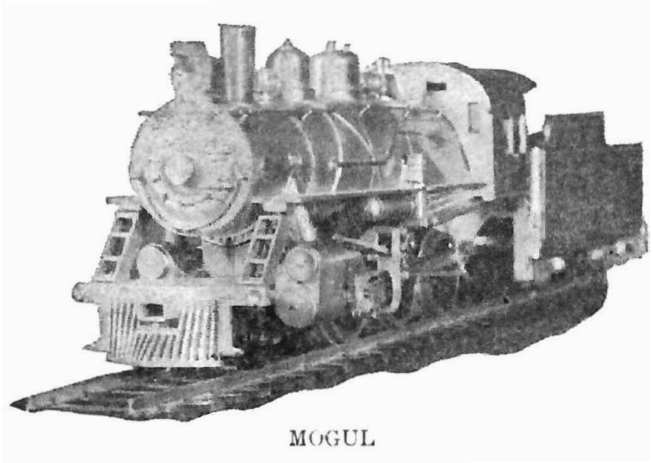
3 Instruction Booklet

for

2-6-0 MOGUL Model No. 15 Scale

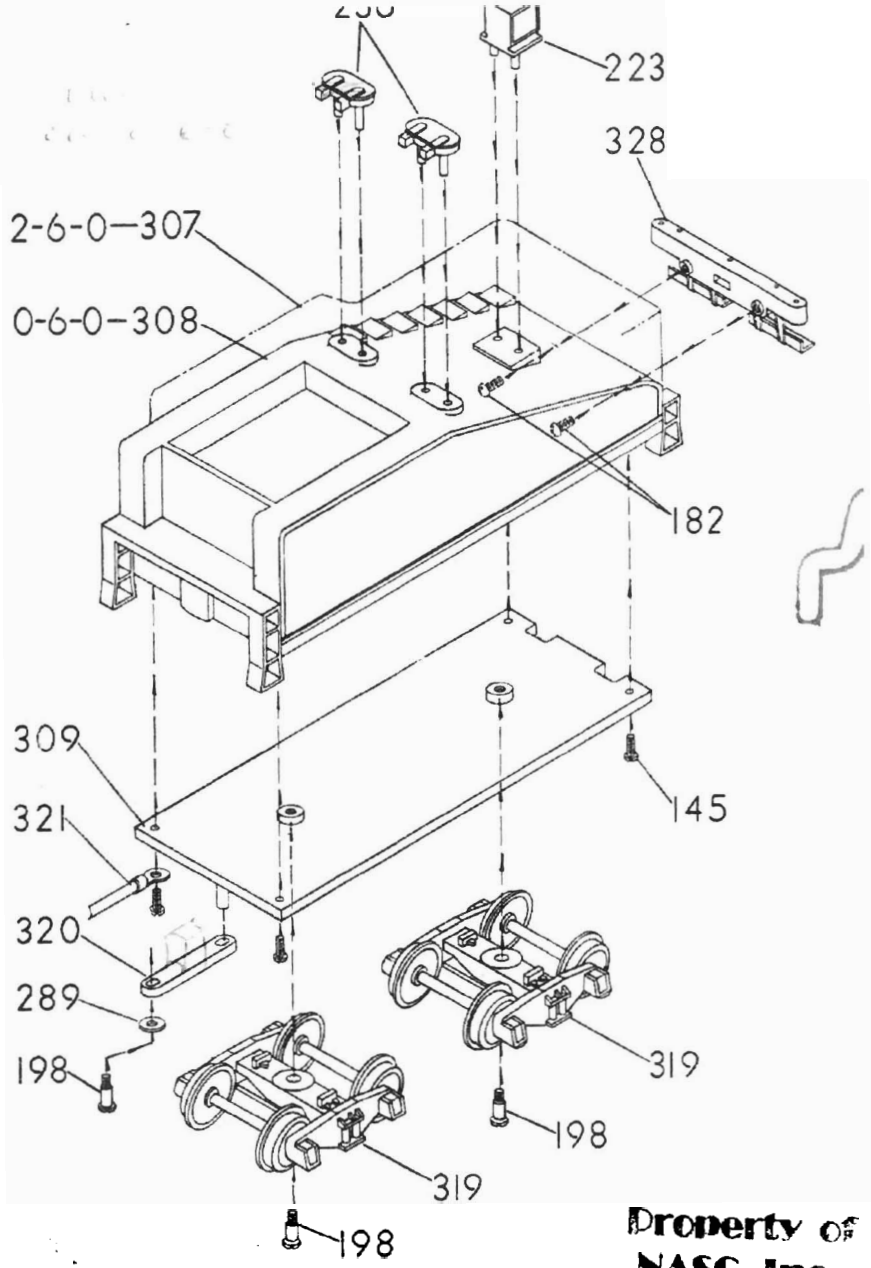
0-6-0 SWITCHER Model No. 21 Scale

Scale "S" Gauge Locos



MOGUL

S



2-6-0 ROAD TENDER &

0-6-0 SWITCHER TENDER

S & P DISTRIBUTORS
90 Lucy Lane
Northfield, Ohio 44067

Mogul #15 Scale Loco Kit

Switcher #21 Scale Loco Kit

*Indicates parts and instructions for 0-6-0

INTRODUCTION

The Rex Mogul is a free lance passenger or light freight locomotive designed from several prototypes, most of which have long been scrapped. They reached the heighth of their popularity between 1910 and 1930.

The closest prototype of this 2-6-0 wheel arrangement was the Green Bay & Western built by the American Locomotive Co., but many similar locomotives built both by Baldwin and American were quite common all over the U.S.A.

PROTOTYPE SPECIFICATIONS

Total weight	139,000 lbs.
Tractive power	25,000 lbs.
Water capacity	5,000 gals.
Driver diameter	56 ins.

The American Locomotive Company furnished us erecting blueprints of this locomotive and similar locomotives, which prints were used extensively in the design of the Rex Mogul. It is a pleasure to acknowledge this cooperation.

0-6-0 Switcher

INTRODUCTION

The Rex Switcher is a free lance switching locomotive designed from several prototypes, most of which have been scrapped. They reached the heighth of their popularity between 1910 and 1930.

The closest prototype of this 0-6-0 wheel arrangement was the Pennsylvania B-6 built by the Pennsylvania Railroad Co., but many similar locomotives were built both by the American and Baldwin Locomotive Companies. These also were quite common in the U.S.A.

PROTOTYPE SPECIFICATIONS

Total weight	308,000 lbs.
Tractive power	36,000 lbs.
Water capacity	4,000 gals.
Driver diameter	56 ins.

The Pennsylvania Railroad Company furnished us erection blueprints of this locomotive and similar locomotives, which prints were used extensively in the design of the Rex Switcher. It is a pleasure to acknowledge this cooperation.

1. UNPACK AND CHECK PARTS

Before proceeding with the various steps of assembly we ask that you unpack the parts and check them against the list. If anything appears to be missing or damaged please contact us. Extra parts may be ordered. Next read the instructions thoroughly, identify the various parts and familiarize yourself with the sequence in which you are going to need them for assembly.

Where the right and left hand parts and assemblies are almost identical and the text refers to one side only, it applies, of course to both sides.

KEEP THE EXPLODED VIEW IN FRONT OF YOU AT ALL TIMES AND REFER TO IT EACH STEP.

2. PREPARE CASTINGS

The kit contains many zinc castings which have exceptional detail and accuracy. Before removing the flash and burrs from these castings we suggest you familiarize yourself with them from the drawings and photographs, so that you will not remove any of the fine rivets and other details that it took our expert die makers many hours to build into the kit for you. The dies were made by Culp Die Co. of Philadelphia, Pa. and the castings were by the Canton Die Casting Co. of Canton, Ohio and it is a pleasure to pass on to these companies the credit they so justly deserve.

Any PART NEEDING STRAIGHTENING, *APPLY HEAT* OR PUT IN *HOT WATER,* THIS WILL PREVENT BREAKAGE OF PART.

3. ASSEMBLE DRIVERS, SIDE RODS AND ENGINE TRUCK IN FRAME

These wheel assemblies are pressed and quartered on the axles at the factory and no adjustment is required by the modeler.

Fit #201 front wheel axle and gear assembly into bearing slot in the 313 frame so that it turns freely. Fit #150A centerbearing block over

#203 axle and wheel assembly and into center square slot in frame and see that it turns freely. Then fit rear bearing over the axle of the #202 rear wheel assembly so that it turns freely. Then fit the bearing blocks into the square slots of the #313 locomotive frame. It should rock up and down from the center, but fit snugly front to back and side to side. This establishes the equalizing feature. The insulated wheels go on the left, or firemen side with the locomotive facing forward. With the frame upside down assemble the #315 cover plate to the frame with the two #145 screws. Be careful not to file too much off the top projections of the cover plate where it contacts the front axle and the rear bearing blocks or you will have a sloppy mechanism assembly. Place the #306L side rod over the rear wheel crank pin and fasten them to the front and middle wheel with the #132 shoulder screws. Repeat same for right side.

Make sure that everything works freely and that the assembly can be pushed effortlessly by the hand back and forth on the track.

The #180 front wheel and axle assembly should be placed in the bearing slot of the #220 engine truck and held in position with a #145 screw. The axle must be free to turn in the bearing slot. The screw is used merely to keep it in place. The front truck assembly is then fastened to the frame with #188 shoulder screw which also acts as a retaining screw for the #315 coverplate. On the front engine truck the #186 spring should be slipped in place over the lug provided for it in the #220 engine truck frame.

4. MAKE SUB-ASSEMBLY OF CYLINDER AND CROSSHEAD GUIDES

The four #176 crosshead guides should next be pressed into the #191 cylinder. There is no other mechanical means for holding these crosshead guides in place and they MUST FIT TIGHTLY enough so that they will not come loose in operation.

5. MAKE SUB-ASSEMBLY OF CROSSHEAD AND MAIN ROD

Next make up main rod and crosshead sub-assemblies as follows: fasten #305L main rod to the #121 left hand crosshead and piston rod with the #132 shoulder screw. Fasten the other #305R rod to the #120 right hand crosshead with shoulder screw. On the front end, where the main rod fits into the crosshead, it should fit loosely on the shoulder when the screw is snugly fastened through the rod into the crosshead. The crosshead should slide freely back and forth on the outside of the guides with the main rod retainer lugs on the inside of the guides. If all these parts are not PERFECTLY FREE TO MOVE they will cause trouble later on.

6. ASSEMBLE CYLINDER AND CROSSHEAD GUIDE UNIT AND CROSSHEAD MAIN ROD UNIT IN PLACE.

You are now ready to fasten the previously made sub-assemblies to the frame. With two #168 screws and two #251 nuts fasten the sub-assembly of the #191 cylinder (with its fitted crosshead guides) to the #313 frame. This is a temporary assembly. When the boiler is later fastened to the frame and cylinder, remove and discard the two nuts and complete the assembly as described in section 10. Now place the cross- and main rod sub-assembly in position. Slide the crosshead into its final position between the crosshead guides with the piston rod in the center hole of the cylinder. Then put the main rod over the crankpin in the rear wheel and the outside of the previously assembled side rods, and fasten to the crankpin with the eccentric crank and O-80 flathead screw in valve gear kit. Assemble part #148 guide hanger to #313 frame with #145 screw. The rear end of the crosshead guides should just come flush with the back of the guide hanger. Again try the fit of the crosshead in the crosshead guides and adjust until they have a FREE SLIDING FIT. The mechanical assembly should roll along the track with no interference of any kind. Do not attempt to apply power either by dragging or pushing the assembly until all interference has been removed and mechanism rolls FREE AND LOOSE. Use a few drops of light clock oil on all moving parts. A minimum of oil should be used and applied with a toothpick or needle. Put the small hole terminal end of the pickup wire through the hole on the back end of the frame. Slide the insulating tubing on the wire first then thread through the hole. It will be fastened to the left hand motor terminal.

7. ASSEMBLE MOTOR AND TRY OUT MECHANISM.

Solder #103 worm to #117 motor shaft. Set worm about 1/16 from end of shaft and solder. Set motor and worm on a block of wood and test run to make sure motor runs freely and quietly. Oil wick on pully end of motor and on back end of armature. Use toothpick and light oil. Force #126 grommet in front motor mounting hole in top of #313 frame. The grommet acts as a cushion mounting for the motor, also provides a means to tighten or loosen the worm and gear fit. Place rubber washer #134 between part #304 rear mounting lug of the motor and the top of the #313 locomotive frame and fasten rear of motor in place with #127 flat head screw. Put a #133 washer through the clearance hole in cover plate over the bottom of the front motor grommet and fasten front of the motor with #145A screw. Check the fit of the worm and gear until it will move with a minimum of play. Alternately tighten the front and rear motor mounting screws carefully, checking the gear mesh and fit BY ROTATING THE MOTOR ARMATURE BY HAND. Lubricate the gears and all moving parts with a few drops of light oil. Now fasten one terminal on the pickup wire to the left hand motor terminal with the #197 screw. If motor terminal is not tapped, the terminal may be soldered in place. The contact lug on top of motor should be on the other or right hand terminal post in the illustration. Again make sure no bind occurs in any of the moving parts. With the mechanism upside down touch the left hand drivers and the pickup wire with your 12-volt D.C. power leads. The mechanism should now run freely. If any bind or noise should occur at this time it will probably be due to:

(1) Faulty gear adjustment, which can be eliminated with a screw driver by loosening the front and rear motor screws until proper adjustment is secured.

(2) Crosshead or rod bind. This latter difficulty, however, should have been eliminated if all steps listed previously have been followed. When everything runs freely with the mechanism upside down you are now ready to run the motor in for half hour or so in this position. The armature of a permanent magnet motor should never be removed, even for a short while. Motors magnetized after assembly will be weakened instantly by armature removal. The motor manufacturers' recommendation is maximum current on intermittant duty 1.0 amps; and the current at the recommended speed of 10,000 rpm is 0.9 amps.

8. ASSEMBLE ACCESSORY CASTINGS TO FRAME AND BOILER.

The two air #178 reservoirs (one on each side) are pushed in place on the boiler underneath the running board. The #123 bell, #138 air compresser, #140 generator, #177 number plate and #223 headlight are assembled into the holes provided for them and cemented in place. The various accessories can be assembled in any sequence, as long as they do not interfere with each other.

9. ASSEMBLE HANDRAIL AND POSTS

The #323 and #169 hand rail wire should be inserted through the holes in the #135 hand rail posts before the posts are pressed into place. This prevents distorting the holes in the posts while they are being pressed in. These little hand rail posts are made to scale. They are fragile and CANNOT BE ABUSED. If the posts do not seem to fit in their holes tightly enough they can be held in place with a drop of metal cement. If tight, ream hole with a #66 drill.

10. ASSEMBLE BOILER AND CAB TO FRAME.

Fit the #310 cab into the slots provided at rear of boiler. Fasten with one #145 screw. The rear of the boiler fits over the platform on the frame and is fastened in place with two #145 screws. The front of boiler sets down on the cylinder saddle and is held in place with two #168 screws which pass through the frame and cylinder saddle into the holes in the boiler. These holes are threaded. The two #173 front steps should be loosely fastened to the locomotive frame with #197 screws. When the boiler is set in place it will locate the top of the steps in position. The #197 screws can be tightened after the #168 screws are in place. If #168 screws appear too long, file off a little and round the ends.

11. FINISH PAINT AND LETTER

No decals for lettering or numbering are supplied because you will probably want to use your own. In our opinion the painting and lettering are the final touches and can either make a model outstanding or do it a great injustice. There is no one set of standards to follow in finishing a model, though there are several methods. Through personal experience you have established your own procedure. Many of the model railroad paints will do a very satisfactory job if the directions are closely followed.

12. TENDER ASSEMBLY

Fasten the #328A footboard and bolster to rear of tender body with two #182 screws. Next fasten the #309 tender floor to the #307 tender body with four #145 screws. Assemble rear light #223 in the holes provided for it.

Assemble two #319 tender trucks to the tender floor with two #198 shoulder screws. Coil spring #198A is supplied for better pickup. The insulated wheels should be on the right hand side. Fasten the two #236 tank hatches to the top side of tender where holes are provided for them. Turn locomotive and tender upside down and fasten draw bar #320 to tender with #198 screw; then to like position on locomotive. Fasten #321 locomotive lead wire to tender pickup wire, then to one of the front screws #145 holding tender frame to tender body.

13. TESTING AND RUNNING

Now put the locomotive and tender on the track and run it in. The motor should not at this time draw more than .5 amps at 12 volts. The scale speed at 12 volts should be 75 miles per hour, or about 103 feet per minute in "S" gauge.

14. SUPERDETAILING REX LOCOS

On the front of the locomotive and on the back of the tender there is much room for additional detail such as coupler release rods and handrails. We can supply these parts if you care to order them from us. Additional piping anywhere around the boiler of the locomotive or on the underframe of tender could be made up of .025 wire and bent to suit the purpose for which it is intended. Additional holes are also supplied in the bottom of the tender frame for mounting air reservoirs, air brake cylinders, and air valves. These parts and ideas were added after exploded assembly drawings were made. They are not shown, but with normal amount of ingenuity by the model maker they may be added or left off if you so desire.

Upon request we can quote price for any stage of completion you wish on any Rex locomotive.

PRICE LIST PARTS FOR
REX 2-6-0 MOGUL & 0-6-0 SWITCHER

Part No.	Number Needed		Price each
103	1	Worm gear, single thread, 56p	.50
117	1	Pittman, motor DC71A	6.50
120	1	Crosshead & piston rod RH	.50
121	1	Crosshead & piston rod LH	.50
123	1	Bell & bracket	.50
126	1	Grommet, rubber	.15
127	1	Screw #4-40x3/8 flathead	.05
132	6	Shoulder screw for side and main rods	.15
133	1	Washer #2 S.A.E. 3/32 I.D.x1/40.D.x.020	.05
134	1	Washer, rubber rear motor mount	.05
135	13	Handrail posts	.10
138	1	Air compressor, single	.45
140	1	Generator	.40
145	7	Screws #2-56 x 1/4 rd.hd.	.05
145A	1	Screw #2-56 x 3/8 rd.hd. front motor mount	.05
148	1	Guide hanger	.85
150	1	rear bearing	.35
150A	1	Middle bearing	.40
156	1	Comb. speed nut and box wrench	.65
158	1	Nut #4-40 hex	.05
168	2	Screw #2-56 x 3/4 flat head	.10
169	1	Handrail, boiler front	.10
~~173~~	~~2~~	Front steps	.50
176	4	Cross head guides, sq. brass	.10
177	1	Number plate	.30
178	2	Air reservoirs	.30
~~180~~	~~1~~	Wheels & axle Ass. engine truck-scale	.45
182	2	Screws #2-56 x 3/16 rd. hd.	.10
~~186~~	~~1~~	Spring, engine lead truck	.10
~~188~~	~~1~~	Shoulder screw, truck pivot and cover plate	.15
191	1	Cylinder & boiler saddle	2.50
197	3	Screw #O-80 x 3/32 rd. hd.	.10
201	1	Driver, gear & axle assem. front-scale	3.75

Part No.	Number Needed		Price each
202	1	Drivers, crankpin & axle assem. rear-scale	3.25
203	1	Drivers & axle assem. intermediate-scale	3.00
~~220~~	~~1~~	Engine truck frame	.50
223	1	Headlight	.50
~~225~~	~~1~~	Pilot & bolster	2.00
251	2	Hex-nut #2-56	.05
304	1	Rear motor mount	.40
305L	1	Main rod	.70
305R	1	Main rod	.70
306L	1	Side rod	.60
306R	1	Side rod	.60
310	1	Cab	4.00
~~312~~	~~1~~	Boiler	11.00
313	1	Frame	9.00
315	1	Cover plate	.70
321	1	Tender to motor lead wire	.40
323	2	Handrail, boiler	.10
321A	1	Insulating stock, lead wire	.10

0-6-0

*182A	2	Pilot screws #2-56 x 1/8	.10
*311	1	Boiler	11.00
*328	1	Footboard & bolster	2.00
*223AF	1	Headlight	.50
*182	1	Headlight screw #2-56 x 3/16	.10

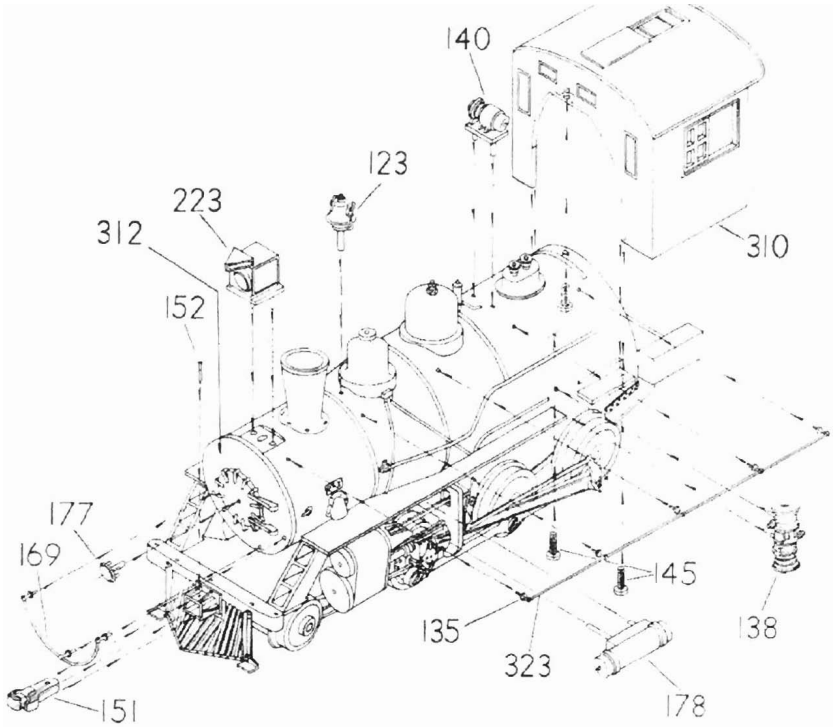
As an accommodation to those who might otherwise find it impossible to purchase the complete kit, we are offering Mogul and Switcher Kits in three sections.

MOGUL KITS

401	Tender Kit	12.50
402	Boiler Assembly	15.50
403	Frame and mechanism	32.50

SWITCHER KITS

411	Tender kit	13.50
412	Boiler assembly	15.00
413	Frame and mechanism	32.00

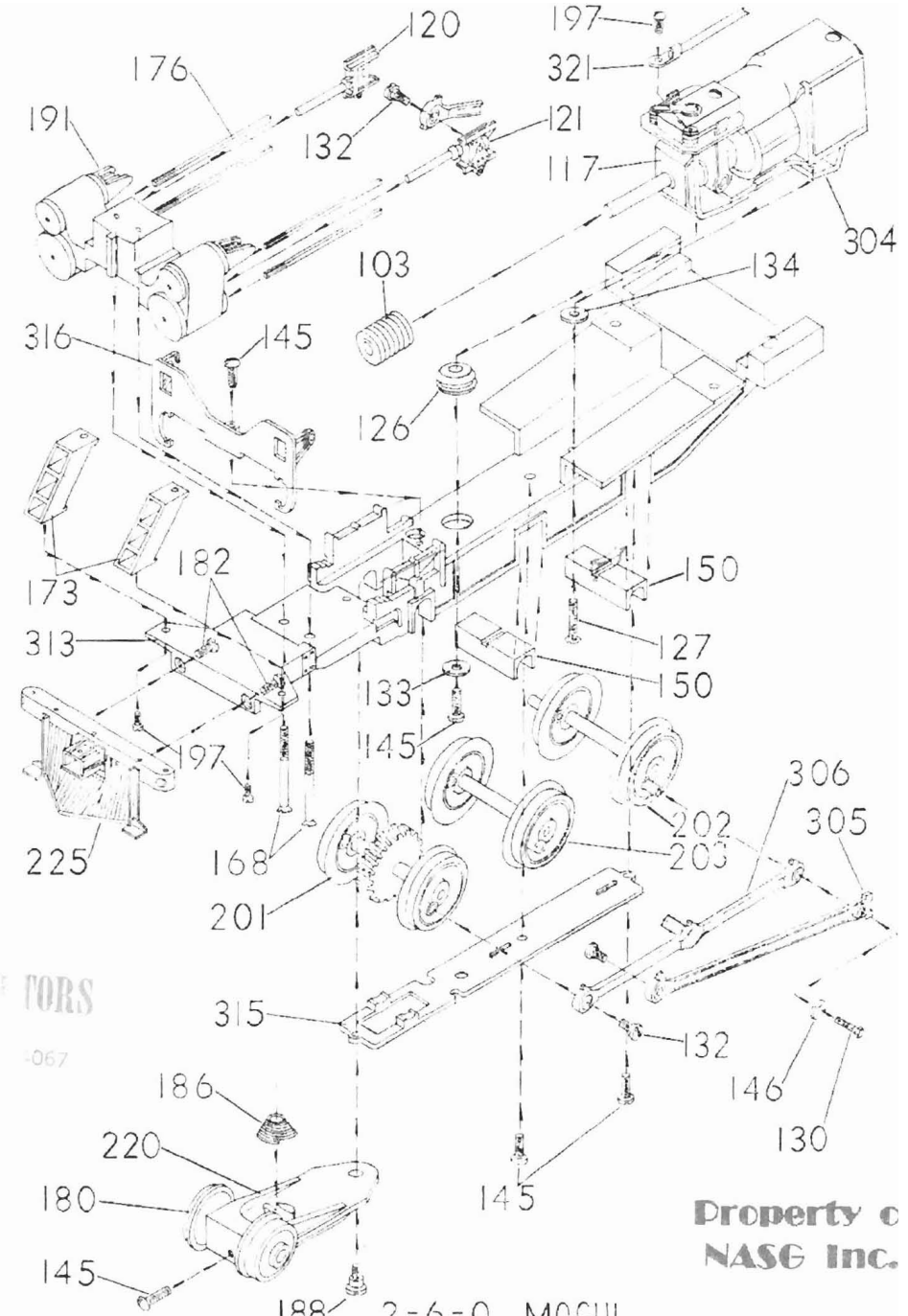


2-6-0 MOGUL
LOCOMOTIVE ASSEMBLY

Valve Gear Assembly

REX ENGINEERING CO.
261 Briggs Building
Birmingham, Michigan

Printed in U. S. A.



2-6-0 MOGUL
MECHANISM ASSEMBLY