REX ENGINEERING & MFG. CO.

263 BRIGGS BLDG. BIRMINGHAM, MICH

REX S-GAUGE WALSCHAERT VALVE GEAR KIT
MODEL 20 SUBURBAN - MODEL 5 DOCKSIDE
ASSEMBLY AND INSTALLATION INFORMATION

INTRODUCTION

WHEN THE REX DOCKSIDE AND SUBURBAN LOCOMOTIVES WERE DESIGNED, PROVISION WAS MADE FOR THE SIMPLE INSTALLATION OF THIS VALVE GEAR. IT WAS DONE BY SUPPLYING MOUNTING HOLES IN THE CROSS HEADS AND THE VALVE HANGER BRACKETS ON THE FRAME. AND SUPPLYING THE CRANK PINS ON THE REAR DRIVERS WITH TAPPED HOLES AND DRIVING SLOTS FOR THE ECCENTRIC CRANK. THE EXPLODED DRAWINGS GIVEN IN THE TEXT OF THS WRITE-UP CONCERN ONE SIDE ONLY. THE OTHER SIDE IS SIMILIAR.

TOOLS REQUIRED

1. NO. 0-80 THREAD AND NO. 00-90 THREAD TAPS AND WRENCH.
2. SMALL SCREW DRIVER FOR NO. 0-80 AND NO. 00-90 SREWS.
3. SMALL CENTER PUNCH AND LIGHT HAMMER FOR RIVETING.
4. SMALL SHARP NOSE PLIERS OR TWEEZERS FOR HANDLING PARTS.
5. SMALL FLAT FILE

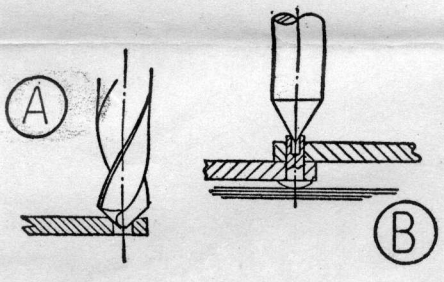
PREPARATION OF VALVE GEAR PARTS

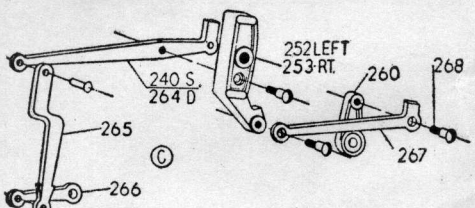
THE SUCCESS OF THE WHOLE JOB DEPENDS ON DOING THE FOLLOWING OPERATONS PROPERLY. ALTHOUGH THE STEPS ARE SIMPLE AND EASY, THEY ARE ALSO QUITE NECESSARY. LAY OUT THE PARTS AS SHOWN IN SKETCH C FOR RIGHT AND LEFT HAND,ONLY DIFFERENCE BEING THE POSITION OF THE LUBRICATOR LUGS ON THE COMBINATION LEVER (265) AND THE RIGHT AND LEFT HAND LINKS (252) AND (253).

1. REMOVE THE DIE CAST FLASH AND CLEAN OUT THE HOLES IN THE LINK (252) AND (253) & ECCENTRIC CASTINGS (260), FILING AND POLISHING THEM SO THEY WILL PRESENT A NEAT APPEARANCE.
2. IN THE ECCENTRIC CRANK (260) TAP THE SMALL OR UPPER HOLE NO. 00-90. BACK OUT THE TAP AFTER EACH HALF TURN TO CLEAR CHIPS SO THAT THE TAP WILL NOT BREAK.
3. IN THE LINKS (252) AND (253) TAP THE CENTER HOLE NO. 0-80 AND THE OTHER HOLE NO. 00-90.
4. TAP NO. 00-90 HOLE IN CENTER OF THE RADIUS ROD (264) DOCKSIDE OR (240) SURBURBAN.
5. FASTEN RADIUS ROD (264) OR (240) TO UPPER HOLE IN THE COMBINATION LEVER (265) AND CROSSHEAD LINK (266) TO LOWER HOLE IN COMBINATION LEVER (265) WITH RIVETS (249). FILE OFF FRONT LUBRICATOR LUG FROM COMBINATION LEVER (265). SEE SKETCH C FOR PROPER POSITION OF PARTS.

RIVETING SUGGESTIONS. REMOVE THE SHARP EDGES FROM THE HOLES IN THE LEVERS BY TWIRLING A SHARP POINTED TWIST DRILL A FEW REVOLUTIONS BETWEEN YOUR FINGERS. THIS IS A DELICATE OPERATION AND SHOULD NOT BE DONE WITH A POWER TOOL. SEE SKETCH A.

THE RIVETING PROPER MAY BE DONE WITH A COMMON CENTER PUNCH USING ONLY A FEW LIGHT HAMMER BLOWS. SEE SKETCH B. THE PARTS MUST TURN FREELY WHEN RIVETED. IT IS BETTER TO HAVE THEM TOO LOOSE THAN TOO TIGHT. YOU CAN ALWAYS TIGHTEN THE RIVET JOINT BY A FEW EXTRA TAPS OF THE HAMMER, BUT LOOSENING A JOINT IS ALMOST IMPOSSIBLE WITHOUT DESTROYING OR MUTILATING THE PARTS. AFTER THE RIVET JOINT HAS BEEN MADE IT IS BETTER TO FILE OFF THE SURPLUS RIVET THAN TO TRY TO FLATTEN IT DOWN TOO TIGHT. THE RIVETS DO NOT HAVE TO BE FLATTENED OUT COMPLETELY ON THE BACK, AS THEY WILL CLEAR EVERYTHING ON THE MECHANISM EVEN THOUGH THEY DO PROJECT A LITTLE WAYS. FOR A PERMANENT THOUGH LOOSE RIVET ASSEMBLY YOU ARE DEPENDING ON THE SWELL OF THE RIVET INTO THE COUNTERSINK OF THE LEVERS, RATHER THAN ON FLATTENING THE RIVET OVER THE BACK.





PREPARATION OF LOCO MECHANISM

1. REMOVE BOILER FROM FRAME.
2. REMOVE, OR AT LEAST LOOSEN, MOUNTING SCREWS ON MOTOR SO THAT GEAR AND WORM ARE OUT OF MESH AND DRIVE WHEELS CAN BE TURNED BY HAND.
3. TAP NO. 0-80 HOLES IN THE VALVE HANGER BRACKETS ON THE LOCOMOTIVE FRAME
4. TAP NO. 00-90 HOLES IN THE CROSS HEADS.
5. REMOVE AND DISCARD THE 0-80 HEX HEAD SCREWS AND WASHERS FROM THE CRANK PINS.

YOU ARE NOW READY FOR THE MOUNTING OF THE PREVIOUSLY ASSEMBLED VALVE GEAR TO THE LOCOMOTIVE MECHANISM.

INSTALLATION

REFER TO SKETCH D.

1. PUT THE PREVIOUSLY RIVETED COMBINTION LEVER ASSEMBLY THROUGH THE SQUARE HOLE IN THE GUIDE HANGER ON THE LOCOMOTIVE FRAME AND FASTEN THE CROSS HEAD LINK (266) TO THE CROSS HEAD WITH A SHOULDER SCREW (268).

2. PUT THE NO. 0-80 HEX HEAD SCREW (259) FURNISHED WITH THE VALVE GEAR KIT THROUGH THE PREVIOUSLY TAPPED HOLE ON THE LOCOMOTIVE FRAME AND THROUGH THE DIE CAST LINK (252) AND (253). THIS SCREW MUST NOT BE A TIGHT FIT IN EITHER PART, NOR MUST THE PARTS BE TIGHTENED AGAINST EACH OTHER. VALVE GEAR LINK SHOULD SET APART FROM THE FRAME ABOUT 1/64 OF AN INCH. THE SCREW (259) ACTUALLY ACTS AS A PIVOT SHAFT FOR THE ROCKING MOTION OF THE LINK WHICH MUST BE FREE TO PIVOT BACK AND FORTH ON THIS SCREW.

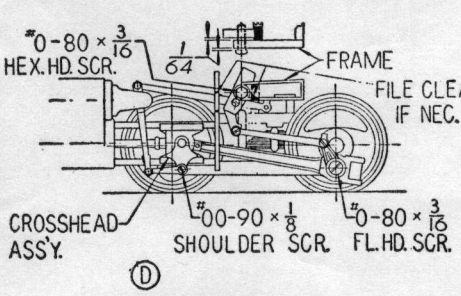
3. PLACE THE ECCENTRIC CRANK (260) ON THE CRANK PIN IN THE REAR WHEEL SO THAT THE PROJECTIONS ON THE CRANK FIT INTO THE GROVES IN THE CRANK PIN. WITH THE CRANK PIN ON THE BOTTOM CENTER THE ECCENTRIC CRANK SHOULD LEAN FORWARD ABOUT 30 DEGREES AND THE SMALL END OF THE CRANK POINT UPWARD AS SHOWN IN SKETCH D.

4. FASTEN CRANK SECURELY ON THE CRANK PIN WITH NO. 0-80 FLAT HEAD SCREW (259). BE SURE THAT THE SCREW HEAD DOES NOT PROJECT OUT PAST THE CRANK, AS IT WILL THEREBY CAUSE INTERFERENCE. THIS SCREW TAKES THE PLACE OF THE PREVIOUSLY DSCARDED HEX HEAD SCREW AND WASHER.

5. FASTEN THE ECCENTRIC ROD (267) IN PLACE WTH ONE (268) SHOULDER SCREW AT EACH END.

6. FASTEN THE RADIUS ROD (240 SUBURBAN) OR (264) DOCKSIDE) TO THE LINK (252) AND (253) WITH A (268) SHOULDER SCREW.

THE ASSEMBLY IS NOW COMPLETE BUT SHOULD BE TESTED AND TRIED OUT BEFORE RUNNING.



TEST AND RUN

TURN DRIVE WHEELS OVER BY HAND AND CHECK EVERYTHING FOR FREE MOVING OF PARTS. THERE MUST BE NO BINDING OR TIGHTNESS OF ANY KIND. IT IS PERMISSIBLE, IF NECESSARY, TO SLIGHTLY BEND OR SPRING ANY OF THE STAMPED LEVERS TO INSURE FREEDOM FROM INTERFERENCE. IT MAY ALSO BE NECESSARY TO FILE MORE CLEARANCE IN THE SQUARE HOLE OF THE GUIDE HANGER IN FRONT OF THE LINK AND TO FILE MORE CLEARANCE ON THE SUPPORT BAR ON THE VALVE HANGER BRACKET ON THE FRAME (SHOWN BY SHADED AREA IN SKETCH D). AGAIN TURN THE WHEELS OVER SLOWLY BY HAND AND CHECK FOR INTERFERENCE. IF EVERYTHING IS FREE YOU MAY NOW MOUNT THE MOTOR BACK IN PLACE. SET GEAR CENTERS PROPERLY AND RUN THE MECHANISM SLOWLY UNTIL IT IS WELL BROKEN IN. THESE PARTS, FRAGILE AS THEY MAY SEEM, ARE AS STRONG AS IT IS POSSIBLE TO MAKE THEM WITHOUT HAVING A CLUMSY OVERSIZED MECHANISM.

PART NO.	NUMBER NEEDED	NAME-DESCRIPTION	PRICE EACH
249	4	RIVET (SET OF 6)	.30
252	1	LINK	.50
253	1	LINK	.50
257	2	SCREW NO. 0-80 X 3/16 HEX HEAD	.05
259	2	SCREW NO. 0-80X3/16 FLAT HEAD	.05
260	2	ECCENTRIC CRANK	.50
240	2	(SUBURBAN) RADIUS ROD	.30
264	2	(DOCKSIDE) RADIUS ROD	.30
265	2	COMBINATION LEVER	.40
266	2	CROSSHEAD LINK	.20
267	2	ECCENTRIC ROD	.30
268	8	SHOULDER SCREWS	.10

DOCKSIDE KIT MODEL 5

SUBURBAN KIT MODEL 20

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