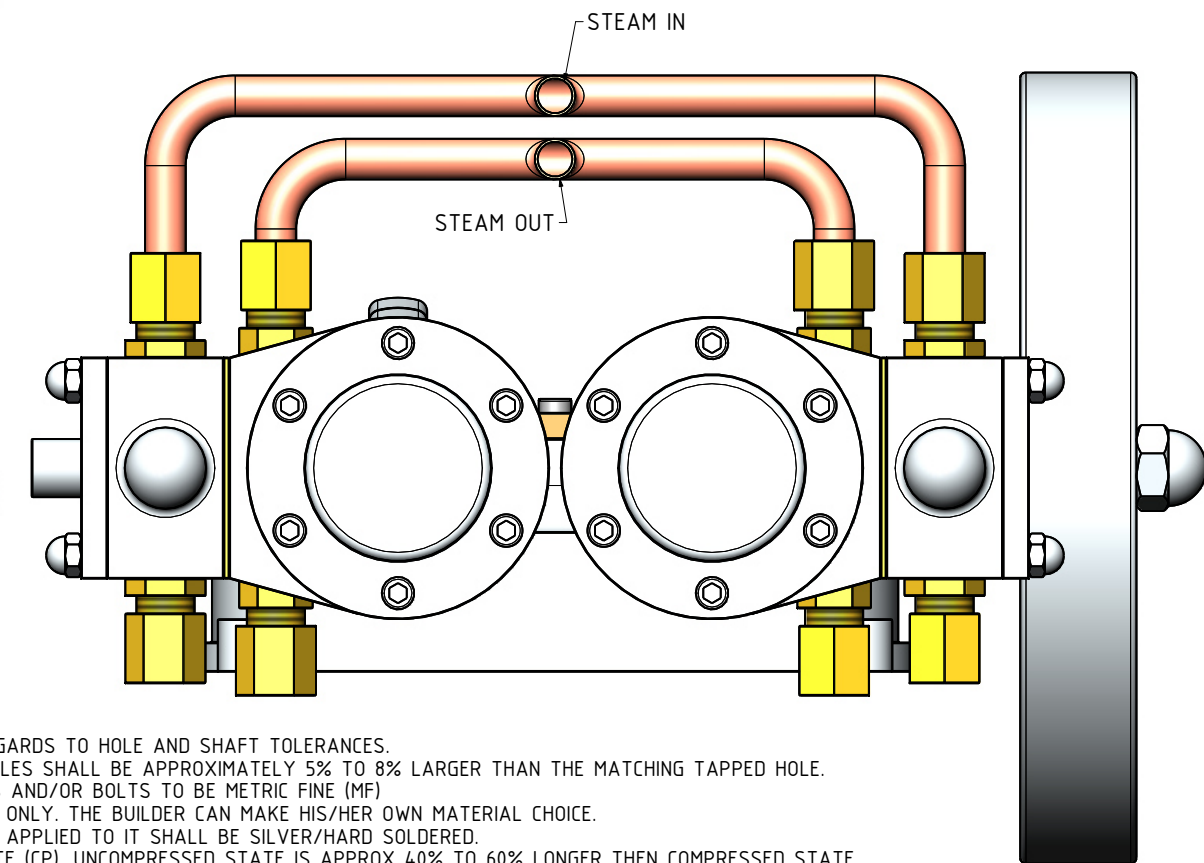
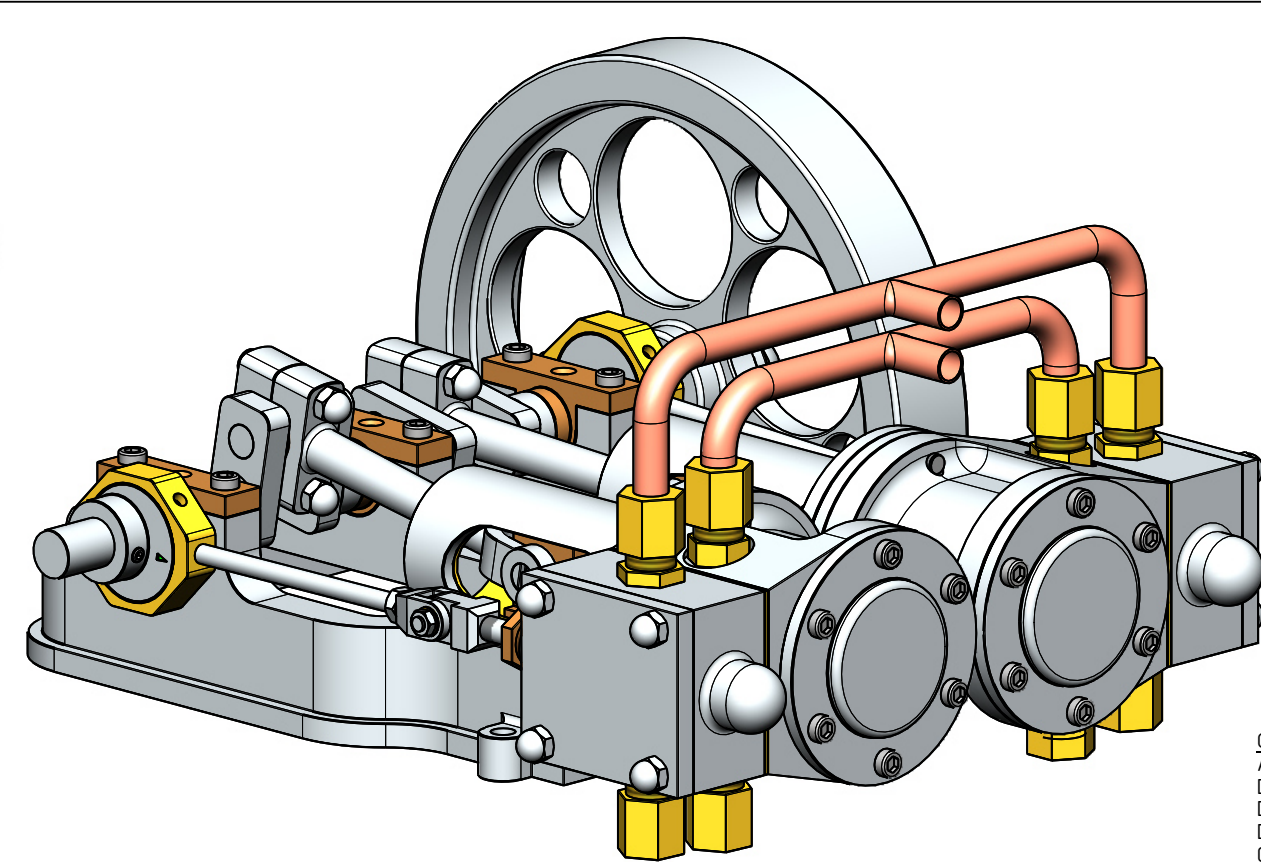
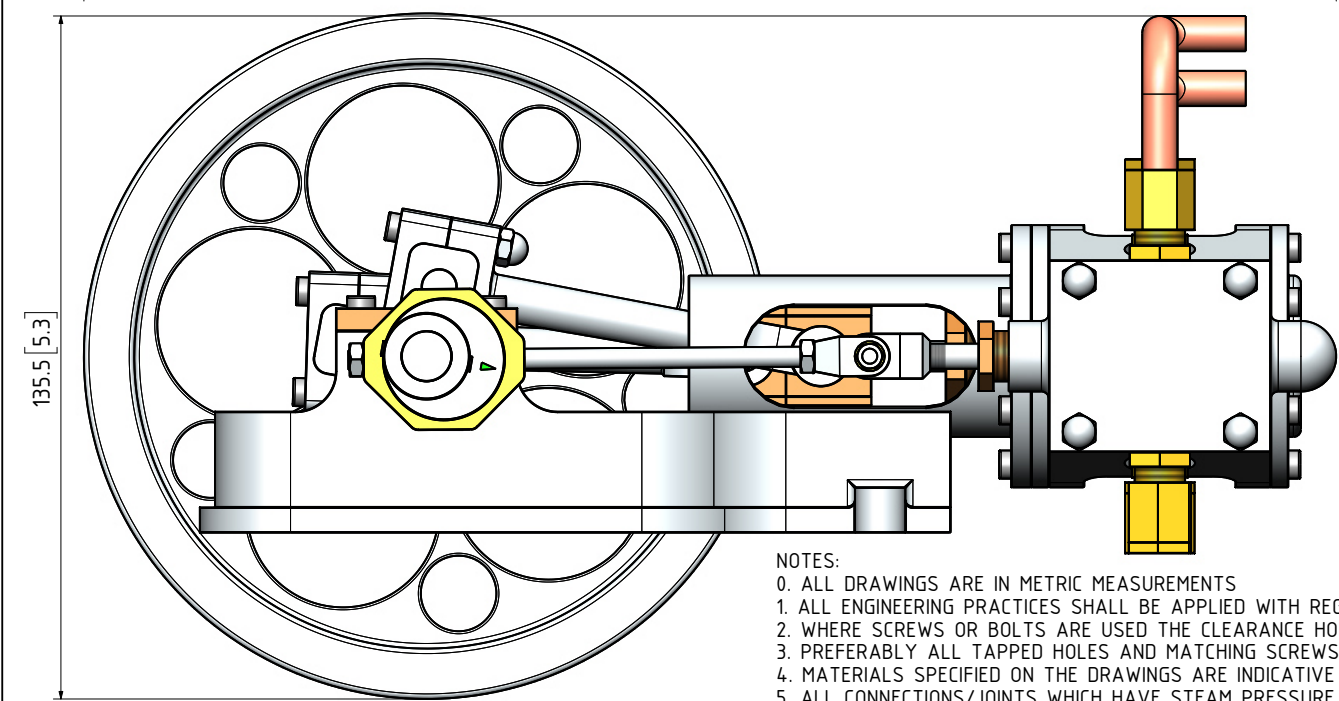
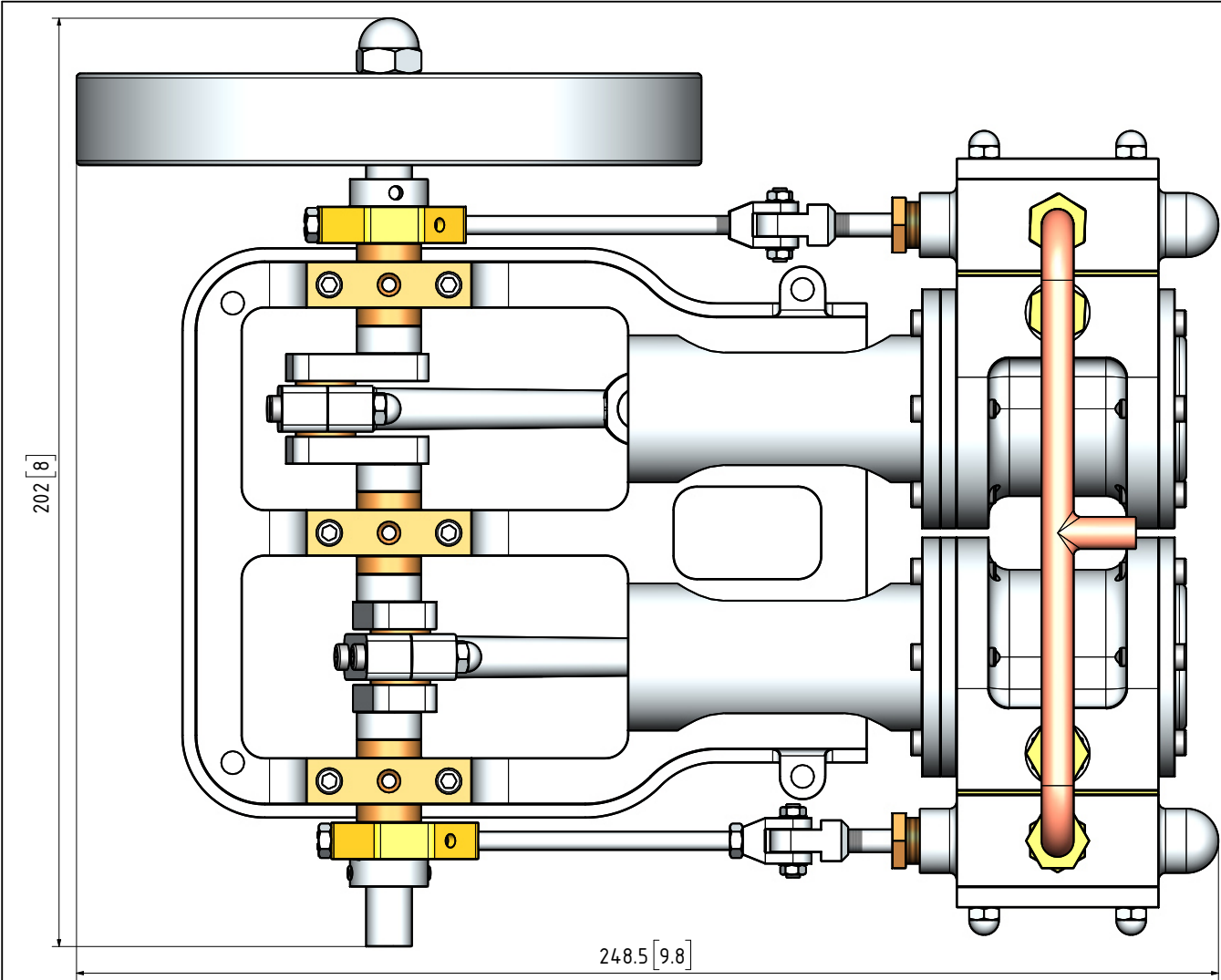




MATERIAL ABBREVIATIONS:
ALU = ALUMINIUM
HALU= HARD ALUMINIUM
BRS = BRASS
BRZ = BRONZE OR GUNMETAL (BRZ/GM)
CI = CAST IRON
CU = COPPER
GRA = GRAPHITE
MS = MILD STEEL/BRIGHT MILD STEEL
SS = SILVER STEEL OR STAINLESS STEEL
SPS = SPRING STEEL
PEEK= POLYETHER ETHER KETONE
SYN = SYNTHETIC MATERIAL SUCH AS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

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.

QTY.	PART NUMBER
1	09B-28-00-1-01-BED PLATE
2	09B-28-00-2-05-ECCENTRIC SHEAVES
3	09B-28-00-1-03-CRANK SHAFT BEARING
2	09B-28-00-1-04-CYLINDER BLOCK
2	09B-28-00-1-02-CROSS HEAD GUIDE
2	09B-28-00-1-06-CYLINDER FRONT COVER
1	09B-28-00-2-01-CRANK SHAFT + FLYWHEEL
2	09B-28-00-2-02-PISTON+CROSSHEAD
2	09B-28-00-2-03-CON-ROD
2	09B-28-00-2-04-SLIDE VALVE+ROD
2	09B-28-00-1-05-CYLINDER REAR COVER
2	09B-28-00-2-06-ECCENTRIC STRAP
4	09B-28-00-M3 NUT
4	09B-28-00-M3 WASHER
2	09B-28-00-M3x4 A-K GRUB SCREW
12	09B-28-00-M4 DOME NUT
3	09B-28-00-M4 NUT
18	09B-28-00-M4x12 A-K CYL HEAD SCREW
12	09B-28-00-M4x16 A-K CYL HEAD SCREW
4	09B-28-00-M4x24 A-K CYL HEAD SCREW
1	09B-28-00-M8 DOME NUT
4	09B-28-00-1-07-STOP NUT
4	09B-28-00-1-08-PIPE NUT
1	09B-28-00-1-09-EXHAUST PIPE
1	09B-28-00-1-10-STEAM INLET PIPE

NOTES: THIS DESIGN IS LOOSELY BASED ON DRAWINGS WHICH WERE GIVEN TO ME. THE ORIGINAL DRAWINGS REFERENCE IS STUART 10H DOUBLE. REFERENCE DRAWINGNUMBER: DRG 70224. THIS ENGINE IS 1.5 TIMES LARGER THAN THE ORIGINAL														
TITLE 2 CYLINDER HORIZONTAL STEAM ENGINE NON REVERSING (BORE=30mm x STROKE=28mm)				DRAWING CONTENTS GENERAL ARRANGEMENT, ISOMETRIC VIEW, NOTES, BILL OF MATERIALS				PROJECT No 09B-28-00		PROJECTION	JDWDS	MODEL SCALE: 1:1		
								JDW DRAUGHTING SERVICES J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPA KURA 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz.				DWG SCALE: 1:1 @A3 OR AS SHOWN		
										DATE	SEPTEMBER 2020	Copyright © J.A.M. DE WAAL PAPA KURA NZ		
										SHEET: 01 OF 04	A3	No: 09B-28-00-SHT01		

DRAWINGS ARE FOR PERSONAL USE ONLY NOT FOR COMMERCIAL PURPOSES