

LocoGear

John D.L. Johnson
3879 Woods Walk Blvd.
Lake Worth, FL 33467-2359
jjohnson@LocoGear.com
www.LocoGear.com

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Lima Locomotive Works Order Number, Shop Number, and Drawing/Card Number Systems

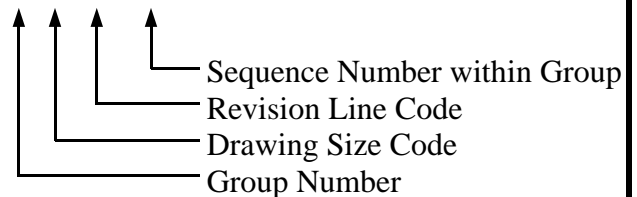
The Lima Locomotive Works' numbering systems for sales orders, locomotive serial numbers and drawing/card numbers may seem confusing at first, but once you understand the schemes, you will find them very ingenious.

Prior to 1915, all drawings were assigned a sequential **Card Number**, sometimes preceded by a letter such as **A**, **B** or **T**. Side elevations or "Erection" drawings were numbered with the same number as the **Shop Number** (serial number) assigned to the first locomotive built to that drawing.

During the years 1915 and 1916 Lima created a new "group" numbering system for their drawings which lasted to the end of steam locomotive production. Lima grouped their drawings based on the subject matter of the drawing. The "new" Card Numbers consisted of seven numbers separated between the third and fourth digit by a capital letter, often with a pair of dashes on either side of the capital letter. For example, **Western Maryland Railway #6's** right side view "Erection Elevation" drawing was assigned card number **420-A-5014**. Because it was built in 1945, most of the drawings used to build **Western Maryland Railway Shay #6** were assigned card numbers according to this group system.

The card number contained four elements identifying the drawing. The first two digits referred to the **Group Number**. The third digit referred to the **Drawing Size Code** of the

420-A-5014



drawing. The letter referred to the **Revision Line Code** of the drawing. The remaining four digits were assigned to drawings sequentially within the group. Refer to the diagram on this page.

The two digit **Group Numbers used** for drawings ranged between **10** and **99**. Each Group Number was assigned to a group of similar parts. The group descriptions were assigned numbers based on their arrangement alphabetically, except the last three Group Numbers, **97-99**. Thus the first drawing Group Number **10**, was assigned to **Ash Pans** and Group Number **96** was assigned to **Whistles**. Refer to the chart on pages 2 and 3 for a list of the Group Numbers and their contents. Not all Group Numbers were used.

The Group Number system also included **01** through **09** which were not used for the drawings, but were used in the **Master Drawing Index Books** for each order to list specifications, cost summaries and manufacturing

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Group Number	Group Contents	Group Number	Group Contents
01	Construction Order and Specifications	48	Frames and Details for Engines
02	Material Costs-Estimated vs. Actual	49	Gauges, Templates and Jigs used in production
03	Labor Costs-Estimate vs. Actual	50	Guides, Yoke and End
04	Summary of Costs-Estimated vs. Actual	51	Grate Arrangements
09	Manufacturing Notes	52	Grate Details
10	Ash Pans and Oil Pans	53	Hand Rails and Steps for Engines and Tenders
11	Axles	54	Headlights and Signal Attachments including Lamps, Electric Wiring, Builders Licenses and Number Plates
12	Bells and Bell Ringers	55	Injectors, Boiler Checks, Feed Water Attachments and Strainers
13	Boilers	57	Lagging and Jackets
14	Boiler Details and Attachments including Tubes and Flues	58	Link Motion Arrangements
15	Bolts, Nuts, Studs, Keys, Pins, and Bushings	59	Oil and Grease Cups, Lubricators and Brackets, Oil Can Holders, Flange Lubricators
18	Brackets, Air and Steam Gauge Brackets, Steam and Cylinder Bottom Brackets	60	Oil Burning Attachments for Engines
20	Brake Equipment	61	Painting, Lettering and Numbering
21	Bumpers and Details including Push Poll Pockets	62	Pilots and Snow Plows
22	Cabs	63	Pipe Fittings and Clamps, Air, Steam, Water and Lubricator Pipe Fittings
23	Cab Details including Aprons, Brackets, Door Fixtures, and Ventilators	64	Pipe Arrangements, Engine and Tender, Air Brake, Cooling, Oil Heaters, Sprinkler and Steam Heat Piping
26	Cocks and Valves including Cylinder and Blow-off Cocks, Globe Valves	65	Pistons and Rods, Extensions, Rod Packing
27	Cocks and Valves, Gauges, Water, and Special	66	Plugs, Hand Holes and Washouts
28	Cock Rigging	68	Reverse Levers, Screws and Pneumatic Gears
29	Crank Pins and Details	69	Reverse Shafts and Reach Rods
30	Crossheads, Arms, Pins, Keys and Shoes	70	Rockers and Boxes
31	Cylinders and Barrel Bushings	71	Running Boards and Brackets, Side and Deck Sheets
32	Cylinder and Steam Chest Heads and Covers, Steam Chests and Bushings	72	Rods - Connecting and Stubs
34	Cylinder By-Passes, Relief, Vacuum and Drift Valves	73	Sand Boxes, Sanders and Rigging
35	Die Work including Flanging Dies	74	Shafts - Crank, Line, Square, Counterbalances, Couplings, Brasses, Pinions, Gears
36	Domes including Caps, Casings and Rings	75	Smoke Box Arrangements, Fronts and Doors, Smoke Stacks and Extensions, Smoke Box Braces
37	Draw-Gear for Engines including Couplers, Uncoupling Rigging, Front Buffers, Draw-bars, Safety Chains and Bars	76	Springs
39	Eccentrics including Cranks, Straps, and Rods	78	Steam Gauges, Safety Valves and Turrets
42	Erection Cards - Elevation Views	79	Steam Pipes and Tee Heads
43	Erection Cards - Cross Section Views	80	Stokers and Details for Engines and Tenders
44	Exhaust Pipes and Nozzles		
45	Fire Doors, Fire Brick and Tubes, and Smoke Consumers		

Group Number	Group Contents
81	Superheaters, Headers and Details
82	Tank Valves for Oil and Water including Handles, Wells, Goose Necks, Strainers, Hoses and Oil Burning Attachments for Tenders
85	Tender Frames
87	Tender Decks and Tool Boxes
88	Tender Tanks for Water and Oil Including Filling Holes, Tank Funnels, Coal Gates and Coal Pushers
91	Throttles and Dry Pipes including Levers, Supports and Sleeves
92	Tools
93	Trucks and Truck Details including Journal Boxes and Bearings
94	Valves for Distribution including Stems, Rods, Valve Rod Crossheads and Packing
95	Wheels and Tires
96	Whistles and Rigging
97	Preliminary Designs and Propositions
98	Clearance and Wheel Base Diagrams
99	Miscellaneous

(Continued from page 1)

notes. The Master Drawing Index Books were used to list every drawing used for that Order Number. A copy of the Master Drawing Index Book for **WM #6** is available in PDF format for download at the **LocoGear** web site.

The third digit, just to the left of the first dash, refers to the **Drawing Size Code** for Lima's standard drafting paper sizes. As the number increases from **1** through **0**, the size of the drawing also grows. Drawing Size Codes **1** through **4** were Lima's most frequently used standard drawing sizes. Drawing sizes **1** through **4** were usually drawn on drafting vellum paper or linen which was commercially available at the time with the border and title block pre-printed in place.

However, beginning with Drawing Size Code **5** and above the drawing sizes grew larger than standard commercially available drafting paper and their size was determined by the size or shape of the part or parts to be drawn and thus each code is actually a range of similar sizes. Drawings with

Drawing Size Codes **5** through **0** were usually drawn on vellum paper or linen sheets cut from standard width rolls of material with the border and title block drawn by hand. These drawings varied in height from 12" to 28" (the width of the roll), and from 42" to 138" in length. Refer to the chart below for a list of the drawing sizes. The drawing sizes listed for Drawing Size Codes **5** through **0** are typical examples of sizes found in that range.

The capital letter **Revision Line Code** was used to identify revisions to the drawing. On the standard pre-printed drawings a table containing Revision Line Code letters **A** through **L** were available just below the title block to use for each **Order Number** as the drawing was revised for subsequent orders. The first Revision Line Code "**A**" was used for the first Order Number that used the drawing.

Lima used two numbering systems to identify locomotives; the **Order Number** and the **Shop Number**. The **Order Number** is essentially a number assigned by the sales department identifying the placement of a sales order with the company by a customer for one or more locomotives. The **Shop Number** is essentially the serial number assigned by the manufacturing or engineering department to a particular locomotive. **WM #6's Order Number** is **510** and its **Shop Number** is **3354**.

Prior to 1905, the Order Number and Shop Number were generally the same and ranged between **1** and **999**. However, if an order contained more than one locomotive these numbers only matched on the first locomotive produced for that Order Number.

Beginning in 1905, Lima began assigning separate Shop Numbers for geared and conventional rod locomotives. Geared locomotives were assigned Shop Numbers in the series **1500** to **4999**. The highest Shop Number used was **3354** assigned to the last Shay built, **WM #6**. From 1905 to 1917 the Order Number and Shop Number were generally the same. However beginning in 1917, Lima began a new series of **Construction Order Numbers** for the geared locomotives ranging between **100** through **999**. After 1917 the Construction Order Numbers and Shop Numbers no longer matched for the same locomotive. The highest Construction Order Number used was **510**, again assigned to the last Shay locomotive ordered, **WM #6**.

Code	Drawing Size	Contents
1	9" x 12"	Small Details & Brass Work (Sketches)
2	12" x 18"	Small Details & Brass Work (Sketches)
3	18" x 24"	Details
4	24" x 30"	Cylinders, Cabs, Boiler Sections, Grates, Ash Pans, & Tanks
5	12" x 42"	Engine Frames etc. & Small Designs, Running Boards
6	12" x 60"	Engine Frames, Spring Rigging, etc.
7	24" x 42" to 52"	Cylinders, Tender Frames & Tanks
8	24" x 54" to 60"	Boiler Elevations & Small Erecting Cards
9	26" x 66" or larger	Erecting Cards
0	26" or larger x 84" or larger	Erecting Cards

The Revision Line Codes “**B**” and higher were primarily used to identify different Order Numbers assigned to subsequent locomotives or **Repair Orders** that used the same drawing with or without any mechanical revision to the part or parts shown in the drawing. These revisions ranged from minor dimensional notations to major changes.

Sometimes the Revision Line Codes were used to identify modifications of similar parts used to build the same locomotive. For example the Truck Plan drawing Card Number **939-A-5002** with revisions **B** and **C** for Order Number **510**, used Revision Line Codes **A**, **B** and **C** to identify each of **WM #6**’s three trucks (**A**-Front, **B**-Center, **C**-Rear).

An interesting example of the use of Revision Line Codes for multiple Order Numbers can be seen in the truck part drawings used for both **Greenbrier Cheat and Elk Railroad #12** and **Western Maryland Railway #6**. For the Right Side Truck Frame drawing, Card Number **933-A-5066** was assigned on November 18, 1920 to Order Number **329**, to build **GC&E #12**. The first revision of this drawing was assigned Card Number **933-B-5066** on December 28, 1932 for Repair Order **R-13637** to Shop Number **3156**, (the Shop Number for **GC&E #12**). In 1932 the **GC&E** added a fourth truck to **#12** by enlarging its tender and needed the extra parts to build a matching fourth truck. This revision thus documents this modification to **#12**, although it was done at Cass,

West Virginia by the **GC&E** shop crew and not by Lima. The Second revision to this drawing was assigned Card Number **933-C-5066** also on December 28, 1932 with minor dimensional changes and marked for “Future” use. That future use came about between July 13, 1944 and February 5, 1945 with several additional minor dimensional changes when the same drawing was used to make the right side truck frames for **WM #6**.

To further document the close relationship between **GC&E #12** and **WM #6**, nearly the same notations are used on the Left Side Truck Frame drawing Card Number **933-A-5067** with revisions **B** and **C**. A similar story can be found on the Right Side Truck Journal Box drawing with Card Number **933-A-5069** assigned to Order Number **329**. Revision Line Code **B** was assigned to Repair Order **R-13637** with a notation of the Shop Number **3156**. Revision Line Code **C** was assigned to Order Number **510** on June 14, 1944. In all cases there were minor dimensional changes with each revision.

The last four digits of the Card Number are sequentially assigned to the part within the group identified in the first two digits. For parts specific to geared locomotives these sequence numbers seem to be assigned beginning with the number **5000** and higher.