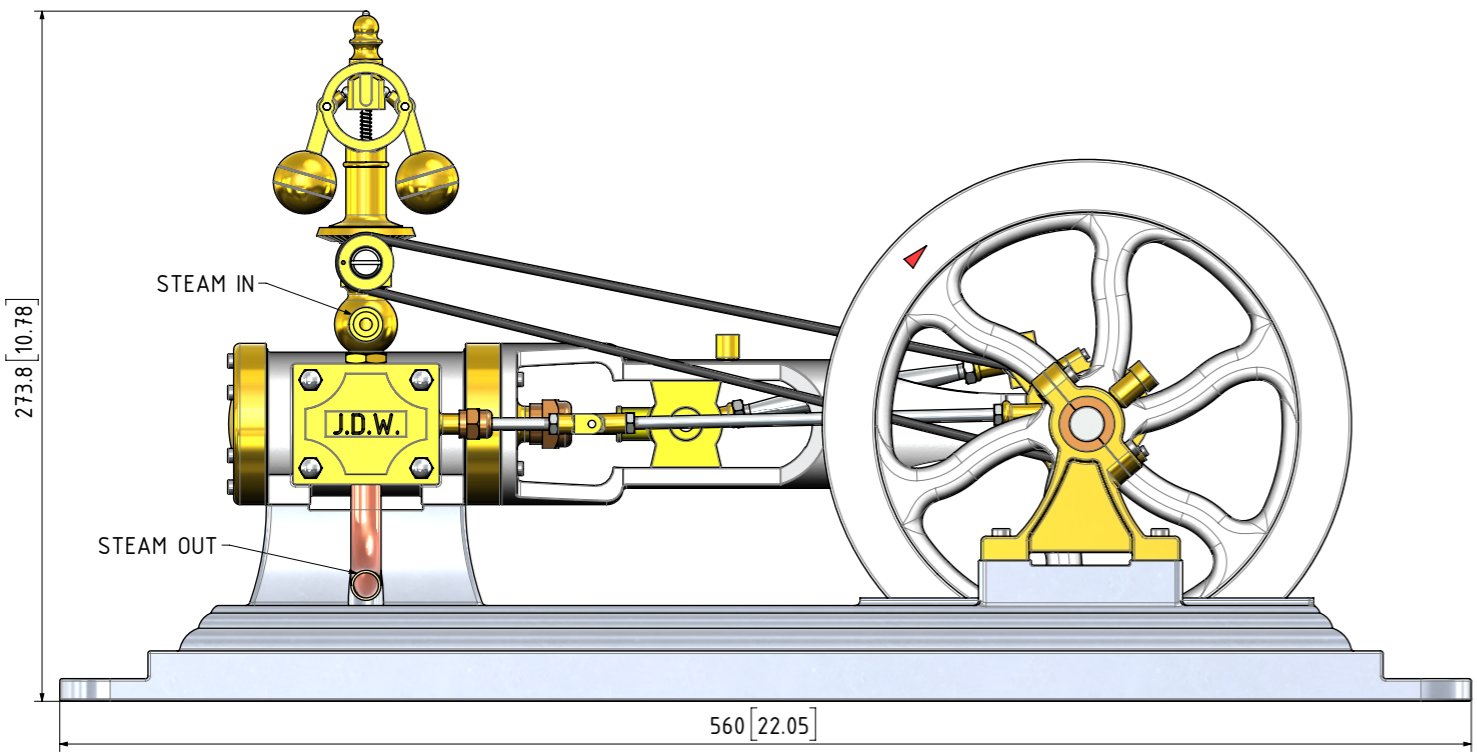
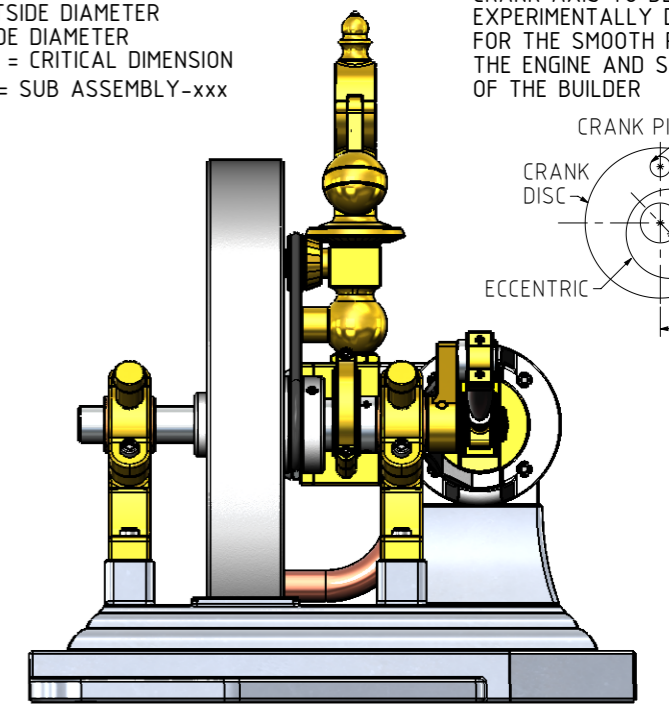
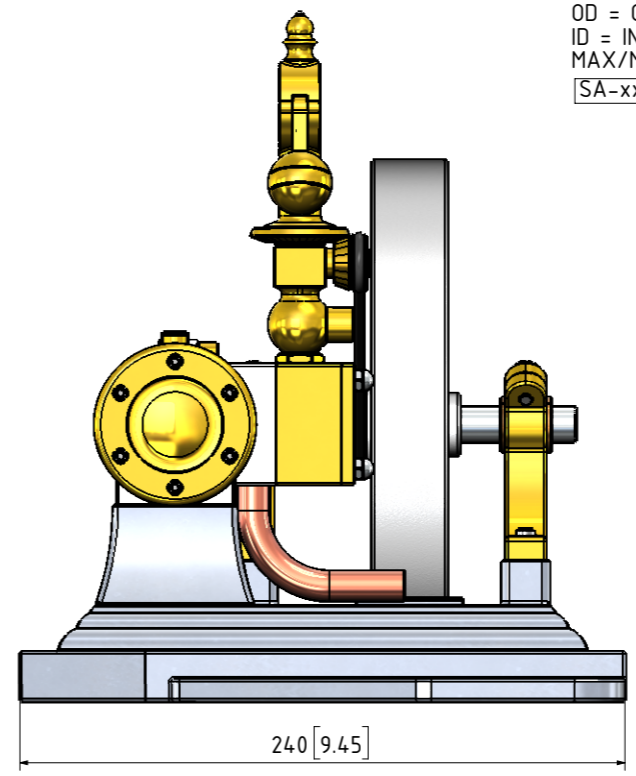
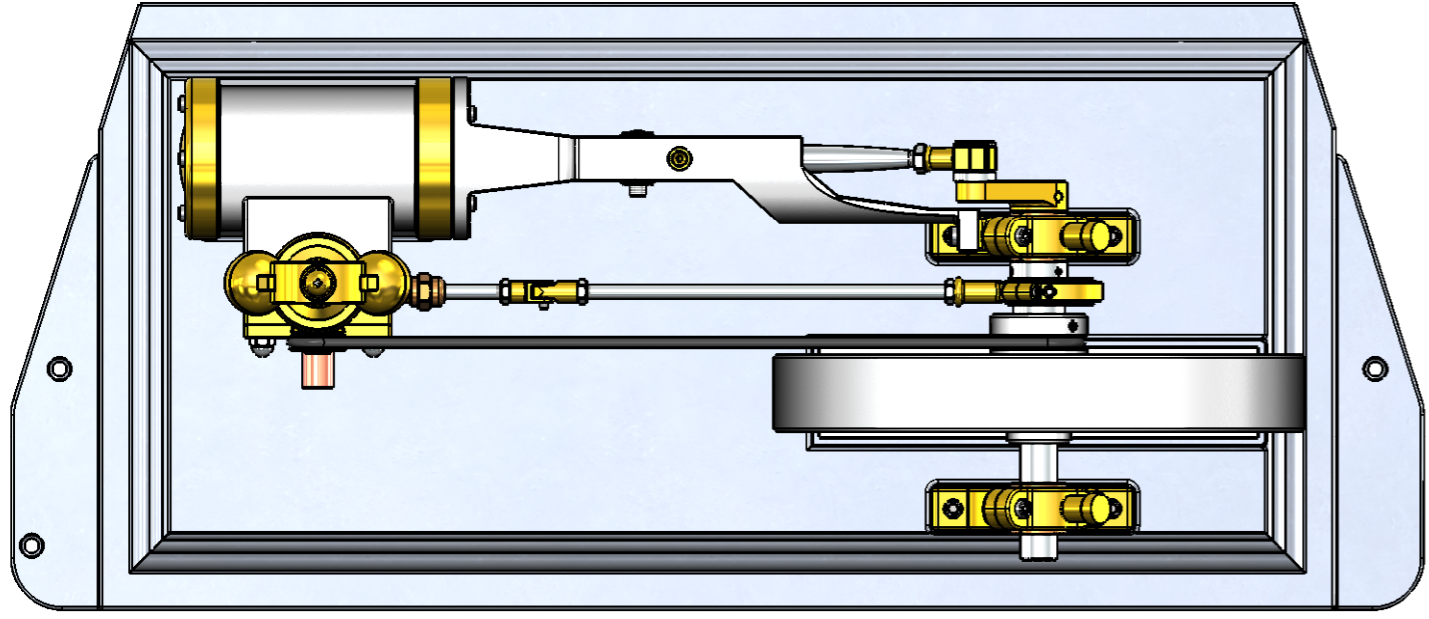
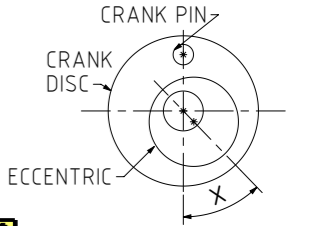
ADDITIONAL NOTES ABOUT THESE DRAWINGS:
 1) MATERIALS HAVE BEEN SPECIFIED ON THESE DRAWINGS. HOWEVER THE BUILDER CAN CHOOSE ITS OWN PREFERRED MATERIAL FOR THE PARTS/COMPONENTS. THE FOLLOWING COLOURS ON THE DRAWINGS INDICATES POSSIBLE MATERIALS WHICH CAN BE USED FOR PARTS: YELLOW=BRASS, LIGHT GREY=ALUMINIUM OR MILD STEEL, REDDISH BROWN=COPPER, DARK BROWN=BRONZE OR GUN METAL, WHITISH=SILVER STEEL OR STAINLESS STEEL
 2) FASTENERS. FASTENERS SUCH AS BOLTS, SCREWS, RIVETS, NUTS AND WASHERS HAVE BEEN SHOWN ON THESE DRAWINGS. THE BUILDER TO CHOOSE ITS OWN PREFERRED TYPE OF FASTENERS IF SO DESIRED.

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 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

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

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: DWG No M76-6004-C DATED 14-9-76, TITLE: "CRETORS POPCORN STEAM ENGINE - MODEL ECX" AND DWG No M76-6003-C DATED 25-5-76, TITTLE "FLY-BALL GOVERNOR MODEL ECX" BOTH BY R. BROMPS. (CONV. FROM IMPERIAL TO METRIC)

TITLE
**A 1 CYLINDER HORIZONTAL STEAM ENGINE
 MODEL OF "CRETORS POPCORN" ENGINE**

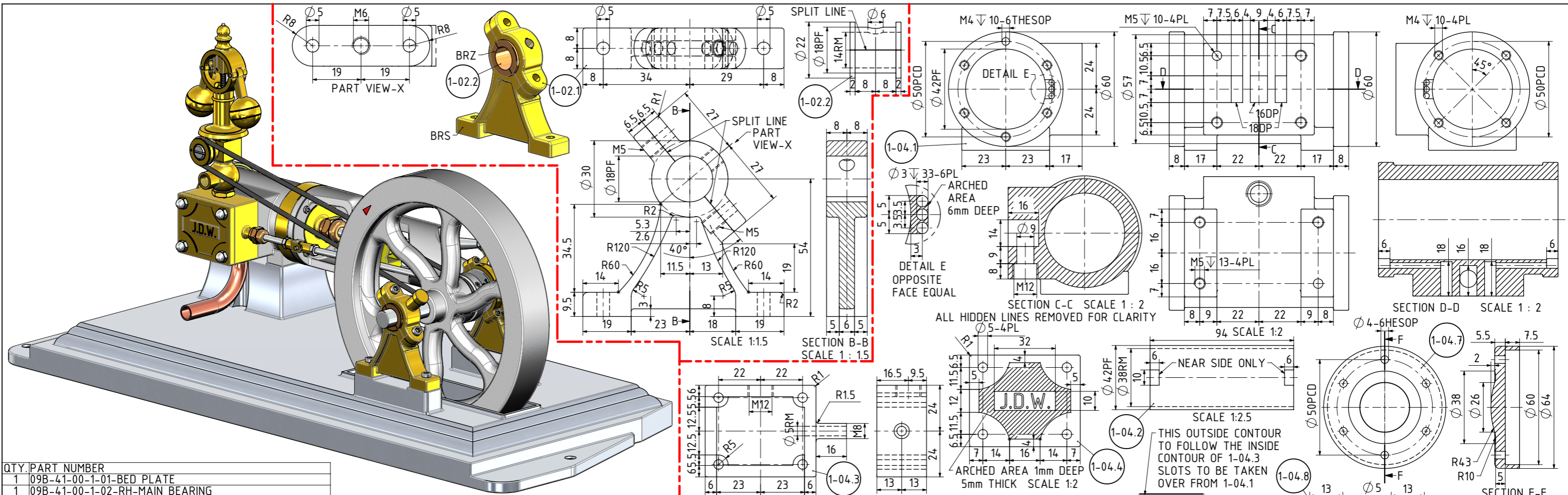
DRAWING CONTENTS
**GENERAL ARRANGEMENT, VIEWS,
 NOTES**

PROJECT No 09B-41-00
 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.

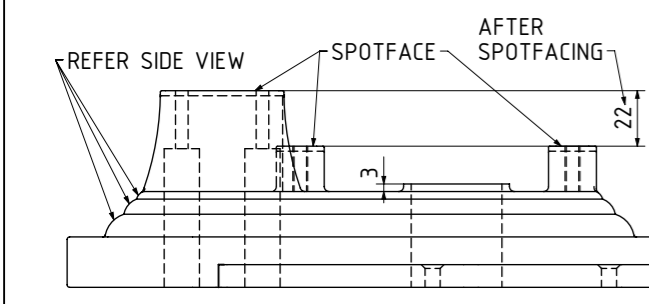
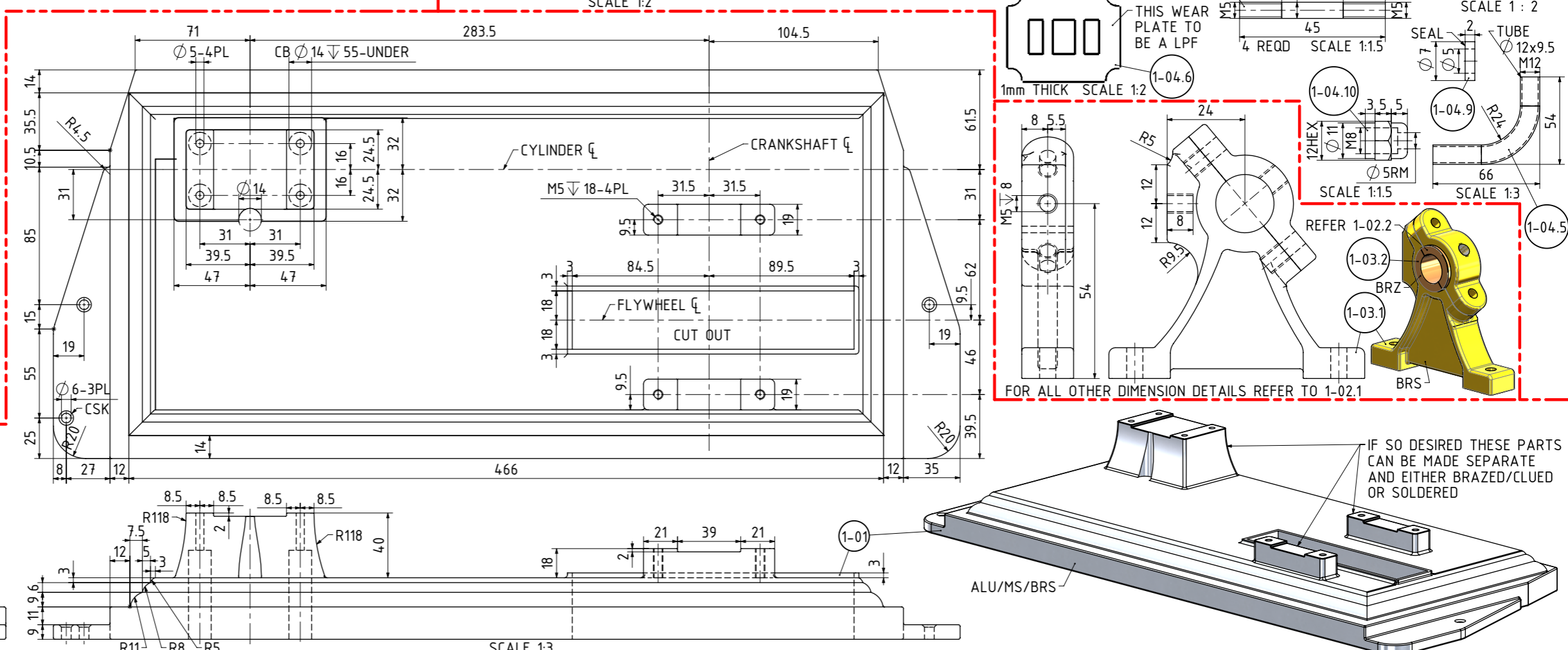
PROJECTION

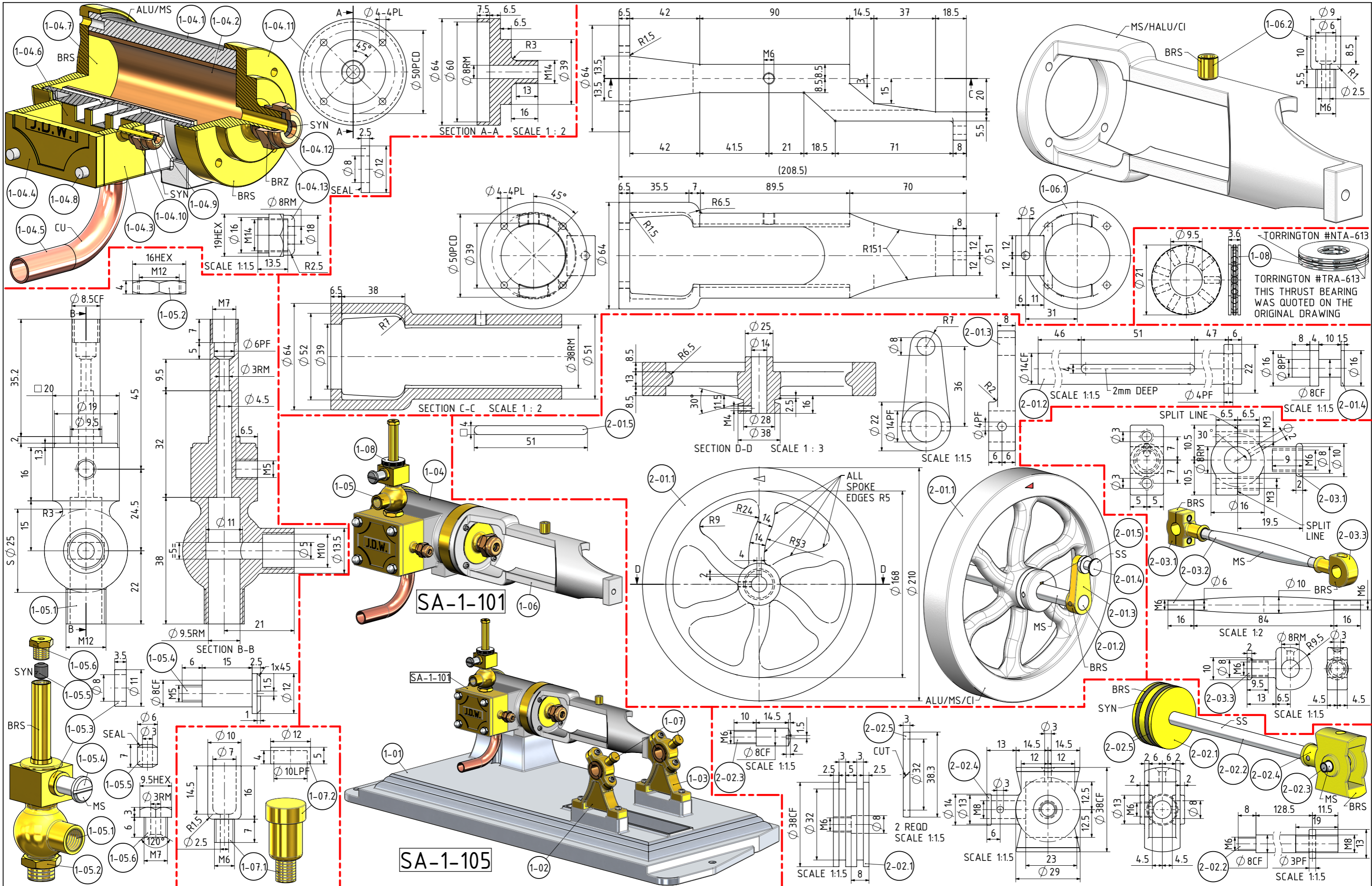
 DATE JULY 2024
 SHEET: 01 OF 04

MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
 Copyright © J.A.M. DE WAAL PAPAOKURA NZ
 A3 No:09B-41-00-SHT-01



QTY	PART NUMBER
1	09B-41-00-1-01-BED PLATE
1	09B-41-00-1-02-RH-MAIN BEARING
1	09B-41-00-1-03-LH-MAIN BEARING
1	09B-41-00-1-04-CYLINDER BLOCK
1	09B-41-00-1-05-GOVERNOR BODY
1	09B-41-00-1-06-CROSSHEAD GUIDE
2	09B-41-00-1-07-MAIN BEARING OIL CUP
1	09B-41-00-1-08-GOVERNOR THRUST BEARING
1	09B-41-00-2-01-CRANK SHAFT+ FLYWHEEL
1	09B-41-00-2-02-PISTON+CROSSHEAD
1	09B-41-00-2-03-CON-ROD
1	09B-41-00-2-04-ECCENTRIC
1	09B-41-00-2-05-'D'-SLIDE VALVE
1	09B-41-00-2-06-ECCENTRIC STRAP
1	09B-41-00-2-07-GOVERNOR PINION GEAR
1	09B-41-00-2-08-GOVERNOR DRIVE BELT
1	09B-41-00-2-09-GOVERNOR BEVEL GEAR
1	09B-41-00-2-10-GOVERNOR CONTROL VALVE+ACTUATOR
2	09B-41-00-2-11-GOVERNOR FLYWIEGHT+ARM
1	09B-41-00-2-12-GOVERNOR COMPRESSION SPRING
2	09B-41-00-M3x14 A-K CYL HEAD SCREW
3	09B-41-00-M3x4 A-K GRUB SCREW
1	09B-41-00-M4x12 A-K GRUB SCREW
6	09B-41-00-M4x14 A-K CYL HEAD SCREW
4	09B-41-00-M4x22 A-K CYL HEAD SCREW
4	09B-41-00-M5 DOME NUT
3	09B-41-00-M5 NUT
5	09B-41-00-M5x14 A-K CYL HEAD SCREW
4	09B-41-00-M5x20 A-K CYL HEAD SCREW
4	09B-41-00-M5x34 A-K CYL HEAD SCREW
2	09B-41-00-M6 NUT





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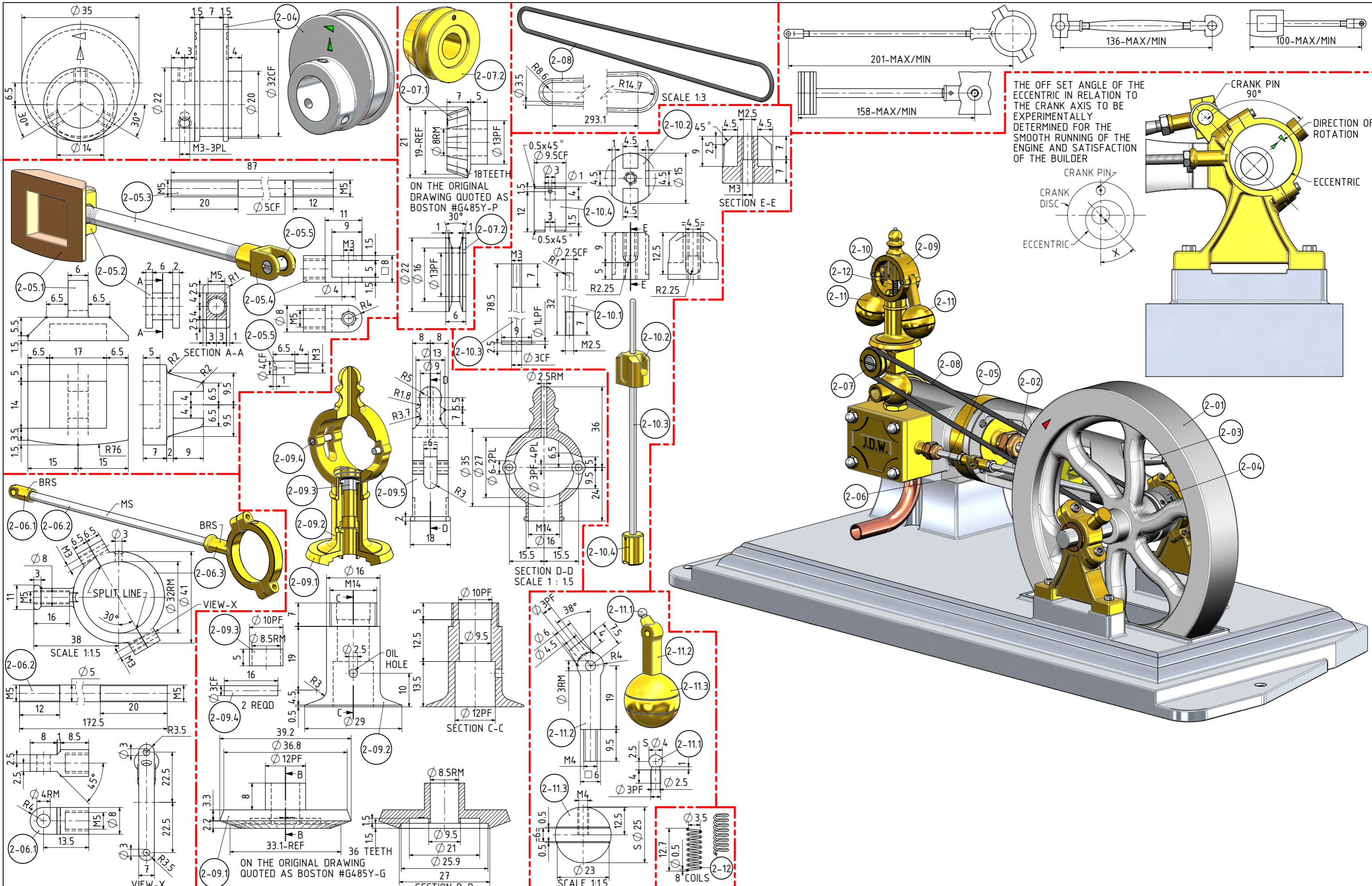
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PROJECT No 09B-41-00
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 0211791000 E-MAIL: dewaal@xtra.co.nz.

PROJECTION
JDWDS
 DATE JULY 2024
 SHEET: 03 OF 04
 MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
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A3 No:09B-41-00-SHT-03

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DATE	JULY 2024	DWG SCALE: 1:1 @A3 OR AS SHOWN
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