

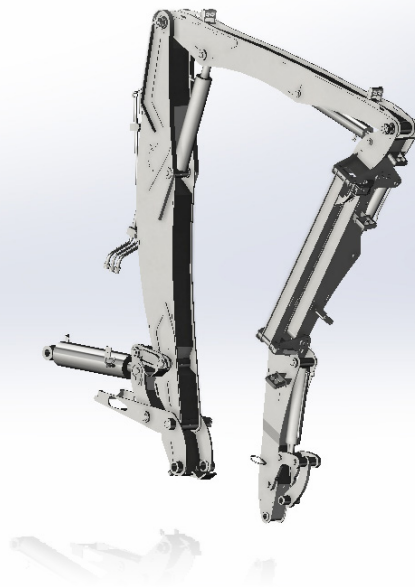


A Member of Alamo Group

BUILT SHARPER®

MANTIS^{4142™}

RF Boom Parts Manual



Alamo Industrial®

1502 E. Walnut
Seguin, Texas 78155
830-379-1480
alamo-industrial.com

¡ATENCIÓN!

LEA EL INSTRUCTIVO

Si No Lee Ingles, Pida Ayuda a Alguien
Que Si Lo Lea Para Que le Traduzca las
Medidas de Seguridad.



An Operator's Manual was shipped with the equipment in the Manual Canister. This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. **READ, UNDERSTAND, and FOLLOW** the Safety and Operation Instructions contained in this manual before operating the equipment. If the Operator's Manual is not with the equipment, contact your dealer or Alamo Industrial (800-356-6286) to obtain a Free copy before operating the equipment.

Introduction

Health and Safety Statement

The health and safety of employees and guests of Alamo Industrial is of primary concern for Alamo Industrial. Alamo Industrial strives to comply with OSHA regulations and our own health, environmental and safety policies. Alamo Industrial is committed to the goal of providing an accident free work place by providing a safe and productive work environment. All employees and guests are required to comply with all Alamo Industrial safety rules in all of their activities. Employees and guests are required to wear Personal Protective Equipment, which includes safety glasses with side shields, hearing protection, safety shoes with metatarsal guards, while in the Alamo Industrial manufacturing facility.

Personnel safety requires each person to be aware of potential hazards associated with the work, paying attention, following instructions, not taking risks, and watching out for other workers. The help and support of each guest is essential to the success of our safety objectives. Each of us is responsible for our own safety and for the safety of fellow workers and guests. Together we can learn and work safely and enjoy our experiences at Alamo Industrial.

Contact Information

Contact Information

To help you assemble your new mower and mount it to your tractor, we provide you with drawings, instructions and general information. When needed, you can get information or clarification from Alamo Industrial Customer Service over the phone.

How to Contact Alamo Industrial To Place Orders

1. Visit www.alamo-industrial.com
2. Call or visit your local Alamo Industrial dealer (Dealer listing can be found on www.alamo-industrial.com)
3. Call Alamo Industrial Customer Support to speak with your assigned Account Manager*
4. Fax or e-mail your orders to your assigned Customer Support Account Manager*

*Orders placed over the phone, fax, or e-mail are subject to a 5% loss of contracted discount

For parts identification please visit <http://www.alamo-industrial.com/ProductManuals>

Customer Support Contact Information

Phone Toll Free 1-800-356-6286

Fax 1-800-322-5041

Operational Hours

8 AM to 5 PM CST.

Monday Through Friday

parts@alamo-industrial.com

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SECTION 10

SAFETY



SAFETY

GENERAL SAFETY INSTRUCTIONS AND PRACTICES

A careful operator is the best operator. Safety is of primary importance to the manufacturer and should be to the owner/operator. Most accidents can be avoided by being aware of your equipment, your surroundings, and observing certain precautions. The first section of this manual includes a list of Safety Messages that, if followed, will help protect the operator and bystanders from injury or death. Read and understand these Safety Messages before assembling, operating or servicing this Implement. This equipment should only be operated by those persons who have read the manual, who are responsible and trained, and who know how to do so responsibly.



The Safety Alert Symbol combined with a Signal Word, as seen below, is used throughout this manual and on decals which are attached to the equipment. The Safety Alert Symbol means: "ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!" The Symbol and Signal Word are intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this equipment.

Practice all usual and customary safe working precautions and above all--- remember safety is up to YOU. Only YOU can prevent serious injury or death from unsafe practices.



Indicates an imminently hazardous situation that, if not avoided, WILL result in DEATH OR VERY SERIOUS INJURY.



Indicates an imminently hazardous situation that, if not avoided, COULD result in DEATH OR SERIOUS INJURY.



Indicates an imminently hazardous situation that, if not avoided, MAY result in MINOR INJURY.




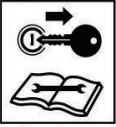

Identifies special instructions or procedures that, if not strictly observed, could result in damage to, or destruction of the machine, attachments or the environment.

NOTE: Identifies points of particular interest for more efficient and convenient operation or repair.

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in this Manual and in the Safety Messages on the implement. Always follow the instruction in this manual and use good common sense to avoid hazards.



Pictographs are used throughout this manual to help bring your visual attention to safety issues.

SAFETY HAZARD	SAFETY AVOIDANCE	SAFETY PREVENTION
<p>Pictograph surrounded by a triangle indicates a Safety Hazard that must be avoided.</p> <p style="text-align: center;"><i>Example:</i></p>  <p style="text-align: center;">Equipment contacting overhead electrical lines</p>	<p>Pictograph by itself or inside a box indicates an avoidance procedure that should be followed to prevent injuries.</p> <p style="text-align: center;"><i>Example:</i></p>  <p style="text-align: center;">Always shut off engine and remove key before working on equipment.</p>	<p>A circle with a slash through it indicates an action that is prohibited.</p> <p style="text-align: center;"><i>Example:</i></p>  <p style="text-align: center;">No Smoking</p>

NOTE: If you want a translation of this safety section in one of the following Languages, please contact: Translations at 1502 E. Walnut Street Seguin, TX 78155; Fax: (830) 372-9529; Safety Section Translations are available in Spanish, Portuguese, French, German, Russian. PN 6S01

SAFETY

Operator Safety

				
Read and understand Operator's Manual	Always wear Safety Glasses	Wear Hard Hat Safety Shoes	Never use Drugs or Alcohol when operating equipment	Wear Safety Vest when operating on or near roads

⚠ WARNING TO AVOID SERIOUS INJURY OR DEATH DO THE FOLLOWING:

- **READ, UNDERSTAND** and **FOLLOW** Operator's Manual instructions, Warnings and Safety Messages.
- **WEAR SAFETY GLASSES**, safety shoes, hard hat, hearing protection and gloves when operating or repairing equipment
- **WEAR** appropriate breathing respirator when operating in dusty conditions to avoid respiratory diseases.
- **DO NOT WEAR** loose clothing or jewelry to avoid rotating parts entanglement injury.
- **DO NOT USE DRUGS** or **ALCOHOL** before or while operating equipment.
- **DO NOT ALLOW** anyone to operate equipment under the influence of drug or alcohol.
- **CONSULT** medical professional for medication impairment side effects.
- **STAY CLEAR** of hot surfaces such as Mufflers, hydraulic pumps, valves and tanks.
- **STAY ALERT**, prolonged operation can cause fatigue, **STOP** and **REST**.

GENERAL OPERATING SAFETY

VISIBILITY CONDITIONS WHEN MOWING:

- **OPERATE IN DAYLIGHT** or with lights that gives at least 100 yards clear visibility.
- **BE ABLE TO SEE** and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects.
- Avoid backing up while mowing, vision may be limited, severe damage or injury can occur.
- **DO NOT** run tractor in enclosed building without adequate exhaust ventilation.

GROUND SPEED WHEN MOWING:

- **NORMAL SPEED** range is between 1 to 2 mph(1-3 kph).
- **ADJUST MOWING SPEED** for terrain conditions and grass type, density and cut height.
- **REDUCE MOWING SPEED** when near steep slopes, ditches, drop-offs, overhead obstructions, power lines and to avoid debris and foreign objects.

TRACTOR and MOWER

- **DO NOT** operate the tractor or mower unless the equipment is maintained and operating properly.
- **DISCONTINUE OPERATION** if tractor or mower electrical and hydraulic controls do no function properly.
- **DISCONTINUE OPERATION** of the tractor if the braking or steering systems do not function properly.
- **DO NOT** operate the tractor or mower if there are any hydraulic leaks.

INSECT INFESTATION

- **DO NOT** operate in areas where bees or insects may attack unless you **WEAR PROTECTIVE CLOTHING** or use enclosed tractor cab.

PTO SPEED:

- **DO NOT EXCEED IMPLEMENT RATED PTO SPEED**
- **AVOID** exceeding rated PTO speeds that may result in broken drivelines or blade failures.

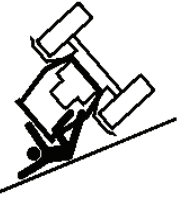
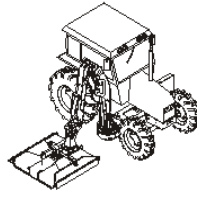

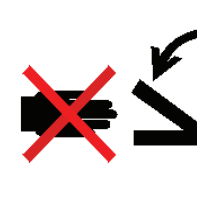
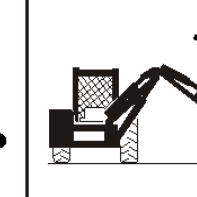
SAFETY SIGNS:

- **REPLACE** missing, damaged or unreadable safety signs immediately. *PN OSBM-01*



SAFETY

CRUSHING HAZARDS

				
Crushing injury from roll over	Use Cab Tractor With Boom Mowers	Always wear seatbelt	Pinch Point Hazard Keep Hands and body parts clear of pinch points	Crushing injury from boom or mower head falling

⚠️ ⚠️ TO AVOID SERIOUS INJURY OR DEATH FROM FALLING OFF TRACTOR, EQUIPMENT RUN OVER, ROLLOVER AND CRUSHING BY FALLING WING OR IMPLEMENT:

- **USE ROPS** and **SEAT BELT** equipped tractors for mowing operations.
- **KEEP ROPS** lock in up position.
- **ALWAYS BUCKLE UP** seat belt when operating tractor and equipment.
- **ONLY OPERATE** tractor and equipment while seated in tractor seat.

WHEN RAISING BOOM MOWER:

- Raise or lower **ONLY WHILE SEATED** in tractor seat with seat belt buckled.
- **KEEP BYSTANDERS CLEAR** of area **TO AVOID** crushing.
- **KEEP** sufficient clearance around implement and wings **TO AVOID** contacting buildings or overhead power lines.

LIFTED Equipment can fall from mechanical or hydraulic failure or inadvertent Control Lever movement.

⚠️ **WARNING** TO AVOID EQUIPMENT FALLING while working near or under lifted boom, components and Mower Head:

- **SECURELY SUPPORT** or **block up** raised equipment, wings and components.
- **BLOCK UP** and securely support equipment before putting hands, feet or body under raised equipment or lifted components.
- **KEEP BYSTANDERS CLEAR** of raised boom or mower head until securely blocked up.

WHEN PARKING Implement and Tractor:

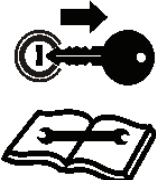



- **LOWER** Mower Head to the ground or **BLOCK** lifted parts before leaving equipment.
- **NEVER** leave implement unattended in a raised position.

⚠️ **WARNING** TO AVOID CHILDREN FALLING OFF OR BEING CRUSHED BY EQUIPMENT:

- **NEVER ALLOW** children to play on or around Tractor or Implement.
- **DO NOT** operate without operator **CAB** or **OVERHEAD** protection. Falling limbs and debris can cause injuries. *PN CHBM-01*

SAFETY

CONNECTING OR DISCONNECTING IMPLEMENT SAFETY

			
<p>Stop Tractor Remove Key Read Manual</p>	<p>Crushing Hazard Do Not get under boom when connecting mower head to boom</p>	<p>Stability Hazard Ensure 20% of tractor weight is on front wheels</p>	<p>Stability Hazard Ensure 1500lbs down force on left tire with boom extended</p>

⚠️ ⚠️ TO AVOID SERIOUS INJURY OR DEATH FROM BEING CRUSHED BY TRACTOR OR IMPLEMENT:

WHEN connecting mower head to the boom:

- **KEEP BYSTANDERS AWAY** from tractor and mower.
- Ensure there is enough room to lift and swing the boom with out hitting objects

BEFORE connecting and disconnecting the mower head or boom:

- **STOP TRACTOR ENGINE**, place transmission into park, engage parking brake and remove key.

WHEN connecting and disconnecting the mower head or boom:

- **DO NOT** crawl or walk under raised mower head or boom. *(Refer to Instructions in Operation Section)*

WHEN CONNECTING IMPLEMENT DRIVELINE:(If equipped)

TO AVOID implement driveline coming loose during operation:

- **LUBRICATE** yoke spring locking collar to ensure it freely slides on PTO shaft.
- **SECURELY** seat yoke locking balls in PTO shaft groove.
- **PUSH** and **PULL DRIVELINE** on both the tractor and implement **PTO SHAFTS** to ensure it is **SECURELY ATTACHED**.

TO AVOID broken driveline during operations:

- **CHECK** driveline for proper length between PTO shaft and implement gearbox shaft. *(Refer to Instructions in Operation Section)*
- Drivelines too short can pull apart or disengage.
- Drivelines too long can bottom out.
- Bottoming driveline telescoping assembly will stop sliding and become solid.
- Driveline bottoming can push through support bearings and break off PTO shaft.

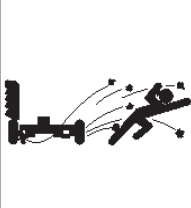

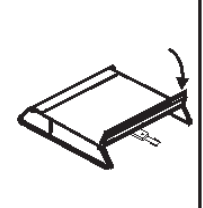

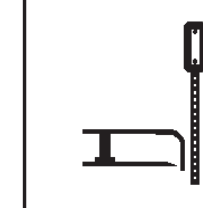
CONTACT DEALER if implement driveline does not match Tractor PTO shaft:

- **DO NOT USE PTO ADAPTER.**
Using a PTO adapter can cause:
 - Excessive vibration, thrown objects, blade and implement failures by doubling operating speed.
 - Increased working length exposing unshielded driveline areas and entanglement hazards. *PN CDBM-01*



SAFETY

THROWN OBJECTS HAZARDS

				
Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Keep mower door closed when traffic comes within 300 feet	Inspect Area remove foreign objects	Do not let blades contact solid objects



ROTARY MOWERS CAN THROW OBJECTS 300 FEET OR MORE UNDER ADVERSE CONDITIONS.

TO AVOID SERIOUS INJURY OR DEATH TO OPERATOR OR BYSTANDERS FROM THROWN OBJECTS:

- KEEP bystanders 300 feet away

STOP MOWING IF PASSERSBY ARE WITHIN 300 FEET UNLESS:

- **ALL THROWN OBJECT SHIELDING** including, Front and Rear Deflectors, Chains Guards, Steel Guards, Bands, Side Skirts and Skid Shoes in place and in good condition when mowing.
- Mower is close and parallel to ground without exposing blades.
- **MOWING AREA** has been inspected and foreign materials and debris have been removed.
- **DO NOT** shred or mow loose or previously cut material if **BYSTANDERS** are within 300 feet.
- **PASSERSBY** are inside enclosed vehicle.

INSPECT AREA FOR POTENTIAL THROWN OBJECTS BEFORE MOWING:

- **REMOVE** debris, rocks, wire, cable, metal objects and other foreign material from area. Wire, cable, rope, chains and metal objects can be thrown or swing outside deck with great velocity :
 1. **MARK** objects that cannot be removed.
 2. **AVOID** these objects when mowing.

HIGH GRASS and WEED AREA INSPECTION:

- **INSPECT** for and **REMOVE** any hidden large debris.
- **MOW** at Intermediate height
- **INSPECT** and remove remaining debris
- **MOW** at final height.

MOWER THROWN OBJECT SHIELDING:

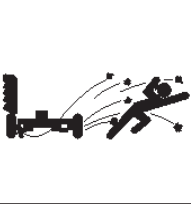

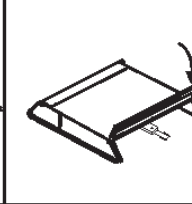


- **KEEP** all thrown object shielding including, Front and Rear Deflectors, Chains Guards, Steel Guards, Bands, Side Skirts and Skid Shoes in place and in good condition when mowing.
- **DO NOT OPERATE** with any thrown object shielding missing, damaged or removed.

RIGHT OF WAY (Highway) MOWING

- Stop mowing if any bystander comes within 300 feet of the mower.
- No shielding is 100% effective in preventing thrown objects. To Reduce Possibility of Injury:
 1. **MAINTAIN MOWER SHIELDING**, side skirts, skid shoes, and blades in good operational condition,
 2. **RAISE CUTTING HEIGHT** to **6 INCHES** minimum,
 3. **INSPECT AREA** thoroughly before mowing to **REMOVE** potential **THROWN OBJECT HAZARDS**,
 4. **NEVER ALLOW BLADES** to **CONTACT SOLID OBJECTS** like wire, rocks, post, curbs, guardrails, or ground while mowing. *PN TOBM-01*

SAFETY

THROWN OBJECTS HAZARDS (Continued)

				
Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Keep mower door closed when traffic comes within 300 feet	Inspect Area remove foreign objects	Do not let blades contact solid objects

MOWER OPERATION:

- **DO NOT** exceed mower's rated Cutting Capacity or cut non-vegetative material.
- **USE ENCLOSED TRACTOR CABS** when two or more mowers are operating in mowing area.
- Do Not mow in areas where bees or insects may attack unless you **WEAR PROTECTIVE CLOTHING** or use enclosed tractor cab.
- **ADJUST** mower head close and parallel to ground without exposing blades.
- **ADJUST** cutting **HEIGHT** to **AVOID BLADE CONTACT** with solid objects like wire, rocks, posts, curbs, guard rails and fixed obstructions.
- **CLOSE** Mower door and stop operating if bystanders come within 300 feet of the mower.
- Keep mower door closed when cutting close to the ground.
- Open door only to cut large brush or tree limbs. Close door immediately after cutting limb.
- **DO NOT** push mower head down onto material to cut it, use the front tips of the mower blades to cut into the material.
- **DO NOT** operate mower when mower is in transport position.
- **STOP MOWING** immediately if blades strike heavy objects, fixed structures, metal guard rails and concrete structures:
 1. **BLADES CAN FAIL** from impact and objects can be thrown with great velocity.
 2. **INSPECT** and **REPLACE** any damaged blades.
 3. **CHECK** blade carrier and **REPLACE** if damaged.
- **DO NOT** mow in standing water **TO AVOID** possible **BLADE FAILURE**.
- **AVOID MOWING** in reverse:
 1. **STOP PTO** and back up mower.
 2. **LOWER** mower, engage **PTO** and mow forward.
- **DISENGAGE** mower head and wait until **BLADES** stop rotating before raising mower to transport position.
- **DO NOT ENGAGE PTO** with mower in transport position.
- **STOP** mowing when **EXCESSIVE VIBRATION** occurs:
 1. **STOP PTO** and tractor **ENGINE**.
 2. **INSPECT** mower for vibration source.
 3. **REPLACE** any damage parts and bent or damaged **BLADES**. *PN TOBM-02*



SAFETY

RUN OVER HAZARDS

		
Operator run over hazard	Rider fall off run over hazard	Bystander run over hazard

⚠️ ⚠️ TO AVOID SERIOUS INJURY OR DEATH FROM FALLING OFF TRACTOR OR EQUIPMENT RUN OVER:


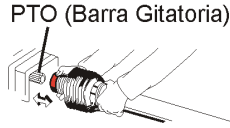
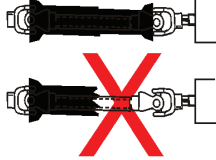
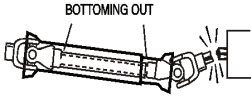
- **USE ROPS** and **SEAT BELT** equipped tractors for mowing operations.
- **KEEP ROPS** locked in **UP** position.
- **ONLY** start tractor while seated in tractor seat.
- **ALWAYS BUCKLE UP** seat belt when operating tractor and equipment.
- **ONLY OPERATE** tractor and equipment while seated in tractor seat.
- **NEVER ALLOW RIDERS** on tractor or implement.
- When not mowing stow Boom and Mower head in transport location before moving.

WHEN MOUNTING AND DISMOUNTING TRACTOR:

- **ONLY** mount or dismount when tractor and moving parts are stopped.
- **STOP ENGINE AND PTO**, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismounting from tractor. *PN ROBM-01*

SAFETY

PTO ENTANGLEMENT HAZARDS

			
<p>Entanglement hazard Do Not approach or touch a rotating PTO driveshaft</p>	<p>Make sure PTO shaft is securely attached Do Not Use PTO Adapter</p>	<p>DO NOT Operate if PTO shields are damaged or missing</p>	<p>Make sure PTO shafts are proper length</p>



KEEP AWAY FROM ROTATING DRIVELINES AND ELEMENTS TO AVOID SERIOUS INJURY OR DEATH:

STAY AWAY and **KEEP** hands, feet and body **AWAY** from rotating blades, drivelines and parts until all moving elements have stopped.

- **STOP, LOOK** and **LISTEN** before approaching the mower to make sure all rotating motion has stopped.
- **ROTATING COMPONENTS CONTINUE** to **ROTATE** after the PTO is shut off.

PTO SHIELDING:

TO AVOID SERIOUS INJURY OR DEATH FROM ENTANGLEMENT WHEN OPERATING IMPLEMENT:

- **KEEP** PTO shields, integral driveline shields and input shields installed
- **DO NOT OPERATE** mower without shields and guards in place or missing
- **REPAIR OR REPLACE** if damage, broken or missing
- **ALWAYS REPLACE GUARDS** that have been removed for service or maintenance.
- Do Not use PTO or PTO guard as a step.

TO AVOID broken driveline during operations:

- **CHECK** driveline for proper length between PTO shaft and implement gearbox shaft. (*Refer to Instructions in Operation Section*)
- Drivelines too short can pull apart or disengage.
- Drivelines too long can bottom out.
Bottoming driveline telescoping assembly will stop sliding and become solid.
- Driveline bottoming can push through support bearings and break off PTO shaft
- **AVOID** sharp turns or lift mower to heights to cause driveline "knocking".
- Lubricate driveshaft-telescoping components weekly.

CONTACT DEALER if implement driveline does not match Tractor PTO shaft:




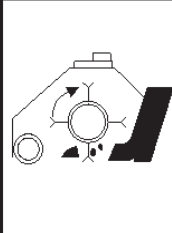
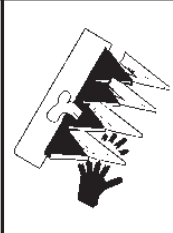
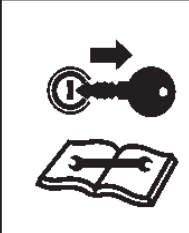
- **DO NOT USE PTO ADAPTER.**

Using a PTO adapter can cause excessive vibration, thrown objects, blade and implement failures by doubling operating speed. Increased working length exposing unshielded driveline areas. **PN PE01**



SAFETY

MOWER BLADE CONTACT HAZARDS

					
Do not put fingers underneath mower	Do not put hands underneath Flail Mower	Do not put foot underneath mower	Do not put foot underneath Flail Mower	Shearing Hazard from Sickle blades	Stop Tractor Remove Key Read Manual




KEEP AWAY FROM ROTATING BLADES TO AVOID SERIOUS INJURY OR DEATH FROM BLADE CONTACT:

- **STAY AWAY** and **KEEP HANDS, FEET** and **BODY AWAY** from rotating blades, drivelines and parts until all moving elements have stopped.
- **DO NOT** put hands or feet under mower decks
- **STOP** rotating **BLADES** disengage mower switch and PTO and wait for blade to stop rotating before raising mower head.
- **DO NOT** approach Sickle Bar head until Tractor Engine has been shut off.
- **STOP LOOK** and **LISTEN** before approaching the mower to make sure all rotating motion has stopped. *PN MBBM-01*

SAFETY

HIGH PRESSURE OIL LEAK HAZARD

			
High pressure oil penetrating skin	High pressure oil eroding skin	Using cardboard to check for oil leaks	Tank contents under pressure. Allow oil to cool before slowly removing cap



TO AVOID SERIOUS INJURY OR DEATH FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENERATING SKIN:

- **DO NOT OPERATE** equipment with oil or fuel leaks.
- **KEEP** all hydraulic hoses, lines and connections in **GOOD CONDITION** and **TIGHT** before applying system pressure.
- **RELIEVE HYDRAULIC PRESSURE** before disconnecting lines or working on the system.
- **REMOVE** and replace hose if you suspect it leaks. Have dealer test it for leaks.

HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE.

WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:

- **ALWAYS WEAR** safety glasses and impenetrable gloves.
- **USE** paper or cardboard to search for leaks.
- **DO NOT USE** hands or body parts to search for leak.
- **KEEP** hands and body **AWAY** from pin holes and nozzles ejecting hydraulic fluid.
- Hydraulic fluid may cause gangrene if not surgically removed immediately by a doctor familiar with this form of injury.

Use caution when removing Hydraulic Tank cap.

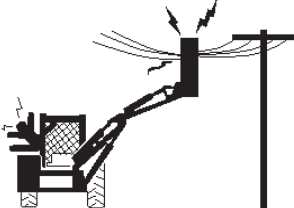


- Tank contents maybe under pressure
- Allow oil to cool before removing cap.
- Relieve oil pressure before removing cap slowly.
- Stay away from hot oil that may spray from tank.

PN HPBM-01



SAFETY

ELECTRICAL & FIRE HAZARDS

		
<p>Mower head or Boom contacting overhead electrical lines</p>	<p>Strike and explosion Hazard Blades Contacting Utility or Gas Lines</p>	<p>Fire Hazard Do Not operate near fires. Keep debris away from hydraulic pumps and valves</p>

⚠️ DANGER DANGER **TO AVOID SERIOUS INJURY OR DEATH FROM ELECTRICAL CONTACT WHEN WORKING AROUND ELECTRICAL POWER LINES, GAS LINES AND UTILITY LINES:**

- **INSPECT** mowing area for overhead or underground electrical power lines, obstructions, gas lines, cables and Utility, Municipal, or other type structure.
- **KEEP** all raised wings at a 10 feet or greater distance from all power lines and overhead obstructions.
- **DO NOT** allow mower to contact with any Utility, Municipal, or type of structures and obstructions.
- **CALL 811** and 1-800-258-0808 for identify buried utility lines.

FIRE PREVENTION GUIDELINES while Operating, Servicing, and Repairing Mower and Tractor to reduce equipment and grass fire Risk:

- **EQUIP** Tractor with a **FIRE EXTINGUISHER**
- **DO NOT OPERATE** mower on a tractor equipped with under frame exhaust
- **DO NOT SMOKE** or have open flame near Mower or Tractor
- **DO NOT DRIVE** into burning debris or freshly burnt area
- **AVOID FIRE IGNITION** by not allowing mower blade to contact solid objects like metal or rock.
- **DO NOT** operate if oil is leaking. Repair oil leak and remove all accumulated oil before operating.
- **CLEAR** any grass clippings or debris buildup around mower hydraulic pumps, valves or tanks.
- **SHUT OFF ENGINE** while refueling. *PN EFBM-01*

SAFETY

TRANSPORTING HAZARDS

		
Use SMV signs and Flashing Lights	Loss of Control Stopping Hazard	Loss of Control Speeding Hazard



TO AVOID SERIOUS INJURY AND DEATH WHEN TOWING OR TRANSPORTING EQUIPMENT:

- **KEEP** transport speed **BELOW** 20 mph to maintain control of equipment.
- **REDUCE SPEED** on inclines, on turns and in poor towing conditions.
- **DO NOT TOW** with trucks or other vehicles.
- **USE** only properly sized and equipped tractor for towing equipment.
- **FOLLOW** all local traffic regulations.

TRACTOR REQUIREMENTS FOR TOWING OR TRANSPORTING IMPLEMENTS:

- **ONLY TRANSPORT** with tractor with **ROPS** in the raised position.
- **USE** properly sized and equipped tractor that exceeds implement weight by at least 20%.
- **KEEP** 20% of tractor weight on front wheels to maintain safe steering.

BEFORE TRANSPORTING OR TOWING IMPLEMENT:

TRACTOR INSPECTION:

- **CHECK** steering and braking for proper operation and in good condition.
- **CHECK SMV** sign, reflectors and warning lights for proper operation and visibility behind unit.
- **CHECK** that your driving vision is not impaired by tractor, cab, or implement while seated in tractor seat.
- **ADJUST** your operating position, mirrors, and implement transport for clear vision for traveling and traffic conditions.

PREPARE IMPLEMENT FOR TRANSPORTING OR TOWING:

- Store Boom and Mower in transport positions and engage transport locks if equipped.

DETERMINE STOPPING CHARACTERISTICS OF TRACTOR AND IMPLEMENT FOR TRANSPORTING OR TOWING:

BRAKING TESTS:

- Stopping distance with implement attached may increase
- Observe **STOPPING** distances increases with increased speeds.
- **DETERMINE** the maximum safe transport speed that does not exceed 20 mph.
- Reduce travel speed in wet or icy roads, stopping distances increase.

DETERMINE MAXIMUM TURNING SPEED BEFORE OPERATING ON ROADS OR UNEVEN GROUND:

- **TEST** equipment in slowly increasing speed in turns to determine it can be operated at higher speeds.
- **USE REDUCED** turning speeds in sharp turns to avoid equipment turning over.



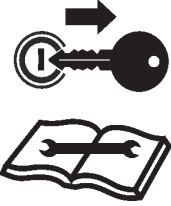

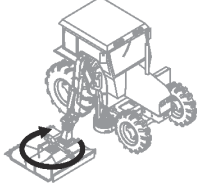
WHEN TOWING OR TRANSPORTING EQUIPMENT:

- Always **WEAR SEAT BELT** when operating or transporting mower.
- **USE** low speeds to avoid overturn with raised wings.
- **USE** low speeds and gradual steering on curves, hills, rough or uneven surfaces and on wet roads.
- **TURN ON** tractor **FLASHING WARNING LIGHTS**.
- **ALLOW** clearance for implement swing while turning.

KEEP raised boom mower 10 feet or greater distance from all power lines and overhead obstructions. PN THBM-01

SAFETY

HAZARDS WITH MAINTENANCE OF IMPLEMENT

				
Periodically inspect all moving parts, lubricate drivelines, and tighten all fasteners	Lower mower head to ground or block up before servicing	Stop engine remove key before conducting maintenance	Set mower head securely on the ground before servicing blades	Thrown Objects Hazard Ensure blades rotate clockwise viewed from above mower head



AVOID SERIOUS INJURY OR DEATH FROM COMPONENT FAILURE BY KEEPING IMPLEMENT IN GOOD OPERATING CONDITION IN PERFORMING PROPER SERVICE, REPAIRS AND MAINTENANCE.

BEFORE PERFORMING SERVICE, REPAIRS AND MAINTENANCE ON THE IMPLEMENT:

- **STOP ENGINE AND PTO**, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismounting from tractor.
- **PLACE** implement on ground or securely block up raised equipment. Use large blocks on soft or wet soil.
- **PUSH** and **PULL** Remote Hydraulic Cylinder lever to relieve hydraulic pressure.
- **DISCONNECT Pump solenoid valve or PTO driveline connection before servicing mower head.**
- **WEAR SAFETY GLASSES, PROTECTIVE GLOVES** and follow **SAFETY PROCEDURES** when performing service, repairs and maintenance on the implement:
 - Always **WEAR** protective **GLOVES** when handling blades, knives, cutting edges or worn component with sharp edges.
 - Always **WEAR GLOVES** and **SAFETY GLASSES** when servicing hot components
 - **AVOID CONTACT** with hot hydraulic oil tanks, pumps, motors, valves and hose connection surfaces.
 - **SECURELY** support or **BLOCK UP** raised implement, framework and lifted components before working underneath equipment.
 - **FOLLOW INSTRUCTIONS** in maintenance section when replacing hydraulic cylinders to prevent component falling.
 - **STOP** any implement movements and **SHUT-OFF TRACTOR** engine before doing any work procedures.
 - **USE** ladder or raised stands to reach high equipment areas inaccessible from ground.
 - **ENSURE** good footing by standing on solid flat surfaces when getting on implement to perform work.
 - **FOLLOW** manufacturer's instructions in handling oils, solvents, cleansers, and other chemical agents.
 - **DO NOT** change any factory-set hydraulic calibrations to avoid component or equipment failures.
 - **DO NOT** modify or alter implement, functions or components.
 - **DO NOT WELD** or repair rotating mower components. These may cause vibrations and component failures being thrown from mower.

PERFORM SERVICE, REPAIRS, LUBRICATION AND MAINTENANCE OUTLINED IN IMPLEMENT MAINTENANCE SECTION:

- **INSPECT** for loose fasteners, worn or broken parts, leaky or loose fittings, missing or broken cotter keys and washers on pins, and all moving parts for wear.
- **REPLACE** any worn or broken parts with authorized service parts.
- Inspect mower blade spindle to ensure bearing preload. If loose repair before operating.
- **LUBRICATE** unit as specified by lubrication schedule
- **NEVER** lubricate, adjust or remove material while it is running or in motion.
- **TORQUE** all bolts and nuts as specified.

BLADE INSPECTION:

- Inspect blade carrier and blades daily.
- Check blade and blade carrier **BOLT TORQUE** daily. Loose bolts can cause blade or blade bolt failures.
- **REPLACE**, bent, damage, cracked and broken blades immediately with new blades.
- **AVOID** blade failures and thrown broken blades. **DO NOT** straighten, weld, or weld hard-facing blades.

SAFETY SHIELDS, GUARDS AND SAFETY DEVICES INSPECTION:

- **KEEP** all Deflectors, Chain Guards, Steel Guards, Gearbox Shields, and PTO integral shields, Bands, Side Skirts and Skid Shoes in place and in good condition.
- **REPLACE** any missing, broken or worn safety shields, guards and safety devices.
- **PROPOSITION 65** - Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.
- Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. **PN HMBM-01**

SAFETY

PARTS INFORMATION

PARTS INFORMATION

Alamo Industrial mowers use balanced and matched system components for blade carriers, blades, cuttershafts, knives, knife hangers, rollers, drivetrain components, and bearings. These parts are made and tested to Alamo Industrial specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void mower warranties, and present a safety hazard. Use genuine Alamo Industrial mower parts for economy and safety. (SPAM-1)

SEE YOUR ALAMO DEALER

Operator's & Parts Manuals



www.algqr.com/apm

Decal Location

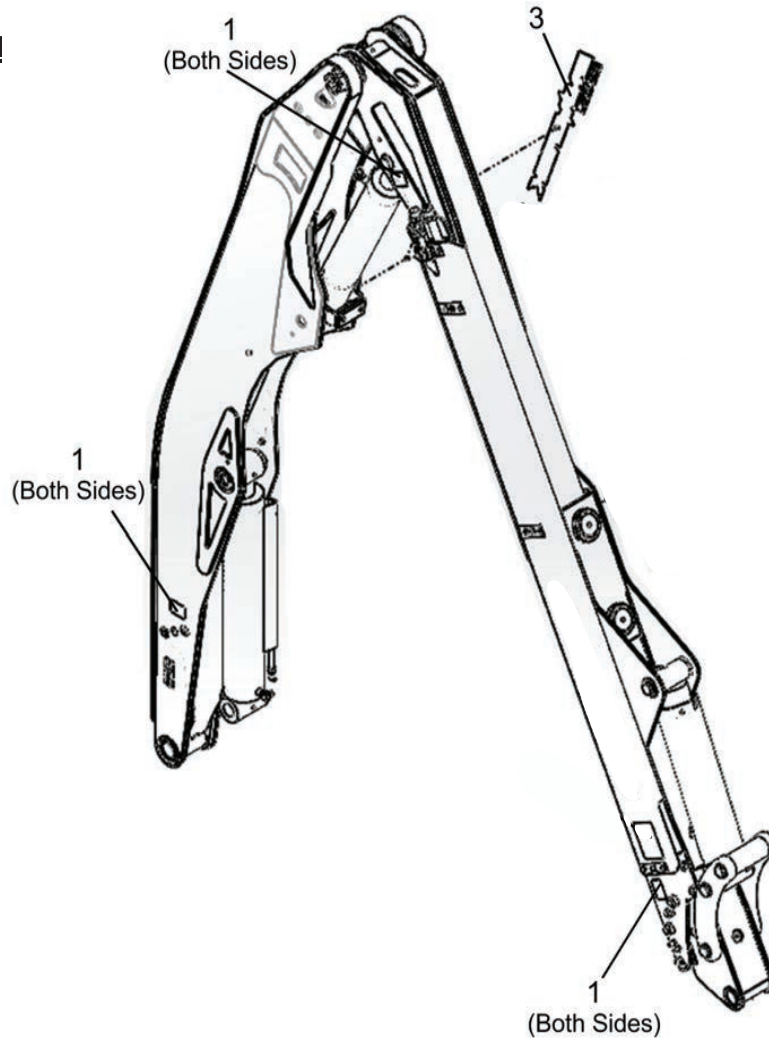
NOTE: Alamo Industrial supplies safety decals on this product to promote safe operation. Damage to the decals may occur while in shipping, use, or reconditioning. Alamo Industrial cares about the safety of its customers, operators, and bystanders, and will replace the safety decals on this product in the field, free of charge (Some shipping and handling charges may apply). Contact your Alamo Industrial dealer to order replacement decals.

DECAL MAP MANTIS RF22 BOOM

DECAL LOCATION

NOTE: Alamo Industrial supplies safety decals on this product to promote safe operation. Damage to the decals may occur while in shipping, use, or reconditioning. Alamo Industrial cares about the safety of its customers, operators, and bystanders, and will replace the safety decals on this product in the field, free of charge (Some shipping and handling charges may apply). Contact your Alamo Industrial dealer to order replacement decals.

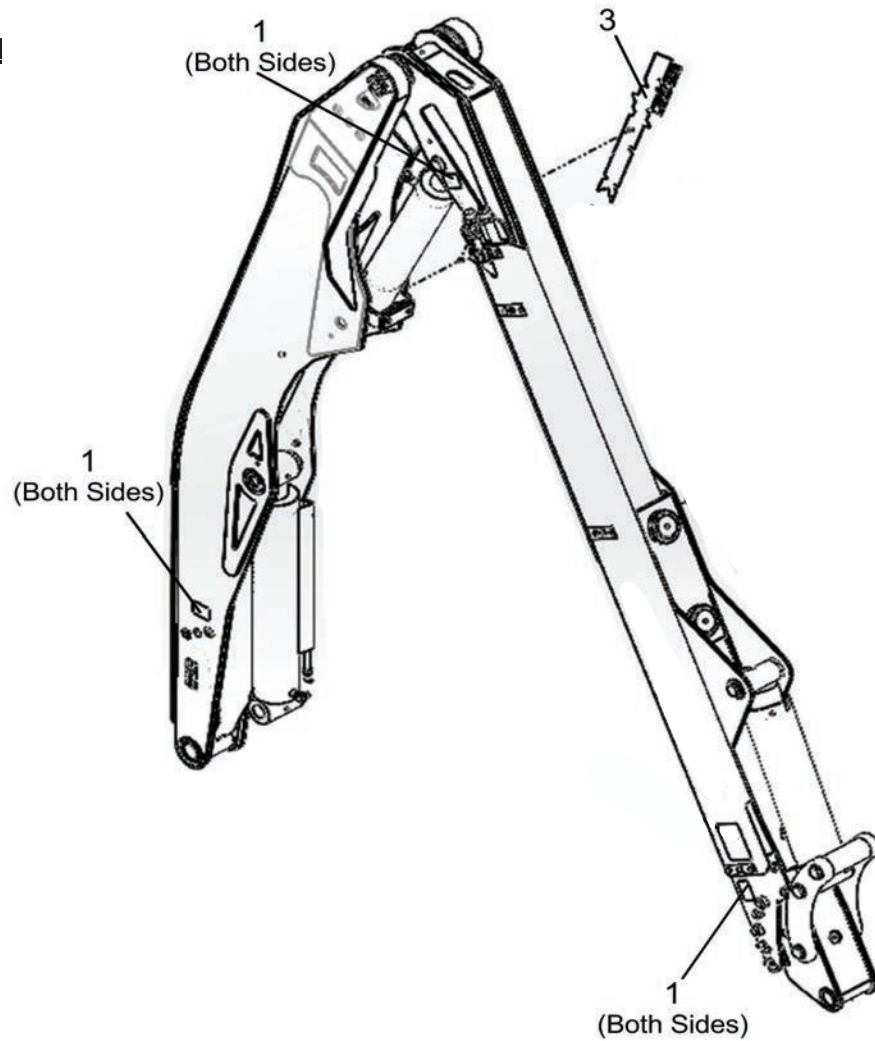
BOOM ARM



ITEM	PART NO.	QTY.	TYPE	DESCRIPTION
1.	D623	6	WARNING	Pinch Points
3.	32120488	2	NAME	Logo - RF22 Boom
6.	NFS	1	SER PLT	Serial Number Plate (Not Shown)




DECAL MAP MANTIS RF30 BOOM


BOOM ARM



ITEM	PART NO.	QTY.	TYPE	DESCRIPTION
1.	D623	6	WARNING	Pinch Points
3.	32120488	2	NAME	Logo - RF22 Boom
6.	NFS	1	SER PLT	Serial Number Plate (Not Shown)

SAFETY

⚠ WARNING		
		
<p>TO AVOID SERIOUS INJURY OR DEATH FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENETRATING SKIN:</p> <ul style="list-style-type: none">• DO NOT OPERATE equipment with oil or fuel leaks.• KEEP all hydraulic hoses, lines and connections in good condition and tight before applying system pressure.• Relieve hydraulic pressure before disconnecting lines or working on the system.• REMOVE and replace hose if you suspect it leaks. Have dealer test it for leaks. <p>HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE. WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:</p> <ul style="list-style-type: none">• DO NOT use hands to check for leaks.• ALWAYS WEAR safety glasses and impenetrable gloves.• USE paper or cardboard to search for leaks.• KEEP hands and body AWAY from pin holes and nozzles ejecting hydraulic fluid.• Hydraulic fluid may cause gangrene if not surgically removed immediately by a doctor familiar with this form of injury. <p>D617</p>		

⚠ WARNING	
<p>PRESSURIZED TANK OIL FILLER CAP IS PRESSURE RELIEF CAP</p>	
<p>TO AVOID SERIOUS INJURY AND DEATH FROM HOT OIL:</p> <ul style="list-style-type: none">• STAY AWAY from hot oil that may spray out of tank.• ALLOW oil to cool down BEFORE removing cap .• SLOWLY remove cap to relieve pressure BEFORE removing completely. <p>D625</p>	

SAFETY

⚠ DANGER

CRUSHING HAZARD AND PINCH POINTS



TO AVOID SERIOUS INJURY OR DEATH:

- KEEP AWAY from moving machinery parts that can pinch, crush or fall.

D628

⚠ DANGER

Crushing Hazard


Transport Latch D683

RAISE AND SECURELY LOCK Wing Transport Latch before transporting mower on roadways or working under wing.



⚠ WARNING

CRUSHING HAZARD
could cause serious injury:



- Tire is extremely heavy - 1500 lbs.
- Use proper lifting & handling equipment when dismounting tire
- Refill tire with appropriate ballast for stability.
- Check torque on all wheel lugs.

D876

SAFETY

⚠ WARNING

Cancer and Reproductive Harm
www.P65 Warnings.ca.gov D960

⚠ WARNING

	 USE SEAT BELT
---	--

CRUSHING HAZARD

- Always Wear Seatbelt and securely fasten around your body.
- Do not attempted to jump, if machine tips.
- Keep Rollover Protection is in good working condition.
- Maintain unimpaired operator protection and manufacture's ROPS certification.
- Damaged ROPS structures must be replaced, not repaired or revised.
- Any alteration to the ROPS must be approved by the manufacturer.

D966

⚠ WARNING



FALL HAZARD

Avoid serious injuries from a fall. Do not ride on machine.

D971

SAFETY

WARNING



INJURY HAZARD

The Instructor seat has been provided only for training operators or diagnosing machine problems.

- Keep all other riders, including children off of tractor and equipment.
- Always wear the seat belt.


D967



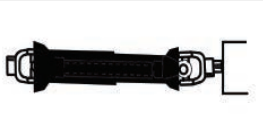
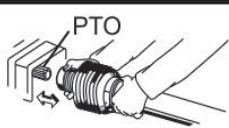

CAUTION

1. Read and understand Operator's Manual and safety signs before operating this mower.
2. Keep all shields and guards in place, Replace damaged or missing shields and guards.
3. Do not allow riders except for instructional purposes.
4. Always use the instructional and operator's seat belts.
5. Do not start engine, lower or engage mower units until all bystanders are clear.
6. Keep hands, feet, clothing and hair away from moving parts.
7. Stop engine, remove key, set parking brake and wait for all movement to stop before servicing, adjusting or unclogging machine.
8. Reduce speed when turning, while on rough ground or on steep slopes.
9. Avoid contact with overhead powerlines.
10. Always use flashing warning lights when travelling on a public roadway.
11. Stop engine, remove key and set park brake before leaving machine unattended.

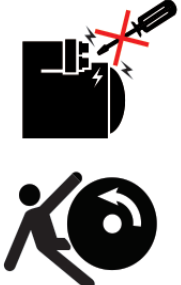
D968

SAFETY

⚠ WARNING	
	<p>PRESSURIZED TANK RADIATOR CAP IS PRESSURE RELIEF CAP</p> <p>TO AVOID SERIOUS INJURY AND DEATH FROM HIGH PRESSURE FLUID:</p> <ul style="list-style-type: none">• STAY AWAY from high pressure fluid that may spray out of tank.• ALLOW radiator to cool down BEFORE removing cap .• SLOWLY remove cap to relieve pressure BEFORE removing completely. <p>D969</p>

⚠ DANGER		
		
<p>TO AVOID SERIOUS INJURY OR DEATH FROM DRIVELINE CONTACT, DRIVELINE SEPARATION OR PTO STUB SHAFT FAILURE:</p> <ul style="list-style-type: none">• STOP, LOOK and LISTEN for rotating motion before approaching implement.• STAY AWAY and KEEP hands, feet and body AWAY from rotating parts until all moving elements have stopped.• ALWAYS shut off PTO before dismounting.• DO NOT operate if PTO shields are damaged or missing.• PUSH AND PULL on yoke until collar clicks and locks yoke in place.• CHECK driveline guards for free rotation and sufficient overlap to avoid unshielded areas.• DO NOT USE PTO ADAPTER		
		D970

SAFETY



! DANGER	
	CRUSHING HAZARD Start Only from the operator's seat. Do not attempt to jump start tractor.
D972	


<p>Ultra Low Sulfur Diesel fuel only.</p>
D973

! DANGER

THROWN OBJECT HAZARD
TO AVOID SERIOUS INJURY OR DEATH: DO NOT OPERATE if Thrown Object Shielding is damaged or missing. Always maintain Thrown Object Shielding in good condition.
D974

SAFETY

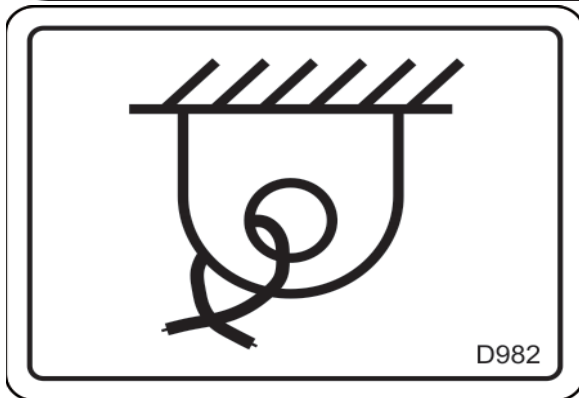
⚠ WARNING	
TO AVOID EQUIPMENT AND GRASS FIRES: <ul style="list-style-type: none">• Do not operate Engine if oil or fuel leaks are observed.• Clear away grass and debris from engine and hydraulic lines.• Disconnect electrical switch when in storage or during maintenance.	  SWITCH D975

⚠ WARNING	
	HOT SURFACE HAZARD <p>To avoid Injury or death:</p> <ul style="list-style-type: none">• After treatment system is extremely hot.• Keep machine away from other bystanders, animals, plants, and flammable material.• Keep the area near the muffler clean and away from flammable and combustible materials.
	D976


DEF only D979

SAFETY

 DANGER		
CRUSHING HAZARD		
 D980		<ul style="list-style-type: none">• Step ladder may fall, serious injury or death could occur.• Always Wear Hard Hat• Keep 5 feet away from ladder



 DANGER
 D977
GUARD MISSING DO NOT OPERATE

 WARNING	
PINCH POINT HAZARD	
TO AVOID SERIOUS INJURY: <ul style="list-style-type: none">• DO NOT OPERATE with Belt Shield removed. D641	



SAFETY

Federal Laws and Regulations

This section is intended to explain in broad terms the concept and effect of federal laws and regulations concerning employer and employee equipment operators. This section is not intended as a legal interpretation of the law and should not be considered as such.

Employer-Employee Operator Regulations

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:

"...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources..."

DUTIES

Sec. 5 (a) Each employer-

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.
- (b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Training Requirements

Title 29, Code of Federal Regulations Part 1928.57(a)(6). www.osha.gov

Operator instructions. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee who operates an agricultural tractor and implements in the safe operating practices and servicing of equipment with which they are or will be involved, and of any other practices dictated by the work environment.

Keep all guards in place when the machine is in operation;

Permit no riders on equipment

Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.

Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

Employer Responsibilities:

To ensure employee safety during Tractor and Implement operation, it is the employer's responsibility to:

1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator's manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor and Implement in a safe operational condition and maintain all shields and guards on the equipment.
5. Ensure the Tractor is equipped with a functional ROPS and seat belt and require that the employee operator securely fasten the safety belt and operate with the ROPS in the raised position at all times.
6. Forbid the employee operator to carry additional riders on the Tractor or Implement.
7. Provide the required tools to maintain the Tractor and Implement in a good safe working condition and provide the necessary support devices to secure the equipment safely while performing repairs and service.
8. Require that the employee operator stop operation if bystanders or passersby come within 300 feet.

Child Labor Under 16 Years of Age

Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

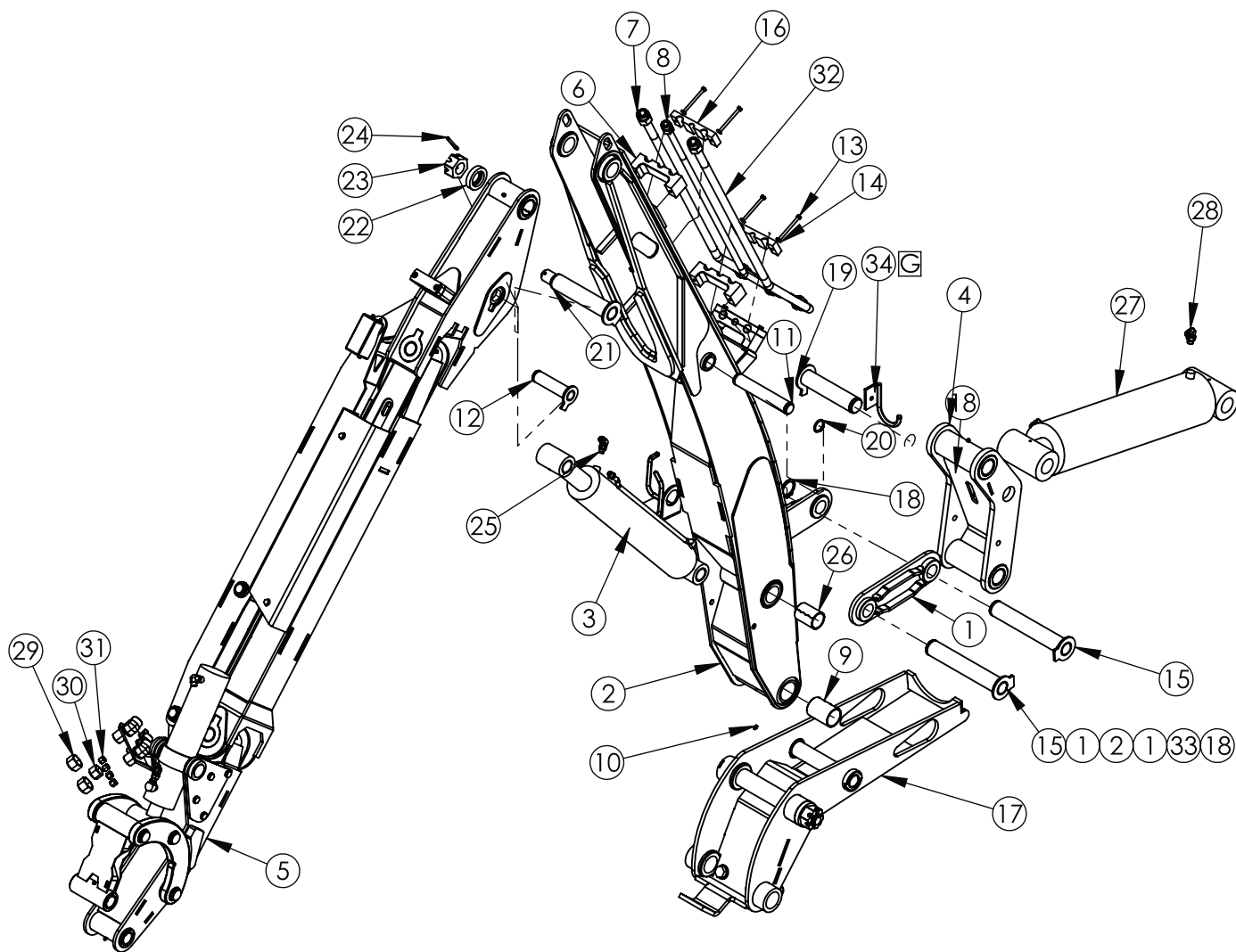
SECTION 20

PARTS





ASY, 22' BOOM, MANTIS



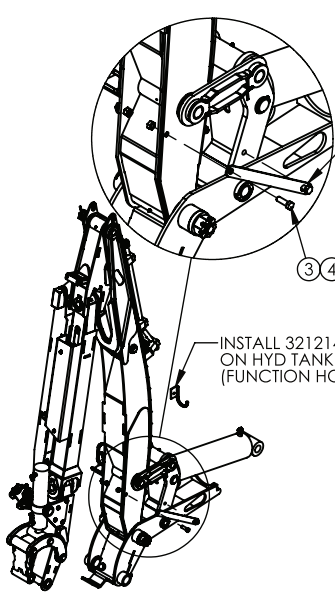
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Notes: P/N 02999071

ASY, 22' BOOM, MANTIS

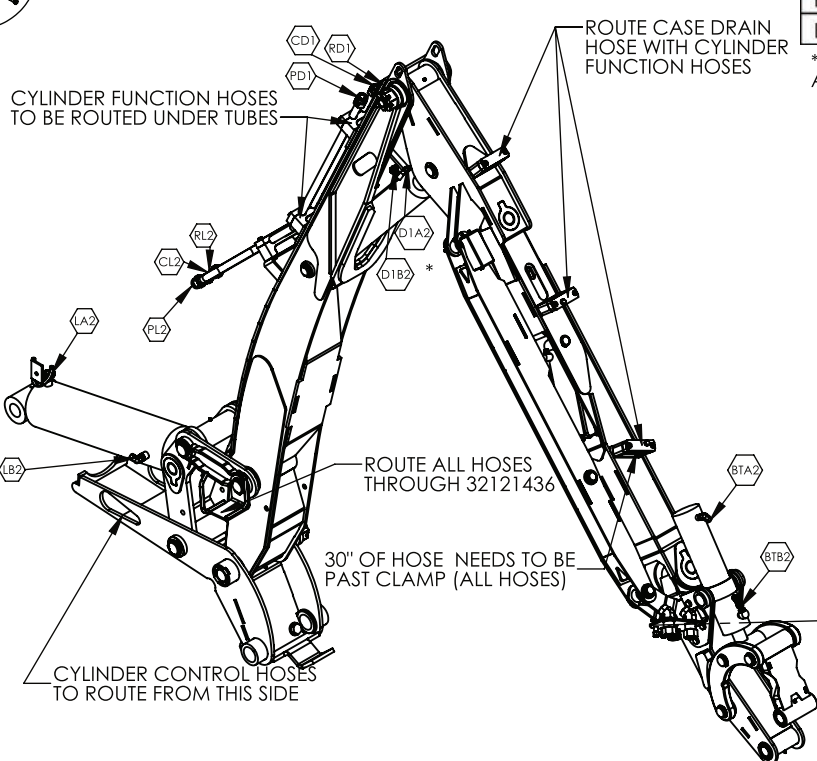
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	02999105	MACH, WLDMT, LINKAGE, BOOM	2
2	02999204	WLDMT, LIFT BOOM	1
3	02981277	CYLINDER, 4.0B X 2.25R X 21.5S	1
4	02999073	ASY, BOOM LIFT LINKAGE, MANTIS	1
5	02999072	ASY, 22' BOOM, DIPPER	1
6	02999228	DELIN, HYD CLAMP, BOT, LIFT	3
7	02999238	HYD TUBE, #16, LIFT BOOM, R	1
8	02999237	HYD TUBE, #12, LIFT BOOM	1
9	02999224	CONNEX BUSHING, 2-1/2 X 2-1/4	2
10	00752670	GREASE FITTING 1/4-28 BOLT THD	1
11	02999109	PIN, 1.5OD X 9.31LG	1
12	02999216	WLDMT, PIN, DIP CYL	1
13	03200995	BOLT, HHCS 5/16" X 3-3/4" LG	6
14	00023500	FLATWASHER 5/16, TYPE AW, ZP	6
15	02999211	WLDMT, PIN, 2OD X 11.92LG	2
16	02999229	DELIN, HYD CLAMP, TOP, LIFT	3
17	02999103	KIT, CARRIER INTERFACE, BOOM	1
18	02986385	RETAINING RING, 2" PIN	3
19	02999213	WLDMT, PIN, 2OD X 8.42LG	1
20	02994201	RETAINING RING, 1.5 SHAFT	2
21	02999214	WLDMT, PIN, 2OD X 9.62S	1
22	02981273	SPACER, PIN, DIPPER, MAVERICK	1
23	02981702	SLOTTED NUT, 1-1/2 NF	1
24	165020	PIN, COTTER 5/16 X 2-1/2 PL	1
25	02998821	HYD ADP, 06MB X 06MF X 90	1
26	02981420	CONNEX BUSHING, 2 1/4 X 2 X 3	2
27	02999227	CYLINDER, 6.0B X 3.0R X 20S	1
28	02998431	HYD ADP FTG, 08MB X 08MRFS, 90	2
29	02999326	HYD FTG, 16FF, CAP	2
30	02999327	HYD FTG, 12FF, CAP	1
31	02999328	HYD FTG, 04FF, CAP	4
32	32121346	HYD TUBE, #16, LIFT BOOM, P	1
33	32121435	WLDMT, HOSE STAND OFF	1
34	32121436	WLDMT, HOSE SUPPORT, TANK	1

ASY, 22' BOOM, HOSE ROUTING

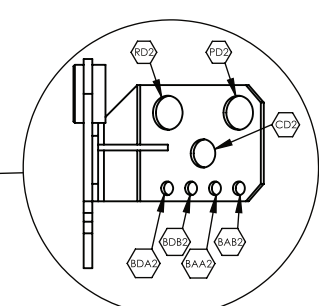


4	32111982	PLATE, BOOM RETAINER	2
3	00753753	HHCS 5/8 NC X 2 PL GR8	4
2	00010400	5/8 NUT	4
1	02999204	WLDMT, LIFT BOOM	1
ITEM NO.	PART NUMBER	DESCRIPTION	QTY

HYDRAULIC HOSE LOCATIONS			
END 1	HOSE P/N	END 2	REF DRAWING
M1-P1 (ST)	02999303	PL2 (ST)	02999344
M2- R1 (90)	02999304	RL2 (ST)	02999344
C1 (ST)	02999305	CL2 (ST)	02999344
PD1 (45)	02999306	PD2 (ST)	
RD1 (45)	02999307	RD2 (ST)	
CD1 (45)	02999308	CD2 (ST)	
LA1 (ST)	02999284	LA2 (ST)	02999074
LB1 (ST)	02999283	LB2 (ST)	02999074
D1A1 (ST)	02999286	D1A2 (ST)	02999074
D1B1 (ST)	02999285	D1B2 (ST)	02999074
BTA1 (ST)	02999289/97	BTA2 (ST)	02999074
BTB1 (ST)	02999290/98	BTB2 (ST)	02999074
BDA1 (ST)	02999291/99	BDA2 (ST)	02999074
BDB1 (ST)	02999292/300	BDB2 (ST)	02999074
BAA1 (ST)	02999293/301	BAA2 (ST)	02999074
BAB1 (ST)	02999294/302	BAB2 (ST)	02999074



*DIPPER HOSES TO BE ROUTED THROUGH ACCESS HOLE ABOVE CYLINDER

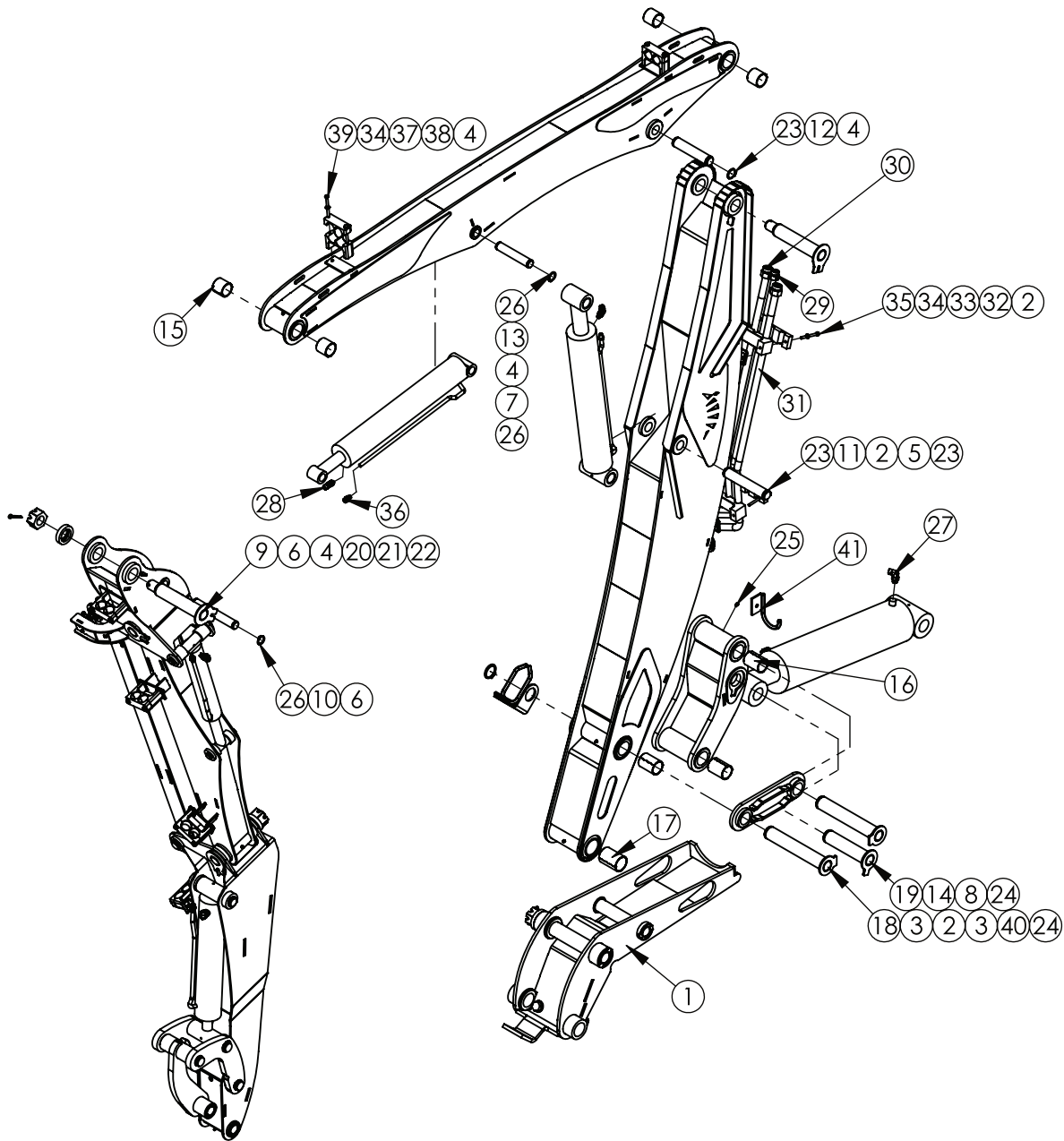


HEAD TILT HOSE BULKHEAD

Click on the model to rotate

Notes: P/N 02999071

ASY, LONG REACH BOOM, MANTIS
P/N 32121344



Click on the model to rotate

Notes: P/N 32121344

ASY, LONG REACH BOOM, MANTIS

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	02999103	KIT, CARRIER INTERFACE, BOOM	1
2	32121304	WLDMT, LR BOOM LIFT	1
3	02999105	MACH, WLDMT, LINKAGE, BOOM	2
4	32121305	WLDMT, MID DIPPER, LR BOOM	1
5	02981277	CYLINDER, 4.0B X 2.25R X 21.5S	1
6	32121271	ASY, DIP2, LR BOOM	1
7	32121311	CYL, 3.5Bx1.75Rx20S	1
8	02999227	CYLINDER, 6.0B X 3.0R X 20S	1
9	32121307	WLDMT, PIN, 2 OD X 9 UL	2
10	32121283	PIN, 1.25 OD X 8.125 UL	1
11	32121286	PIN, 1.5 OD X 8 UL	1
12	32121285	PIN, 1.5 OD X 6.625 UL	1
13	32121282	PIN, 1.25 OD X 6.25 UL	1
14	32121303	WLDMT, LIFT LINKAGE	1
15	02999223	CONNEX BUSHING, 2 1/4 X 2 X 2	4
16	02981420	CONNEX BUSHING, 2 1/4 X 2 X 3	6
17	02999224	CONNEX BUSHING, 2-1/2 X 2-1/4	2
18	02999211	WLDMT, PIN, 2OD X 11.92LG	2
19	02999213	WLDMT, PIN, 2OD X 8.42LG	1
20	02981273	SPACER, PIN, DIPPER, MAVERICK	2
21	02981702	SLOTTED NUT, 1-1/2 NF	2
22	165020	PIN, COTTER 5/16 X 2-1/2 PL	2
23	02994201	RETAINING RING, 1.5 SHAFT	4
24	02986385	RETAINING RING, 2" PIN	3
25	00752670	GREASE FITTING 1/4-28 BOLT THD	6
26	02993162	SNAP RING, 1.25" HD	4
27	02998431	HYD ADP FTG, 08MB X 08MRFS, 90	2
28	02998821	HYD ADP, 06MB X 06MF X 90	2
29	02999237	HYD TUBE, #12, LIFT BOOM	1
30	02999238	HYD TUBE, #16, LIFT BOOM, R	1
31	32121346	HYD TUBE, #16, LIFT BOOM, P	1
32	02999228	DELIN, HYD CLAMP, BOT, LIFT	2
33	02999229	DELIN, HYD CLAMP, TOP, LIFT	2
34	00023500	FLATWASHER 5/16, TYPE AW, ZP	16

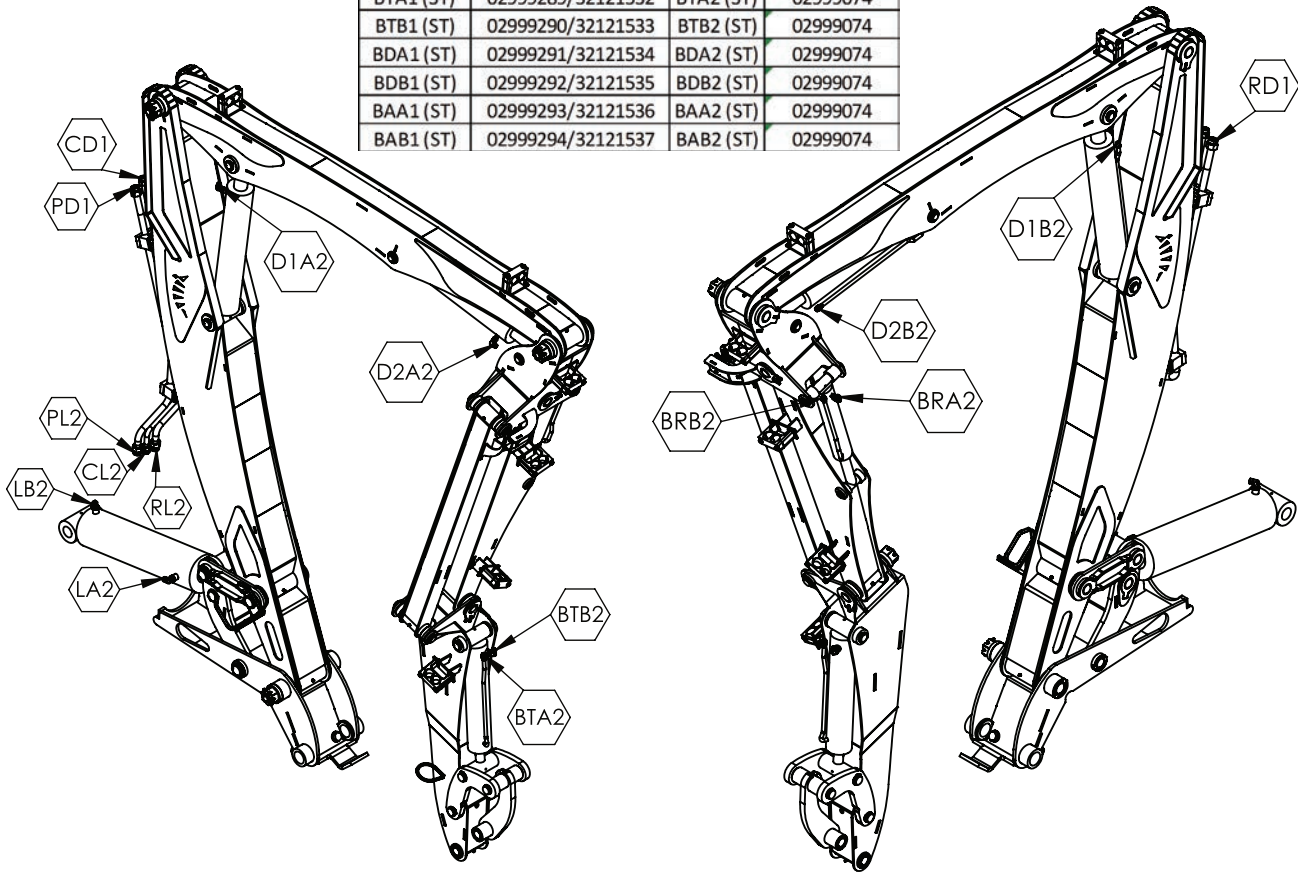
ASY, LONG REACH BOOM, MANTIS

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
35	63092200	BOLT, HHCS 5/16" X 3-1/2" LG	4
36	02999231	HYD ADP FTG, 06MB-06MF	1
37	02998815	HYD CLAMP, BOT, DIPPER	6
38	02998816	HYD CLAMP, MID, DIPPER	6
39	000006	HHCS 5/16-18UNC 4-1/4 PL5	12
40	32121435	WLDMT, HOSE STAND OFF	1
41	32121436	WLDMT, HOSE SUPPORT, TANK	1

ASY, LONG REACH BOOM, MANTIS HOSE ROUTING



HYDRAULIC HOSE LOCATIONS			
END 1	HOSE P/N	END 2	REF DRAWING
M1-P1 (ST)	02999303	PL2 (ST)	02999344
M2- R1 (90)	02999304	RL2 (ST)	02999344
C1 (ST)	02999305	CL2 (ST)	02999344
PD1 (ST)	32121538	PD2 (ST)	
RD1 (ST)	32121539	RD2 (ST)	
CD1 (ST)	32121540	CD2 (ST)	
LA1 (ST)	02999284	LA2 (ST)	02999074
LB1 (ST)	02999283	LB2 (ST)	02999074
D1A1 (ST)	02999286	D1A2 (ST)	02999074
D1B1 (ST)	02999285	D1B2 (ST)	02999074
D2A1 (ST)	32121524/28	D2A2 (ST)	02999074
D2B1 (ST)	32121527/29	D2B2 (ST)	02999074
BRA1 (ST)	02999287/32121531	BRA2 (ST)	02999074
BRB1 (ST)	02999288/32121530	BRB2 (ST)	02999074
BTA1 (ST)	02999289/32121532	BTA2 (ST)	02999074
BTB1 (ST)	02999290/32121533	BTB2 (ST)	02999074
BDA1 (ST)	02999291/32121534	BDA2 (ST)	02999074
BDB1 (ST)	02999292/32121535	BDB2 (ST)	02999074
BAA1 (ST)	02999293/32121536	BAA2 (ST)	02999074
BAB1 (ST)	02999294/32121537	BAB2 (ST)	02999074



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Notes: P/N 32121344



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