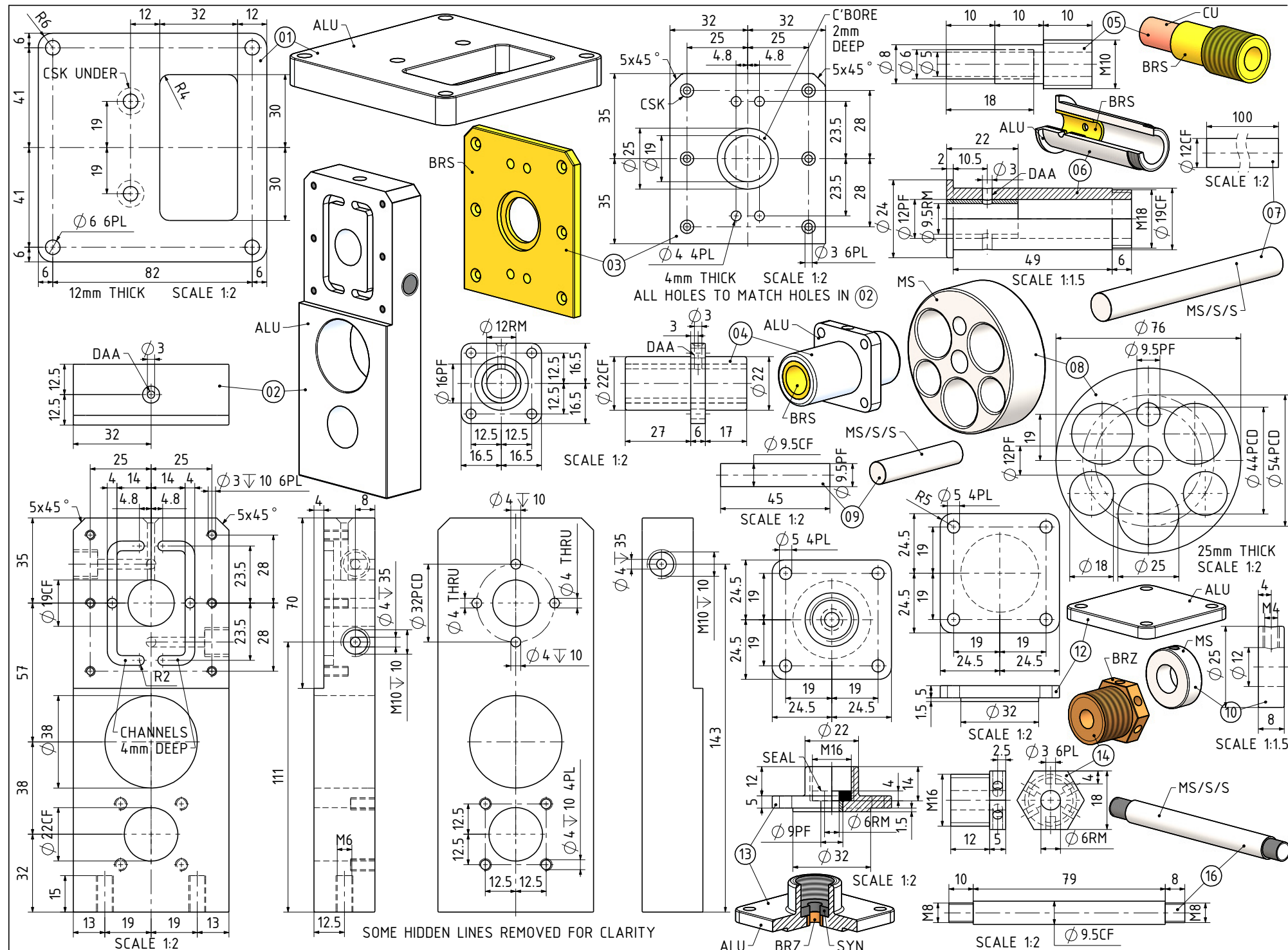


QTY.	PART NUMBER
1	EVG-P36-01-BASE PLATE
1	EVG-P36-02-COLUMN
1	EVG-P36-03-COLUMN PORT FACE PLATE
1	EVG-P36-04-CRANK SHAFT BEARING PLATE
2	EVG-P36-05-STEAM PIPE CONNECTOR
1	EVG-P36-06-PIVOT BEARING
1	EVG-P36-07-CRANKSHAFT
1	EVG-P36-08-FLYWHEEL-CRANK
1	EVG-P36-09-CRANK PIN
1	EVG-P36-10-CRANKSHAFT LOCKING COLLAR
1	EVG-P36-11-CYLINDER
1	EVG-P36-12-CYLINDER TOP COVER
1	EVG-P36-13-CYLINDER BOTTOM COVER
1	EVG-P36-14-PISTON ROD PACKNUT
1	EVG-P36-15-CROSSHEAD GUIDE
1	EVG-P36-16-CYLINDER PIVOT SHAFT
1	EVG-P36-17-PISTON
1	EVG-P36-18-PISTON ROD
1	EVG-P36-19-CROSSHEAD
1	EVG-P36-20-REVERSER VALVE
1	EVG-P36-21-REVERSER VALVE WASHER
1	EVG-P36-22-REVERSER VALVE PRESSURE SPRING
1	EVG-P36-23-REVERSER VALVE LOCKING NUT
1	EVG-P36-24-PIVOT SHAFT WASHER
1	EVG-P36-25-PIVOT SHAFT PRESSURE SPRING
1	EVG-P36-26-PIVOT SHAFT LOCKING NUT
6	EVG-P36-M3x12 C-SINK SCREW
1	EVG-P36-M4x6.5 GRUB SCREW
4	EVG-P36-M4x14 PAN HEAD SCREW
8	EVG-P36-M5x14 PAN HEAD SCREW
2	EVG-P36-M6x25 C-SINK SCREW
1	EVG-P36-M8 DOME NUT

MATERIAL ABBREVIATIONS:
 ALU = ALUMINIUM OR DURAL(MIN)
 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
 COULD BE ABLE TO WITHSTAND THE
 HEAT AND PRESSURE(S) APPLIED TO
 THEM.
 nnn/nnn MEANS THAT EITHER MATERIAL
 CAN BE USED

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. N/A
6. ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.
7. COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.
8. 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.
9. 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.
10. THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.
11. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.
12. A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.
13. THE MANNER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.




NOTES: THE ORIGINAL DRAWINGS AND ARTICLE OF THIS ENGINE WERE BY ELMER VERBURG AND PUBLISHED IN A BOOK AS CHAPTER 36. THE ORIGINAL DRAWINGS WERE POSTED ON: WWW.JOHN-TOM.COM (THIS ENGINE IS 2 TIMES LARGER THAN THE ORIGINAL)

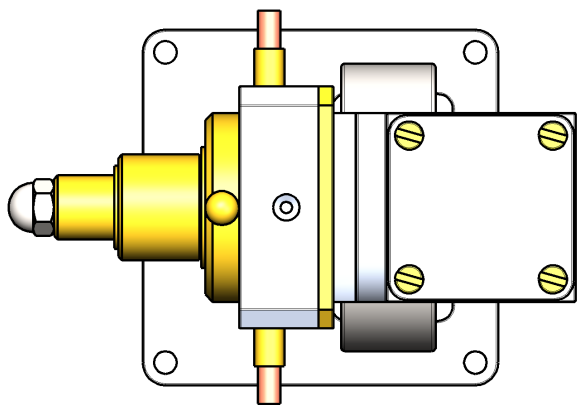
TITLE	1-CYL. VERTICAL OSCILLATING STEAM ENGINE WITH REVERSER (VERT. REV. WOBBLER)
-------	--

DRAWING CONTENTS

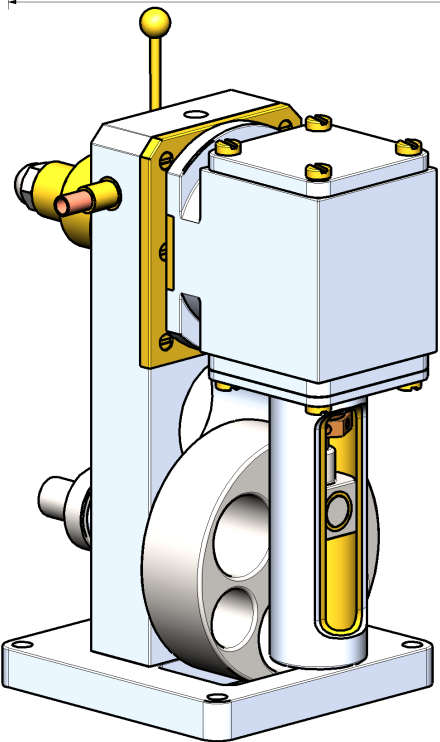
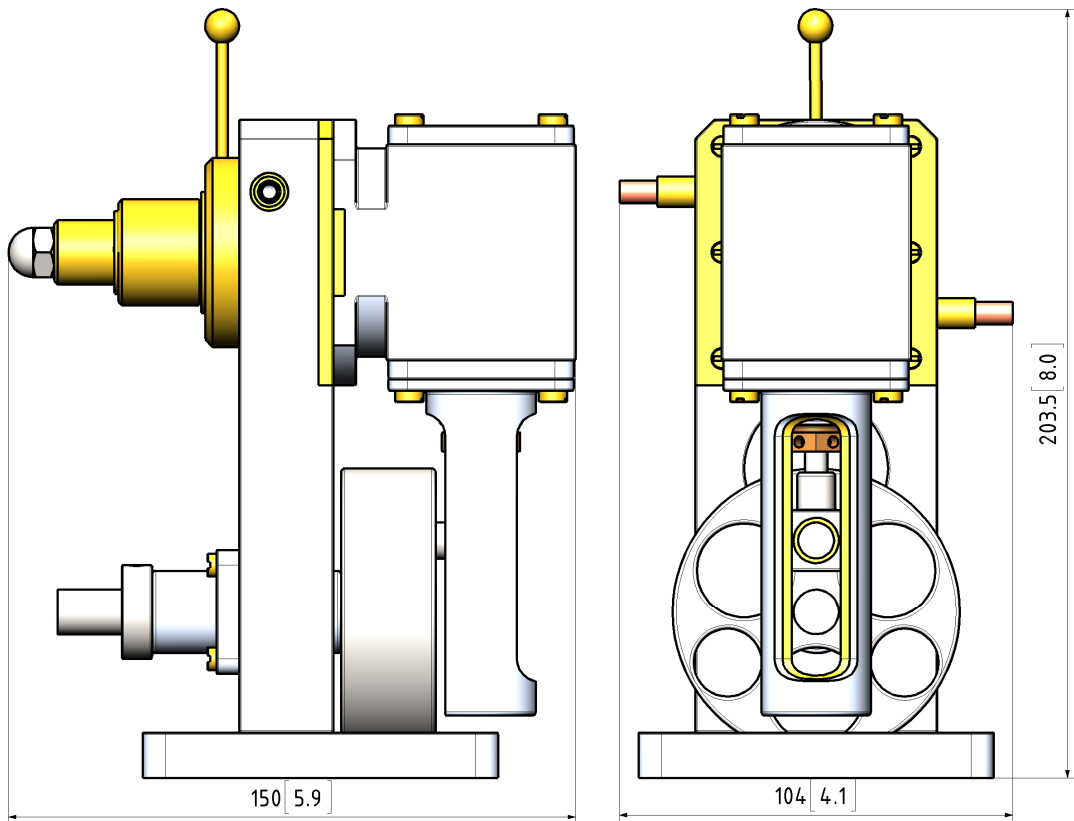
G.A., ISOMETRIC VIEW, BOM, NOTES, PARTS AND ASSEMBLIES

PROJECT No 10-36-00
<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>

PROJECTION	JDWDS	MODEL SCALE: 1:1
		DWG SCALE: 1:1 @A3 OR AS SHOWN
DATE	MARCH-2016	Copyright © J.A.M. DE WAAL PAPA KURA NZ
SHEET: 01 OF 02		A3 No: EVG-P36-01



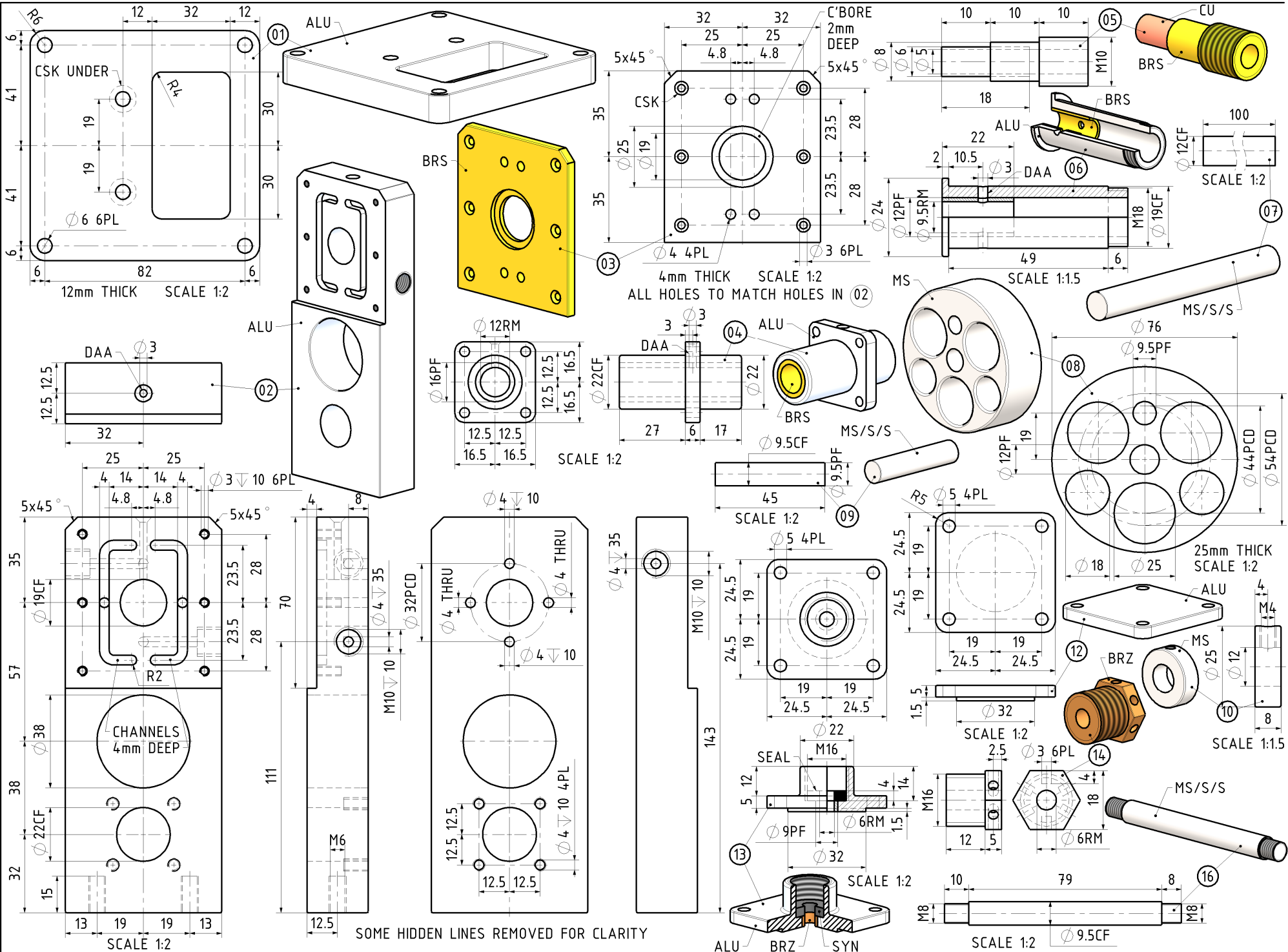
OTHER ABBREVIATIONS
DP = DEEP
PF = PRESS FIT
PCD = PITCH CIRCLE DIAMETER
RM = REAM
HEX = HEXACON, 6SIDED
CP = COMPRESSED
KNL = KNURLED
CSK = COUNTERSINK
PL = PLACES
CF = CLOSE FIT (SIZE FOR SIZE)
DAA= DRILL AFTER ASSEMBLY
PFAA= PRESSFIT AFTER ASSEMBLY
LCT = USE LOCTITE
LPF = LIGHT PRESS FIT
SA-xxx= SUB ASSEMBLY-xxx

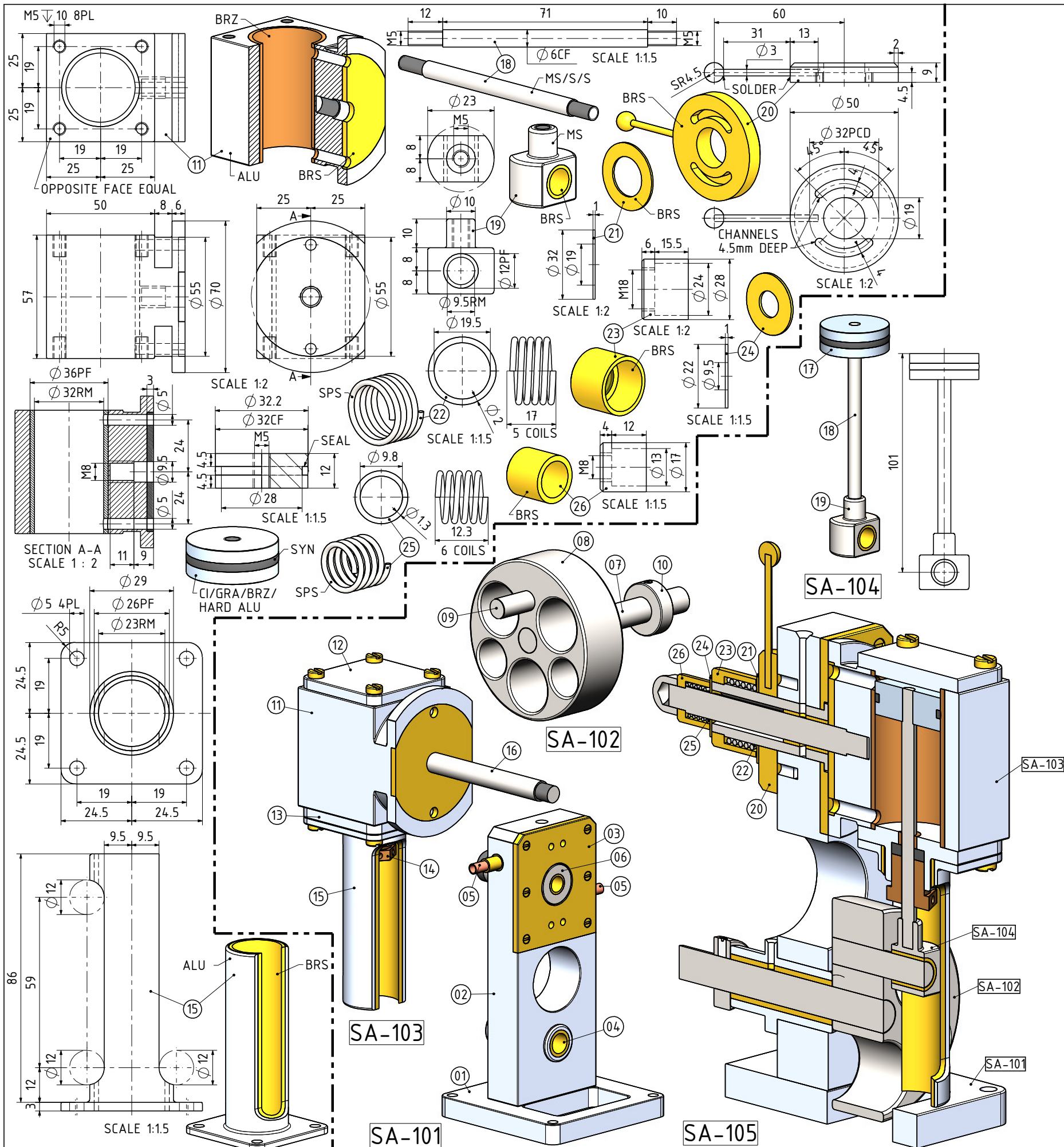


QTY.	PART NUMBER
1	EVG-P36-01-BASE PLATE
1	EVG-P36-02-COLUMN
1	EVG-P36-03-COLUMN PORT FACE PLATE
1	EVG-P36-04-CRANK SHAFT BEARING PLATE
2	EVG-P36-05-STEAM PIPE CONNECTOR
1	EVG-P36-06-PIVOT BEARING
1	EVG-P36-07-CRANKSHAFT
1	EVG-P36-08-FLYWHEEL-CRANK
1	EVG-P36-09-CRANK PIN
1	EVG-P36-10-CRANKSHAFT LOCKING COLLAR
1	EVG-P36-11-CYLINDER
1	EVG-P36-12-CYLINDER TOP COVER
1	EVG-P36-13-CYLINDER BOTTOM COVER
1	EVG-P36-14-PISTON ROD PACKNUT
1	EVG-P36-15-CROSSHEAD GUIDE
1	EVG-P36-16-CYLINDER PIVOT SHAFT
1	EVG-P36-17-PISTON
1	EVG-P36-18-PISTON ROD
1	EVG-P36-19-CROSSHEAD
1	EVG-P36-20-REVERSER VALVE
1	EVG-P36-21-REVERSER VALVE WASHER
1	EVG-P36-22-REVERSER VALVE PRESSURE SPRING
1	EVG-P36-23-REVERSER VALVE LOCKING NUT
1	EVG-P36-24-PIVOT SHAFT WASHER
1	EVG-P36-25-PIVOT SHAFT PRESSURE SPRING
1	EVG-P36-26-PIVOT SHAFT LOCKING NUT
6	EVG-P36-M3x12 C-SINK SCREW
1	EVG-P36-M4x6.5 GRUB SCREW
4	EVG-P36-M4x14 PAN HEAD SCREW
8	EVG-P36-M5x14 PAN HEAD SCREW
2	EVG-P36-M6x25 C-SINK SCREW
1	EVG-P36-M8 DOME NUT

MATERIAL ABBREVIATIONS:
ALU = ALUMINIUM OR DURAL(MIN)
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 SHOULD BE ABLE TO WITHSTAND THE HEAT AND PRESSURE(S) APPLIED TO THEM.
nnn/nnn MEANS THAT EITHER MATERIAL CAN BE USED

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. N/A
6. ALL CONNECTIONS/JOINTS WHICH HAVE STEAM PRESSURE APPLIED TO IT SHALL BE SILVER/HARD SOLDERED.
7. COMPRESSION SPRINGS ARE DRAWN IN COMPRESSED STATE (CP), UNCOMPRESSED STATE IS APPROX 40% TO 60% LONGER THEN COMPRESSED STATE.
8. 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.
9. 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.
10. THE ORDER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED AND THE MODEL IS ASSEMBLED IS ENTIRELY LEFT TO THE BUILDER/MODEL MAKER.
11. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.
12. A COLOUR SCHEME FOR THIS PROJECT IS ENTIRELY LEFT UP TO THE MODEL MAKER.
13. THE MANNER IN WHICH THE PARTS/COMPONENTS ARE MANUFACTURED IS ENTIRELY LEFT UP TO THE BUILDER.






NOTES: THE ORIGINAL DRAWINGS AND ARTICLE OF THIS ENGINE WERE BY ELMER VERBURG AND PUBLISHED IN A BOOK AS CHAPTER 36. THE ORIGINAL DRAWINGS WERE POSTED ON: WWW.JOHN-TOM.COM (THIS ENGINE IS 2 TIMES LARGER THAN THE ORIGINAL)

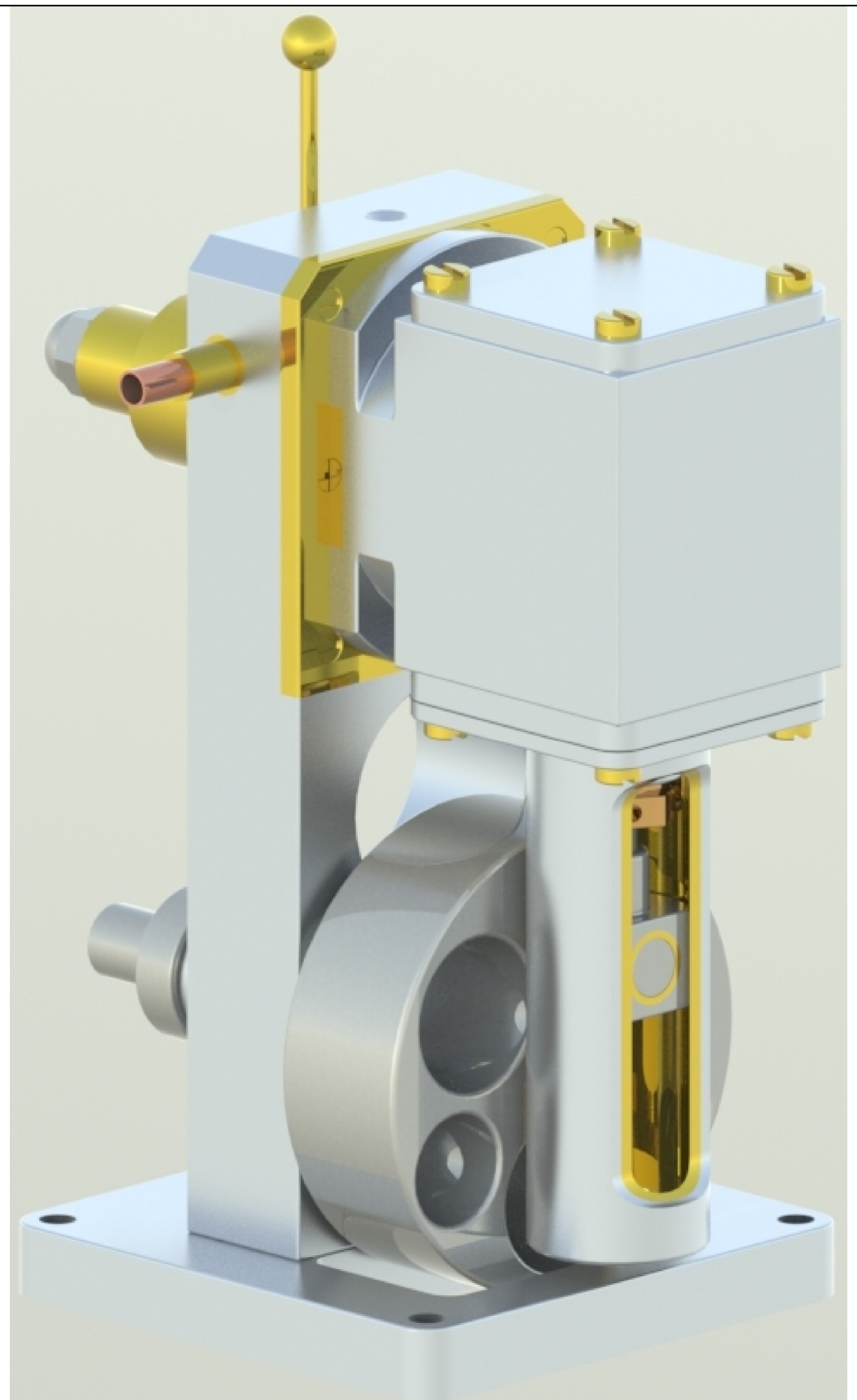
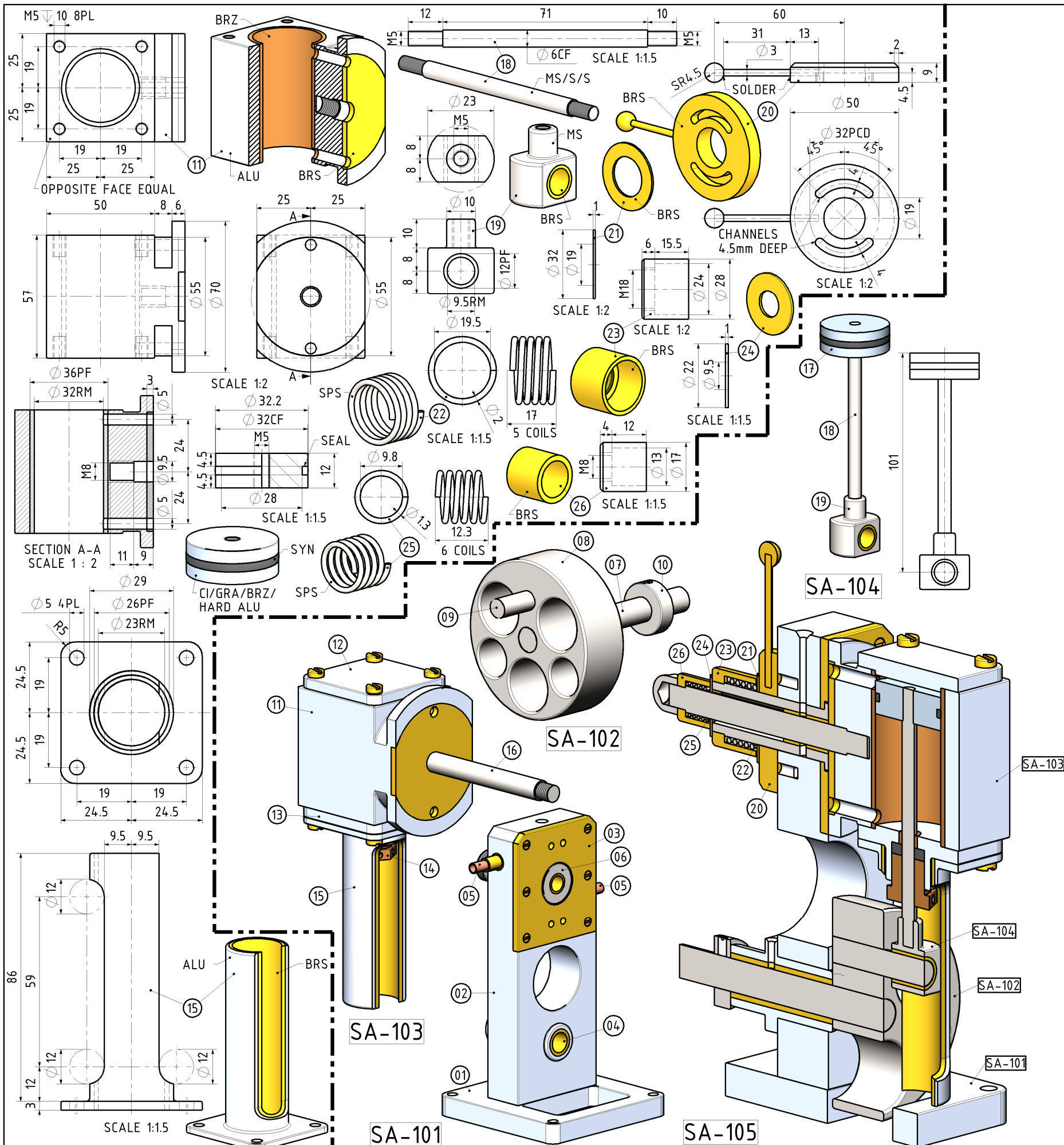
TITLE
1-CYL. VERTICAL OSCILLATING STEAM ENGINE WITH REVERSER (VERT. REV. WOBBLER)

DRAWING CONTENTS

PARTS AND ASSEMBLIES

PROJECT No 10-36-00
<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>

PROJECTION	JDWDS	MODEL SCALE: 1:1
		DWG SCALE: 1:1 @A3 OR AS SHOWN
DATE	MARCH-2016	Copyright © J.A.M. DE WAAL PAPAKURA N
SHEET: 02 OF 02		A3 No: EVG-P36-02



NOTES: THE ORIGINAL DRAWINGS AND ARTICLE OF THIS ENGINE WERE BY ELMER VERBURG AND PUBLISHED IN A BOOK AS CHAPTER 36. THE ORIGINAL DRAWINGS WERE POSTED ON: WWW.JOHN-TOM.COM (THIS ENGINE IS 2 TIMES LARGER THAN THE ORIGINAL)			PROJECT No 10-36-00		PROJECTION		MODEL SCALE: 1:1	
TITLE			JDW DRAUGHTING SERVICES		DATE MARCH-2016		DWG SCALE: 1:1 @A3 OR AS SHOWN	
1-CYL. VERTICAL OSCILLATING STEAM ENGINE WITH REVERSER (VERT. REV. WOBBLER)			J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAKAPURA 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz.		Copyright © J.A.M. DE WAAL PAKAPURA NZ		SHEET: 02 OF 02	
DRAWING CONTENTS			A3		No: EVG-P36-02			