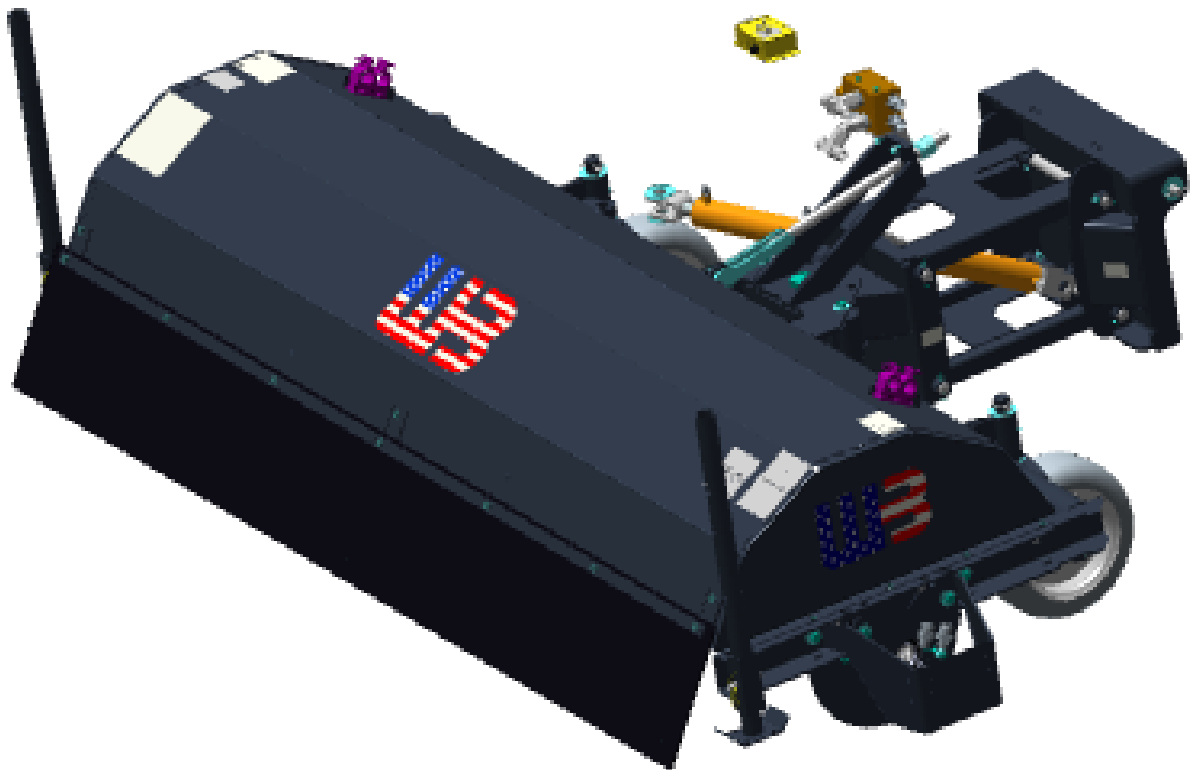


# OPERATOR'S MANUAL

Model WHLP

Hydraulic Loader Broom



AHA-01971 WHLP



WB© WERK-BRAU CO., INC.  
FINDLAY, OH USA  
1-800-537-9561  
MANUFACTURED BY M-B COMPANIES, INC.  
NEW HOLSTEIN, WI USA  
1-800-558-5800



<b>INTRODUCTION</b>	
General .....	2
Operator's Manual .....	2
Identification Numbers .....	2
<b>SAFETY</b>	
Safety Alerts .....	3
Safety Decals .....	3
Pre-Start Guidelines .....	3
Operation Guidelines .....	3
Maintenance Guidelines .....	4
<b>SETUP AND ADJUSTMENTS</b>	
Setup .....	5
Mounting .....	5
Leveling .....	5
Pattern Adjustment .....	5
<b>OPERATION</b>	
Pre-Startup Checks .....	6
Travel Procedure .....	6
Operation .....	6
<b>MAINTENANCE</b>	
Maintenance Schedule .....	7
Lubrication .....	7
Filler Replacement .....	7
Core Removal .....	7
Brush Removal .....	7
Brush Installation .....	8
Core Installation .....	8
<b>STORAGE</b> .....	<b>9</b>
<b>TROUBLESHOOTING</b> .....	<b>10</b>
<b>NOTES</b> .....	<b>12</b>
<b>WARRANTY</b> .....	<b>13</b>
<b>BRUSH REFILL KITS</b> .....	<b>14</b>
<b>PARTS BREAKDOWNS CAN BE FOUND IN THE BACK OF THIS MANUAL</b>	

# INTRODUCTION

## GENERAL

The WHL Model brooms are hydraulically-driven. A quick hitch is used to connect to the prime mover.

## 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 power broom.

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 unit.

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

Model Name/Number:	
Date Purchased:	Serial #:

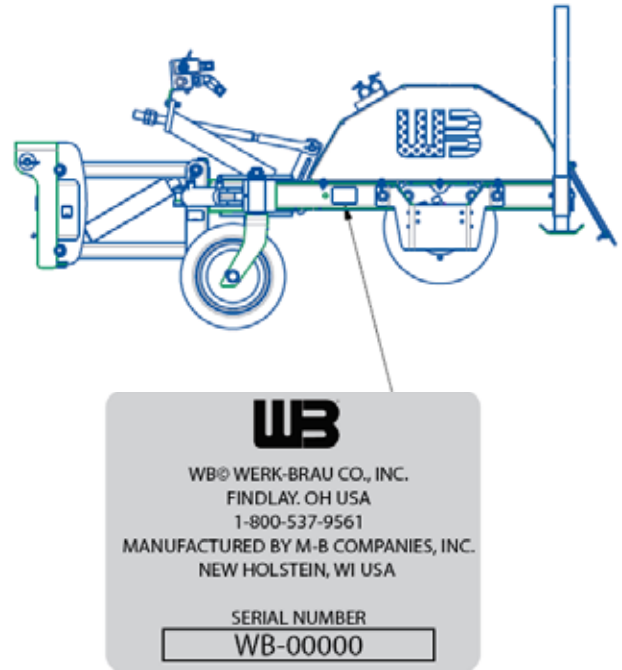


Figure 1

# 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.



Indicates a hazardous situation or unsafe practice which, if not

## 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.

# SAFETY

## SAFETY ALERTS

Signal words and alert symbols notify of important safety precautions.

## 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.



## ⚠ CAUTION

Read Operator's Manual before using broom. If operating instructions are missing, contact the M-B Co. for your free replacement.

- Before operating broom make sure all guards and broom are installed properly.
- Wear eye protection when operating broom.
- Do not operate broom near any objects that can be damaged by thrown debris. Be sure no by-standers are near broom during operation.
- The polypropylene brush segments can melt or burn. Do not subject to excessive heat or flame.
- Do not allow riders on broom.
- Stop power source, lower broom to the ground, set parking brake, and remove ignition key before servicing or adjusting.
- Do not operate broom on any roof or other elevated surface.

## 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.

# SETUP AND ADJUSTMENTS

## SETUP

Proper setup and leveling of your power broom will increase the life of the brush and produces more efficient movement of material. Visually inspect the adjustments on the broom before each operating session and measure the adjustments once every 10 hours.

The following procedures must be followed in the prescribed order in order to be effective.

Once the broom has been properly adjusted, a short operation period is recommended for break-in; approximately 15 minutes. After this break-in period repeat the leveling procedure to ensure that it is correct. Mounting instructions can be found in the prime mover instruction manual.

## LEVELING

1. After the broom is mounted to the tractor, loader, mower, or skid-steer, park the unit on a flat level surface; preferably concrete or asphalt.
2. If mounting to a skid-steer, lower the arms all the way down and tilt the quick-attach all the way back.

If mounting to a loader, tilt the bucket cylinders all the way back and lower the arms until the horizontal mounting shaft is 18" from the ground. If there is a way to set this location on the loader hydraulics, do so at this time.

If mounting to a mower, set the down limit location so that the horizontal mounting shaft is as close to 18" as it can be. Because of the constrained spaces on some mowers it may be necessary that the shaft is higher or lower.

- NOTE: Occasionally the horizontal mounting shaft is replaced by pins or bolts based on mounting.
3. Swing the broom so that it is horizontal and tighten the pattern adjustment jam nuts. (See Figure 3.)
  4. Adjust the swing frame so that it is level by adjusting the bolts in or out on the back of the swing frame. (Refer to Figure 2). Adjust both bolts evenly to maintain an even load on the mounting frame and the arms. Check to see that the frame is level by placing a small torpedo level vertically on the swing frame or horizontally on the pivot frame.
  5. Recheck for level after any other adjustments, including pattern adjustment. If the broom is still level continue to Pattern Adjustment. If not, re-start the process of leveling.

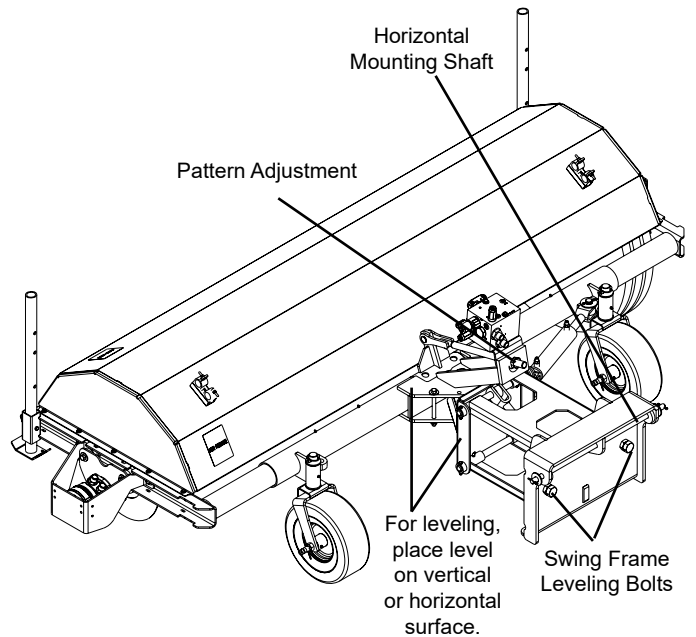


Figure 2

## PATTERN ADJUSTMENT

1. After the broom has been leveled, the last adjustment is to set the brush pattern. This adjustment is located at the top of the broom. (Refer to Figure 3)
2. With the unit set-up on a flat level surface adjust the nuts on the top of the anchor so that the broom pattern has approximately 3" of contact from the front-most contact point to the rear-most contact point. Loosening the nuts will create more pattern.
3. Once this adjustment is set, it can be confirmed by running the unit for about 30 seconds in the down position while stationary. Stop the broom and back the unit away. The 'cleaned' portion of the surface should be 2" - 4".
4. Tighten the two pattern adjustment nuts against each other to lock.

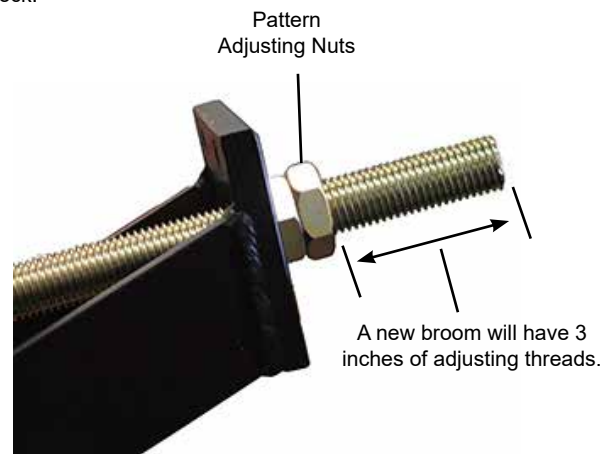


Figure 3

# OPERATION

## PRE-STARTUP CHECKS

### IMPORTANT!

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

1. Visually inspect equipment and hardware to ensure that all parts are secure and all hardware is tightened and secure.
2. Check for oil leaks and loose hose connections.
3. Inspect the broom adjustments to ensure that the broom is level and that there is proper brush pattern. Refer to the **Setup and Adjustment** section.
4. Inspect the bristle length to determine if replacement segments are needed.

## TRAVEL PROCEDURE

Follow these instructions for extended travel (i.e. to and from the sweeping site):

- Move the broom switch to the Off position.
- Move the lift toggle to the up position until the brush is in the fully raised position.
- Raise the support stands to the highest position and secure in place.

## OPERATION

### IMPORTANT!

The support stands should never be used for anything other than as stationary storage stands to hold the broom up while it is being stored.

- Ensure the support stands are raised to the highest position and secured in place.
- Sweep at a speed that is appropriate for the conditions and location.
- For heavy material such as gravel or stones, drive more slowly with a higher broom speed. For lighter material, drive faster with a lower broom speed.
- It may be necessary to increase broom contact pattern under some conditions. If the surface being swept is uneven and causes the broom to leave upswept patches, increase the pattern size to compensate.
- If the material being swept is dried-on or difficult to remove, such as mud or ice, it may be necessary to drive extremely slow to allow the broom to "scrub" the surface.



# MAINTENANCE

## MAINTENANCE SCHEDULE

- Check adjustments – every 10 hours
- Grease bearings – after initial 10 hours, then every 200 - 300 hours thereafter.
- Grease pivot points – every 50 hours

NOTE: Grease points are noted with an applicable decal.



## LUBRICATION

- Grease bearings and pivot points per the MAINTENANCE SCHEDULE using Chevron Ultra Duty II, Grade 2; or equivalent high-temp grease.
- There are minimum of (7) grease points on the unit; (4) at the swing frame tubes, (1) on the swing frame pivot point and (2) on the brush end bearings.

## FILLER REPLACEMENT

### Core Removal

1. Lower broom until brush contacts the ground.

NOTE: Steps 2 and 3 apply to each brush drive motor.

2. Remove (2) 1/2-13 x 1-1/2" capscrews, flat washers, lock nuts and motor guard from brush frame. Retain guard and mounting hardware. See Figure 5.

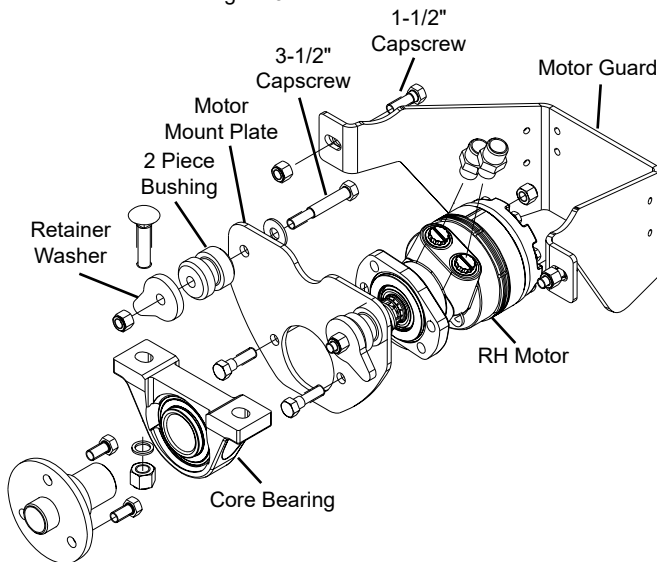


Figure 4

3. Remove (2) 1/2-13 x 3-1/2" capscrews, flat washers, retainer washers and lock nuts from the brush frame. Slide motor and motor mount plate out of mating splined hub. Let motor hang on hoses. Retain mounting hardware. See Figure 5. Remove (2) 5/8-11 x 2" carriage bolts and lock nuts attaching core support bearing to bottom of brush frame at each end of broom. See Figure 5.
4. Raise the hood and slide core out the front of the broom.

NOTE: The 2 piece bushing can stay in place. This bushing provides a vibration mount for the motor. To remove the bushing pull the two halves apart.

### Brush Removal

1. Remove support bearing from the hub on one end of core.
2. Remove (3) 1/2-13 x 1" capscrews, lock washers and splined hub from one end of core. Retain hub and mounting hardware. See Figure 6.

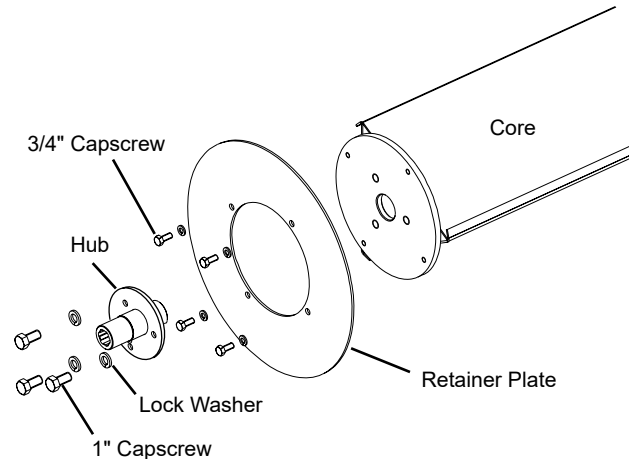


Figure 5

3. Remove (4) 5/16-18 x 3/4" capscrews, lock washers and end disc (wafer retainer plate) from one end of core. Retain end disc and mounting hardware. See Figure 6.
4. Slide spent brush wafers and spacers off core and discard.

# MAINTENANCE

## Brush Installation

1. Stand core in upright position and begin filling by sliding a poly brush wafer and then a spacer down the full length of the core.
2. Note the location of the drive pin on the inside ring of each brush wafer. Position each wafer so its drive pin is positioned between the stop flanges. Rotate each subsequent wafer before installing so the position of its pin is staggered on the core by one stop flange. See Figure 7.

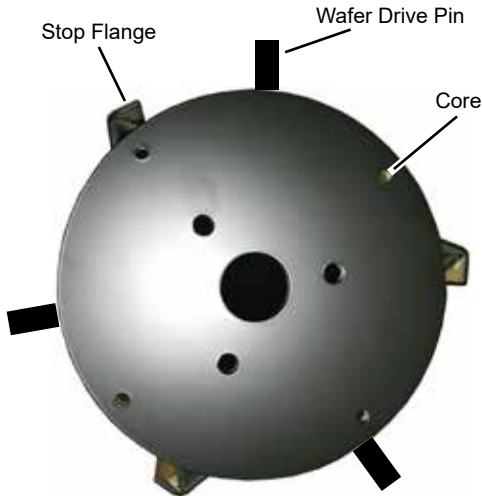


Figure 6

**IMPORTANT!** Proper wafer and spacer position must be followed to ensure proper balance on the core.

**NOTE:** The circular spacers have unconnected, overlapped ends.

3. Position the overlap of the first spacer between the stop flanges, rotated one flange ahead of the drive pin location of the last installed brush wafer. All following spacers must follow the same staggered placement pattern.

**NOTE:** Brush surface contact during initial operation will set all wafer drive pins up against the core stop flanges. See Figure 8.

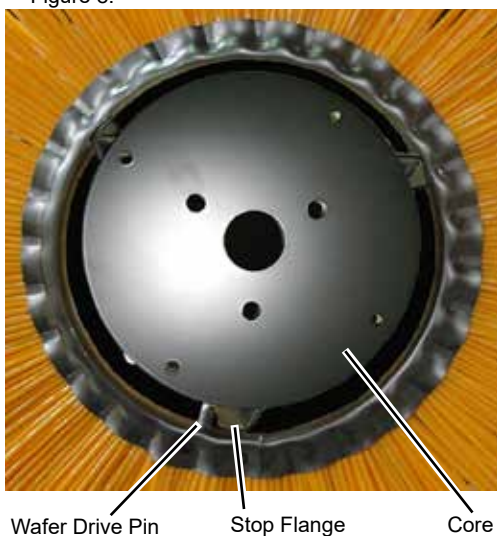


Figure 7

4. Continue stacking the core in a wafer-spacer, wafer-spacer configuration until it is full, ending with a poly brush wafer.

**NOTE:** Always start and finish with a poly wafer. The last wafer should actually extend beyond the end of the core (minimum 1/2"). The retainer plate compresses the spacers onto the core when tightened.

5. Install end disc (wafer retainer plate) on core with original hardware. See Figure 6.
6. Install splined hub on core with original hardware. See Figure 6.
7. Slide end bearings onto hubs. See Figure 6.

## Core Installation

1. Position filled core in front of the broom head. Lift the broom high enough so that core clears the hood and the brush can be rolled/pushed back into its original position. Once in place, lower broom head down onto the support bearings at each end of core.
2. Attach core support bearings to bottom of brush frame at each end of broom with original hardware. See Figure 5.

**NOTE:** Steps 3 through 5 apply to each brush drive motor. Apply grease to splines before installing hydraulic motors.

3. Slide motor shaft into mating splined hub.
4. Install motor mount plate on brush frame using original hardware. See Figure 5.
5. Install motor guard on brush frame with original hardware. See Figure 5.
6. Before placing machine back into service, adjust and test for proper amount of brush pattern. Excessive and/or misaligned pattern can cause brush failure or premature wear. Refer to the **Setup and Adjustments** section of the manual for pattern adjustment.

# STORAGE

## STORAGE

- Always store the broom in a supported position, on its included stands, 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.
- Disconnect all electrical connections between the broom and prime mover (mower/loader/tractor) for extended storage to prevent battery drain.
- Properly clean the unit before storage and remove dirt, debris, salt, etc. to extend paint life.
- If the unit is power-washed, all lubrication points should be greased before storage.

# TROUBLESHOOTING

Trouble	Possible Cause	Remedy
Broom does not rotate.	<ol style="list-style-type: none"> <li>1. No hydraulic pressure/flow.</li> <li>2. Hoses disconnected.</li> <li>3. Hoses bent or kinked.</li> <li>4. Pressure relieving too low.</li> <li>5. Electric valve not functioning.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check tractor operation.</li> <li>2. Connect hoses and fittings.</li> <li>3. Remove sharp bends and kinks.</li> <li>4. Adjust relief valve.</li> <li>5. Check electrical connections.</li> </ol>
Broom rotates in wrong direction.	<ol style="list-style-type: none"> <li>1. Hoses installed incorrectly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch hydraulic hose connections</li> </ol>
Brushes wearing very quickly.	<ol style="list-style-type: none"> <li>1. Brush pattern too wide.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust brush pattern to be 2-4" wide. Refer to the <b>Setup and Adjustments</b> section of this manual.</li> </ol>
Broom bounces during sweeping.	<ol style="list-style-type: none"> <li>1. Travel speed too fast and/or brush speed too slow.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust to find correct ground and brush speed for surface.</li> </ol>
Broom sweeping poorly.	<ol style="list-style-type: none"> <li>1. Material is 'caked-on' or frozen.</li> <li>2. Uneven sweeping surface.</li> <li>3. Material is too heavy.</li> <li>4. Broom rotating too slowly.</li> <li>5. Prime mover moving too fast.</li> <li>6. Pattern incorrectly set.</li> </ol>	<ol style="list-style-type: none"> <li>1. Slow down and 'scrub' surface.</li> <li>2. Increase pattern to compensate.</li> <li>3. Slow down prime mover speed.</li> <li>4. Increase engine speed.</li> <li>5. Slow down prime mover speed.</li> <li>6. Adjust height of broom.</li> </ol>
Broom does not lift or angle.	<ol style="list-style-type: none"> <li>1. No/Low hydraulic pressure/flow.</li> <li>2. Electric valve not functioning.</li> <li>3. System backpressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check prime mover operation. Check hydraulic oil level. Refer to <b>Maintenance</b> section of this manual for hydraulic system requirements.</li> <li>2. Check electrical connections.</li> <li>3. Check prime mover instructional manual.</li> </ol>
Hydraulic pump making noise.	<ol style="list-style-type: none"> <li>1. Pump intake blocked.</li> <li>2. Shaft seal leaking.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check inlet lines for obstructions.</li> <li>2. Check and repair as necessary.</li> </ol>



# NOTES

# Warranty/Product Registration

**A Warranty Registration Form must be submitted online to make warranty effective.**

**Warranty Start Date:**

All claims must be submitted using the proper form and emailed to [mbattachments@aebi-schmidt.com](mailto:mbattachments@aebi-schmidt.com).

To be eligible for warranty payment the product must be registered with M-B Companies via

[www.m-bco.com/warranty](http://www.m-bco.com/warranty)

M-B Companies, Inc. reserves the right to decline any claim that does not meet above requirements.

Pre-Approval Required Prior To ANY Work Being Performed.

## 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. 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.

# REPLACEMENT BRUSH KITS

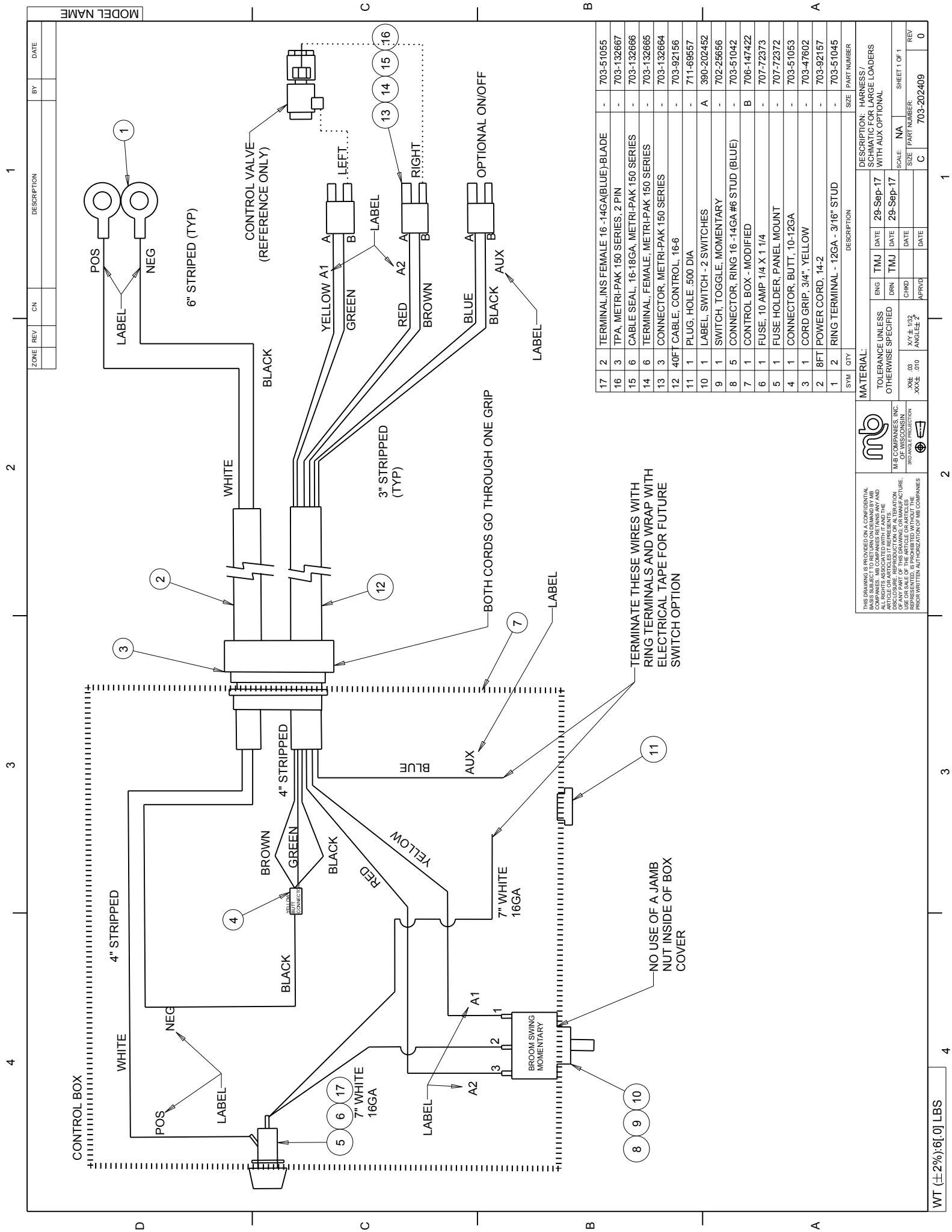
Part Number  
907-46666

Description  
REFILL, 32 IN. X 8 FT. , WAFER, COMBO





WB© WERK-BRAU CO., INC.  
FINDLAY, OH USA  
1-800-537-9561  
MANUFACTURED BY M-B COMPANIES, INC.  
NEW HOLSTEIN, WI USA  
1-800-558-5800



ZONE	REV	CN	DESCRIPTION	BY	DATE

MODEL NAME	
------------	--

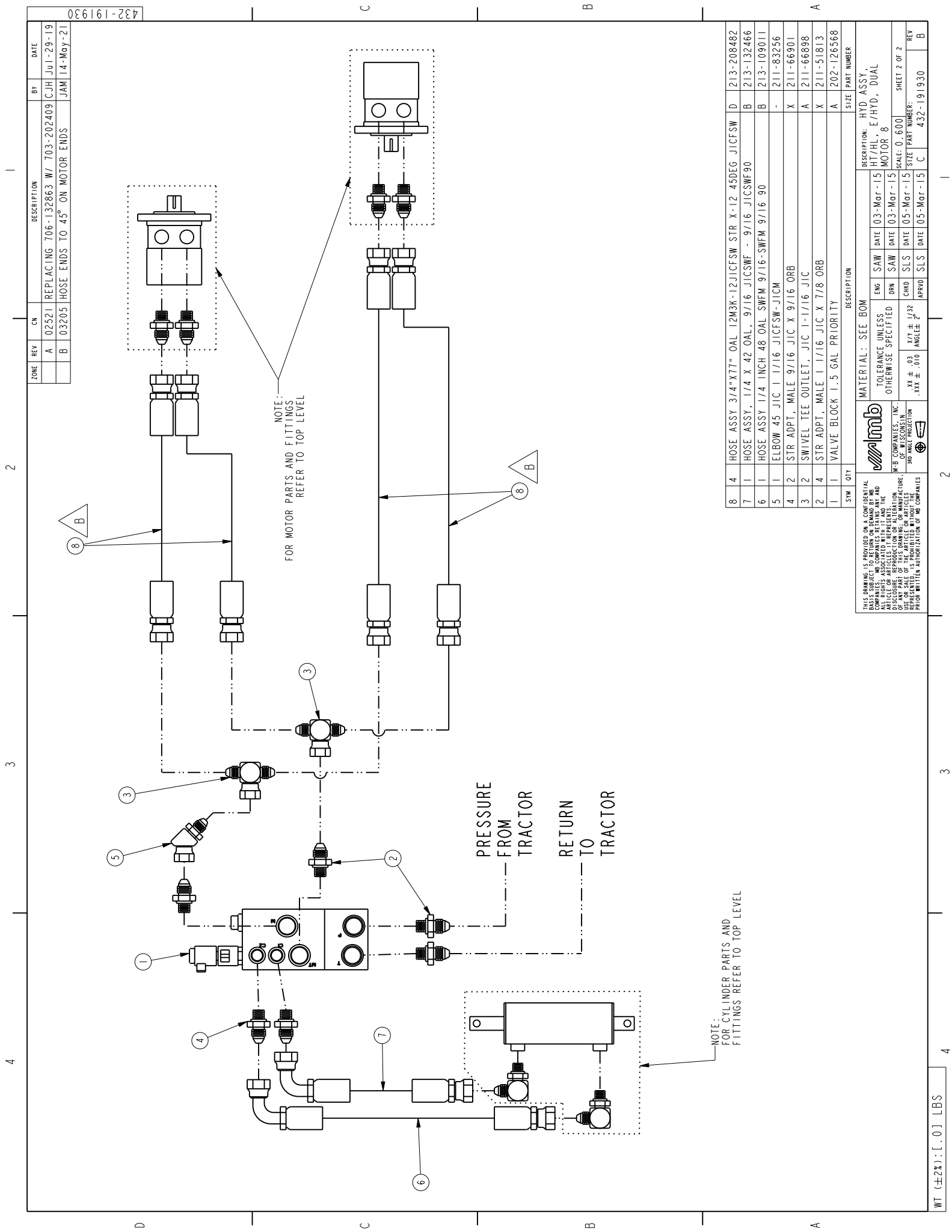
SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
17	2	TERMINAL-INS FEMALE 16-14GA(BLUE)-BLADE	-	703-51055
16	3	TPA, METRI-PAK 150 SERIES, 2 PIN	-	703-132667
15	6	CABLE SEAL, 16-18GA, METRI-PAK 150 SERIES	-	703-132666
14	6	TERMINAL, FEMALE, METRI-PAK 150 SERIES	-	703-132665
13	3	CONNECTOR, METRI-PAK 150 SERIES	-	703-132664
12	1	40FT CABLE, CONTROL, 16-6	-	703-92156
11	1	PLUG, HOLE .500 DIA	-	711-69557
10	1	LABEL, SWITCH - 2 SWITCHES	A	390-202452
9	1	SWITCH, TOGGLE, MOMENTARY	-	702-28656
8	5	CONNECTOR, RING 16-14GA #6 STUD (BLUE)	-	703-51042
7	1	CONTROL BOX - MODIFIED	B	706-147422
6	1	FUSE, 10 AMP 1/4 X 1 1/4	-	707-72373
5	1	FUSE HOLDER, PANEL MOUNT	-	707-72372
4	1	CONNECTOR, BUTT, 10-12GA	-	703-51053
3	1	CORD GRIP, 3/4", YELLOW	-	703-47602
2	8FT	POWER CORD, 14-2	-	703-92157
1	2	RING TERMINAL - 12GA - 3/16" STUD	-	703-51045

MATERIAL:				DESCRIPTION			
TOLERANCE UNLESS OTHERWISE SPECIFIED				HARNES / SWITCH / CONTROL VALVE / LARGE LOADERS WITH AUX OPTIONAL			
ENG	TMJ	DATE	29-Sep-17	SCALE	NA	SHEET	1 OF 1
DRN	TMJ	DATE	29-Sep-17	SIZE		REV	0
CHKD		DATE					
APPRV		DATE					

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS AND IS THE PROPERTY OF M-B COMPANIES, INC. ALL RIGHTS ASSOCIATED WITH IT AND THE INFORMATION CONTAINED HEREIN ARE RESERVED. REPRODUCTION OR ALTERATION, DISCLOSURE, REPRODUCTION OR ALTERATION, USE OR SALE OF THIS ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE WRITTEN PERMISSION OF M-B COMPANIES, INC.

**mb**  
M-B COMPANIES, INC.  
OF WISCONSIN  
3RD FLOOR  
1000 W. WISCONSIN ST.  
MILWAUKEE, WI 53233

WT (±2%): 6[.0] LBS



432-191930

ZONE	REV	CN	DESCRIPTION	BY	DATE
A	02521		REPLACING 706-132863 W/ 703-202409 C.J.H. Jul-29-19	C.J.H.	Jul-29-19
B	03205		HOSE ENDS TO 45° ON MOTOR ENDS	JAM	14-May-21

SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
8	4	HOSE ASSY 3/4"x77" OAL 12M3K-12JICFSW STR X-12 45DEG JICFSW	D	213-208482
7	1	HOSE ASSY, 1/4 X 42 OAL, 9/16 JICSNF - 9/16 JICSNF90	B	213-132466
6	1	HOSE ASSY 1/4 INCH 48 OAL SWFM 9/16-SWFM 9/16 90	B	213-109011
5	1	ELBOW 45 JIC 1/16 JICFSW-JICM	-	211-83256
4	2	STR ADPT, MALE 9/16 JIC X 9/16 ORB	X	211-66901
3	2	SWIVEL TEE OUTLET, JIC 1-1/16 JIC	A	211-66898
2	4	STR ADPT, MALE 1/16 JIC X 7/8 ORB	X	211-51813
1	1	VALVE BLOCK 1.5 GAL PRIORITY	A	202-126568

FOR MOTOR PARTS AND FITTINGS REFER TO TOP LEVEL

FOR CYLINDER PARTS AND FITTINGS REFER TO TOP LEVEL

PRESSURE FROM TRACTOR

RETURN TO TRACTOR

NOTE: FOR CYLINDER PARTS AND FITTINGS REFER TO TOP LEVEL

NOTE: FOR MOTOR PARTS AND FITTINGS REFER TO TOP LEVEL

MATERIAL: SEE BOM

TOLERANCE UNLESS OTHERWISE SPECIFIED

MB COMPANIES, INC. OF WISCONSIN

3D CAD MODEL PRODUCTION

ENG	SAW	DATE	DESCRIPTION
		03-Mar-15	HYD ASSY, HT/HL, E/HYD, DUAL MOTOR 8
		03-Mar-15	SCALE: 0.600
		05-Mar-15	SIZE PART NUMBER: C 432-191930
		05-Mar-15	REVISION: 8
		05-Mar-15	SHEET 2 OF 2

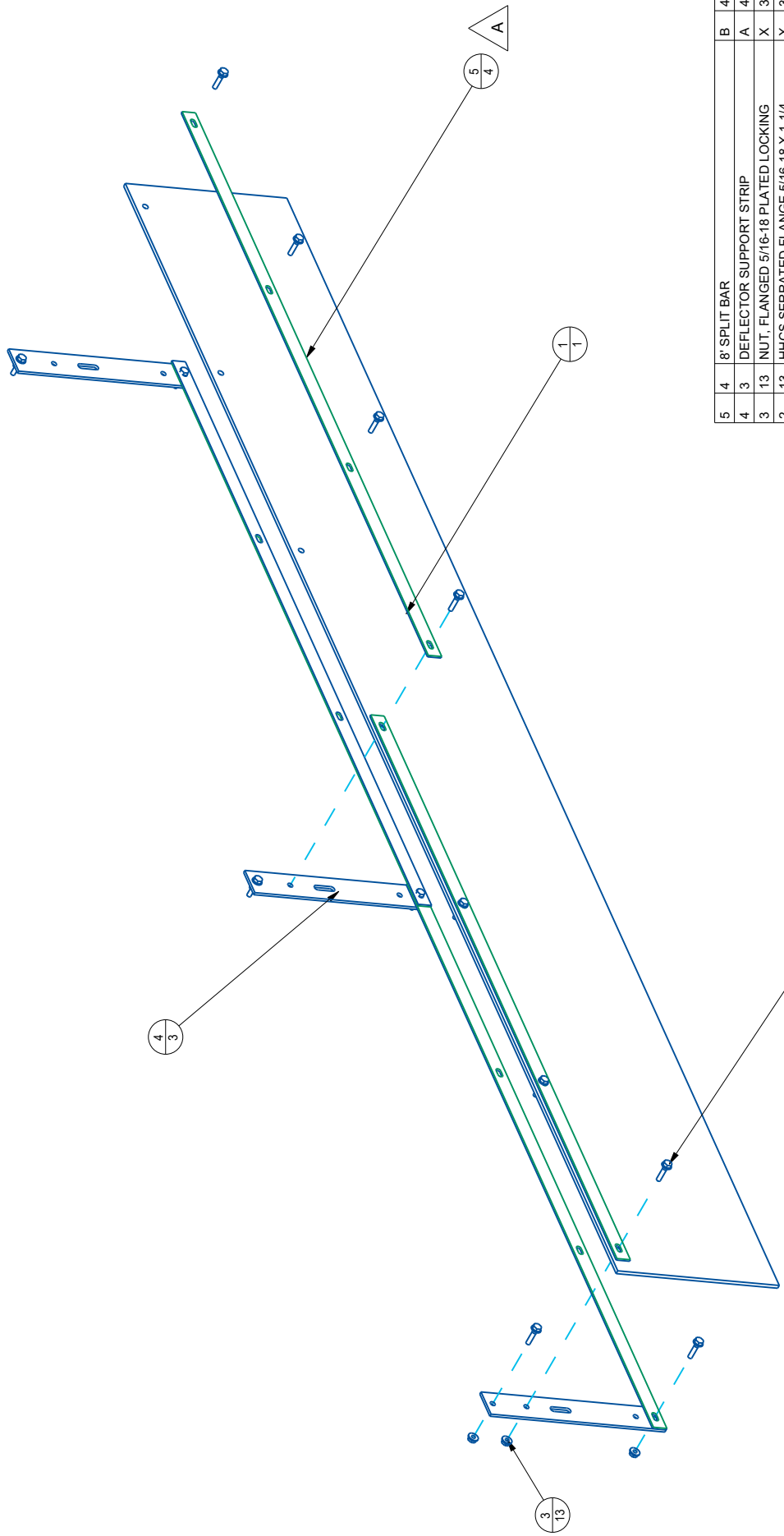
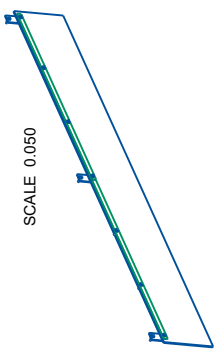
THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS TO THE CUSTOMER AND IS NOT TO BE REPRODUCED OR ALIENATED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF MB COMPANIES, INC. OF WISCONSIN. ANY REPRODUCTION OR ALIENATION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF MB COMPANIES, INC. OF WISCONSIN IS PROHIBITED.

WT (±2%): [ . 0 ] LBS

1 2 3 4

ZONE	REV	CN	DESCRIPTION	BY	DATE
B1	A	03524	SPLIT DEFLECTOR STRIPS	JAM	06-May-22

432-190632



SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
5	4	8" SPLIT BAR	B	401-215112
4	3	DEFLECTOR SUPPORT STRIP	A	400-83533
3	13	NUT, FLANGED 5/16-18 PLATED LOCKING	X	371-92059
2	13	HHCS SERRATED FLANGE 5/16-18 X 1-1/4	X	370-190650
1	1	DIRT DEFLECTOR, 8"	B	101-75791

**MATERIAL: SEE BOM**

**TOLERANCE UNLESS OTHERWISE SPECIFIED**

ENG	SMF	DATE
DRN	SMF	DATE
CHKD	SLS	DATE
APPRV	SLS	DATE

SCALE: 0.200

SHEET 1 OF 1

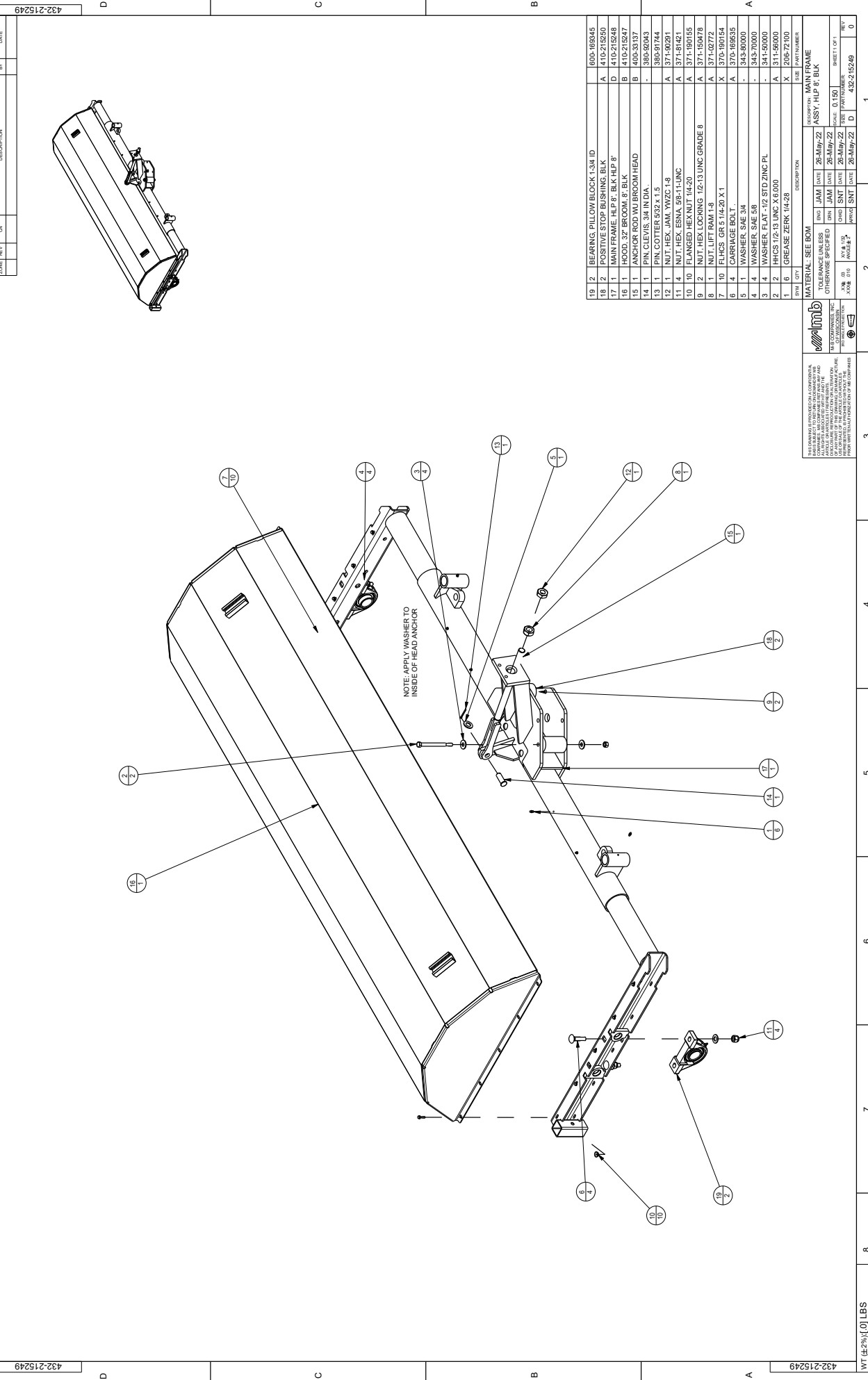
REV: C 432-190632

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS AND IS THE PROPERTY OF M-B COMPANIES, INC. ALL RIGHTS ASSOCIATED WITH IT AND THE INFORMATION CONTAINED HEREIN ARE RESERVED. DISCLOSURE, REPRODUCTION OR ALTERATION OF THIS DRAWING IS STRICTLY PROHIBITED. USE OR SALE OF THIS ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE WRITTEN PERMISSION OF M-B COMPANIES, INC.

**mb**  
M-B COMPANIES, INC.  
OF WISCONSIN  
3RD FLOOR  
300 W. WISCONSIN ST.

WT (±2%): [0] LBS

432-215249 1 2 3 4 5 6 7 8



432-215249 1 2 3 4 5 6 7 8

QTY	DESCRIPTION	SIZE	PART NUMBER
16	2 BEARING PILLLOW BLOCK 1.34 ID		600-169245
16	2 POSTIVE STOP BUSHING BLK	A	1410-215250
17	1 MAIN FRAME HLP 8' BLK HLP 8'	D	1410-215248
16	1 HOOD 37" BROOM 8" BLK	B	1410-215248
15	1 ANCHOR ROD W/ BROOM HEAD	B	4400-33137
14	1 PIN CLEVIS 3/4 IN DIA.	-	3890-91744
13	1 PIN COTTER 5/32 X 1.5	-	3890-91744
12	1 NUT HEX. JAM. YWZC-1.8	A	371-81421
11	4 NUT HEX. ESN. 988-11UNC	A	371-190155
10	10 FLANGED HEX NUT 1/4-20	A	371-150476
9	2 NUT HEX. LOCKING 1/2-13 UNC GRADE 8	A	371-02772
8	1 NUT LIFT RAM 1-8	X	370-190154
7	10 FLCS GR 5/16-20 X 1	-	343-80000
6	4 CARRIAGE BOLT	-	343-80000
5	1 WASHER SAE 3/4	-	343-70000
4	4 WASHER SAE 5/8	-	341-50000
3	4 WASHER FLAT-1/2 STD ZINC PL	-	341-50000
2	2 FHCS 1/2-13 UNC X 6.000	A	311-50000
1	6 GREASE ZERK 1/4-28	X	206-72100

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

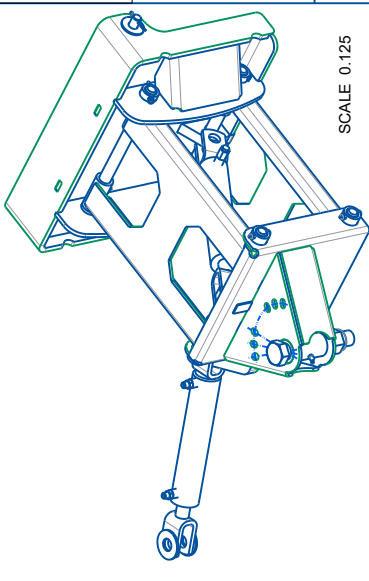
REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

REV	DATE	BY	CHKD	DESCRIPTION
0				ISSUE FOR MANUFACTURE

WT 10.0 LBS

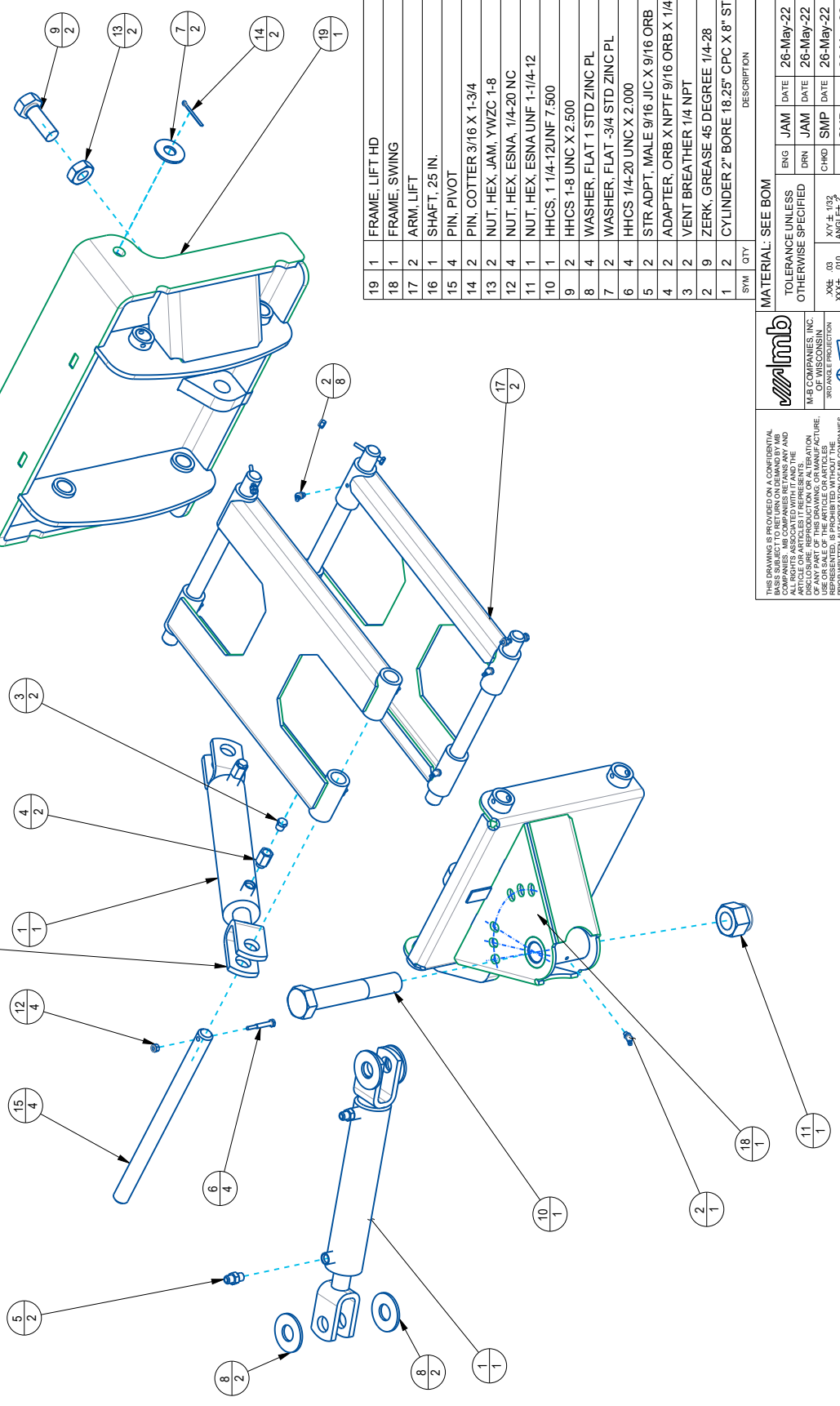
ZONE	REV	ON	DESCRIPTION	BY	DATE



16 1

NOTE:  
HAIR PINS AND CLEVIS PINS  
COME WITH HYD CYLINDERS.  
FOR SERVICE SEE CYLINDER  
DRAWING.

PINS & COTTERS NOT USED  
WITH THIS CYLINDER  
REMOVE & DISCARD UPON  
INSTALLATION



SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
19	1	FRAME, LIFT HD	C	410-160293
18	1	FRAME, SWING	C	410-147705
17	2	ARM, LIFT	C	410-140309
16	1	SHAFT, 25 IN.	B	401-215251
15	4	PIN, PIVOT	A	401-140317
14	2	PIN, COTTER 3/16 X 1-3/4		380-90145
13	2	NUT, HEX. JAM, YWZC 1-8	A	371-90291
12	4	NUT, HEX. ESNA, 1/4-20 NC	A	371-81299
11	1	NUT, HEX. ESNA UNF 1-1/4-12	A	371-81289
10	1	HHCS, 1/4-12UNF 7.500	A	371-140320
9	2	HHCS 1-8 UNC X 2.500	A	370-92715
8	4	WASHER, FLAT 1 STD ZINC PL	A	341-97100
7	2	WASHER, FLAT -3/4 STD ZINC PL	X	341-80000
6	4	HHCS 1/4-20 UNC X 2.000	A	311-12000
5	2	STR ADPT, MALE 9/16 JIC X 9/16 ORB	X	211-66901
4	2	ADAPTER, ORB X NPTF 9/16 ORB X 1/4 NPT	A	211-58884
3	2	VENT BREATHER 1/4 NPT	X	209-26663
2	9	ZERK, GREASE 45 DEGREE 1/4-28	X	206-91152
1	2	CYLINDER 2" BORE 18.25" CPC X 8" STROKE	B	203-142346

MATERIAL: SEE BOM		DESCRIPTION: ANGLE PIVOT	
TOLERANCE UNLESS OTHERWISE SPECIFIED		FRAME	
ENG	JAM	DATE	26-May-22
DRN	SMP	DATE	26-May-22
CHKD	SMP	DATE	26-May-22
APPRVD	SMP	DATE	26-May-22
SCALE	0.200	SHEET	1 OF 1
SIZE	0.200	REV	0
XX#	.00	XX#	.00
XX#	.00	XX#	.00

**mb**  
M-B COMPANIES, INC.  
OF WISCONSIN  
3RD FLOOR  
300 W. WISCONSIN ST.  
MILWAUKEE, WI 53233

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS AND IS THE PROPERTY OF M-B COMPANIES, INC. ALL RIGHTS ASSOCIATED WITH IT AND THE INFORMATION CONTAINED HEREIN ARE RESERVED. REPRODUCTION OR ALTERATION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF M-B COMPANIES, INC. IS PROHIBITED.

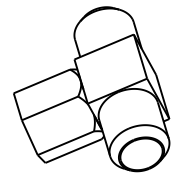
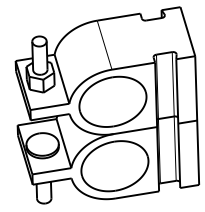
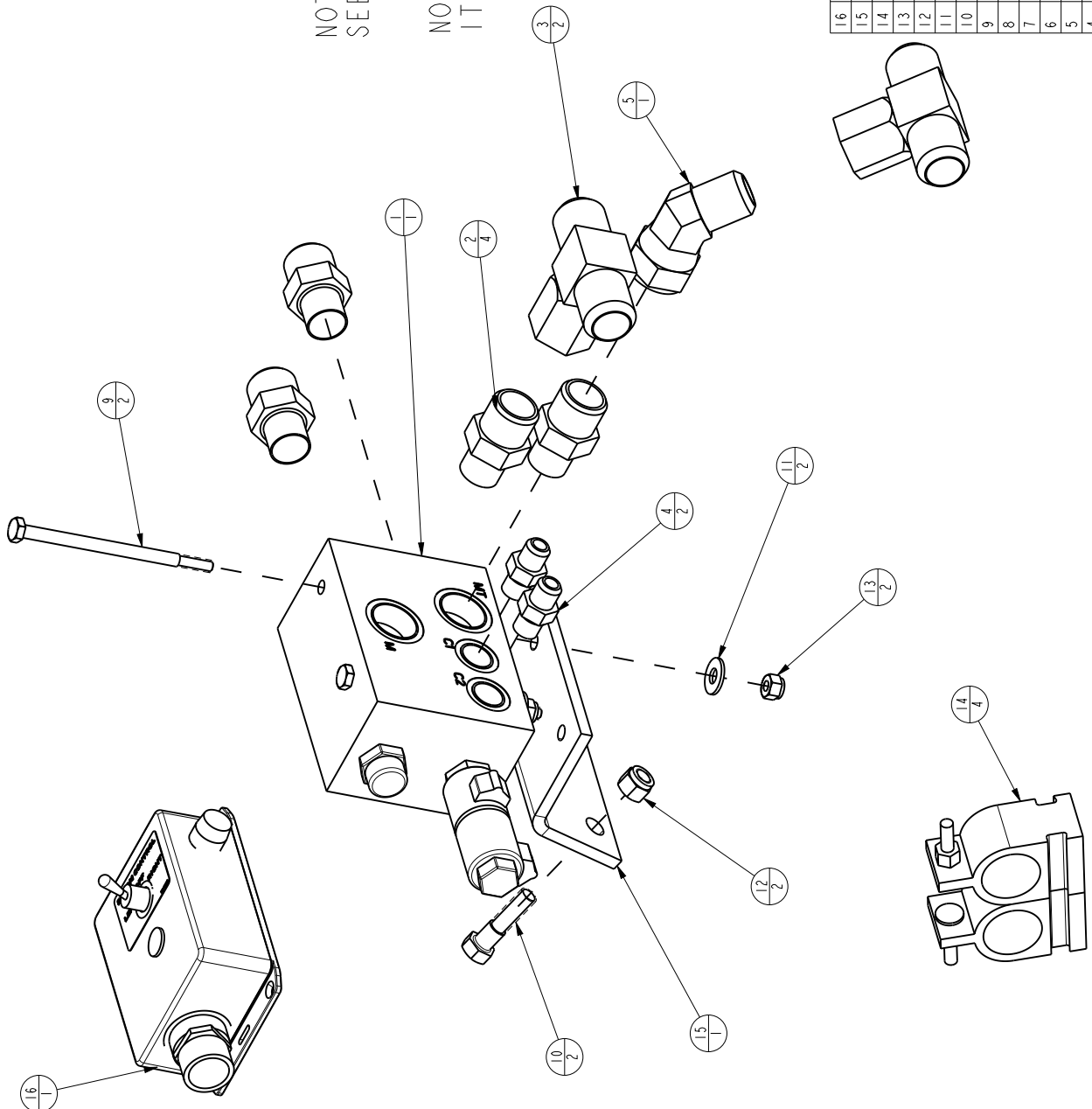
2 3 4

ZONE	REV	CN	DESCRIPTION	BY	DATE
A	02521		REPLACING 706-132863 W/ 703-202409 C.JH Jul-29-19	C.JH	Jul-29-19
B	03205		HOSE ENDS TO 45° ON MOTOR END	JAM	14-May-21

432-191930

NOTE:  
SEE SHEET 2 FOR HYD CONNECTION DIAGRAM

NOTE:  
ITEMS 6, 7, & 8 NOT SHOWN IN DRAWING



SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
16	1	HARNES. LONG LARGE LOADER WITH BLINK AUX OPT.	B	703-202409
15	1	PLATE, VALVE BLOCK MFG HT/HL FRAME	A	401-126653
14	4	CLAMP ASSY 1.19 INCH	A	387-126788
13	2	NUT, HEX, ESNA, 1/4-20 NC	A	371-81299
12	2	NUT, HEX, ESNA, 3/8-16 UNC	A	371-81297
11	2	WASHER, FLAT -1/4 STD ZINC PL	-	341-10000
10	2	HHCS 3/8-16 UNC X 1.500	A	311-31500
9	2	HHCS 1/4-20 UNC X 4.250	A	311-14250
8	4	HOSE ASSY 3/4"x177" OAL 12M3K-12JICFSW STR X-12 45DEG JICFSW	D	213-208482
7	1	HOSE ASSY, 1/4 X 42 OAL, 9/16 JICSWF - 9/16 JICSWF90	B	213-132466
6	1	HOSE ASSY 1/4 INCH 48 OAL SWFM 9/16-SWFM 9/16 90	B	213-109011
5	1	ELBOW 45 JIC 1 1/16 JICFSW-JICM	-	211-83256
4	2	STR ADPT, MALE 9/16 JIC X 9/16 ORB	X	211-66901
3	2	SWIVEL TEE OUTLET, JIC 1-1/16 JIC	A	211-66898
2	4	STR ADPT, MALE 1 1/16 JIC X 7/8 ORB	X	211-51813
1	1	VALVE BLOCK 1.5 GAL PRIORITY	A	202-126568

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS TO THE ASSOCIATED BUYER AND COMPANY. M.B. COMPANIES, INC. AND ITS ASSOCIATED BUYERS AND COMPANIES ARE NOT TO BE REPRODUCED, COPIED, DISCLOSED, REPRODUCED OR ALTERATION, USE, OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED IS PROHIBITED WITHOUT WRITTEN PERMISSION FROM M.B. COMPANIES, INC.

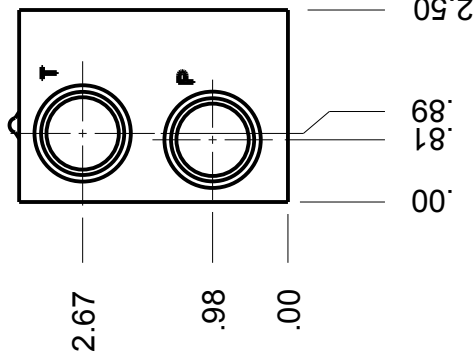
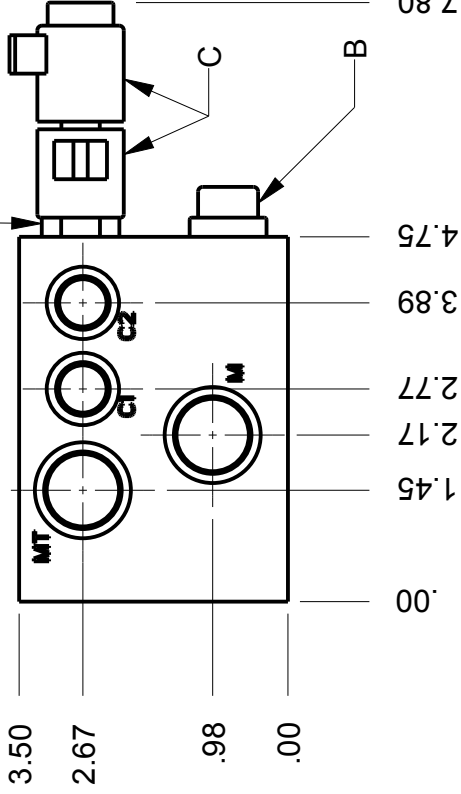
**mb**  
M.B. COMPANIES, INC.  
OF WISCONSIN  
3RD FLOOR PRODUCTION

ENG	SAW	DATE	DESCRIPTION
		03-Mar-15	HYD ASSY, HT/HL, E/HYD, DUAL MOTOR 8
		03-Mar-15	SCALE: 0.600
		05-Mar-15	SIZE PART NUMBER: SHEET 1 OF 2
		05-Mar-15	REVISION: 432-191930

WT (±2%): [ . 0 ] LBS

ZONE	REV	CN	DESCRIPTION	BY	DATE
	A		DELETED SHEET TWO	SMP	4-17-09
	B		ADDED E-SERIES COIL PN	SMP	6-10-10
	C	02624	WAS 4300212 AND 202-163137	CJH	Nov-11-19

202-126568



PORTS:

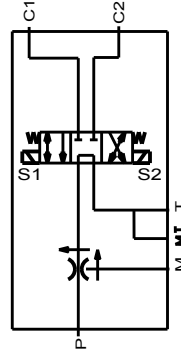
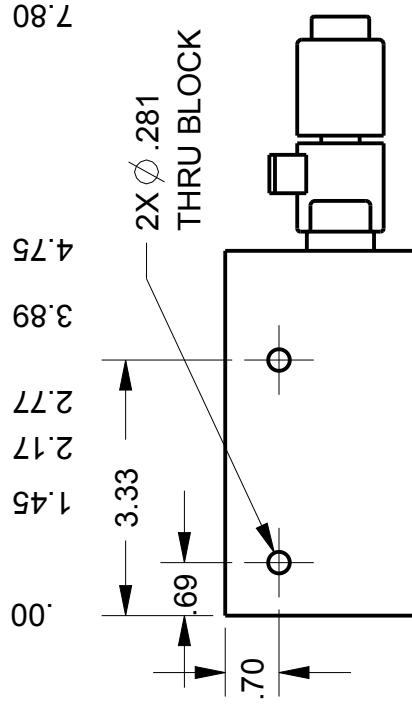
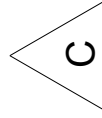
P, T, M, MT : SAE #10  
C1, C2 : SAE #6

3 POSITION, 4-WAY  
TANDEM CENTER  
A) MB #: 202-126568-01

PRESSURE-COMP REGULATOR  
B) MB #: 202-126888

E-SERIES COILS  
PN: 4300212 before 1-1-04  
C) MB #: 202-169494

PN: 4303812  
C) MB #: 202-147341



SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
MATERIAL		NUMBER	NAME:	
PURCHASED			VALVE BLOCK	
TOLERANCE UNLESS OTHERWISE SPECIFIED			1.5 GAL PRIORITY	
.XX ± .03	X/Y ± 1/32	RISK	SCALE: 0.400	SHEET 1 OF 1
.XXX ± .010	ANGLE ± 2°	DWN	SIZE	REV
		CKD	PART NO.	A
		APP	202-126568	C
		DATE		
		16-Jul-01		
		30-Jun-11		
		30-Jun-11		

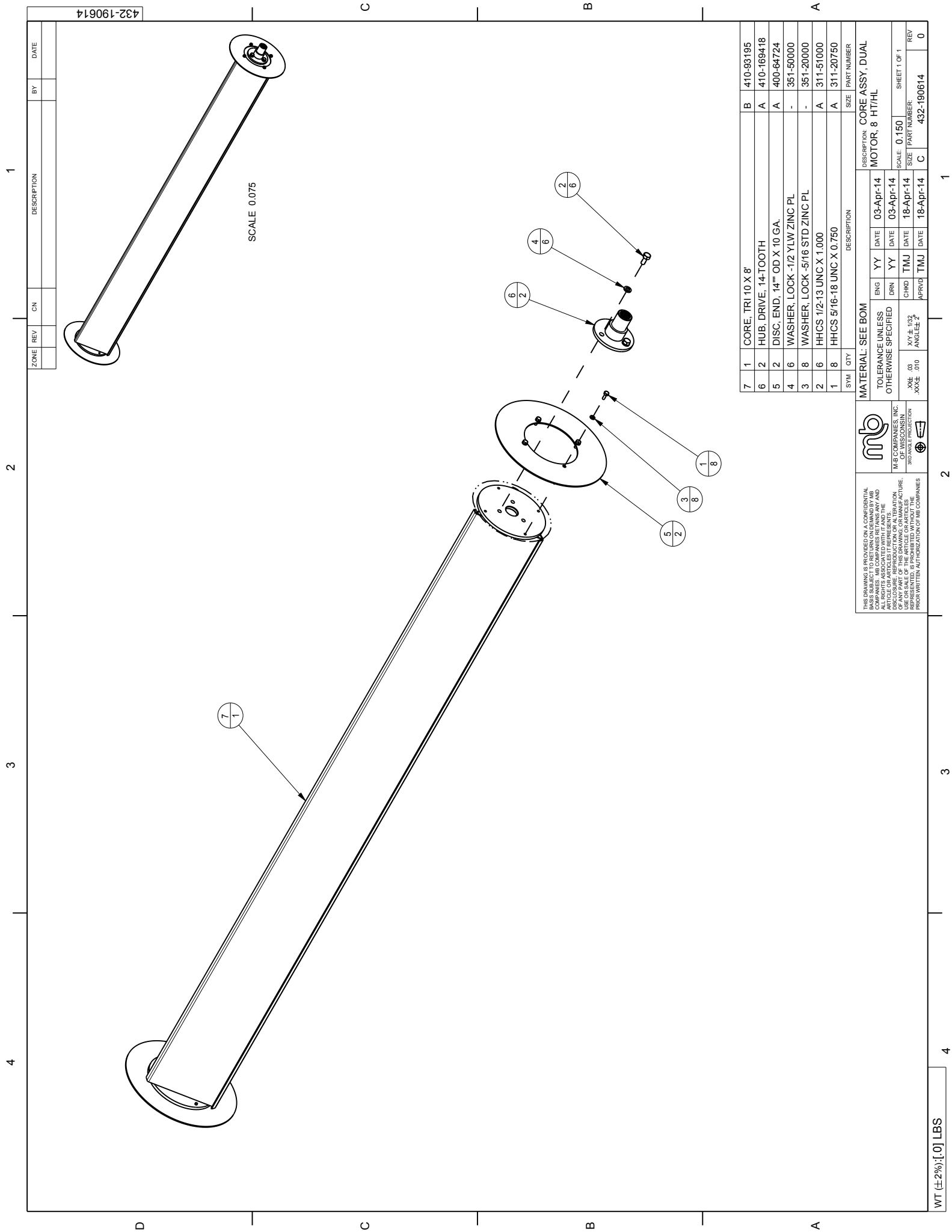


M-B COMPANIES, INC.  
OF WISCONSIN  
3RD ANGLE PROJECTION



RATED FOR 25 GPM





SCALE 0.075

ZONE	REV	CN	DESCRIPTION	BY	DATE

7	1	CORE, TRI 10 X 8'	B	410-93195
6	2	HUB, DRIVE, 14-TOOTH	A	410-169418
5	2	DISC, END, 14" OD X 10 GA.	A	400-64724
4	6	WASHER, LOCK -1/2 YLW ZINC PL	-	351-50000
3	8	WASHER, LOCK -5/16 STD ZINC PL	-	351-20000
2	6	HHCS 1/2-13 UNC X 1.000	A	311-51000
1	8	HHCS 5/16-18 UNC X 0.750	A	311-20750
		SYM QTY	SIZE	PART NUMBER

**MATERIAL: SEE BOM**

TOLEARNCE UNLESS OTHERWISE SPECIFIED

XXS .03  
XXE .010

XXL 4-103  
XXZ 2

APPROV: [Signature]

DATE: 18-Apr-14

CHD: TMJ

DRN: [Signature]

ENG: [Signature]

DATE: 03-Apr-14

DATE: 03-Apr-14

DATE: 03-Apr-14

DESCRIPTION: CORE ASSY, DUAL MOTOR, 8 HT/HL

SCALE: 0.150

SIZE: C

PART NUMBER: 432-190614

SHEET 1 OF 1

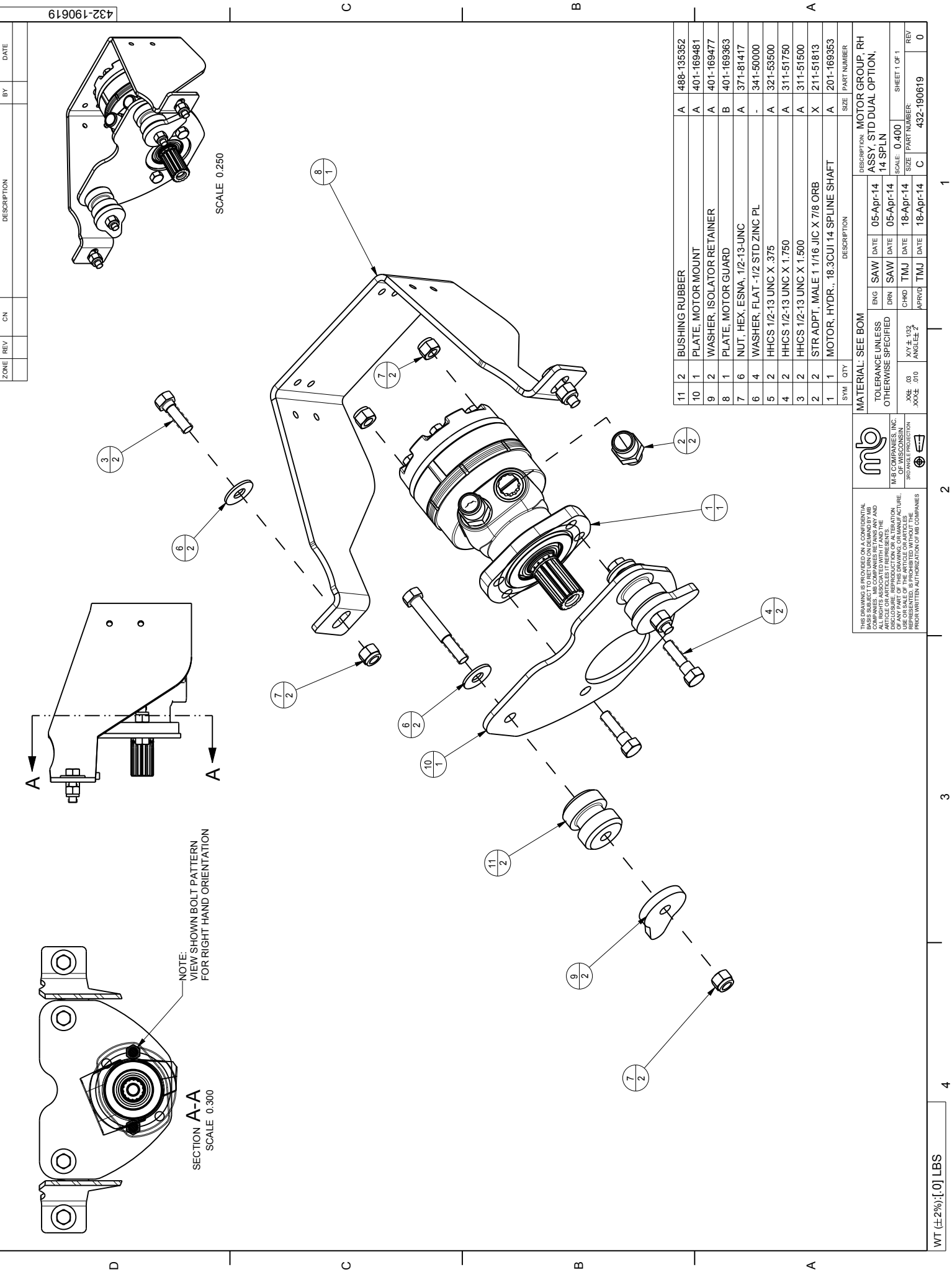
REV: 0

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS AND IS THE PROPERTY OF M-B COMPANIES, INC. ALL RIGHTS ASSOCIATED WITH IT AND THE INFORMATION CONTAINED HEREIN ARE RESERVED. DISCLOSURE, REPRODUCTION OR ALTERATION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF M-B COMPANIES, INC. IS PROHIBITED. WITHOUT LIMITATION, THIS DRAWING IS NOT TO BE USED FOR THE REPRODUCTION OF THE COMPANIES.

M-B COMPANIES, INC.  
3RD FLOOR  
OF WISCONSIN  
3RD FLOOR

WT (±2%): [0] LBS

432-190614



ZONE	REV	CN	DESCRIPTION	BY	DATE

11	2	BUSHING RUBBER	A	488-135352
10	1	PLATE, MOTOR MOUNT	A	401-169481
9	2	WASHER, ISOLATOR RETAINER	A	401-169477
8	1	PLATE, MOTOR GUARD	B	401-169363
7	6	NUT, HEX, ESNA, 1/2-13-UNC	A	371-81417
6	4	WASHER, FLAT - 1/2 STD ZINC PL	-	341-50000
5	2	HHCS 1/2-13 UNC X .375	A	321-53500
4	2	HHCS 1/2-13 UNC X 1.750	A	311-51750
3	2	HHCS 1/2-13 UNC X 1.500	A	311-51500
2	2	STR ADPT, MALE 1/16 JIC X 7/8 ORB	X	211-51813
1	1	MOTOR, HYDR., 18.3CUJ 14 SPLINE SHAFT	A	201-169353
		SYM	QTY	SIZE
				PART NUMBER

MATERIAL: SEE BOM

TOLERANCE UNLESS OTHERWISE SPECIFIED

ENG	SAW	DATE	05-Apr-14
DRN	SAW	DATE	05-Apr-14
CHKD	TMJ	DATE	18-Apr-14
APPRD	TMJ	DATE	18-Apr-14

SCALE: 0.400

SHEET 1 OF 1

REV

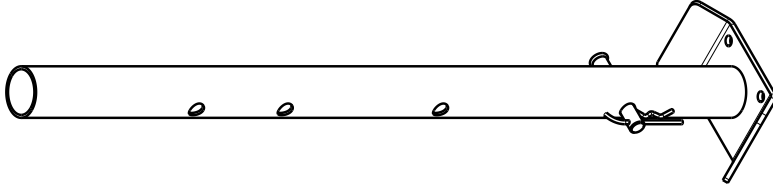
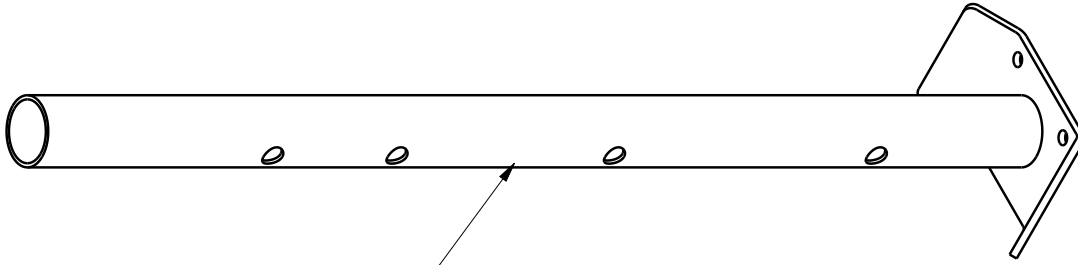
0

M-B COMPANIES, INC.  
300 WEST WISCONSIN  
MILWAUKEE, WI 53212

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS. ALL RIGHTS ASSOCIATED WITH IT AND THE DISCLOSURE, REPRODUCTION OR ALTERATION, USE OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE WRITTEN PERMISSION OF THE COMPANIES.

1

ZONE	REV	CN	DESCRIPTION	BY	DATE



SCALE 0.250

MATERIAL	NUMBER	QTY	DESCRIPTION	SIZE	PART NUMBER
3	1		STORAGE STAND W.U.	B	410-94050
2	1		CLIP, HAIRPIN .125" DIA SHAFT 7/16"-3/4"	X	380-84739
1	1		PIN, CLEVIS 1/2 X 3	A	380-76379

M.B. COMPANIES, INC.  
OF WISCONSIN  
3RD ANGLE PROJECTION

**SEE BOM**

TOLERANCE UNLESS OTHERWISE SPECIFIED	DWN	TAK	DATE
XX ± .03	CKD	SMP	15-Aug-13
.XXX ± .010	APP	SMP	24-Sept-13
		SMP	24-Sept-13

SCALE: 0.350

SIZE: B

SHEET 1 OF 1

REV: NH

1

2

2

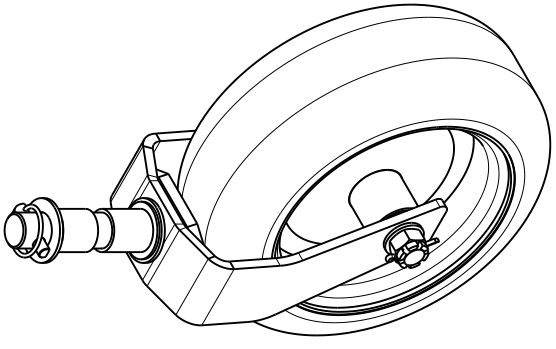
B

A

B

A

ZONE	REV	CH	DESCRIPTION	BY	DATE
	A	11638	410-176888 WAS 410-147662	TAK	06/04/13
	B	12300	REMOVED BEARING KIT ITEMS FR BOM	SLS	28-Aug-15



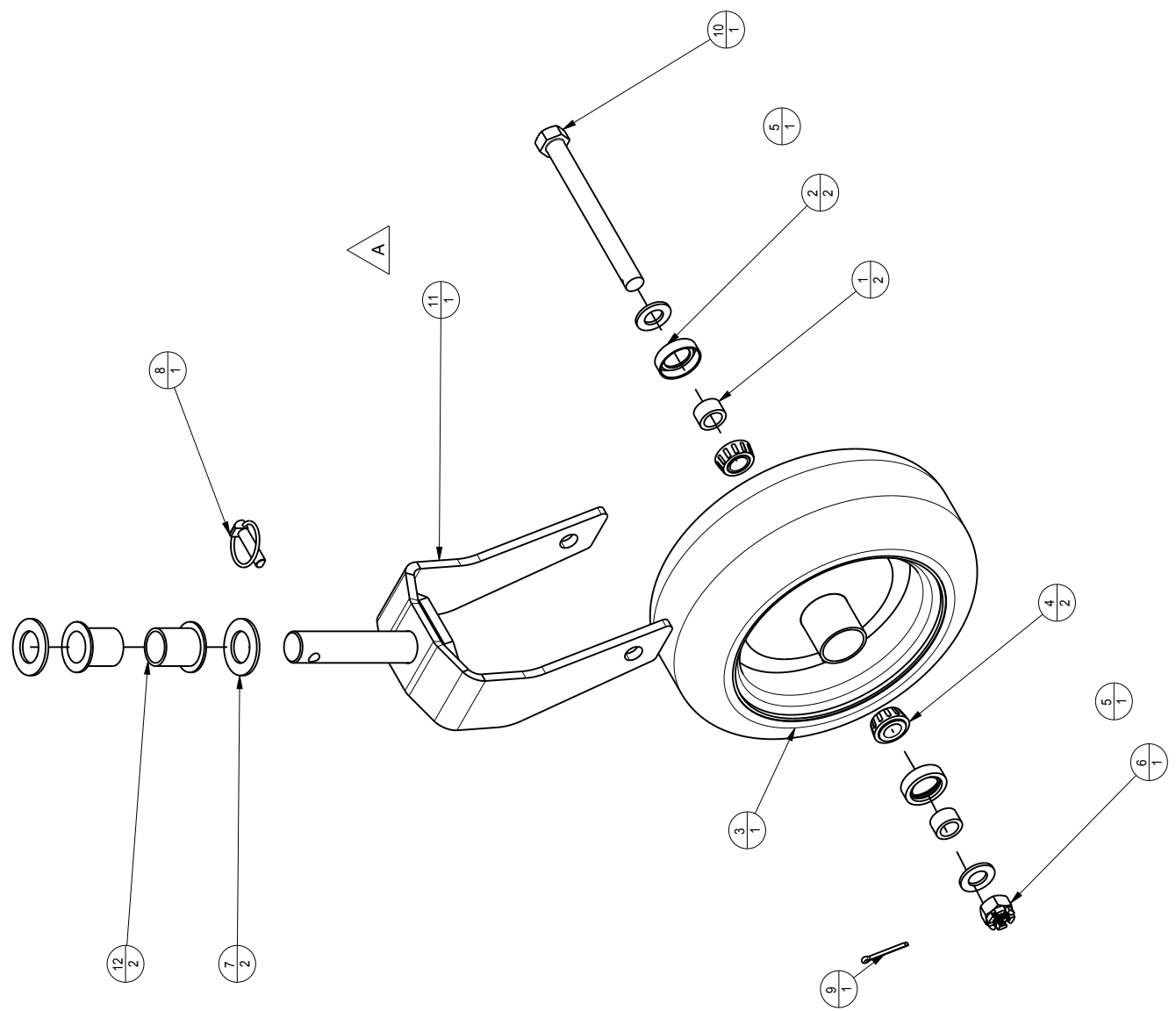
SCALE 0.300  
SOLID

BEARING KIT IS AVAILABLE: 601-160722  
KIT CONTAINS FOR ONE WHEEL:  
2 BEARINGS: 100-109457  
2 SEALS: 100-108615  
2 SPACERS: 100-108614

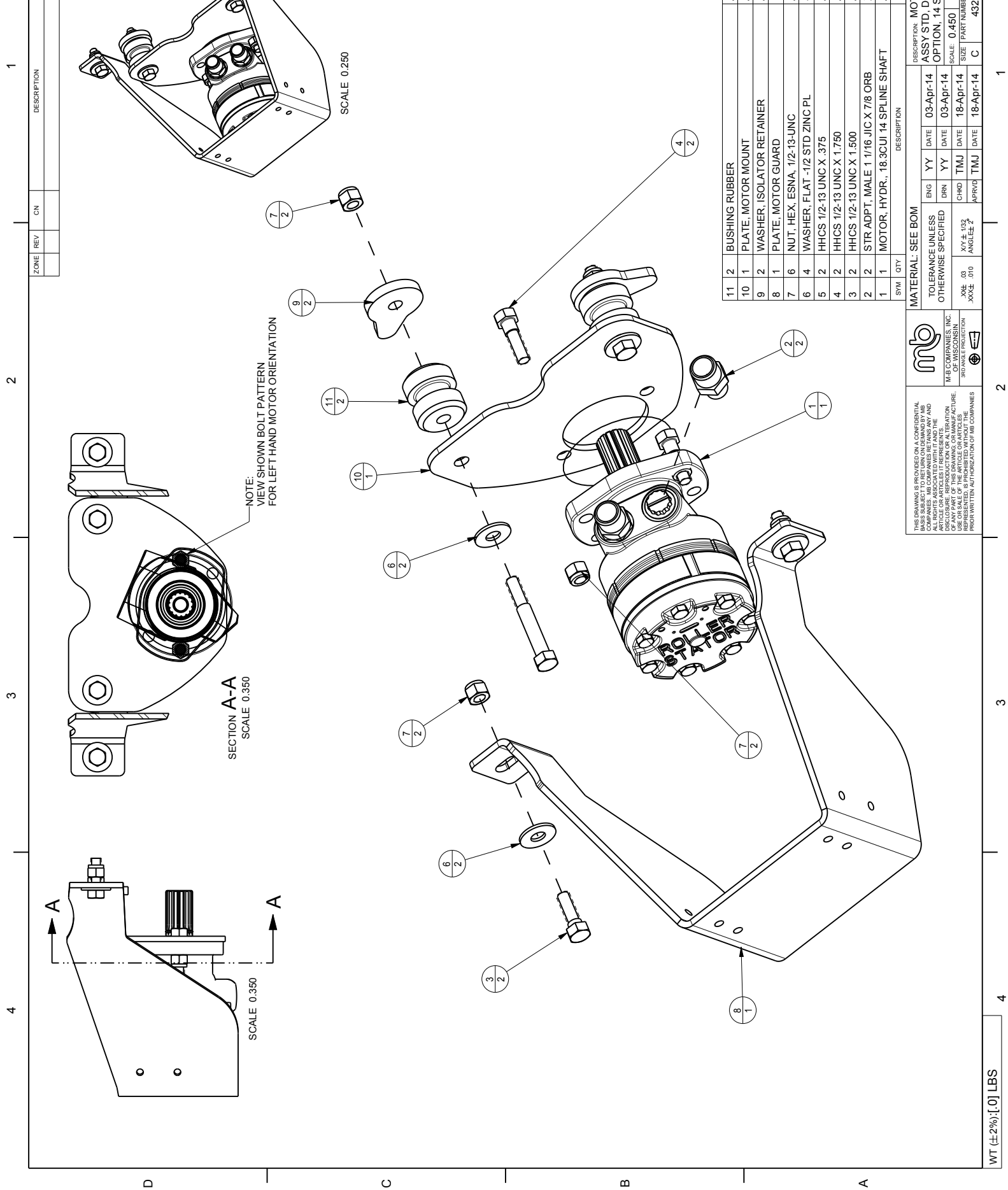
SYM	QTY	NUMBER	DESCRIPTION	SIZE	PART NUMBER
12	2	FLANGED OILITE BEARING TK-H	A	603-75914	
11	1	CASTER FORK W.U.	B	410-176888	
10	1	BOLT, MODIFIED, HLP CASTER AXLE	A	401-150725	
9	1	PIN, COTTER 5/32 x 1.5		380-91744	
8	1	PIN, CLIP 7/16" LUNCH	A	380-147671	
7	2	WASHER, FLAT 1.125 SAE STD ZINC PL	X	372-92009	
6	1	CASTLE NUT, 3/4-16 NF	X	371-92004	
5	2	WASHER, SAE 3/4	-	343-80000	
4	2	BEARING, TAPERED	X	100-109457	
3	1	TIRE AND WHEEL SOLID 13 X 5-10	X	100-108617	
2	2	BEARING SEAL	X	100-108615	
1	2	SPACER	X	100-108614	

**M&B COMPANIES, INC.**  
OF WISCONSIN  
SHOOTING PROVISIONS

SEE BOM	NUMBER	QTY	DESCRIPTION	SEE BOM	NAME
CASTER WHEEL ASSM 13" HTPHLP					
TOLERANCE UNLESS OTHERWISE SPECIFIED	DWN	CJM	DATE	SCALE	0.300
XX ± .05	CKD	TAK	15-Mar-10	SIZE PART NO	
XXX ± .010	APP	TAK	15-Mar-10	REV	B



ZONE	REV	CN	DESCRIPTION	BY	DATE



NOTE:  
VIEW SHOWN BOLT PATTERN  
FOR LEFT HAND MOTOR ORIENTATION

SECTION A-A  
SCALE 0.350

SCALE 0.250

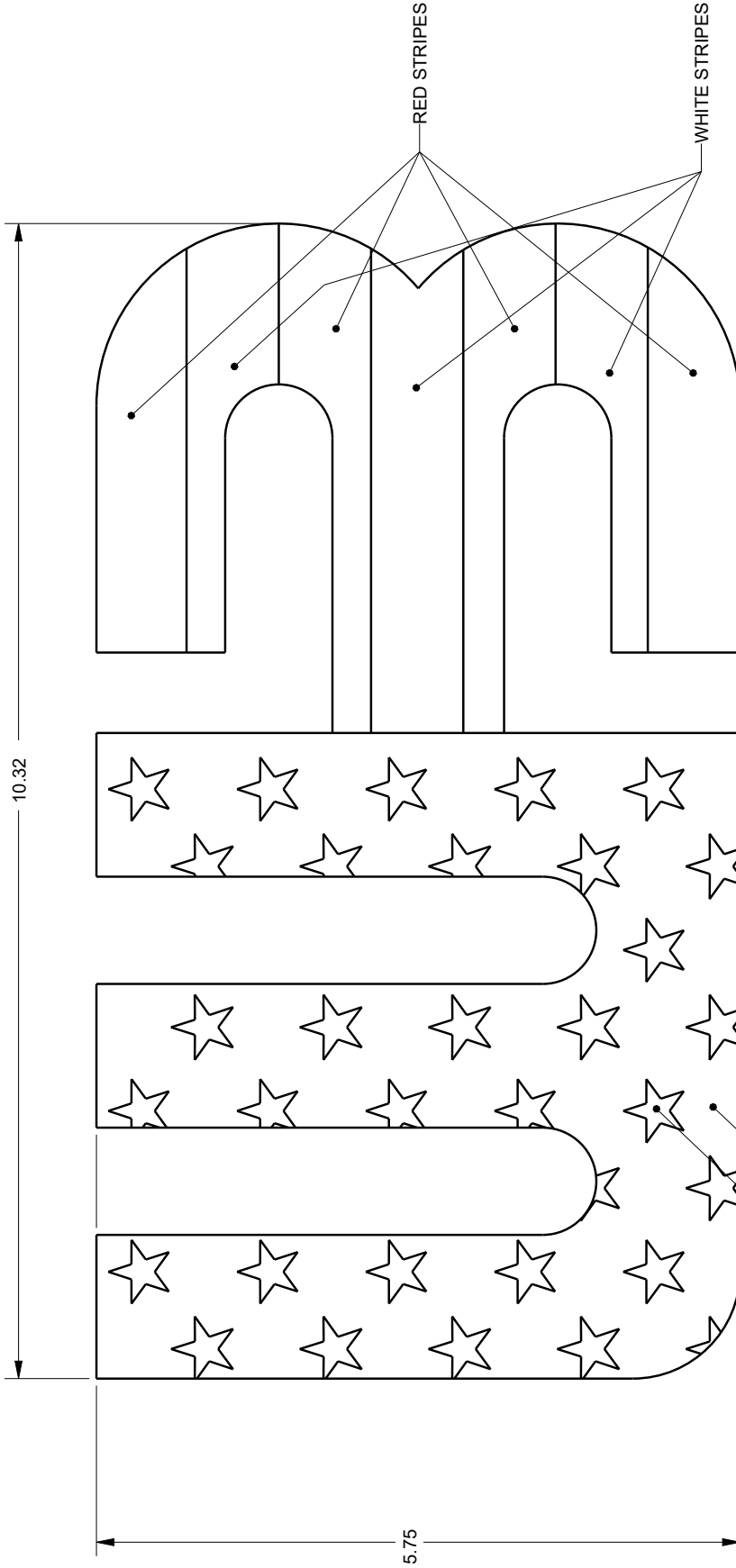
SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
11	2	BUSHING RUBBER	A	488-136352
10	1	PLATE, MOTOR MOUNT	A	401-169481
9	2	WASHER, ISOLATOR RETAINER	A	401-169477
8	1	PLATE, MOTOR GUARD	B	401-169363
7	6	NUT, HEX. ESNA, 1/2-13-UNC	A	371-81417
6	4	WASHER, FLAT -1/2 STD ZINC PL	-	341-50000
5	2	HHCS 1/2-13 UNC X .375	A	321-53600
4	2	HHCS 1/2-13 UNC X 1.750	A	311-51750
3	2	HHCS 1/2-13 UNC X 1.500	A	311-51600
2	2	STR ADPT, MALE 1/16 JIC X 7/8 ORB	X	211-51813
1	1	MOTOR, HYDR., 18.3CUJ 14 SPLINE SHAFT	A	201-169353

MATERIAL: SEE BOM				DESCRIPTION: MOTOR GROUP, LH			
TOLERANCE UNLESS OTHERWISE SPECIFIED				ASSY STD, DUAL/SINGLE OPTION, 14 SPLN			
ENG	YY	DATE	03-Apr-14	SCALE	0.450	SHEET 1 OF 1	REV
DRN	TMJ	DATE	18-Apr-14	SIZE	PART NUMBER:	C	0
CHKD	TMJ	DATE	18-Apr-14	SCALE	0.450	SHEET 1 OF 1	REV
APPRV	TMJ	DATE	18-Apr-14	SIZE	PART NUMBER:	C	0

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS TO THE CUSTOMER. IT IS THE PROPERTY OF M-B COMPANIES, INC. AND ALL RIGHTS ASSOCIATED WITH IT AND THE INFORMATION CONTAINED HEREIN ARE RESERVED. DISCLOSURE, REPRODUCTION OR ALTERATION OF THIS DRAWING IS STRICTLY PROHIBITED. USE OR SALE OF THIS ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE WRITTEN PERMISSION OF M-B COMPANIES, INC.

**mb**  
M-B COMPANIES, INC.  
OF WISCONSIN  
3RD FLOOR  
300 W. WISCONSIN ST.

ZONE	REV	CN	DESCRIPTION	BY	DATE



WHITE STARS

BLUE LETTER W

\*DESIGN OWNED AND CONTROLLED BY  
WERK BRAU

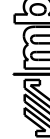
WT (±2%): 0 LBS

SYM	QTY	DESCRIPTION	SIZE	PART NUMBER

**MATERIAL: PURCHASED**

TOLERANCE UNLESS OTHERWISE SPECIFIED

XXL .03	XXV L 1/32	CHKD	SNT	DATE	24-May-22
XXXL .010	ANGLEZ 2°	APPRD	SNT	DATE	24-May-22


**M.B. COMPANIES, INC.**  
 OF WISCONSIN  
 3RD ANGLE PROJECTION

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS SUBJECT TO RETURN ON DEMAND BY M.B. COMPANIES. M.B. COMPANIES RETAINS ANY AND ALL RIGHTS ASSOCIATED WITH IT AND THE ARTICLE OR ARTICLES IT REPRESENTS. THE USE OF ANY PART OF THIS DRAWING OR MANUFACTURE, REPRODUCTION, OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF M.B. COMPANIES.

DESCRIPTION: WERK BRAU USA DECAL MEDIUM		SCALE: 1.000	SHEET 1 OF 1
SIZE: B	PART NUMBER: 390-215208	REV: 0	

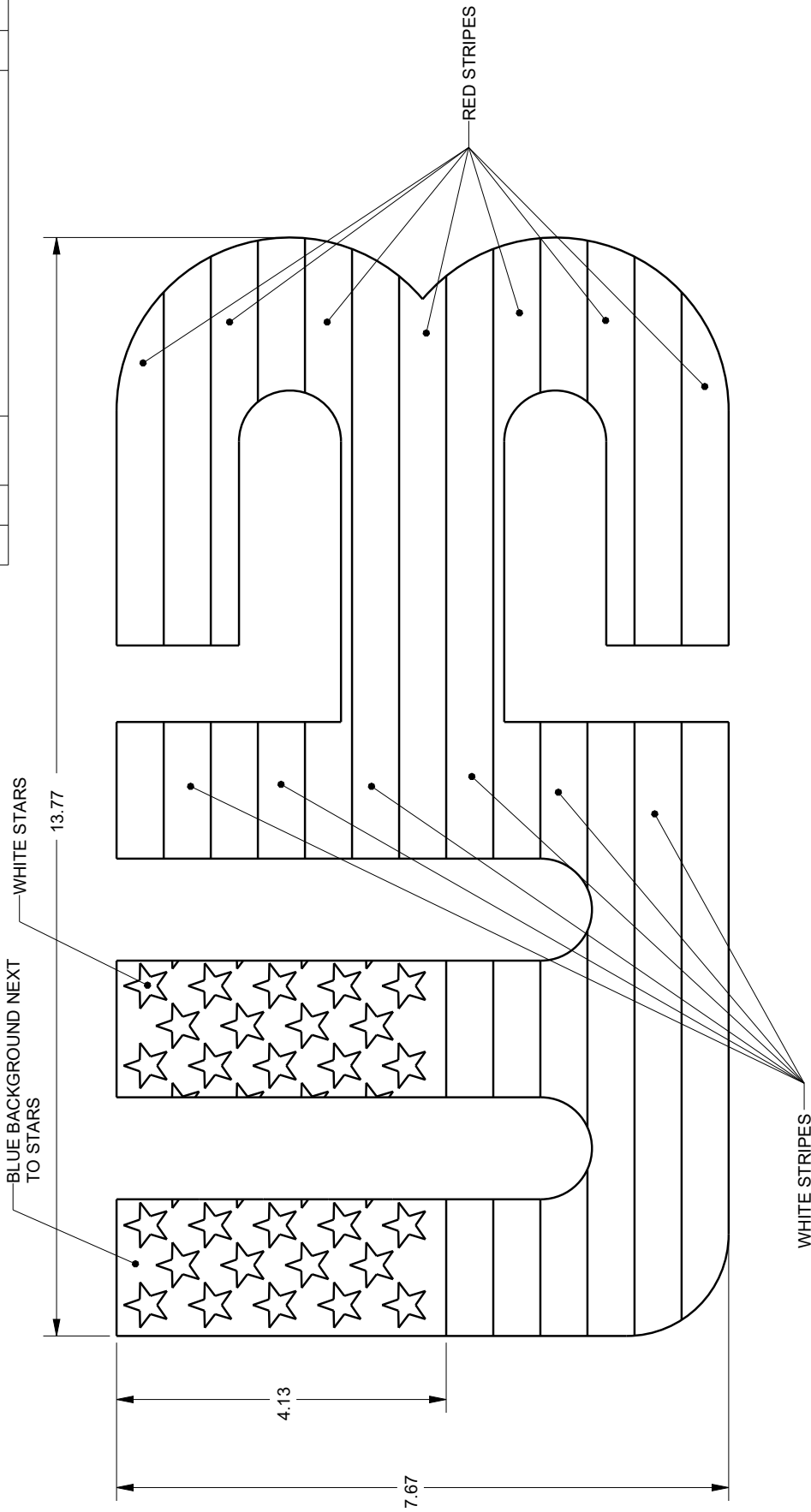
1

2

1

2

ZONE	REV	CN	DESCRIPTION	BY	DATE



SYM	QTY	DESCRIPTION	SIZE	PART NUMBER

**MATERIAL: PURCHASED**

TOLERANCE UNLESS OTHERWISE SPECIFIED

ENG	JAM	DATE
DRN	JAM	24-May-22
CHKD	SNT	24-May-22
APPRD	SNT	24-May-22

XXL .03  
XXXL .010

XY 4-103  
ANGLEZ 2

**mb**

M.B. COMPANIES, INC.  
OF WISCONSIN  
3RD ANGLE PROJECTION

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS SUBJECT TO RETURN ON DEMAND BY M.B. COMPANIES. M.B. COMPANIES RETAINS ANY AND ALL RIGHTS ASSOCIATED WITH IT AND THE ARTICLE OR ARTICLES IT REPRESENTS. REPRODUCTION OF ANY PART OF THIS DRAWING OR MANUFACTURE, USE OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF M.B. COMPANIES

**\*DESIGN OWNED AND CONTROLLED BY WERK BRAU**

DESCRIPTION: WERK BRAU USA DECAL LARGE

SCALE: 0.750

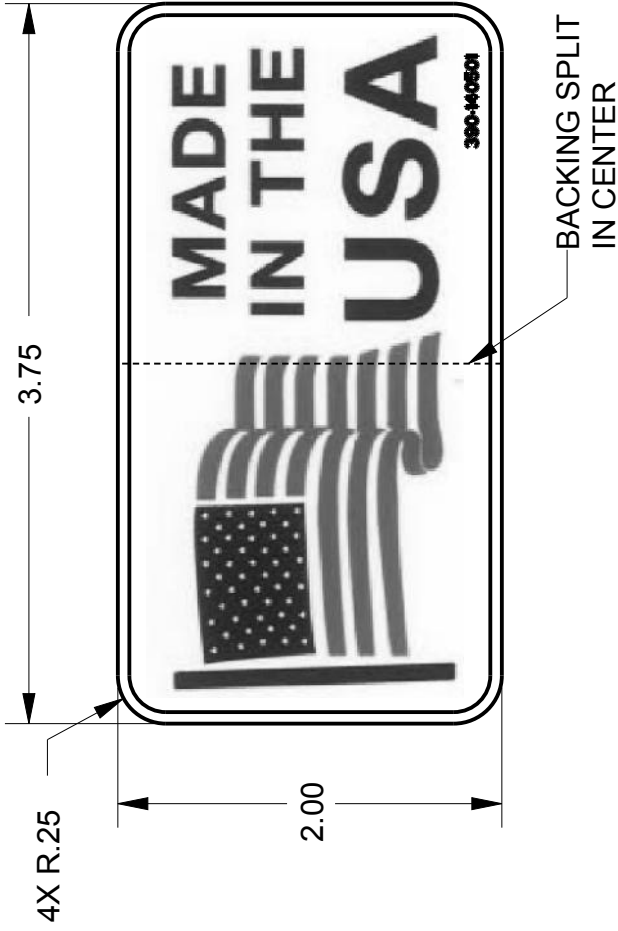
SHEET 1 OF 1

PART NUMBER: 390-215207

REV 0

WT (±2%): 0 LBS

ZONE	REV	CN	DESCRIPTION	BY	DATE	390-140501
-	A	-	DRAWN IN PRO/E, ADDED BORDER AND ROUNDED CORNERS	RMW	09-10-07	



MATERIAL: VINYL WITH ADHESIVE BACKING,  
 3M #468, 5-MIL THICKNESS ADHESIVE  
 COLORS: TEXT AND BORDER: NAVY BLUE  
 FLAG: RED, WHITE AND BLUE  
 BACKGROUND: WHITE  
 SUGGESTED SOURCE:

SYM	QTY	DESCRIPTION				SIZE	PART NUMBER
			X	QTY:	X	NAME:	DECAL, MADE IN THE USA
MATERIAL		NUMBER				SCALE:	1.000
PURCHASE		TOLERANCE UNLESS OTHERWISE SPECIFIED	DWN	RMW	DATE	SIZE	PART NO.
		.XX ± .03	X/Y ± 1/32			A	390-140501
		.XXX ± .010	ANGLE ± 2°	APP	DATE	REV	A
M-B COMPANIES, INC. OF WISCONSIN		3RD ANGLE PROJECTION					



ZONE	REV	CN	DESCRIPTION	BY	DATE

390-169222

R.13  
TYP

4.00



4.00

FLYING DEBRIS

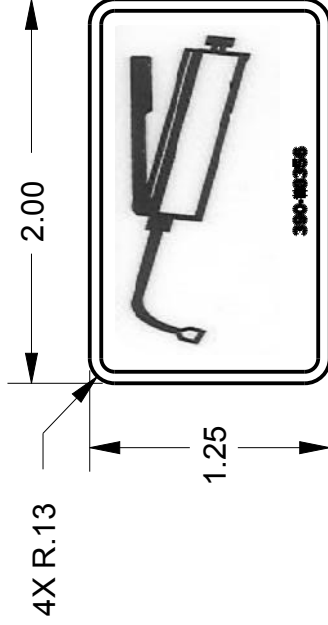


4.0"

4.0"

SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
MATERIAL	NUMBER	QTY:	NAME:	
4 MIL WHITE VINYL			WARNING LABEL FLYING DEBRIS	
TOLERANCE UNLESS OTHERWISE SPECIFIED	DWN	SMP	DATE	SCALE: 0.750
.XX ± .03	CKD	TAK	11-Jan-11	SHEET 1 OF 1
.XXX ± .010	APP	TAK	19-Sep-12	REV
			19-Sep-12	0
M-B COMPANIES, INC. OF WISCONSIN		3RD ANGLE PROJECTION		
				

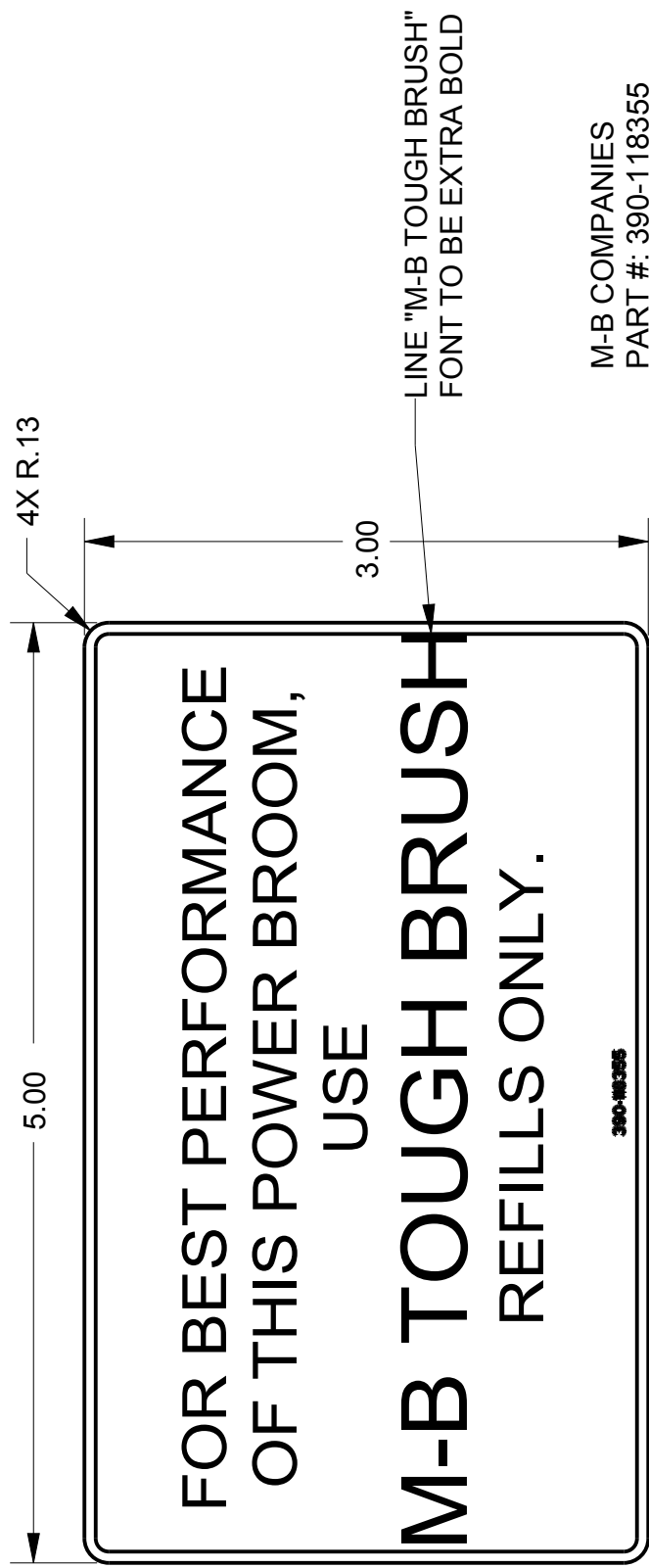
ZONE	REV	CN	DESCRIPTION	BY	DATE	390-118356
-	A	-	REDRAWN PRO/E, P/N WAS IN LOWER RH CORNER, DELETED "GREASE" TEXT, ENLARGED SYMBOL	RMW	09-11-07	





MATERIAL: VINYL WITH ADHESIVE BACKING  
 COLORS: BLACK TEXT, BORDER AND DETAIL  
 ON WHITE BACKGROUND  
 SUGGESTED SOURCE:

SYM	QTY	DESCRIPTION	SIZE	PART NUMBER
MATERIAL	NUMBER	X	QTY:	X
PURCHASE				
TOLERANCE UNLESS OTHERWISE SPECIFIED				
.XX ± .03	X/Y ± 1/32	DWN	RTR	DATE
.XXX ± .010	ANGLE ± 2°	CKD		DATE
		APP		DATE
M-B COMPANIES, INC. OF WISCONSIN		DECAL GREASE POINT		
3RD ANGLE PROJECTION		SCALE: 1.000		
		SHEET 1 OF 1		
		REV		
		A		
		390-118356		
		A		

ZONE	REV	CN	DESCRIPTION	BY	DATE	390-118355
-	-	-	REDRAWN CREO	RMW	03-Jan-18	



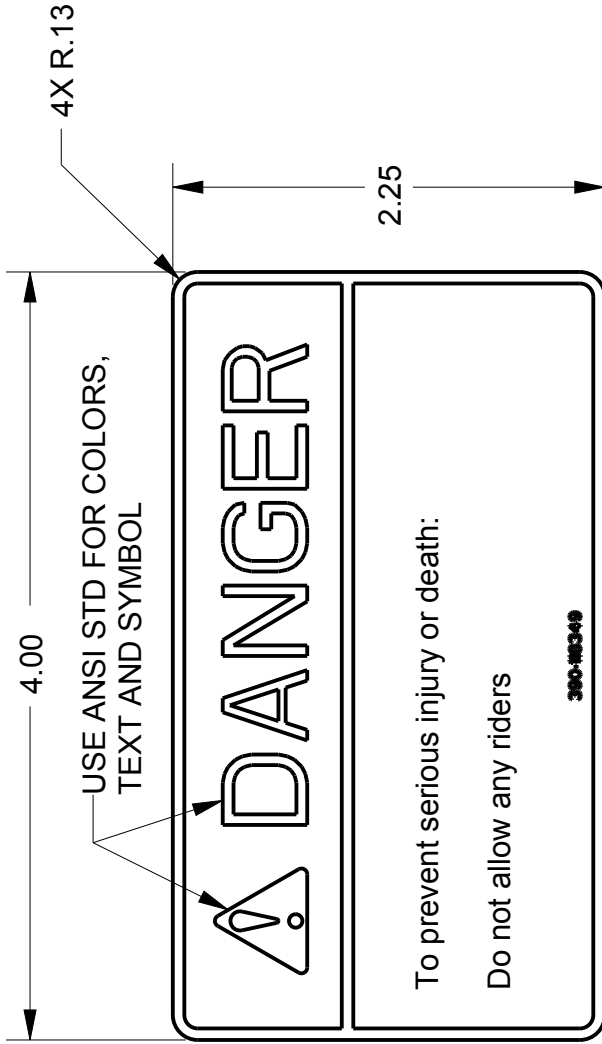
M-B COMPANIES  
 PART #: 390-118355  
 DESC.: SAFETY DECAL SET  
 R#: 19102  
 QUANTITY PER SET: 1  
 SIZE: 3" X 5" X .125" RAD.  
 COLOR: BLACK ON WHITE  
 DATE: 4/15/98

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS SUBJECT TO RETURN ON DEMAND BY MB COMPANIES. MB COMPANIES RETAINS ANY AND ALL RIGHTS ASSOCIATED WITH IT AND THE ARTICLE OR ARTICLES IT REPRESENTS. DISCLOSURE, REPRODUCTION OR ALTERATION OF ANY PART OF THIS DRAWING; OR MANUFACTURE, USE OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF MB COMPANIES			<b>MATERIAL: PURCHASE</b>				DESCRIPTION: LABEL, BRUSH REFILL	
	M-B COMPANIES, INC. OF WISCONSIN 3RD ANGLE PROJECTION		TOLERANCE UNLESS OTHERWISE SPECIFIED		ENG	RTR	DATE	SCALE: 1.000
	.XX± .03 .XXX± .010	XY ± 1/32 ANGLE ± 2°	DRN	RTR	DATE	SHEET 1 OF 1	SIZE	PART NUMBER:
		.XX± .03 .XXX± .010	CHKD	APRVD	DATE	A	390-118355	REV 0

WT (±2%): NA

ZONE	REV	CN	DESCRIPTION	BY	DATE
	0		REDRAW IN CREO	AHU	23-Sep-13

390-118349



M-B COMPANIES  
 PART #: 390-118349  
 DESC.: SAFETY DECAL SET  
 R/#: 19102  
 QUANTITY PER SET: 1  
 SIZE: 2.25" X 4" X .125" RAD.  
 COLOUR: RED AND BLACK  
 DATE: 4/15/98

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS SUBJECT TO RETURN ON DEMAND BY MB COMPANIES. MB COMPANIES RETAINS ANY AND ALL RIGHTS ASSOCIATED WITH IT, AND THE ARTICLE OR ARTICLES IT REPRESENTS. DISCLOSURE, REPRODUCTION OR ALTERATION OF ANY PART OF THIS DRAWING, OR MANUFACTURE, USE OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF MB COMPANIES



M-B COMPANIES, INC.  
 OF WISCONSIN  
 3RD ANGLE PROJECTION



**MATERIAL: PURCHASE**

TOLERANCE UNLESS OTHERWISE SPECIFIED

.XX ± .03  
 .XXX ± .010  
 XY ± 1/32  
 ANGLE ± 2°

DATE  
 DATE  
 DATE

DWN  
 CKD  
 APP

RTR  
 DATE  
 DATE

15-Apr-98  
 SHEET 1 OF 1  
 REV  
 0

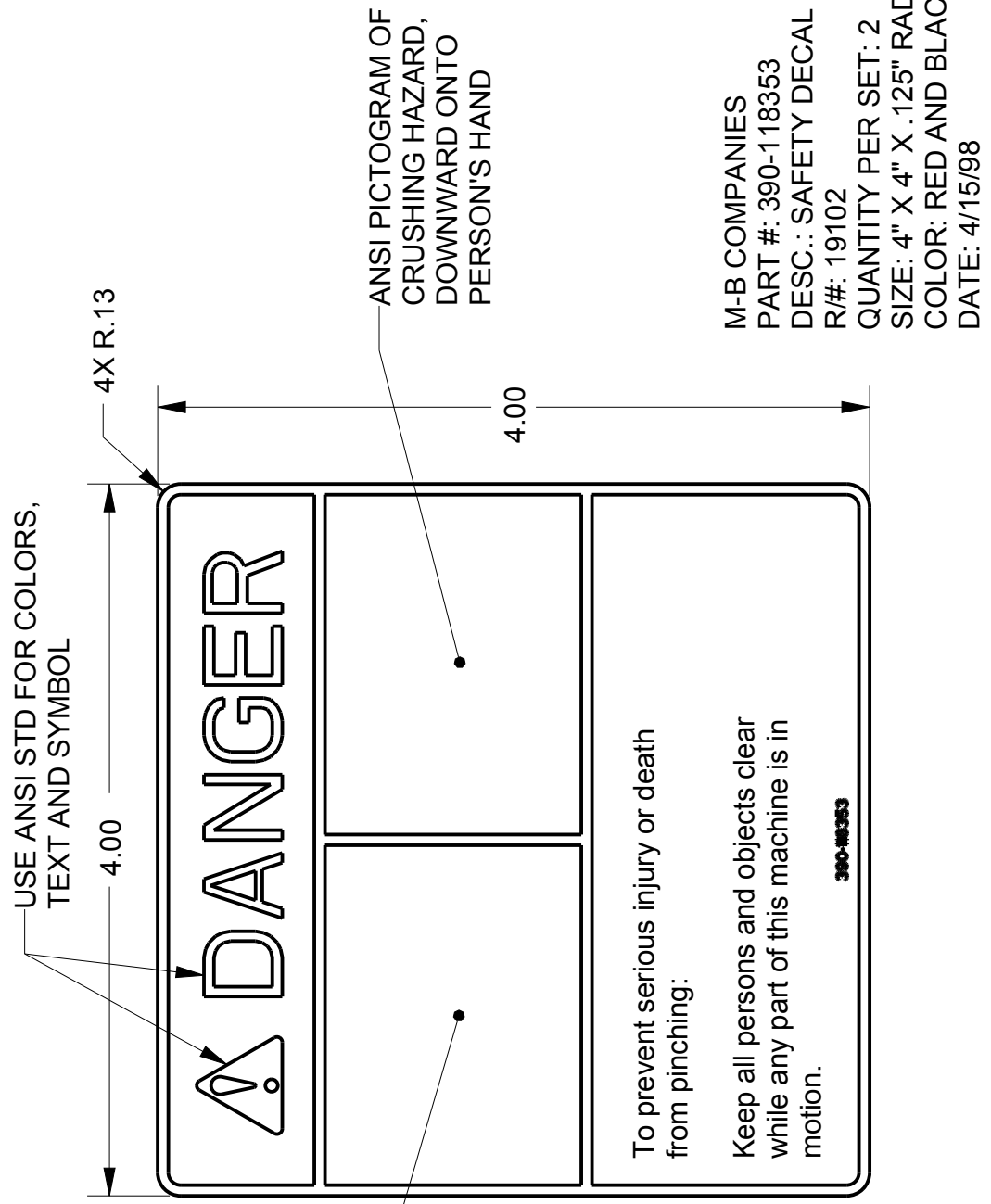
NAME:

DECAL DANGER  
 NO RIDERS

SCALE: 1.000

SIZE PART NO. 390-118349

ZONE	REV	CN	DESCRIPTION	BY	DATE	390-118353
-	-	-	REDRAWN CREO	RMW	03-Jan-18	



M-B COMPANIES  
 PART #: 390-118353  
 DESC.: SAFETY DECAL SET  
 R#: 19102  
 QUANTITY PER SET: 2  
 SIZE: 4" X 4" X .125" RAD.  
 COLOR: RED AND BLACK  
 DATE: 4/15/98

THIS DRAWING IS PROVIDED ON A CONFIDENTIAL BASIS SUBJECT TO RETURN ON DEMAND BY MB COMPANIES. MB COMPANIES RETAINS ANY AND ALL RIGHTS ASSOCIATED WITH IT AND THE ARTICLE OR ARTICLES IT REPRESENTS. DISCLOSURE, REPRODUCTION OR ALTERATION OF ANY PART OF THIS DRAWING; OR MANUFACTURE, USE OR SALE OF THE ARTICLE OR ARTICLES REPRESENTED, IS PROHIBITED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF MB COMPANIES	 M-B COMPANIES, INC. OF WISCONSIN 3RD ANGLE PROJECTION	MATERIAL: PURCHASE				DESCRIPTION: LABEL, DANGER PINCHING	
		TOLERANCE UNLESS OTHERWISE SPECIFIED	ENG DRN CHKD APRVD	RTR RTR	DATE DATE DATE DATE	15-Apr-98 15-Apr-98	SCALE: 1.000 SHEET 1 OF 1
		.XX± .03 .XXX± .010	XY ± 1/32 ANGLE ± 2°			SIZE A	PART NUMBER: 390-118353

WT (±2%): NA