

Jinma 284 Tractors

INTRODUCTORY USER GUIDE



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INTRODUCTORY USER GUIDE

Jinma Tractors for Beginners

Introduction

OK, so you have bought a Jinma tractor, now what? If you are a novice with farm equipment and want to know what it can do (can not do) and what it requires to make it work like it is supposed to, read on. If you are a farm equipment veteran, then you may find some of the pictures helpful in orienting you to the Jinma tractor.

The purpose of this guide is to give beginners a real world guide to Jinmas (compact tractors imported from China). If you are a traditional suburbanite or other “newbie”, you don’t know anything/much about diesel engines! You may also not know much about the how to use your Jinma to accomplish work. Make no mistake about it, Jinmas can do a variety of work with the appropriate attachments. But first you must become comfortable with your tractor, what it needs, and what you need to do. The care of a Jinma is not that hard, but you need to get past the mind-numbing mental block that may come from reading the original equipment instruction manuals. This document is **not** intended to replace those manuals; you should read them and follow their directions. This is intended to be a brief and instructive guide in United States English to what does the manual mean and what do I really need to do. This has been written for the 2007 Jinma model 284, but should have useful information for other years and models.

To a certain extent this document follows the same order of the Jinma manual to assist in working back and forth between them. Since this is not always the case and since there is less information in this document than in the Jinma manual you are advised to read the Jinma manuals. Hopefully this document will help you understand the original manuals better.

(I suggest adding:

1. A legal disclaimer of responsibility
2. Some type of copyright on the text which would only allow distribution of this document or excerpts of it with your name, address, etc. and the legal disclaimer)
3. An advertisement for Farm Pros maintenance services

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CHAPTER I - THE JINMA TRACTOR

1. General Introduction

The Jinma tractor has been built in China and has been shipped to the United States for final assembly here. The Jinma has a 3 cylinder diesel engine for movement, a hydraulic system run by the engine to power front and rear attachments, and a PTO (Power Take-Off) attached to the engine to run other attachments. The hydraulic system can power attachments on the front such as a front end loader. The rear hydraulics and PTO can operate other attachments such as a mower or backhoe. The Jinma has a number of forward speeds controlled by the shift lever and a Hi-Lo Range gear; these options are to match working speed with work being done. The Jinma also can be shifted into 4-wheel drive to provide more working force.



2. Fuel, Lubricants, and Water

See the Maintenance Summary Section of this Guide for information on fuel, lubricants, and water. Please note that the Jinma Manual has some recommendations on these materials which are misleading to owners in the United States or Canada.

Note: In this document italicized questions are based on issues raised in the Jinma manual.

3. Break-in of New Tractor (“Running-in” in the Jinma manual)

Should I do an unloaded break-in of the engine? **NO**, as this only requires 60 minutes, the assembler has already done this.

Do I really need to break-in the gears of the unloaded tractor each gear by driving around for 6 hours? **NO**, that would seem to be excessive. It is thought that about an hour of unloaded operation split among all the different gears (including Hi/Lo and Creeper) should be sufficient. Again, your assembler has already done this. Look at the hour meter and confirm this with them.

Do I really need to break-in the gears of the tractor under load for an additional 25 hours? What loads should I use? Again, **NO**, that would seem to be excessive. Another approach is to simply not use maximum force for any operation until there has been some additional break-in time on the machinery. If you are using the tractor to plow a field, go slower than you normally would for a number of hours. If you are front-end loading and moving material, load less material and go slower for a while (keep RPMs below the “Green Range”). Assuming a normal mix of transit and work, the tractor should be broken-in after 25 hours of use. Expect the gear shifting including the shuttle shift to be a little stiff and difficult initially – these will break-in as you use the tractor. If you are having problems after 25 hours, contact your assembler or maintenance service provider.

What do I really need to check/service during and after the break-ins described above? During the first 25 hours of operation it is particularly important to check for leaks, fluid levels, and monitor that everything is operating properly. See the Shift Maintenance schedule in the Maintenance section. At 50 hours of use you have your first scheduled service of the tractor.

4. Controls and Instruments

The numbering system for the definitions is designed to be similar to the numbers used in the Jinma Manual. Because there are more pictures in this manual, the descriptions are grouped by picture. Therefore the descriptions are not always in numerical order. Controls not mentioned in the Jinma Manual are given lettering designations in this Guide.

A. Drive Controls

Main Gear Shift Lever



1) **Auxiliary Gear Shift Lever:** This controls the auxiliary speed gear which changes the gear ranges of the Main Gears (see #2 below). It is located very near and to the right of the Main Gear Shift. Like some 4-wheel drive trucks, the auxiliary speed gear can be set to either L (low - Lo) or H (high - Hi). The L range is such that L (low) and 3rd speed (on the Main Gear Shift) is a lower gear than H (high) and 1st speed ($L1 < L2 < L3 < H1 < H2 < H3$). Generally if you are moving the tractor around you should be in the High gear range. When you are working with the tractor under strain, you may be using the Low range to work more efficiently. The clutch must be depressed to change from H to L or from L to H.

Auxillary (High/Low) Gear Shift Lever

2) **Main Gear Shift Lever:** This is the primary control of the forward and reverse speeds of the tractor. It has 3 forward speeds and one reverse speed. The Auxillary Gear Shift lever works to change the range of the gears so that you effectively have 6 forward and 2 reverse gears. Remember to use the clutch to shift all gears.

3) **Gear Shifting Pattern:** On the top of the Main Gear Shift lever is the “H” pattern to reach each gear of the Main Gear Shift. The tractor is in neutral when the gear shift lever is in the middle of the “H” pattern. The “H” pattern may also be on a plate on the floor on some models.

Clutch

Front Wheel Drive Axle Control Lever

Steering Wheel

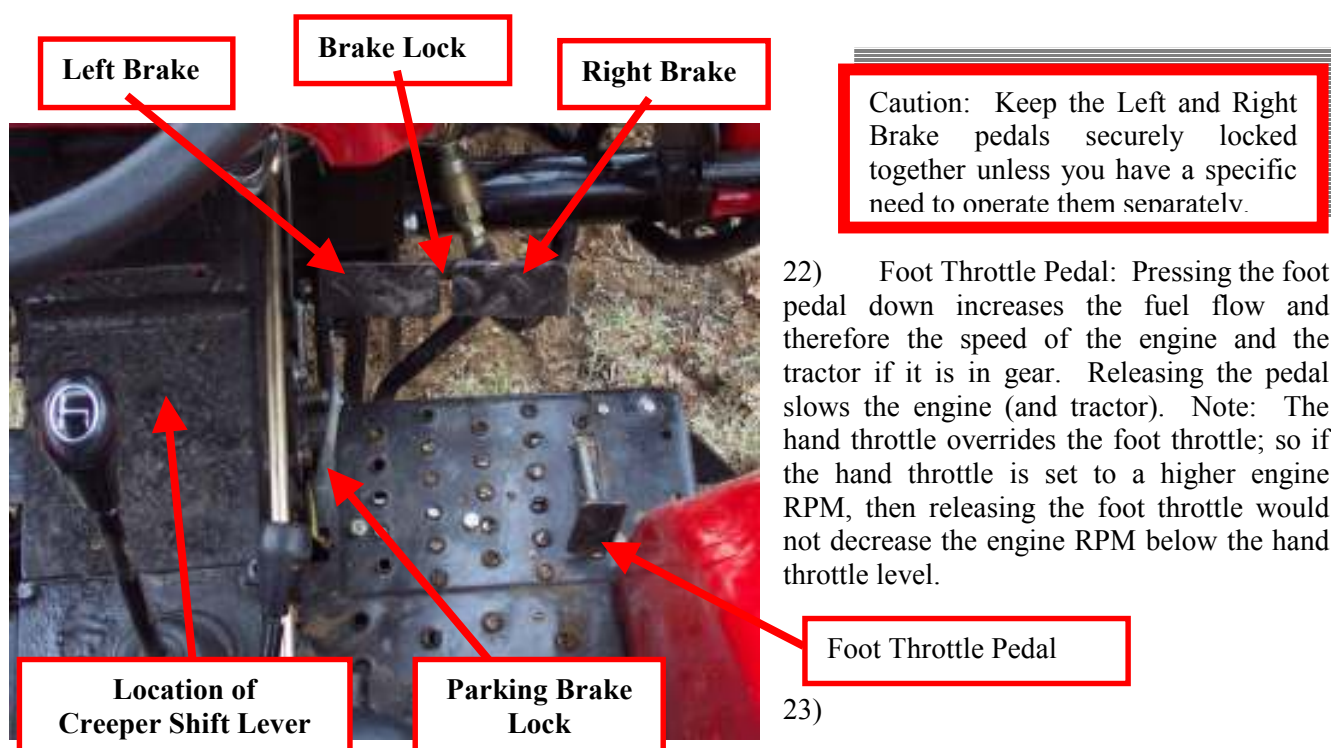
4) **Front Wheel Drive Axle Control Lever (4-Wheel Drive Shift):** This lever engages the front axle to enable/disable 4-wheel drive. Move the lever forward (up) to engage the front axle and operate in 4-wheel drive. Move the lever backward (down) to disengage the front axle and have 2-wheel drive (the rear wheels are always engaged). Use 2-wheel drive when moving the tractor to different locations (especially on pavement) and use 4-wheel drive only when working or when stuck and more traction is needed. Generally, do not use 4-wheel drive unless you need it.



5) **Steering Wheel:** The steering wheel controls the direction of the front wheels and thereby the direction the tractor will travel in both forward and reverse gears.

6) **Clutch Pedal:** When you depress the Clutch Pedal, the clutch is disengaged and you can shift gears. Depressing the Clutch Pedal is necessary whenever you shift the Main Gears, the Shuttle Shift, the Auxiliary Gears (H-L), and the Creeper Gear. Also the Clutch must be depressed when making PTO changes.

21) **Left and Right Brake Pedals:** The brakes are only on the rear wheels. The left brake pedal activates the brakes on the left side of the tractor and the right pedal controls the right side brakes. Since both brake pedals are on the right side of the tractor frame, the most normal operating mode is to lock the two brake pedals together so that both sides of the tractor brake at the same time. The brake lock (braking lock plate in Jinma manual) is used to link the left and right pedals together. Turn the lock plate to the right to connect the two pedals (turn left to disconnect). Connecting the pedals makes the left and right brakes work at the same time when either pedal is pressed. Disconnecting the braking lock plate allows the left and right brakes to operate independently. Independent Brake Pedal operation can be used to turn the tractor in a smaller radius when one side of the brakes is pressed while the other wheels move forward. Please recognize that using the brakes separately to turn the tractor faster places strain on the mechanical equipment of the tractor and may make some parts wear out faster. It can also be dangerous at higher speeds as it may cause the tractor to tip over.

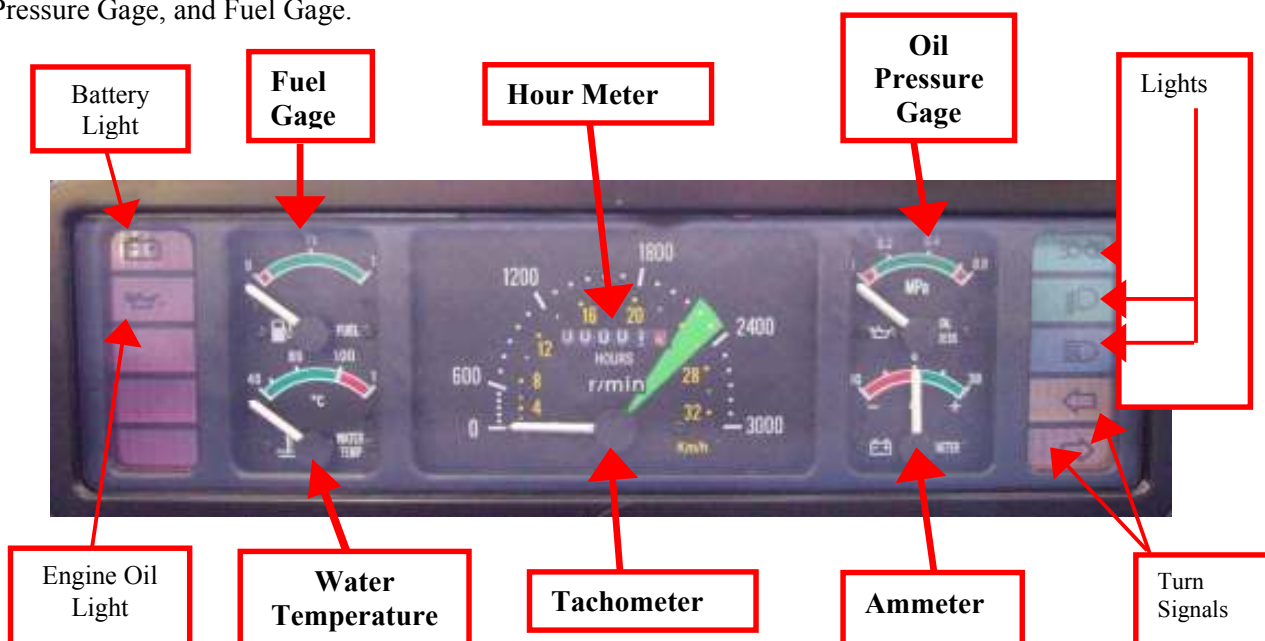


22) **Foot Throttle Pedal:** Pressing the foot pedal down increases the fuel flow and therefore the speed of the engine and the tractor if it is in gear. Releasing the pedal slows the engine (and tractor). Note: The hand throttle overrides the foot throttle; so if the hand throttle is set to a higher engine RPM, then releasing the foot throttle would not decrease the engine RPM below the hand throttle level.

23)

20) **Creeper Shift Lever:** (Note: This gear does not exist on models with the shuttle shift.) On models where it exists, it is located on the right side of the transmission channel forward of the Main Gear Shift and near the brakes. This lever puts the tractor into “creeper” mode which is a very, very low speed. It is used if the tractor is stuck or if you are trying to pull a very heavy load. To shift the tractor into Creeper mode (gear range), depress the Clutch and pull the lever back (towards the Turtle). Reverse this procedure to take the tractor out of Creeper mode (Rabbit). Creeper gear is similar to the Hi-Lo auxiliary gear lever to achieve even lower gears than the L (Low) gear range. It would not be used except to lower the gear ration below L (Creeper Gear should not be used when the auxiliary gear shift lever is in “H” position).

B. Main Instrument Panel: This Panel contains the Ammeter, Water Temperature Gage, Tachometer, Oil Pressure Gage, and Fuel Gage.



12) **Ammeter:** This gage is on the lower right of the Main Instrument Panel. It shows whether the battery is being charged (pointer deflects to the “+” [right] side) or is being discharged (pointer deflects to the “-” [left] side). When the engine is running this gage should show “+” that the battery is being charged. It will show “-” when starting (see starting section).

13) **Water Temperature Gage:** This gage indicates is on the lower left side of the Main Instrument Panel. It registers the temperature of the cooling water in the engine; it reads in Celsius (not Fahrenheit). Prior to starting the temperature will reflect ambient conditions (or warmer if an engine heater is being used). Do not operate the tractor for heavy work until the engine temperature reaches 60 degrees Celsius. Generally, after the engine is started and has run for a couple of minutes you can move the tractor around, but do not apply heavy loads. Normal operating temperature is about 60-80 degrees Celsius, but can be hotter depending on conditions.

14) **Tachometer:** This gage shows both the current RPM (revolutions per minute) of the engine and the cumulative engine hours of the engine. The normal RPM of the engine when in neutral, warmed up, and the Hand Throttle is set to slow is between 600 and 700 RPM. When the tractor is working through the PTO or on a steady task such as mowing, we recommend running the engine in the “Green Range” (about 2,100 to 2,400 RPM). (Note: Remember to operate the tractor below the “Green Range” during the Break-in period.) The hour gage registers the number of hours the engine is running both at idle and at work.

A. **Hour Meter:** This records the cumulative time in hours that the engine has run.

15) **Oil pressure gage:** This indicates the oil pressure of the engine oil. The normal range is 0.2-0.4 MPa.

16) **Fuel gage:** This gage indicates the diesel fuel level of the fuel tank. The tank capacity is about 4.7 gallons (18 liters). The engine will run 10-15 hours (generally more) on a full diesel fuel tank depending on the amount of work being done (higher RPMs use more fuel).

C. Controls Adjacent to the Steering Wheel

7) Decompression Lever (Decompressing lever in the Jinma manual): (Note: This Decompression lever does **not** exist on tractor models which have the "Shuttle Shift" feature.) This lever is located below the switch panel. This lever can be used to reduce (decompress) the pressure in the engine cylinders and make starting easier in cold weather or if you have a weak battery. It can also be used to turn the engine crankshaft and lubricate an engine which has not been started in a while. The Decompression lever can only be turned clockwise. See the starting section on how this lever is used.

Decompression Lever



8) Fuel "Cut-Off" Handle (Extinguishing lever in the Jinma manual): Pulling this "Cut-Off" Handle (attached to a cable) stops the flow of diesel fuel to the engine and stops the engine. This is the **ONLY** way to turn off the engine. When starting the engine this Handle/cable needs to be fully pushed in to allow diesel fuel to go to the engine.

(Note: There are several different variations of the switches and switch panel. As each switch has a "pictograph" of its function, you should be able to easily figure out the function of each switch with a little trial and error.)

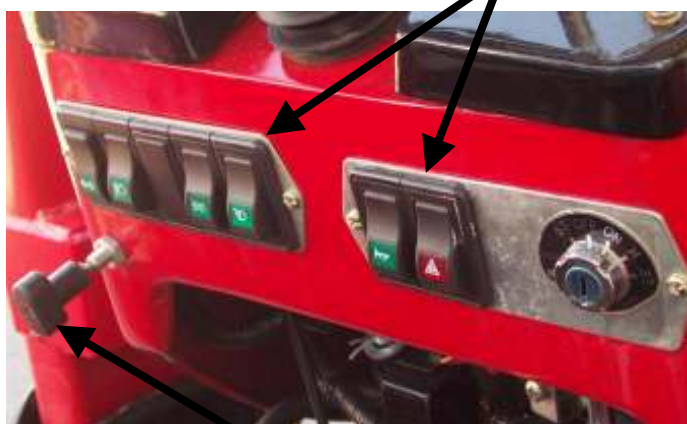
Switch Panel

9) Work Light switch: This turns on/off the rear work light.

10) Turn Signal switches: There are one or two Turn Signal switches

11) Horn control: There are two ways to honk the horn. The horn switch on the switch panel will activate the horn. You can also push the center of the Steering Wheel.

17) Headlight Switch: This Switch turns on and off the headlights.



Fuel "Cut-Off" Handle

A) Dash Light Switch: This turns on/off the dash lights.

B) Hazard Light Switch: This activates the hazard lights (flashing both sides). Some older models use left and right turn signals 'On' to accomplish this.



18) Starting Switch: This switch has 5 Positions. The straight-up position is "Off." The key can be inserted and removed when the switch is at "Off." The left position is for Start, but is not normally used. The first position to the right is the "ON" position and allows current to the engine and accessories; when the tractor is operating the key should be in the "ON" position. Switch positions to the clockwise (right) of "ON" are momentary positions (e.g., the key returns to "ON" when the key is released). The position to the right of "ON" (Position "H") is an interim position which is used to send electricity to the Glow Plugs. The final position to the right is the ST (start) position and used for starting the tractor. The switch returns to the "ON" position automatically after the switch is turned right for

Starting.

Warning: Do not run the starter more than 5-10 seconds at one time, let it rest for 1 minutes between start attempts, and do not try more than 5 attempts in a row without letting the starter cool for 15 minutes. Failure to follow these precautions can burn out the Starter Motor

Unlike gasoline engines which use a spark plug to ignite the air/fuel mixture, diesel engines rely on the heat produced by highly-compressing air in the cylinder to initiate combustion. In a diesel engine, the Starter motor must create significant compression in order for the diesel engine to start. In cold weather this is difficult.

Glow plugs are used to heat the combustion chambers of diesel engines to help initiate combustion of the diesel fuel. There is one glow plug for each cylinder. In the tip of the glow plug is a coil of a resistive wire or a filament which heats up when electricity is connected. Glow plugs are required because diesel engines produce the heat needed to ignite the diesel fuel by the compression of air in the cylinder and combustion chamber (compression produces heat). Heating the air to a minimum starting temperature of 850°C is critical for diesel engine start-up. In cold weather, and when the engine block, engine oil and cooling water are cold, the heat generated during the first compression revolutions of the engine is conducted away by the cold surroundings, preventing ignition of the diesel fuel. The glow plugs are an additional source of heat in the cylinder and are switched on prior to turning over the engine to provide heat to the combustion chamber. The glow plugs remain on as the engine is turned over (started) to help ignite the diesel fuel. Once the diesel engine is running, the glow plugs are no longer needed.

19) Hand throttle: This lever is located to the right of the Steering Wheel. Pulling the hand throttle toward you (rabbit) increases the diesel fuel flow to the engine and the RPMs of the engine. Pushing it away (turtle) decreases the fuel flow.

Caution: The hand throttle overrides the foot throttle.

This hand throttle is can be used when the tractor is stationary and driving attachments either through the hydraulic system or through the PTO. When “driving” and expecting to change speeds using the foot throttle pedal, the hand throttle should be set to its lower range. The hand throttle can also be used as a speed control to set a constant speed such as when mowing. If doing work which involves locomotion as well as the hydraulic system, the hand throttle can be set higher to match workload or to increase hydraulic performance. Note: If the hand throttle is set higher when the tractor is moving, then the clutch and gearing have to be used to control speed; this may create more wear on the clutch. Again, remember that the Hand Throttle overrides the Foot Throttle; if you are going too fast, readjust the Hand Throttle or depress the clutch and change the Gears.

Hand Throttle



C) **Shuttle Shift** (on some models): This lever is located to the left of the Steering Wheel. Moving this lever shifts the tractor from forward to reverse. On Shuttle Shift models there is no reverse gear on the Main Gear Shift Lever and the only way to put the tractor in reverse is using the Shuttle Shift. The Shuttle Shift lever has three positions Forward (F), Neutral (middle positions), and Reverse (R). To use the Shuttle Shift feature, the tractor must be stopped and the Clutch Pedal must be depressed; then move the Shuttle Shift lever into the desired position. The Shuttle Shift helps the operator be more productive when constantly moving back and forth in operations such as using a Front-End Loader.



Shuttle Shift

D. Additional Drive and Attachment Controls

D. **PTO Connection:** The tractor has a “Power Take-Off” (PTO) at the rear of the tractor which can power attachments through a rotating shaft.

PTO Connection
It rotates when engaged.



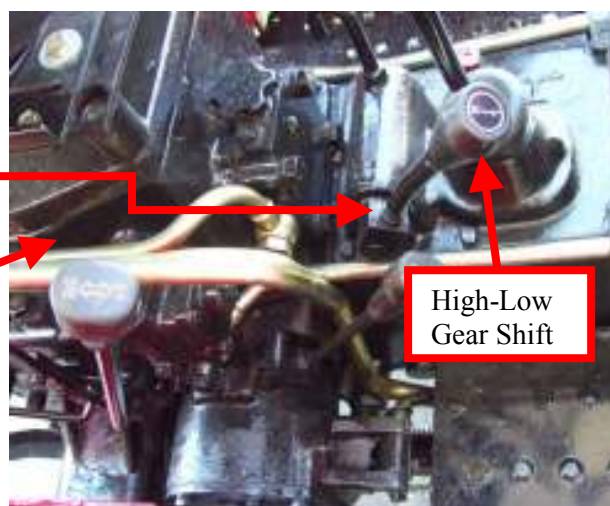
24) **PTO Control Lever:** This Control Lever engages the PTO. This lever is located just to the right of the Auxillary Gear Shift Lever (High and Low speeds) and just forward of the Differential Lock Lever (see #25 below). It has two positions EN (engaged) and DIE (disengaged). This Lever should be disengaged unless you are using the PTO. Remember to depress the clutch when shifting the PTO either on or off (engaged or disengaged).

Caution: These two levers are very close.

Don't confuse them!

PTO Control Lever

Differential Lock Lever

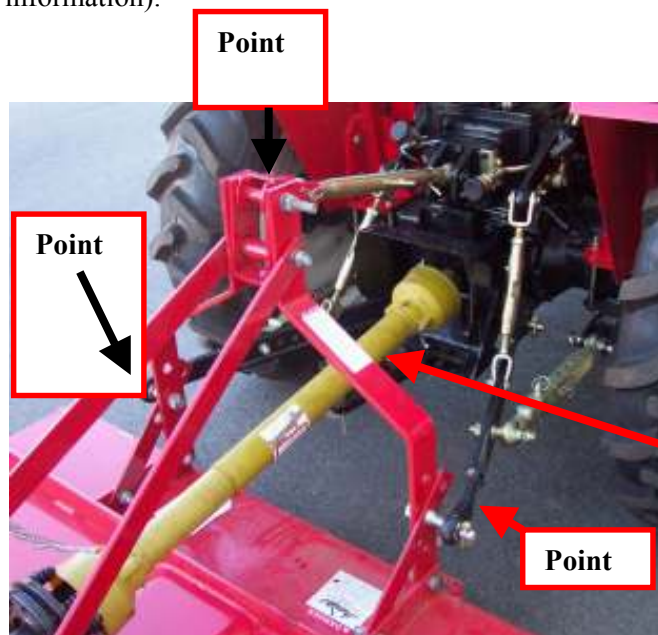


High-Low Gear Shift

25) **Differential Lock Lever:** This lever has two positions: EN (engaged) and DIE (disengaged). Under normal operating conditions the differential lock lever should be in the DIE (disengaged) position (e.g., the wheels turn separately). The differential lock lever can be engaged to keep the tractor's wheels turning at the same (engaged) speed. To engage the Differential Lock, push in the Clutch and move the lever to the EN (engaged) position and hold the lever there. If the tractor is stuck with a wheel spinning, first try shifting to 4-wheel drive to get un-stuck. If 4-wheel drive does not work, then you would want to consider locking the differential lock so the other (non-spinning) main wheel can apply power to the tractor. Disengage the lock by releasing the lever as soon as you are no longer stuck as running the tractor

with the Differential Lock engaged (wheels locked together) puts a significant strain on the differential and related systems.

E. PTO Speed Control Lever: This lever is located at the rear right side of the tractor. It has 3 positions: 540 (RPM), N (neutral), and 1000 (RPM) The 540 RPM speed is the most commonly used; only use the 1000 RPM speed if it is clear that 1,000 RPM (revolutions per minute) is what the attachment requires. When shifting into a PTO speed from neutral, the clutch should be depressed. The tractor should be in neutral gear and the parking brake ON when engaging PTO devices which are designed for stationary use. This mechanical (rotating) PTO connection can be used to power a variety of attachments (see Attachment section for more information).



F. 3 Point Hitch: The 3 Point Hitch allows connection of attachments to the rear of a tractor. There are three physical points which connect to an attachment. The 3 Point Hitch also allows raising and lowering of the attachment through the hydraulic system. This picture shows a mower attached to the 3-Point Hitch. The mower attachment also requires PTO power to drive the mower blades.

PTO Drive Shaft

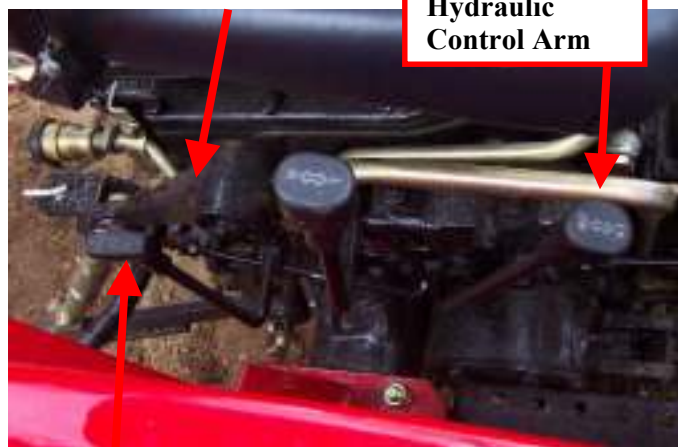
Connection from tractor to mower

Hydraulic (3 Point) Control Lever

Differential Lock Lever

Hydraulic Control Arm

6) Hydraulic Control Lever: This lever is immediately behind the Differential Lock Lever. It controls the height of the 3-Point Hitch system at the rear of the tractor. It raises (R) or lowers (L) the 3-Point Hitch by moving the hydraulic lifting arm (See Attachment section). It has 3 positions R (raise), N (neutral), and L (lower). After pushing to R or L the control will automatically return to N when the attachment has been fully raised or lowered; you can also manually return the control to N to stop the attachment at any in-between level.



PTO Speed Control Lever



3 Point Hitch Speed Adjustment Valve

G. 3-Point Hitch Raise/Lower Speed Adjustment Valve: This valve is just under the seat and behind the Main Gear Shift. Adjustment of this valve is normally not needed. It can be adjusted to speed up or slow down the speed at which the 3-Point hitch (hydraulic control arm) is raised or lowered. Note: This valve must be screwed in completely to allow use of the rear remote hydraulics (removal of a set screw is required to do this).

Spring Cushion Adjustment



H. Seat Adjustments: The tractor seat can be adjusted in 3 ways. The seat can be moved forward and backward by pulling the lever under the left front side of the seat (not shown - left side when sitting on the seat facing forward). The second adjustment allows raising or lowering the seat back. Finally, the spring cushioning feature of the seat can be tightened or loosened by turning the knob at the top of the seat. This regulates the amount of “sink” in the seat when you sit down.

Seat Back Raise/Lower



Side Panel Pin Retracted

Side Panel Pin Extended



I. Side Panel Pins: The side panels on each side of the engine connect to the hood by sliding the Side Panel Pins forward and backward into the hood when the hood is closed and latched. The Pins are moved forward and backward by reaching



Side Panel Pin NOT engaged with Hood

To move Pin, feel under panel bottom and push button up from below

your fingers under the side panel into the slot on the bottom, pushing up on the little button, and sliding it forward or backward into or out of the matching hole in the Hood

assembly.

J. Hood Release: The Hood of the tractor can be raised by retracting the Side Panel Pins and then pulling on the Hood Release.



CHAPTER II - OPERATING THE TRACTOR

1. Standard Pre-Start Checks

Before starting your tractor for the day, there are several common sense things you should do. Walk around the tractor and look for fluid leaks, obstacles in the way of movement, tools in the way, and other things that don't look right (do you have a flat tire?).

For owners who use the tractor for 8-10 hour shifts, you should follow the Shift Maintenance schedule in the Maintenance section every day. For owners who only use the tractor an hour or two at a time, undertake the Shift Maintenance at every 8-10 hours of use.

Carry out the Shift Maintenance tasks consistently!

Before starting you should also check to confirm that the PTO is in the N (neutral) position.

2. Starting the Engine

First Start (Cold Engine, but NOT very cold weather – see below for cold weather starts)

Procedure for “Shuttle Shift” Models with no Decompression Lever

It is recommended that before starting you put the Parking Brake ON, put the tractor gear in neutral (N). At the very least you must depress the Clutch Pedal if the tractor is not in neutral. Note: The tractor has a starter safety switch which will not allow the tractor to be started unless the clutch is depressed.

Check to make sure the Fuel Cut-Off Handle is pushed all the way into the tractor so that fuel is available to the engine. Put the key in the ignition. The Hand Throttle can be set to about ¼ of full open.

Starting the engine involves heating the “Glow Plugs” inside the engine using current from the battery BEFORE engaging the starter motor. To do this turn the key past “ON” (to “H”) but not all the way to start (“ST”) and look at the Ammeter. If current is going to the Glow Plugs the Ammeter will deflect significantly to the left (battery being drained). The key needs to be held in this position 30 seconds or more to allow the Glow Plugs to heat. It is suggested you begin with a 30 second hold in order to heat the Glow Plugs; you can use shorter or longer times as you get used to how the tractor starts under what conditions. After you have held the key with the Glow Plugs heating (Ammeter staying to the left), then turn the key fully right to Start and hold for a few seconds until the engine starts. The



key will automatically return to ON after you release it. Do NOT run the starter for more than 5-10 seconds at a time, allow 1 minute between attempted starts, and do not attempt more than 5 starts in a row without letting the starter cool for 15 minutes. If you do not follow this rule you may burn out your Starter.

Warning: Do not run the starter more than 5-10 seconds at one time, let it rest for 1 minutes between start attempts, and do not try more than 5 attempts in a row without letting the starter cool for 15 minutes. Failure to follow these precautions can burn out the Starter Motor

If the engine fails to start after a couple of tries, consider using the Cold Weather start procedures below.

After the tractor starts, let it run in neutral with the parking brake ON for at least 5 minutes to warm up (see Operating the Tractor below).

Additional Procedures for Models with Decompression Lever

If your tractor has a Decompression Lever, you can use it to assist starting the tractor. After you have held the key with the Glow Plugs heating (Ammeter staying to the left) for approximately 30 seconds, then turn the Decompression Lever up to approximately 11 o'clock and hold the Decompression Lever there while you turn the key fully right to Start. With the Decompression Lever still at 11 o'clock and the Key turned to Start, watch the Engine Oil pressure and release the Decompression Lever when it reaches 0.2 MPa; continue to hold the Key at Start. This combined action (Lever at 11 o'clock) decompresses the engine to allow it to turn over faster and then (Lever released) creates the pressure needed for starting. If the engine does not start in a couple of seconds release the Key to discontinue the starting process. The key will automatically return to ON after you release it. If the engine does not start, then you can repeat the procedure. Be sure to let your starter cool down in-between attempts.



Warm Engine Start

When the engine is warm (run in the last hour or so), then starting is easier. Make sure the Fuel Cut-Off Handle is pushed all the way into the tractor. Depress Clutch (or put in neutral) and turn key to Start. Depending on the temperature of the engine you may or may not have to hesitate and let the Glow Plugs heat up (experience is the best teacher).

Cold Weather Start (definitely below 32 degrees Fahrenheit and higher temperatures as needed) *This is the same as the First Start procedure except that the additional Cold Weather Start steps are shown in CAPITAL LETTERS.*

IN COLD OR VERY COLD WEATHER IT IS RECOMMENDED THAT YOU PLUG IN AN ENGINE HEATER FOR AN HOUR OR TWO PRIOR TO STARTING.

It is recommended that before starting you put the Parking Brake ON, put the tractor gear in neutral (N). At the very least you must depress the Clutch if the tractor is not in neutral.

Check to make sure the Fuel Cut-Off Handle is pushed all the way into the tractor so that fuel is available to the engine. Put the key in the ignition. The Hand Throttle can be set to about ¼ of full open.

Starting the engine involves heating the “Glow Plugs” inside the engine using current from the battery BEFORE engaging the starter motor. To do this turn the key past ON but not all the way to start and look at the Ammeter. If current is going to the Glow Plugs the Ammeter will deflect all significantly to the left (battery being drained). The key needs to be held in this position to allow the Glow Plugs to heat. **FOR COLD WEATHER (AT OR BELOW 32 DEGREES FARENHEIT) YOU SHOULD HOLD ABOUT 60 SECONDS AND PERHAPS LONGER DEPENDING ON THE TEMPERATURE.** After you have held the key with the Glow Plugs heating (Ammeter staying to the left), then turn the key fully right to Start and hold for a few seconds until the engine starts. The key will automatically return to ON after you release it.

Do NOT run the start for more than 5-10 seconds at a time, allow 1 minute between attempted starts, and do not attempt more than 5 starts in a row without allowing the starter to cool for 15 minutes. If you do not follow this rule you may burn out your Starter.

If the engine fails to start after a couple of tries and you have the Decompression Lever, then add the Decompression Lever procedures described above.

After the tractor starts, let it run in neutral with the parking brake ON for at least 5 minutes to warm up (see Operating the Tractor below).

3. Stopping the Engine

Make sure the tractor is in neutral and no attachments are operating (including the PTO). Lower the speed of the engine if the Hand Throttle is set higher than Slow (Turtle). If the temperature is more than a couple of degrees above 80 degrees Celsius , don’t shut off the engine but let it idle in neutral until the temperature drops to approximately 70-80 degrees Celsius.

To stop the engine, pull the Fuel Cut-Off Handle out. The engine should stop in a few seconds. The Fuel Cut-Off Handle is the CORRECT way to stop the engine. Turning the Ignition Switch to “OFF” will not stop the engine. After the engine stops you may turn OFF the ignition key. You may also leave the ignition key in the ON position if you are planning to restart the engine shortly (there is a small battery drain as long as the ignition is ON).

NOTE! PULLING THE FUEL CUT-OFF HANDLE STOPS THE ENGINE!
The Ignition Switch does NOT stop the engine.





Emergency Engine Stop Procedure

While this is very rare, if the Fuel Cut-Off fails to stop the fuel, the engine could continue to operate. In the event of an engine continuing to run, you will need to stop the engine in another way. Rotate the Hand Throttle to the lowest speed; put the tractor in neutral with the brakes set. It is recommended that you open the hood of the tractor and place an obstruction over the air inlet located on the air filter unit. Cutting off the air completely will stop the engine.

Cover the Air Intake in case of emergency!

4. Operating the Tractor

After the tractor starts for the first time in a day, let it run in neutral with the parking brake on for at least 5 minutes. At this point you can begin to move the tractor around and do light work with the tractor. Do not begin to do heavy work until the water temperature gage (#13) approaches 60-70 degrees Celsius.

Before moving the tractor be sure to raise any implement which is resting on the ground (or on a trailer). Release the Parking Brake Lock if it is set (put your foot on the Brake Pedals if needed to prevent the tractor from rolling).

To move the tractor depress the clutch and shift into gear; increase engine speed by pressing on foot throttle pedal and release clutch slowly/smoothly to proceed forward or backward. Do Not Ride the Clutch: When operating do not keep the Clutch partially engaged to control your speed as this wears out the Clutch (this can happen in a matter of hours). Instead choose the proper gear for the work you are doing.

To stop either forward or backward motion of the tractor, push in the Clutch (shift to neutral) and push the Brake Pedals. (Note: tractor brakes will not work efficiently unless clutch is depressed.)

5. In-active Tractor

When the tractor is turned off and put away for the day, for a week, or for a month there are some things which should be considered. While there is not an official list, the following items are some to consider.

Make sure the Key is "OFF."

Park the tractor on level ground whenever possible. This should make starting easier.

If the next time the tractor will be started may require the tractor heater to be plugged in, is your parking space near enough to an electrical outlet?

It is advisable to prohibit rain, dust, and “critters” from entering the exhaust system. Putting a cover over the exhaust is a good idea even if the tractor will be used the next day. If it is going to sit for a longer time this becomes even more important.

If the tractor is going to sit for a month or more, then you might want to consider turning off the fuel tank valve (located on the left side bottom of the fuel tank).

If the tractor is going to sit for a month or more consider putting a trickle charger on the tractor battery. Significantly cold weather will reduce the battery’s power by roughly 30%. If excessively cold temperatures are expected consider moving the battery into a warmed location.

If the tractor is going to sit for a month or more you may want to put diesel fuel stabilizer into the fuel tank (make sure it is intended for use with diesel fuel). If the tractor is going to go months without a refilling of the diesel fuel tank because of low usage, then consider a diesel fuel stabilizer.

While parking in-doors is always preferable, many tractors have to be parked outside. Should you cover the tractor to reduce the effect of weather and the elements? Have you developed a standard procedure and standard equipment to cover the tractor?

Have you thought about security issues to prevent theft or vandalism?

CHAPTER III - ATTACHMENTS AND ACCESSORIES

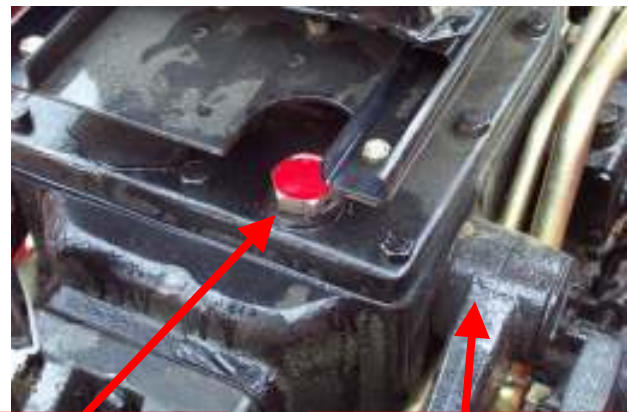
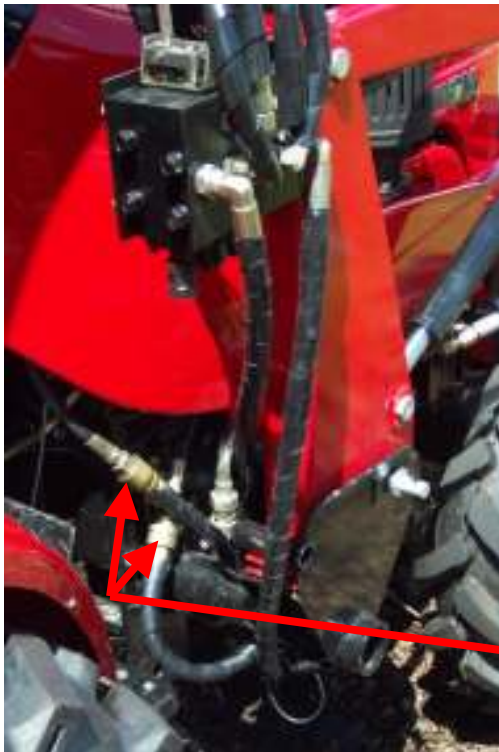
1. Overview of Attachments

It is unlikely that you bought the Jinma tractor so that you could ride around on it. You intended to do some work and doing that work requires using attachments which connect to the tractor and run off of the power provided by the tractor engine. The following two sections describe the tractor's PTO system and the Hydraulic system and generally how they work with attachments.

There are so many attachments and accessories available to work with your tractor that it would not be feasible to describe how to operate them all. This manual will use a generalized front-end loader attachment and a generalized mower attachment as examples of how attachments are operated. Sub-section 4 below provides a list and short description of many available attachments. You should get and follow the specific operating instructions for each attachment you use with your tractor.

2. Operation of the Hydraulic System and a Front-End Loader

The tractor has a hydraulic system powered by the motor to create a pressurized system which is used to provide power (hydraulic pressure) to operate attachments. The hydraulic system consists of a pump operating off the engine, a reservoir of hydraulic fluid for the pump to pump, and hoses to deliver the pressurized hydraulic fluid to the front and rear of the tractor where implements would be attached.



**Hydraulic Fluid Fill
Cap and Dip-stick**

**Hydraulic Control Arm
(Raises/Lowers 3 Point
Hitch)**

Pressurized hydraulic fluid goes into the attachment through one hose and the fluid returns to the hydraulic reservoir through the second hose. Both hoses must be connected correctly for the system to work. The hoses have "Quick Connects" to retain the hydraulic fluid in the hoses. When no attachment is in place, the front hydraulic hoses are to be connected to themselves to allow fluid to move, ensure no damage to the hydraulic pump, and assure dirt does not enter the system. Because the Quick Connects are oriented in opposite directions, the attachment only connects one way.

**Hydraulic "Quick Connects" from Tractor to
Front End Loader**

The most common use of the hydraulic system for the front of the tractor is to power a Front-End Loader (or similar device) which can pick up materials and transfer these materials to another location. A Front-End Loader (FEL) is physically attached to stationary locations on the tractor. It is also attached to the hydraulic system. There is a control valve (see picture below) which comes with the Front-End Loader and which controls the operation of the loader bucket (raises and lowers the bucket and tilts the bucket up or down).

To do work with a Front-End Loader, you must coordinate the operation of



the bucket with the forward motion of the tractor. As a simple example: In order to pick up a pile of dirt, you would position the bucket at the bottom of the pile with the bottom of the bucket parallel to the ground. Then you would use the forward gears of the tractor to move the tractor forward into the pile of dirt to fill the bucket. With the bucket full then you would tilt the bucket up so the dirt stays in the bucket. Then you would raise the bucket into the air so you can move the tractor to the location where the dirt will be dumped. (In doing an operation of this type and depending on the weight being moved, you may set the hand throttle higher than slow to provide more hydraulic power to the Front-End Loader.)

For the hydraulic system to work properly it is important to use good quality hydraulic fluid and keep the hydraulic fluid reservoir full. While hydraulic fluid does not freeze, the fluid does become “thicker” at lower temperatures. That means that the performance of the system will be reduced at colder temperatures until the hydraulic fluid heats up from the work being done. Therefore, in colder weather operate the attachment at a lower work level until the hydraulic system warms up; as there is not a hydraulic fluid temperature gage you will have to learn this from experience. (Note: Remember that hydraulic fluid leaks can either be on the tractor itself or on the attachment; check both areas for leaks.)

3. Control & Operation of the PTO, 3-Point Hitch, and Rear Hydraulic System

Introduction

The PTO (Power Take-Off) is a rotating connection at the rear of the tractor tied into to the tractor engine. The PTO is used to power attachments to the tractor. Generally attachments which use the PTO are also attached to the back of the tractor through the 3-Point Hitch. The 3-Point Hitch provides a physical link of the attachment to the tractor, but also allows the hitch (and thereby the attachment) to be raised or lowered using power from the hydraulic system. First will be a description of the PTO, second will be the description of the 3-Point Hitch and hydraulic system controls, and finally will be a generic description of how to connect and operate a mower.

PTO (Power Take-Off)

The PTO can be engaged and disengaged by using the PTO Control Lever on the right side of the transmission box next to the Auxiliary Gear Shift Lever (see pictures earlier in the Manual) and the PTO Speed Control Lever located at the rear of the tractor.

In order to connect the attachment to the PTO, put the tractor and the attachment into alignment. Put the PTO Control Lever in the “DIS” position and put the tractor in Neutral gear. Either turn off the tractor (or put the tractor into neutral) and set the Parking Brake. Make sure the PTO Control Lever is in the DIS position and that the PTO is not turning. With the PTO not spinning, couple the desired attachment to the PTO shaft using the locking collar to make sure the connection is firm.

If the attachment also needs to be connected to the 3-Point Hitch (see below), make this connection at the same time (see instructions which come with the attachment). The 3-Point Hitch may need to be raised or lowered to make this connection easier (see below).



Set the PTO Speed Control Lever to either 540 RPM or 1000 RPM based on the attachment being used (remember 540 RPM is the most commonly used speed). (When disconnecting the PTO from an attachment remember to disengage the Speed Control by putting the PTO Speed Control Lever in the middle neutral position.)

When the attachment is completely connected, you should give it a visual test with the tractor running to assure proper connections. Start the tractor, put it in Neutral gear, and Engage the PTO. When engaging or disengaging the PTO push the Clutch pedal all the way down. To engage the PTO, move the control lever from DIS (Disengaged) to EN (Engaged). Assuming the PTO seems to be working correctly Disengage it, get

off the tractor, and recheck the connections one more time.

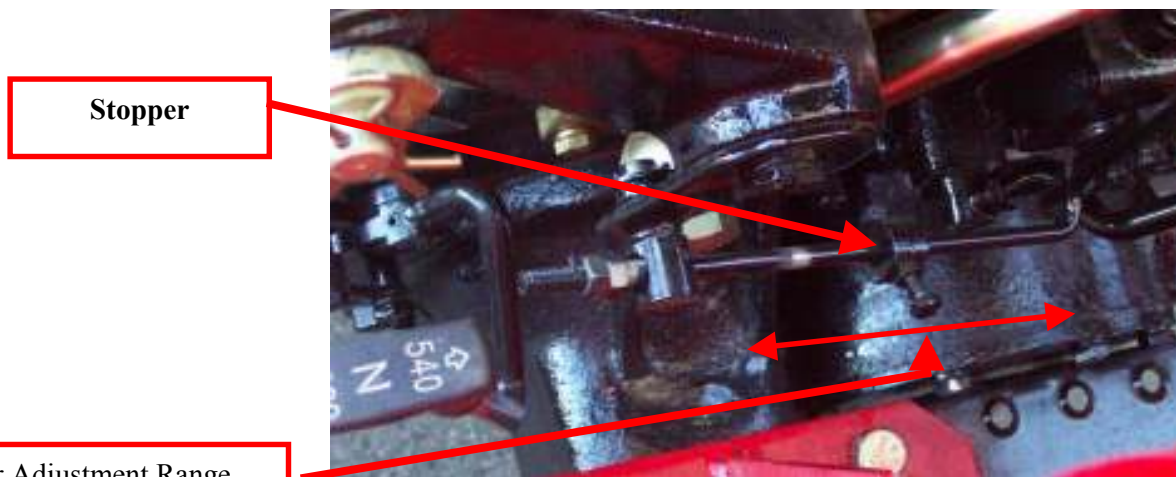
3-Point Hitch (Hydraulic Hitch System in the Jinma manual)

The 3-Point Hitch provides a method of firmly connecting the attachment to the tractor and serves to lift and lower attachments, as well as adjust and maintain the working position of the attachment in order to meet different operating requirements. During installation, the position of the 3 Point Hitch to the implement can be adjusted by moving the Hydraulic Control Lever to R (raise) or L (lower) the hitch. Moving the Lever back to the N (neutral) position during raising or lowering will stop the motion. Once connected to the 3 Point Hitch, make sure the locking pins on the 3-points are solidly set in place. To raise and lower the implement, simply move the Hydraulic Control Lever. Please refer to instructions for the specific attachment to determine how the attachment should be connected to the 3-Point Hitch.

The next step is to fine tune how far the implement can be lowered. When the desired low position of the implement has been reached (again based on the instructions for the attachment) set the Hydraulic Control Lever to N and set the position of the Stopper on the return rod to limit the range of the Control Lever. Tighten the stopper on the rod with the screw, so that the lever can be pushed to the same position every time; this assures the attachment will always be lowered to the same position. Different adjustments will have to be made for different attachments.



**Hydraulic
Control Lever
Raise/Lower
3 Point Hitch**



Stopper

Stopper Adjustment Range

Note: It is normally not necessary to change the lowering speed of the 3-Point Hitch. If necessary, turn the Lowering Speed Adjustment Valve to control the lowering speed of the 3-Point Hitch and attachment (see picture in Section 1). The lowering speed should be selected according to the weight of the implement and the type of work being done. (Example: If you are using a plow which must dig itself into the dirt, you might set the lowering speed toward a slower speed to allow the plow to enter the ground slowly.)

Note: Some attachments will connect to the rear hydraulic connections to power them. See the attachment manual for further information. The rear hydraulic connections do not have to be connected to each other when not in use

Generic Mower Attachment and Operation

A mower deck attachment will be connected at the rear of the tractor to the PTO to provide power for the mowing blades to spin and attached to the 3-Point Hitch to raise it and lower it into operating position. Assuming the PTO and 3-Point Hitch connections have been made, then there are some fine tuning checks and adjustments to be made. The goal is to have a mower deck which will operate correctly when towed behind the tractor and still allow the tractor and mower to negotiate turns and uneven ground.

The first step is getting the mower level. If your mower has 4 wheels (2 front and 2 back), then the wheels will entirely control height of the mower deck. Setting the 3-Point Hitch so that it is in "Floating Control" (see below) may be the best approach. If your mower has only 1 wheel at the rear (some have 2 wheels in the rear), then you need to be sure that the mower deck is level front-to-back when the 3-Point Hitch has been lowered to the lowest position (where the stopper is set). Adjust the stopper to achieve a level mower deck.

A mower should also be level from side-to-side. Check this by bending down and looking over the deck at the rear axle of the tractor. If it is not level, adjust one or both of the lower 3-Point Hitch arms until the deck is parallel to the axle.

The mower should also be able to traverse uneven ground (dips and rises) without pulling part of the mower off the ground or pushing it too close to the ground. You need to adjust the upper link of the 3-Point Hitch so that there is some flex of the mower deck, but also limit the amount of slack so that you can raise the rear of the mower off the ground with some clearance. In other words when the 3-Point Hitch is fully raised, the mower deck should clear the ground by a foot at both front and back.

The Sway/Check chains on the 3-Point Hitch should be reasonably tight to assure that the mower follows straight behind the tractor and doesn't sway or hit the rear wheels when the tractor is turned. This control over deflection of the mower is especially important if you are backing the mower so that you don't run over it. At the same time the Sway/Check chains should not be too tight; they should be swinging loosely when in operating mode and should not lift the mower or should not be going taught as the tractor and mower go over uneven ground.

Floating Control: In floating control, the supporting wheels control the mower height and the "Floating Control" keeps the mower on the ground even with uneven terrain. During mowing, hold the Hydraulic Control Lever at the "lowering" position (i.e. push the control lever of distributor forward with the return stopper. Do not return the control lever to the neutral position). The hydraulic circuit is then in "floating" control. Using floating control, the mowing depth is controlled by the change in height of the supporting wheels. This is not suitable for two wheel mower decks. The 3 point lever will stay in the "floating" position until it is manually moved.

After doing all the alignment and height adjustments and before starting the tractor, check that the PTO shaft has the appropriate spacing and is free to rotate, but will not fall off.

Before starting the tractor, clutch and shift the PTO to N (neutral). Start the tractor, clutch, and raise 3-Point Hitch and the mower deck using the Hydraulic Control Lever. Depress the clutch pedal fully then shift the drive gears into neutral and shift the PTO control lever to the 540 RPM (engaged) position. While remaining in neutral gear, release the clutch pedal slowly and the PTO drive shaft will begin operating the cutting blades. If the linkages from the PTO appear to still be in correct spacing run the PTO at higher speeds to assure proper operation continues. With the PTO in neutral and the 3-Point Hitch raised, proceed to the mowing area. Lower the 3-Point Hitch and attachment to working level. Put the PTO Lever to 540 RPM and put tractor into gear and proceed forward. In mowing you will want to set the Hand Throttle to keep the cutting blades at an appropriate

speed. This will require you to choose an appropriate tractor gear to have the tractor operate at a reasonable forward speed. Try using Low 3 to begin and adjust upward as desired.

When the tractor travels for a distance to reach another mowing area or return to the “barn,” the PTO should be turned off and the 3-Point Hitch should be raised.

Note: When operating a new mower for the first time, stop after several mowing passes and recheck all the alignments, especially the PTO spacing and the height of the 3-Point Hitch (level of the mower deck). After that do a general visual check every few hours of operation

4. List of Available Attachments

(I also suggest marking the items FarmPro usually stocks and referencing your web site. Do you want to add short descriptions?)

- Front end loader
- Pallet Forks
- Fork lift (rear)
- Hay lifter (why delete this from the list???)
- Plow
- Box Scraper
- Scraper blade
- Landscape Rake
- Post-Hole Digger
- Backhoe
- Rear Forklift
- Wood Chipper
- Log Splitter
- Log Lift (have you named it?)
- Snow Blade
- Snow Blower
- Mower
- Rototiller
- Tiller
- Plows
- Disk Harrows
- Bale Stabbers
- Cultivator
- Generators
- Rear Hitch
- Hauling trailer
- Cement Mixer
- Dirt Scoop
- Drag Harrow
- TR3's ???

CHAPTER IV - MAINTENANCE SUMMARY

1. Maintenance Overview

To prolong the useful life of the tractor, to reduce break-downs, and to maintain the value of the tractor, maintenance is necessary. Because a tractor does significant physical work in often bad weather or ground conditions, tractors are exposed to strains and impacts which require extra vigilance. While specific scheduled preventive maintenance can be done at a shop or by a maintenance company at your site, it is the owner/operator's responsibility to think "maintenance." This starts with the concept of "Shift Maintenance" where the owner/operator needs to check specific things every 8-10 hours of tractor operation. Because it is unlikely that most owner/operators will have a maintenance company come out to check the tractor each day, the owner/operator must assume this responsibility. Good maintenance means following the recommended steps, but it also means being aware of maintenance issues during the tractor operations. With a little care your tractor should run reliably for many years.

This manual is not intended to be a detailed "how to" maintenance manual. There is additional detail in the Jinma manual, in the engine manual, and a variety of other sources. This section is only intended to help the new owner become familiar with the things which need to be done and assist the owner/operator understanding a little about how to do the normal maintenance.

2. Maintenance Schedule for the Tractor

In order to keep the tractor in excellent condition, prolong its service life and reduce troubles, the users must often check the mechanical condition of the tractor and strictly carry out recommended maintenance.

Shift Maintenance (every 8-10 Hours of operation or anytime the tractor has been unused for more than 10 days)

1. Clean dirt and mud on the tractor and implements.
2. Check all main fastening bolts and nuts on the tractor, especially the front and rear wheel nuts. Tighten if necessary.
3. Check for any leaking of oil, water, and repair if necessary.
4. Check the fluid levels in engine oil crankcase, radiator, fuel tank and hydraulic system; refill if necessary. Make sure the tractor is on flat ground and is level before checking the fluids. (Note: To avoid being burned, only check the fluids in the tractor before starting or after the engine has been stopped for long enough for the fluids to cool.)
5. Check the tire pressure and inflate if necessary.
6. Under the extremely dusty circumstances, the air filter and radiator dust screen should be checked more often.
7. Determine if the attachments you are planning to use have any Shift maintenance requirements

50 Hour Maintenance (Every 50 Hours)

1. Carry out the maintenance items in the Shift Maintenance schedule.
2. All grease fittings should be wiped clean and greased.
3. Check air filter and clean or replace as needed.
4. Check the fan belt tension. When pressing the middle part of the longer side of the belt, the belt should drop about 1/2 to 3/4 inch with a light to medium push with your finger. Adjust the belt tension if necessary.
5. Check the hydraulic fluid level in the transmission box and the front drive axle. Refill with hydraulic fluid if necessary. Also check to see if the hydraulic fluid is showing signs of being a milky white color. This implies water getting into the hydraulic system and maintenance of seals or other water sources should be carried out (and change the hydraulic fluid).
6. Lubricate control cables and pivot points as needed.
7. Check the color and grittiness of the engine oil. Change oil and filter if needed.

Note: For the 1st 50 Hour Maintenance, change the engine oil and filter, change the hydraulic fluid in the hydraulic system and the hydraulic oil filter, change the fuel filter, and check the air filter and change if needed

250 Hour Maintenance (Every 250 Hours) (If you operate your tractor less than 125 hours per year, you may want to consider service every year.)

1. Complete all Shift and 50 Hour maintenance items.
2. Changing the hydraulic fluid and hydraulic fluid filter.
3. Replace the fuel filter (cartridge). If the filter is very dirty, inspect the fuel tank to determine if it need cleaning.
4. Change the engine oil and oil filter. (Note: If the oil is very dirty, you may want to flush the engine oil sump and clean the oil pump strainer. This requires removing the oil pan and inserting a new gasket when reassembling.)
5. Check the free travel of clutch pedal and brake pedals. Adjust if necessary. (See Jinma manual.)
6. Check battery and terminals for corrosion and clean if necessary.

500 Hour Maintenance (Every 500 Hours) (If you operate your tractor less than 125 hours per year, you may want to consider the 500 Hour Maintenance every 4 years of so.)

1. Complete Shift, 50 Hour and 250 Hour maintenance items.
2. Check and adjust inlet and exhaust valve clearance of the engine.
3. Drain Transmission fluid. Flush transmission box. Replace with new hydraulic fluid.
4. Check and adjust front wheel toe-in (See Jinma manual).
5. Check the free travel of the steering wheel; free travel should be less than 15 degrees. Check the Hydraulic Fluid in the Steering Gear and fill if necessary.
6. Add fuel injector cleaner to the diesel fuel Every 250 - 500 hours. If the engine is not running smoothly, you may need to check and adjust fuel injection pressure and injector atomization at the 500 hour check.
7. If the cooling fluid is more than two years old, it is recommended you replace it with new water and anti-freeze.
8. If there are problems with the operation of the hydraulic system (slowness in response or less working capacity), then you may want to clean the filter of hydraulic lifter arms and flush the

inside of lifter housing before refilling with fresh hydraulic fluid (Note: This requires taking apart certain components and is more difficult than normal preventive maintenance).

1000 Hour Maintenance (Every 1000 Hours) (If you operate your tractor less than 125 hours per year, you may want to consider the 1000 Hour Maintenance every 8 years.)

1. Complete Shift, 50 Hour, 250 Hour, and, 500 Hour maintenance.
2. Clean the gathered carbon in the silencer and exhaust manifold by removing the silencer and running water through it (Note: make sure the silencer is completely dry before reinstalling).
3. After the maintenance has been done, run the tractor for a short time to make sure that every part is in normal operating condition. Recheck fluid levels.

Additional from Jinma manual

- a. Review and carry out additional required maintenance from the diesel engine manual.
- b. Clean the fuel tank, if needed.
- c. Re-grease the front bearing and the clutch release bearing.
- d. Check and adjust the main drive bevel gears, if needed.

Maintenance for Long Term Storage

If the tractor is to be in long term storage (3 months or more), you should fully examine mechanical condition and follow the steps listed below.

1. Store the tractor in dry shelter if possible. If storing in the open air for limited time, cover the tractor with a tarp.
2. Clean the outside of the tractor, wax painted surfaces and lubricate each lubrication point with grease.
3. Check antifreeze level and protection in the cooling system.
4. Remove the battery for storage or disconnect the battery and put a slow trickle charge on the battery.
5. Cover the exhaust system opening to keep out all water, dust, and “critters.”
6. Support the front and rear wheels so full weight is not on the tires.
7. Start the engine to run for 20 minutes every three months to insure the proper lubrication of seals, gaskets, and internal engine parts.

Start the tractor and let it run for at least 20 minutes every three months.

3. Maintenance Items - Pictures and Descriptions

(Includes Fluids, Specifications and Capacities)

Note: In this document italicized questions are based on issues raised in the Jinma manual.

Air Filter

The air filter housing is at the front of the engine compartment. The air filter is accessed and changed by removing the panel on the end (opposite the air hose).

Use an approved Jinma 284 Air Filter. These can be purchased at Rocky Mountain Farm Pros. (Air Filter does NOT crossover to NAPA®/Carquest® etc.)

The short flexible tube under the air filter housing is an opening to remove accumulated grit. When the engine is not running, it can be opened by squeezing and will let grit and dust fall out. Check this periodically between air filter changes. Check air filter every 50 hours of operation. Change the air filter no less than every 250/500/1,000 hours of operation even if it seems clean.



Open from this end.

Cooling System

Water

Is using boiled hard water an acceptable approach? **No!** Boiling water or adding caustic soda is not a good approach in the US. Distilled water best but you can also use other soft water. Most “city” water in the Denver area is acceptable; be careful about well water as it may contain minerals and particles.

Radiator Cap

The cooling system holds about 2 gallons of liquid (water plus antifreeze).

Avoid **Hard** Water



Anti-Freeze

What type of anti-freeze should I use and at what proportions? Use standard vehicle antifreeze. For Colorado, it should be mixed in the range recommended by the antifreeze manufacturer which is generally 50/50 for protection to minus 43 degrees Fahrenheit. For colder areas of Colorado up to 70% antifreeze / 30% water can be used based on the antifreeze manufacturer's recommendations..

Using the new type of anti-freeze which can be mixed with either type of previous color coded anti-freezes is a good precaution so that you do not have to be concerned with what type of anti-freeze you can add.

Look at changing the cooling fluid after 2 years of operation or the first 250 hours of operation.

Radiator Drains: There are two ways to drain the radiator. The first is by turning a triangular wire which is at the rear of the engine compartment, on the left side, and near the top of the engine (see picture) and is attached to a valve which is near the bottom of the engine. Turn the triangular wire to operate the drain. This will drain all the fluid out of the block. The second drain is attached to the back right side of the radiator at the bottom (this is not pictured as it is difficult to see, but is reasonably easy to find. For a through draining of the cooling fluid drain both locations.

Radiator Drain
Control Wire



Diesel Fuel

Diesel: Use diesel fuel you get from the filling station or a bulk source. You are eligible to buy diesel for use in your tractor without state road tax. Farm suppliers such as a local Co-op are good sources.

Do I have to use different diesel fuels based on the outside temperature? **No**

Diesel Fuel Additives: There are two additives you should consider. An anti-gelling additive helps keep the diesel from gelling in cold temperatures; gelling makes it hard for the diesel to get to the engine in cold temperatures. If you are using the new Low Sulfur fuel sold at gasoline stations (marked on the pump), you should consider an additive which contains a lubricity additive. Both of these products should be marked specifically for diesel fuel. These additives can be purchased separately or found together in some products. Additionally, a fuel stabilizer can be added to the diesel (gas tank and stored fuel) if the fuel is going to sit unused for more than 3-6 months.

Diesel Fuel Fill Cap



Diesel Fuel Filter Cartridge: Use a Napa# 3195 or Jinma HECX0607 fuel filter. These can be purchased at Rocky Mountain Farm Pros or at your local Napa.

Diesel Fuel Filter

Do I have to settle and filter the diesel fuel before putting it in the tractor? Do I have to periodically drain the fuel tank to remove debris? **No**, fuel in the US is of sufficient quality that it does not have to be settled or filtered unless it has become contaminated. Make sure any transfer container is clean inside and does not have internal scale or rust. Under normal conditions you don't need to drain the fuel tank; draining it after every 500 hours of service is probably a wise precaution especially if your fuel filter cartridge is getting more contaminants than normal. Draining the tank requires removing the connection to the bottom of the fuel tank and should only be done in carefully controlled situations with a cold engine and with provisions to catch all drained fluid.



Electrical System

General: This is a 12 volt system the same as automobiles with the chassis of the tractor grounded to the negative pole of the battery.

Battery: The original battery is a heavy duty 925 CCA (cold cranking amps) battery. A replacement battery can be of any size which will fit and not cause a short (such as might happen with side terminals). It should be a heavy duty marine or automotive battery designed for starting and have a Cold Cranking Amp (CCA) rating of at least 900 CCA.

(Need Battery Picture)



Fuses: The tractor uses standard automotive fuses. There are extra fuses located in the side of the fuse box.

Fuse Box

Lights: The tractor uses standard automotive bulbs, and should come with extras in the provided tool box.

Schematic: See the Jinma manual.

Engine Oil

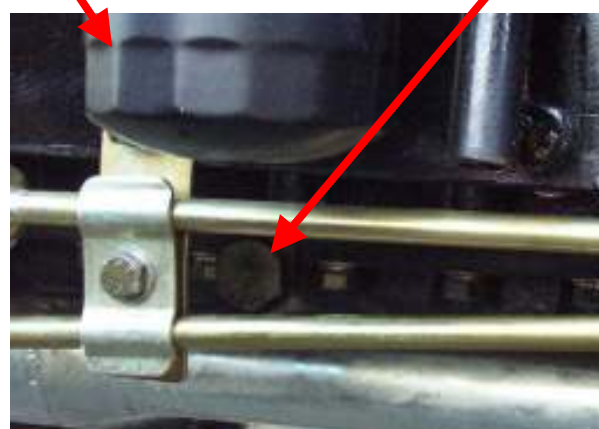
Engine Oil: Use good quality heavy duty motor oil intended for diesel engines (trucks or tractors). The engine holds about 5-6 quarts of oil.

Reminder: Use engine oil labeled as intended for **diesel** engines.

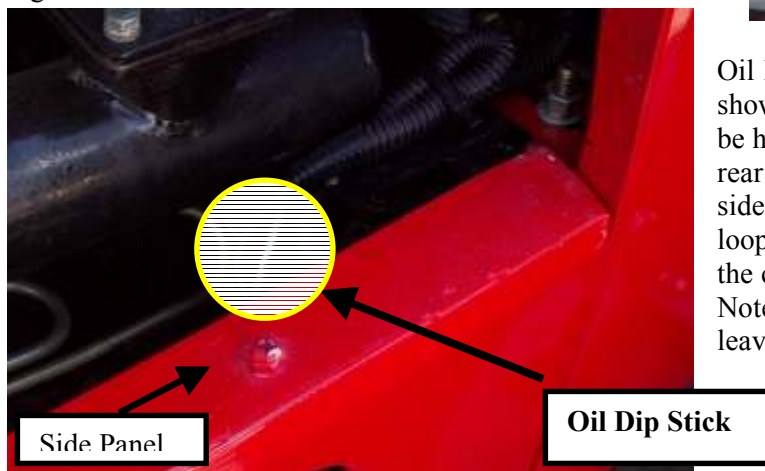
Do I have to use different lubricating engine oils based on the outside temperature? **NO** For warm weather conditions you can use a 30 weight oil or a 15w-40. For conditions below 32 degrees Fahrenheit use a 15w-40.



Oil Filter: Use a Napa®# 1315 or a Jinma JX0707 oil filter. These can be purchased at Rocky Mountain Farm Pros or your local Napa®.



Oil Drain Plug: The plug to drain the engine oil is located below and behind the engine oil filter on the left side of the engine block



Oil Dip Stick: The engine does have a dip stick to show when the engine is full of oil; however, it can be hard to find and hard to reinsert. It is on the left, rear side of the engine and adjacent to the top of the side panel. The top of the dip stick is a yellow loop. Its location is somewhat further forward than the cooling system drain which has a triangular top. Note: Some people remove the side panels and leave them off for better maintenance access.



Grease Nipple

Grease: There are various locations on the tractor which need to be greased using a grease gun. Use good quality grease. In the US that generally means a molybdenum or lithium based grease. Lithium grease or lithium grease with molybdenum should be fine.

What is calcium based grease that is referenced in the Jinma manual? Don't use it! It is of a lesser quality than lithium and molybdenum grease.

Grease Nipples: Each of the locations to be greased has a grease nipple. There are 7 grease nipples on the Front Axle and Steering System assembly. There are 4 more grease nipples on the underside of the tractor where the brake/clutch pedals rotate. There are 5 more grease nipples on the back end of the tractor (2 on the axles, 1 on each 3pt. Linkage). Generally the grease at each location is full when the grease begins leaking out the gun/nipple.

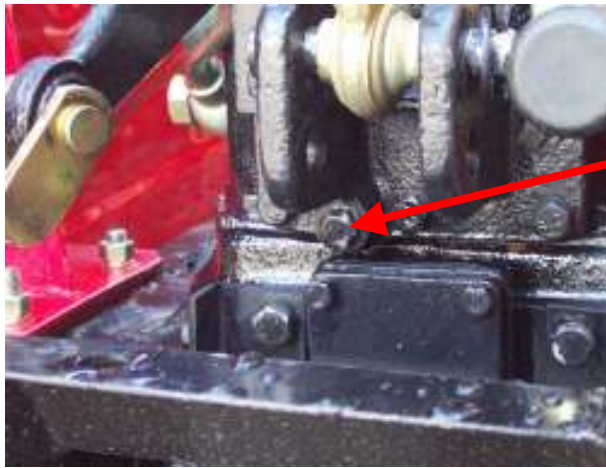
Grease Nipple

Hydraulic System

The reservoir for the hydraulic fluid is under the driver's seat. If the seat is moved forward, the fill plug can be seen and accessed. The large bolt has a dip stick attached (level to the line on the dip stick when the bolt is fully turned in). The reservoir holds about 2.5 gallons of hydraulic fluid.

Hydraulic Fluid: Use a good quality lightweight hydraulic fluid. You may be able to find it at some discount stores and auto parts stores, but farm equipment places are more likely to carry it. Standard hydraulic fluid is called tractor hydraulic fluid (THF) and is acceptable for use; however, a light weight fluid is recommended.

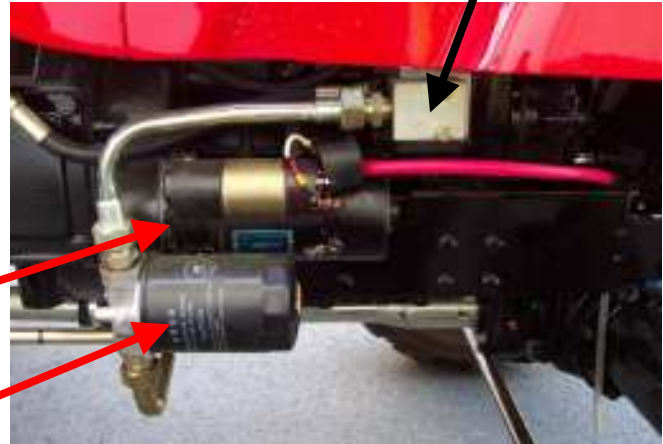
Hydraulic Fluid Fill



Hydraulic Fluid Drain Plug: This plug is located on the rear of the Hydraulic Fluid Reservoir on the lower left side. (Use a 16mm socket)

Hydraulic Fluid Drain

Hydraulic Fluid Pump



**Starter Motor
(FYI)**

Hydraulic Fluid Filter

Hydraulic Fluid Filter: These are Jinma JX0811 filters and can be bought at Rocky Mountain Farm Pro.

Tires

Farm Tires or agricultural are the standard tires. These tires use inner tubes. The front tires should be inflated to 35 lbs. of pressure and the rear tires to 25 lbs.



Transmission Box and Transfer Case Oil:



Transmission Fill Bolt

The Transmission Box and Transfer Case are interconnected connected and are filled and drained as one system. Use a good quality standard hydraulic fluid or tractor hydraulic fluid as cited above for the Hydraulic System. There is not a replaceable filter on this system.

The Transmission Box Reservoir is full when the fluid reaches the high mark on the dip-stick.

There are two locations which can be used to drain the Transmission Box and Transfer Case. The lower bolt drains more fluid from the system, but will drain slower.



Transmission Drain Bolts

Front Axle Oil

The front axle also must be filled with Hydraulic Fluid. Use the same hydraulic fluid cited above. It is full when the fluid reaches the high mark on the dip-stick. The drain is on the underneath the tractor on back of the axle, near the center of the axle.

Front Axle Fill



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