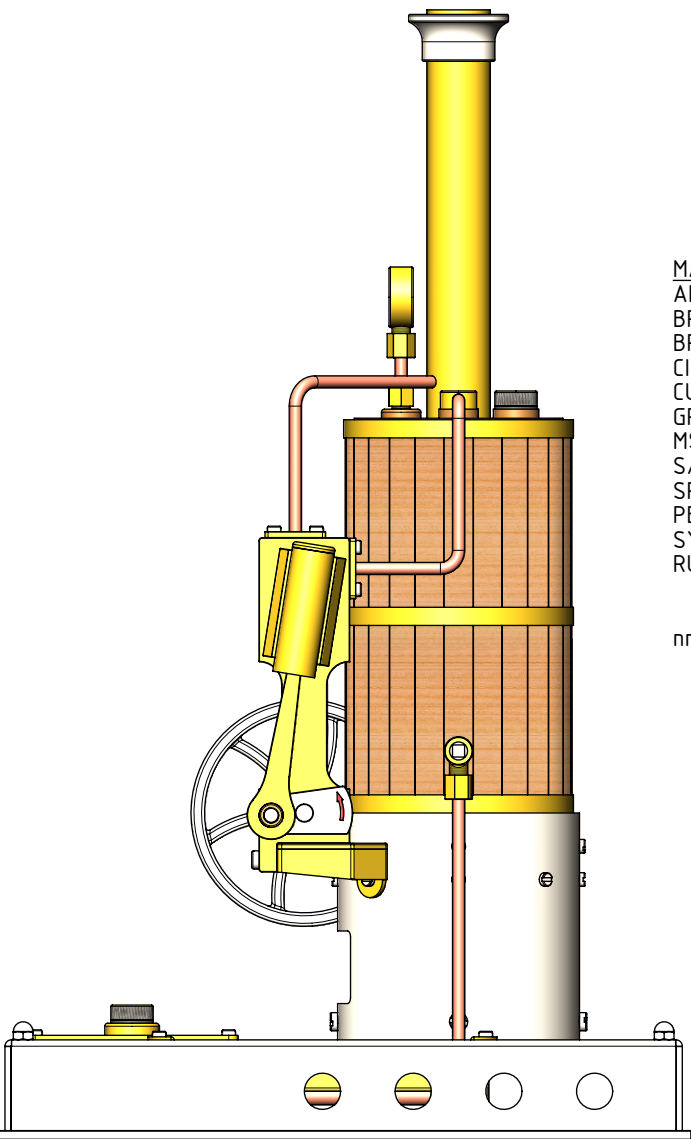
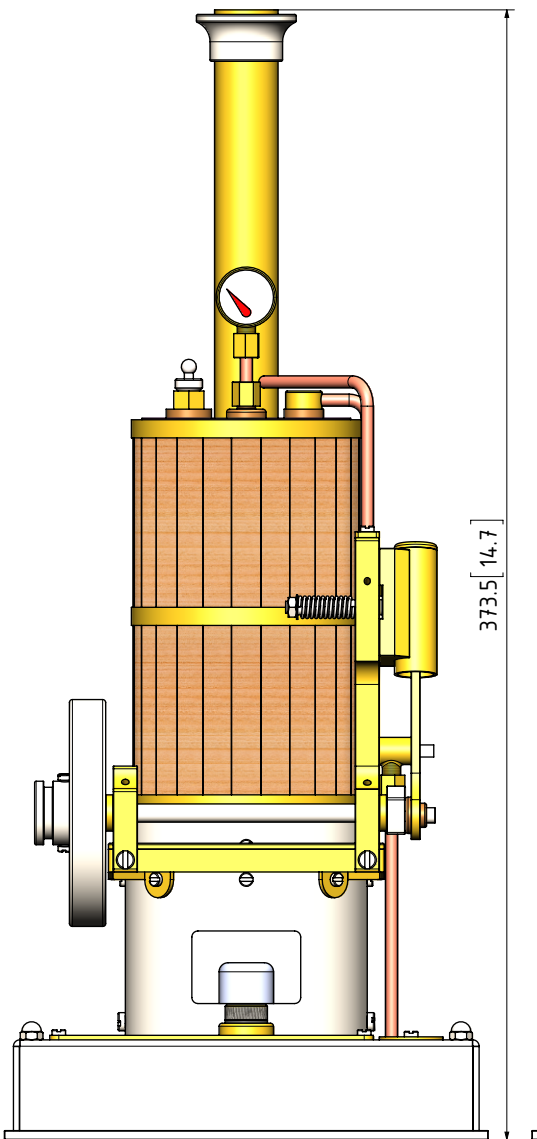
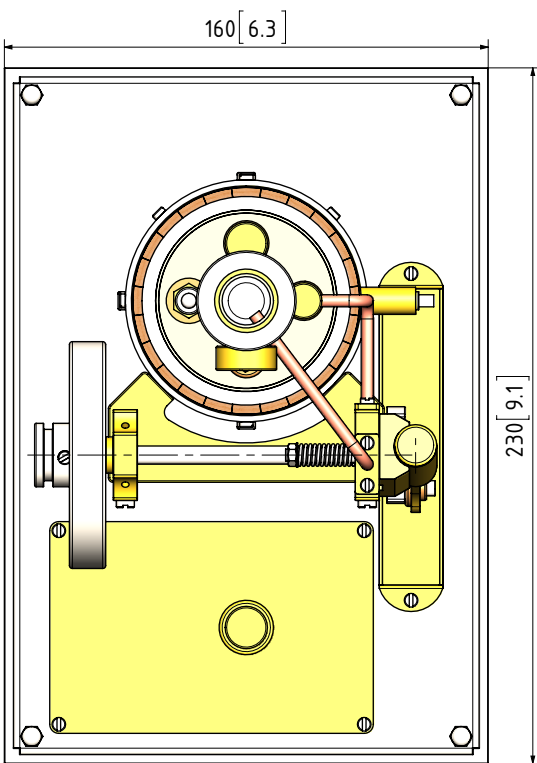




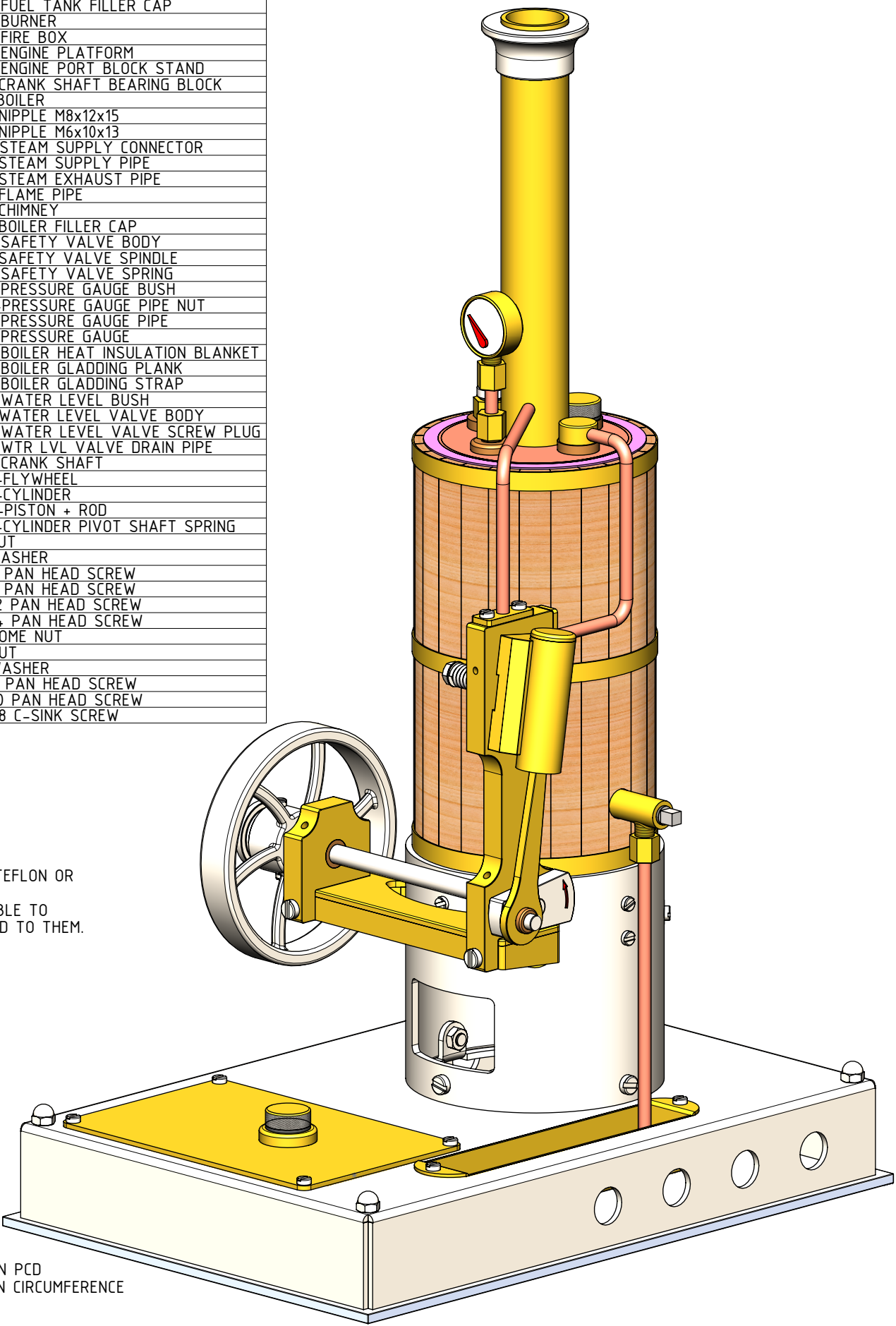
NOTES:
0. ALL DRAWINGS ARE IN METRIC MEASUREMENTS
1. ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.
2. WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
3. PREFERABLY ALL TAPPED HOLES AND MATCHING 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. WASHER SHALL BE USED WHERE DEEMED NECESSARY.
14. IN QUIRE AT THE APPROPRIATE AUTHORITIES WHETHER OR NOT THIS BOILER REQUIRES A PRESSURE TEST CERTIFICATE
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
BRS = BRASS
BRZ = BRONZE OR GUNMETAL (BRZ/GM)
CI = CAST IRON
CU = COPPER
GRA = GRAPHITE
MS = MILD STEEL/BRIGHT MILD STEEL
S/S = 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

OTHER ABBREVIATIONS
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
(T)HESOP=(TAPPED)HOLES EQUALLY SPACED ON PCD
(T)HESOC=(TAPPED)HOLES EQUALLY SPACED ON CIRCUMFERENCE
[SA-xxx]= SUB ASSEMBLY-xxx

QTY.	PART NUMBER
1	VERTICAL-1-01-FLOOR PLATE
1	VERTICAL-1-02-BOILER AND BURNER BASE
1	VERTICAL-1-03-SPILLAGE CONTAINER
1	VERTICAL-1-04-FUEL TANK
1	VERTICAL-1-05-FUEL TANK FILLER CAP
1	VERTICAL-1-06-BURNER
1	VERTICAL-1-07-FIRE BOX
1	VERTICAL-1-08-ENGINE PLATFORM
1	VERTICAL-1-09-ENGINE PORT BLOCK STAND
1	VERTICAL-1-10-CRANK SHAFT BEARING BLOCK
1	VERTICAL-1-11-BOILER
2	VERTICAL-1-12-NIPPLE M8x12x15
1	VERTICAL-1-13-NIPPLE M6x10x13
1	VERTICAL-1-14-STEAM SUPPLY CONNECTOR
1	VERTICAL-1-15-STEAM SUPPLY PIPE
1	VERTICAL-1-16-STEAM EXHAUST PIPE
1	VERTICAL-1-17-FLAME PIPE
1	VERTICAL-1-18-CHIMNEY
1	VERTICAL-1-19-BOILER FILLER CAP
1	VERTICAL-1-20-SAFETY VALVE BODY
1	VERTICAL-1-21-SAFETY VALVE SPINDLE
1	VERTICAL-1-22-SAFETY VALVE SPRING
1	VERTICAL-1-23-PRESSURE GAUGE BUSH
3	VERTICAL-1-24-PRESSURE GAUGE PIPE NUT
1	VERTICAL-1-25-PRESSURE GAUGE PIPE
1	VERTICAL-1-26-PRESSURE GAUGE
1	VERTICAL-1-27-BOILER HEAT INSULATION BLANKET
24	VERTICAL-1-28-BOILER GLADDING PLANK
3	VERTICAL-1-29-BOILER GLADDING STRAP
1	VERTICAL-1-30-WATER LEVEL BUSH
1	VERTICAL-1-31-WATER LEVEL VALVE BODY
1	VERTICAL-1-32-WATER LEVEL VALVE SCREW PLUG
1	VERTICAL-1-33-WTR LVL VALVE DRAIN PIPE
1	VERTICAL-2-01-CRANK SHAFT
1	VERTICAL-2-02-FLYWHEEL
1	VERTICAL-2-03-CYLINDER
1	VERTICAL-2-04-PISTON + ROD
1	VERTICAL-2-05-CYLINDER PIVOT SHAFT SPRING
6	VERTICAL-M3 NUT
1	VERTICAL-M3 WASHER
10	VERTICAL-M3x6 PAN HEAD SCREW
2	VERTICAL-M3x8 PAN HEAD SCREW
8	VERTICAL-M3x12 PAN HEAD SCREW
4	VERTICAL-M3x14 PAN HEAD SCREW
4	VERTICAL-M4 DOME NUT
7	VERTICAL-M4 NUT
1	VERTICAL-M4 WASHER
4	VERTICAL-M4x8 PAN HEAD SCREW
2	VERTICAL-M4x10 PAN HEAD SCREW
4	VERTICAL-M4x38 C-SINK SCREW



NOTES: ORIGINAL DRAWINGS WERE PUBLISHED IN THE "MODELBOUWER" MAGAZINE 1988 PAGES 208, 209, 210, 264, 265, 342, 343, 493, 494, 495

TITLE
1-CYLINDER VERTICAL OSCILLATING STEAM
ENGINE COMPLETE WITH BOILER.

DRAWING CONTENTS
GENERAL ARRANGEMENT,
ISOMETRIC VIEWS AND NOTES

PROJECT No 09A-22-00
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
DATE
MARCH-2016
SHEET: 01 OF 03

MODEL SCALE: 1:1
DWG SCALE: 1:1 @A3 OR AS SHOWN
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A3 No: VERTICAL-01