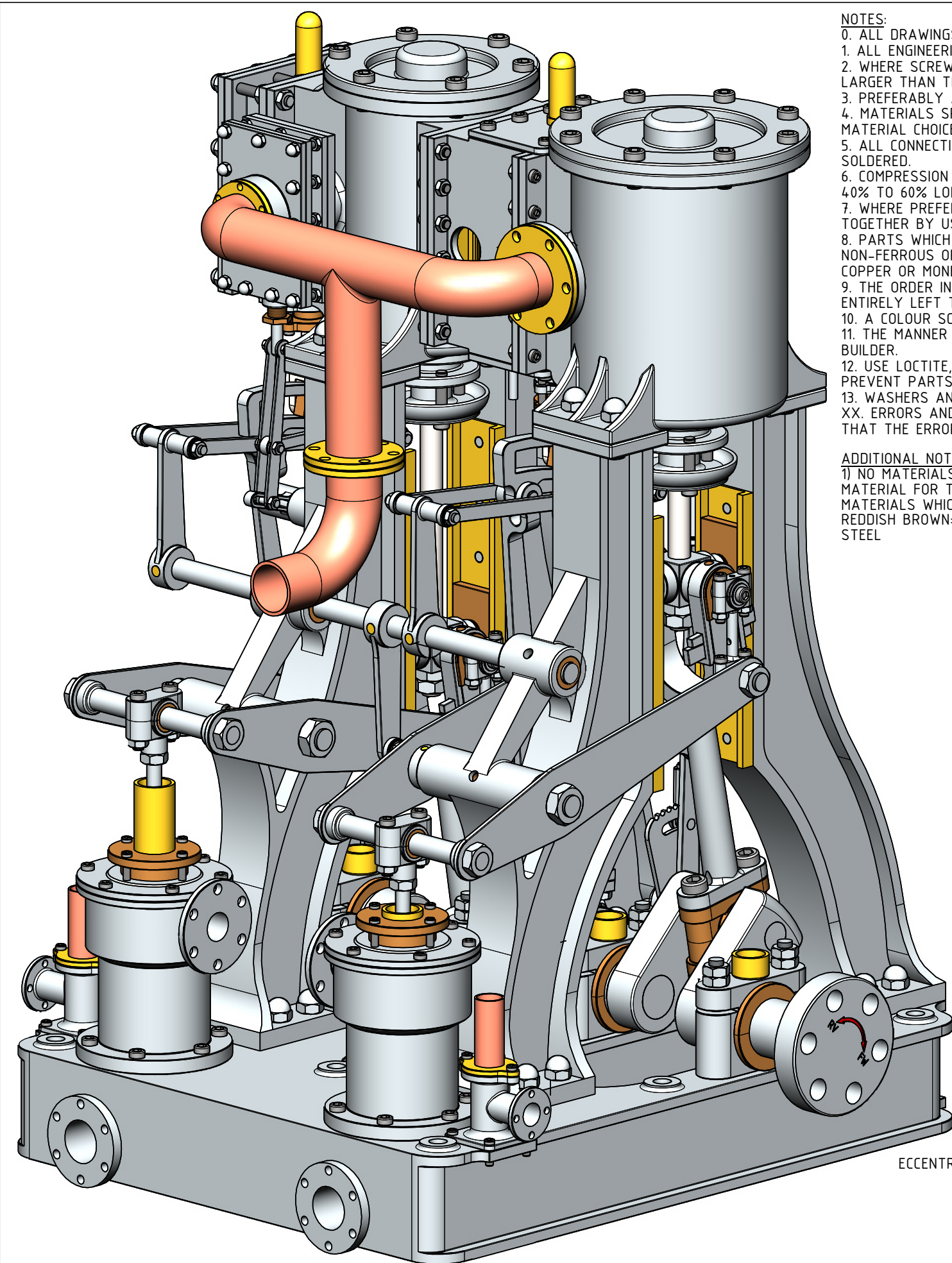




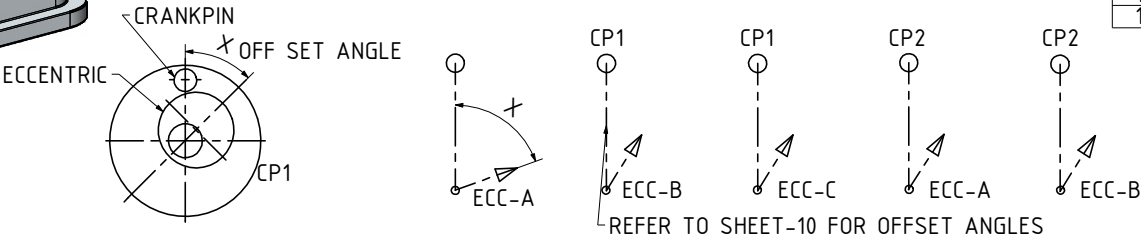
- NOTES:
- 0. ALL DRAWINGS ARE IN METRIC MEASUREMENTS
 - 1. ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.
 - 2. WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
 - 3. PREFERABLY ALL TAPPED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

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

- 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 = HEXAGON, 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 INFORMATION, SUCH AS VIEWS, DIMENSIONS, SECTIONS ETC, ON THE ORIGINAL DRAWING(S), SOME OF THE COMPONENTS MIGHT NOT BE AS CONSTRUCTED ORIGINALLY



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

QTY.	PART NUMBER
1	09C-52-00-1-01-BASE FRAME
4	09C-52-00-1-02-MAIN CRANK SHAFT BEARING
21	09C-52-00-M4 NUT
1	09C-52-00-1-03-COLUMNS
1	09C-52-00-1-04-HP-CYLINDER
1	09C-52-00-1-05-HP-CYLINDER VALVE CHEST
1	09C-52-00-1-06-HP-CYLINDER TOP COVER
2	09C-52-00-1-07-HP+LP-PISTON ROD GLAND
1	09C-52-00-1-08-HP-EXHAUST VALVE CHEST
1	09C-52-00-1-09-STEAM TRANSFER CHEST
1	09C-52-00-1-10-HP-STEAM INLET PIPE
14	09C-52-00-M4x8 A-K CYL HEAD SCREW
46	09C-52-00-M3 NUT
12	09C-52-00-M3 DOME NUT
28	09C-52-00-M2 NUT
13	09C-52-00-M2 DOME NUT
12	09C-52-00-M2x10 A-K CYL HEAD SCREW
10	09C-52-00-M3x14 A-K CYL HEAD SCREW
32	09C-52-00-M2.5x8 A-K CYL HEAD SCREW
56	09C-52-00-M2.5 NUT
1	09C-52-00-1-16-LP-VALVE CHEST TOP COVER
1	09C-52-00-1-17-LP-VALVE CHEST BOTTOM COVER
19	09C-52-00-M3x6 A-K CYL HEAD SCREW
17	09C-52-00-M2x4 A-K CYL HEAD SCREW
11	09C-52-00-M2x6 A-K CYL HEAD SCREW
4	09C-52-00-M1.5x4 A-K CYL HEAD SCREW
1	09C-52-00-1-19-LP TO HP-TRANSFER CORRIDOR
7	09C-52-00-M2.5x8 A-K C-SINK SCREW
24	09C-52-00-M4x12 A-K CYL HEAD SCREW
24	09C-52-00-M4 DOME NUT
1	09C-52-00-1-03-COLUMNS
1	09C-52-00-1-11-LP-CYLINDER
1	09C-52-00-1-12-LP-CYLINDER TOP COVER
1	09C-52-00-1-13-EXHAUST PIPE
2	09C-52-00-1-14-CONDENSING PUMP
2	09C-52-00-1-15-WATER PIPE CONECTOR PILLAR
32	09C-52-00-M3x8 A-K CYL HEAD SCREW
12	09C-52-00-M2.5x4 A-K CYL HEAD SCREW
1	09C-52-00-1-18-REVERSER QUADRANT
7	09C-52-00-M3 WASHER
1	09C-52-00-2-01-CRANKSHAFT
1	09C-52-00-2-10-ECCENTRIC SHEAVE
2	09C-52-00-2-10-ECCENTRIC SHEAVE
2	09C-52-00-2-10-ECCENTRIC SHEAVE
5	09C-52-00-M3x14 A-K GRUB SCREW
1	09C-52-00-2-02-HP-PISTON+CROSS HEAD
22	09C-52-00-M5 NUT
1	09C-52-00-2-03-LP-PISTON+CROSS HEAD
2	09C-52-00-2-04-CON-ROD
4	09C-52-00-M5x36 A-K CYL HEAD SCREW
2	09C-52-00-2-05-PUMP ROCKING BEAM
4	09C-52-00-M6 NUT
4	09C-52-00-2-06-ROCKING BEAM CON-ROD
16	09C-52-00-M2.5x12 A-K CYL HEAD SCREW
2	09C-52-00-2-07-PUMP CROSSHEAD
2	09C-52-00-2-08-PUMP PISTON
1	09C-52-00-2-09-LP-EXHAUST CONTROL VALVE
1	09C-52-00-2-11-EXHAUST ROKING ARM
1	09C-52-00-2-12-ECCENTRIC STRAP-C
1	09C-52-00-2-13-EXHAUST VALVE LINKS
4	09C-52-00-M1.5 NUT
1	09C-52-00-2-14-EXHAUST VALVE CONTROL LEVER
1	09C-52-00-2-15-CONTROL LINK
1	09C-52-00-2-16-LP-STEAM INLET CONTROL VALVE
1	09C-52-00-2-17-CORRIDOR SLIDE VALVE
1	09C-52-00-2-18-HP-SLIDE VALVE
1	09C-52-00-2-19-LP-SLIDE VALVE
2	09C-52-00-2-20-EXSPANSION LINK
2	09C-52-00-2-21-EXPANSION DIE BLOCK
1	09C-52-00-2-23-REVERSING LEVER HANDLE
1	09C-52-00-M4 WASHER
9	09C-52-00-M2.5 WASHER
1	09C-52-00-2-24-REVERSER HANDLE LINK
4	09C-52-00-2-25-REVERSER LINK
2	09C-52-00-2-26-ECCENTRIC STRAP-B
2	09C-52-00-2-27-ECCENTRIC STRAP-A
1	09C-52-00-M2 WASHER
1	09C-52-00-2-22-REVERSER CONTROL SHAFT

NOTES: THE ORIGINAL SKETCHES/LITHOGRAPHES WERE PUBLISHED ON THE "MODELENGINEERINGWEBSITE" WEBSITE. THE HEADING ON THE ORIGINAL DRAWING WAS: ENGINES OF THE STEAM TUG "ERA". MESSRS STEWART AND NICHOLSON, BLACKWALL IRONWORKS, ENGINEERS AND PATENTEES. FIRST PUBLISHED IN THE MAGAZINE "THE ENGINEER" ON 8 OF OCTOBER 1869

TITLE

2 CYLINDER VERTICAL COMPOUND MARINE STEAM ENGINE (HP:B=40mm/LP:B=52mm/S=52)

DRAWING CONTENTS

GENERAL ARRANGEMENT, ISOMETRIC VIEW, NOTES, BILL OF MATERIALS

PROJECT No 09C-52-00

JDW DRAUGHTING SERVICES

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PROJECTION

DATE JUNE 2021

SHEET: 04 OF 12

JDWDS

MODEL SCALE: 1:1

DWG SCALE: 1:1 @A3 OR AS SHOWN

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A3 No: 09C-52-00-SHT04

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