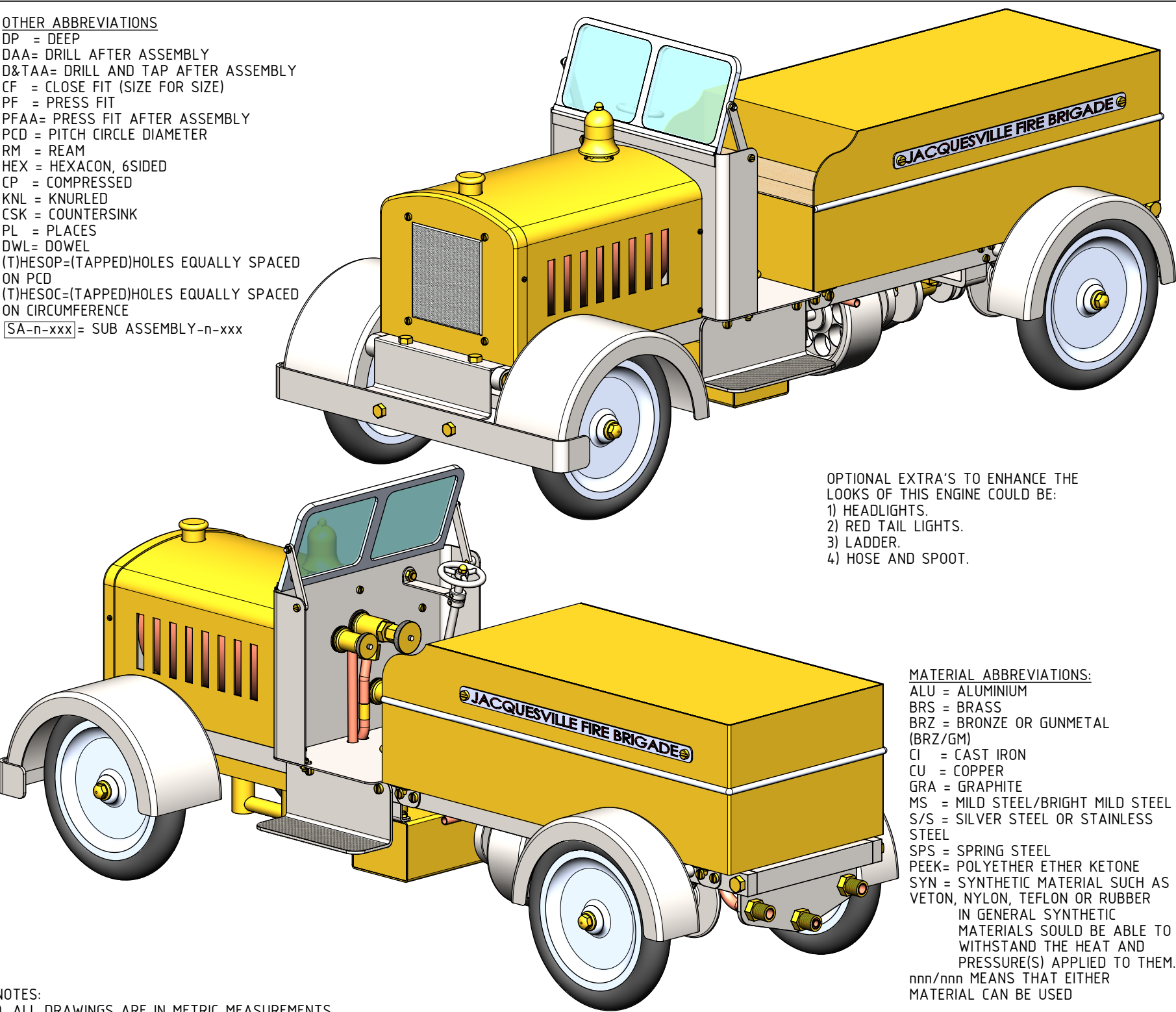


QTY.	PART NUMBER	QTY.	PART NUMBER
1	FIRE-1-01-SIDE BEAM	1	FIRE-2-31-RH-FRONT WHEEL AXLE
1	FIRE-1-01-SIDE BEAM	1	FIRE-2-32-TRACK ROD
1	FIRE-1-02-FRONT CROSS ROD	2	FIRE-2-33-TRACK ROD YOKE END
1	FIRE-1-03-REAR CROSS BEAM	1	FIRE-2-34-STEERING PUSH ROD
1	FIRE-1-04-PORT BLOCK MOUNTING CROSS BEAM	1	FIRE-2-35-STEERING PUSH ROD YOKE END
1	FIRE-1-05-PUMP GEAR SHAFT MOUNTING CROSS BEAM	1	FIRE-2-36-STEER COLUMN BOTTOM CON-ROD
8	FIRE-1-06-LEAF SPRING BRACKET	1	FIRE-2-37-STEERING COLUMN
2	FIRE-1-07A-REAR LEAF SPRING	1	FIRE-2-38-STEERING WHEEL
2	FIRE-1-07B-FRONT LEAF SPRING	2	FIRE-2-39-FRONT WHEEL
2	FIRE-1-08-REAR WHEEL AXLE BOX	2	FIRE-2-40-STEERING COLUMN COLLAR
4	FIRE-1-09-FUEL TANK BRACKET	1	FIRE-2-41-BELL CLAPPER BUSH
1	FIRE-1-10-AIR VESSEL MOUNTING BRACKET	2	FIRE-2-42-BELL CLAPPER
1	FIRE-1-11-REAR BEAM PIPE BRACKET	2	FIRE-2-44-FRONT WHEEL KING PIN
3	FIRE-1-12-REAR BEAM PIPE NIPPLE	3	FIRE-2-45-FRONT WHEELTRACK ROD PIN
3	FIRE-1-13-REAR BEAM PIPE NIPPLE NUT	4	FIRE-2-46-WHEEL NUT
1	FIRE-1-14-AIR VESSEL	QTY.	PART NUMBER
1	FIRE-1-15-AIR VESSEL DELIVERY PIPE-1	1	FIRE-3-01-BOILER SHELL
1	FIRE-1-16-AIR VESSEL DELIVERY PIPE-2	1	FIRE-3-02-BOILER SHELL FRONT END
1	FIRE-1-17-PUMP GEAR SHAFT BEARING BRACKET	1	FIRE-3-03-BOILER SHELL REAR END
1	FIRE-1-18-STEAM ENGINE PORT BLOCK	3	FIRE-3-04-BOILER WATER TUBE
2	FIRE-1-19-PORT BLOCK COVER	3	FIRE-3-05-M10x16 SCREW NIPPLE
1	FIRE-1-20-PUMP ENGINE PORT BLOCK	2	FIRE-3-06-M8x14 SCREW NIPPLE
1	FIRE-1-21-PUMP DISCHARGE PIPE	1	FIRE-3-07-BOILER SUPPORT PLATE
1	FIRE-1-22-PUMP SUCTION PIPE	1	FIRE-3-07-BOILER SUPPORT PLATE
1	FIRE-1-23-STEAM ENGINE EXHAUST PIPE	1	FIRE-3-08-WATER FILLER CAP
1	FIRE-1-24-LIQUID FUEL TANK	1	FIRE-3-09-SAFETY VALVE BODY
1	FIRE-1-25-BURNERS FUEL SUPPLY PIPE	1	FIRE-3-10-SAFETY VALVE BALL VALVE
2	FIRE-1-26-BURNER	1	FIRE-3-11-SAFETY VALVE STEM
1	FIRE-1-26-BURNER	1	FIRE-3-12-SAFETY VALVE SPRING
1	FIRE-1-27-CONTROL HANDLE MOUNTING PLATE	1	FIRE-3-13-SAFETY VALVE SPRING TENSION SCREW
1	FIRE-1-28-CONTROL ROD GUIDE ANGLE	1	FIRE-3-14-DUMMY BELL
1	FIRE-1-29-LOWER STEERING COLUMN BRACKET	1	FIRE-3-15-WTR LVL TEST VALVE BODY
1	FIRE-1-30 FRONT WHEEL FIXED AXLE BEAM	1	FIRE-3-15-WTR LVL TEST VALVE BODY
1	FIRE-1-31-FLOOR BOARD	2	FIRE-3-16-WTR LVL TEST VALVE SPINDLE
1	FIRE-1-32-DASH BOARD	1	FIRE-3-17-STEAM SUPPLY VALVE BODY
1	FIRE-1-33-LUBRICATOR	1	FIRE-3-18-STEAM SUPPLY VALVE SPINDLE
1	FIRE-1-34-STEAM ENGINE SUPPLY PIPE	1	FIRE-3-19-STEAM SUPPLY VALVE SPINDLE GUIDE
1	FIRE-1-35-STEAM SUPPLY PIPE PART-1	1	FIRE-3-20-STEAM SUPPLY VALVE SPINDLE NUT
1	FIRE-1-36-WINDOW FRAME	1	FIRE-3-21-STEAM SUPPLY VALVE PIPE NUT
1	FIRE-1-37-WINDOW FRAME HINGE	1	FIRE-3-23-STEAM SUPPLY PIPE PART-2
2	FIRE-1-38-WINDOW STAY	2	FIRE-3-24-BOILER SACER
4	FIRE-1-39-ENGINE COVER ANGLE BRACKET	1	FIRE-3-25-BOILER STEAM COLLECTOR PIPE
1	FIRE-1-40-CABIN STEP	QTY.	PART NUMBER
1	FIRE-1-40-CABIN STEP	1	FIRE-4-01-BOILER HOOD
1	FIRE-1-41-UPPER STEERING COLUMN BRACKET	1	FIRE-4-02-BOILER RADIATOR COVER
1	FIRE-1-42-BELL MOUNTING BRACKET	1	FIRE-4-03-RADIATOR
1	FIRE-1-43-BELL	1	FIRE-4-04-ENGINE COVER SHELL
2	FIRE-1-44-REAR WHEEL FENDER	1	FIRE-4-05-ENGINE COVER BOTTOM ANGLE
1	FIRE-1-44-REAR WHEEL FENDER	1	FIRE-4-06-ENGINE COVER TOP ANGLE
1	FIRE-1-45-CONTROL HANDLE PIVOT AXLE	1	FIRE-4-07-ENGINE COVER TOP PLATE
4	FIRE-1-46-FENDER SPACER	1	FIRE-4-08-ENGINE COVER FRONT PLATE
2	FIRE-1-47-FRONT WHEEL FENDER	1	FIRE-4-09-WOODEN SEAT
4	FIRE-1-48-FRONT FENDER SPACER	4	FIRE-4-10- FLOOR LOCATING PIN
1	FIRE-1-49-BUMPER MOUNTING BRACKET	1	FIRE-4-11-TRIM
1	FIRE-1-50-BUMPER	2	FIRE-4-12-NAME PLATE
QTY.	PART NUMBER	QTY.	PART NUMBER
1	FIRE-2-01-STEAM CYLINDER	2	FIRE-M2.5 NUT
1	FIRE-2-02-STEAM CYLINDER TOP COVER	4	FIRE-M2.5x8 PAN HEAD SCREW
1	FIRE-2-03-STEAM CYLINDER BOTTOM COVER	1	FIRE-M2x6 LOCKING PIN
2	FIRE-2-04-STEAM-PUMP PISTON ROD GLAND	1	FIRE-M2x8.5 LOCKING PIN
1	FIRE-2-05-PUMP CYLINDER	8	FIRE-M2x8 PAN HEAD SCREW
1	FIRE-2-06-PUMP CYLINDER TOP COVER	2	FIRE-M2x10 LOCKING PIN
1	FIRE-2-07-PUMP CYLINDER BOTTOM COVER	2	FIRE-M3 DOME NUT
2	FIRE-2-08-CYLINDER ROCKING SHAFT	24	FIRE-M3 NUT
2	FIRE-2-09-ROCKING SHAFT SPRING	3	FIRE-M3 WASHER
1	FIRE-2-10-CRANKSHAFT	2	FIRE-M3x6 GRUB SREW
2	FIRE-2-11-CRANK DISC	20	FIRE-M3x6 PAN HEAD SCREW
1	FIRE-2-12-STEAM DISC CRANK PIN	4	FIRE-M3x7-WOOD SCREW
1	FIRE-2-13-PUMP DISC CRANK PIN	13	FIRE-M3x8 PAN HEAD SCREW
1	FIRE-2-14-FLYWHEEL	12	FIRE-M3x10 PAN HEAD SCREW
1	FIRE-2-15-STEAM PISTON	6	FIRE-M3x12 PAN HEAD SCREW
1	FIRE-2-16-PUMP PISTON	15	FIRE-M4 NUT
2	FIRE-2-17-CON-ROD	5	FIRE-M4x6 PAN HEAD SCREW
2	FIRE-2-18-CON-ROD BIG END	2	FIRE-M4x7 GRUB SREW
1	FIRE-2-19-DRIVE SHAFT CRANK PLATE	16	FIRE-M4x8 PAN HEAD SCREW
1	FIRE-2-20-DRIVE SHAFT	30	FIRE-M4x10 PAN HEAD SCREW
1	FIRE-2-21-DRIVE SHAFT PINION GEAR WHEEL	8	FIRE-M4x16 C-SINK SCREW
1	FIRE-2-22-REAR WHEEL SHAFT CROWN GEAR WHEEL	2	FIRE-M4x20 PAN HEAD SCREW
1	FIRE-2-23-REAR WHEEL SHAFT	5	FIRE-M5 NUT
2	FIRE-2-24-REAR WHEEL SHAFT COLLAR	1	FIRE-M5x6 HEX BOLT
1	FIRE-2-25-CONTROL HANDLE	2	FIRE-M5x8 HEX BOLT
1	FIRE-2-26-CONTROL ROD FORK	2	FIRE-M5x16 HEX BOLT
1	FIRE-2-27-CONTROL ROD	2	FIRE-M6x20 C-SINK SCREW
1	FIRE-2-28-GEAR SHIFTING FORK	2	FIRE-M6x20 HEX BOLT
2	FIRE-2-29-REAR WHEEL	1	FIRE-M8x8 HEX BOLT
1	FIRE-2-30-LH-FRONT WHEEL AXLE		



OPTIONAL EXTRA'S TO ENHANCE THE LOOKS OF THIS ENGINE COULD BE:
1) HEADLIGHTS.
2) RED TAIL LIGHTS.
3) LADDER.
4) HOSE AND SPOOT.

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 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. 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. WASHER SHALL BE USED WHERE DEEMED NECESSARY.
 14. INQUIRE AT THE APPROPRIATE AUTHORITIES WHETHER OR NOT THIS BOILER REQUIRES 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.

NOTES: THESE ENGINE DRAWINGS ARE LOOSLY BASED ON A DRAWING SET WHICH WERE GIVEN TO ME. THE ORIGINAL DRAWINGS WERE DATED 9-DECEMBER-1954 AND THE DESIGN WAS BY "L.B.S.C." (A STEAM FIRE ENGINE FOR THE KIDDIES)

TITLE	DRAWING CONTENTS	PROJECT No 08-11-00	PROJECTION	DATE	MODEL SCALE: 1:1
SPiRiT FUEL DRIVEN STEAM FIRE ENGINE FROM THE "JACQUESVILLE FIRE BRIGADE"	ISOMETRIC VIEWS, NOTES AND BILL OF MATERIALS	JDW DRAUGHTING SERVICES		DECEMBER-2016	DWG SCALE: 1:1 @A3 OR AS SHOWN
		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 07	A3 No: FIRE-ENGINE-02