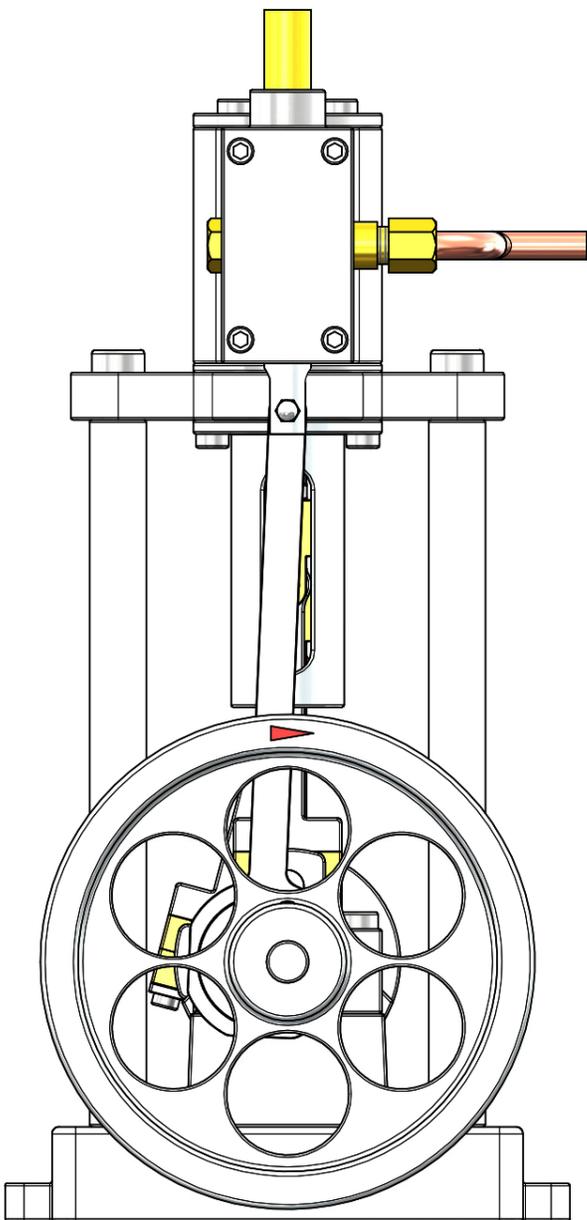
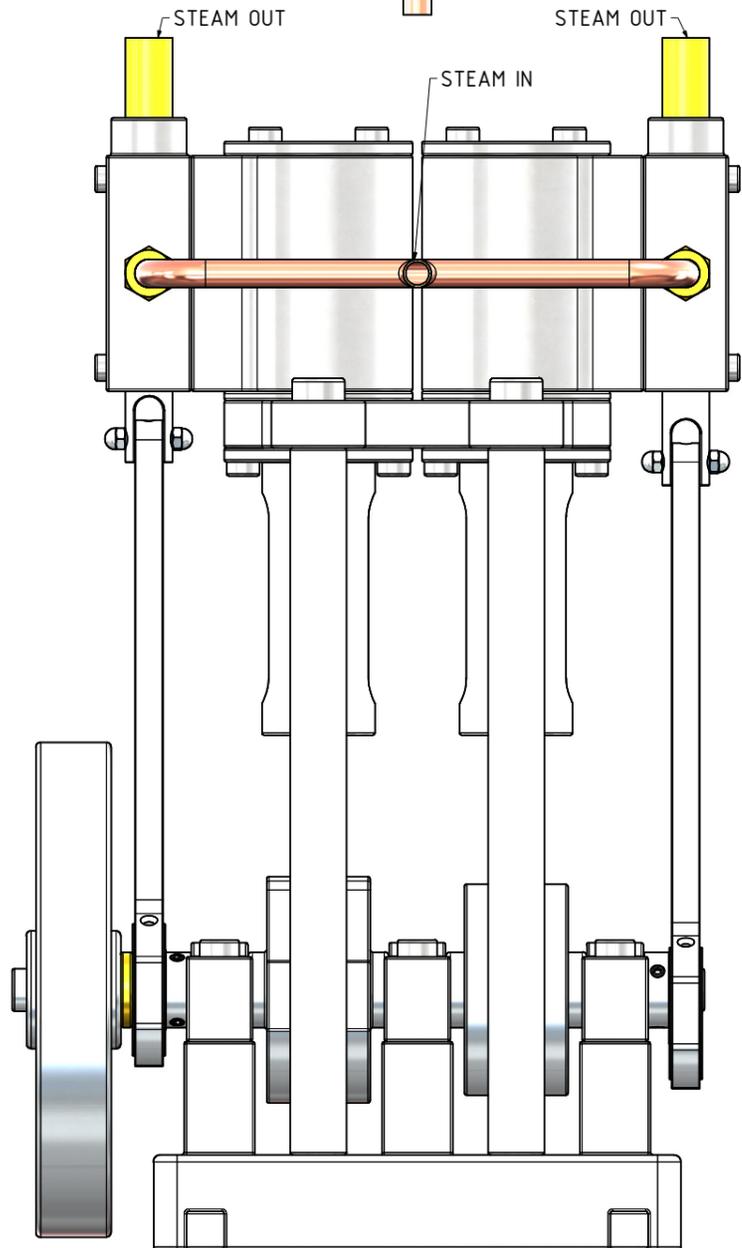
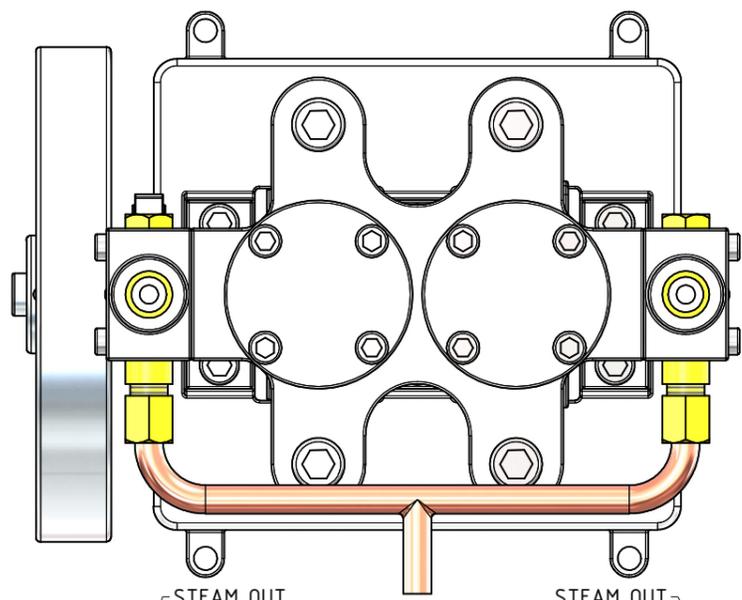


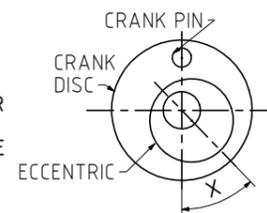
OTHER ABBREVIATIONS  
AS = AS SHOWN  
DP = DEEP  
DAA= DRILL AFTER ASSEMBLY  
D&TAA= DRILL AND TAP AFTER ASSEMBLY  
CF = CLOSE FIT (SIZE FOR SIZE)  
PF = PRESS FIT  
PFAA= PRESS FIT AFTER ASSEMBLY  
PCD = PITCH CIRCLE DIAMETER  
RM = REAM  
HEX = HEXACON, 6SIDED  
CP = COMPRESSED  
KNL = KNURLED  
CSK = 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



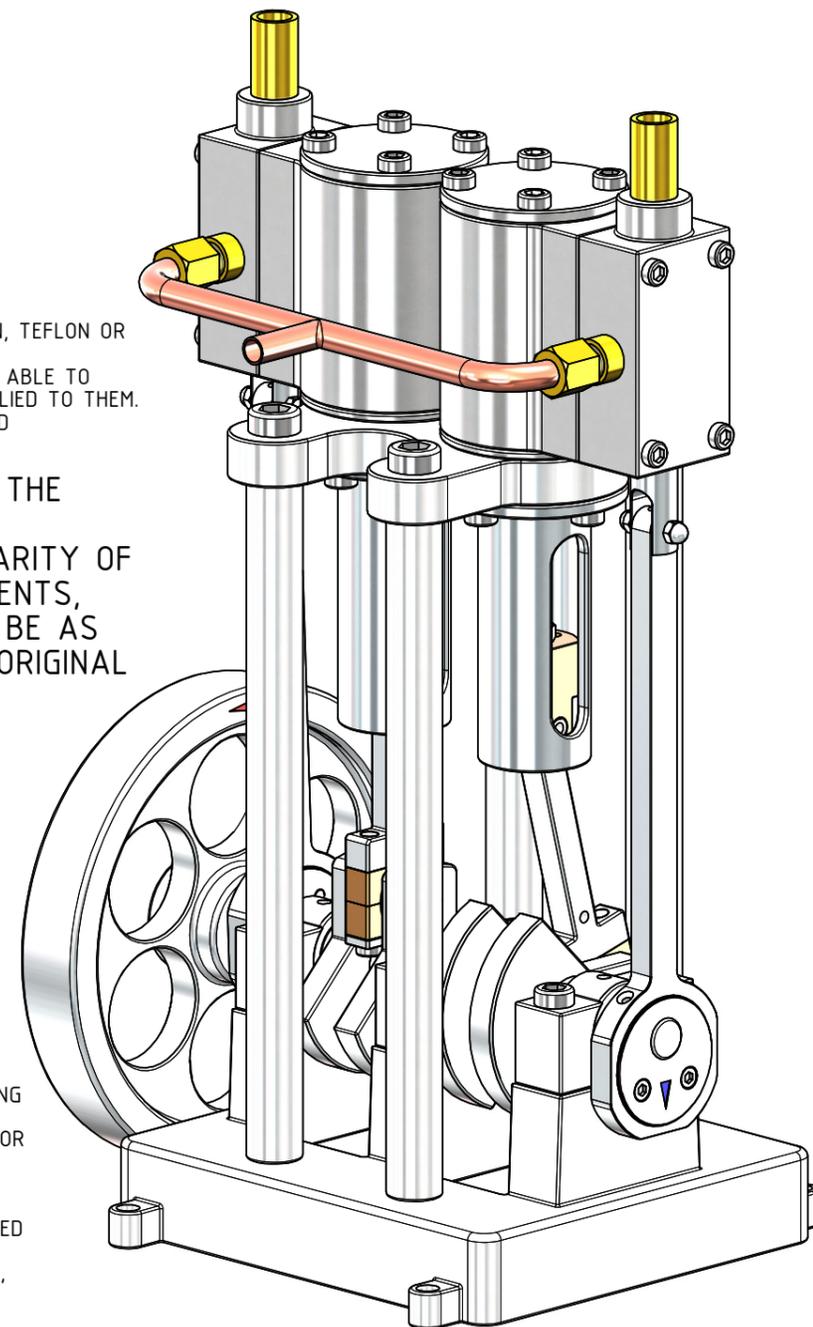
MATERIAL ABBREVIATIONS:  
ALU = ALUMINIUM  
HALU= HARD ALUMINIUM  
BRS = BRASS  
PBRZ= PHOSPHORE BRONZE  
BRZ = BRONZE OR GUNMETAL (BRZ/GM)  
OLT = OILITE  
CI = CAST IRON  
CU = COPPER  
GRA = GRAPHITE  
MS = MILD STEEL/BRIGHT MILD STEEL  
SS = SILVER STEEL OR STAINLESS STEEL  
SPS = SPRING STEEL  
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

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



- 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.



QTY	PART NUMBER
1	09C-73-00-1-01-BASE+ENGINE PLATFORM
1	09C-73-00-1-02A-CYLINDER+VALVE CHEST
1	09C-73-00-1-02B-CYLINDER+VALVE CHEST
2	09C-73-00-1-03-CROSS HEAD TRUNK GUIDE
1	09C-73-00-1-04-STEAM INLET PIPE
1	09C-73-00-2-01-CRANK SHAFT+FLYWHEEL
2	09C-73-00-2-02-PISTON+CROSSHEAD
2	09C-73-00-2-03-CON-ROD
2	09C-73-00-2-04-SPOOLVALVE
2	09C-73-00-2-05-ECCENTRIC STRAP
4	09C-73-00-M3 DOME NUT
6	09C-73-00-M3x3.5 A-K GRUB SCREW
4	09C-73-00-M3x7 A-K C-SINK SCREW
1	09C-73-00-M3x8 A-K GRUB SCREW
2	09C-73-00-M4 NUT
12	09C-73-00-M4x24 A-K CYL HEAD SCREW
2	09C-73-00-M5 NUT
8	09C-73-00-M5x12 A-K CYL HEAD SCREW
8	09C-73-00-M5x64 A-K CYL HEAD SCREW
6	09C-73-00-M6x26 A-K CYL HEAD SCREW
8	09C-73-00-M8x24 A-K CYL HEAD SCREW

NOTES: THE ENGINE SHOWN ON THESE DRAWINGS ARE LOOSLY BASED ON A UNDIMENSIONED DRAWING AND PICTURES WHICH I FOUND ON THE INTERNET. THE DRAWING WAS DRAWN BY SIMON ROWLEY, AND DATED SEPT-2018. NO SCALE INDICATED.

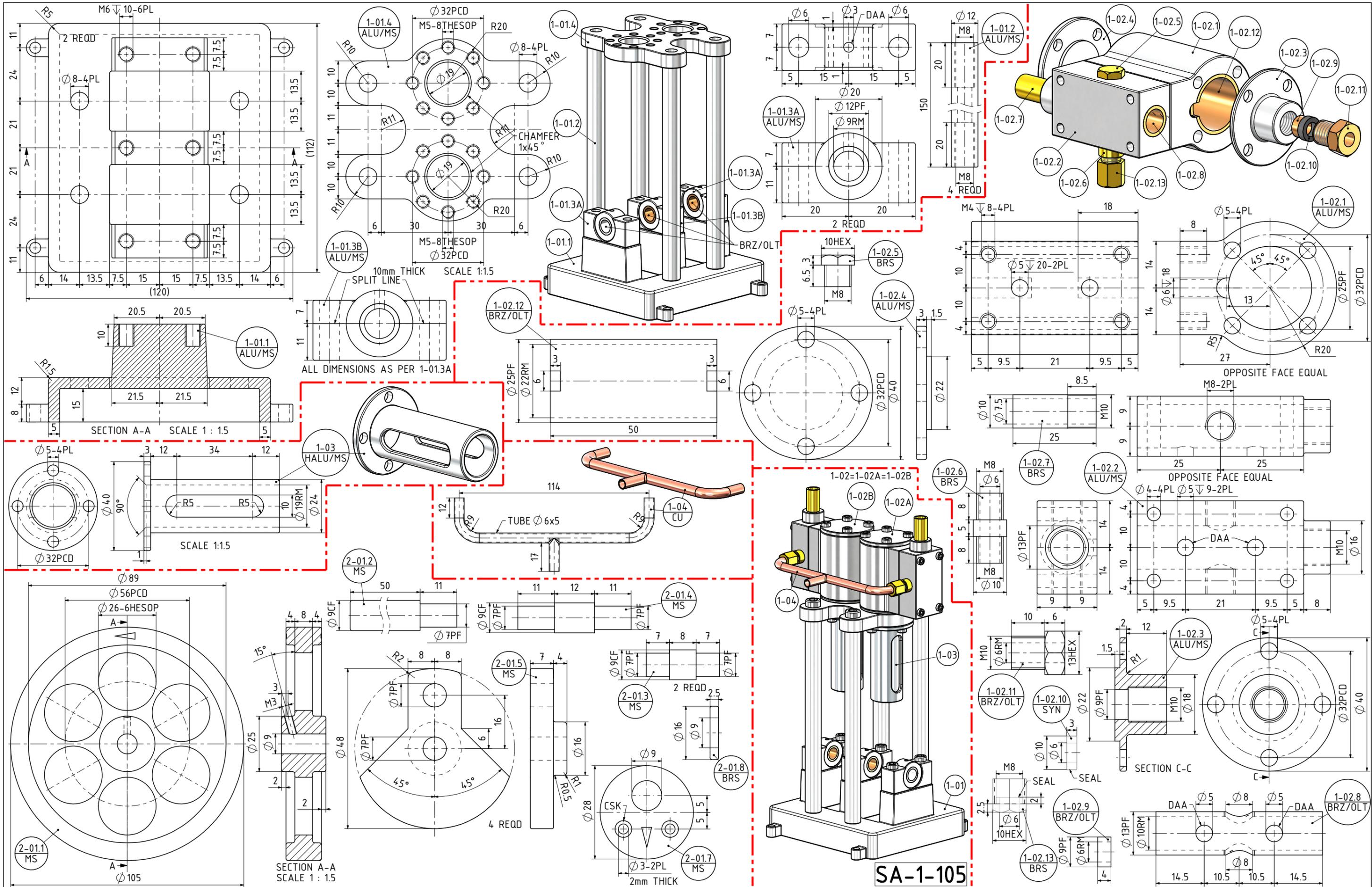
TITLE  
**2 CYLINDER NON REVERSABLE VERTICAL STEAM ENGINE (BORE=22mm STROKE=32mm)**

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

PROJECT No 09C-73-00  
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  
Copyright © J.A.M. DE WAAL PAPAOKURA NZ  
SHEET: 01 OF 03 **A3** No:09C-73-00-SHT-01

**DRAWINGS ARE FOR PERSONAL USE ONLY NOT FOR COMMERCIAL PURPOSES**



NOTES: THE ENGINE SHOWN ON THESE DRAWINGS ARE LOOSLY BASED ON A UNDIMENSIONED DRAWING AND PICTURES WHICH I FOUND ON THE INTERNET. THE DRAWING WAS DRAWN BY SIMON ROWLEY, AND DATED SEPT-2018. NO SCALE INDICATED.

TITLE  
**2 CYLINDER NON REVERSABLE VERTICAL STEAM ENGINE (BORE=22mm STROKE=32mm)**

DRAWING CONTENTS  
**PARTS AND ASSEMBLIES**

PROJECT No 09C-73-00  
 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:09C-73-00-SHT-02

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