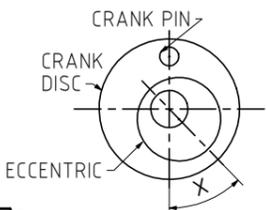


QTY.	PART NUMBER
1	09C-66-00-1-01-BASE FRAME+CYLINDER
1	09C-66-00-2-01-CRANKSHAFT+ECCENTRIC+FLYWHEEL
1	09C-66-00-2-02-PISTON+CROSSHEAD
1	09C-66-00-2-03-CON-ROD
1	09C-66-00-2-04-SLIDE VALVE
1	09C-66-00-2-05-ECCENTRIC STRAP
4	09C-66-00-M2.5 NUT
2	09C-66-00-M2.5x22 A-K CYL HEAD SCREW
2	09C-66-00-M2x6 A-K CYL HEAD SCREW
6	09C-66-00-M3 NUT
2	09C-66-00-M3 WASHER
2	09C-66-00-M3x10 A-K CYL HEAD SCREW
8	09C-66-00-M4 DOME NUT
8	09C-66-00-M4x34 A-K CYL HEAD SCREW
4	09C-66-00-M4x8 A-K CYL HEAD SCREW
6	09C-66-00-M5x12 A-K CYL HEAD SCREW
2	09C-66-00-M8 DOME NUT
4	09C-66-00-M8x30-ROUND HEAD WOOD SCREW

ADDITIONAL NOTES ABOUT THESE DRAWINGS:
 1) NO MATERIALS HAVE BEEN SPECIFIED ON THESE DRAWINGS. THE BUILDER TO CHOOSE ITS OWN PREFERRED MATERIAL FOR THE PARTS/COMPONENTS. THE FOLLOWING COLOURS ON THE DRAWINGS INDICATES POSSIBLE MATERIALS WHICH CAN BE USED FOR PARTS:
 YELLOW=BRASS, LIGHT GREY=ALUMINIUM OR MILD STEEL, REDDISH BROWN=COPPER, DARK BROWN=BRONZE OR GUN METAL, WHITISH=SILVER STEEL OR STAINLESS STEEL

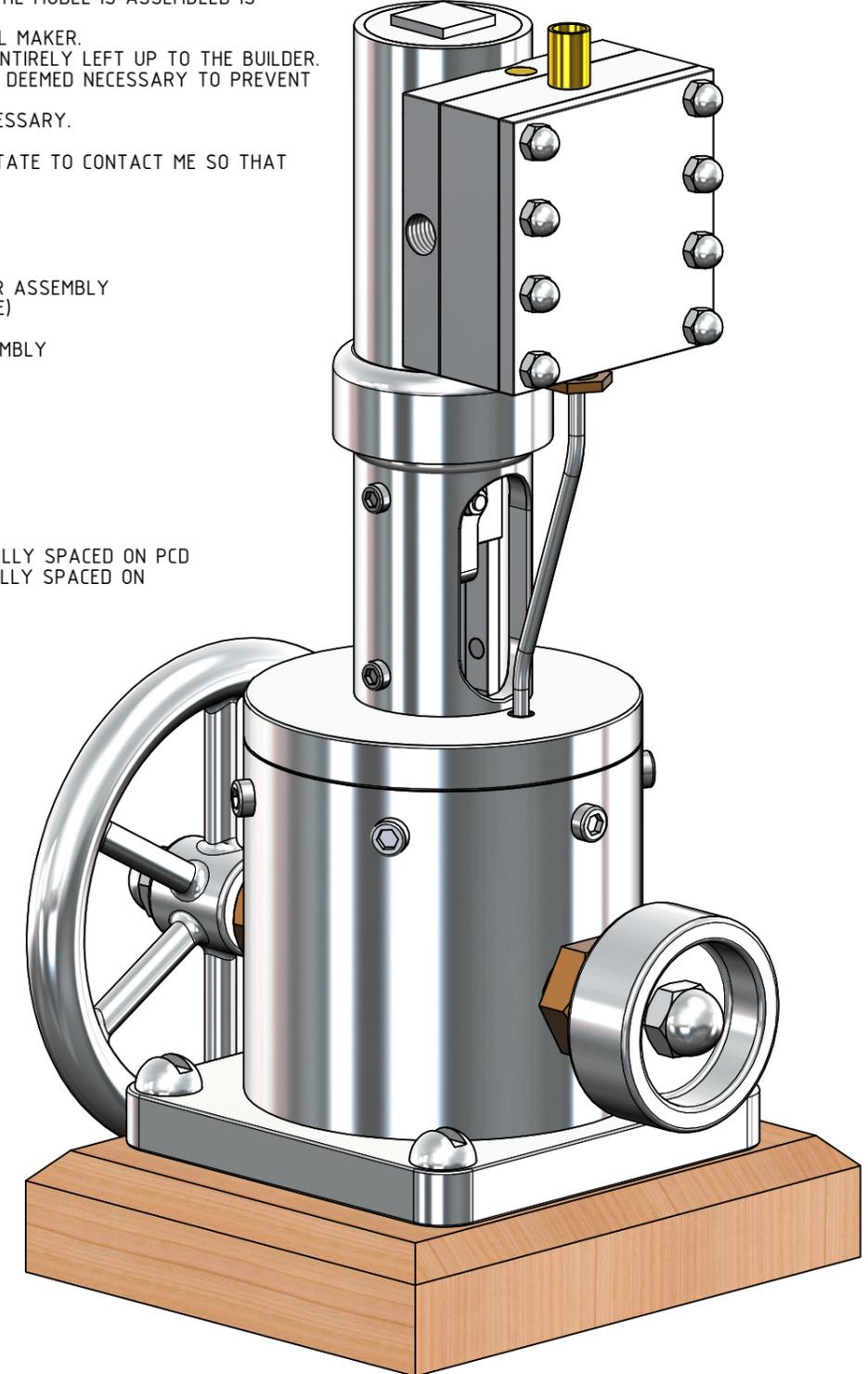
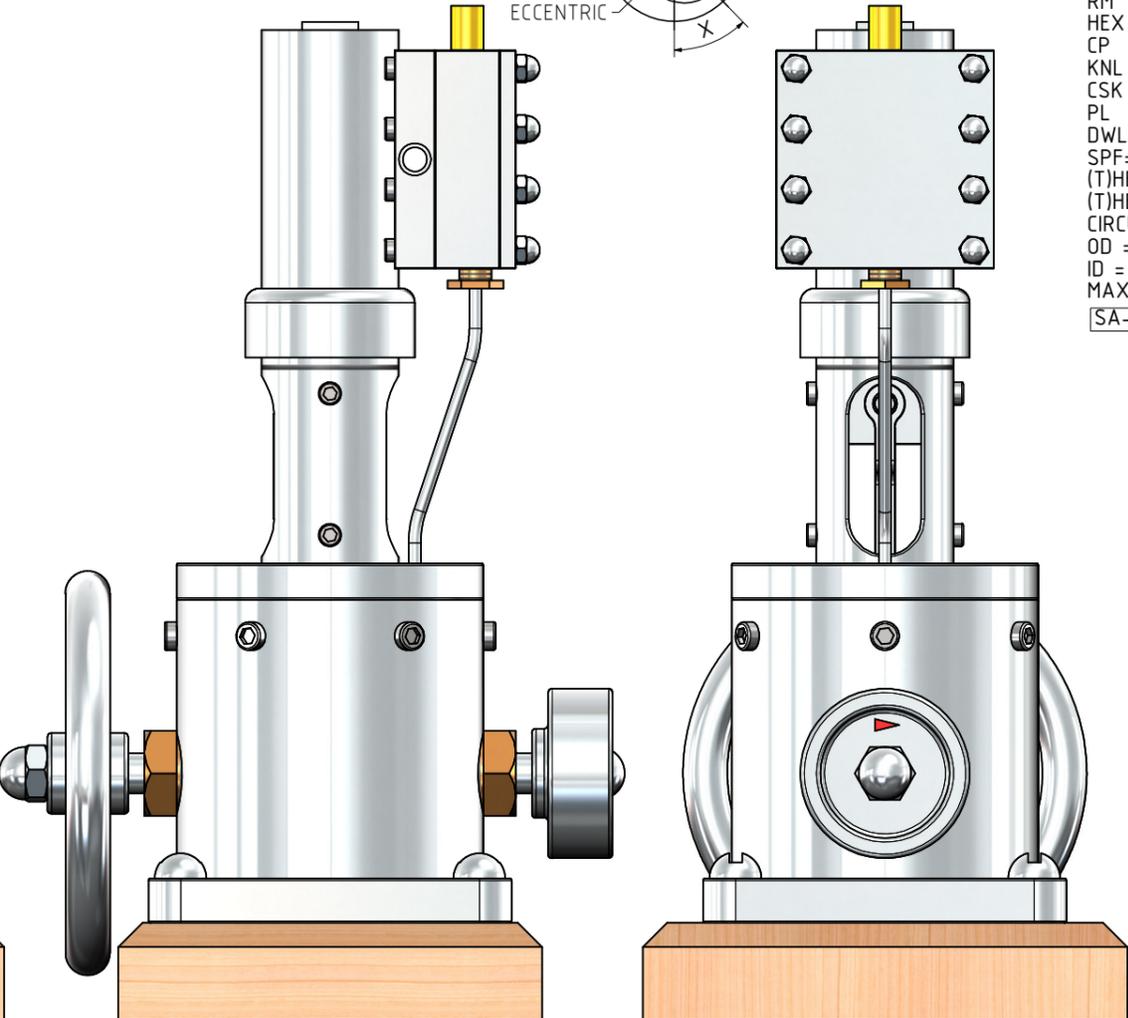
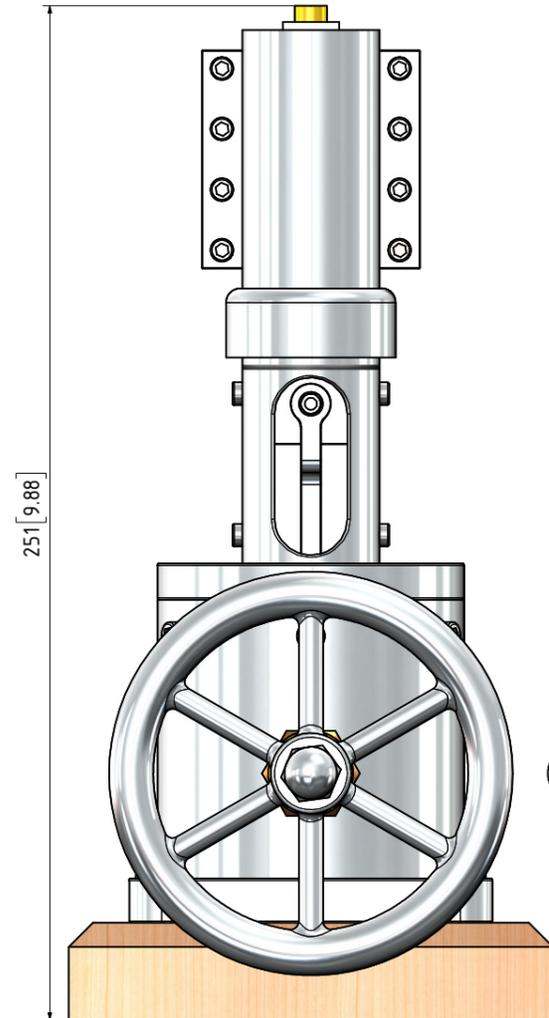
THE OFF SET ANGLE OF THE ECCENTRIC IN RELATION TO THE CRANK AXIS TO BE EXPERIMENTALLY DETERMINED FOR THE SMOOTH RUNNING OF THE ENGINE AND SATISFACTION OF THE BUILDER

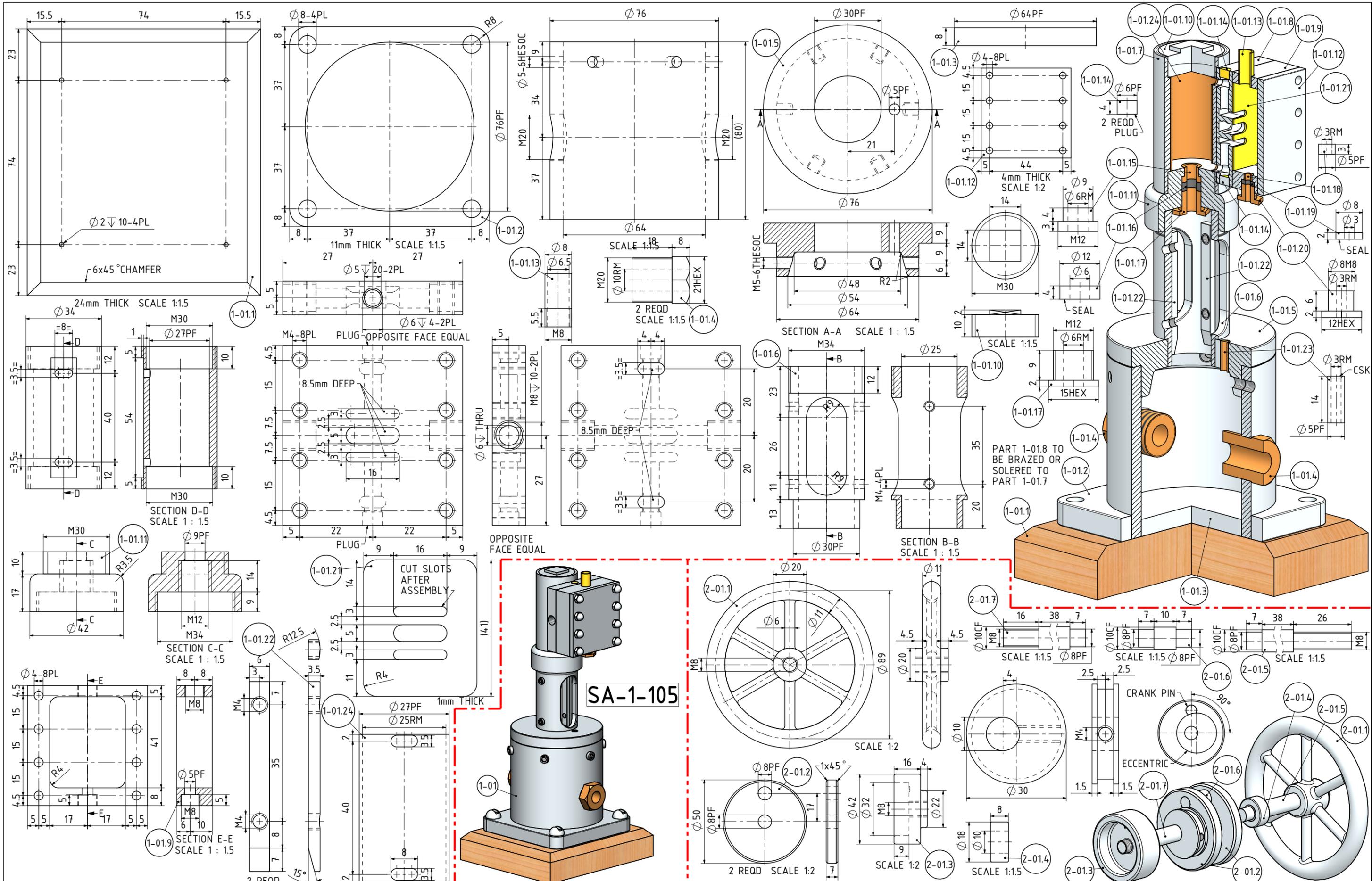


GENERAL NOTES:
 0. ALL DRAWINGS ARE IN METRIC MEASUREMENTS
 1. ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.
 2. WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
 3. PREFERABLY ALL TAPPED HOLES 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. 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.

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

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





NOTES: THE ORIGINAL DRAWINGS WERE GIVEN TO ME. THE ORIGINAL DRAWINGS WERE PUBLISHED IN THE "POPULAR SCIENCE MONTHLY" MAGAZINE OF FEBRUARY 1924 PAGE 108. ARTICLE TITLE: "UNIQUE STEAM ENGINE IS SIMPLY BUILT FROM CHEAP, EASILY OBTAINABLE PARTS"

TITLE
1 CYLINDER VERTICAL NON REVERSABLE STEAM ENGINE OF 1924 (B=25mm S=34mm)

DRAWING CONTENTS
PARTS AND ASSEMBLIES

PROJECT No 09C-66-00
 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.

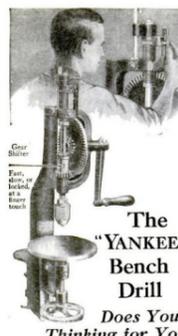
PROJECTION
JDWDS MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
 DATE FEBRUARY 2025 Copyright © J.A.M. DE WAAL PAPAOKURA NZ
 SHEET: 02 OF 03 **A3** No:09C-66-00-SHT-02

DRAWINGS ARE FOR PERSONAL USE ONLY NOT FOR COMMERCIAL PURPOSES

Unique Steam Engine Is Simply Built from Cheap, Easily Obtainable Parts

By Frank N. Coakley

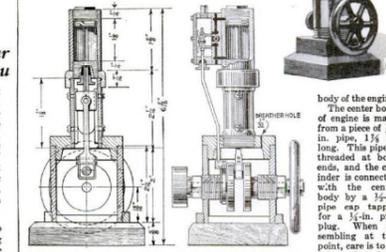
To build a small steam engine is the ambition of almost every home worker at some time or other. There is a peculiar fascination about the thing, even if the finished model serves for no other purpose than a curiosity. The majority of amateur engineers are hampered because of lack of tools and materials, and the difficulty of making grooves in a model engine, however, that is almost every home worker's machine. A model engine, however, that can be made in almost every home workshop with a few hand tools that are in almost every home workshop, a bench vice, hand drill, light hammer, a few files, small taps, and small drills are



The "YANKEE" Bench Drill

Does Your Thinking for You

All you have to do is to set your work and turn the crank. The "Yankee" Automatic Friction Feed runs drill down to contact. Then the drill is fed at the proper rate and with the right pressure, by the "Yankee" Automatic Ratchet Feed. It does away with drill-breakage from inaccurate hand-feeding. Automatic throw-off prevents jamming.



No. 1005 (illustrated) two speeds; 3-jaw chuck holding drills up to 1/2 inch. Entire length, 28 inches.

No. 1003 one speed; 3-jaw chuck, holding drills up to 1/4 inch. Entire length, 18 3/4 inches.

Some other "YANKEE" Tools
 Ratchet Screw-Drivers
 Pipe Screw-Drivers
 Bench Vice
 Ratchet Hand Drills
 Ratchet Chain Drills
 Bench Vices
 Bench Vices, removable
 Bench Vices, removable
 Bench Vices, removable

Write for FREE BOOK

North Bros. Mfg. Co. Philadelphia, U. S. A.

"YANKEE" TOOLS
 Make Better Mechanics

The center body of engine is made from a piece of 1 1/2 in. pipe, 1 1/2 in. long. This pipe is threaded at both ends, and the cylinder is connected with the center body by a 1/2-in. pipe cap tapped for a 1/4-in. pipe plug. When assembling at this point, care is to be taken that both parts are properly in line with each other.

This center body is provided with two openings opposite each other. They are 7/16 in. wide by 1 1/2 in. long and are made by drilling 7/16-in. holes in 1 1/2-in. centers and filing away intervening metal, preferably with a round file. The crosshead gibs are at right angle to the holes and are held in place by two 1/4-in. round head machine screws. These side holes are necessary for assembling the gibs, crosshead, piston rod, and connecting rod.

The connecting rod is made from a piece of 3/16-in. square steel 1 1/2 in. long. After filing the top or small end to the desired shape, and drilling a 1/4-in. cross head pinhole, a saw cut is made about 1/2 in. long. This is done to enable one to spread the ends, so that the connecting rod's upper end will straddle the cross head.

The lower end is filed to 3/16 in. wide and left 5/16 in. thick. Two 3/32-in. holes are drilled for the connecting-rod strap bolts. The connecting-rod brass can be made by clamping the pieces

flange on each side of the piston to hold the ring in place. Common tin can be used as a packing for the stuffing box. The crosshead is made from a piece of brass 1/2 by 9/16 by 5/16 in. thick. A 3/16-in. hole is tapped in one side and another 1/4-in. hole drilled through the side for the connecting rod.

A groove is filed on both sides of the crosshead that receive slides that are fastened with screws to the center

of the engine.

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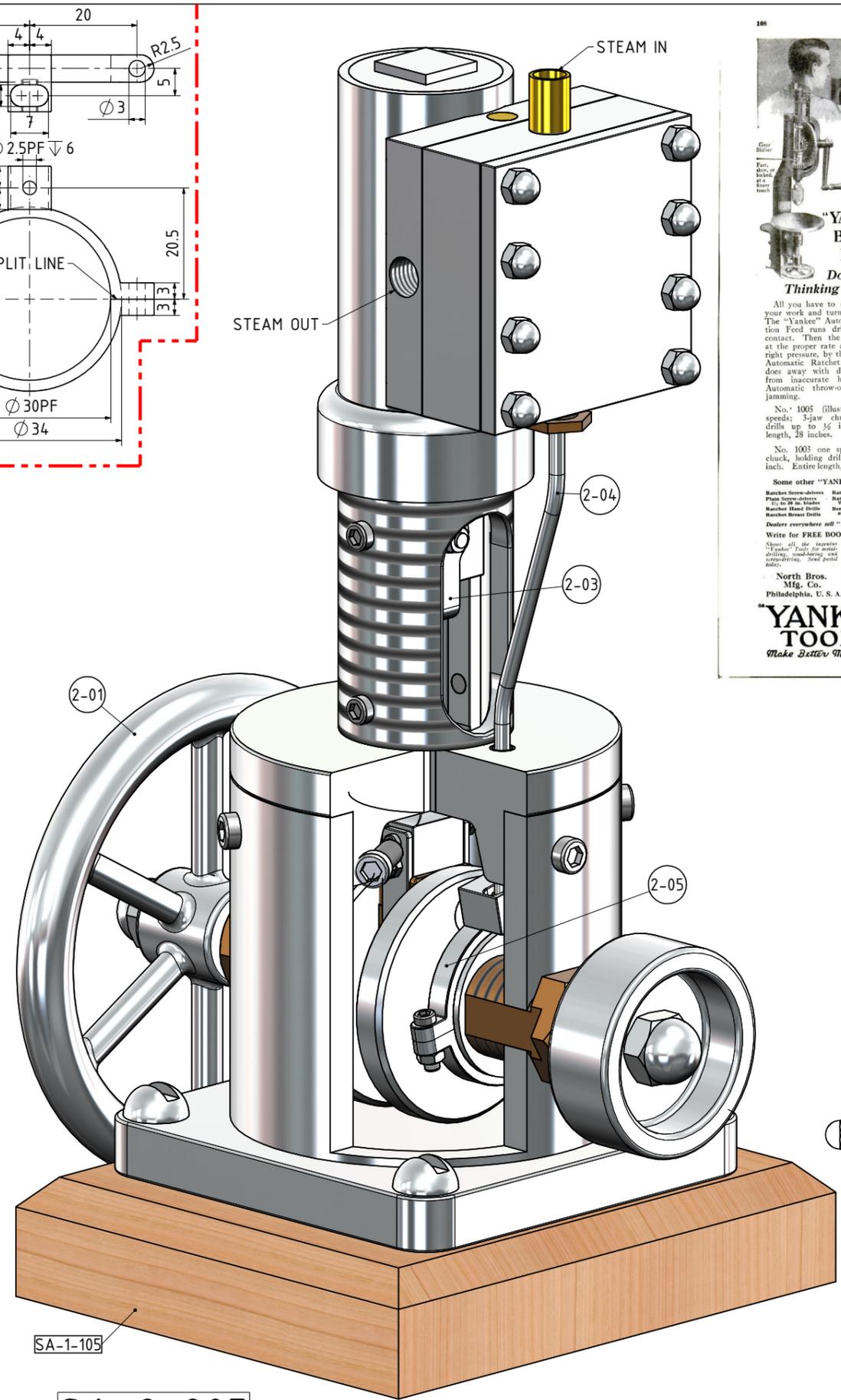
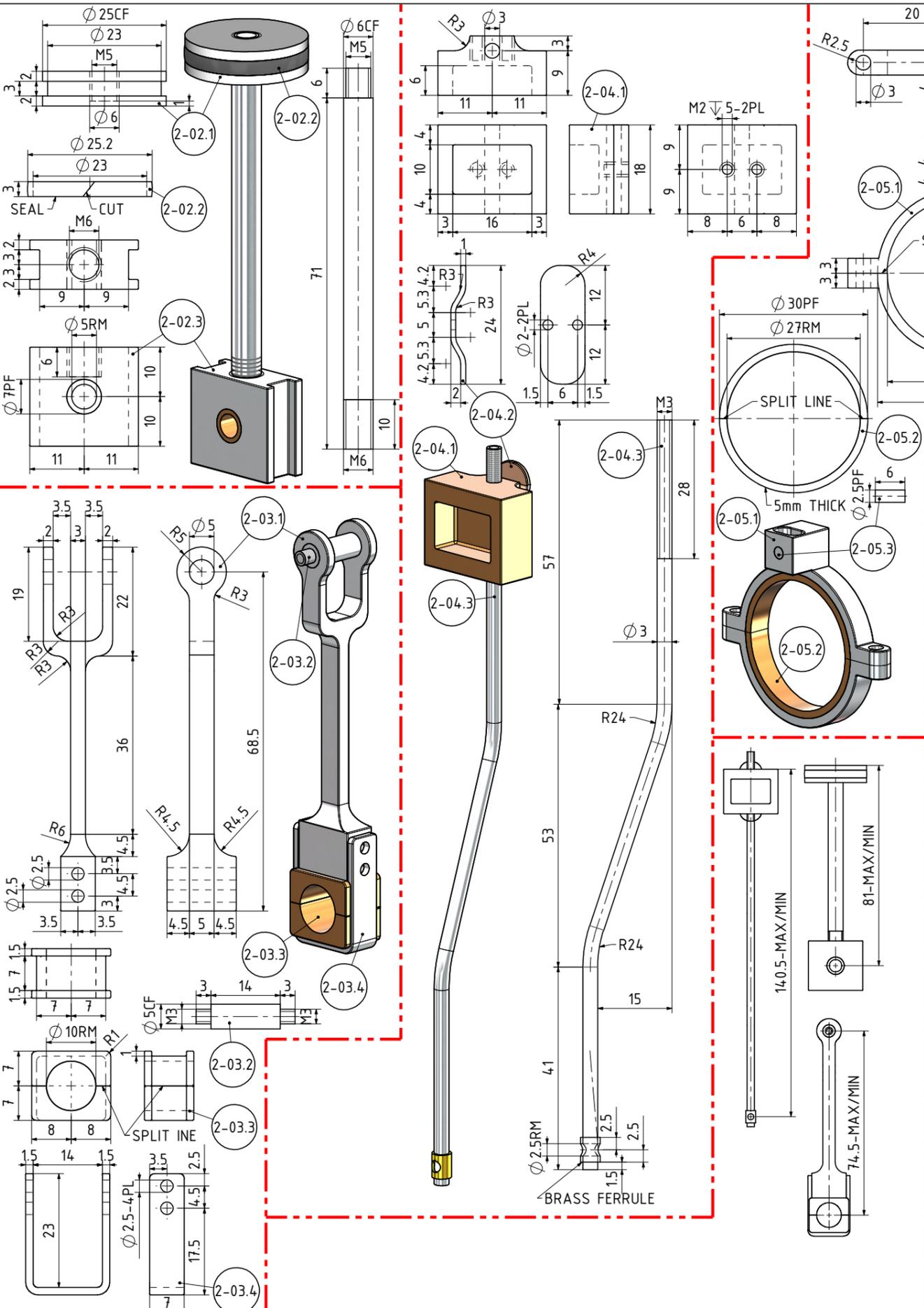
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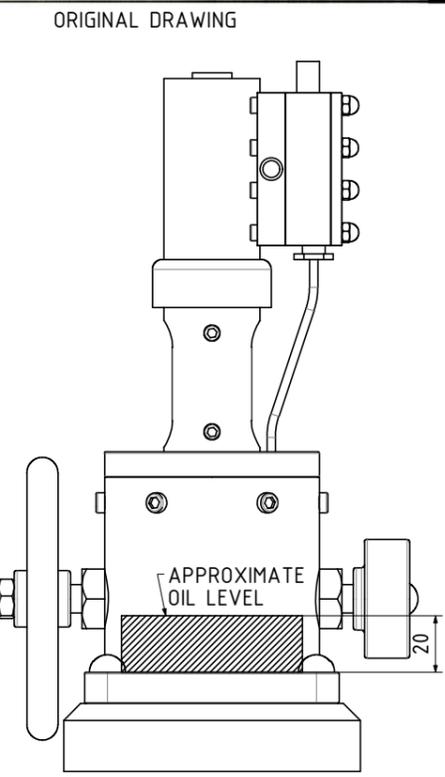
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SA-2-205



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PROJECTION
JDWDS
 DATE FEBRUARY 2025
 SHEET: 03 OF 03

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