

OPERATOR'S AND PARTS MANUAL

Hydra Walk-Behind Power Broom



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INTRODUCTION

OPERATOR'S MANUAL

You must read, understand and comply with all the safety and operating instructions in this manual before attempting to set-up and operate your unit.

Failure to comply with the safety and operating instructions can result in loss of machine control, serious personal injury to you and/or bystanders, and risk of equipment and property damage.

IDENTIFICATION NUMBERS

When contacting your authorized dealer for information, replacement parts or service, you **MUST** have the model and serial number of your broom head and drive unit.

The broom head serial number plate/decal be found in the location shown in Figure 1. Record the serial number in the space provided.

Model Name/Number:	
Date Purchased:	Serial #:



Figure 1

SAFETY

SAFETY ALERTS

Signal words and alert symbols notify of important safety precautions.

DANGER!



Indicates a hazardous situation which, if not avoided, will result in serious injury or death.

WARNING!



Indicates a hazardous situation which, if not avoided, could result in serious injury or death.

CAUTION!



Indicates a hazardous situation or unsafe practice which, if not avoided, could result in minor or moderate injury or property damage.

SAFETY DECALS

Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operate this equipment safely and effectively, we have placed several safety labels on the unit to remind you of this important information while you are operating your unit.

All DANGER, WARNING, CAUTION, and INSTRUCTIONAL messages on your unit should be carefully read and obeyed. Bodily injury can result when these instructions are not followed. The information is for your safety and it is important.

These labels will act as a constant visual reminder to you, and others who may use the equipment, to follow the safety instructions necessary for safe, effective operation.

If any of these labels are lost or damaged, replace them at once. See your local dealer for replacements.

PRE-START GUIDELINES

- Install any covers or guards which may have been removed for shipping purposes.
- Before starting equipment, walk around equipment, making a visual inspection that all safety devices are properly installed and secured.
- Check that all hardware, fasteners, hydraulic fittings, etc. are in good condition and properly fastened. Replace any fatigued or damaged items with proper replacements.
- Personnel who are not required to be in the work area should be kept away. Never start the equipment unless you are absolutely certain that everyone in the area is clear of the machine and aware it is being started.
- Follow the manufacturer's recommended start-up procedure.

OPERATION GUIDELINES

Read, understand and follow all instructions in the manual and on the unit before starting.

NOTE: All reference to left, right, front or rear are given from the operator position and facing forward.

- To avoid serious injury or death, do not modify equipment. Any modifications made to equipment can be dangerous and can void equipment warranty.
- Never defeat a safety device to make a task easier.
- Always wear proper apparel when operating equipment; safety glasses, face shield or goggles, ear protection, and dust mask. Tie hair back. Never wear loose clothing or jewelry that could get caught in moving parts.
- Never operate equipment with covers or guards removed. Rotating parts can cause severe injury. Keep hands, feet, hair, jewelry and clothing away from all moving parts.
- Only allow responsible adults who are familiar with the instructions, to operate the unit (local regulations can restrict operator age).
- Clear the area of objects such as rocks, toys, wire, etc., which could be picked up and thrown.
- Be aware of surroundings. Be sure the area is clear of other people, bystanders or pets. Stop unit if anyone enters the area.
- Always look down and behind before and while traveling in reverse.
- Be aware of discharge direction and do not point discharge at anyone. Do not point the discharge at glass enclosures, automobiles, or windows.
- Always stand clear of the discharge area when operating this unit.
- Disengage all clutches and PTOs before starting engine.
- Never leave a running machine unattended. Always disengage the attachment and traction controls, lower the attachment, set the park brake, stop the engine and remove the ignition key before leaving the machine.
- Operate only in daylight or good artificial light.
- Never carry passengers.
- Do not operate the unit while under the influence of drugs, alcohol or other medication.
- Watch for traffic when operating near or crossing roadways.
- Use extra care when loading or unloading the unit into a trailer or truck.
- Keep in mind the operator is responsible for accidents occurring to other people or property.
- Data indicates that operators, age 60 years and above, are involved in a large percentage of power equipment-related injuries. These operators should evaluate their ability to operate the unit safely enough to protect themselves and others from injury.
- All operators should seek and obtain professional and practical instruction.
- Protect eyes, face and head from objects that may be thrown from unit. Wear appropriate hearing protection.
- Always wear substantial footwear and appropriate clothing. Wear footwear that improves traction on slippery slopes. DO NOT wear long scarves or loose clothing that could become entangled in moving parts.
- Abnormal Vibrations are a warning of trouble. Striking a foreign object can damage unit. Stop unit and engine. Wait for all moving parts to stop. Inspect unit and make any necessary repairs before restart.

SAFETY

- Never place your hands or any part of your body or clothing inside or near any moving part while unit is running.
- Stop engine before: refueling, cleaning, making adjustments or removing the attachment assembly.
- Follow the drive unit manufacturer's recommendations for wheel weights or counter weights.
- Make any adjustments before operating unit.
- Do not touch parts which may be hot from operation. Allow such parts to cool before attempting to service the unit.
- Before using, always visually check that hardware is present, intact and secure. Replace worn or damaged parts.
- Never operate the machine with damaged guards, or without safety protective devices in place.
- Follow the manufacturer's recommendations for towing weight restrictions and procedures.
- Original purchaser of this unit was instructed by the seller on safe and proper operation. If unit is to be used by someone other than original purchaser; loaned, rented or sold, ALWAYS provide this manual and any needed safety training before operation.
- The Operator must understand the functions and parameters of all controls and how to operate, as well as how to STOP in an Emergency.

SLOPE OPERATION

WARNING!



Never operate on slopes greater than 17.6 percent (10°), which is a rise of 3-1/2 feet (106 cm) vertically in 20 feet (607 cm) horizontally.

When operating on slopes use additional wheel weights or counterweights. See your dealer to determine which weights are available and appropriate for your unit. Select slow ground speed before driving onto slope. Travel UP and DOWN the slope, never across the face, use caution when changing directions and DO NOT START OR STOP ON SLOPE.

Slopes are a major factor related to loss-of-control and tipover accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not operate on it.

Do

- See your authorized dealer for recommendations counterweights to improve stability.
 - Travel up and down slopes, not across.
 - Remove obstacles such as large rocks, tree limbs, etc.
 - Watch for holes, ruts, or bumps. Uneven terrain could overturn the unit. Snow can hide obstacles.
 - Use slow speed. Tires may lose traction on slopes.
 - Keep all movement on the slopes slow and gradual.
 - Do not make sudden changes in speed or direction.
- ### Do Not
- Do not start or stop on a slope. If tires lose traction, disengage the broom and proceed slowly straight down the slope.
 - Do not turn on slopes unless necessary, and then, turn slowly and gradually downhill, if possible.
 - Do not operate near drop-offs, ditches, or embankments. The unit could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
 - Do not operate power broom on roof tops.
- ## EMISSIONS
- Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.
 - Look for the relevant Emissions Durability Period and Air Index information on the engine emissions label.
- ## SERVICE AND MAINTENANCE
- Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.
 - a. Use only an approved container.
 - b. Never remove gas cap or add fuel with the engine running. Allow engine to cool before refueling.
 - c. Do not smoke.
 - d. Never refuel the unit indoors.
 - If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
 - Replace all fuel tank caps and fuel container caps securely.
 - Never fill containers inside a vehicle or on a truck bed with a plastic bed liner. Always place containers on the ground away from your vehicle before filling.
 - Remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.
 - Keep nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.
 - Do not use a nozzle lock-open device.
 - If fuel is spilled on clothing, change clothing immediately.
 - Maintain or replace safety and instruction labels as necessary.
 - Never run a unit in an enclosed area.
 - Keep nuts and bolts tight and keep equipment in good condition.
 - Never tamper with safety devices. Check their proper operation regularly and make necessary repairs if they are not functioning properly.
 - Keep unit free of debris build-up. Clean up oil or fuel spillage.
 - Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
 - Never make adjustments or repairs with the engine running unless specified otherwise in the engine manufacturer's manual.
 - Components are subject to wear, damage, and deterioration.
 - Frequently check components and replace with manufacturer's recommended parts, when necessary.
 - Check control operation frequently. Adjust and service as required.
 - Use only factory authorized replacement parts when making repairs.

SAFETY

- Always comply with factory specifications on all settings and adjustments.
- Only authorized service locations should be utilized for major service and repair requirements.
- Never attempt to make major repairs on this unit unless you have been properly trained. Improper service procedures can result in hazardous operation, equipment damage and voiding of manufacturer's warranty.
- Do not change engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.
- Disengage broom and traction, stop the engine, and disconnect the spark plug wire(s) before: performing service work or if the unit vibrates abnormally.
- After striking an object, inspect the machine for damage and make repairs before restarting and operating the equipment.

ANSI B71.3-1995 WARNINGS

Training

1. Read the operating and service instruction manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Never allow children to operate the equipment.
3. Never allow adults to operate the equipment without proper instruction.
4. Keep the area of operation clear of all persons, particularly small children and pets.
5. Exercise caution to avoid slipping or falling especially when operating in reverse.

Preparation

1. Thoroughly inspect the area where the equipment is to be used and remove all doormats, sleds, boards, wires, and other foreign objects.
2. Disengage all clutches and shift into neutral before starting engine (motor).
3. Do not operate the equipment without wearing adequate outer garments. Wear footwear that will improve footing on slippery surfaces.
4. Handle fuel with care; it is highly flammable.
 - a. Use an approved fuel container.
 - b. Never add fuel to a running engine or hot engine.
 - c. Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
 - d. Replace fuel cap securely and wipe up spilled fuel.
5. Never attempt to make any adjustments while the engine (motor) is running (except when specifically recommended by the manufacturer).
6. Let engine (motor) and machine adjust to outdoor temperatures before starting to clear snow.
7. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair to protect eye from foreign objects that may be thrown from the machine.

Operation

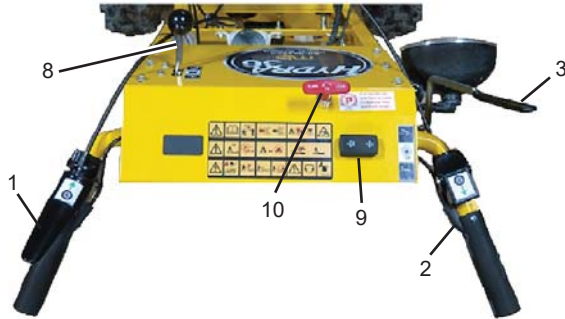
1. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
2. Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic.

3. After striking a foreign object, stop the engine (motor), remove the wire from the spark plug, disconnect the cord on electric motors, thoroughly inspect the power broom for any damage, and repair the damage before restarting and operating the power broom.
4. If the unit should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning of trouble.
5. Stop the engine (motor) whenever you leave the operating position, before making any repairs, adjustments, or inspections.
6. When cleaning, repairing, or inspecting make certain the broom and all moving parts have stopped. Disconnect the spark plug wire and keep the wire away from the plug to prevent accidental starting.
7. Do not run the engine indoors except for starting the engine or for transporting the power broom in or out of the building. Open the outside doors; exhaust fumes are dangerous.
8. Do not clear snow across the face of slopes. Exercise extreme caution when changing direction on slopes. Do not attempt to clear steep slopes.
9. Never operate the power broom without proper guards plates, or other safety protective devices in place.
10. Never operate the power broom near glass enclosures, automobiles, window wells, drop-offs, and the like without proper adjustment of the discharge angle.
11. Do not overload the machine capacity by attempting to clear snow, sand or dirt at too fast a rate.
12. Never operate the machine at high transport speeds on slippery surfaces. Look behind and use care when backing.
13. Never direct discharge at bystanders or allow anyone in front of the unit.
14. Disengage power to the broom when power broom is transported or not in use.
15. Use only attachments and accessories approved by the manufacturer of the power broom (such as wheel weights, counterweights and cabs).
16. Never operate the power broom without good visibility or light. Always be sure of your footing, and keep a firm hold on the handles. Walk, never run.

Maintenance and Storage

1. Check shear bolts and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.
2. Never store the machine with fuel in the fuel tank inside a building where ignition sources are present such as hot water and space heaters and clothes dryers. Allow the engine to cool before storing in any enclosure.
3. Always refer to the operator's guide instructions for important details if the power broom is to be stored for an extended period.
4. Maintain or replace safety and instruction labels as necessary.
5. Run the machine a few minutes after moving snow to prevent freeze-up of the broom assembly.
6. Always observe safe refueling and fuel handling practices when refueling the unit after transportation or storage.
7. Always follow the engine manual instructions for storage preparations before storing the unit for both short and long term periods.
8. Always follow the engine manual instructions for proper start-up procedures when returning the unit to service.

CONTROLS AND FEATURES



1. **Forward Speed Selector Lever:** Selects the forward speed. The ground speed is variable and controlled by pushing down on the lever.
2. **Reverse Speed Selector Lever:** Selects the reverse speed. The ground speed is variable and controlled by pulling up on the lever.
3. **Broom Control:** Engages the broom when depressed. Releasing the control stops the broom.
4. **Engine Choke Control:** Close choke to start a cold engine. Open choke when engine starts.
5. **Fuel On/Off Valve:** When transporting or for long-term storage, close the valve. Open valve before starting engine.
6. **Throttle Lever:** Controls engine speed. Move toward the hare icon for faster engine speed, move toward the turtle icon for slower engine speed. Set throttle to FULL/FAST (hare icon) for operation.
7. **Engine Key Switch:** The Engine Key Switch prevents the engine from being started when in the OFF position. Rotate key to the ON position to start engine, OFF to shut engine off.
8. **Broom Swivel Lock:** Pull upwards to unlock the broom swivel lock pin. The broom head can be angled to either the right, left or straight by rotating the broom frame with the broom assembly resting on the ground. Push Down on the broom swivel lock to lock the broom in the selected position.
9. **Handle Bar Heat Switch:** Turn on to heat the hand grips.
10. **Brake Lock:** Pull up and rotate to prevent the unit from rolling. Turn back and push down to release the brakes.

SETUP

When the power broom is shipped;

- the fuel is drained
- engine oil is at full level
- the battery is strapped down and disconnected
- the caster assemblies are secured upside down in the brackets.

Before starting the engine and using the power broom the following tasks must be completed.

1. Fill the fuel tank according to the engine manual instructions.
2. Check and add (if needed) engine oil according to the engine manual instructions.
3. Remove the top of the battery box. Connect the loose wire to the proper battery terminal. The red wire connects to the positive (+) terminal.
4. Lift and support the broom head to remove the caster assemblies. Remove the pins, slide the assembly out, insert the assembly from the bottom and reinsert the pin. Refer to the section on "Brush Height Adjustment" to level the power broom.

OPERATION

CHECKS BEFORE EACH START-UP

1. Make sure all safety guards are in place and all nuts, bolts and clips are secure.
2. Check the engine oil level. See your engine Owner's Manual for procedure and specifications.
3. Check to make sure spark plug wire is attached and spark plug is tightened securely. If necessary, torque spark plug to 15 ft. lbs.
4. Check the fuel supply. Fill the tank no closer than 1/4 to 1/2 inch to the top of tank to provide space for expansion. See your engine Owner's Manual for fuel recommendations.
5. Check the casters to make sure they are set at the desired height.
6. Check the Drive Control, and Broom Control for proper operation. If adjustment is required, see the Service section for procedures.
7. Make sure that the broom is angled in the proper direction. See the Service section for adjustment procedures.
8. Check the Speed Selector Levers for smooth operation. The levers must move freely and return when released. If the Speed Selector Levers do not move freely into all forward and reverse speed positions, contact your local authorized dealer for assistance.

STARTING THE ENGINE



- | | |
|----------------------|------------------|
| A. Starter Handle | D. Fuel Valve |
| B. Throttle Lever | E. Choke Control |
| C. Engine Key Switch | |

Figure 2 Engine Controls

See Figure 2 Engine Controls.

1. Turn the Fuel Valve (D) to the ON position.
2. Move the Throttle Lever (B) fully to the FAST position.
3. Close the Choke Control (E) fully. Do not choke a warm engine.
4. Turn the Engine Key Switch (C) fully to the right. The starter will engage to start the engine. When the engine is started, release the key. Or to manually start the engine, pull Starter Handle (A) rapidly. Do not allow the Starter Handle (A) to snap back—let the starter rope rewind slowly—while keeping a firm grip on the Starter Handle (A).
5. As the engine starts, slowly open Choke Control (E) and slide Throttle Lever (B) towards the idle position. Allow engine to run for a few minutes until it runs smoothly.

NOTE: Allow the engine to warm up at SLOW throttle for a few minutes before operating the power broom at full speed. The engine will not develop full power until it reaches operating temperature. After warming up, always operate at full throttle.

WARNING!



For your safety, operation on slopes should be in an up and down direction only. If it becomes necessary to move across the face of a slope, use caution and do not engage the broom. Be very careful when changing direction on a slope. Proper footwear is recommended for the operator to help prevent slipping. Never attempt to operate on excessively steep slopes. The maximum slope for any operation is 17.7% (10°).

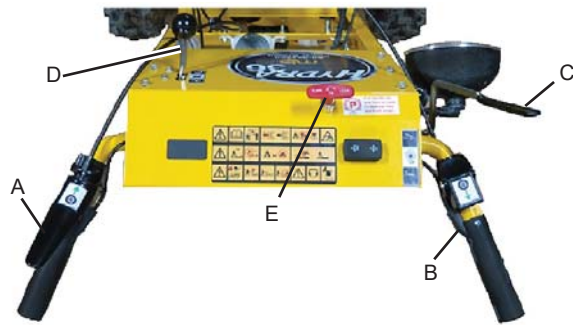
WARNING!



Gasoline is highly flammable and must be handled with care. Never fill the tank when the engine is hot or running. Always move outdoors to fill the tank. Keep power broom and gasoline away from open flame or spark.

OPERATION

OPERATING THE POWER BROOM



- | | |
|---------------------------|---------------------------|
| A. Forward Speed Selector | C. Broom Rotation Control |
| B. Reverse Speed Selector | D. Broom Swivel Lock |
| | E. Brake Lock |

Figure 3 Controls

WARNING!



Always engage speed control before engaging broom drive. Always release the broom drive before disengaging the speed control or broom contact may push unit backwards

See Figure 3 Controls.

1. Set the engine speed.
2. Squeeze down on the Forward Speed Selector Lever, (A) for forward travel, and begin moving the power broom. To disengage the traction drive, completely release the lever.
3. Fully press and hold the Broom Rotation Control (C) on the right-hand grip to begin broom rotation. Releasing the Broom Rotation Control (C) will disengage the broom.

CAUTION!



To prevent kickback the unit should be moving forward before starting to rotate the broom. When travelling in reverse the broom should not be rotating.

4. Use the Forward Speed Selector Lever (A) or the Reverse Speed Selector Lever (B) to control the direction and speeds. The speed increases as the lever is pushed downward.
5. When the speed controls are released the Brake Lock (E) may be used to prevent the broom from rolling downhill. Pull up and rotate the handle to the right (clockwise) to lock. Pull up and rotate to the left (counterclockwise) to release.

ENGINE SPEED

Brush speed is adjusted by engine rpm. Adjust engine speed as needed.

BRUSH ANGLE ADJUSTMENT

See Figure 4 Brush Swivel Controls.

WARNING!



To avoid personal injury, do not adjust the angle of the broom head while the brush is rotating.

To change the angle of the brush:

1. Stop all broom rotation.
2. Pull upwards on the Broom Swivel Lock handle and hold. This will release the Broom Swivel Lock Pin.
3. With the brush assembly resting on the ground, rotate the broom frame 30° to the right or left.
4. When the brush is in the proper position, push down on the Broom Swivel Lock handle. The brush assembly will be locked in the selected position. The broom head may need to be moved slightly to engage the lock pin.

NOTE: The brush can be positioned to either 30° to the right or left or straight ahead.

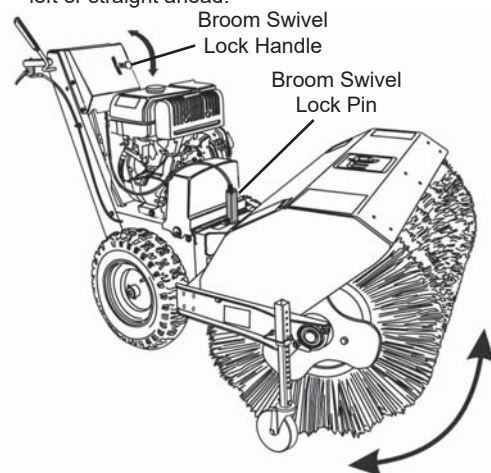


Figure 4 Brush Swivel Controls

OPERATION

BRUSH HEIGHT ADJUSTMENT

CAUTION!



If brush height is set too low, the brush can drive the machine rearward when attachment clutch is engaged. Engage brush slowly with brush set at proper height.

For hard surfaces, adjust the caster wheels so that the brush just touches surface. The brush works best with the brush properly leveled. To adjust the brush height:

1. Move the brush to a dusty, flat surface. Leave the engine running.
2. Start the brush at a slow speed. Run the brush in a stationary position for 30 seconds.
3. Lift the brush head assembly off the ground and reverse the unit to move it away from the swept area.
4. Stop engine and allow all moving parts to stop.
5. Check the width of the swept area. The brush pattern should be 2-4 inches wide, running the length of the brush. (See Figure 5 Brush Sweeping Pattern)

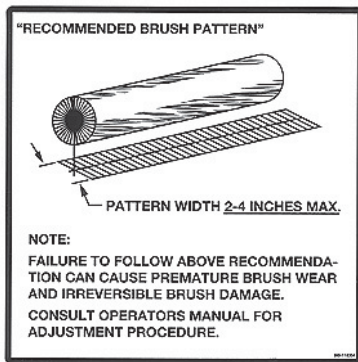


Figure 5 Brush Sweeping Pattern

6. To adjust:
 - a. Remove the caster wheel lock pin. (See Figure 6 Pattern Adjustment)
 - b. Raise or lower the caster wheel as needed.
 - c. Insert the caster wheel lock pin into the hole in the caster bracket and through the caster tube. Use the attached spring clip to secure the pin.

NOTE: If using the power broom for turf applications, less ground contact is required.

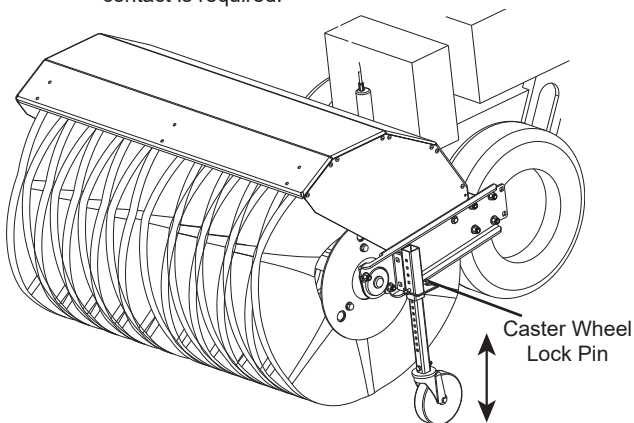


Figure 6 Pattern Adjustment

WHEN PUSHING THE BROOM

For easy pushing of the power broom, disengage the Transaxle using the Traction Bypass Knob (See Figure 7).

1. Turn the unit off.
2. To DISENGAGE the transaxle, locate the Traction Bypass Knob on the right side of the housing.
3. Pull out on the knob while positioning the cross pins to exit through the slots.
4. Rotate the knob 90 degrees (1/4 turn) and release.
5. The pins will remain outside the housing. The unit can now be moved with minimal resistance.
6. To ENGAGE the transaxle, rotate the traction bypass knob to allow the cross pins to enter the slots.

Pull Knob Outward



Figure 7

ADJUSTMENTS AND SERVICE

SPEED SELECTOR LEVER ADJUSTMENT

The Speed Selector Levers are adjusted at the factory to provide the optimum control over forward and reverse movement.

WARNING!



Improper adjustment of the Speed Selector Lever cables may result in unexpected movement of the unit when started. Contact you dealer before making any adjustments.

If one of the Speed Selector Lever cables requires adjustment, locate the Speed Control Bracket (Figure 8) on the side of the transaxle. A link with several holes is used to allow adjustment.

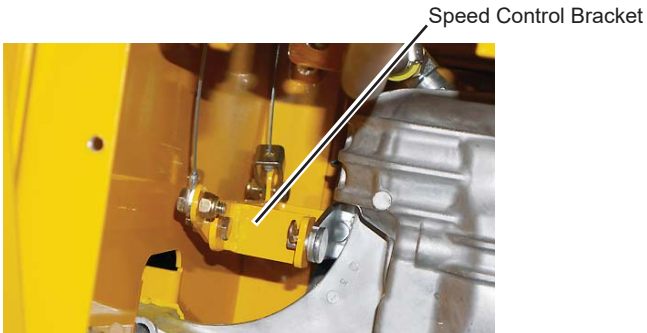


Figure 8

When there is no tension on either cable, the Speed Control Bracket will return to a centered neutral position.

The bolt and nut holding the cable end can be removed to allow the cable to align with one of the holes in the adjustment link.

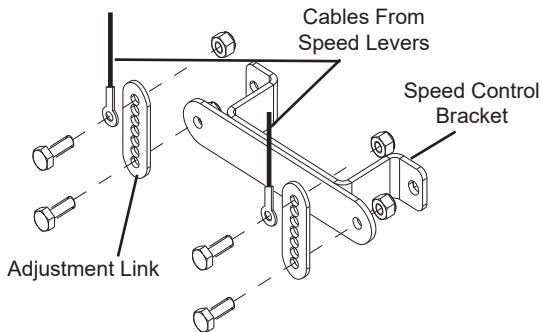


Figure 9

To reattach the cable:

1. Pull down on the end of the cable to eliminate slack and seat the lever on the handlebars.
2. Rotate the adjustment link upwards and line up with the cable ends.
3. Place the bolt through the cable end and into the hole in the adjustment link that is above the center of the bolt.
4. Repeat for the other cable if needed.

CAUTION!



Do not move the speed control bracket to make the bolt holes line up. Doing so will hold the transaxle in gear.

BROOM DRIVE TENSION

WARNING!



Do not over-tighten, as this may lift the lever and cause broom drive to be engaged without depressing the Broom Control.

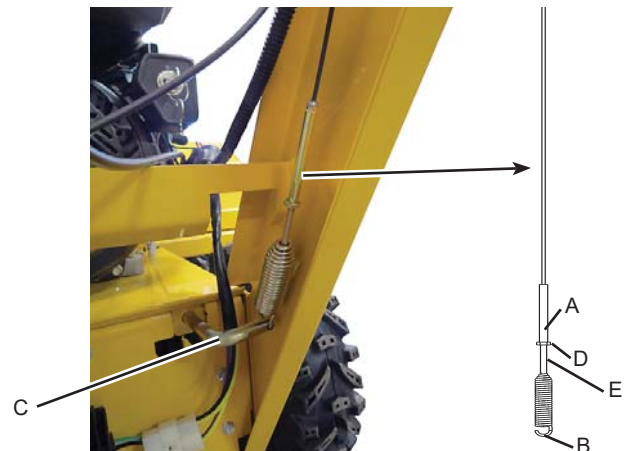
See Figure 10 Broom Drive Adjustment.

1. With the drive lever released, the hook (B) should barely touch the lever (C) without raising it. There can be a maximum 1/32" clearance.

NOTE:

The adjustment screw is a phillips screw. The head can be held or turned by inserting a screwdriver up through the spring.

2. To adjust, loosen nut (D) by holding the adjusting flats (A) and turning nut (D). Turn adjustment flats and hold screw to tighten or loosen the contact between the hook (B) and the lever (C).
3. Hold adjusting flats (A) and tighten nut (D) against adjusting nut (A).
4. Start unit and check broom. Broom must not be engaged unless Broom Control is depressed.
5. With engine running, fully depress Broom Rotation Control Lever. The broom should engage and run normally.
6. Release the Broom Rotation Control Lever. Broom must stop within 5 seconds.
7. If broom does not operate properly, stop engine and recheck drive linkage adjustments.
8. If drive linkage is properly adjusted, broom drive belt tension may require adjustment. See "Belt Replacement" in this section of the manual.



- A. Adjusting Nut
B. Spring Hook
C. Lever

- D. Nut
E. Adjustment Screw

Figure 10 Broom Drive Adjustment

ADJUSTMENTS AND SERVICE

SHEAR BOLT REPLACEMENT

DANGER!



Do not go near the broom when the engine is running. Do not run the engine with any cover or guard removed.

Under most circumstances, if the broom strikes an object which could cause damage to the unit, the shear bolt(s) will break. This protects the gear box and other parts from damage. The shear bolts are located on the broom shaft.

See Figure 11 Shear Bolt Replacement.

To replace the shear bolts:

1. Tap out the broken pin(s) with a pin punch.

IMPORTANT!

Replace shear bolts with a HHCS .31-18 UNC x 2.250 Grade 5 Bolt. Use of screws or a harder shear bolt will lead to damaged equipment.

2. Install new shear bolt(s) and secure with nut. Do not overtighten and clamp the broom core to the shaft.

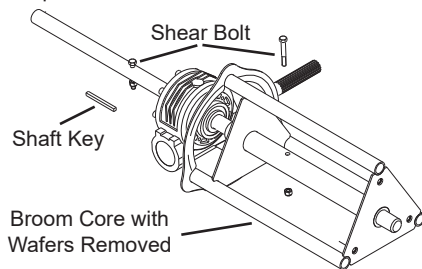


Figure 11 Shear Bolt Replacement

BELT REPLACEMENT

1. Turn off the engine and wait for all moving parts to stop. Remove the spark plug wire. Loosen the two screws securing the belt cover (Figure 12 Belt Cover).

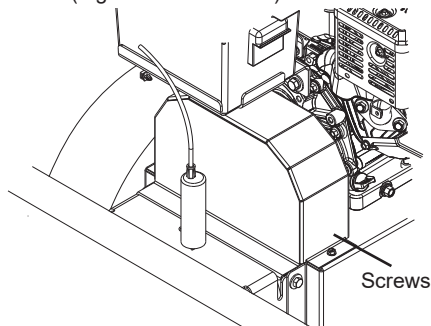
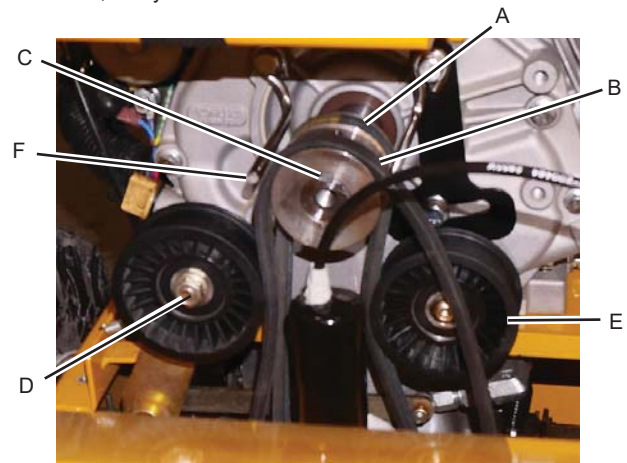


Figure 12 Belt Cover

2. Tilt the cover forward and pull it up and off the power broom.
3. Remove the broom drive belt as follows, Figure 13:
 - a. Loosen the bolts on the engine belt guides and move them (F) away from the pulley.
 - b. Slip the broom drive belt (B) from the engagement pulley (D) by pushing the pulley away from the belt.
 - c. Remove the belt from the engine pulley.

NOTE: Make sure to firmly support the broom assembly.

- d. Remove the four housing bolts that hold the broom head onto the drive frame and pivot the broom head assembly away from the transaxle housing.
 - e. Remove broom drive belt.
4. Remove the traction drive belt as follows:
 - a. Loosen the nut over the adjusting slot for the drive pulley.
 - b. Slip the belt off the bottom traction pulley and then the engine pulley.
 - c. Pull the belt out between the broom pulley (D) and traction pulley (F).
 5. Reverse the procedure to install the belts. Be sure there are no twists and the belts are properly seated in the grooves. The patterns for the drive belts are shown in Figure 13 Belts and Pulleys.
 6. Check the traction drive tension and broom drive tension.
 7. Make sure the broom stops when the Broom Rotation Control Lever is released. If not, check the belt tension. If a problem exists, see your dealer.



- | | |
|------------------------|-----------------------------|
| A. Traction Drive Belt | D. Engagement Pulley, Broom |
| B. Broom Drive Belt | E. Drive Pulley |
| C. Engine Pulley | F. Engine Belt Guide |

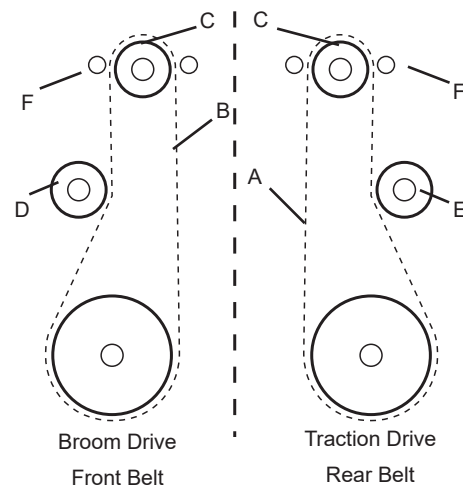


Figure 13 Belts and Pulleys

ADJUSTMENTS AND SERVICE

BRUSH SEGMENT REPLACEMENT

1. Remove bolts from broom bearings at both ends of the support shaft (Figure 14 Brush Removal).

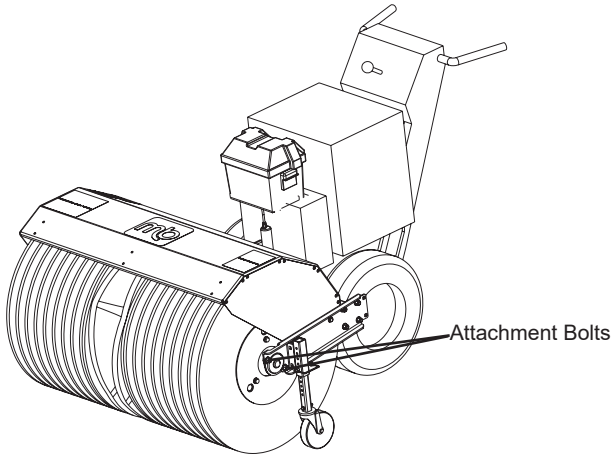


Figure 14 Brush Removal

2. Loosen bearing setscrews and slide bearings inwards toward the center of broom.
3. Manually move power unit backwards away from the brush assembly.

IMPORTANT! Support splined drive shaft to prevent damage.

4. Stand broom assembly on one end (Figure 15 Brush Assembly).
5. Remove the three bolts from the end plate (Figure 15 Brush Assembly).
6. Remove used broom segments and spacers.
7. Install new broom segments. The first segment will be wavy. This will provide cleaning action at the center of the broom. Continue adding segments until the last segment is in place.

NOTE: Align segment engagement fingers (Figure 15 Brush Assembly) on alternating support shafts. This will evenly spread the rotating force through the drive system.

8. Add the end plate and secure it with the three bolts. When the end plate is tightened, it will compress the brush segments on the core.
9. Reinstall broom assembly.

IMPORTANT! Fully tighten the bearing setscrews before operating the power broom.

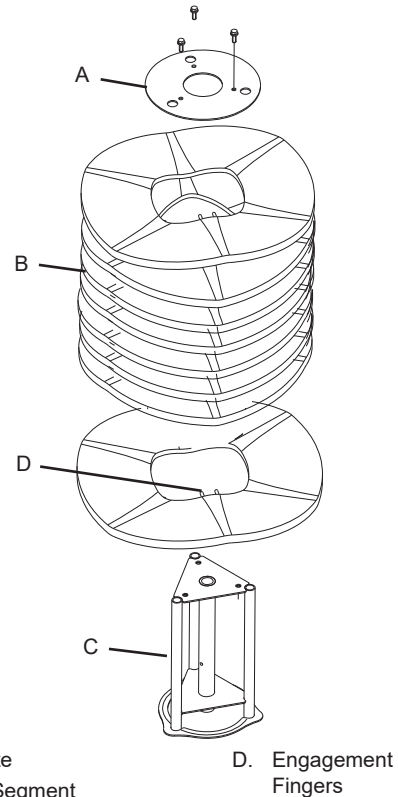


Figure 15 Brush Assembly

MAINTENANCE

MAINTENANCE SCHEDULE

Maintenance Required	Service Interval	Notes
Lubricate power broom	10 Hours	Use 10W Oil and Automotive Lithium Grease
Check tire pressure	Monthly	Inflate to 20 psi (1.37 bar)
Check/Change engine oil**	Check oil before each use**	None
Replace spark plug**	Yearly**	None
Check drive linkage and belt tension	4-6 Hours	None

** See your engine owner's manual for engine-related information.

LUBRICATION

NOTE: Grease points are noted with an applicable decal.



Grease bearings and pivot points per the MAINTENANCE SCHEDULE using Chevron Ultra Duty II, Grade 2; or equivalent high-temp grease.

IMPORTANT!

It is very important that the broom shaft is lubricated regularly. If the broom core rusts to the shaft, damage to worm gear may occur if shear bolts do not break. See Figure 16. When the broom wafers are being replaced and the broom core is removed, clean the shaft. At assembly a coating of anti-seize should be applied to the shaft.

To prevent wheels rusting to axles, it is also necessary to remove the wheels and grease the axles regularly.

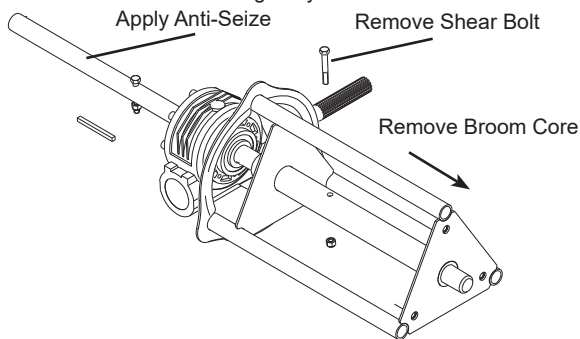


Figure 16

1. Apply medium weight (10W) oil to Control Linkage.
2. Check oil reservoir on lower handle bars. Oil should be visible. If fluid level is low, fill half-way with 20W50 motor oil and inspect the transaxle for leaks.
3. Check engine manual for engine lubrication.
4. Grease broom drive universal joint (See Figure 17).

NOTE: Access is best gained from underneath machine.

5. Grease broom pivot pin (See Figure 17).

Generally, all moving metal parts should be oiled where contact is made with other parts. Keep oil and grease off belts, pulley grooves, drive disc, and friction disc.

LUBRICATION NOTES:



Grease locations indicated by grease gun symbol. Use grease fittings when present. Disassemble parts to apply grease to moving parts when grease fittings are not installed.

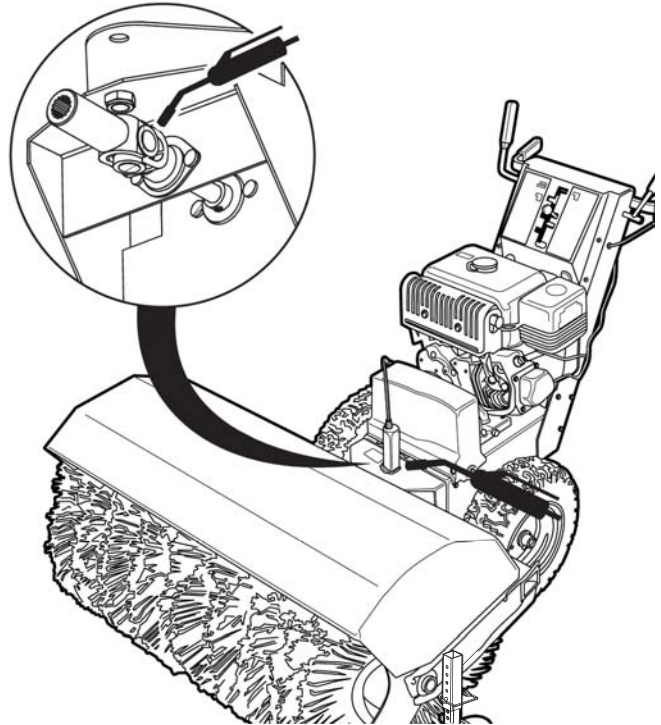


Figure 17

CHECKING TIRE PRESSURE

The air pressure in each tire (Figure 18) should be 20 psi (136 kPa) and should be equal for both tires for best performance. Be sure to keep caps on valves to prevent entry of debris into the valve stem.

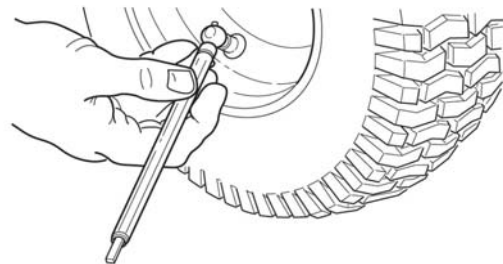


Figure 18

STORAGE

TEMPORARY STORAGE (30 DAYS OR LESS)

Remember, the fuel tank will still contain some gasoline, so never store the unit indoors or in any other area where fuel vapor could travel to any ignition source. Fuel vapor is also toxic if inhaled. Never store the unit in any structure used for human or animal habitation.

Here is a checklist of things to do when storing your unit temporarily or in between uses:

- Always store the broom in a supported position on the caster wheels, with the brush off the ground. If the bristles are stored in a deformed position for extended periods of time, the broom will become severely out of balance.
- Store the broom in a location out of the sun and weather to prevent premature failure of plastic bristles. Bristles can become brittle when subjected to sunlight or repeated temperature changes.
- Properly clean the unit before storage and remove snow, dirt, debris, salt, etc. to extend paint life.
- If the unit is power-washed, all lubrication points should be greased before storage. Refer to MAINTENANCE section.
- Keep in an area away from where children may come into contact with it. If there's any chance of unauthorized use, remove the spark plug wire.
- If the unit can't be stored on a reasonable level surface, chock the wheels.

NOTE: If storing your unit between winter snow removal jobs in a cold area, we suggest that you fill the fuel tank at the completion of each job to prevent water condensation in the fuel tank. Wait for engine to cool before filling tank.

LONG TERM STORAGE (LONGER THAN 30 DAYS)

Before you store your unit for the off-season, read the Maintenance and Storage instructions in the Safety section, then perform the following steps:

1. Drain crankcase oil and refill with a grade of oil that will be required when unit is used again. Refer to engine manual.
2. Coat all bare metal surfaces with paint or light coat of oil to prevent rusting.
3. Clean external surfaces and engine.
4. Prepare engine for storage. See engine owner's manual.
5. Clean any dirt from the engine housing.
6. Cover air intake and exhaust outlet tightly with plastic or other waterproof material to keep out moisture, dirt and insects.
7. Completely lubricate as outlined in the **MAINTENANCE** section.
8. Drain fuel system completely or add a gasoline stabilizer to the fuel system. If you have chosen to use a fuel stabilizer and have not drained the fuel system, follow all safety instructions and storage precautions in this manual to prevent the possibility of fire from the ignition of gasoline fumes. Remember, gasoline fumes can travel to distant sources of ignition and ignite, causing risk of explosion and fire.

NOTE: Gasoline, if permitted to stand unused for extended periods (30 days or more), may develop gummy deposits which can adversely affect the engine carburetor and cause engine malfunction. To avoid this condition, add a gasoline stabilizer to the fuel tank or drain all fuel from the system before placing unit in storage.

STARTING AFTER LONG TERM STORAGE

Before starting the unit after it has been stored for a long period of time, perform the following steps.

1. Remove any blocks from under the unit.
2. Unplug the exhaust outlet and air cleaner.
3. Fill the fuel tank with fresh gasoline. See engine manual for recommendations.
4. See engine Operator's Manual and follow all instructions for preparing engine after storage.
5. Check crankcase oil level and add proper oil if necessary.
6. Inflate tires to proper pressure.
7. Start the engine and let it run slowly. **DO NOT** run at high speed immediately after starting. Be sure to run engine only outdoors or in well ventilated area.

TROUBLESHOOTING

This section provides troubleshooting and service instructions. Locate the problem and check the possible cause/remedy in the order listed.

Also, refer to the engine manufacturer's Owner's Manual for additional information.

For problems not covered here, contact your local dealer.

IMPORTANT!

Before performing any adjustment or service to power broom, stop the engine and wait for moving parts to stop. Remove the key. To prevent accidental starting, disconnect the spark plug wire and fasten away from the plug.

Trouble	Possible Cause	Remedy
Engine fails to start.	Engine switch is OFF.	Set switch to ON position.
	Fuel valve is in CLOSED position.	Turn valve to OPEN position.
	Out of fuel.	Fill fuel tank.
	Choke OFF - cold engine.	Turn choke to ON, set throttle to FAST.
	Engine flooded.	Turn choke to OFF; try starting.
	No spark.	Check gap. Gap plug, clean electrode, or replace plug as necessary.
	Water in fuel, or old fuel.	Drain tank (Dispose of fuel at an authorized hazardous waste facility). Fill with fresh fuel.
Engine starts hard or runs poorly.	Fuel mixture too rich.	Move choke to OFF position.
	Carburetor adjusted incorrectly.	See your dealer for adjustments.
	Spark plug faulty, fouled, or gapped improperly.	Clean and gap, or replace.
	Fuel Cap Vent is blocked.	Clear vent.
Brush does not clean hard surface.	Casters improperly adjusted.	RAISE casters (this lowers the broom).
Broom does not rotate.	Broom Control not engaged.	Engage Broom Control.
	Broom drive clutch rod slack.	Tighten to remove slack. See broom clutch rod adjustment.
	Broom drive belt slipping.	Check broom drive belt adjustment.
	Broken belt.	Replace belt.
	Shear bolt broken.	Replace shear bolt.
Poor traction.	Tires slipping.	Check tire pressure and tread.
Broom does not stop when broom lever is released.	Broom clutch rod too tight or bent.	Loosen or straighten clutch rod.
	Broom drive belt out of adjustment.	Adjust broom belt.
	Broom belt guide out of adjustment.	Adjust broom belt guide.
Power broom does not stop when drive lever is released.	Traction drive cables out of adjustment.	Check cables (see Speed Selector Lever Adjustment).
Power broom veers to one side.	Tires pressure unequal.	Check and adjust tire pressure.
	Axle key sheared for one wheel	Remove wheel and replace axle key.
Excessive vibration.	Loose parts or damaged broom assembly.	Tighten all hardware. Replace broom assembly if necessary. If vibration continues, see your dealer.
Traction Drive Cables difficult to move or frozen in place.	Cables need lubrication.	Lubricate with 5W-50 synthetic motor oil (see Maintenance).

SERVICE PARTS

Part Number	Description
100-140487	Caster Wheel
380-172458	Pin, Caster Wheel Adjustment
504-104384	V-Belt, A33KC (Broom)
504-200557	V-Belt, A29KC (Drive)
109-131128	Paint, Spray, MB Yellow
249-92003	Paint, Spray, Black
249-92005	Primer, Spray
311-22250	Shear Bolt, HHCS 5/16-18 NC x 2-1/4 G5

Please have your serial number (S/N) ready when contacting M-B Co. or an Authorized Dealer for replacement parts or service information.

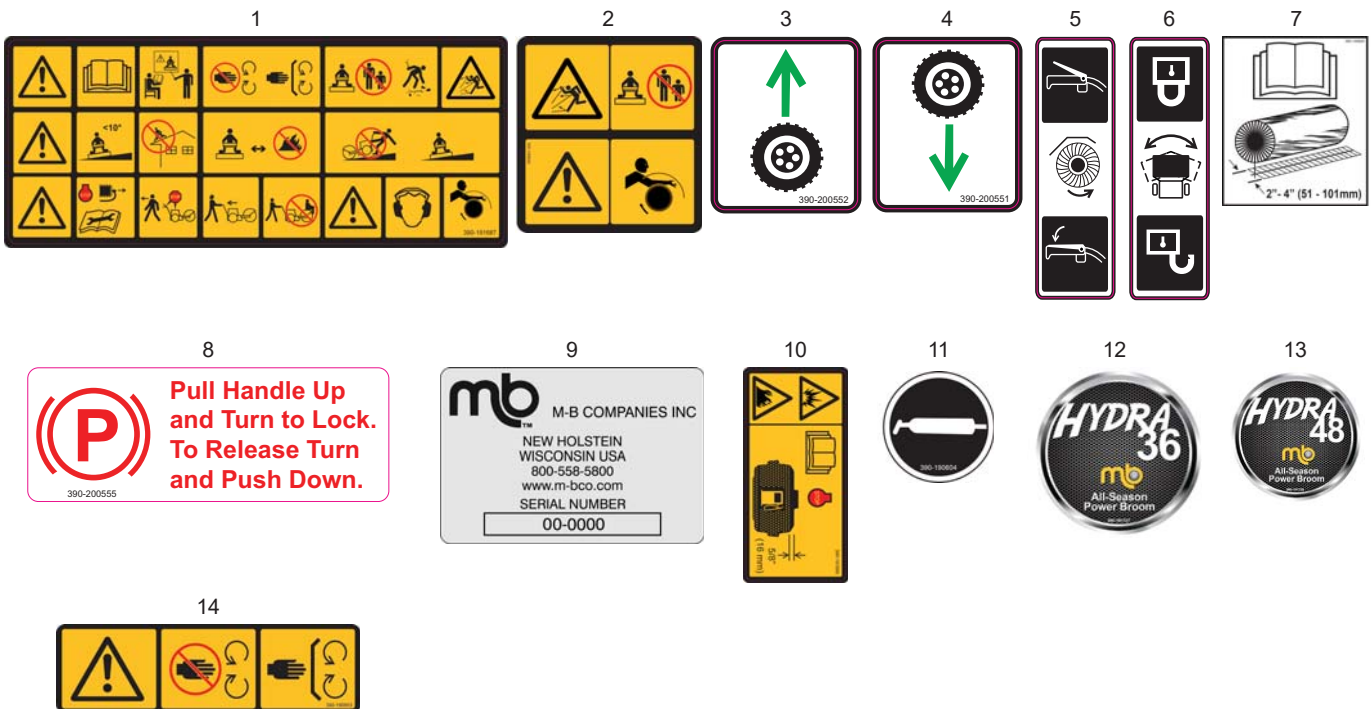
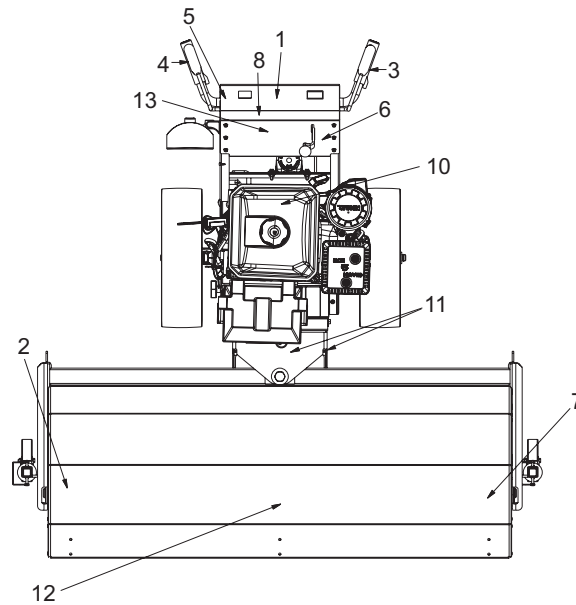
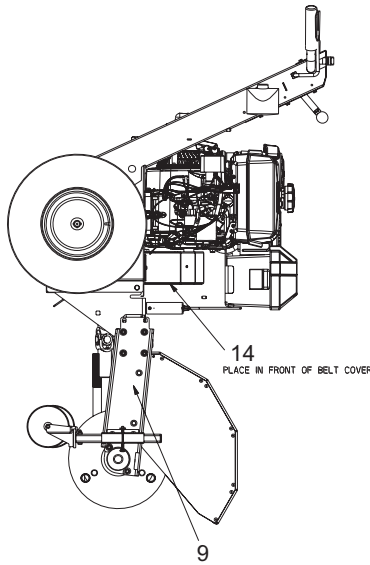
M-B Co.
1615 Wisconsin Ave.
P.O. Box 200
New Holstein, WI 53061-0200

website: www.m-bco.com
email: sales@m-bco.com
Phone: 800-558-5800 or 920-898-4203
FAX:

Main 920-898-4588
Attachments 920-898-1085
Brush Dept. 920-898-1082

PARTS LISTS

DECALS

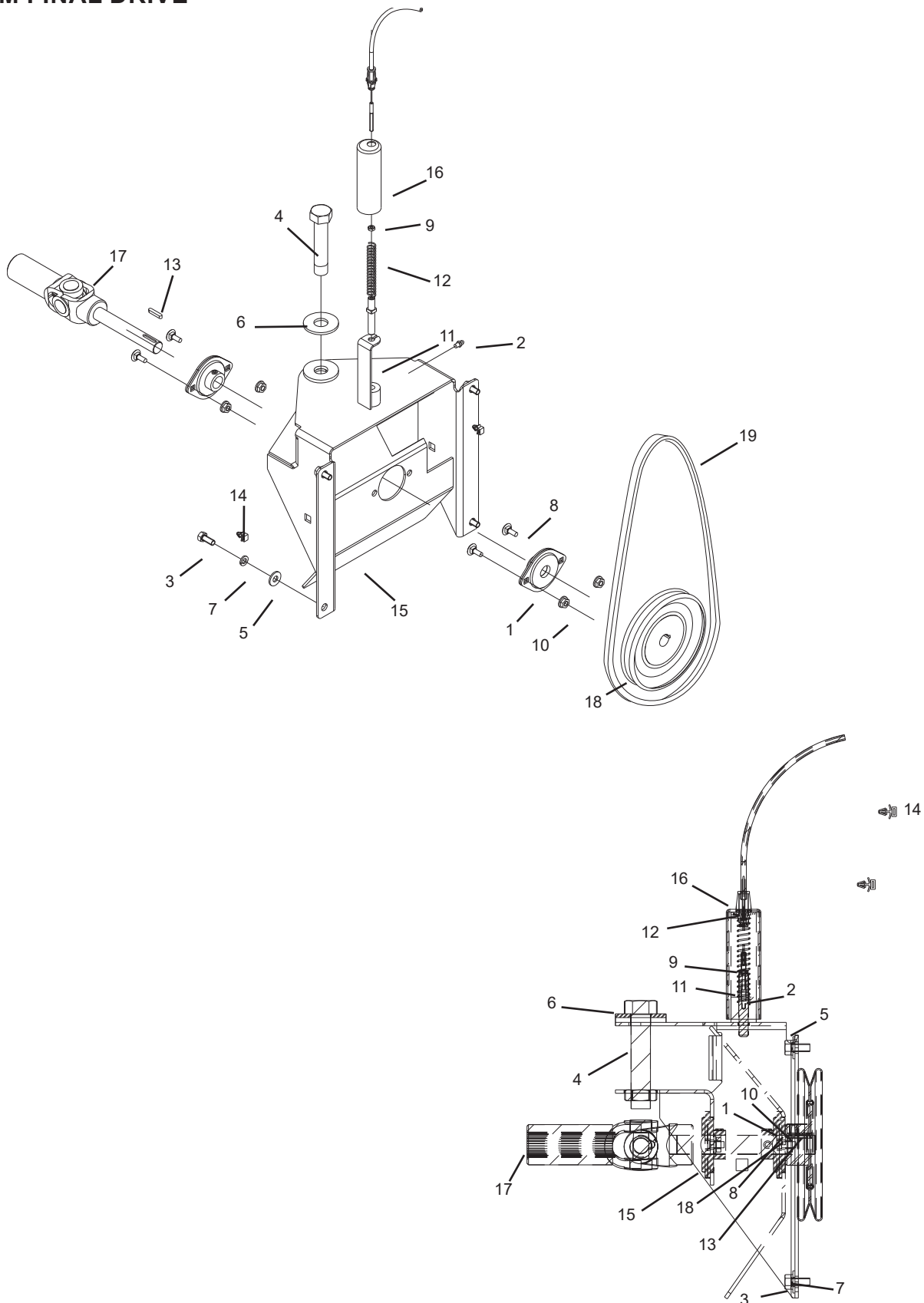


Item	Description	Part Number
1	Decal, International Warning Block	390-191687
2	Decal, International Fly Obj/Entangle	309-190602
3	Decal, Drive Forward	390-200552
4	Decal, Drive Reverse	390-200551
5	Decal, Broom Handle	390-200553
6	Decal, Pivot Lever	390-200554
7	Decal, International Brush Pattern	390-190609
8	Decal, Parking Brake	390-200555

9	Decal, Serial No	390-169251
10	Decal, Fuel Warning	390-191690
11	Decal, International Grease	390-190604
12	Decal, WB36 Hood - 3 Ft Broom	390-191727
	Decal, WB48 Hood - 4 Ft Broom	390-191728
13	Decal, WB36 Control PNL - 3 Ft Broom	390-191725
	Decal, WB48 Control PNL - 4 Ft Broom	390-191726
14	Decal, International Danger Guard	390-190603

PARTS LISTS

BROOM FINAL DRIVE



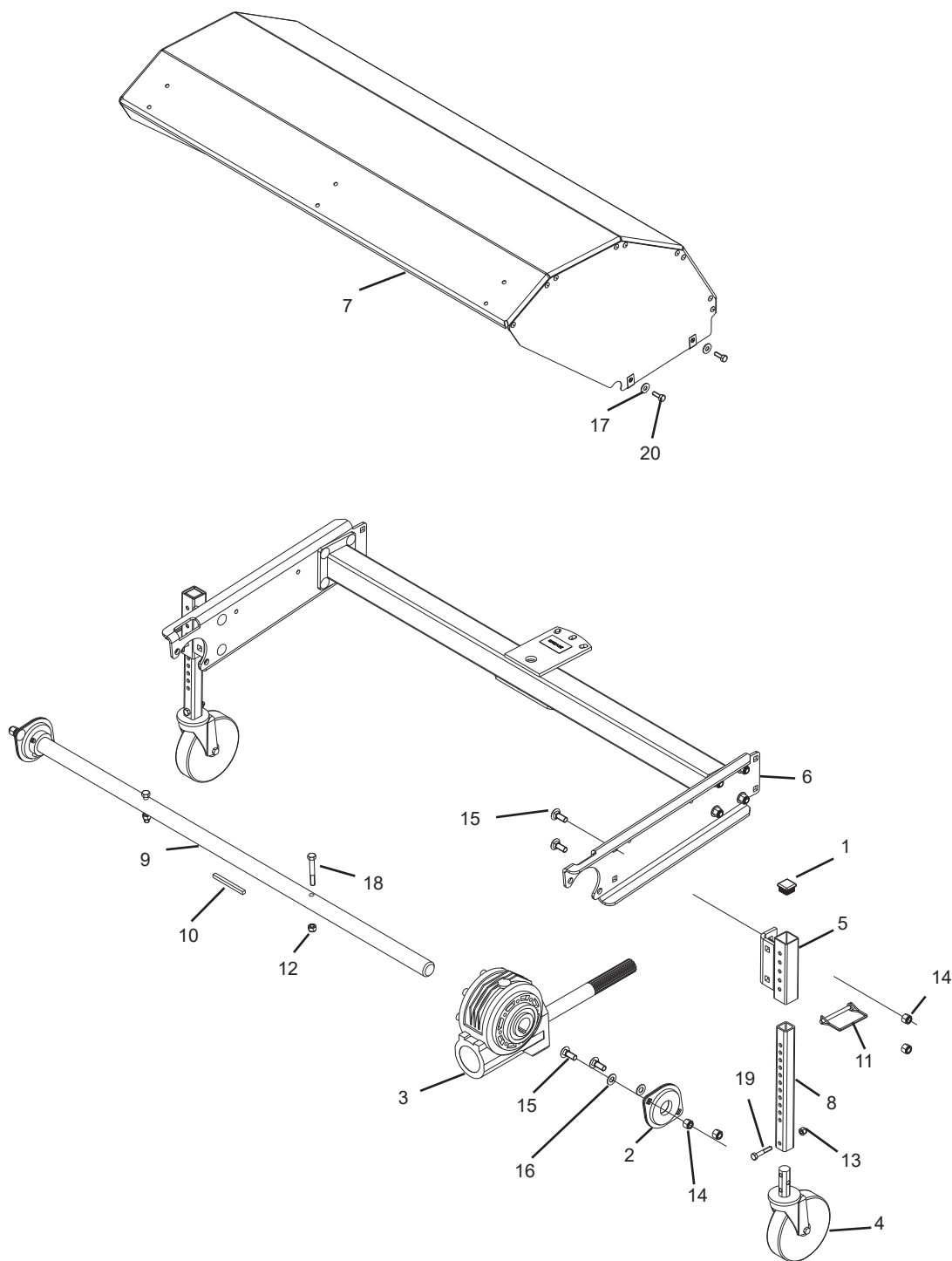
PARTS LISTS

BROOM FINAL DRIVE

Item	Description	Part Number	Qty
1	Bearing, 3/4" Flangette	600-132224	2
2	Grease Zerk 1/4-28	206-72100	1
3	HHCS .31-18 UNC x 0.750	311-20750	4
4	HHCS .75-16 UNF x 3.750	313-83750	1
5	Washer, Flat - 5/16 STD Zinc PL	341-20000	4
6	Washer, Flat - 3/4 STD Zinc PL	341-80000	1
7	Washer, Lock - 5/16 STD Zinc PL	351-20000	4
8	Carriage Bolt 5/16-18 UNC x .75	370-126976	4
9	Nut, Hex, 10-24	371-81807	1
10	Nut, Flanged 5/16-18 Plated Locking	371-92059	4
11	Pin, Swing MCD, Trigger Release	380-140544	1
12	Spring, Compression .51" OD x 3.5" Long	382-140710	1
13	Key, Round End .1875 x 1	386-91174	1
14	Base, Push 3/16 Cable in 1/4 Hole	387-140764	2
15	Frame, Mounting Hydra	410-191965	1
16	Cap, Vinyl Modified	488-140763	1
17	Driveline, Modified Series 07 3/4 Keyed x 1-15 SPLN	502-200479	1
18	Sheave, 6 OD, 3/4 ID A Section Stamped Steel	505-129571	1
19	V-Belt A33KC (Broom)	504-104384	1
*	Tie Wrap, Medium 6 inch Black	703-55662	

PARTS LISTS

BROOM HEAD ASSEMBLY



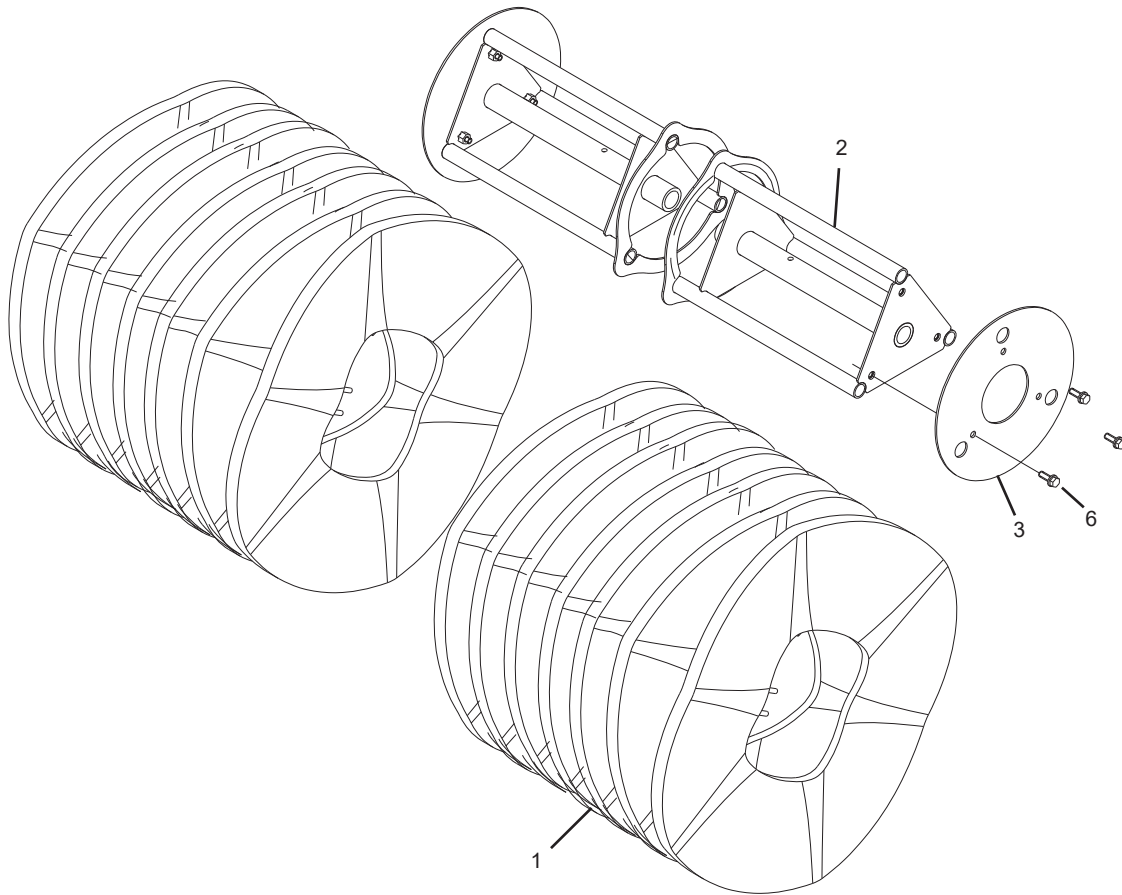
PARTS LISTS

BROOM HEAD ASSEMBLY

Item	Description	Part Number	Qty
1	Plug, Square, 1" Plastic	711-132229	2
2	Bearing, 1-1/8" Flangette	600-132225	2
3	Gearbox, Worm Aluminum, 8.25:1	501-140152	1
4	Caster Wheel, 5" 3/4" Expandable Stem	100-140487	2
5	Caster Bracket WU	410-172575	2
6	Frame, Bolt-on Arms 3'	420-172234	1
	Frame, Bolt-on Arms 4'	420-172233	1
7	Hood, 18 GA Riveted, 3' Hydra	420-169347	1
	Hood, 18 GA Riveted, 4' Hydra	420-169885	1
8	Tube, Caster	401-172238	2
9	Shaft, Thru, 1-1/8 3' Hydra	401-140151	1
	Shaft, Thru, 1-1/8 4' Hydra	401-140471	1
10	Key, Square .25 x .25 x 3 LG	386-140951	1
11	Pin, Wire Lock 1/4 x 2-1/4	380-172458	2
12	Nut, Hex, ESNA, 5/16-18-UNC	371-81620	2
13	Nut, Hex, ESNA, 1/4-20 NC	371-81299	2
14	Nut, Hex, ESNA, 3/8-16 UNC	371-81297	8
15	Carriage Bolt 3/8-16 UNC x 1	370-92047	8
16	Washer, SAE 3/8	343-30000	4
17	Washer, Flat - 1/4 STD Zinc PL	341-10000	4
18	HHCS .31-18 UNC x 2.250	311-22250	2
19	HHCS .25-20 UNC x 1.500	311-11500	2
20	HHCS .25-20 UNC x 0.750	311-10750	4

PARTS LISTS

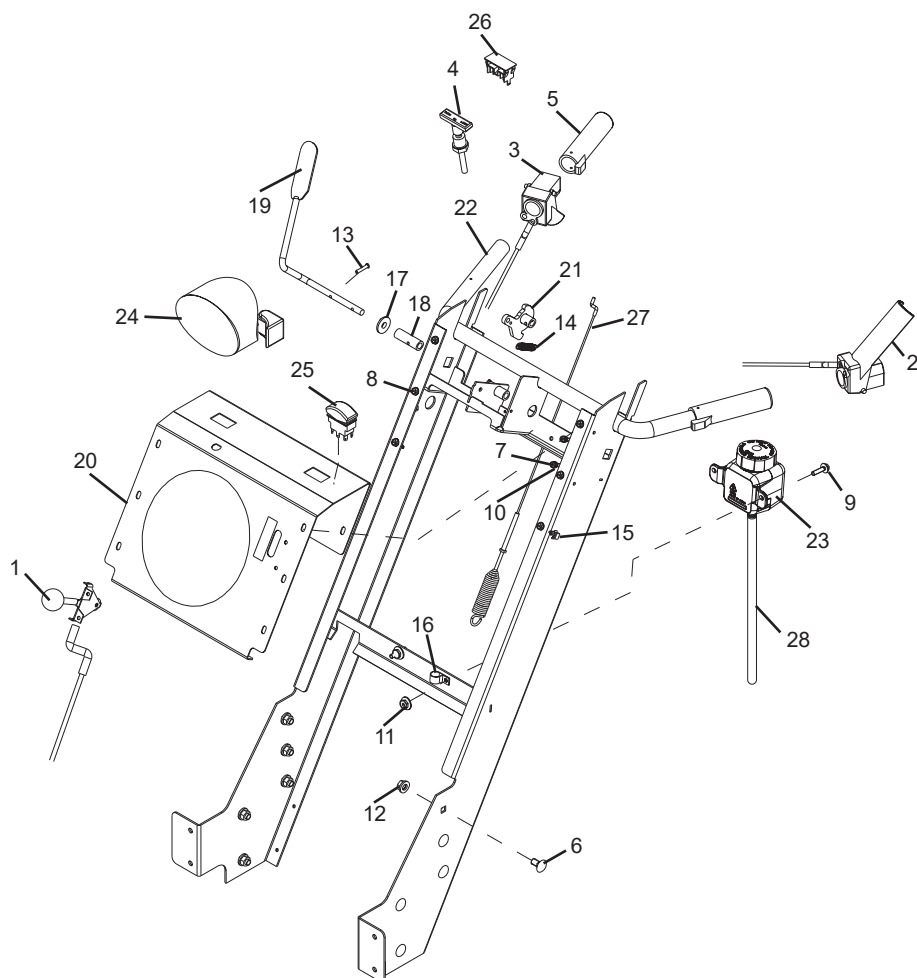
BRUSH ASSEMBLY



Item	Description	Part Number	Qty
1	Segment, Poly 10 x 25 Conv Black	101-129541	18 or 26
1	Segment, Poly/Wire 10 x 25 Conv Black	101-132808	18 or 26
2	Core, Weldment 3' Hydra	410-169692	2
	Core, Weldment 4' Hydra	410-169689	2
3	Plate, End Retainer	401-147887	2
4	HHCS, Serrated Flange 3/8-16 x 1 Plated	370-126977	6

PARTS LISTS

HANDLES & CONTROLS



PARTS LISTS

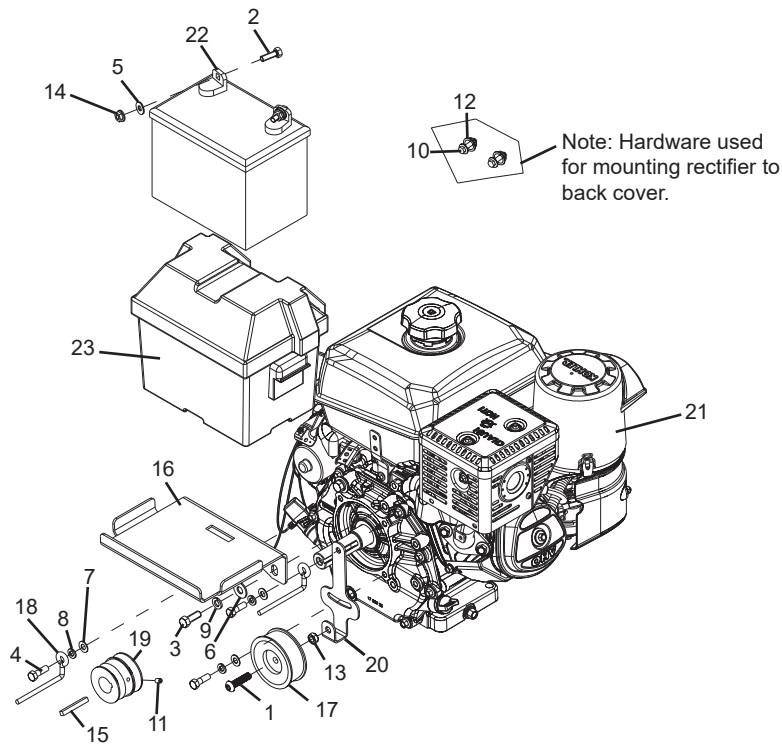
HANDLES & CONTROLS

Item	Description	Part Number	Qty
1	Cable Assy, WB Head Pivot	102-200464	1
2	Cable Assy, FWD Speed WB	102-200465	1
3	Cable Assy, Reverse Speed, WB	102-200466	1
4	Turn To Lock Push Pull Cable	102-200468	1
5	Heated Hand Grip	106-190341	2
6	Carriage Bolt 3/8-16 UNC x .75	370-132227	10
7	Machine Screw-Pan Head 10-24 x 3/4	370-162221	2
8	Screw, Self Tapping 1/4-20 x 1/2, .228 Hole	370-163866	8
9	Flanged Cap Bolt 1/4-20 x 1- G5	370-190154	2
10	Nut - LK - NYL 10-24 W/INSRT YWZC	371-102837	2
11	Flanged Hex Nut 1/4-20	371-190155	2
12	Nut, Hex Flange Locking	371-92057	10
13	Pin, Clevis Self-Locking, 3/16" x 1" (0.781" Useable)	380-200047	2
14	Spring, Drive/Broom Cam Return	382-200125	1
15	Base, Push 3/16 Cable IN 1/4 Hole	387-140764	2
16	Cable Clamp 5/8 ID	387-72383	1
17	Bushing Stop, Plastic, MCD=WB	401-191148	1
18	Bushing, Drive Arm, MCD-WB	401-191149	1
19	Handle Bar, Broom Drive, HYDRA	401-200045	1
20	Plate, Dash Cable Control	401-200558	1
21	Broom Clutch Cam Weldment	410-191959	1
22	Control Housing, MCD-WB	410-191982	1
23	Expansion Tank, MCD-WB (T2 Transmission)	553-191068	1
24	Light Housing With Incandescent Bulb	701-190339	1
25	Rocker Switch On-Off-On	702-190340	1
26	Plug, MCD-WB Switch Cover	702-191729	1
27	Cable, Drive With Adjustment Screw, HYDRA	721-200044	1
28	Hose, T2 Expansion Return Line 24" OAL	106-191677	1
*	Harness, Accesory	703-190380	1
*	Accessory Install	904-190413	1
*	Clamp, Cable 5/8"	387-72383	2
*	Tie Wrap, Medium	703-55662	10
*	Loom 1/2" 3FT	212-92009	1
*	Loom 5/8" 1FT	703-105195	1

*Not Shown

PARTS LISTS

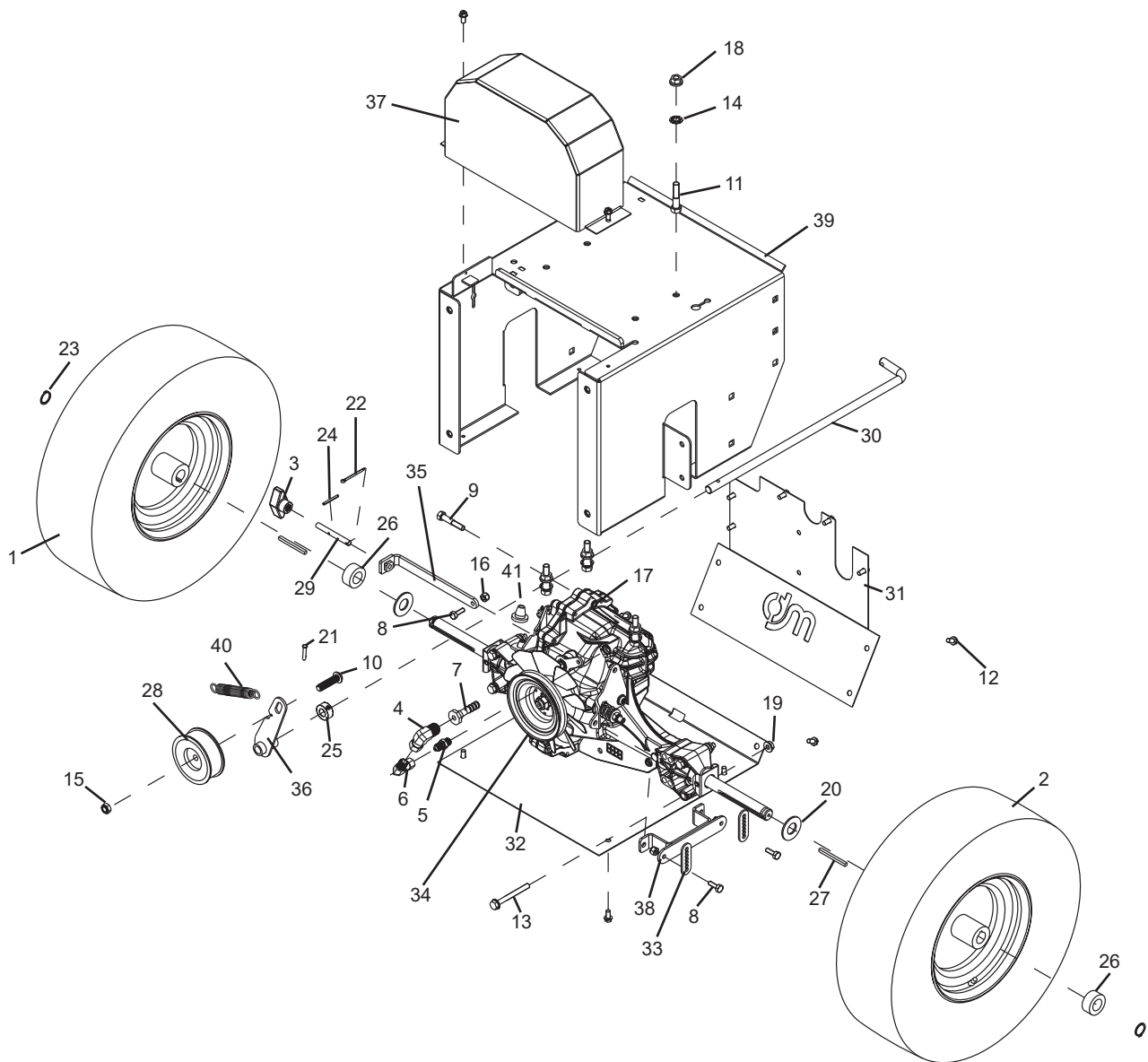
ENGINE BATT



Item	Description	Part Number	Qty
1	Button-Head Cap Screw 3/8-16 x 1-1/2	311-191529	1
2	HHCS .31-18 UNC x 1.000	311-21000	2
3	HHCS 3/8-16 UNC x 1.000	311-31000	2
4	HHCS .31-24 UNF x 1.000	313-21000	3
5	Washer, Flat - 1/4 STD Zinc PL	341-10000	2
6	Washer, Flat - 3/8 STD Zinc PL	341-30000	2
7	Washer, SAE 5/16	343-20000	3
8	Washer, Lock - 5/16 STD Zinc PL	351-20000	3
9	Washer, Lock - 3/8 YLW Zinc PL	351-30000	2
10	Flanged Cap Bolt 1/4-20 x 1 - G5	370-190154	2
11	Set Screw, Allen HD 1/4-20 x .375	370-91161	2
12	Flanged Hex Nut 1/4-20	371-190155	2
13	Locknut, Jam, 3/8-16, G5 YWZC	371-200048	1
14	Nut, Flanged 5/16-18 Plated Locking	371-92059	2
15	Key, Square 1/4" x 2"	386-190440	1
16	Battery Bracket, WB	401-190324	1
17	Pulley, Broom Drive MCD-WB	401-191391	1
18	Belt Finger, Hydra	401-200279	2
19	Pulley, Dual Engine Drive, Cable Control	401-200582	1
20	Plate, Tensioner Mount, MCD-WB	401-200986	1
21	Kohler Engine CH395-3031	500-190181	1
22	Battery, UI	700-190337	1
23	Walk Behind Battery Box	706-190338	1

PARTS LISTS

FRAME & TRANSAXLE



PARTS LISTS

FRAME & TRANSAXLE

Item	Description	Part Number	Qty
1	Tire Assy, Directional RH, Snow Tires, Hydra-WB	100-191098	1
2	Tire Assy, Directional LH, Snow Tires, Hydra-WB	100-191167	1
3	Hand Knob, T2 Bypass Lever	100-191651	1
4	Elbow 90 3/4 JIC W x 9/16 JIC SWFM	211-171860	1
5	STRD ADPT, JICM - 04 x ORBM - 04	211-191668	1
6	Elbow 90, JICM - 06 x JICFSW - 04	211-191669	1
7	CPLG, Push On - 08 x JICFSW - 08	211-191670	1
8	HHCS .25-20 UNC x 0.750	311-10750	3
9	HHCS .31-18 UNC x 1.750	311-21750	1
10	Button HD Cap Screw 3/8-16 x 1-1/2	311-191529	1
11	HHCS 3/8-16 UNC x 1.750	311-31750	4
12	Screw, Self Tapping 1/4-20 x 1/2, .228 Hole	370-163866	15
13	HHCS Serrated Flange, 5/16-18 x 2-3/4" G5 Zinc Plated	370-191145	4
14	Push Nut, 3/8" Screw Size	371-191080	4
15	LOCKNUT, Jam, 3/8-16, G5, YWZC	371-200048	1
16	Nut, Hex, ESNA, 1/4-20 NC	371-81299	3
17	Nut, Hex, ESNA, 5/16-18 UNC	371-81620	1
18	Nut, Hex Flange Locking	371-92057	4
19	Nut, Flanged 5/16-18 Plated Locking	371-92059	4
20	Washer, Thrust 3/4" ID (SAE 841 Impregnated)	372-191398	2
21	Pin, CLEVIS Self-Locking, 3/16" x 1" (0.781" Useable)	380-200047	1
22	Pin, Cotter	380-81380	1
23	Ring, Retaining Wheel Lock	381-191146	2
24	Pin, Spring 1/8" x 1-1/4" Long, Zinc Plated	383-191767	1
25	Shaft Collar, 1/2" ID	401-191122	1
26	Spacer, Wheel	401-191184	2
27	Key, 3/16 Square x 2.25" Long	401-191261	2
28	Pulley, Broom Drive MCD-WB	401-191391	1
29	Rod, Drill Threaded 5/16-18	401-191648	1
30	Rod, Drive Lever	401-191948	1
31	Plate, T2 Middle Cover, MCD-WB	401-191963	1
32	Plate, T2 Tranny Cover, Bottom	401-191964	1
33	Linkage, Speed Adjustment	401-200520	2
34	Transmission, T2 Modified with Welded Gear	501-191696	1

Item	Description	Part Number	Qty
35	Welded Lever, T2 Tranny Bypass	410-191649	1
36	Arm, Idler Support	410-191956	1
37	Belt Cover, Hydra	410-200004	1
38	Bracket Assembly, Speed Control	410-200484	1
39	Frame, Welded, Cable Mount	410-200545	1
40	Spring, Idler	382-200062	1
41	Bushing, Brake Cable Stop	401-200562	1
*	V-Belt A29KC (Drive)	504-200557	

*Not Shown

NOTES

[illegible]

LIMITED WARRANTY

Limited Warranty: Subject to the limitations set forth herein, M-B Companies, Inc. ("M-B") warrants its products to be free from defects in material and workmanship for a period of twelve (12) months from the date of delivery of the product to its original owner, except that the warranty is twelve (12) months solely for the following products: Truck Mounted Pavement Marking Equipment, Airport Snow Removal Products, Attachment Products, Brushes, MSV Multi-Service Vehicles. Parts shall have a ninety (90) day warranty. This warranty is not transferable without the written consent of M-B.

Notice: M-B's obligations under this Limited Warranty are conditioned on M-B receiving, within the warranty period, written notice from Buyer specifying the nature of any alleged defect and requesting corrective action by Seller.

Remedies: M-B, at its option, will repair or replace, or provide a credit to Buyer for, defective warranted items. If requested by M-B, products or parts for which a warranty claim is made shall be returned, transportation prepaid, to M-B's factory. Buyer shall not return any product for repair, replacement or credit without M-B's advance written consent.

Other Manufacturer's Warranty: On products furnished by M-B, but manufactured by any other manufacturer, the warranty of said manufacturer, if any, will be assigned to Buyer, if the said warranty is assignable. However, M-B does not represent or guarantee that such manufacturer will comply with any of the terms of the warranty of such manufacturer.

Exclusions: Any improper use, operation beyond capacity, or substitution of parts not approved by M-B, or alteration or repair by others in such a manner as in M-B's judgment materially and/or adversely affects the product shall void this warranty. This warranty does not apply to defects caused by damage or unreasonable use while in the possession of the owner, including but not limited to: failure to provide reasonable and necessary maintenance, normal wear, routine tune ups or adjustments, improper handling or accidents, operation at speed or load conditions contrary to published specifications, improper or insufficient lubrication, or improper storage.

Seller manufactures power brooms that mount to many makes and models of equipment. Seller attempts to ensure that the mounting frames fit correctly. However, the large number of tractor models, types and options currently available, compounded by frequent manufacturer design changes, may prevent Seller from supplying a frame that fits every unit correctly. Therefore, unless Buyer supplies drawing which detail the attachment points on the specific unit to which the broom will be mounted, Seller will not be responsible for the fit of the mounting frame.

The batteries, tires, rubber material, brushes and material normally consumed in operation, and major components such as engines, air compressors, and hydraulic pumps and motors are excluded from this warranty but may be covered to the extent of any warranty received by M-B from its supplier if permitted by the terms of such warranty.

Limitations of liability: M-B shall not be liable for any incidental, consequential, punitive or special damages of any kind, including, but not limited to, consequential labor costs or transportation charges in connection with the repair or replacement of defective parts, or lost time profits or expense which may have accrued because of said defect.

M-B disclaims all other warranties, whether express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. This warranty is exclusive remedy of buyer. This warranty cannot be extended, broadened or changed in any respect except in writing by an authorized officer of M-B.

Notwithstanding anything in this warranty is to the contrary, in no event shall M-B's total liability hereunder exceed the purchased price of the particular product.

AIRPORT SNOW REMOVAL EQUIPMENT
1200 Park Street
Chilton, WI 53014
800-558-5800

PAVEMENT MARKING EQUIPMENT-PA
79 Montgomery Street
Montgomery, PA 17752
888-323-2900

PAVEMENT MARKING EQUIPMENT-OR
2490 Ewald Avenue SE
Salem, OR 97302
800-253-2909

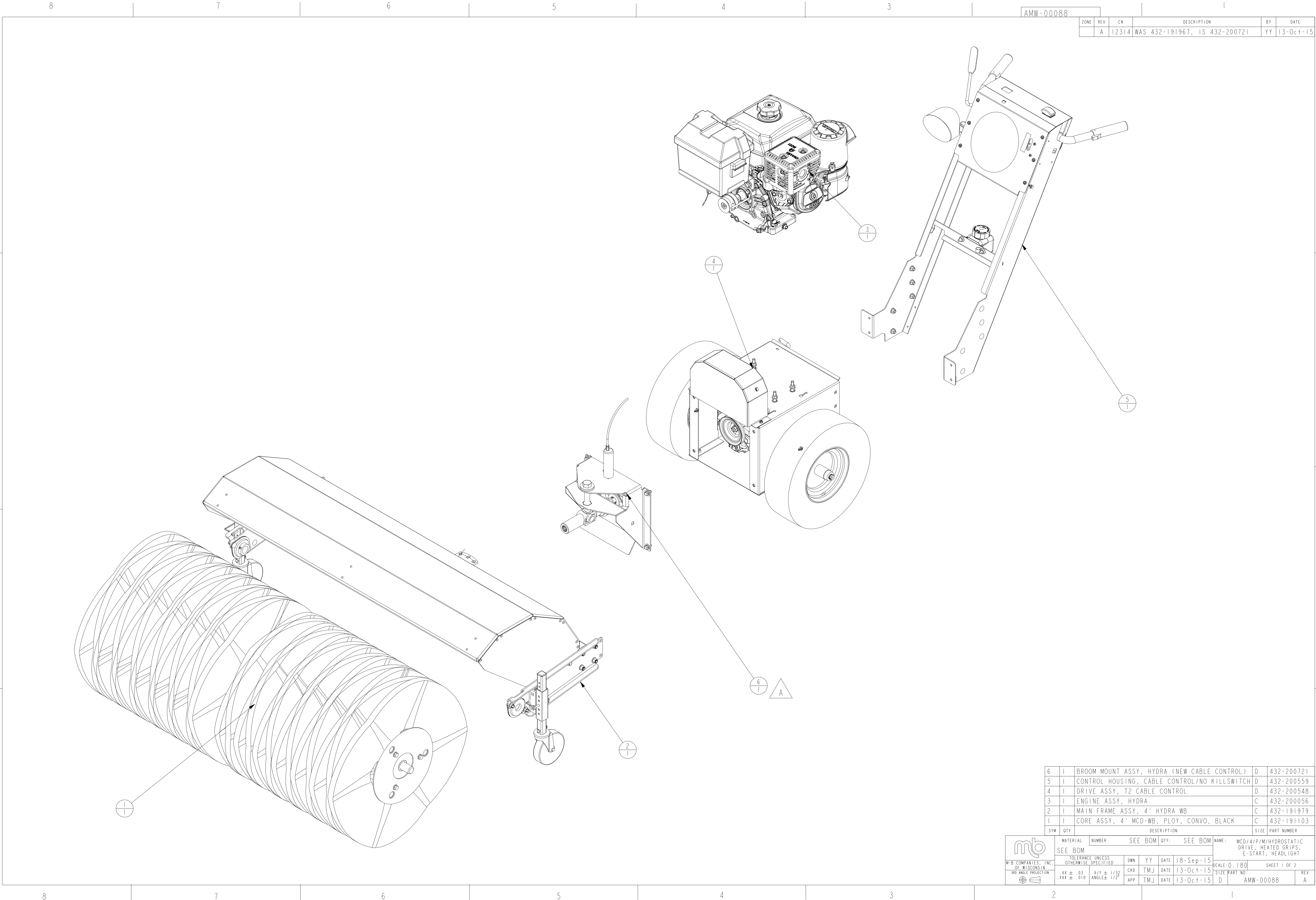
ATTACHMENTS DIVISION
1615 Wisconsin Avenue
New Holstein, WI 53061
800-558-5800



WWW.M-B.CO.COM

M-B Companies, Inc.
1615 Wisconsin Ave.
P. O. Box 200
New Holstein, WI 53061-0200
(920) 898-1560 or 800-558-5800
FAX: (920) 898-4588





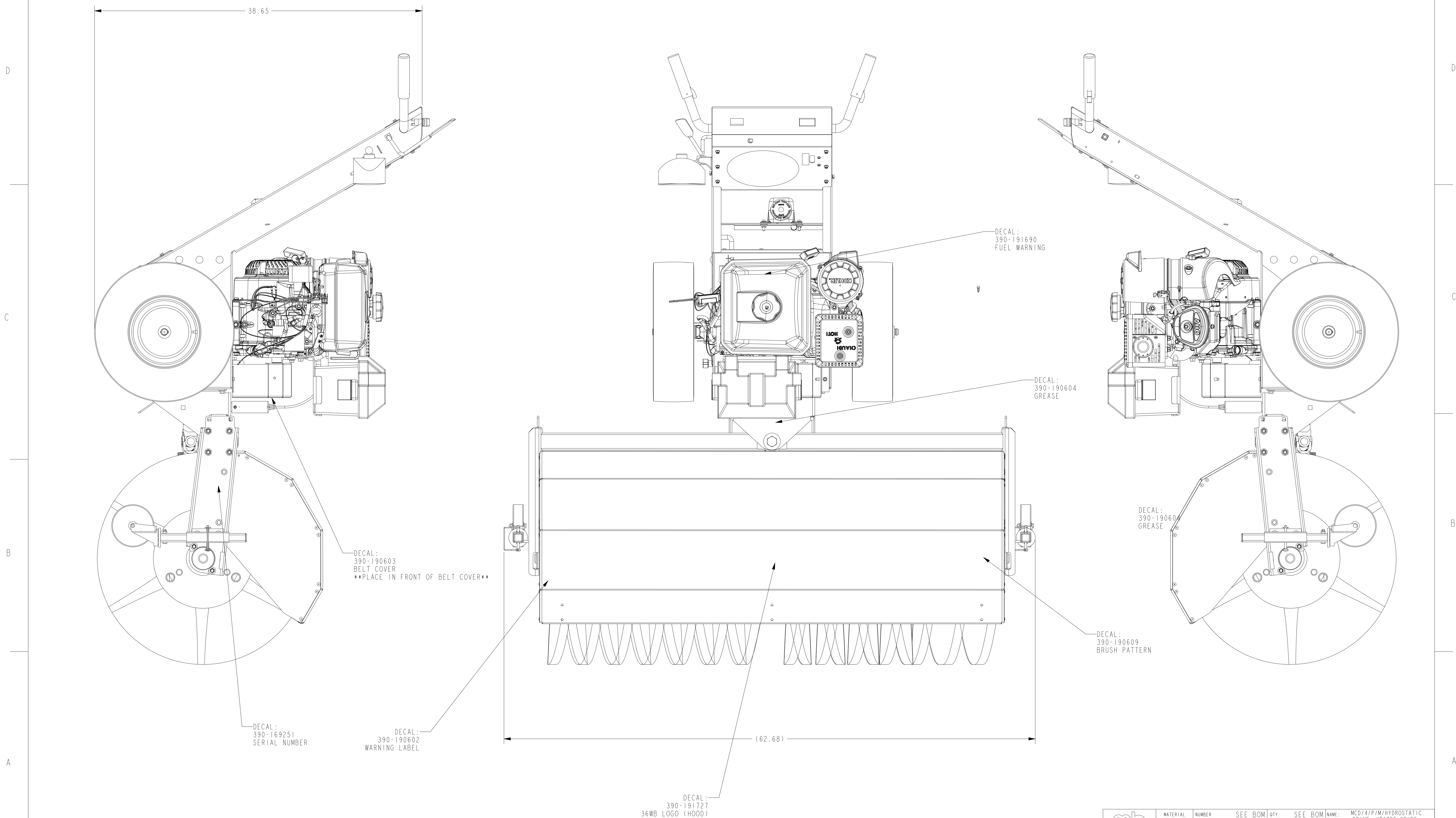
AMW-00088									
ZONE	REV	CN	DESCRIPTION				BY	DATE	
	A	12314	WAS 432-191967, IS 432-200721				YY	13-Oct-15	


6	1	BROOM MOUNT ASSY, HYDRA (NEW CABLE CONTROL)	D	432-200721
5	1	CONTROL HOUSING, CABLE CONTROL/NO KILLSWITCH	D	432-200559
4	1	DRIVE ASSY, T2 CABLE CONTROL	D	432-200548
3	1	ENGINE ASSY, HYDRA	C	432-200056
2	1	MAIN FRAME ASSY, 4' HYDRA WB	C	432-191979
1	1	CORE ASSY, 4' MCD-WB, PLOY, CONVO, BLACK	C	432-191103

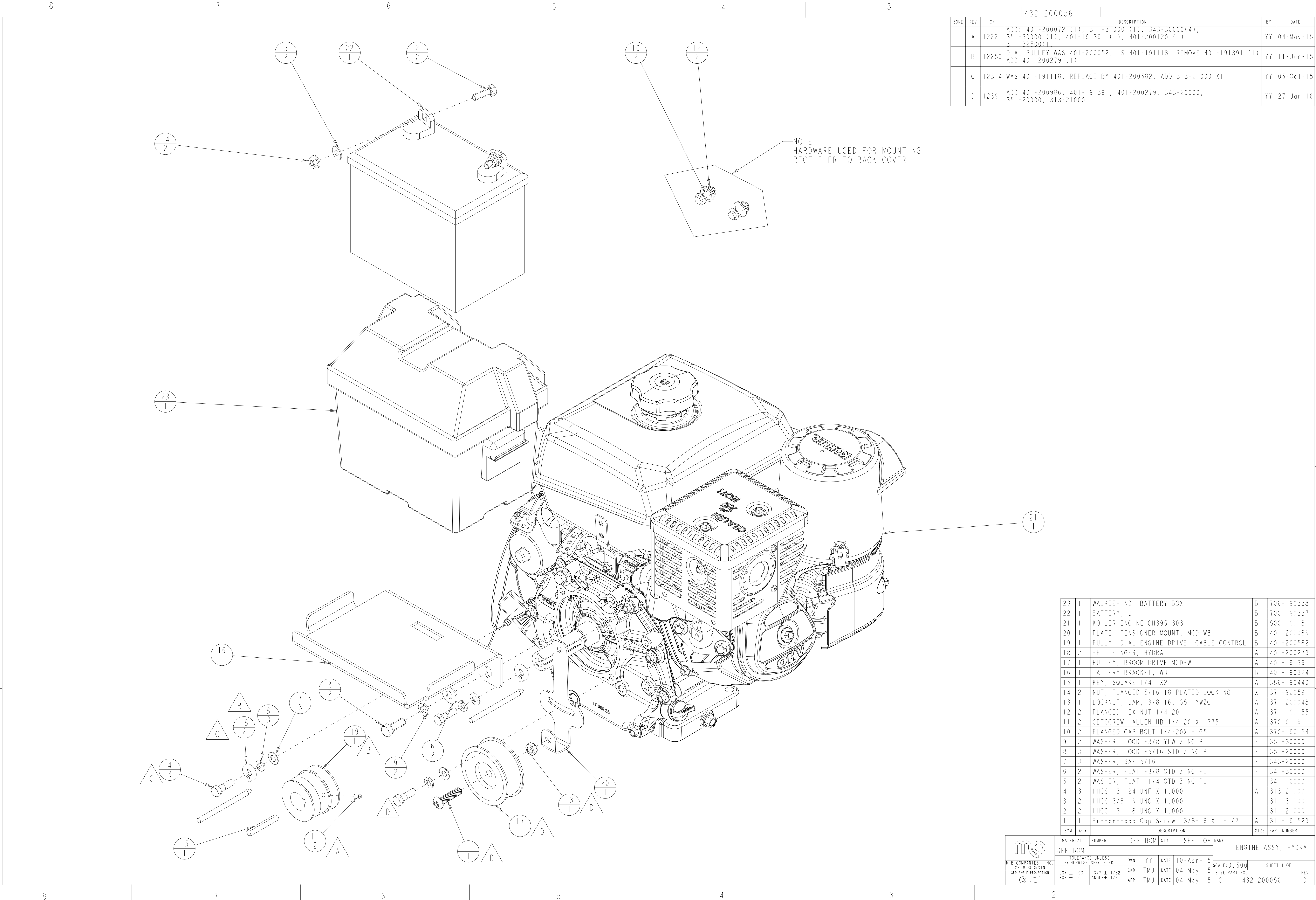
SEE BOM		SEE BOM		SEE BOM		NAME: MCD/4/P/M/HYDROSTATIC DRIVE, HEATED GRIPS, E-START, HEADLIGHT	
TOLERANCE UNLESS OTHERWISE SPECIFIED		DWN	YY	DATE	18-Sep-15	SCALE:0.180	
.XX ± .03		CKD	TMJ	DATE	13-Oct-15	SHEET 1 OF 2	
.XXX ± .010		APP	TMJ	DATE	13-Oct-15	REV	
3RD ANGLE PROJECTION		SIZE PART NO.		D		AMW-00088	
						A	

AMW-00088

ZONE	REV	CN	DESCRIPTION	BY	DATE
	A	12314	WAS 191967, IS 432-200721	YY	13-Oct-15



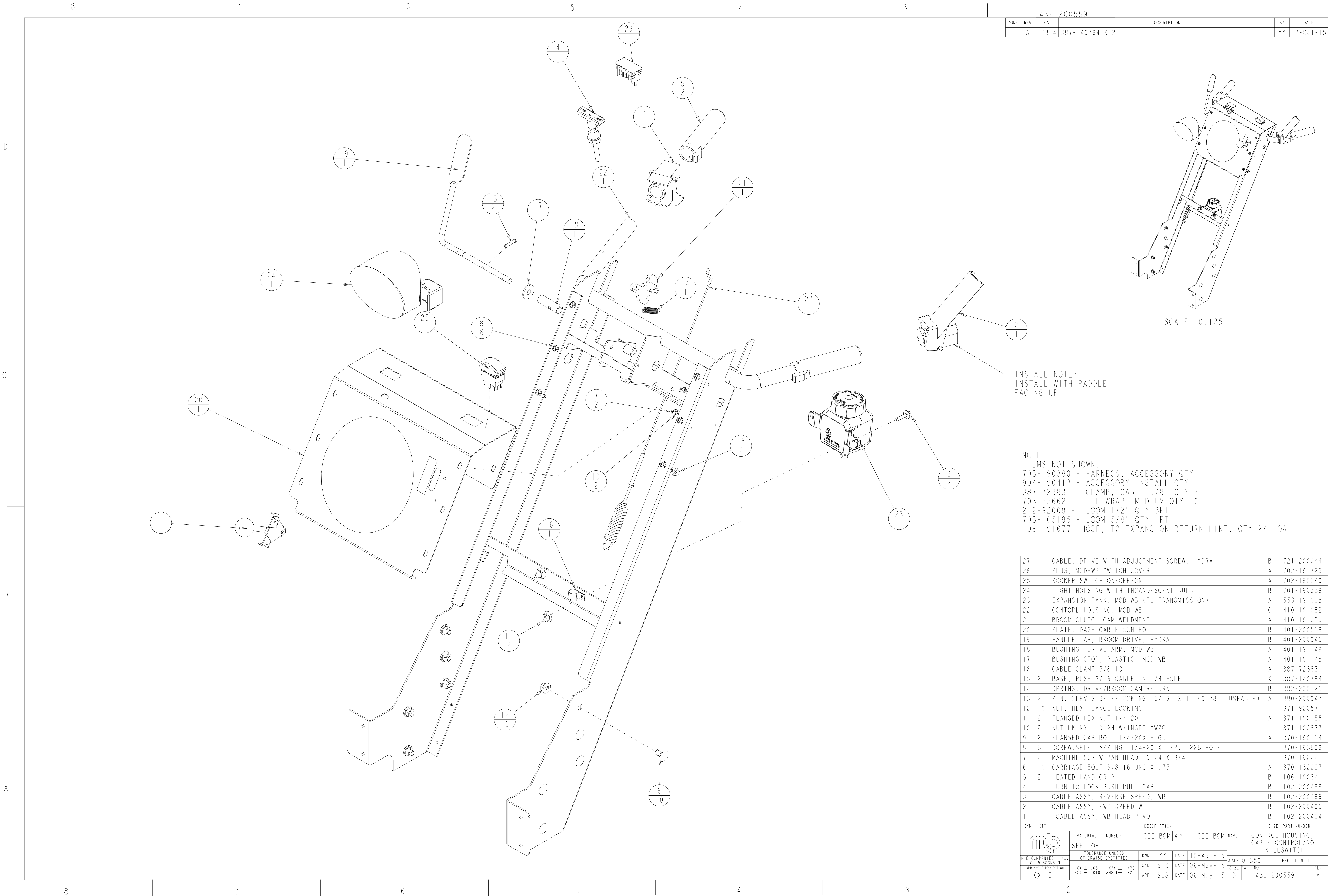
	MATERIAL	NUMBER	SEE BOM	QTY:	SEE BOM	NAME: MCD/4/P/M/HYDROSTATIC DRIVE, HEATED GRIPS. E-STAR, HEADLIGHT	
	SEE BOM						
	TOLERANCE UNLESS OTHERWISE SPECIFIED						
	DWN	YY	DATE	22-Jul-15			
	KCD	TMJ	DATE	13-Oct-15			
	APP	TMJ	DATE	13-Oct-15			
W-B COMPANIES, INC. OF WISCONSIN						SCALE: 0.200	SHEET 2 OF 2
3RD ANGLE PROJECTION						SIZE PART NO.	REV A
						D AMW-00088	



ZONE		REV	CN	DESCRIPTION	BY	DATE
	A	12221		ADD: 401-200072 (1), 311-31000 (1), 343-30000(4), 351-30000 (1), 401-191391 (1), 401-200120 (1) 311-32500(1)	YY	04-May-15
				DUAL PULLEY WAS 401-200052, IS 401-191118, REMOVE 401-191391 (1) ADD 401-200279 (1)	YY	11-Jun-15
	C	12314		WAS 401-191118, REPLACE BY 401-200582, ADD 313-21000 X1	YY	05-Oct-15
	D	12391		ADD 401-200986, 401-191391, 401-200279, 343-20000, 351-20000, 313-21000	YY	27-Jan-16

23	1	WALKBEHIND BATTERY BOX	B	706-190338
22	1	BATTERY, UI	B	700-190337
21	1	KOHLER ENGINE CH395-3031	B	500-190181
20	1	PLATE, TENSIONER MOUNT, MCD-WB	B	401-200986
19	1	PULLEY, DUAL ENGINE DRIVE, CABLE CONTROL	B	401-200582
18	2	BELT FINGER, HYDRA	A	401-200279
17	1	PULLEY, BROOM DRIVE MCD-WB	A	401-191391
16	1	BATTERY BRACKET, WB	B	401-190324
15	1	KEY, SQUARE 1/4" X2"	A	386-190440
14	2	NUT, FLANGED 5/16-18 PLATED LOCKING	X	371-92059
13	1	LOCKNUT, JAM, 3/8-16, G5, YWZC	A	371-200048
12	2	FLANGED HEX NUT 1/4-20	A	371-190155
11	2	SETSCREW, ALLEN HD 1/4-20 X .375	A	370-91161
10	2	FLANGED CAP BOLT 1/4-20X1- G5	A	370-190154
9	2	WASHER, LOCK -3/8 YLW ZINC PL	-	351-30000
8	3	WASHER, LOCK -5/16 STD ZINC PL	-	351-20000
7	3	WASHER, SAE 5/16	-	343-20000
6	2	WASHER, FLAT -3/8 STD ZINC PL	-	341-30000
5	2	WASHER, FLAT -1/4 STD ZINC PL	-	341-10000
4	3	HHCS .31-24 UNF X 1.000	A	313-21000
3	2	HHCS 3/8-16 UNC X 1.000	-	311-31000
2	2	HHCS .31-18 UNC X 1.000	-	311-21000
1	1	Button-Head Cap Screw, 3/8-16 X 1-1/2	A	311-191529

SYM		QTY	DESCRIPTION		SIZE	PART NUMBER
SEE BOM		NUMBER	SEE BOM	QTY:	SEE BOM	NAME:
TOLERANCE UNLESS OTHERWISE SPECIFIED		DWN	YY	DATE	10-Apr-15	ENGINE ASSY, HYDRA
.XX ± .03		CKD	TMJ	DATE	04-May-15	SCALE:0.500
.XXX ± .010		APP	TMJ	DATE	04-May-15	SHEET 1 OF 1
3RD ANGLE PROJECTION						SIZE PART NO.
						432-200056
						REV
						D

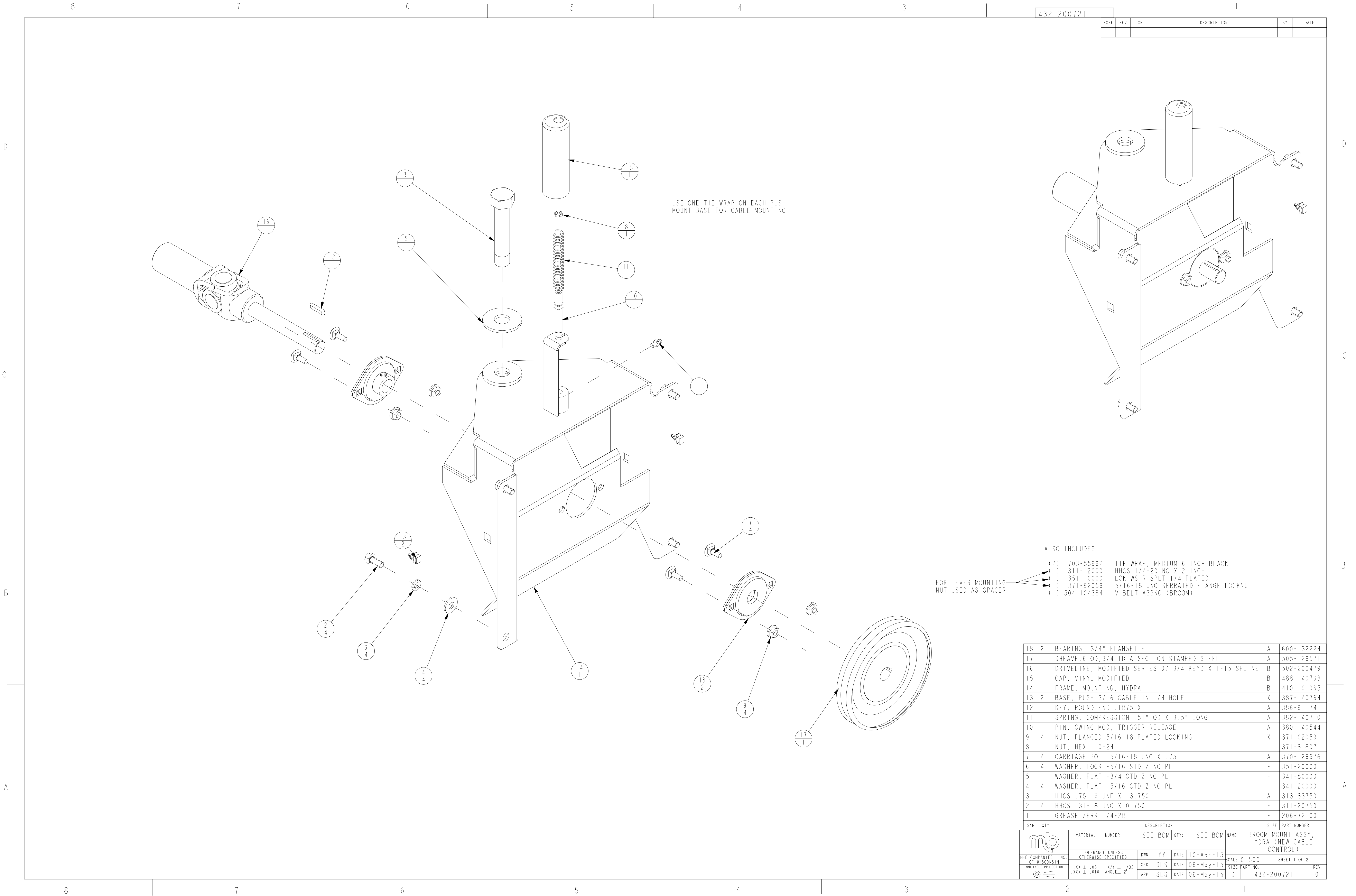


		432-200559			
ZONE	REV	CN	DESCRIPTION	BY	DATE
	A	12314	387-140764 X 2	YY	12-Oct-15

NOTE:
ITEMS NOT SHOWN:
703-190380 - HARNESS, ACCESSORY QTY 1
904-190413 - ACCESSORY INSTALL QTY 1
387-72383 - CLAMP, CABLE 5/8" QTY 2
703-55662 - TIE WRAP, MEDIUM QTY 10
212-92009 - LOOM 1/2" QTY 3FT
703-105195 - LOOM 5/8" QTY 1FT
106-191677- HOSE, T2 EXPANSION RETURN LINE, QTY 24" OAL

27	1	CABLE, DRIVE WITH ADJUSTMENT SCREW, HYDRA	B	721-200044
26	1	PLUG, MCD-WB SWITCH COVER	A	702-191729
25	1	ROCKER SWITCH ON-OFF-ON	A	702-190340
24	1	LIGHT HOUSING WITH INCANDESCENT BULB	B	701-190339
23	1	EXPANSION TANK, MCD-WB (T2 TRANSMISSION)	A	553-191068
22	1	CONTORL HOUSING, MCD-WB	C	410-191982
21	1	BROOM CLUTCH CAM WELDMENT	A	401-191959
20	1	PLATE, DASH CABLE CONTROL	B	401-200558
19	1	HANDLE BAR, BROOM DRIVE, HYDRA	B	401-200045
18	1	BUSHING, DRIVE ARM, MCD-WB	A	401-191149
17	1	BUSHING STOP, PLASTIC, MCD-WB	A	401-191148
16	1	CABLE CLAMP 5/8 ID	A	387-72383
15	2	BASE, PUSH 3/16 CABLE IN 1/4 HOLE	X	387-140764
14	1	SPRING, DRIVE/BROOM CAM RETURN	B	382-200125
13	2	PIN, CLEVIS SELF-LOCKING, 3/16" X 1" (0.781" USEABLE)	A	380-200047
12	10	NUT, HEX FLANGE LOCKING	-	371-92057
11	2	FLANGED HEX NUT 1/4-20	A	371-190155
10	2	NUT-LK-NYL 10-24 W/INSRT YWZC	-	371-102837
9	2	FLANGED CAP BOLT 1/4-20X1- G5	A	370-190154
8	8	SCREW,SELF TAPPING 1/4-20 X 1/2, .228 HOLE		370-163866
7	2	MACHINE SCREW-PAN HEAD 10-24 X 3/4		370-162221
6	10	CARRIAGE BOLT 3/8-16 UNC X .75	A	370-132227
5	2	HEATED HAND GRIP	B	106-190341
4	1	TURN TO LOCK PUSH PULL CABLE	B	102-200468
3	1	CABLE ASSY, REVERSE SPEED, WB	B	102-200466
2	1	CABLE ASSY, FWD SPEED WB	B	102-200465
1	1	CABLE ASSY, WB HEAD PIVOT	B	102-200464

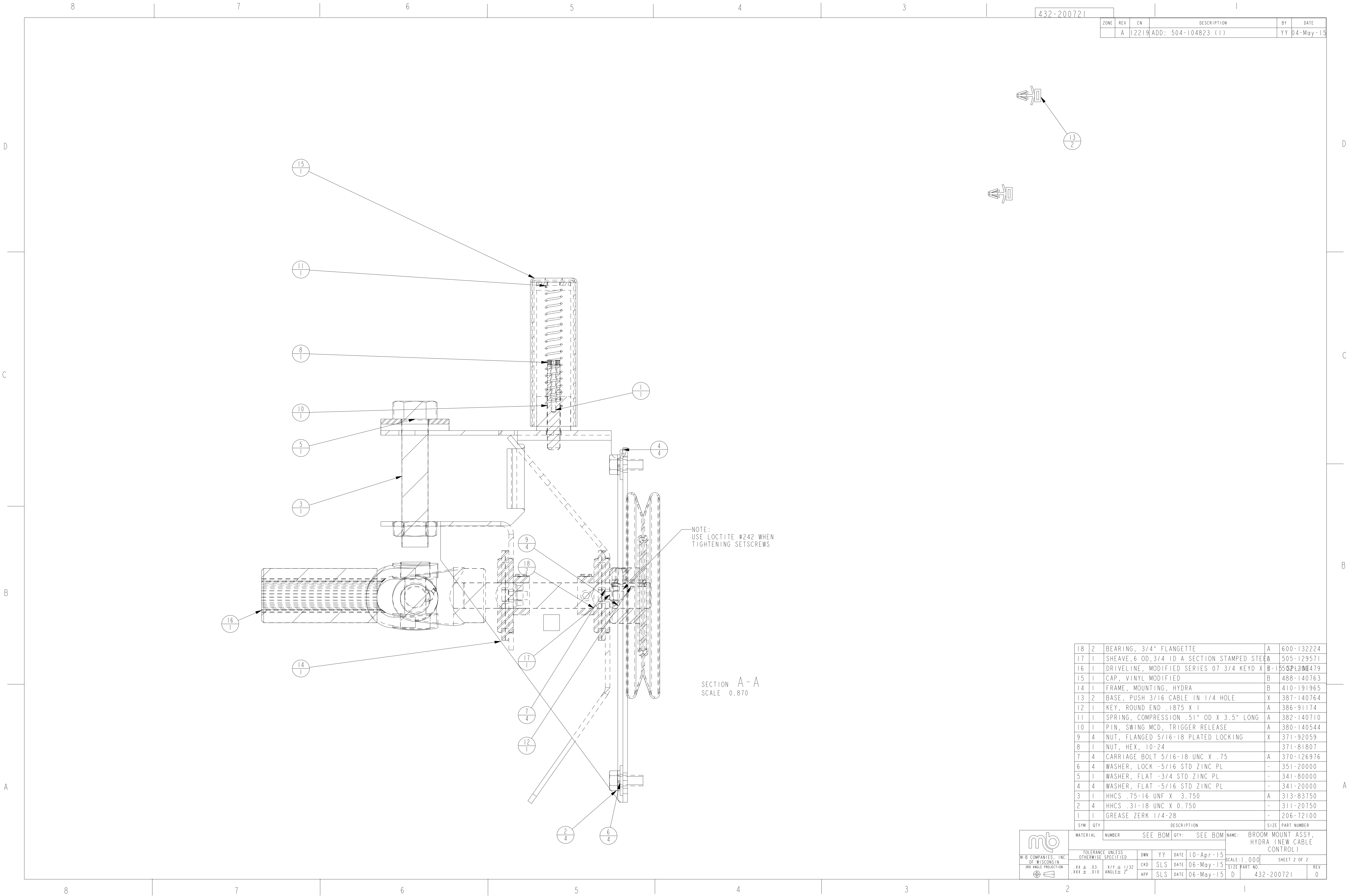
SYM		QTY	DESCRIPTION		SIZE	PART NUMBER
mb			MATERIAL	NUMBER	SEE BOM	QTY: SEE BOM
			TOLERANCE UNLESS OTHERWISE SPECIFIED		DWN	YY
			DATE		DATE	10-Apr-15
			3RD ANGLE PROJECTION		CKD	SLS
			.XX ± .03		DATE	06-May-15
			.XXX ± .010		APP	SLS
			X/Y ± 1/32		DATE	06-May-15
			ANGLE ± 1/2°			
			NAME: CONTROL HOUSING, CABLE CONTROL/NO KILLSWITCH		SCALE:0,350	SHEET 1 OF 1
			SIZE PART NO.		D	432-200559
					REV	A



432-200721		1	
ZONE	REV	CN	DESCRIPTION
			BY
			DATE

18	2	BEARING, 3/4" FLANGETTE	A	600-132224
17	1	SHEAVE, 6 OD, 3/4 ID A SECTION STAMPED STEEL	A	505-129571
16	1	DRIVELINE, MODIFIED SERIES 07 3/4 KEYD X 1-15 SPLINE	B	502-200479
15	1	CAP, VINYL MODIFIED	B	488-140763
14	1	FRAME, MOUNTING, HYDRA	B	410-191965
13	2	BASE, PUSH 3/16 CABLE IN 1/4 HOLE	X	387-140764
12	1	KEY, ROUND END .1875 X 1	A	386-91174
11	1	SPRING, COMPRESSION .51" OD X 3.5" LONG	A	382-140710
10	1	PIN, SWING MCD, TRIGGER RELEASE	A	380-140544
9	4	NUT, FLANGED 5/16-18 PLATED LOCKING	X	371-92059
8	1	NUT, HEX, 10-24		371-81807
7	4	CARRIAGE BOLT 5/16-18 UNC X .75	A	370-126976
6	4	WASHER, LOCK -5/16 STD ZINC PL	-	351-20000
5	1	WASHER, FLAT -3/4 STD ZINC PL	-	341-80000
4	4	WASHER, FLAT -5/16 STD ZINC PL	-	341-20000
3	1	HHCS .75-16 UNF X 3.750	A	313-83750
2	4	HHCS .31-18 UNC X 0.750	-	311-20750
1	1	GREASE ZERK 1/4-28	-	206-72100

SYM QTY		DESCRIPTION		SIZE	PART NUMBER
M-B		MATERIAL	NUMBER	SEE BOM	QTY: SEE BOM
TOLERANCE UNLESS OTHERWISE SPECIFIED		DWN	YY	DATE	10-Apr-15
.XX ± .03		CKD	SLS	DATE	06-May-15
.XXX ± .010		APP	SLS	DATE	06-May-15
3RD ANGLE PROJECTION		NAME: BROOM MOUNT ASSY, HYDRA (NEW CABLE CONTROL)		SCALE: 0.500	SHEET 1 OF 2
		D		432-200721	REV 0



432-200721



ZONE	REV	CN	DESCRIPTION	BY	DATE
	A	12219	ADD: 504-104823 (1)	YY	04-May-15

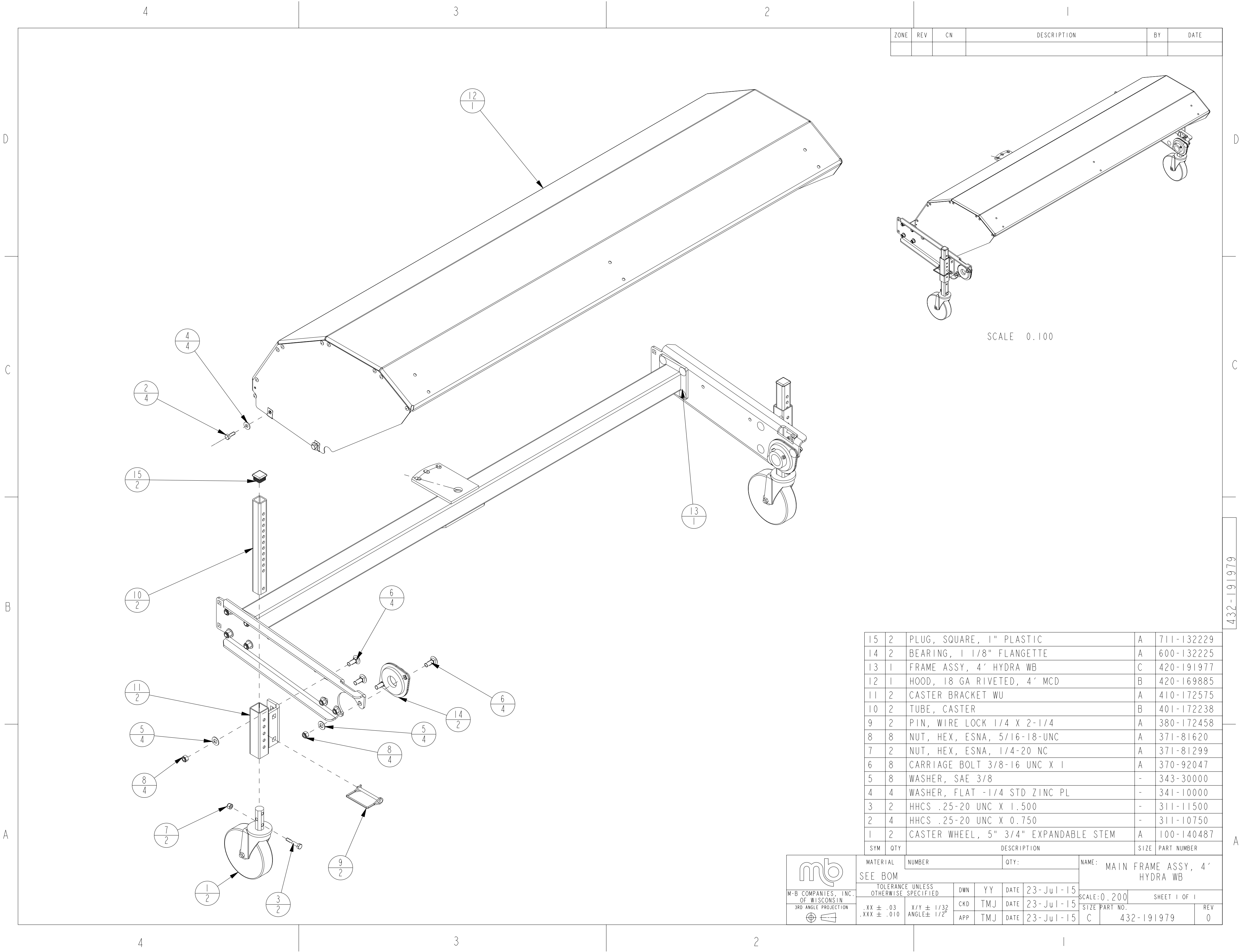
13
2

NOTE:
USE LOCTITE #242 WHEN
TIGHTENING SETSCREWS

SECTION A-A
SCALE 0.870

18	2	BEARING, 3/4" FLANGETTE	A	600-132224
17	1	SHEAVE, 6 OD, 3/4 ID A SECTION STAMPED STEEL	A	505-129571
16	1	DRIVELINE, MODIFIED SERIES 07 3/4 KEYD X 1 1/2	B-1	558-120479
15	1	CAP, VINYL MODIFIED	B	488-140763
14	1	FRAME, MOUNTING, HYDRA	B	410-191965
13	2	BASE, PUSH 3/16 CABLE IN 1/4 HOLE	X	387-140764
12	1	KEY, ROUND END .1875 X 1	A	386-91174
11	1	SPRING, COMPRESSION .51" OD X 3.5" LONG	A	382-140710
10	1	PIN, SWING MCD, TRIGGER RELEASE	A	380-140544
9	4	NUT, FLANGED 5/16-18 PLATED LOCKING	X	371-92059
8	1	NUT, HEX, 10-24		371-81807
7	4	CARRIAGE BOLT 5/16-18 UNC X .75	A	370-126976
6	4	WASHER, LOCK -5/16 STD ZINC PL	-	351-20000
5	1	WASHER, FLAT -3/4 STD ZINC PL	-	341-80000
4	4	WASHER, FLAT -5/16 STD ZINC PL	-	341-20000
3	1	HHCS .75-16 UNF X 3.750	A	313-83750
2	4	HHCS .31-18 UNC X 0.750	-	311-20750
1	1	GREASE ZERK 1/4-28	-	206-72100

 M-B COMPANIES, INC. OF WISCONSIN 3RD ANGLE PROJECTION 	MATERIAL		NUMBER		SEE BOM		QTY:	SEE BOM		NAME: BROOM MOUNT ASSY, HYDRA (NEW CABLE CONTROL)	
	TOLERANCE UNLESS OTHERWISE SPECIFIED			DWN	YY	DATE		10-Apr-15		SCALE: 1.000	
	.XX ± .03 XXX ± .010			CKD	SLS	DATE		06-May-15		SHEET 2 OF 2	
	ANGLE ± 1/2°			APP	SLS	DATE		06-May-15		SIZE PART NO. D 432-200721	
										REV 0	

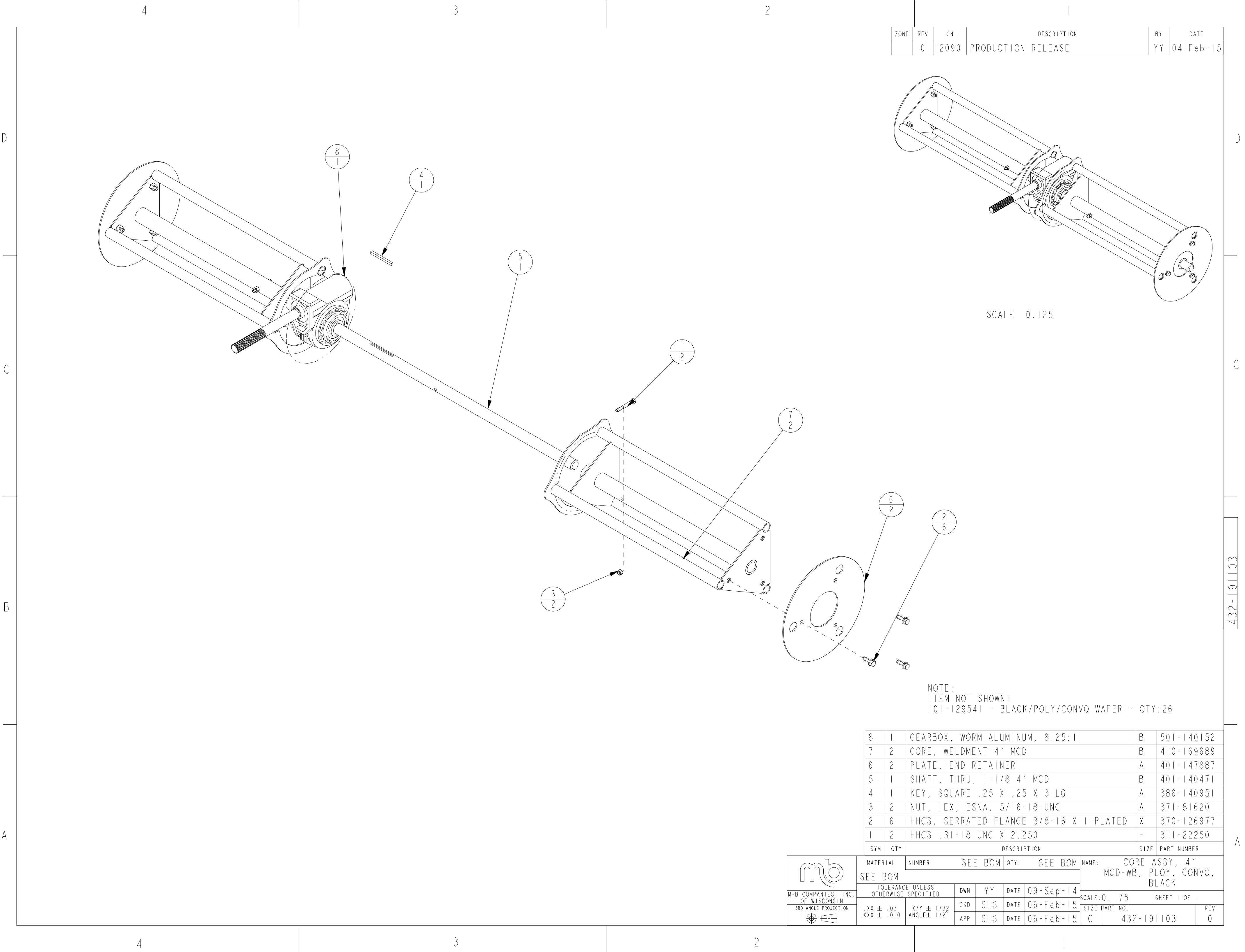


ZONE	REV	CN	DESCRIPTION	BY	DATE

SCALE 0.100

15	2	PLUG, SQUARE, 1" PLASTIC	A	711-132229
14	2	BEARING, 1 1/8" FLANGETTE	A	600-132225
13	1	FRAME ASSY, 4' HYDRA WB	C	420-191977
12	1	HOOD, 18 GA RIVETED, 4' MCD	B	420-169885
11	2	CASTER BRACKET WU	A	410-172575
10	2	TUBE, CASTER	B	401-172238
9	2	PIN, WIRE LOCK 1/4 X 2-1/4	A	380-172458
8	8	NUT, HEX, ESNA, 5/16-18-UNC	A	371-81620
7	2	NUT, HEX, ESNA, 1/4-20 NC	A	371-81299
6	8	CARRIAGE BOLT 3/8-16 UNC X 1	A	370-92047
5	8	WASHER, SAE 3/8	-	343-30000
4	4	WASHER, FLAT -1/4 STD ZINC PL	-	341-10000
3	2	HHCS .25-20 UNC X 1.500	-	311-11500
2	4	HHCS .25-20 UNC X 0.750	-	311-10750
1	2	CASTER WHEEL, 5" 3/4" EXPANDABLE STEM	A	100-140487
SYM	QTY	DESCRIPTION	SIZE	PART NUMBER

<div><div>mb</div><div>M-B COMPANIES, INC. OF WISCONSIN</div><div>3RD ANGLE PROJECTION</div></div>	MATERIAL		NUMBER		QTY:		NAME: MAIN FRAME ASSY, 4' HYDRA WB		
	SEE BOM								
	TOLERANCE UNLESS OTHERWISE SPECIFIED		DWN	YY	DATE	23-Jul-15			
	.XX ± .03		X/Y ± 1/32	CKD	TMJ	DATE	23-Jul-15		
	.XXX ± .010		ANGLE ± 1/2°	APP	TMJ	DATE	23-Jul-15		
SCALE: 0.200		SHEET 1 OF 1			SIZE PART NO.		REV		
C		432-191979					0		



ZONE	REV	CN	DESCRIPTION	BY	DATE
	0	12090	PRODUCTION RELEASE	YY	04-Feb-15

SCALE 0.125

NOTE:
ITEM NOT SHOWN:
101-129541 - BLACK/POLY/CONVO WAFER - QTY:26

8	1	GEARBOX, WORM ALUMINUM, 8.25:1	B	501-140152
7	2	CORE, WELDMENT 4' MCD	B	410-169689
6	2	PLATE, END RETAINER	A	401-147887
5	1	SHAFT, THRU, 1-1/8 4' MCD	B	401-140471
4	1	KEY, SQUARE .25 X .25 X 3 LG	A	386-140951
3	2	NUT, HEX, ESNA, 5/16-18-UNC	A	371-81620
2	6	HHCS, SERRATED FLANGE 3/8-16 X 1 PLATED	X	370-126977
1	2	HHCS .31-18 UNC X 2.250	-	311-22250
SYM QTY		DESCRIPTION	SIZE	PART NUMBER

<div><div>mb</div><div>M-B COMPANIES, INC. OF WISCONSIN</div><div>3RD ANGLE PROJECTION</div></div>	MATERIAL		NUMBER		SEE BOM		QTY:		SEE BOM		NAME: CORE ASSY, 4'				
	SEE BOM										MCD-WB, PLOY, CONVO, BLACK				
	TOLERANCE UNLESS OTHERWISE SPECIFIED				DWN	YY	DATE	09-Sep-14							
	.XX ± .03				CKD	SLS	DATE	06-Feb-15							
	.XXX ± .010				APP	SLS	DATE	06-Feb-15							
	X/Y ± 1/32 ANGLE ± 1/2°				SCALE:0.175								SHEET 1 OF 1		
					SIZE PART NO.								C 432-191103		REV 0