

## **Marx Drive Gears and The Locomotives They Love**

**Revision 4 – Added 588**

**Revision 5 – Saved as Portable Document Format (Goes through all switches)**

**Revision 6 – Mexican 999**

**Revision 7 – Photos of the DR and SR gears in Steamers**

**Revision 8 – Spelling and grammar**

**Revision 9 – Added 799 RI Switcher**

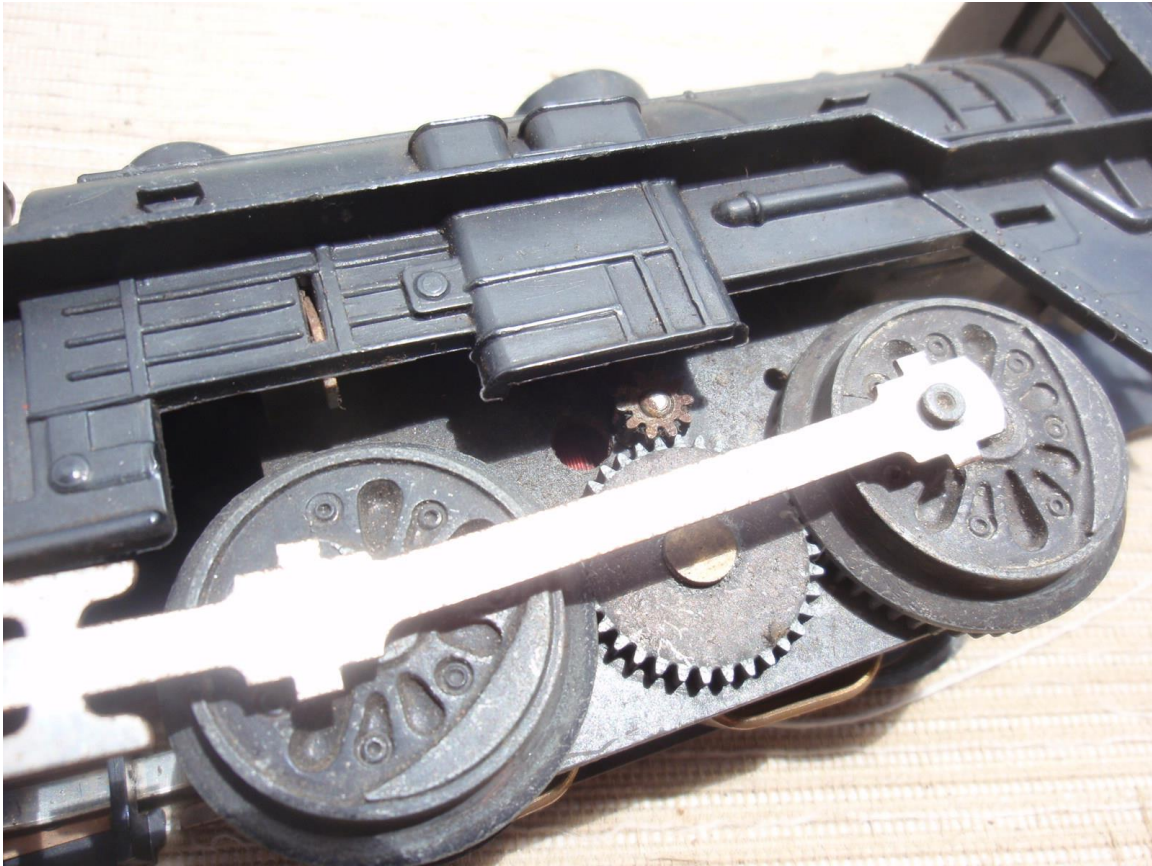
**Revision 10 – Added NYC colors for 588 and LV 112**

The term “double reduction” means that there are two steps in the gearing. The motor runs at a higher rate for any given speed. That means these locos typically move a little slower, run a little smoother and can pull more cars than a single reduction motor.

A second effect is that the gear attached to the drive wheels has a smaller diameter. That makes the thickness of the flange a bit less and makes it possible for those locos to travel through some other brands of switches.

Over the years, some hobbyists may have replaced an original, single reduction motor in a locomotive. There are reports that the factory may also have done so while repairing locos for customers. You really have to look closely at the drive wheels to be sure. If the gears go all the way to the edge of the flange, it is single reduction. If the gear teeth do not go to the edge, it is double reduction.

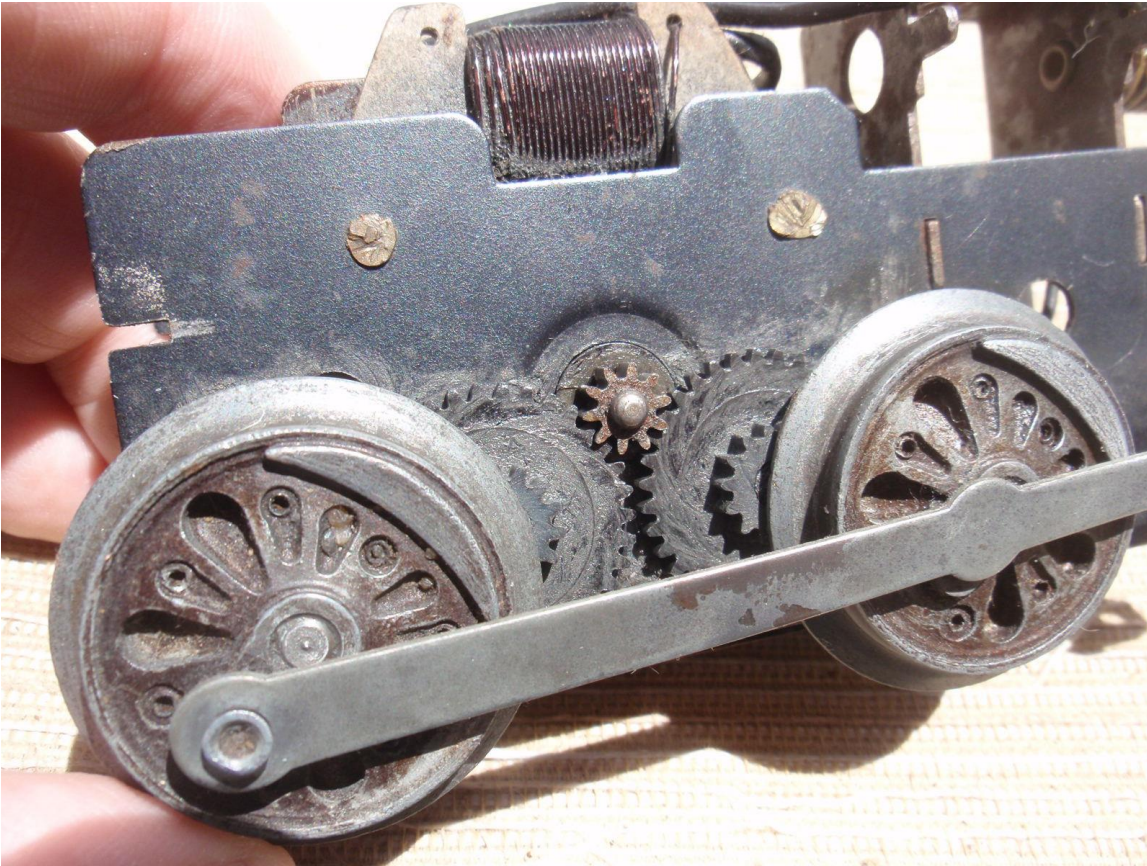
**Some Photos:**



**Marx Steamer – Single Reduction Side View – there is a single stage of rotation reduction. The big central gear is just an idler.**



**Marx Steam Loco with Single Reduction Bottom View – note that the gears come all the way to the edge of the flange. Some call this the ‘thick flange version’ because it will not work through some brands of switches or crossings. The guard rails interfere.**



**Marx Steamer with Double Reduction gears – Side View. The motor pinion (minion?) drives the outer teeth of the compound gears to either side. That provides one stage of rotation reduction. The smaller inner gears on the compounds drive the teeth that are part of the wheel. The wheel gears have more teeth and that provides the second stage of rotation reduction.**

**There are similar arrangements in the various diesel locos. Of course, those have differing numbers of gear teeth.**



**Marx Steamer chassis with Double Reduction Gears. Note that only the flange extends to the full diameter of the drive wheel. It does not have problems with guard rails. In fact, guard rails help it to track better.**

### **Some General Model Guidance – which has what?**

The following **steam** locomotives came with double reduction gears.

333 (4-6-2)

666 (2-4-2)

1666 (2-4-2)

1829 (4-6-4)

The following locomotives came with single or double reduction gears. You have to look at them to see.

400 (0-4-0)

490 (0-4-0)

591 (0-4-0) Look for sheet metal boiler with hand rails, drive rods etc.

635 (0-4-0) Mercury sparking – these may have different size gears from other double reduction motors.

897 (0-4-0) Army version

994 (0-4-0) Numbers below the cab window and shade over the headlight. These are rare and came with light weight plastic cars in the sets. **All 994 black electrics were double reduction.**

**995 (0-4-0) Red ones are double reduction**

999 (2-4-2) Look for the Marx logo on the cab and not on the boiler. These are hard to find.

999 (2-4-2) Plain pilot

999 (2-4-2) There are some Mexican production 999's with a double reduction motor that have a blank circle rather than a Marx logo on the side of the cab. But there is still no logo on the boiler on those.

3000 (2-4-2) Canadian Pacific gray boiler/maroon and gold side boards

The following **diesel** outline locos sometimes had double reduction gears:

62 B&O E or F type cab unit

81 Monon

112 Lehigh Valley

588 New York Central – Black or Gray or Maroon

799 Rock Island switcher – Red & Black

1998 Switcher

6000 Southern Pacific E or F type cab unit

Pre-1955 Santa Fe and New York Central E units

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