# HINDSIGHT 20/20

# Building The Chicagoland RPM 2019 Mini-Kit

### Part One

## Presented by George Toman

June 2020



# Illinois Central Single Sheathed Boxcar







### 2019 CHICAGOLAND RPM MINI-KIT ILLINOIS CENTRAL SINGLE SHEATHED BOXCAR SERIES 16000-16975

The 2019 Chicagoland RPM Mini-Kit was a Illinois Central single sheathed boxcar. The prototype cars were built for a total of 1000 cars split evenly between Pullman Manufacturing and Mt. Vernon in 1927. The cars had unusual 3 over 5 Dreadnaught ends which are reproduced in the resin parts for the Mini-Kit. The cars were also built with an outward facing angle sill that allowed the sills to be shallower than most contemporary cars.

In addition to the dreadnaught ends, these cars were built with Hutchins roofs, and a Beard take-up reel at the base of the vertical brake staff. Originally numbered in the 176000-176999 series, the cars were later renumbered in the 1940's into the 16000-16975 series. Of the original 1000 cars, 961 of them were still in service in 1948, 920 of them in 1956, and 265 were still on the roster in 1965.

Prototype Photos courtesy of Ray Breyer's photo collection

### The Subject Matter Car



Photo Courtesy Ray Breyer

The 2019 Chicagoland Mini-Kit gift to the 1<sup>st</sup> 100 registered guests



Required Additional Recommended Parts

Accurail 7100 series undecorated single sheathed boxcar Plano Model Products #12121 Boxcar Ladder Set Tahoe Model Works 40-ton ARA Trucks TMW-114 or TMW-214 0.040" sheet styrene 1x6 HO scale styrene (for side flange) 0.020x0.030" styrene 18" grab irons of modelers choice Additional brake details per modelers preference Carmer cut levers of modelers choice if desired. Kadee #158 couplers Drawings for this car can be found in the book, Illinois Central Railroad Freight Car Diagrams, March 1954 Edition.

Also: Focus on Freight Single Sheathed Box & Automobile Cars Volume One Speedwitch Media



### Comparison of Accurail Car Shell to Actual Car from 170000 Series



### The Accurail Body

A decision was made to only use Roof and Door Sections and Mini-Kit resin parts. Extra door handle will be removed and top door rib to be shortened New Wood side and new sill will be built using styrene



First step I needed to prep the Accurail Shell that needed the two ends removed and the wood car sides on each side of the doors removed

To prep the Car body to cut the end off I glued a .010x.040 strip as a cutting guide



# Using a UMM-USA Microsaw to cut along styrene guide



Making a cutting guide from .1x.1 styrene too cut side from roof



I used some .1x.1 Evergreen Styrene and cut notches to fit over the Z's cast into the car side. This allowed for a flush cut with the Micro Saw and served as a cutting guide for straight accurate cuts.

Note notches in .1x.1 styrene to fit around Z Bars

# Pictured below are the cuts in the body to separate roof and door from the sides and ends



Note Rivet strip on each side of door was left intact

### The wood side and ends cut away



Using a chisel blade to trim off unwanted details





As the body was warped, I added styrene shims to keep the doors perpendicular

.040 styrene cut to keep body square



Note: My Perma-grit tungsten file is over 40 years olds and now available from Micromark





A small T Square was used to help square cut using files and sanding sticks I decided to use individual boards made of .020x.060 styrene. One edge was beveled only to give the appearance of individual boards.



Scrap styrene fixture was made to hold the .020x.060 styrene strips for the side and put a slight bevel on one edge for board definition Note the grove to hold the .020x.060. Make a mark on the edge with slight bevel



A Micro saw was used to score the boards for wood grain effect

The .020x.060 boards were glued to a .040 substrate and cut to size to fit the cutout area on the Accurail shell. Note a beveled edge was butted next to a square edge to show some board edge definition.





The two side are glued in place and allowed to thoroughly setup The side sill will be added from .040x.125 styrene and the .010x.060 outward facing bottom channel. See drawing on next slide.



Note: One thing I did was to recess the new wood sides by .005 to the Accurail Car Body. Next time I would go flush and just make sure I had a slight bevel where the wood meets the Accurail top eave. Reason being for the car side diagonal supports that get glued in in a later strip did not sit perfectly flat.

### Styrene Side Construction Not TO Scale



Note the lip that is formed for the floor assembly to fit where the blue .040 thick styrene meets the black .040x.125 side sill Mockup of Z bracing made up of .005 x .030 strips glued first to car body and the an L constructed of .020x.030 and .011 x .033 (HO 1x3)(I used .020x.030 high to match the Acccurail Car Body)(.020 x.020 would be more correct)

.005x.030

.011x.033 (1x3)







A homemade measuring guide was use for making the .005x.030 strips This photo shows a guide that is .020 See drawing next slide for construction detail

> Note: I will have a short addendum about cutting strips near the end of the presentation.



Measuring guide side view showing lip to push against stock and ruler

### End View of Strip Cutting Guide



Next I need to construct the L shaped part of the Z Bars used on the sides. I used .020 x .030 stood on end with a .011 x .033 (HO 1x3) glued on top to form the L. Wood scrapes and an aluminum square were used as a gluing aid to keep pieces at right angle. Styrene glue does not adhere well to the wood and aluminum



Gluing the .020 x .030 to the .011 x .033 to create the L portion of the Z.

.020x.030

.011x.033



The Resin Car Ends needed some styrene backing and were cut from .040 styrene stock and glued in place

A 1.05 Wide styrene end backing was cut from .040 styrene and glued flush to sides on both ends

Unassembled Underframe is test fit into car body (Not Glued At This Time)



Parts that will be used to build the Underframe from Accurail Parts are Shown Below in Black

4 Resin Cross Bearers and Semi Scale Draft Gear shown in Gray



#### Resin ends were attached to the car body



Note: When attaching the Resin Ends I 1<sup>st</sup> liberally apply styrene cement to the styrene backing put in two steps ago. The styrene gets gooey and creates a bond to the resin and allow for positing. Once set in place, I apply CA to the bottom and top from the inside of the carbody



Upside down view of Carbody and stating prep on underframe Note the lip that was formed by the car sides and side sills for floor to sit in



Dimensions were take off the Accurail body to mark the sides with a Digital Caliper for positioning the Z's



I cut a triangle made from styrene to use as a template to mark the angles



Side view and placement of Vertical and Angled Z's. Measurement and placement mirrored Accurail Body



### Note the shadow 3D effect of constructing the Z's this way







View from the opposite direction





### Archer Fine Transfers AR88030 Rivets were used for the Z's



### Micro Scale Micro Sol and Micro Set were used to apply the Archer Rivets







Locating the Resin Corner Supports using custom cut styrene guides from styrene and an Old Simpson Products T Square. Photos were used to determine placement location Also use cast on detail on resin end to help locate position



Resin corner braces in place

Extra rivets added to corner braces per photos

Side grabs formed from Tichy .010 wire located

Bolster Rivets added to side sill Tichy .020 Rivets

Small welded side supports added from .005 stryene

Rivets added to opposite side of Z
Top and Bottom

Shim Brass was cut and bent into an L shape from .005 thick by .080 wide & a square styrene .010x.010 styrene strip was attached with CA to form front of door track



I will talk a bit more about cutting and bending brass near the end of the presentation.

### Testing Door Track and Resin Door Roller on car Not Glued at this time





Test fitting of Resin Door Rollers and Track
Making the Tow Loops with .010 wire and .020 Tichy Rivets





A small template was made from styrene to <u>mark</u> location of .010 wire loop. Holes were <u>not</u> drilled all the way until underframe is mounted

### Photo Etched Stiles were used with .010 Tichy Wire bent to size







Note that the top and bottom of the stiles are bent inward

A Hand Grab was formed from Tichy .010 wire. Note that it is a drop grab and how it stands out from the car end







.005x.030 brass strips were formed for the air Reservoir mounting brackets

#### Mounting brackets were made from styrene for the Brake Cylinder and Three Way Valve

Note that the Air reservoir is mounted in the center as seen in Prototype Photos





The Accurail Corner Braces were cut flush to floor

A .015 thick styrene glued to bolster that properly spaces draft gear



Yarmouth PE brass Brake Levers were used

Tichy .0125 wire was used for the piping to the reservoir

.008 wire was used for the line to the retaining valve





Release Rod made from .008 wire. Left long for final trimming

Brake Reservoir was centered per photos of car





Resin rivet plate is applied to the Cross Bearers with Canopy Glue and reinforced with CA Glue

I used the rivet plates form the Mini-Kit and later learned from Ted Cullota that there should be a double row of rivets. Close inspection of photos does show this to be the case





The underframe was attached to the body and a .005x.030 L shape with a hole was attached to the floor and side for the .008 bleed valve rod Short lengths of .032 SS Tubing were cut for mounting the Train Air Line and air hoses



Precision Air hose brackets and Moloco Rubber Air Hoses are used



The Precision Bracket is drilled and a Moloco air hose is inserted



The SS Tubing is pulled over the air hose and secured with CA



# Underframe Complete



## Close-up of Piping





Now that the floor is glued in place drill the pre marked holes for the Tow Loops and then add a Tichy .020 Rivet Head next to each loop





.010x.015 styrene strips are cut to mount the ladders

Brake step mounting brackets are formed from .005x.030 brass using a template I made for bending





The Brake Wheel upper support formed from .005 brass around a .015 piece of wire







Moloco Roof Walk Supports added on each end of car

Ladders have been installed and Precision relief valve added with .008 wire

Lower Brake staff and Beard Take up reel is fabricated from bass as shown



Note the bend in the U Shaped bracket for the brake staff

.010x.030 brass was formed for the lower brake staff. A hole was drilled for the .015 staff and soldered in place along with a length of A-Line chain





Yarmouth Models 12 inch straight leg stirrups were cut out and formed to shape

Styrene Drilling Template to locate stirrups on car sides

### The upper brake staff and lower support are mounted in place





YARMOUTH MODEL WORKS . . . . **Detail Parts** YMW #405 **Carmer Cut levers** OL 2, LL 2

I choose Yarmouth Models YMW #405 Cramer Cut levers from their available choices. Installed as seen below





Another Drilling template was made from styrene for the corner steps

# End of Part 1

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# HINDSIGHT 20/20

# Part 2

# Building The Chicagoland RPM 2019 Mini-Kit

# Presented by George Toman

June 2020

### What are Keeley Cans?



Journal Box Cooler for plain journals and patented by M.P. Cook in March 1912. This type of Journal Box Cooler for Hot Boxes became known as Keeley Cans. When a journal heated up too much, a Keeley Can was hung on hooks above the trucks and journals box covers. A hose was inserted into the open journal box and let water drip to cool it off.

Photo credit Google Patent for M.P. Cook



Small hooks were formed from .010 brass around a .012 Stainless Steel wire from Detail Associates.

Xuron Tweezer Nose pliers were used





Further Detailing the Yarmouth Photo Etched steps previously installed

Next to each step I used a .010 thick by .030x.030 glued in place and a harvested Athearn Rivet added

# <sup>3</sup>⁄<sub>4</sub> View Showing Progress up to this point



Close up of progress Also you can see the four Hooks for the Keeley Cans. Note how they are positioned with the hooks opening facing outward



Note: I made a styrene drilling template as well to drill the 4 small hooks on each corner



The four hooks for the Keeley Cans and their position can be seen



Note Brake Chain





installed


View of upper door stop made of .010 thick by .030 x.030 cut on a diagonal to a triangular shape



## Alternate View

Lateral Running Board supports were cut and formed from .005 x. 030 brass and installed on the roof. The running boards were made from .015 x.060 scribed styrene



The grabs were formed from .010 wire and Tichy Plastic Ladder Rung ends cut off and glued next to the wire ends and Yarmouth eyelet

![](_page_75_Picture_1.jpeg)

![](_page_75_Picture_2.jpeg)

![](_page_76_Picture_0.jpeg)

Here you can see the Tichy Ladder Rung ends cut and glued in place next to the .010 formed grab

![](_page_76_Figure_2.jpeg)

Tichy Ladder Rungs Part # 3062

![](_page_77_Picture_0.jpeg)

![](_page_77_Picture_1.jpeg)

Making the Ladder Mounting Brackets from .004 shim brass and using an old NWSL rivet tool with .010 rivets dies. Cutting and bending into and L shape as required per photos

![](_page_78_Picture_0.jpeg)

Making the Ladder Mounting Brackets from .004 shim brass and using an old NWSL rivet tool with .010 rivets. Cutting and bending into and L shape as required per photos. Two different styles were required as shown. Brake wheel mounted from Tichy AB set

End view with the Resin Tack Boards in place

Brass Ladder mounting brackets also glued in place. Three on the end ladders. I used Canopy Glue with a bit of CA after the Canopy Glue Dried

![](_page_79_Picture_3.jpeg)

Three Ladder Mounting brackets can be seen in this view

Note the ones for the sides only use a single rivet vs the ends that use two as shown in the prototype photos

![](_page_80_Picture_2.jpeg)

# Side View Ready for final cleaning Paint and Trucks

![](_page_81_Picture_1.jpeg)

# The B End complete

![](_page_82_Picture_1.jpeg)

## Painting the Model

Stynylez Primer Neutral Yellow Body Vallejo Black Red (70.818) 80% and Saddle Brown (70.950) 20% Underframe Vallejo Black Gray (70.862)

![](_page_83_Picture_2.jpeg)

## My favorite primer. Made by Badger Airbrush. Comes in 12 colors

![](_page_84_Picture_1.jpeg)

#### "A fine finish - requires a fine start"

The most accomplished model artisan follows a meticulous process, and they know surface preparation and priming is of paramount importance in achieving a competition winning — museum quality finish on their model. It is with this "attention to detail" mentality that STYNYLREZ primers were designed, developed, and created.

A great primer helps the artist easily bring out every detail of the piece they're finishing. It also ensures that the finish put over it will last a lifetime. The ease of application, thin coat coverage, and exceptional adhesion and durability of STYNYLREZ primers provide a detail enhancement and finish longevity unmatched by any primer before it.

It was our goal in developing STYNYLREZ primers to bring together the most comprehensive understanding of tools and techniques used in model finishing preparation, and the priming process, to create the best primer ever. STYNYLREZ is the result of over fifty years of finishing equipment design knowledge coming together with the insights and direction of the most accomplished modelers in the world. Dur goal was achieved. STYNYLREZ primers are the best primers ever, STYNYLREZ provides.....

The perfect prime - everytime:

KEY FEATURES OF STYNYLREZ PRIMERS ~Simple and easy application			NEW	NEW
~Self leveling - detail enhancing coverage ~Excellent adhesion and durability	WHITE	RED BROWN	LIGHT FLESH	OCEANIC BLUE
~Dries to hard flat finish (except black gloss)			NEW	NEW
~For use on plastics (styrene, vinyl, resin), metals, woods, various other substrates				
~Applicable with brush, airbrush, pad, etc.	GRAY	OLIVE GREEN	EBONY FLESH	METAL
~Safe, waterbase acrylic polyurethane formulation			NEW	NEW
~Simple and easy clean up				
~Available in twelve base tones	BLACK	NEUTRAL VELLOW	DULL PINK	BLACK GLOSS

#### Available in 2 oz., 4 oz., 16 oz, 32 oz. sizes. MSRP: 2 oz. \$7.00, 4 oz. \$12.50, 16 oz. \$42.00, 32 oz. \$74.00

Also available in 2 & 4 oz. 3 tone packs (White/Gray/Black), 2 & 4 oz. 6 tone packs (first 6 tones), 2 & 4 oz. 12 tone packs 3 tone pack - 2 oz. \$19.00, 4 oz. \$34.00 / 6 tone pack - 2 oz. \$36, 4 oz \$64.00 / 12 tone pack - 2 oz. \$70, 4 oz. \$124

Made in the U.S.A by or for Badger Air-Brush Co., Franklin Park, IL, USA Telephone: 1(847)678-3104 www.BadgerAirBrush.com

I typically use Neutral Yellow under Browns, Reds, and Yellow top coats. If I want to vary the shade of the top coat I may use the Gray. Stynylez Neutral Yellow Primer Applied with Grex .5 mm size needle at 20psi

![](_page_85_Picture_1.jpeg)

Pre weathering running board with oil based washes from AK Interactive Dark Brown Wash

![](_page_86_Picture_1.jpeg)

![](_page_86_Picture_2.jpeg)

The running board was taped off and a coat of Vallejo Custom Mixed paint applied. Vallejo Black Red (70.818) 80% and Saddle Brown (70.950) 20%

![](_page_87_Picture_1.jpeg)

Note Running Boards are tapped off. Also not the couplers are wrapped in white Teflon tape as used in plumbing. Thanks to **Michael Gross** for this tip.

![](_page_88_Picture_1.jpeg)

### Scrap Trucks are used for painting.

![](_page_89_Picture_1.jpeg)

A gloss coat of Future/Pledge applied and let dry overnight and then applied kit decals Scraps of yellow post It Notes were used on the tack boards and sides. Chalk marks available from Speedwitch Media More on decals in a bit.

![](_page_90_Picture_1.jpeg)

I can't read the small print

# Tips for Viewing Decals

I can't read the small print

By George Toman

June 2020

I often have trouble reading and selecting the correct information printed on the sheet of decals. This is especially true of the small data and print. I have found the use of my Camera Phone (iphone 10) and a light table made from a Swing Arm Desk Lamp with a .020 thick piece of styrene to help me read and select the proper decals.

> View of IC Decal Sheet Included with Mini-Kit Taken with my iPhone X (Actually pretty easy to read)

![](_page_92_Figure_2.jpeg)

I found that I can take a photo and use the camera zoom feature to enlarge the small data as seen below and snap a photo

![](_page_93_Picture_1.jpeg)

For really tiny and still tough to read data and print, a homemade light table made from a simple swing arm desk lamp with a .020 white styrene sheet is used and held in place with tape. This view shows my desk lamp with a LED 2700 Kalvin 60 watt equivalent. You may need a brighter LED to help read depending on the decal backing sheet and color

![](_page_94_Picture_1.jpeg)

![](_page_94_Picture_2.jpeg)

![](_page_94_Picture_3.jpeg)

#### Views of photos on the LED Light Table

![](_page_95_Picture_1.jpeg)

Sample of another decal sheet that is very hard To read

There is data on the right side that is extremely hard to see even in this enlarged view

![](_page_96_Picture_2.jpeg)

Same Decal Sheet as seen on previous page. Photo taken on full zoom with iPhone

Same image on left and enlarged on computer

![](_page_97_Figure_2.jpeg)

Although this is not a perfect solution for the many decals and brands out there, I find it to be another tool to help me in my quest to get it right.

I have tried the trick of putting the decal sheets on a dark (black) background or even using a Black Sharpie to color the backing sheet with some luck, but find this method to work fairly well

I do keep looking for new ways to get the job done

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George Toman

![](_page_99_Picture_0.jpeg)

# Flat Coat of Vallejo applied

Left Side

![](_page_99_Picture_3.jpeg)

**Right Side** 

![](_page_100_Picture_0.jpeg)

A End

B End

![](_page_100_Picture_2.jpeg)

# **Right Side**

![](_page_101_Picture_1.jpeg)

# Left Side

![](_page_102_Picture_1.jpeg)

![](_page_103_Picture_0.jpeg)

Keeley Hooks

![](_page_103_Picture_2.jpeg)

Brake Chain And train line

![](_page_104_Picture_0.jpeg)

# Underframe

![](_page_104_Picture_2.jpeg)

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# The Concludes the construction of the IC Mini-Kit

Cutting and Bending thin Brass Next

# Cutting Styrene & Thin Brass Strips

# with some Bending Brass

By George Toman

June 2020

Cutting small thin strips of styrene and brass + making angle shapes from shim brass

![](_page_107_Picture_1.jpeg)
I use a Photo Etch bending tool from UMM-USA to hold fold and bend. You can also use these with styrene to securely hold kind of like a vice. There are now 4 versions of this bender

A short and long and also now a short and long with a built in bending brake. The short are excellent to bend PE Stiles such as those from Yarmouth Models.



Cutting small consistent custom widths of styrene with Homemade Guides. Sizes of styrene are a suggestion only. I use scrap that I have for heavier pieces.

Below is a cutting guide to cut thin styrene to .053 wide



## End View of Strip Cutting Guide



#### Positioning the cutting guide



Homemade cutting guide ispushed up against a straight edge of styrene or brass stock

Straight Edge is pushed up against cutting guide stops at top and bottom Firmly hold straight edge in place and score the styrene with blade and you can now bend at score make and break off. Note the PE bending tool is useful to hold the styrene and bend and break off small widths of sheet styrene.



Note: For .005 thick styrene I make light multiple cuts to cut all the way

through.

#### I also use this for cutting .010 and thinner brass using the following method

Place guide up to edge of sheet brass. We will be cutting a .030 wide strip of brass .005 thick



#### Slide straight edge against guide and scribe brass sheet with blade a couple of passes



UUM-USA MN013 UMM<sup>™</sup> Photo Etch Easy Bender 150mm will be used to bend and break at Score mark Place sheet with scribe mark aligned with edge You can also use this to hold styrene as well

http://ummusa.com/onlinestore/index.php?cPath=21

P

Using a metal straight edge to make a bend. Try for one smooth motion The newer version of PE bender with bending break makes this easier



Back and Forth bending motion is used. Bending the sheet backwards then forward. On the third bend it broke off



### Measuring strip



Using a sanding stick to smooth edges to remove slight raised edge



Make Brass Angles From .005 shim stock

.005 brass is 1<sup>st</sup> scribed with a xacto blade. I made this strip .080 wide and scribed a line at .035 in the center for the bend. I allowed .005 for bend



# Scribe Line at .080 wide is lined up in bending tool



Bending the brass back and forth to break it off from the sheet



.080 wide strip is now cut off. One side is .045 and the other is .035. I usually allow .005 for the bend



Brass strip inserted into bender on center scribe line. Note I usually score the bend line 2 or 3 times to make the bending a bit easier.



.Bending brake is raised 90 degrees to form right angle



L shaped is complete leaving a .040x.040 angle





This concludes this short how to on the cutting of thin styrene and brass with some bending.

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