

5008 N SCALE 1:160

SHOWCASE
Miniatures

N#3 CLASS A, 16 TON, T-BOILER SHAY LOCOMOTIVE SHELL KIT.
THIS IS A MODEL KIT SHELL DESIGNED TO BE POWERED BY
THE SEARAIL'S POWERMAXI POWERED TRUCK (NOT INCLUDED)
IT REQUIRES ASSEMBLY AND PAINTING



THE
MICHIGAN-CALIFORNIA
LUMBER COMPANY
SHAY #2
IN N#3 SCALE

THIS ASSEMBLY MANUAL

THIS MANUAL IS PRIMARILY CONCERNED WITH THE ASSEMBLY OF TWO SPECIFIC SHAY LOCOMOTIVES BUT ENOUGH PARTS ARE INCLUDED TO ALLOW CONSTRUCTION OF OTHER SHAYS OF SIMILAR SIZE AND VINTAGE. MANY OF THE PARTS ON PROTOTYPICAL SHAYS WERE PRETTY MUCH STANDARD ON MOST ENGINES.

SHAY DESIGNS VARIED DEPENDING ON THE YEAR IT WAS BUILT, THE TYPE OF FUEL USED, TONNAGE AND THE DESIRES OF THE CUSTOMER AS TO CERTAIN FEATURES AND DETAILS. HOWEVER, THE SHAY'S GENERAL CHARACTERISTICS REMAINED FAIRLY CONSTANT, AT ANY GIVEN TIME, THROUGHOUT THE DIFFERENT PERIODS OF ITS DEVELOPMENT.



THE LIMA SHAY #122

EPHRAIM SHAY'S SIDEWINDER WAS, UNQUESTIONABLY, THE MOST POPULAR OF THE THREE MAJOR GEARED LOCOMOTIVES AMONG LOGGERS THROUGHOUT THE COUNTRY. ABOUT 2000 WERE BUILT BETWEEN 1884 AND 1945, WHEN THE LAST SHAY LEFT THE LIMA PLANT. THEY RANGED IN SIZE FROM TINY 10 TON TEAKETTLES TO 4-TRUCK BEHEMOTHS, OF 150 TONS, AND COULD BE ORDERED TO SUIT A WIDE VARIETY OF TRACK GAUGES. ONLY A RELATIVELY SMALL NUMBER OF THESE UNIQUE MACHINES ARE LEFT TODAY. A FEW ARE STILL RUNNING WHILE OTHERS, FORTUNATELY, ARE PRESERVED IN PARKS AND MUSEUMS.

ONE OF THESE IS THE LIMA NO. 122 BUILT IN 1884 FOR THE RUMSEY LUMBER CO. OF BIG RAPIDS, MICHIGAN. AFTER A SUCCESSION OF OWNERS, IT WAS ACQUIRED BY THE MICHIGAN-CALIFORNIA LUMBER COMPANY IN 1917 AND, AS THEIR #2, SERVED AS THE YARD SWITCHER IN CAMINO, CA UNTIL 1951 WHEN IT WAS RETIRED AND PUT ON DISPLAY THERE.

THROUGHOUT ITS LONG CAREER, VARIOUS REPAIRS AND CHANGES TOOK PLACE SO THAT THE ENGINE'S FINAL APPEARANCE, AS MICH-CAL #2, DOES NOT LOOK MUCH LIKE THE "TYPICAL" SHAY. IN FACT, IT IS QUITE UNIQUE IN THIS RESPECT. BOTH THE CAB AND THE TANKS ARE HOMEMADE ADDITIONS ALONG WITH NUMEROUS OTHER ALTERATIONS TO ITS ORIGINAL FORM. WHEN BUILT, #122 WAS A WOOD BURNER AND HAD 26 INCH WHEELS. MICH-CAL CONVERTED IT TO BURN OIL AND SUBSTITUTED 24 INCH WHEELS. ORIGINALLY CLASSED AS A 13 TON LOCOMOTIVE, THESE CHANGES AND ADDITIONS BROUGHT ITS WEIGHT UP TO 18 TONS. A FINE EXAMPLE OF THE INGENUITY OF LOGGING ROAD MASTER MECHANICS.

....information courtesy the Precision Scale Co.

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SHOWCASE
Miniatures

MOST OF THE EARLY LOCOMOTIVES WERE SMALL - RANGING FROM 10 TO 17 TONS - AND NEARLY ALL HAD "TEE" OR, MORE PROPERLY TERMED, BOOT BOILERS. IN LATER YEARS, THIS GAVE WAY TO THE STRAIGHT BOILER AND THE WAGON TOP BOILER WITH RECTANGULAR FIREBOXES.

THE MOST COMMON FUEL WAS WOOD, ORIGINALLY, BUT MANY ENGINES WERE CONVERTED TO COAL OR OIL. MOST WOOD BURNING SHAYS CARRIED DIAMOND STACKS WITH SOME TYPE OF SPARK ARRESTOR, USUALLY A SCREEN AT THE TOP. COAL AND OIL FIRED LOCOMOTIVES HAD TAPERED OR "SHOTGUN" STACKS ALSO WITH SOME KIND OF SPARK ARRESTING DEVICE AS A RULE.



BUILT UP PHOTOS OF THE
MICH-CAL #2 ASSEMBLED KIT



AN INTERESTING FEATURE OF THE SHAY "CONCEPT" IS THE FACT THAT ALMOST ANY SIZE, OR DESIGN OF THE LOCOMOTIVE COULD BE ORDERED TO VARIETY OF TRACK GAUGES WITHOUT ALTERING THE BASIC DESIGN OF THE ENGINE. ONLY THE TRUCKS WERE CHANGED, TO SUIT THE GAUGE, AND CYLINDERS SLANTED AT WHATEVER ANGLE WAS REQUIRED TO MATCH THE LOCATION OF THE CRANKSHAFT.



BUILT UP PHOTOS OF THE
CLASS A SHAY ASSEMBLED KIT



- REMOVE ANY FLASH FROM THE METAL PARTS AS REQUIRED.
- TEST FIT ALL PARTS BEFORE APPLYING GLUE. ESPECIALLY CHECK THE FIT OF THE MICRO-TRAINS DRAWBAR (INCLUDED) AROUND THE COUPLER PINS IN THE FRONT AND REAR BUMPERS.
- WE RECOMMEND BUILDING AND PAINTING THE SUB-ASSEMBLIES AND THEN PAINTING BEFORE ATTACHING THE POWERMAX! POWER AND THE FRONT TRUCK.

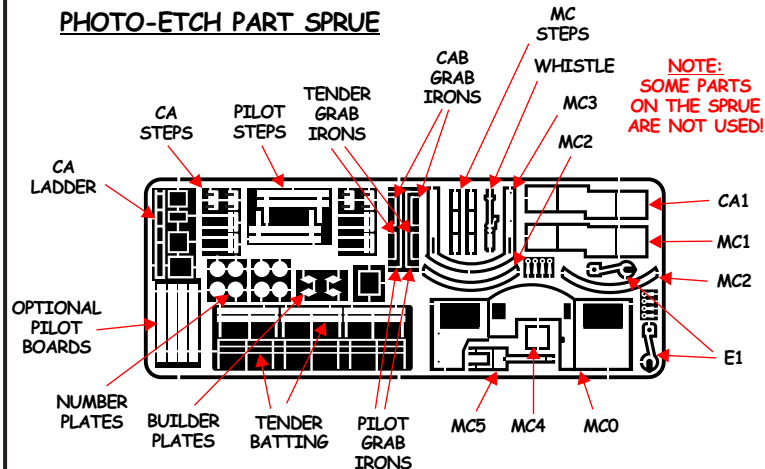
PARTS INCLUDED

PAGE
1

FOLLOWING ARE SPECIFIC ASSEMBLY INSTRUCTIONS FOR THE
Nn3 MICHIGAN-CALIFORNIA LUMBER COMPANY SHAY #2
FOR ALTERNATE ASSEMBLY INSTRUCTIONS FOR THE CLASS A SHAY
PLEASE TURN TO PAGE 5

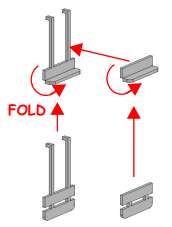
PAGE
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PHOTO-ETCH PART SPRUE

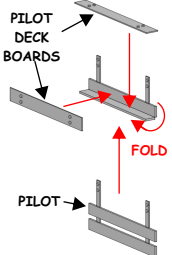


NOTE:
SOME PARTS
ON THE SPRUE
ARE NOT USED!

STEP ASSEMBLY



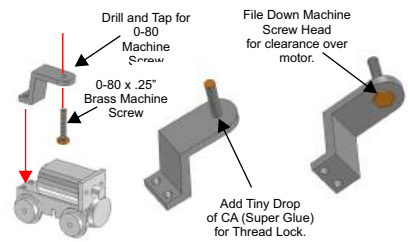
PILOT ASSEMBLY



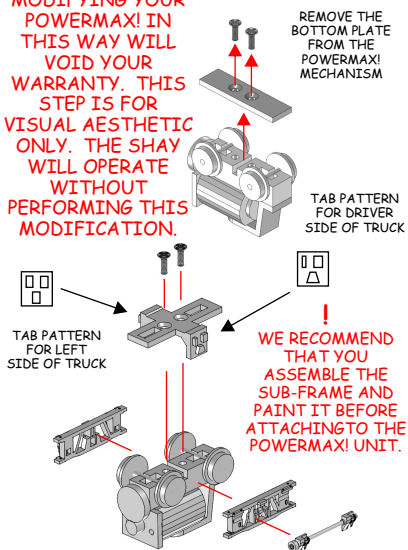
STEP 1

PREPARE THE POWERMAX POWER TRUCK (THE POWERMAX! POWER TRUCK IS NOT INCLUDED IN THE KIT)

THE CENTER PIVOT MOUNTING BRACKET IS INCLUDED IN THE KIT WITH PERMISSION FROM SEARILS. IT WILL NEED TO BE PREPARED IN THE STEPS SHOWN BELOW.



PLEASE NOTE!!
MODIFYING YOUR
POWERMAX! IN
THIS WAY WILL
VOID YOUR
WARRANTY. THIS
STEP IS FOR
VISUAL AESTHETIC
ONLY. THE SHAY
WILL OPERATE
WITHOUT
PERFORMING THIS
MODIFICATION.

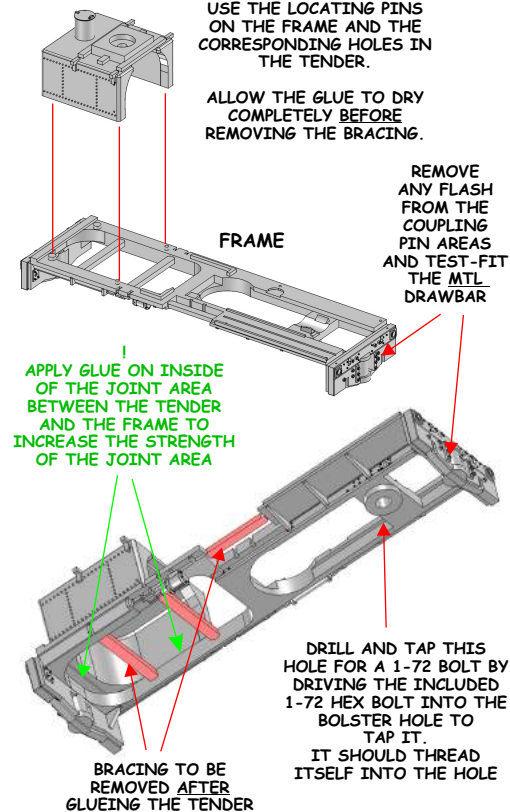


STEP 2

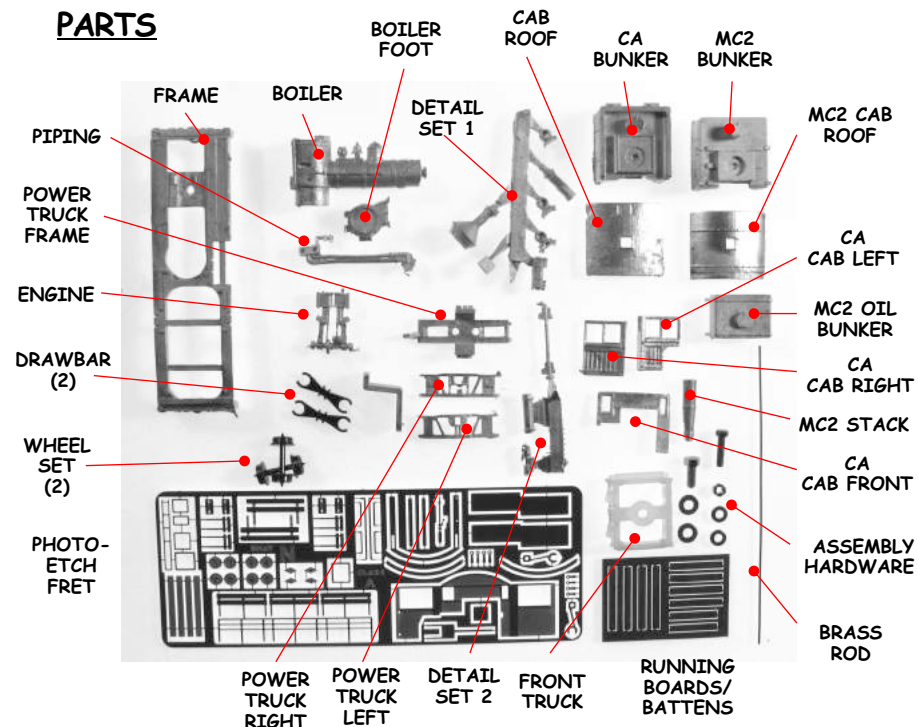
BUNKER

ATTACH THE BUNKER TO THE FRAME.
USE THE LOCATING PINS ON THE FRAME AND THE CORRESPONDING HOLES IN THE TENDER.

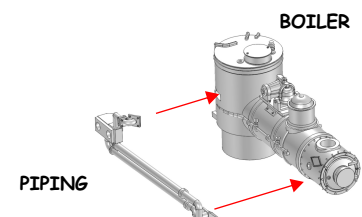
ALLOW THE GLUE TO DRY COMPLETELY BEFORE REMOVING THE BRACING.



PARTS

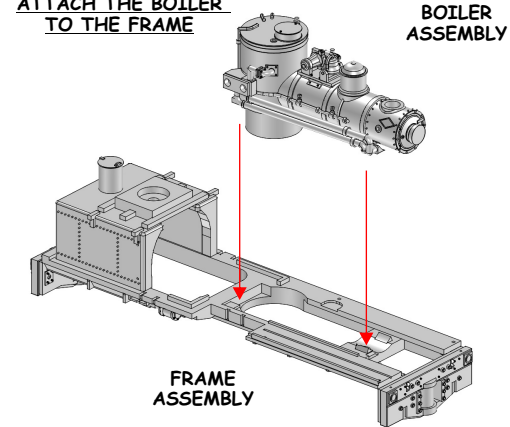


ASSEMBLE THE BOILER



ATTACH THE BOILER TO THE FRAME

BOILER ASSEMBLY



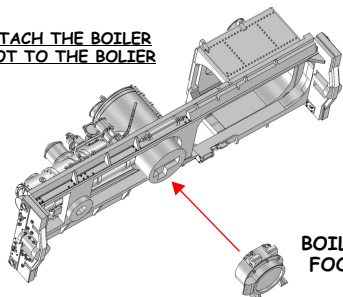
AS ORIGINALLY BUILT, THE MICHIGAN-CALIFORNIA #2 WAS USED AS A ROAD LOCOMOTIVE, HAULING LOGS OUT OF THE WOODS TO THE MILL. LATER IT WOULD BE RELEGATED TO YARD DUTY. THESE LITTLE "COFFEE GRINDERS" GOT THE LOGS OUT OF THE WOODS OVER UNBELIEVABLE TRACK AND UNDER CONDITIONS IMPOSSIBLE FOR OTHER MEANS OF TRANSPORT.

PAGE

3

STEP 3

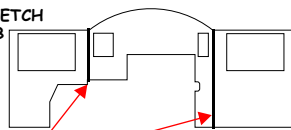
ATTACH THE BOILER FOOT TO THE BOILER



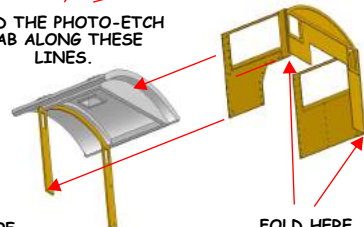
BOILER FOOT

ASSEMBLE THE CAB - CONTINUED

PHOTO-ETCH CAB

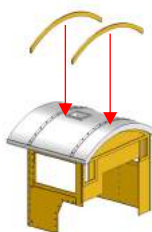


FOLD THE PHOTO-ETCH CAB ALONG THESE LINES.

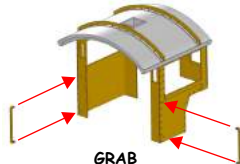


ROOF BRACES

FOLD HERE



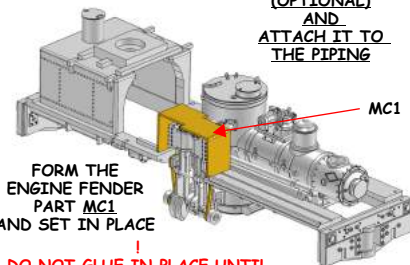
GRAB IRONS



E1

E1

ASSEMBLE THE ENGINE (OPTIONAL) AND ATTACH IT TO THE PIPING

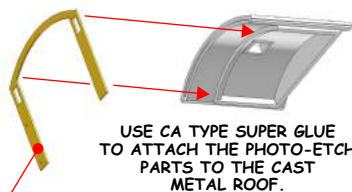


MC1

FORM THE ENGINE FENDER PART MC1 AND SET IN PLACE

DO NOT GLUE IN PLACE UNTIL THE CAB IS ASSEMBLED AND TEST FIT

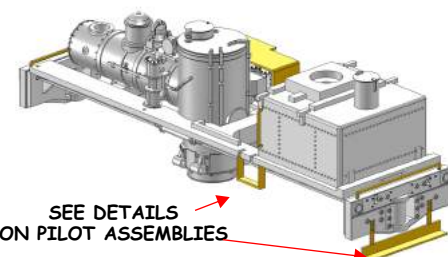
ASSEMBLE THE CAB



USE CA TYPE SUPER GLUE TO ATTACH THE PHOTO-ETCH PARTS TO THE CAST METAL ROOF.

ATTACH THE CAB REAR FIRST TO USE FOR THE ALIGNMENT OF THE CAB FRONT AND SIDES.

USE THESE ILLUSTRATIONS AND THE INCLUDED PHOTOS FOR REFERENCE



SEE DETAILS ON PILOT ASSEMBLIES

NO. 2 WAS THE SWITCH ENGINE IN THE YARDS AT CAMINO, WITH TOM JINKERSON AS ENGINEER FROM ABOUT 1906 UNTIL THE NARROW GAUGE WAS ABANDONED IN 1951. SINCE THEN, IT HAS RESTED ON A SHORT DISPLAY TRACK IN CAMINO. IT IS POSSIBLY THE OLDEST SHAY IN EXISTENCE. ...from "Pino Grande" by R.S. Polkinghorn

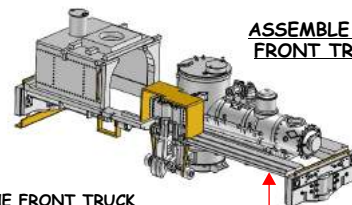
PAGE

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THIS TWO TRUCK SHAY SHELL KIT IS DESIGNED TO BE POWERED BY THE SEARAIL'S POWERMAX! POWER TRUCK. IT IS A N SCALE MODEL DESIGNED TO RUN ON Z SCALE TRACK.

PLEASE FOLLOW THE OPERATING INSTRUCTIONS FOR THE POWERMAX! FOR OPTIMUM PERFORMANCE.

ASSEMBLE THE FRONT TRUCK



THE FRONT TRUCK IS A 3D PRINTED PART THAT HAS BEEN PRE-CLEANED.

PRIME AND PAINT AND THEN INSERT THE METAL WHEELS.

THE MATERIAL IS RESILIENT ENOUGH TO ALLOW CAREFUL INSERTION OF THE WHEELS.

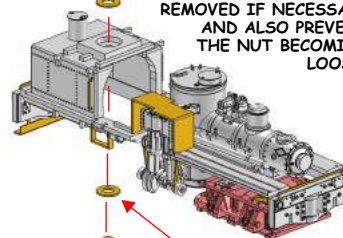
1-72 WASHER

1-72 HEX BOLT

ATTACH THE POWERMAX POWER TRUCK

0-80 BRASS WASHER APPLY GREASE LUBRICANT

0-80 BRASS NUT LEAVE A "LOOSE" FIT TO ALLOW THE POWERMAX MECHANISM TO ROTATE. ADD A TINY DROP OF WHITE GLUE TO THE 0-80 SCREW TO ACT AS A THREAD LOCK. THIS WILL ALLOW THE TRUCK MECHANISM TO BE REMOVED IF NECESSARY AND ALSO PREVENT THE NUT BECOMING LOOSE.



0-80 BRASS WASHER APPLY GREASE LUBRICANT

OIL TANK



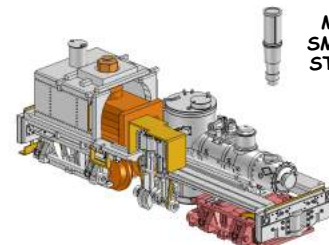
ADD THE DETAILS

HEADLIGHT ASSEMBLY

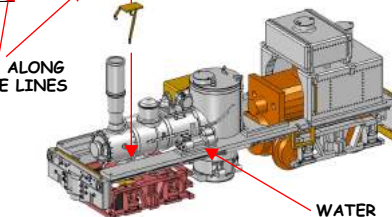


FOLD ALONG THESE LINES

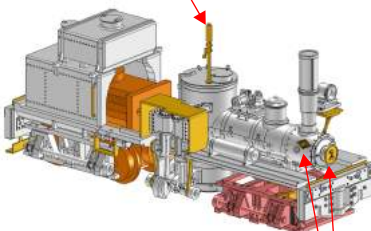
MC2 SMOKE STACK



WATER PUMP

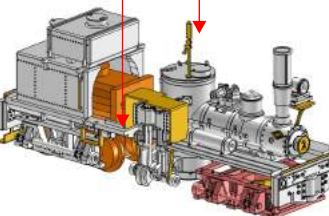


WHISTLE



NUMBER AND BUILDER PLATES

ATTACH CAB (GLUE IS OPTIONAL)



DETAILS CAN BE ADDED USING THE SUPPLIED BRASS ROD.

FOLOWING ARE ASSEMBLY INSTRUCTIONS FOR A Nn3 CLASS A, 16 TON SHAY LOCOMOTIVE

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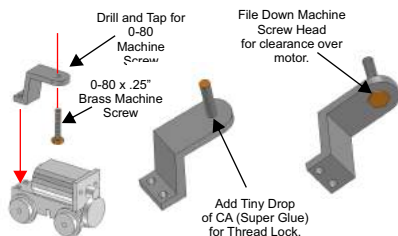
WE RECOMMEND THAT YOU ADD THE PHOTO-ETCH DETAILS PRIOR TO PAINTING TO ENSURE A GOOD BOND BETWEEN THE BRASS DETAILPARTS AND THE PEWTER CASTINGS

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6

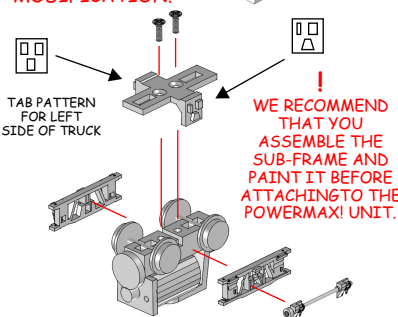
STEP 1

PREPARE THE POWERMAX POWER TRUCK (THE POWERMAX! POWER TRUCK IS NOT INCLUDED IN THE KIT)

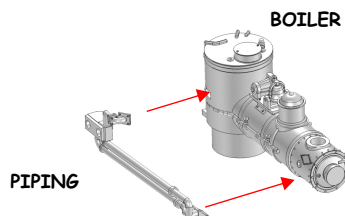
THE CENTER PIVOT MOUNTING BRACKET IS INCLUDED IN THE KIT WITH PERMISSION FROM SEARAILS. IT WILL NEED TO BE PREPARED IN THE STEPS SHOWN BELOW.



PLEASE NOTE!!
MODIFYING YOUR
POWERMAX! IN
THIS WAY WILL
VOID YOUR
WARRANTY. THIS
STEP IS FOR
VISUAL AESTHETIC
ONLY. THE SHAY
WILL OPERATE
WITHOUT
PERFORMING THIS
MODIFICATION.



ASSEMBLE THE BOILER



STEP 2

BUNKER

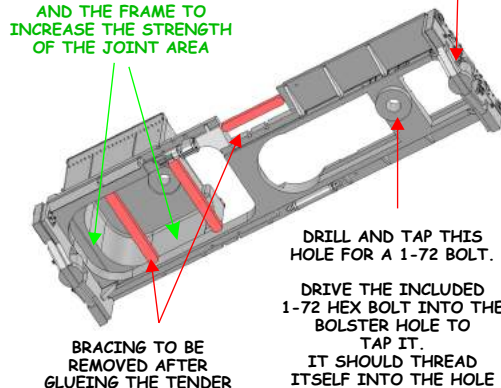
ATTACH THE BUNKER
TO THE FRAME.
USE THE LOCATING PINS
ON THE FRAME AND THE
CORRESPONDING HOLES IN
THE TENDER.

ALLOW THE GLUE TO DRY
COMPLETELY BEFORE
REMOVING THE BRACING.

REMOVE
ANY FLASH
FROM THE
COUPLING
PIN AREAS
AND TEST-FIT
THE MTL
DRAWBAR

FRAME

APPLY GLUE ON INSIDE
OF THE JOINT AREA
BETWEEN THE TENDER
AND THE FRAME TO
INCREASE THE STRENGTH
OF THE JOINT AREA



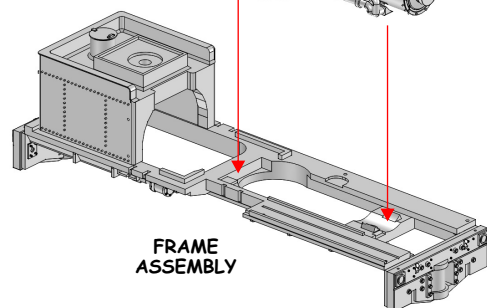
DRILL AND TAP THIS
HOLE FOR A 1-72 BOLT.

DRIVE THE INCLUDED
1-72 HEX BOLT INTO THE
BOLSTER HOLE TO
TAP IT.
IT SHOULD THREAD
ITSELF INTO THE HOLE

BRACING TO BE
REMOVED AFTER
GLUEING THE TENDER

ATTACH THE BOILER TO THE FRAME

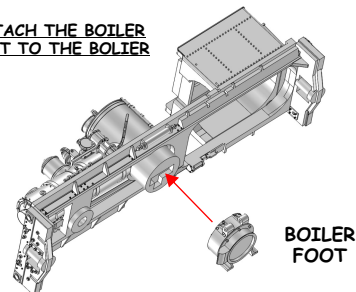
BOILER ASSEMBLY



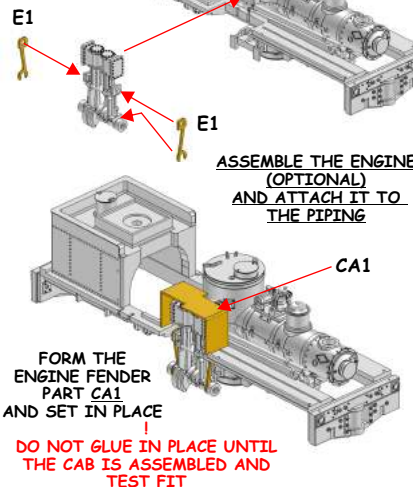
FRAME ASSEMBLY

STEP 3

ATTACH THE BOILER FOOT TO THE BOILER



BOILER FOOT



ASSEMBLE THE ENGINE (OPTIONAL) AND ATTACH IT TO THE PIPING

FORM THE
ENGINE FENDER
PART CA1
AND SET IN PLACE

DO NOT GLUE IN PLACE UNTIL
THE CAB IS ASSEMBLED AND
TEST FIT

ASSEMBLE THE CAB

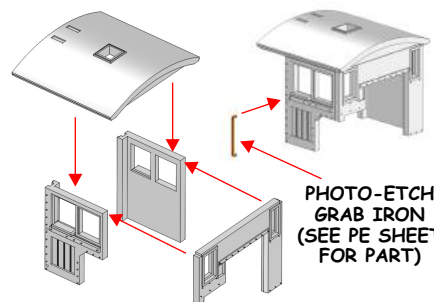
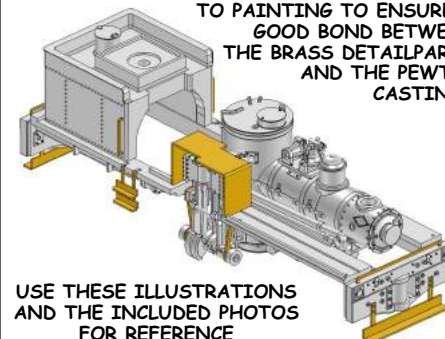


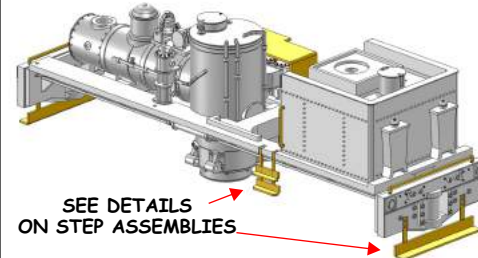
PHOTO-ETCH
GRAB IRON
(SEE PE SHEET
FOR PART)

STEP 4

WE RECOMMEND THAT YOU ADD
THE PHOTO-ETCH DETAILS PRIOR
TO PAINTING TO ENSURE A
GOOD BOND BETWEEN
THE BRASS DETAILPARTS
AND THE PEWTER
CASTINGS



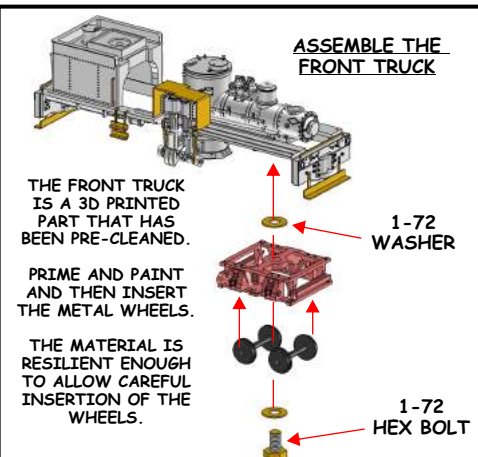
USE THESE ILLUSTRATIONS
AND THE INCLUDED PHOTOS
FOR REFERENCE



SEE DETAILS
ON STEP ASSEMBLIES

WE PAINTED THE COMPLETED MAIN
ASSEMBLY AND THE COMPLETED
CAB ASSEMBLY AT THIS POINT.

WE USED A SPRAY ON PRIMER FOR
METAL FROM TAMIYA AND THEN
PAINTED THE MODEL WITH
TESTORS FLAT BLACK SPRAY.



ASSEMBLE THE FRONT TRUCK

THE FRONT TRUCK
IS A 3D PRINTED
PART THAT HAS
BEEN PRE-CLEANED.

PRIME AND PAINT
AND THEN INSERT
THE METAL WHEELS.

THE MATERIAL IS
RESILIENT ENOUGH
TO ALLOW CAREFUL
INSERTION OF THE
WHEELS.

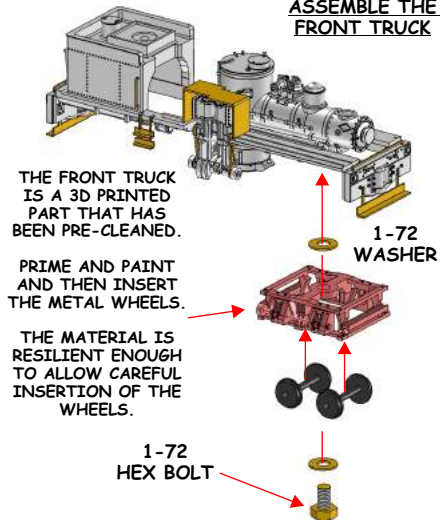
1-72
WASHER

1-72
HEX BOLT

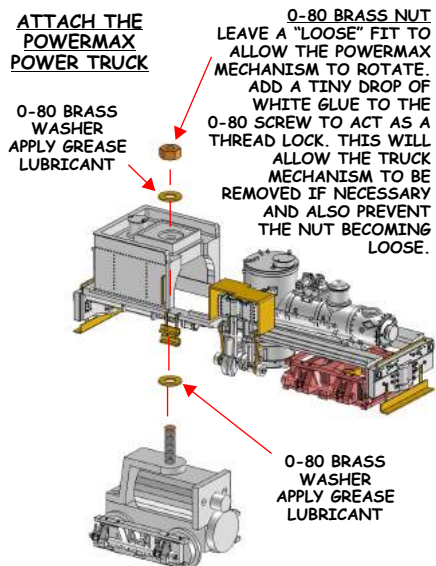
WE PAINTED THE COMPLETED MAIN ASSEMBLY AND THE COMPLETED CAB ASSEMBLY AT THIS POINT.

WE USED A SPRAY ON PRIMER FOR METAL FROM TAMIYA AND THEN PAINTED THE MODEL WITH TESTORS FLAT BLACK SPRAY.

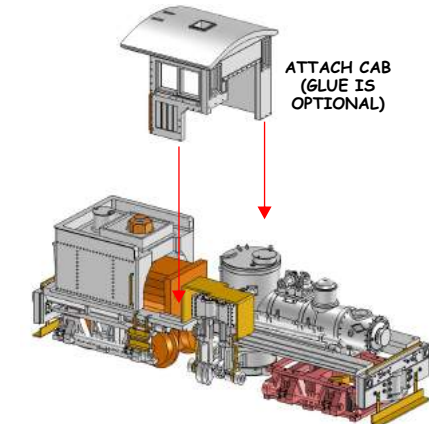
ASSEMBLE THE FRONT TRUCK



ATTACH THE POWERMAX POWER TRUCK

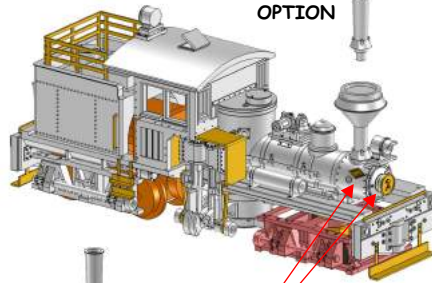


ATTACH CAB
(GLUE IS OPTIONAL)

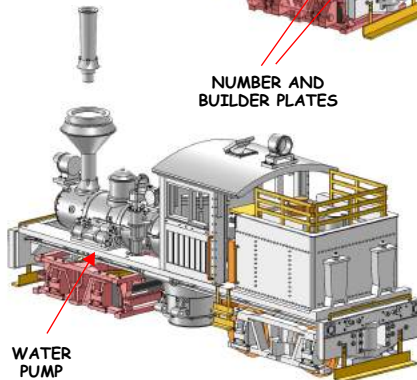


ADD THE DETAILS

SMOKE STACK
OPTION



NUMBER AND
BUILDER PLATES



DETAILS CAN BE ADDED USING THE SUPPLIED BRASS ROD.