

Instruction Sheet
Class "C" 70-ton 3-truck
3-cylinder SHAY Locomotive

Kit 370
HO scale



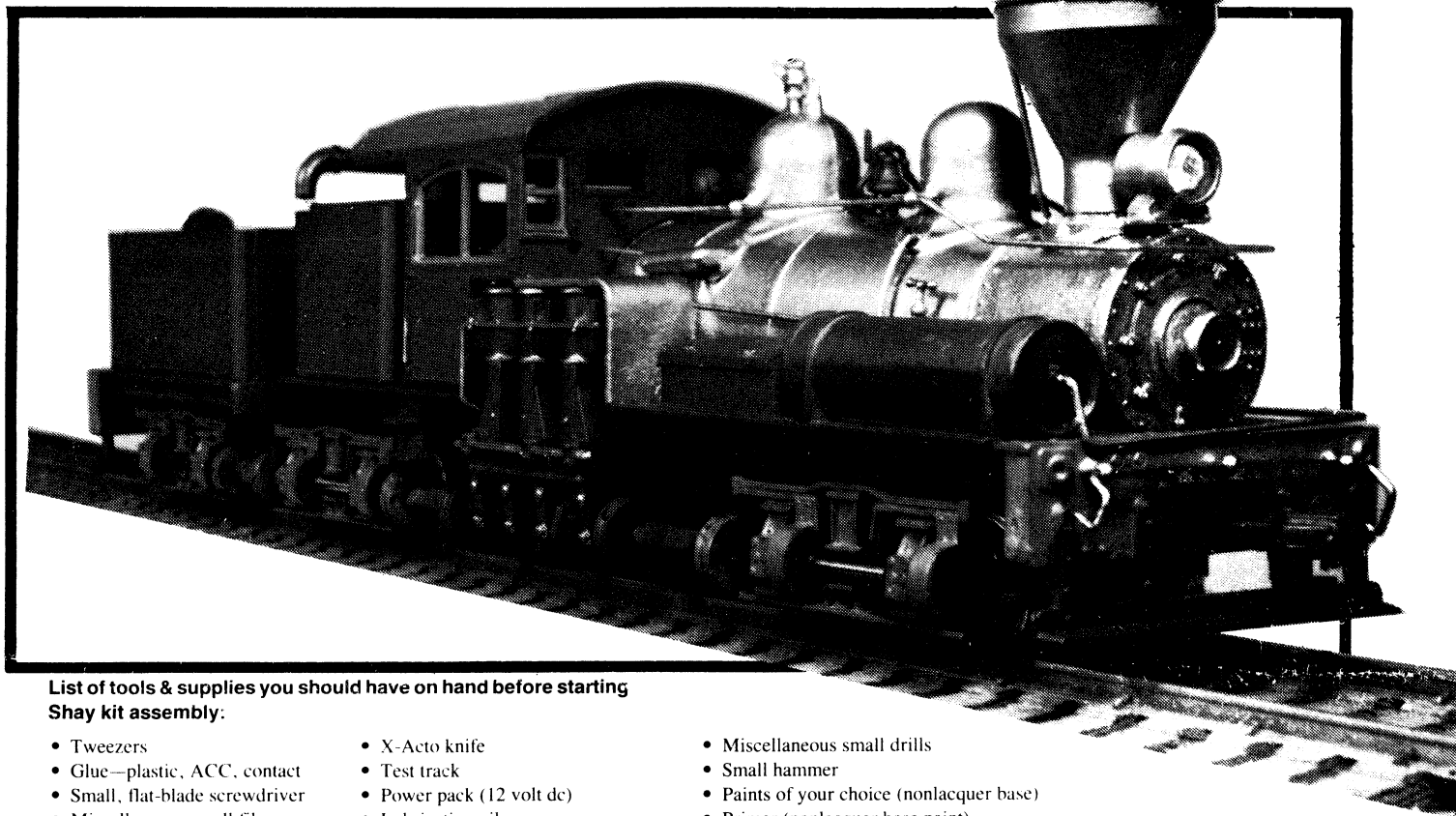
Welcome to SHAY Country U.S.A. !

There has probably never been a more sought after engine than the Shay, ever since Mr. Ephraim Shay created the first 14-horsepower "Sidewinder" in 1877

Ephraim Shay, owner & operator of his own logging road in Haring, Michigan, designed and had Lima Machine Works make up his 26" gauge (wide tread) wheeled engine for running on flat wood pin stringers. The Shay was a vertical boiler job, having "vertical" cylinders located to the immediate rear of the boiler.

HISTORY

In 1880, the first Shay was built in Lima. The original Shay was conjured up in 1873 and took six years of "tinkering" before the Carnes Agerter & Company (later Lima Locomotives) was invited to participate in this new design. After 1880, the Shay design was to become the principle product of the company. According to the Lima construction list, No. 6 was the first Shay and was delivered to Milton J. Bond. In 1938, Lima Locomotive Works discontinued Shay production for six years. The final Shay was built for the Western Maryland Railway Company as their No.6 and was shipped to Elkins, West Virginia on May 14, 1945. Total output of the Shays was 2,770.



List of tools & supplies you should have on hand before starting Shay kit assembly:

- Tweezers
- Glue—plastic, ACC, contact
- Small, flat-blade screwdriver
- Miscellaneous small files
- Dikes
- Toothpicks (used to apply glue)
- X-Acto knife
- Test track
- Power pack (12 volt dc)
- Lubricating oil
- Masking tape
- #400 & #600 sand/emory paper
- Miscellaneous small drills
- Small hammer
- Paints of your choice (nonlacquer base)
- Primer (nonlacquer base paint)
- Quiet, well-lit place to work

Pre-Assembly Instructions:

Before starting any assembly, please read all instructions in order to become familiar with the project, including the chapter on painting. **(Note: Do not start painting at this time.)**

Lay out the parts and separate the screws. Remove flash and burrs from the various castings, being careful not to damage small, delicate parts. Pre-tap all the holes in the metal parts using the self-tapping screws called for in the instruction sheets. This will make the final assembly much easier. Rub the screw threads on a bar of hand soap to lubricate them. Insert the screw into its proper hole and turn it in a couple of turns, then back it out again. Repeat until the proper depth is achieved.

The illustrations show the assembly in progressive steps. Reference is made to either the left or right side. In our instructions, the left side is the side facing you with the pilot or front of the locomotive pointed toward the left.

When attaching parts, use ACC (Super glue) sparingly.

Painting Instructions (Page 14)

This should be done after the model has completed and is running properly. It can be disassembled as needed for painting. Remember not to paint where electrical contact needs to be made, and do not paint where paints are reassembled and fit together.

UNDERFRAME & MOTOR ASSEMBLY

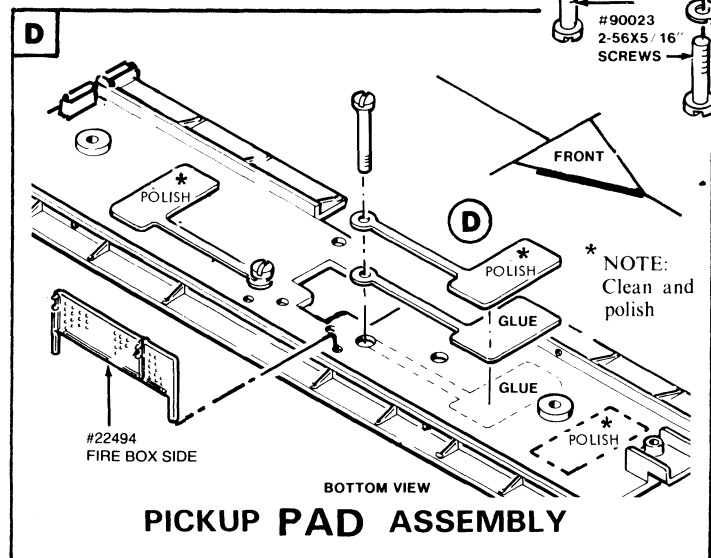
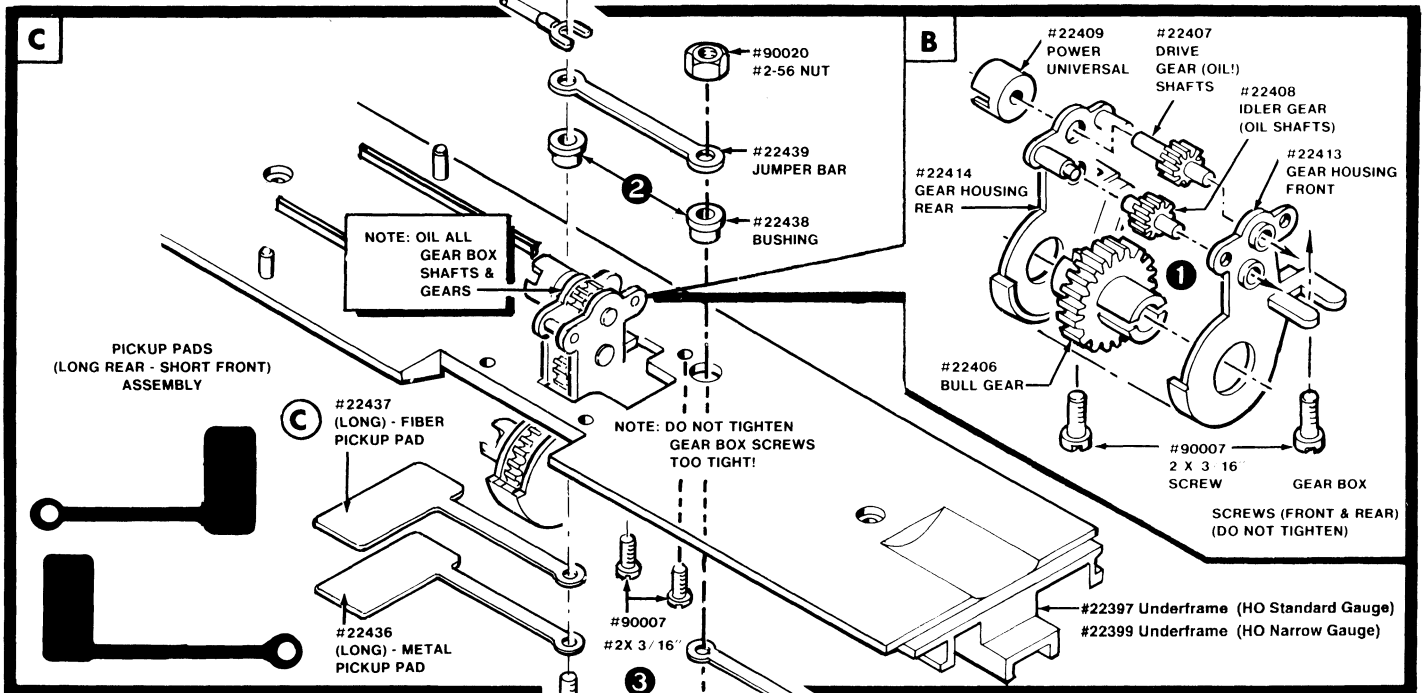
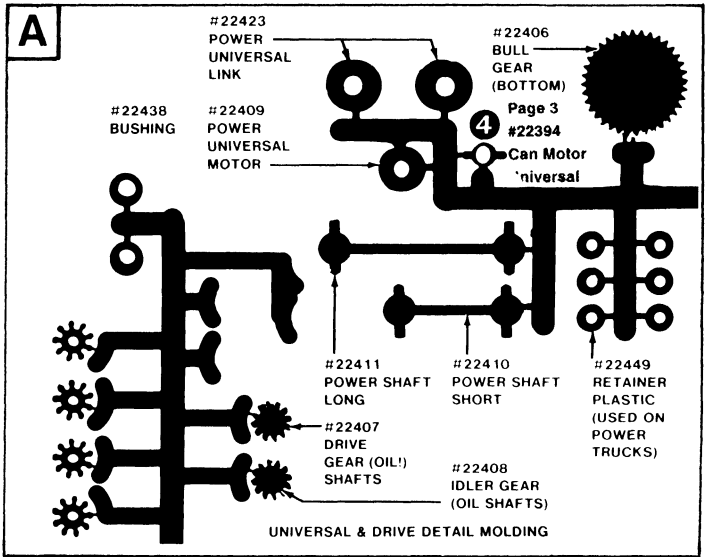
Please READ instructions before starting assembly! Clean and remove burrs.

Test each motor, electrical & gear assembly BEFORE and AFTER installation. Do not wait to test completed model at the end of assembly . . . Take your time!

Gear housing halves (front & rear) - Remove burrs on outside edges of the drive & idler gear shaft holes using a No. 11 X-Acto® blade. Lightly rotate the blade to remove the sharp edge (burr) on the moldings.

1) Assemble gear box using the parts outlined in drawing (A) and (B). Into the gear housing (front & rear), assemble the drive gear (long stud faces toward the motor), idler gear and large lower gear. Press the two gear housing halves together gently. Attach (universal female) to the rear of drive gear(top). Test the assembly for binding or tight spots by rotating it with your fingers. Lightly oil and assemble to the underframe as illustrated in drawing (C), using two 2x3/16" screws.

2) Top side of underframe. Assemble (2) insulating plastic bushings, #22438 (A).



SHAY PICKUP PAD ASSEMBLY (Clean and polish BEFORE assembly)

3) Pickup pad assembly (front & rear). Refer to the illustrations (C) and (D) for proper assembly. (Remove burrs from the metal pickup pads) **NOTE:** Pickup pads (long arm) are positioned at the rear of the underframe. Fiber insulation pad is cemented (use ACC) to the underframe. Secure front and rear metal pickup pad using a 2-56 x 5/16" machine screw and cement to the fiber pad. Next, position brass jumper bar over plastic bushing. Secure assembly using two #2 hex head nuts. Test with a 12 volt DC transformer. Test circuit and make sure there is no short. Touch one lead wire to the underframe and the other lead to the metal pickup pad. If you get sparks, you have a short!

4) Motor - Assemble the motor shaft drive (male universal molding #22394) to end of the motor shaft. Refer to drawing (A) below.

5) Truck mounting pins #22412 (plastic) found on the truck side frame molding (illustration, see page 6). Before attaching the motor to the underframe, insert the rear truck mounting pin into the hole.

6) Mounting motor. DO NOT BEND TABS ON MOTOR. Untwist and spread the wire strands at the bare end of the *SHORT lead wire* which is soldered to the lower terminal on the Motor. Then, trap the strands between the *Motor Housing* and the *Underframe*. Be sure that the underframe beneath the motor is clean, bare metal for good electrical contact. Attach the motor to the underframe.

Test with a Power Pack

Test the assembly with a 12 volt DC power pack. Using two wire leads, attach one end to the underframe and the other end to the metal pickup pad on the underside of the underframe. Turn power on and check for running quality. Make any minor adjustment. When the motor and gear box are running smoothly, proceed to mounting the power trucks (page 4).

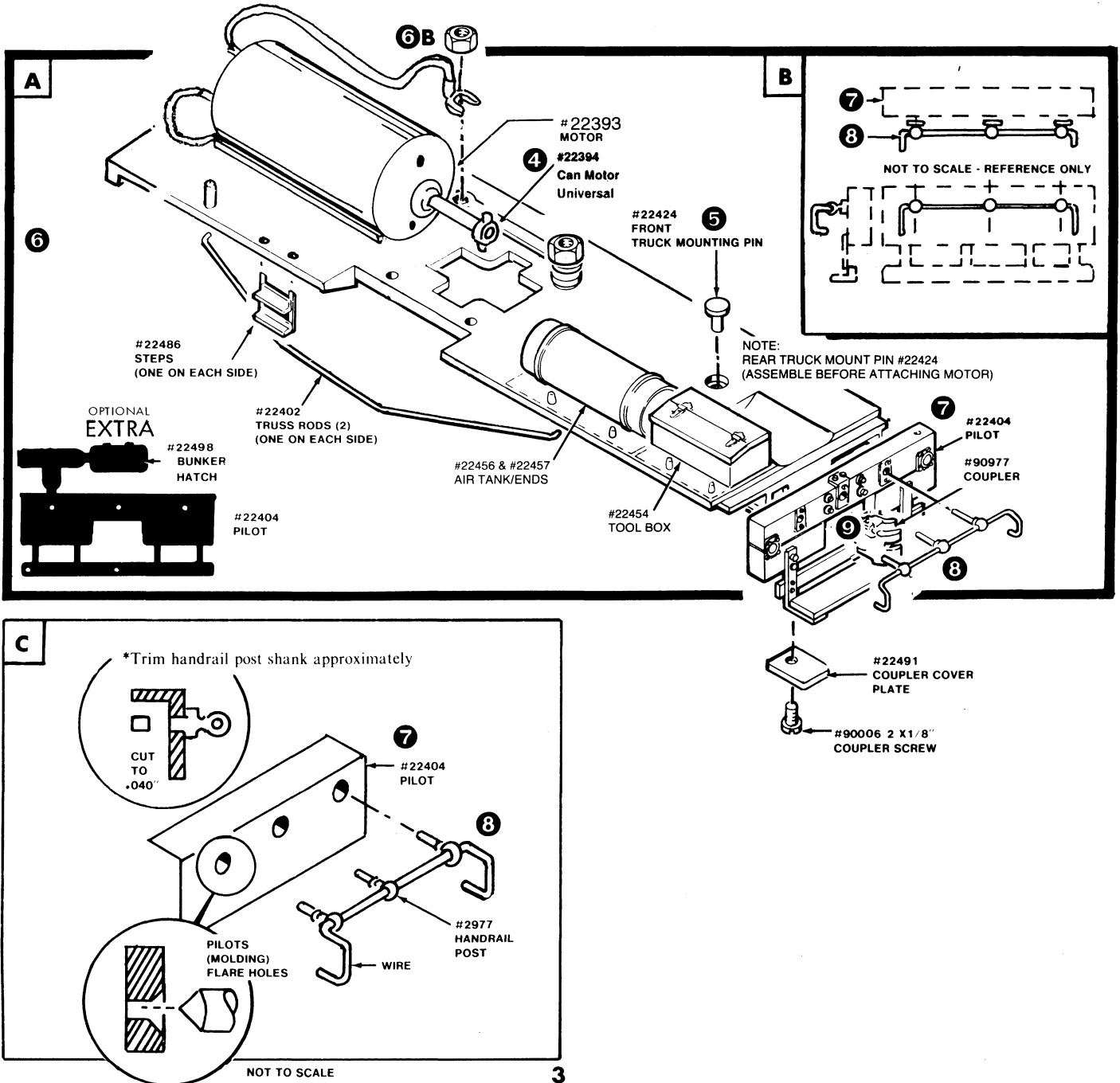
DETAILING....Drawings (B) and (C)

After the mechanism is working properly **PILOT BEAM** (Locomotive and Tender) Both are the same.

7) Pilot beam - front and rear (coupler pin-lift bar). Using a 11/2" piece of wire, thread (3) brass handrail posts and insert hand rail posts into pilot beam. See drawings (B) and (C).

8) Coupler Pin Lift Bar (wire). Bending procedure (B). Bend ends straight up. For the second bend use needle nose pliers. Next, grip the wire and bend it 90 degrees down (both sides). Then bend it 90 degrees back, forming a (U) shape .

9) Coupler installation - Assemble the coupler into the coupler box and test. Secure the cover plate using 2 x 1/8" screws. Do not tighten too tight. Couplers should swivel in the coupler box without binding.



POWER TRUCK COVERING: LOCOMOTIVE (FRONT & REAR) POWER TRUCKS, AND TENDER TRUCK (Refer to pages 4, 5, 6, 7)

In this section you will be assembling three 4-wheel power trucks (one front and two rear). Trucks are very close in appearance, so take your time and don't rush. (**Note:** The locomotive rear truck has a universal assembly on the front and rear.)

1) Right side frame shaft assembly:(3) required, one for each truck (refer to page 6, drawing A). Assemble two plastic washers and plastic gears onto shaft and space according to the template. Set aside for later installation.

Power Truck / Locomotive and Tender

2) Assemble to truck housing(top): jack shaft assembly, (2) brass washers (one at each end) and add universal #22423 to end of shaft and insert wheel assemblies. (**Note:** Tender universal #22377 is smaller in diameter.) Make sure the geared wheels are on the right side. Lightly oil gears and rotate. Snap bottom into the top housing and test by rotating universal, make sure there are no binds.

3) To disassemble: **DO NOT FORCE** or you may break off the locking fingers on the power truck covers.

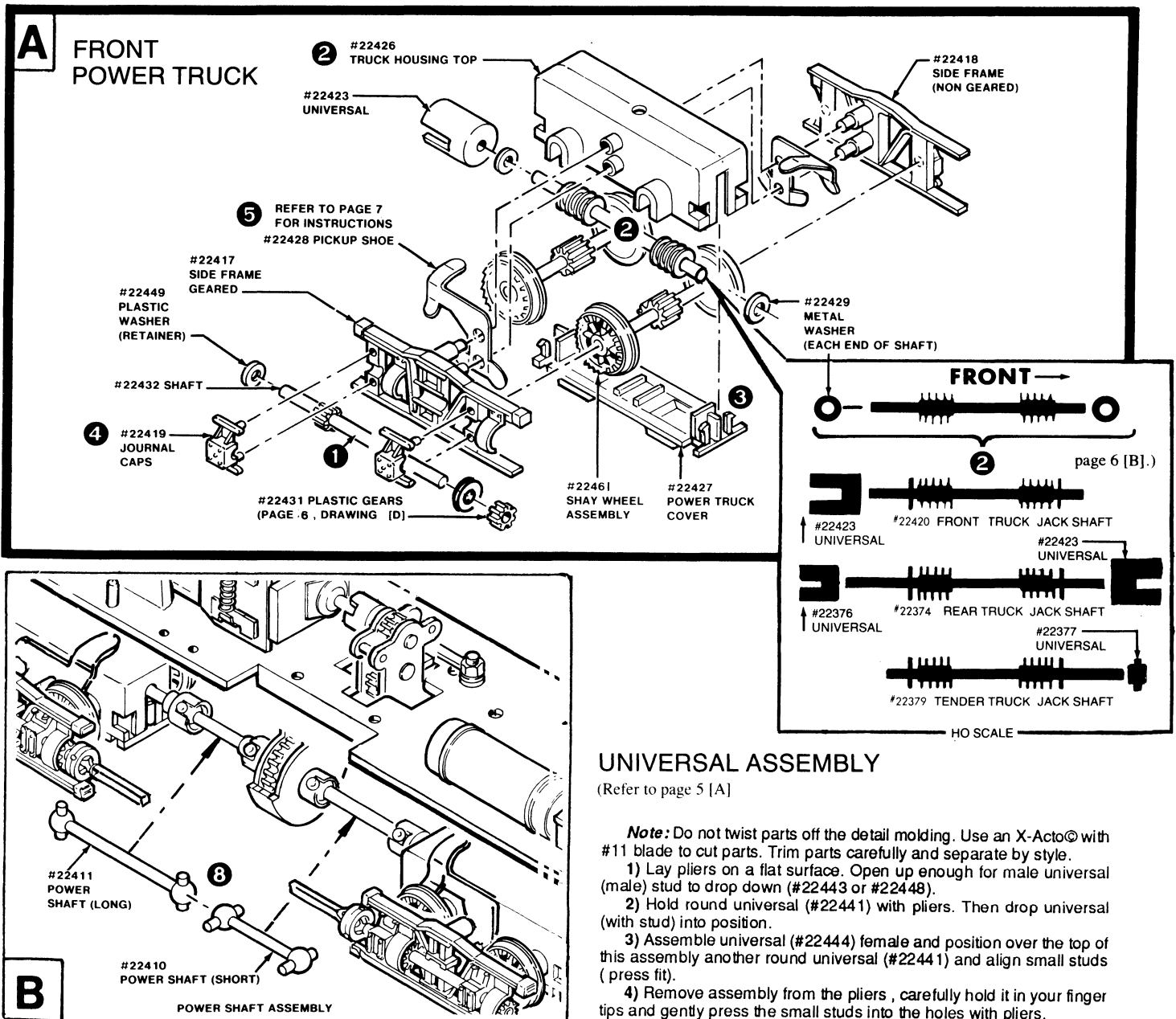
4) Pickup shoe assembly (refer to page 7). Be sure to position pickup shoes correctly. Attach pickup shoe to the side frame and push the side frames onto the power truck housing.

5) Assembly of the geared frame shaft into frame and installation of the side frame journal caps will be done later.

Note: Locomotive rear truck utilizes (1) pickup shoe, positioned to the front. See page 7 (c)

6) For tender pickup shoe assembly, use drawing on page 7(C).

At this point, the power truck should be installed with the power shafts, the mechanism placed on the track and power tested. Screw the boiler casting in place for this power testing. If the mechanism runs smoothly, install the geared side shafts and test again.



Universals - Power Trucks

Refer to drawings...**Do not use cement!!!** Parts snap together.

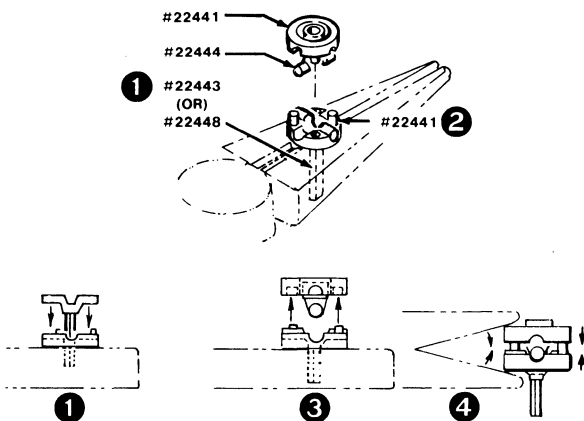
5) Front truck (A) - Assemble universal coupling parts consisting of (4) individual pieces: (2) caps (look like doughnuts - the pair work in unison with pins and holes at 90 degrees) and male and female universal. (Make up four sets of universals.)

6) Locomotive Rear Truck Assembly (B) - Assemble finished universal assemblies one to each end of steel shaft.

7) Tender Truck - Assemble universal assembly (C) to side frame shafts; add plastic washer to the end of the rear shaft.

8) Drive Power Shaft (plastic) Assembly (page 4 drawing B). Assemble short drive shaft into gear housing gear and to front power truck universal. Assemble long power shaft into gear housing and to the rear power truck universal. Secure power truck to underframe by pushing power truck onto plastic mounting pins.

UNIVERSAL ASSEMBLY



Note: Do not use glue to attach parts; this is a press fit assembly!

Power Truck Test

Note: Remove the universal assemblies from the front and rear truck so as not to damage them. In testing, run the mechanism back and forth on a straight piece of track. When satisfied with the test, proceed to the Shay cylinder assembly.

Test the assembly with power. **DO NOT APPLY TOO MUCH CURRENT AT ONCE** - Just enough to get the motor turning over. When everything reacts properly, lightly oil the gear train and test the mechanism on the layout. Re-attach the universals before attaching the Shay cylinder assembly, page 8 drawing A.

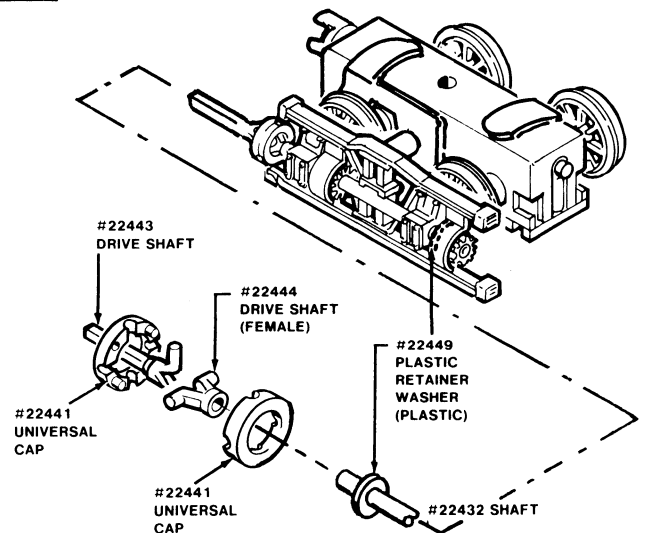
1) Assemble line shafts as illustrated (A). Side frame (lift gear covers)- slide shaft assembly into place under the gear cover. Attach the journal caps. (If cap lugs will not press into side frames holes, flare the edge of the holes using a drill bit larger than the hole diameter and twist drill bit with your fingers.) Be careful not to tighten too tight. Snap in place with a small blade screwdriver.

2) Turn universal with your fingers. You should be able to push and pull slightly with no tightness.

3) Assemble to power truck. Turn power truck (universal) with your fingers. Adjust side frame gear play. Side frame gearing should mesh and turn without binding and geared truck wheels.

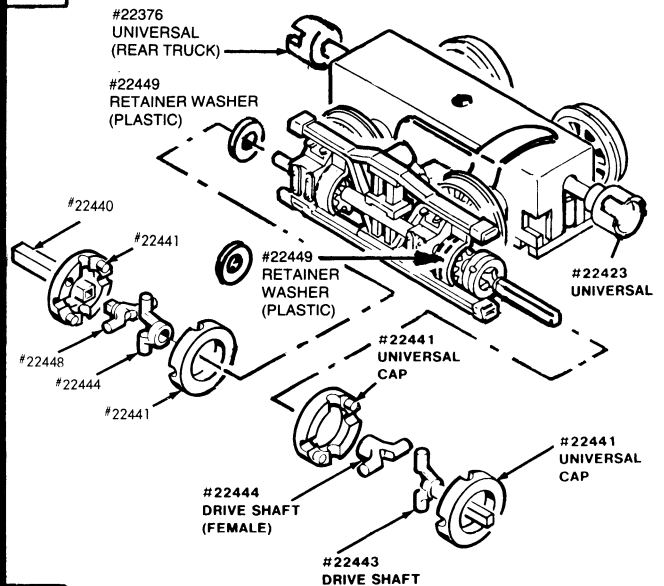
A

FRONT POWER TRUCK



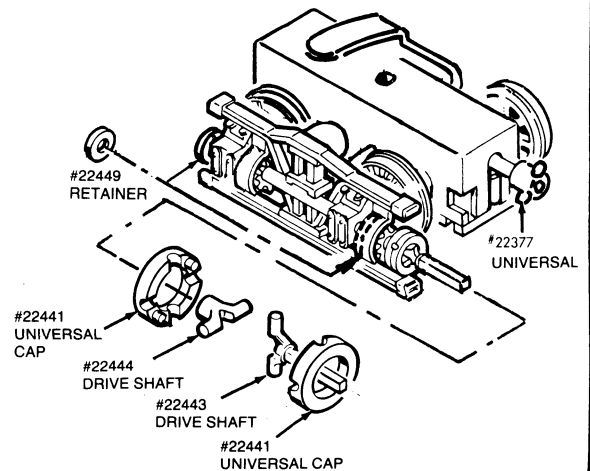
B

REAR POWER TRUCK



C

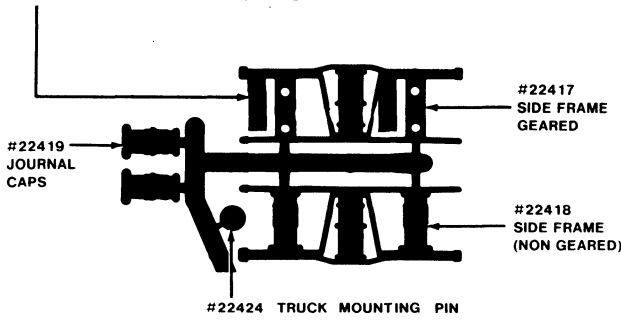
TENDER POWER TRUCK



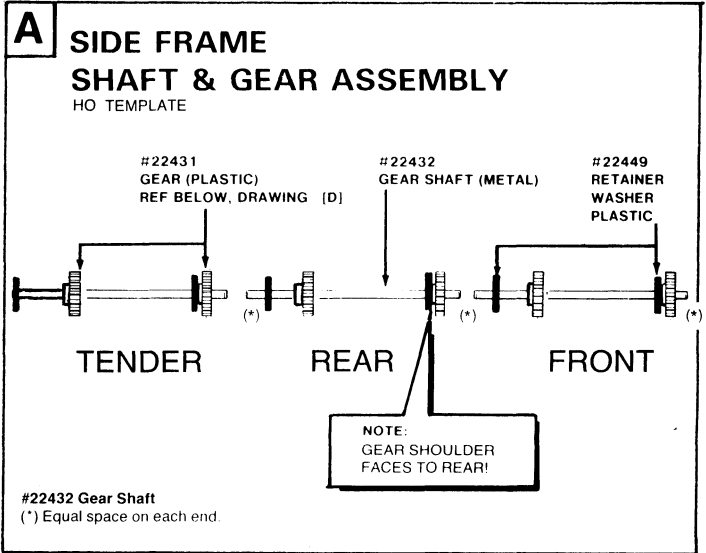
SIDE FRAME (SHAFT & GEAR) ASSEMBLY

Right Side Frame Assembly

1) Assemble line shaft as illustrated [A]. Side Frame (lift gear covers)—slide shaft assembly into place under gear cover. Attach journal.

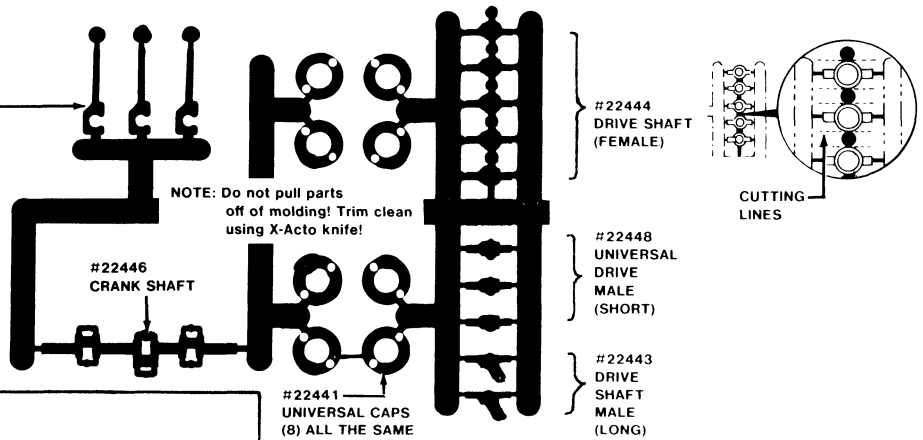


caps. (If cap lugs will not press into side frame holes, flare edge of holes using a drill bit larger than hole diameter; twist drill bit with your fingers.) Do not tighten too tight.

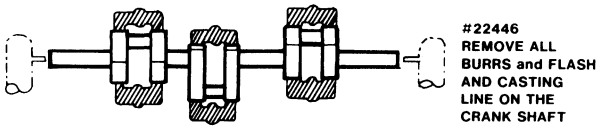


B UNIVERSAL DETAIL MOLDING

#22447 PISTON ROD (3) (SAND BOTH SIDES SMOOTH)



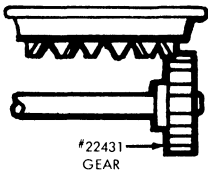
C CRANK SHAFT



CRANK SHAFT - REMOVE CAREFULLY WITH X-ACTO (OVERFLOW) SHADED AREAS & SAND CLEAN

- 2) Turn universal with fingers. You should be able to (push/pull) slightly with no tightness.
- 3) Assembly to power truck. Turn power truck (universal) with your fingers. Adjust side frame gear play. Side frame gearing should mesh and turn without binding with geared truck wheels.

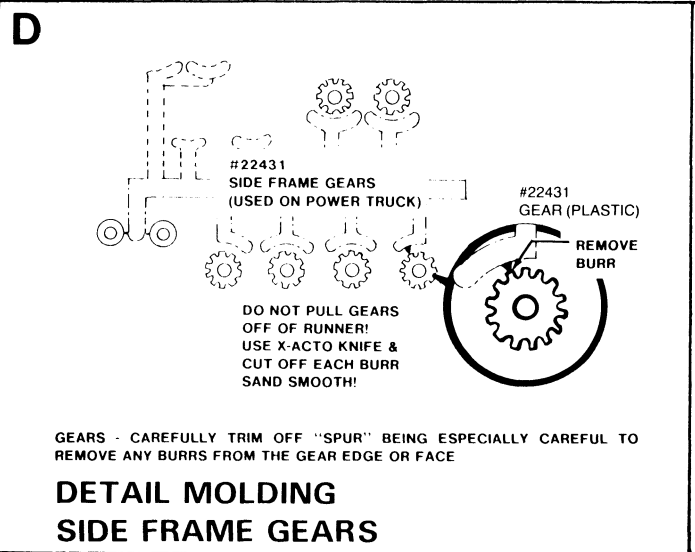
PROBLEM—Tight Gears SOLUTION—



TOP VIEW

FRONT POWER TRUCK DO FRONT WHEEL ONLY!

First—Hold the steel shaft #22432 using pliers, then slide the front gear #22431 slightly forward (as shown). Gear should only slightly touch geared drive wheel.



PICKUP SHOE ASSEMBLY

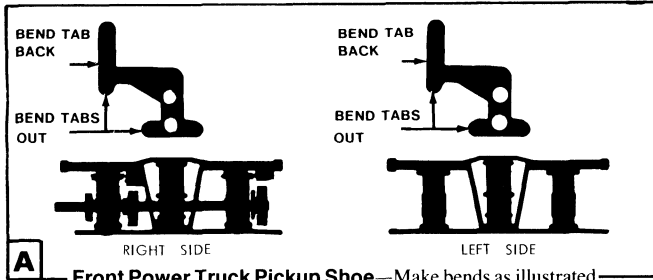
IMPORTANT

Note: Clean and polish pickup shoe as illustrated. Burnish both sides of pickup shoe with #600 emery paper prior to bending to remove burrs and sharp edges (use a small piece of masking tape to hold the shoe steady). Clean with alcohol.

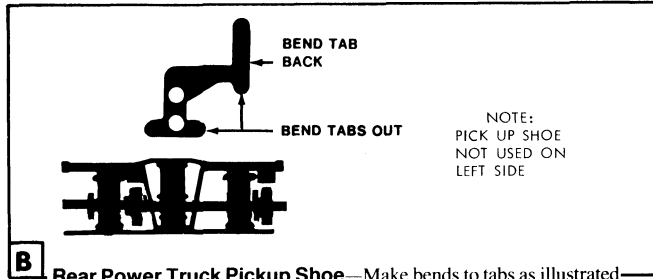
Kit is furnished with four (4) pickup shoes.

PICKUP SHOE ASSEMBLY

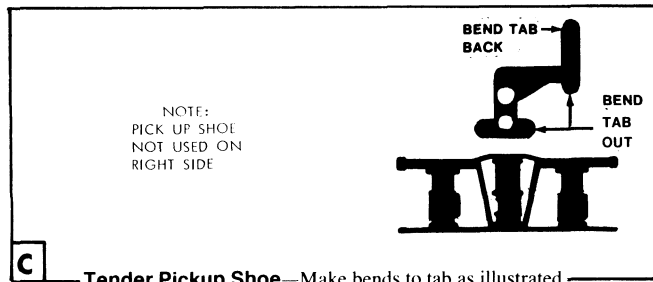
Attach as illustrated. Position pickup shoe as illustrated in drawings A, B and C. (All tabs must rub on the metal back side of wheels and not touch the plastic wheel centers.) If this procedure is not accomplished correctly, your Shay **WILL NOT** operate! Also, make sure that the top contact tab does not ride on top of the wheel.



A Front Power Truck Pickup Shoe—Make bends as illustrated.

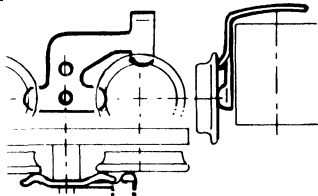


B Rear Power Truck Pickup Shoe—Make bends to tabs as illustrated.



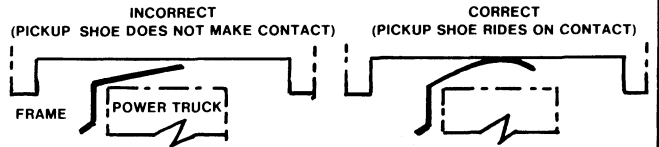
C Tender Pickup Shoe—Make bends to tab as illustrated.

NOTE:
PICKUP SHOES
MUST BE CLEAN & POLISHED
(CONTACT THE METAL
WHEEL RIM)

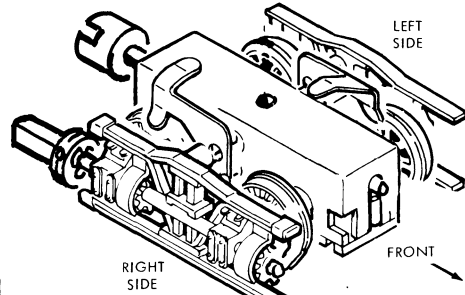


PROPER PICKUP SHOE ASSEMBLY

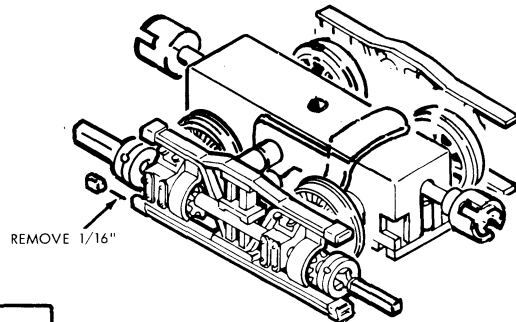
POWER TRUCK-FRONT VIEW



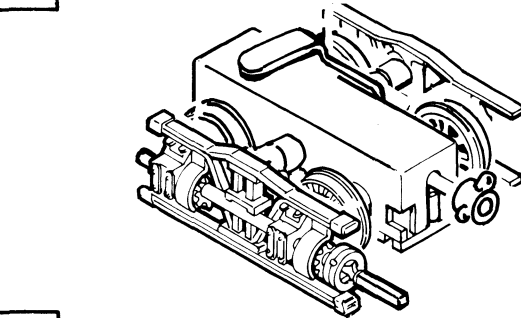
Testing Pickup Shoe—Using 12 volt dc (minimum power) connect one lead wire to metal underframe and touch just the pickup shoe. **Note:** Only touch the **INSULATED** pickup shoe; otherwise, you'll get a short! The motor should turn over and run, with correctly positioned pickup shoes. If not, recheck pickup shoe contact.



A LOCOMOTIVE—Front Power Truck



B LOCOMOTIVE—Rear Power Truck



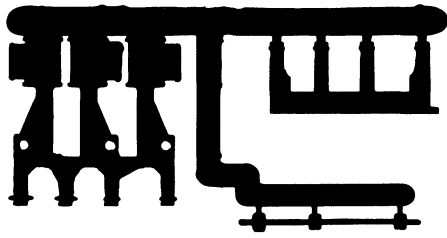
C TENDER—Power Truck

During normal maintenance (or) pickup shoe cleaning, pull side frame gently off pickup shoe and service.

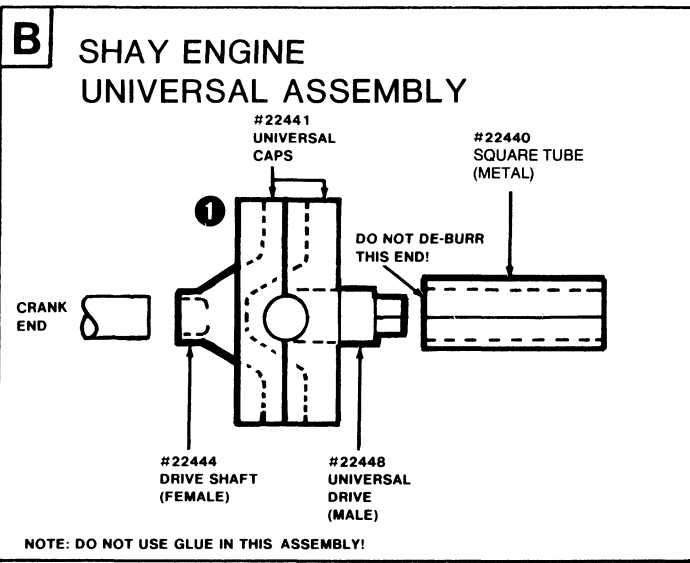
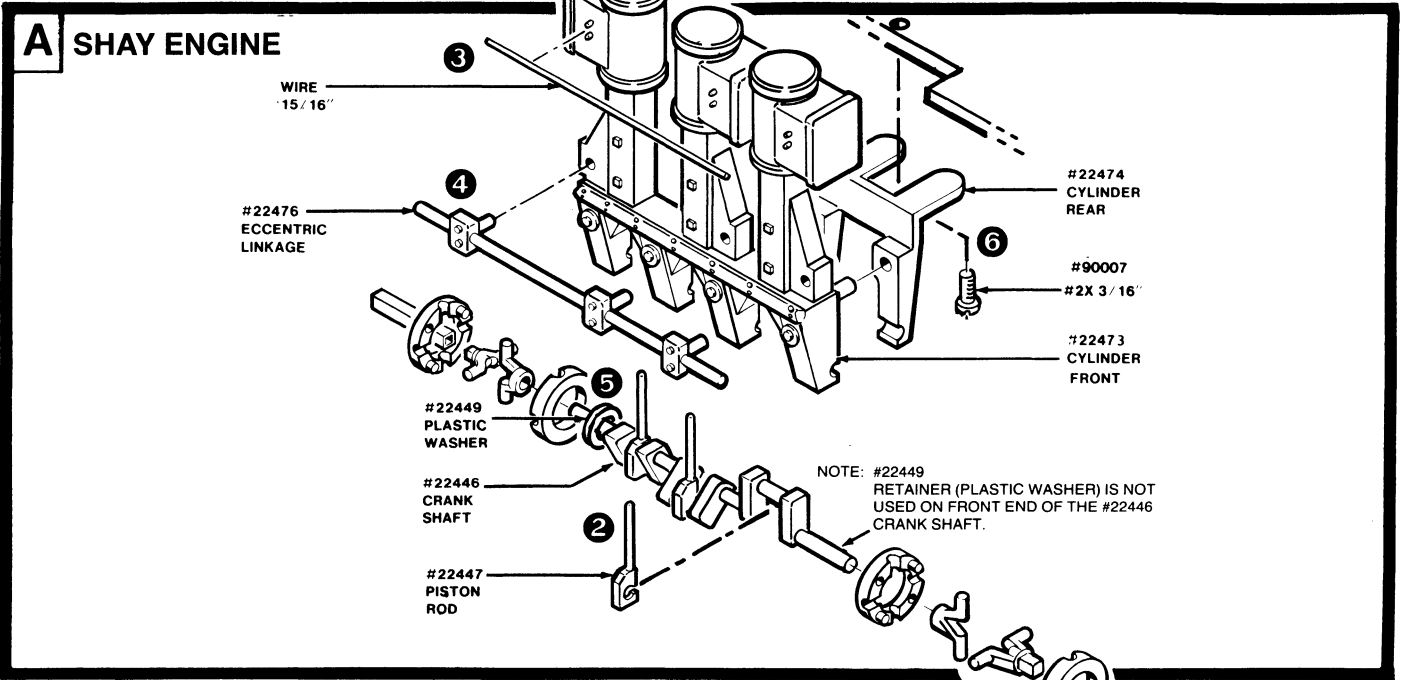
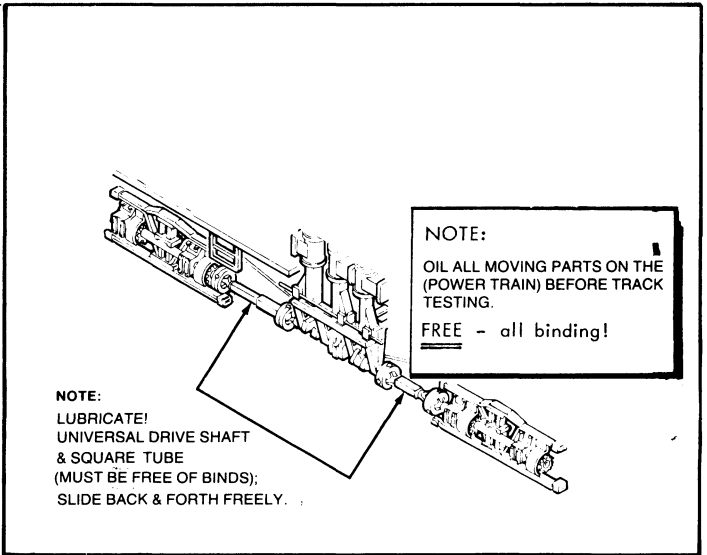
Reassemble and reform pickup shoe tabs. Position pickup shoes inside of wheel set (pickup shoe tabs to the inside). Carefully push power truck side frame back into power truck. (Check to make sure pickup shoes are rubbing on the metal rims of the wheels.)

SHAY ENGINE - ASSEMBLY

Take your time with this assembly. It is very critical to the proper performance of your finished locomotive. The Shay engine parts are molded from a plastic to which nothing can be glued. These assemblies are **press fit**.

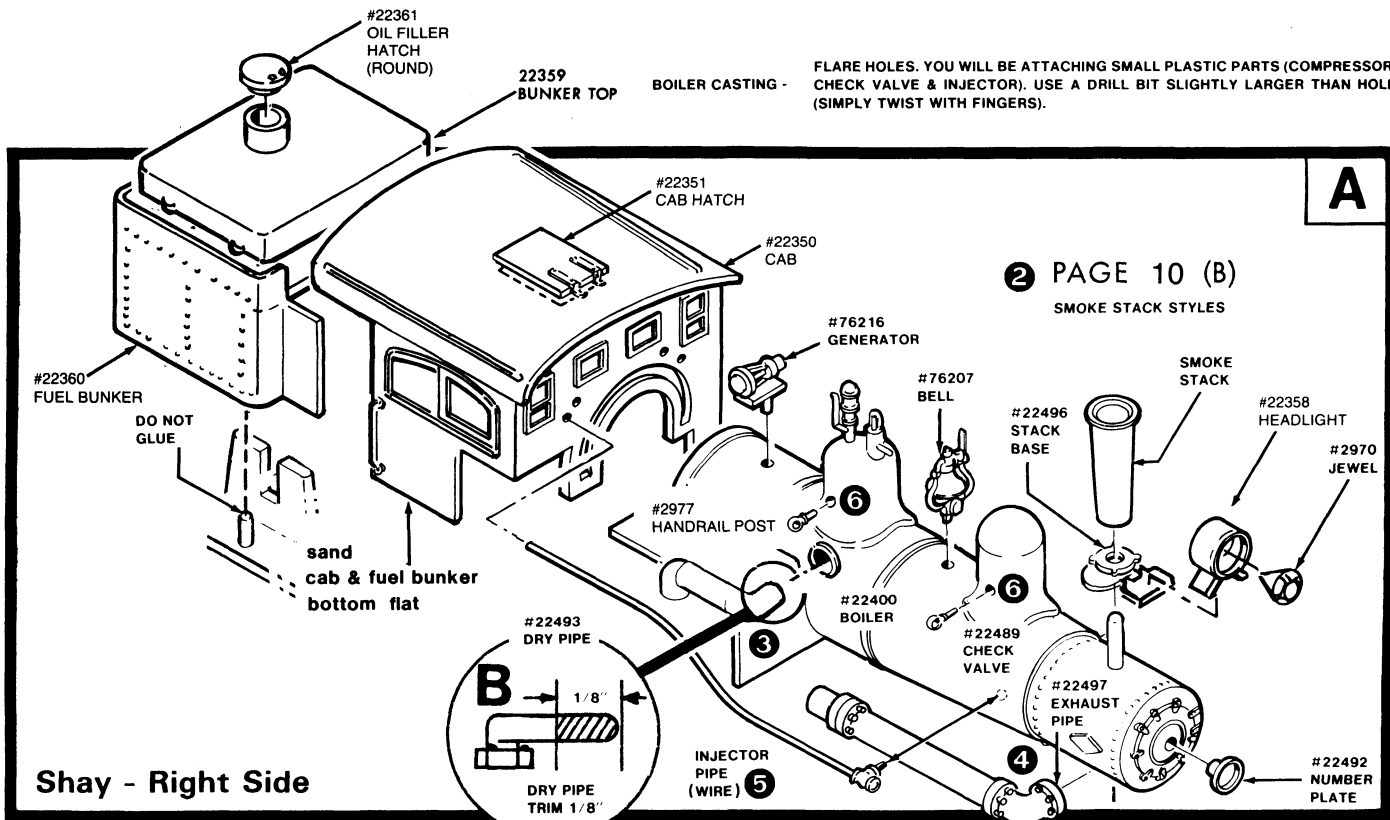
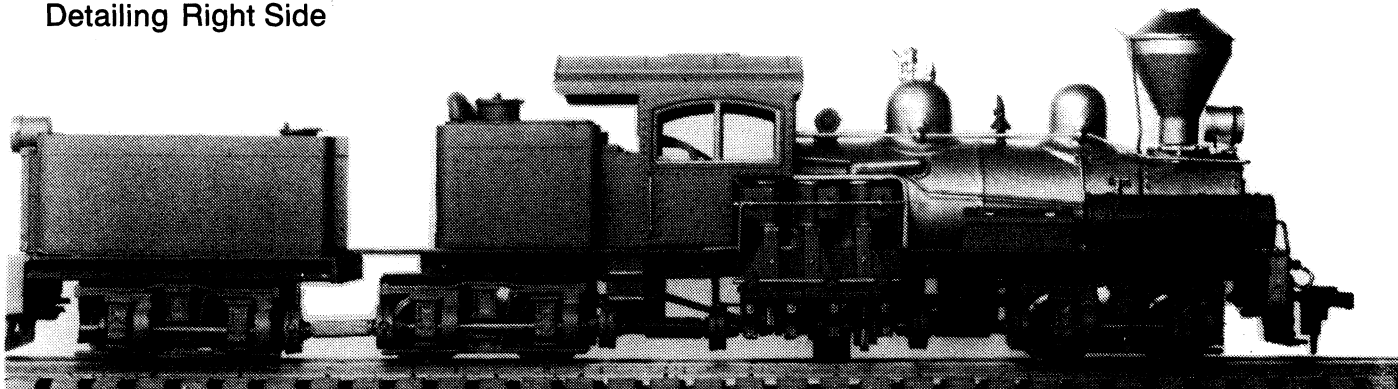


1) Universal assemblies (make 2)- refer to drawings (A) and (B). Parts needed: universal caps (male and female), universal drives (male and female) and two small square brass tubes.

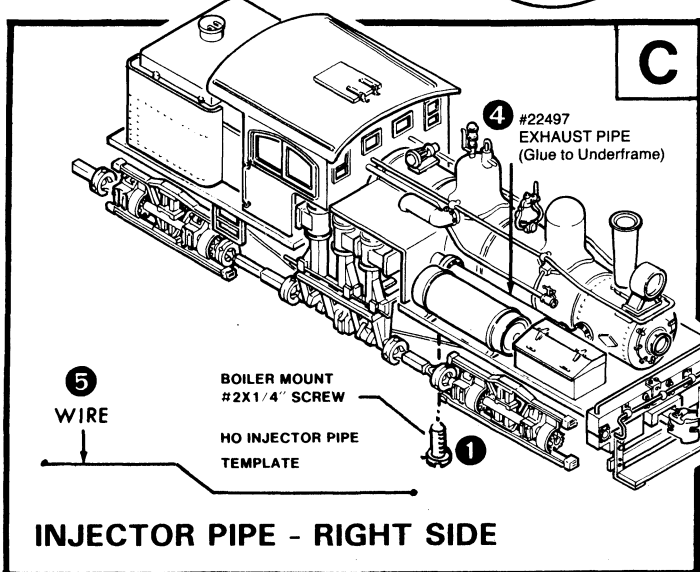


- 2) Shay Engine Assembly - Refer to page 6(B) and (C) and page 8(A) and (B) for proper location of parts. Attach three piston rods to crank. Insert into cylinder halves and press together; rotate the finished assembly, making sure there are no binds.
- 3) Press cylinder cock linkage (wire) into place; attaches between small plastic pins on the cylinder heads.
- 4) Press eccentric throw linkage (plastic molding) into holes (attaches at the base of the cylinders).
- 5) Press retainer washer and universal assemblies onto rear of the crank shaft. Test by turning it with your fingers.
- 6) Shay engine (finished assembly). Secure to underframe using two 2 x 3/16" screws, see drawing (c).

SHAY—Superstructure Detailing Right Side



Shay - Right Side

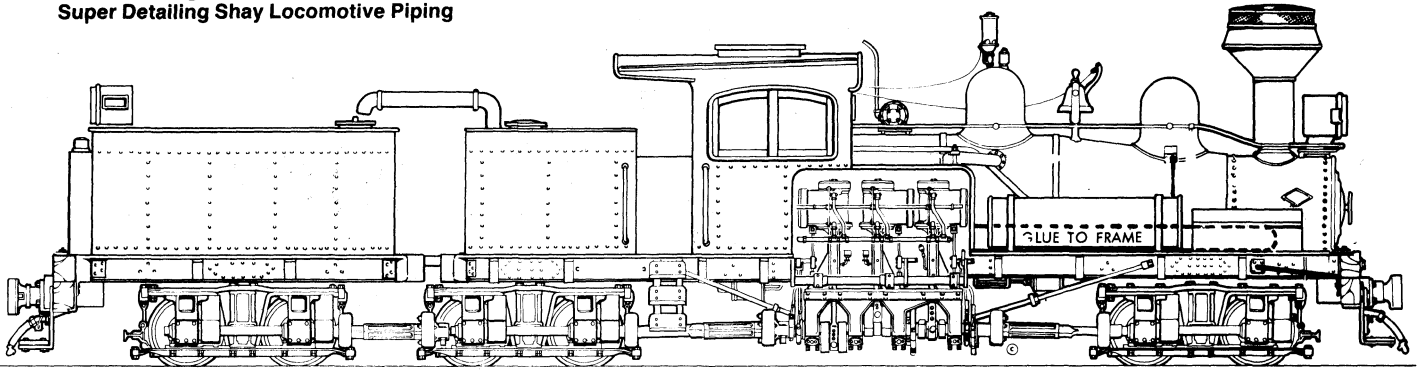


Superstructure Assembly (Right Side):

- 1) Temporarily assemble the metal boiler casting, cab and rear fuel bunker to metal underframe, securing boiler using 2 x 1/4" screw. Next, glue the fuel bunker top into fuel bunker. Glue round top filler cap into place. Slip the cab in place against the boiler. Fuel bunker snaps down on two pins and secures cab into place.
- 2) Assemble detailing parts to the boiler top and side (generator, bell, smoke stack and light). See drawing (A) above.
- 3) Dry Pipe - Refer to drawing (B) and trim molding as illustrated and attach to the boiler.
- 4) Steam exhaust pipe - Glue into place on the underframe.
- 5) Injector pipe and check valve assembly - Refer to drawing (C) injector pipe template. Using straight wire, make up injector pipe as shown in illustration. Insert end into cab and glue to check valve; check to see that valve attaches to boiler side.
- 6) Handrail posts (brass turnings) - Assemble four handrail posts, two to each dome. Be sure to align holes horizontally so that handrail will slide through the holes. A drop of ACC will keep the posts and wire in place.

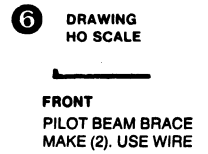
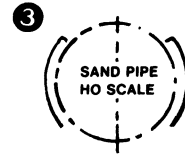
SHAY Right Side/Detailing

Super Detailing Shay Locomotive Piping



Covering: Injectors, Check Valves & Air Compressors

Super detailing the Shay model is somewhat tedious and necessitates having at least four hands. We suggest using tweezers to install small wire pipes and parts for cementing.



A

NOTE
KIT CONTAINS SPARE
PARTS -NOT USED

SHAY DETAIL MOLDING

#22496
STACK BASE

#22493
DRY PIPE

#22486
CAB STEPS

#22487
HEADLIGHT
FRONT

#22491
COUPLER

#22489
CHECK VALVE

#22497
EXHAUST PIPE

#22494
FIRE BOX
SIDE

#22492
NUMBER PLATE

#22488
REAR
HEADLIGHT
BRACKET

#22487
HEADLIGHT
REAR

NOTE: Do not twist parts off of detail molding! Use an X-Acto knife and carefully trim part from sprue.

Use Cyano-Acrylate (ACC) or Epoxy glue when attaching small parts and piping (straight wire).

B

NOTE Do not twist parts off of detail molding! Use an X-Acto knife and carefully trim part from sprue.

#22368
R&H STACK
BOTTOM

#22362
TENDER
FILLER
CAP

#22366
DIAMOND
STACK
BOTTOM

#22369
R&H STACK
TOP

#22361
OIL BUNKER
FILLER CAP

#22367
DIAMOND
STACK
TOP

#22363
WATER
SIPHON

#22384
TAPER
STACK

Note: (Piping): Kit contains straight wire which must be formed into various arrangements using the wiring templates on page 12. Templates are approximate only and some adjustments may have to be made.

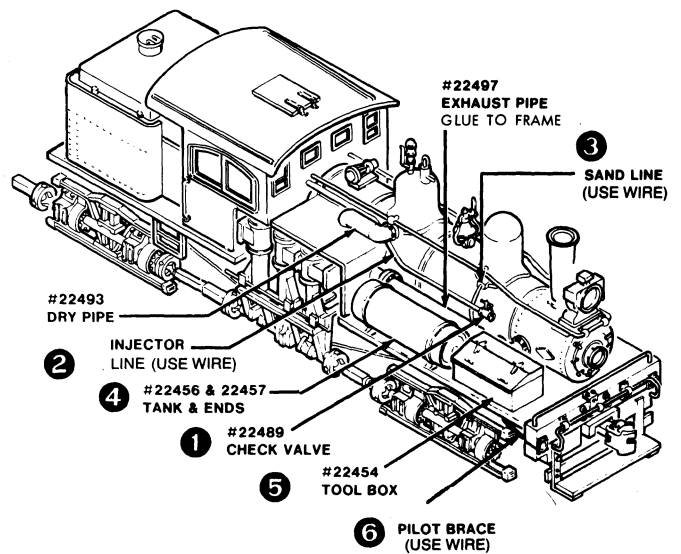
Drawings: lines (optional) represent air, water, sand and steam lines.
SHAY - Right Side Assembly Procedure

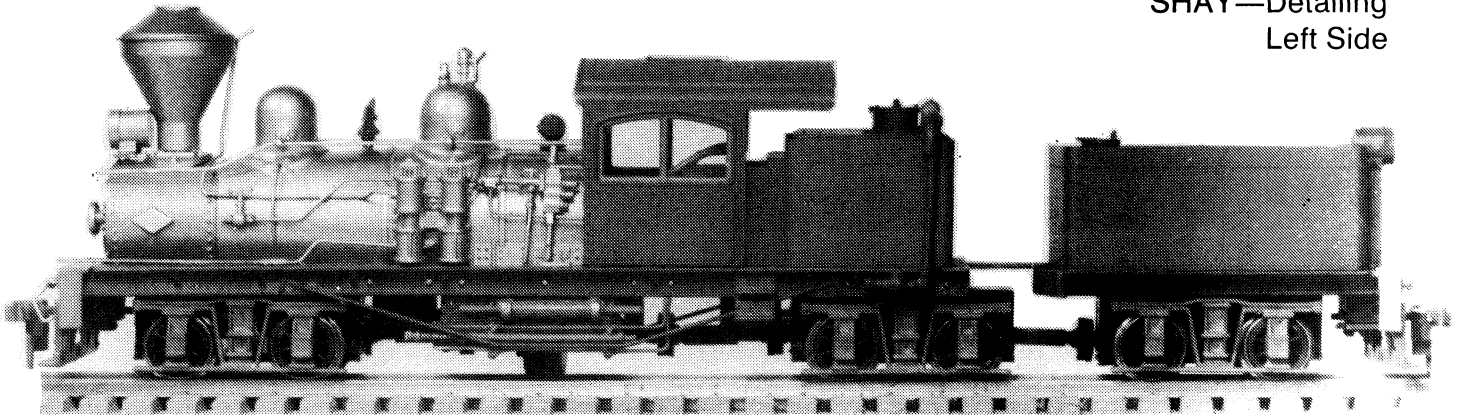
- 1) Check valve (molding)
- 2) Injector pipe (wire form)
- 3) Sand dome pipe (wire). Make two (one for each side of the sand dome.)

4) Air tank and ends (metal castings)

5) Tool box (metal castings)

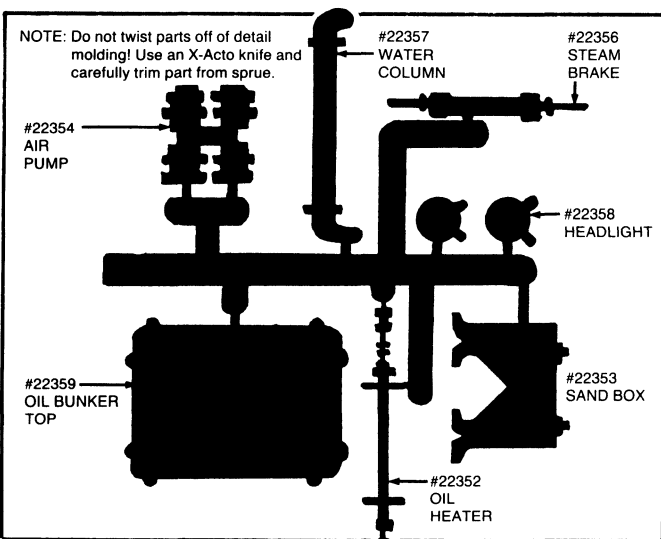
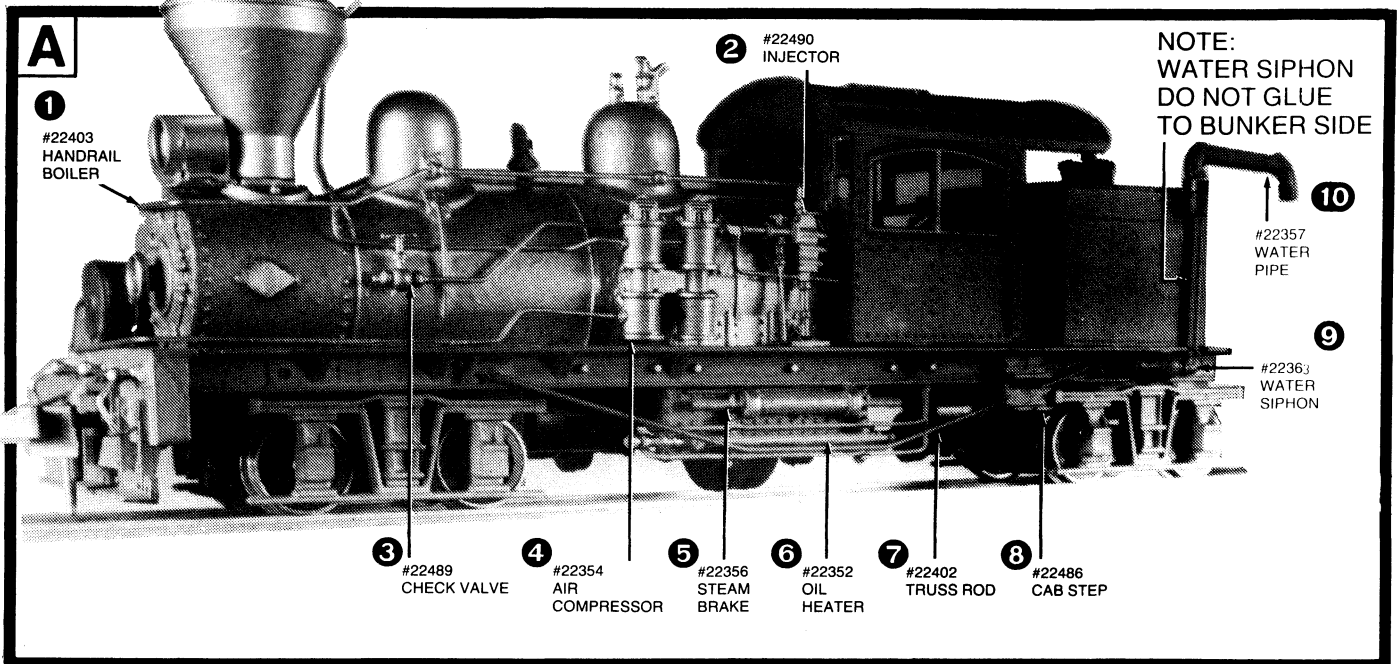
6) Pilot braces (located at the end of the underframe at front). Refer to Shay side view drawing.





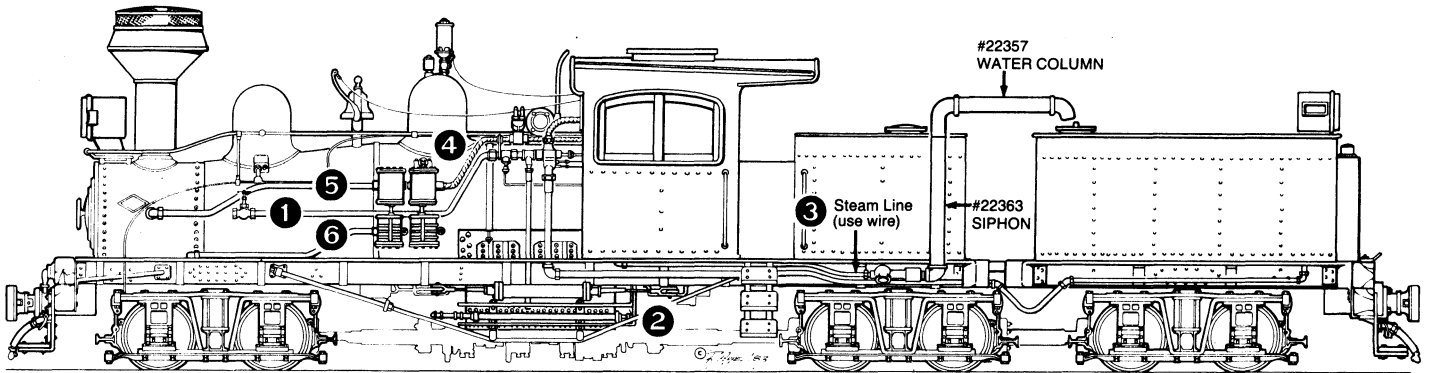
Superstructure Assembly (Left Side):

COVERING: Injector, Check valve, Air Compressor, Steam Brake, Oil Heater, Water Siphon, Truss Rods and Cab Steps.



Superstructure Assembly (Left Side):

- 1) Assemble handrail wire from #22403 into handrail posts and insert 1/4" into cab. Glue posts and wire in place. Do not glue into cab.
- 2) Attach and glue the following detail parts into place on the locomotive boiler as called out in illustration (A) above.
 - 1) Handrail wire #22403
 - 2) Injector #22490
 - 3) Check valve #22489
 - 4) Air compressor #22354
 - 5) Steam Brake #22356 (refer to page 12 (A))
 - 6) Oil heater # 22218 (refer to page 12(A))
 - 7) Truss Rod (wire form) #22402
 - 8) Cab steps # 22486
 - 9) Water Siphon #22363 (refer to page 12(B))
 - 10) Water Pipe #22357 (refer to page 12)

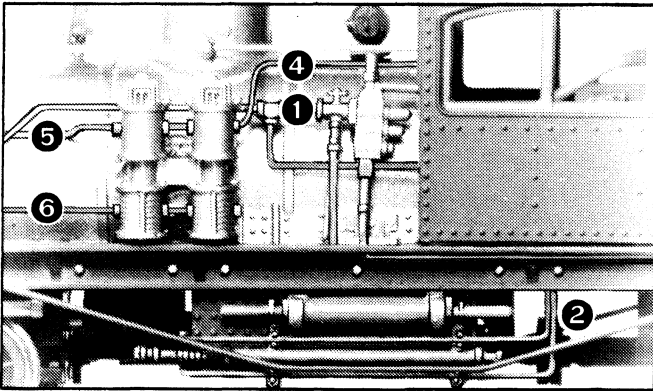
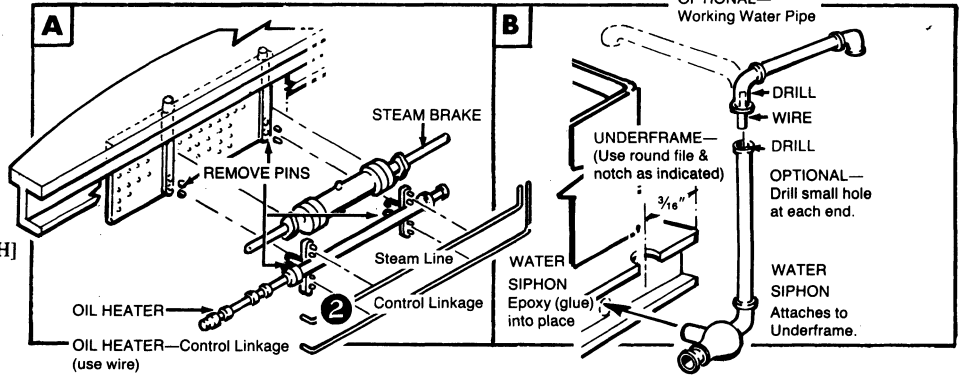


OPTIONAL DETAILS

**SHAY—LEFT SIDE
Super Detailing & Optional Piping**

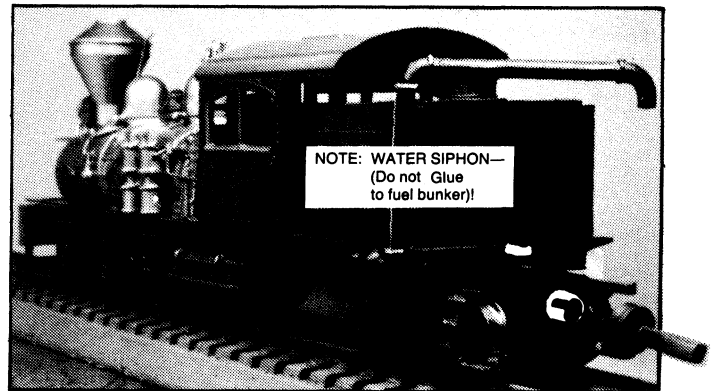
Covering the following
(construct from straight wire).

- 1 -Injector pipe to check valve [I]
- 2 -Oil heater-steam line [A & G], control rod [A & H]
- 3 -Water siphon-steam line [above]
- 4 -Air pump-steam intake line [L]
- 5 -Air pump-steam exhaust line [F]
- 6 -Air pump-air line to air tank [F & above]



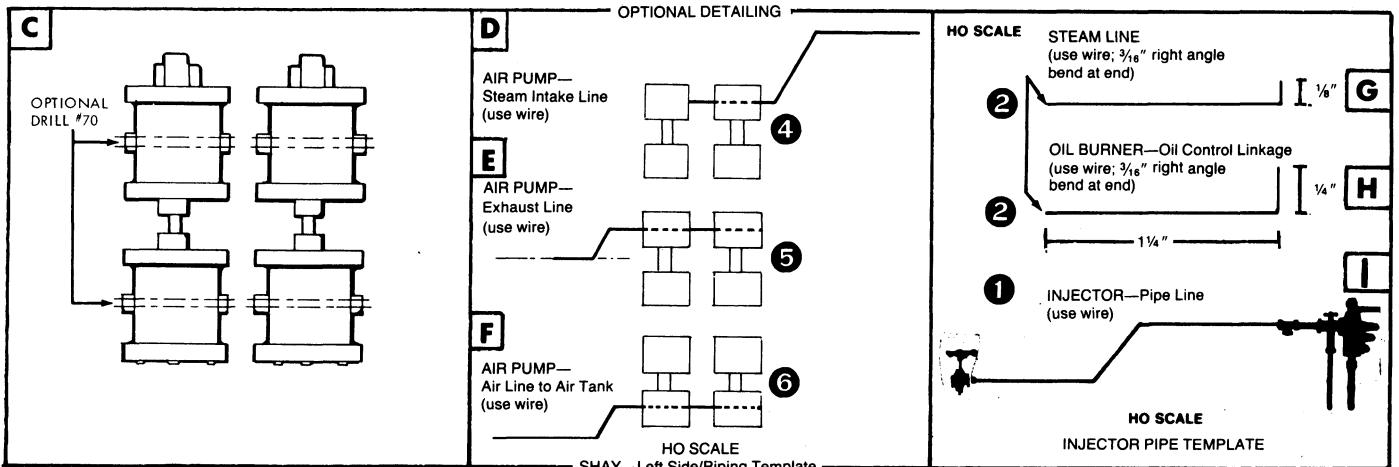
Steam Brake drawing [A]. Glue cylinder to side of fire box (under the lower edge of metal underframe).

Fire box. Remove molded pins from fire box face and glue oil burner to fire box. Refer to [A].



Oil burner (steam line and control linkage). Construct from straight wire. See diagram [A & H].

Water siphon. Refer to drawing at top of page 12 [B]



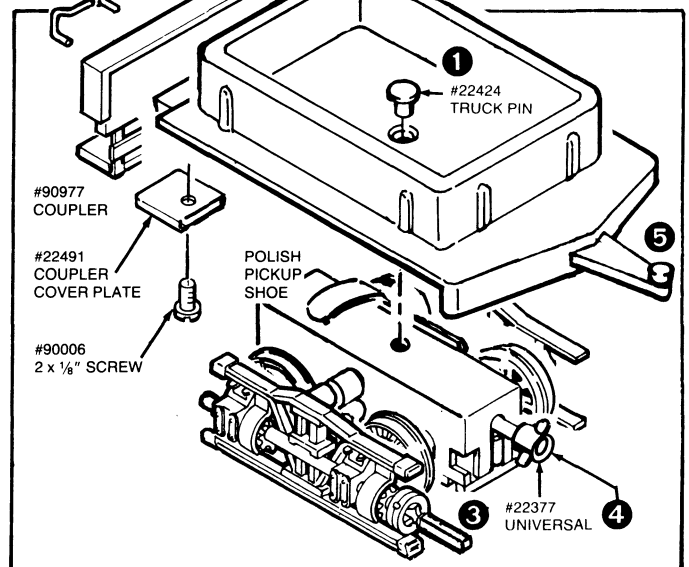
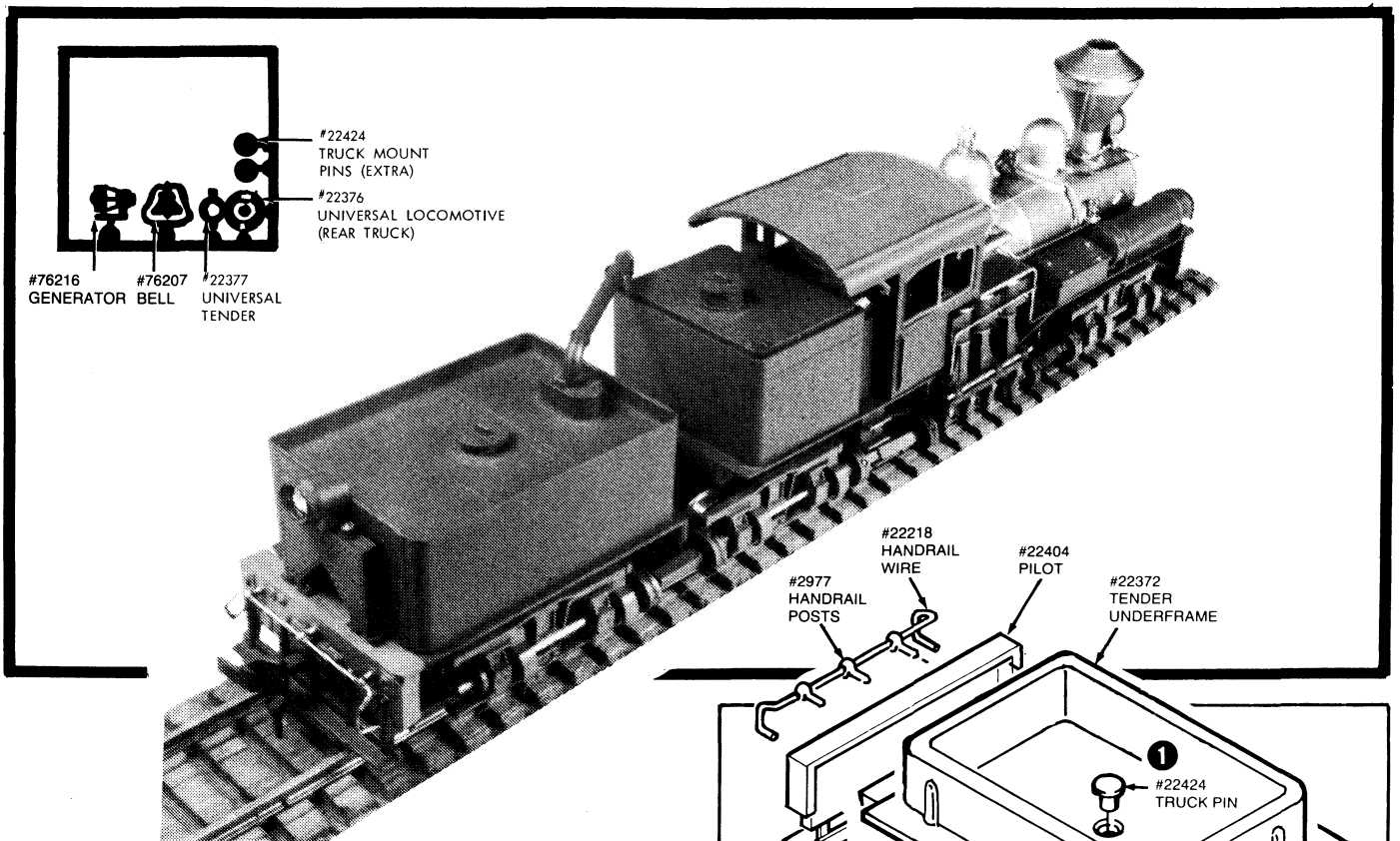
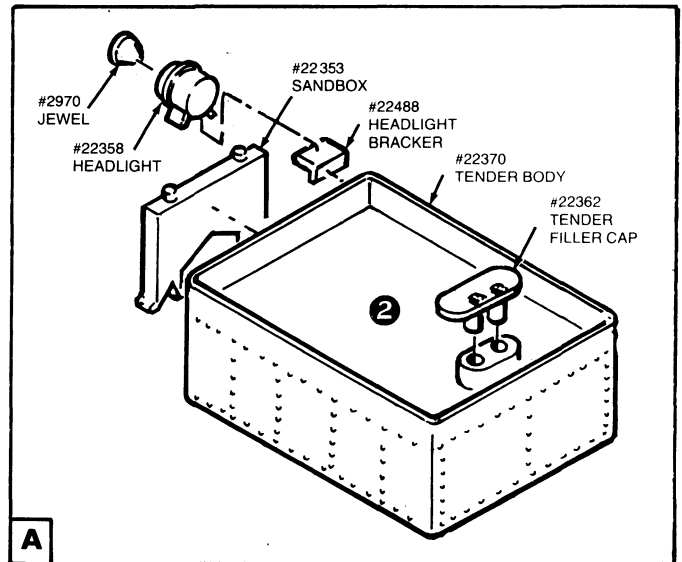
TENDER Assembly:

TENDER Body & Underframe

Tender body - Glue sand box to rear of tender. Glue rear headlight to left corner. Glue hatch cover in place (refer to (A)).

Underframe - Polish the bottom of underframe at point of contact with pickup shoe. Attach tender pilot and install rear coupler assembly.

- 1) Power Truck - Attach to underframe using mounting pin.
- 2) Tender Body - Press onto underframe. **DO NOT** glue.
- 3) Universal - Join tender and locomotive rear power truck universals.
- 4) Power Drive Shaft - Insert locomotive drive into tender universal.
- 5) Attach locomotive coupler hitch into hole in the tender underframe.
- 6) Test final assembly for operation under power. Correct any binds in the line shafts and universals.



PROBLEM: Finished 3-truck shay binds when running with the line shafts to the inside of an 18" radius circle.

SOLUTION: Back off line shaft toward the coupler end (rear) making additional space.

Alternate solution: Trim 1/64" from the metal square tube #22440 and reassemble and test again. If the bind still persists, trim slight amount from drive shaft #22443, removing small amounts at a time until bind is relieved.

PAINTING

Finalizing the Roundhouse SHAY

Introduction to Shay Kit Painting

PAINTING HINTS—Read before painting.

- Do not paint the Shay gear drive, power train drive, truck gearing or universals or Shay "engine" crank assembly. This could cause undue binding and stoppage of line shaft motion.
- Do not glue parts to prepainted surfaces. Parts will not hold. Always remove paint at point to which part is to be joined.

Shay Disassembly—Preparation for painting finished model.

- Remove superstructure from underframe and unmount motor and terminal lug. Set motor aside so as not to get paint into it.
- Remove Shay cylinder assembly and power trucks. **Note:** When removing trucks be very careful not to pull drive assembly apart. Uncouple front and rear universal drives first.

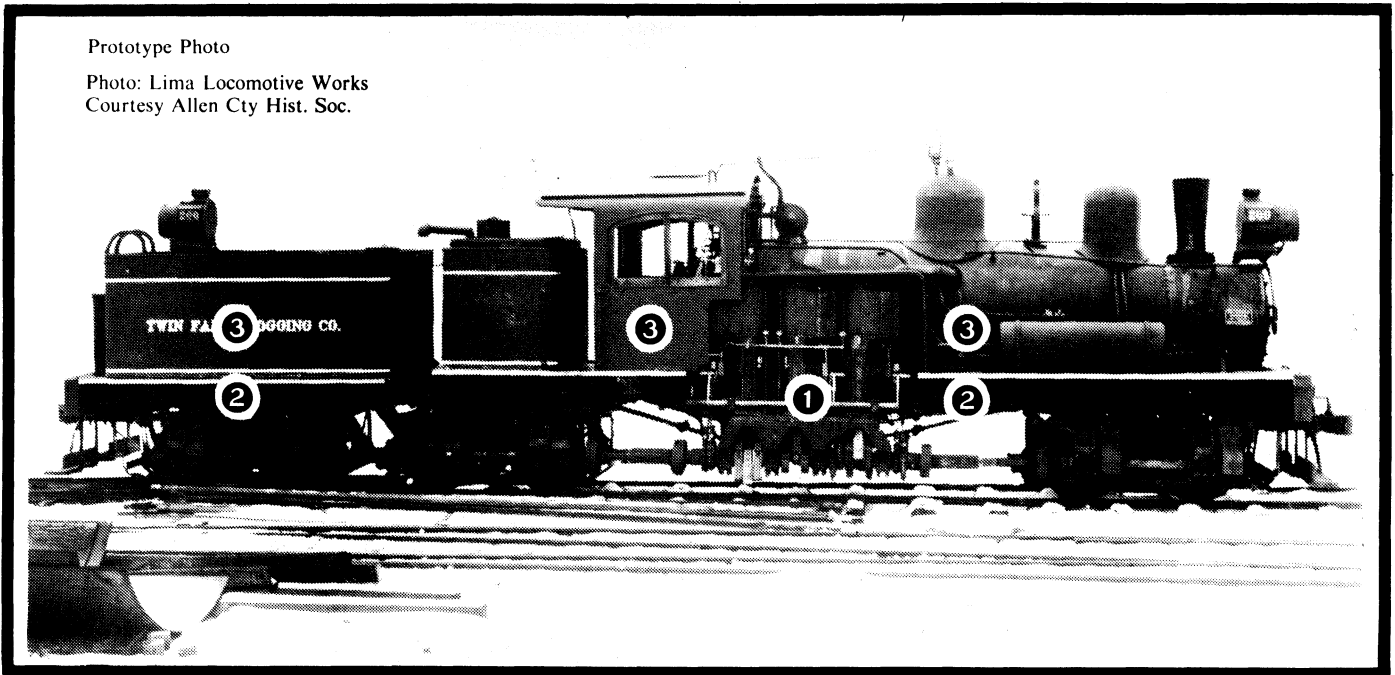
PAINTING INSTRUCTIONS

Shay plastic power truck geared side frames and Shay (engine)—Paint only the side frames; be careful not to get paint into the journals or line shaft/gear.

- 1) Shay engine—Remove the crank shaft and universal drive. You can paint the engine molding and then reassemble (be sure to oil moving parts). **Note:** Clean with vinegar, rinse and dry with a blow dryer.
- 2) Underframe—Remove oil and grease. Using masking tape, cover electrical contacts and portion of underframe area just rear of the coupler box which ground pickup shoe rubs against (see instruction sheet, page 2, bottom view). Pull off tape after paint has dried.
- 3) Boiler, cab & bunker assembly—Remove any oil. **Note:** If you have glued superstructure (plastic and metal parts) together, clean assembly with vinegar. Use a hair dryer (warm) and blow dry the parts.

Prototype Photo

Photo: Lima Locomotive Works
Courtesy Allen Cty Hist. Soc.



PAINTING INSTRUCTIONS (PLASTIC PARTS)

Note: Test paint (spray or brush) **BEFORE** painting model. Use only enamel spray paint; no lacquer base paints!

- 1) Make sure plastic parts are clean and free of grease or oil before painting (see instructions below).
- 2) If you are going to paint plastic parts with Floquil spray paint, first use a primer on all parts (using Floquil Primer only). Otherwise, the plastic will "craze" or distort.

PAINTING INSTRUCTIONS FOR (METAL) PARTS

IMPORTANT! Paint will not adhere properly to dirty or oily surfaces, so make sure your hands are clean before handling the clean metal parts.

- 1) After de-burring METAL PARTS and before painting, you should degrease each part.

Using a bread pan (glass or metal) add vinegar, deep enough to submerge the part. Scrub each part with an old toothbrush.

METAL PARTS only! Rinse in warm water and dry (using a blow dryer).

- 2) You are now ready to primer the METAL PARTS. Use (non-lacquer) spray metal primer paint, available from your hobby shop or paint store.

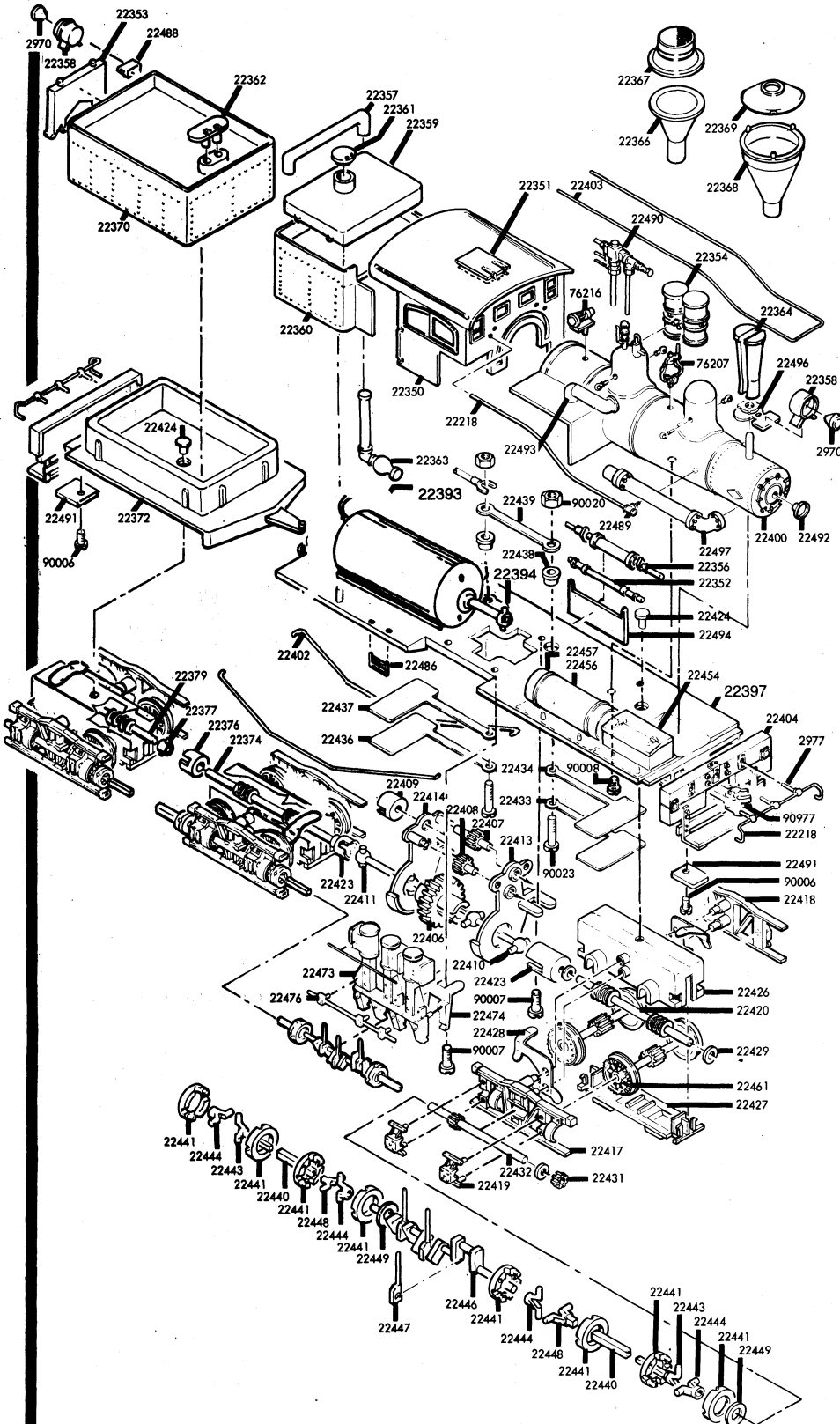
After applying primer paint to the METAL PARTS, set aside to dry. Wait at least one hour. *Do not handle parts which have just been spray painted!*

- 3) Finish painting the parts with any leading model hobby spray paint color. For a well-used look, you can use Floquil Grimy Black; or, for a newer look, use a semi-gloss color combination or black.

When handling painted METAL PARTS, do your final construction work by supporting the parts with a soft material (scrap of rug or sponge). This will ensure that you will not damage the painted surfaces. After completing your locomotive kit you can use a paint brush and touch up "dings" in metal parts with paint.

After all parts (including the tender) are painted and dried, you can start assembling your locomotive kit (be sure to oil all moving parts and gearing assemblies).

70 Three Truck SHAY - Parts List



- 22218 Handrail Wire (3 pc)
- 22350 Steel Cab 3-Truck
- 22351 Cab Roof Hatch
- 22352 Oil Heater
- 22354 Air Pump
- 22356 Steam Brake
- 22357 Water Column
- 22358 Headlight
- 22359 Oil Bunker Top
- 22360 Fuel Bunker Body
- 22361 Oil Bunker Filler Cap
- 22363 Water Siphon
- 22364 Taper Stack Half (2)
- 22366 Diamond Stack, Bottom
- 22367 Diamond Stack, Top
- 22368 R&H Stack, Bottom
- 22369 R&H Stack, Top
- 22400 Shay Boiler
- 22403 Handrail, Formed
- 22454 Tool Box
- 22456 Tank
- 22457 Tank Ends (2)
- 22486 Steps (2)
- 22489 Check Valve (2)
- 22490 Injector 1.25 ea.
- 22492 Number Board
- 22493 Dry Pipe 1.00 ea.
- 22494 Fire Box Side
- 22496 Smoke Ex. Hdt. base
- 22497 Exhaust Pipe
- 2970 Headlight Jewel (2)
- 2977 Handrail Posts
- 76207 Bell
- 76216 Generator

- 22397 Underframe 3-Truck
- 22374 Power Trk. Jack Shaft
- 22376 Drive Coupling Rear
- 22402 Truss Rod (2)
- 22404 Pilot (2) 3.00 ea.
- 22406 Bull Gear
- 22407 Drive Gear, 12th/48pt
- 22408 Idler Gear, 12th/48pt
- 22409 Power Universal Gear Box
- 22410 Power Shaft, Short
- 22411 Power Shaft, Long
- 22394 Universal Drive, Motor Shaft
- 22413 Gear Housing, Front
- 22414 Gear Housing, Rear
- 22417 Truck Frame, Right (3)
- 22418 Truck Frame, Left (3)
- 22419 Journal Cap (6)
- 22420 Jack Shaft Assembly
- 22423 Power Universal Link (2)
- 22424 Truck Mounting Pin (3)
- 22426 Power Truck Housing (3)
- 22427 Power Truck Housing Cover (3)
- 22428 Pickup Shoe (4)
- 22429 Thrust Washer (6)
- 22431 Gear 9th/48pt (6)
- 22432 Gear Shaft, .062x1.150 (3)
- 22433 Front Shoe, Short Metal
- 22434 Front Shoe, Short Fiber
- 22436 Rear Shoe, Long Metal
- 22437 Rear Shoe, Long Fiber
- 22438 Bushing, Insulating (2)
- 22439 Jumper Bar
- 22440 Square Tube 5/16" long (3)
- 22441 Universal Cap (12)
- 22443 Universal Drive Male Short (3)
- 22444 Universal Drive Female (5)
- 22446 Crank Shaft
- 22447 Piston Rods (3)
- 22448 Universal Drive, Male short (3)
- 22449 Retainer, Plastic (6)
- 22461 Shay Driver Assy. (6)
- 22473 Cylinder, Front Detail
- 22474 Cylinder, Rear Detail
- 22476 Eccentric Throw
- 22491 Cover Plates
- 22393 Can Motor
- 22353 Sand Box
- 22362 Tender Filler Cap
- 22370 Tender Body, 3 Truck
- 22372 Tender Underframe 3 Truck
- 22377 Universal Drive (Male) Tender
- 22379 Tender Jackshaft
- 22488 Bracket Taillight

- 90006 2 x 1/8" S.T. Screw (2)
- 90007 2 x 3/16" S.T. Screw (2)
- 90008 2 x 1/4" S.T. Screw (1)
- 90020 2-56 Nut (2)
- 90023 2-56 x 5/16" Screw (2)
- 90017 2mm x 4mm Screw (1)
- 90977 Coupler (2)