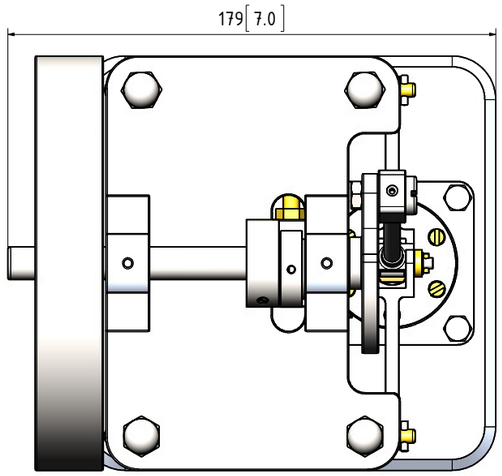
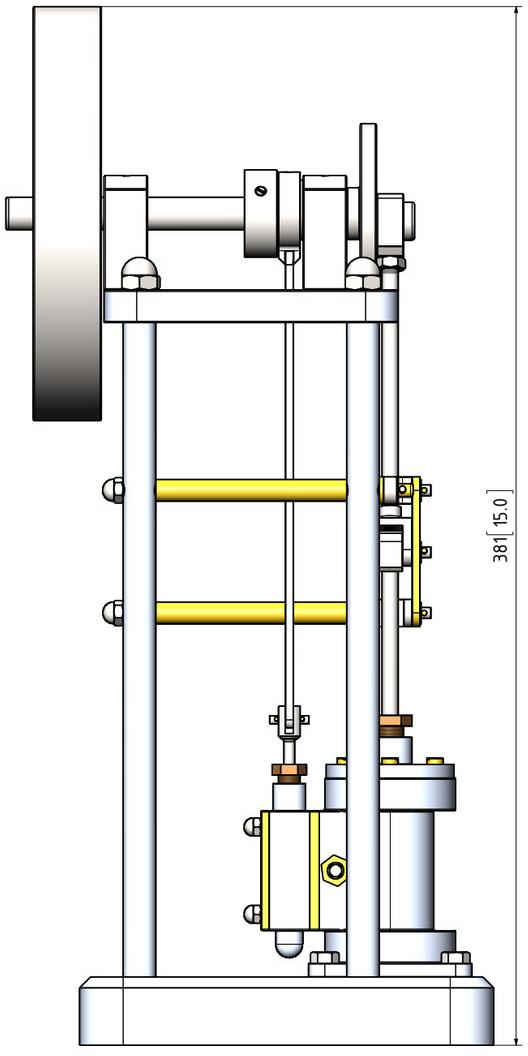
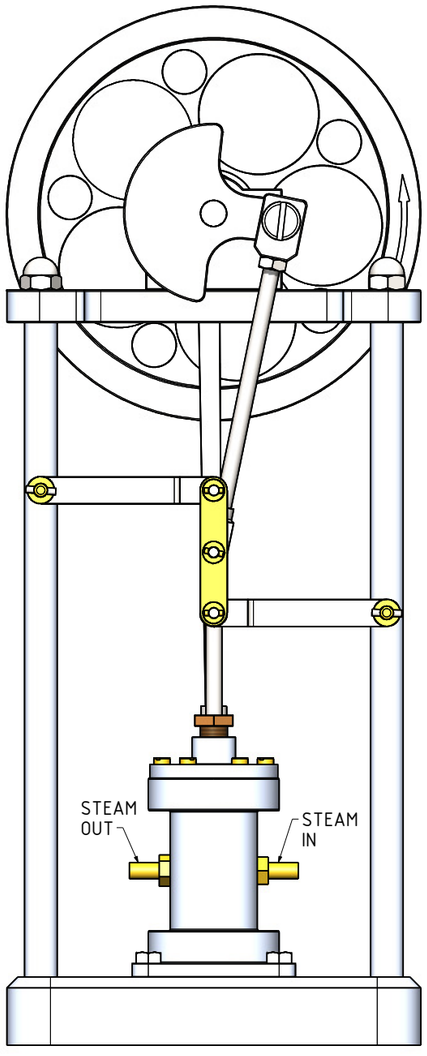



NOTES:
0. ALL DRAWINGS ARE IN METRIC MEASUREMENTS
1. ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.
2. WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
3. PREFERABLY ALL TAPPED HOLES AND MATCHING 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. N/A
6. ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.
7. COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.
8. 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.
9. 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.
10. THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.
11. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.
12. A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.
13. THE MANNER IN WHICH THE PARST/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.

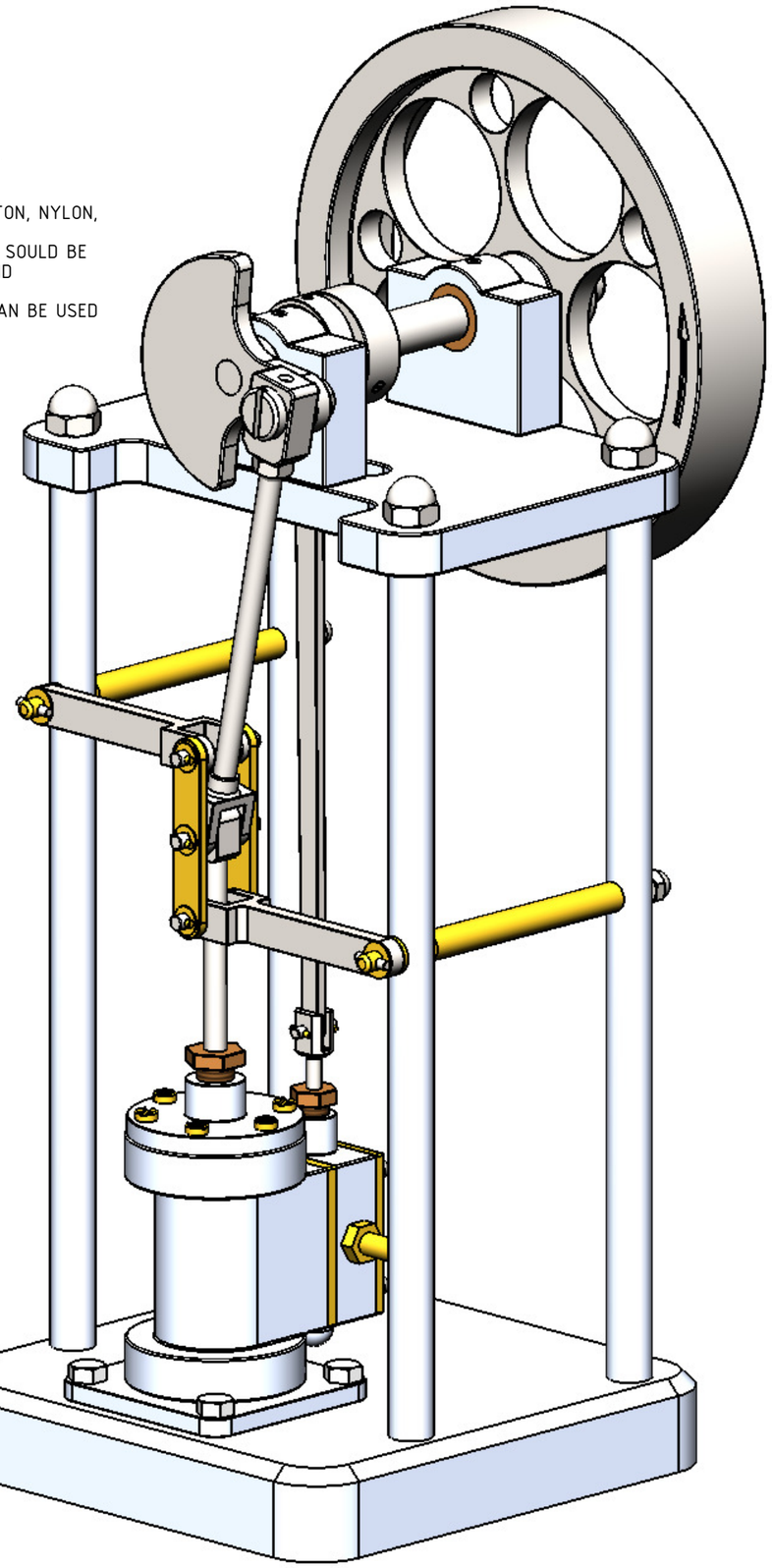
MATERIAL ABBREVIATIONS:
ALU = ALUMINIUM OR DURAL(MIN)
BRS = BRASS
BRZ = BRONZE OR GUNMETAL (BRZ/GM)
CI = CAST IRON
CU = COPPER
GRA = GRAPHITE
MS = MILD STEEL/BRIGHT MILD STEEL
S/S = SILVER STEEL OR STAINLESS STEEL
SPS = SPRING STEEL
PEEK= POLYETHER ETHER KETONE
SYN = SYNTHETIC MATERIAL SUCH AS VETON, 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
PF = PRESS FIT
PCD = PITCH CIRCLE DIAMETER
RM = REAM
HEX = HEXACON, 6SIDED
CP = COMPRESSED
KNL = KNURLED
CSK = COUNTERSINK
PL = PLACES
CF = CLOSE FIT (SIZE FOR SIZE)
DAA= DRILL AFTER ASSEMBLY
PFAA= PRESSFIT AFTER ASSEMBLY
LCT = USE LOCTITE
LPF = LIGHT PRESS FIT
SA-xxx = SUB ASSEMBLY-xxx




| QTY. | PART NUMBER |
|---|---|
| 1 | EVG-P32-01-BASE PLATE |
| 2 | EVG-P32-02-PLATFORM SUPPORT PILLAR (02A) |
| 2 | EVG-P32-02-PLATFORM SUPPORT PILLAR (02B) |
| 1 | EVG-P32-03-MAIN BEARING PLATFORM |
| 2 | EVG-P32-04-LINK PLATE PIVOT SHAFT |
| 2 | EVG-P32-05-SHORT BEARING STAND |
| 1 | EVG-P32-06-CYLINDER LOWER COVER |
| 1 | EVG-P32-07-CYLINDER TOP COVER |
| 1 | EVG-P32-08-CYLINDER |
| 1 | EVG-P32-09-VALVE CHEST PORT PLATE |
| 1 | EVG-P32-10-VALVE CHEST |
| 1 | EVG-P32-11-VALVE CHEST COVER |
| 1 | EVG-P32-12-PISTON ROD PACKNUT |
| 1 | EVG-P32-13-VALVE ROD PACKNUT |
| 1 | EVG-P32-14-CRANK PLATE AND SHAFT |
| 1 | EVG-P32-15-CRANK PIN |
| 1 | EVG-P32-16-ECCENTRIC SHEAVE |
| 1 | EVG-P32-17-FLYWHEEL |
| 1 | EVG-P32-18-PISTON |
| 1 | EVG-P32-19-PISTON ROD |
| 1 | EVG-P32-20-CON-ROD |
| 1 | EVG-P32-21-CON-ROD TOP YOKE |
| 2 | EVG-P32-22-ROSSHEAD STABILIZING ARM |
| 2 | EVG-P32-23-STABILIZER LINK |
| 1 | EVG-P32-24-CROSSHEAD PIN |
| 2 | EVG-P32-25-PILLAR STABILIZER ARM SPACER |
| 1 | EVG-P32-26-SLIDE VALVE |
| 1 | EVG-P32-27-SLIDE VALVE NUT |
| 1 | EVG-P32-28-VALVE SPINDLE |
| 1 | EVG-P32-29-ECCENTRIC STRAP |
| 1 | EVG-P32-30-VALVE SPINDLE PIN |
| 2 | EVG-P32-32-STEAM OUTLET PIPE |
| 4 | EVG-P32-M4 DOME NUT |
| 6 | EVG-P32-M4 WASHER |
| 4 | EVG-P32-M4x7 GRUB SCREW |
| 2 | EVG-P32-M4x10 GRUB SCREW |
| 6 | EVG-P32-M4x12 C-SINK SCREW |
| 6 | EVG-P32-M4x12 PAN HEAD SCREW |
| 4 | EVG-P32-M4x34 THREADED ROD |
| 2 | EVG-P32-M5 DOME NUT |
| 2 | EVG-P32-M5 WASHER |
| 2 | EVG-P32-M6 NUT |
| 4 | EVG-P32-M6x20 C-SINK SCREW |
| 8 | EVG-P32-M6x30 HEX BOLT |
| 4 | EVG-P32-M8 DOME NUT |



NOTES: THE ORIGINAL DRAWINGS AND ARTICLE OF THIS ENGINE WERE BY ELMER VERBURG AND PUBLISHED IN A BOOK AS CHAPTER 32. THE ORIGINAL DRAWINGS WERE POSTED ON: WWW.JOHN-TOM.COM (THIS ENGINE IS 2 TIMES LARGER THAN THE ORIGINAL)

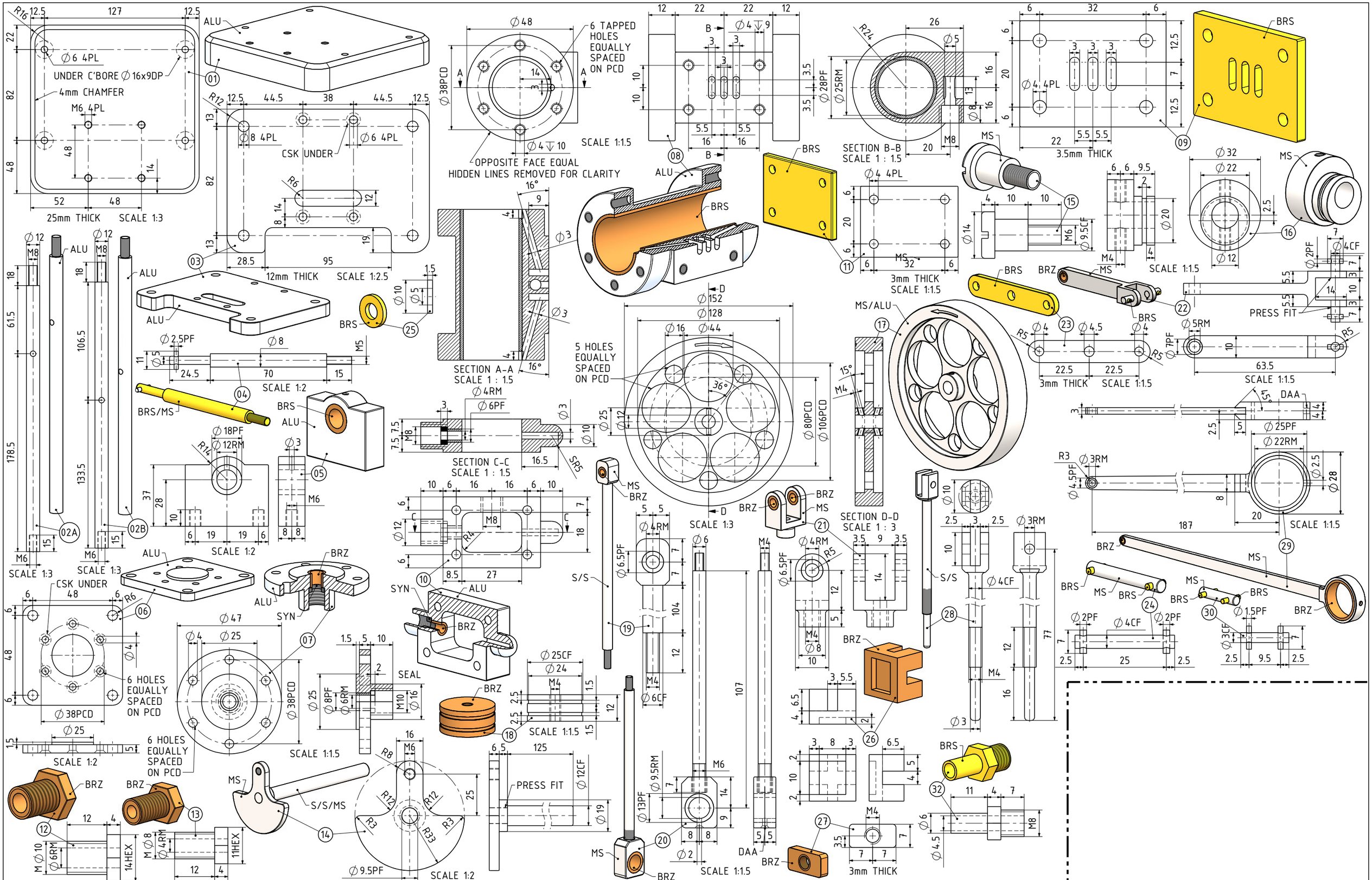
TITLE
# 1 CYLINDER VERTICAL TALL OPEN COLUMN STEAM ENGINE

DRAWING CONTENTS
## GENERAL ARRANGEMENT, ISOMETRIC VIEW, NOTES AND BOM

PROJECT No 10-32-00
JDW DRAUGHTING SERVICES
J.A.M. DE WAAL. 12 BRIGHTWELL STREET PAPAKURA 2110. NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000
E-MAIL: dewaal@xtra.co.nz.

PROJECTION JDWDS
DATE MARCH-2016
SHEET: 01 OF 03

MODEL SCALE: 1:1
DWG SCALE: 1:1 @A3 OR AS SHOWN
Copyright © J.A.M. DE WAAL PAPAKURA NZ
A3 No: EVG-P32-01

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TITLE
# 1 CYLINDER VERTICAL TALL OPEN COLUMN STEAM ENGINE

DRAWING CONTENTS
## PARTS AND ASSEMBLIES

PROJECT No 10-32-00

JDW DRAUGHTING SERVICES
J.A.M. DE WAAL. 12 BRIGHTWELL STREET PAPAKURA 2110. NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000
E-MAIL: dewaal@xtra.co.nz.

PROJECTION JDWDS
DATE MARCH-2016

MODEL SCALE: 1:1
DWG SCALE: 1:1 @A3 OR AS SHOWN
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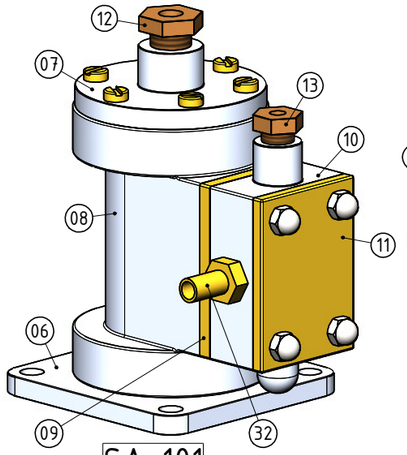
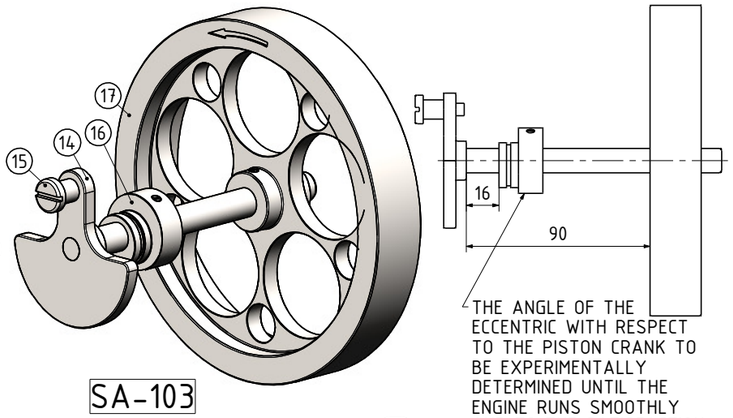
SHEET: 02 OF 03 | A3 | No: EVG-P32-02



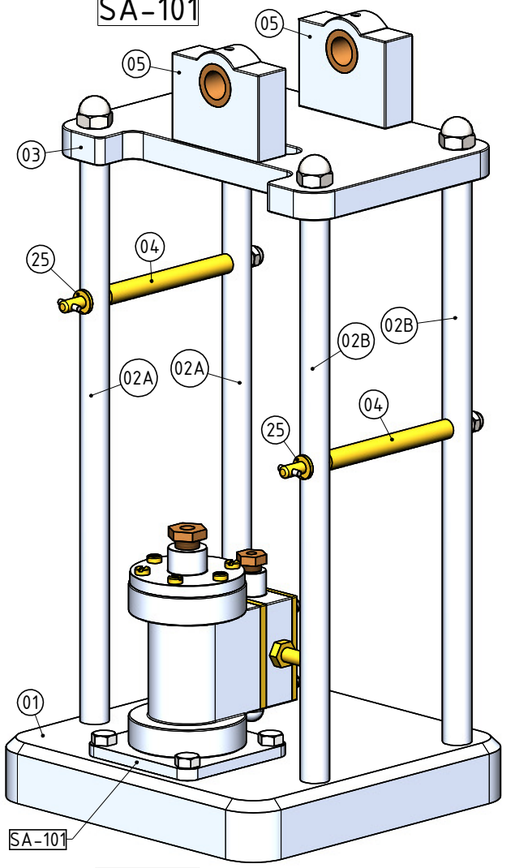

SA-101




SA-103




THE ANGLE OF THE ECCENTRIC WITH RESPECT TO THE PISTON CRANK TO BE EXPERIMENTALLY DETERMINED UNTIL THE ENGINE RUNS SMOOTHLY AND TO THE SATISFACTION OF THE BUILDER

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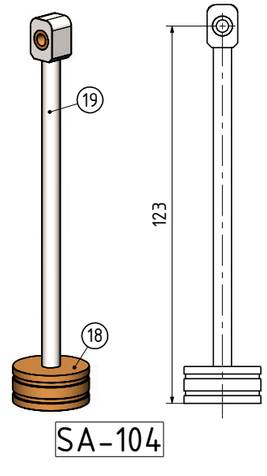


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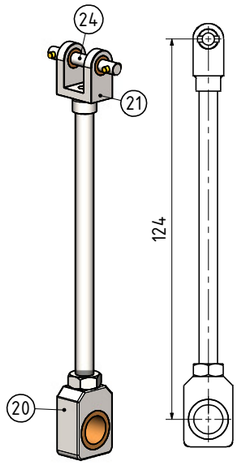


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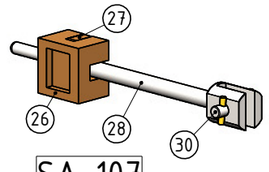


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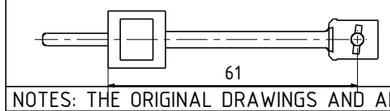


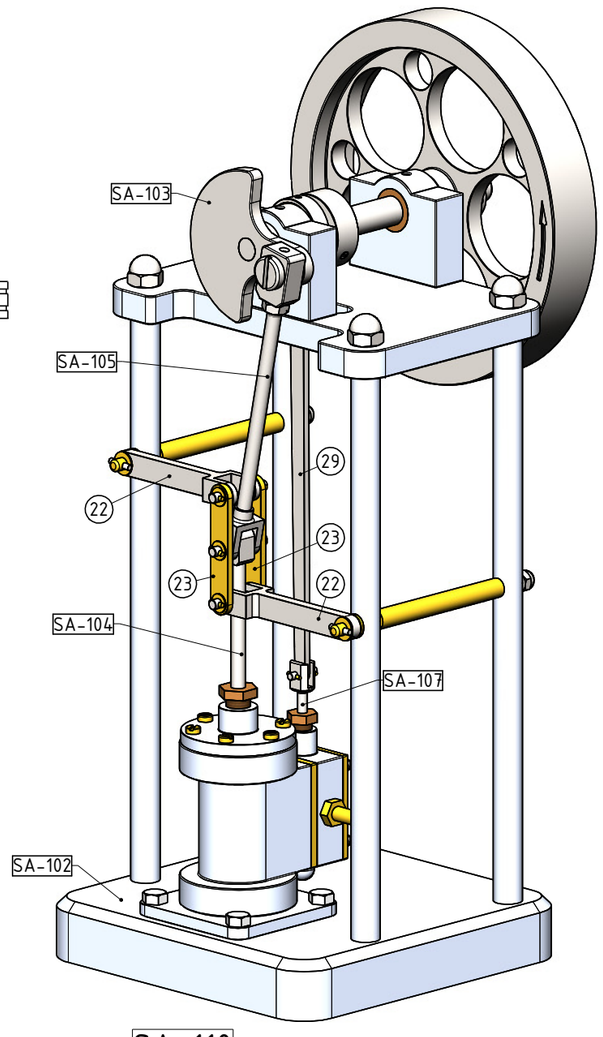


SA-110

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DRAWING CONTENTS
## PARTS AND ASSEMBLIES

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DATE MARCH-2016

MODEL SCALE: 1:1

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