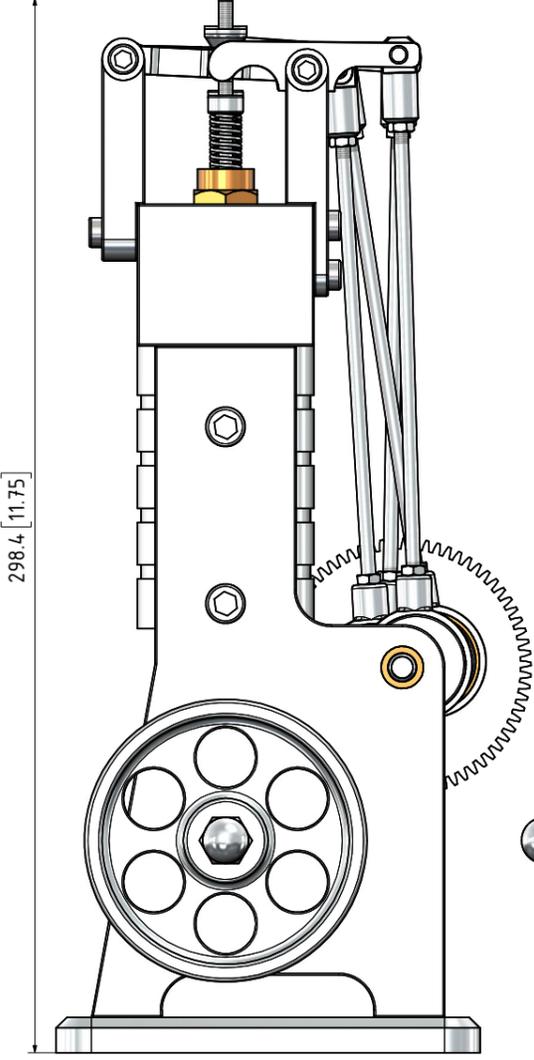
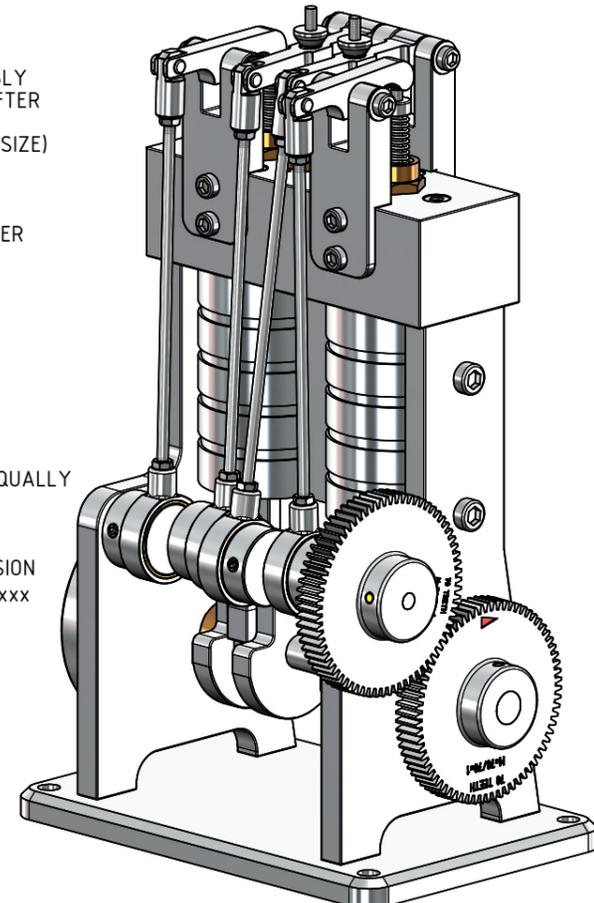


QTY	PART NUMBER
1	09C-68-00-1-01-BASE+CYLINDERS
1	09C-68-00-1-02-CYLINDER HEAD
1	09C-68-00-2-01-CRANKSHAFT+FLYWHEEL+GEARWHEEL
2	09C-68-00-2-02-PISTON
2	09C-68-00-2-03-CON-ROD
1	09C-68-00-2-04-ECCENTRIC SHAFT+ECCENTRICS
2	09C-68-00-2-05-INLET VALVE TOP LEVER
2	09C-68-00-2-06-INLET VALVE ECCENTRIC STRAP
2	09C-68-00-2-07-INLET VALVE
2	09C-68-00-2-08-EXHAUST VALVE TOP LEVER
2	09C-68-00-2-09-EXHAUST VALVE ECCENTRIC STRAP
2	09C-68-00-2-10-EXHAUST VALVE
8	09C-68-00-M4 NUT
4	09C-68-00-M5 DOME NUT
2	09C-68-00-M5x14 A-K GRUB SCREW
2	09C-68-00-M5x18 A-K GRUB SCREW
4	09C-68-00-M5x26 A-K CYL HEAD SCREW
4	09C-68-00-M5x28 A-K C-SINK SCREW
4	09C-68-00-M6 WASHER
4	09C-68-00-M6x10 A-K CYL HEAD SCREW
6	09C-68-00-M6x18 A-K CYL HEAD SCREW
6	09C-68-00-M6x48 A-K C-SINK SCREW
1	09C-68-00-M8 DOME NUT
4	09C-68-00-M8x18 A-K CYL HEAD SCREW

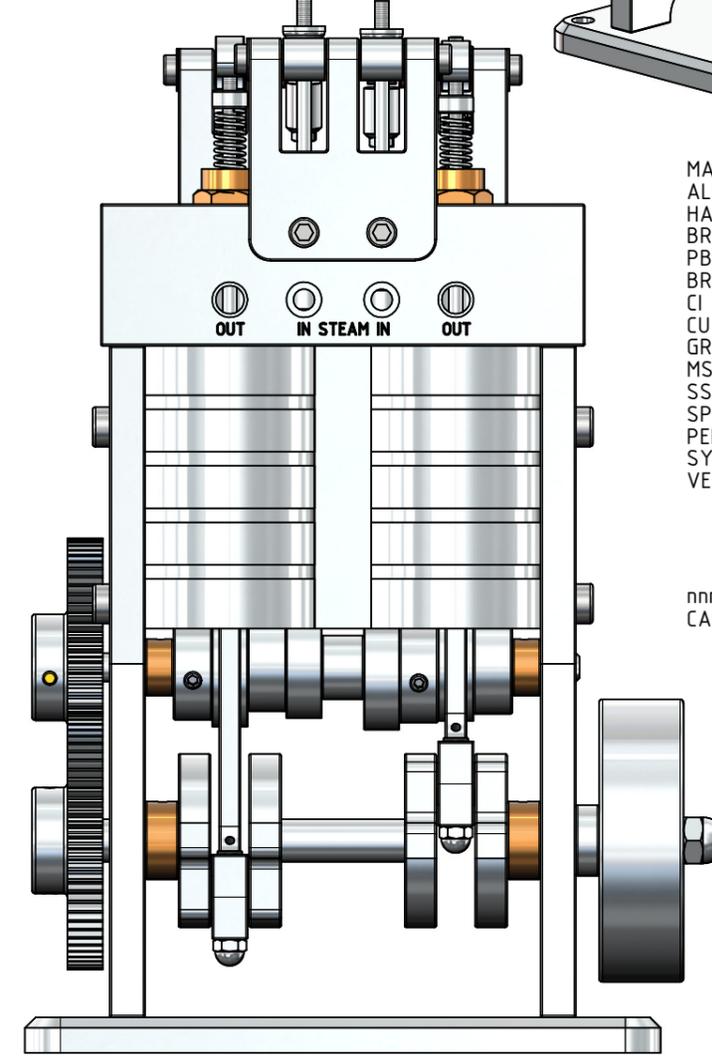
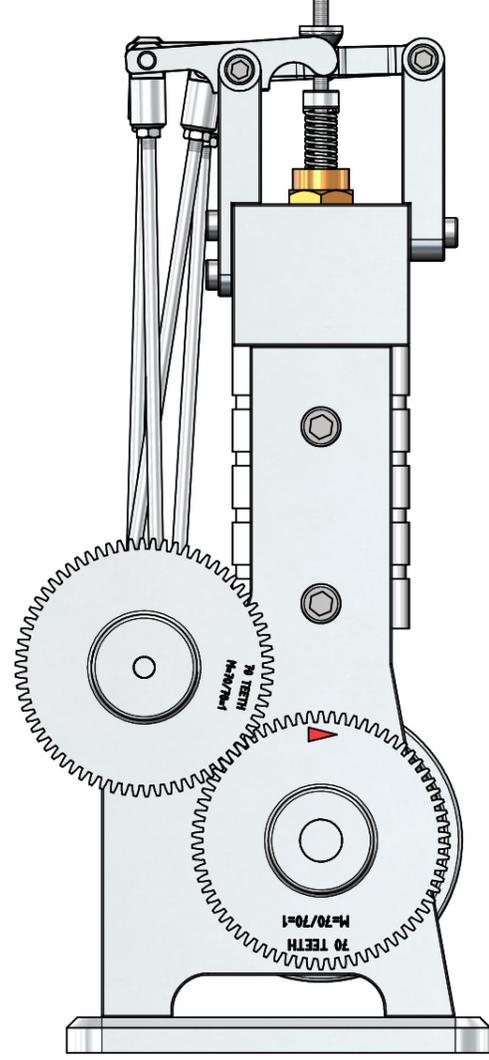
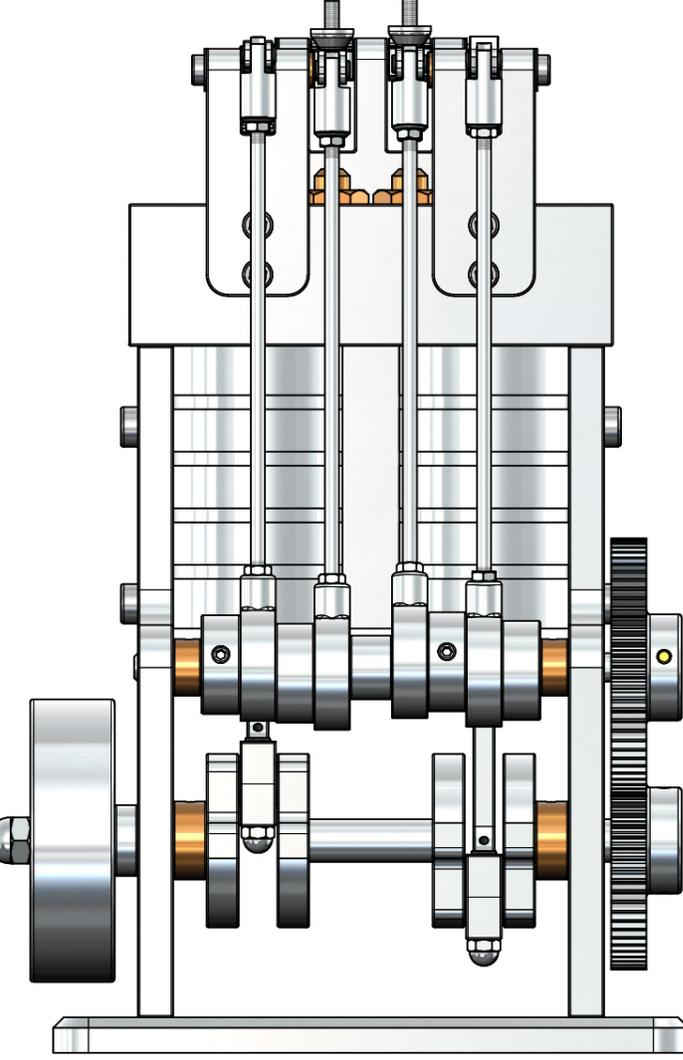
DUE TO THE LACK OF INFORMATION ON THE ORIGINAL DRAWING(S), SUCH AS VIEWS, DIMENSIONS, SECTIONS ETC AND/OR CLARITY OF COMPONENTS, OMITTED PARTS/COMPONENTS, SOME OF THE COMPONENTS MIGHT NOT BE AS CONSTRUCTED ORIGINALLY OR AS THE ORIGINAL DESIGNER INTENDED

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.

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



298.4 [11.75]



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 SOULD BE ABLE TO WITHSTAND THE HEAT AND PRESSURE(S) APPLIED TO THEM.
 nnn/nnn MEANS THAT EITHER MATERIAL CAN BE USED

NOTES: THE ORIGINAL DRAWINGS WERE GIVEN TO ME. THE ORIGINAL DRAWINGS WERE OF GERMAN ORIGIN. THE ASSEMBLY DRAWING TITLE WAS: "VALVE STEAM ENGINE" BY FRAENSENGINEERING DATED 08.10.2023. ENGINE SHOWN ON THESE DRAWINGS IS 2x LARGER. SOME ALTERATIONS HAVE BEEN INCORPORATED IN THESE DRAWINGS

TITLE
2 CYLINDER VERTICAL STEAM ENGINE USING PUSH VALVES (BORE=26mm STROKE=32mm)

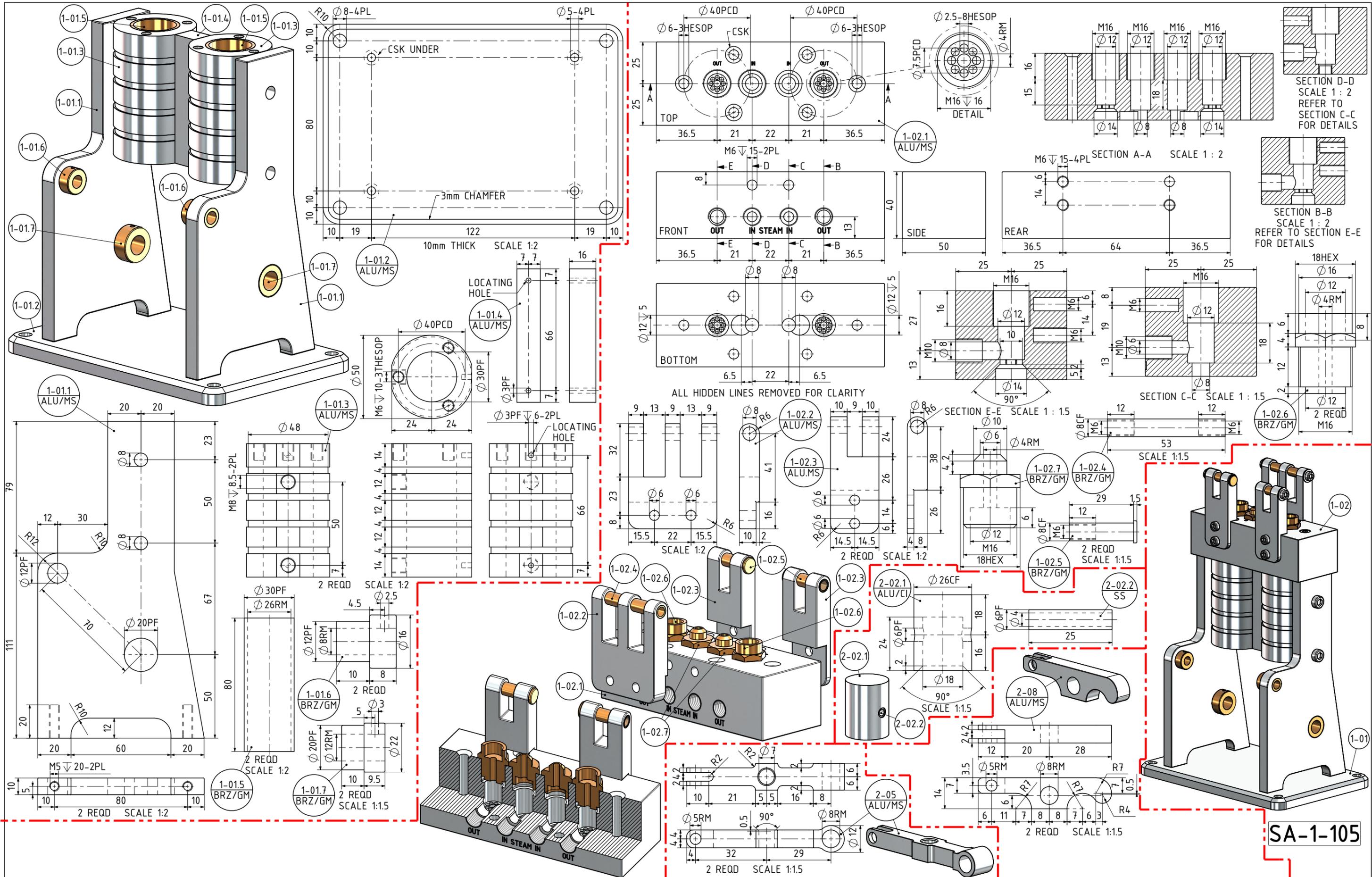
DRAWING CONTENTS
GENERAL ARRANGEMENT, ISOMETRIC VIEW, NOTES, BILL OF MATERIALS

PROJECT No 09C-68-00
 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 MARCH 2025
 SHEET: 01 OF 03

MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
 Copyright © J.A.M. DE WAAL PAKAPURA NZ
A3 No:09C-68-00-SHT01

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TITLE
**2 CYLINDER VERTICAL STEAM ENGINE USING
 PUSH VALVES (BORE=26mm STROKE=32mm)**

DRAWING CONTENTS
PARTS AND ASSEMBLIES

PROJECT No 09C-68-00
 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 MARCH 2025 Copyright © J.A.M. DE WAAL PAPAOKURA NZ
 SHEET: 02 OF 03 **A3** No:09C-68-00-SHT02

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