SAFETY, OPERATION, MAINTENANCE, & PARTS MANUAL
MC250 Curbilder

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This manual is for the Miller MC250 Curbilder

Table of Contents

SPARK ARRESTER SERVICE

Your engine is not factory-equipped with a spark arrester. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. A spark arrester is available from authorized Honda dealers.

SAFETY

The ⚠CAUTION symbol applies to all items in the Safety section unless otherwise noted.

These safety and operating instructions for Miller Spreader curbing equipment are for your protection. Careless regard of these instructions and other construction practices could result in accidents and injury

A. General Safety

- Replace damaged or worn decals.
- Replace damaged or worn decals only with original equipment decals. Do not modify decals in any way.

⚠DANGER

All repairs to this machine must be made by a qualified service mechanic using only MILLER SPREADER replacement parts or their approved equal. Any deviation from the original MILLER SPREADER supplied machine in the operation, repair, and/or modifications of the machine without the express written consent of the MILLER SPREADER COMPANY, voids all machine warranties and any liability for injuries and/or damage to person or property.

B. Before putting this equipment into operation inspect the equipment daily.

- Inspect this equipment on a hard and level surface.
  1. Shut engine off.
  2. Disconnect spark plug wire to prevent accidental starts.
  3. Block wheels in both directions to prevent machine movement.
  4. Inspect belt tension/chain tension. Adjust if required.
  5. Inspect auger for wear. Repair or replace if required.
  6. Inspect tires, wheels and tire pressure on pneumatic tire models. Air pressure should be 50 PSI.
  7. Inspect all operating controls: speed control linkage, steering handle, and wheel height adjustment for proper operation, cleanliness, and adjustment.
  8. Inspect engine oil level.
  9. Before adding fuel

⚠DANGER

     - Shut engine off.
     - Let engine cool off a minimum of 5 minutes
     - Extinguish smoking materials
     - Use funnel
     - Do not overfill
  10. Replace fuel cap after adding fuel.
  11. A hot engine may ignite spilled gasoline.
  12. Exercise extreme caution when refueling.

- After making adjustments 1-7, start engine. Verify that centrifugal clutch operates correctly. At idle speed the clutch fully disengages auger drive and the auger stops

turning. When engine speed is increased to full speed, the clutch engages and auger turns freely.

- Make any necessary repairs or adjustments before putting this equipment into operation All repairs must be made by qualified service personnel. ALL GUARDS MUST BE IN PLACE AND FUNCTIONAL. Refer to the Maintenance and Machine Adjustments sections of this manual.

C. Familiarize yourself with the work site and job conditions prior to using the Curbilder.

⚠DANGER This equipment must only be operated by trained personnel who fully understand its safe operation. Each operator must be able to identify any unsafe worksite conditions and report these conditions to his supervisor for immediate correction.

- Do not start or operate this equipment in an unventilated area. A gasoline engine discharges carbon monoxide gas which causes INJURY or DEATH if inhaled.

⚠DANGER A GASOLINE ENGINE DISCHARGES CARBON MONOXIDE GAS WHICH CAUSES DEATH IF INHALED. ENGINE EXHAUST AND SOME OF ITS CONSTITUENTES ARE KNOWN TO CAUSE CANCER, BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM. DO NOT OPERATE THIS MACHINE IN A BUILDING OR OTHER AREA WHERE THERE IS NOT ADEQUATE VENTILATION FOR THE OPERATOR.

- Do not operate this equipment on unsafe surfaces. This equipment is intended for use only on leveled and compacted surfaces. AVOID ANY CONDITIONS OF SLOPE AND/OR GRADE WHICH MAY CAUSE THIS EQUIPMENT TO TIP.

1. Verify that all surfaces will support safely the maximum load of the machine with the payload
2. All surfaces must have suitable surface for good footing for the operator.
3. Wet, muddy and/or loose surfaces may cause an operator to lose his/her footing and fall.
4. Identify all unprotected openings on jobsite and do not operate this equipment near these openings.
5. Identify all overhead structures, electrical wires, and door openings on the jobsite. Be sure the equipment will safely pass through and under.
6. Identify the load requirements for the jobsite. Do not exceed the load limits in weight as shown on the following chart. Under all operating conditions the operator is solely responsible for a safe and secure load. If jobsite conditions so warrant, reduce load.

SAFETY & OPERATION SPECIFICATION CHART FOR MILLER SPREADER MC250 CURBILDER		
MAX VEHICLE GVW	TIRE PRESSURE	
	FRONT	REAR
330LBS	50 PSI	50 PSI

D. Operation of this equipment

⚠DANGER Use caution when operating near other people and obstructions. Always look to the rear before backing up and back up slowly.

⚠DANGER Never feed auger with a tool that could get caught in a turning auger and strike someone.

- Use caution when operating near other personnel and obstructions. Always look to the rear before backing up and back up slowly.
- This vehicle is not intended for the transportation of any personnel. NO RIDERS!
- Do not operate equipment with oily dirty gloves and/or controls.
- Do not operate recklessly. Careless operation causes accidents and injury.
- If operator must leave operator's station (standing at the steering handle) he must
  1. Stop equipment
  2. Block wheels
  3. Shut off engine by turning engine ignition switch off or depressing the emergency stop button on the console.
- This equipment is not intended to tow other items or equipment.
- Refer to "Lifting and Tie down Instructions" section of this manual. Note the appropriate lifting and tie down points, and the specific load ratings for chains, straps, and forklifts.
- Avoid all operating conditions where you, the operator, and/or other people may become trapped or pinched between the Curbilder and some other obstacle or where a Curber lifted by a crane etc. may fall on you.
- A Curbilder cannot be operated in areas with flammable or explosive atmospheres. Refer to code of Federal Regulations (OSHA.) 29 CFR Part 1910.178 to determine permissible areas where these curbers may be operated.

⚠DANGER Keep hands clear of auger during operation of curber. Rotating auger contact can cause injury or death. Keep away!

Lifting, Tie down, and Transportation Instructions

CAUTION All chains/straps must pull away from and to the front and rear as shown below.

CAUTION Do not lift Curbilder with forklift or damage to Curbilder and/or bystanders may result.

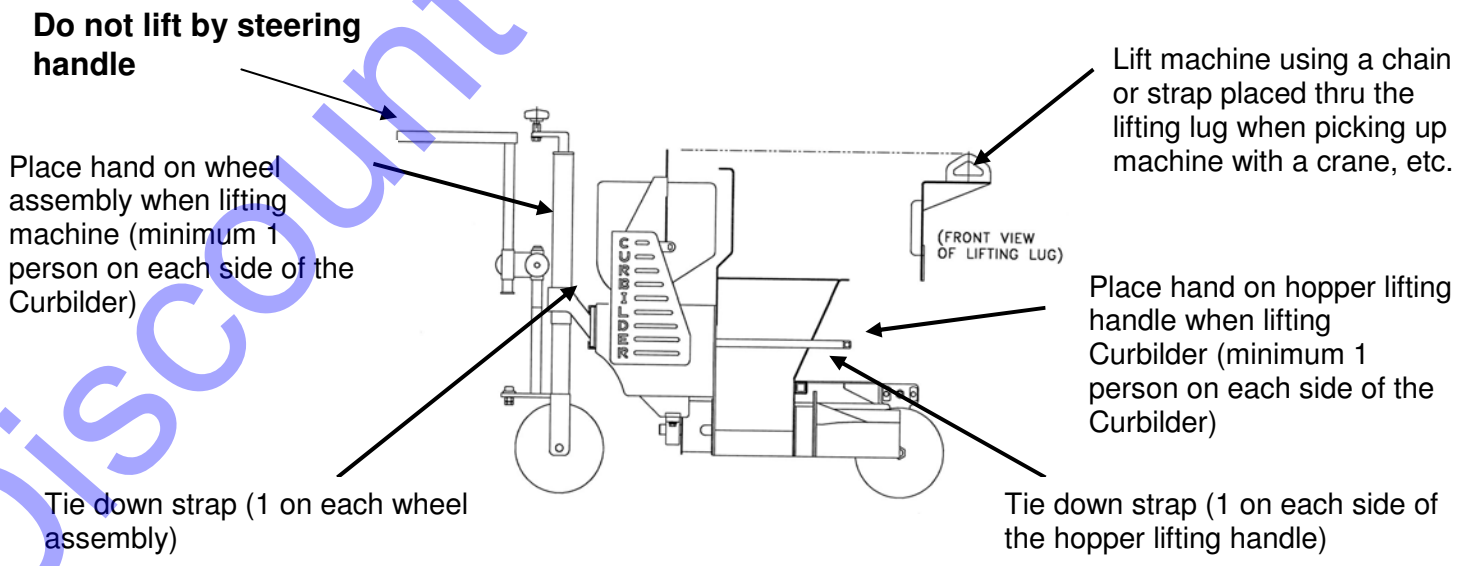
A. To tie curber down to the trailer bed, etc (Note: empty curber weighs 209#)

- Empty hopper
- Chock all wheels
- Secure Curbilder to trailer bed using 4 chains or straps as follows:
  1. 1 on the hopper handle on each side as shown below
  2. 1 on each front wheel assembly as shown below
- All chains/straps must pull away and to the front and rear as shown

B. To lift Curbilder

- When lifting Curbilder with a crane or other mechanical hoist
  1. Empty hopper.
  2. Position the chain/strap through the Lifting Lug as shown below.
- When lifting Curbilder without a crane or other mechanical hoist always use 2 or more people to lift the Curbilder.
  1. 1 person stands on each side of the machine.
  2. Use the hopper lifting handle and the front wheel assembly to lift the machine.
  3. Be sure to bend at the knees when lifting.

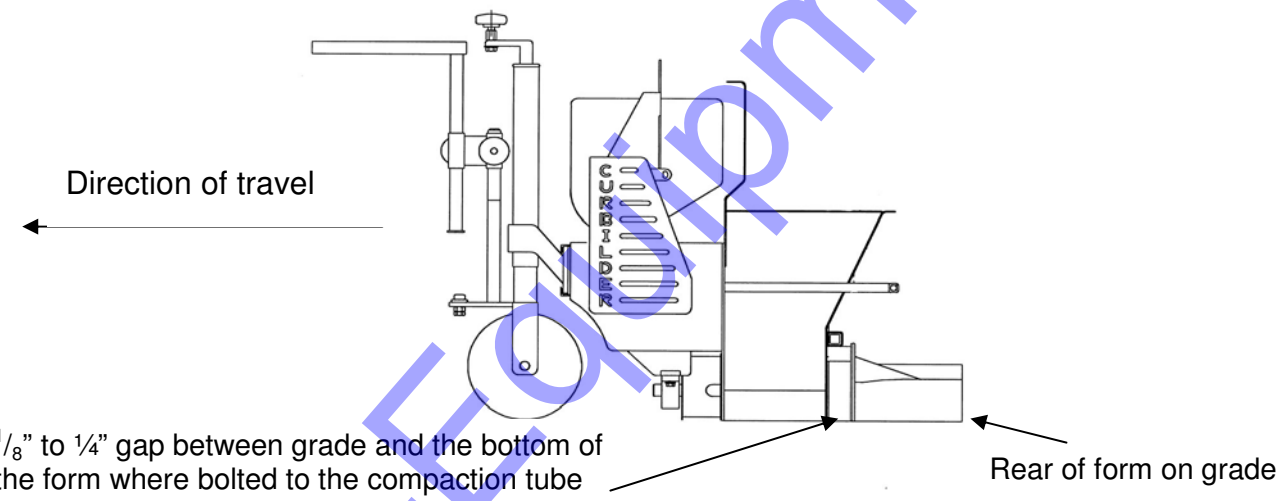
CAUTION Use OSHA approved lifting/tie down chains and straps that are designed to have a minimum working load limit of 1320# per chain or strap. Lift or tie down Curbilder only when hopper is empty. Only transport Curbilder with engine off. Turn fuel switch to off position to prevent fuel from entering crankcase.



Curbilder Operating Instructions

A. Preparing machine for operation

- Spray with water when extruding concrete curb.
- Position the Curbilder so that the curb form is in the proper location to begin extrusion.
- Adjust front wheel assembly horizontally to meet jobsite conditions. Remove rear wheel assembly so the discharge (rear) end of curb form touches the surface on which the curb will be laid. Adjust front wheel assemblies vertically to lift flange (front) end of curb form 1/8" above the base course. (Rear discharge end of curb form will touch base, front flanged end of curb form will not.)
- Each front wheel assembly can be adjusted to level the machine if so desired.
- When extruding concrete curb on top of concrete, lay a concrete epoxy for joining concrete to concrete ahead of Curbilder in path of curb form.



B. Curbilder is now in position to extrude curb

- Start engine and idle until warm. When ready to extrude curbing, increase engine speed to full throttle (3,650 RPM) to engage automatic clutch, thereby driving the extrusion auger.
- Shovel concrete into hopper, but do not fill hopper or machine will not move.
- As material nears the discharge end of the curb form, block the opening in order that the material will be compacted. (A piece of wood or a shovel work well.)
- Curbilder starts forward as material is extruded through the curb form. THE FORCE OF EXTRUSION PROVIDES PROPELLING POWER.
- After Curbilder moves forward, the curb may be struck off with a shovel at the desired starting point. (This excess material may be reused in the Curbilder) If advanced start is not possible, starting end of curb may be hand shaped with finishing trowel.
- Fill hopper steadily and steer Curbilder to ensure curb is placed where desired.

C. General considerations

- Optimum compaction has been designed into the Curbilder and the curb form. Greater compaction will be obtained when the machine is operating uphill, or by raising the front wheel assemblies, transferring weight to the curb form. Lowering the front wheel assemblies decreases compaction by decreasing the weight carried on the curb form.
- When Curbilder is not extruding material, throttle engine down to disengage automatic clutch. (Auger stops turning.)
- Never allow material to stand in the hopper when the Curbilder is not in operation.
- At the end of a run, cut off curb with a shovel and finish with hand trowel as required.

Curb Mix Information

There are two (2) basic material formulas for decorative curbing. The most commonly used mix is referred to as "curb mix". This mix resembles mortar in that it is comprised of sand, Portland cement, fiber, and water. This mix does not have the 28 day strength of conventional concrete. The advantage of using curb mix is that it trowels easily and can be finished immediately after being placed. As the curb is a homogeneous mix, placing expansion joints is easily done.

A concrete mix provides a much stronger product, usually exceeding 3000 psi at 28 days. However, greater skill is required to finish the concrete. Whether the concrete is placed as a slab or curb, the time between placement and finishing is much longer than with a curb mix. The bleed water needs to come to the surface before the curb can be troweled. The curb needs to be troweled to bring the fines to the surface and work the aggregate below the surface. Cutting expansion joints in a concrete curb requires practice as the aggregate provides resistance when making the cut.

A. Recommended Mix Specifications for "Curb Mix" Curb (NOTE: This mix does not have the 28 day strength of a true concrete mix.)

Ingredients:

- Coarse sand
- Portland Type I cement
- Fiber
- Water

A batch of curb mix made in a 6 cu ft mortar mixer will produce 15' to 20' of curb depending on the size of the curb being laid.

The following mixing instructions call for the sand and Portland cement to be mixed dry to ensure uniform consistency throughout the mix. However, there are numerous "recipes" for curb mix that vary the sand/cement ratio and when to add water. Too much Portland cement and the mix will be gooey and difficult to work; too little cement results in a curb that won't stand up and has little strength.

Mixing instructions:

- Divide the 94-lb. bag of cement equally into two (2) 5 gallon buckets.
- Start mortar mixer in accordance with manufacture's instructions. Concrete mixers are not recommended for this dry application.
- Place two (2) buckets of sand into the mortar mixer.
- Place a small handful of fiber into mixer.
- Place one (1) 5 gallon bucket of Portland cement into the mixer.
- Mix ingredients for at least two minutes.
- Place two (2) more 5 gallon buckets of sand into the mixer.
- Add water sparingly until desired consistency is reached. The amount of water required will depend on the moisture in the sand. Allow mixer to mix ingredients for at least 15 seconds.
- Dump into a wheelbarrow and transport to machine.

The mix should be very dry, zero slump. Just enough water should be added to activate the cement. To test the mix, scoop a handful of concrete into your hand and form a ball. The ball should stay together and your hands should be almost dry. If the ball does not stay together (too dry) add a little water at a time until the proper consistency is reached. If one's hands are wet with water (too wet) add additional sand and Portland cement in small amounts until the proper consistency is reached.

The sand to cement ratio should range between 3:1 to 5:1.

Recommended Mix Specifications for Concrete Curb

It is recommended that Grade 1 concrete be used. Grade 1 concrete is used for foundation walls, footings, garden walls, etc, and for uses where abrasion resistance and water tightness are not required and has a 28 day strength of 2500 to 3000 psi. The extruded curb provides the resistance that allows the machine to move itself forward through the extrusion process. If the mix is too wet the curb will spread and not provide sufficient resistance to move the machine forward.

Use QUICKCRETE® Concrete Mix #1101 or similar product. Product can be mix by hand in a wheelbarrow, mortar tray or in a mortar mixer. Do not use a concrete mixer as it will not properly mix the concrete mix and water. For each 80# bag of concrete mix add 3-1/4 to 3-1/2 quarts of water. Mix thoroughly. The finished mix will be very dry. Do not make the mix too wet or the curb will not stand up.

To determine the number of lineal inches of curb that one 80# bag of concrete mix will make, divide 513 by the curbform area. As an example, when using a LFG-0002 with an area of 22 SQ IN one 80# bag of concrete mix will make approximately 23 lineal inches of curb (513 ÷ 22 = 23.3). To determine lineal feet per bag, divide by 12. In this example one 80# bag of concrete mix will make approximately 1.9 linear feet of curb. Refer to the curbform selection chart to determine curbform area for each curbform.

4” Auger Curbform Guideline

The following chart is a GENERAL GUIDE to the minimum and maximum dimensions of a curbform that will work properly with a 4” auger.

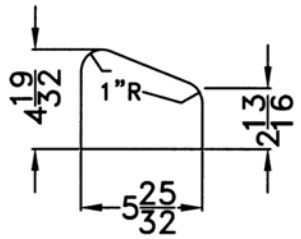
Auger Size	Min Sq Inch Area	Min Sq Inch Area	Min Height	Max Height	Min Width	Max Width
4"	12 SQ. IN.	30 SQ. IN.	3”	7”	4”	9“

It is possible to add 5-10% to the recommended upper limit for any given auger size and still extrude satisfactorily. Forms, which are larger than 5-10% above the recommended upper limit, will slow down the production rate significantly.

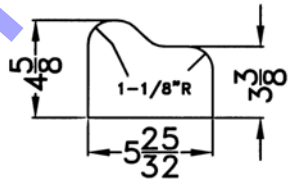
Curbforms

A. Standard Curbforms.

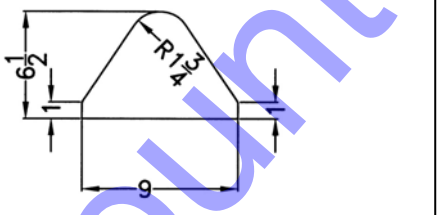
CFD # LFD-0001	Area 22.2 SQ IN
Auger Size 4”	
175 Linear Feet per CU YD of concrete	



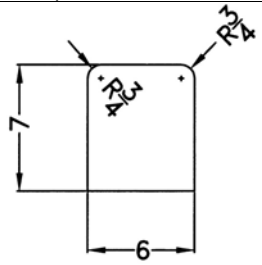
CFD # LFD-0002	Area 22.0 SQ IN
Auger Size 4”	
176 Linear Feet per CU YD of concrete	



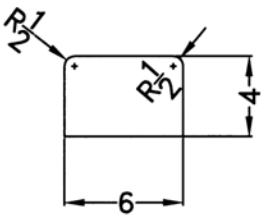
CFD # LFD-0003	Area 38.7 SQ IN
Auger Size 4”	
100 Linear Feet per CU YD of concrete	



CFD # LFD-0004	Area 41.8 SQ IN
Auger Size 4”	
93 Linear Feet per CU YD of concrete	



CFD # LFD-0005	Area 23.9 SQ IN
Auger Size 4”	
162 Linear Feet per CU YD of concrete	



B. Custom curbforms can be made to meet specific needs. Curb forms must be specified as left-and or right-hand forms. To determine hand of required curb form:

1. Consider curber (equipped with the desired curb form) to be in operation moving away from an observer at the rear of the machine (where the curb comes out)
2. With an observer oriented this way in relation to the machine determine from the observer's viewpoint on which side (left/right) the most vertical side of the curb is being formed. This determines the hand of the form.
3. For example, if the most vertical side of the curb is on the observers left side, the curb form required to extrude the curb should be designated as a left-hand form.

Curbilder Cleaning & Maintenance

A. Cleaning the machine

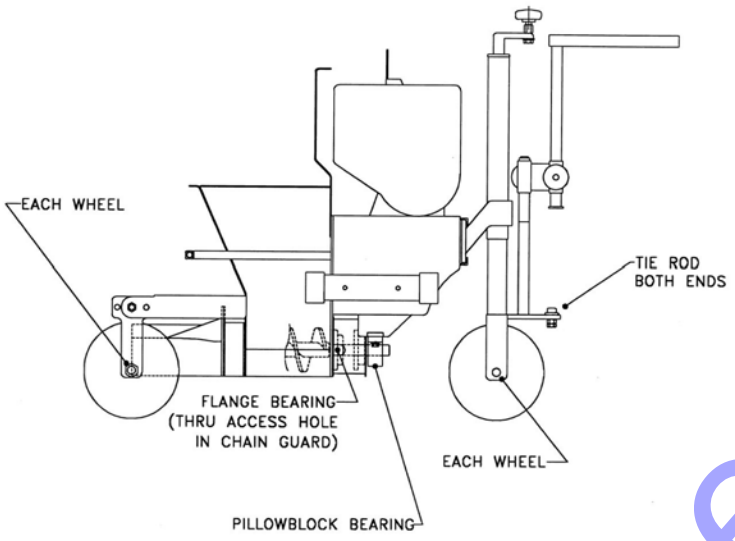
To clean Curbilder after use with Portland cement concrete, special precautions and effort must be made to insure proper cleaning. At the end of each day, remove curb form, compaction tube, and extrusion auger. All parts should be cleaned with water and all deposits scraped from Curbilder. The inside of the hopper and the auger housing should be thoroughly cleaned with water, and the auger shaft should be greased, before placing the auger back onto shaft.

NOTE: If the cleaning procedures noted above are not closely followed, the auger will seize to the auger shaft. Proper cleaning is a must to get maximum life out of the critical wear parts. **CLEAN AS DIRECTED DAILY.**

B. Machine Lubrication

The following points of lubrication must be serviced once a week.

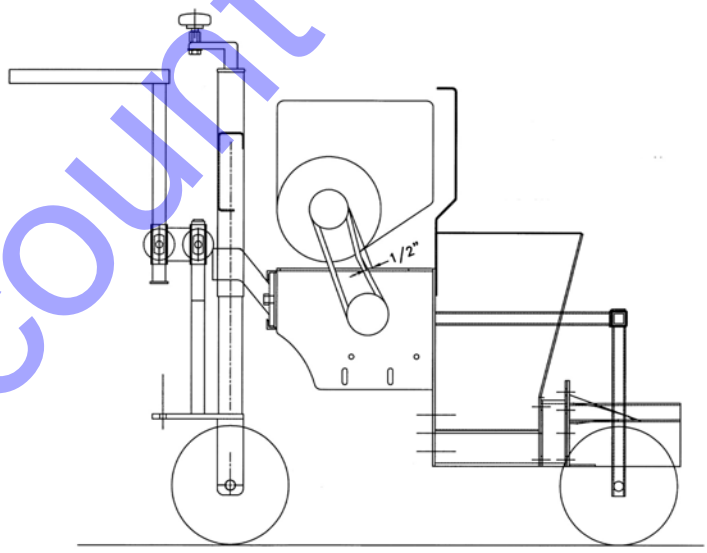
- Two (2) grease fittings, 1 in each end of the tie rod assembly mounted to the front wheel forks.
- Three (3) grease fittings, 1 each in the hub of the wheels.
- Two (2) grease fittings, one in each auger shaft bearing.
- Two (2) grease fittings, one in each speed reducer output shaft bearing.
- Lubricate chain with LPS3 or equivalent.

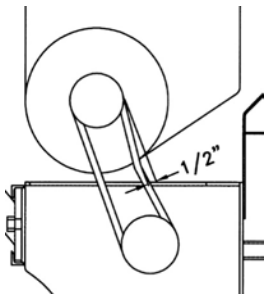


C. Machine maintenance

1) Belt Tensioning

- Turn engine off, remove spark plug wire
- Empty hopper
- Remove the belt guard
- Loosen the 4 bolts that hold the engine to the engine mounting plate
- Slide engine until belt has ½" deflection as per drawing
- When properly tensioned, tighten the 4 engine mounting bolts
- Reattach the belt guard





Close-up view of belt

2) Compaction tube

The compaction tube must be inspected regularly and kept clean and free of holes. For holes, steel patches can be welded on the inside of the compaction tube and ground smooth to maintain proper auger clearance. When the compaction tube is damaged or worn beyond repair, a new compaction tube should be purchased.

3) Augers

The extrusion auger has two functions, to feed the material into the compaction tube for maximum density, and to propel the Curbilder. These two functions together cause terrific wear on the auger. It is very important that the Curbilder be cleaned after each days use. The auger must be removed and cleaned daily. Be sure to clean and grease the auger shaft before reinstalling the auger.

The hard faced steel extrusion augers are one-piece augers. The full flight on the tip at each end has been completely hard surfaced. Each steel auger is mounted to the auger shaft with one (1) long shear bolt through the center of the auger.

⚠CAUTION To inspect the auger, shut down the engine and allow the engine to cool, disconnect the spark plug, then remove the auger from the auger shaft.

Instructions for removing the auger:

- Turn engine off, remove spark plug wire
- Empty hopper
- Loosen the 2 bolts that attach the belt guard, remove the belt guard. (figure 1)
- Carefully rotate belt (figure 2) until the auger shear bolt is parallel to the ground (figure 3) so the shear bolt and nut are accessible.
- Remove shear bolt.
- Slide auger off shaft.
- Reverse procedure to reinstall the auger.

The auger must be removed and the end flight checked daily for wear. If the hard surfacing appears to be worn off of the end flight at the discharge end, or the clearance between the compaction tube and the outside auger edge exceed 3/8", remove the auger and turn it end for end, placing the unworn end to the discharge side of the auger housing for additional use before resurfacing is necessary.

Do not permit auger wear beyond these limits or loss of performance and/or machine damage will result. If a worn extrusion auger is not turned end for end or hard surfaced in proper time, a slug of material may lodge in the compaction chamber, putting excessive end thrust on the bearings, causing bearing or other component part failure.

Hard surfacing life depends upon the sand content and type of aggregate used in the mix, and the size of the curb form. If a condition exists that causes excessive auger wear, it can manifest itself by causing the auger end flights to wear down to the shaft

in a very short period of time. The worn auger end will look pointed like a corkscrew. At this point, the mix and/or the curb form need to be evaluated.

HARD FACING INSTRUCTIONS

Welding repair procedure:

1. Two layers of weld for maximum wear.
2. Weld as cold (**Low Heat**) as possible to prevent dilution of hard surfacing with base metal.
3. Position auger to enable welding to be done in a down hand motion.
4. 5/32" - 3/16" diameter electrode, on face of first flight and nose and on outside edges of all flights.

Recommended electrodes or equivalent:

* McKay -- Hardalloy 40
* Airco -- Aircolite 59
* Alloy Rods -- Weararc 40
  Hobart -- Fabtuff 960 (Mig)

4) Engine

Engine maintenance is described in the engine manual (provided by the engine manufacturer), which accompanies each Curbilder.

5) Automatic clutch

Adjust the belts for 1/4" of depression with a force of 6.7# in the middle of the belt span. Always re-tension new belts after 4 hours use.

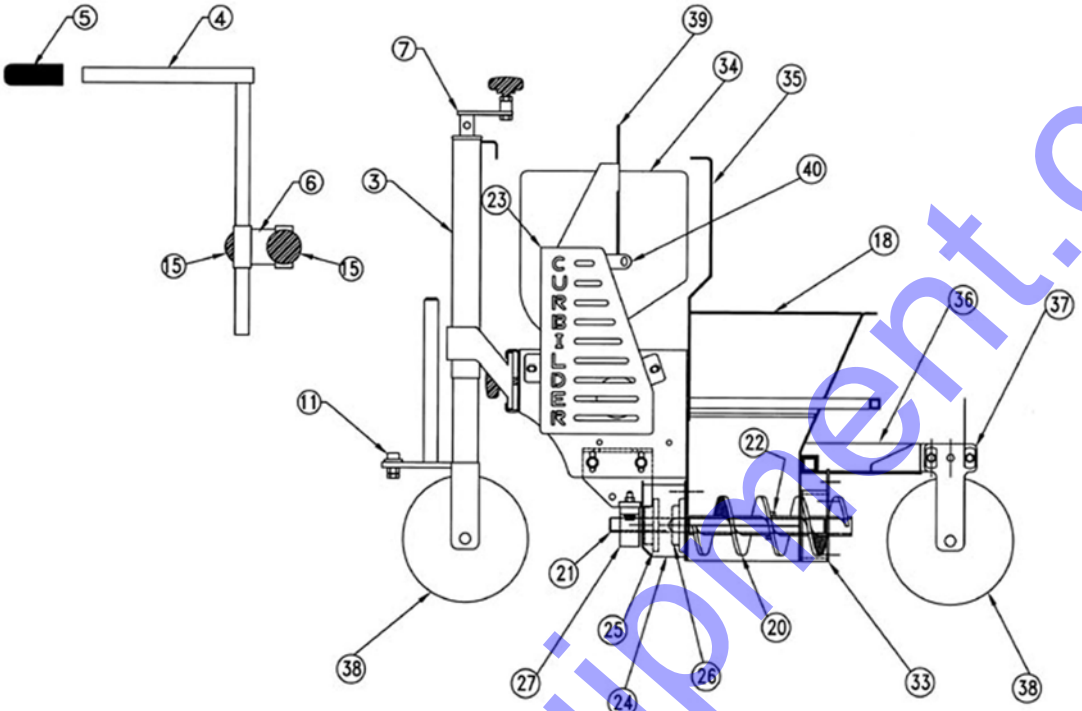
6) Drive chain

Adjust the chain for 3/16" of slack in the middle of the chain span as necessary. Chain adjustment is accomplished by sliding the gearbox.

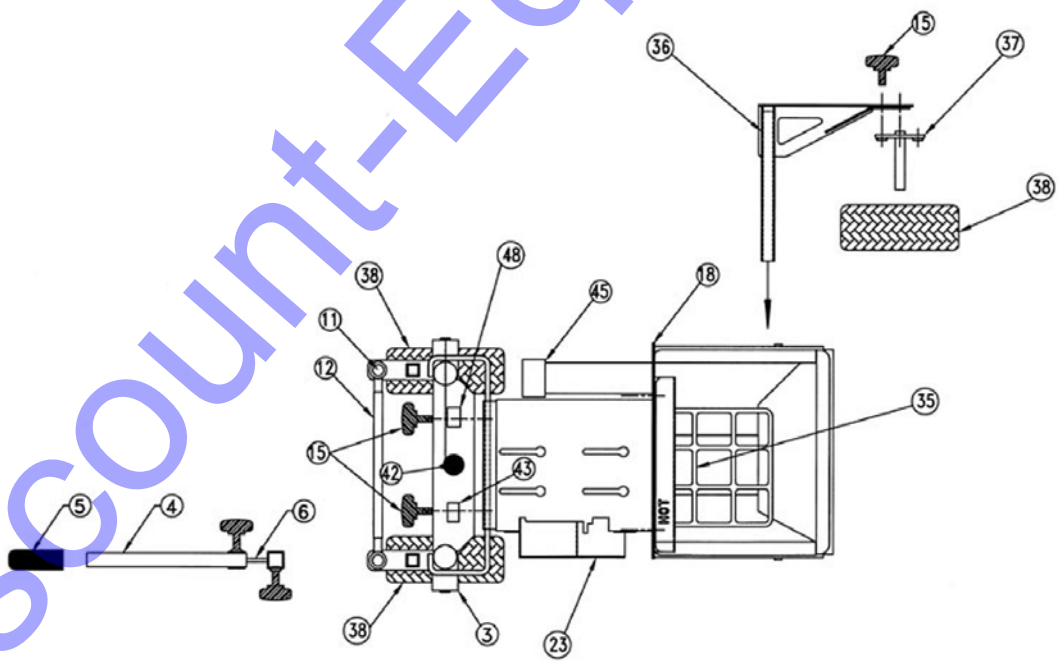
7) Gearbox

The gearbox is sealed and requires no lubrication. Inspect gearbox occasionally to ensure there is no damage to the casing that would result in fluid leaks.

Parts Listing



Side View



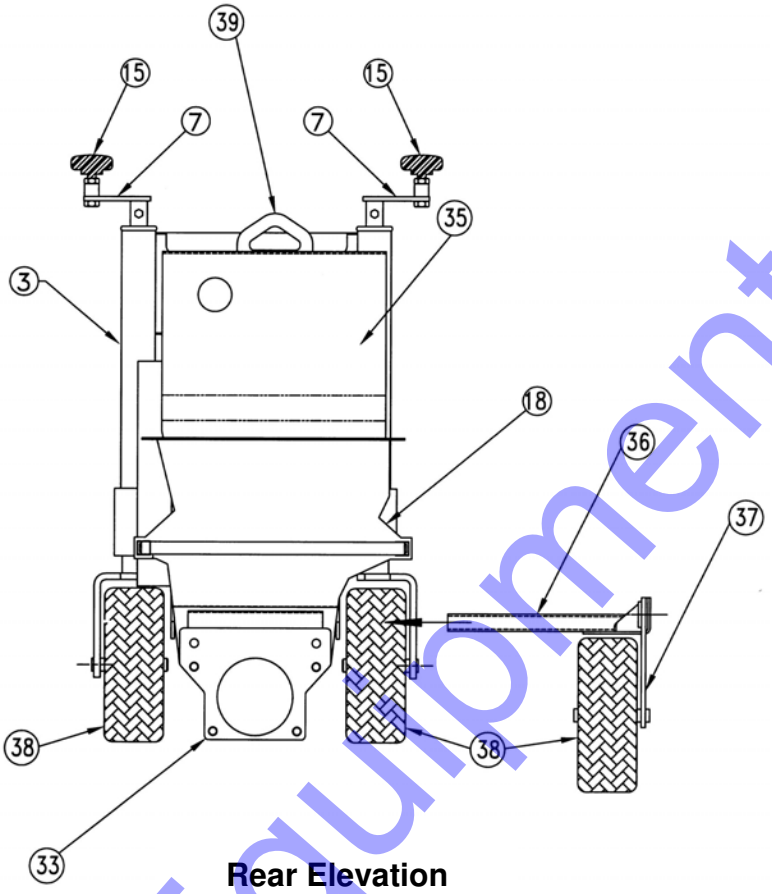
Top View

ITEM	PART DESCRIPTION	PART NO.	QTY
1	OPEN	OPEN	–
2	OPEN	OPEN	–
3	JACK ASS'Y WELDMENT	48202-2	1
4	STEERING HANDLE WELDMENT	48202-13	1
5	HAND GRIP	CG0100	1
6	STEERING HANDLE MOUNTING CLAMP	48202-18	1
7	CRANK ARM WELDMENT	48202-22	2
8	OPEN	--	–
9	OPEN	--	–
10	OPEN	--	–
11	TIE ROD ENDS	45059-04	2
12	TIE ROD	48202-28	1
13	OPEN	--	–
14	OPEN	--	–
15	KNOB	48200-26	7
16	OPEN	--	–
17	OPEN	--	–
18	MAIN FRAME WELDMENT	48201-1	1
19	OPEN	--	–
20	4" STEEL AUGER	48203-2	1
21	AUGER SHAFT	48203-7	1
22	SHEAR BOLT	48203-8	1
23	BELT GUARD WELDMENT	48204-2	1
24	CHAIN GUARD WELDMENT	48206-2	1
25	SPROCKET	48200-20	1
26	4-BOLT FLANGE BEARING	48200-19	1
27	2-BOLT PILLOW BLOCK BEARING	48200-23	1
28	TRANSMISSION MOUNT WELDMENT	48211-2	1
29	OPEN	--	–
30	OPEN	--	–

ITEM	PART DESCRIPTION	PART NO.	QTY
31	OPEN	OPEN	–
32	OPEN	OPEN	–
33	COMPACTION TUBE WELDMENT	48207-2	1
34	HONDA 4HP ENGINE	48200-21	1
35	ENGINE COVER WELDMENT	48209-2	1
36	REAR WHEEL ARM WELDMENT	48210-2	1
37	REAR WHEEL SUPPORT WELDMENT	48210-8	1
38	WHEEL	48200-14	3
39	LIFTING BAIL WELDMENT	48208-2	1
40	LIFTING BAIL ATTACHM'T BRACKET	48208-6	1
41	TIE ROD ENDS	45059-04	2
42	EMERGENCY STOP SWITCH ASS'Y	48200-2	1
43	HOUR METER	48200-7	1
44	LANDSCAPE CURBER MANUAL	48200-8	1
45	MANUAL CANNISTER ASSEMBLY	44108-01	7
46	MANUAL CANNISTER PLUG	44108-05	2
47	MANUAL CANNISTER CLAMP	44108-06	2
48	LEVEL ASS'Y	48200-28	1
	BELT	48200-13	1
	INPUT SHEAVE	48200-15	1
	GEARBOX	48200-16	1
	OUTPUT SPROCKET	48200-18	1
	CHAIN	48200-27	1
	CLUTCH	48200-22	1
	HOUR METER	48200-07	1
	WIRING HARNESS	48200-33	1

DECAL LIST

DESCRIPTION	PART NO.	QTY
EMISSIONS DECAL	DE1700	1
"MILLER" LABELS	40111-03	3
"INSTRUCTIONS" LABEL	44103-24	1
"DANGER AUGER" LABEL	DE0100	1
"NO OIL" LABEL	DE2100	1



Rear Elevation