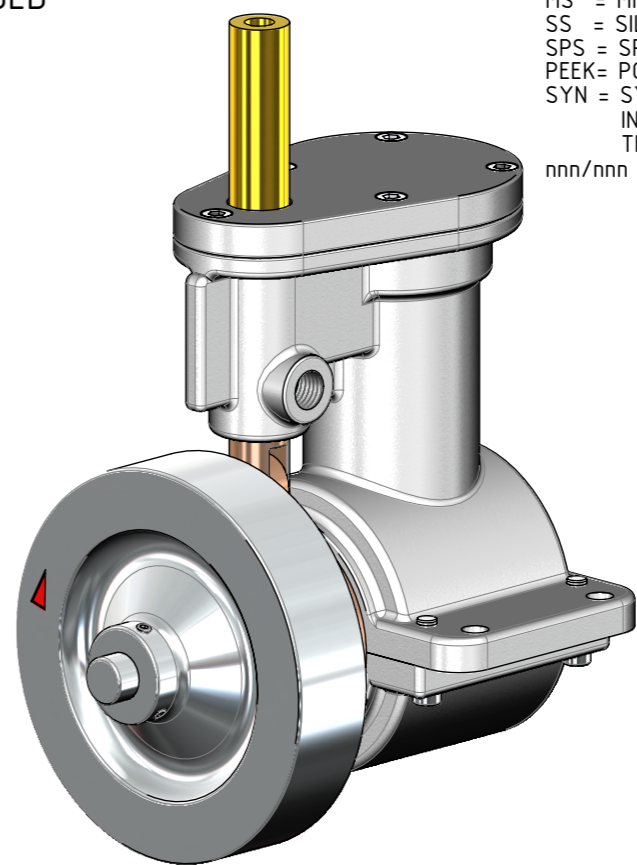
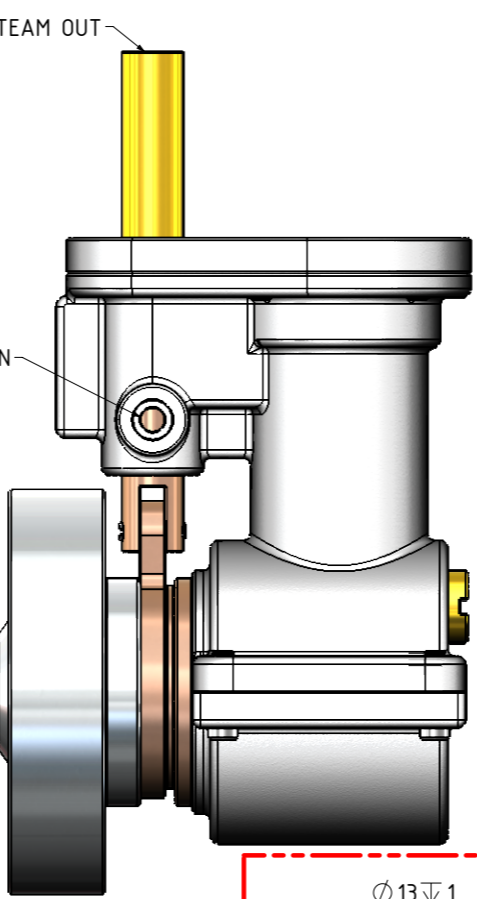
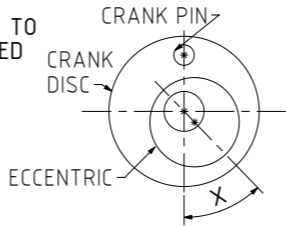


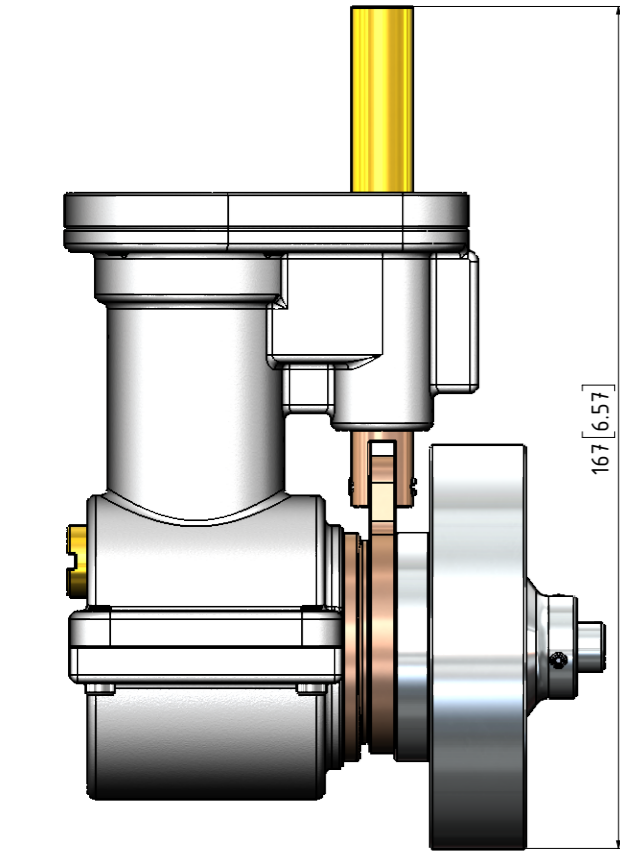
QTY.	PART NUMBER
1	09C-63-00-1-01-ENGINE FRAME
1	09C-63-00-2-01-CRANK SHAFT+FLYWHEEL
1	09C-63-00-2-02-PISTON
1	09C-63-00-2-03-CON-ROD
1	09C-63-00-2-04-PISTON VALVE
1	09C-63-00-2-05-ECCENTRIC STRAP
3	09C-63-00-M3x5.5 A-K GRUB SCREW
4	09C-63-00-M4x12 A-K C-SINK SCREW
4	09C-63-00-M4x14 A-K C-SINK SCREW
4	09C-63-00-M4x15 A-K CYL HEAD SCREW
1	09C-63-00-M5 NUT

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



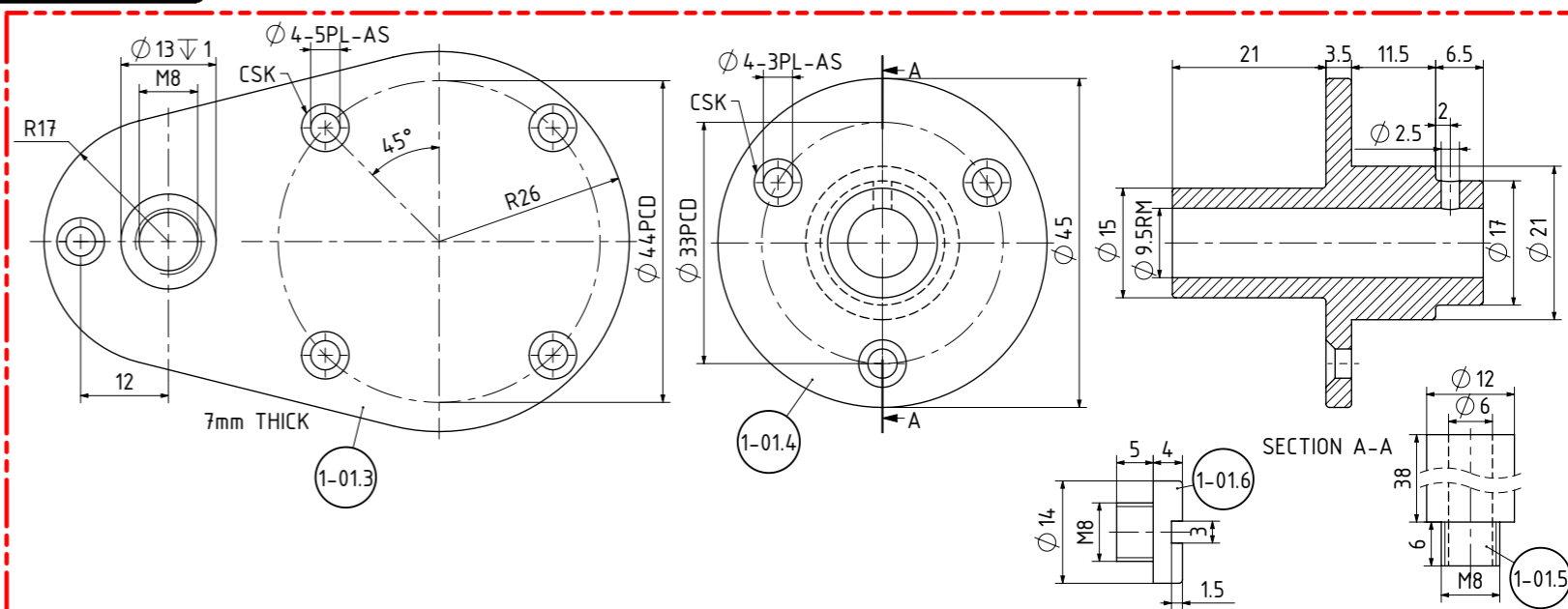
MATERIAL ABBREVIATIONS:  
 ALU = ALUMINIUM  
 HALU= HARD ALUMINIUM  
 BRS = BRASS  
 BRZ = BRONZE OR GUNMETAL (BRZ/GM)  
 CI = CAST IRON  
 CU = COPPER  
 GRA = GRAPHITE  
 MS = MILD STEEL/BRIGHT MILD STEEL  
 SS = SILVER STEEL OR STAINLESS STEEL  
 SPS = SPRING STEEL  
 PEEK= POLYETHER ETHER KETONE  
 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  
 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



ADDITIONAL NOTES ABOUT THESE DRAWINGS:  
 1) MATERIALS HAVE BEEN SPECIFIED ON THESE DRAWINGS.HOWEVER THE BUILDER CAN 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  
 2) 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 IF SO DESIRED.

GENERAL 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 SPRING WASHERS SHALL BE USED WHERE DEEMED NECESSARY.  
 14. REMOVE ALL SHARP EDGES  
 XX. ERRORS AND/OR OMISSIONS MAY OCCUR IN THE DRAWINGS, DO NOT HESITATE TO CONTACT ME SO THAT THE ERRORS/OMISSIONS CAN BE RECTIFIED.



NOTES: THE ORIGINAL DRAWING WAS GIVEN TO ME. THE TITLE WAS "BLACK NIGHT-STEAM ENGINE", DWG NUMBER L-609,DRAWN BY 'EED', DATED 12/76. THE ENGINE SHOWN ON THESE DRAWINGS IS 1.5 TIMES LARGER THAN THE ORIGINAL DESIGN.

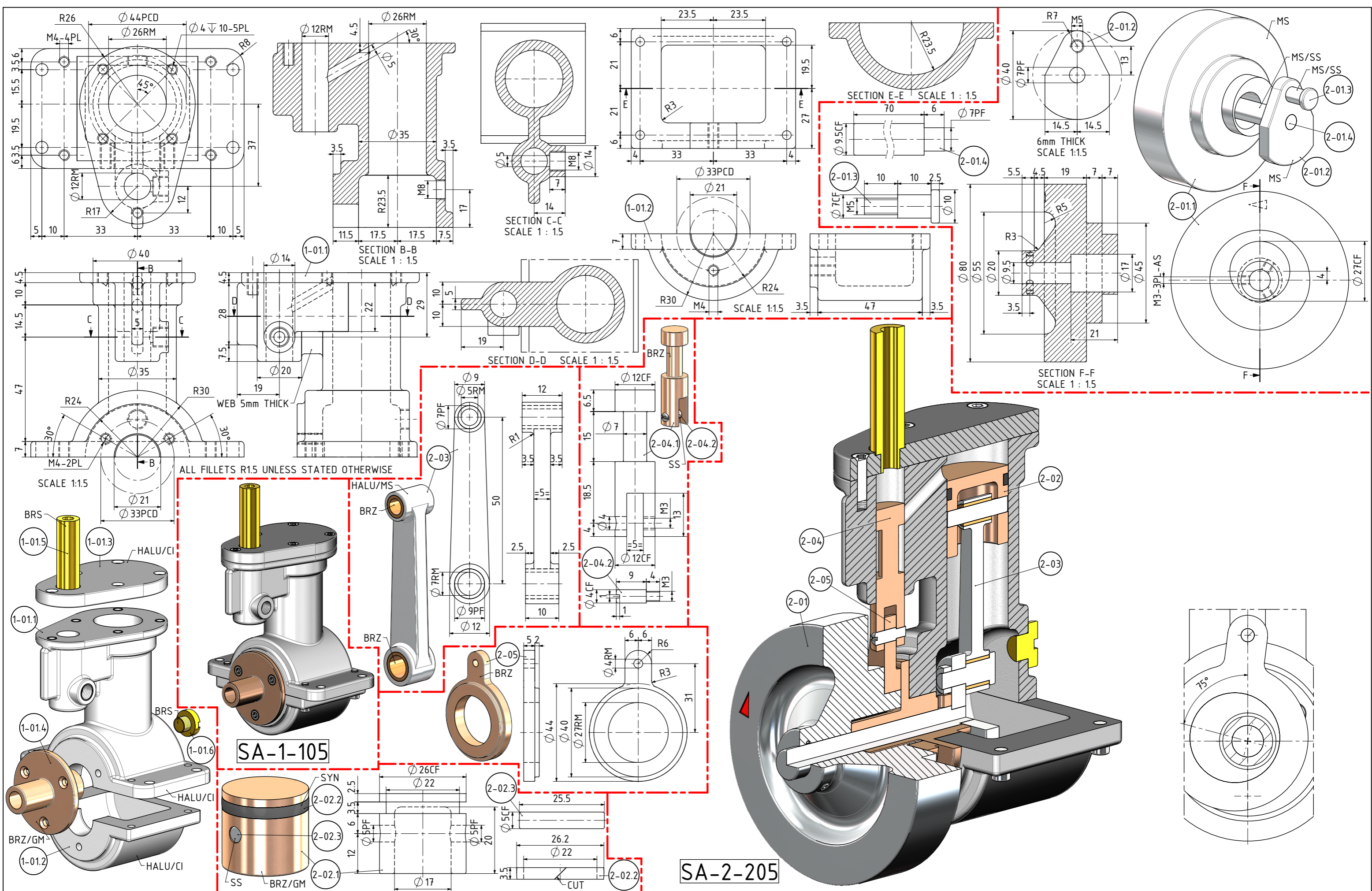
TITLE  
**1 CYLINDER VERTICAL, NON REVERSABLE, STEAM ENGINE CALLED "BLACK NIGHT"**

DRAWING CONTENTS  
**GENERAL ARRANGEMENT, NOTES, B.O.M., PARTS AND ASSEMBLIES**

PROJECT No 09C-63-00  
 JDW DRAUGHTING SERVICES  
 J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPA KURA  
 2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 021191000 E-MAIL: dewaal@xtra.co.nz.

PROJECTION  
 DATE AUGUST 2024  
 SHEET: 01 OF 02  
 MODEL SCALE: 1:1  
 DWG SCALE: 1:1 @A3 OR AS SHOWN  
 Copyright © J.A.M. DE WAAL PAPA KURA NZ  
 A3 No:09C-63-00-SHT-01

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NOTES: THE ORIGINAL DRAWING WAS GIVEN TO ME. THE TITLE WAS "BLACK NIGHT-STEAM ENGINE", DWG NUMBER L-609, DRAWN BY 'EED', DATED 12/76. THE ENGINE SHOWN ON THESE DRAWINGS IS 1.5 TIMES LARGER THAN THE ORIGINAL DESIGN.

TITLE	DRAWING CONTENTS	PROJECT No	PROJECTION	MODEL SCALE:
1 CYLINDER VERTICAL, NON REVERSABLE, STEAM ENGINE CALLED "BLACK NIGHT"	PARTS AND ASSEMBLIES	09C-63-00	JDWDS	1:1
		JDW DRAUGHTING SERVICES	DATE	DWG SCALE: 1:1 @A3 OR AS SHOWN
		J.A.M. DE WAAL, 12 BRIGHTWELL STREET PAPAOKURA	AUGUST 2024	Copyright © J.A.M. DE WAAL PAPAOKURA NZ
		2110, NEW ZEALAND. PHONE: 0064 09 2988815. MOB: 0211791000 E-MAIL: dewaal@xtra.co.nz.	SHEET: 02 OF 02	A3 No:09C-63-00-SHT-02

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