

SAFETY, OPERATION, MAINTENANCE, & PARTS MANUAL

REVISED JANUARY 2010

MC350 Curbuilder™



This manual is for the Miller MC350 Curbilder™

READ THE CONTENTS OF THE MANUAL **BEFORE** PUTTING THIS MACHINE IN SERVICE.

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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

See “Curbilder Operating Instructions,” page XX, for location of the machine controls.

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, injury or death.

The  symbol applies to all items in the Safety section unless otherwise noted. This Caution Symbol indicates a possibility of Personal Injury or Equipment Damage if the Instructions in this manual and on the decals attached to the machine are not followed.

The  symbol, when it appears, indicates a strong possibility of Severe Personal Injury or Death if the Instructions in this manual and on the decals attached to the machine are not followed.

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.
- Know what safety equipment is required to operate and maintain this machine. Safety equipment must include but not limited to Safety Glasses, Reflector type Vests, Gloves Ear Protection and Steel Toed Work Boots.
- Never operate or perform any maintenance on this machine while under the influence of Drugs and/or Alcohol.



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. “LOCK-OUT, TAG-OUT Equipment BEFORE Servicing.
 2. Push in the “Emergency Stop Switch” and Disconnect spark plug wire to prevent accidental starts.
 3. Block Front Wheels in both directions to prevent machine movement. Remove Rear Transport Wheel Assembly from machine and lower the rear of the machine to the ground. Lower the front of the machine using the two (2) Wheel Height Adjustment Cranks until Auger Housing Assembly engages the ground and the Curb Machine is **Immobile**.
 4. Inspect belt tension. Adjust if required. See “Curbilder Machine Adjustment Section.”

5. Inspect Plunger for wear. Repair or replace if required. See “Curbilder Cleaning and Maintenance Section.”
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 (two (2) places) for proper operation, cleanliness, and adjustment.
8. Inspect engine oil level.
9. Before adding fuel:



- **A hot and/or running engine can ignite spilled gasoline.**
- Shut engine off.
- Let engine cool off a minimum of 5 minutes
- Extinguish smoking materials
- Use funnel
- Do not overfill

After adding fuel:

- Replace fuel cap after adding fuel.
 - Exercise extreme caution when refueling.
- After making Inspections and Adjustments 1-9, **REPLACE ALL MACHINE GUARDS**. Start engine. Refer to the “Machine Cleaning and Maintenance” and Machine Adjustments Sections” of this manual.

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



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.



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.

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OF INADEQUATE VENTILATION ON THE JOB DUE TO BUT NOT LIMITED TO CARBON MONOXIDE GAS, THE JOB SITE AREA MUST BE TESTED REGULARILY (EVERY ONE (1) HOUR) PER OSHA 29 CFR PART 1910.146. FURTHER, THE JOBSITE MUST MEET ALL OSHA MINIMUM ATMOSPHERE GUIDELINES FOR THE JOB SITE AS SET FORTH “IN THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION”, OSHA 29CFR PART 1926.55 APPENDIX A. ADEQUATE VENTILATION MUST BE DETERMINED BY FOLLOWING JOB SITE INSPECTION PROCEDURES AS OUTLINED BY OSHA. **ALL JOB SITE VENTILATION ISSUES MUST BE CORRECTED BEFORE EXPOSING WORKERS TO HARMFUL JOB SITES.**

- 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. 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 MC350 CURBILDER		
MAX VEHICLE GWW	TIRE PRESSURE	
	FRONT	REAR
330LBS	50 PSI	50 PSI

- 2) All **surfaces** must have suitable surface for good footing for the operator. Wet, muddy and/or loose surfaces may cause an operator to lose his/her footing and fall. Correct job site deficiencies before using Curbilder.
- 2) Identify all **unprotected openings** on jobsite and do not operate this equipment near these openings.
- 3) Identify all overhead structures, electrical wires, and door openings on the jobsite. Be sure the equipment will safely pass through and under.
- 4) When working on an active/in-use roadway set up safety protection for all employees and equipment as required by local codes. This safety equipment should include but is not limited to Traffic Cones, Flagmen for traffic control, Safe Access and Exit for Asphalt/Concrete Truck.
- 5) Dismiss all untrained employees and bystanders from the area in which this machine will be operated.

D. Operation of this equipment



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



Never feed plunger with a tool that could get caught in the plunger and strike someone.

- Know that when the Engine is RUNNING on this machine the PLUNGER IS OPERATING. **TO STOP THE PLUNGER, THE ENGINE MUST BE STOPPED.**
- Know the two(2) ways a Curbilder Auger can be Stopped:

1) IN AN EMERGENCY:

Push **IN** the Emergency Stop Switch RED Button on the Curbilder. On Model MC-350 the Emergency Stop Switch is located on the TOP of the metal cross brace between the two (2) Front Wheel Assembly Leveling Cranks. These Emergency Stop Switches have two (2) MAINTAINED POSITIONS: Pulled OUT Position, Engine/Plunger will operate (ON Position); Pushed IN Position, Engine/Plunger will not run (OFF/Stop Position).

2) In Normal Machine On-Off Operation:

Use the Engine On-Off Switch located directly above the Engine Recoil Starter. Turn the On-Off Switch to the "OFF" position to STOP the Engine and Plunger. Refer to your engine manual for operation.

- 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) Shut off engine by turning engine ignition switch off or depressing the emergency stop button on the console.
 - 3) Remove the Rear Transport Wheel Assembly if installed in the machine. Then Lower machine using two (2) Wheel Height Adjustment Cranks until the Plunger Housing Assembly engages the ground and the Curb Machine is immobile.
- This equipment is not intended to be towed or 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 Curbilder 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.



Keep hands clear of Plunger during operation of curber. Contact with a moving Plunger can cause injury or death. Keep away!

Lifting, Tie down, and Transportation Instructions



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



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

Note: An Empty Curbilder weighs 190#. Only lift, load and tie down Curbuilder with the **Hopper EMPTY, the Engine Off and the Engine Fuel turned Off**).

A. To load a Curbilder onto a trailer:

Either:

- Load the Curbilder using a Crane (see item C below).

or

- Pull the Curbilder onto a trailer using ramp(s):

The top, loading surface of the ramp(s) must be clean and dry. The ramps must not exceed a 25% (15 Degree) Grade. The Loading Surface of the Trailer must be level, dry and the brakes on the towing vehicle secure.

Two (2) people are required to pull the machine onto the trailer. If two (2) people are not available to pull the machine onto the trailer a 500# rated Winch is required to safely pull the Curbilder onto the trailer.

Prepare the Curbilder to pull it onto a trailer:

Lift the rear of the Curbilder up approximately 8" and insert the arm of the Rear Wheel Transport Assembly into the square tube at the rear of the hopper with the Wheel pointing down to the ground. This Rear Wheel Transport Assembly can be installed on either the Left or Right side of the machine. Lower the rear of the machine onto the ground. See the drawing below:

Turn the two (2) Height Adjusting Screws COUNTER-Clockwise to provide 4" of clearance between the bottom of the Auger Housing and the ground. This clearance is required for the Curbilder to clear the ramp pivot point on the trailer.

Raise the Pointer Rod up so there is a minimum of 4" of Clearance between the bottom end of the Pointer Rod and the Ground.

Pull the machine with the Steering Handle toward the front of the trailer. Also

B. To tie curber down to the Trailer Bed, etc (Note: empty curber weighs 190#)

- Lower Curbilder using three(3) Wheel Height Adjusting Screws until Auger Housing makes firm contact with the trailer bed and Curbilder is level with bed of trailer and the Curbilder is immobile.
- Chock all wheels to prevent machine movement in all directions.
- 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

C. To lift Curbilder

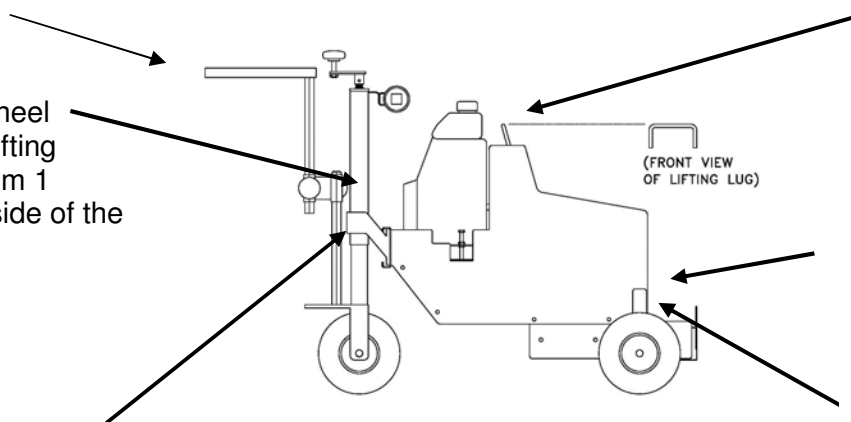
- When lifting Curbilder with a crane or other mechanical hoist use a device rated at a 1,000# Working Load.
- Position the chain/strap through the Lifting Lug as shown below.
- When lifting Curbilder without a crane or other mechanical hoist always use 3 or more people to lift the Curbilder.
 1. One(1) person stands on each side of the machine; one(1) person stands at the Front 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.



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.

Do not lift by steering handle

Place hand on wheel assembly when lifting machine (minimum 1 person on each side of the Curbilder)



Lift machine using a chain or strap placed thru the lifting lug when picking up machine with a crane, etc.

Place hand on hopper lifting handle when lifting Curbilder (minimum 1 person on each side of the Curbilder)

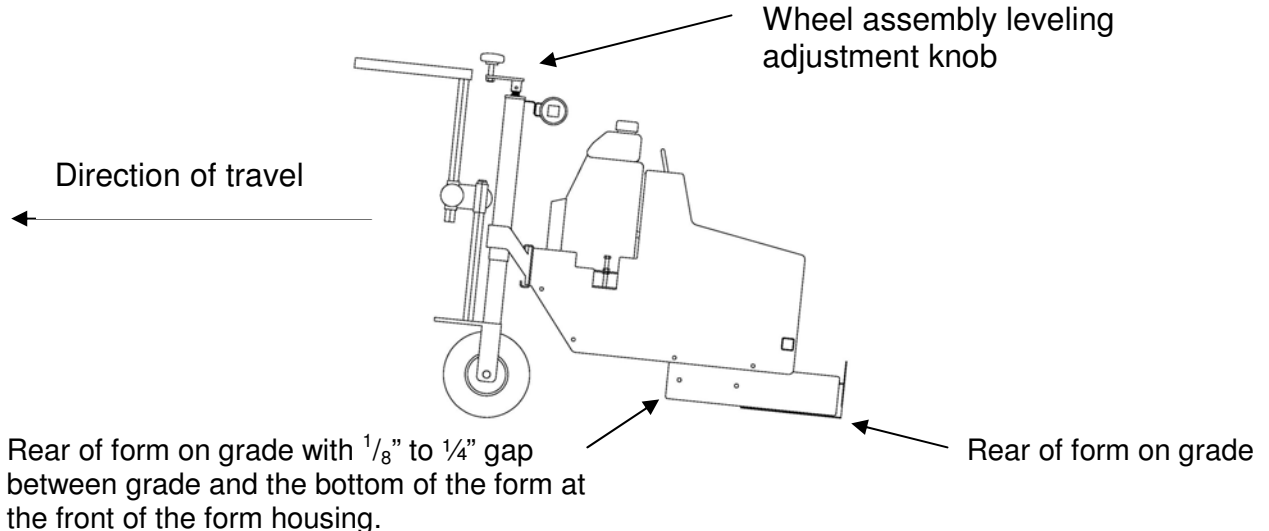
Tie down strap (1 on each wheel assembly)

Tie down strap (1 on each side of the hopper lifting handle)

Curbilder Operating Instructions

D. 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.



4) Curbilder is now in position to extrude curb

- Start engine and idle until warm. When ready to extrude curbing, increase engine speed as needed for optimum speed for the jobsite conditions.
- Shovel concrete into hopper, making sure that one can always see the plunger. If the plunger can't be seen, there is too much material in the hopper "bridging" will occur and the machine will not move. Turn off engine and use a shovel handle to break the "bridge" so the plunger is visible.
- 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.

5) 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.
- 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 goeey 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.

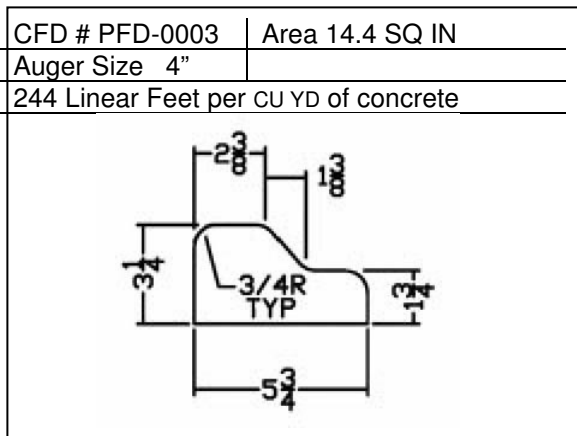
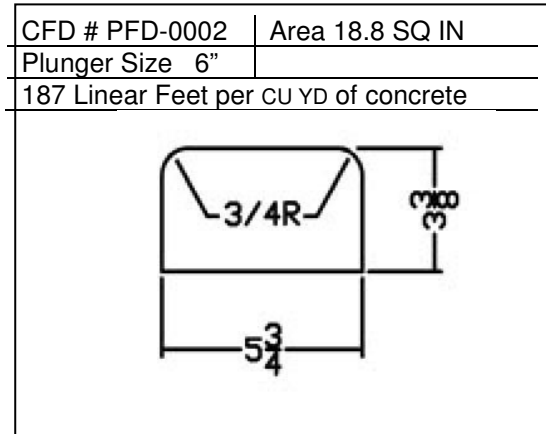
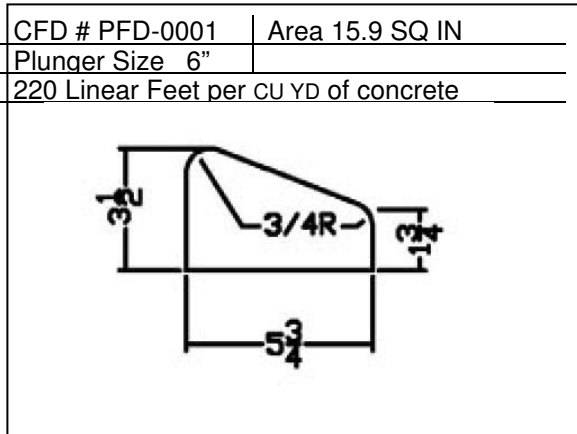
Use QUICKCRETE[®] Concrete Mix #1101 or similar product. Product can be mix by hand in a wheelbarrow, mortar tray or in a mortar mixer. Do not use a concrete mixer as it will not properly mix the concrete mix and water. For each 80# bag of concrete mix add 3-1/4 to 3-1/2 quarts of water. Mix thoroughly. 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 ($513 \div 22 = 23.3$). 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.

Curbforms

A. Standard Curbforms.

Standard curbforms can be both left or right hand forms. By rotating the form and reinstalling in the housing one can change from a left to right hand form



6) Custom curbforms can be made to meet specific needs.

Curbforms will be custom made. In addition to the price of the curbform, an engineering design and programming fee will be charged.

Curbilder™ Cleaning & Maintenance

A. Cleaning the machine

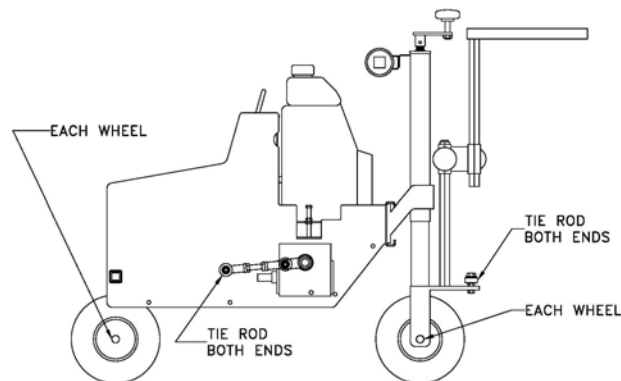
To clean Curbilder after use with Portland cement concrete, special precautions and effort must be made to insure proper cleaning. All parts should be cleaned with water and all deposits scraped from Curbilder. It is important that the plunger and plunger carriage assembly are cleaned daily.

NOTE: Proper cleaning is a must to get maximum life out of the critical wear parts.
CLEAN AS DIRECTED DAILY.

7) 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 end of the tie rod.



8) Machine maintenance

1) Form and Form Housing

The form and form housing must be inspected regularly and kept clean and free of holes. Make sure the form housing is securely fastened to the hopper and the form securely bolted in place to the hopper.

2) Compaction Ram

The ram has two functions, to feed the material into the curbform and to propel the Curbilder. It is very important that the Curbilder be cleaned after each days use. The plunger and trolley assembly must be cleaned daily to ensure that there are no obstructions preventing the movement of the trolley.



To inspect the plunger, shut down the engine and allow the engine to cool, disconnect the spark plug, then remove the plunger from the plunger assembly.

3) Engine

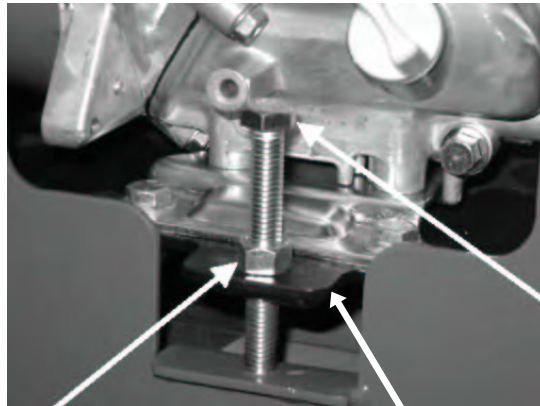
Engine maintenance is described in the engine manual (provided by the engine manufacturer), which accompanies each Curbilder.

4) 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.

5) Belt Tensioning

- Turn engine off, remove spark plug wire
- Empty hopper
- Back off belt tensioning bolt jam nut
- Turn belt tensioning belt clockwise to tighten belt or counter clockwise to loosen belt until belt has 1/2" deflection
- Once the belt is properly tensioned, tighten the belt tensioning jam nut securely against the engine mounting plate tab

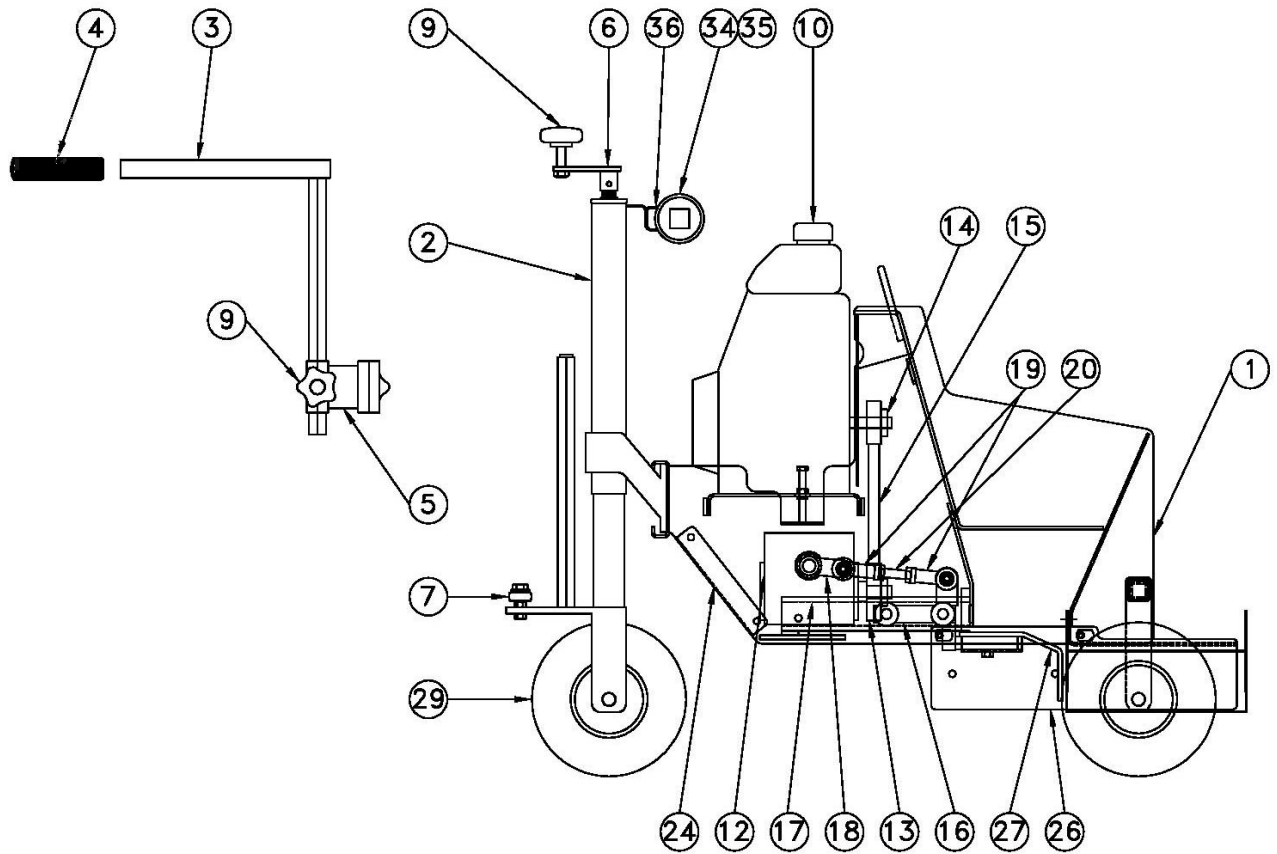


**Belt tensioning
jam nut**

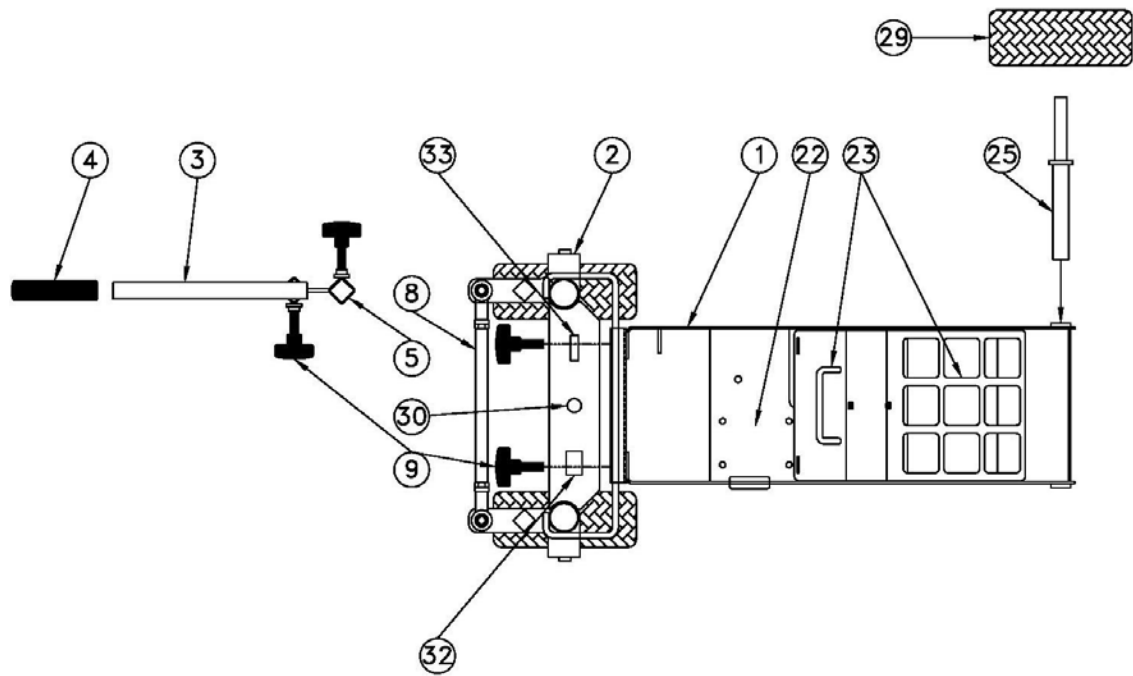
Engine mounting plate tab

Belt tensioning bolt

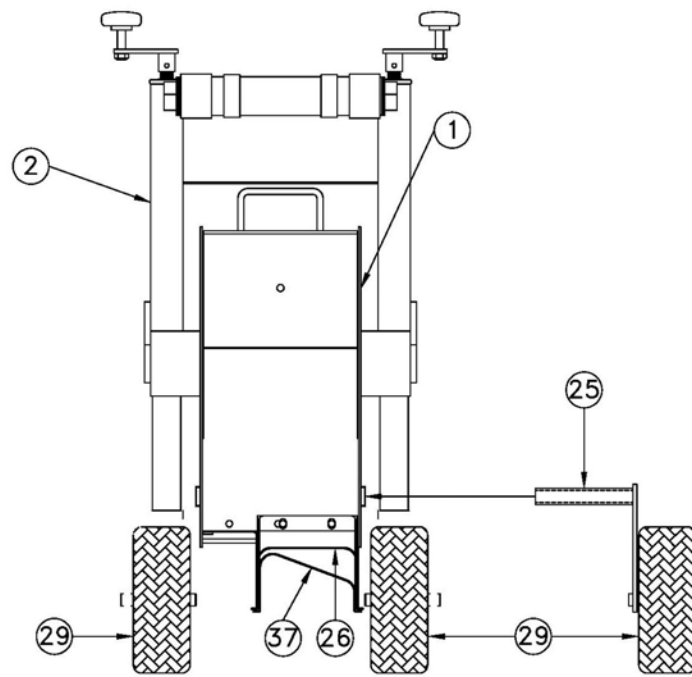
Parts Listing



Side View



Plan View



Rear Elevation

ITEM	DESCRIPTION	PART NO.	QTY
1	MAIN FRAME WELDMENT	48301-01	1
2	JACK ASEMBLY WELDMENT	48202-02	1
3	STEERING HANDLE WELDMENT	48202-13	1
4	HAND GRIP	CG0100	1
5	STEERING HANDLE MOUNTING CLAMP	48202-18	1
6	JACK CRANK ARM WELDMENT	48202-22	2
7	STEERING TIE ROD ENDS	45059-04	2
8	STEERING TIE ROD	48202-28	1
9	KNOB	48200-26	4
10	HONDA 3 HP ENGINE	48300-21	1
11	OPEN	-	-
12	GEARBOX	48308-24	1
13	INPUT SHEAVE	48200-15	1
14	ENGINE SHEAVE	48300-16	1
15	DRIVE BELT	48300-13	1
16	TROLLEY ASSEMBLY	48308-11	1
17	TROLLEY TRACK WELDMENT	48308-19	1
18	CRANK ARM WELDMENT	48308-02	1
19	DRIVE TIE ROD END	48308-07	2
20	DRIVE TIE ROD	48308-09	1
21	OPEN	-	-
22	MOTOR MOUNT WELDMENT	48302-01	1
23	HOPPER GUARD WELDMENT	48303-01	1
24	PLUNGER DRIVE GUARD WELDMENT	48304-01	1
25	REAR WHEEL ARM WELDMENT	48305-01	1

ITEM	DESCRIPTION	PART NO.	QTY
26	FORM SUPPORT WELDMENT	48306-01	1
27	5-3/4" RAM WELDMENT	48306-10	1
28	8" RAM WELDMENT	-	1
29	WHEEL	48200-14	3
30	EMERGENCY STOP SWITCH ASSEMBLY	48200-02	1
31	OPEN	-	-
32	HOUR METER	48200-07	1
33	LEVEL ASSEMBLY	48200-28	1
34	MANUAL CANNISTER ASSEMBLY	44108-01	1
35	MANUAL CANNISTER PLUG	44108-05	2
36	MANUAL CANNISTER CLAMP	44108-06	2
37	FORM	REF.	1
38	OPEN	-	-
39	OPEN	-	-
40	OPEN	-	-
41	OPEN	-	-
42	OPEN	-	-
43	OPEN	-	-
44	OPEN	-	-
45	"INSTRUCTIONS" LABEL	45099-03	1
46	"MILLER" LABELS	40111-03	1
47	"MANUAL TUBE" LABEL	44103-24	1
48	"MC350" LABEL	45099-06	1
49	"EMISSIONS" LABEL	DE1700	1
50	"NO OIL" LABEL	DE2100	1