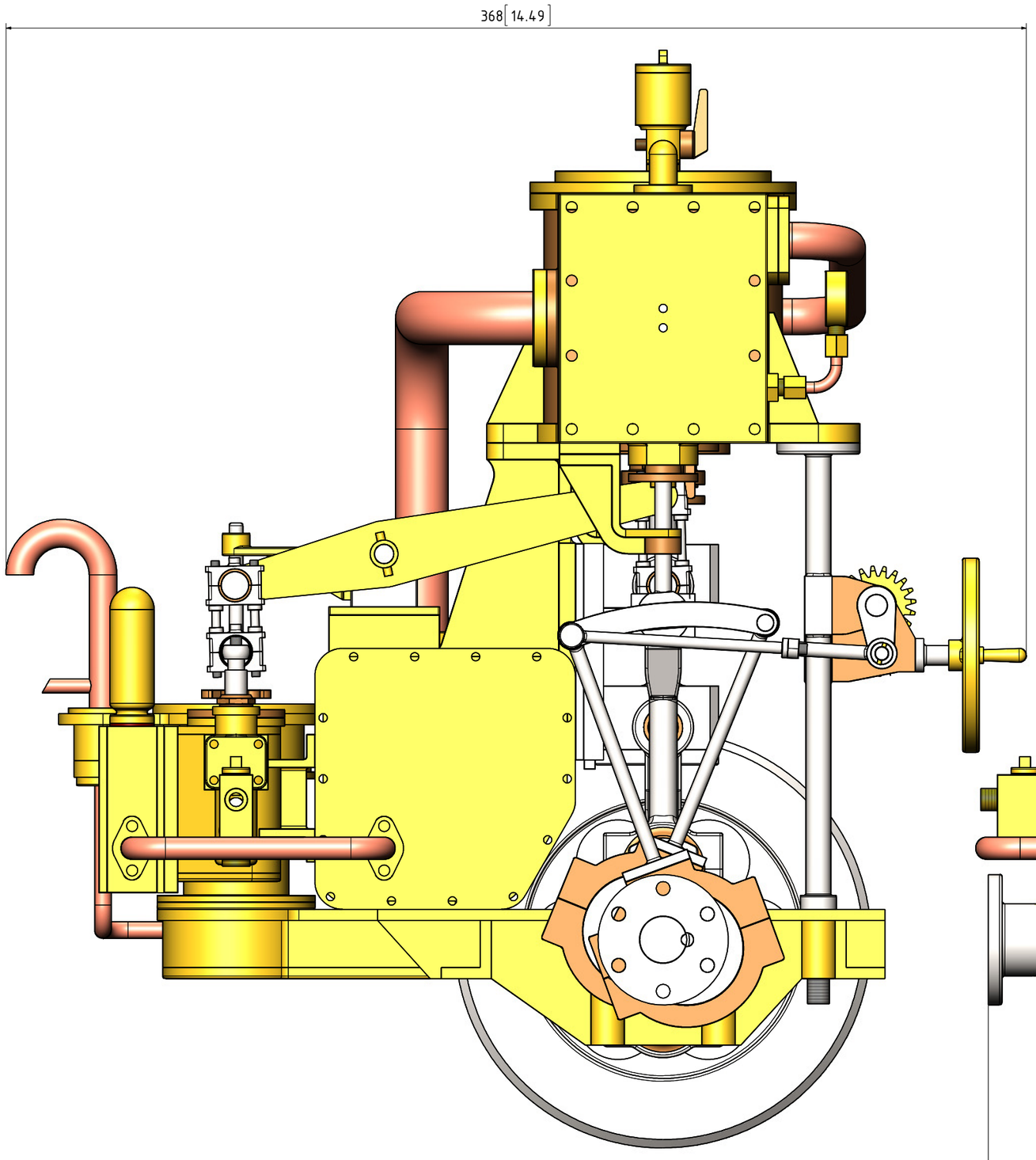
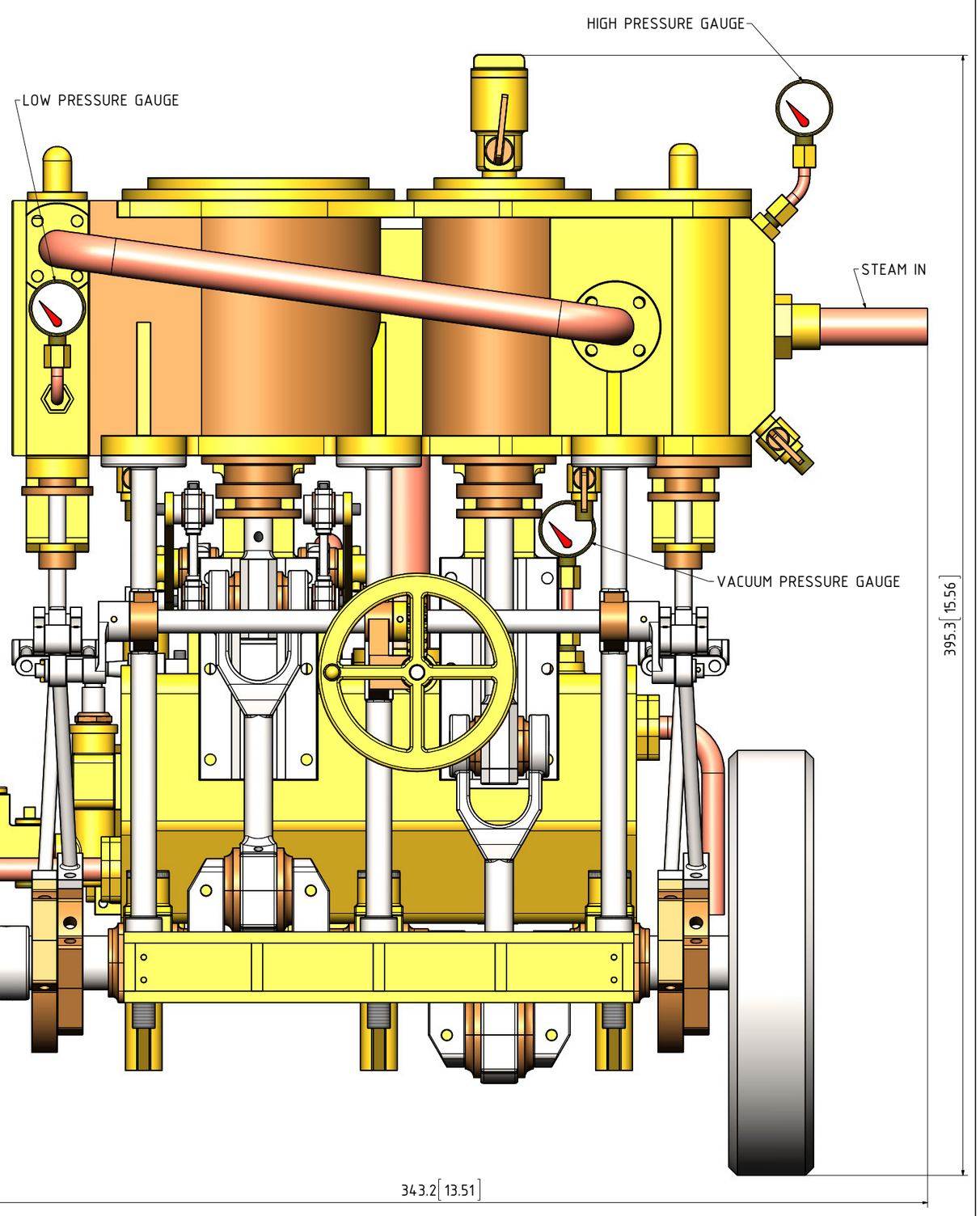


LEFTHAND VIEW



FRONT VIEW

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TITLE
MODEL COMPOUND CONDENSING STEAM ENGINE

DRAWING CONTENTS
GENERAL ARRANGEMENT

PROJECT No 09C-19-00

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 JUNE-2016
SHEET: 01 OF 13

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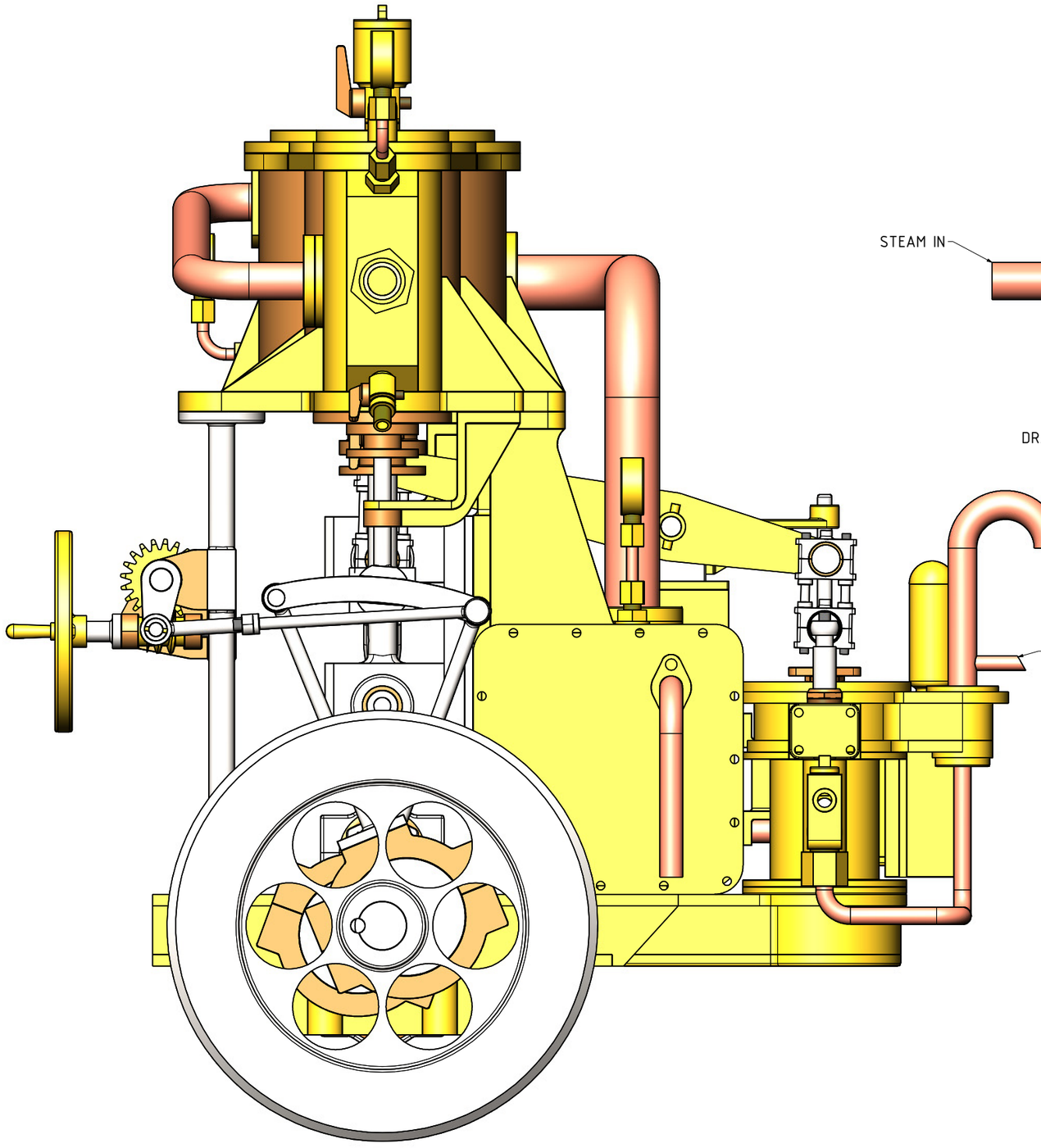
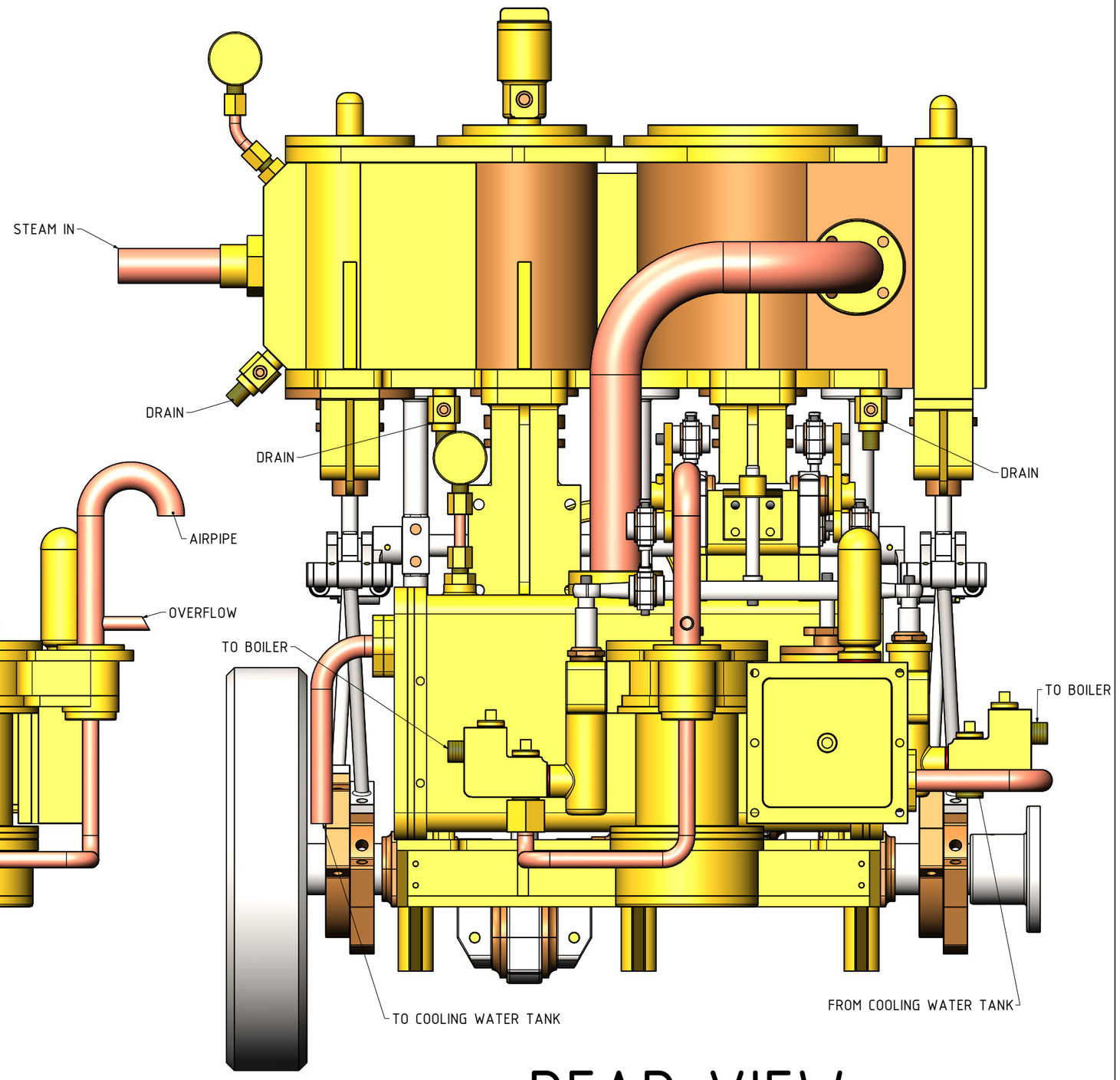
A3 No: MCCSE-01



RIGHTHAND VIEW



REAR VIEW

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TITLE
MODEL COMPOUND CONDENSING STEAM ENGINE

DRAWING CONTENTS
GENERAL ARRANGEMENT

PROJECT No 09C-19-00

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 JUNE-2016
SHEET: 02 OF 13

MODEL SCALE: 1:1
DWG SCALE: NTS @A3 OR AS SHOWN
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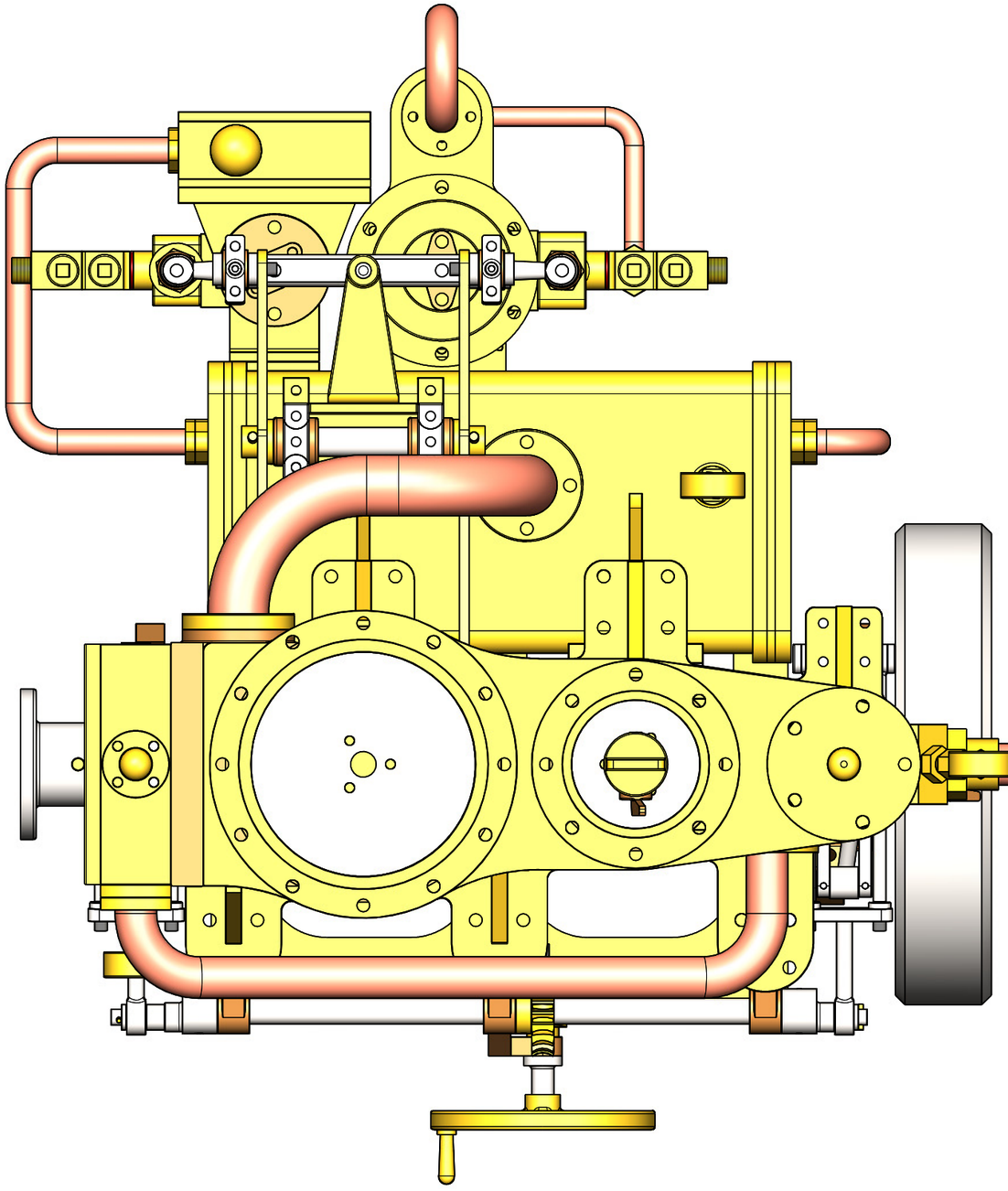
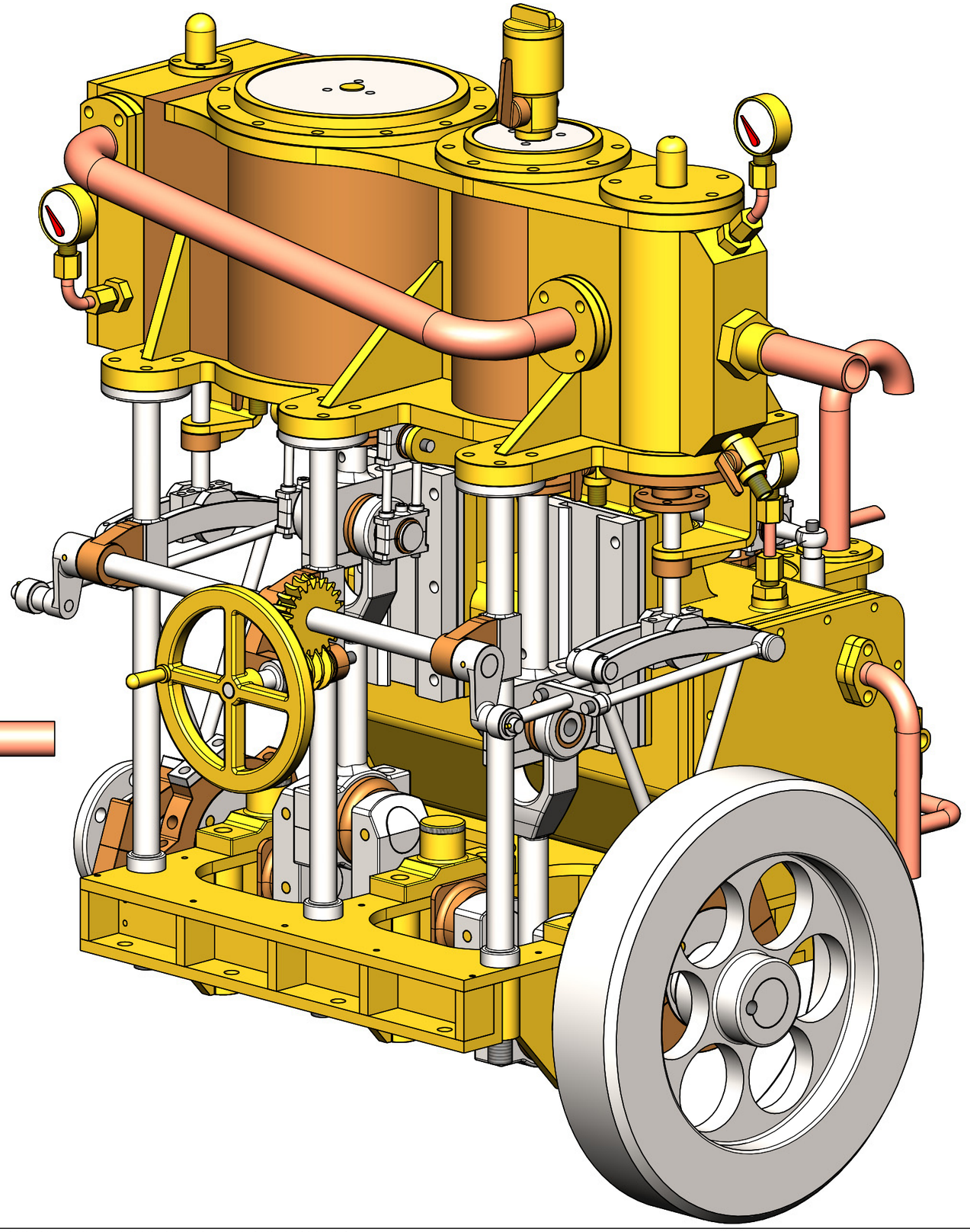
A3 No: MCCSE-02





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TITLE

MODEL COMPOUND CONDENSING STEAM ENGINE

DRAWING CONTENTS

GENERAL ARRANGEMENT TOP VIEW AND ISOMETRIC VIEW

PROJECT No 09C-19-00

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 JUNE-2016

SHEET: 03 OF 13

MODEL SCALE: 1:1

DWG SCALE: NTS @A3 OR AS SHOWN

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A3 No: MCCSE-03

QTY.	PART NUMBER
1	MCCSE-01-UNDER FRAME ANGLE-1
5	MCCSE-02-UNDER FRAME STIFFENING PLATE-1
1	MCCSE-02-UNDER FRAME STIFFENING PLATE-1
3	MCCSE-03-UNDER FRAME COLUMN-1
3	MCCSE-04A-UNDER FRAME PLATE-1A
3	MCCSE-04B-UNDER FRAME PLATE-1B
6	MCCSE-05-UNDER FRAME COLUMN-2
3	MCCSE-06-UNDER FRAME PLATE-2
1	MCCSE-07A-MAIN CENTER BEARING SADDLE
2	MCCSE-07B-MAIN OUTER BEARING SADDLE
1	MCCSE-08-UNDER FRAME ANGLE-2
2	MCCSE-09-UNDER FRAME STIFFENING PLATE-2
1	MCCSE-10-UNDER FRAME WATER RESEVOIR
1	MCCSE-11-FRAME STRUCTURE TOP PLATE
1	MCCSE-12-RESEVOIR BOTTOM PLATE
4	MCCSE-13-RESEVOIR BOTTOM PLATE PILLAR
1	MCCSE-14-CENTER BEARING BLOCK
2	MCCSE-15-OUTER BEARING BLOCK
1	MCCSE-16-BEARING BLOCK CAP
2	MCCSE-16-BEARING BLOCK CAP
3	MCCSE-17-BEARING BLOCK CAP COVER
2	MCCSE-18-FRONT OUTER SUPPORT COLUMN
1	MCCSE-19-FRONT CENTER SUPPORT COLUMN
1	MCCSE-20A-CONDENSER SHELL
2	MCCSE-20B-CONDENSER END FLANGE
1	MCCSE-20C-CONDENSER TOP FLANGE
2	MCCSE-20D-CONDENSER TOP STAND OFF
1	MCCSE-20E-CONDENSER BOTTOM FLANGE
2	MCCSE-20F-CONDENSER BOTTOM STAND OFF
2	MCCSE-20G-CONDENSER CROSSHEAD STAND OFF PLATE
2	MCCSE-20H-CONDENSER TOP GUSSET
2	MCCSE-20J-CONDENSER CIRC PMP STAND OFF
1	MCCSE-20K-CONDENSER END COVERS
1	MCCSE-20K-CONDENSER END COVERS
1	MCCSE-21-CONDENSER TUBE PLATE
1	MCCSE-21-CONDENSER TUBE PLATE
90	MCCSE-22-CONDENSER TUBE
2	MCCSE-23-CROSSHEAD GUIDE PLATE
4	MCCSE-24-CROSSHEAD GUIDE RAIL
1	MCCSE-25A-CIRC.PMP FACE PLATE
1	MCCSE-25B-CIRC.PMP CYLINDER HOUSING
1	MCCSE-25C-CIRC.PMP CYL TOP PLATE
1	MCCSE-25D-CIRC.PMP CYL BOTTOM PLATE
1	MCCSE-25E-CIRC.PMP CYL CYLINDER
1	MCCSE-25F-CIRC.PMP MOUNTING BRACKET
1	MCCSE-25G-CIRC.PMP BILGE PUMP BRACKET
1	MCCSE-25H-CIRC.PMP VALVE CHAMBER
1	MCCSE-25J-CIRC.PMP VALVE PLATE
4	MCCSE-25K-CIRC.PMP VALVE
1	MCCSE-25L-CIRC.PMP VALVE CHAMBER COVER
4	MCCSE-25M-CIRC.PMP VALVE SCREW
1	MCCSE-25N-CIRC.PMP TOP COVER
1	MCCSE-25P-CIRC.PMP TOP COVER GLAND
1	MCCSE-26-CIRC.PMP AIR VESSEL
1	MCCSE-27A-BILGE PUMP HOUSING
1	MCCSE-27B-BILGE PUMP GLAND NUT
2	MCCSE-28A-PUMP VALVE BOX HOUSING
4	MCCSE-28B-PUMP VALVE BOX BALL VALVE
4	MCCSE-28C-PUMP VALVE BOX SCREW TOP
1	MCCSE-29A-AIR PMP FOOT VALVE HOUSING
1	MCCSE-29B-AIR PMP FOOT VALVE GUARD
1	MCCSE-29C-AIR PMP FOOT VALVE
1	MCCSE-29D-AIR PMP FOOT VALVE GUARD SCREW
1	MCCSE-29E-AIR PMP BARREL
1	MCCSE-29F-AIR PMP HOTWELL VALVE HOUSING
1	MCCSE-29G-AIR PMP HOTWELL TOP PLATE
1	MCCSE-29H-AIR PMP HOTWELL BOTTOM PLATE
1	MCCSE-29J-AIR PMP HOTWELL TOP COVER
1	MCCSE-29K-AIR PMP HOTWELL VALVE
1	MCCSE-29L-AIR PMP HOTWELL PISTON ROD GUIDE
1	MCCSE-29M-AIR PMP HOTWELL TOP COVER GLAND
1	MCCSE-29N-AIR PMP HOTWELL GLAND SEAL
1	MCCSE-29P-AIR PMP HOTWELL AIR PIPE
1	MCCSE-30A-FEED PUMP HOUSING
1	MCCSE-30B-FEED PUMP GLAND NUT
1	MCCSE-31-CIRC PMP OUTLET PIPE
1	MCCSE-32-AIR PMP HOTWELL DISCHARGE PIPE

QTY.	PART NUMBER
1	MCCSE-33-M10x6 PIPE NUT
1	MCCSE-34-PUMP LEVER BEARING BRACKET
2	MCCSE-35-PUMP LEVER BEARING
1	MCCSE-36-PUMP GUIDE BRACKET
2	MCCSE-37-REVERSING SHAFT END BRACET
1	MCCSE-38-REVERSING SHAFT CENTER BRAKCET
1	MCCSE-39-CYLINDERS LOWER PLATE
1	MCCSE-40-CYLINDERS UPPER PLATE
1	MCCSE-41A-CYLINDER CENTER GUSSET
1	MCCSE-41B-CYLINDER OUTER GUSSET TYPE-1
1	MCCSE-41C-CYLINDER OUTER GUSSET TYPE-2
1	MCCSE-41D-CYLINDER FRONT GUSSET TYPE-3
1	MCCSE-41E-CYLINDER FRONT GUSSET TYPE-4
1	MCCSE-41F-CYLINDER FRONT GUSSET TYPE-5
1	MCCSE-41G-CYLINDER OUTER GUSSET TYPE-6
1	MCCSE-42A-LP-CYLINDER
1	MCCSE-42B-LP-CYL. PORT BLOCK
1	MCCSE-42C-LP-CYL. TOP COVER
1	MCCSE-42D-LP-CYL. STEAM CHEST
1	MCCSE-42E-LP-CYL. STEAM CHEST COVER
1	MCCSE-42F-LP-CYL. STEAM CHEST SPINDLE GUIDE
1	MCCSE-42G-LP-CYL. STEAM CHEST GLAND
1	MCCSE-42H-LP-CYL. STEAM CHEST SPINDLE GUIDE BACKET
1	MCCSE-42J-LP-CYL. TOP COVER PLATE
1	MCCSE-42K-LP-CYL. PISTON ROD GUIDE
1	MCCSE-42L-LP-CYL. PISTON ROD GUIDE GLAND
1	MCCSE-42M-LP-CYL. STEAM CHEST COVER SPRING
1	MCCSE-42N-LP-CYL. STEAM CHEST RECEIVER PIPE
1	MCCSE-42P-LP-CYL. EXHAUST PIPE
1	MCCSE-43A-HP-CYLINDER
1	MCCSE-43B-HP-CYL. PORT BLOCK PART-1
1	MCCSE-43C-HP-CYL. PORT BLOCK PART-2
1	MCCSE-43D-HP-CYL. PORT BLOCK PART-3
1	MCCSE-43E-HP-CYL. PORT BLOCK VALVE LINER
1	MCCSE-43F-HP-CYL. PISTON ROD GUIDE
1	MCCSE-43G-HP-CYL. PISTON ROD GUIDE GLAND
1	MCCSE-43H-HP-CYL. TOP COVER
1	MCCSE-43J-HP-CYL.PORT BLOCK TOP COVER
1	MCCSE-43K-HP-CYL.PORT BLOCK BOTTOM COVER
1	MCCSE-43L-HP-CYL.PORT BLOCK BOT. COVER GLAND
1	MCCSE-43M-HP-CYL. TOP COVER PLATE
1	MCCSE-43N-HP-CYL. VALVE SPINDLE GUIDE BACKET
1	MCCSE-50A-CRANKSHAFT END PART-1
1	MCCSE-50B-CRANKSHAFT END PART-2
1	MCCSE-50C-CRANKSHAFT CENTER PART
2	MCCSE-50D-CRANKSHAFT CRANK PIN
4	MCCSE-50E-CRANK PLATE
2	MCCSE-51-ECCENTRICS
2	MCCSE-51-ECCENTRICS
1	MCCSE-52-FLYWHEEL
1	MCCSE-53-COUPLING PLATE
1	MCCSE-54A-LP PISTON PART-1
1	MCCSE-54B-LP PISTON PART-2
1	MCCSE-54C-LP PISTON PART-3
2	MCCSE-54D-LP PISTON RING
2	MCCSE-55A-PISTON ROD
2	MCCSE-55B-PISTON ROD BEARING
2	MCCSE-55C-PISTON ROD BEARING KEEPER
1	MCCSE-56A-HP PISTON PART-1
1	MCCSE-56B-HP PISTON PART-2
1	MCCSE-56C-HP PISTON PART-3
2	MCCSE-56D-HP PISTON RING
2	MCCSE-57A-CONNECTING ROD
4	MCCSE-57B-CON-ROD BIG END BEARING
1	MCCSE-58-LP-CROSSHEAD-CON-ROD PIN
1	MCCSE-59-HP-CROSSHEAD-CON-ROD PIN
8	MCCSE-60A-PUMP LINK BEARING HOUSING
16	MCCSE-60B-PUMP LINK BEARING
4	MCCSE-60C-FRONT PUMP LINK SPACER
4	MCCSE-60D-REAR PUMP LINK SPACER
2	MCCSE-61A-PUMP LEVER ARM
4	MCCSE-61B-PUMP LEVER LINK PIVOT AXLE
1	MCCSE-61C-PUMP LEVER MAIN PIVOT SHAFT
1	MCCSE-62A-REAR PUMPS CROSSHEAD
1	MCCSE-62B-REAR PUMPS CROSSHEAD GUIDE PIN
1	MCCSE-63-BILGE PUMP RAM
1	MCCSE-64-FEED PUMP RAM

QTY.	PART NUMBER
1	MCCSE-65-CIRC. PUMP PISTON AND ROD
1	MCCSE-66A-AIR PMP BUCKET PISTON
1	MCCSE-66B-AIR PMP BUCKET VALVE GUARD
1	MCCSE-66C-AIR PMP BUCKET VALVE
1	MCCSE-66D-AIR PMP BUCKET PISTON ROD
1	MCCSE-67A-REVERSING SHAFT
2	MCCSE-67B-REV. SHAFT END CRANK
1	MCCSE-67C-REV. LP-SHAFT END CRANK PIN
1	MCCSE-67D-REV. SHAFT GEAR WHEEL
1	MCCSE-67E-REV. SHAFT WORM GEAR
1	MCCSE-67F-REV. SHAFT HAND WHEEL
1	MCCSE-67G-REV.HP-SHAFT END CRANK PIN
1	MCCSE-68A-LP-SLIDE VALVE
1	MCCSE-68B-LP-VALVE SPINDLE
1	MCCSE-68C-LP-VALVE SPINDLE WASHER
1	MCCSE-69A-HP-SPOOL VALVE
1	MCCSE-69B-HP-VALVE SPINDLE
2	MCCSE-69C-HP-VALVE SPINDLE WASHER
4	MCCSE-70A-ECCENTRIC STRAP
4	MCCSE-70B-ECCENTRIC STRAP ROD
4	MCCSE-71A-REV. CURVED LINK BAR
2	MCCSE-71B-REV. CURVED LINK BAR SPACER
2	MCCSE-71B-REV. CURVED LINK BAR SPACER
4	MCCSE-71C-REV. CURVED LINK BAR DRAG LINK SHAFT
2	MCCSE-71D-REV. DRAG LINK CONNECTOR
4	MCCSE-71E-REV. DRAG LINK
2	MCCSE-71F-REV. DRAG LINK BLOCK
1	MCCSE-72A-HP- PRESSURE GAUGE
1	MCCSE-72B-HP- PRESSURE GAUGE CONNECTOR
1	MCCSE-72C-HP- PRESSURE GAUGE PIPE
1	MCCSE-73A-LP- PRESSURE GAUGE
1	MCCSE-73B-LP- PRESSURE GAUGE CONNECTOR
1	MCCSE-73C-LP- PRESSURE GAUGE PIPE
1	MCCSE-74A-CONDENSOR VACUUM GAUGE
1	MCCSE-74B-CONDENSOR VACUUM GAUGE CONNECTOR
1	MCCSE-74C-CONDENSOR VACUUM GAUGE PIPE
6	MCCSE-75-M6x4 PIPE NUT
3	MCCSE-76A-DRAIN VALVE BODY
3	MCCSE-76B-DRAIN VALVE SPINDLE
1	MCCSE-77-STEAM INLET PIPE
1	MCCSE-78A-HP OILER-RELIEF VALVE BODY
1	MCCSE-78B-HP OILER-RELIEF VALVE SPINDLE
1	MCCSE-79-COND. COOL. WTR OUTET PIPE

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
PF = PRESS FIT
PCD = PITCH CIRCLE DIAMETER
RM = REAM
HEX = HEXACON, 6SIDED
CP = COMPRESSED
KNL = KNURLED
CSK = COUNTERSINK
PL = PLACES
DWL= DOWEL
HESOP=HOLES EQUALLY SPACED ON PCD
SA-n-xxx= SUB ASSEMBL-n-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. SEALS AND/OR GASKETS SHALL BE USED WHERE DEEMED NECESSARY TO PREVENT LEAKAGE.
XX. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.

COMMENTS ON THE ORIGINAL DRAWINGS AND MY DRAWINGS:
ON THE ORIGINAL DRAWINGS A LARGE NUMBER OF COMPONENTS WERE SHOWN TO BE MADE OF CASTINGS/MOULDINGS.
ON MY DRAWINGS THE CASTINGS HAVE BEEN OMITTED AND THE MATERIALS USED ARE STANDARD STOCK
NO BOLTS, WASHERS, NUTS, STUDS OR OTHER FASTENERS HAVE BEEN SHOWN ON MY DRAWINGS.
IT IS UP TO THE BUILDER TO DECIDE WHAT TYPE OF FASTENERS TO USE.
THE COMPONENTS MAKING UP THE "CASTINGS" CAN BE SOLDERED TOGETHER USING HIGH STRENGTH SOFT SOLDER.
WHERE HIGHER PRESSURES ARE EXPECTED SILVER OR HARD SOLDER SHOULD BE USED.
DOWELS COULD BE LIGHT PRESS FIT.

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DRAWING CONTENTS
BILL OF MATERIALS AND NOTES

PROJECT No 09C-19-00
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 JUNE-2016
SHEET: 04 OF 13

MODEL SCALE: 1:1
DWG SCALE: 1:1 @A3 OR AS SHOWN
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A3 No: MCCSE-04

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MODEL COMPOUND CONDENSING STEAM ENGINE

DRAWING CONTENTS

PARTS AND ASSEMBLIES

PROJECT No 09C-19-00

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 JUNE-2016

MODEL SCALE: 1:1

DWG SCALE: 1:1 @A3 OR AS SHOWN

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SHEET: 05 OF 13 | A3 | No: MCCSE-05

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MODEL COMPOUND CONDENSING STEAM ENGINE

DRAWING CONTENTS

PARTS AND ASSEMBLIES

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.

PROJECT No 09C-19-00

PROJECTION JDWDS

DATE JUNE-2016

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DWG SCALE: 1:1 @A3 OR AS SHOWN

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SHEET: 06 OF 13

A3 No: MCCSE-06

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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 JUNE-2016

SHEET: 07 OF 13

MODEL SCALE: 1:1

DWG SCALE: 1:1 @A3 OR AS SHOWN

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A3 No: MCCSE-07

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DRAWING CONTENTS

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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 JUNE-2016

SHEET: 08 OF 13

MODEL SCALE: 1:1

DWG SCALE: 1:1 @A3 OR AS SHOWN

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A3 No: MCCSE-08

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TITLE
MODEL COMPOUND CONDENSING STEAM ENGINE

DRAWING CONTENTS
PARTS AND ASSEMBLIES

PROJECT No 09C-19-00

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 JUNE-2016

SHEET: 09 OF 13

MODEL SCALE: 1:1

DWG SCALE: 1:1 @A3 OR AS SHOWN

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A3 No: MCCSE-09

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DATE JUNE-2016

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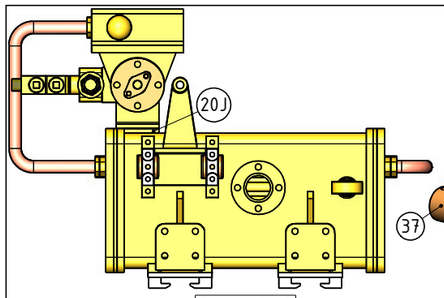
A3 No: MCCSE-10



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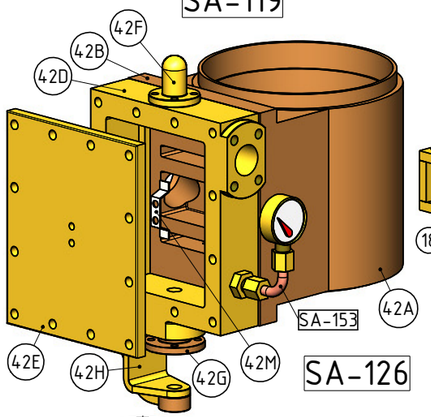

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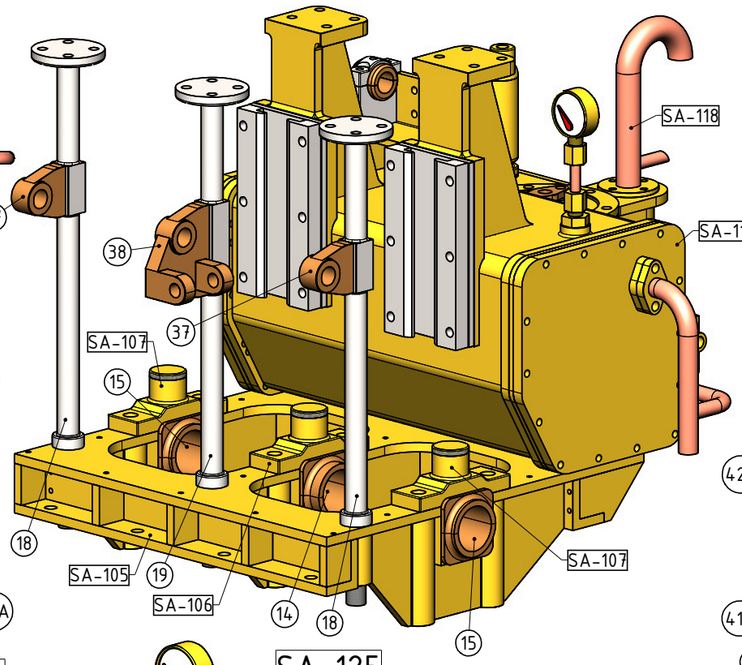

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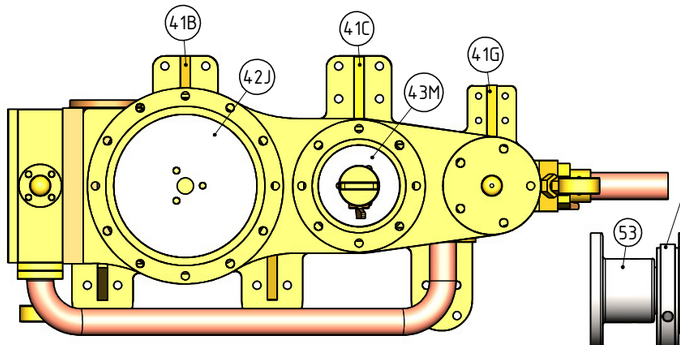
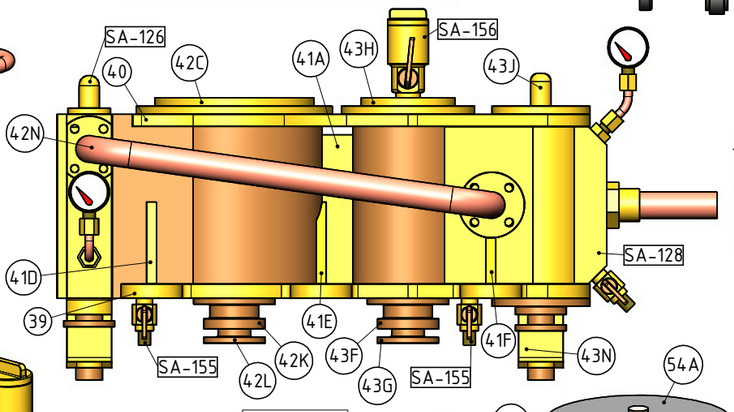
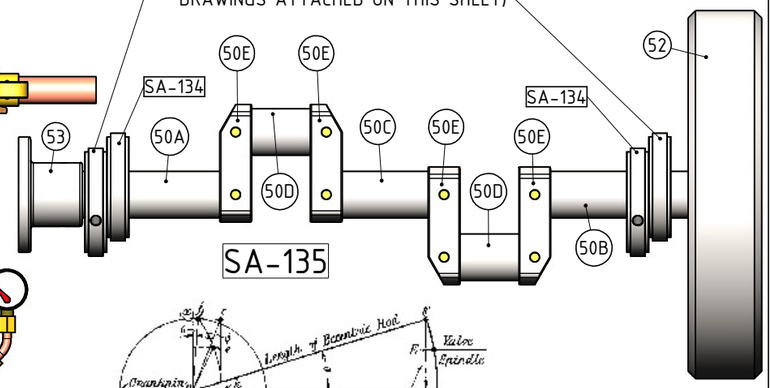




SA-129

THE SETINGS OF THE ECCENTRICS OF THE LOW PRESSURE SIDE AND THE HIGH PRESSURE SIDE SHALL BE EXPERIMENTALLY DETERMINED UNTILL THIS ENGINE RUNS SMOOTHLY TO THE SATISFACTION OF THE BUILDER. (ALSO REFER TO ORIGINAL DRAWINGS ATTACHED ON THIS SHEET)



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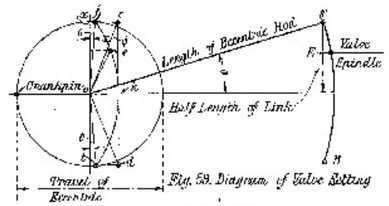
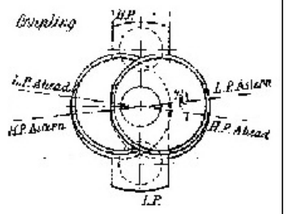


Fig. 59. Diagram of Valve Setting



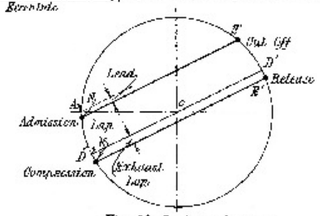
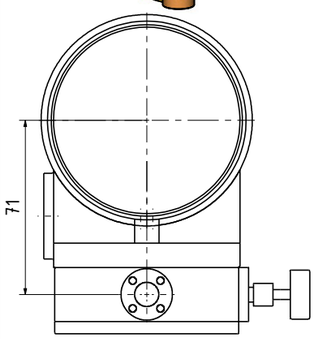
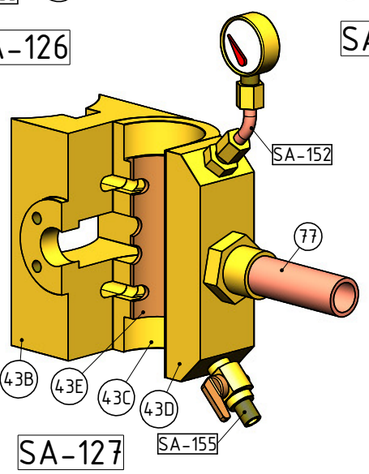


Fig. 60. Reuleaux Diagram.





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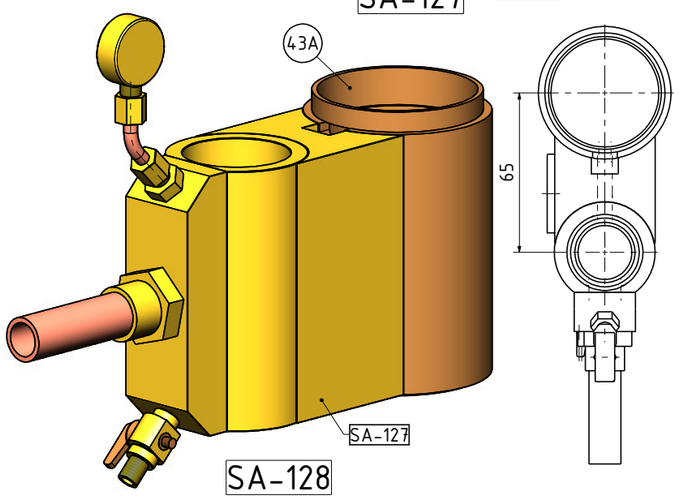

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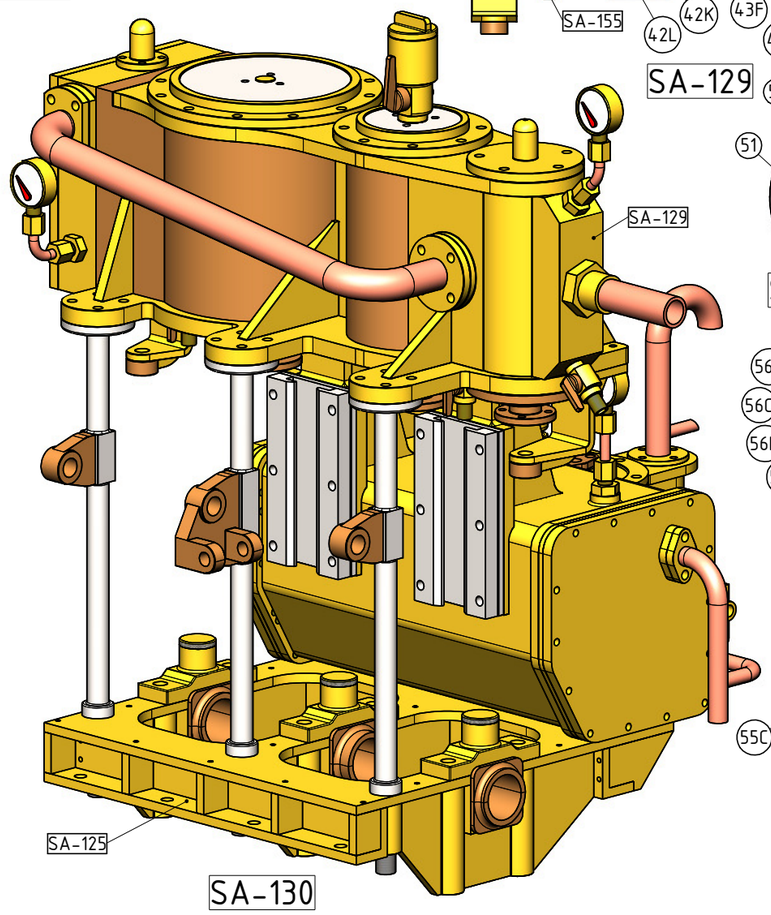

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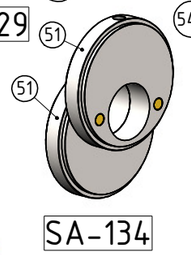

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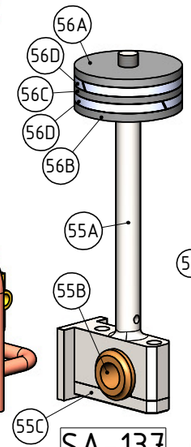

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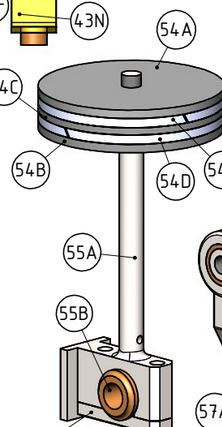

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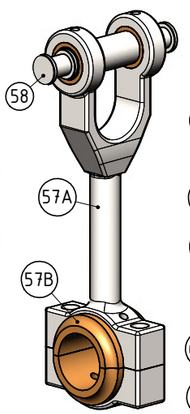

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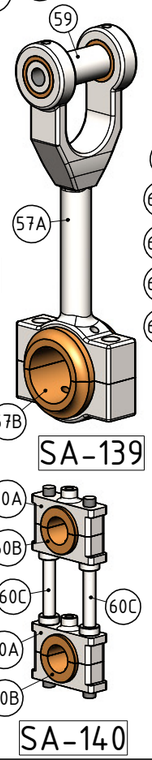

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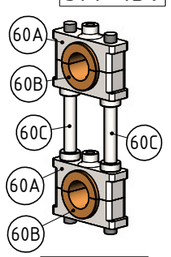

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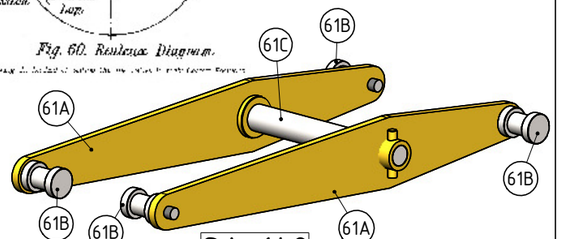

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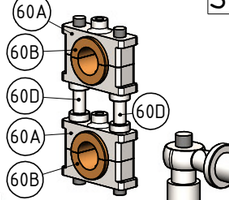

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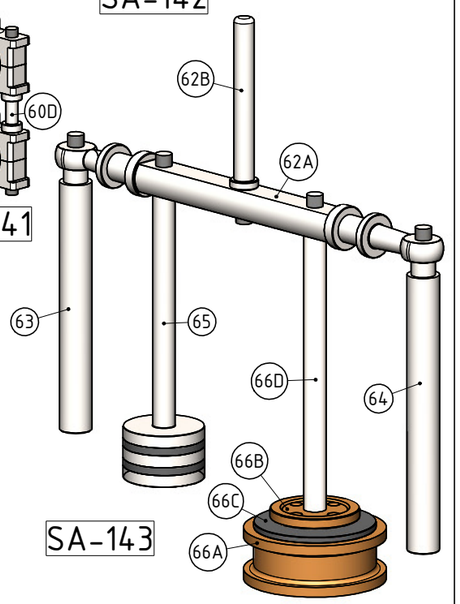

SA-143

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DATE JUNE-2016

SHEET: 11 OF 13

MODEL SCALE: 1:1

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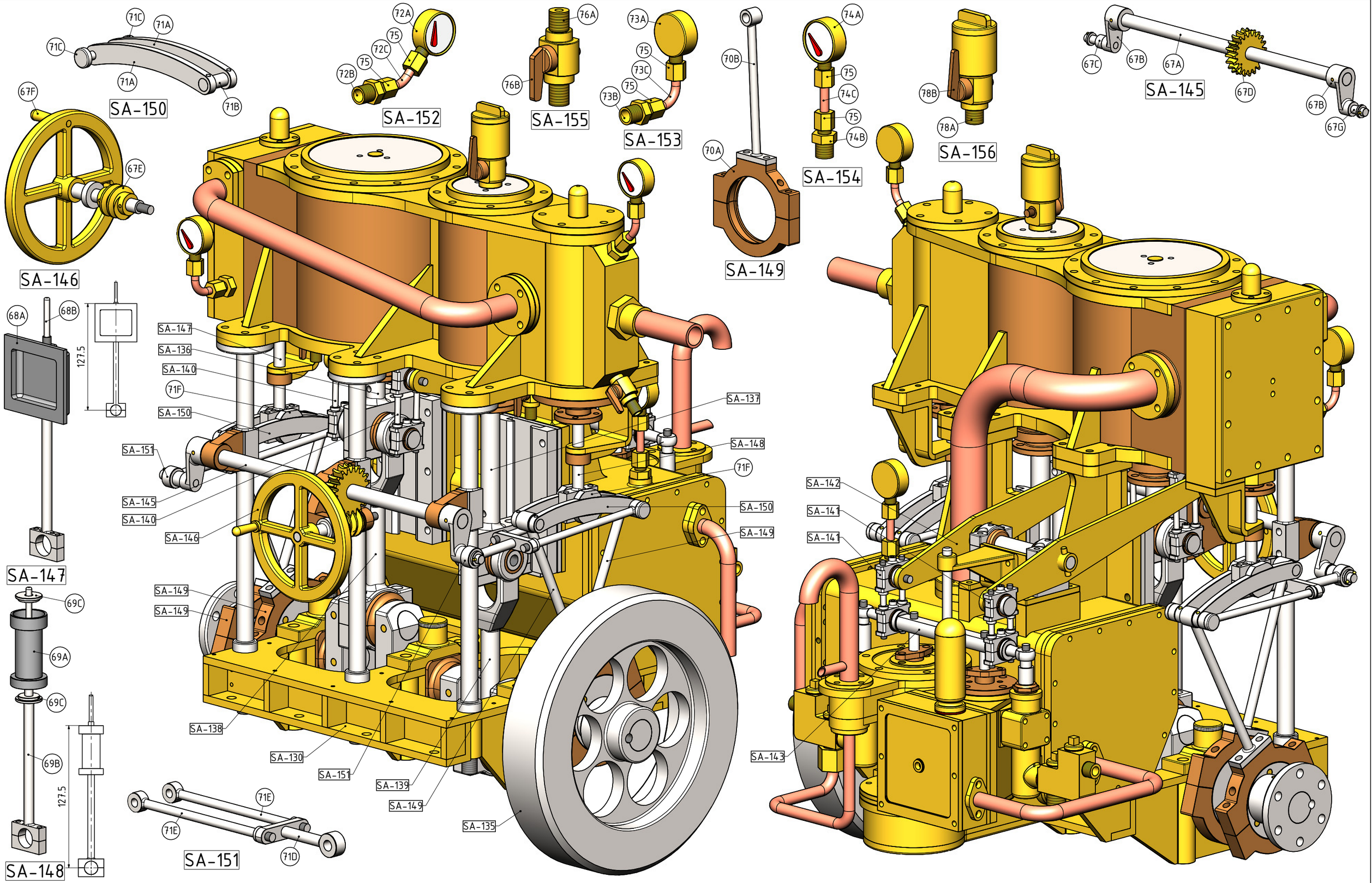
A3 No: MCCSE-11



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PROJECTION JDWDS

DATE JUNE-2016

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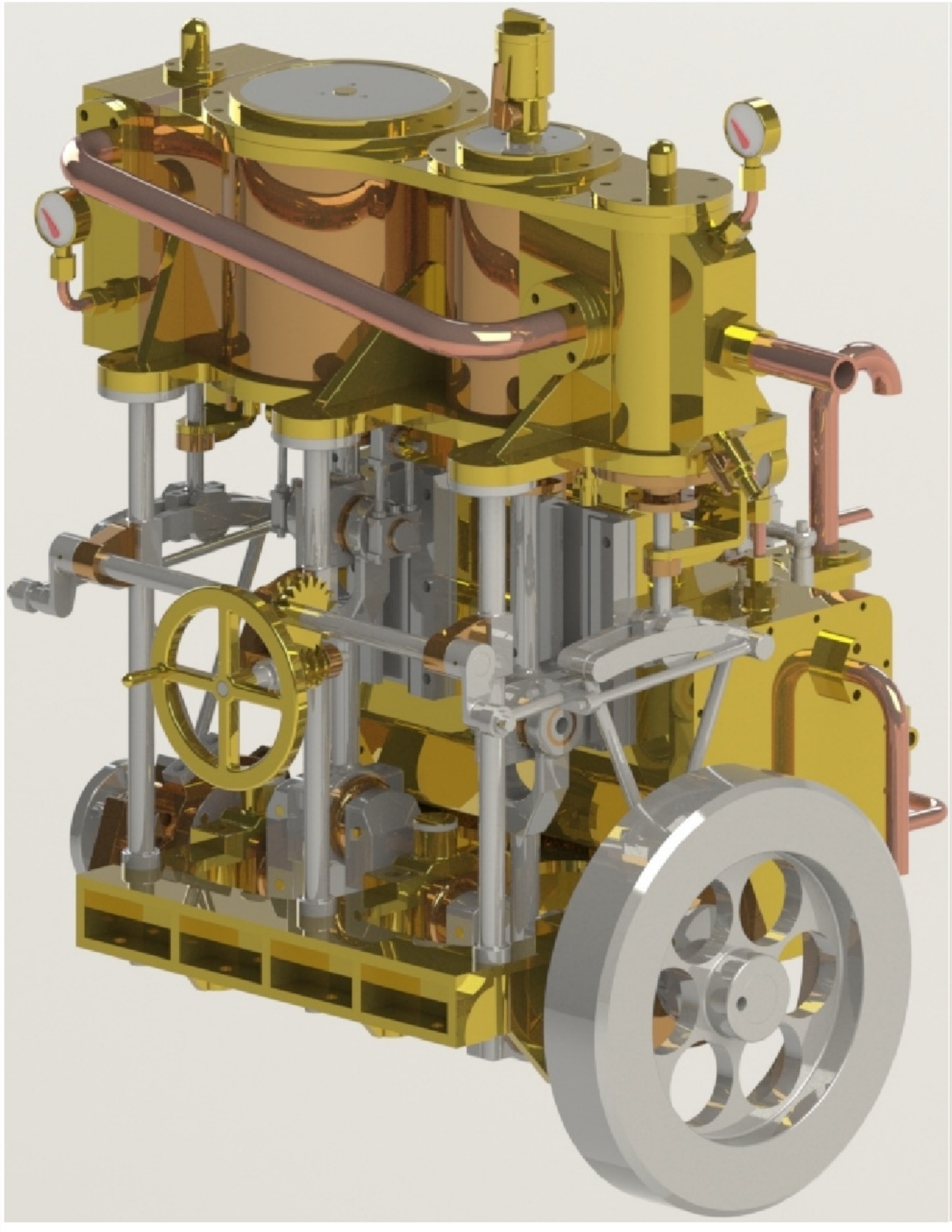

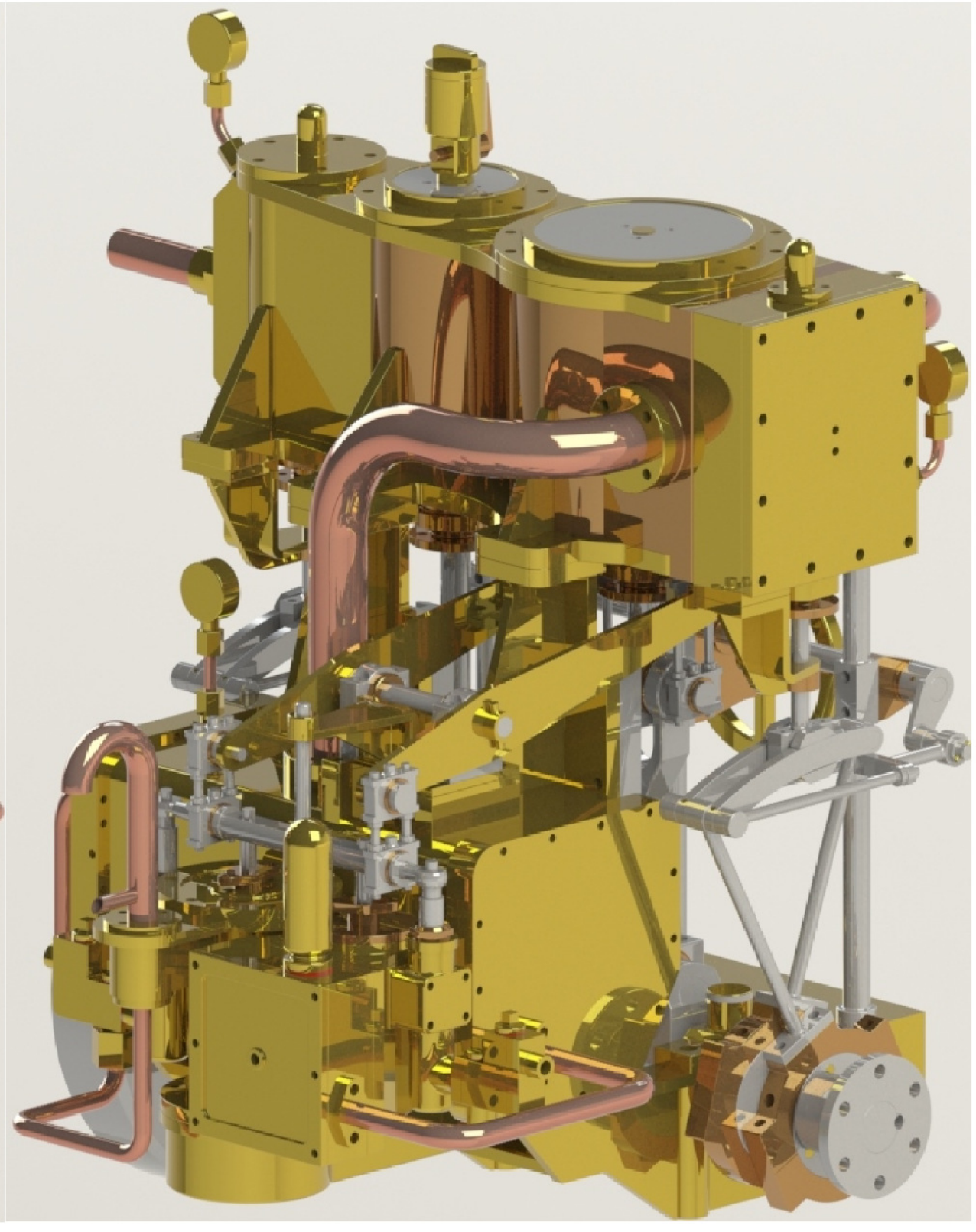

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RENDERED PICTURES

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