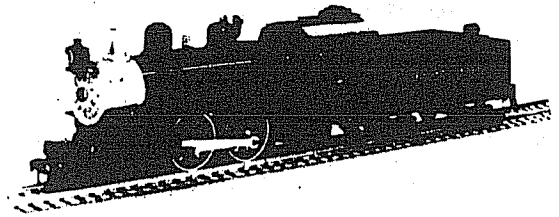


MANTUA

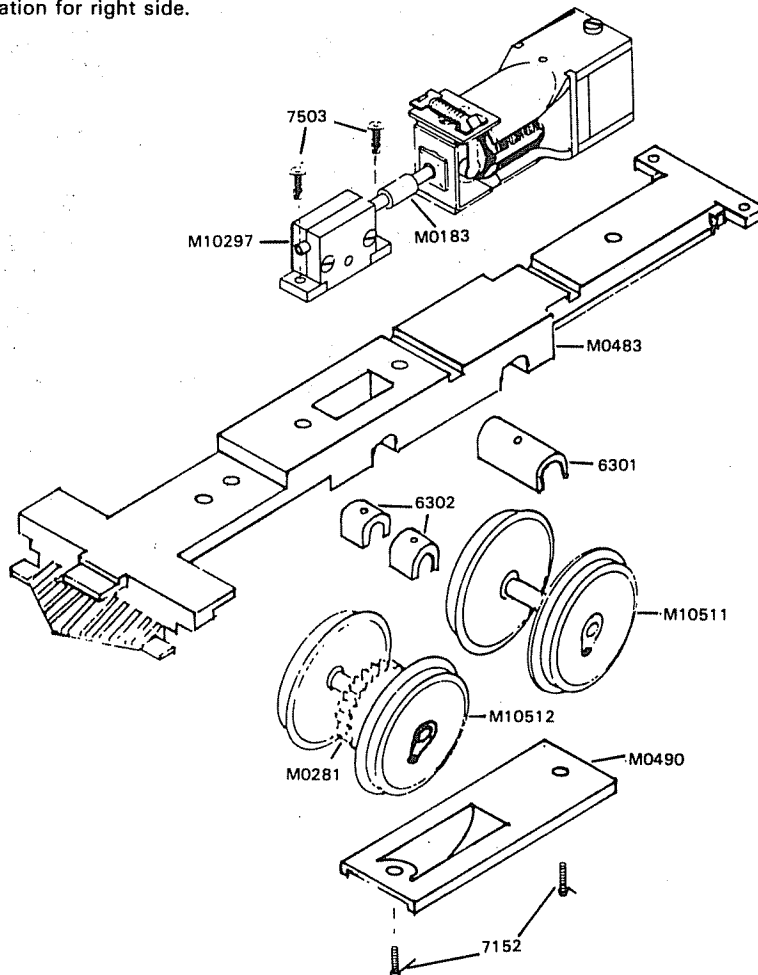
Mechanism Assembly

1. Check all parts against replacement parts list. Study drawings to identify the parts. Read instructions thoroughly before starting and BE SURE you understand HOW each part is to be mounted and avoid disappointing and expensive errors. Smooth edges of all castings with a knife or fine file to remove all flash and burrs.
2. Assemble one #6301 long bearing and two #6302 short bearings in the slots of #M0483 main frame making certain they are located on pins and properly rested in slots.
3. Place one pair of #M10511 80" spoked drive wheels in rear bearing and one pair of #M10512 80" spoked drivers with #M0281 gear in front bearings. All insulated wheels must be on left side (left side when locomotive is on track).
4. Secure #M0490 retainer plate in place with two #7152, #2-56 x 3/16" self tapping screws.
5. Make sure each set of wheels revolves freely in its bearing.
6. Assemble side rods to drivers with #7159 short side rod screws in front drivers. Using #6933 bushing and #7160 long side rod screw fasten rear of side rod to second set of drivers. This screw will later be used to attach #M0465 main rod to rear drivers with bushing between side rod and main rod.
7. Check rotation of coupled drivers. Tight spots in side rods may be freed by reaming slightly with a round needle file. Do not ream any more than is absolutely necessary. Assembled mechanism should roll freely.
8. Crosshead #M0469 and main rod #M0465 are assembled as shown using #8355 rivet. Main rod flutes face outward on locomotive. Repeat operation for right side.



4-4-2 ATLANTIC

9. Assemble lead truck #M10513 by placing two sets of #25047 wheels in bearing slots and sliding two #M0492 retainer plates in position to hold axles. File sharp points off the axles.
(Place #M0471 cylinder on frame and fasten by using #7503, 2-56 x 1/4" S.T. screw up through front hole of frame and cylinder.)
10. Place crosshead guide unit into cylinder and fasten to frame as shown with #7276, 2-56 x 1/4" R.H.S.T. screw. Slide crossheads into crosshead guide and attach main rod to rear set of drivers using #7160 side rod screw with #6933 bushing between side rod and main rod. Mechanism should roll freely with no catches.



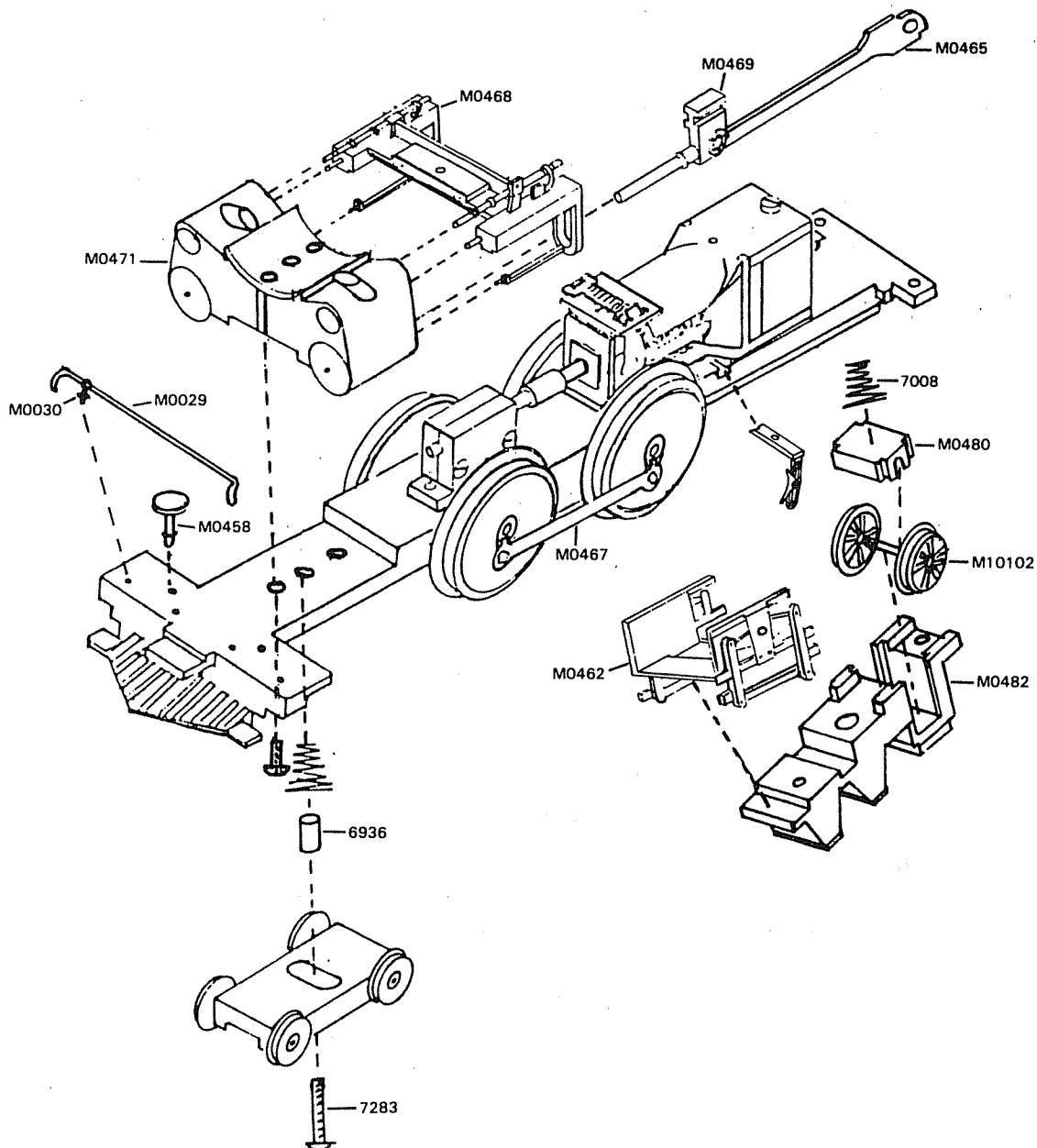
Suspension system #M0462 is placed on ash pan #M0482 as shown. No. M10102 spoked wheel set is placed as shown and bearing #M0480 is placed in ash pan cavity to hold wheel set. Place #7008 spring between bearing plate and loco frame and place up against bottom of frame as shown and secure with #7503 2-56 x 1/4" S.T. screw through front hole of ash pan. No. 7477, 0-7/32 screw is used at rear of ash pan.

11. Place front brake set #M0505 in slot and secure with #0 x 7/32 S.T. screw. No.M0463 brake set is secured the same way in the rear slot. Brake set with extension on right side is front set.
12. Place #M10297 gear box as shown and fasten with two #7503 2-56 x 1/4" S.T. screws.

13. Motor is placed as shown and secured by #7503, 2-56 x 1/4" S.T. screw with lock washer #7573. Flexible coupling is placed on shafts and adjusted so end play in motor is transferred to gear box and the shafts move as a single unit. This is necessary to give smooth, quiet movement to the mechanism.

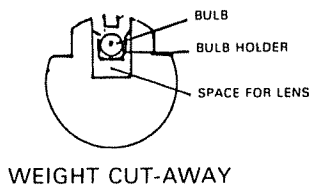
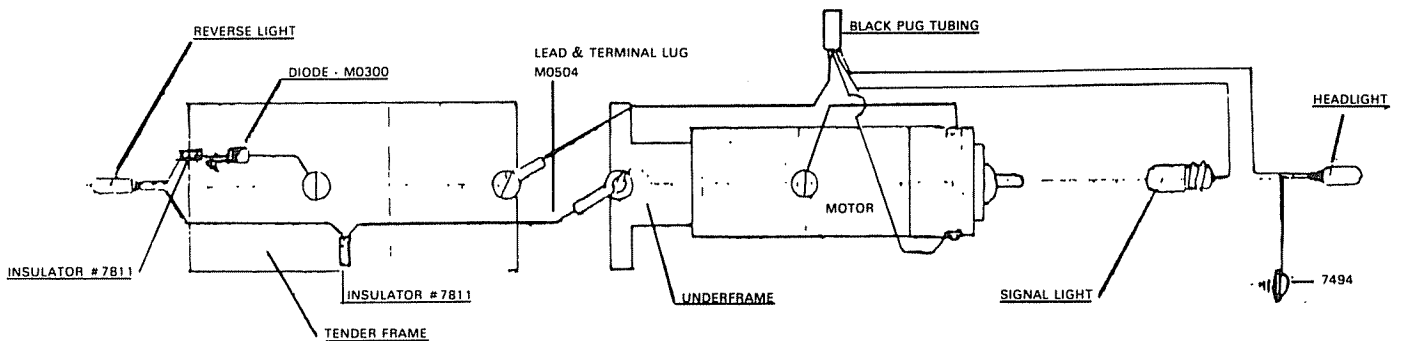
14. Lead truck is attached after boiler has been fastened as shown in the drawing.

15. Mechanism should run smoothly by attaching wires from a 12 volt D.C. power pack to the lead wires. Run about 1/2 hour in each direction. **DO NOT CONNECT POWER UNTIL BEARINGS HAVE BEEN LUBRICATED AND GREASE IS PUT ON GEAR.**



WIRING INSTRUCTIONS

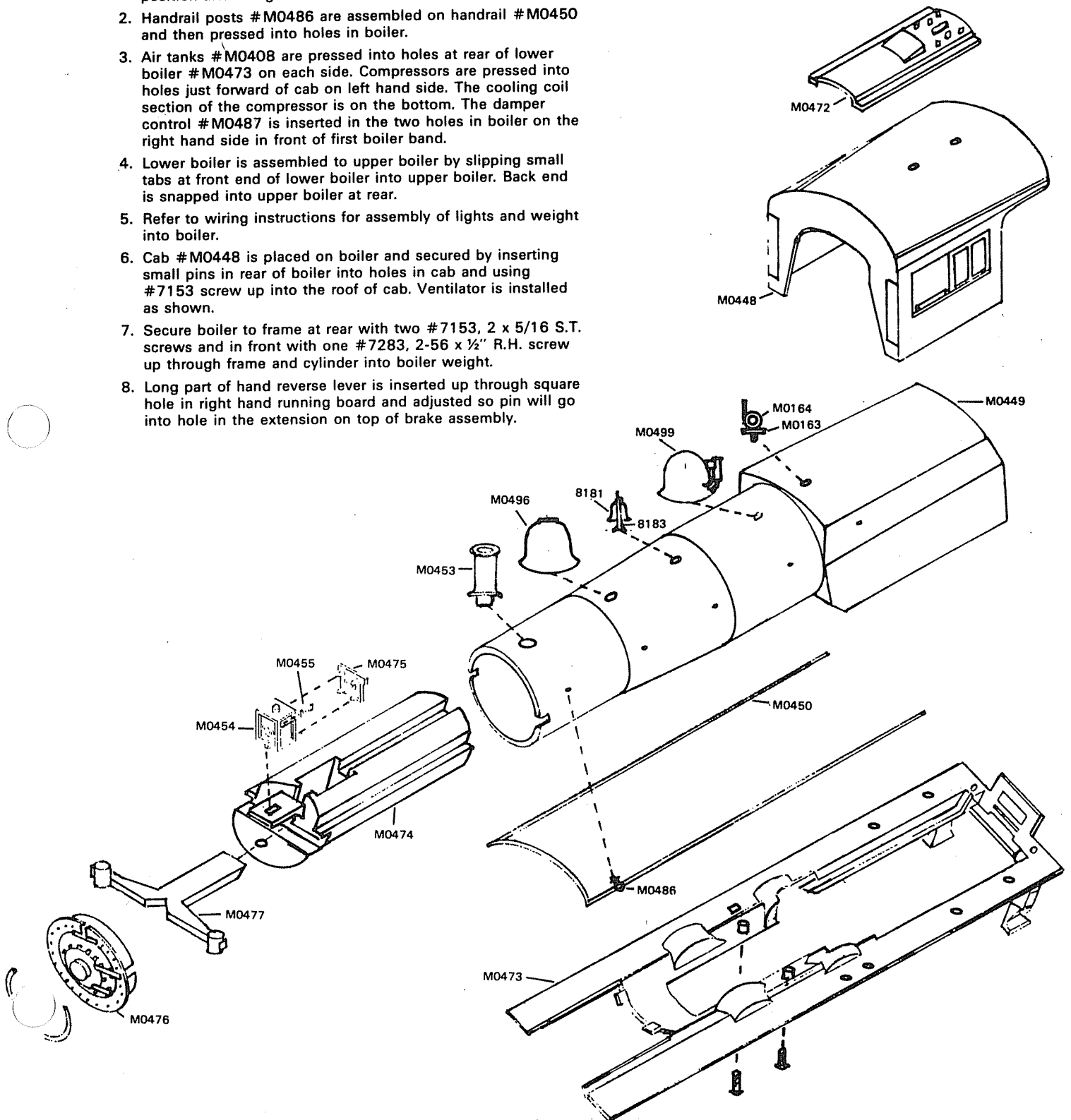
- Slide number boards in each side of headlight and place plastic back piece on housing. Pass wires of headlight lamp through headlight and rest lamp inside the housing. One lamp wire is cut 1½" long and stripped and fastened with a #7494 washer head screw to the front of the weight.
- The metal base of the large bulb is pressed into the brass clip and then into the cavity in the top of the weight with the bulb facing to the rear. Do not push to bottom of cavity because the T shape lens has to be inserted through front of weight so bulb is above but not touching it. Keep as high as possible in the cavity. The second headlight wire and the wire from large bulb are twisted together and placed in the slot running to the back of the weight. Weight is inserted through front of boiler, and wires are twisted together with wires from right hand side of motor brush and wire from tender. Left hand wire from motor is grounded under washer head screw on top. Two 0 x 7/32 S.T. screws go up through lower boiler to hold weight in place.
- Marker light housings are assembled on ends of lens making sure the square holes in housings are properly located on lens. By pressing top and bottom section each lens will be ready for a drop of glue at the back end of the lens. Do not get glue on lens.
- T shape lens with marker lights is pushed into weight until lens is nested in slots in boiler. Boiler front is pressed in and light is pressed into light bracket with wires going through slot in boiler front into boiler. May be glued later if desired.
- The rear bulb is assembled in the light housing with both wires going out through rear and down through hole in rear deck of tender body. The black band on the diode is the front and must be toward the bulb when the wires are hooked up.



WIRING

BOILER ASSEMBLY

1. Dome #M0496, dome #M0499 (w/whistle and pop valves attached), and generator #M0163 (2 parts) are placed in positions as shown. If desired, a drop of glue on the inside of boiler will hold them permanently. Bell bracket #8183 is fastened with #7477, 0 x 7/32 S.T. screw, bell and hanger is inserted in bracket. Smoke stack #M0453 is placed in position after weight is inserted in boiler.
2. Handrail posts #M0486 are assembled on handrail #M0450 and then pressed into holes in boiler.
3. Air tanks #M0408 are pressed into holes at rear of lower boiler #M0473 on each side. Compressors are pressed into holes just forward of cab on left hand side. The cooling coil section of the compressor is on the bottom. The damper control #M0487 is inserted in the two holes in boiler on the right hand side in front of first boiler band.
4. Lower boiler is assembled to upper boiler by slipping small tabs at front end of lower boiler into upper boiler. Back end is snapped into upper boiler at rear.
5. Refer to wiring instructions for assembly of lights and weight into boiler.
6. Cab #M0448 is placed on boiler and secured by inserting small pins in rear of boiler into holes in cab and using #7153 screw up into the roof of cab. Ventilator is installed as shown.
7. Secure boiler to frame at rear with two #7153, 2 x 5/16 S.T. screws and in front with one #7283, 2-56 x 1/2" R.H. screw up through frame and cylinder into boiler weight.
8. Long part of hand reverse lever is inserted up through square hole in right hand running board and adjusted so pin will go into hole in the extension on top of brake assembly.



No. in Kit	Description	Part No.
1	Main Frame	M0483
1	Bearing, Long Axle	6301
2	Bearing, Short Axle	6302
1	Wheel & Axle, 80" Spoked, Flanged	M10511
1	Wheel, Gear & Axle, 80" Spoked, Flanged	M10512
1	Retainer Plate	M0490
2	Side Rod	M0467
2	Bushing	6933
2	Screw, Short Hex Head	7159
2	Screw, Long Shouldered Hex Head	7160
1	Gear Box	M10297
1	MG-81 Motor	
1	Coupling	M0277
1	Lock Washer	7573
1	Wrench	5511
1	Cylinder	M0471
1	Crosshead Hanger	M0468
2	Pilot Handrail & Coupler Lift	M0029
8	Handrail Post - Large	M0030
1	Coupler Pocket	M0338
1	Coupler	2601
1	Crosshead L.H.	M0469
1	Crosshead R.H.	M0470
2	Main Rod	M0465
1	Lead Truck Frame	M0491
1	Spacer, Lead Truck	6936
1	Spring, Conical	7008
2	Wheel & Axle Set, 33"	25047
2	Retainer, Lead Truck	M0492
1	Front Brake Set	M0505
1	Rear Brake Set	M0463
1	Suspension System	M0462
1	Ash Pan	M0482
1	Bearing Block	M0480
1	Spoked Wheel Set, 40"	M10102
1	Spring, Conical	7008

BOILER PARTS

1	Boiler, Bell Paire	M0449
1	Lower Boiler	M0473
1	Boiler Front, Penna.	M0476
1	Headlight Housing	M0454
1	Headlight Retainer	M0475
2	Number Plate	M0455
1	Light Bulb & Lead Wires	M0028
1	Smoke Stack	M0453
1	Dome, Flat Top	M0496
1	Dome, 3 Holes	M0499
1	Bell	8181
1	Bell Bracket	8183
1	Bell Hanger	8182
1	Generator Base	M0163
1	Generator	M0164
1	Whistle	M0452
2	Pop Valve	M0451
1	Handrail, Boiler Front	M0459
1	Handrail, Boiler	M0450
15	Handrail, Posts - Small	M0486
1	Damper Control	M0487
1	Hand Reverse	M0466
2	Signal Light Housing, Top	M0456
2	Signal Light Housing, Bottom	M0457
1	Lens	M0477
2	Compressor, Top	M0514
2	Compressor, Bottom	M0515
2	Air Cylinder	M0408
1	Cab, Penna.	M0448
1	Ventilator	M0472

No. in Kit	Description	Part No.
1	Rear Deck Plate	M0421
1	Weight	M0474
1	Bulb & Lead Wire 4/4"	M10520
1	Bulb Holder	5602
1	Insulator, PVC Sleeve	M0503
1	Lead Wire & Terminal	M10518

TENDER PARTS

1	Tender Body	M0447
1	Tender Frame	M0478
2	Tender Truck	M10437
1	Diode	M0300
2	Insulator	7811
1	Lead & Terminal Lug, 4 1/4"	M10518
1	Drawbar	M0185
2	Wave Washer	M0143
1	Water Scoop	M0508
1	Back-up Light Housing	M0411
1	Shovel	M0519
1	Lamp & Lead Wire	M0028
8	Screw, #0 x 7/32 S.T.	7477
7	Screw, 2-56 x 3/16 S.T.W.H.	7494
4	Screw, #2 x 5/16 S.T.	7153
1	Screw, 2-56 x 1/2" R.H.	7283
2	Screw, 2-56 x 3/16 S.T.	7152
5	Screw, 2-56 x 1/4" S.T.	7503
1	Screw, 2-56 x 1/4" R.H.	7626
1	Screw, 2-56 x 3/8" S.T.	7504

REPLACEMENT PARTS

See your Hobby Dealer. If he cannot supply them you may order from the factory. Please send check or money order for parts required, plus \$1.00 for postage and handling.

DEFECTIVE PARTS

RETURN PARTS ONLY - NOT COMPLETE MODEL. Any defective part will be replaced at no charge. If complete or partially completed model is returned only the defective part will be replaced, not installed. Please enclose check or money order for \$2.00 to cover the cost of postage and handling.

OUR GUARANTEES

Because of the workmanship of the Mantua product, we are able to offer a **Limited Lifetime Warranty**. As the owner of Mantua products, you'll enjoy a commitment to product dependability few companies can offer. All Mantua items are thoroughly inspected and tested prior to shipment. They are guaranteed to operate satisfactorily, and to be free from defects in material and /or workmanship.

If it fails to perform because of defects in material or workmanship, Mantua will replace it free of charge. This guarantee does not apply to (a) electric bulbs, (b) damage caused by customer accident, abuse, mishandling or dropping; or (c) products which have been subject to unauthorized repairs. We cannot assume responsibility for the replacement of any parts that have been altered, or assembled and painted, unless, in our opinion, the defect did not become apparent until after the assembly.