
MILLER PRO

**DUMP BOX
MODEL 9016**

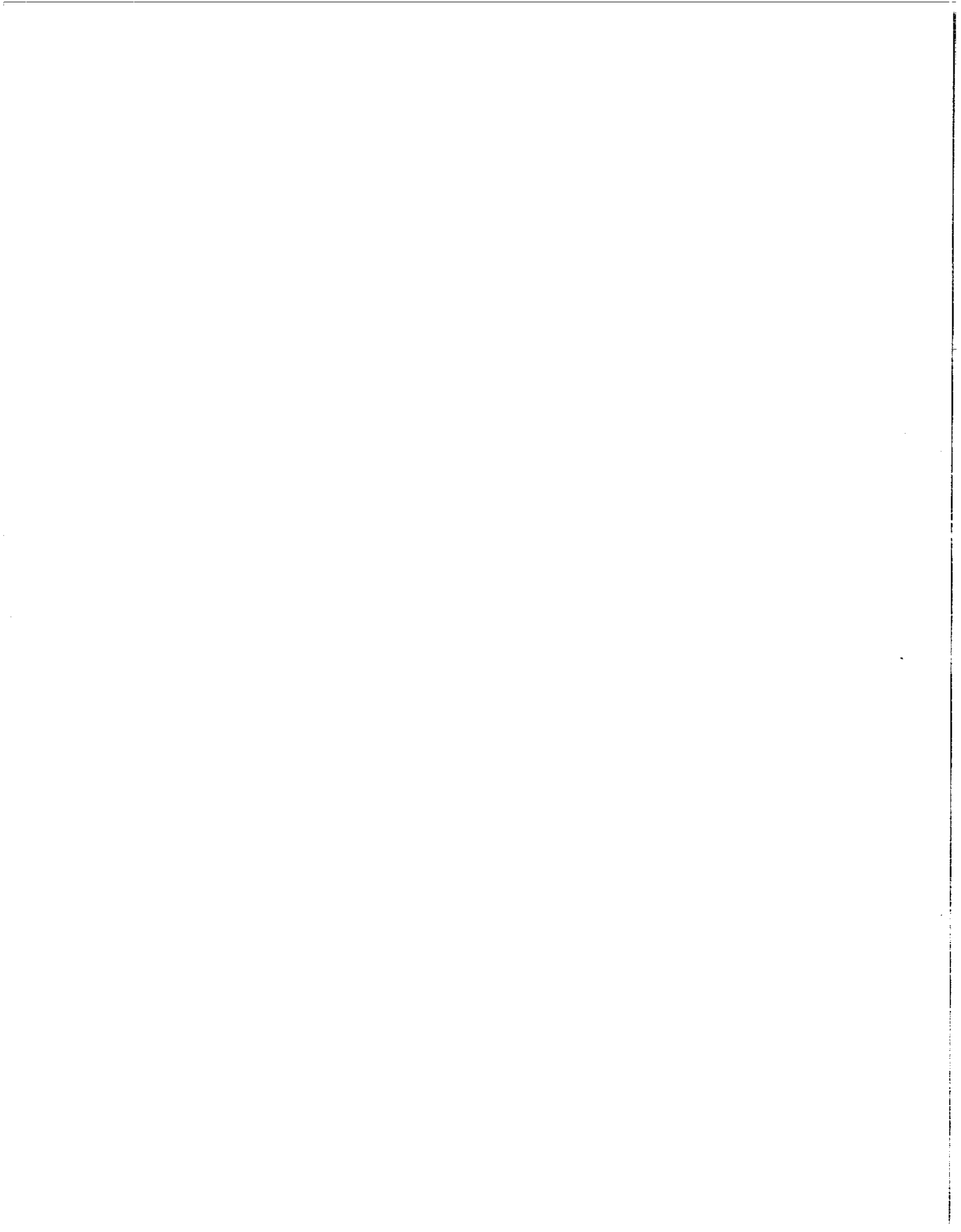
OPERATOR'S MANUAL

**DO NOT OPERATE THIS EQUIPMENT UNTIL THIS MANUAL HAS BEEN READ
AND UNDERSTOOD.**

19.00674a
10/99



Miller-St. Nazianz, Inc.
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St. Nazianz, WI 54232
(920) 773-2121
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GENERAL INFORMATION

The purpose of this manual is to assist the operator in maintaining and operating the Miller Pro Dump Box. Read it carefully: it furnishes information and instructions that will help you achieve years of dependable service.

Each section of this manual is clearly identified and is divided into smaller sections.

All replacement parts should be obtained from or ordered through your Miller dealer. Give complete information when ordering service parts including the model number and serial numbers. Record numbers in the space provided as a handy record for quick reference.

Model No. _____ Serial No. _____

Miller reserves the right to make improvements in design, or changes in specifications at any time, without incurring any obligation to owners of units previously sold.

IDENTIFYING TERMS

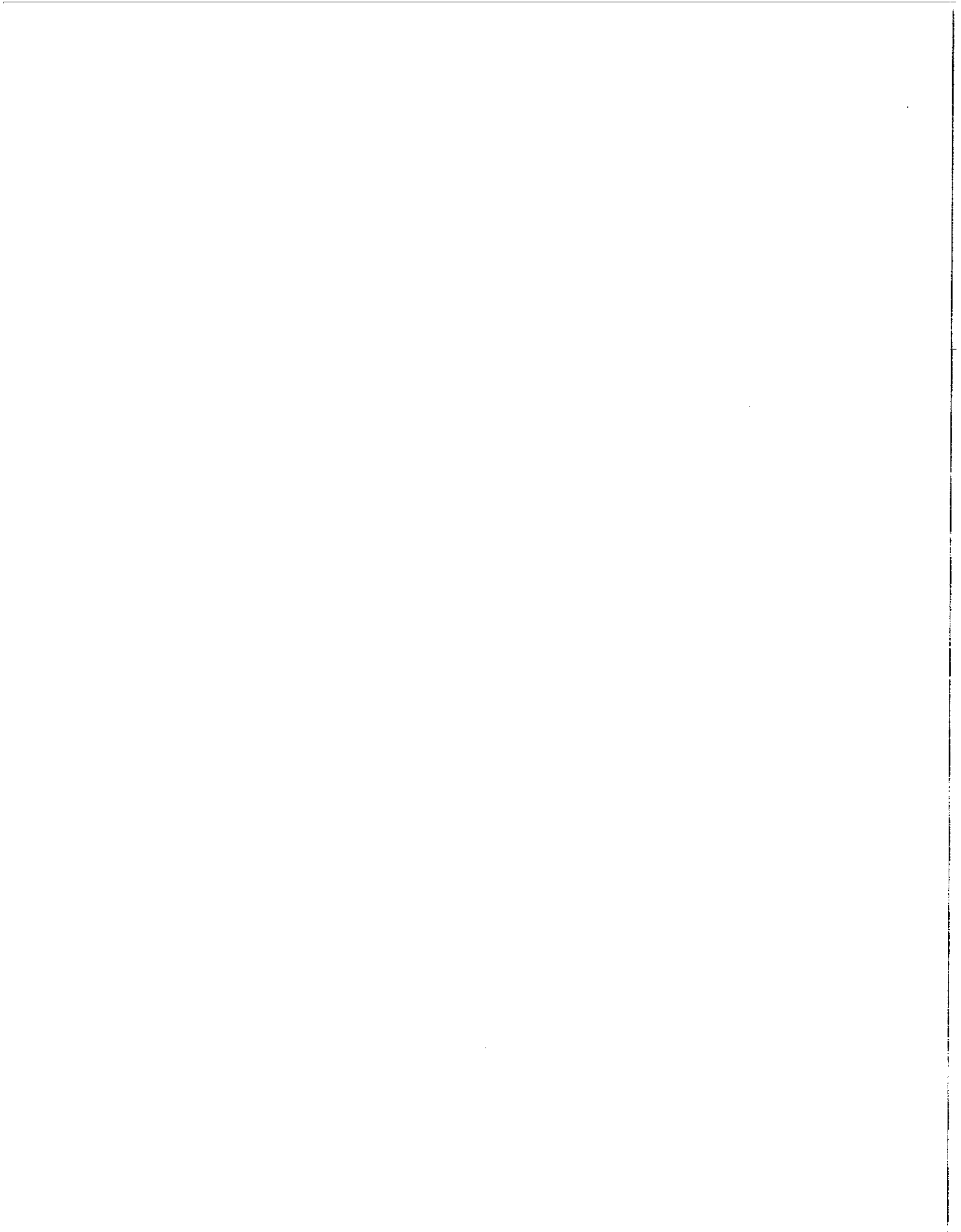
"LEFT" and "RIGHT" are determined from a position standing at the rear of the unit looking toward the direction of travel. "Front" is the leading end and "Rear" is the trailing end when the tractor is traveling forward.

TRACTORS

This Operator's Manual uses the term "Tractor" when identifying the power source for the dump box. However, the same safety and operating practices apply to other power sources such as hydraulic and electric motors.

WARRANTY REGISTRATION

The **DELIVERY AND WARRANTY REGISTRATION CARD** found in the front of this manual must be completed and signed to validate your warranty protection. You must read and understand the places where you attest to having received instructions as to care, adjustments, safe operation and applicable warranty policy. The terms and conditions of the warranty are specified on the rear cover of this manual.



MILLER PRO DUMP BOX

PRE-DELIVERY CHECK LIST

After the Miller Pro Dump Box has been completely set-up, check to be certain it is in correct running order before delivering it to the customer. The following is a list of points to inspect. Check off each item as you have made the proper adjustments and found the item operating satisfactorily. Any adjustment must be made according to specifications defined in this manual.

- All mechanisms are operating trouble free.
- All bolts and other fasteners are tight.
- Check all pivot points for freedom of movement.
- All grease fittings have been lubricated . See "Lubrication" section in this manual, page 21.
- Wheel bolts checked
- Pins properly installed
- Hydraulic Systems Bled

(If applicable):

- Roof installed
- Lift arm & cable installed
- Roof swings freely
- Brakes work correctly

Dealer's Name

Signature of Pre-Delivery Inspector

Date of Inspection

Model No.

Serial No.

DELIVERY CHECK LIST

The following check list is an important reminder of valuable information that **MUST** be passed on to the customer at the time the unit is delivered. Check off each item as you explain it to the customer.

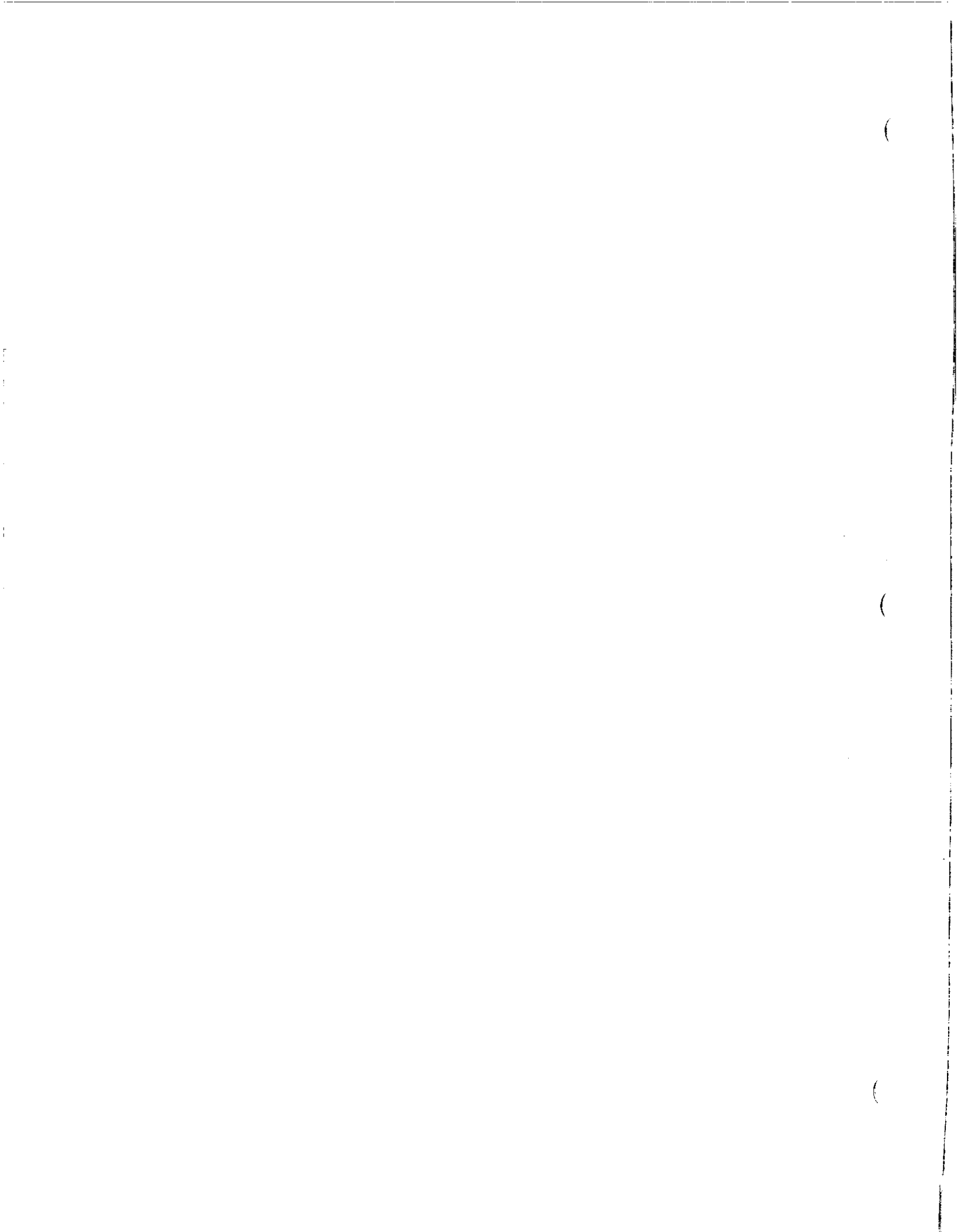
- Give the customer their Operator's Manual. Instruct them to be sure to read and completely understand its contents **BEFORE** attempting to operate the unit.
- Explain the warranty.
- Explain and review with the customer the Safety Precautions section of this manual.
- Explain and review with the customer the Operating Instructions section of this manual.
- Explain that regular lubrication and proper adjustments are required for continued proper operation and long life. Review with the customer the Lubrication and Adjustments section of this manual.
- Check hydraulic pressure capacity of tractor (2250 PSI min) as hydraulic pressure lower than 2250 will reduce load dumping capacity. The system is designed to operate at 3000 PSI maximum with a flow of 16 GPM for correct cycle time.
- Check hydraulic fluid level in tractor reservoir, the dump box needs a minimum usable quantity of 7 gallons.
- Fluid in dump box hydraulic system is compatible with tractor hydraulic system.
- Complete the Delivery Registration Card and have customer sign it and return it to Miller-St. Nazianz.

I acknowledge that above points were reviewed with me at the time of delivery.

Customer's Signature

Date Delivered

(Dealer Copy)



MILLER PRO

HIGH LIFT DUMP BOX

MODEL 9016

19.00674

Table of Contents

GENERAL INFORMATION	Inside Front Cover
TABLE OF CONTENTS	1
PRE-DELIVERY/DELIVERY CHECK LIST	2
SAFETY PRECAUTIONS	3-6
SAFETY DECALS	7-8
SET-UP AND ASSEMBLY INSTRUCTIONS	9-13
HYDRAULIC CYLINDER SYSTEMS	14
OPERATING INSTRUCTIONS	15-17
CAPACITY	18-20
LUBRICATION	21
ADJUSTMENTS	22-23
TROUBLESHOOTING	24-26
OPTIONS & ACCESSORIES	27-28
TORQUE SPECIFICATIONS	29
WARRANTY	Inside Back Cover

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SAFETY PRECAUTIONS



This symbol is used to call your attention to instructions concerning your personal safety. Be sure to observe and follow these instructions. Take time to be careful!

DANGER



“DANGER” indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING



“WARNING” indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION



“CAUTION” indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also alert against unsafe practices.

BEFORE you attempt to operate this dump box, read and study the following safety information. In addition, **MAKE SURE** that every individual who operates or works with this equipment, whether family member or employee, is familiar with these safety precautions. Miller-St. Nazianz provides guards for exposed moving parts for the operator's protection; however, some areas cannot be guarded or shielded in order to assure proper operation. The **OPERATOR'S MANUAL AND DECALS** on the machine itself warn you of dangers and **SHOULD BE READ AND OBSERVED CLOSELY**.

POWER SOURCE SHUTDOWN PROCEDURE

Before cleaning, unclogging, adjusting, lubricating or servicing this machine:

1. Shut off the tractor engine, remove the starter key and take it with you.
2. The Dump Box should be completely lowered.
3. Wait for the all machine motion to stop.
4. Remove ALL power connections from the tractor.

Failure to follow these precautions could result in death or serious injury.

SAFETY PRECAUTIONS, continued



Do not unclog, adjust, lubricate or service the dump box unless the "Power Source Shut Down Procedure" (Page 3) has been performed.

KEEP hands, feet and clothing away from moving parts!

DO NOT allow minors to be near the machine unless properly supervised!

KEEP the dump box away from power lines. Contact with electric lines may result in serious injury or death by electrocution!

USE only properly rated running gear and tires!

ALWAYS engage the tractor parking brake before proceeding to unload the dump box!

DO NOT allow people other than a qualified operator near the unit!

DO NOT exceed a maximum towing speed of 20 MPH (32 KMH) while transporting the dump box!

DO NOT travel on public highways unless adequate warning devices are used to alert other drivers!

DO NOT drive too close to ditches or creeks; be sure surrounding ground has adequate strength to support the weight of the loaded dump box!

DO NOT attempt to ride on the pole of the running gear!

ALWAYS use a safety or locking hitchpin!

ALWAYS keep the towing vehicle in gear when descending steep grades!

ALWAYS travel slowly around curves and along sidehills to prevent tipping!

BE SURE the tires are properly and evenly inflated at all times!

BE SURE the wheel nuts and other fasteners are kept securely tightened at all times!

ALWAYS follow state and local regulations regarding a safety chain and auxiliary lighting when towing farm equipment on a public highway. Be sure to check with local law enforcement agencies for your own particular regulations. Only a safety chain (Not an elastic or nylon/plastic tow strap) should be used to retain the connection between the towing and towed machines in the event of separation of the primary attaching system.

SAFETY PRECAUTIONS, continued

BLOCK the tires, front and back, so that the Dump Box will not roll when disconnecting from the towing vehicle.

MAINTAIN liquid ballast in non-dump side tires! Maintain at least 1500 lbs of ballast in the weight box.

CHECK lug nuts periodically. 5/8" NUTS TORQUE TO 90 FT.- LB.

22.5 INCH TIRE OPERATING AIR PRESSURE 70 P.S.I...



To ensure continued safe operation, replace damaged or worn-out parts with genuine Miller service parts, before attempting to operate equipment.

BE A SAFE OPERATOR

**BE A SAFE OPERATOR
BY THINKING — BEFORE ACTING
AND
BY READING YOUR OPERATORS MANUAL**

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home, or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that can not be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

THE COMPLETE OBSERVANCE OF ONE SIMPLE RULE WOULD PREVENT MANY THOUSANDS OF SERIOUS INJURIES EACH YEAR, THAT RULE IS:

PERFORM MANDATORY SHUTDOWN PROCEDURE.

DO NOT DUMP WHILE MOVING.



CAUTION



1. Read and understand the Operator's Manual before operating the unit.
2. Keep children, visitors and all untrained personnel away from machine while in operation.
3. Keep all shields and safety devices in place.
4. Perform mandatory shutdown procedures.
5. Keep hands, feet and clothing away from moving parts.
6. Check overhead clearance before operating. (High voltage lines, etc.).
7. Keep unit level when operating.
8. Maintain proper tire pressure when transporting machine. (Refer to Manufacturers Recommendations).

SAFETY LABEL LOCATION

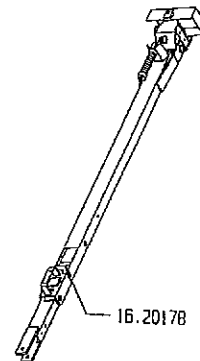
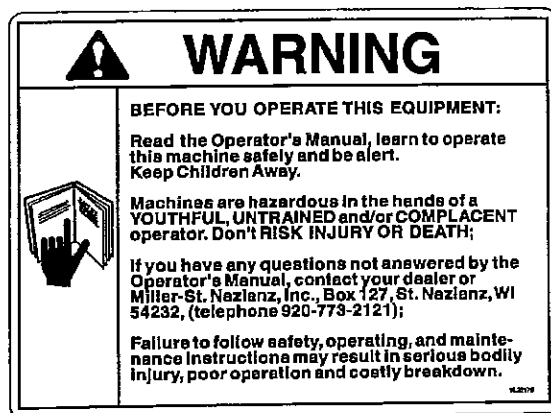
Each Dump Box has been produced and assembled with the operator's safety in mind. As a reminder to the operator of proper operation of the machine, several labels of warning and instruction have been attached. Information on labels is by necessity less than in the operator's manual. Do not depend solely on the labels for safe and proper operation. Use your operator's manual.

DO NOT remove any of these labels. They are for your protection! Take note of their messages and observe!

Periodically check all labels and replace any that are missing, worn, or illegible. When replacing, clean machine surface thoroughly using soap and water or cleaning solvent to remove dirt and grease. Contact your dealer or Miller-St. Nazianz at 920-773-2121 if any labels are not understood!

The Miller Dump Box was designed as a dump box. DO NOT use for other purposes!

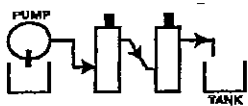
DECAL LOCATION



SAFETY DECALS

⚠ CAUTION

ALL SERIES SYSTEMS
MUST BE BLED OF AIR.



PUMP
TANK

1. Move control valve for the lift cylinders to **DOWN** position and hold for two or more minutes in the retracted position.
2. Now move the control valve for the lift cylinders to the **UP** position and watch the rods extend. If cylinders do not extend evenly, repeat initial purge procedure in **DOWN** position. When cylinders extend evenly, run them to full extension.
3. Now move control valve for the lift position to **DOWN** position and retract both cylinders fully. Hold control valve **DOWN** for an additional full 2 minutes to assure fully purged cylinders.
4. **NEVER** try to operate cylinders with any **AIR** retained within the system.

After initial purging, when dumping box, hold hydraulic valve open a minimum of 5 seconds beyond the end of the cylinder stroke in the down position.

If system is bled, it will require 13 gallons of hydraulic fluid to be fully charged. 19.00877

OPERATING INSTRUCTIONS

Failure to equalize the cylinders by purging the air from them can severely damage both cylinders and box.

⚠ CAUTION

BEFORE loading first load each day, hold valve for the lift cylinders down for 60 seconds with box in down position.

Equalize the lift cylinders on each load, hold valve for the lift cylinders down for 5 seconds with the box in down position.

⚠ CAUTION

Use extreme caution when operating box on uneven ground.

Do not raise box unless wagon is parked beside a truck and in proper unloading position.

⚠ CAUTION

Always be sure to raise the tank at least 12 inches before dumping.

Avoid lowering box with a load whenever possible.

⚠ CAUTION

Do not exceed 30,000 pounds (evenly distributed load) on 8016.

Always maintain 7 gallons reserve oil in the hydraulic reservoir. (Pumping air into wagon's hydraulic system will cause severe damage).

⚠ CAUTION

Do not tow Dump Box over 20 M.P.H.

Maintain liquid ballast in non-dump side tires. Maintain 1500 lbs. of ballast in weight box.

Check Lug Nuts Periodically. 5/8" Nuts Torque to 90 ft. lb.

22.5 Inch tire Operating Air Pressure 70. P.S.I.

19.00678

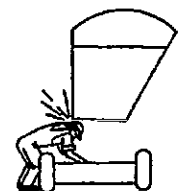
⚠ WARNING



AVOID HIGH-PRESSURE FLUIDS

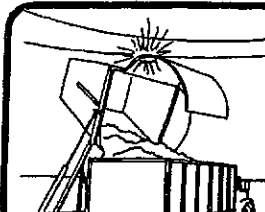
AVOID THE HAZARD BY RELIEVING PRESSURE BEFORE DISCONNECTING HYDRAULIC OR OTHER LINES. TIGHTEN ALL CONNECTIONS BEFORE APPLYING PRESSURE.

SEARCH FOR LEAKS WITH A PIECE OF CARDBOARD. PROTECT HANDS AND BODY FROM HIGH PRESSURE FLUIDS. 21.09024



⚠ DANGER

KEEP CLEAR OF DANGER AREAS. NEVER PLACE ANY PART OF THE BODY BETWEEN BOX AND FRAME WHILE BOX IS IN THE RAISED POSITION.



⚠ WARNING

BEFORE RAISING BOX, ALWAYS BE SURE THERE IS A 35' MINIMUM OVERHEAD CLEARANCE.

SETUP AND ASSEMBLY INSTRUCTIONS

All references to left and right or front and rear are determined with the operator sitting on the tractor facing forward. The container itself is normally set-up at the factory for either left hand or right hand operation depending on model.

SMV Emblem

A Slow Moving Vehicle (SMV) Emblem bracket has been supplied with the dump box. The location of the SMV Emblem varies according to safety laws for different states and localities. Your dealer can assist you in mounting the SMV Emblem in the proper location.

Lights

Your Miller Pro Dump Box is also equipped with running and turn signal lights for those areas where they are required by state or local safety laws.

Your Miller Pro dump box Model #19.00526 is set-up so it normally dumps to the left. Model #19.00662 is set-up to dump to the right. The Figures shown in this manual show the assembly of the left hand model. Assembly of the right hand model is the same but opposite to the side shown. For normal assembly proceed as follows:

1. Remove all of the contents from the container. Please inspect all items carefully for discrepancies or shortages of pieces or hardware items.



CAUTION

Handle the component assemblies carefully to avoid injury; they are very heavy and awkward. Use a lift truck or overhead hoist to aid in handling the heavy components.

2. Mount the wheels on the wagon hubs. Fasten the wheels and tires to the hubs with the (8) wheel nuts torqued from 90 to 105 ft. lbs. Check tire pressure for appropriate PSI as listed on the tire. Two tires require liquid ballast, 75% full. See your local tire dealer for this service. The tires containing the fluid are to be mounted opposite the dump side for counter weight.
3. Center the reach pole between the front and rear axle assemblies. The distance between the centers of the axles should be 157-1/2 inches.
4. Couple the rear axle assembly to the reach pole with the (6) 5/8" x 1-1/2" Gr5 bolts, (12) 5/8" diameter hardened flatwashers and (6) 5/8" nylon insert lock nuts as shown in Figure 1. Do not tighten bolts.

SET-UP AND ASSEMBLY INSTRUCTIONS, continued

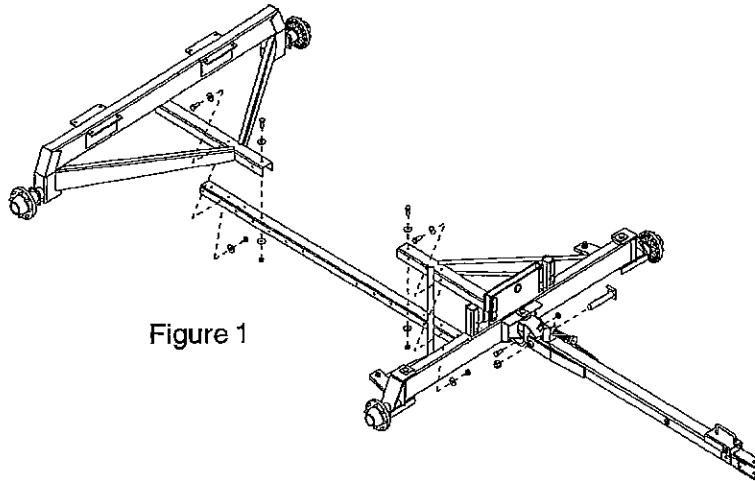


Figure 1

Couple the front axle assembly to the reach pole with the (6) 5/8" x 1-1/2" Gr5 bolts, (12) 5/8" diameter hardened flatwashers and (6) 5/8" nylon insert lock nuts as shown in Figure 1. Do not tighten bolts.

4. Securely fasten the pole to the pivot assembly on the front axle using the machined bolt, castle nut and cotter pin as shown in Figure 1.

Fasten the assist spring to the pivot assembly with the included hardware. Adjust spring tension by loosening the double nut on the spring rod. Then tighten or loosen the two nuts according to whichever adjustment you are seeking and retighten the nuts to each other.

5. **Caution:** Carefully raise the dump box and frame assembly securely with forklifts or other suitable lifting devices and install on top of the running gear. Attach the rear with (8) 5/8" x 2-1/2" Gr5 bolts, (16) 5/8" diameter flatwashers, (8) 5/8" lockwashers and (8) 5/8" nuts. Do not tighten. Attach the front to the running gear with the pivot pin and (1) 3/8" diameter lockwasher and (1) 3/8" nut as shown in Figure 2.

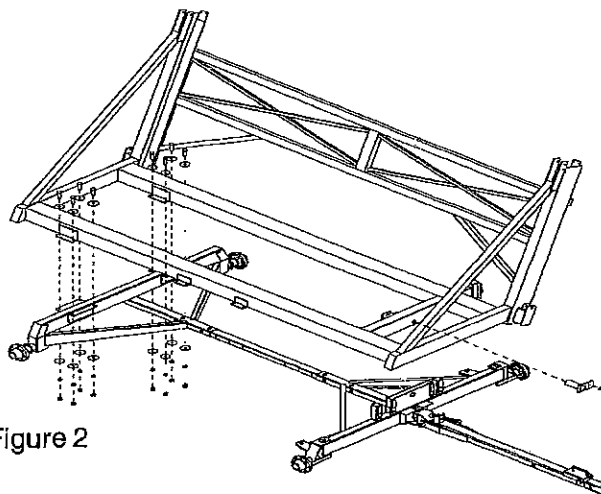


Figure 2

SET-UP AND ASSEMBLY INSTRUCTIONS, continued

6. Tighten all running gear, reach and axle mounting hardware securely. Torque all hardware to the specifications found at the end of this manual.
7. Assemble the roof opener arms to the roof with (6) 1/2" x 4" Gr5 bolts, (6) 1/2" diameter flatwashers, (6) 1/2" lockwashers, (6) 1/2" nuts and (3) 1-1/2" diameter plastic hole plugs as shown in Figure 3.

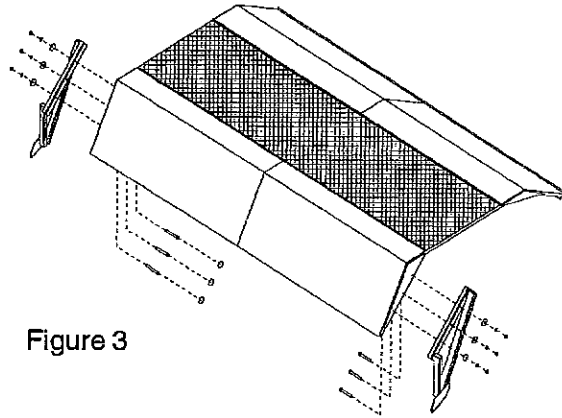


Figure 3

8. Raise the roof assembly and lower onto the top of the dump box. Attach the roof to the dump box with the (4) pins, (8) cotter pins and (2) 3/4" diameter washers as shown in Figure 4. The long pins are used on each end of the roof. The short pins are used for the center pivots.

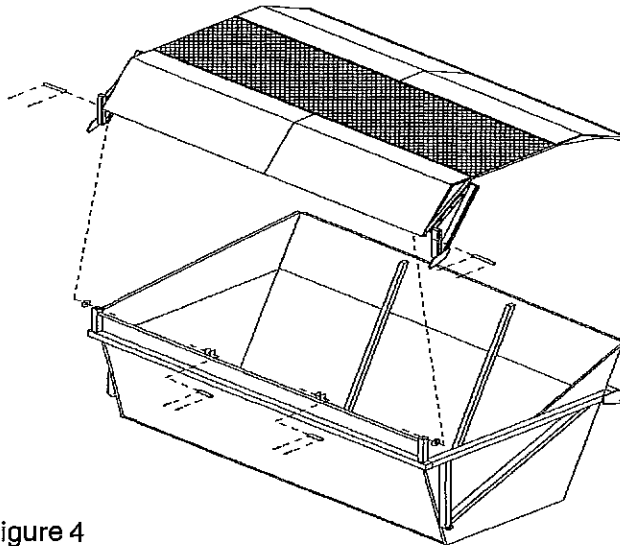


Figure 4

SET-UP AND ASSEMBLY INSTRUCTIONS, continued

9. Install the connector links onto the roof opener arms and into the center hole of the tilt cylinders as shown in Figure 5. Slide the cable thimbles onto the connector link. Slide the cable through the pulley and through the cable thimbles. Attach 2 cable clamps at each thimble using a short loop in the cable. (Refer to diagram below for correct cable clamp installation and instructions). Repeat the procedure at the other end of the dump box.

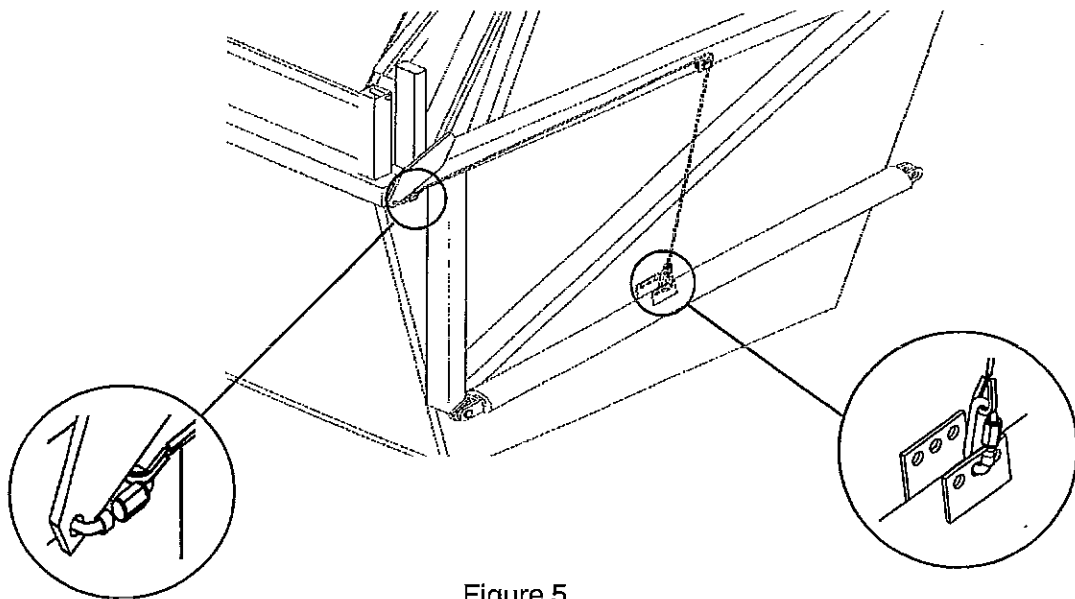
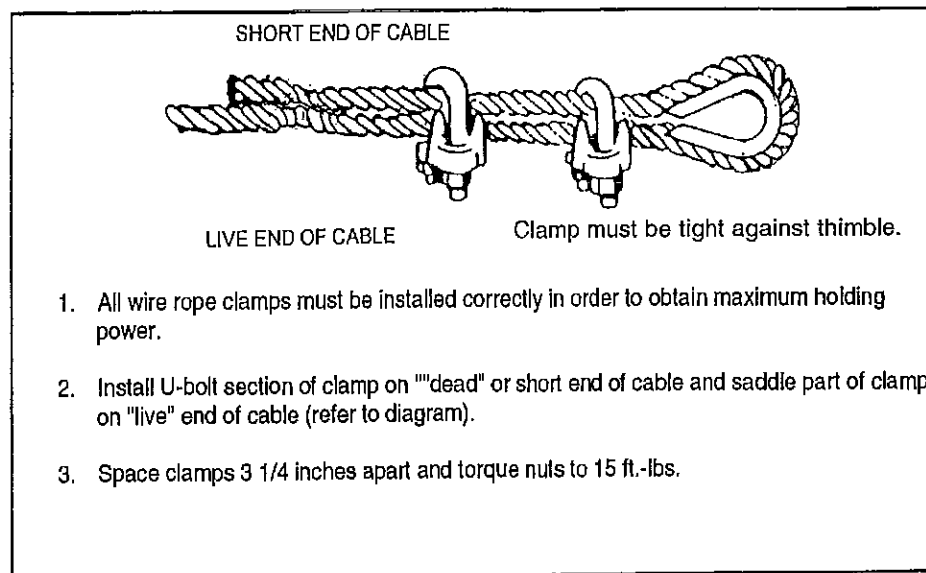


Figure 5



SET-UP AND ASSEMBLY INSTRUCTIONS, continued

10. Recheck all bolts making sure they are tight. NOTE: Cables may have to be readjusted to make sure the roof opens evenly.
11. Assemble the weight box to the frame of the dump box with (8) 5/8" x 6-1/2" Gr5 bolts, (8) 5/8" diameter flat washers, (4) straps, (8) 5/8" lockwashers and a (8) 5/8" nuts as shown in Figure 6. Fill the weight box with at least 1500 lbs of sand or similar material for ballast.

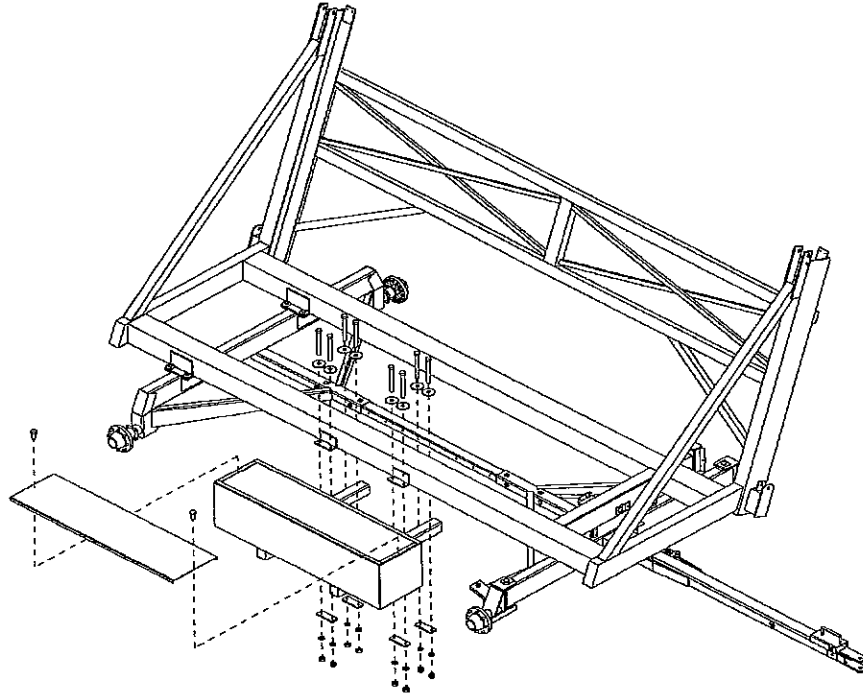
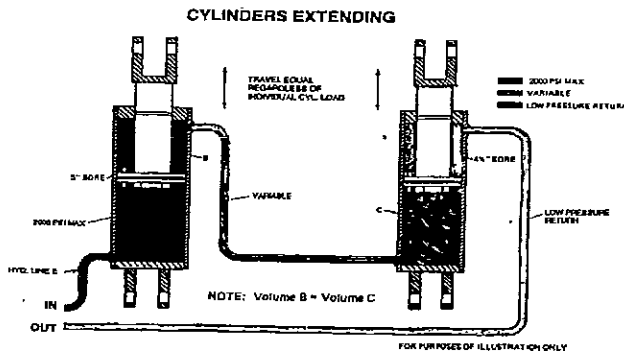


Figure 6

READ THIS SECTION CAREFULLY

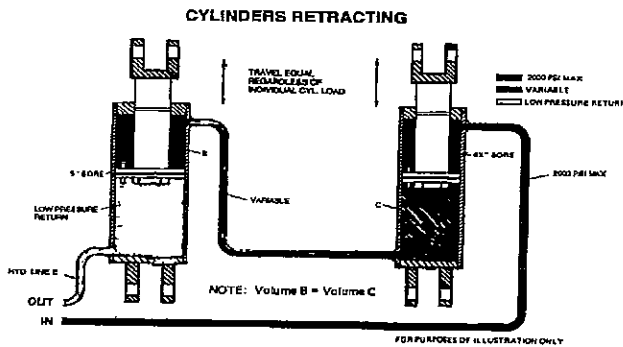
12. With the box empty, place a block of wood between the front axle and the stabilizer cylinder or front bolster; additionally, you want to hold down the non-dump side rear tire with a tractor loader bucket or some similar heavy object for safety during the initial test cycle. Power the box through the dump cycle several times according to the hydraulic instructions decal located on the front of the power unit reservoir, and add any oil as required to keep the system full.

HYDRAULIC CYLINDER SYSTEMS



The lift cylinders are automatically kept in balance. External by-pass automatically allows oil to flow to lifting cylinder when piston reaches the end of its stroke in the retracting position.

With the cylinders extending, as 2000-PSI oil goes into the bottom of the large cylinder, the fluid at the top of the large cylinder is forced into the bottom of the small cylinder so that both pistons rise at the same time.



With the cylinders retracting, as 2000-PSI oil goes into the top of the small cylinder, the fluid at the bottom of the small cylinder is forced into the top of the large cylinder so that both pistons lower at the same time.

HYDRAULIC SYSTEM

1. The hydraulic system of the dump box, as delivered, is charged with hydraulic fluid: In the retracted position there are 13 gallons of fluid in the cylinders. To extend (raise and tilt the box) will require an additional 7 gallons.
2. As a regular step of normal operation, hold control valve open for five additional seconds after cylinders are fully retracted after dumping, to ensure equalization phasing of the cylinders.
3. Before initial operation, or if the system has sat for some period of time without being used or the system has been opened for maintenance (see paragraph 5), do the following before operating the dump box: with the tractor running at a low idle, hold the hydraulic valve in the down position for two minutes. (This will recharge the system through the internal by-pass valves).

If cylinders do not extend evenly, repeat Step 3.

4. If either or both cylinders fail to fully extend, check the fluid supply. If low, add fluid. (Make certain that seven gallons of space is available in reservoir to lower the unit to down position).
5. If any hoses are removed, make certain that all are reconnected according to "Instructions for installing and recharging cylinders in the field."

OPERATING INSTRUCTIONS



FAILURE TO EQUALIZE THE CYLINDERS BY PURGING THE AIR FROM THEM CAN SEVERELY DAMAGE BOTH CYLINDERS AND BOX.

1. Before loading the box each work day, hold valve in "down" position for 60 seconds. (This purges any air intruding during over night cooling. Each time the box is dumped, hold valve open 5 seconds after box stops moving at the "down" position, remember that additional time may be required to raise the stabilizer cylinder in the down position. Once the box is full and you are ready to dump, you will become aware of two unique features of the Miller Pro Dump Box which will make dumping quick and easy.

One feature is that the box moves horizontally a distance of approximately 25" toward the receiving unit as the box is being lifted. The other feature is the integral lip. These two features provide the operator with ample space between the dump box and the receiving unit without having to get too close for dumping.

2. The actual pivot height of the boxes vary from 120" to 177" which will accommodate most receiving units. The actual clearance height over a container will be approximately 4" less than pivot height.
3. The 47 degree maximum dumping angle allows material to slide out easily.
4. The telescoping tongue unit is used when a steerable wagon is being operated in conjunction with harvesting equipment which interferes with dumping. By releasing the latch and pulling the tractor slowly ahead until elevator or blower, etc. clears the edge of the box, the dump cycle can be completed without having to unhook or swing anything out of the way. Once the dump cycle is complete, the tractor should be backed until the latch catches.
5. The dumping cycle time will depend on the hydraulic flow of the tractor. The higher the GPM rating of the hydraulics, the faster the cycle. (This system is designed for 2250 PSI and 16 GPM).
6. The roof will open automatically as the box is being dumped, and will close when the box is lowered.

OPERATING INSTRUCTIONS, continued

FILLING THE BOX

1. Your dump box is designed for filling directly from the harvesting equipment. It may be towed directly behind or beside harvesters in the field. A low 9'6" average loading height allows elevators, conveyors, augers, and blowers from the harvester to clear the box easily during loading.
2. One of the outstanding features of the dump box is the synchronized equal-force hydraulic cylinder system. This means that you can fill the box to capacity without worrying about the load distribution in the box. (Do not exceed rated load).
3. The capacity of the dump box is stated throughout this manual in two ways:
 - a. Volume capacity (cubic feet)
 - b. Lifting capability (pounds)

Each of these is generally stated without any regard to the density (weight per unit of volume) of the commodity being handled. Because the densities of different commodities vary greatly, so will the usable capacity of the dump box vary from commodity to commodity.

DUMPING THE BOX



CAUTION

Use extreme caution when operating box on uneven ground.

Do not raise box unless wagon is parked beside a truck and in proper unloading position.



CAUTION

Avoid lowering box with a load whenever possible.



CAUTION

Do not exceed 30,000 pounds (evenly distributed load) on 9016.



CAUTION

Always maintain 7 gallons reserve oil in the hydraulic reservoir. (Pumping air into the dump box's hydraulic system will cause severe damage).

OPERATING INSTRUCTIONS, continued

Transporting

The dump box has been equipped with amber reflectors on the front and red reflectors to the rear.

There are also red and amber transport lights on the rear frame. The plug for the light cord is mounted in the front. For your safety, and the safety of others, it is recommended that the transport lights are used when traveling public roadways.



NEVER EXCEED A MAXIMUM TOWING SPEED OF 20 MPH (32 KMH) WHEN TRANSPORTING THE DUMP BOX!

DO NOT allow anyone to operate this equipment who has not been trained in its safe operation!

1. **Before unloading the dump box, park the box on level ground for unloading, and engage the tractor parking brake.**

Fasteners

Retighten all fasteners every 50 loads or as required.

Storage

For off- season storage the following procedures are recommended:

1. Remove all crop material from the dump box.
2. Lubricate all grease points.
3. Run the dump box for several minutes to distribute lubrication.
4. Store inside.

<u>MATERIAL</u>	<u>LBS. BU.</u>	<u>LBS. CU. FT.</u>
MALT, WHOLE, DRY	34-37	27-30
MALT, MEAL	45-50	36-40
MILLET SEED, COMMON	50	40
MUSTARD SEED	56	45
MILO, CORN SORGHUM	56	45
OATS	32	26
ONIONS	57	46
ORCHARD GRASS SEED	14	11
PEACHES, FRESH	48	39
PEANUTS, UNSHELLED, RAW	19-25	15-20
PEAS, GREEN	56	45
PLUMS	64	51
POTATOES	60	48
POTATOES, SWEET	54	43
RICE, ROUGH	45	36
RUTABAGAS	60	48
RYE	55	44
SAWDUST	12-16	10-13
SHAVINGS, WOOD	19	15
SLASH, SOFTWOOD	.28/CMT	
SLASH, HARDWOOD	.33/CMT	
SHAVINGS, HARDWOOD	.40/CMT	
SILAGE, CORN	31-45	25-36
SOYBEANS, WHOLE	60	48
SUGAR CANE	13-27	10-22
SUGAR BEETS	68	55
SUNFLOWER SEEDS	20-26	16-21
TIMOTHY SEED	45	40
TOBACCO, SCRAPS	19-21	15-25
TOMATOES	60	48
TURNIPS	60	48
WALNUTS	50	40
WHEAT	60	48
WHEAT, CRACKED	56	45
WOOD CHIPS, SCREENED	15-25	12-20

The preceding are simply general listings for some of the various commodities that may be used in a dump box. Please remember that moisture and compaction or processing will change the specific weight of a commodity greatly from that which is listed, and as such, the aforementioned listings are guidelines only. You may have to weigh one (1) CU. FT. of material to verify how much you may put into a dump cart safely.

LUBRICATION



CAUTION! BEFORE LUBRICATING THE MACHINE, SHUT OFF THE TRACTOR ENGINE AND ENGAGE THE PARKING BRAKE. BE CAREFUL!

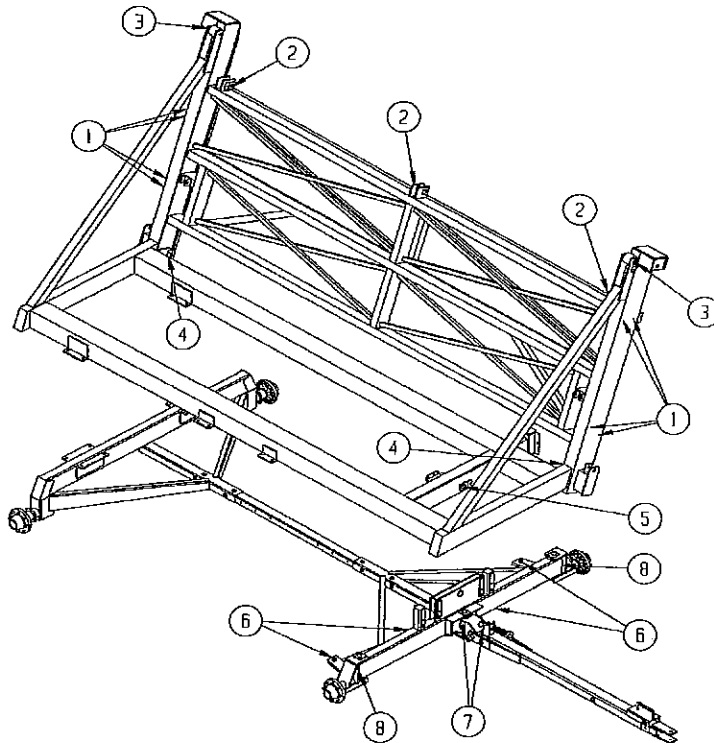
Sufficient oil and grease will prevent excessive part wear and early failure. Lubricate according to instructions. Grease fittings are provided on the running gear at several important pivot points. Fittings should be lubricated at least four times a year. Use a good grade of lithium base grease. Wipe dirt from the fittings before greasing to prevent any dirt from being forced into the bearings or pivots. Replace any missing fittings. To minimize dirt build-up, avoid excessive greasing.

NOTE: In addition to the fittings, inspect and repack the wheel bearings at least twice a year.

Daily or after every 30 loads

Grease Fitting Locations:

1. Slide Channels
2. Tank Pivots
3. Upper Rollers
4. Lower Rollers
5. Front Bolster Pivot
6. Tie Rod Ball Joints
7. Hitch Box Pivots
8. King Pins



ADJUSTMENTS

INSTRUCTIONS FOR INSTALLING AND REPHASING CYLINDER IN THE FIELD

LIFT CYLINDERS

1. Mount the cylinders on elevator but do not hook up the rod ends.
2. Hook up all hoses, lines, fittings and valves.
3. After the system is properly plumbed, hook it up to the hydraulic power source, and make sure there is an adequate supply of hydraulic fluid in the reservoir. (Approximately 20 gallons of fluid are required to fully charge and extend all cylinders at once).
4. Remove the bleed plug located at the top of the front lift cylinder. Move the control valve for the lift cylinder to the down position and hold until fluid starts coming out of the bleed port. Release the control valve and replace the bleed plug. Repeat the procedure on the rear lift cylinder.
5. Move control valve to "down" position and hold for two or more minutes. Then move control to the "up" position and watch the rods extend. If the cylinders are fully charged, the rods will reach the end of their strokes at the same time. If they do not, move control valve to "down" position, retract both cylinders and repeat everything as described under this paragraph. Continue repeating this sequence until both cylinders extend and retract together, reaching the ends of the strokes at the same time.

TILT CYLINDERS

6. Mount base of cylinders on elevator but do not hook up the rod ends. Support the tilt cylinders by blocking them off the main frame so that the cylinder rods can fully extend without touching or moving any part of the box.
7. Repeat Steps 2, 3 and 5
8. Attach rod ends to dump box and attach roof cables.

POLE

Miller Pro dump boxes come with an extendible pole. The pole extends to facilitate hook-ups.

To use the extendible pole, back the towing vehicle near the hitch clevis. Then lift the latch and extend the pole. Securely attach the hitch clevis to the towing vehicle with a locking hitchpin. Back up the towing vehicle to relatch the pole.

ASSIST SPRING

Your Miller Pro dump box comes with an adjustable assist spring. To adjust, loosen the double nut on the spring rod. Then tighten or loosen the two nuts according to whichever adjustment you are seeking and retighten the nuts to each other.

ADJUSTMENTS, continued

TIRES



WARNING

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

The pressure should be frequently checked and maintained at the appropriate values. Non-dump side tires must be filled with liquid ballast.

WHEELS



WARNING

Frequently check the wheel nuts to make sure they are securely fastened. Nuts should be torqued from 90 - 105 ft-lb.

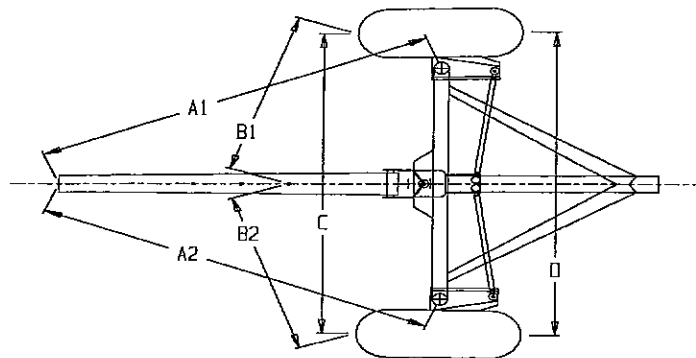
WHEEL BEARINGS

To adjust the wheel bearings, remove the grease cap and cotter pin. Tighten the slotted nut until there is a slight drag on the wheel. Then, back the nut off one notch and lock its position with the cotter pin. Replace the grease cap after the adjustment is made.

TOE-IN

The initial "toe-in" is factory set. However, if excessive Dump Box sway or tire wear is noted the "toe-in" should be checked and readjusted in the following manner:

1. Check ball joints, if loose retorque to 100 ft. lbs. (min) for the dump box running gear. Tighten to next slot in nut and replace the cotter pin.
2. Adjust the length A1 to within 1/16" of length A2.
3. Adjust the tie rod length, by loosening the nuts and rotating the tube, to make length B1 equal to length B2.
4. Equally adjust the tie rod length, by rotating the tubes, so that length C is 1/2" to 1" shorter than length D.
5. Retighten the nuts on the tie rod tubes.



HYDRAULIC TROUBLE SHOOTING GUIDELINES

Most of the failure in hydraulic systems have essentially the same symptoms—a gradual or sudden loss of high pressure, with consequent loss of power in the work cylinder, causing it to stall out under light loads, or to move more slowly than normal. Any one of the system components may be at fault, and by following instructions, the problem can usually be pinpointed in a short time. These instructions are intended for spotting problems in a system which previously has been working properly. A reasonably accurate pressure gauge and flow gauge must be used, and the original pump working pressure and GPM flow must be known.

TEST METHOD

The most likely test point in the system is: the piston blow-by. Leakage past the cylinder piston can be detected by testing each cylinder at mid stroke in a fixed length position for fluid by-pass.

TRACTOR PUMPS

Many of the newer tractors and self-propelled machines sold today incorporate a constant pressure-full bypass or closed center type of hydraulic pump. These pumps will not lift to full capacity unless a relief valve of fifty percent greater pressure is first installed. Checking this system for pressure only is not sufficient, as flow is required to move a hydraulic cylinder in and out, and this will not be present if the system has reached hydraulic lock pressure and flow has been shut down while pressure is retained with a check valve. Miller Pro hydraulic systems require 2250 PSI and an oil flow of 16 GPM to achieve normal operation, hydraulic systems not giving this output will demonstrate less than satisfactory performance. Please consult owner's manual of the power unit for further full explanation of the hydraulic system operating parameters.

New box systems occasionally experience a climbing or creeping of cylinders from time to time. This is usually caused by aerated oil trapped between the two cylinder glands, normally causing the smaller cylinder to rise several inches and extending the smaller stabilizer cylinder. In this instance, rechecking fitting tightness and checking for damaged lines should remedy the problem. Another cause normally found is a small oil bypass around the four-way valve on the power unit. This will push both cylinders evenly a small distance until pressures are even, again causing the small stabilizer cylinder to extend first. Additionally, owners will find that when the units are parked unhooked during periods of extreme temperature variations, that thermal expansion of the oil will cause the cylinders to rise six to ten inches in a tightly sealed hydraulic circuit. This is considered normal and simply repurging the circuit before further use will correct the system.

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
BOX DOES NOT RAISE OR LOWER	NO HYDRAULIC POWER	<ul style="list-style-type: none"> -CONNECT HYDRAULIC CIRCUIT TO POWER SOURCE. -ACTUATE PROPER TRACTOR HYDRAULIC CONTROL LEVER. -ENGAGE PTO IF REQUIRED -CHECK QUICK-COUPERS TO BE CERTAIN THEY ARE COMPLETELY ENGAGED OR COMPATIBLE. -CHECK RESERVOIR OIL LEVEL. -LOWER BACK PRESSURE BY REPLACING CLOGGED OIL FILTER.
	INTERNAL LEAKAGE IN THE LIFT CYLINDERS.	-REPLACE PISTON SEALS IN LIFT CYLINDERS.
	BOX OVERLOADED.	-REMOVE PART OF LOAD.
	INSUFFICIENT HYDRAULIC PRESSURE.	-USE POWER SOURCE CAPABLE OF PROVIDING 2250 PSI MINIMUM AT FULL RESTRICTION AND FLOW.
	HYDRAULIC CIRCUIT CROSSED.	-TRACE HYDRAULIC CIRCUIT AND CONNECT SO FRONT AND REAR CYLINDER PORTS ARE IN SERIES.
BOX RAISES OR LOWERS SLOWLY	<p>NOT ENOUGH HYDRAULIC OIL VOLUME IN LINE.</p> <p>FLOW RESTRICTOR IN DEALER INSTALLED HOSES.</p> <p>HYDRAULIC SUPPLY LINES ARE TOO SMALL DIAMETER</p>	<ul style="list-style-type: none"> -USE POWER SOURCE CAPABLE OF PROVIDING 16 GPM MINIMUM. -REPLACE WORN PUMP. -REPLACE WORN CONTROL VALVES. -CHECK ADJUSTMENT OF VALVE. -SPEED CONTROL (SEE TRACTOR OWNER'S MANUAL). -REPLACE CLOGGED OIL FILTER. -SPEED UP TRACTOR ENGINE. -DO NOT DEPRESS TRACTOR CLUTCH (JOHN DEERE). -SLOW VALVE SPEED.
	INTERNAL LEAKAGE IN LIFT CYLINDERS.	-REPLACE PISTON SEALS IN LIFT CYLINDERS.
	BOX OVERLOADED	-REMOVE PART OF LOAD.

TROUBLE SHOOTING, continued

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
BOX CHATTERS WHEN RAISING OR LOWERING, OR DOES NOT RAISE TO FULL HEIGHT	AIR IN HYDRAULIC SYSTEM.	-ACTUATE CYLINDERS TO FULLY RETRACTED STROKE TO PURGE SYSTEM OF AIR.
	OIL LEVEL LOW - CHECK FOR MINIMUM USABLE OIL.	-ADD HYDRAULIC OIL (SEE TRACTOR OWNER'S MANUAL) USE HYDRAULIC FLUID ONLY.
	INSUFFICIENT RESERVOIR CAPACITY.	-CHANGE POWER SOURCE TO PROVIDE A MINIMUM RESERVOIR CAPACITY OF 7 GALLONS USABLE OIL.
STABILIZER CYLINDER DOES NOT EXTEND OR RETRACT PROPERLY	TRACTOR HAS RESTRICTOR IN SYSTEM. TRACTOR FOUR-WAY VALVE IS LEAKING OIL	-SEE TRACTOR OWNER'S MANUAL FOR INSTRUCTIONS AND OPERATION WITH DOUBLE ACTING CYLINDERS. -REPLACE PISTON SEALS IN STABILIZER CYLINDER
BOX DOES NOT DUMP PROPERLY.	BOX RAISES SLOWLY.	-SEE TROUBLESHOOTING SECTION - BOX RAISES SLOWLY.
	BOX DUMPED ON SIDE HILL.	-DUMP BOX ON LEVEL GROUND.
BOX RAISES ONE END.	HYDRAULIC CIRCUIT NOT COMPLETELY FILLED. DRY CYLINDER INSTALLED AND NOT PURGED. BROKEN OIL LINE.	-CHECK FOR LINE LEAKS - BAD SEALS - LEAKY QUICK COUPLER. -POWER SOURCE HAS TOO LITTLE HYDRAULIC FLOW (GPM)

OPTIONAL FEATURES & ACCESSORIES

SAFETY CHAIN

If the Dump Box is going to be transported on a public highway, a safety chain must be obtained and installed. Always follow state and local regulations regarding a safety chain and auxiliary lighting when farm equipment on a public highway. Be sure to check with local law enforcement agencies for your own particular regulations. Only a safety chain (not an elastic or nylon/plastic tow strap) should be used to retain the connection between the towing and towed machines in the event of separation of the primary attaching system.

SURGE BRAKES

For those applications where brakes are needed, Miller Pro offers surge brakes for the 9016 Dump Box.

FOR EXTEND-O-MATIC BRAKE TONGUE

1. Assemble the hydraulic tubing to your running gear, using the instruction sheet and parts list for proper placement.
2. Remove master cylinder cover, and fill reservoir of hydraulic cylinder with hydraulic brake fluid, and bleed air from lines. Then refill reservoir, it is important that all air is removed from brake lines.
3. Note that the hydraulic cylinder is mounted on spring loaded slides which periodically need to be cleaned and lubricated
4. Hydraulic cylinder is activated by a spring loaded push rod operating between it and the tongue insert. These components should be oiled periodically to insure free movement of actuator shaft.
5. Provisions for safety chains are provided and can be purchased as extra equipment. It is mandatory that safety chains be used for all highway use.

OPTIONS & ACCESSORIES

HYDRAULIC BRAKE INSTRUCTIONS

1. **Adjust Brakes.**

The brake adjustment nut is located behind a slot at the bottom of the backing plate. Tighten until lining drags lightly on the drum. Then back off the adjustment 10 to 12 notches. This allows wheel to turn freely. Always rotate drum in direction of forward rotation only.

2. **Brake Lines.**

Check that all lines are fastened securely. Be sure there are no sharp bends or kinks to retard flow of hydraulic fluid.

3. **Bleeding the System.**

Use only high-quality brake fluid (SAE 70 R1 or 70 R3). To bleed the system manually - fill master cylinder with fluid. Install bleeder hose on first wheel cylinder. Place free end of hose in glass container submerged in fluid (to observe bubbles). Pump actuator with full strokes until bubbles no longer rise to the surface of fluid. Close bleeder screw securely. Repeat bleeding operation at each wheel. Make sure the master cylinder reservoir remains no less than 1/2 full. Fill and secure filler cap when operation is complete.

4. **Master Cylinder.**

The EXTEND-O-MATIC tongue has an overload control device built in to avoid destructive hydraulic line pressure that could be experienced in panic stops. The master cylinder is allowed to reach the maximum pressure permissible and then moves back on preloaded spring mounts. This holds the pressure on the brake shoes until the braking is reduced to normal. The spring mounting bracket must be kept free from dirt and rust, and should be lubricated frequently to keep brakes from grabbing or becoming erratic. This unit is found under the guard at the rear of the tongue body.

5. **Hydraulic Damper.**

This is found at the forward end of the torque insert. It is a hydraulic shock absorber installed between the tongue body and latch slide assembly. This dampens the brake action and prevents brakes from erratic operation. Keep slide lubricated lightly. Slide must move slowly but freely.







6. **EXTEND-O-MATIC Tongue.**

The tongue assembly is designed for dual purpose use. For ease in hooking up - unlatch the insert latch and move tongue insert forward up to 18" to tractor tow bar. After hooking up, back up first to latch then insert. After latching, the insert then applies brakes. Special brake shoes prevent brakes from holding as wagon is backed up. In normal operation the wagon attempts to push the tractor when slowing down. The hydraulic cylinder then activates brakes until wagon reaches tractor speed. Clean and lubricate insert occasionally to maintain smooth operating brakes. To remove insert from the tongue body — remove large bolt at center of tongue assembly. **Always replace bolt.**

TORQUE SPECIFICATIONS

NOTE: Use these torque values when tightening hardware (excluding: Locknuts and Self-tapping, Thread Forming and Sheet Metal Screws) unless specified otherwise.

All torque values are in Lb-Ft except those marked with an * which are Lb-In (for metric torque value Nm, multiply Lb-Ft value by 1.355 or Lb-In value by 0.113)

Unified National Thread	Grade 2 		Grade 5 		Grade 8 	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
8-32 8-36	19* 20*	14* 15*	30* 31*	22* 23*	41* 43*	31* 32*
10-24 10-32	27* 31*	21* 23*	43* 49*	32* 36*	60* 68*	45* 51*
1/4-20 1/4-28	66* 76*	50* 56*	9 10	75* 86*	12 14	9 10
5/16-18 5/16-24	11 12	9	17 19	13 14	25	18 20
3/8-16 3/8-24	20 23	15 17	30 35	23 25	45 50	35
7/16-14 7/16-20	32 36	24 27	50 55	35 40	70 80	55 60
1/2-13 1/2-20	50 55	35 40	75 90	55 65	110 120	80 90
9/16-12 9/16-18	70 80	55 60	110 120	80 90	150 170	110 130
5/8-11 5/8-18	100 110	75 85	150 180	110 130	220 240	170 180
3/4-10 3/4-16	175 200	130 150	260 300	200 220	380 420	280 320
7/8-9 7/8-14	170 180	125 140	430 470	320 360	600 660	460 500
1-8 1-14	250 270	190 210	640 710	480 530	900 1000	680 740
Metric Course Thread	Grade 8.8 		Grade 10.9 		Grade 12.9 	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
M6-1	8	6	11	8	13.5	10
M8-1.25	19	14	27	20	32.5	24
M10-1.5	37.5	28	53	39	84	47
M12-1.75	65	48	91.5	67.5	111.5	82
M14-2	103.5	76.5	145.5	108	176.5	131
M16-2	158.5	117.5	223.5	165.5	271	200

NOTES

WARRANTY

Miller-St. Nazianz, Inc. ("Miller") warrants each new Miller Pro dump box to be free from defects in material and workmanship under recommended use and service, as stated in the Operator's Manual, as follows:

Miller will replace, F.O.B. St. Nazianz, Wisconsin, or repair, as Miller elects, any part of a new Miller Pro dump box which is defective in material or workmanship without charge for either parts or labor during the first year following delivery to the original retail customer.

All warranties on the new Miller Pro dump box shall apply only to the original retail purchaser from an authorized Miller Pro dealer.

Miller warrants that it will replace, F.O.B. St. Nazianz, Wisconsin, or repair, as Miller elects without charge, any genuine Miller spare part purchased after the expiration of the new dump box warranty that are defective in material or workmanship within ninety (90) days of the installation date.

The provisions of this warranty shall not apply to any Miller Pro dump box which has been subject to misuse, negligence, alteration or accident, or which shall have been repaired with parts other than those obtainable through Miller.

Repairs eligible for labor warranty must be made by an authorized Miller dealer. The purchaser is responsible for transportation of the equipment to the dealership for warranty service or for any service call expense.

Except as set forth above, Miller shall not be liable for injuries or damages of any kind or nature, direct, consequential, to person or property. This warranty does not extend to loss of crops, loss because of machinery rental or for any other reason. No person is authorized to give any other warranties or, to assume any other obligations on Miller's behalf unless made or, assumed in writing by Miller.

**THERE ARE NO WARRANTIES, EITHER
EXPRESSED OR IMPLIED, OF
MERCHANTABILITY OR FITNESS FOR
PARTICULAR PURPOSE INTENDED OR FIT-
NESS FOR ANY OTHER PURPOSE.**

