

QTY.	PART NUMBER
2	TOBY-M-1-01-SIDE FRAME PLATE
1	TOBY-M-1-02-FRONT BUFFER BEAM
1	TOBY-M-1-03-REAR BUFFER BEAM
1	TOBY-M-1-04-REAR FRAME SPACER
1	TOBY-M-1-05-MID FRAME PLATE SPACER
4	TOBY-M-1-06-AXLE BOX KEEPER
4	TOBY-M-1-07-AXLE BOX
2	TOBY-M-1-08-PULLING COUPLING
2	TOBY-M-1-09-CYLINDER BLOCK
2	TOBY-M-1-10-CYLINDER FRONT COVER
1	TOBY-M-1-11-LH+RH-CYLINDER REAR COVER
1	TOBY-M-1-11-LH+RH-CYLINDER REAR COVER
2	TOBY-M-1-12-PISTON ROD GLAND
2	TOBY-M-1-13-CROSS HEAD SLIDE BAR
2	TOBY-M-1-14-CROSS HEAD SLIDE BAR BRACKET
4	TOBY-M-1-15-CYLINDER AUTO DRAINCOCK HOUSING
4	TOBY-M-1-16-CYLINDER AUTO DRAINCOCK VALVE
4	TOBY-M-1-17-CYLINDER AUTO DRAINCOCK CAP
2	TOBY-M-1-18-STEAM VALVE CHEST
2	TOBY-M-1-19-STEAM VALVE CHEST COVER
2	TOBY-M-1-20-VALVE SPINDLE GLAND
2	TOBY-M-1-21-SNIFFER BODY
2	TOBY-M-1-22-SNIFFER BALL VALVE
2	TOBY-M-1-23-SNIFFER VALVE CAP
1	TOBY-M-1-24-WATER FEED PUMP BODY
1	TOBY-M-1-25-WATER FEED PUMP TOP FITTING
1	TOBY-M-1-26-WATER FEED PUMP BOTTOM FITTING
2	TOBY-M-1-27-WATER FEED PUMP BALL VALVE
1	TOBY-M-1-28-STEAM INLET MANIFOLD
4	TOBY-M-1-29-BANJO FITTING
1	TOBY-M-1-30-STEAM EXHAUST MANIFOLD
1	TOBY-M-1-31A-TRAILING TRUCK PIVOT PIN
2	TOBY-M-1-31B-TRAILING TRUCK SPRING PILLAR
2	TOBY-M-1-32-TRAILING TRUCK SPRING
1	TOBY-M-1-33-PULL LINK
4	TOBY-M-1-34-COUPLING LINK PIN
4	TOBY-M-1-35-PIPE NUT M6x4
1	TOBY-M-1-36-LH--FEED WATER SUPPLY PIPE
1	TOBY-M-1-37-FEED WATER NIPPLE
1	TOBY-M-1-38-RH--FEED WATER SUPPLY PIPE
1	TOBY-M-1-39-PIPE STOP NUT M6

QTY.	PART NUMBER
2	TOBY-M-2-01-WHEEL AXLE
2	TOBY-M-2-02-LEADING WHEEL
2	TOBY-M-2-03-DRIVING WHEEL
2	TOBY-M-2-04-LEADING WHEEL CRANK PIN
2	TOBY-M-2-05-DRIVING WHEEL CRANK PIN
1	TOBY-M-2-06-WATER FEED PUMP ECCENTRIC
1	TOBY-M-2-07-WATER FEED PUMP ECCENTRIC STRAP
1	TOBY-M-2-08-WATER FEED PUMP PLUNGER
2	TOBY-M-2-09-COUPLING ROD
2	TOBY-M-2-10-COUPLING ROD FRONT BUSH
2	TOBY-M-2-11-COUPLING ROD REAR BUSH
2	TOBY-M-2-12-CON-ROD
2	TOBY-M-2-13-CON-ROD FRONT BUSH
2	TOBY-M-2-14-CON-ROD REAR BUSH
2	TOBY-M-2-15-PISTON
2	TOBY-M-2-16-PISTON ROD
1	TOBY-M-2-17-CROSSHEAD
1	TOBY-M-2-17-CROSSHEAD
2	TOBY-M-2-18-CROSSHEAD PIVOT PIN
2	TOBY-M-2-19-SLIDE VALVE
2	TOBY-M-2-20-SLIDE VALVE NUT
2	TOBY-M-2-21-SLIDE VALVE SPINDLE
2	TOBY-M-2-22-SLIDE VALVE ECCENTRIC STRAP
2	TOBY-M-2-23-SLIDE VALVE ECEN. STRAP ROD
2	TOBY-M-2-24-SLIDE VALVE ECCENTRIC
2	TOBY-M-2-25-SLIDE VALVE ECCENTRIC STOP COLLAR
1	TOBY-M-2-26-TRAILING TRUCK FRAME PLATE
1	TOBY-M-2-27-TRAILING TRUCK AXLE BRACKET
2	TOBY-M-2-28-TRAILING TRUCK BEARING BUSH
1	TOBY-M-2-30-TRAILING TRUCK WHEEL AXLE
2	TOBY-M-2-31-TRAILING TRUCK WHEEL
2	TOBY-M-2-32-VALVE SPINDLE SCREW

QTY.	PART NUMBER
1	TOBY-M-6-01-CABIN SHELL
2	TOBY-M-6-02-WINDOW RIM
1	TOBY-M-6-03-CABIN ROOF TRUSS-1
1	TOBY-M-6-04-LH ROOF BEAM
1	TOBY-M-6-04-LH ROOF BEAM
1	TOBY-M-6-05-CABIN REAR POST
1	TOBY-M-6-05-CABIN REAR POST
1	TOBY-M-6-06-CABIN ROOF TRUSS-2
1	TOBY-M-6-07-CABIN ROOF

QTY.	PART NUMBER
1	TOBY-M-3-01-FOOTPLATE
1	TOBY-M-3-02-SMOKEBOX FRONT PLATE
1	TOBY-M-3-03-SMOKEBOX SHELL
1	TOBY-M-3-04-SMOKEBOX DOOR
2	TOBY-M-3-05-SMOKEBOX DOOR HINGE
2	TOBY-M-3-06-SMOKEBOX HINGE
1	TOBY-M-3-07-SMOKEBOX DOOR SCREW
1	TOBY-M-3-08-CHIMNEY BASE RING
1	TOBY-M-3-09-CHIMNEY FLUE
1	TOBY-M-3-10-CHIMNEY CROWN
1	TOBY-M-3-11-INTERNAL FLUE BASE
1	TOBY-M-3-12-WATER TANK
1	TOBY-M-3-12-WATER TANK
2	TOBY-M-3-13-WATER TANK TOP PLATE
2	TOBY-M-3-14-WATER TANK TOP FILLER COVER
6	TOBY-M-3-15-WATER TANK HAND RAIL POST
2	TOBY-M-3-16-WATER TANK HAND RAIL
2	TOBY-M-3-17-WATER TANK SUPORT PILLAR
1	TOBY-M-3-18-BLOWER ELBOW
1	TOBY-M-3-19-BLOWER ELBOW LOCK NUT
1	TOBY-M-3-20-BLOWER BLOW PIPE
1	TOBY-M-3-21-BLOWER ELBOW NOZZLE
4	TOBY-M-3-22-SIDE STEP
1	TOBY-M-3-23-OIL TANK HOUSING
1	TOBY-M-3-24-OIL TANK TOP
1	TOBY-M-3-25-OIL TANK BOTTOM
2	TOBY-M-3-26-OIL TANK NIPPLE
2	TOBY-M-3-27-OIL TANK PLUG
1	TOBY-M-3-28-OIL TANK NUT
1	TOBY-M-3-29-SMOKEBOX HINGE PIN
1	TOBY-M-3-30-BLOWER PIPE PART-1
1	TOBY-M-3-31-BLOWER PIPE PART-2
2	TOBY-M-3-32-WATER TANK SUPPLY NIPPLE
4	TOBY-M-3-33-PIPE NUT M6x4

QTY.	PART NUMBER
2	TOBY-M-7-01-TNDR SIDE FRAME
4	TOBY-M-7-02-TNDR SIDE FRAME ANGLE BRACKET
1	TOBY-M-7-03-TNDR FRONT BUFFER BEAM
1	TOBY-M-7-04-TNDR REAR BUFFER BEAM
2	TOBY-M-7-05-TNDR PULLING COUPLING
1	TOBY-M-7-06-TNDR SIDE FRAME STAY
4	TOBY-M-7-07-TNDR AXLE BOX HORN
4	TOBY-M-7-08-TNDR AXLE BOX LEAF SPRING
4	TOBY-M-7-09-TNDR AXLE BLOCK
4	TOBY-M-7-10-TNDR AXLE BOX SPRING
2	TOBY-M-7-11-TNDR WHEEL AXLE
4	TOBY-M-7-12-TNDR WHEEL
1	TOBY-M-7-13-TNDR BOTTOM PLATE
1	TOBY-M-7-14-TNDR UPPER BODY OUTER SHELL
1	TOBY-M-7-15-TNDR COAL BUNKER PLATE
1	TOBY-M-7-16-TNDR TOP ACCES HATCH PLATE
1	TOBY-M-7-17-TNDR ACCES HATCH
1	TOBY-M-7-20-WATER HAND PUMP MOUTING BRACKET
1	TOBY-M-7-21-WATER HAND PUMP CYLINDER INSERT
1	TOBY-M-7-22-WATER HAND PUMP BODY
1	TOBY-M-7-23-WATER HAND PUMP TOP DELIVERY NIPPLE
2	TOBY-M-7-24-WATER HAND PUMP VALVE
1	TOBY-M-7-25-WATER HAND PUMP INLET PLUG
1	TOBY-M-7-26-WATER HAND PUMP PISTON
1	TOBY-M-7-27-WATER HAND PUMP PIVOT BRACKET
2	TOBY-M-7-28-WATER HAND PUMP LINK BRACKET
1	TOBY-M-7-29-WATER HAND PUMP HANDLE
1	TOBY-M-7-30-PIPE NUT M6x4
1	TOBY-M-7-31-WATER TANK SUPPLY NIPPLE
1	TOBY-M-7-32-HAND PUMP DISCHARGE PIPE
1	TOBY-M-7-33-FLEXIBLE COUPLING HOSE
2	TOBY-M-7-34-PIPE NUT M8x5

MATERIAL ABBREVIATIONS:

ALU = ALUMINIUM
 BR5 = 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 SOULD BE ABLE TO WITHSTAND
 THE HEAT AND PRESSURE(S) APPLIED TO THEM.
 nnn/nnn MEANS THAT EITHER MATERIAL CAN BE USED

QTY.	PART NUMBER
1	TOBY-M-4-01-BOILER SHELL
1	TOBY-M-4-02-BOILER FRONT TUBE PLATE
1	TOBY-M-4-03-FIRE BOX SHELL
1	TOBY-M-4-04-FIRE BOX FRONT TUBE PLATE
1	TOBY-M-4-05-BOILER TUBE 13MM
15	TOBY-M-4-06-BOILER TUBE 9.5MM
1	TOBY-M-4-07-BOILER THROAT PLATE
1	TOBY-M-4-08-BOILER BACK HEAD PLATE
1	TOBY-M-4-09-BOILER BACK SHELL
2	TOBY-M-4-10-BOILER BUSH M4x6.5x8
4	TOBY-M-4-12-BOILER BUSH M10x13x16
1	TOBY-M-4-13-BOILER BUSH 22x27x34
1	TOBY-M-4-14-STEAM COLECTOR DOME
2	TOBY-M-4-15-CHECK VALVE BODY
2	TOBY-M-4-16-CHECK VALVE BALL VALVE
2	TOBY-M-4-17-CHECK VALVE TOP SCREW
1	TOBY-M-4-18-CHECK VALVE MANIFOLD
1	TOBY-M-4-19-BOILER INSULATION BLANKET
1	TOBY-M-4-20-BOILER CLADDING
1	TOBY-M-4-21-CHECK VALVE DOME
1	TOBY-M-4-22-REGULATOR BODY
1	TOBY-M-4-23-REGULATOR SCREW VALVE
1	TOBY-M-4-24-REGULATOR SPINDLE NUT
1	TOBY-M-4-25-REGULATOR STEAM PIPE
1	TOBY-M-4-26-SUPER HEATER PIPE END-1
1	TOBY-M-4-27-SUPER HEATER PIPE END-2
1	TOBY-M-4-28-SUPER HEATER PIPE
2	TOBY-M-4-29-PIPE NUT M8x5.5
1	TOBY-M-4-30-STEAM MANIFOLD
1	TOBY-M-4-31-FIRE DOOR MOUTING PLATE
1	TOBY-M-4-32-FIRE DOOR
2	TOBY-M-4-33-FIRE DOOR HINGE STRAP
1	TOBY-M-4-34-FIRE DOOR HINGE
2	TOBY-M-4-35-AIR GAP SPACER
1	TOBY-M-4-36-FIRE BOX BAFFLE PLATE
2	TOBY-M-4-37-GRATE SUPPORT BAR
1	TOBY-M-4-38-ASHPAN REAR PLATE
1	TOBY-M-4-39-ASH TRAY
2	TOBY-M-4-40-ASH TRAY HAND RAIL POST
1	TOBY-M-4-41-ASH TRAY HAND RAIL
12	TOBY-M-4-42-GRATE BAR
33	TOBY-M-4-43-GRATE SPACER
2	TOBY-M-4-44-FIRE DOOR REST-HANDLE
3	TOBY-M-4-45-GRATE TIE ROD
2	TOBY-M-4-46-BOILER BUSH M6x11x13
1	TOBY-M-4-47-BOILER DRAIN SCREW PLUG
1	TOBY-M-4-48-SAFETY VALVE BODY
1	TOBY-M-4-49-SAFETY VALVE BALL VALVE
1	TOBY-M-4-50-SAFETY VALVE STEM
1	TOBY-M-4-51-SAFETY VALVE SPRING
1	TOBY-M-4-52-SAFETY VALVE PRESSURE PLATE
1	TOBY-M-4-53-WTR LVL IND BOTTOM HOUSING
1	TOBY-M-4-54-WTR LVL IND TOP HOUSING
1	TOBY-M-4-55-WTR LVL IND TOP SCREW
1	TOBY-M-4-56-WTR LVL IND GLASS TUBE
2	TOBY-M-4-57-WTR LVL IND GLASS TUBE NUT
1	TOBY-M-4-58-WTR LVL IND SPINDLE NUT
1	TOBY-M-4-59-WTR LVL IND SPINDLE
1	TOBY-M-4-60-WTR LVL IND SPILL PIPE
1	TOBY-M-4-61-WTR LVL INDSPILL PIE NUT
1	TOBY-M-4-62-BANJO FITTING SCREW
1	TOBY-M-4-63-PRESSURE GAUGE BANJO FITTING
1	TOBY-M-4-64-PRESSURE GAUGE
1	TOBY-M-4-65-PRESSURE GAUGE PIPE NUT
4	TOBY-M-4-66-GENERAL ON-OFF VALVE BODY
4	TOBY-M-4-67-GENERAL ON-OFF SPINDLE
4	TOBY-M-4-68-GENERAL ON-OFF VALVE SPINDLE NUT
1	TOBY-M-4-69-WHISTLE BASE
1	TOBY-M-4-70-WHISTLE TUBE
1	TOBY-M-4-71-WHISTLE TUBE CAP
7	TOBY-M-4-72-PIPE NUT M6x4
1	TOBY-M-4-73-WHISTLE PIPING
1	TOBY-M-4-74-FEED WATER PIPE-1
1	TOBY-M-4-75-FEED WATER PIPE-2

ON THE DRAWINGS SOME OF PARTS HAVE BEEN SPECIFIED AS ALU/MS OR MS/ALU. IF GOOD ADHESION AND STRENGHT IS REQUIRED THEN THE USE OF MS (MILD STEEL) WOULD BE THE BETTER OPTION.

QTY.	PART NUMBER
1	TOBY-M-8-64mm-RAIL
64	TOBY-M-M2.5 NUT
26	TOBY-M-M2.5x5 PAN HEAD SCREW
16	TOBY-M-M2.5x6 PAN HEAD SCREW
36	TOBY-M-M2.5x9 PAN HEAD SCREW
16	TOBY-M-M2.5x29 THREADED ROD
30	TOBY-M-M2 NUT
16	TOBY-M-M2x6 PAN HEAD SCREW
8	TOBY-M-M2x12 PAN HEAD SCREW
40	TOBY-M-M3 NUT
2	TOBY-M-M3x4 GRUB SREW
26	TOBY-M-M3x6 PAN HEAD SCREW
45	TOBY-M-M3x8 PAN HEAD SCREW
8	TOBY-M-M3x10 C-SINK SCREW
27	TOBY-M-M3x10 PAN HEAD SCREW
16	TOBY-M-M3x12 PAN HEAD SCREW
1	TOBY-M-M3x16 GRUB SREW
1	TOBY-M-M4 DOME NUT
9	TOBY-M-M4 NUT
8	TOBY-M-M4 WASHER
2	TOBY-M-M4x12 C-SINK SCREW
14	TOBY-M-M4x12 PAN HEAD SCREW
2	TOBY-M-M4x14 PAN HEAD SCREW
2	TOBY-M-M4x20 PAN HEAD SCREW
1	TOBY-M-M4x27 THREADED ROD
4	TOBY-M-M5 NUT
1	TOBY-M-M6x10 PAN HEAD SCREW

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. WATER CONTAINERS SHALL SOLDERED TOGETHER AND BEING WATERTIGHT, AFTER SOLDERING CHECK FOR LEAKAGE.
15. IN QUIRE 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.

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
 (T)HESOP=(TAPPED)HOLES EQUALLY SPACED ON PCD
 (T)HESOC=(TAPPED)HOLES EQUALLY SPACED ON CIRCUMFERENCE
 [SA-n-xxx]= SUB ASSEMBLY-n-xxx

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

<p>NOTES: THE ORIGINAL DESIGN AND BUILT OF THIS LOCO IS BY Mr. STEVE EATON (s.eaton@talk21.com) THE DRAWINGS SUPPLIED TO ME WERE DATED FROM 1999 TO 2003 (DRG-00 TO DRG-32)</p>		
<p>TITLE</p> <h2>MODEL STEAM LOCOMOTIVE FOR 2.5inch (63.5mm) GAUGE CALLED "TOBY".</h2>	<p>DRAWING CONTENTS</p> <h2>BILL OF MATERIAL AND NOTES</h2>	<p>PROJECT No 07B-12-00</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>DATE</p> <p>SEPT-2016</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: 02 OF 14</p>		<p>A3 No: TOBY-M-02</p>