



# OPERATOR'S AND PARTS MANUAL

## MM60 AND MM72 MULCHERS



**PALADIN™**  
LIGHT CONSTRUCTION GROUP



*The Power of Combined Excellence*



SERIAL NUMBER: \_\_\_\_\_

MODEL NUMBER: \_\_\_\_\_

Manual Number: OM713  
Part Number: 75613  
Rev. 5

**U.S. PATENT NO. 7,578,482 B2**

## **READ ENTIRE OPERATOR'S & PARTS MANUAL BEFORE OPERATING!**

**DANGER!** ROTATING DRUM HAZARD! STAY BACK! OBJECTS CAN BE THROWN!  
DO NOT operate near bystanders.



**DANGER!** TO AVOID SERIOUS PERSONAL INJURY OR DEATH THE BRADCO  
MULCHER MUST NOT BE ATTACHED TO ANY POWER UNIT THAT  
DOES NOT HAVE A FORESTRY GUARD PACKAGE INSTALLED.



**DANGER!** FLYING DEBRIS HAZARD. CLEAR AREA OF BYSTANDERS AND LIVE-  
STOCK BEFORE OPERATING. THE MULCHER IS CAPABLE OF PRO-  
DUCING LARGE AMOUNTS OF FLYING DEBRIS IN ALL DIRECTIONS.



**WARNING!** Before leaving the operator's seat: Lower the lift arms against frame  
and place unit on the ground. Disengage auxiliary hydraulics. Engage  
parking brake. Stop Engine. Remove the key.



**WARNING!** These BRADCO Mulchers should never be operated more than 18"  
above the ground.



If there is any portion of this manual or function you do not understand, con-  
tact your local authorized dealer or the manufacturer.

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# PREFACE

## GENERAL COMMENTS

Congratulations on the purchase of your new BRADCO product! This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

**WARNING!**  **Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual. Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.**

Unless noted otherwise, right and left sides are determined from the operator's control position when facing the attachment.

**NOTE:** The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

## BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer.

## SAFETY ALERT SYMBOL



This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

## SERVICE

When servicing your product, remember to use only manufacturer replacement parts. Substitute parts may not meet the standards required for safe, dependable operation.

To facilitate parts ordering, record the model and serial number of your unit in the space provided on the cover of this manual. This information may be obtained from the identification plate located on the product.

The parts department needs this information to insure that you receive the correct parts for your specific model.

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# SAFETY STATEMENTS



THIS SYMBOL BY ITSELF OR WITH A WARNING WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



## DANGER

THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



## WARNING

THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



## CAUTION

THIS SIGNAL WORD IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

## NOTICE

NOTICE INDICATES A PROPERTY DAMAGE MESSAGE.

## GENERAL SAFETY PRECAUTIONS

### WARNING!

#### READ MANUAL PRIOR TO INSTALLATION



Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual, as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).**



#### READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws, and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing, or operating this equipment.



#### KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions, and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to ensure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued, or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn or hard to read.

## GENERAL SAFETY PRECAUTIONS

### WARNING!



#### PROTECT AGAINST FLYING DEBRIS

Always wear proper safety glasses, goggles, or a face shield when driving pins in or out, or when any operation causes dust, flying debris, or any other hazardous material.

### WARNING!



#### LOWER OR SUPPORT RAISED EQUIPMENT

Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or on blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

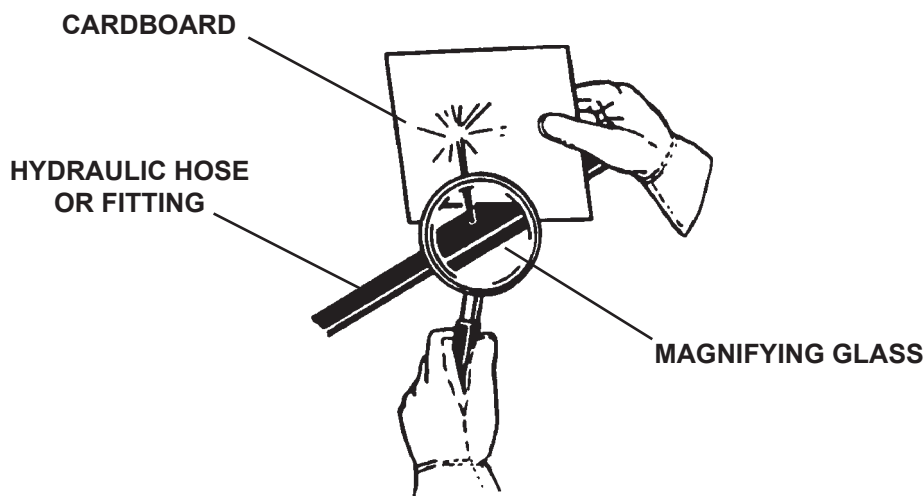
### WARNING!



#### USE CARE WITH HYDRAULIC FLUID PRESSURE

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime mover's operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
- If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS!** **SEE ILLUSTRATION.**





## GENERAL SAFETY PRECAUTIONS

### WARNING!



#### DO NOT MODIFY MACHINE OR ATTACHMENTS

Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any ROPS (Roll Over Protection Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.

### WARNING!



#### SAFELY MAINTAIN AND REPAIR EQUIPMENT

- Do not wear loose clothing or any accessories that can catch in moving parts. If you have long hair, cover or secure it so that it does not become entangled in the equipment.
- Work on a level surface in a well-lit area.
- Use properly grounded electrical outlets and tools.
- Use the correct tools for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.



#### SAFELY OPERATE EQUIPMENT

Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for these instructions.

- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
- Never allow anyone to be around the equipment when it is operating.
- Do not allow riders on the attachment or the prime mover.
- Do not operate the equipment from anywhere other than the correct operator's position.
- Never leave equipment unattended with the engine running, or with this attachment in a raised position.
- Do not alter or remove any safety feature from the prime mover or this attachment.
- Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

# EQUIPMENT SAFETY PRECAUTIONS

## WARNING!



### KNOW WHERE UTILITIES ARE

Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for location of buried utility lines, gas, water, and sewer, as well as any other hazard you may encounter.

## WARNING!



### EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATORY DISEASE.

It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

## WARNING!



### REMOVE PAINT BEFORE WELDING OR HEATING

Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



### OPERATING THE MULCHER

- Block off work area from bystanders, livestock, etc. Flying debris can cause severe injury or death. The mulcher is capable of producing large amounts of flying debris in all directions.
- Do NOT operate without a forestry guard package installed on the prime mover.
- Operate only from the operator's station.
- Be aware when mulching standing trees, there is a danger of the treetop falling back onto the operator's cab.
- Do not engage or disengage the drum while the engine rpm's are above 750.
- Do not operate the mulcher with the attachment over 18" above the ground.
- Do not lift loads in excess of the capacity of the prime mover. Lifting capacity decreases
- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn.
- Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.
- Before exiting the prime mover, lower the attachment to the ground, apply the brakes turn off the prime mover's engine, and remove the key.

# EQUIPMENT SAFETY PRECAUTIONS



## TRANSPORTING THE MULCHER

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc., to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavations, etc., cave in could result.
- Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.



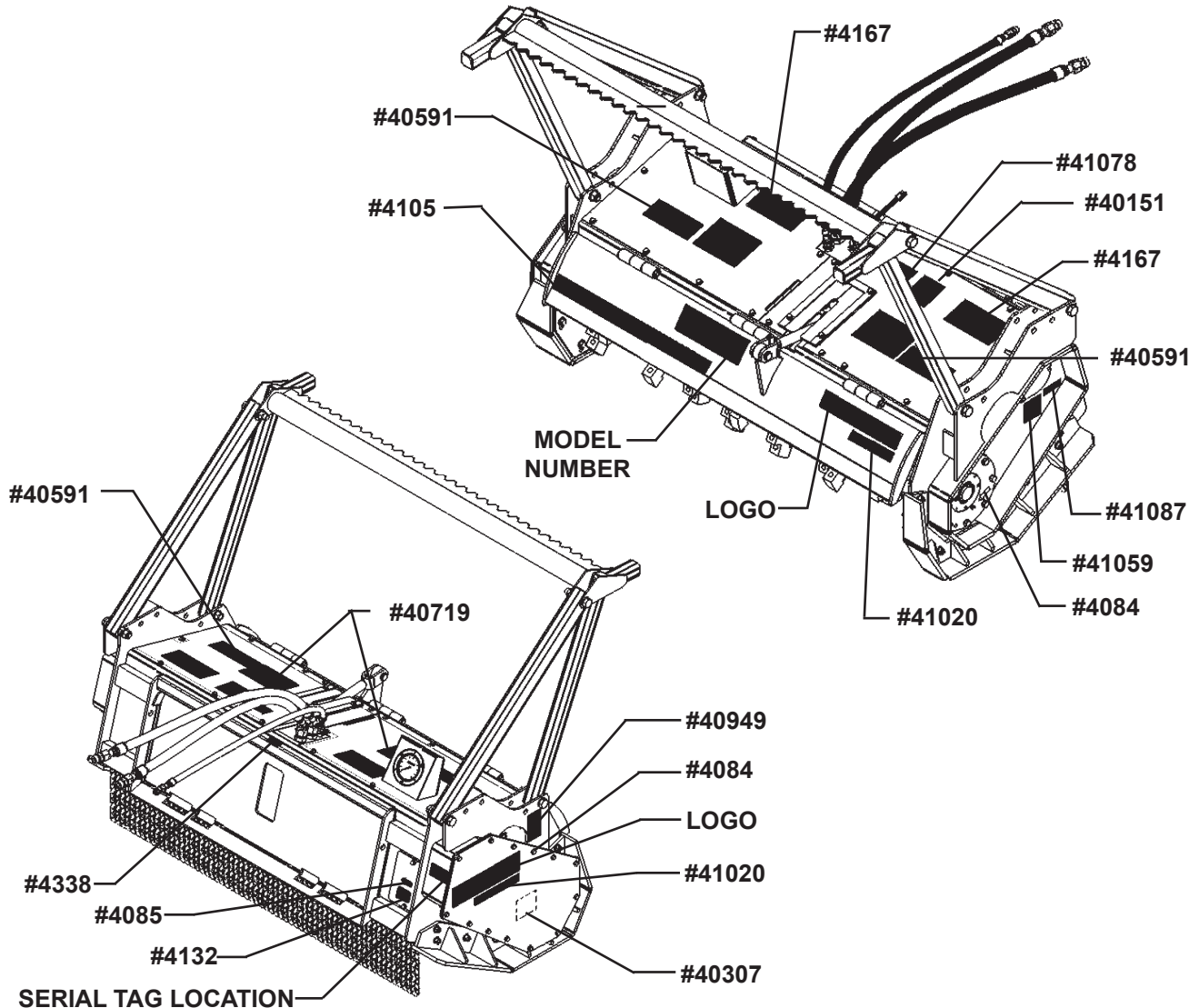
## MAINTAINING THE MULCHER

- Before performing maintenance, disengage auxiliary hydraulics, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator manual's before any repair is made. After completing maintenance or repair, check for correct functioning of the attachment. If not functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from BRADCO.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.

# DECALS

## GENERAL INFORMATION

The diagram on this page shows the location of the decals used on the BRADCO Mulchers. The decals are identified by their part numbers, with reductions of the actual decals located on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the attachment. They contain information you need to know for both safety and longevity.



**IMPORTANT:** Keep all safety signs clean and legible. Replace all missing, illegible, or damaged safety signs. When replacing parts with safety signs attached, the safety signs must also be replaced.

**REPLACING SAFETY SIGNS:** Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety sign, exposing the adhesive surface. Apply the safety sign to the position shown in the diagram above and smooth out any bubbles.

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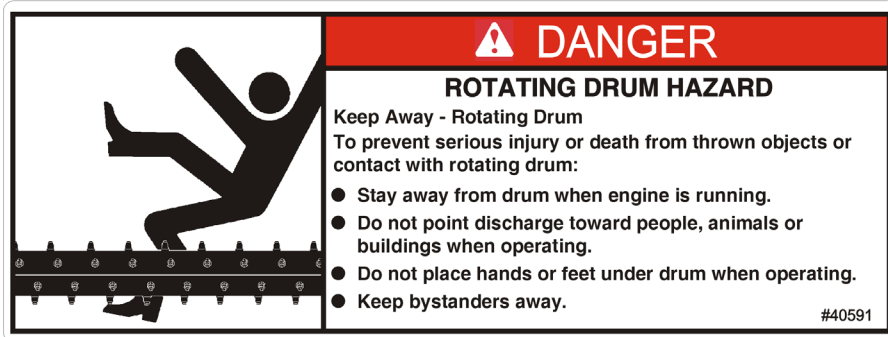
## DECALS



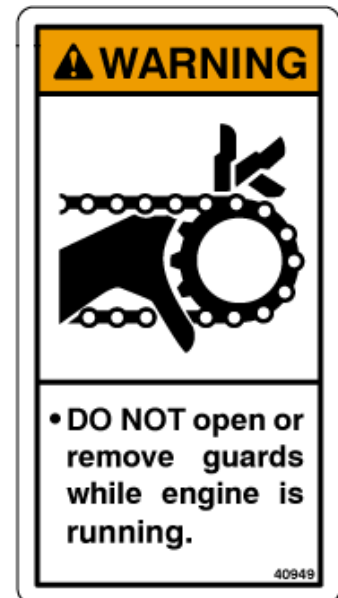
**DANGER! FLYING DEBRIS**  
PART #40719



**WARNING! HIGH PRESSURE FLUID**  
PART #40151



**DANGER! ROTATING DRUM**  
PART #40591



**WARNING! GUARDS**  
PART #40949



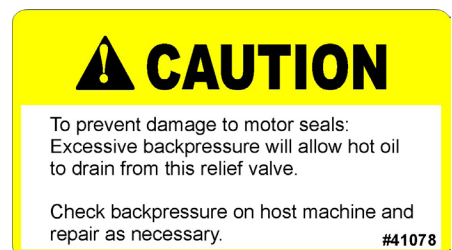
**DANGER! STAND CLEAR**  
PART #4105



**CLEAN DEBRIS - 8 HOURS**  
PART #41087



**DANGER! GUARD MISSING**  
PART #40307

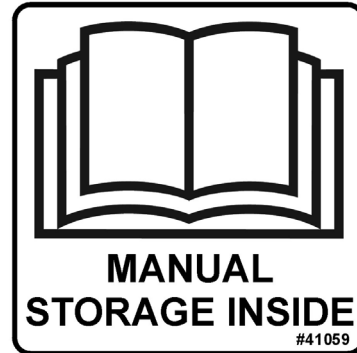


**CAUTION! CHECK BACK PRESSURE**  
PART #41078

## DECALS



NO STEP  
PART #4167



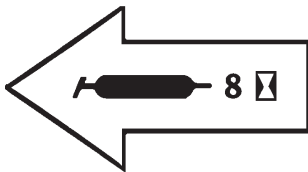
MANUAL STORAGE INSIDE  
PART #41059



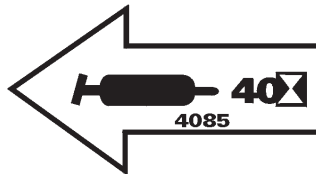
MADE IN U.S.A.  
PART #4338



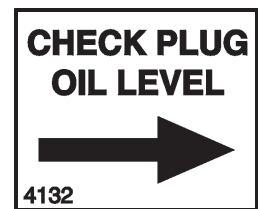
MULCHER LOGO  
PART #41020



GREASE EVERY 8 HOURS  
PART #4084



GREASE EVERY 40 HOURS  
PART #4085



CHECK OIL LEVEL  
PART #4132

**NOTE: CONTACT YOUR LOCAL DEALER FOR MODEL NUMBER AND LOGO DECALS.**

# SET-UP

## MOTOR DISPLACEMENT

Due to the range of prime movers the BRADCO mulcher is designed for, the motor displacement is adjustable to various GPM and rotor RPM to give you optimum productivity for your particular application. The displacement must be adjusted and then “locked in”.

For optimum productivity and proper operation the displacement on the mulcher motor needs to be adjusted for the “ACTUAL” GPM of your prime mover and the desired RPM of the mulcher rotor. With the engine at full throttle, set the rotor RPM between 1800 - 2000 RPM. (Factory settings are 41 CC on all 60” mulchers, the 112729 & 112730 MM72 mulchers are both set at 50 CC while the 113750 MM72 mulcher is factory set at 76 CC.)

**NOTICE:** *Insufficient RPM (below 1800) will greatly reduce the productivity of your unit while overspeeding (above 2000) can cause serious damage to the motor and hammers.*

See the following charts for correct adjustment of the limit screw for the motor minimum displacement.

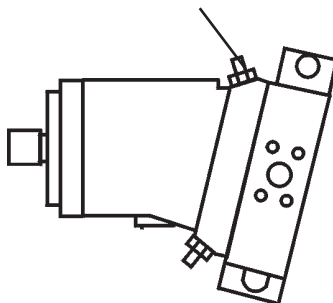
### To Adjust Minimum Limit Screw:

**Loosen and hold the locking nut while turning the minimum limit screw to the desired dimension and then hold the limit screw while turning the locking nut and therefore locking it in place.**

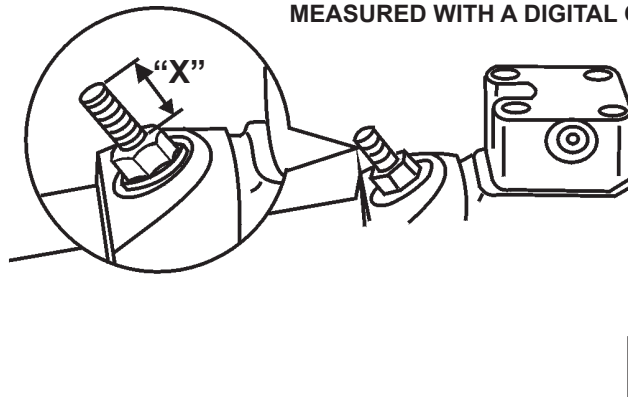
It is recommended that the drum RPM be checked with a tachometer after adjustments have been completed. To increase RPM, increase “X” dimension. To decrease RPM decrease the “X” dimension. The maximum displacement limit screw is adjusted at the factory.

**IMPORTANT:** Prime mover must be at operating temperature prior to adjustment.

MINIMUM LIMIT SCREW



BEST RESULTS ARE OBTAINED WHEN MEASURED WITH A DIGITAL CALIPER.



**NOTE:** These mulchers include a 6mm allen wrench and 19mm wrench to adjust the displacement screws.

## SET-UP

60" SKID STEER ONLY MULCHER 30-45 GPM / 80CC (107251 HYDRAULIC MOTOR SN 248067 AND UP)						
	1800 ROTOR RPM		1900 ROTOR RPM		2000 ROTOR RPM	
GPM	DISPLACEMENT (CC)	SCREW (M12X110) DIMENSION X (IN)	DISPLACEMENT (CC)	SCREW (M12X110) DIMENSION X (IN)	DISPLACEMENT (CC)	SCREW (M12X110) DIMENSION X (IN)
30	36.1	1.39	34.2	1.43	32.4	1.47
31	37.3	1.36	35.3	1.40	33.5	1.44
32	38.5	1.33	36.4	1.38	34.6	1.42
33	39.7	1.31	37.6	1.35	35.7	1.40
34	40.9	1.29	38.7	1.33	36.8	1.37
35	42.1	1.25	39.8	1.30	37.9	1.35
36	43.3	1.23	41.0	1.28	38.9	1.32
37	44.5	1.20	42.1	1.25	40.0	1.30
38	45.7	1.17	43.3	1.23	41.1	1.27
39	46.9	1.15	44.4	1.20	42.2	1.25
40	48.1	1.12	45.5	1.18	43.3	1.23
41	49.3	1.09	46.7	1.15	44.3	1.20
42	50.5	1.06	47.8	1.12	45.4	1.18
43	51.7	1.04	49.0	1.10	46.5	1.15
44	52.9	1.01	50.1	1.07	47.6	1.13
45	54.1	0.98	51.2	1.05	48.7	1.11

60" MULCHER 30-45 GPM / 107CC (200-169 HYDRAULIC MOTOR - UP TO SN 248066)						
	1800 ROTOR RPM		1900 ROTOR RPM		2000 ROTOR RPM	
GPM	DISPLACEMENT (CC)	SCREW (M12X80) DIMENSION X (IN)	DISPLACEMENT (CC)	SCREW (M12X80) DIMENSION X (IN)	DISPLACEMENT (CC)	SCREW (M12X80) DIMENSION X (IN)
30	36.1	.56	34.2	.59	32.4	.62
31	37.3	.53	35.3	.57	33.5	.60
32	38.5	.51	36.4	.55	34.6	.58
33	39.7	.49	37.6	.53	35.7	.56
34	40.9	.47	38.7	.51	36.8	.54
35	42.1	.45	39.8	.49	37.9	.52
36	43.3	.42	41.0	.47	38.9	.50
37	44.5	.40	42.1	.44	40.0	.48
38	45.7	.38	43.3	.42	41.1	.46
39	46.9	.36	44.4	.40	42.2	.44
40	48.1	.34	45.5	.38	43.3	.42
41	49.3	.31	46.7	.36	44.3	.40
42	50.5	.29	47.8	.34	45.4	.38
43	51.7	.27	49.0	.32	46.5	.36
44	52.9	.25	50.1	.30	47.6	.34
45	54.1	.23	51.2	.28	48.7	.32



# SET-UP

60" COMBO AND EXCAVATOR MULCHERS 30-45 GPM / 80CC (200-169 HYDRAULIC MOTOR 248067 AND UP)						
	1800 ROTOR RPM		1900 ROTOR RPM		2000 ROTOR RPM	
GPM	DISPLACEMENT (CC)	SCREW (M12X110) DIMENSION X (IN)	DISPLACEMENT (CC)	SCREW (M12X110) DIMENSION X (IN)	DISPLACEMENT (CC)	SCREW (M12X110) DIMENSION X (IN)
30	36.1	1.73	34.2	1.77	32.4	1.80
31	37.3	1.71	35.3	1.75	33.5	1.78
32	38.5	1.69	36.4	1.73	34.6	1.76
33	39.7	1.67	37.6	1.71	35.7	1.74
34	40.9	1.65	38.7	1.68	36.8	1.72
35	42.1	1.62	39.8	1.66	37.9	1.70
36	43.3	1.60	41.0	1.64	38.9	1.68
37	44.5	1.58	42.1	1.62	40.0	1.66
38	45.7	1.56	43.3	1.60	41.1	1.64
39	46.9	1.54	44.4	1.58	42.2	1.62
40	48.1	1.51	45.5	1.56	43.3	1.60
41	49.3	1.49	46.7	1.54	44.3	1.58
42	50.5	1.47	47.8	1.52	45.4	1.56
43	51.7	1.45	49.0	1.50	46.5	1.54
44	52.9	1.43	50.1	1.48	47.6	1.52
45	54.1	1.40	51.2	1.46	48.7	1.50
46	55.3	1.38	52.4	1.44	49.8	1.48
47	56.5	1.36	53.5	1.42	50.8	1.46
48	57.7	1.34	54.6	1.39	51.9	1.44
49	58.9	1.32	55.8	1.37	53.0	1.42
50	60.1	1.30	56.9	1.35	54.1	1.40
51	61.3	1.27	58.1	1.33	55.2	1.39
52	62.5	1.25	59.2	1.31	56.2	1.37
53	63.7	1.23	60.3	1.29	57.3	1.35
54	64.9	1.21	61.5	1.27	58.4	1.33
55	66.1	1.19	62.6	1.25	59.5	1.31
56	67.3	1.16	63.8	1.23	60.6	1.29
57	68.5	1.14	64.9	1.21	61.6	1.27
58	69.7	1.12	66.0	1.19	62.7	1.25
59	70.9	1.10	67.2	1.17	63.8	1.23
60	72.1	1.08	68.3	1.15	64.9	1.21

<b>72" MULCHER 40-45 GPM / 107CC (114325 HYDRAULIC MOTOR)</b>						
	<b>1800 ROTOR RPM</b>		<b>1900 ROTOR RPM</b>		<b>2000 ROTOR RPM</b>	
<b>GPM</b>	<b>DISPLACEMENT (CC)</b>	<b>SCREW (M12X110) DIMENSION X (IN)</b>	<b>DISPLACEMENT (CC)</b>	<b>SCREW (M12X110) DIMENSION X (IN)</b>	<b>DISPLACEMENT (CC)</b>	<b>SCREW (M12X110) DIMENSION X (IN)</b>
40	84.1	.86	79.7	.94	75.7	1.01
41	86.2	.82	81.7	.90	77.6	.98
42	88.3	.78	83.7	.87	79.5	.94
43	90.4	.74	85.7	.83	81.4	.91
44	92.5	.71	87.7	.79	83.3	.87
45	94.6	.67	89.7	.76	85.2	.84

<b>72" MULCHER 30-45 GPM / 80CC (107251 HYDRAULIC MOTOR)</b>						
	<b>1800 ROTOR RPM</b>		<b>1900 ROTOR RPM</b>		<b>2000 ROTOR RPM</b>	
<b>GPM</b>	<b>DISPLACEMENT (CC)</b>	<b>SCREW (M12X100) DIMENSION X (IN)</b>	<b>DISPLACEMENT (CC)</b>	<b>SCREW (M12X100) DIMENSION X (IN)</b>	<b>DISPLACEMENT (CC)</b>	<b>SCREW (M12X100) DIMENSION X (IN)</b>
30	44.2	1.21	41.8	1.26	39.7	1.31
31	45.6	1.18	43.2	1.23	41.1	1.28
32	47.1	1.14	44.6	1.20	42.4	1.25
33	48.6	1.11	46.0	1.17	43.7	1.22
34	50.1	1.08	47.4	1.14	45.0	1.19
35	51.5	1.04	48.8	1.11	46.4	1.16
36	53.0	1.01	50.2	1.08	47.7	1.13
37	54.5	.98	51.6	1.04	49.0	1.10
38	55.9	.95	53.0	1.01	50.3	1.07
39	57.4	.91	54.4	.98	51.7	1.04
40	58.9	.88	55.8	.95	53.0	1.01
41	60.4	.85	57.2	.92	54.3	.98
42	61.8	.81	58.6	.89	55.6	.95
43	63.3	.78	60.0	.85	57.0	.92
44	64.8	.75	61.4	.82	58.3	.89
45	66.2	.71	62.8	.79	59.6	.86

# INSTALLATION

## GENERAL INFORMATION

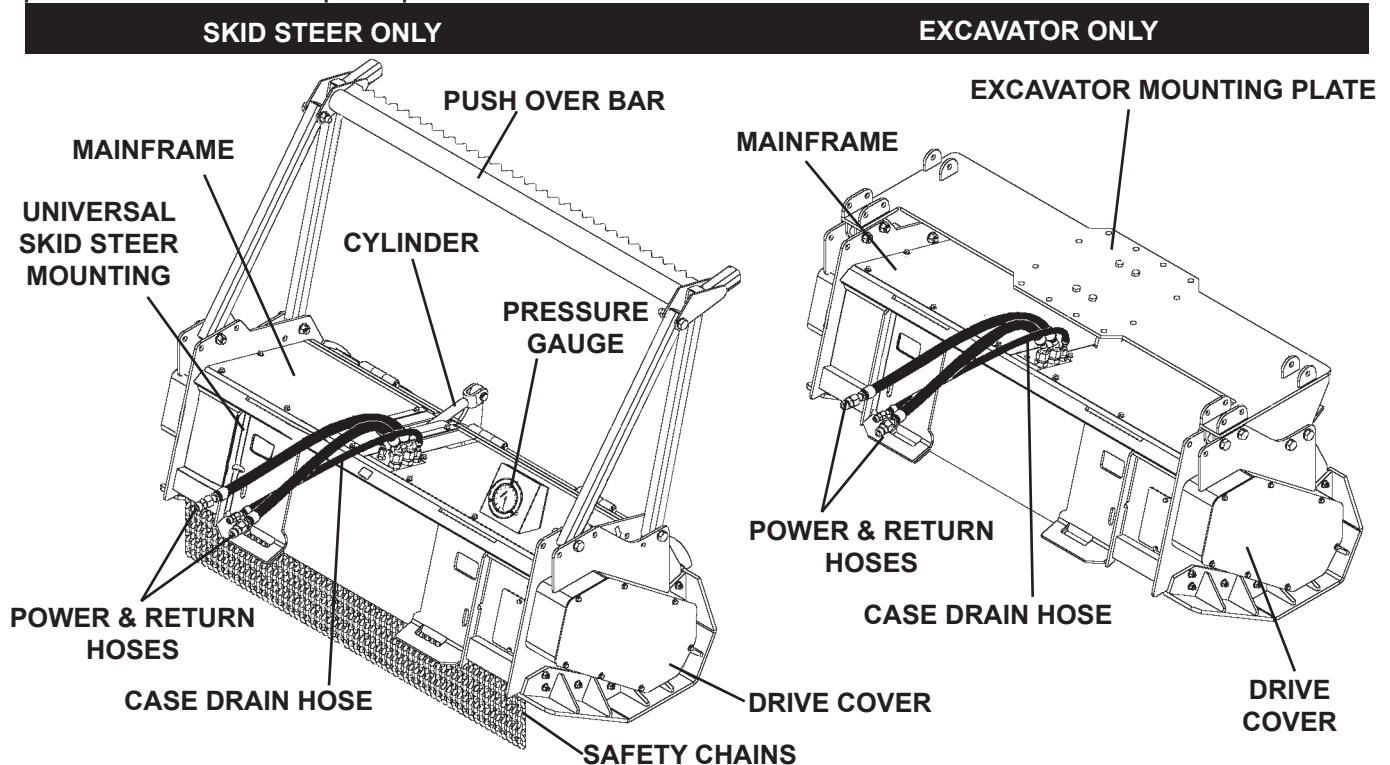
The BRADCO Mulchers were designed to be easy to use and maintain. The MM60 mulchers are available with skid steer only mounting, excavator only mounting or a combination mulcher that can be easily changed from skid steer mounting to excavator mounting. The MM72 mulchers are available with universal skid steer mounting.

When installing a hydraulic 3-line mulcher onto your prime mover a control box assembly #15754 or a pigtail adaptor harness for in-cab controls is required to operate the deflector door. Both mulcher widths are available with 5-line hydraulics that require dual auxiliary hydraulics on your prime mover. The MM72 (113750) mulcher was designed for a universal hitch, forestry vehicle and requires 40-45 GPM and 5500 PSI to operate.

**NOTICE: DO NOT operate the BRADCO Mulcher on standard flow hydraulic systems.**

## NOMENCLATURE

Throughout this manual, reference is made to various mulcher components. Study the following diagrams to acquaint yourself with the various names of these components. The combination mulcher is not shown but has components from both attachments shown below. This knowledge will be helpful when reading through this manual or when ordering service parts. There is a complete parts breakdown for each mulcher at the back of this manual.



## ATTACHING - UNIVERSAL SKID STEER MOUNTING

**NOTE: Before attaching the mulcher to your prime mover, make sure a forestry guard package has been installed onto the prime mover. This is required to protect the operator from possible thrown objects.**

Install the BRADCO Mulcher by following your prime mover operator's manual for proper installation of an attachment. When attaching the hoses to the prime mover, the case drain line must be connected first, then the power and return hoses (middle hose is return and back hose power).

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# INSTALLATION

When disconnecting the hoses, it is recommended to disconnect the case drain line last. This will prevent any over pressurization of the motor case on the mulcher head. Install control box #15754 to electrical harness on mulcher or install a pigtail adaptor to adapt the wiring harness on the mulcher to your in-cab controls (if so equipped).

**IMPORTANT: Check hoses for kinks or pinching. Reroute if necessary. Oil leaking from the atmospheric relief on motor is caused by improper connection, obstruction or damaged coupler on the case drain line. Make any necessary adjustments before operating.**

**WARNING!** To Avoid Serious Personal Injury, make sure the mulcher is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the unit.



Clear the area of all bystanders during installation.

## ATTACHING - EXCAVATOR

A separate mounting kit is required to install the BRADCO Mulcher onto your excavator. Install the mounting bracket to the mulcher mounting plate. Install the mulcher to your excavator by following your power unit operator's manual for proper installation of an attachment. When attaching the hoses to the excavator, the case drain line must be connected first, then the power and return hoses (middle hose is return and back hose power). When disconnecting the hoses, it is recommended to disconnect the case drain line last. This will prevent any over pressurization of the motor case on the mulcher head. NOTE: The case drain line must be installed from the mulcher head to the excavator hydraulic tank. The case drain line must be unrestricted all the way to the tank.

**IMPORTANT: Check hoses for kinks or pinching. Reroute if necessary. Oil leaking from the atmospheric relief on motor is caused by improper connection, obstruction or damaged coupler on the case drain line. Make any necessary adjustments before operating.**

**WARNING!** To Avoid Serious Personal Injury, make sure the mulcher is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the unit.



Clear the area of all bystanders during installation.

## ATTACHING - COMBINATION MULCHER

The combination mulcher can be mounted to a skid steer or excavator.

**NOTE: The attachment ships skid-steer ready. See "CHANGING COMBINATION MULCHER MOUNTING" for changing from skid steer mounting to excavator mounting and back again.**

Install the mulcher to your skid steer or excavator by following your prime mover's operator's manual for proper installation of an attachment. When attaching the hoses, the case drain line must be connected first, then the power and return hoses (middle hose is return and back hose power). When disconnecting the hoses, it is recommended to disconnect the case drain line last. This will prevent any over pressurization of the motor case on the mulcher head.

**NOTE: If installing onto an excavator the case drain line must be installed from the mulcher head to the excavator hydraulic tank. The case drain line must be unrestricted all the way to the tank.**

# INSTALLATION

**IMPORTANT:** Check hoses for kinks or pinching. Reroute if necessary. Oil leaking from the atmospheric relief on motor is caused by improper connection, obstruction or damaged coupler on the case drain line. Make any necessary adjustments before operating.

**WARNING!** To Avoid Serious Personal Injury, make sure the mulcher is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the unit.



Clear the area of all bystanders during installation.

## DETACHING

On firm, level ground. Lower the mulcher to the ground.

Move the control levers back and forth to relieve pressure in the line.

Disconnect couplers. (When disconnecting the hoses, it is recommended to disconnect the case drain line last. This will prevent any over pressurization of the motor case on the mulcher head.)

**NOTE: Connect couplers together or install dust caps and plugs to prevent contaminants from entering the hydraulic system.**

Disconnect the auxiliary electrical connection or the control box from the prime mover and secure the wire harness to the attachment (if so equipped).

Follow your prime mover operator's manual for detaching (removing) an attachment.

**WARNING!** Clear the area of all bystanders during removal.



**NOTE:** Frequent lubrication of grease fittings with a multi-purpose grease will greatly increase the life of the product.

**IMPORTANT: DISENGAGE THE AUXILIARY HYDRAULICS, STOP THE ENGINE, ENGAGE PARKING BRAKE AND REMOVE KEY BEFORE LEAVING THE OPERATOR'S STATION.**

## CHANGING COMBINATION MULCHER MOUNTING

The combination mulcher can be mounted to a skid steer or excavator with very few changes. The attachment ships skid steer ready.

### To Change From Skid Steer to Excavator Mounting:

1. Install the excavator mount(s).
2. Retract the cylinder and remove the deflector door. NOTE: The cylinder can remain on the unit.
3. Disconnect electrical connection. (Disconnect mulcher electrical harness from control box #15754 or pigtail adaptor going to in-cab electrical outlet.)
4. Adjust or remove the push over bar to clear the excavator dipper. NOTE: We recommend removing the push over bar to help facilitate the installation of the unit onto your excavator.

### To Change From Excavator Mounting:

1. Remove the excavator mount(s).
2. Install the deflector door.
3. Connect the cylinder to the deflector door.
4. If the push over bar was removed, reinstall using the existing hardware.
5. Reinstall electrical connection. (Connect mulcher electrical harness to control box #15754 or pigtail adaptor going to in-cab electrical outlet.)

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# OPERATION

## GENERAL INFORMATION

The BRADCO Mulcher is perfect for clearing tall weeds, heavy brush and hardwood tree's up to 8" in diameter. There are three 60" models of the mulcher available, one attaches to the toolbar/quick-attach mechanism of your skid steer loader, one installs onto your excavator with the addition of a mounting kit and the third unit is a combination mulcher which is equipped for skid steer loaders and excavators. There are also three models of 72" mulchers available, all with universal skid steer mounting. Two models are for 30-45 GPM units with 4000 PSI and the third was designed for a forestry vehicle and requires 40-45 GPM and 5500 PSI. Due to this arrangement, thorough knowledge of the prime mover is necessary for machine operation. Read and understand your prime mover's operator's manual before attempting to use the mulcher.

Follow the installation instructions for installing the mulcher onto your prime mover.

**WARNING!** Block off the work area from bystanders and livestock. Flying debris can cause severe personal injury or death. The mulcher is capable of producing large amounts of flying debris in all directions.



**Do not operate without a forestry guard package installed on your prime mover.**

**Do not engage or disengage the drum while the engine rpm's are above a low idle.**

**WARNING!** Before exiting the prime mover, lower the attachment to the ground, disengage auxiliary hydraulics, engage parking brake, turn off the engine and remove the key.



## CASE DRAIN

The case drain hose coming from the mulcher to the prime mover must never become pinched, removed from the machine while in operation, or have any type of restriction at any time. Any quick connect fitting used on the case drain line should be bi-directional, with no check valve or flow restrictions. Any type of restriction in this line will cause severe hydraulic system damage and could void warranty. When connecting the mulcher onto your unit you should always connect the case drain line first, and when disconnecting the mulcher you should always disconnect the case drain line last.

**NOTE:** Oil leaking out of the atmospheric relief on your motor is caused by improper connection, obstruction or damaged coupler on the case drain line. Make any necessary adjustments before operating the mulcher.

## SKID SHOE ADJUSTMENT

The BRADCO Mulcher is equipped with adjustable skid plates. The mulcher is shipped from the factory with the plates in the top position. By lowering the skid shoes, the amount of hammer to ground impact can be reduced, thus increasing the life of the cutting hammers. The need to move the plates can be determined by the desired outcome after mulching is complete.

To Adjust Skid Shoe Plates:

1. Remove all seven bolts that secure the right skid shoe to the mulcher.
2. Place the skid shoe plate in the desired location and reinstall the bolts to secure it to the mulcher frame. Torque to specification.
3. Repeat Steps 1 & 2 for the left skid shoe.

# OPERATION


## PUSH OVER BAR ADJUSTMENT

The push over bar is standard from the factory and installed in the front position. The front position should be used for pushing over brush when mulching strictly brush and not standing trees. The rear position is for mulching standing trees and little brush. If you need to much a standing tree and the push over bar is in the front position, tilt the attachment back to prevent bending the push bar.

The push over bar is easily adjusted by removing the two bolts at the back mounting ears. Move the bar to the desired location and reinstall the bolts. Torque to 250 ft. lbs.

## HYDRAULIC DEFLECTOR DOOR

The hydraulic deflector door is used on all mulchers except when operating the mulcher on an excavator. The deflector door is operated using the optional electrical control box, your skid steer loaders in-cab electrical controls or dual auxiliary hydraulics. The deflector door is designed to deflect debris and mulched material towards the ground. Extreme caution should be used when operating this attachment and should never be used with bystanders or any other personnel present.

**DANGER!**  **TO PREVENT PERSONAL INJURY OR DEATH. DO NOT OPERATE WITH BYSTANDERS OR OTHER PERSONNEL PRESENT. FLYING DEBRIS FROM THE FRONT OR REAR OF THE MACHINE IS POSSIBLE EVEN IF THE DEFLECTOR DOOR IS CLOSED.**

The deflector door can be open or closed when operating in either direction. However, we recommend that the door be open when operating in a forward motion with the mulcher engaged. This will prevent brush or standing trees from pushing on the deflector door and bending it in towards the rotor and therefore causing damage to the door and/or hammers. When traveling in reverse we recommend closing the deflector door to direct the debris and mulch down to the ground and produce a smooth clean looking finished product. Ultimately, safety is the responsibility of the operator and he should be aware of his surroundings at all times.

## HYDRAULIC PRESSURE SITE GAUGE

The hydraulic pressure gauge on the skid steer mounted and the combination model is visible from the operator's seat and will show the operator what the hydraulic system pressure is during operation of the mulcher. Each skid steer has a different maximum operating pressure and the operator should know what that is prior to operating the mulcher. As the gauge approaches the maximum pressure the operator should slow down the ground speed or raise the mulcher slightly so the unit is not operating at maximum operating pressure for an extended amount of time. Running the mulcher at maximum pressure levels can lessen the life of the hydraulic components. Operating the unit slightly below maximum pressure will create less heat and allow for better productivity and more efficient operation.

The MM72 mulcher (113750) was designed for use on a forestry vehicle which is equipped with an in-cab pressure gauge and therefore the mulcher itself is not equipped with a hydraulic pressure site gauge.



# OPERATION

## OPERATION

**DANGER!**  To avoid serious personal injury or death the BRADCO mulcher must not be attached to any prime mover that does not have a forestry guard package installed.

Read and understand all warnings and precautions in this manual and on the machine before operating the mulcher. The Bradco mulcher is relatively simple to use, and with the help of the information in this manual and a little practice you should become proficient in its operation and able to develop procedures suitable to your particular situation.

### Starting The Mulcher

1. Start the attachment with the engine at an idle only.
2. Engage high flow switch (if operating on a skid steer loader).

**NOTE:** The rotor will only turn in one direction. If rotor is not turning check for proper hydraulic hose hook up. The back hose is the power or pressure hose and the middle hose is the return line. If you have the correct hydraulic hook up and rotor is still not turning, idle the engine all the way down as far as it will go and disengage the high flow switch. (You must never change the direction of the high flow switch while the rotor is in motion.) Failure to follow this shut down and restart procedure will cause severe damage to the hydraulic system of the attachment and void all warranties. Care must be taken when shutting the high flow switch to the off position not to inadvertently switch the direction of the flow to the attachment.

3. Check position of the skid shoes, deflector door and push over bar. Make sure they are in the correct position for your prime mover and the job at hand.
4. Position the prime mover, check that all personnel and bystanders are out of the area, start rotor and increase engine speed.
5. Be sure the mulcher is operating smoothly at full throttle and then start forward travel while monitoring hydraulic pressure and rotor rpm.

**NOTICE:** Continual monitoring of hydraulic oil temperature and water temperature of the prime mover is required during mulcher operation. If temperature rises too high the mulcher must be removed from the brush/debris and the prime mover returned to an idle until it has cooled down sufficiently to continue operation.

### Stopping The Rotor

Disengage the rotor by first idling the engine all the way down and allow the rotor to slow down as far as it will go and then disengage the auxiliary hydraulics. Failure to follow this shut down procedure will cause severe damage to the hydraulic and drive system of the attachment.



# OPERATION

## GENERAL OPERATING TIPS

**DANGER!** When operating with a loader, never raise the mulcher high enough that you see the safety chains. If the safety chains are visible debris can be discharged back towards the operator causing severe bodily injury or death.



**GROUND SPEED:** Ground speed can be determined by watching the pressure gauge and slowing down whenever the gauge approaches maximum operating pressure. Operating at ground speed that is too fast will cause the rotor to engage too much material and stall. As you slow down the ground speed and reduce the amount of material going through the mulcher the pressure gauge will go down.

**STALLING:** If the attachment stalls, the operator will have to stop and remove the mulcher from the material and allow the rotor to regain speed. Slow down your ground speed to prevent further stalling.

**JAM:** When a jam occurs, shut off the hydraulics. Move the mulcher to a clear area, tip forward and drive in reverse to force the drum to rotate without hydraulics and therefore discharging the jam.

**BRUSH:** When clearing brush set the skid shoes down and travel forward through the brush at a pace that will not decrease the rotor rpm. Once you are completely through, tip the mulcher forward slightly and reverse. This will re-mulch the brush and produce a more finished surface.

**NOTE:** Traveling too fast will not properly mulch the material.

**TREES:** Start at the trunk, with the mulcher tilted back slightly and the deflector door open (if so equipped). When you are 3/4 of the way through the tree start to tilt the mulcher forward and using the push over bar, push the tree over. Grind down the remainder of the trunk to prevent the prime mover from getting “hung up”. Position the mulcher on top of the tree and travel forward removing the limbs. Lower the unit and travel back and forth over each section of the trunk until gone. This may take many passes depending on the diameter of the tree.

**CAUTION!** Take extra care when mulching dead standing trees. There is a danger of the tops falling back onto the operator’s cab, causing injury or property damage.



**GROUND MULCHING / MIXING:** The mulcher head is capable of mulching and mixing debris approximately 1.50” below ground level. Keep in mind that excessive ground engaging will rapidly decrease the life of the cutting hammers, sometimes up to as much as 50%. When doing excessive ground engaged mulching, inspect the cutting hammers more often to prevent wearing the cutters into the holders.

# MAINTENANCE

## GENERAL INFORMATION

Regular maintenance is the key to long equipment life and safe operation. Maintenance requirements have been reduced to the absolute minimum. However, it is very important that these maintenance functions be performed as described below.

### DAILY

- Check all bolts and nuts for tightness.
- Replace any missing bolts or nuts with approved replacement parts.
- Check hydraulic system for hydraulic oil leaks. See procedure below.
- Visually inspect the machine for worn parts or cracked welds, and repair as necessary.
- Visually inspect the machine for worn, broken or missing hammer teeth. Repair or replace as necessary.
- Lubricate grease fittings on both ends of the rotor.
- Clean rotor of any accumulated debris and dirt.

### EVERY 40 HOURS

- Lubricate grease fitting on the upper bearing housing. (Remove inspection cover plate on back of unit, using a hand gun and approximately 2 pumps of grease.)

### BREAK IN PERIOD

- Check drive belt tension at 40 hour intervals for the first 120 hours.

### EVERY 100 HOURS

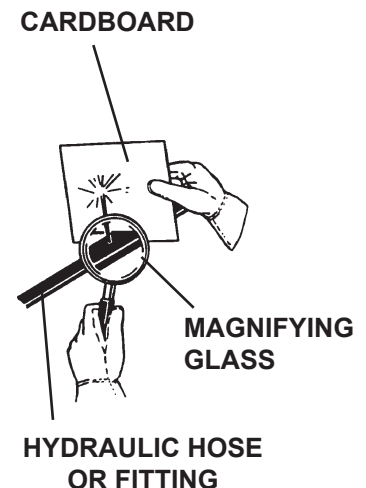
- Check drive belt tension.

**WARNING!** Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.



Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.

If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.



**IMPORTANT:** When replacing parts, use only factory approved replacement parts. Manufacturer will not claim responsibility for use of unapproved parts or accessories, and/or other damages as a result of their use.

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## MAINTENANCE & SERVICE

**WARNING!** Before performing maintenance or service lower the attachment to the ground, disengage auxiliary hydraulics, turn off the engine, remove the key and apply the brakes.



**WARNING!** Never perform any work on this attachment unless you are authorized and qualified to do so. Always read the operator's manuals before any repair is made. After completing maintenance or service, check for correct functioning of the attachment. If not functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.



### REPLACING HAMMER TEETH

Worn, broken or missing teeth will cause excessive machine vibration and reduce productivity. It is important that all hammer teeth are attached properly. Double sided, reversible hammers can be rotated when worn or if carbide points are broken or missing.

1. Remove existing hammer tooth.
2. Check to make sure the mounting surface and bolt holes are clean and free of debris. (Any accumulation of debris can cause the hammer not to seat properly in the slot resulting in unsafe operation.)
3. Position the new hammer tooth onto the holder and after both bolts have been started, push the hammer up into the mounting slot and tighten with an impact wrench. Torque to 150 ft. lbs.

**NOTE:** Replace any damaged bolts or washers. Install washers with the side that is higher in the center towards the bolt head.

**NOTICE:** Failure to start both bolts into the hammer tooth first before tightening a bolt, can bind the other bolt, and damage the bolt and possibly the cutting hammer, rendering the hammer and bolt unusable.

**WARNING!** Improper mounting can void warranty and cause serious injury and/or death. Use only manufacturer replacement parts.



### DRIVE BELT TENSIONING AND/OR REMOVAL

1. Remove the drive cover, top right cover and inspection access cover on the back of the mulcher.

**NOTE:** Either support the top right cover to prevent strain on the gauge hose or be sure that there is no pressure in the system and disconnecting the hose going to the gauge from the motor. (If so equipped.) Cap or plug all fittings to prevent contaminants from entering the hydraulic system.

2. Test the tension of the belt by checking the deflection in the belt halfway between the two pulleys. The belt should not move more than .25" or be so tight that you cannot move it at all. When properly adjusted:

**MM60** used belt should require approximately 50 lbs. of force to deflect the belt .25" while a new belt should require approximately 68 lbs of force to obtain the same .25" deflection.

**MM72 (Assembly #112729 & #112730)** used belt should require approximately 47-51 lbs. of force to deflect the belt .25" while a new belt should require approximately 62-66 lbs of force to obtain the same .25" deflection.

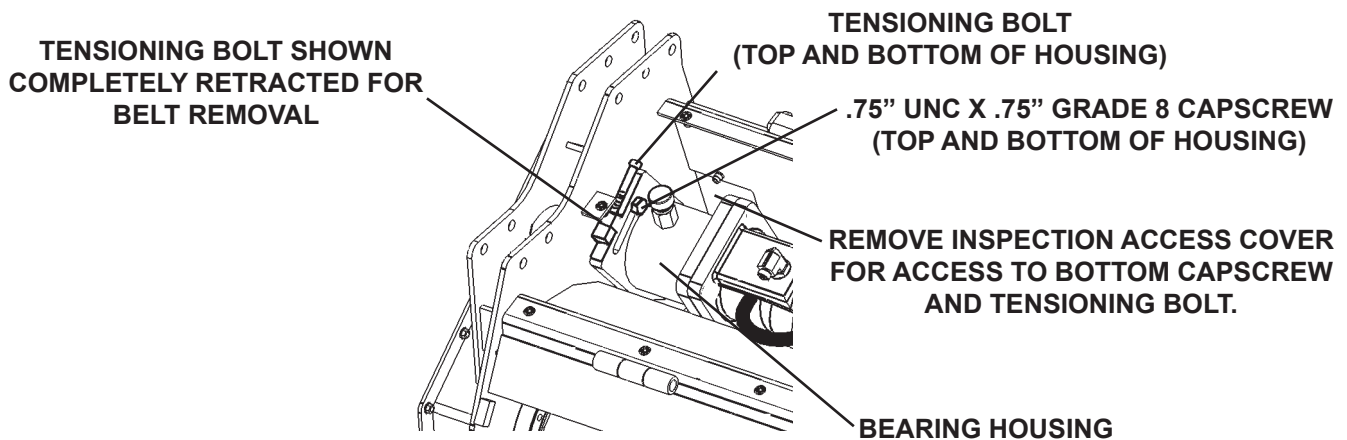
**MM72 (Assembly #113750)** used belt should require approximately 67-75 lbs. of force to deflect the belt .25" while a new belt should require approximately 86-94 lbs of force to obtain the same .25" deflection.

## MAINTENANCE & SERVICE

3. Loosen the two .75" grade 8 capscrews that secure the bearing housing to the frame to allow the housing to slide in the slots.
4. The two tensioning bolts take a .38" allen wrench to adjust. Adjust the belt tensioning bolts alternately until the proper tension is achieved.

**NOTE: Retracting the two tensioning bolts will release the tension on the belt and allow for BELT REMOVAL.**

5. Retighten the .75" grade 8 bolts securing the bearing housing to the frame. Torque to 350 ft. lbs.
6. Recheck belt tension and check pulley's for alignment. (See Pulley Installation)
7. Install drive cover and inspection access cover using existing hardware.
8. If so equipped, reconnect the gauge hose if removed and reinstall the top right cover.



**NOTE: Belt damage can occur if belt is too loose, too tight or if debris is present. Do not operate without drive cover installed.**

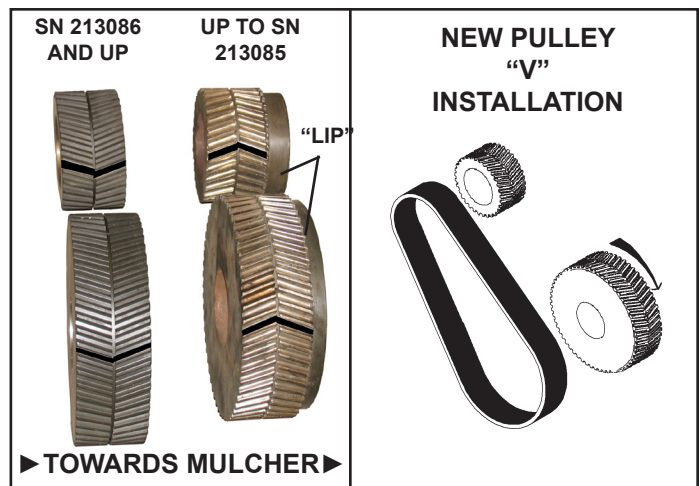
## PULLEY REMOVAL AND INSTALLATION - MM60 MULCHERS ONLY

### PULLEY IDENTIFICATION AND ORIENTATION

On mulchers up to serial number 213085, all pulleys were designed with a "lip" that went to the inside and the drive belt was installed with the "V" pointing up and over the small pulley. The new pulley design has removed the lip and is made to install with the "V" going down and over the bottom pulley. Changing the direction the belt is mounted onto the unit will greatly increase belt life by decreasing the amount of debris trapped in the drive system.

When replacing pulleys on these units it is recommended to update both pulleys at the same time and change belt direction.

**NOTE: The top pulley must be replaced when replacing the bottom pulley. The "lip" on the bottom (bigger) pulley is smaller and will allow the pulley to be turned around (lip to the outside) when replacing the top smaller pulley. This will allow you to change the direction of the "V" on the drive belt.**

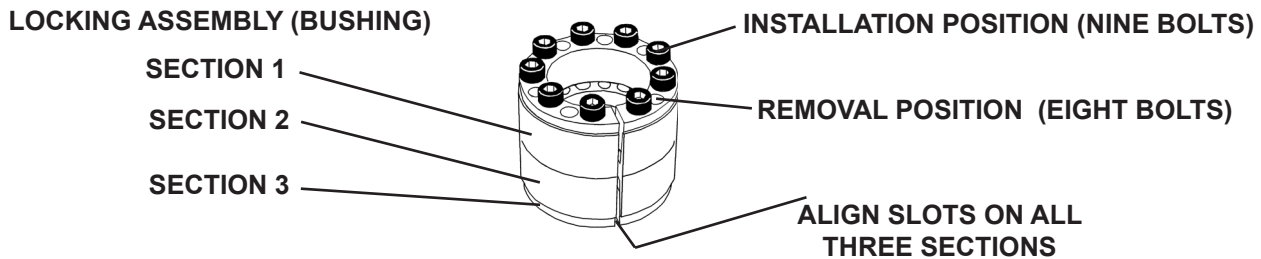


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# MAINTENANCE & SERVICE

## Removal

1. Remove the drive belt. See “**DRIVE BELT TENSIONING AND/OR REMOVAL**”
2. Loosen the locking assembly (bushing) on the pulley by removing all nine bolts and reinstalling eight of them into the holes that were not used previously. (Remove each bolt and move it over one hole, there will be one bolt not used.) Four bolts will be pushing the rear part of the bushing apart and four bolts will be pulling the front part of the bushing out. Continue tightening the bolts in sequence around the bushing 1/4 turn until it separates. When the front and rear portions of the bushing are separated, you will be able to remove the pulley.



## Installation

1. Tighten the two .75" grade 8 capscrews on the upper bearing housing to ensure proper alignment of the shaft and housing.
- NOTE: The housing must be properly seated flat against the frame of the mulcher for proper alignment of the pulleys. If there are any gaps along this surface, remove the housing and clean any debris from the surface. Reinstall and tighten.**
2. The locking assembly (bushing) needs to be reassembled for proper installation. DO NOT use "Never Seize" on bushing or bolts. Align the three sections of the bushing and return all nine bolts to their original location. Check that the three sections are still aligned and then loosen all nine bolts. Take two of the bolts and install one into a push out hole and one into a pull out hole and hand tighten to separate the three sections.
  3. Push the locking assembly (bushing) into the pulley and slide both onto the shaft. If the locking assembly will not insert into the pulley or the pulley will not slide onto the shaft, you have the locking assembly too tight. Loosen the bolts holding the bushing together and tighten both the push out bolt and the pull out bolt.
- NOTE: Pulleys are directional, make sure both are pointing in the same direction.**
4. Make certain the locking assembly (bushing) is in the center of the pulley and that the pulley and shaft are completely through the bushing.
  5. If both pulley's were removed, install the second one using the same procedure. Once both pulleys are on the shaft install the drive belt. See “**DRIVE BELT TENSIONING AND/OR REMOVAL**”.
  6. Check for any interference with the covers, fittings, bolts or hoses.
  7. Remove the two bolts used for push out and pull out and reinsert them into the proper holes for tightening the locking assembly (bushing). Hand tighten all locking assembly bolts to keep the bushing and pulley from moving after checking for alignment and clearance of the drive assembly.
  8. Align the second pulley with the first by using a straight edge. The outside edge of both pulley's must be aligned. Failure to align the pulleys will destroy the belt when the machine is put into operation.

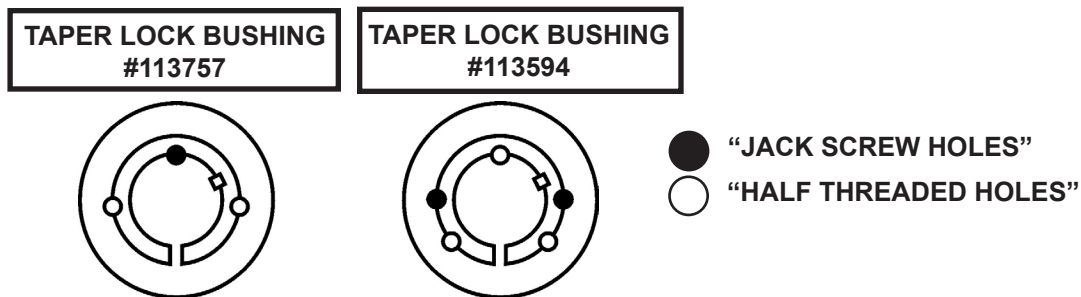
## MAINTENANCE & SERVICE

9. Tighten the belt just enough to hold the pulleys and then torque the bolts to 30 ft. lbs. on the locking assembly (bushing). **IMPORTANT: Tighten the locking bolts in sequence around the bushing using only 1/4 turns for several passes. When 1/4 turns can no longer be achieved, continue to apply torque to bolts for 2 more passes. Set the torque wrench to 30 ft. lbs. and recheck all bolts to be sure that they are torqued to the proper setting.**
10. Follow instructions for re tensioning the drive belt and cover installation. See “**DRIVE BELT TENSIONING AND/OR REMOVAL**”.

### SPROCKET (PULLEY) REMOVAL AND INSTALLATION - MM72 MULCHERS ONLY

#### TAPER LOCK BUSHING IDENTIFICATION AND ORIENTATION

When replacing sprockets, it is recommended to update both sprockets at the same time.



#### Removal

1. Remove the drive belt. See “**DRIVE BELT TENSIONING AND/OR REMOVAL**”
2. Loosen the taper lock assembly (bushing) in the sprocket by removing all mounting screws.
3. Insert screws into all jack screw holes indicated in the diagram for the Taper Lock Bushing for your mulcher.
4. Loosen the bushing by alternately tightening the screws in small but equal increments until the taper sprocket and bushing surfaces disengage.

#### Installation

1. Tighten the .75” grade 8 capscrews on the upper bearing housing to ensure proper alignment of the shaft and housing.

**NOTE: The housing must be properly seated flat against the frame of the mulcher for proper alignment of the sprockets. If there are any gaps along this surface, remove the housing and clean any debris from the surface. Reinstall and tighten.**

2. The taper lock bushing assembly needs to be reassembled for proper installation. DO NOT use “Never Seize” on bushing or bolts.
3. Clean the shaft, bore of bushing, outside of bushing and the sprocket hub bore of all oil, paint and dirt. File away any burrs. **NOTE: The use of lubricants can cause sprocket breakage. USE NO LUBRICANTS IN THIS INSTALLATION.**
4. Insert the bushing into the sprocket hub. Match the hole pattern, not the threaded holes (each complete hole will be threaded on one side only.)
5. LIGHTLY oil the set screws and thread them into the half-threaded holes indicated on the diagram. **NOTE: Do not lubricate the bushing taper, hub taper, bushing bore, or the shaft. Doing so could result in sprocket breakage.**

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## MAINTENANCE & SERVICE

6. With the key in the shaft keyway, position the assembly onto the shaft allowing for small axial movement of the sprocket which will occur during the tightening process. Make certain the shaft is completely through the bushing.

**NOTE: If the locking assembly will not slide onto the shaft, you have the locking assembly too tight.**

7. Alternately tighten the set screws until the sprocket and taper lock bushing are seated together. Do not apply enough torque to the set screws that the sprocket and taper lock bushing will not slide on the shaft for alignment purposes.

**NOTE: Do not use worn hex key wrenches. Doing so may result in a loose assembly or may damage screws.**

8. If both sprockets were removed, install the second one using the same procedure.
9. Align the sprockets using a straight edge. The outside edge of both sprockets must be aligned. Torque the set screws to approximately one-half of the recommended torque to lock the bushings onto the shaft. See torque table below.

**NOTICE: Failure to align the sprockets correctly will decrease the life of the belt.**

10. Install the drive belt and tension just enough to prevent the sprockets from rotating.

**NOTICE: Never force the belt over the sprocket flange as internal damage to the belt will occur.**

11. Continue to alternate tightening of the capscrews on the bushings to the recommended torque value shown in table.
12. To increase the bushing gripping force, hammer the face of the bushing using a drift or sleeve (do not hit the bushing directly with the hammer).
13. Re-torque the bushing screws after hammering.
14. Recheck all screw torque values after the initial drive run-in, and periodically thereafter. Tighten as required.
15. Follow instructions for re tensioning the drive belt and cover installation. See “**DRIVE BELT TENSIONING AND/OR REMOVAL**”.

BUSHING	BOLTS		TORQUE WRENCH	
PART NUMBER	QTY	SIZE	LBS - FT.	LBS - IN.
113720	2	.50" UNC X 1.00"	35.8	430
113757	2	.62" UNC X 1.25"	66.7	800
113594	3	.50" UNC X 1.50"	83.3	1000
NOTICE: Excessive bolt torque can cause sprocket and/or bushing breakage.				
NOTE: To insure proper bushing/sprocket performance, full bushing contact on the shaft is recommended.				

## REPLACING THE LOWER BEARINGS

1. Remove the drive belt. (Right side bearing only.) See “**DRIVE BELT TENSIONING AND/OR REMOVAL**”
2. Remove the lower pulley. (Right side bearing only.) See “**PULLEY REMOVAL AND INSTALLATION**”.
3. Disconnect and grease lines and plug or cap fittings and hoses to prevent contaminants from entering the lubrication system. (Right side bearing only.)

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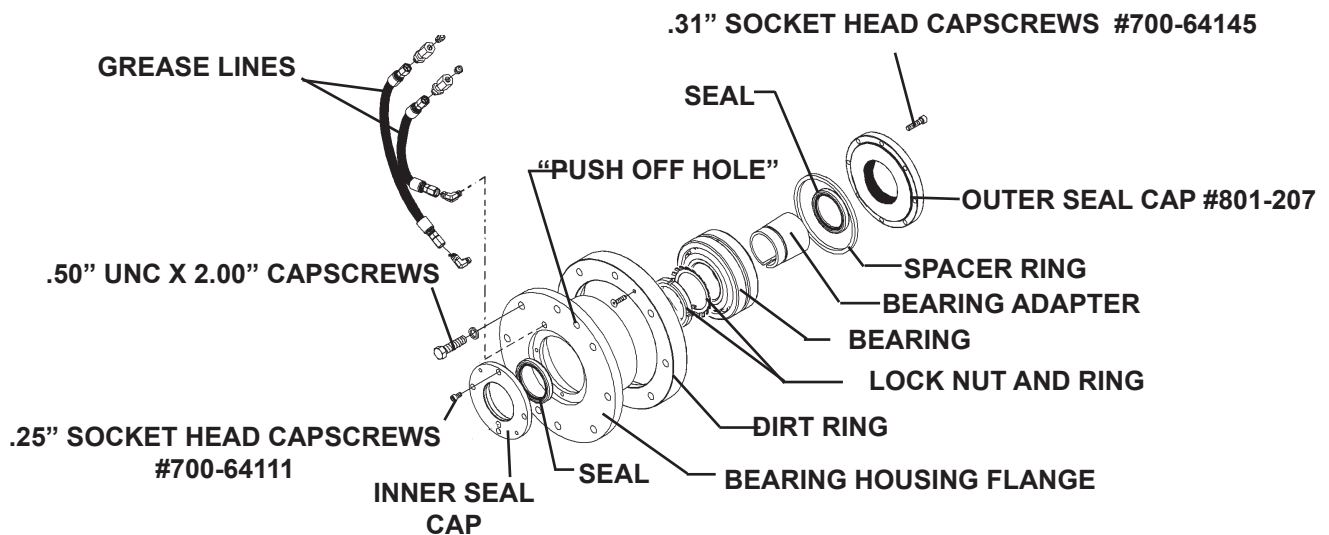
## MAINTENANCE & SERVICE

4. Remove the four socket head capscrews #700-64111 and remove the outside inner seal cap #801-206. (You may have to install two .25" x 1.00" capscrews into the push off holes to remove the inner seal cap.)
5. Loosen the lock nut and ring on the bearing adapter.

**NOTE: The locking tab must be bent out of the bearing lock nut prior to removal of the nut. Failure to bend out the locking tab can result in breaking the lock ring and/or destroying the threads on the taper lock inside the bearing.**

**NOTE: The bearing adapter may need to be released from the bearing by pushing it back, into the bearing.**

### LOWER RIGHT BEARING ASSEMBLY



6. Remove the eight .50" capscrews from the bearing housing flange and install two of them into the push off holes to release the housing from the shaft. Remove the bearing housing.
7. Remove the socket head capscrews from the inside outer seal cap #801-207 and remove the cap plate and spacer ring.
8. Slide the bearing out the back of the housing.
9. Inspect the inside of the bearing housing for defects before installing a new bearing. Replace bearing #600-158.
10. Reinstall the bearing with the smaller side of the taper to the outside of the housing. Once the bearing is inside of the housing, remove the lock ring and lock nut from the bearing adapter and slide the adapter into the bearing. Loosely reinstall the lock ring and lock nut onto the bearing adapter and install the spacer ring into the housing.
11. Install a new seal #600-159 into the seal cap and install onto the housing using the existing bolts.
12. Install the bearing housing, with bearings, onto the rotor shaft taking care not to damage the dirt ring.
13. Reinstall the eight .50" bolts into the bearing housing securing the housing to the frame. Torque to 106 ft. lbs.
14. Check to be certain the rotor is centered in the head and then tighten the bearing adapter. Torque to 250 ft. lbs.
15. Once the bearing is tight, check to be sure the rotor spins freely in the head.

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## MAINTENANCE & SERVICE

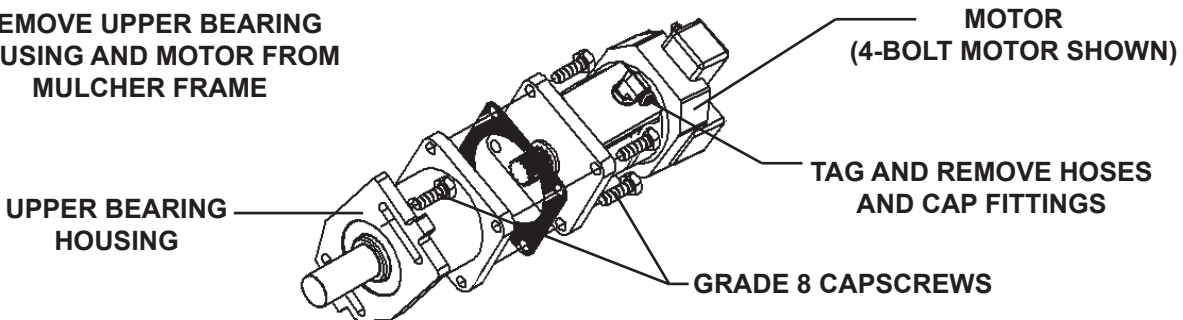
16. After torquing the bearings to 250 ft. lbs, locate the locking tab on the lock ring and bend into a slot. If slots are in alignment, tighten the bearing to align a slot.
17. Reconnect the grease lines and pump grease into the line to be sure grease is coming out through the bearing. (Right side bearing only.)
18. Install inner seal cap onto the housing using the existing .25" socket head capscrews.
19. Grease the bearing. Reinstall the belt, pulley & covers following the belt and pulley installation procedure if replacing the right side bearing.

### REPLACING UPPER BEARINGS AND SEALS

**NOTE: An overhead hoist is recommended when removing the upper bearing assembly.**

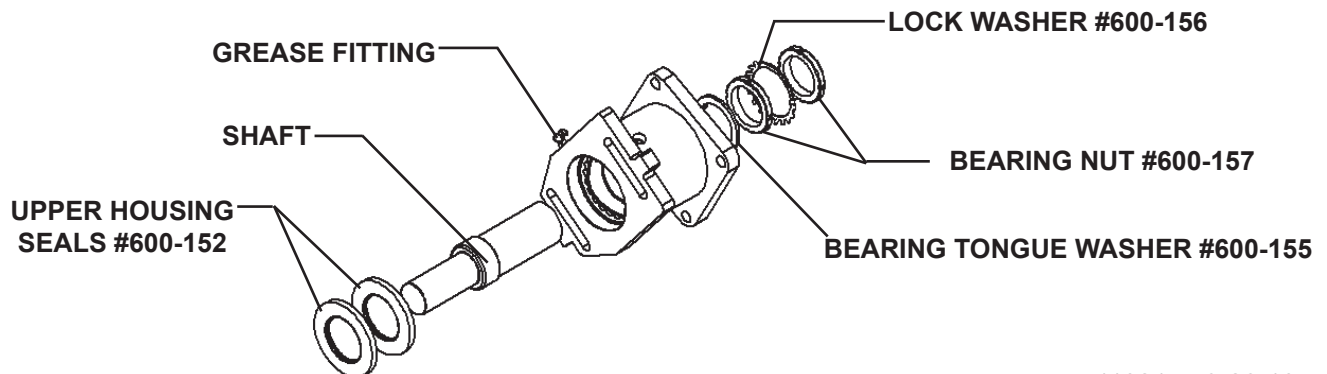
1. Remove the drive belt. See **"DRIVE BELT TENSIONING AND/OR REMOVAL"**
2. Securely attach hoist to the motor and upper bearing housing to support it for removal.
3. Remove the upper pulley. See **"PULLEY REMOVAL AND INSTALLATION"**.
4. Tag and remove hoses from the hydraulic motor.
5. Remove the two .75" grade 8 capscrews (#10012) securing the housing to the side of the mulcher frame.
6. Slide the motor and housing assembly out of the mulcher frame. Drain oil from housing by removing plug #30461.
7. Place housing and motor assembly on a clean surface. Remove the grade 8 bolts securing the

**REMOVE UPPER BEARING  
HOUSING AND MOTOR FROM  
MULCHER FRAME**



motor to the housing and separate the housing from the motor.

8. Bend tab up on lock washer #600-156 and remove the first bearing nut and washer. Loosen and remove the second bearing nut and the bearing tongue washer.
9. Remove seals #600-152 from housing. Remove shaft.



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## MAINTENANCE & SERVICE

10. Remove the bearings from the shaft. Inspect the shaft and housing for damage and replace if necessary. Replace the bearings (cones #600-153 & cups #600-154).
11. Reinstall the shaft into the housing using the existing washers and bearing nuts.
12. Install the inside upper housing seal and press down until it is seated against the shoulder on the housing. Install the second upper housing seal and press into the housing until it is flush with the outside of the housing.
13. Inspect motor shaft seal and replace if necessary. Replace the motor gasket (or o'ring) and re-install the motor onto the housing using the existing grade 8 capscrews. Torque to specification.
14. Using the hoist, position the housing and motor assembly back into the mulcher frame and secure in place using the remaining two .75" grade 8 capscrews.
15. Grease the upper housing seals using a hand gun and approximately two pumps of grease. (Grease every 40 hours.)
16. Reconnect the hydraulic hoses and refill the housing assembly with premium gear oil 80W90. See "Checking and/or Adding Oil".
17. Reinstall the belt, pulley and covers following the belt and pulley installation procedures.

### CHECKING AND/OR ADDING OIL

The upper bearing housing is filled with a premium gear oil 80W90. In the event that gear oil is needed, there is a fill level plug on the backside of the housing. (Remove the inspection cover plate on back of mulcher frame.)

#### To Fill Housing:

1. Remove the plug and breather from the top of the housing.
2. Fill the housing until there is oil coming out of the fill level hole.
3. Replace the plug and the breather.

NOTE: This is a sealed system. If oil level is low check seals for damage.

# MAINTENANCE AND SERVICE

## CYLINDER SEAL REPLACEMENT

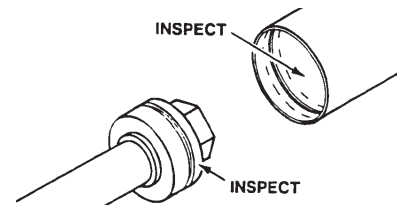
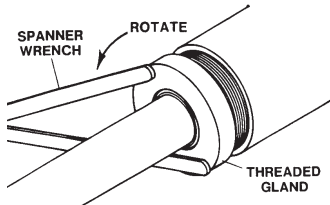
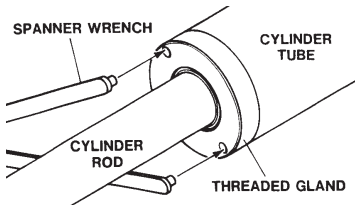
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic cylinders. Always protect the active part of the cylinder rod (the chrome section). Nicks or scratches on the surface of the rod could result in cylinder failure. Clean all parts thoroughly with a cleaning solvent before reassembly.

### DISASSEMBLY PROCEDURE

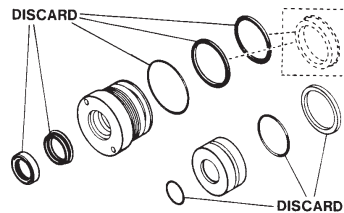
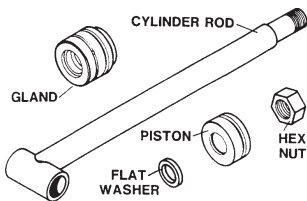
**IMPORTANT:** Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

#### THREADED TYPE GLAND

1. Rotate the gland with a spanner wrench counterclockwise until the gland is free of the cylinder tube.
2. Pull the cylinder rod from the cylinder tube and inspect the piston and the bore of the cylinder tube for deep scratches or galling. If damaged, the piston AND the cylinder tube must be replaced.



3. Remove the hex nut, piston, flat washer or spacer tube (if so equipped), and gland from the cylinder rod. If the cylinder rod is rusty, scratched, or bent, it must be replaced.
4. Remove and discard all the old seals.

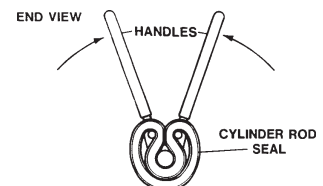
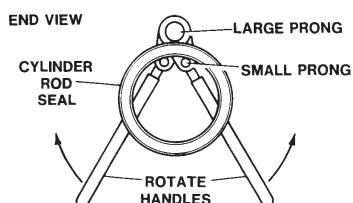
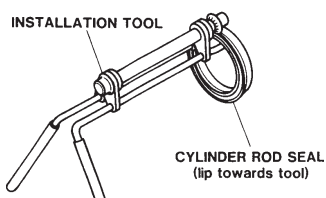


### ASSEMBLY PROCEDURE

**IMPORTANT:** Replace all seals even if they do not appear to be damaged. Failure to replace all seals may result in premature cylinder failure. **NOTE:** Seal kits will service most cylinders of similar bore size and rod diameter.

1. Install the cylinder rod seal in the gland first. Be careful not to damage the seal in the process, as it is somewhat difficult to install.

**NOTE:** A special installation tool (Part #65349) is available to help with installing the seal. Simply fit the end of the tool over the seal so that the large prong of the tool is on the outside of the seal, and the two smaller prongs on the inside. The lip of the seal should be facing towards the tool. Rotate the handles on the tool around to wrap the seal around the end of the tool.



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# MAINTENANCE AND SERVICE

Now insert the seal into the gland from the inner end. Position the seal in its groove, and release and remove the tool. Press the seal into its seat the rest of the way by hand.

2. Install the new piston ring, rod wiper, O-rings and backup washers, if applicable, on the piston.

Be careful not to damage the seals. Caution must be used when installing the piston ring. The ring must be stretched carefully over the piston with a smooth, round, pointed tool.

3. After installing the rod seal inside the gland, as shown in step #1, install the external seal.

**NOTE:** Threaded glands may have been equipped with a separate O-ring and backup washer system or a polypak (all in one) type seal. Current seal kits contain a polypak (all in one) type seal to replace the discarded seal types on ALL THREADED GLANDS.

4. Slide the gland onto the cylinder rod, being careful not to damage the rod wiper. Then install the spacer, or flat washer (if so equipped), small o-ring, piston, and hex nut onto the end of the cylinder rod.
5. Secure the cylinder rod (mounting end) in a vise with a support at its center. Torque the nut to the amount shown for the thread diameter of the cylinder rod (see chart).

Thread Diameter	POUNDS - FEET
7/8"	150-200
*1"	230-325
1-1/8"	350-480
1-1/4"	490-670
1-3/8"	670-900
* 1" Thread Diameter WITH 1.25" Rod Diameter	
Min. 230 ft. lbs. Max. 250 ft. lbs.	

**IMPORTANT:** Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

6. Apply a lubricant (such as Lubriplate #105) to the piston and teflon ring. Insert the cylinder rod assembly into the cylinder tube.

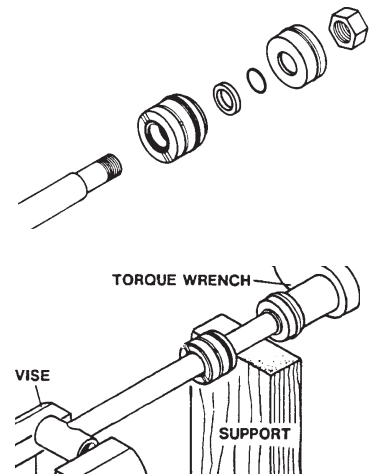
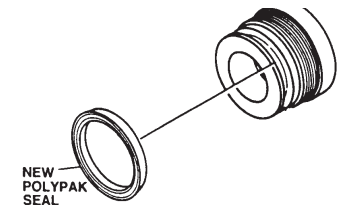
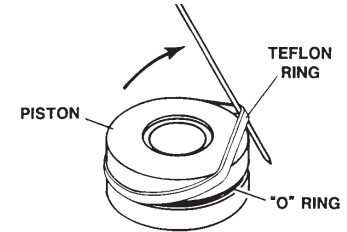
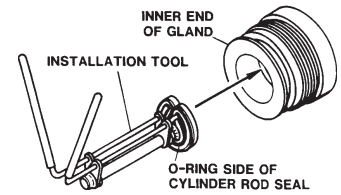
**IMPORTANT:** Ensure that the piston ring fits squarely into the cylinder tube and piston groove, otherwise the ring may be damaged and a leak will occur.

7. Use a spanner wrench to rotate the gland clockwise into the cylinder. Continue to rotate the gland with the spanner wrench until it is tight.

## WARNING!



Cylinders serviced in the field are to be tested for leakage prior to the attachment being placed in work. Failure to test rebuilt cylinders could result in damage to the cylinder and/or the attachment, cause severe personal injury or even death.



# TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>POSSIBLE REMEDY</u></b>
<b>Rotor not turning.</b>	Auxiliary hoses not hooked up to the prime mover.	Check coupler engagement.
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
	Hydraulic motor damaged or seals blown.	Call Bradco service department for instructions.
	Auxiliary control valve not engaged.	Verify hydraulic flow using inline flow meter or other attachment..
	Rocks and debris caught between rotor and mainframe.	Remove debris. (See "General Operating Tips")
	Damaged quick coupler.	Replace if necessary
	Drive belt broken.	Replace.
<b>Rotor rotates sluggishly.</b>	High flow not properly engaged.	Engage high flow.
	Insufficient hydraulic flow from the prime mover.	Refer to prime mover owners manual and verify hydraulic flow using an inline flow meter or other attachment.
	Damaged quick coupler.	Replace if necessary.
	Hydraulic motor damaged or seals blown.	Call Bradco service department for instructions.
<b>Leaking Oil.</b>	Oil filter on prime mover needs replaced.	Refer to prime mover owners manual.
	Loose or damaged hydraulic line.	Tighten or replace.
	Upper bearing failure.	Replace as necessary
	O-Rings on fittings damaged.	Replace if necessary.
	Hydraulic motor damaged or seals blown.	Call Bradco service department for instructions.
	Fittings loose or damaged.	Tighten or replace.
	Cylinder seals damaged.	Replace cylinder seals.
<b>Insufficient power.</b>	Case drain not properly connected or coupler damaged.	Engage coupler or replace.
	Insufficient hydraulic flow from the prime mover.	Refer to prime mover owners manual and verify hydraulic flow using an inline flow meter or other attachment.
	Relief valve setting adjusted too low.	Refer to prime mover owners manual.
	Hydraulic motor damaged or seals blown.	Call Bradco service department for instructions.
	Oil filter on prime mover needs replaced.	Refer to owners manual.
	Incorrect motor displacement setting.	Reset motor displacement for your prime mover. See Set-Up Instructions.
	Operating mulcher on a standard flow hydraulic system.	Activate high flow system on your skid steer loader.

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# TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>POSSIBLE REMEDY</u></b>
<b>Excessive oil temperature.</b>	Hydraulic oil level too low.	Refer to prime mover owners manual
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
	Hydraulic oil or oil filter in prime mover needs replaced.	Refer to prime mover owners manual.
	Relief valve setting adjusted too low.	Refer to prime mover owners manual.
	Obstructed radiator/cooler on prime mover.	Clean radiator/cooler.
	Incorrect motor displacement setting.	Reset motor displacement for your prime mover. See Set-Up Instructions.
	Operating the mulcher at maximum pressure for an extended amount of time.	Slow down the speed and/or the down pressure on the mulcher until operating below maximum pressure.
<b>Excessive vibration during operation.</b>	Hammer teeth are worn, broken or missing.	Inspect and replace as necessary.
	Bearing failure.	Inspect and replace as necessary.
	Rotor obstruction.	Clear all debris from rotor and hammer teeth. (See General Operating Tips)
<b>Hydraulic cylinder not operating.</b>	Insufficient hydraulic flow from the prime mover.	Refer to prime mover owners manual and verify hydraulic flow using an inline flow meter or other attachment.
	Cylinder rod bent.	Visually inspect the cylinder for damage.
	Cylinder seals damaged.	Replace cylinder seals.
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
	Blown fuse on skid-steer.	Refer to skid-steer's owners manual.
	Damaged electrical wiring.	Test and replace if necessary.
	Faulty switch or electrical connection.	Repair or replace as necessary.
	Solenoid valve spool bent.	Replace spool.
	Faulty control valve coil.	Replace coil.

# TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>POSSIBLE REMEDY</u></b>
<b>Hydraulic cylinders only operating in one direction.</b>	Contaminants in the hydraulic system and solenoid valve.	Remove spool from solenoid valve and check for foreign material. Clean or replace.
		Remove spool from solenoid valve and check seals for damage. Replace if necessary.
	Damaged electrical wiring.	Test and replace if necessary.
	Solenoid valve spool bent.	Replace spool.
	Faulty control valve coil	Replace coil.
<b>Excessive or uneven tooth wear on drive belt</b>	Incorrect tensioning of belt.	Retension belt. See Belt Tensioning.
	Belt misaligned.	Align pulleys using a straight edge.
	Pulley's worn.	Replace as necessary.
	Debris in drive assembly.	Remove debris and replace covers.
<b>Drive belt cracking.</b>	Excessive low temperatures.	Moderate temperatures, especially at start up.
	Exposed to oil solvents/chemicals.	Eliminate exposure to chemicals and shield drive.
<b>Drive belt skipping or ratcheting.</b>	Belt undertensioned.	Retension belt. See Belt Tensioning.
	Pulley worn.	Replace worn pulley.
	Debris in drive assembly.	Remove debris and replace covers.

# BOLT TORQUE SPECIFICATIONS

## GENERAL TORQUE SPECIFICATION TABLES


Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

## SAE BOLT TORQUE SPECIFICATIONS




**NOTE:** The following torque values are for use with extreme pressure lubricants, plating or hard washer applications. Increase torque 15% when using hardware that is unplated and either dry or lubricated with engine oil.

Bolt Size		SAE GRADE 5 TORQUE				SAE GRADE 8 TORQUE				Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary
		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6.35	8	9	11	12	10	13	14	18	
5/16	7.94	14	17	19	23	20	25	27	34	
3/8	9.53	30	36	41	49	38	46	52	62	
7/16	11.11	46	54	62	73	60	71	81	96	
1/2	12.70	68	82	92	111	94	112	127	152	
9/16	14.29	94	112	127	152	136	163	184	221	
5/8	15.88	128	153	174	207	187	224	254	304	
3/4	19.05	230	275	312	373	323	395	438	536	
7/8	22.23	340	408	461	553	510	612	691	830	
1	25.40	493	592	668	803	765	918	1037	1245	
1-1/8	25.58	680	748	922	1014	1088	1224	1475	1660	
1-1/4	31.75	952	1054	1291	1429	1547	1700	2097	2305	
1-3/8	34.93	1241	1428	1683	1936	2023	2312	2743	3135	
1-1/2	38.10	1649	1870	2236	2535	2686	3026	3642	4103	




GRADE 2



GRADE 5






GRADE 8



## METRIC BOLT TORQUE SPECIFICATIONS

**NOTE:** The following torque values are for use with metric hardware that is unplated and either dry or lubricated with engine oil. Reduce torque 15% when using hardware that has extreme pressure lubricants, plating or hard washer applications.

Bolt head identification marks as per grade.		
		

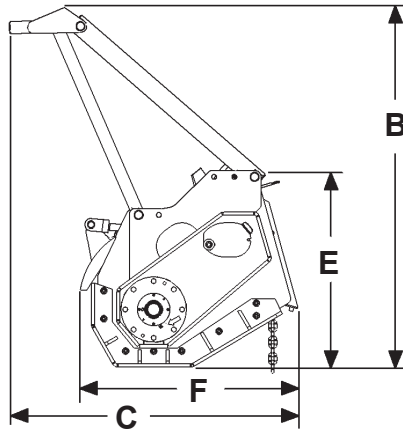
Size of Bolt	Grade No.	Pitch (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6



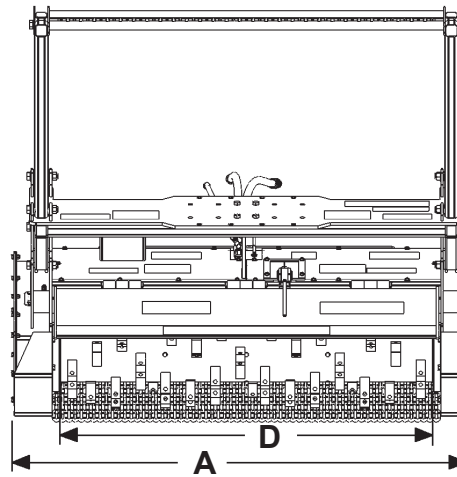
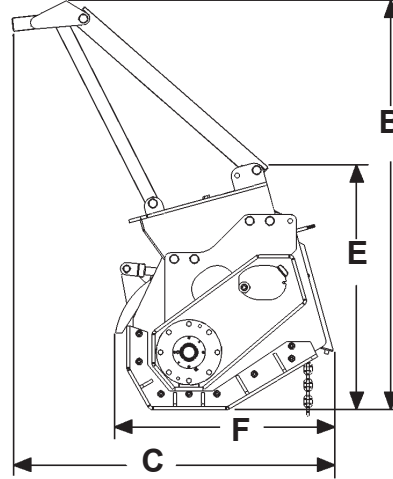
# SPECIFICATIONS

## MM60& MM72 MULCHERS

**(MM60S & MM72)**



**MM60E & MM60C**



DESCRIPTION	60" MULCHERS			72" MULCHERS MM72		
	MM60S	MM60E	MM60C	112729	112730	113750
A. Overall Width	72.98"	72.98"	72.98"	84.98"	84.98"	84.98"
B. Overall Height	57.60"	39.67"	39.67"	57.60"	57.60"	57.60"
C. Overall Length	46.33"	33.16"	51.59"	46.33"	46.33"	46.33"
D. Cutting Width	60.00"	60.00"	60.00"	72.00"	72.00"	72.00"
E. Height Without Push Over Bar	31.38"	39.67"	39.67"	31.38"	31.38"	31.38"
F. Length Without Push Over Bar	34.94"	33.16"	34.94"	34.94"	34.94"	34.94"
Operating Pressure (PSI)	4000	4000	4000	4000	4000	5500
Hydraulic Flow (GPM)	30-60	30-60	30-60	30-45	30-45	40-45
Hammers	45	45	45	54	54	54
Weight (LBS)	2057#	2167#	2381#	2600#	2590#	2640#
Cylinder Specifications						
Bore	2.00"	2.00"	2.00"	2.00"	2.00"	2.00"
Stroke	8.00"	8.00"	8.00"	8.00"	8.00"	8.00"
Rod Diameter	1.12"	1.12"	1.12"	1.12"	1.12"	1.12"
Specifications and design are subject to change without notice and without liability therefor.						

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# Limited Warranty

Except for the Excluded Products as described below, all new products are warranted to be free from defects in material and/or workmanship during the Warranty Period, in accordance with and subject to the terms and conditions of this Limited Warranty.

1. Excluded Products. The following products are excluded from this Limited Warranty:

(a) Any cable, part that engages with the ground (i.e. sprockets), digging chain, bearing, teeth, tamping and/or demolition head, blade cutting edge, pilot bit, auger teeth and broom brush that either constitutes or is part of a product.

(b) Any product, merchandise or component that, in the opinion of Paladin Light Construction<sup>1</sup>, has been (i) misused; (ii) modified in any unauthorized manner; (iii) altered; (iv) damaged; (v) involved in an accident; or (vi) repaired using parts not obtained through Paladin Light Construction.

2. Warranty Period. The Limited Warranty is provided only to those defects that occur during the Warranty Period, which is the period that begins on the first to occur of: (i) the date of initial purchase by an end-user, (ii) the date the product is first leased or rented, or (iii) the date that is six (6) months after the date of shipment by Paladin Light Construction as evidenced by the invoiced shipment date (the "Commencement Date") and ends on the date that is twelve (12) months after the Commencement Date.

3. Terms and Conditions of Limited Warranty. The following terms and conditions apply to the Limited Warranty hereby provided:

(a) Option to Repair or Replace. Paladin Light Construction shall have the option to repair or replace the product.

(b) Timely Repair and Notice. In order to obtain the Limited Warranty, (i) the product must be repaired within thirty (30) days from the date of failure, and (ii) a claim under the warranty must be submitted to Paladin Light Construction in writing within thirty (30) days from the date of repair.

(c) Return of Defective Part or Product. If requested by Paladin Light Construction, the alleged defective part or product shall be shipped to Paladin Light Construction at its manufacturing facility or other location specified by Paladin Light Construction, with freight PRE-PAID by the claimant, to allow Paladin Light Construction to inspect the part or product.

Claims that fail to comply with any of the above terms and conditions shall be denied.

## **LIMITATIONS AND EXCLUSIONS.**

**THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY BASED ON A COURSE OF DEALING OR USAGE OF TRADE.**

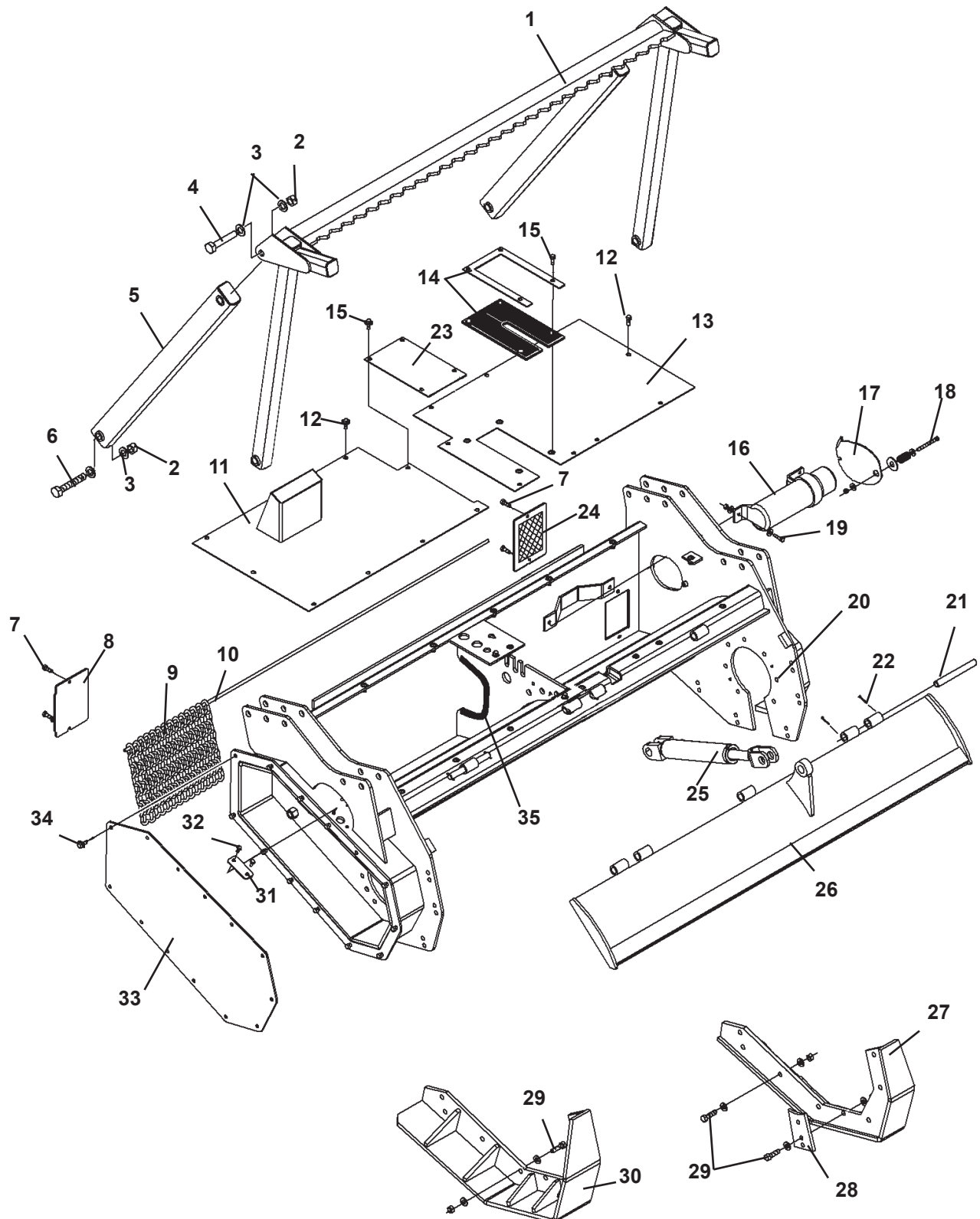
**IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.**

**IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR ANY LOSS OR CLAIM IN AN AMOUNT IN EXCESS OF THE PURCHASE PRICE, OR, AT THE OPTION OF PALADIN LIGHT CONSTRUCTION, THE REPAIR OR REPLACEMENT, OF THE PARTICULAR PRODUCT ON WHICH ANY CLAIM OF LOSS OR DAMAGE IS BASED. THIS LIMITATION OF LIABILITY APPLIES IRRESPECTIVE OF WHETHER THE CLAIM IS BASED ON BREACH OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE OR OTHER CAUSE AND WHETHER THE ALLEGED DEFECT IS DISCOVERABLE OR LATENT.**

<sup>1</sup>Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Light Construction.

# 60" MULCHER ASSEMBLY

## MAINFRAME ASSEMBLY - SKID STEER ONLY



10900 3-23-10-4

# 60" MULCHER ASSEMBLY

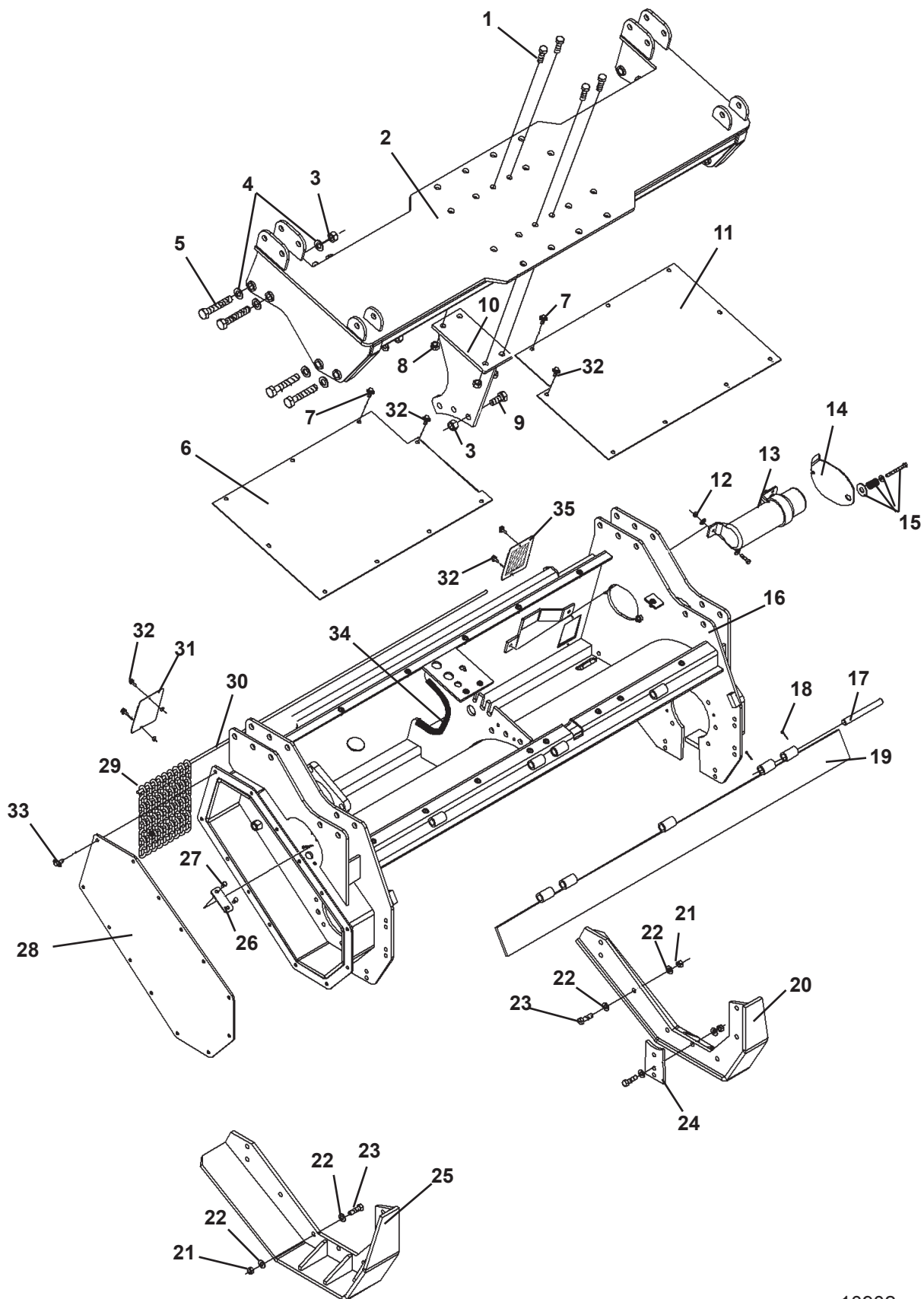
## MAINFRAME ASSEMBLY - SKID STEER ONLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	800A074	Push Over Bar - 5'
2	6	1936	.75" UNC Deformed Lock Nut
3	12	1649	.75" Hard Flat Washer
4	2	1147	.75" UNC X 4.00" Hex Capscrew
5	2	110172	Adjustment Post
6	4	1148	.75" UNC X 4.50" Hex Capscrew
7	4	10219	.38" UNC X 1.25" Flangehead Hex Capscrew
8	1	801-328	Inspection Cover Plate
9	62	801-260	Safety Chain Assembly
10	1	801-320	Safety Chain Mounting Bar
11	1	113967	Right Cover (SN 248067 and UP)
		109030	Right Cover (UP to SN 248066)
12	14	10218	.38" UNC X 1.00" Flangehead Hex Capscrew
13	1	113965	Left Cover (SN 248067 and UP)
		111099	Left Cover (SN 211731 to 248066)
		109033	Left Cover (UP to SN 211730)
	4	10140	.38" UNC Rivet Nut (UP to SN248066)
14	1	109036	Rubber Cylinder Cover
	1	109037	Cover Retainer
15	8	10219	.38" UNC X 1.25" Flangehead Hex Capscrew
16	1	25453	Manual Storage Tube
17	1	110284	Manual Access Cover
18	1	1031	.31" UNC X 3.25" Hex Capscrew
	2	1513	.31" Flat Washer
	1	110724	Spring
	1	1528	.62" Washer
	1	1753	.31" UNC Nylock Nut
19	2	1023	.31" UNC x 1.25 " Hex Capscrew
	4	1513	.31" Flat Washer
	2	1753	.31" UNC Nylock Nut
20	1	108997	Mainframe
	20	10141	.38" UNC Rivet Nut (UP to SN 248066)
21	3	801-244	Pivot Pin - Deflector Door
22	6	1616	Cotter Pin
23	1	113969	Filler Plate (SN 248067 and UP)
		110276	Filler Plate (UP to SN 248066)
24	1	111097	Screen
25	1	107209	Cylinder Assembly
26	1	111109	Deflector Door
27	1	800A065	Left Skid Shoe
28	1	801-219	Side Plate Filler
29	15	1841	.50" UNC Deformed Lock Nut
	30	1527	.50" SAE Flat Washer
	15	1091	.50" UNC X 1.75" Hex Capscrew
30	1	800A066	Right Skid Shoe
31	1	110175	Belt Tension Access Cover
32	2	1021	.31" UNC X .75" Hex Capscrew
	2	1502	.31" Lock Washer
33	1	801-227	Drive Cover
34	13	10218	.38" UNC X 1.00" Flangehead Hex Capscrew
	13	1525	.38" Flat Washer
	13	1837	.38" UNC Deformed Lock Nut
35	1	111519	Rubber Edging - 15"

10901 3-23-10-4

# 60" MULCHER ASSEMBLY

## MAINFRAME ASSEMBLY - EXCAVATOR ONLY



10902 3-23-10-4

## 60" MULCHER ASSEMBLY

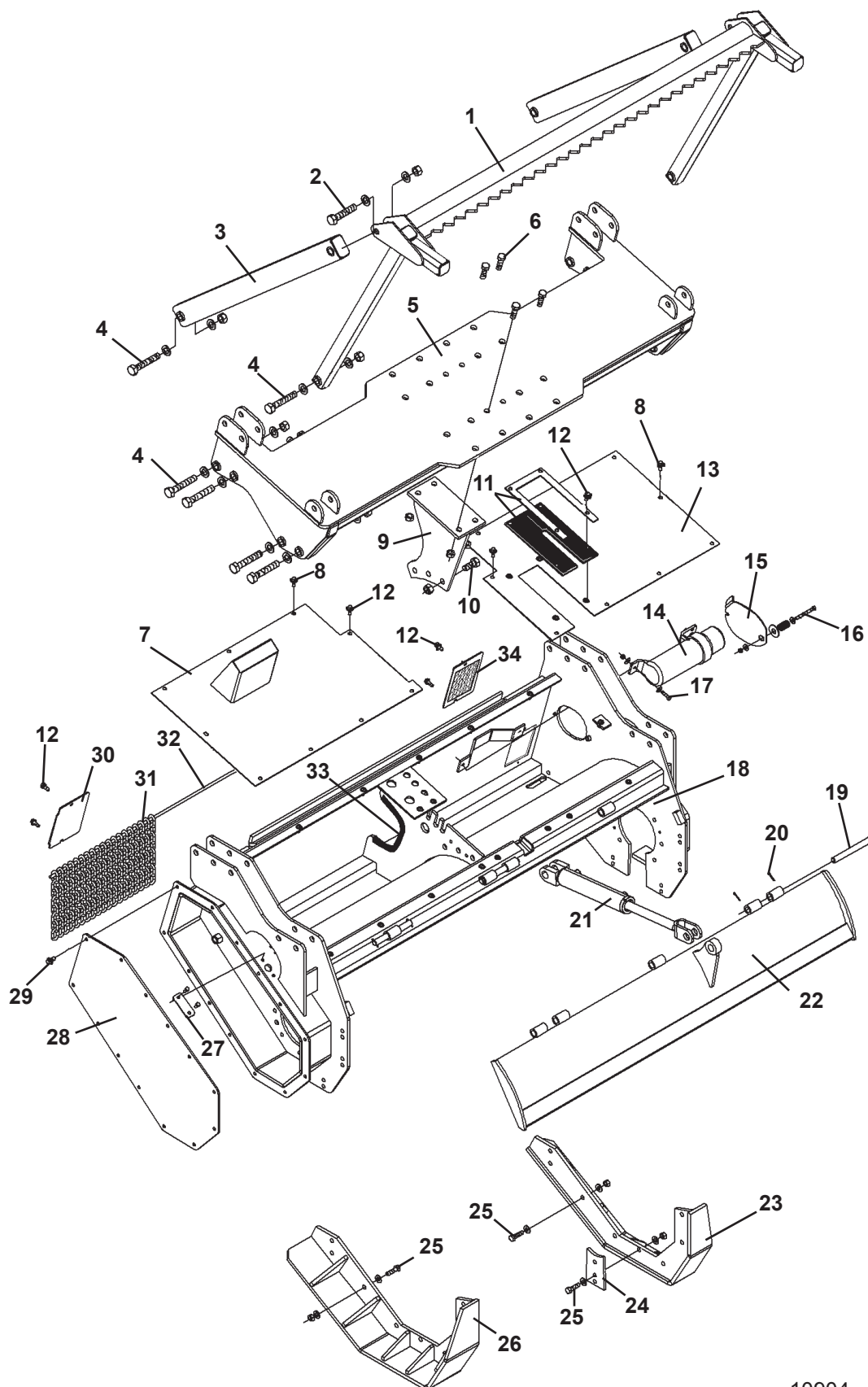
### MAINFRAME ASSEMBLY - EXCAVATOR ONLY

<b>ITEM</b>	<b>REQ'D</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	4	1116	.62" UNC X 2.00" Hex Capscrew
2	1	110991	Excavator Mount (SN 211731 and UP)
		109222	Excavator Mount (Up to SN 211730)
3	11	1936	.75" UNC Deformed Lock Nut
4	16	1649	.75" Hard Flat Washer
5	8	1148	.75" UNC X 4.50" Hex Capscrew
6	1	113971	Right Cover (SN 248067 and UP)
		110545	Right Cover (UP to SN 248066)
7	16	10218	.38" UNC X 1.00" Flangehead Hex Capscrew
8	4	1839	.62" UNC Deformed Lock Nut
9	3	1138	.75" UNC X 1.75" Hex Capscrew
10	1	110995	Center Plate Support Bracket (SN 211731 and UP)
		108430	Center Plate Support Bracket (Up to SN 211730)
11	1	113970	Left Cover (SN 248067 and UP)
		111098	Left Cover (SN 211731 to SN248066)
		109141	Left Cover (Up to SN 211730)
12	2	1023	.31" UNC X 1.25" Hex Capscrew
	4	1513	.31" Flat Washer
	2	1753	.31" UNC Nylock Nut
13	1	25453	Manual Storage Tube
14	1	110284	Manual Access Cover
15	1	1031	.31" UNC X 3.25" Hex Capscrew
	2	1513	.31" Flat Washer
	1	110724	Spring
	1	1528	.62" Washer
	1	1753	.31" UNC Nylock Nut
16	1	108997	Mainframe
	20	10141	.38" UNC Rivet Nut (UP to SN 248066)
17	3	801-244	Pivot Pin - Deflector Door
18	6	1616	Cotter Pin
19	1	109224	Flat Deflector Door
20	1	800A065	Left Skid Shoe
21	15	1841	.50" UNC Deformed Lock Nut
22	30	1527	.50" SAE Flat Washer
23	15	1091	.50" UNC X 1.75" Hex Capscrew
24	1	801-219	Side Plate Filler
25	1	800A066	Right Skid Shoe
26	1	110175	Belt Tension Access Cover
27	2	1021	.31" UNC X .75" Hex Capscrew
	2	1502	.31" Lock Washer
28	1	801-227	Drive Cover
29	62	801-260	Safety Chain Assembly
30	1	801-320	Safety Chain Mounting Bar
31	1	801-328	Inspection Cover Plate
32	6	10219	.38" UNC X 1.25" Flangehead Hex Capscrew
33	13	10218	.38" UNC X 1.00" Flangehead Hex Capscrew
	13	1525	.38" Flat Washer
	13	1837	.38" UNC Deformed Lock Nut (UP to SN 248066)
34	1	111519	Rubber Edging - 15"
35	1	111097	Screen



# 60" MULCHER ASSEMBLY

## MAINFRAME ASSEMBLY - COMBO (SKID-STEER AND EXCAVATOR)



10904 3-23-10-4[;]

# 60" MULCHER ASSEMBLY

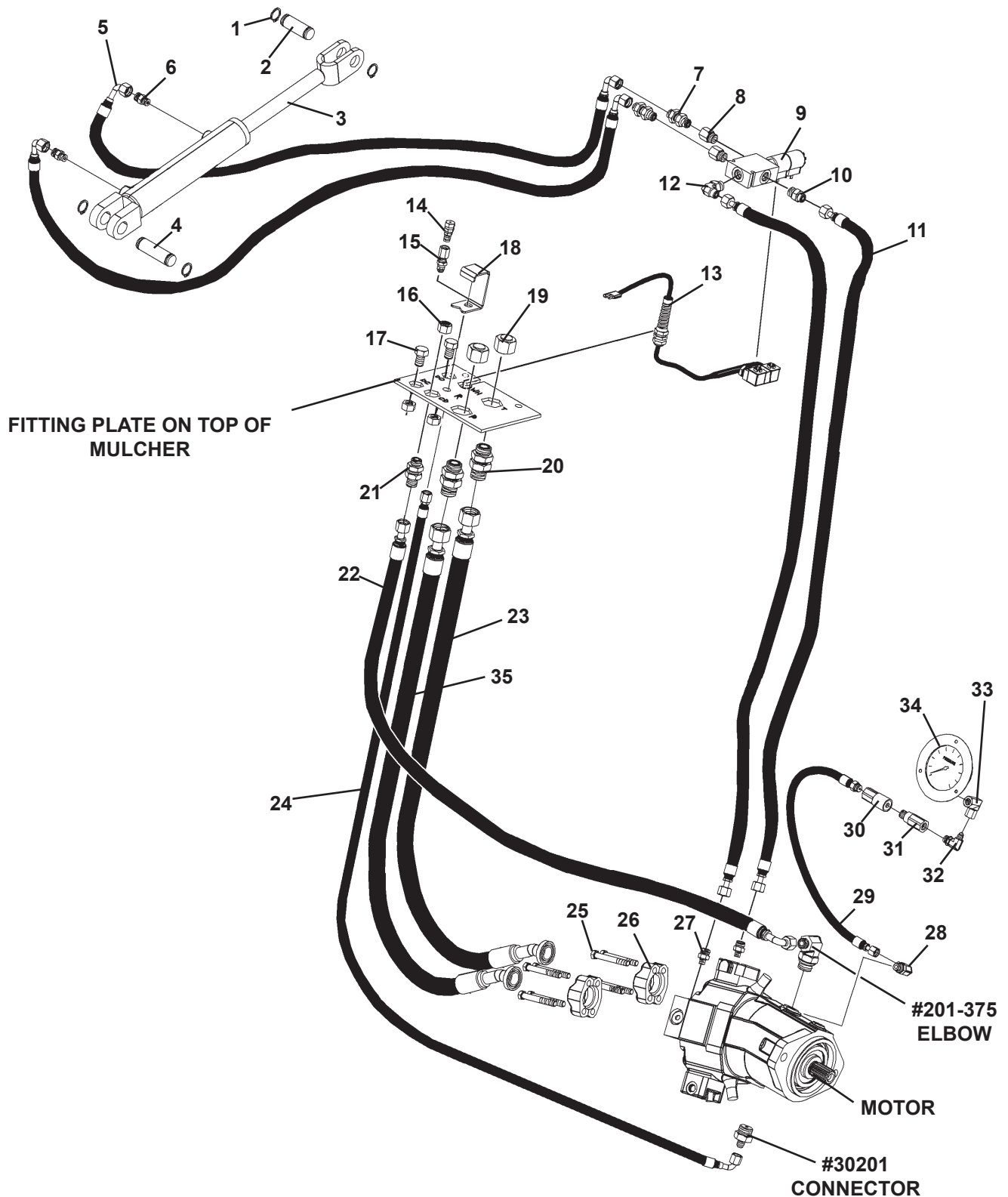
## MAINFRAME ASSEMBLY - COMBO (SKID-STEER AND EXCAVATOR)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>		
1	1	800A074	Push Over Bar - 5'		
2	2	1936	.75" UNC Deformed Lock Nut		
	4	1649	.75" Hard Flat Washer		
	2	1147	.75" UNC X 4.00" Hex Capscrew		
3	2	110172	Adjustment Post		
4	12	1148	.75" UNC X 4.50" Hex Capscrew		
	24	1649	.75" Hard Flat Washer		
	12	1936	.75" UNC Deformed Lock Nut		
5	1	110991	Excavator Mount (SN 211731 and UP)		
		109222	Excavator Mount (Up to SN 211730)		
6	4	1116	.62" UNC X 2.00" Hex Capscrew		
	4	1839	.62" UNC Deformed Lock Nut		
7	1	113967	Right Cover (SN 248067 and UP)		
		109030	Right Cover (UP to SN248066)		
8	16	10218	.38" UNC X .1.00" Flangehead Hex Capscrew		
9	1	110995	Center Plate Support Bracket (SN 211731 and UP)		
		108430	Center Plate Support Bracket (Up to SN 211730)		
10	3	1138	.75" UNC X 1.75" Hex Capscrew		
	3	1936	.75" UNC Deformed Lock Nut		
11	1	109036	Rubber Cylinder Cover		
	1	109037	Cover Retainer		
12	10	10219	.38" UNC X .1.25" Flangehead Hex Capscrew		
13	1	113965	Left Cover (SN 248067 and UP)		
		111099	Left Cover (SN 211731 to SN 248066)		
		109033	Left Cover (Up to SN 211730)		
	4	10140	.38" UNC Rivet Nut (UP to SN 248066)		
14	1	25453	Manual Storage Tube		
15	1	110284	Manual Access Cover		
16	1	1031	.31" UNC X 3.25" Hex Capscrew		
	2	1513	.31" Flat Washer		
	1	110724	Spring		
	1	1528	.62" Washer		
	1	1753	.31" UNC Nylock Nut		
17	2	1023	.31" UNC x 1.25 " Hex Capscrew		
	4	1513	.31" Flat Washer		
	2	1753	.31" UNC Nylock Nut		
18	1	108997	Mainframe		
	20	10141	.38" UNC Rivet Nut (UP to SN 248066)		
19	3	801-244	Pivot Pin - Deflector Door		
20	6	1616	Cotter Pin		
21	1	107209	Cylinder Assembly		
22	1	111109	Deflector Door		
23	1	800A065	Left Skid Shoe		
24	1	801-219	Side Plate Filler		
25	15	1841	.50" UNC Deformed Lock Nut		
	30	1527	.50" SAE Flat Washer		
	15	1091	.50" UNC X 1.75" Hex Capscrew		
26	1	800A066	Right Skid Shoe		
27	1	110175	Belt Tension Access Cover		
	2	1021	.31" UNC X .75" Hex Capscrew		
	2	1502	.31" Lock Washer		
28	1	801-227	Drive Cover		
29	13	10218	.38" UNC X 1.00" Flangehead Hex Capscrew		
	13	1525	.38" Flat Washer		
	13	1837	.38" UNC Deformed Lock Nut		
30	1	801-328	Inspection Cover Plate		
31	62	801-260	Safety Chain Assembly		
32	1	801-320	Safety Chain Mounting Bar		
33	1	111519	Rubber Edging - 15"	10905	3-23-10-4
34	1	111097	Screen		

# 60" MULCHER ASSEMBLIES

## SKID STEER AND COMBO HOSE ASSEMBLIES

### 3-LINE HYDRAULIC SYSTEM



10885 3-23-10-4

# 60" MULCHER ASSEMBLIES

## SKID STEER AND COMBO HOSE ASSEMBLIES

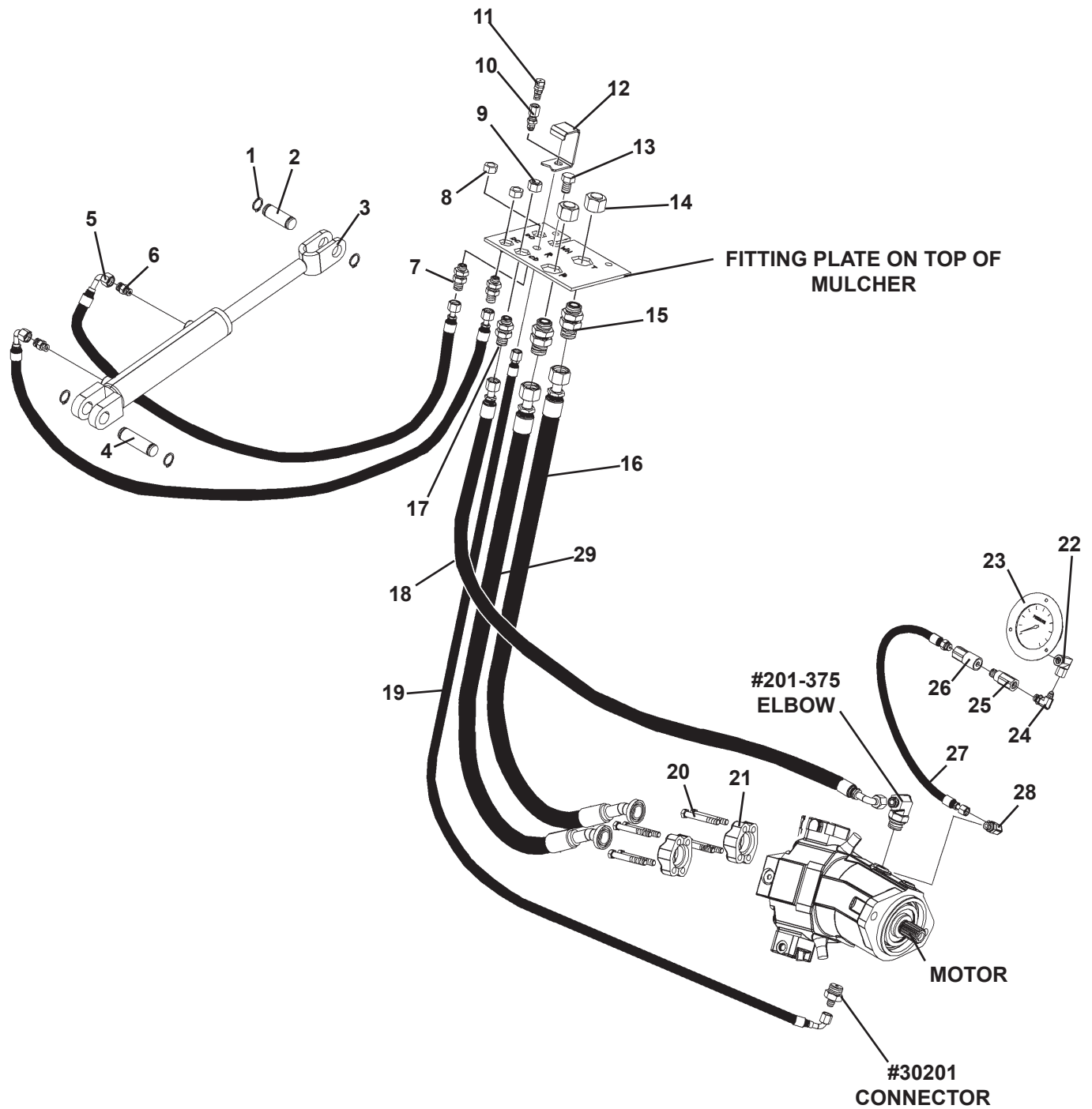
### 3-LINE HYDRAULIC SYSTEM

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	6612	Snap Ring
2	1	86620	Pivot Pin
3	1	107209	Cylinder Assembly
4	1	18747	Pivot Pin
5	2	38511	Hose .38" X 24" 6FFS90°-6FFS90°
6	2	30208	Straight Connector 6MBo-6MFS
7	2	30411	Straight Bulkhead Fitting 6MBo-6MFS
8	2	3338	Straight Connector 6FBo-8MBo
9	1	107652	Solenoid Valve
10	1	30412	Straight Connector 6MFS-8MBo
11	2	38475	Hose .38" X 16" 6FFS-6FFS
12	1	30318	90° Elbow 6MFS-8MBo
13	1	17174	Wire Assembly (Switch to Valve)
14	1	200-173	Atmosphere Relief Valve
15	1	30434	Straight Bulkhead Fitting 4FP-6MJ
16	1	30424	Cap 8FFS
17	2	1112	.62" UNC X 1.00" Hex Capscrew
	2	1839	.62" UNC Deformed Lock Nut
18	1	111520	Oil Deflector
19	2	30426	Cap 12FFS
20	2	30387	Straight Bulkhead Fitting 12MFS
21	1	30291	Straight Bulkhead Fitting 8MFS
22	1	203-241	Hose .50" X 27" 8FFS-8FFS 90°
23	1	203-240	Hose .75" X 27.75" 12FFS-16FLH60 90° Code 62
24	1	38006	Hose .25" X 40" 6FJX-6FFJX90°
25	8	10189	.44" UNC X 3.25" Hex Capscrew Grade 8
26	2	3428	Clamp Assembly - Code 62
	-	3390	Replacement O'Ring
27	2	30413	Straight Connector 6MFS-4MBo
28	1	201-429	90° Elbow 4MFS-6MBo
29	1	38577	Hose .25" X 40" 4FFS-6MBo
30	1	103378	Female Coupler .25"
31	1	102682	Male Coupler .25"
32	1	30431	90° Elbow 4MP-6MBo
33	1	201-388	90° Elbow 4FP-4FPX
34	1	200-155	Pressure Gauge
	3	10161	#10 X .75" Slotted Hex Head Tapping Screw
	1	801-324	Gasket - Pressure Gauge
35	1	38470	Hose .75" X 16" 12FFS-16FLH60 Code 62 - Skid Steer
	1	38522	Hose .75" X 68" 12FFS 90°-16FLH 90° Code 62 - Combo

# 60" MULCHER ASSEMBLIES

SKID STEER HOSE ASSEMBLY

5-LINE HYDRAULIC SYSTEM



11638 3-23-10

## 60" MULCHER ASSEMBLIES

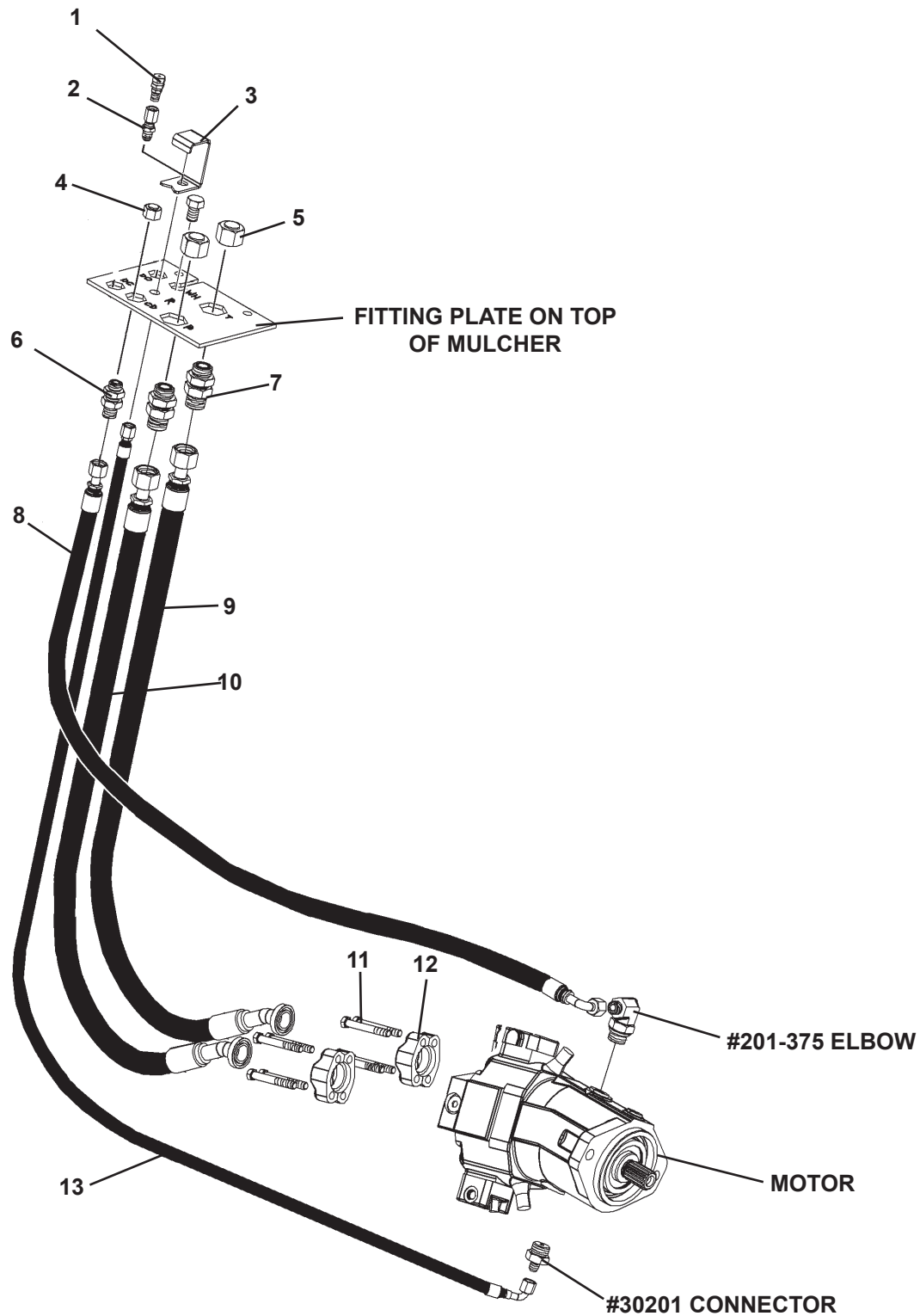
SKID STEER HOSE ASSEMBLY

5-LINE HYDRAULIC SYSTEM

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	6612	Snap Ring
2	1	86620	Pivot Pin
3	1	107209	Cylinder Assembly
4	1	18747	Pivot Pin
5	2	203-227	Hose .38" X 22" 6FFS-6FFS90°
6	2	30208	Straight Connector 6MBo-6MFS
7	2	201-144	Straight Bulkhead Fitting 6MFS
8	2	30423	Cap 6FFS
9	1	30424	Cap 8FFS
10	1	30434	Straight Bulkhead Fitting 4FP-6MJ
11	1	200-173	Atmosphere Relief Valve
12	1	111520	Oil Deflector
13	1	1112	.62" UNC X 1.00" Hex Capscrew
	1	1839	.62" UNC Deformed Lock Nut
14	2	30426	Cap 12FFS
15	2	30387	Straight Bulkhead Fitting 12MFS
16	1	203-240	Hose .75" X 27.75" 12FFS-16FLH60 90° Code 62
17	1	30291	Straight Bulkhead Fitting 8MFS
18	1	203-241	Hose .50" X 27" 8FFS-8FFS 90°
19	1	38006	Hose .25" X 40" 6FJX-6FFJX90°
20	8	10189	.44" UNC X 3.25" Hex Capscrew Grade 8
21	2	3428	Clamp Assembly - Code 62
	-	3390	Replacement O'Ring
22	1	201-388	90° Elbow 4FP-4FPX
23	1	200-155	Pressure Gauge
	3	10161	#10 X .75" Slotted Hex Head Tapping Screw
	1	801-324	Gasket - Pressure Gauge
24	1	30431	90° Elbow 4MP-6MBo
25	1	102682	Male Coupler .25"
26	1	103378	Female Coupler .25"
27	1	38577	Hose .25" X 40" 4FFS-6MBo
28	1	201-429	90° Elbow 4MFS-6MBo
29	1	38470	Hose .75" X 16" 12FFS-16FLH60 Code 62

# 60" MULCHER ASSEMBLY

## EXCAVATOR ONLY HOSE ASSEMBLY



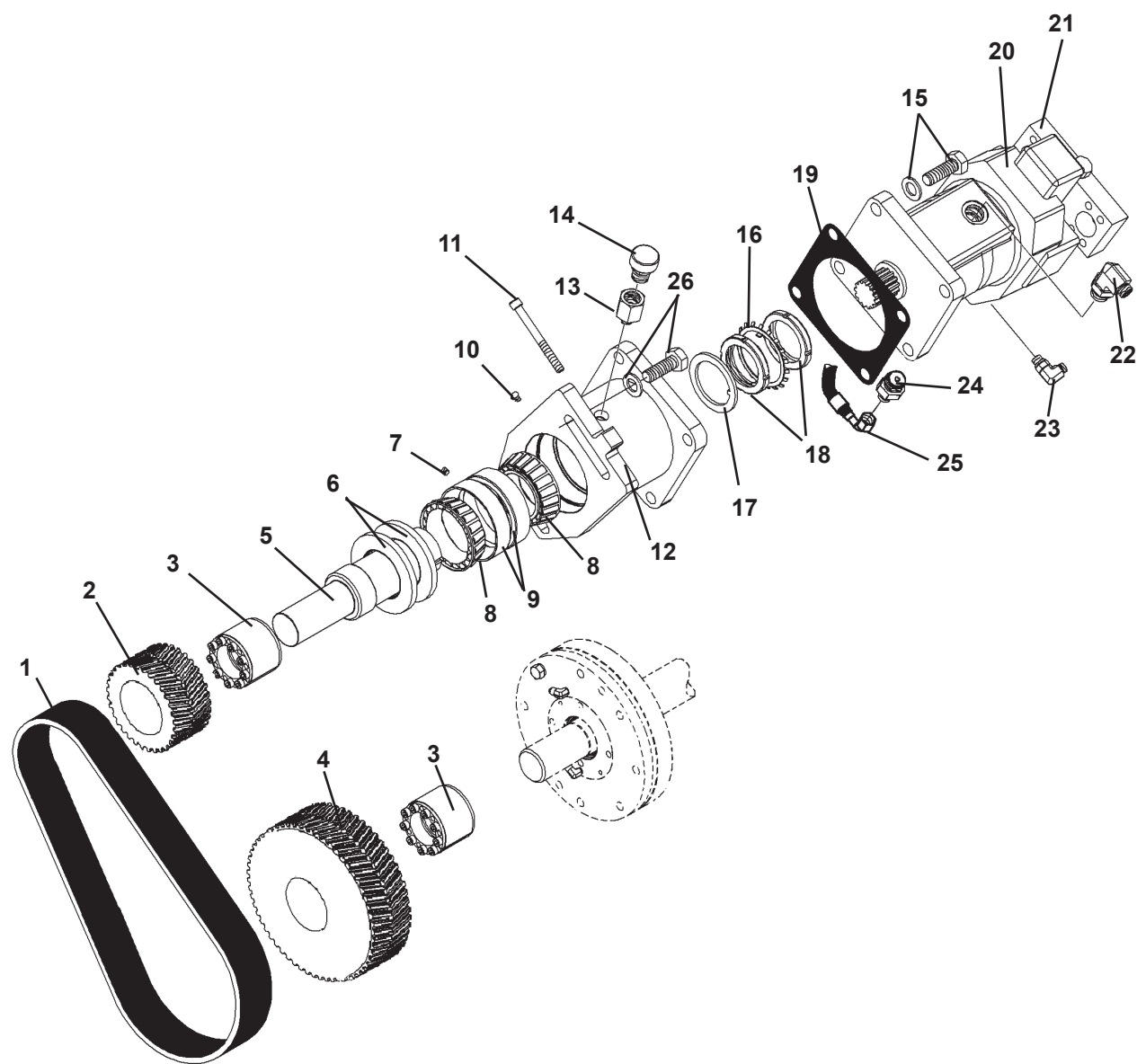


# 60" MULCHER ASSEMBLY

## EXCAVATOR ONLY HOSE ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	200-173	Atmospheric Relief Valve
2	1	30434	Straight Bulkhead Connector 6MJ-4FP
3	1	111520	Oil Guard
4	1	30424	Cap
5	2	30426	Cap
6	1	30291	Straight Bulkhead Connector 8MFS-8MFS
7	2	30387	Straight Bulkhead Connector 12MFS-12MFS
8	1	203-241	Hose .50" X 27" 8FFS-8FFS 90°
9	1	203-240	Hose .75" X 27.75" 12FFS-16FLH60 90° Code 62
10	1	38522	Hose .75" X 68" 12FFS 90°-16FLH 90° Code 62
11	8	10189	.44" UNC X 3.25" Hex Capscrew - Grade 8
	8	1504	.44" Lock Washer
12	2	3428	Clamp Assembly - Code 62
	-	3390	Replacement O'Ring
13	1	38006	Hose .25" X 40" 6FJX-6FJX 90°

**60" MULCHER ASSEMBLY**  
MOTOR AND DRIVE ASSEMBLY



# 60" MULCHER ASSEMBLY

## MOTOR AND DRIVE ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	600-209	Drive Belt
2	1	600-206	Pulley - 32 Tooth
3	2	600-150	Locking Assembly
4	1	600-205	Pulley - 56 Tooth
5	1	800A077*	Motor Shaft
	1	800A057*	Motor Shaft (Skid Steer ONLY mulchers SN 248067 and UP)
6	2	600-152*	Upper Housing Seal
7	1	30461*	Hex Plug
8	2	600-153*	Upper Housing Bearing Cone
9	2	600-154*	Upper Housing Bearing Cup
10	1	6133*	Grease Fitting
11	2	700-115*	.44" UNC X 4.50" Socket Head Capscrew - Grade 8
12	1	801-422*	Upper Bearing Housing
	1	107774*	Upper Bearing Housing (Skid Steer ONLY mulchers SN 248067 and UP)
13	1	201-366*	Straight Connector 12FP-8MP
14	1	54645*	Breather
15	4	10012	.75" UNC X 2.25" Hex Capscrew - Grade 8 (200-169 Motor)
	4	1649	.75" Hard Flat Washer (200-169 Motor)
	2	10215	.62" UNF X 2.25" Hex Capscrew - Grade 8 (107251 Motor)
	2	1627	.62" Hard Flat Washer (107251 Motor)
16	1	600-156*	Bearing Lock Washer
17	1	600-155*	Bearing Tongue Washer
18	2	600-157*	Special Bearing Nut
19	1	106948	Motor Gasket
	-	22609	Motor O'Ring (Skid Steer ONLY mulchers SN 248067 and UP)
20	1	200-169	Hydraulic Motor
	-	45986	Replacement Motor Shaft Seal for 200-169 Motor
	1	107251	Hydraulic Motor (Skid Steer ONLY mulchers SN 248067 and UP)
	-	45987	Replacement Motor Shaft Seal for 107251 Motor
21	1	111594	Relief Block Valve - 107CC Motor (Used on 200-169 Motor ONLY)
	1	109542	Relief Block Valve - 80CC Motor (Used on 107251 Motor ONLY)
		45990	Replacement Cartridge - Anti-Cavitation
		46003	Replacement Cartridge - Pressure Relief (200-169 Motor ONLY)
		46068	Replacement Cartridge - Pressure Relief (107251 Motor ONLY)
		30280	Replacement #4 Plug
22	1	201-375	90° Elbow 8MFS-12MBo
23	1	201-429	90° Elbow 4MFS-6MBo - Not used on Excavator Only Models
24	1	30201	Straight Connector 12MBo-6MJ
25	1	38006	Hose .25" X 40" 6FJX-6FJX 90° (To Coupler Bracket / Atmospheric Relief Valve)
26	2	10012	.75" UNC X 2.25" Hex Capscrew - Grade 8
	2	1649	.75" Hard Flat Washer

### OPTIONAL

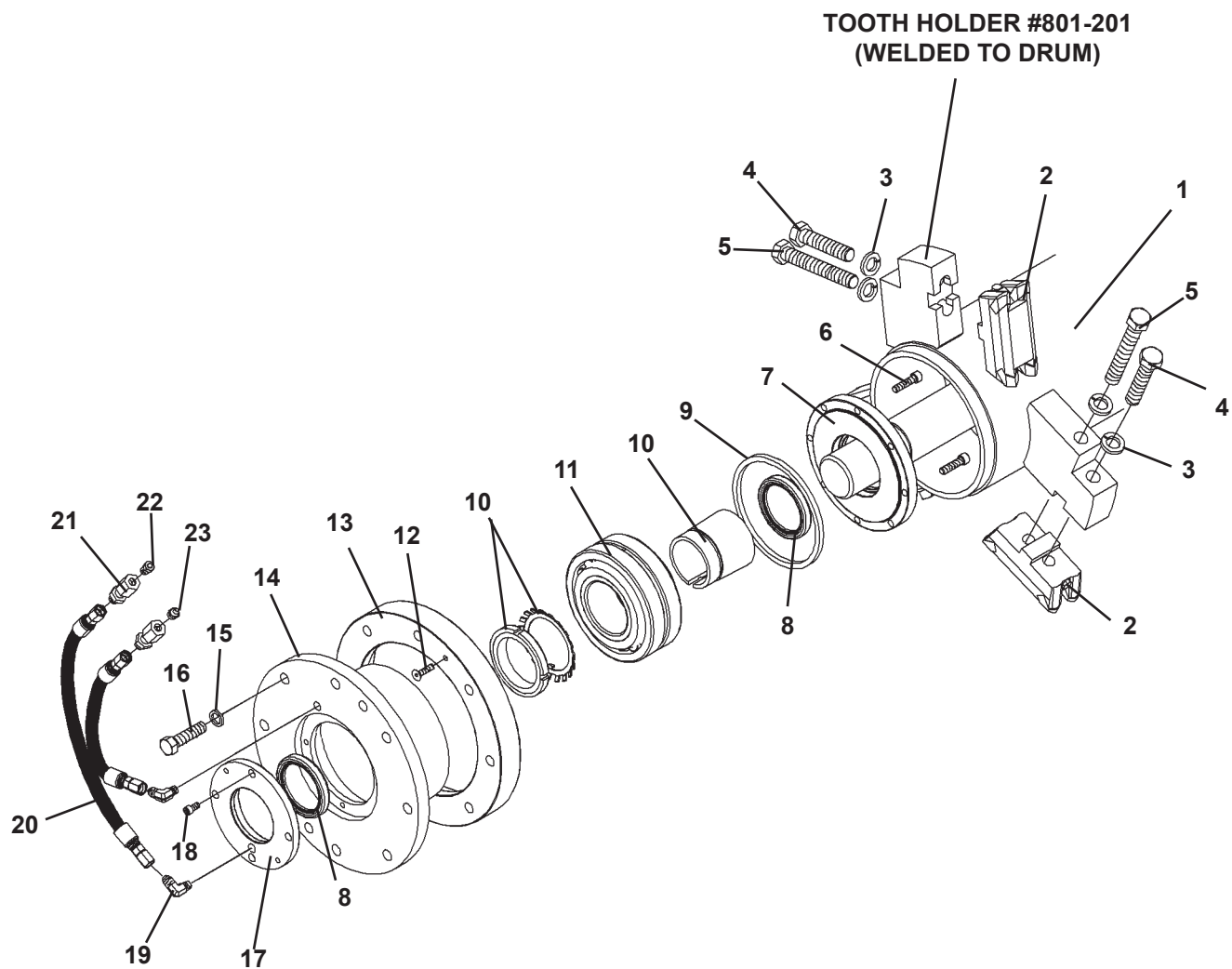
1	115000	Bearing Socket (For removal of bearing nut #600-157.)
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**NOTE:** Field replacement of internal motor seals voids warranty.

**NOTE:** All items marked with an asterisk (\*) are part of a Overhung Load Adapter Assembly.  
Order #114894 for complete Overhung Load Adapter Assembly for Skid Steer ONLY mulchers with SN 248067 and UP.  
Order #114895 for complete Overhung Load Adapter Assembly for all Combo & Excavator mulchers and skid steer only mulchers up to SN 248066.

# 60" MULCHER ASSEMBLY

## LOWER RIGHT BEARING ASSEMBLY



# 60" MULCHER ASSEMBLY

## LOWER RIGHT BEARING ASSEMBLY

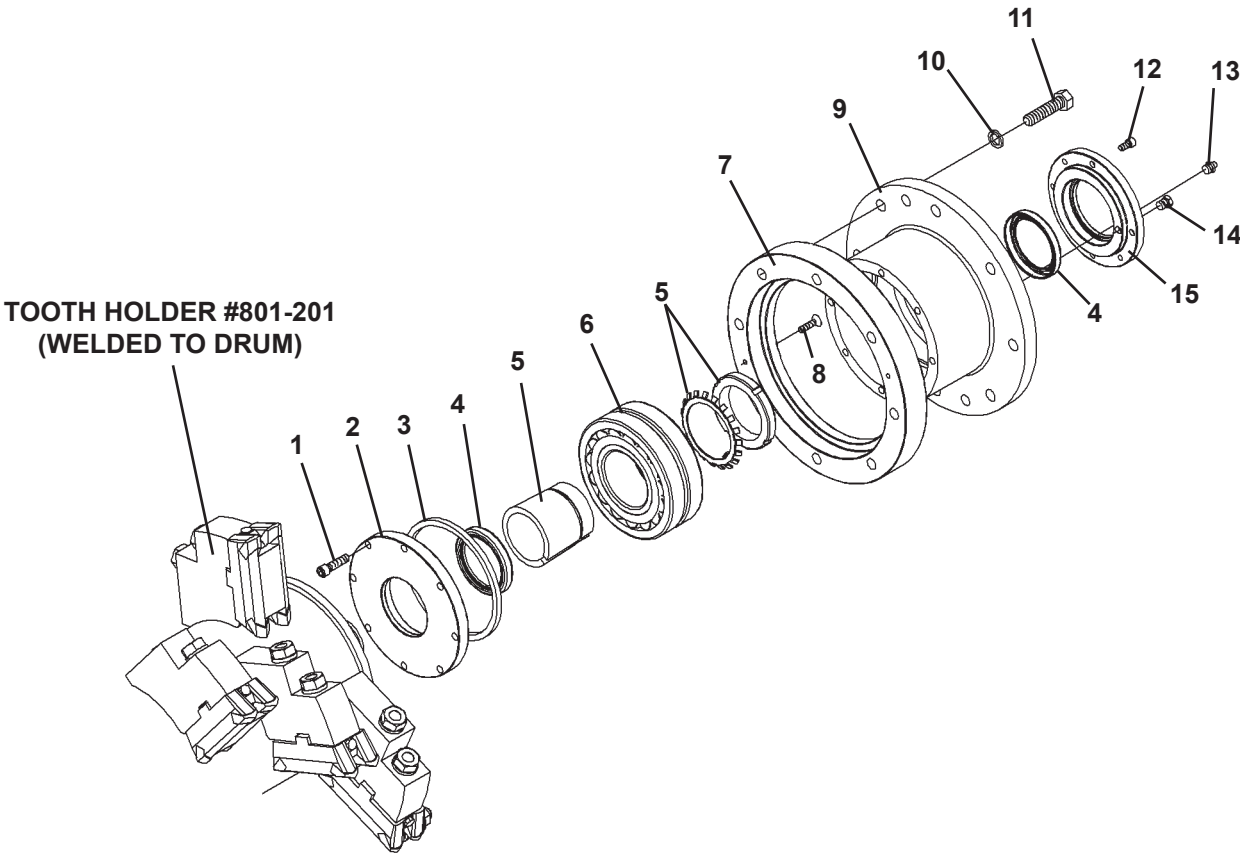
<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	110508	Rotor Drum - 60" Mulcher - No Teeth
		801-201	Replacement Tooth Holder (Welded to Drum)
2	--	600-112-1	Single Side Hammer Tooth - Nonreversible Kit #109843 includes 45 Hammers 600-112-1 (No hardware)
	--	600-168	Double Side Hammer Tooth - Reversible Gap (Shown) Kit #109842 includes 45 Hammers 600-168 (No hardware)
	--	111588	Claw Tooth - Reversible Kit #112577 includes 45 Hammers 111588 (No hardware)
	--	600-108	Rock Hammer - Nonreversible
	--	600-162	Rock Hammer - Reversible
3	90	10165	16mm Lock Washer
4	45	700-114	M16 X 75mm Hex Capscrew 1.5P
5	45	700-111	M16 X 110mm Hex Capscrew 1.5P
6	8	700-64145*	.31" UNC X 1.25" Socket Head Capscrew
7	1	801-207*	Outer Seal Cap
8	2	600-159*	Seal
9	1	801-303*	Spacer Ring
10	1	600-160*	Bearing Adapter (Includes Lock ring and Lock Nut)
	-	108949	Replacement Lock Nut
	-	108950	Replacement Lock Ring
11	1	600-158*	Bearing
12	2	1700	.24" UNC X .75" Flathead Capscrew
13	1	801-210	Dirt Ring
14	1	801-288*	Bearing Housing Flange
15	8	700-58096	.50" Lock Washer
16	8	1092	.50" UNC X 2.00" Hex Capscrew
17	1	801-206*	Inner Seal Cap
18	4	700-64111*	.25" UNC X .50" Socket Head Capscrew
19	2	201-263	90° Elbow 4MJ-2MP
20	2	203-112	Hose .25" X 12" 4FJX-4FJX
21	2	201-262	Straight Bulkhead Connector 2FP-4MJ (Includes Nut)
22	1	113935	Breather
23	1	9371	Grease Fitting

### OPTIONAL

1	114999	Bearing Socket (For removal of bearing nut #108949.)
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**NOTE: All items marked with and asterisk (\*) are part of the Bearing Assembly.  
Order #114248 for a complete Bearing Assembly.**

**60" MULCHER ASSEMBLY**  
LOWER LEFT BEARING ASSEMBLY



# 60" MULCHER ASSEMBLY

## LOWER LEFT BEARING ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	8	700-64145*	.31" UNC X 1.25" Socket Head Capscrew
2	1	801-207*	Outer Seal Cap
3	1	801-303*	Spacer Ring
4	2	600-159*	Seal
5	1	600-160*	Bearing Adapter (Includes Lock ring and Lock Nut)
	-	108949	Replacement Lock Nut
	-	108950	Replacement Lock Ring
6	1	600-158*	Bearing
7	1	801-210	Dirt Ring
8	2	1700	.24" UNC X .75" Flathead Capscrew
9	1	801-288*	Bearing Housing Flange
10	8	700-58096	.50" Lock Washer
11	8	1092	.50" UNC X 2.00" Hex Capscrew
12	4	700-64111*	.25" UNC X .50" Socket Head Capscrew
13	1	9371	Grease Fitting
14	1	700-97728	Breather
15	1	801-206*	Inner Seal Cap
<b><u>OPTIONAL</u></b>			
	1	114999	Bearing Socket (For removal of bearing nut #108949.)

**NOTE: All items marked with and asterisk (\*) are part of the Bearing Assembly.  
Order #114248 for a complete Bearing Assembly.**

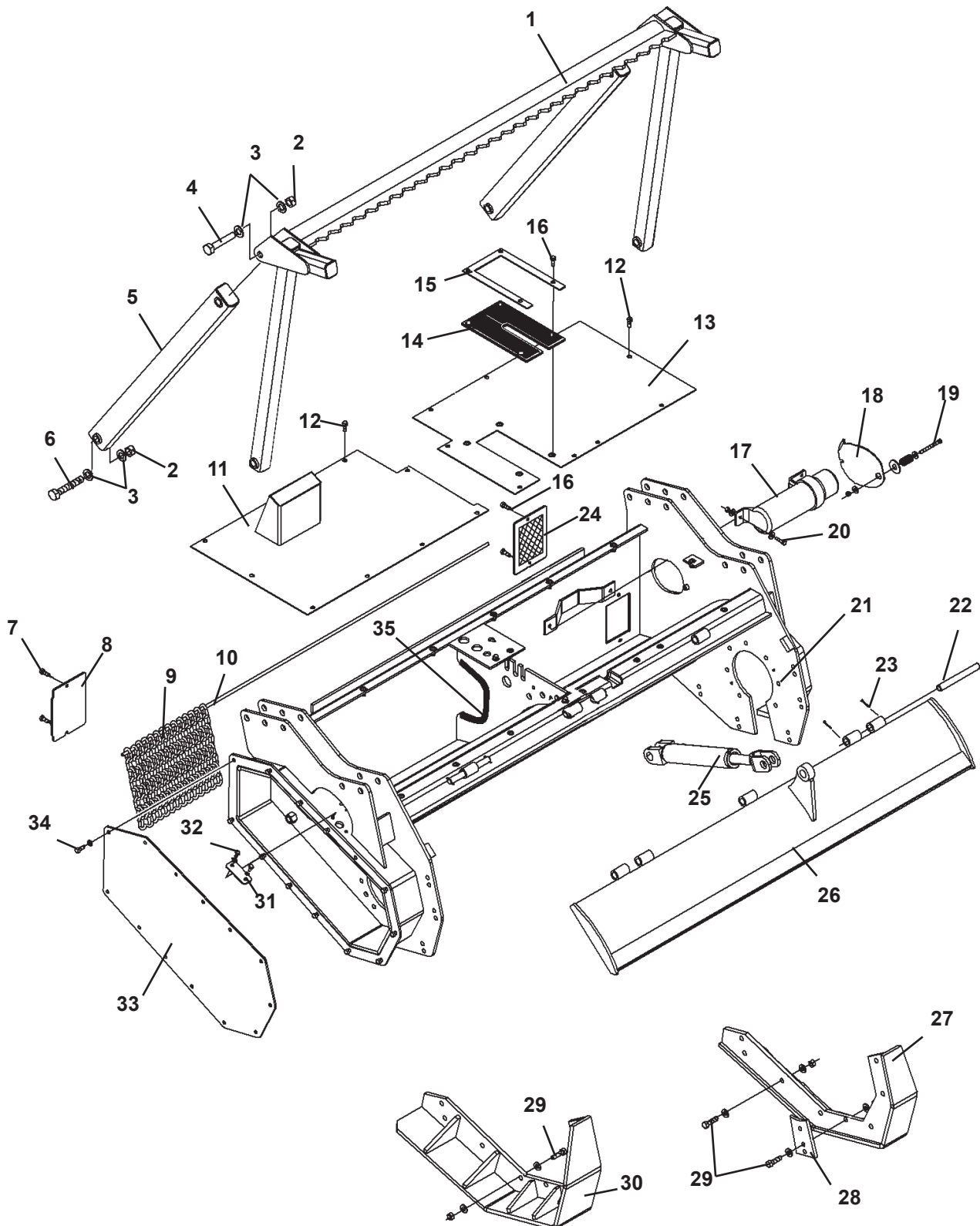


## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750



11444 6-2-09

## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

<b>ITEM</b>	<b>REQ'D</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	1	110436	Push Over Bar - 6'
2	6	1936	.75" UNC Deformed Lock Nut
3	12	1649	.75" Hard Flat Washer
4	2	1147	.75" UNC X 4.00" Hex Capscrew
5	2	110172	Adjustment Post
6	4	1148	.75" UNC X 4.50" Hex Capscrew
7	2	10219	.38" UNC X 1.25" Flange Head Capscrew
8	1	801-328	Inspection Cover Plate
9	74	801-260	Safety Chain Assembly
10	1	110489	Safety Chain Mounting Bar
11	1	112744	Right Cover (Used on both 4000 PSI mulchers)
	1	113756	Right Cover (Used on 5500 PSI mulcher ONLY)
12	18	10218	.38" UNC X 1.00" Flange Head Capscrew
13	1	112745	Left Cover
14	1	109036	Rubber Cylinder Cover
15	1	109037	Cover Retainer
16	6	10219	.38" UNC X 1.25" Flange Head Capscrew
17	1	25453	Manual Storage Tube
18	1	110284	Manual Access Cover
19	1	1031	.31" UNC X 3.25" Hex Capscrew
	2	1513	.31" Flat Washer
	1	110724	Spring
	1	1528	.62" Washer
	1	1753	.31" UNC Nylock Nut
20	2	1023	.31" UNC x 1.25 " Hex Capscrew
	4	1513	.31" Flat Washer
	2	1753	.31" UNC Nylock Nut
21	1	112731	Mainframe
22	3	801-244	Pivot Pin - Deflector Door
23	6	1616	Cotter Pin
24	1	111097	Screen
25	1	107209	Cylinder Assembly
26	1	112741	Deflector Door
27	1	800A065	Left Skid Shoe
28	1	801-219	Side Plate Filler
29	15	1841	.50" UNC Deformed Lock Nut
	30	1527	.50" SAE Flat Washer
	15	1091	.50" UNC X 1.75" Hex Capscrew
30	1	800A066	Right Skid Shoe
31	1	110175	Belt Tension Access Cover
32	2	1021	.31" UNC X .72" Hex Capscrew
	2	1502	.31" Lock Washer
33	1	801-227	Drive Cover
34	13	1043	.38" UNC X 1.00" Hex Capscrew
	26	1525	.38" Flat Washer
	13	1837	.38" UNC Deformed Lock Nut
35	1	111519	Rubber Edging - 15"

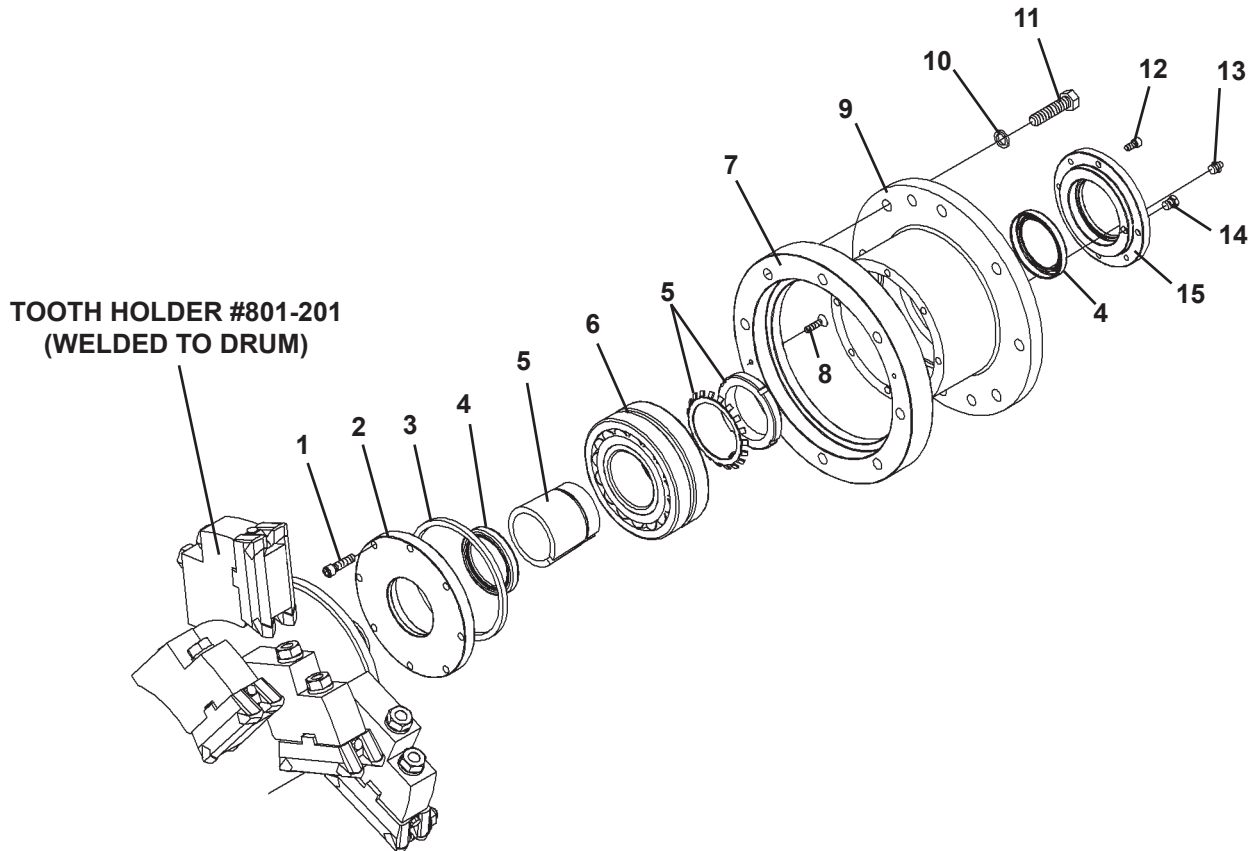
## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

### LOWER LEFT BEARING ASSEMBLY



## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

### LOWER LEFT BEARING ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	8	700-64145*	.31" UNC X 1.25" Socket Head Capscrew
2	1	801-207*	Outer Seal Cap
4	2	600-159*	Seal
3	1	801-303*	Spacer Ring
5	1	600-160*	Bearing Adapter (Includes Lock ring and Lock Nut)
	-	108949	Replacement Lock Nut
	-	108950	Replacement Lock Ring
6	1	600-158*	Bearing
7	1	801-210	Dirt Ring
8	2	1700	.24" UNC X .75" Flathead Capscrew
9	1	801-288*	Bearing Housing Flange
10	8	700-58096	.50" Lock Washer
11	8	1092	.50" UNC X 2.00" Hex Capscrew
12	4	700-64111*	.25" UNC X .50" Socket Head Capscrew
13	1	9371	Grease Fitting
14	1	700-97728	Breather
15	1	801-206*	Inner Seal Cap
<b><u>OPTIONAL</u></b>			
	1	114999	Bearing Socket (For removal of bearing nut #108949.)

**NOTE: All items marked with and asterisk (\*) are part of the Bearing Assembly.  
Order #114248 for a complete Bearing Assembly.**

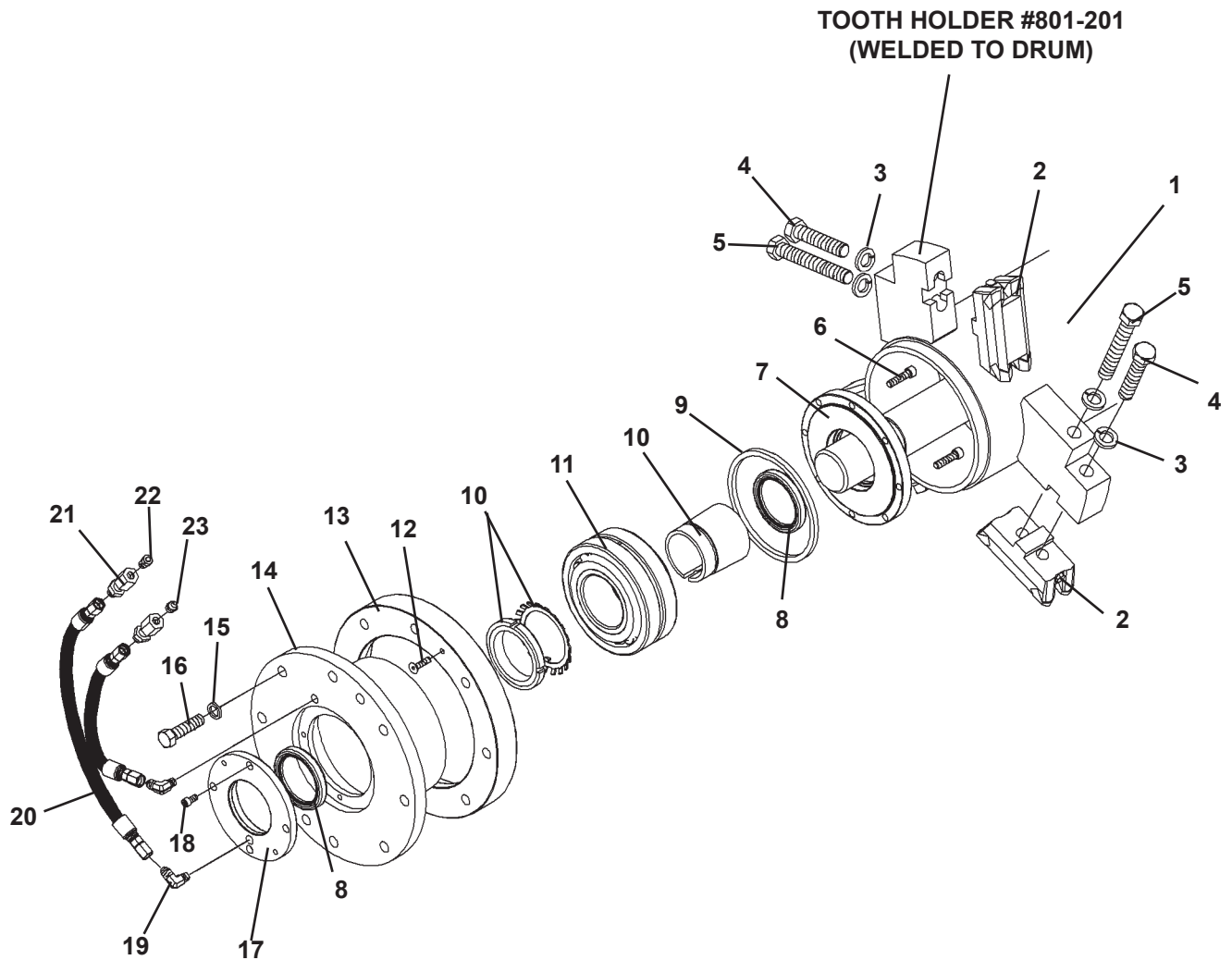
## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

### LOWER RIGHT BEARING ASSEMBLY




## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

### LOWER RIGHT BEARING ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	110512	Rotor Drum - 72" Mulcher - No Teeth
		801-201	Replacement Tooth Holder (Welded to Drum)
2		600-112-1	Single Side Hammer Tooth - Nonreversible Kit #111793 includes 54 Hammers 600-112-1 (No hardware)
	--	600-168	Double Side Hammer Tooth - Reversible Gap (Shown) Kit #111794 includes 54 Hammers 600-168 (No hardware)
	--	111588	Claw Tooth - Reversible Kit #112578 includes 54 Hammers 111588 (No hardware)
	--	600-108	Rock Hammer - Nonreversible
	--	600-162	Rock Hammer - Reversible
3	108	10165	16mm Lock Washer
4	54	700-114	M16 X 75mm Hex Capscrew 1.5P
5	54	700-111	M16 X 110mm Hex Capscrew 1.5P
6	8	700-64145*	.31" UNC X 1.25" Socket Head Capscrew
7	1	801-207*	Outer Seal Cap
8	2	600-159*	Seal
9	1	801-303*	Spacer Ring
10	1	600-160*	Bearing Adapter (Includes Lock ring and Lock Nut)
	-	108949	Replacement Lock Nut
	-	108950	Replacement Lock Ring
11	1	600-158*	Bearing
12	2	1700	.24" UNC X .75" Flathead Capscrew
13	1	801-210	Dirt Ring
14	1	801-288*	Bearing Housing Flange
15	8	700-58096	.50" Lock Washer
16	8	1092	.50" UNC X 2.00" Hex Capscrew
17	1	801-206*	Inner Seal Cap
18	4	700-64111*	.25" UNC X .50" Socket Head Capscrew
19	2	201-263	90° Elbow 4MJ-2MP
20	2	203-112	Hose .25" X 12" 4FJX-4FJX
21	2	201-262	Straight Bulkhead Connector 2FP-4MJ (Includes Nut)
22	1	113935	Breather
23	1	9371	Grease Fitting

#### OPTIONAL

1	114999	Bearing Socket (For removal of bearing nut #108949.)
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**NOTE: All items marked with an asterisk (\*) are part of the Right Bearing Assembly.  
Order #114248 for a complete Right Bearing Assembly.**

11447 3-24-10-2

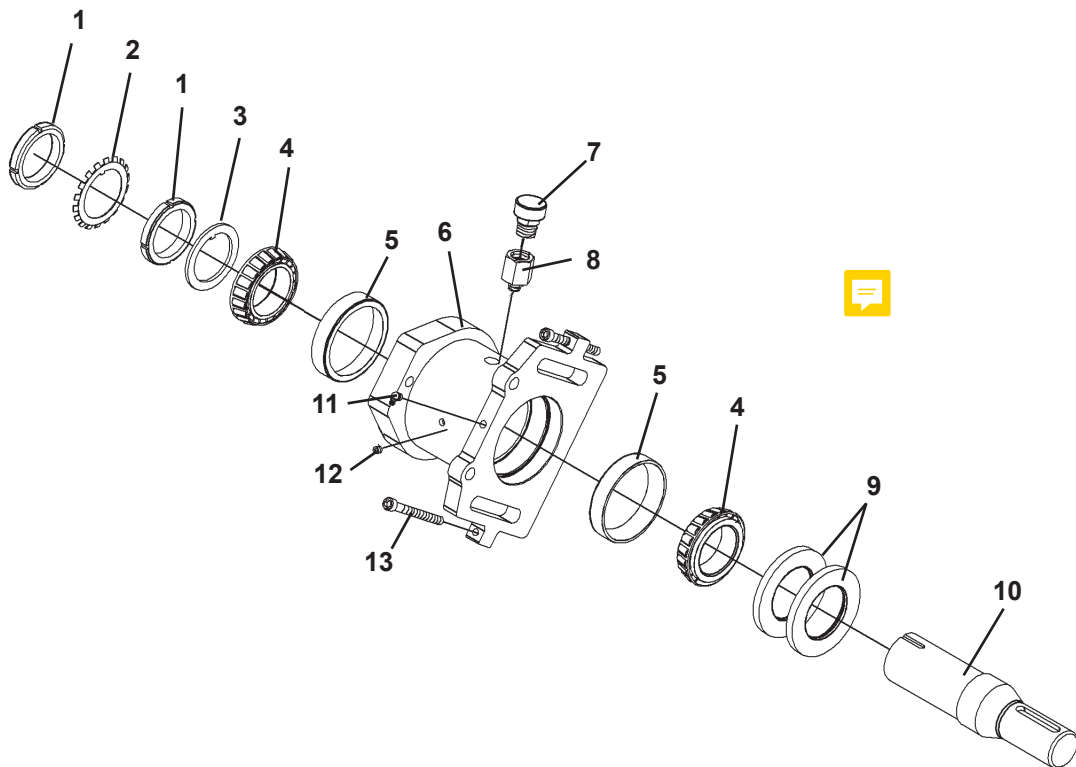
## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

OVERHUNG LOAD ADAPTER ASSEMBLY





## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

### OVERHUNG LOAD ADAPTER ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	600-157*	Special Bearing Nut
2	1	600-156*	Bearing Lock Washer
3	1	600-155*	Bearing Tongue Washer
4	2	600-153*	Upper Housing Bearing Cone
5	2	600-154*	Upper Housing Bearing Cup
6	1	107774*	Upper Bearing Housing - Shown (Used on both 4000 PSI mulchers)
	1	801-422*	Upper Bearing Housing (Used on 5500 PSI mulcher ONLY)
7	1	54645*	Breather
8	1	201-366*	Straight Connector 12FP-8MP
9	2	600-152*	Upper Housing Seal
10	1	800A057*	Motor Shaft (Used on both 4000 PSI mulchers)
	1	800A077*	Motor Shaft (Used on 5500 PSI mulcher ONLY)
11	1	6133*	Grease Fitting
12	1	30461*	Hex Plug
13	2	700-115*	.44" UNC X 4.50" Socket Head Capscrew - Grade 8

#### OPTIONAL

1	115000	Bearing Socket (For removal of bearing nut #600-157.)
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**NOTE:** Field replacement of internal motor seals voids warranty.

**NOTE:** All items marked with an asterisk (\*) are part of a Overhung Load Adapter Assembly.  
 Order #114894 for complete Overhung Load Adapter Assembly for both 4000 PSI mulchers.  
 Order #114895 for complete Overhung Load Adapter Assembly for 5500 PSI mulcher ONLY.

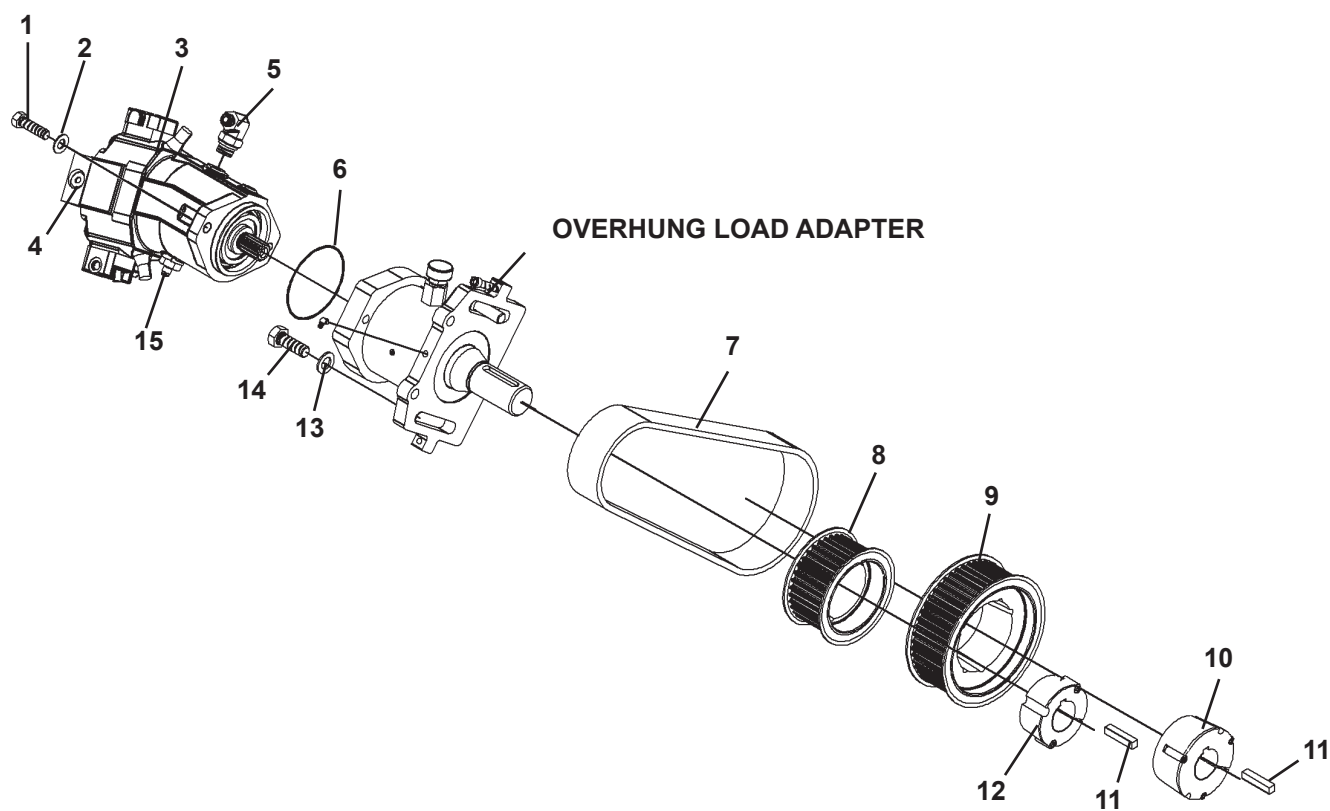


## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

MOTOR AND DRIVE ASSEMBLY



## **72" MULCHER ASSEMBLIES**

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

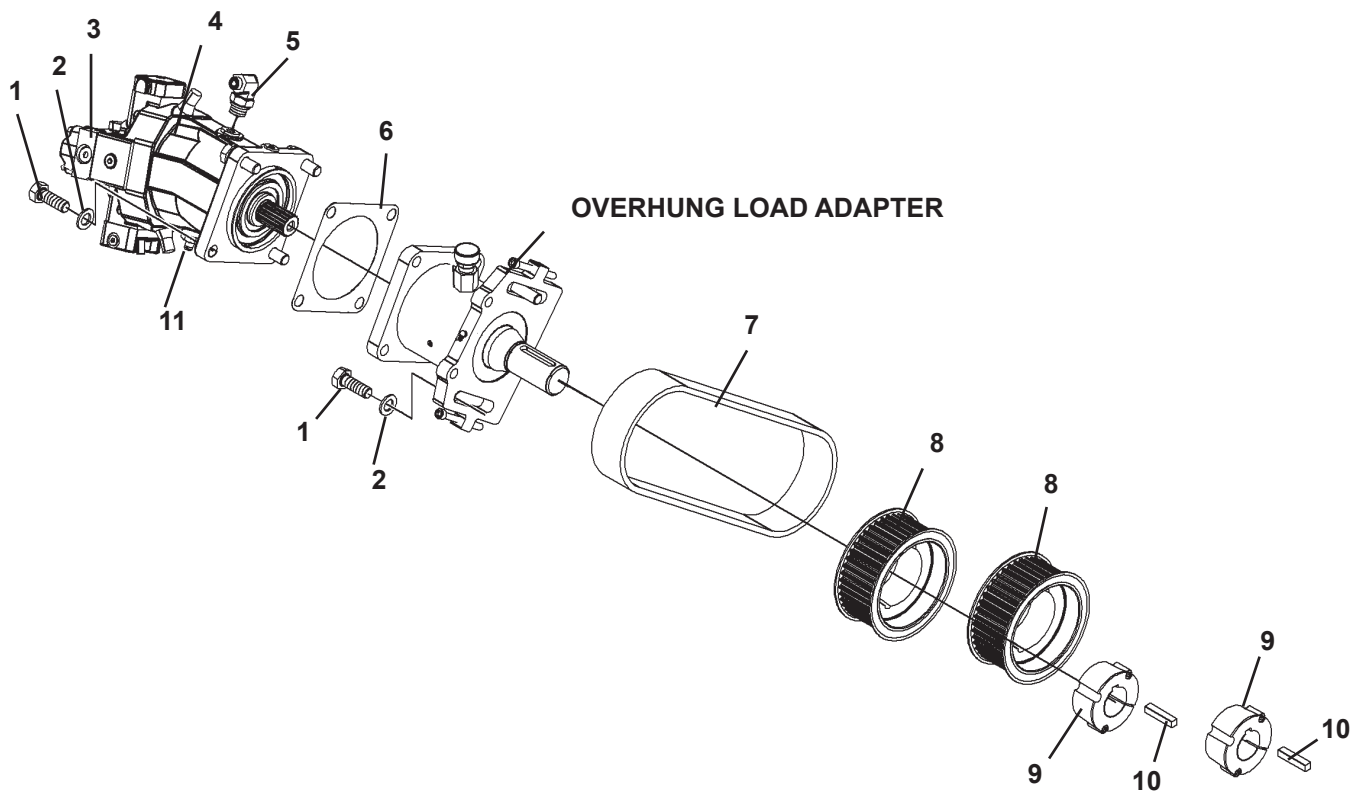
MOTOR AND DRIVE ASSEMBLY

<b><u>ITEM</u></b>	<b><u>REQ'D</u></b>	<b><u>PART NO.</u></b>	<b><u>DESCRIPTION</u></b>
1	2	10215	.62" UNF X 2.25" Hex Capscrew - Grade 8
2	2	1627	.62" Hard Flat Washer
3	1	107251	Hydraulic Motor
	-	45987	Replacement Motor Shaft Seal
4	1	109542	Relief Block Valve - 80CC Motor
		45990	Replacement Cartridge - Anti-Cavitation
		46068	Replacement Cartridge - Pressure Relief
		30280	Replacement #4 Plug
5	1	201-375	90° Elbow 8MFS-12MBo
6	1	22609	Motor Seal
7	1	113762	Drive Belt
8	1	113759	Taper Lock Sprocket - 35 Tooth
9	1	113761	Taper Lock Sprocket - 50 Tooth
10	1	113594	Taper Lock Bushing
11	2	53780	Key
12	1	113757	Taper Lock Bushing
13	2	1649	.75" Hard Flat Washer
14	2	10012	.75" UNC X 2.25" Hex Capscrew - Grade 8
15	1	30201	Straight Connector 12MBo-6MJ

\* Field replacement of internal motor seals voids warranty.

## 72" MULCHER ASSEMBLIES

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750  
MOTOR AND DRIVE ASSEMBLY



## 72" MULCHER ASSEMBLIES

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750  
MOTOR AND DRIVE ASSEMBLY

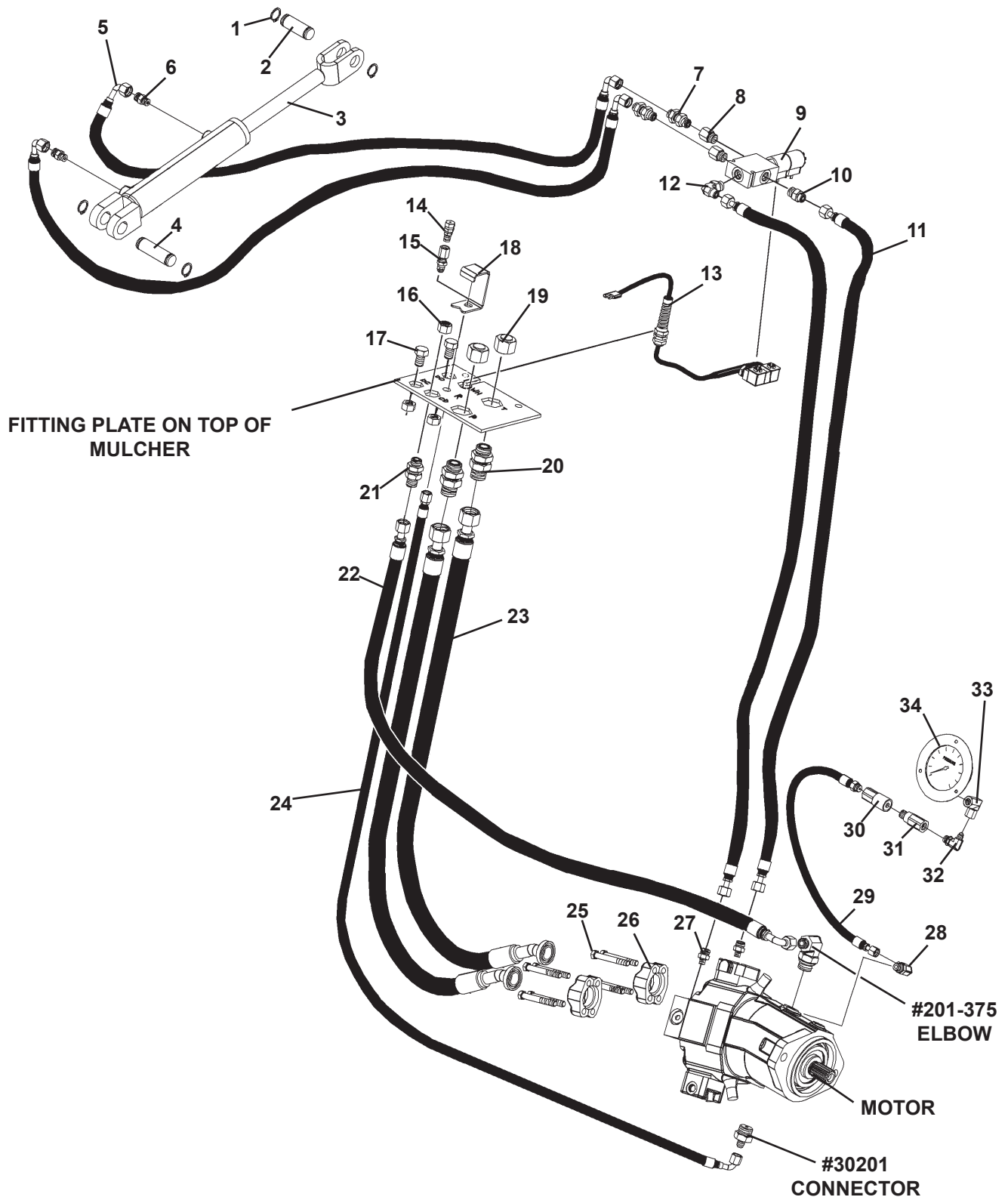
<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	6	10012	.75" UNC X 2.25" Hex Capscrew - Grade 8
2	6	1649	.75" Hard Flat Washer
4	1	200-169	Hydraulic Motor
	-	45986	Replacement Motor Shaft Seal
3	1	111594	Relief Block Valve - 80CC Motor
		45990	Replacement Cartridge - Anti-Cavitation
		46003	Replacement Cartridge - Pressure Relief
		30280	Replacement #4 Plug
5	1	201-375	90° Elbow 8MFS-12MBo
6	1	106948	Motor Gasket
7	1	113762	Drive Belt
8	2	113760	Taper Lock Sprocket - 43 Tooth
9	2	113757	Taper Lock Bushing
10	2	53780	Key
11	1	30201	Straight Connector 12MBo-6MJ

\* Field replacement of internal motor seals voids warranty.

# 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729

HYDRAULIC SYSTEM ASSEMBLY



11460 6-5-09

## 72" MULCHER ASSEMBLIES

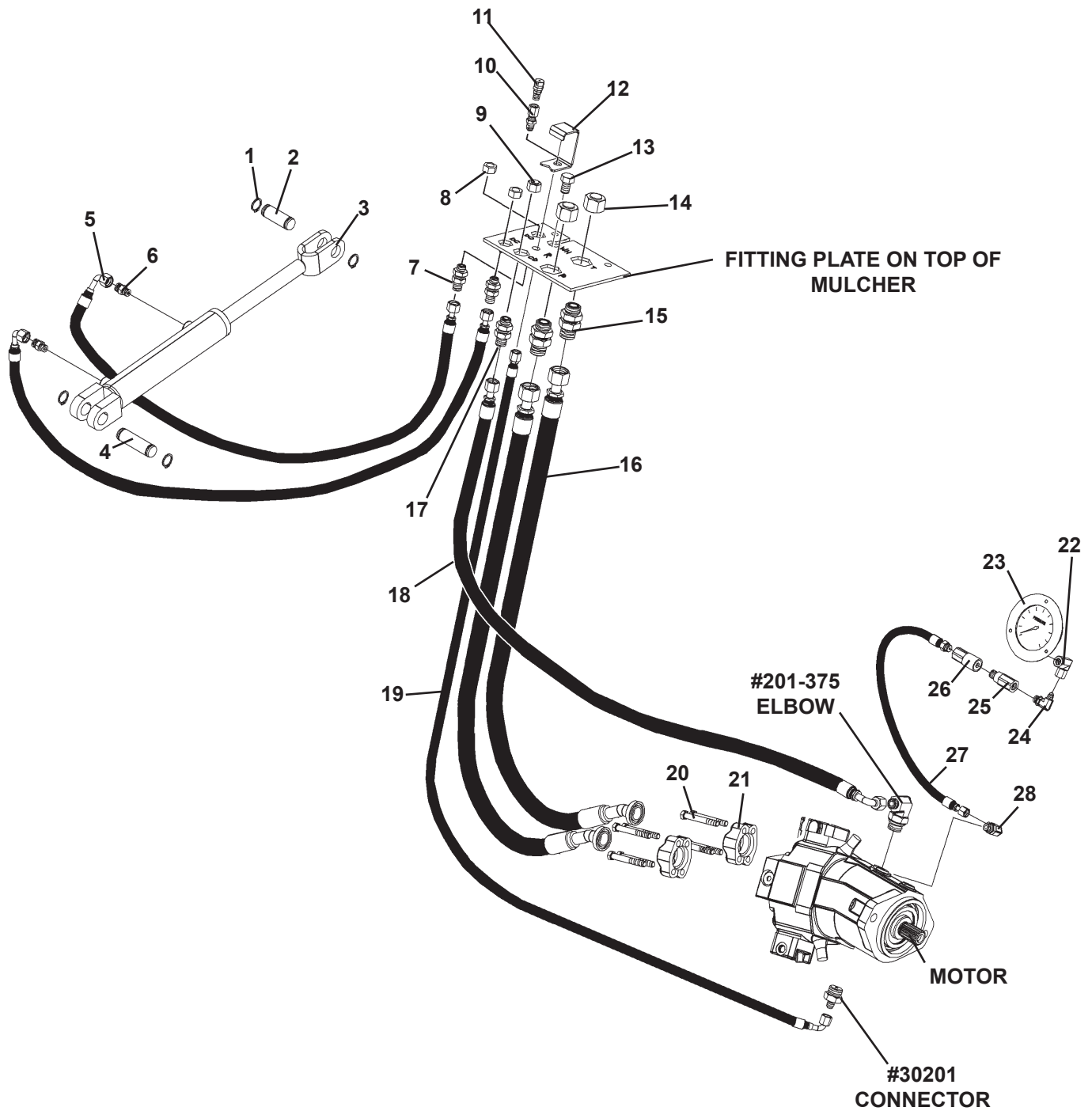
30-45 GPM - 4000 MAX PSI - 3-LINE MULCHER ASSEMBLY #112729  
HYDRAULIC SYSTEM ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	6612	Snap Ring
2	1	86620	Pivot Pin
3	1	107209	Cylinder Assembly
4	1	18747	Pivot Pin
5	2	38511	Hose .38" X 24" 6FFS90°-6FFS90°
6	2	30208	Straight Connector 6MBo-6MFS
7	2	30411	Straight Bulkhead Fitting 6MBo-6MFS
8	2	3338	Straight Connector 6FBo-8MBo
9	1	107652	Solenoid Valve
10	1	30412	Straight Connector 6MFS-8MBo
11	2	37842	Hose .38" X 24" 6FFS-6FFS
12	1	30318	90° Elbow 6MFS-8MBo
13	1	17174	Wire Assembly (Switch to Valve)
14	1	200-173	Atmosphere Relief Valve
15	1	30434	Straight Bulkhead Fitting 4FP-6MJ
16	1	30424	Cap 8FFS
17	2	1112	.62" UNC X 1.00" Hex Capscrew
	2	1839	.62" UNC Deformed Lock Nut
18	1	111520	Oil Deflector
19	2	30426	Cap 12FFS
20	2	30387	Straight Bulkhead Fitting 12MFS
21	1	30291	Straight Bulkhead Fitting 8MFS
22	1	38625	Hose .50" X 34" 8FFS-8FFS90°
23	2	38620	Hose .75" X 30.75" 12FFS-16FLH22
24	1	38006	Hose .25" X 40" 6FJX-6FFJX90°
25	8	10189	.44" UNC X 3.25" Hex Capscrew Grade 8
26	2	3428	Clamp Assembly - Code 62
	-	3390	Replacement O'Ring
27	2	30413	Straight Connector 6MFS-4MBo
28	1	201-429	90° Elbow 4MFS-6MBo
29	1	38577	Hose .25" X 40" 4FFS-6MBo
30	1	103378	Female Coupler .25"
31	1	102682	Male Coupler .25"
32	1	30431	90° Elbow 4MP-6MBo
33	1	201-388	90° Elbow 4FP-4FPX
34	1	200-155	Pressure Gauge
	3	10161	#10 X .75" Slotted Hex Head Tapping Screw
	1	801-324	Gasket - Pressure Gauge

## 72" MULCHER ASSEMBLIES

30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730

HYDRAULIC SYSTEM ASSEMBLY



11458 6-4-09



## 72" MULCHER ASSEMBLIES

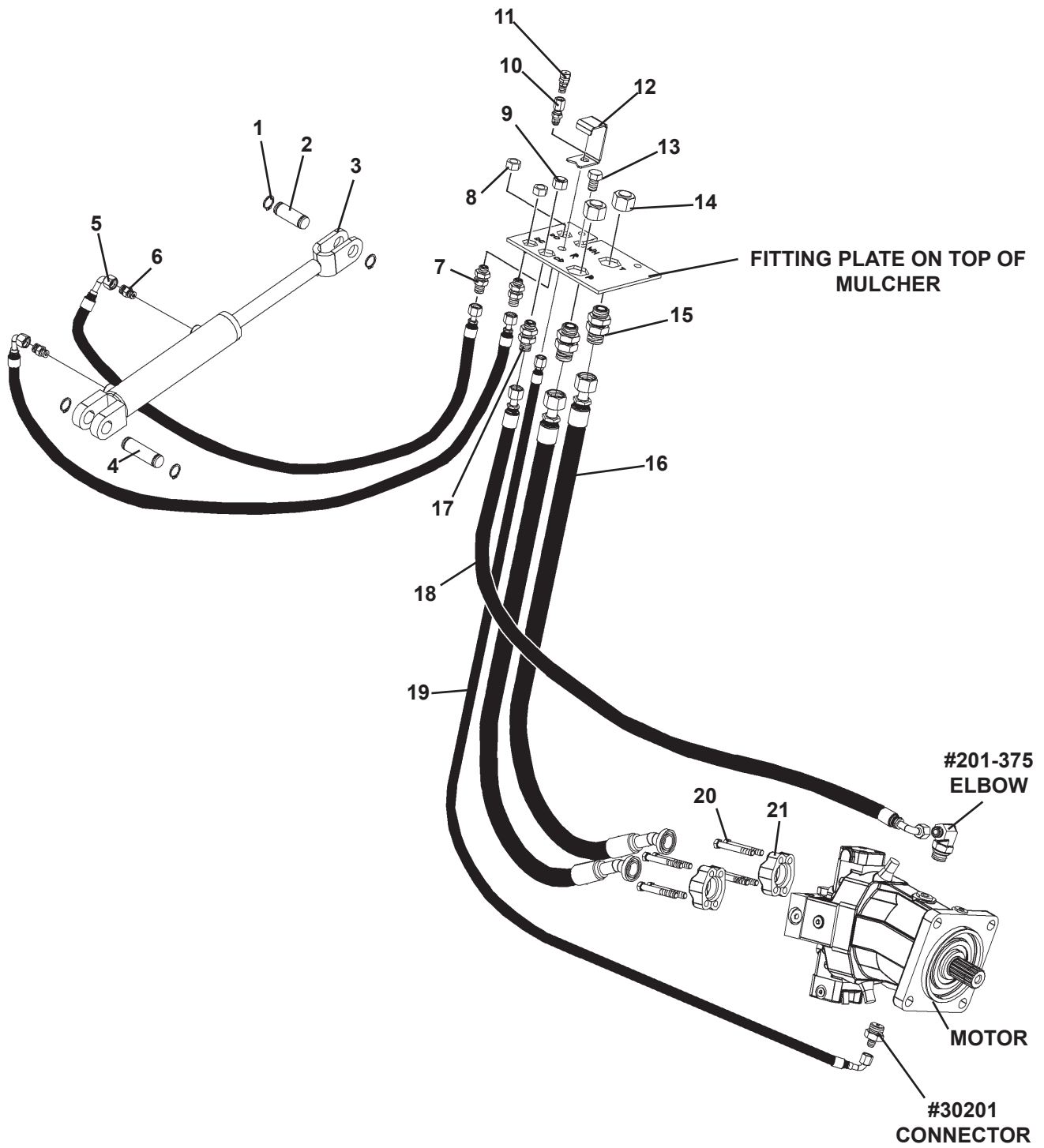
30-45 GPM - 4000 MAX PSI - 5-LINE MULCHER ASSEMBLY #112730  
HYDRAULIC SYSTEM ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	6612	Snap Ring
2	1	86620	Pivot Pin
3	1	107209	Cylinder Assembly
4	1	18747	Pivot Pin
5	2	203-227	Hose .38" X 22" 6FFS-6FFS90°
6	2	30208	Straight Connector 6MBo-6MFS
7	2	201-144	Straight Bulkhead Fitting 6MFS
8	2	30423	Cap 6FFS
9	1	30424	Cap 8FFS
10	1	30434	Straight Bulkhead Fitting 4FP-6MJ
11	1	200-173	Atmosphere Relief Valve
12	1	111520	Oil Deflector
13	1	1112	.62" UNC X 1.00" Hex Capscrew
	1	1839	.62" UNC Deformed Lock Nut
14	2	30426	Cap 12FFS
15	2	30387	Straight Bulkhead Fitting 12MFS
16	2	38620	Hose .75" X 30.75" 12FFS-16FLH22
17	1	30291	Straight Bulkhead Fitting 8MFS
18	1	38625	Hose .50" X 34" 8FFS-8FFS90°
19	1	38006	Hose .25" X 40" 6FJX-6FFJX90°
20	8	10189	.44" UNC X 3.25" Hex Capscrew Grade 8
21	2	3428	Clamp Assembly - Code 62
	-	3390	Replacement O'Ring
22	1	201-388	90° Elbow 4FP-4FPX
23	1	200-155	Pressure Gauge
	3	10161	#10 X .75" Slotted Hex Head Tapping Screw
	1	801-324	Gasket - Pressure Gauge
24	1	30431	90° Elbow 4MP-6MBo
25	1	102682	Male Coupler .25"
26	1	103378	Female Coupler .25"
27	1	38577	Hose .25" X 40" 4FFS-6MBo
28	1	201-429	90° Elbow 4MFS-6MBo

## 72" MULCHER ASSEMBLIES

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750

HYDRAULIC SYSTEM ASSEMBLY



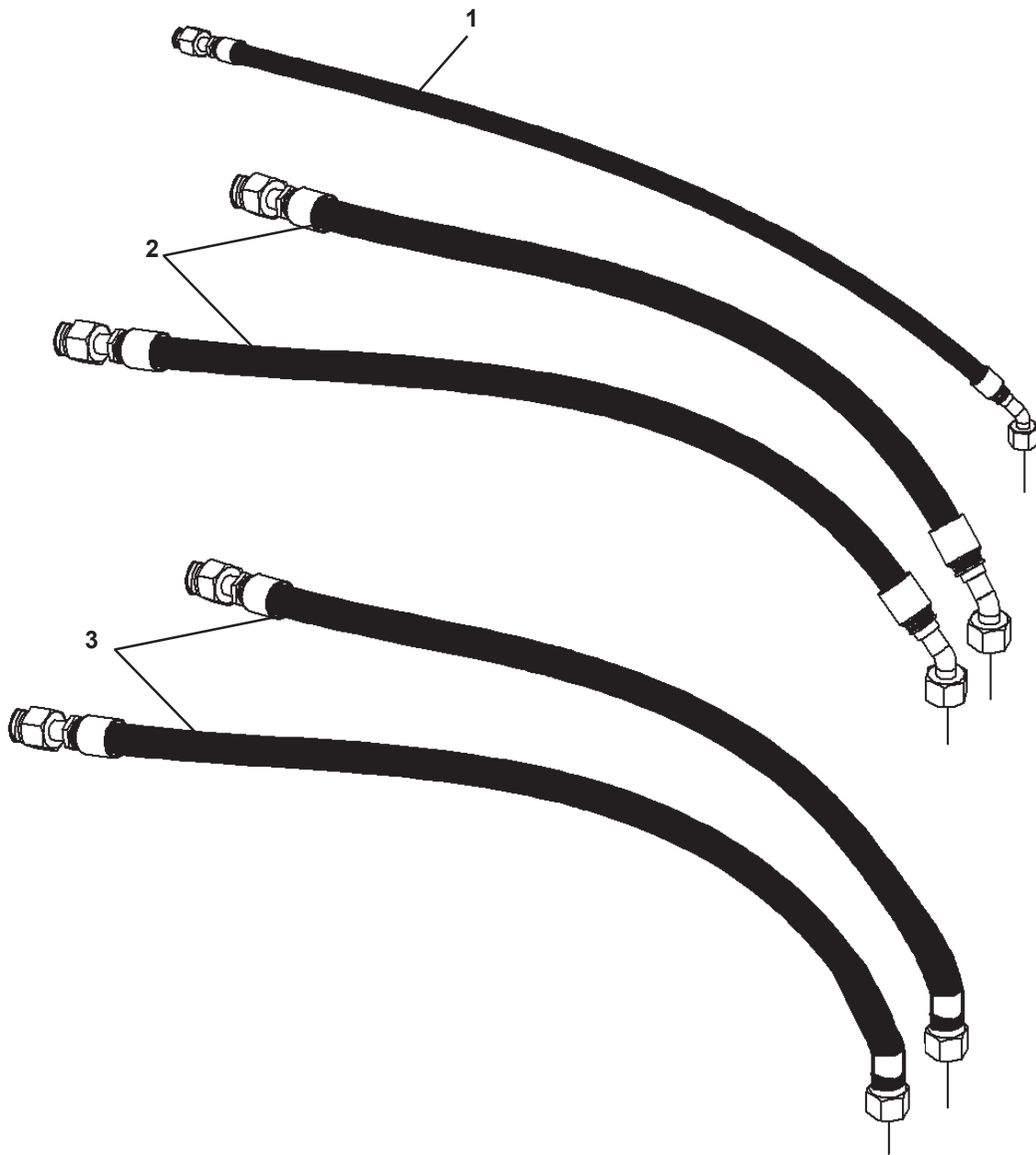
11456 6-4-09

## 72" MULCHER ASSEMBLIES

40-45 GPM - 5500 MAX PSI - 3-LINE MULCHER ASSEMBLY #113750  
HYDRAULIC SYSTEM ASSEMBLY

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	6612	Snap Ring
2	1	86620	Pivot Pin
3	1	107209	Cylinder Assembly
4	1	18747	Pivot Pin
5	2	203-227	Hose .38" X 22" 6FFS-6FFS90°
6	2	30208	Straight Connector 6MBo-6MFS
7	2	201-144	Straight Bulkhead Fitting 6MFS
8	2	30423	Cap 6FFS
9	1	30424	Cap 8FFS
10	1	30434	Straight Bulkhead Fitting 4fp-6mj
11	1	200-173	Atmosphere Relief Valve
12	1	111520	Oil Deflector
13	1	1112	.62" UNC X 1.00" Hex Capscrew
	1	1839	.62" UNC Deformed Lock Nut
14	2	30426	Cap 12FFS
15	2	30387	Straight Bulkhead Fitting 12MFS
16	2	38620	Hose .75" X 30.75" 12FFS-16FLH22
17	1	30291	Straight Bulkhead Fitting 8MFS
18	1	38625	Hose .50" X 34" 8FFS-8FFS90°
19	1	38006	Hose .25" X 40" 6FJX-6FFJX90°
20	8	10189	.44" UNC X 3.25" Hex Capscrew Grade 8
21	2	3428	Clamp Assembly - Code 62
	-	3390	Replacement O'Ring

## HYDRAULIC KITS



## HYDRAULIC KITS

### HOSE KIT #110914 (3-LINE HYDRAULIC SYSTEM)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	38550	Hose .38" X 65" 8MBo-8FFS 45°
2	2	38546	Hose .75" X 65" 12MBo-12FFS 45°

### HOSE KIT #110915 (3-LINE HYDRAULIC SYSTEM)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	38549	Hose .38" X 80" 8MBo-8FFS 45°
2	2	38547	Hose .75" X 80" 12MBo-12FFS 45°

### HOSE KIT #110916 (3-LINE HYDRAULIC SYSTEM)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	38551	Hose .38" X 96" 8MBo-8FFS 45°
2	2	38548	Hose .75" X 96" 12MBo-12FFS 45°

### HOSE KIT #114047 (5-LINE HYDRAULIC SYSTEM)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	38550	Hose .38" X 65" 8MBo-8FFS 45°
2	2	38546	Hose .75" X 65" 12MBo-12FFS 45°
3	2	38655	Hose .50" X 65" 12MBo-6FFS

### HOSE KIT #114048 (5-LINE HYDRAULIC SYSTEM)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	38549	Hose .38" X 80" 8MBo-8FFS 45°
2	2	38547	Hose .75" X 80" 12MBo-12FFS 45°
3	2	38656	Hose .50" X 80" 12MBo-6FFS

### HOSE KIT #114049 (5-LINE HYDRAULIC SYSTEM)

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	38551	Hose .38" X 96" 8MBo-8FFS 45°
2	2	38548	Hose .75" X 96" 12MBo-12FFS 45°
3	2	38657	Hose .50" X 96" 12MBo-6FFS

### COUPLER OPTIONS (NOT SHOWN)

#### Power and Return

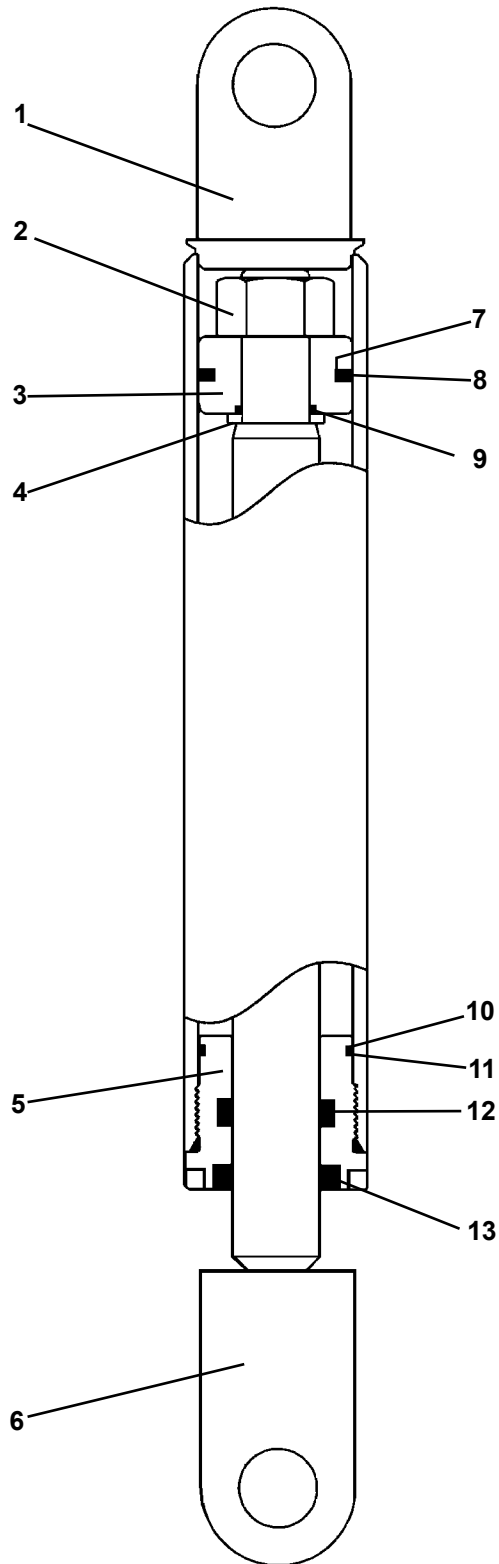
22519	Male Coupler	.50" Body	12FBo
22518	Female Coupler	.50" Body	12FBo
84922	Male Coupler	.62" Body	12FBo
84921	Female Coupler	.62" Body	12FBo
22521	Male Coupler	.75" Body	12FBo
22520	Female Coupler	.75" Body	12FBo

#### Case Drain

102682	Male Coupler .24" Body	6FBo
	(Requires one #3337 Adapter 6MBo-8FBo)	
84923	Male Coupler	.38" Body 8FBo
84928	Female Coupler	.38" Body 8FBo

# CYLINDER ASSEMBLY

ASSEMBLY #107209



# CYLINDER ASSEMBLY

ASSEMBLY #107209

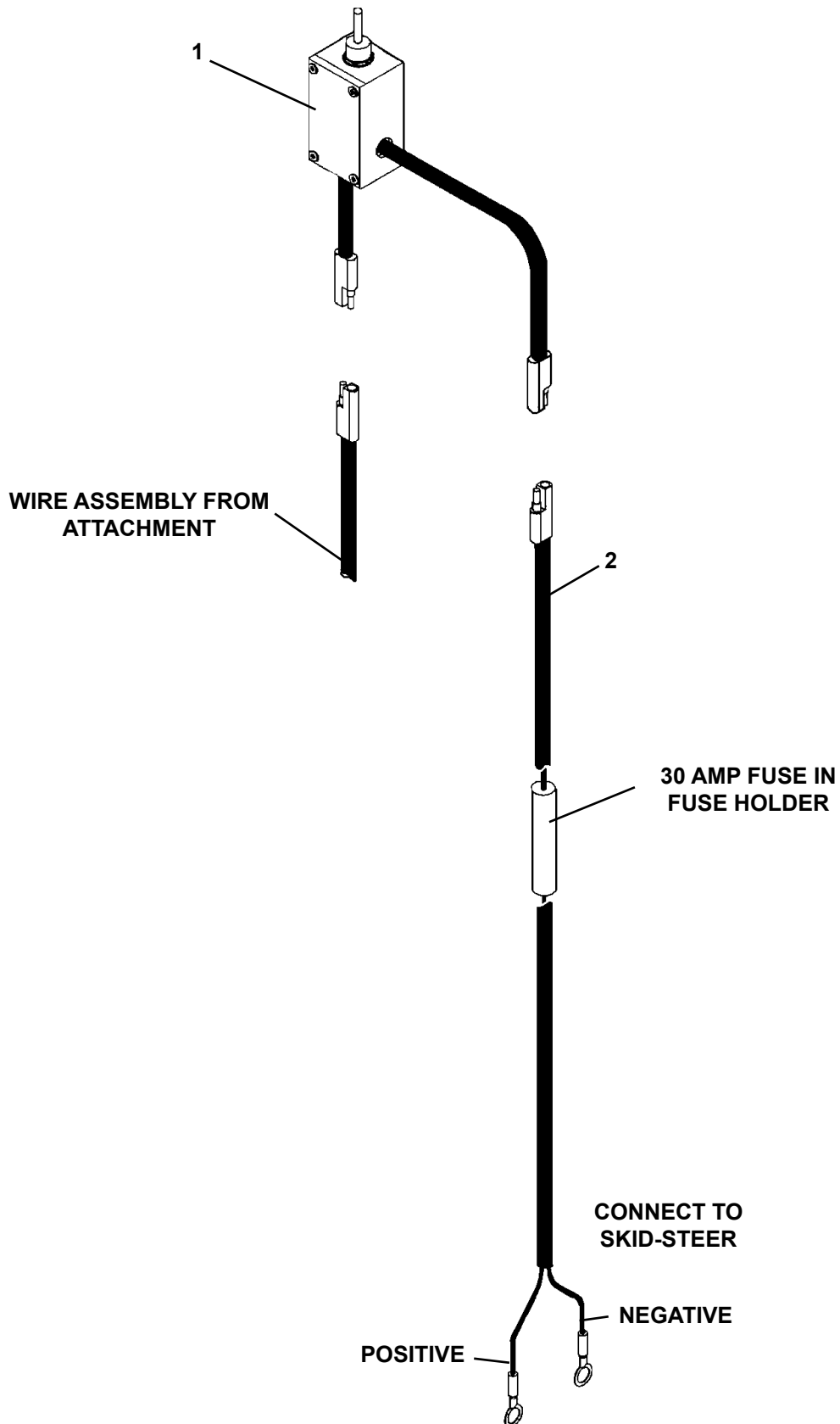
<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	107408	Cylinder Tube
2	1	1482	Hex Nut (Torque to 150-200 ft. lbs.)
3	1	6992	Piston
4	1	52644	Washer
5	1	89527	Cylinder Gland
6	1	107410	Cylinder Rod
7	1	4637*	O'Ring
8	1	4636*	Piston Ring
9	1	4635*	O'Ring
10	1	4633*	O'Ring
11	1	4634*	Back-Up Washer
12	1	45262*	Poly-Pak Seal
13	1	4981*	Rod Wiper

**NOTE: Seal kit #45581 includes all parts marked with an asterisk (\*). Parts are not sold separately.**

10884 1-24-07

# OPTIONAL ELECTRICAL CONTROL BOX

## ELECTRICAL CONTROL BOX ASSEMBLY #15754





## OPTIONAL ELECTRICAL CONTROL BOX

ELECTRICAL CONTROL BOX ASSEMBLY #15754

<u>ITEM</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	17692	Control Box Assembly (Includes one single pole, double throw, normally open, momentary closed, spring return toggle switch.)
2	1	17173	Wire Assembly (To Skid Steer Power Supply)

### **DANGER! ELECTROCUTION HAZARD**

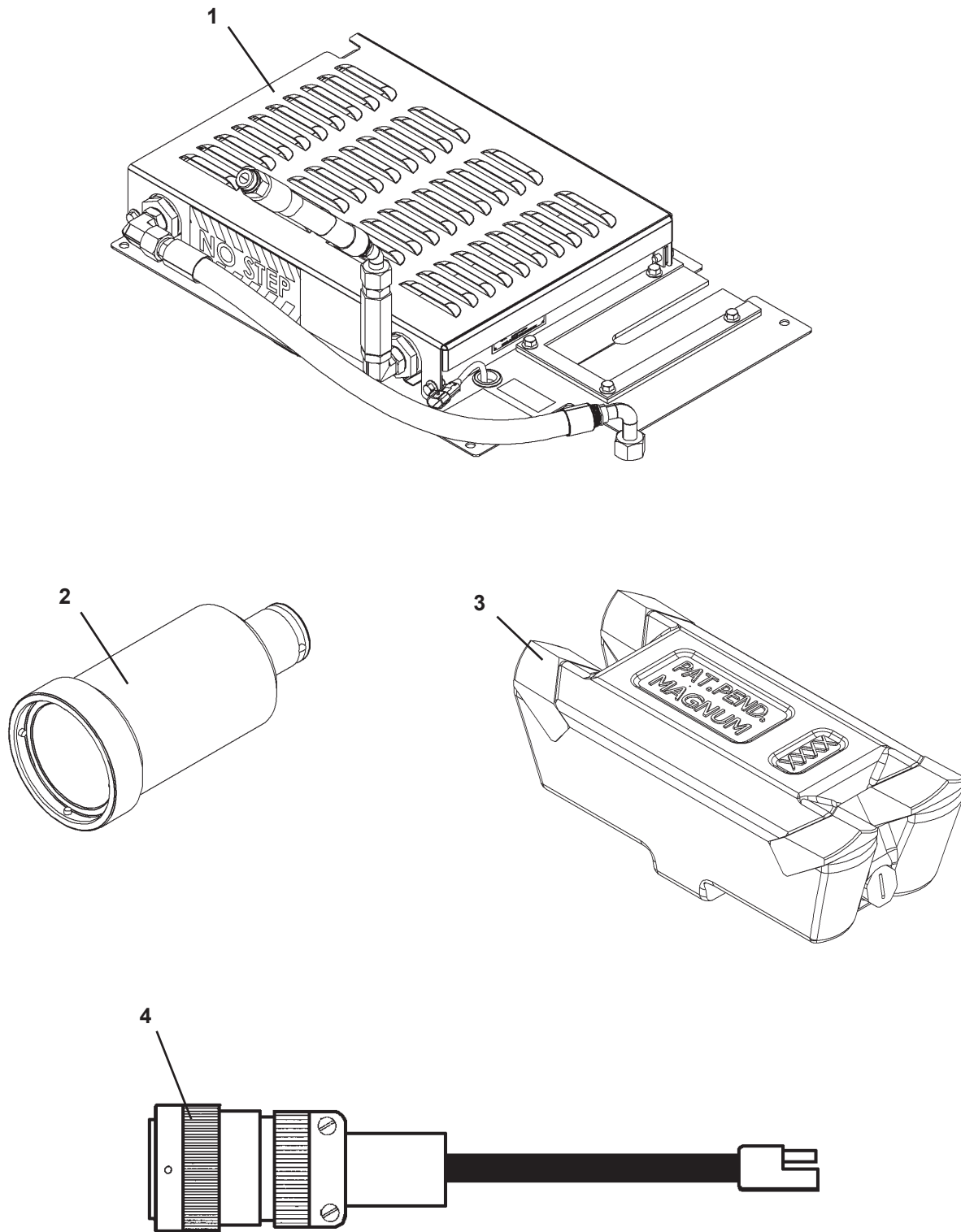


Provide electrical power to the control box by following your skid steer manufacturer's recommended procedures.

The electrical circuit must be fused to prevent machine damage and serious personal injury or death.

9913 6-12-07-2

## OPTIONS



## OPTIONS

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	<b><u>Oil Coolers</u></b>	
	111627	Oil Cooler (11626 = Factory Installed) 300 PSI Rated for 60" Mulchers (Used on 109292, 109294, 112388 Mulchers)
	111796	Oil Cooler (111795 = Factory Installed) 300 PSI Rated for 72" Mulchers (Used on 106766, 106771, 111797 Mulchers)
	114065	Oil Cooler Factory Installed 300 PSI Rated for 72" Mulchers (Used on 112729, 112730, 112750 Mulchers)
	114018	Oil Cooler (112960 = Factory Installed) 600 PSI Rated for 60" Mulcher (Used on 109292, 109294, 112388 Mulchers)
	108948	Oil Cooler - 60" Mulchers 300 PSI Rated for 60" Mulchers (Used on 106765 & 106770 Mulchers Manufactured before January 1, 2008)
2	<b><u>Bearing Sockets</u></b>	
	114999	Bearing Socket (Lower Bearings)
	115000	Bearing Socket (Upper Bearings - Overhung Load Adapter)
3.	<b><u>Tooth Kits</u></b>	
	109843	Single Sided Tooth Kit (Includes (45) #600-112-1 Teeth)
	109842	Double Sided Tooth Kit (Includes (45) #600-168 Teeth)
	112577	Claw Tooth Kit (Includes (45) #111588 Teeth)
	111793	Single Sided Tooth Kit (Includes (54) #600-112-1 Teeth)
	111794	Double Sided Tooth Kit (Includes (54) #600-168 Teeth)
	112578	Claw Tooth Kit (Includes (54) #111588 Teeth)
4	<b><u>Adapter Harness for In-Cab Controls</u></b>	
	110627	14 Pin Bobcat
	25887	14 Pin Case / New Holland / Volvo / Ditch Witch
	25904	14 Pin John Deere
	25886	8 Pin ASV / CAT / Komatsu
	25885	3 Pin John Deere