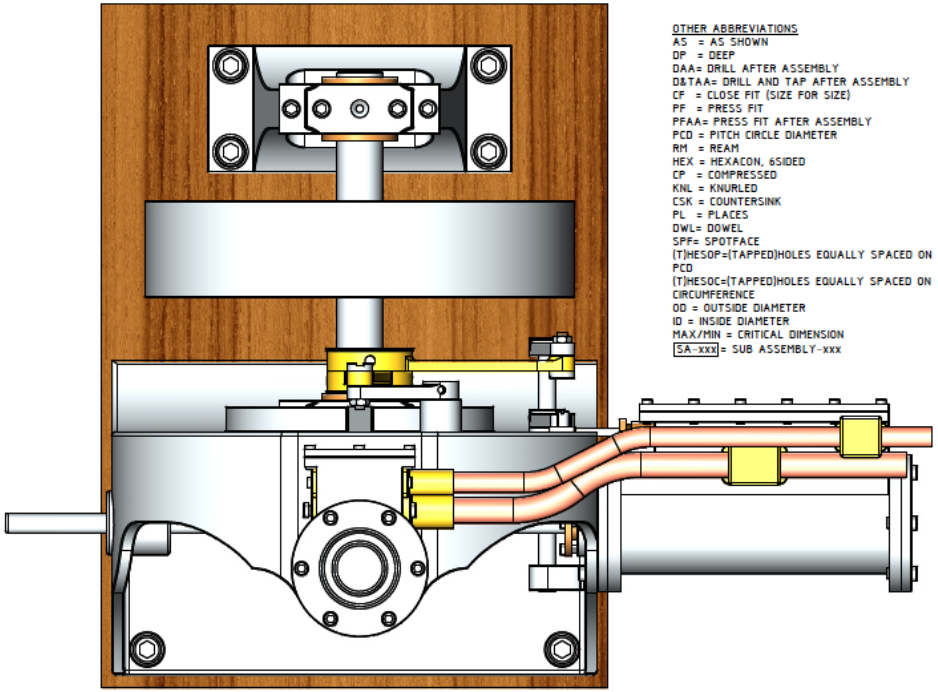
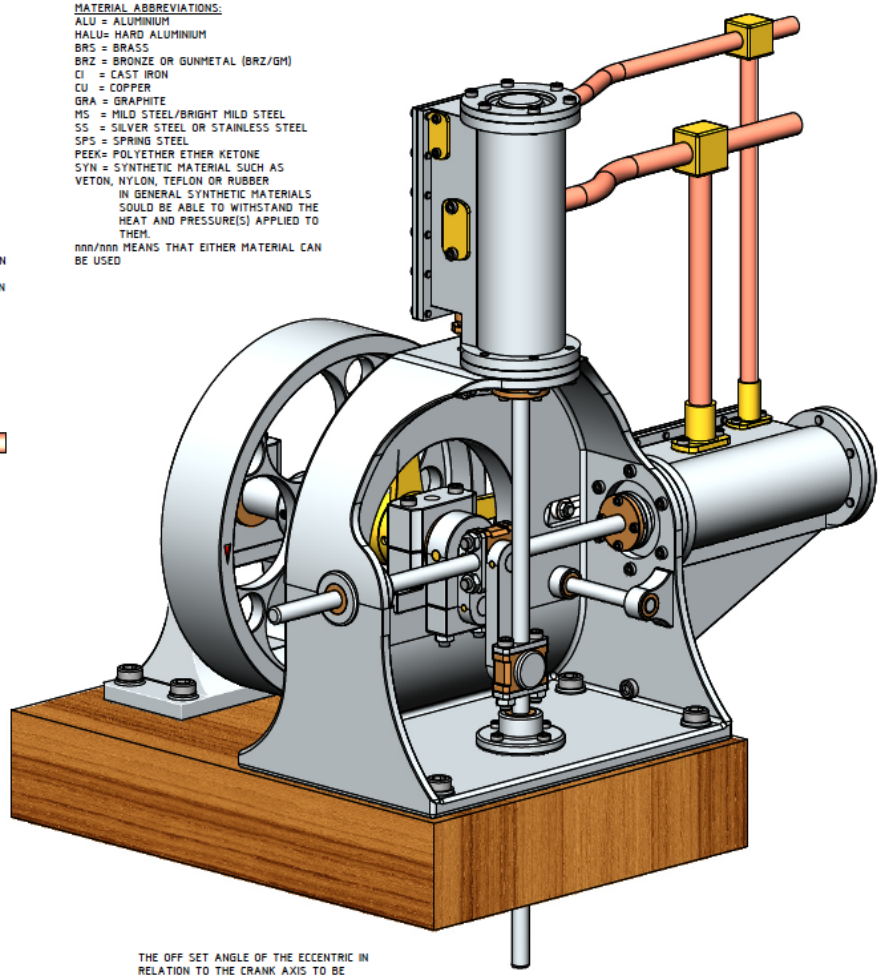


OTHER ABBREVIATIONS
AS = AS SHOWN
DP = DEEP
DAA= DRILL AFTER ASSEMBLY
DATAA= DRILL AND TAP AFTER ASSEMBLY
CF = CLOSE FIT (SIZE FOR SIZE)
PF = PRESS FIT
PFAA= PRESS FIT AFTER ASSEMBLY
PCD = PITCH CIRCLE DIAMETER
RM = REAM
HEX = HEXACON, 6SIDED
CP = COMPRESSED
KNL = KNURLED
CSK = COUNTERSINK
PL = PLACES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

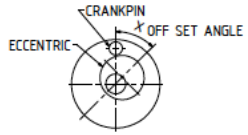
MATERIAL ABBREVIATIONS:
ALU = ALUMINIUM
HALU= HARD ALUMINIUM
BRS = BRASS
BRZ = BRONZE OR GUNMETAL (BRZ/GM)
CI = CAST IRON
CU = COPPER
GRA = GRAPHITE
MS = MILD STEEL/BRIGHT MILD STEEL
SS = SILVER STEEL OR STAINLESS STEEL
SPS = SPRING STEEL
PEEK= POLYETHER ETHER KETONE
SYN = SYNTHETIC MATERIAL SUCH AS 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



QTY	PART NUMBER
1	09D-23-00-1-01-BASE FRAME
1	09D-23-00-1-02-CRANK SHAFT BEARING BLOCK
1	09D-23-00-1-03-CYLINDER+VALVE CHEST
1	09D-23-00-1-03-CYLINDER+VALVE CHEST
2	09D-23-00-1-04-CYLINDER TOP COVER
2	09D-23-00-1-05-CYLINDER BOTTOM COVER
1	09D-23-00-1-06-OUTER CRANK SHAFT BEARING
1	09D-23-00-1-07-STEAM SUPPLY PIPES
1	09D-23-00-1-08-EXHAUST PIPES
1	09D-23-00-1-10-BRICK STONE BASE
1	09D-23-00-2-01-CRANK SHAFT + FLYWHEEL
2	09D-23-00-2-02-PISTON + CROSSHEAD
1	09D-23-00-2-03-CRANK LINK
1	09D-23-00-2-04-ECCENTRIC SHEAVES
2	09D-23-00-2-05-SLIDE VALVE
1	09D-23-00-2-06-SLIDE VALVE ROCKER SHAFT
2	09D-23-00-2-07-ECCENTRIC STRAP
1	09D-23-00-2-08-SLIDE VALVE ROCKER SHAFT-2
4	09D-23-00-M3x4 A-K CYL HEAD SCREW
4	09D-23-00-M3x8 A-K C-SINK SCREW
40	09D-23-00-M3x8 A-K CYL HEAD SCREW
2	09D-23-00-M3x9 A-K GRUB SCREW
4	09D-23-00-M4 NUT
17	09D-23-00-M4x10 A-K CYL HEAD SCREW
11	09D-23-00-M4x14 A-K CYL HEAD SCREW
2	09D-23-00-M4x20 A-K CYL HEAD SCREW
2	09D-23-00-M4x7 A-K GRUB SCREW
8	09D-23-00-M4x8 A-K CYL HEAD SCREW
6	09D-23-00-M5 NUT
4	09D-23-00-M5x12 A-K CYL HEAD SCREW
8	09D-23-00-M5x30 A-K CYL HEAD SCREW
3	09D-23-00-M6 NUT
1	09D-23-00-M6x20 A-K CYL HEAD SCREW
8	09D-23-00-M8x28 A-K CYL HEAD SCREW

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.

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 BY Mr. BRIAN CARGILL FROM THE UK. THE DRAWINGS AND ARTICLE WERE UNDER TITLE "THE DAVIS DIRECTLY CONNECTED ENGINE" AUTHOR AND DRAFTER UNKOWN

TITLE
AN EXPERIMENTAL 2 CYLINDER DIRECT CONNECTED STEAM ENGINE (B=32mm S=96mm)

DRAWING CONTENTS
G.A. TOP VIEW. ISOMETRIC VIEW, NOTES, BILL OF MATERIALS

PROJECT No 09D-23-00
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PROJECTION | JDWDS | MODEL SCALE: 1:6.35
DWG SCALE: 1:1 @A3 OR AS SHOWN
DATE APRIL 2021 | Copyright © J.A.M. DE WAAL PAPAKURA NZ
SHEET: 03 OF 07 | A3 | No: 09D-23-00-SHT03

DRAWINGS ARE FOR PERSONAL USE ONLY NOT FOR COMMERCIAL PURPOSES