

- 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. USE SEALING GASKETS WERE DEEMED NECESSARY.
 15. 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.

MATERIAL ABBREVIATIONS:

ALU = ALUMINIUM
 HALU= HARD ALUMINIUM
 BRS = BRASS
 PBRZ= PHOSPHORE BRONZE
 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

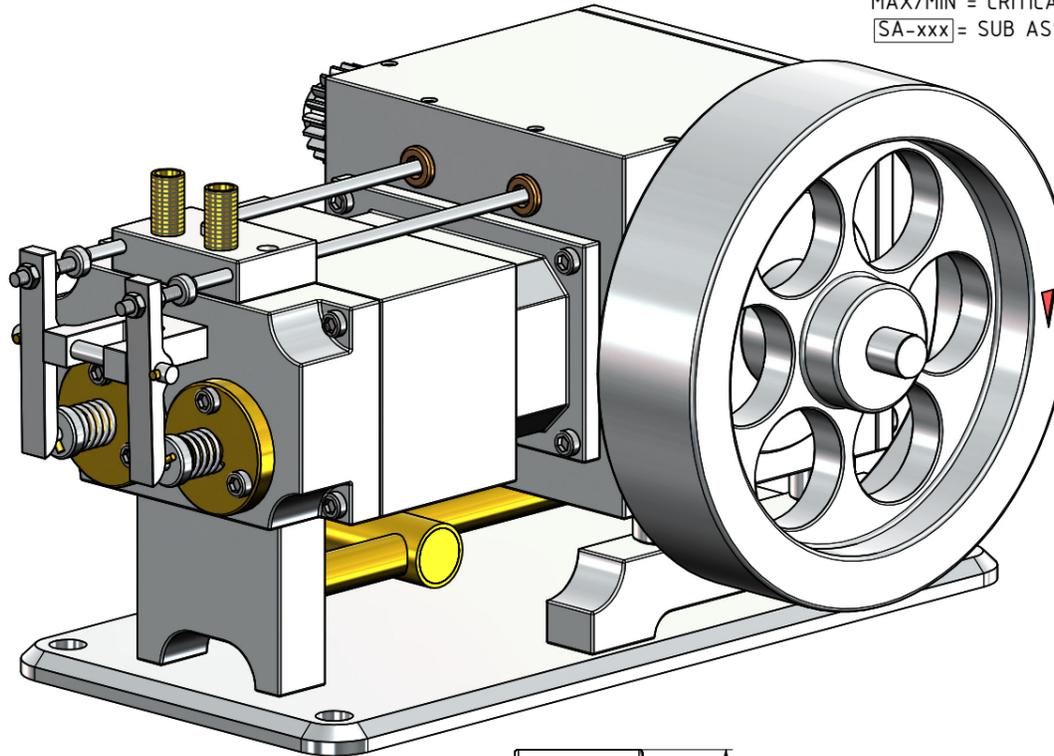
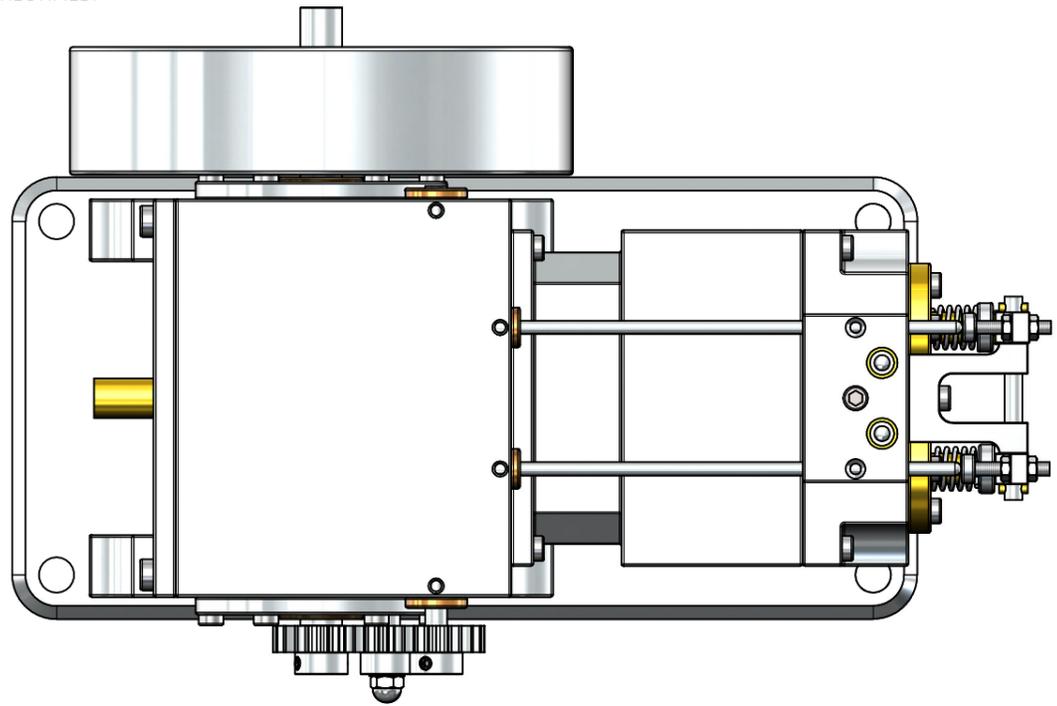
IN GENERAL SYNTHETIC MATERIALS SHOULD BE ABLE TO WITHSTAND THE HEAT AND PRESSURE(S) APPLIED TO THEM.

nnn/nnn MEANS THAT EITHER MATERIAL CAN BE USED

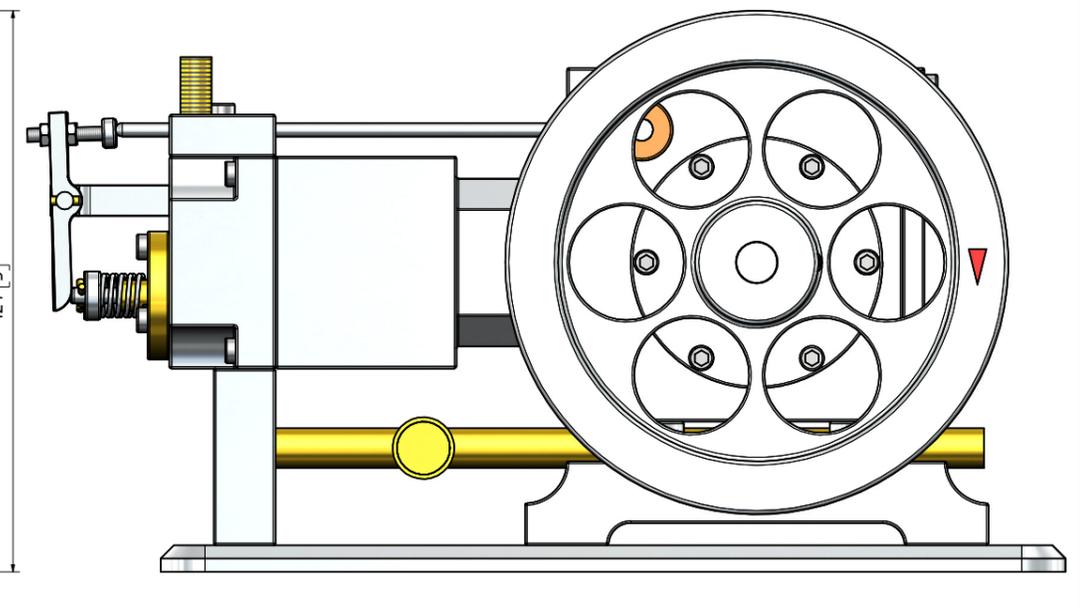
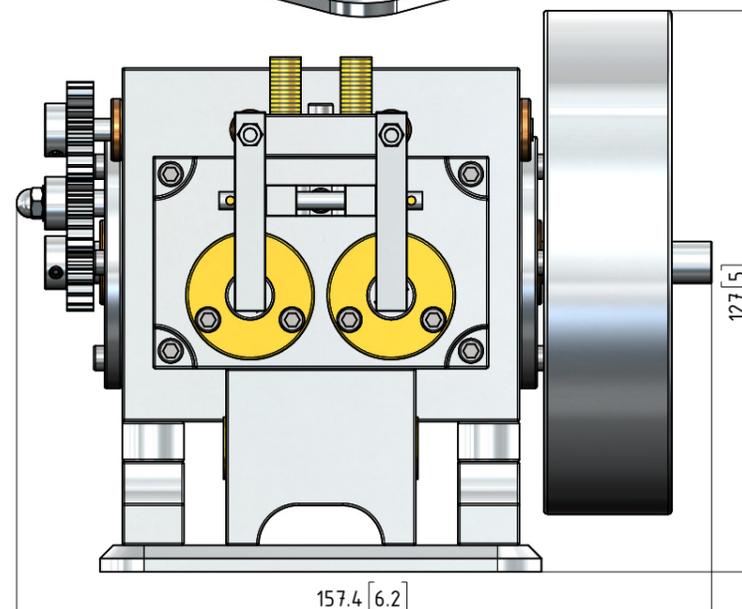
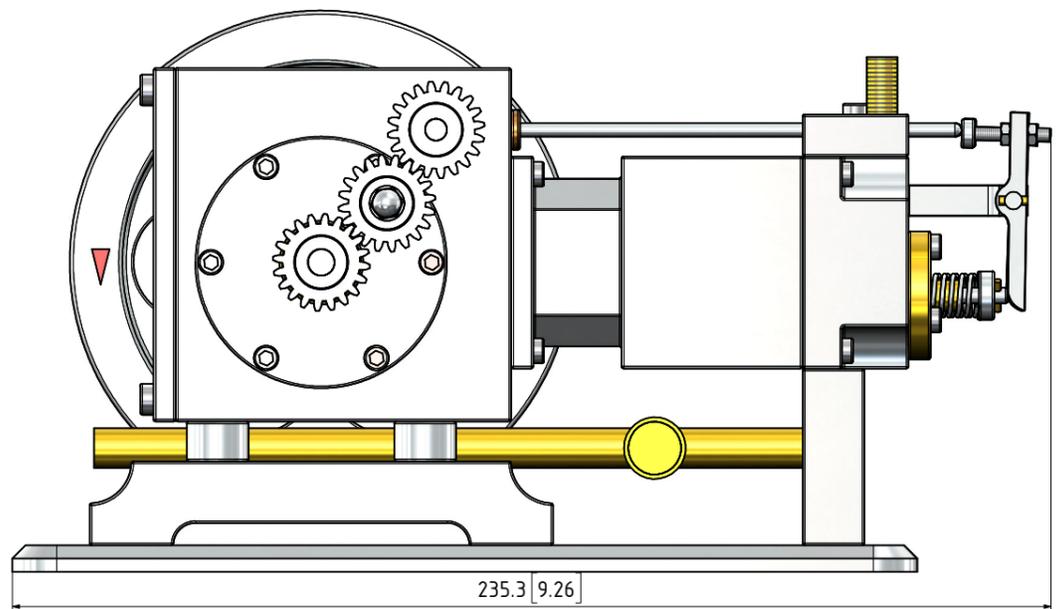
OTHER ABBREVIATIONS

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 = HEXAGON, 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



QTY.	PART NUMBER
1	09D-33-00-1-01-BASE PLATE
1	09D-33-00-1-02-CYLINDER BLOCK
1	09D-33-00-1-03-CYLINDER HEAD
2	09D-33-00-1-04-VALVE UNIT
1	09D-33-00-2-01-CRANK SHAFT + FLYWHEEL
2	09D-33-00-2-02-PISTON
2	09D-33-00-2-03-CON-ROD
1	09D-33-00-2-04-CAM SHAFT
1	09D-33-00-2-05-GEARWHEEL-A 20T
1	09D-33-00-2-06-GEARWHEEL-B 20T
1	09D-33-00-2-07-GEARWHEEL-C 20T
2	09D-33-00-2-08-INLET VALVE
2	09D-33-00-2-09-VALVE LIFTER+PUSH ROD
2	09D-33-00-2-10-VALVE ROCKER ARM
4	09D-33-00-M3 NUT
4	09D-33-00-M3x14 A-K CYL HEAD SCREW
4	09D-33-00-M3x3 A-K GRUB SCREW
1	09D-33-00-M4 DOME NUT
1	09D-33-00-M4 WASHER
16	09D-33-00-M4x12 A-K CYL HEAD SCREW
7	09D-33-00-M4x14 A-K CYL HEAD SCREW
1	09D-33-00-M4x18 A-K CYL HEAD SCREW
4	09D-33-00-M4x20 A-K CYL HEAD SCREW
1	09D-33-00-M4x9.5 A-K GRUB SCREW
4	09D-33-00-M5x10 A-K CYL HEAD SCREW
6	09D-33-00-M5x12 A-K C-SINK SCREW
4	09D-33-00-M5x24 A-K CYL HEAD SCREW
1	09D-33-00-M5x32 A-K CYL HEAD SCREW



NOTES: THE ORIGINAL DRAWINGS WERE GIVEN TO ME. THE ORIGINAL DRAWINGS DID NOT STATE THE DESIGNER, DRAFTER, DATES. THE ENGINE SHOWN ON THESE DRAWINGS IS 1.5 TIMES THE ORIGINAL

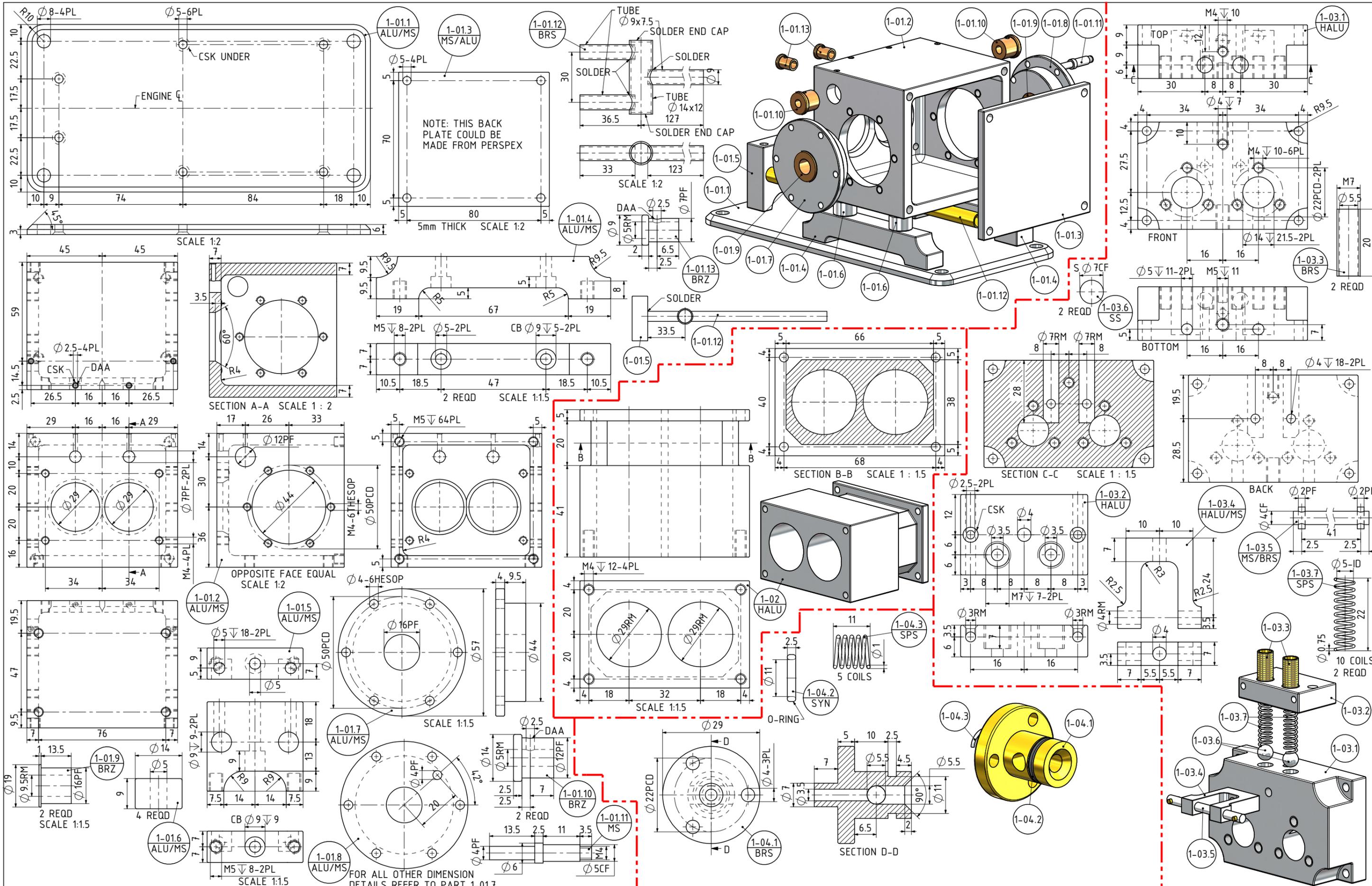
TITLE
 AN EXPERIMENTAL 2 CYLINDER HORIZONTAL STEAM ENGINE USING PUSH ROD VALVES

DRAWING CONTENTS
 GENERAL ARRANGEMENT, ISOMETRIC VIEW, NOTES, BILL OF MATERIALS

PROJECT No 09D-33-00
 JDW DRAUGHTING SERVICES
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 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz.

PROJECTION
 DATE APRIL 2025
 SHEET: 01 OF 03
 MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
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 A3 No:09D-33-00-SHT-01

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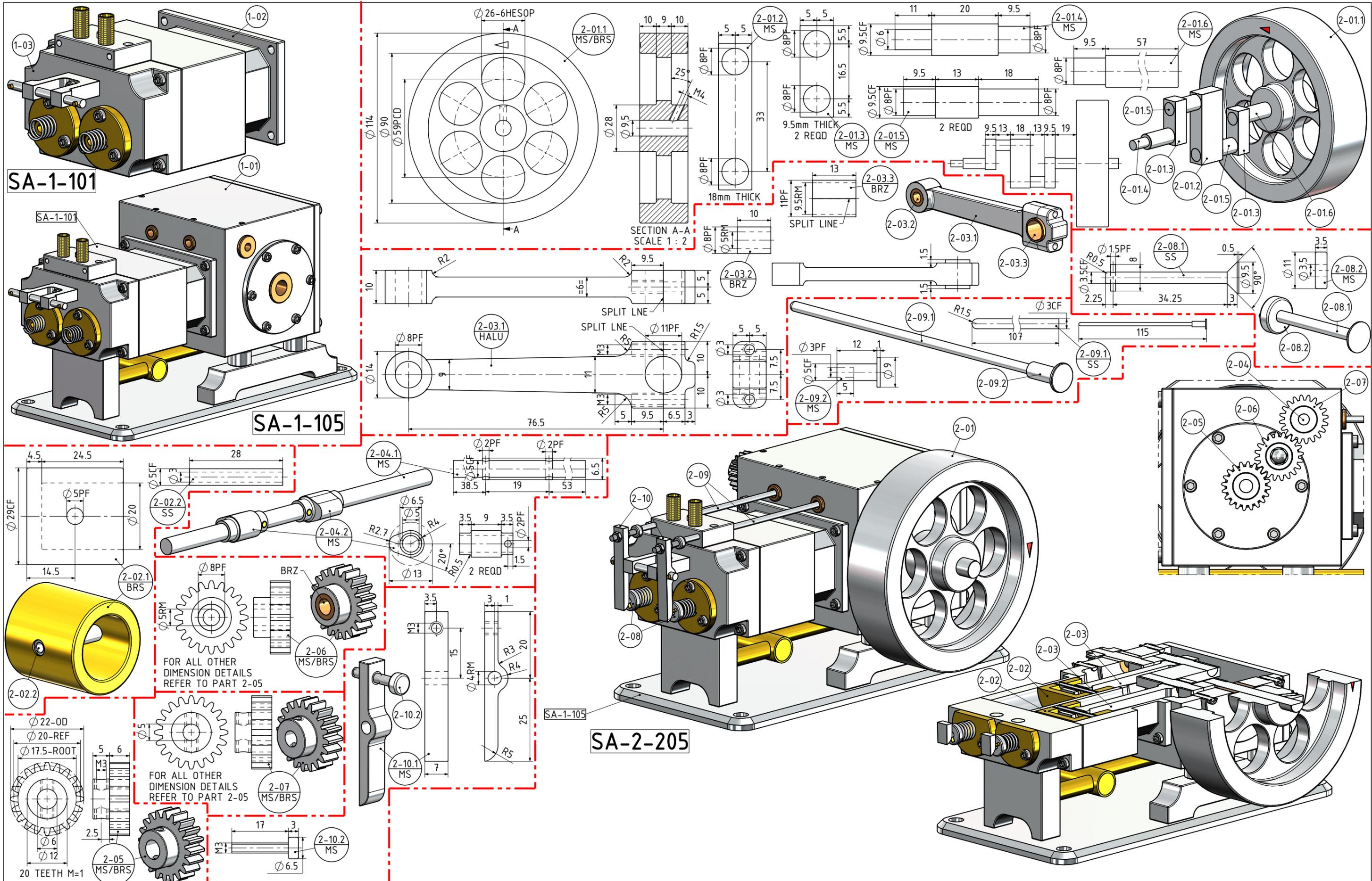
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DRAWING CONTENTS
PARTS AND ASSEMBLIES

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PROJECTION **JDWDS** MODEL SCALE: 1:1
 DATE APRIL 2025 DWG SCALE: 1:1 @A3 OR AS SHOWN
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SA-1-101

SA-1-105

SA-2-205

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TITLE
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PROJECTION	JDWDS	MODEL SCALE: 1:1
DATE	APRIL 2025	DWG SCALE: 1:1 @A3 OR AS SHOWN
SHEET: 03 OF 03	A3	No:09D-33-00-SHT-03

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