

NOTES: THIS ENGINE IS LOOSIE BASED ON AN ENGINE OF WHICH PHOTOGRAPHES WERE PUBLISHED IN A DUCTH MODEL MAGAZINE. NO DRAWINGS WERE ISUEED OR SHOWN TO DESIGN THIS ENGINE. THIS DESIGN IS BY JDW.

TITLE  
**EXP. DUPLEX COMPOUND STEAM ENGINE  
 WITH INDIVIDUAL INLET & EXHAUST VALVES**

DRAWING CONTENTS  
**GENERAL ARRANGEMENT**

PROJECT No 09D-29-00  
 JDW DRAUGHTING SERVICES  
 J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPA KURA  
 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB:  
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PROJECTION	<b>JDWDS</b>	MODEL SCALE: 1:1
DATE	MAY 2023	DWG SCALE: 1:1 @A3 OR AS SHOWN
SHEET: 01 OF 06		Copyright © J.A.M. DE WAAL PAPA KURA NZ
A3		No:09D-29-00-SHT-01

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QTY.	PART NUMBER
1	09D-29-00-1-01-BASE PLATE
2	09D-29-00-1-02-CYLINDERS
2	09D-29-00-1-03-LP END STAND+CROSSHEAD GUIDE
2	09D-29-00-1-04-HP END STAND+PISTON ROD GUIDE
4	09D-29-00-1-05-CRANKSHAFT BEARING
2	09D-29-00-1-06-HP-ROCKER SHAFT SUPPORT BEARING
4	09D-29-00-1-07-LP-ROCKER SHAFT SUPPORT BEARING
2	09D-29-00-1-08-STEAM INLET PIPES
8	09D-29-00-1-09-INLET VALVE BODY
2	09D-29-00-1-10A-STEAM OUTLET PIPES TYPE-A
2	09D-29-00-1-10B-STEAM OUTLET PIPES TYPE-B
8	09D-29-00-1-11-EXHAUST VALVE BODY
2	09D-29-00-1-12-ECCENTRIC SHAFT BEARING
1	09D-29-00-2-01-CRANKSHAFT+FLYWHEEL
2	09D-29-00-2-02-PISTONS+CROSSHEAD
2	09D-29-00-2-03-CON-ROD
2	09D-29-00-2-04-ECCENTRIC MOUNTING SHAFT
16	09D-29-00-2-05-ECCENTRIC
16	09D-29-00-2-06-STEAM INLET-EXHAUST VALVE
16	09D-29-00-2-07-INLET ROCKER ARM
8	09D-29-00-2-08-ECCENTRIC STRAP
8	09D-29-00-2-08-ECCENTRIC STRAP
2	09D-29-00-2-51-25 TEETH GEARWHEEL-12mm HOLE
8	09D-29-00-M3x20 A-K GRUB SCREW
34	09D-29-00-M3x5 A-K GRUB SCREW
16	09D-29-00-M4x10 A-K C-SINK SCREW
6	09D-29-00-M4x4 A-K GRUB SCREW
6	09D-29-00-M4x7 A-K GRUB SCREW
28	09D-29-00-M5 DOME NUT
4	09D-29-00-M5 NUT
4	09D-29-00-M5x16 A-K C-SINK SCREW
4	09D-29-00-M5x28 A-K CYL HEAD SCREW
4	09D-29-00-M6 DOME NUT
8	09D-29-00-M6x18 A-K C-SINK SCREW
4	09D-29-00-M6x22 A-K C-SINK SCREW
8	09D-29-00-M8x20 A-K C-SINK SCREW

**GENERAL NOTES:**

- ALL DRAWINGS ARE IN METRIC MEASUREMENTS
- ALL ENGINEERING PRACTICES SHALL BE APPLIED WITH REGARDS TO HOLE AND SHAFT TOLERANCES.
- WHERE SCREWS OR BOLTS ARE USED THE CLEARANCE HOLES SHALL BE APPROXIMATELY 5% TO 8% LARGER THAN THE MATCHING TAPPED HOLE.
- PREFERABLY ALL TAPPED HOLES AND MATCHING SCREWS AND/OR BOLTS TO BE METRIC FINE (MF)
- MATERIALS SPECIFIED ON THE DRAWINGS ARE INDICATIVE ONLY. THE BUILDER CAN MAKE HIS/HER OWN MATERIAL CHOICE.
- ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.
- COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.
- 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.
- 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.
- THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.
- A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.
- THE MANNER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.
- USE LOCTITE, ON SCREW OR PRESS FIT CONNECTIONS OR SURFACES, WERE DEEMED NECESSARY TO PREVENT PARTS FROM LOOSENING.
- WASHERS AND/OR SPRING WASHERS SHALL BE USED WHERE DEEMED NECESSARY.
- INQUIRE AT THE APPROPRIATE AUTHORITIES WHETHER OR NOT THIS BOILER REQUIRE 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.

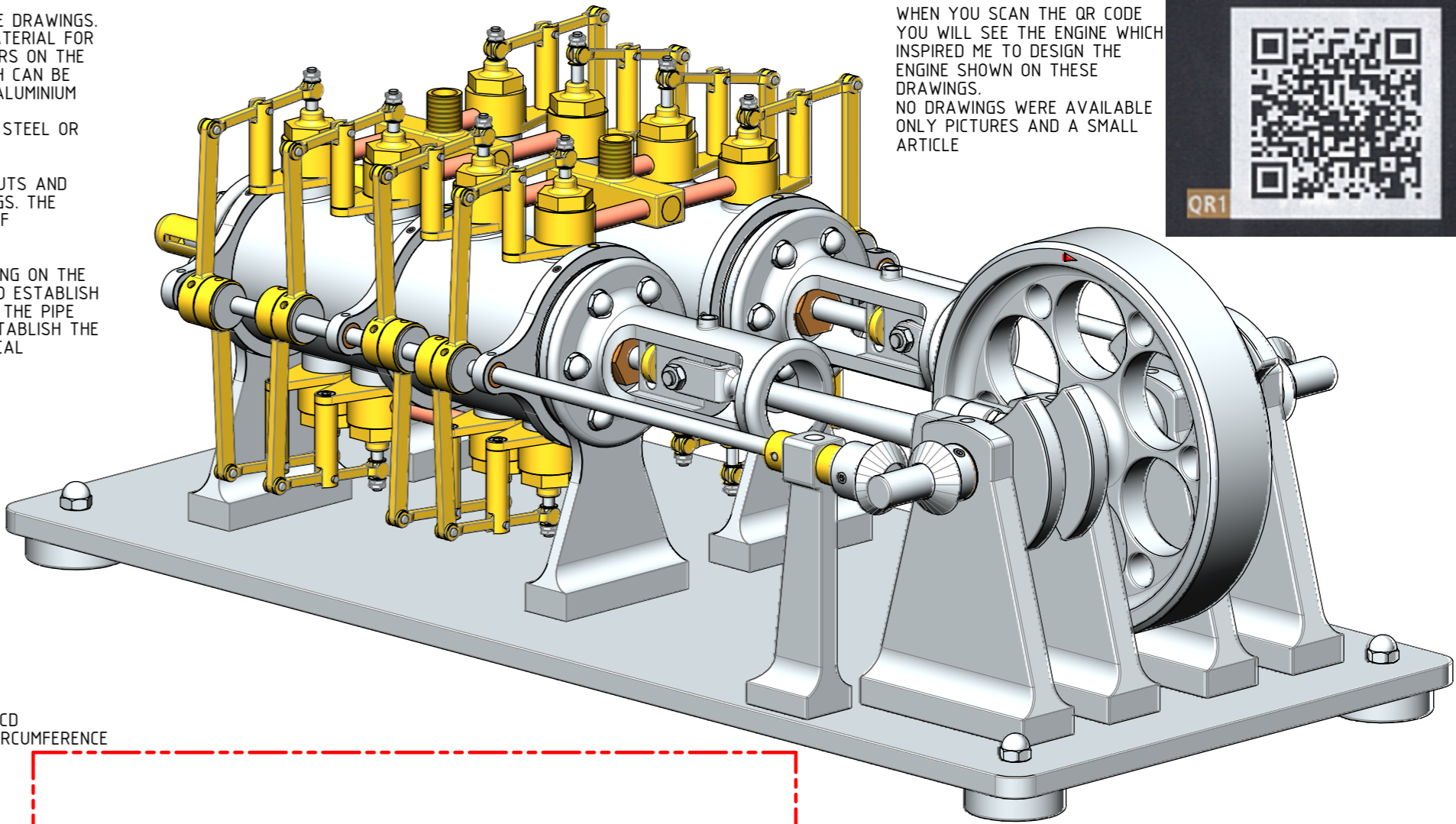
**ADDITIONAL NOTES ABOUT THESE DRAWINGS:**

- 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
- FASTENERS. FASTENERS SUCH AS BOLTS, SCREWS, RIVETS, NUTS AND WASHERS HAVE BEEN SHOWN ON THESE DRAWINGS. THE BUILDER TO CHOOSE ITS OWN PREFERRED TYPE OF FASTENERS.
- PIPING. PREFERABLY ALL PIPING TO BE COPPER. THE PIPING ON THE DRAWINGS ARE INDICATIVE ONLY. THE BUILDER TO ESTABLISH THE PIPE LENGTH AND ROUTE FROM WORK PIECE. THE PIPE SIZES ARE INDICATIVE ONLY. THE BUILDER TO ESTABLISH THE AVAILABILITY OF THE PIPE SIZE(S) FROM THE LOCAL SUPPLIER(S).

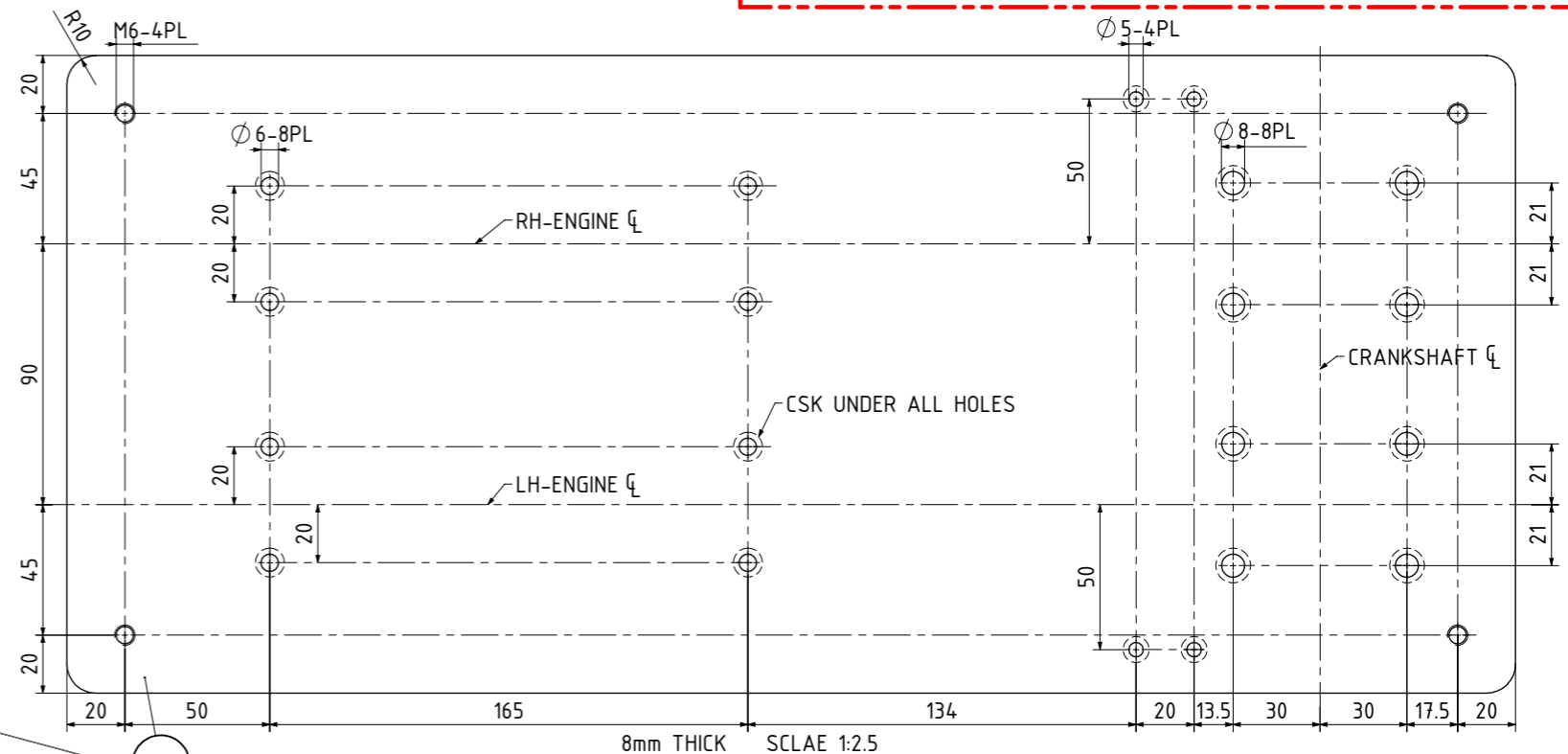
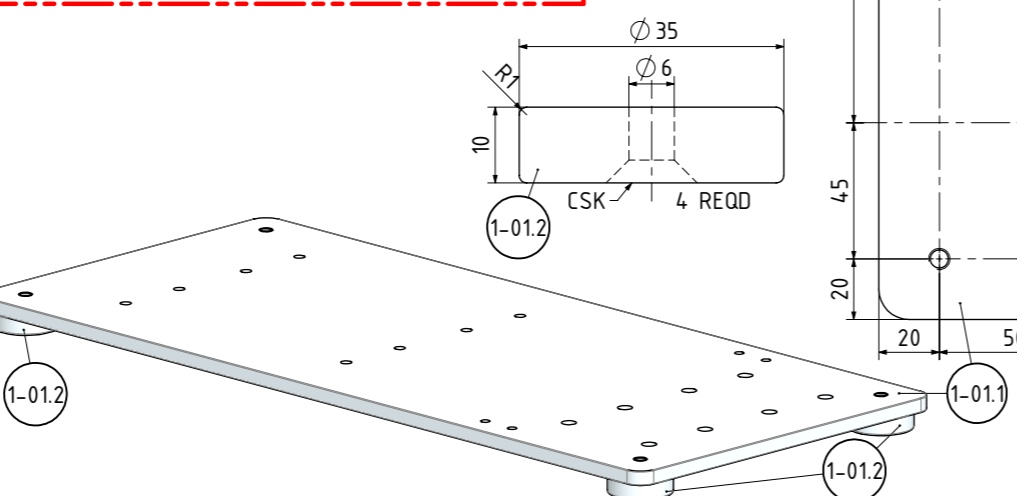
**OTHER ABBREVIATIONS**

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

WHEN YOU SCAN THE QR CODE YOU WILL SEE THE ENGINE WHICH INSPIRED ME TO DESIGN THE ENGINE SHOWN ON THESE DRAWINGS. NO DRAWINGS WERE AVAILABLE ONLY PICTURES AND A SMALL ARTICLE



THIS IS THE USED BEVEL GEARS SHOWN ON THESE DRAWINGS. THE BUILDER CAN CHOOSE HIS/HER OWN GEARS. THE GEAR RATIO SHOULD BE 1:1



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TITLE  
**EXP. DUPLEX COMPOUND STEAM ENGINE WITH INDIVIDUAL INLET & EXHAUST VALVES**

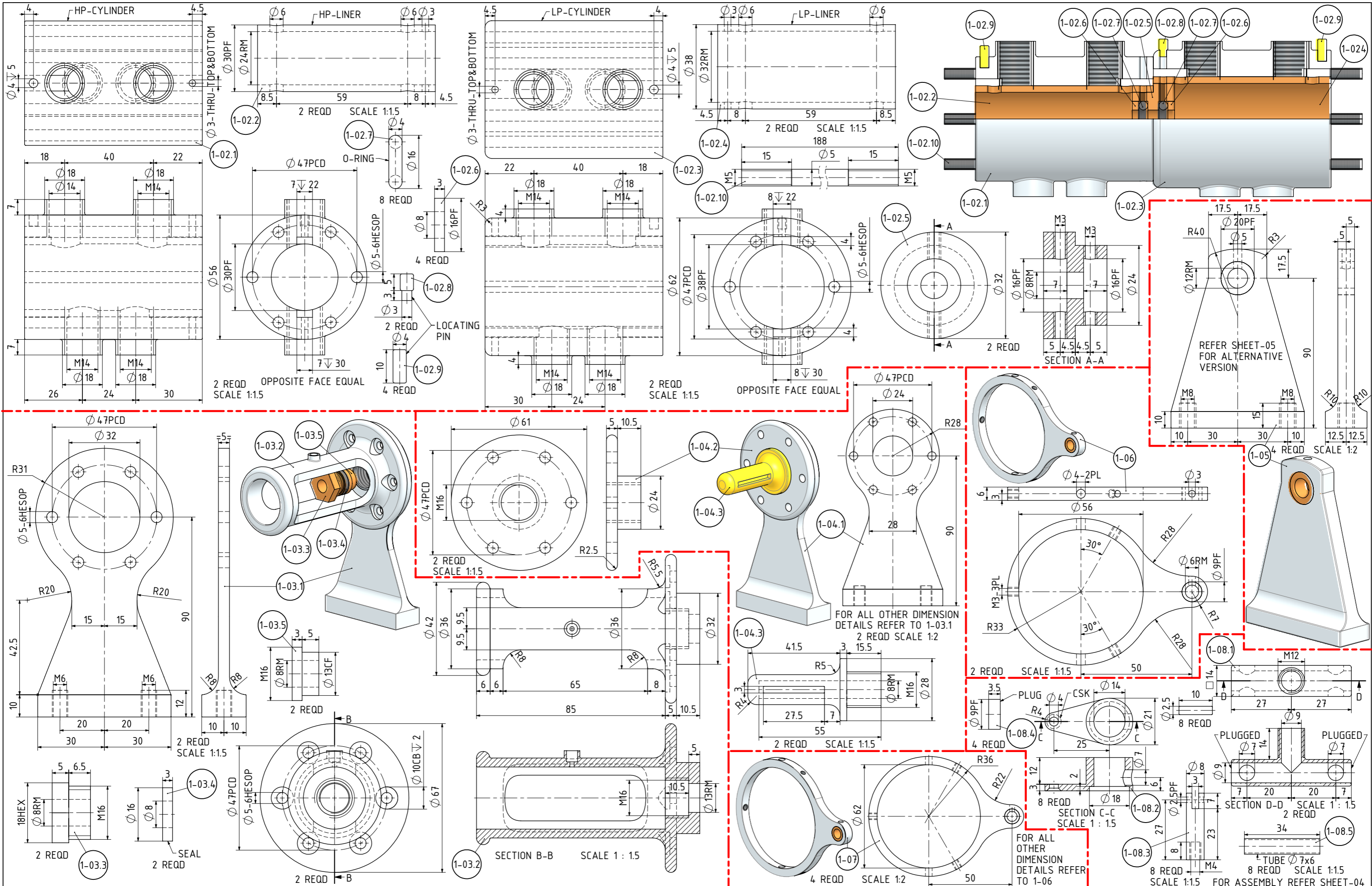
DRAWING CONTENTS  
**ISOMETRIC VIEW, BILL OF MATERIALS NOTES, PARTS AND ASSEMBLIES**

PROJECT No 09D-29-00  
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PROJECTION  
  
**JDWDS**  
DATE MAY 2023  
SHEET: 02 OF 06

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DRAWING CONTENTS  
**PARTS AND ASSEMBLIES**

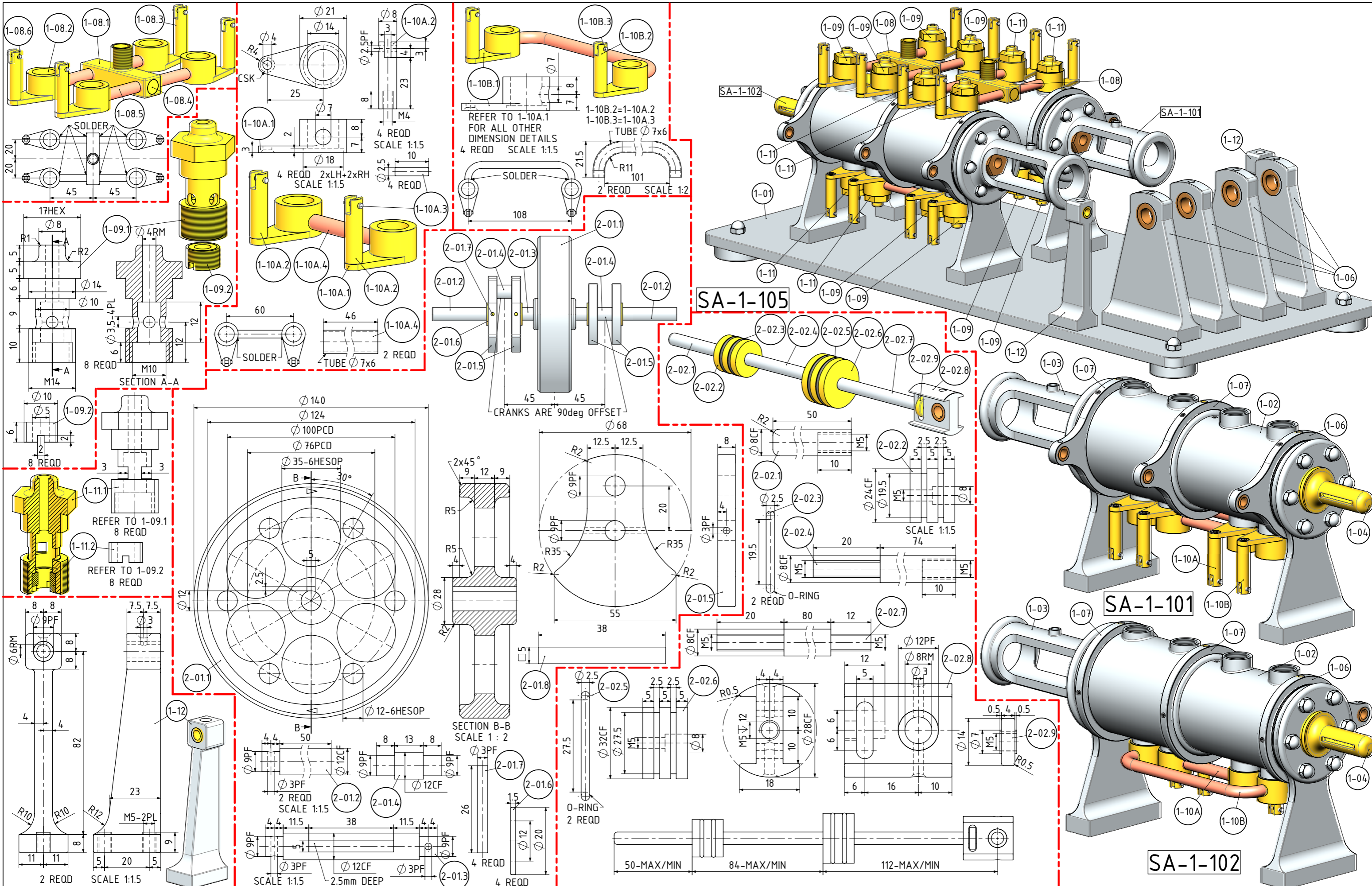
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PROJECTION  
**JDWDS**  
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 SHEET: 03 OF 06

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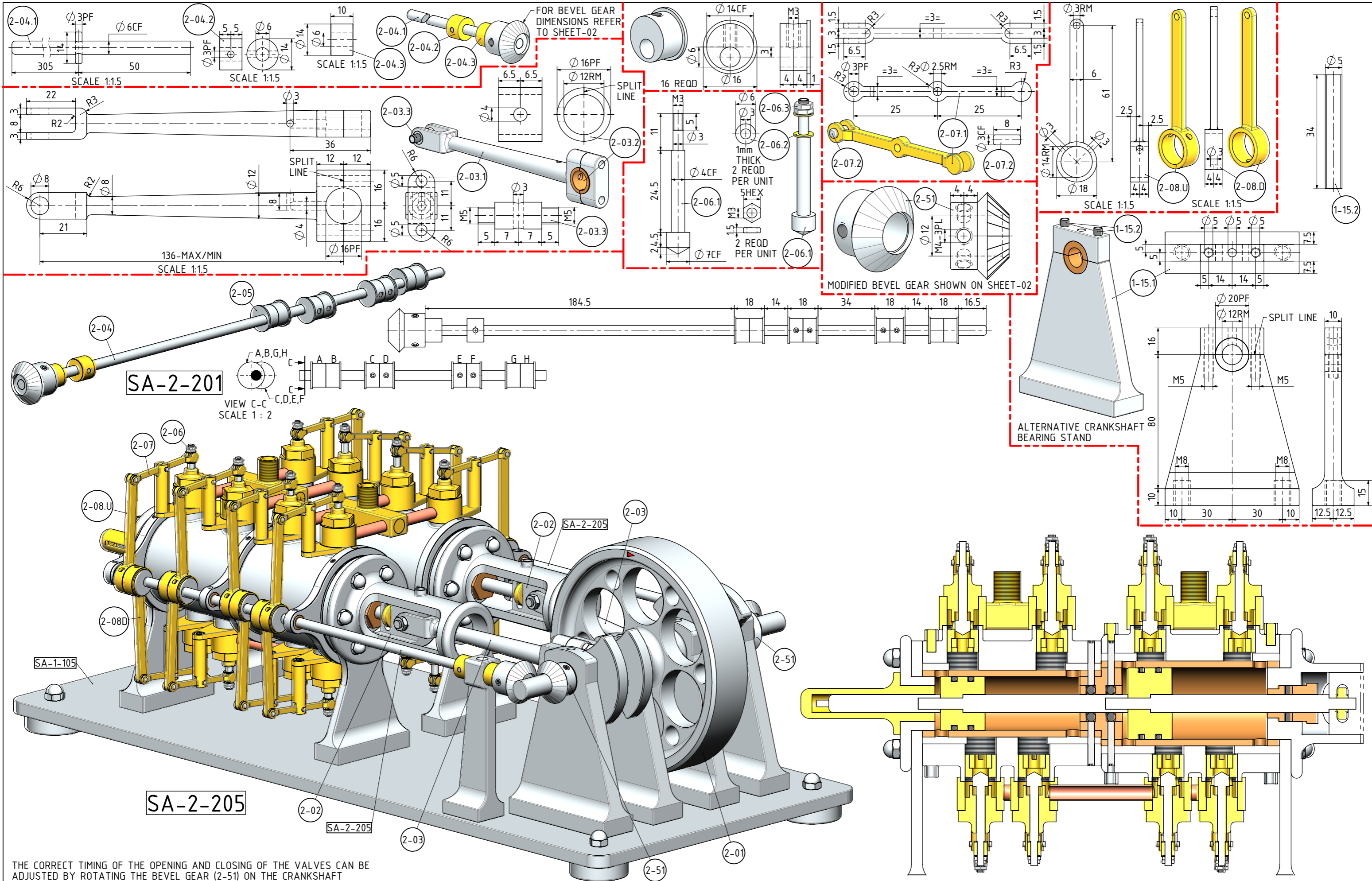
DRAWING CONTENTS  
**PARTS AND ASSMBLIES**

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THE CORRECT TIMING OF THE OPENING AND CLOSING OF THE VALVES CAN BE ADJUSTED BY ROTATING THE BEVEL GEAR (2-51) ON THE CRANKSHAFT

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DRAWING CONTENTS  
**PARTS AND ASSMBLIES**

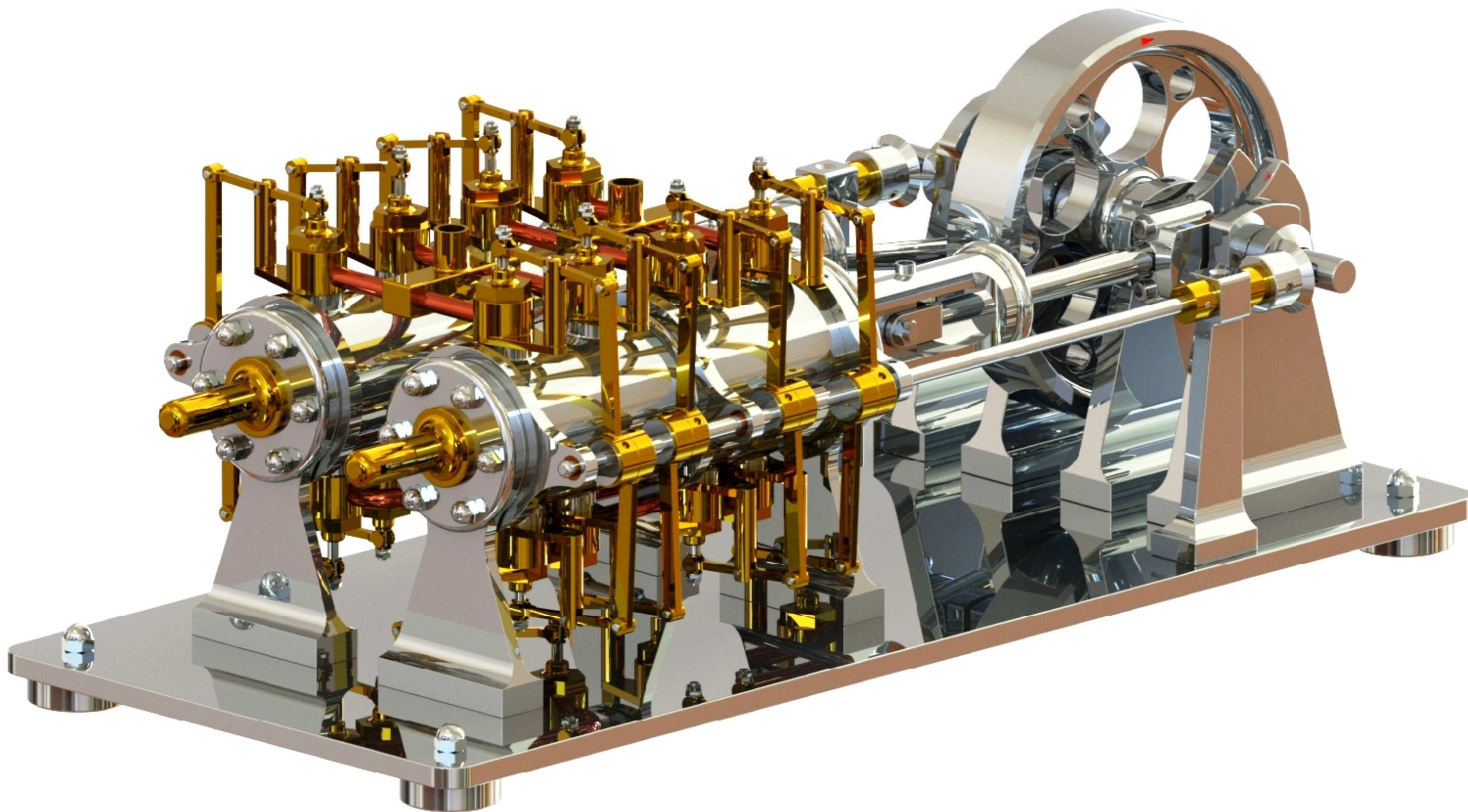
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PROJECTION  
**JDWDS**  
 DATE MAY 2023  
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DRAWING CONTENTS  
**RENDERED PICTURE**

PROJECT No 09D-29-00

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PROJECTION



DATE

MAY 2023

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