

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 REFERRED 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.
14. N/A
- XX. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.

MATERIAL ABBREVIATIONS:

- ALU = ALUMINIUM
- HALU= HARD ALUMINIUM
- BRS = BRASS
- BRZ = BRONZE OR GUNMETAL (BRZ/GM)
- CI = CAST IRON
- CU = COPPER
- GRA = GRAPHITE
- MS = MILD STEEL/BRIGHT MILD STEEL
- SS = 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 SHOULD BE ABLE TO WITHSTAND THE HEAT AND PRESSURE(S) APPLIED TO THEM.
- nnn/nnn MEANS THAT EITHER MATERIAL CAN BE USED

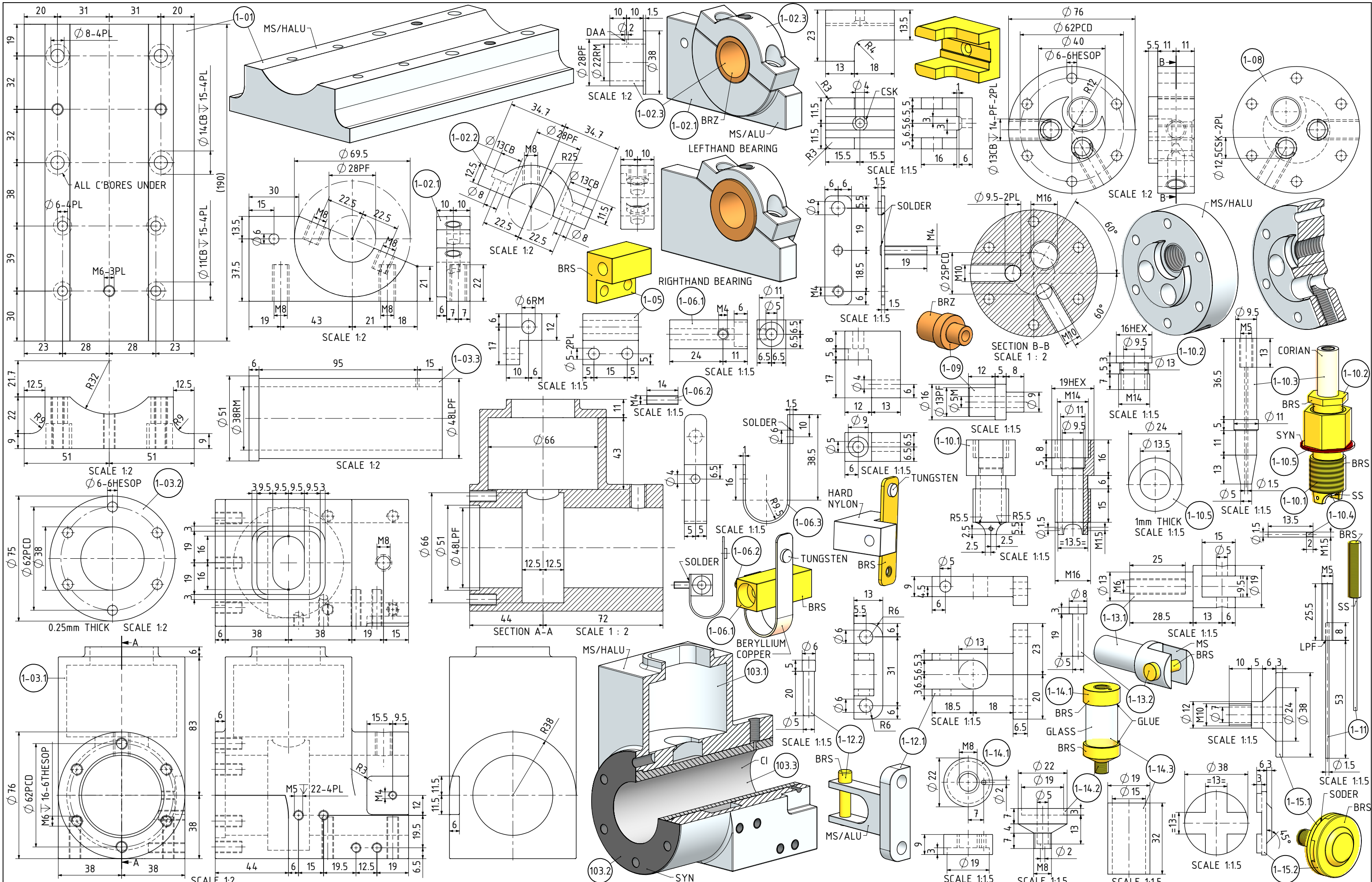
OTHER ABBREVIATIONS

- DP = DEEP
- 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
- [SA-xxx]= SUB ASSEMBLY-xxx

QTY.	PART NUMBER
1	01-30-00-1-01-BASE PLATE
1	01-30-00-1-02-LH+RH-BEARING BLOCK
1	01-30-00-1-02-LH+RH-BEARING BLOCK
1	01-30-00-1-03-CYLINDER HOUSING
1	01-30-00-1-04-SLIDE BEARING BLOCK
1	01-30-00-1-05-PUSH ROD BEARING
1	01-30-00-1-06-POINT PART-1
1	01-30-00-1-07-POINT PART-2
1	01-30-00-1-08-CYLINDER HEAD
2	01-30-00-1-09-VALVE GUIDE
1	01-30-00-1-10-SPARK PLUG
1	01-30-00-1-11-SPARK PLUG CORE WIRE
1	01-30-00-1-12-ROCKER ARM PIVOT
1	01-30-00-1-13-REGULATOR ARM PIVOT
3	01-30-00-1-14-OILER
1	01-30-00-1-15-EXHAUST MUFFLER
1	01-30-00-1-16-CARBURETOR
1	01-30-00-2-01-PISTON
2	01-30-00-2-02-PISTON RING
1	01-30-00-2-03-WRIST PIN
1	01-30-00-2-04-CRANKSHAFT
2	01-30-00-2-05-FLYWHEEL
1	01-30-00-2-06-CON-ROD
1	01-30-00-2-07-REGULATOR YOKE
2	01-30-00-2-08-REGULATOR FLYWEIGHT
2	01-30-00-2-09-FLYWHEEL SPRING
1	01-30-00-2-10-CRANKSHAFT GEAR WHEEL
1	01-30-00-2-11-IDLER GEAR WHEEL
1	01-30-00-2-12-CAM
1	01-30-00-2-13-REGULATOR BOBBIN
1	01-30-00-2-14-REGULATOR ARM
1	01-30-00-2-15-CAM FOLLOWER
1	01-30-00-2-16-CAM FOLLOWER ROLLER
2	01-30-00-2-17-VALVE
1	01-30-00-2-18-CAM FOLLOWER SPRING
1	01-30-00-2-19-INTAKE VALVE SPRING
1	01-30-00-2-20-EXHAUST VALVE SPRING
1	01-30-00-2-21-EXHAUST VALVE ROCKER ARM
6	01-30-00-M4 NUT-BRASS
4	01-30-00-M4 WASHER-BRASS
4	01-30-00-M4x4.5 A-K GRUB SCREW
1	01-30-00-M4x10 A-K C-SINK SCREW
1	01-30-00-M4x12 RND HD SCW-BRASS
3	01-30-00-M5 NUT-BRASS
2	01-30-00-M5 WASHER-BRASS
2	01-30-00-M5x8 A-K GRUB SCREW
2	01-30-00-M5x10 A-K CYL HEAD SCREW
2	01-30-00-M5x24 A-K CYL HEAD SCREW
1	01-30-00-M5x28 A-K CYL HEAD SCREW
1	01-30-00-M5x50 A-K CYL HEAD SCREW
2	01-30-00-M6x20 A-K C-SINK SCREW
8	01-30-00-M6x38 A-K CYL HEAD SCREW
2	01-30-00-M6x44 A-K CYL HEAD SCREW
3	01-30-00-M8x10 A-K CYL HEAD SCREW
4	01-30-00-M8x18 A-K CYL HEAD SCREW
4	01-30-00-M8x32 A-K CYL HEAD SCREW

ADDITIONAL NOTES:

- IF SOMEBODY IS PLANNING TO BUILD THIS ENGINE I WOULD STRONGLY ADVISE TO CONTACT DAVID KERZEL WITH REGARDS TO THE FOLLOWING:
- 1) WHAT TYPE OF IGNITION SYSTEM TO USE
 - 2) THE SETTING UP OF THE TIMING OF THE EXHAUST VALVE TO OPEN AND WHEN FIRING SHOULD TAKE PLACE.
 - 3) WHAT THE BEST TYPE OF FUEL IS FOR THIS ENGINE.
 - 4) WHAT MAXIMUM SPEED TO RUN THIS ENGINE AT
 - 5) AIR INTAKE FILTER REQUIRED
 - 6) OTHER CONCERNS



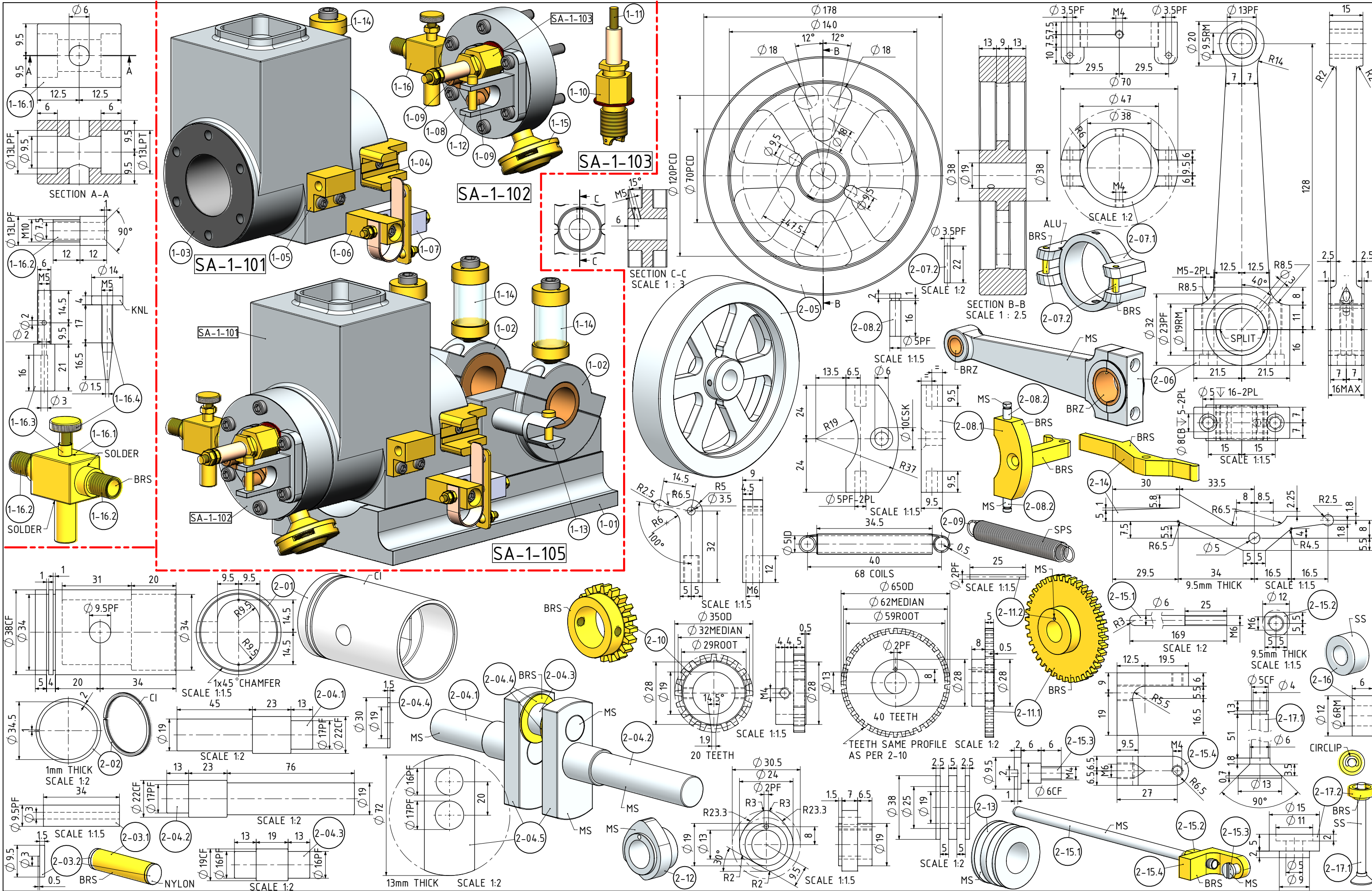
NOTES: THE ORIGINAL DRAWINGS AND THE ORIGINAL DESIGN WAS BY DAVID KERZEL. THE ORIGINAL DRAWINGS WERE GIVEN TO ME BUT CAME FROM THE FOLLOWING WEBSITE: <http://www.floridamae.org/Plans/HHM1/HHM1-Complete%20Engine%20Model.pdf> PLEASE NOTE THIS ENGINE IS 2x LARGER THAN THE ORIGINAL

TITLE
A SINGLE CYLINDER HORIZONTAL "HIT AND MISS" INTERNAL COMBUSTION ENGINE

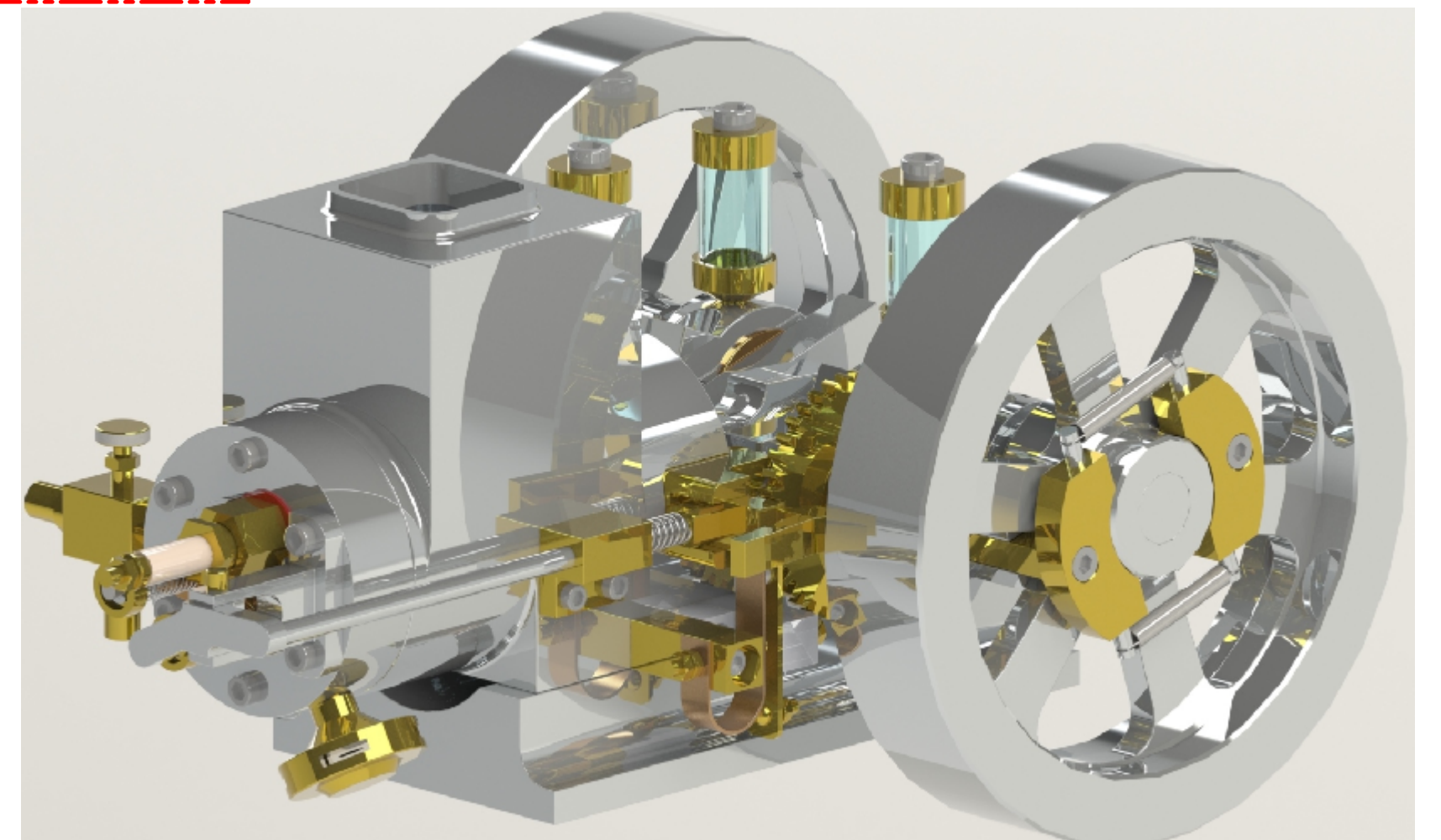
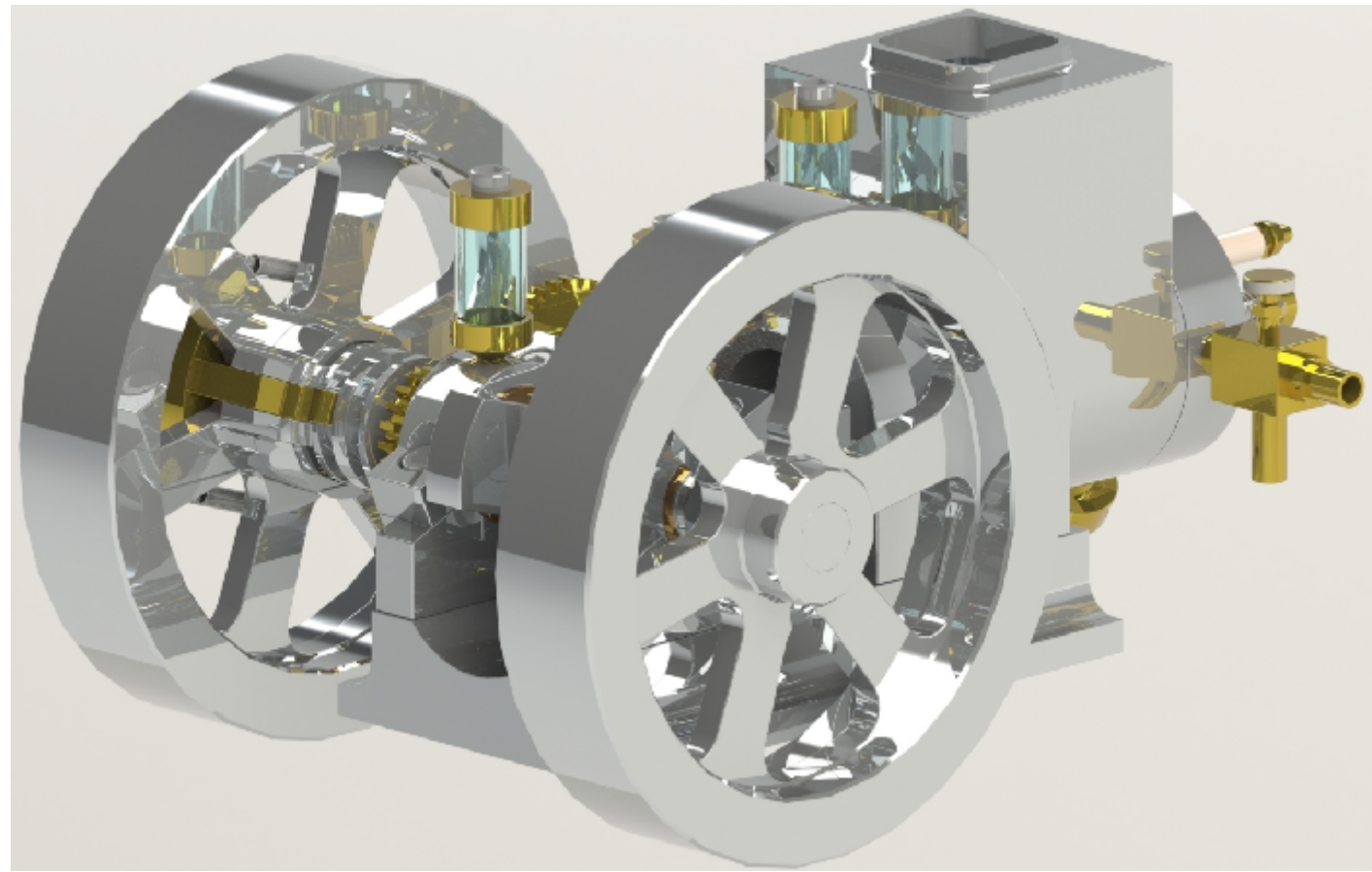
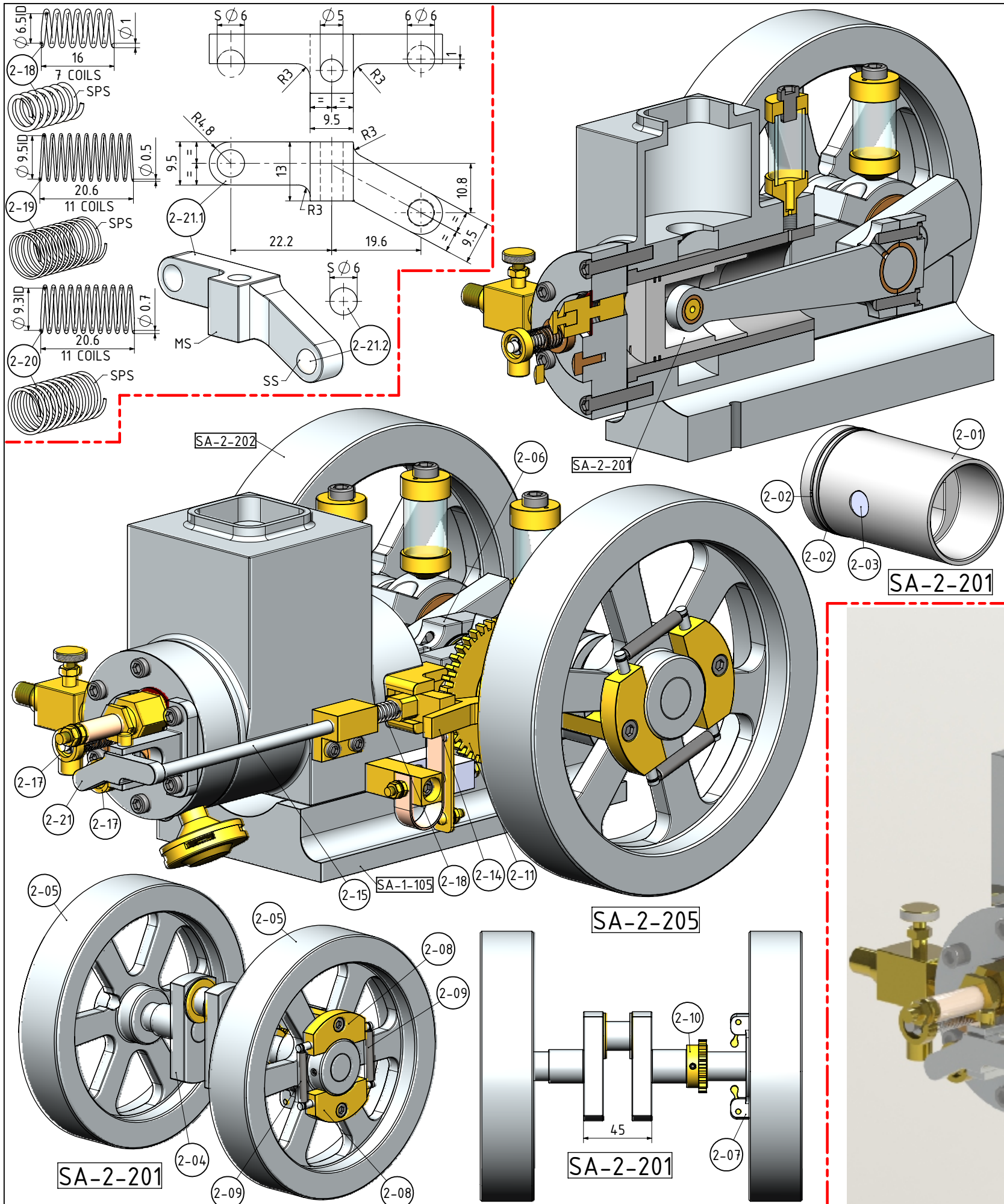
DRAWING CONTENTS
PARTS AND ASSEMBLIES

PROJECT No 01-30-00
 JDW DRAUGHTING SERVICES
 J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAKAPURA 2110.
 NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000
 E-MAIL: dewaal@xtra.co.nz.

PROJECTION
JDWDS
 DATE JUNE 2018
 MODEL SCALE: 1:1
 DWG SCALE: 1:1 @A3 OR AS SHOWN
 Copyright © J.A.M. DE WAAL PAKAPURA NZ
 SHEET: 03 OF 05 **A3** No: 01-30-00-SHT03



<p>TITLE</p> <p>A SINGLE CYLINDER HORIZONTAL "HIT AND MISS" INTERNAL COMBUSTION ENGINE</p>	<p>DRAWING CONTENTS</p> <p>PARTS AND ASSEMBLIES</p>	<p>PROJECT No 01-30-00</p> <p>JDW DRAUGHTING SERVICES</p> <p>J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAKAPURA 2110. NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz.</p>	<p>PROJECTION</p> <p>JDWDS</p> <p>DATE JUNE 2018</p> <p>MODEL SCALE: 1:1</p> <p>DWG SCALE: 1:1 @A3 OR AS SHOWN</p> <p>Copyright © J.A.M. DE WAAL PAKAPURA NZ</p> <p>SHEET: 04 OF 05 A3 No: 01-30-00-SHT04</p>
---	--	---	---



<p>NOTES: THE ORIGINAL DRAWINGS AND THE ORIGINAL DESIGN WAS BY DAVID KERZEL. THE ORIGINAL DRAWINGS WERE GIVEN TO ME BUT CAME FROM THE FOLLOWING WEBSITE: http://www.floridaa.me.org/Plans/HHM1/HHM1-Complete%20Engine%20Mcdel.pdf PLEASE NOTE THIS ENGINE IS 2x LARGER THAN THE ORIGINAL</p>		<p>PROJECT No 01-30-00</p>	
<p>TITLE A SINGLE CYLINDER HORIZONTAL "HIT AND MISS" INTERNAL COMBUSTION ENGINE</p>		<p>PROJECTION JDWDS MODEL SCALE: 1:1 DATE JUNE 2018 DWG SCALE: 1:1 @A3 OR AS SHOWN Copyright © J.A.M. DE WAAL PAPAKURA NZ</p>	
<p>DRAWING CONTENTS PARTS AND ASSEMBLIES</p>		<p>NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz</p>	
<p>SA-2-201</p>		<p>DATE JUNE 2018 SHEET: 05 OF 05 A3 No: 01-30-00-SHT05</p>	