

DARF

HAY RAKES

OWNER'S AND PARTS MANUAL



1017LFMWAB

Model 1017L

Manufactured by
NIKKEL IRON WORKS CORP.
Shafter, California



READ THE MANUAL

Revised May 2019



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ENGINEERED FOR LONG LIFE

Thank you for purchasing a DARF 1017L hay rake. We hope it will provide you with many years of productive use. The rake is designed to be pulled by a ROPS (Roll-Over Protective Structure) tractor of proper size or a pickup truck of proper size. The purpose of this rake is to provide a means for harvesting forage. All product users must read and understand this manual prior to equipment operation. This manual is considered part of the machine and should remain with the machine at all times. Do not allow anyone to operate or maintain this equipment that has not read and fully comprehended this manual. Failure to follow the recommended procedures may result in equipment damage, personal injury or death.

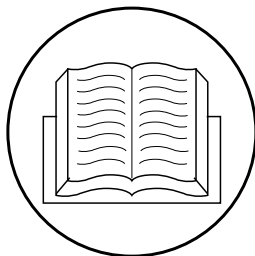
The intent of this manual is to provide guidelines to cover general use and to assist in avoiding accidents and injuries. Information in this manual is designed to help owners and operators to obtain the best results and safest operation from their investment. The life of any machine depends largely on the care it is given and we suggest that the manual be referred to frequently. If for any reason you do not understand the instructions and safety requirements, please contact your authorized dealer.

There may be times when circumstances occur that are not covered in this manual. At those times it is best to use common sense and/or contact your authorized dealer.

Some photographs, diagrams, or illustrations in this manual may show doors, guards and shields opened or removed to aid in clarity and understanding of a particular procedure. All guards, shields and safety devices must be in their proper position prior to operation.

Left-hand and right-hand sides are viewed from the rear, as if you were sitting in the driver seat.

We urge you to make safety your top priority when using and maintaining this equipment. Read and understand this manual before operating or maintaining your 1017L DARF hay rake.



SERIAL NUMBER LOCATION



Serial Number located under right-side of overhead main frame



Serial Number: _____

Model Information: _____

Date Purchased: _____

CONTACT DEALER

Name: _____

CONTACT FACTORY

NIKKEl IRON WORKS CORP.
17045 Central Valley Highway
Shafter, CA 93263

661.746.4904
661.746.4905 (Fax Line)

sales@nikkeliron.com (Email)
www.nikkelironworks.com

SAFETY ALERT SYMBOLS

	READ THE MANUAL		CRUSH HAZARD (rolling over)
	SAFETY ALERT SYMBOL		CRUSHING HAZARD (body)
	FALLING HAZARD		PINCH POINT HAZARD
	HOT SURFACE HAZARD		SLOW VEHICLE PLACARD
	ZERO PRESSURE		HIGH PRESSURE FLUID HAZARD
	DEFECTIVE OR BROKEN PART		BLOCK WHEELS
	EYE PROTECTION		HEARING PROTECTION
	VISUALLY INSPECT		INSPECT EQUIPMENT
	NO PASSENGERS		NO BYSTANDERS
	NO ALCOHOL		NO DRUGS
	MAINTENANCE PROCEDURE		STOP ENGINE
	SET PARKING BRAKE		USE PROPER TOOLS
	WEIGHT RATING		OEM PARTS ONLY
	DO NOT ALTER OR MODIFY		DO NOT WELD

SAFETY SIGNAL WORDS



This **SAFETY ALERT** symbol is found throughout the manual and is used to call special attention to potential personal injury hazards. Follow all safety alert symbols to avoid injury or death.



DANGER indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.



WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

GENERAL SAFETY GUIDELINES

- Safety of the operator and any bystanders is one of the key objectives in designing and developing a new piece of equipment. Designers and manufacturers integrate as many safety features as possible. However, every year, many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment.

- Do not read, eat, drink, talk, text or use cell phone while using this equipment. Never use alcohol or drugs when operating this piece of equipment.

- Stay clear of moving parts such as rake wheels, cylinders, couplings, and universal joints. Review the safety instructions and precautions annually!

SAFETY SIGN AND DECAL LOCATIONS



Decal located on the jack side of tongue near the hitch.



Decal located on both raking frames near lift cylinders, tongue near the hitch, and near the valve manifold cover.



Decal located on both raking frames ahead of leg strut, near swing cylinders.



SMV (slow moving vehicle) emblem located on the rear of rake.



California Proposition 65 sticker located on various items.



Amber reflective decal located on ends of raking frames.



Red reflective decal located on ends of raking frames.



If safety signs or decals have been damaged, new ones must be applied. Please contact authorized dealer.

TIRE SAFETY



• Failure to follow proper procedures when mounting a tire on a wheel can produce an explosion which may result in serious injury or death.



• Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.



• Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/or mount tires.



• Always order and install tires and wheels with appropriate capacity to meet or exceed the anticipated weight to be placed on the equipment.



• Be sure you have proper tire pressure and the lug nuts are properly tightened. Check wheel bearings on a regular basis and grease semiannually.

SAFETY LIGHTING AND MARKING



• It is the responsibility of the owner to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility.



• Light kits are available from your dealer.

HIGHWAY AND TRANSPORT SAFETY



REMEMBER! Your best insurance against accidents is a careful and responsible operator. If there is any portion of this manual or of the machine's operation you do not understand, contact your local authorized dealer.

Adopt safe driving practices by:

- Keep the brake pedals latched together at all times.
- NEVER USE INDEPENDENT BRAKING WITH MACHINE IN TOW AS LOSS OF CONTROL AND/OR UPSET OF UNIT CAN RESULT.**
- Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed to a minimum.
- Reduce speed prior to turns to avoid the risk of overturning and avoid sudden updrill turns on steep slopes.
- Always keep the tractor or towing vehicle in gear to provide engine braking when going downhill, do not coast.
- Do not drive under the influence of drugs or alcohol



NO ALCOHOL



NO DRUGS

- Comply with all state and local laws governing highway safety and movement of farm machinery on public roads. Use approved accessory lighting flags and necessary warning devices to protect operators of other vehicles on the highway during daytime and nighttime transport. Safety lights and devices are available from your dealer.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.



- When driving the tractor and equipment on the road or highway under 20mph, use flashing amber lights and a (SMV) identification emblem.

- Plan your route to avoid heavy traffic!
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- Be observant of bridge loading ratings. Do not cross bridges rated lower than the gross weight at which you are operating.
- Watch for obstructions overhead and to the side while transporting.
- Always operate equipment in a position to provide maximum visibility at all times. Make allowances for increased length and weight of equipment when making turns, stopping the rake, etc.
- Pick the most level route possible when transporting across fields. Avoid the edges of ditches or gullies and steep hillsides.
- Be extra careful when working on inclines.



- Maneuver the tractor or towing vehicle at safe speeds.
- Avoid loose fill, rocks and holes; they can be dangerous for equipment operation or movement.
- Allow for rake length when making turns.
- Operate the towing vehicle from the operator's seat only.
- Avoid overhead wire or other obstacles. Contact with overhead lines could cause serious injury or death.
- Never stand alongside a rake with engine running or attempt to start engine and/or operate machine while standing alongside unit.
- Never leave running equipment attachments unattended.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.



BEFORE OPERATION SAFETY



- Carefully review and understand this manual.
- Do not wear loose fitting clothing which may catch in moving parts and always wear protective clothing and substantial shoes.
- Keep wheel lug nuts or bolts tightened to correct torque.



- Inspect your rake for any loose bolts, worn parts, hydraulic leaks, frayed hoses, cracked welds, etc. Follow maintenance chart.
- Be sure all the hydraulic lines do not conflict with moving parts and lubricate all fittings/joints as needed or required.
- Insure that rake implement tires are inflated evenly.
- Be sure that there are no tools lying on or near the rake. Don't hurry the process or take the rake for granted, ease into it and become familiar.
- Do not use the rake until you are sure the area is clear, especially children and animals.
- Use a tractor equipped with a Roll Over Protective System (ROPS) and fasten your seat belt prior to starting.
- Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the rake.
- Securely attach to the towing vehicle with a high strength, appropriately sized hitch pin with a mechanical retainer and attach a **SAFETY CHAIN**.
- If rake is going to be transported on a public highway a safety chain is required. Always follow all local and state regulations regarding safety chain and auxiliary lighting when towing. Lights and signs should be clearly visible by oncoming traffic when the rake is towed.
- Install the **SAFETY CHAIN** by crossing the chains through the tongue and secure to the draw bar cage or hitch or bumper frame.
- Check tire pressure and set to 15 PSI.






DURING OPERATION SAFETY

-  • No passengers allowed at any time, do not carry passengers anywhere on, or in, the tractor or equipment. except as require for operation.
-  • Always look around to make sure that it is safe to start the engine of the towing vehicle. This is particularly important with higher noise levels and quiet cabs, as you may not hear people shouting.
-  • Keep hands and feet clear of moving parts and always keep all shields and guards in place and securely fastened.
-  • Do not clean, lubricate or adjust your rake while it is operating.
- Shift towing vehicle to a lower gear before going down steep downgrades, thus using the engine as a retarding force. Keep towing vehicle is gear at all times, and slow down for corners and rough terrain.
-  • When halting operating, even periodically, set the tractor or towing vehicle's brakes, shut off the engine and **REMOVE THE INGITION KEY.**
- Be especially observant of the operating area and terrain.
- Watch for holes, rocks, or other hidden hazards. Always inspect the area prior to operation.
- Do not operate near the edge of drop-offs or banks.
- Do not operate on steep slopes as overturn may result.
- Operate up and down (not across) intermediate slopes and avoid sudden starts and stops.
- Always drive at a reasonable speed to maintain control of the rake.
-  • Do not back up rake with rake wheels lowered to raking position. Damage will result.




 **CAUTION!** 

- Rake teeth can cause injury. Use special caution when lowering and raising as rake wheels will drop.

AFTER OPERATION SAFETY



- Periodically clear rake of hay or other materials to prevent build-up of dry flammable materials.
- Following operating, or when unhitching, stop the towing vehicle, set the brakes, shut off the engine and **REMOVE THE IGNITION KEYS.**  
- Store the rake in an area away from human activity.
- Do not park equipment where it will be exposed to livestock for long periods of time. Damage and livestock injury could result. Also, do not permit children to play on or around the stored rake.
- Make sure all parked machines are on a hard, level surface and engage all safety devices.
- Wheel chocks may be needed to prevent rake from rolling. 

MAINTENANCE SAFETY


- Good maintenance is your responsibility. A poorly maintained machine will result in breakdown and failure.
- Always use proper tools or equipment for the job. Never replace hex bolts with less than Grade 5 bolts, unless specified by Nikkel Iron Works.  
- Never use your hands to locate a hydraulic leak. Use a small piece of cardboard or wood.  
- Hydraulic fluid escaping under pressure can penetrate the skin.
- If the Darf rake is altered or modified from the original design, or if genuine replacement parts or teeth are not used and properly installed, **NIKKEl IRON WORKS, CORP.** does not assume any responsibility or liability for injury or warranty.



MAINTENANCE SAFETY

- Good maintenance is your responsibility. Proper servicing and adjustments are key to the long life of a Darf rake. With careful inspection and routine maintenance, costly downtime and repairs can be avoided.
- Some parts and assemblies can be quite heavy. Before attempting to detach any part or assembly, arrange to support it by means of a hoist, by blocking or by use of an adequate arrangement to keep it from falling, tipping, swinging, or moving in any manner which may hurt somebody or damage the equipment.
- Always use lifting equipment that is adequately rated to do the job.  

 **WARNING!** 

- Make sure there is plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
- Before working on the equipment, stop the towing vehicle, set the brakes, shut off the engine and **REMOVE THE INGITION KEYS.** 
- Be certain all moving parts on attachments have come to a complete stop before attempting to perform maintenance.



- **ALWAYS** use a safety support and block the wheels.
- Never use a jack to fully support the equipment.
- Use proper tools or equipment for the job at hand.



- Use extreme caution when making adjustments.
- After maintenance, be sure all tools, parts and service equipment are removed.



- Do not weld or cut on any tank containing oil, fuel, or their fumes, or other flammable material, or any container whose previous contents were unknown.

⚠ DANGER! ⚠

- Check hydraulic hoses and fittings frequently. Brush and other debris can damage hoses and fittings. Inspect and maintain equipment daily. Loose, broken, and missing hardware can cause equipment to not perform properly and can result in bodily injury or death.
- Hydraulic systems and oil can be hot and cause burns. Before working on any system, wait until the oil has cooled.

HYDRAULIC FLUID/EQUIPMENT SAFETY

⚠ DANGER! ⚠

- Only adequately trained and qualified persons should work on hydraulic systems. You may be severely injured or killed by being crushed under a falling piece of equipment. Always have transfer locks in place and frame sufficiently blocked when working on any equipment.

⚠ DANGER! ⚠

- Hydraulic fluid escaping under pressure can have sufficient force to cause injury. Keep all hoses and connections in good working condition, failure to do so may result in serious personal injury or death. Avoid the hazard by relieving the pressure before disconnecting lines or performing work on the hydraulic system.

⚠ WARNING! ⚠

- Wear protective gear such as gloves and safety glasses when working with hydraulic systems. **DO NOT DELAY**, if an accident occurs, see a doctor familiar with this type of injury immediately. Any fluid injected into the skin or eyes must be treated within a few hours or gangrene may result.



- Always secure equipment with solid supports before working on or under it. Never work under equipment supported by hydraulics, they can drop equipment if controls are actuated or hydraulic lines burst or pressure is lost while disconnecting lines. Either situation can drop machinery instantly even when power to hydraulics is off. Do not attempt to disconnect a hydraulic cylinder or hose while the system is under pressure.

LOCKOUT / TAGOUT

- **THINK, PLAN, AND CHECK.** **THINK** through the entire procedure and identify all the steps that are required. **PLAN** what personnel will be involved, what needs to be shut down, what guards need to be removed, and how (and under what conditions) the power will be restarted. **CHECK** the machine to verify all power sources and stored energy have been identified including engines, hydraulic and pneumatic systems, springs and accumulators, and suspended loads. Shutoff and lockout power before adjusting, servicing, maintaining, or clearing an obstruction from this rake. Failure to do so may result in serious injury or death. Communicate with everyone involved in a repair or maintenance operation, including bystanders, that work is being done which involves keeping this machine safety at a zero energy state.

• OSHA's requirements for lockout/tagout are covered in Section 1910.147 of the OSHA standards. The LOTO standard established the employer's responsibility to protect workers from hazardous energy. Employers are required to train each worker to ensure that they know, understand, and are able to follow the applicable provisions of the hazardous energy control procedures.

• Proper lockout/tagout (LOTO) practices and procedures safeguard workers from the release of hazardous energy. The OSHA standard for The Control of Hazardous Energy for the general industry outlines specific actions and procedures for addressing and controlling hazardous energy during servicing and maintenance of machines and equipment. Workers must be trained in the purpose and function of the energy control program and have the knowledge and skills required for the safe application, usage and removal of the energy control devices.

• All employees who work in the area where the energy control procedure(s) are utilized need to be instructed in the purpose and use of the energy control procedure(s) and about the prohibition against attempting to restart

or reenergize machines or equipment that is locked or tagged out.

- All employees who are authorized to lockout machine or equipment and perform the service and maintenance operations need to be trained in recognition of applicable hazardous energy sources in the workplace, the type and magnitude of energy found in the workplace, and the means and methods of isolating and/or controlling the energy.

- Specific procedures and limitations relating to tagout systems where they are allowed.

- Retraining of employees to maintain proficiency or introduce new or changed control methods.

- OSHA outlines a six-step procedure for controlling hazardous energy:

Step 1: Prepare for shutdown. It must be determined what type of power system is going to be deactivated including electrical, hydraulic, pneumatic or other energy sources. Knowledge of shutdown methods is necessary.

Step 2: Shutdown the equipment. This should be completed consistent with the manufacturer's instructions for the shutdown procedure and could be as simple as placing a switch in the "off" position or pressing a button.

Step 3: Isolate the equipment. This step involves closing of valves, throwing the main disconnects or circuit breakers and disconnecting or capping any auxiliary power sources or secondary electrical systems.

Step 4: Apply the lockout/tagout device. This is done to prevent restoration of the flow of energy and is done at all disconnect switches, valves, or other energy isolating devices. Locks are the preferred method of controlling energy and should be supplemented with tags. Various lockout devices are available including group lockout hasps. Locks should be individually assigned and have only one key.

Step 5: Control the stored energy. This step includes the release, disconnect or restraint of any residual hazardous energy which may be present and a check that all moving parts have stopped moving. It may also include the installation of "pancakes" or blanking of pipe flanges, the installation of ground wire to discharge electrical capacitors and the blocking or supporting of elevated equipment.

Step 6: Verify isolation of equipment. Double-check the steps and verify that the equipment indeed has been shut down and that the lock and tag do control the stored energy. Employees should be warned and the system tested, including pressing of all start buttons to assure that the equipment will not start.

1017L MODEL DIMENSIONS

Rake Weight: 5980 lbs
Tongue Weight: 750 lbs



Rake Length 25'



Rake Height 7' 10"

Transport Width 12' 4"



Windrow Width 5'
Raking Width 29' (Wide), 24' (Standard)

1017L MODEL SPECIFICATION CHART



This Owner's Manual contains **ALL 1017L Model** information including:

- Standard Overhead frame with standard hydraulics (1017LB)
- Standard Overhead frame with full hydraulics (1017LFMB)
- Wide Overhead frame with standard hydraulics (1017LWB)
- Wide Overhead frame with full hydraulics (1017LFMWB)

1017L MODEL SPECIFICATION CHART

	1017LAB	1017LFMAB	1017LWAB	1017LFMWAB
17-Wheel, Wide Raking Width 29'			◆	◆
17-Wheel, Standard Raking Width 24'	◆	◆		
Heavy Duty Overhead Frame			◆	◆
7-Function Electro/Hydraulic Manifold		◆		◆
5' Rephasing Cylinders	◆		◆	
Super Duty Walking Beam Axle w/2" Spindles	◆	◆	◆	◆
8" Wide Wheels	◆	◆	◆	◆
Heavy Duty Hub	◆	◆	◆	◆
Taper Bearings in Rake Wheel Cranks	◆	◆	◆	◆
Rubber Mounted Tines	◆	◆	◆	◆
DUR-ADJUST Spring and Rod	◆	◆	◆	◆
Standard 2 5/16" Adjustable Ball Hitch	◆	◆	◆	◆
Requires One Hydraulic Circuit & 12 Volt Access		◆		◆
Requires Two Hydraulic Circuits	◆		◆	

HYDRAULIC MANIFOLD AND CONTROL BOX LOCATIONS

7-Function Electro/Hydraulic Manifold located under galvanized metal cover on top overhead frame.



- Control Box Monitor should be located as such. Mount in secure location with easy access for operator.
- Attach **RED** wire to positive lead and attach **BLACK** wire to negative lead. Use only **12-VOLT DC NEGATIVE GROUND ONLY**.

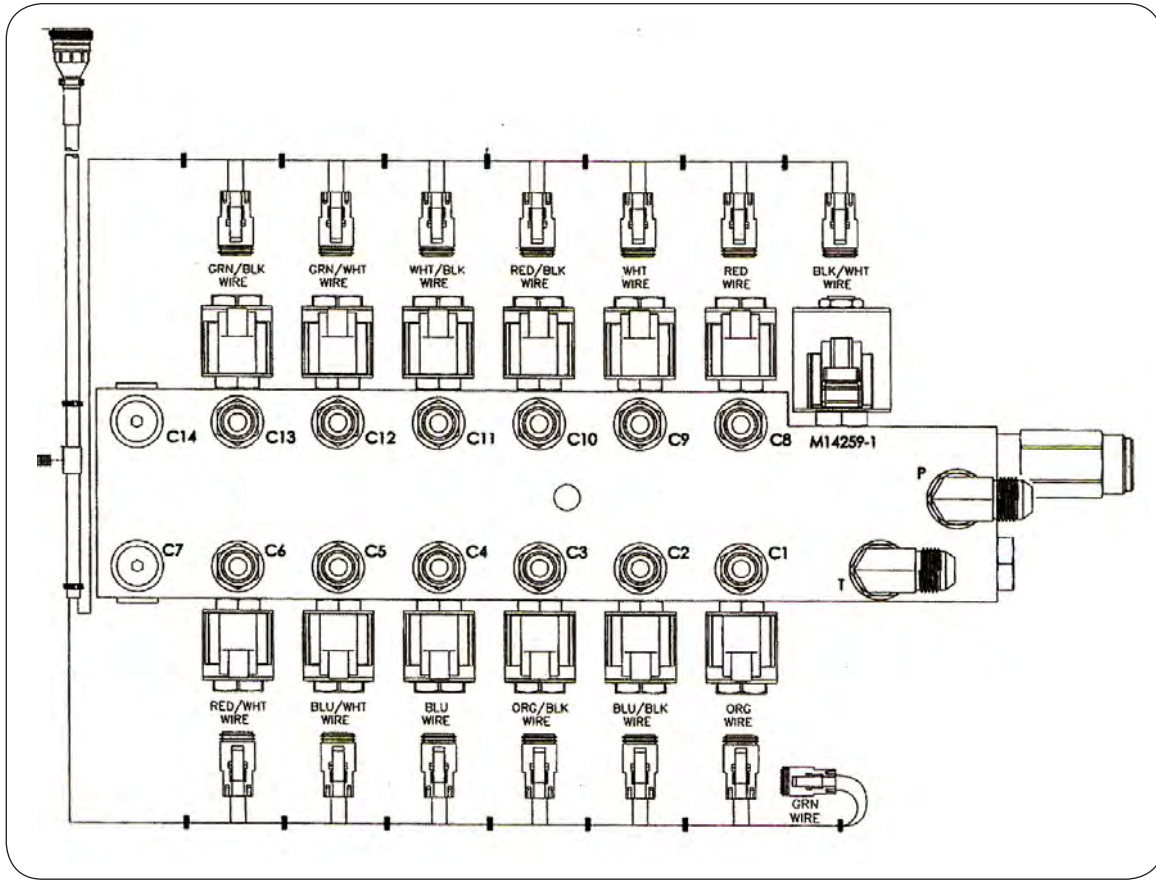
- The hydraulic manifold for the DARF 1017LFM Rake is assembled for **CLOSED CENTER HYDRAULICS**. For open center hydraulics the dump valve needs to be removed and switched to opposite cavity and wire attached, this will be explained later in this manual.
- If the hydraulics are erratic during start-up, **AIR** is likely the cause. Be sure to thoroughly purge the system completely.



- Connect Control Box cable connections from rake to towing vehicle. And route clear of moving parts.



7-FUNCTION MANIFOLD IDENTIFICATION

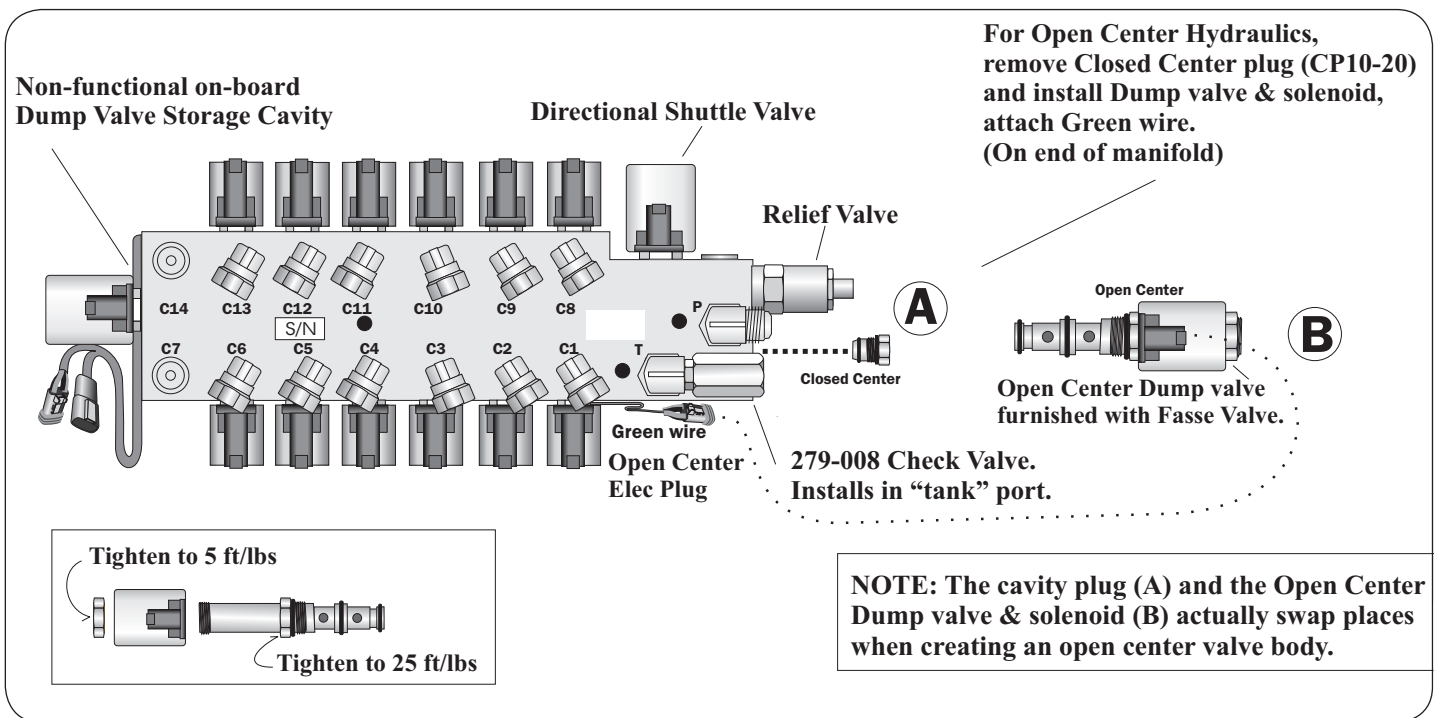


Valve Port	Cylinder	Function	Connection
C-1	Right Angle	Close	Rod End
C-8	Right Angle	Open	Piston
C-2	Right Overhead	Open	Piston
C-9	Right Overhead	Close	Rod End
C-3	Right Lift	Open	Piston
C-10	Right Lift	Close	Rod End
C-4	Left Angle	Close	Rod End
C-11	Left Angle	Open	Piston
C-5	Left Overhead	Open	Piston
C-12	Left Overhead	Close	Rod End
C-6	Left Lift	Open	Piston
C-13	Left Lift	Closed	Rod End
C-7	N/A	N/A	N/A
C-14	N/A	N/A	N/A

CLOSED CENTER VS OPEN CENTER

As mentioned before, the hydraulic manifold comes from the factory set up for **CLOSED CENTER** hydraulics. To switch from **CLOSED** to **OPEN** do as directed below:

- Remove cavity plug A and switch it with Open Center Dump Valve B.
- Install cavity plug A into where the Open Center Dump valve was removed.
- Attach green wire on dump valve to green plug on manifold wiring harness.



1017L RAKE START UP



THE CORRECT START UP IS THE RESPONSIBILITY OF THE DEALER AND/OR OWNER! PLEASE FOLLOW DIRECTIONS.



- Install correct tips on the hydraulic hoses routed down the tongue.

•NOTE•

- Locate hydraulic hose from the “P” port on the Fasse manifold and insert into one of the remote valve couplings. **DO NOT INSERT RETURN LINE AT THIS TIME.** Operate the control valve on

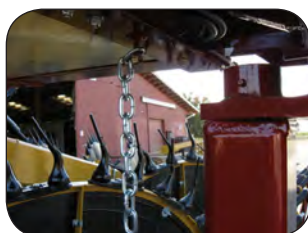


the tractor to determine which position it must be in to supply oil to the pressure hose. You may have a detent that allows the valve to remain in this position, or you may have to tie the valve handle back with a bracket, wire, or twine. Return the valve to neutral and install the **RETURN HOSE IN THE RETURN COUPLER.**

- Full Hydraulic Models 1017LFMB and 1017LFMWB are connected to tractor using 2 hoses.
- Partial Hydraulic Models 1017LB and 1017LWB are connected to tractor using 4 hoses requiring two double acting valves. One to open and close the main frame and one to raise and lower rake wheels.



- Remove (2) safety chains before starting engine located under main frame and on the side of the leg strut.



- Remove (2) cylinder stops, one on each side of leg strut.



- Remove (2) cylinder stops, one on rear of each raking frame.



RAKE OPERATION



- It is highly recommended that both **ANGLE SWING CYLINDERS** be removed from the rod end on raking frame, carefully release 1” pin and clip. Swing cylinders out of way to avoid contact with any object. Until the hydraulic system is completely purged of air there is a chance the raking frame could swing open without warning.
- Always open main frame while **MOVING!**
- For purging air on models 1017LB and 1017LWB (rephasing cylinders) operate control lever for opening main frame cylinders (note that one side will extend first until the cylinders are fully purged). Make sure tractor RPM is moderate (not to exceed 800 RPM) so the hydraulic pump is at near capacity. During initial start up the seals in the cylinders may need a few cycles to seat themselves for a good seal. **PATIENCE** is the key and air is the worst enemy. • **NEVER** loosen a fitting to bleed off the system, this is very dangerous.
- **WITH THE TRACTOR MOVING** operate the tractor valve control handle to supply oil to the pressure hose.
- Operate the “OPEN FRAME” toggle switch on control box for either left or right side. Open fully.
- Operate the remaining toggle switches; frame angle open and close, and raise/lower rake frame.



- Until the hydraulic system is fully purged, it is possible that any one or all of the six functions may cause the cylinders to extend or retract with the toggle switches in the neutral position.

- On occasion it is necessary to extend and retract the overhead frame 2-3 times in order for the hydraulic hoses to “set” and so they will fold as intended.
- Check the tractor hydraulic fluid after engine is off. About 4-5 gallons may be required to replenish the system.
- Adjust the raking width and raking winrow size by opening and closing the main frame and by swinging the raking frames to desired angles.



- Adjust springs on each raking wheel so the crop drives the wheel not the ground.
- Find desired level by placing hairpin clip in different locations. Fine tune adjustments are done by increasing or decreasing the 7/8 inch nylon nut on top the spring and rod assembly. A special tool for raising the rake wheel is provided and stored on leg strut.



NOTE:

- Always open and close main frame while rake is moving!
- For leveling of the rake front to rear adjust main link.



- For fine leveling of raking frames adjust turnbuckles.



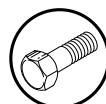
TRANSPORTING RAKE



- Operate the tractor valve (1017LB and 1017LWB) or toggle the control box to raise the raking wheels.
- Return the raking frames by adjusting the angle straight.
- To close the overhead main frame, operate the valve or toggle while moving. Pull forward slowly until the frame is fully closed.
- Be sure the Slow Moving Vehicle emblem is visible.
- Install cylinder safety blocks and frame safety chains.
- Check all lights and flashers and tire pressure.
- Drive cautiously, give oncoming and passing traffic ample room.
- The rake is now ready to be transported.

RAKING CHECKLIST

Level rake using hitch adjustments	•
Set tire pressure to 15 PSI.	•
Adjust raking wheel spring tension to assure clean raking without excessive ground contact.	•
Check hydraulic oil level.	•
Bleed all air in hoses.	•
Re-tighten all bolts after first day of operation.	•



STORING RAKE

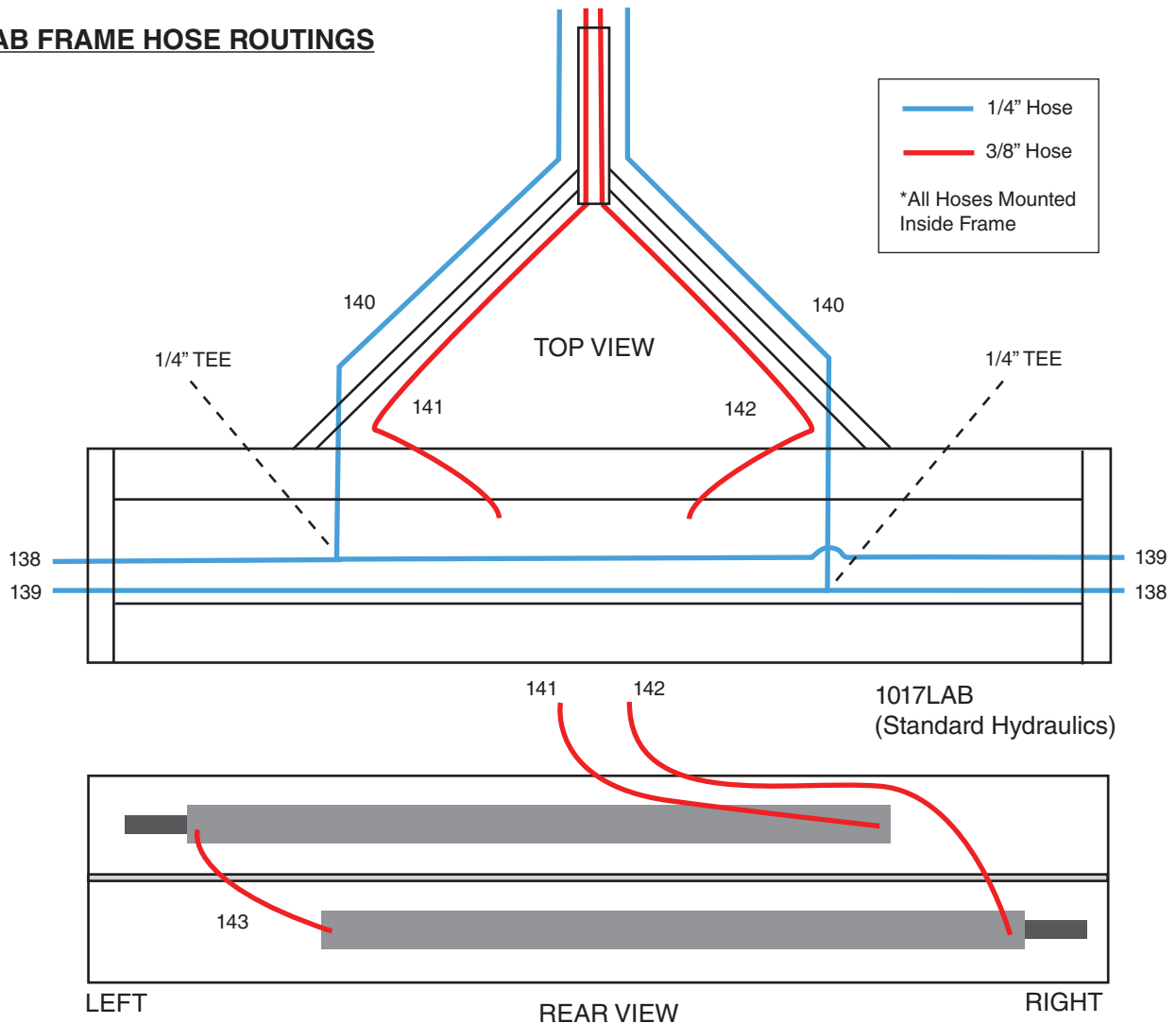
- Store Rake under preferred cover or inside building.
- Inspect Rake for wear.
- Safely block tires.



- Proper Storage of rake is owner's responsibility.

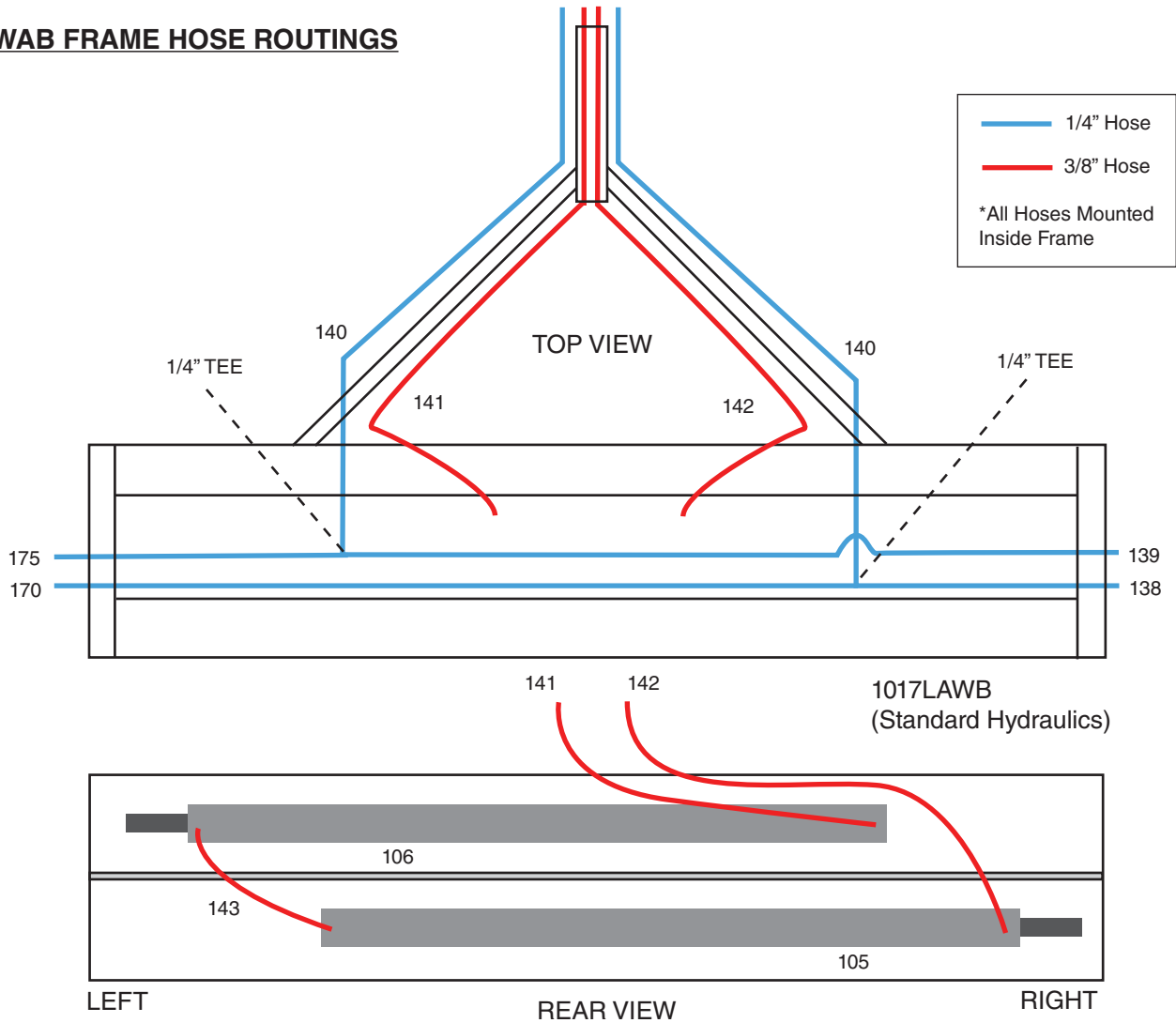


1017LAB FRAME HOSE ROUTINGS



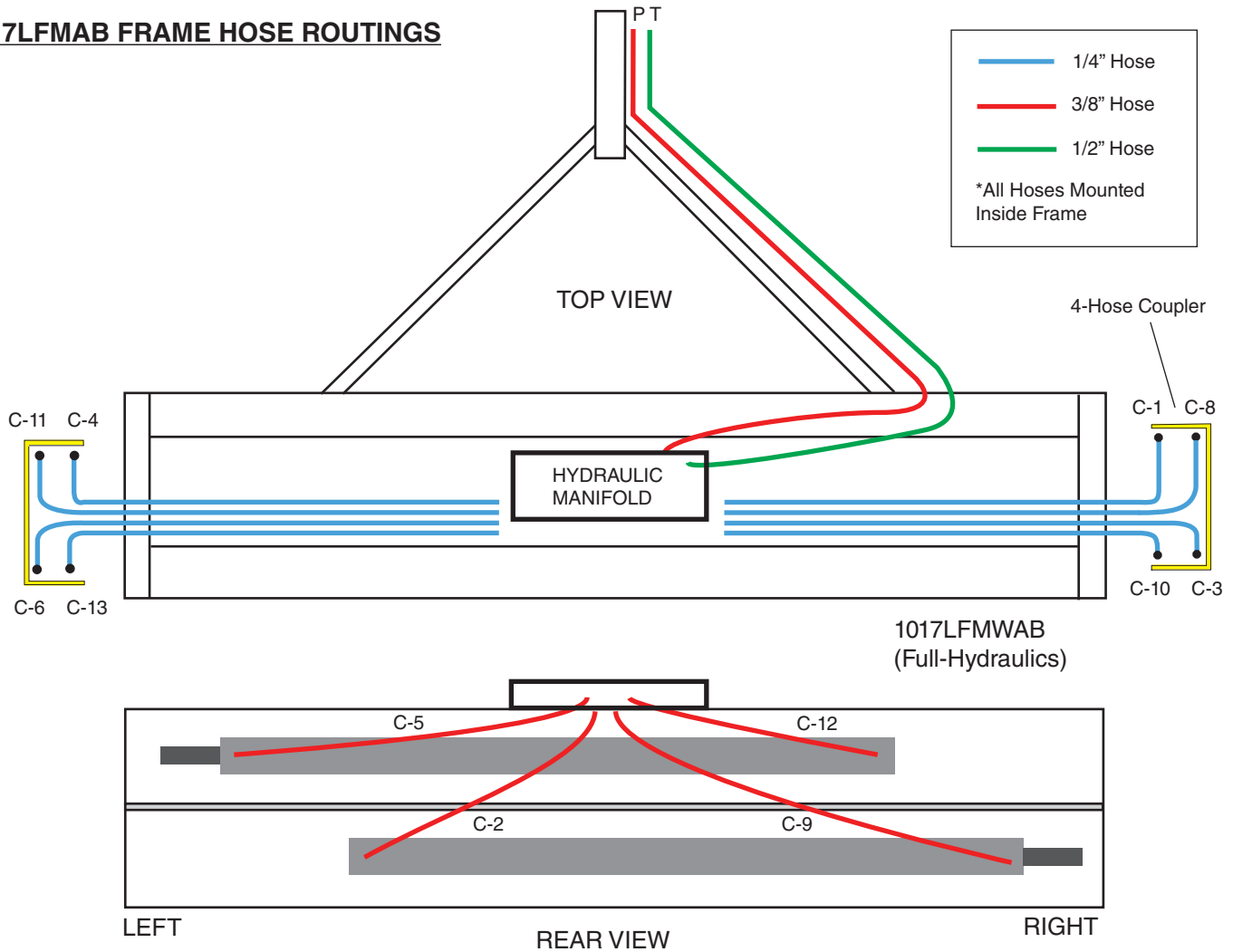
REF #	Part #	Description	Routing/Function
Page 19	04X2272X04J	1/4" x 142" Hose, 1/4" JIC Ends (Not Shown)	Right Inner Rear Coupler to Rod End Port Wheel Lift Cyl.
Page 19	04X2464X04J	1/4" x 124" Hose, 1/4" JIC Ends (Not Shown)	Right Outer Rear Coupler to Piston Port Wheel Lift Cyl.
Page 20	04X1792X04J	1/4" x 112" Hose, 1/4" JIC Ends (Not Shown)	Left Inner Rear Coupler to Rod End Port Wheel Lift Cyl.
Page 20	04X1984X04J	1/4" x 124" Hose, 1/4" JIC Ends (Not Shown)	Left Outer Rear Coupler to Piston Port Wheel Lift Cyl.
138	04X1568X04J	1/4" x 98" Hose, 1/4" JIC Ends	Right TEE to Right Rear Outer Coupler
138	04X1568X04J	1/4" x 98" Hose, 1/4" JIC Ends	Left TEE to Left Rear Outer Coupler
139	04X2176X04J	1/4" x 136" Hose, 1/4" JIC Ends	Right TEE to Right Rear Inner Coupler
139	04X2176X04J	1/4" x 136" Hose, 1/4" JIC Ends	Left TEE to Left Rear Inner Coupler
140	04X4352X04J	1/4" x 272" Hose, 1/4" JIC End and 1/2" NPT	From TEE to Tractor Valve (2)
141	06X4452X08J	3/8" x 297" Hose, 3/8" JIC End and 1/2" NPT	Pressure Hose to Tractor Valve
142	06X4608X08J	3/8" x 288" Hose, 3/8" JIC End and 1/2" NPT	Return Hose to Tractor Valve
143	06X544X06J	3/8" x 34" Hose, 3/8" JIC Ends	Piston Port Slave Cyl. to Rod End Port Master Cyl.

1017LWAB FRAME HOSE ROUTINGS



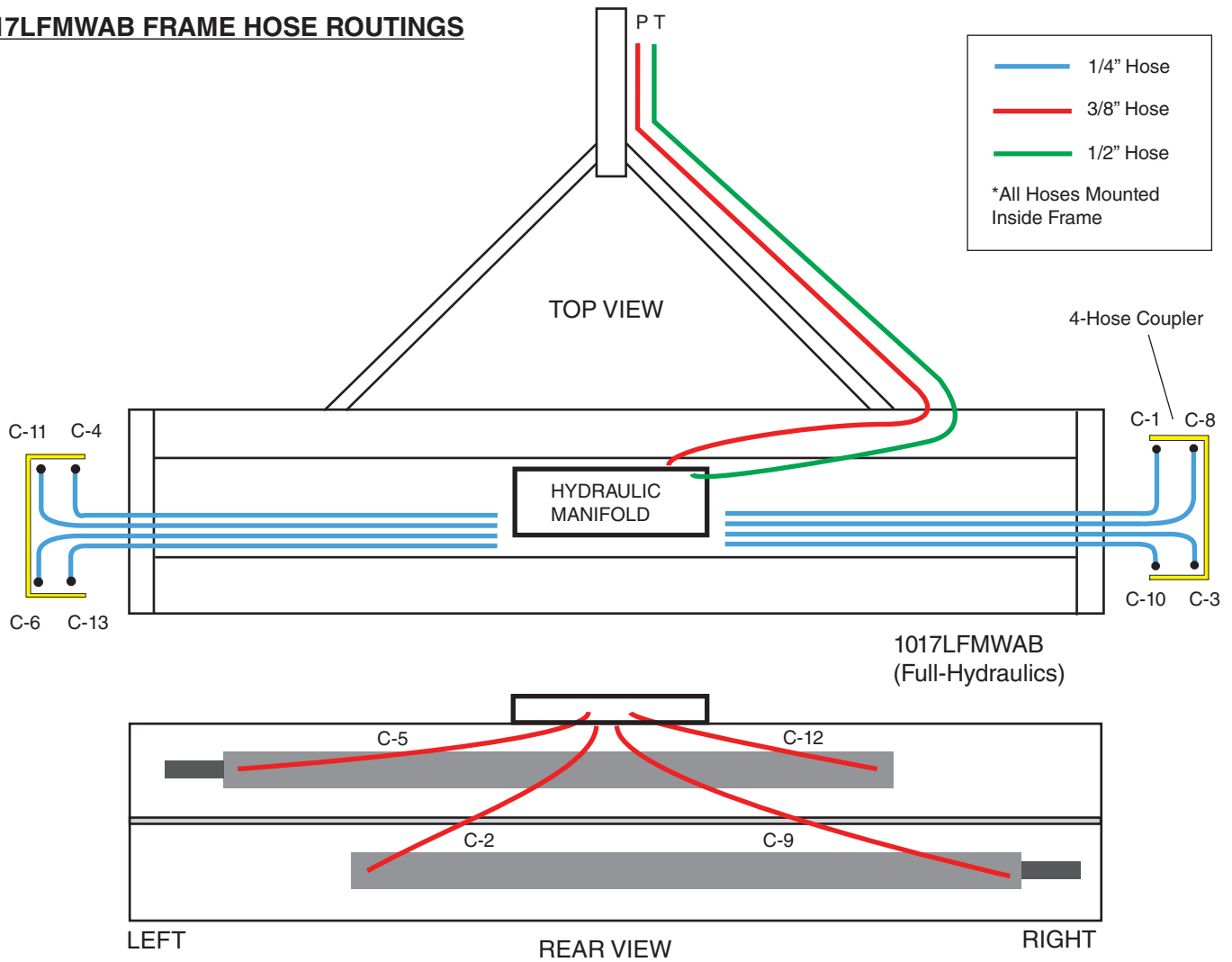
REF #	Part #	Description	Routing/Function
105	N325349	3-1/4" X 60" Slave Cylinder	Lower Cylinder, Right, 1 Valve Cap at Rod End
106	N353249	3-1/2" X 60" Master Cylinder	Upper Cylinder, Left, 2 Valve Caps, 1 at Each End
Page 19	04X2272X04J	1/4" x 132" Hose, 1/4" JIC Ends (Not Shown)	Coupler to Right Wheel Lift Cylinder, Rod End Port
Page 19	04X1792X04J	1/4" x 124" Hose, 1/4" JIC Ends (Not Shown)	Coupler to Right Wheel Lift Cylinder, Piston Port
Page 20	04X1792X04J	1/4" x 112" Hose, 1/4" JIC Ends (Not Shown)	Coupler to Left Wheel Lift Cylinder, Rod End Port
Page 20	04X1984X04J	1/4" x 124" Hose, 1/4" JIC Ends (Not Shown)	Coupler to Left Wheel Lift Cylinder, Piston Port
138	04X1744X04J	1/4" x 109" Hose, 1/4" JIC Ends	1/4" TEE to Coupler, Wheel Lift, Right Side (inside frame)
139	04X2352X04J	1/4" x 147" Hose, 1/4" JIC Ends	1/4" TEE to Coupler, Wheel Lift, Right Side (inside frame)
140	04X4352X04J	1/4" x 272" Hose, 1/4" JIC End and 1/2" NPT (2)	From TEE to Tractor Valve (2)
141	06X4452X08J	3/8" x 297" Hose, 3/8" JIC End and 1/2" NPT	Piston Port on Master Cylinder to Tractor
142	06X4608X08J	3/8" x 288" Hose, 3/8" JIC End and 1/2" NPT	Rod End of Slave Cylinder to Tractor
143	06X384X06J	3/8" x 24" Hose, 3/8" JIC Ends	Rod End of Master Cylinder to Piston Port of Slave Cyl.
170	04X1744X04J	1/4" x 109" Hose, 1/4" JIC Ends	1/4" TEE to Coupler, Wheel Lift, Left Side (inside frame)
175	04X2352X04J	1/4" x 147" Hose, 1/4" JIC Ends	1/4" TEE to Coupler, Wheel Lift, Left Side (inside frame)

1017LFMAB FRAME HOSE ROUTINGS



REF #	Part #	Description	Routing/Function
C-1	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder rod end port, right side
C-2	06X544X06	3/8" x 34" Hose, 3/8" JIC Ends	Overhead main frame right cylinder (lower) piston port
C-3	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder piston port, right side
C-4	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder rod end port, left side
C-5	06X544X06	3/8" x 34" Hose, 3/8" JIC Ends	Overhead main frame left cylinder (upper) piston port
C-6	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder piston port, left side
C-8	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder piston port, right side
C-9	06X800X06	3/8" x 50" Hose, 3/8" JIC Ends	Overhead main frame right cylinder (lower) rod end port
C-10	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder rod end port, right side
C-11	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder piston port, left side
C-12	06X720X06	3/8" x 45" Hose, 3/8" JIC Ends	Overhead main frame left cylinder (upper) rod end port
C-13	04X2448X04	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder rod end port, left side
P	06X4608X08	3/8" x 24' Hose, 3/8"-1/2" (JIC) Ends and 3/8"-1/2" (not JIC) Ends (For Tip)	Pressure hose feeding Fasse Manifold
T	08X4608X08	1/2" x 24' Hose, 1/2"-1/2" (JIC) Ends and 1/2"-1/2" (not JIC) Ends (For Tip)	Return Hose to hydraulic tank

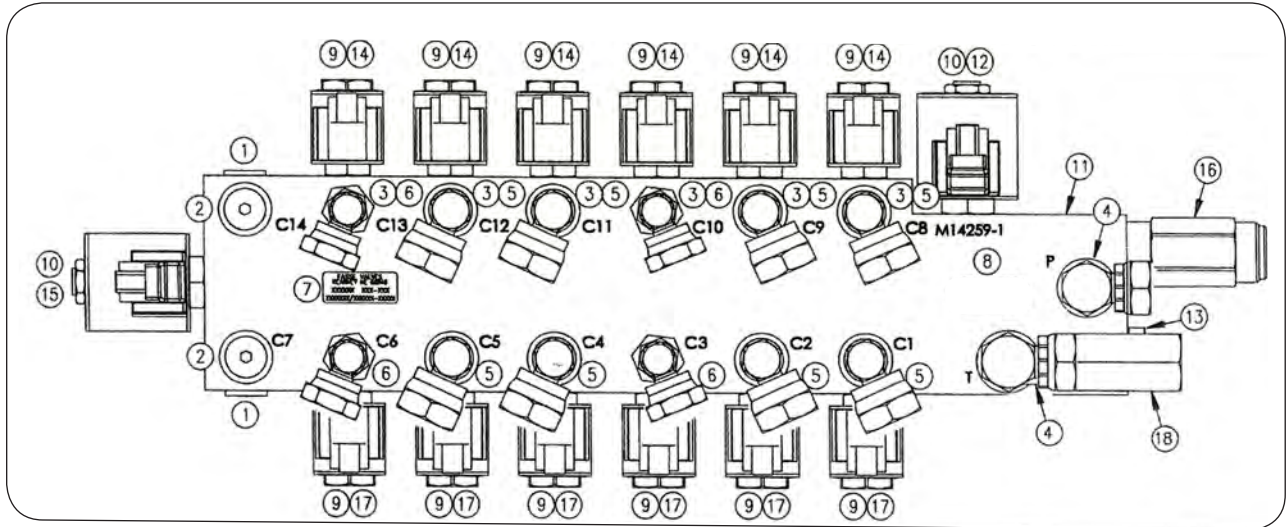
1017LFMWAB FRAME HOSE ROUTINGS



REF #	Part #	Description	Routing/Function
C-1	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder rod end port, right side
C-2	06X544X06J	3/8" x 34" Hose, 3/8" JIC Ends	Overhead main frame right cylinder (lower) piston port
C-3	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder piston port, right side
C-4	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder rod end port, left side
C-5	06X544X06J	3/8" x 34" Hose, 3/8" JIC Ends	Overhead main frame left cylinder (upper) piston port
C-6	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder piston port, left side
C-8	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder piston port, right side
C-9	06X800X06J	3/8" x 50" Hose, 3/8" JIC Ends	Overhead main frame right cylinder (lower) rod end port
C-10	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder rod end port, right side
C-11	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake frame angle cylinder piston port, left side
C-12	06X720X06J	3/8" x 45" Hose, 3/8" JIC Ends	Overhead main frame left cylinder (upper) rod end port
C-13	04X2448X04J	1/4" x 153" Hose, 1/4" JIC Ends	Rake wheel lift cylinder rod end port, left side
P	06X4608X08	3/8" x 24' Hose, 3/8"-1/2" (JIC) Ends and 3/8"-1/2" (not JIC) Ends (For Tip)	Pressure hose feeding Fasse Manifold
T	08X4608X08	1/2" x 24' Hose, 1/2"-1/2" (JIC) Ends and 1/2"-1/2" (not JIC) Ends (For Tip)	Return Hose to hydraulic tank

HYDRAULIC MANIFOLD PARTS

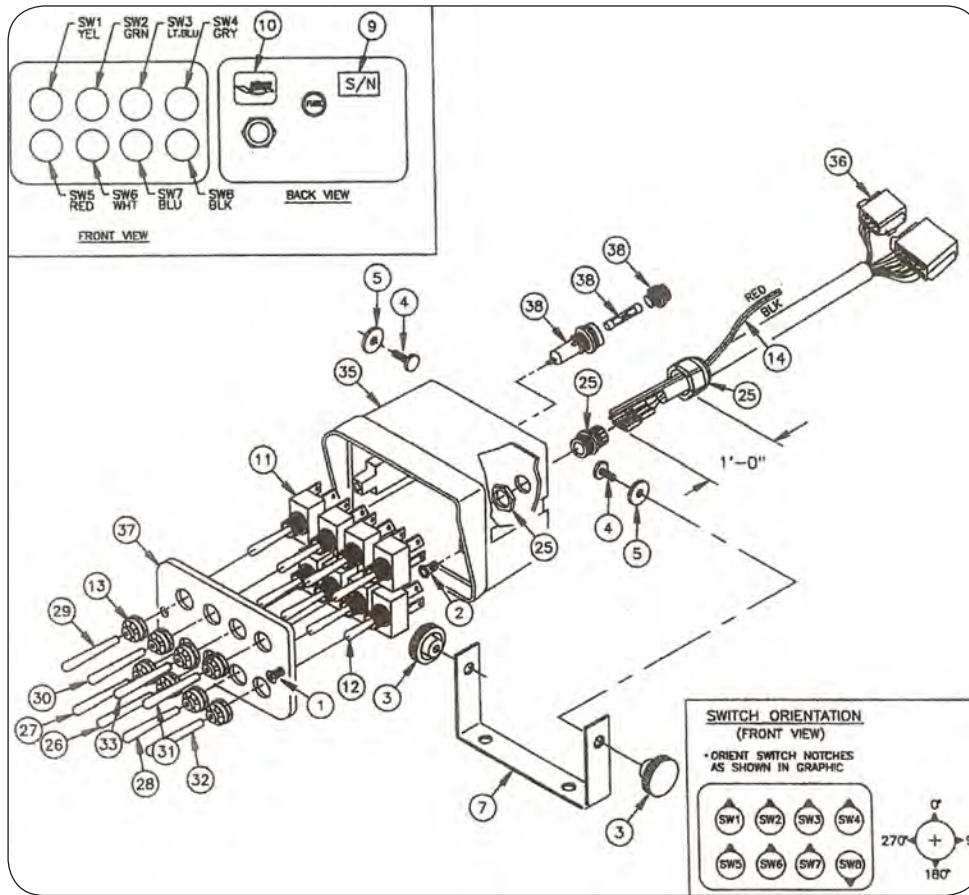
(FM Model)



REF #	Part #	Description	Qty.
1	210-038	FTG 6408-HHP-8/HOLL Hex Plug MO	2
2	210-127	FTG 6408-HHP-6/HOLL Hex Plug MO	2
3	210-151	FTG 6410-6-6/S-MO-FO	6
4	210-166	FTG 6901-8-6/E-MO-FPSW	2
5	210-189	FTG 6901-6-4/E-MO-FPSW	8
6	210-229	FTG 6901-6-6/E-MO-FPSW	4
7	232-050	S/N Decal (Silver)	2
8	232-058	Decal (Black/Gold)	1
9	253-590	Coil M/F 4304012 E-8 12V Diode	12
10	253-593	Coil M/F 4304112E-10 12V Diode	2
11	270-011	MANI S14259-1 7 CIR AL	1
12	273-008	CART H/F SV10-40-0-N-00 SPL 4W 2P	1
13	273-012	CART H/F CP10-20-N Plug 2W	1
14	273-016	CART SV06-24-0-N-00	6
15	273-017	CART SV10-21-0-N-00	1
16	273-078	CART H/F RV10-22H-0-N-35 REL DIFF AREA POP 3000PSI	1
17	273-500	CART H/F SV08-28-0-N-00 2P POP NC BI-DIR	6
18	279-008	Check Valve 10301-503	1

HYDRAULIC CONTROL BOX PARTS

(Part # 312-081)

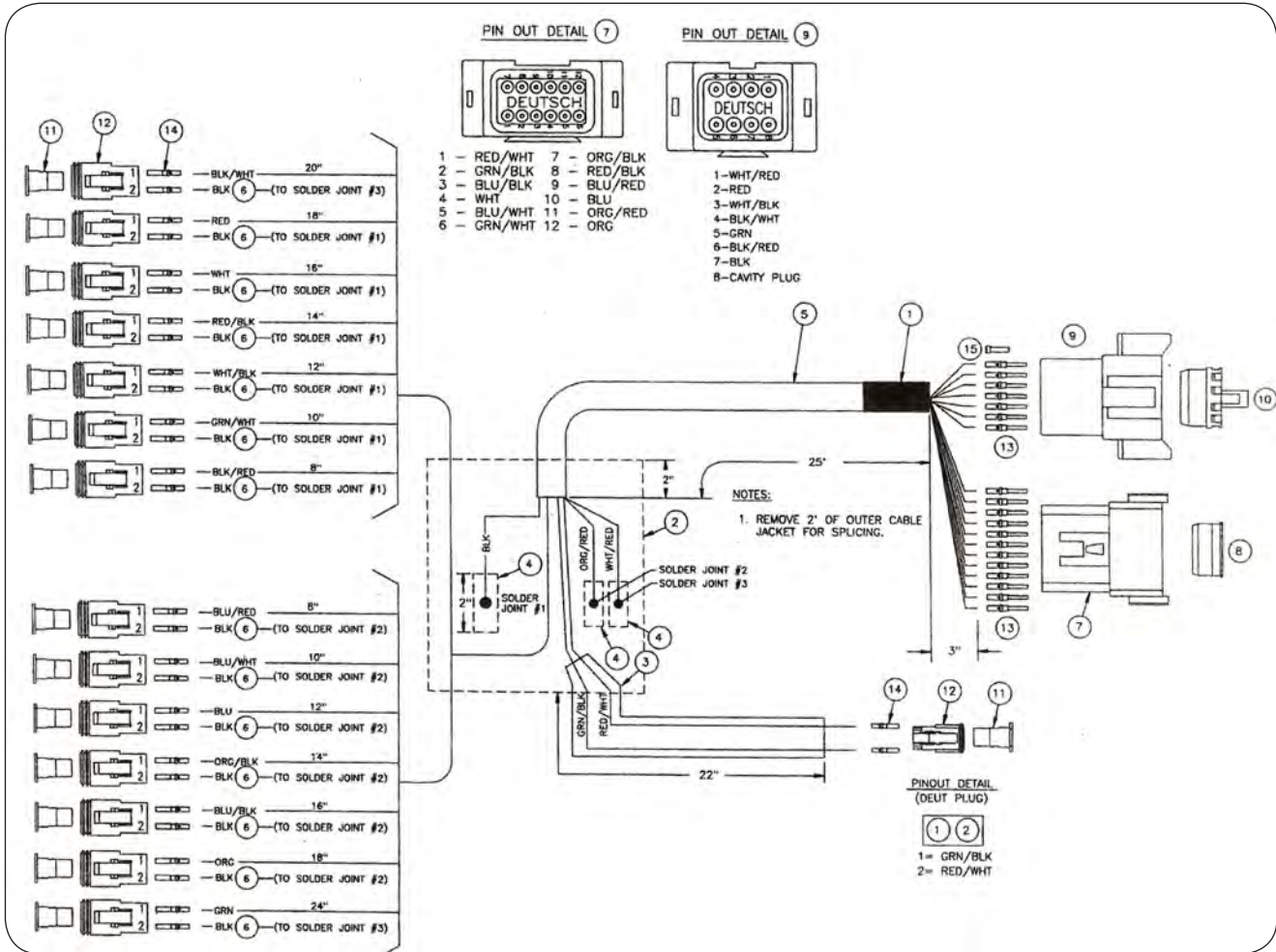


REF #	Part #	Description	Qty.
1	212-184	Screw 6-32x3/8" Oval Head BK	2
2	212-202	Brass Insert 6-32x3/8"	2
3	212-215	Knob 1/4-20 Female	2
4	212-231	Welded Screw 1/4-20x.500	2
5	213-335	Nylon Washer	2
6	214-004	Cable Tie Black 7"	14
7	219-300	BRKT HSNG Monitor	1
8	230-057	Poly Bag, 2mil	1
9	232-050	Decal S/N (Silver)	2
10	232-056	Decal (Black/Gold)	1
11	250-013	SW TOG OPDT 3P MOM Long	7
12	250-020	SW TOG SPST 2P STAT Short	1
13	250-023	SW TOG BOOT OPN GRY	8
14	252-021	Wire, Red/Black 16G ZIP	7'
15	252-058	Wire 18GA Black	1'
16	252-059	Wire 18GA Red	1'
17	252-060	Wire 18GA Green	1'
18	254-001	Diode D116A2 6AMP	1
19	255-002	TRM PO T-TAP F 18-14GA	31

REF #	Part #	Description	Qty.
20	255-006	TRM PO F NON INS 20/18GA	8
21	255-030	TRM Splice Closed End	2
22	255-070	TRM PO M/F	4
23	255-119	TRM PO F INS 16-14GA	5
24	255-265	TRM Splice Closed End Lrg 14-16GA	1
25	255-710	Strain RLF HEYCO .45"-.705"ID	1
26	259-004	SW TOG GRIP VNYL WHT .187	1
27	259-005	SW TOG GRIP VNYL RED .187	1
28	259-015	SW TOG GRIP VNYL BLU .187	1
29	259-022	GRIP TOG VNYL YEL .187"	1
30	259-023	SW TOG GRIP VNYL GRN .187	1
31	259-027	SW TOG GRIP VNYL GRY .187	1
32	259-031	GRIP TOG VNYL BLK .187"	1
33	259-044	GRIP TOG VNYL LT BLU .187"	1
34	300-327	Diode Assy 6A05/1/INTERNAL	2
35	304-400	ENCL DRL MNTR W/Fuseholder	1
36	312-082	HRN 19CON 18GA DTP 12P	1
37	312-083	ENCL FP Drill MNTR Nikkel Iron	1
38	319-769	Fuseholder PM ASSY 10A	1

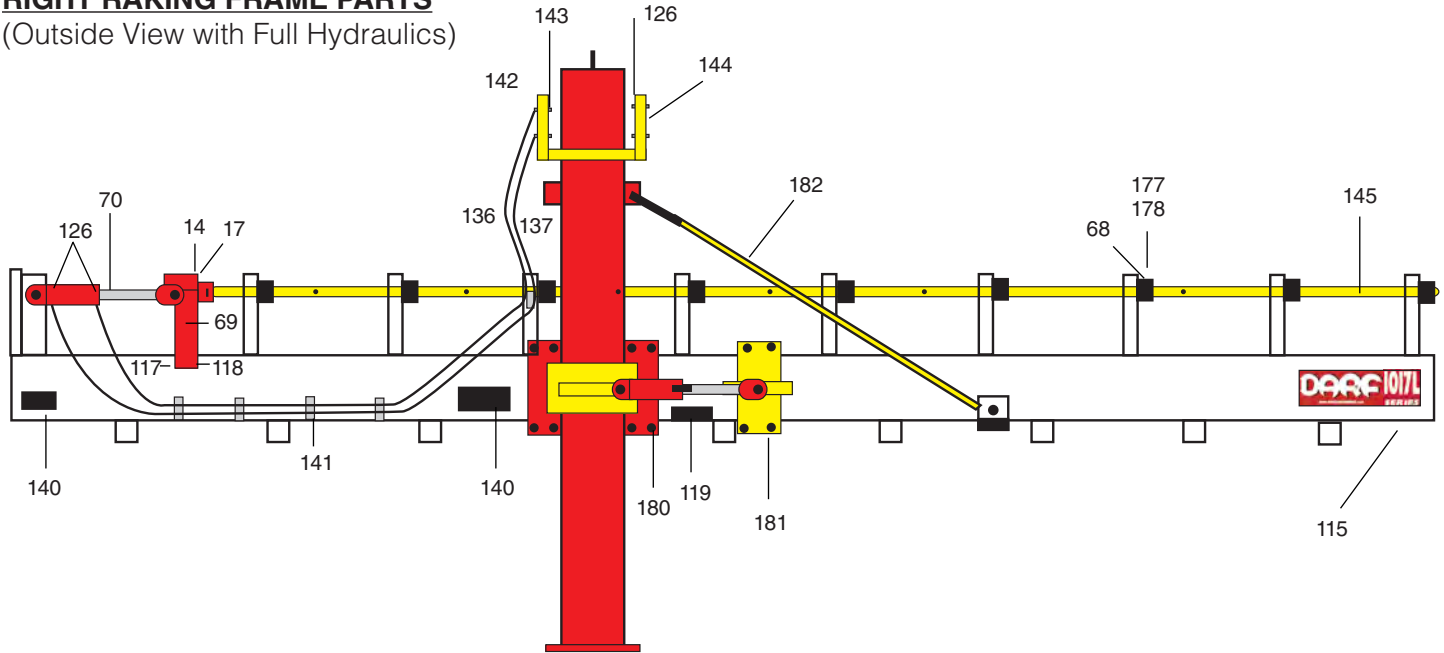
WIRING HARNESS PARTS

(Part # 312-076)



REF #	Part #	Description	Qty.
1	231-007	Shrinktubing .625	2"
2	231-008	Shrinktubing .750	4"
3	231-187	Shrinktubing .187 BLK	23"
4	231-313	Shrinktubing .313	6"
5	252-004	Cable 19CON 19GA PVC GRY	27'
6	252-058	Wire 18GA BLK	17"
7	252-212	CONN DEUT DT RCPT 12PIN	1
8	255-214	CONN DEUT LOCKWEDGE 12PIN DTR GRN	1
9	255-218	CNTR DEUTSCH 8PIN RECPT DT	1
10	255-220	CNTR DEUTSCH LOCKWEDGE 8PIN DTR	1
11	255-505	CNTR DEUTSCH LOCKWEDGE 2PIN DTP	15
12	255-801	CNTR DEUTSCH 2PIN Plug DT	15
13	255-977	TRM PIN DEUTSCH Socket 16/18GA	19
14	255-978	CNTR DEUTSCH Socket 16/18GA	30
15	255-979	CONT DEUT Cavity Plug	1

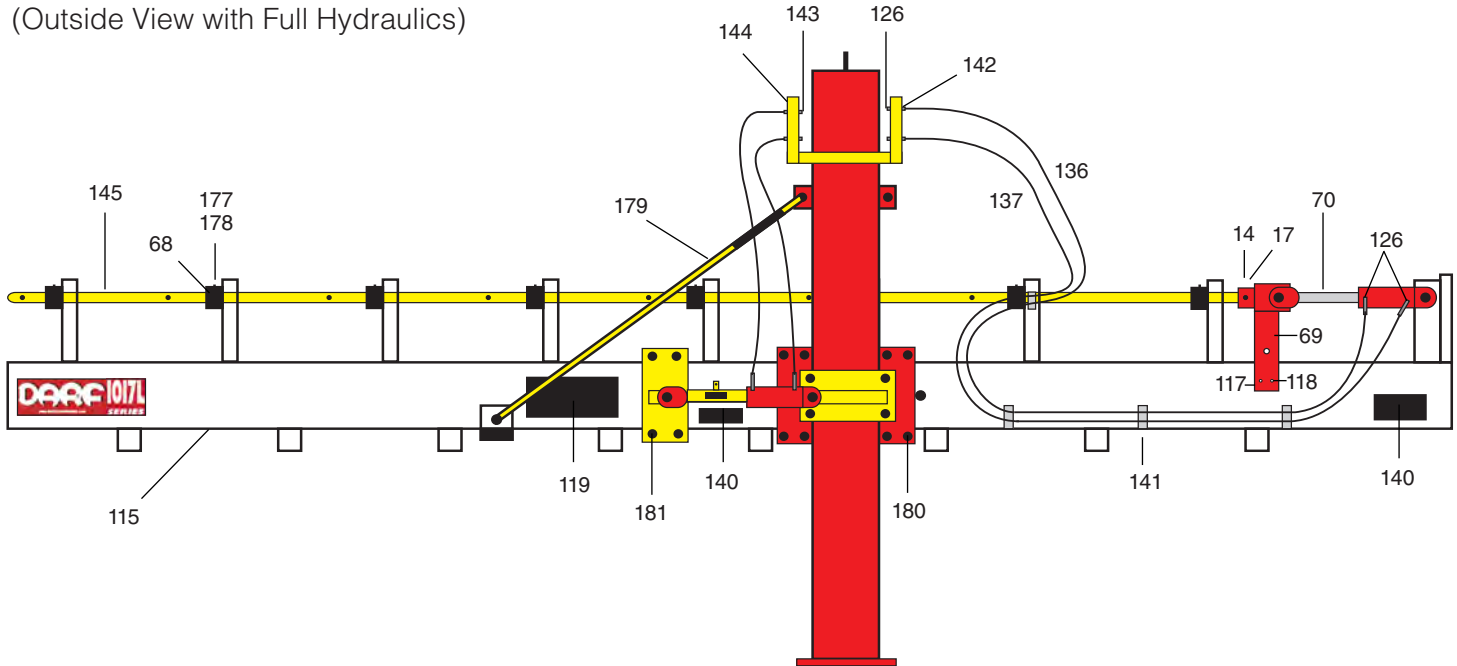
RIGHT RAKING FRAME PARTS
(Outside View with Full Hydraulics)



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	AR	•	•	•	•
17	CSNC06X32	3/8" x 2" NC Cap Screw, Grade 5	AR	•	•	•	•
68	9047	UHMW Bushing	AR	•	•	•	•
69	92193A	Lift Tube Hyd. Clevis w/#117, #118	2	•	•	•	•
70	N201028	2" x 8" ASAE Hyd. Cylinder w/Pins (Use SKAR12104A, unv. 2" repair kit)	2	•	•	•	•
115	101793	Right Rake Frame Weldment	1	•	•	•	•
117	92196-02	Drilled UHMW Pad for 92193	4	•	•	•	•
118	92196-03	Nylon Rivet	8	•	•	•	•
119	NIWDEC4X10	Decal - Operating Instructions	2	•	•	•	•
126	HMBFP9064J	O-ring to Pipe 90 Degree Adapter	8	•	•	•	•
136	04X1792X04J	1/4" X 11' 10" Hose, 1/4 JIC ends	1	•	•	•	•
137	04X1984X04J	1/4" X 12' 10" Hose, 1/4" JIC ends	1	•	•	•	•
140	DECALFLUID	High Pressure Decal	1	•	•	•	•
141	HCTT-08-BL	1/4" Hose Clamps	5	•	•	•	•
142	HMPFP4544J	1/4" 45 Degree Adapter	4	•	•	•	•
143		1/4" Straight Adapter	4	•	•	•	•
144	9018B	4-Hose Coupler	2	•	•	•	•
145	91791	Right Side Lift Tube, 10 Holes	1	•	•	•	•
177	INTLW10	Internal Lock Washer	AR	•	•	•	•
178	SMPAN12X06	#12 x 3/8" Philips Pan Screw	AR	•	•	•	•
179	9099	Heavy Adj. Rake Frame Brace	2	•	•	•	•
180	9028-8	U-Bolt Leg Strut to Frame	4	•	•	•	•
181	9027	U-Bolt to Frame Bracket	4	•	•	•	•
182	9099	Heavy Adj. Rake Frame Brace	2	•	•	•	•
	9629	Plastic Wire Ties, 7-1/2" (On Hose)	9	•	•	•	•

LEFT RAKING FRAME PARTS

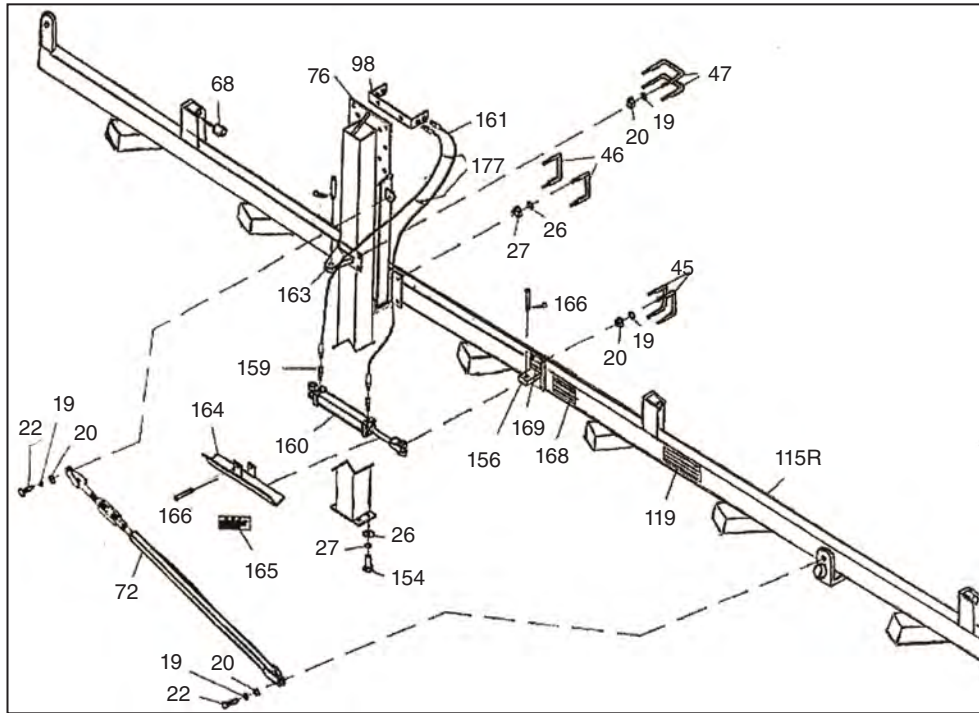
(Outside View with Full Hydraulics)



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	AR	•	•	•	•
17	CSNC06X32	3/8" x 2" NC Cap Screw, Grade 5	AR	•	•	•	•
68	9047	UHMW Bushing	AR	•	•	•	•
69	92193A	Lift Tube Hyd. Clevis w/#117, #118	2	•	•	•	•
70	N201028	2" x 8" ASAE Hyd. Cylinder w/Pins (Use SKAR12104A, unv. 2" repair kit)	2	•	•	•	•
115	101792	Left Rake Frame Weldment	1	•	•	•	•
117	92196-02	Drilled UHMW Pad for 92193	4	•	•	•	•
118	92196-03	Nylon Rivet	8	•	•	•	•
119	NIWDEC4X10	Decal - Operating Instructions	2	•	•	•	•
126	HMBFP9064J	O-ring to Pipe 90 Degree Adapter	8	•	•	•	•
136	04X1792X04J	1/4" X 11' 10" Hose, 1/4 JIC ends	1	•	•	•	•
137	04X1984X04J	1/4" X 12' 10" Hose, 1/4" JIC ends	1	•	•	•	•
140	DECALFLUID	High Pressure Decal	1	•	•	•	•
141	HCTT-08-BL	1/4" Hose Clamps	4	•	•	•	•
142	HMPFP4544J	1/4" 45 Degree Adapter	4	•	•	•	•
143		1/4" Straight Adapter	4	•	•	•	•
144	9018B	4-Hose Coupler	2	•	•	•	•
145	91790	Left Side Lift Tube, 9 Holes	1	•	•	•	•
177	INTLW10	Internal Lock Washer	AR	•	•	•	•
178	SMPAN12X06	#12 x 3/8" Philips Pan Screw	AR	•	•	•	•
179	9099	Heavy Adj. Rake Frame Brace	2	•	•	•	•
180	9028-8	U-Bolt Leg Strut to Frame	4	•	•	•	•
181	9027	U-Bolt to Frame Bracket	4	•	•	•	•
182	9099	Heavy Adj. Rake Frame Brace	2	•	•	•	•
	9629	Plastic Wire Ties, 7-1/2" (On Hose)	9	•	•	•	•

RAKING FRAME / RELATED HARDWARE

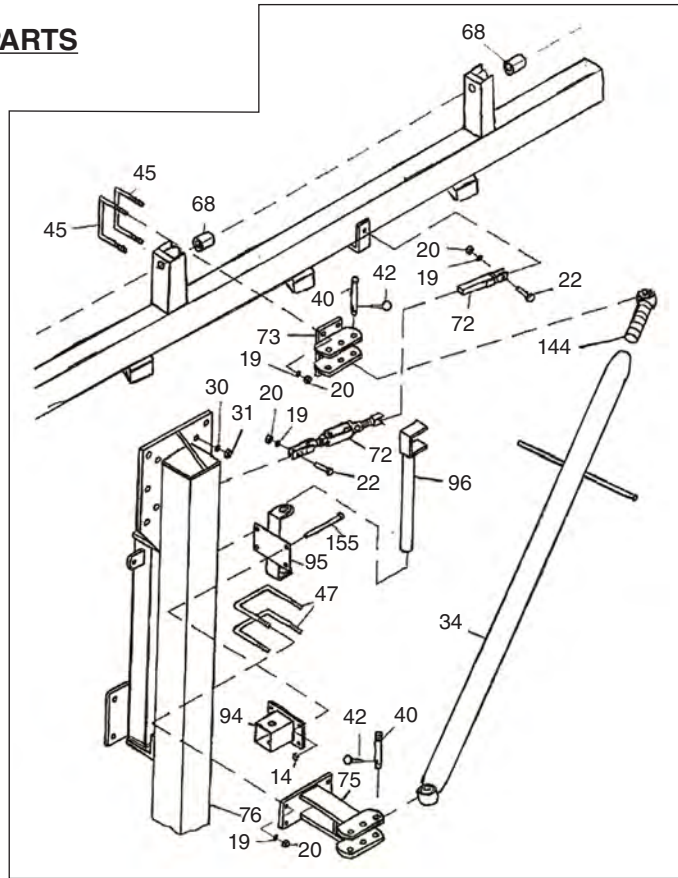
(FM Models)



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
19	LW08SP	1/2" Split Lock Washer	AR	•	•	•	•
20	NUT08NC	1/2" NC Hex Nut	AR	•	•	•	•
22	CSNC08X32	1/2" x 2" NC Cap Screw, Grade 5	AR	•	•	•	•
26	LW10SP	5/8" Split Lock Washer	AR	•	•	•	•
27	NUT10NC	5/8" NC Hex Nut	AR	•	•	•	•
45	9027	U-Bolt, to Frame Bracket	4	•	•	•	•
46	9028	U-Bolt, Leg Strut to Frame	4	•	•	•	•
47	9029	U-Bolt, Leg Strut / Angle Bracket	4	•	•	•	•
68	9047	UHMW Bushing	AR	•	•	•	•
72	9099	Heavy Adj. Rake Frame Brace	2	•	•	•	•
76	92581L	Leg Strut, Left or Right	2	•	•	•	•
98	9018B	4-Hose Coupler	2	•	•	•	•
115R	101793	Right Rake Frame Weldment	1	•	•	•	•
115	101792	Left Rake Frame Weldment (not shown)	1	•	•	•	•
119	NIWDEC4X10	Decal - Operating Instructions	2	•	•	•	•
154	CSNC10X32	5/8" x 2" NC Cap Screw, Grade 5	8	•	•	•	•
156	922990	Hydraulic Cylinder Bracket, Frame End	2	•	•	•	•
159	HMBFPX84J	O-Ring Hydraulic Adapter	4	•	•	•	•
160	N301060	3" x 8" ASAE Hydraulic Cylinder	2	•	•	•	•
161	04X800X04J	1/4" x 4' 2" Hose, 1/4 JIC Ends	4	•	•	•	•
163	9173	Leg Strut / Hydraulic Cylinder Bracket	2	•	•	•	•
164	9189	Hydraulic Cylinder Stop w/pin	2	•	•	•	•
165	DECALTRANS	Decal For Transport Lock	2	•	•	•	•
166	P7966	PTO Lock Pin, 3/8" x 3"	18	•	•	•	•
168	DECALFLUID	High Pressure Decal	2	•	•	•	•
177	9631	Plastic Wire Ties	AR	•	•	•	•

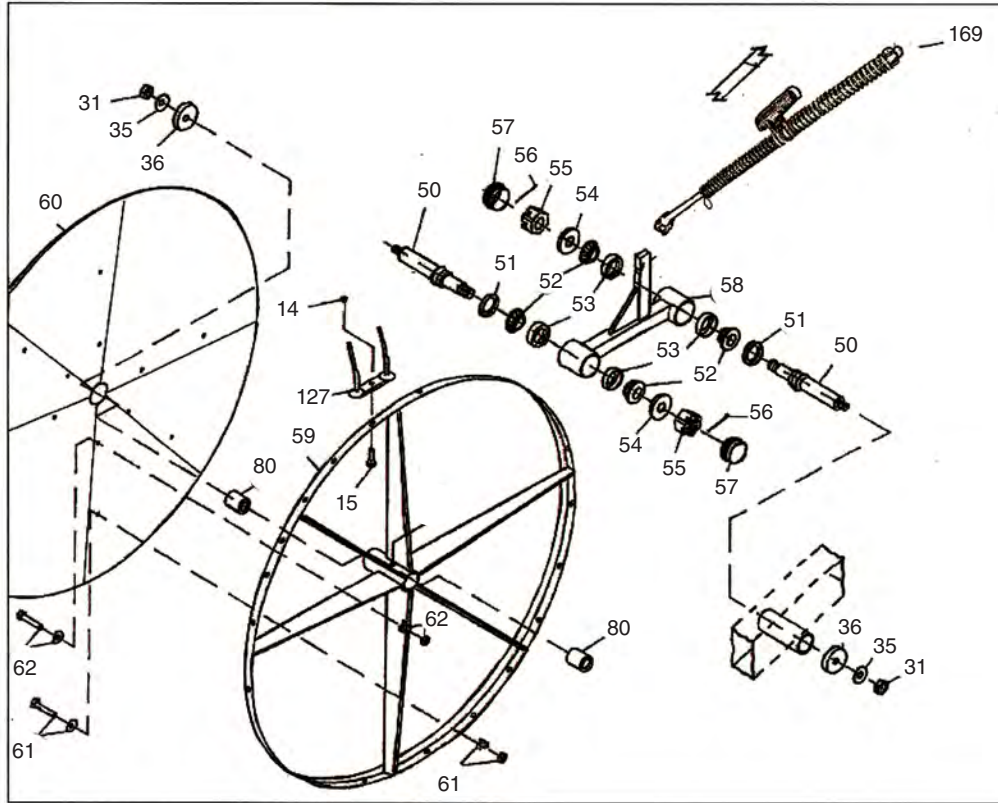
RAKING FRAME / RELATED PARTS

(Standard Hydraulic Models)



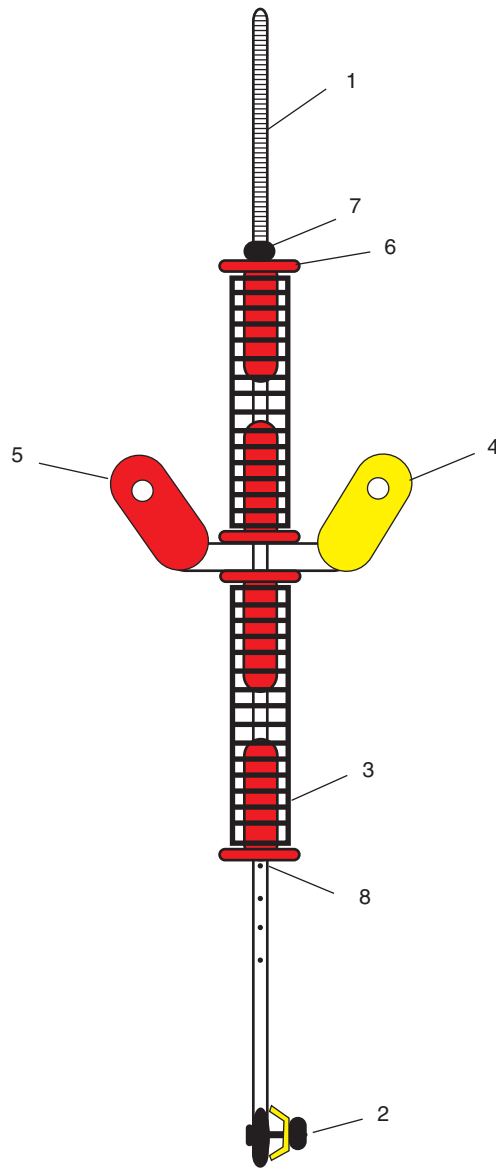
REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	AR	•	•	•	•
19	LW08SP	1/2" Split Lock Washer	AR	•	•	•	•
20	NUT08NC	1/2" NC Hex Nut	AR	•	•	•	•
22	CSNC08X32	1/2" x 2" NC Cap Screw, Grade 5	AR	•	•	•	•
30	LW12SP	3/4" Split Lock Washer	AR	•	•	•	•
31	NUT12NC	3/4" NC Hex Nut	AR	•	•	•	•
34	9172	Manual Adjust Tube	1	•	•		
40	P772	Top Link Pin, 3-5/8"	4	•	•		•
42	P791	Lynch Pin, 7/16"	6	•	•		•
45	9027	U-Bolt, to Frame Bracket	4	•	•	•	•
47	9029	U-Bolt, Leg Strut / Angle Bracket	4	•	•	•	•
68	9047	UHMW Bushing	AR	•	•	•	•
72	9099	Heavy Adjust Rake Frame Brace	2	•	•	•	•
73	922994	3-Hole Adjust Bracket	2	•			
73	92206	5-Hole Adjust Bracket	2		•		
75	922996	Leg Strut, Adjust Bracket	2	•	•		•
76	92581L	Leg Strut, Left or Right	2	•	•	•	•
94	9012	Jack Stow Bracket	1	•	•	•	•
95	901200	Jack Stowage Bracket Bundle	1	•	•	•	•
96	9229930	Wheel Adust Lever Tool	1	•	•	•	•
144	9171	Threaded End for 9172 Rod	2	•	•		•
155	CSNC06X96	3/8" x 6" NC Cap Screw, Grade 5	4	•	•	•	•

**RAKING WHEEL / BEARING
CRANK PARTS**



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	18	•	•	•	•
15	92133-01	Oval Head Tooth Bolt	18	•	•	•	•
31	NUT12NC	3/4" NC Hex Nut	2	•	•	•	•
35	95046	Internal Lock Washer	2	•	•	•	•
36	95045	Retainer (95019 Spindle, 471504)	2	•	•	•	•
50	95019	Spindle w/Nuts	2	•	•	•	•
51	95022	Seal (95019 Spindle, 471504)	2	•	•	•	•
52	9220	Cone (15123)	4	•	•	•	•
53	9221	Cup (15245)	4	•	•	•	•
54	95043	Spindle Washer (A235)	2	•	•	•	•
55	NUT16NFSLT	1" NF Slotted Nut	2	•	•	•	•
56	COT32P	5/32" x 1-1/2" Cotter Pin	22	•	•	•	•
57	9041	Grease Cap (NIW Empossed)	1	•	•	•	•
58	92219H	Support Section	1	•	•	•	•
59	92114	Rake Wheel w/Bushing	1	•	•	•	•
60	92155	Wind Shield (Poly 6-Piece)	1	•	•	•	•
61	92175	Shield Fastener Assembly (Short)	6	•	•	•	•
62	92175A	Shield Fastener Assembly (Long)	6	•	•	•	•
80	92115	Bushing	AR	•	•	•	•
127	92117RL	Right or Left Rubber Mounted Tooth	18	•	•	•	•
169	SRUNIT2-LH/ RH	Spring / Rod Assembly - Per Wheel	AR	•	•	•	•

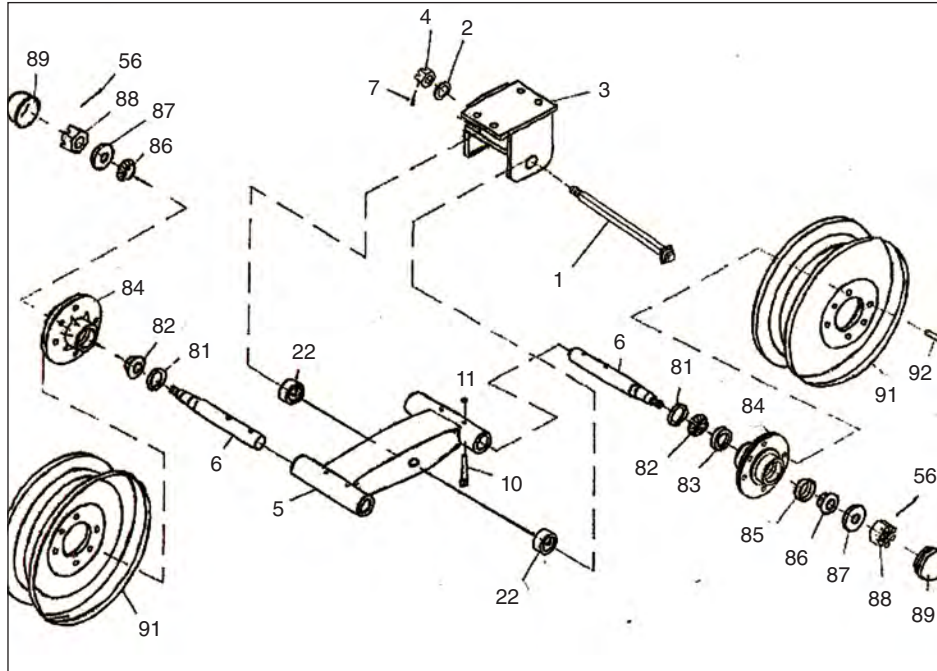
DUR-ADJUST SPRING AND ROD



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
1	SR100	Rod with Nut and Clip	1	•	•	•	•
2	SR200	Mounting Clip Bundle	1	•	•	•	•
3	92221	Compression Spring	2	•	•	•	•
4	SR600R	Right Lift Tube Bracket	1	•	•	•	•
5	SR600L	Left Lift Tube Bracket	1	•	•	•	•
6	SR700	Spring Slide with Bushing	4	•	•	•	•
7	NUT12NCNYC	3/4" Nylon Lock Nut	1	•	•	•	•
8	12HAIR	3/16" Hairpin Clip	1	•	•	•	•

SUPER DUTY WALKING BEAM / CRADLE PARTS

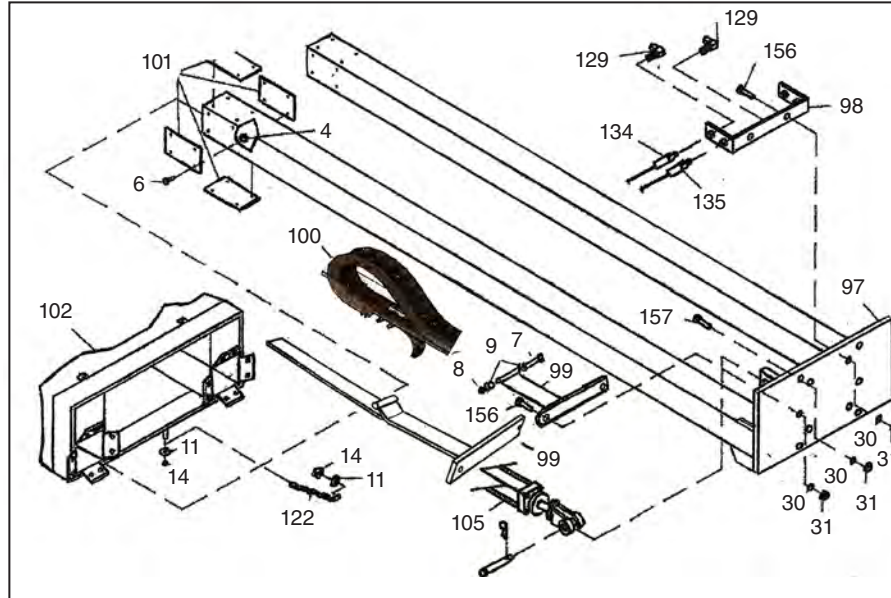
(Left or Right Side)



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
1	1078-02	Pivot Pin Kit	1	•	•	•	•
2	G8GLTWA20	1-1/4" Hard Washer	1	•	•	•	•
3	1079	Walking Beam Cradle	1	•	•	•	•
4	NUT20NFSLT	1-1/4" SAE Slotted Nut NF	1	•	•	•	•
5	1078	Walking Beam Weldment	1	•	•	•	•
6	90801	17-1/2" Spindle	2	•	•	•	•
7	COT47P	1/4" x 2" Cotter Pin	1	•	•	•	•
10	SOCKHD08X48	1/2" x 3" Sock Head Cap Screw w/lock nut	4	•	•	•	•
11	NUT08NCLK	1/2" Lock Nut NC STD PLTD	4	•	•	•	•
22	1002A	Bearing Insert	2	•	•	•	•
56	COT32P	5/32" x 1-1/2" Cotter Pin	2	•	•	•	•
81	204506	Seal, CR20148	2	•	•	•	•
82	25590	Bearing Cone, Inner	2	•	•	•	•
83	25520	Inner Bearing Race	2	•	•	•	•
84	90803	#4910 Hub w/Cups Installed (Yellow)	2	•	•	•	•
85	25821	Outer Bearing Race	2	•	•	•	•
86	25877	Bearing Cone, Outer	2	•	•	•	•
87	9043	7/8" Spindle Washer	2	•	•	•	•
88	92125	7/8" Slotted Spindle Nut	2	•	•	•	•
89	P502001	Grease Cap	2	•	•	•	•
91	W50334	Ground Wheel, 15x8 (6 on 6)	4	•	•	•	•
92	P101303	Wheel Lug Bolt, 9/16" x 1-1/2"	12	•	•	•	•

OVERHEAD MALE SLIDE PARTS

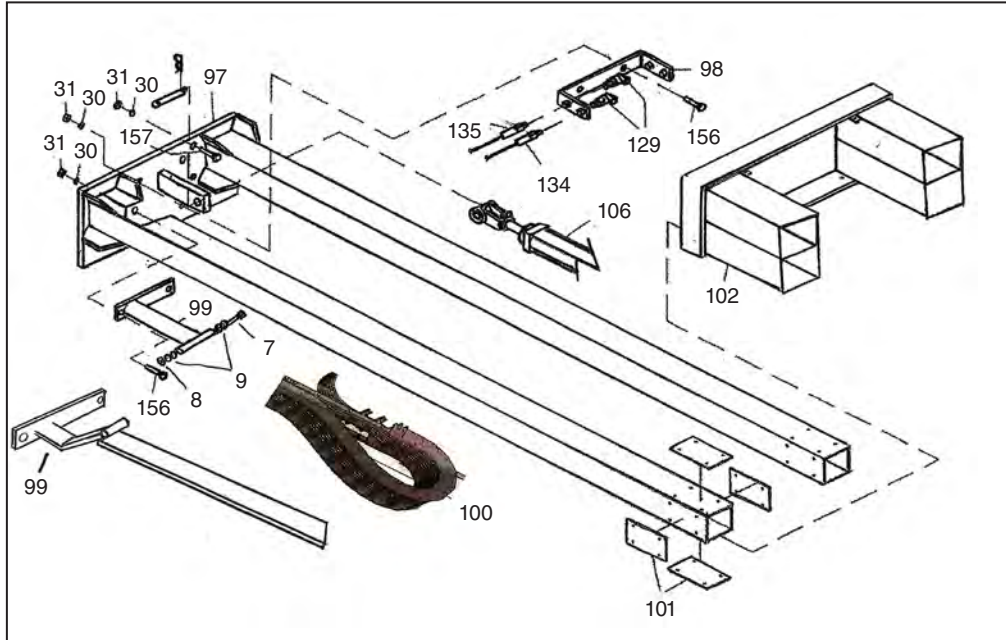
(Right Side)



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
4	NUT04NCNYL	1/4" NC Nylon Lock Nut	AR	•	•	•	•
6	PHMS04X16	1/4" x 1" NC Flat Phillips Head	AR	•	•	•	•
7	CSNC07X56	7/16" x 3-1/2" Grade 5 NC Cap Screw	2	•	•	•	•
8	NUT07NCLK	7/16"-20 Grade C Locknut	3	•	•	•	•
9	FLTWA07	7/16 USS Flat Washer PLTD	8	•	•	•	•
11	FLTWA06	3/8" USS Washer	AR	•	•	•	•
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	AR	•	•	•	•
30	LW12SP	3/4" Split Lock Washer	AR	•	•	•	•
31	NUT12NC	3/4" NC Hex Nut	AR	•	•	•	•
97	9071	Male Slide Weldment (Wide, RT or LT)	2	•	•	•	•
97	93285	Male Slide Weldment (STD, RT or LT)	2	•	•	•	•
98	9018B	4-Hose Coupler	2	•	•	•	•
99	101787	E-Track Guide / Attachment	1	•	•	•	•
99	101787R	E-Track Guide / Attachment	1	•	•	•	•
100	101700ET	E-Track - 5.51" HT @ 62" (STD)	1	•	•	•	•
100	101700WET	E-Track - 5.51" HT @ 74" (Wide)	1	•	•	•	•
101	93100	3/16" x 6" Bearing Plate.	AR	•	•	•	•
101	93101	1/4" x 6" Bearing Plate	AR	•	•	•	•
102	9070	Main Frame Weldment (Wide)	1	•	•	•	•
102	93286	Main Frame Weldment (STD)	1	•	•	•	•
105	N325349	3-1/4" x 60" Slave Cylinder, Lower Right Side	1	•	•	•	•
105	N325277	3-1/4" x 48" Slave Cylinder, Lower Right Side (1 Valve Cap at Rod End, use 4A2105 Repair Kit)	1	•	•	•	•
122	03PCCHAIN	3/16" Proof Coil Chain, 10 Links	2'	•	•	•	•
129	HMPFP9044	90 Degree Adapter	AR	•	•	•	•
134	04X2272X04J	1/4" x 142" Hose, 1/4" JIC Ends	1	•	•	•	•
135	04X2464X04J	1/4" x 154" Hose, 1/4" JIC Ends	1	•	•	•	•
156	CSNC12X48	3/4" x 3" NC Cap Screw, Grade 5	AR	•	•	•	•
157	CSNC12X40	3/4" x 2-1/2" NC Cap Screw, Grade 5	AR	•	•	•	•

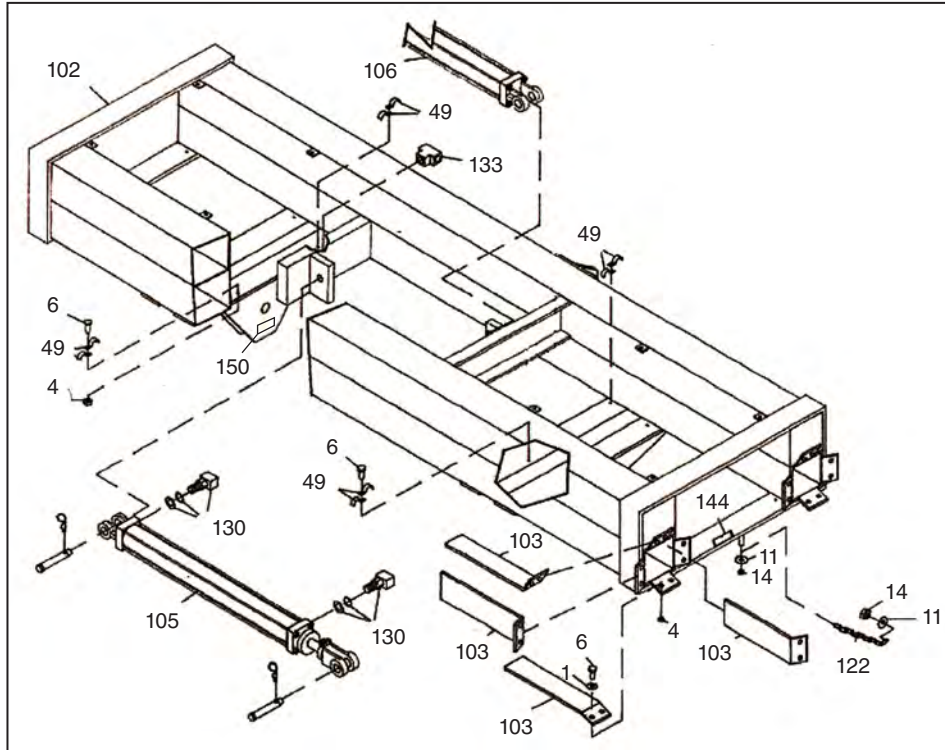
OVERHEAD MALE SLIDE PARTS

(Left Side)



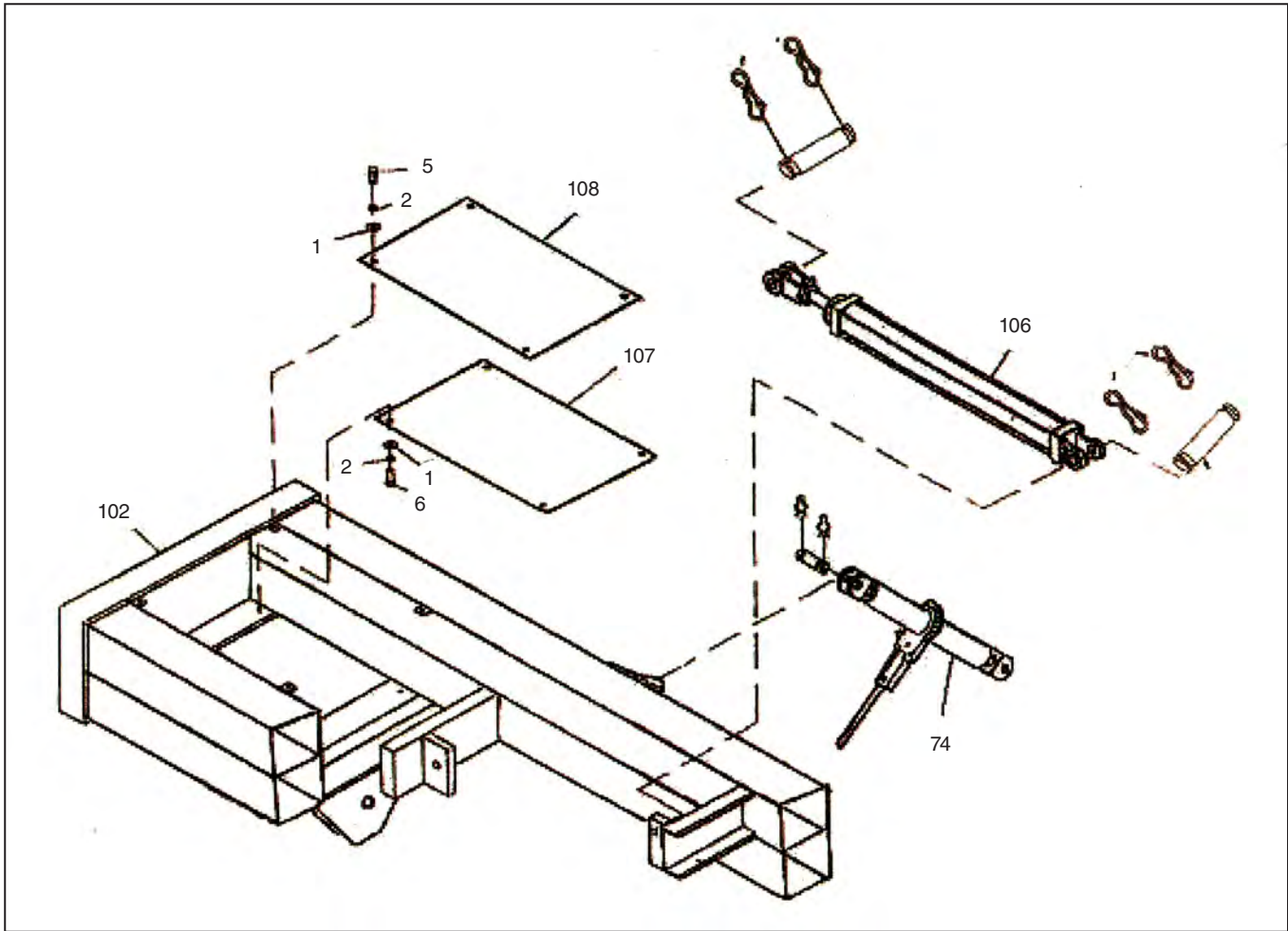
REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
7	CSNC07X56	7/16" x 3-1/2" Grade 5 NC Cap Screw	2	•	•	•	•
8	NUT07NFLK	7/16" - 20 Grade C Locknut, Fine	2	•	•	•	•
9	FLTWA07	7/16" USS Flat Washer PLTD	8	•	•	•	•
30	LW12SP	3/4" Split Lock Washer	AR	•	•	•	•
31	NUT12NC	3/4" NC Hex Nut	AR	•	•	•	•
97	9071	Male Slide Weldment (Wide, RT or LT)	2		•		•
97	93285	Male Slide Weldment (STD, RT or LT)	2	•		•	
98	9018B	4-Hose Coupler	2	•	•	•	•
99	101787	E-Track Guide / Attachment	1	•		•	
99	101787L	E-Track Guide / Attachment	1		•		•
100	101700ET	E-Track - 5.51" HT @ 62" (STD)	1	•		•	
100	101700WET	E-Track - 5.51" HT @ 74" (Wide)	1		•		•
101	93100	3/16" x 6" Bearing Plate.	AR	•	•	•	•
101	93101	1/4" x 6" Bearing Plate	AR	•	•	•	•
102	9070	Main Frame Weldment (Wide)	1		•		•
102	93286	Main Frame Weldment (STD)	1	•		•	
106	N325349	3-1/4" x 60" Slave Cylinder, Lower Right Side	1		•		•
106	N325277	3-1/4" x 48" Slave Cylinder, Lower Right Side (1 Valve Cap at Rod End, use 4A2105 Repair Kit)	1	•		•	
129	HMPFP9044	90 Degree Adapter	AR	•	•	•	•
134	04X2272X04	1/4" x 142" Hose, 1/4" JIC Ends	1	•	•	•	•
135	04X2464X04	1/4" x 154" Hose, 1/4" JIC Ends	1	•	•	•	•
156	CSNC12X48	3/4" x 3" NC Cap Screw, Grade 5	AR	•	•	•	•
157	CSNC12X40	3/4" x 2-1/2" NC Cap Screw, Grade 5	AR	•	•	•	•

OVERHEAD MAIN FRAME PARTS



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
1	FLTWA04	1/4" USS Washer	AR	•	•	•	•
4	NUT04NCNYL	1/4" NC Nylon Lock Nut	AR	•	•	•	•
6	CSNC04X16	1/4" x 1" NC Cap Screw, Grade 5	AR	•	•	•	•
11	FLTWA06	3/8" USS Washer	AR	•	•	•	•
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	AR	•	•	•	•
49	MIN-E28	Hose Clamp	3	•	•	•	•
102	9070	Main Frame Weldment (Wide)	1		•		•
102	93286	Main Frame Weldment (STD)	1	•		•	
103	92283A	1/4" Formed Bearing Plate	AR	•	•	•	•
103	92284A	3/16" Formed Bearing Plate	AR	•	•	•	•
105	N325349	3-1/4" x 60" Master Cylinder, Upper Left Side	1		•		•
105	N325277	3-1/4" x 48" Master Cylinder, Upper Left Side	1	•		•	
106	N353249	3-1/4" x 60" Master Cylinder, Upper Left Side	1		•		•
106	N353177	3-1/4" x 48" Master Cylinder, Upper Left Side	1	•		•	
122	03PCCHAIN	3/16" Proof Coil Chain, 10 Links	2	•	•	•	•
130	HMBFP9086	O'Ring 90 Degree Adapter	4	•	•	•	•
133	HFPT4	1/4" Female Tee	AR	•	•		
144	9110	Hose Clamp	2	•	•	•	•
150	SERIALTAG	Serial Number Tag	1	•	•	•	•

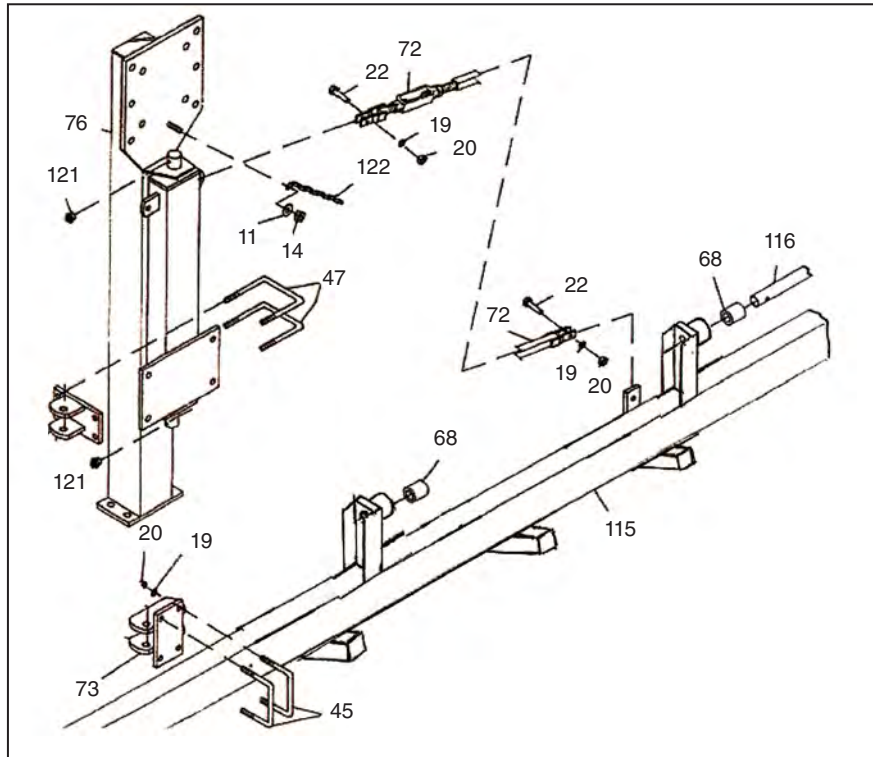
OVERHEAD COVER PLATE PARTS



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
1	FLTWA04	1/4" USS Washer	AR	•	•	•	•
2	LW04SP	1/4" Split Lock Washer	AR	•	•	•	•
5	CSNC04X10	1/4" x 5/8" NC Cap Screw, Grade 5	AR	•	•	•	•
6	CSNC04X16	1/4" x 1" NC Cap Screw, Grade 5	AR	•	•	•	•
74	RJ22590	Ratchet Jack	1	•	•	•	•
102	9070	Main Frame Weldment (Wide)	1		•		•
102	93286	Main Frame Weldment (STD)	1	•		•	
106	N353249	3-1/4" x 60" Master Cylinder, Upper Left Side	1		•		•
106	N353177	3-1/4" x 48" Master Cylinder, Upper Left Side (1 Valve Cap at Rod End, use 4A2105 Repair Kit)	1	•		•	
107	93288	Cover Plate	3	•	•	•	•
108	93288L	Cover Plate, Long	1	•	•	•	•

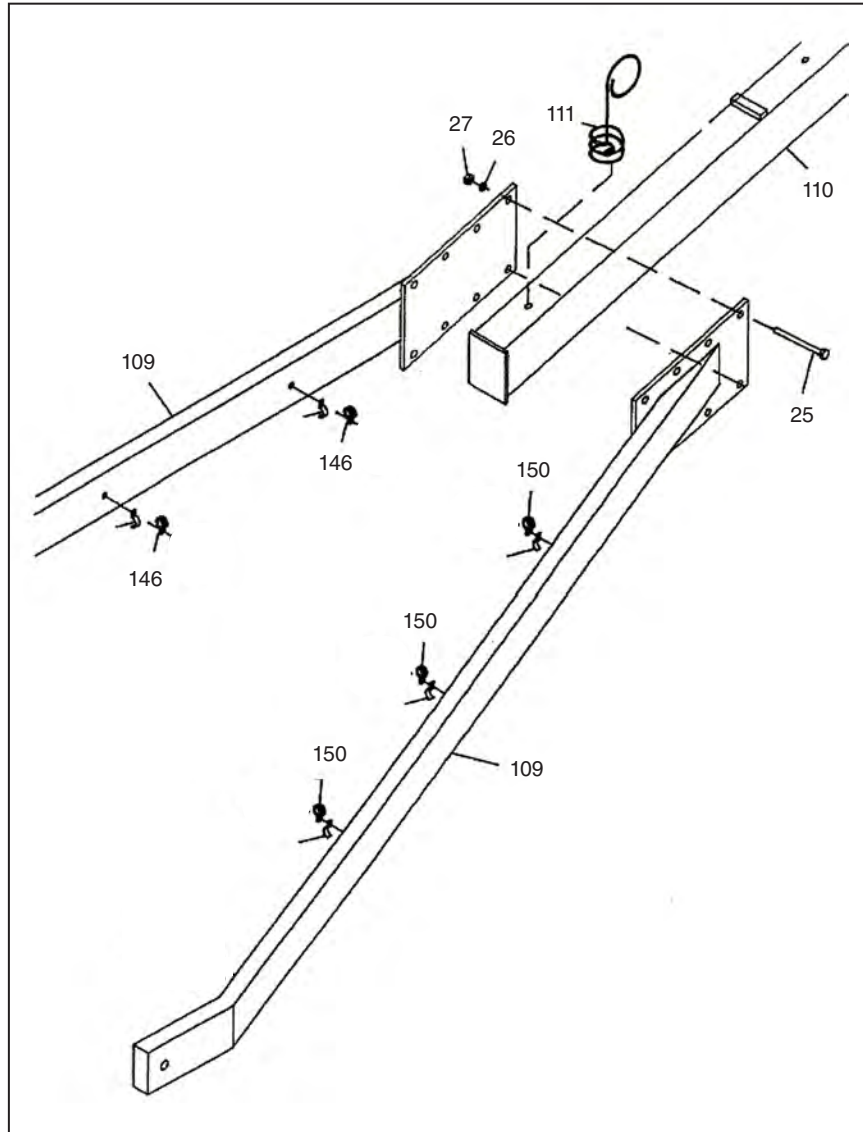
LEG STRUT PARTS

(Left or Right Side)



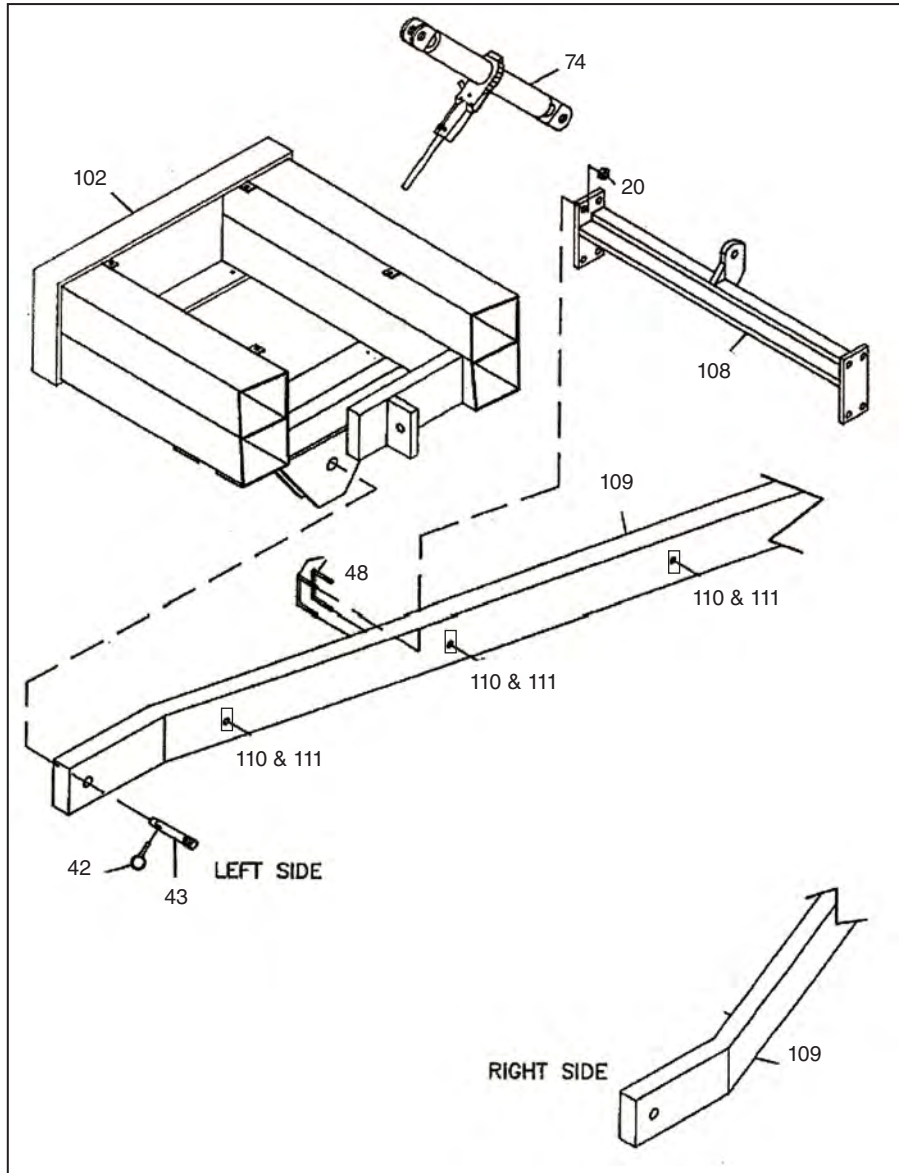
REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
11	FLTWA06	3/8" USS Washer	AR	•	•	•	•
14	NUT06NCLK	3/8" NC Lock Nut, Grade C	AR	•	•	•	•
19	LW08SP	1/2" Split Lock Washer	AR	•	•	•	•
20	NUT08NC	1/2" NC Hex Nut	AR	•	•	•	•
22	CSNC08X32	1/2" x 2" NC Cap Screw, Grade 5	AR	•	•	•	•
45	9027	U-Bolt to Frame Bracket	4	•	•	•	•
47	9029	U-Bolt, Leg Strut / Angle Bracket	4	•	•	•	•
68	9047	UHMW Bushing	AR	•	•	•	•
72	9099	Heavy Adjust Rake Frame Brace	2	•	•	•	•
73	92206	5-Hole Adjust Bracket	2		•		•
73	922994	3-Hole Adjust Bracket	2	•		•	
76	92581L	Leg Strut, Left or Right	2	•	•	•	•
115	101792	Left Rake Frame Weldment	1	•	•	•	•
115R	101793	Right Rake Frame Weldment (Not Shown)	1	•	•	•	•
116	91790	Left Side Lift Tube, 9 Holes	1	•	•	•	•
116R	91791	Right Side Lift Tube, 10 Holes (Not Shown)	1	•	•	•	•
119	NIWDEC4X10	Decal - Operating Instructions	2	•	•	•	•
121	B511ZERK	3/16" Drive In Zerk	4	•	•	•	•
122	03PCCHAIN	3/16" Proof Coil Chain, 10 Links	2	•	•	•	•

TONGUE JOINT PARTS



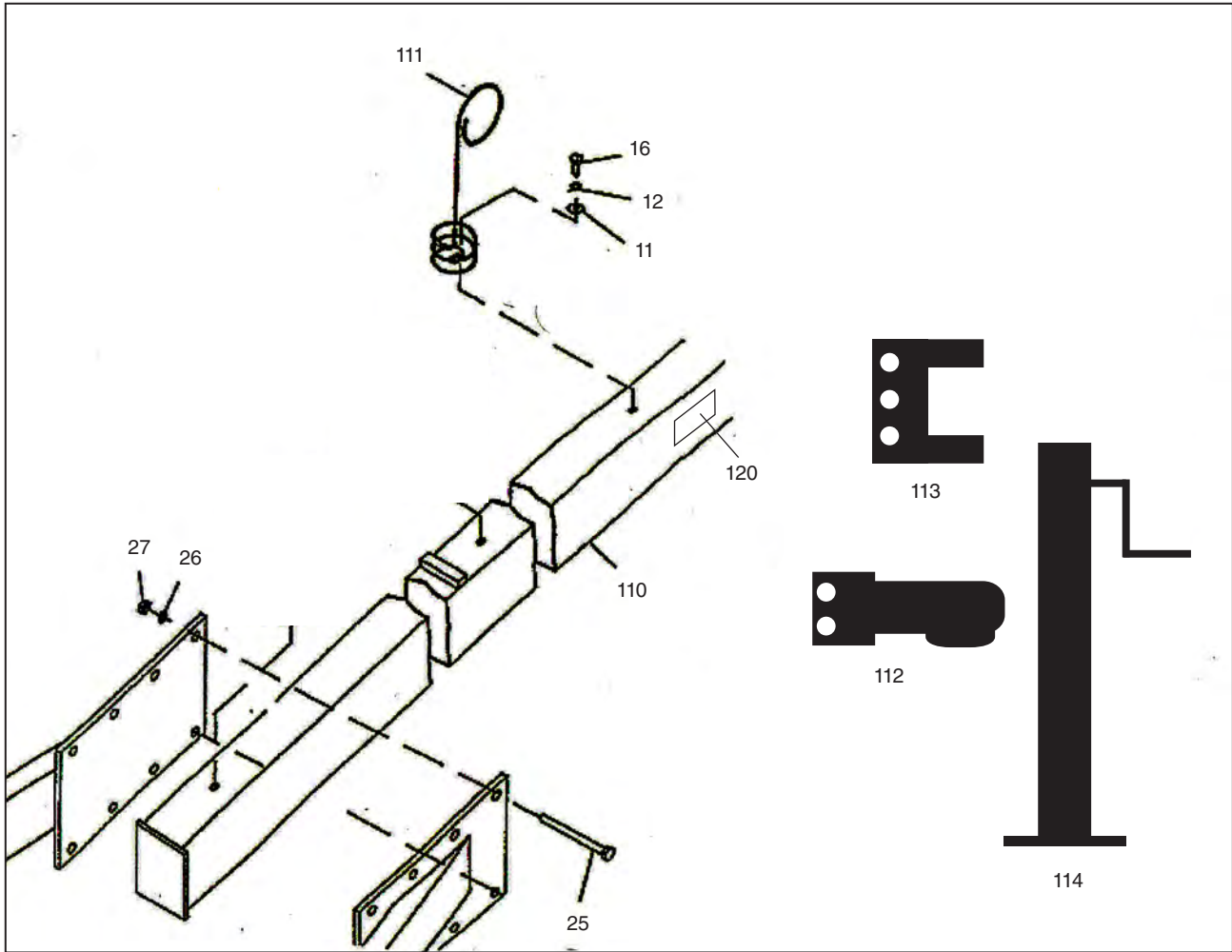
REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
25	CSNC20X96	5/8" x 6" NC Cap Screw, Grade 5	8	•	•	•	•
26	LW10SP	5/8" Split Lock Washer	8	•	•	•	•
27	NUT10NC	5/8" NC Hex Nut	8	•	•	•	•
109	91796	Top Yoke Tube for Tongue	2	•	•	•	•
110	101794	Lower Tongue Member	1	•	•	•	•
111	91798A	Hydraulic Hose Holder	2	•	•	•	•
146	HCTT-10-BL	3/8" and 5/8" Hose Clamps	3	•	•	•	•
150	HCTT-10-BL	3/8" and 3/4" Hose Clamps	3	•	•	•	•

UPPER TONGUE PARTS



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
20	NUT08NCLK	1/2" Lock Nut	AR	•	•	•	•
42	P791	Lynch Pin, 7/16"	6	•	•	•	•
43	P774	Top Link Pin	2	•	•	•	•
48	9032	U-Bolt, Tongue Cross Bar	4	•	•	•	•
74	RJ22590	Ratchet Jack	1	•	•	•	•
102	93286	Main Frame Weldment (STD)	1	•		•	
102	9070	Main Frame Weldment (Wide)	1		•		•
108	9107A	Tongue Cross Bar	1	•	•	•	•
109	91796	Top Yoke Tube for Tongue	2	•	•	•	•
110	HCTT-10-BL	3/8" and 5/8" Hose Clamps (Left)	3	•	•	•	•
111	HCTT-10-BL	3/8" and 3/4" Hose Clamps (Right)	3	•	•	•	•

LOWER TONGUE PARTS



REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
11	FLTWA06	3/8" USS Washer	AR	•	•	•	•
12	LW06SP	3/8" Split Lock Washer	AR	•	•	•	•
16	CSNC06X16	3/8" x 1" NC Cap Screw, Grade 5	AR	•	•	•	•
25	CSNC10X96	5/8" X 6" NC Cap Screw, Grade 5	8	•	•	•	•
26	LW10SP	5/8" Split Lock Washer	12	•	•	•	•
27	NUT10NC	5/8" NC Hex Nut	12	•	•	•	•
110	91794	Lower Tongue Member	1	•	•	•	•
111	91798A	Hydraulic Hose Holder	1	•	•	•	•
112	CTA-290	Ball Hitch	1	•	•	•	•
113	CL44	Clevis Hitch	1	•	•	•	•
114	BE-700M	Side Wind Jack	1	•	•	•	•
120	DECALCRUSH	Crush Decal	1	•	•	•	•

DECAL PARTS



4



7



12



6



1



2



3



11



9



10



15



16



17



5



13



18

OPERATING INSTRUCTIONS

1. Level rake using hitch adjustments.
2. Set tire pressure 15psi
3. Adjust raking wheel spring tension to assure clean raking without excessive ground contact.
4. Check hydraulic oil level in tractor.
5. Bleed all lines of air.
6. Re-tighten all bolts after first day of operation.

14



8

REF #	Part #	Description	Qty.	1017LAB	1017LWAB	1017LFMAB	1017LFMWAB
1	DECALCRUSH	Crush Decal	1	•	•	•	•
2	DECALFLUID	High Pressure Decal	4	•	•	•	•
3	DECALTRANS	Transport Block Decal	4	•	•	•	•
4	1017TRTWTW	West Was Won Decal	1	•	•	•	•
5	1017ROUND	9" Round DARF Decal (std. frame)	1	•		•	
6	1017WROUND	11" Round DARF Decal (wide frame)	1		•		
7	DARFDEC	DARF With Website Decal	3	•	•	•	•
8	NIWDEC15X16	Nikkel Iron Works Decal	3	•	•	•	•
9	1017LSERIES	1017L Series Decal (std. frame)	3	•		•	
10	1017L-WSERIES	1017L W-Series Decal (wide frame)	3		•		•
11	FMMODEL	FM Model Decal	3	•	•	•	•
12	FEMADEC	FEMA Decal	3	•	•	•	•
13	DECALPMITUSA	Proudly Made in USA Decal	4	•	•	•	•
14	NIWDEC4X10	Operating Instruction Decal	2	•	•	•	•
15	B489A	Amber Reflector Decal	2	•	•	•	•
16	B489R	Red Reflector Decal	2	•	•	•	•
17	SMV1	Slow Moving Vehicle Decal	1	•	•	•	•
18	DECAL65	CA Proposition 65 Warning Decal	1	•	•	•	•

MAINTENANCE CHART



Item	Interval
Check that ground wheel hubs are tight	Before transporting
Check that safety lights work	Before transporting
Check tire pressure	Before transporting or operating
Check hydraulic tips, hoses and connections for leaks	Before operating
Grease ball hitch	Monthly
Lubricate male slides (plastics)	Monthly
Lubricate spring and rod slides	Monthly
Check that bearing cranks are tight	Monthly
Grease ground wheel hubs	Monthly
Check tires for uneven wear - adjust toe-in 1/8"	Monthly
Grease wheel bearings	Two times per year
Check all electrical connections	Seasonally
Grease leg strut fittings	Seasonally
Rotate HD walking beam bearing (#1002A) 90 degrees	Seasonally
Review safety instructions	Annually
Clean or replace safety decals	As needed

TROUBLESHOOTING CHART



Problem	Possible Cause	Solution
Rake will not open or close	Open center tractor	Change valve to open center
"	Low hydraulic fluid	Check and add if low
"	Hoses incorrectly located	Review hose charts and correct
"	Air in hydraulic system	Operate cylinders until air is removed
"	Bad coupling / leak	Check for leaks and replace
"	Hydraulic oil volume too high	Relieve pressure and adjust to 4-6 GPM
Unable to level rake	Overhead main frame not adjusted	Correct with ratchet jack
"	Raking frame(s) not square / level	Square and level raking frame to overhead frame
Not raking properly	Raking wheels not adjusted	Adjust each rake wheel properly
"	"	Adjust front wheels deeper than rear
Rake skipping product	Transport tires too firm	Adjust tire pressure to 15 PSI
Hay wraps rear wheels	Raking angle too severe	Adjust for less angle
"	Heavy crop	Raise wheels slightly
Uneven rake teeth wear	Raking wheels not adjusted	Adjust each rake wheel properly

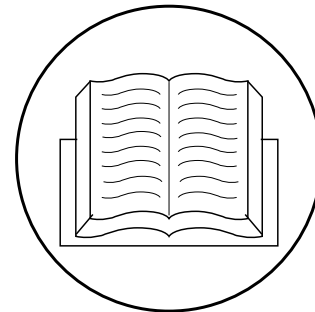
TIPS FROM THE FACTORY



- Keeping the rake cleaned and painted will help to pro-long the value of this product.
- Failure to check rake teeth height routinely may cause excessive wear or missed pick-up of forage.
- When opening the overhead main frame, the rake must be moving forward so as not to damage the transport tires.
- When not attached to the tractor, chock the wheels and ensure that the jack is securely planted. Park this rake in a level area whenever possible and with a cover.
- When stopped or parked, do not leave the raking teeth in contact with the ground fully supporting the weight of the raking frame. This will result in permanent damage to the rake teeth.
- Grease the zerk fittings on the leg struts as needed.
- Check tire air pressure prior to highway transport and increase to 30 PSI.
- Inspect for hydraulic leaks frequently.

WARRANTY INFORMATION

- Rake must be registered within 30 days of purchase.
- Nikkel Iron Works has manufactured Darf hay rakes for over 30 years and has an excellent reputation for quality and workmanship. Please contact your dealer if you feel a component has not lasted to your expectation. These concerns will be handled on a case-by-case basis. Contact your dealer for replacement parts.



NIKKEL IRON WORKS CORP.
17045 Central Valley Highway
Shafter, CA 93263

661.746.4904
661.746.4905 (FAX LINE)

www.nikkelironworks.com