



Tel: 0800 872 2767

www.jinma.co.za/implements.html

Model: FEL250
FEL350
FEL450



Important:

Read these instructions before installing and using this implement.

**Front-end
Loader**

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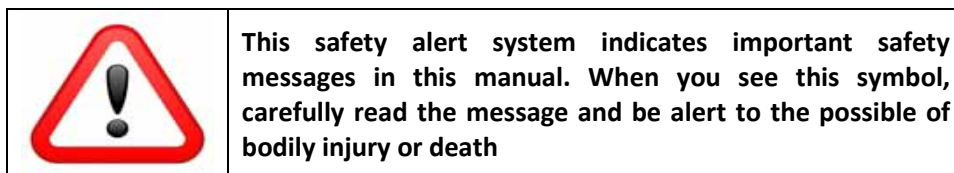
INTRODUCTION

Thank you for purchasing a Redline front end loader attachment. Please read this manual carefully and completely before installing, operating and maintaining the loader. It contains important safety information as well as details on specification, constructions, operation and maintenance.

This manual cannot cover all possible circumstances that occur in the field. In addition to these instructions, discretion according to your individual circumstances must be exercised.

We are committed to continuous improvement of our products and we welcome your feedback. Due to ongoing improvements and other technical information are subject to change without notice. Therefore include the manufacturing date and serial number of your loader when ordering spare parts.

Remember that your machine is designed and produced exclusively for agricultural use, such as light grading and digging, shed and feedlot cleaning or snow removal. Its design is **NOT** intended for industrial use.



Every effort has been made to ensure the accuracy and recentness of the information herein. However we assume no responsibility for errors or omissions.

CHAPTER 1: SAFETY INFORMATION

1.1 Safety First

Your safety and the safety of others depend on the correct operation and maintenance of this equipment. Ensure all potential operators read this manual and notices on the loader completely and carefully including all safety messages before use. Always use care and common sense.

Before operation ensure:

- **All controls are in a state.**
- You know the position of all controls and understand their correct operation
- You are aware of the stability and work characteristics of this loader

Contact your dealer if you are unsure of any item concerning operation, maintenance or service of this loader

The safety information given in this manual does not replace any safety codes, insurance needs, federal, state and local laws. Make sure your machine has the correct equipment required by your laws and regulations.

1.2 Safety Rules and Implement Caution

Safety Rules

Improper use of a loader can cause serious injury or death. The following safety precautions, and those given in the tractor installation instructions, should be thoroughly understood before attempting to operate this machine.

1. General

- Ensure that the front end loader and tractor are up and maintained in accordance with these instructions and that of the tractor.
- While operating your loader, ensure you observe the safety requirements / regulations relating to the tractor.
- Only operators who have been specially trained in loader operation and fully understand this manual can operate the loader.
- Keep hands, feet and clothing away from all moving parts. Wear close fitting clothing and appropriate safety equipment. Prolonged exposure to loud noise can damage hearing. Wear suitable approved hearing protection such as ear muffs or plugs. Operating equipment safely requires your full attention. Do not wear radio or music headphones. Secure hair above shoulder length.

CHAPTER 1: SAFETY INFORMATION

- You must be in good physical and mental health to operate the loader safely. Do not operate the loader when you are ill, fatigued or under the influence of any substance or medication that could affect your vision, co-ordination or judgment.
- The driver/operator should have the relevant driving license and strictly follow the relevant traffic regulations.
- Do not permit others to ride on your tractor. Only one person, the operator or driver, should be on the machine when it is in operation.

2. Prior to each use:

Conduct the following inspections with the equipment in a safe state – implements lowered to the ground, tractor park brake engaged, drive disengaged, all controls in neutral, engine shut off and ignition keys removed.

- Inspect the hoses, seals and couplers for leaks in an effort to avoid the possibility of a dangerous failure to the hydraulic system. Do not operate your loader if any oil leaks exist.
- Inspect the loader for structural damage such as bends or cracks, loose, missing, or malfunctioning components in an effort to avoid the possibility of a dangerous failure.
- Tighten any loose parts. Replace any damaged or worn parts. Make sure replaced parts are of equivalent strength and quality. Be certain any repairs necessary are completed prior to loader operation.
- Check hydraulic oil level in tractor and top up if necessary (refer tractor manual). Check lubrication points on loader and lubricate if necessary.

3. When Operating

- Before starting your tractor engine make sure all operating controls are in park or neutral position.
- Your tractor must be fitted with a Roll Over Protective Structure (ROPS) cab or frame for your protection. See your tractor operator's manual for correct seat belt usage.
- Be certain all bystanders are clear of the machine and work area prior to operation.
- Operate the loader unloaded to ensure it is in proper operating condition before starting your work.
- The use of good judgment is necessary by the operator in using this loader. Use extra caution when rear wheel weights and tyre ballasts are added to a loader-equipped tractor. Do not ram into compacted or frozen piles of dirt or other material with great momentum where sudden shock loads are encountered. Serious and costly damage may result to both the loader and the tractor.
- Operate controls only when seated in the tractor's seat.

CHAPTER 1: SAFETY INFORMATION

- Never lift, hoist, or carry humans in the bucket or on any portion of the loader or loader attachments.
- Move slowly! Travel speed should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slick or muddy surfaces.
- Stay off slopes too steep for safe operation. Select low range before traveling up or down a hill with a heavy load. Avoid “freewheeling”.
- Avoid sudden stops when lowering or lifting the loader boom to prevent loss of control over the machine and / or loader.
- Never perform maintenance or adjustments on the loader or tractor while in operation.
- A loader attachment should be transported in a low position at slow ground speeds. Make turns slowly and use the tractor brakes cautiously. A loader attachment in the raised position alters the center of gravity of the machine and increases the possibility of mishaps.
- Do not stand, walk or work under a raised loader or attachment unless it is securely blocked or held in position. Accidental movement of a control lever or leak in the hydraulic system could cause the loader to drop, or attachment to dump, causing severe injury.
- Contact with power lines can cause severe electrical burns or death from electrocution. Be aware of overhead wires and underground services. Ensure no part of the Front end loader comes in contact with them. Before digging in area that may contain underground service contact relevant authorities to identify exact location.
- Before applying hydraulic pressure, make sure all hydraulic connections are tight and components are in good condition.
- When using remote hydraulic tractor valves on some tractors, the loader lifting and dumping cylinders will continue moving unless the control levers are manually returned to neutral, or until relief pressure is reached at the ends of piston strokes. Observe the bucket movement and maintain control with the control levers.

4. Following Operation

- Whenever the machine is not in operation, lower the loader bucket to the ground, engage tractor park brakes, disengage drive, put all controls in neutral, shut the engine off, and remove the ignition with the control levers.
- Make sure all parked loaders on stands are on a hard level surface with all safety devices engaged to prevent loader from falling and being damaged or injuring someone.
- Always park loader with bucket attached to loader.

CHAPTER 1: SAFETY INFORMATION

5. Performing Maintenance

- Carefully review, understand, and following the “maintenance” section in this manual before attempting to service loader.
- To prevent personal injury, lower the bucket or attachment to the ground, shut off tractor engine, lock out the hydraulic supply and relieve pressure in the hydraulic system before disconnecting fluid lines adjusting, lubrication, or serving the loader.
- Never use your hand to check for suspected leaks under pressures. Use a piece of cardboard or wood for this purpose. Escaping hydraulic oil or diesel fuel leaking under pressure can have sufficient force to penetrate the skin and cause infection or other injury. If injured by leaking fluid, seek medical attention immediately.

Important Caution

- Do not use a bucket to scrape or as a dozer blade, unless the bucket is tilted so that the bucket stops are in contact with the boom. A limited amount of leveling may be done, when the loader valve is arranged with a float control. This will prevent damage to cylinder rods.
- Care must be taken with your loader cylinders. Always keep cylinders in a retracted position when the loader is not in use to guard against rust and contamination which may cause damage to the cylinder rods or hydraulic system.

CHAPTER 1: SAFETY INFORMATION

1.3 Safety Decals

Care of Safety Decals

1. Keep safety decals clean and free of obstructing material.
2. Replace damaged or missing safety decals with new decals from your dealer.
3. If a component with a safety decal(s) affixed is replaced with a new part, ensure new safety decal(s) are attached in the same locations on the replacement components.

Refer below for correct location of decals. Note decals appear on both sides of loader.

IMPORTANT
FOR LOADER OPERATION
USE
HIGH RANGE
GEAR FOR
TRAVELLING
ONLY.

USE
LOW RANGE
GEAR FOR
WORKING LOADER
AND TRACTOR

HYDRAULICS WARNING!
DO NOT disconnect Front Loader, or other hydraulic hoses that are attached to quick couplers
WITHOUT FIRST SHUTTING DOWN COMPLETELY
After the items are removed from operation, a reconnecting hose must be made to allow continued circulation of hydraulic fluid.
FAILURE TO DO SO CAN CAUSE DAMAGE TO ALL MAJOR HYDRAULIC PARTS AND TO THE FRONT SUBFRAME, EXHAUSTOR, REAR SUBFRAME AND TO THE TRACTOR.

ATTENTION
Your responsibility before operating the loader are:
- Read the operator's manual for the correct operation.
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WARNING!
Do not install a 3-point mount Backhoe without first installing rear subframe!

WHEN CONNECTING LOADER, CONNECT COUPLERS L1 to L1 and L2 to L2

WHEN DISCONNECTING LOADER, CONNECT COUPLERS T1 to T1

DANGER!

Do not handle hoses with caution

Do not touch hoses or electrical wires on the loader or the attachment

Do not touch hoses or electrical wires on the loader or the attachment

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Caution!

Do not touch hoses or electrical wires on the loader or the attachment

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Warning! High Pressure Fluid

Do not touch hoses or electrical wires on the loader or the attachment

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CHAPTER 2. LOADER SPECIFICATIONS

2.1 Brief introduction

REDLINE series front end loaders can be attached to several brands of wheeled tractors to increase their versatility. Refer specifications below

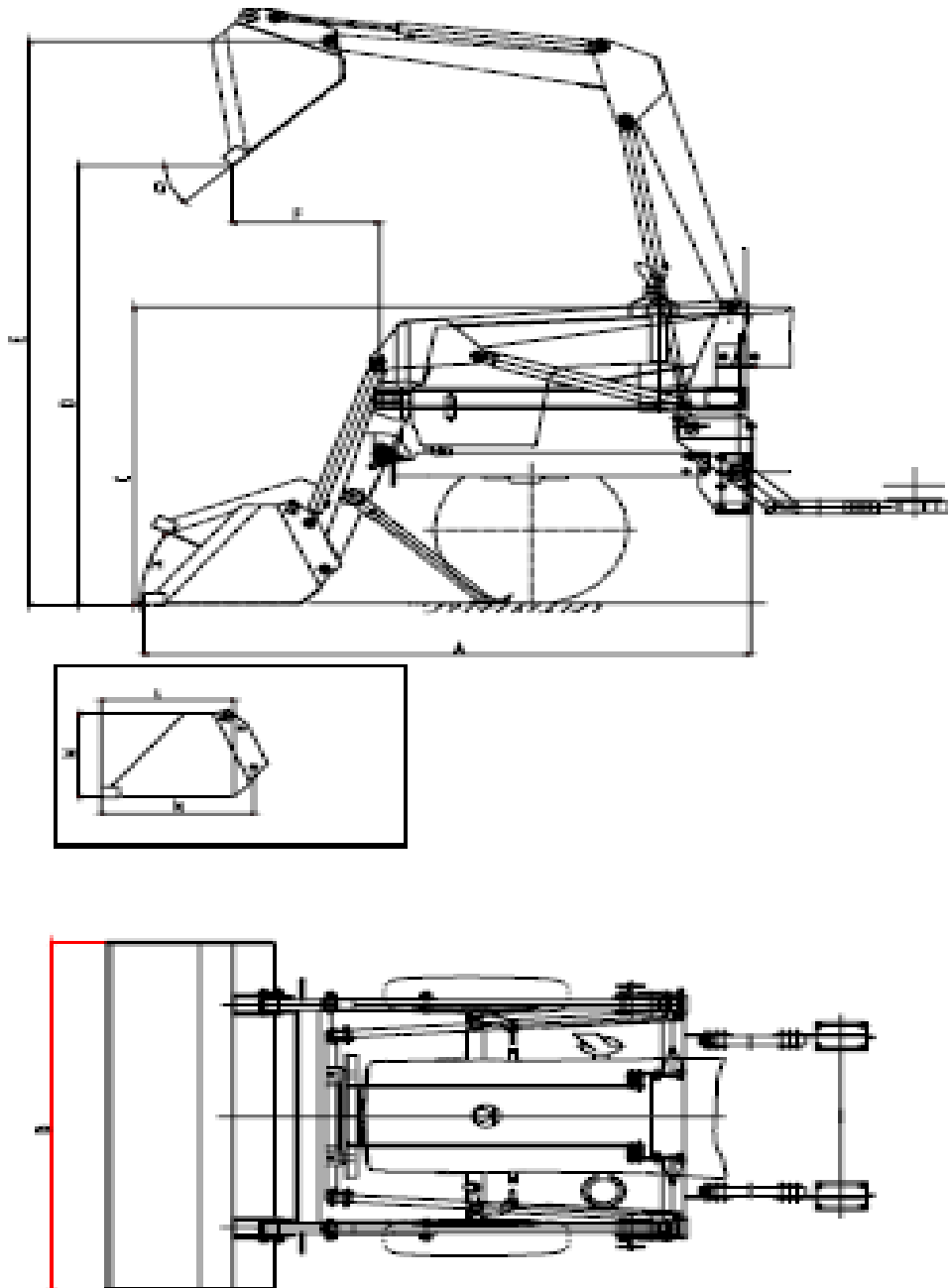


Fig 2.1 Overall dimensions of the Loader

CHAPTER 2. LOADER SPECIFICATIONS

2.2 Specifications and parameters for front end loader

	Loader attachment model	FEL250	FEL350	FEL450
A	Overall length (mm) (With bucket on the ground)	2363	2760	2895
B	Bucket width (mm)	1,520/ 1670	1,670/ 1830	1830
C	Overall height (mm) (With bucket on the ground)	1407	1540	1790
D	Clearance with bucket dumped	1656	1930	2170
E	Maximum lifting height (mm) (front ground to bucket pivot)	2424	2699	2885
f	Reach the bucket (mm) (bucket fully lifted and at 45° dumping angle)	339	494	810
G	Bucket dumping angle	71°	72°	76°
H	Bucket rollback angle	35°	35°	35°
L	Depth of bucket (to back of inner shell) (mm)	616	616	616
M	Height of bucket (mm)	562	562	562
N	Depth of bucket (to pivot pin) (mm)	742	742	742
	Maximum opening angle of clamping bucket	95°	95°	95°
	Bucket cubage (m ³)	0.32/0.35	0.35/0.38	0.38
	Carrying capacity (kg)	440	250	800
	Mass of loader attachment (kg)	490	548	845
	Minimum operating flow required	15l/min	15l/min	25l/min
	Maximum operating flow allowed	35l/min	32l/min	40l/min
	Minimum operating pressure required	10mPa	10mPa	12mPa
	Maximum operating pressure allowed	16mpa	16mpa	16mpa
	Lifting cylinder Bore x stroke – Number	50x515-2	60x535-2	60x535-2
	Bucket cylinder Bore x stroke – Number	40x262-2	50x260-2	50x265-2
	Clamping cylinder Bore x stroke – Number	70x285-2	70x285-2	70x285-2
	Control Valve (double joystick)		DL ₂₁ -F5L-T/000	

CHAPTER 3. OPERATION

3.1 Tractor Preparation

Attachment / Compatibility

This loader is suitable to be operated on a variety of wheeled tractors. Jinma tractors are equipped with the mounting points to accept the loader sub frame. Other machines will require engineer certified mounting points to be fitted to accept the sub frame.

Inspect for any worn or damaged parts that are part of the connection between the tractor and loader. Replace if necessary with parts of suitable strength and quality.

Rear Counterweight

Add recommended rear ballast / rear / rear wheel weights / backhoe for increased stability. Refer to tractor operator's manual for specific recommendations on counterweighing tractor.

Roll Over Protective Structure (ROPS)

Your tractor must be fitted with a Roll Over Protective Structure (ROPS) cap or frame for your protection. See your tractor operator's manual for correct seat belt usage.

Tractor Hydraulic System

Tractor Hydraulic system powering the loader must be compatible with the specifications of the loader. Refer to the minimum and maximum pressure and flow requirements shown in Specifications 2.2 and 2.3. Many tractors hydraulic systems exceed the flow rate specified for you loader. The flow may need to be reduced to an acceptable rate by throttling the engine RPM. Adjusting the flow rate correctly could prevent sudden shock loads on the cylinders, hoses, ect. This results in a smooth operation and reduced maintenance costs and down time.

Tractor operation in a loader application significantly increases demands on the tractor hydraulic system. Check the tractor hydraulic system fluid level daily. Refer to your tractor operator's manual maintenance section for instructions regarding tractor hydraulic system maintenance. Adhere to recommendations in your tractor operator's manual concerning hydraulic fluid and filter specifications and change intervals. The oil in unit is compatible with most tractor manufacture's oil. Do not move control levers on unit before loader is connected to the tractor or the independent hydraulic oil system has been completed.

CHAPTER 3. OPERATION

Tractor Tyres

Front tyres must be maintained at the maximum recommended inflation to maintain normal tyre profile with the added weight of loader.

Rear tyres must be maintained at equal pressure within the recommended tyre inflation range.

Unequal rear inflation can prevent loader bucket from contacting the ground across its full width.

Wheel Tractor Setting

Tractor front and rear wheel track settings must be restricted to spacing recommended in the tractor operator's manual. Maximum recommended spacing provides optimum stability.

CHAPTER 3. OPERATION

3.2 Loader Mounting and Removal

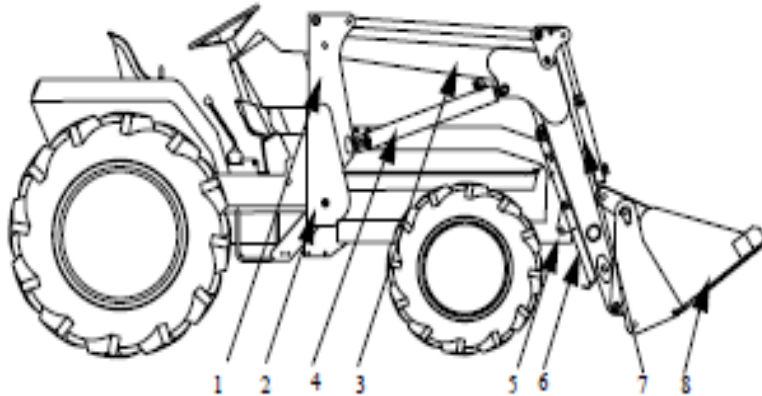





Fig 3.1 Main components of the loader

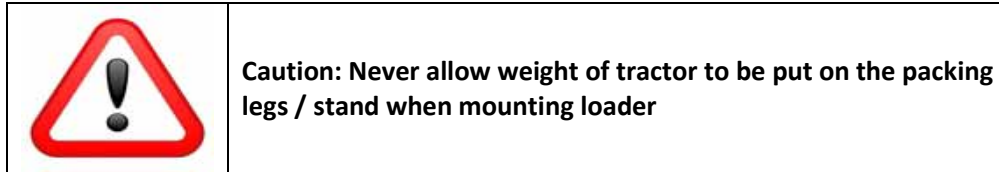
1. Upright assembly	2. Sub frame assembly	3. Boom assembly	4. Lifting cylinder
5. Front bracket assembly	6. Packing leg	7. Crowd cylinder	8. Bucket

	<p>Caution: Do not operate the loader if the fittings are leaking or if the hoses are damaged. A sudden line burst would cause the boom to drop suddenly potentially causing death, bodily injury or property damage.</p>
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	<p>Caution: The loader unit when not fully connected to the tractor is potentially unstable. Proceed with caution. Do not raise the bucket off the ground until it is fully connected to the tractor. Failure to comply with these requirements could cause death, bodily injury or property damage.</p>
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	<p>Caution: Before disconnecting hydraulic lines, turn tractor engine off and relieve all hydraulic pressure. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin causing serious personal injury.</p>
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CHAPTER 3. OPERATION



Mounting of loader

1. Ensure the loader is supported with suitable stands to enable the tractor to be driven into position (refer photo 1). Carefully drive the tractor into the loader between the loader booms to a position where the hydraulic hoses can be connected to the control. Note: The mounting brackets should be aligned with the loader uprights.
2. Shut the tractor OFF and connect the hydraulic couplings (refer photo 2). Ensure to match correctly as per markings stamped on couplings – connect L1 to L2 and if fitted L3 to L3.
3. Start the tractor and drive ahead slowly to position the loader uprights into the mounting brackets. Note: Activate the bucket cylinders and lifting cylinders as required to align the uprights / mounting brackets.
4. With the uprights secure in the mounting brackets, extend the bucket cylinders to ensure the uprights are fully seated in the mounting brackets.
5. Shut the tractor OFF and secure the uprights to the mounting brackets using the existing lock pin and R pin. (refer photo 4). Fit horizontal bar (if supplied) joining two horizontal assemblies and secure with pins (refer photo 5).
6. Start the tractor, raise the loader off the ground and put bucket in dumping position. Lower loader to position bucket cutting edge on ground and shut the tractor OFF. Remove the parking legs (refer photo 6). And return to storage position.

CHAPTER 3. OPERATION



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

CHAPTER 3. OPERATION

Removal of loader

NOTE – The removal of bucket only can be done very quickly and easily. For your convenience only remove complete loader assembly if absolutely necessary.

1. Position loader on hand level surface. Raise boom. Put bucket in dump position. Lower the loader until front edge of bucket is on the ground and shut tractor off.
2. Remove pins and put the parking legs down (refer photo 6). Re-use pins to secure parking legs in “down” position.
3. Raised loader and fully retract bucket. Lower the loader until the parking legs touch the ground. Tip the bucket until bucket cutting edge and the parking legs touch the ground.
4. Remove pins and remove horizontal bar (if fitted) joining two upright assemblies (refer photo 5).
5. Remove the pins from the mounting brackets securing the loader upright. Repeat procedure on both sides (refer photo 4). (Reinstall pins in the uprights after removing loader to prevent loss.)
6. Start the tractor and slowly retract the bucket cylinders until the bottom of the bucket rests firmly on the ground.
7. Back the tractor up slowly until the uprights are clear of the mounting brackets. Observe the four hoses to ensure they are not caught or stretched when backing away from loader.
8. Shift the control valve into the neutral position.
9. Check that the uprights will clear the front tyres. If additional clearance is required, extend the lift cylinders (refer photo 3).
10. Shut the tractor OFF and disconnect the four hydraulic hoses to ensure they will be clear of the tractor. Connect couples T1 to T1 and ensure L3 (if fitted) remains disconnected.
11. Start the tractor and carefully back out of the loader.
12. Provide additional supports (not included) under both upright assemblies to ensure loader unit is stable and will not topple over (refer photo 1).

CHAPTER 3. OPERATION

Removal of Bucket Only

1. Ensure 4 in 1 bucket is closed and lower to ground.
2. Turn tractor off and disconnect 4 in 1 hydraulic couplers (refer photo 7).
3. Turn tractor on. Raise leading edge bucket 50mm off ground at a 45° dump position.
4. Turn tractor off. Pivot lever upwards to release lower lock pins (refer photo 8).
5. Turn tractor on. Use hydraulic control to “unhook” bucket from boom (refer photo 9).



Photo 7



Photo 8





Photo 9

Installation of Bucket Only

1. With bucket on ground use hydraulic control to “hook” bucket on boom.
2. Secure bucket to boom by pulling lever to lock in bottom pins.
3. Turn tractor off. Reconnect 4 in 1 hydraulic couplers.

3.3 Loader operating


	Caution: When the loader is in operation you MUST engage low range on tractor
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	Caution: The tractor / loader should only be operated with all safety equipment properly installed.
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CHAPTER 3. OPERATION

Initial Loader Operation

Before operating the loader, fully raise and lower the boom two or three times. Then raise the bucket approximately 1.2metres above the ground and cycle the bucket cylinders three times. Lower the bucket to the ground. Check the tractor and loader hydraulic oil level.

	Caution: Before disconnecting hydraulic lines, turn tractor engine off and relieve all hydraulic pressure. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin causing serious personal injury.
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	Caution: Do not operate the loader if the fittings are leaking or if the hoses are damaged. A sudden line burst would cause the mainframe to drop suddenly, causing damage to the tractor or loader or injury to personnel.
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Cold Weather Operation

For smooth operation in cold weather, let the tractor warm up. SLOWLY cycle the lift and bucket cylinders several times to warm the oil in the hydraulic system. The loader may operate erratically until the hydraulic oil has warmed to operating temperatures.

Loading Bucket

For the most safe and efficient loading use low range gears. Slowly drive the tractor straight into the material to be loaded and increase speed only after contact has been made. Roll the bucket back a small amount and slowly lift to break away the material. As the load increases, continue rolling the bucket back to scoop the maximum load. Remove the top levels first when loading from large piles of material. When bucket is full, raise loader so the bucket is clear of material and slowly back out of the pile.

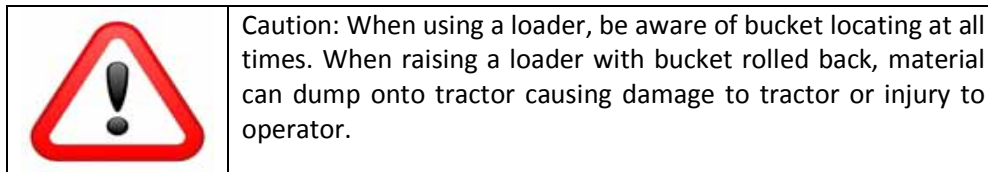
Dumping Bucket

When in the dump area slowly drive the tractor forward and raise the loader at the same time. Raise the loader to the minimum height needed to dump the bucket. Make sure to keep a level bucket position to prevent spilling from the bucket. Dump the bucket and keep all movements smooth.

OPERATION 3. OPERATION

Transporting a Loader Bucket

Transport material with the bucket as possible to prevent spilling and keep maximum stability. The loader must be in a position that will not block the operator's vision. A loaded bucket must not be transported in the upright position or at excessive speed.



Scraping

When scraping, the float position must be used to keep the bucket on the ground and the same time let the bucket follow ground contours. The bucket must be kept level to the ground. during scraping operations.

Backfilling / Backgrading

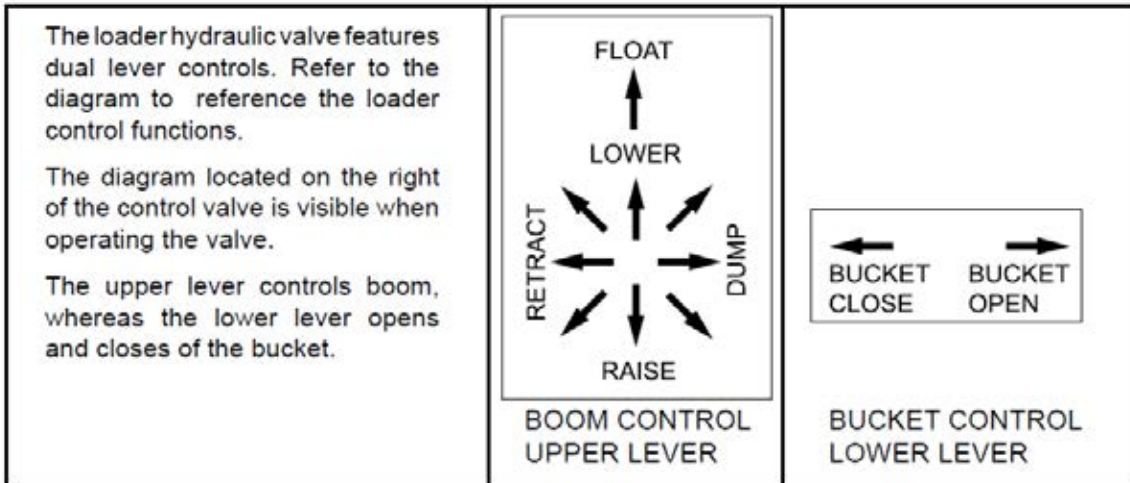
When "Backfilling", position the bucket so it is level on the ground. Do not dump material from bucket following each pass, as additional weight of material in bucket will assist in "Backfilling" and increases loader efficiency during "Backfilling".

Control Rate of Loader Functions

By "feathering" the control lever, reduced operational speeds can be controlled. This action controls the position of the valve body and regulates flow of oil to / from cylinders. It is important to use this practice when lowering loader boom with a loaded bucket of material.

CHAPTER 3. OPERATION

Loader Hydraulic Controls







The loader hydraulic valve lift cylinder circuit incorporates “float” position, which allows the loader bucket to follow ground contours. The “float” position is engaged by shifting the control lever upward into “detent” until the operator pull the control lever out of the “detent” position.

The control valve has a neutral position that prevents movement of loader or bucket. When the control valve is released from the work position, the spool will return to neutral.

CHAPTER 4. MAINTENANCE AND LUBRICATION

4.1 Maintenance

	<p>Caution: Wherever possible lower loader to ground to perform maintenance . If it is necessary to raise loader off ground to perform maintenance use locking pins to secure left and right boom in raised position. Refer photo 10.</p>
	<p>Caution: Do not service / adjust the loader while it is operating. Remove all power from both tractor and loader while servicing the loader.</p>
	<p>Caution: Before disconnecting hydraulic lines, turn tractor off and relive all hydraulic pressure by moving the loader control lever in all directions. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin causing serious personal injury.</p>
	<p>Caution: Do not heat by welding, soldering or using a torch near a pressurized hydraulic line. Pressurised lines can be accidentally cut causing escaping hydraulic oil and possible flammable spray.</p>

CHAPTER 4. MAINTENANCE AND LUBRICATION



Photo 10

Improper disposal of waste can threaten the environment. Do not pour hydraulic oil or other potential contaminants onto the ground, down a drain or into any water source. Consult your local environmental or recycling centre or Jinma dealer for suitable disposal / recycling options.

Failure to perform the routine maintenance procedures outlined below may cause your loader to operate improperly, such operation could lead to bodily injury. Your loader requires a few minutes of maintenance before each use. For your own safety, follow the procedures suggested below.

1. After the first 10 hours of loader operation replace the hydraulic oil filter on the tractor. Thereafter maintain tractor hydraulic system as per maintenance schedule – refer tractor manual for procedures.
2. Check hydraulic oil level in tractor and top up if necessary. Ensure loader is lowered to ground and bucket fully retracted (all cylinders in retracted position). Refer to tractor manual for further procedure.
3. Check all hardware and hoses to ensure they are secure.
4. Check hydraulic hoses, connections, control valve and cylinders for evidence of leakage.
5. Check hoses for cracks and cuts. If a hose is defective replace it immediately.

CHAPTER 4 MAINTENANCE AND LUBRICATION

6. Check for any hoses that may be rubbing against sharp surfaces. Re-route any such hoses immediately.
7. Lubricate all grease nipples and loader pivot points daily (10 hours). Refer to tractor operator's manual for lubricant recommendation.

Tractor front tyres should be maintained at maximum recommended inflation to maintain normal tyre profile with added weight of loader / material. Rear tyres must be kept within inflation pressure range. Unequal rear tyre inflation can bucket not in bucket not bing level to the ground.

Refer to "Lubrication and maintenance Chart" for quick reference to maintenance operations.

Lubrication and Maintenance Chart

Item	Service	Service Interval
Hydraulic system oil level	Check	Daily / 10 hours
Hydraulic system oil filter	Replace	As specified in tractor operator's manual
Tyre inflation	Check	Weekly / 50 hours
Loader pivot points	Lubricate	Daily / 10 hours
Loader hydraulic lines, hoses, connections	Check for leaks, wear	Daily / 10 hours
Lift and bucket cylinder rod packing	Check for seepage, service as needed	Daily / 10 hours
Pivot pin bolts and dust covers	Check, replace if missing	Daily / 10 hours
Mid-mount lock pin and R pin	Check, replace if necessary	Daily / 10 hours
Loader mount hardware	Check visually	Weekly / 50 hours
Loader mount hardware	Re-torque	Every 200 hours

Lubricate with pressure gun using grease as recommended in tractor operator's manual.

4.2 Storage at the end of season

1. Coat all exposed cylinder shafts with corrosion preventative.
2. Store the loader in a dry location protected from the weather.
3. Clear the unit of all mud and dirt, touch up the paint to prevent rust.
4. Install dirt caps on the quick couples to prevent dirt contamination of the hydraulic oil system or connect them together.

CHAPTER 4 MAINTENANCE AND LUBRICATION

4.3 At the start of a season

1. Check hydraulic oil level in tractor and top up if necessary (refer tractor manual).
2. Clean all dirt and debris from all quick couplers.
3. Check all hydraulic hoses and replace necessary.
4. Tighten loose bolts and nuts.
5. Lubricate moving parts.
6. Check the bucket teeth and sharpen or replace if necessary.
7. Run the unit slowly and check the operation control system for correct working condition before starting to dig.

CHAPTER 5. TROUBLE SHOOTING

Trouble	Possible causes	Solution
Lifting and bucket cylinder not working	1. Transmission short of lube oil (oil level below scale line on dipstick).	Replenish oil.
	2. Hydraulic hoses connected improperly	Check and correct hydraulic hose connections.
	3. Low system pressure supplied from hydraulic pump	Check system pressure. Replace or repair pump.
	4. Control valve linkage broken.	Inspect. Repair as required
	5. Quick disconnect couplers are not fully connected.	Check couple connections. Replace coupler(s) if necessary.
	6. Hydraulic hose / tubeline / filter blockage.	Check for evidence of damage to hoses or tubelines that would block flow of oil between cylinders and control valve. Replace filter.
	7. Cylinder piston assembly defective (not sealing)	Check cylinders for internal leakage as described in service section under cylinder leakage tests.
	8. Control valve blockage	Inspect for blockage. Disassemble valve if necessary.
Insufficient lifting capacity	1. Insufficient engine power output	Inspect and service / repair engine as per its operating manual.
	2. Oil level in transmission case is too low	Replenish oil.
	3. Weight in bucket exceeds maximum specified loader capacity	Reduce material load.
	4. Lifting cylinder piston assembly leakage.	Check cylinders for leakage. Repair as needed.
	5. Control valve leaking internally.	Replace control valve and recheck operation.
	6. Hydraulic pump defective.	Check and repair or replace.
Slow or uneven lift	1. Low hydraulic fluid level.	Check and replenish
	2. Cold hydraulic fluid.	Allow hydraulic system to warm up operating temperature.
	3. Engine R.P.M. too slow (hydraulic pump R.P.M. too slow).	Increase engine speed to obtain satisfactory loader operation.
	4. Weight in bucket exceeds maximum specified loader capacity.	Reduce material loader.
	5. Quick disconnect coupler restriction or coupler capacity	Check coupler connections for evidence of restriction.
	6. Hydraulic hose or tubeline restriction	Check hoses and tubelines for evidence of restriction.
	7. Lifting cylinder piston assembly leakage.	Check cylinders for leakage. Repair as needed.
	8. Control valve leaking internally.	Replace control valve.

CHAPTER 5. TROUBLE SHOOTING

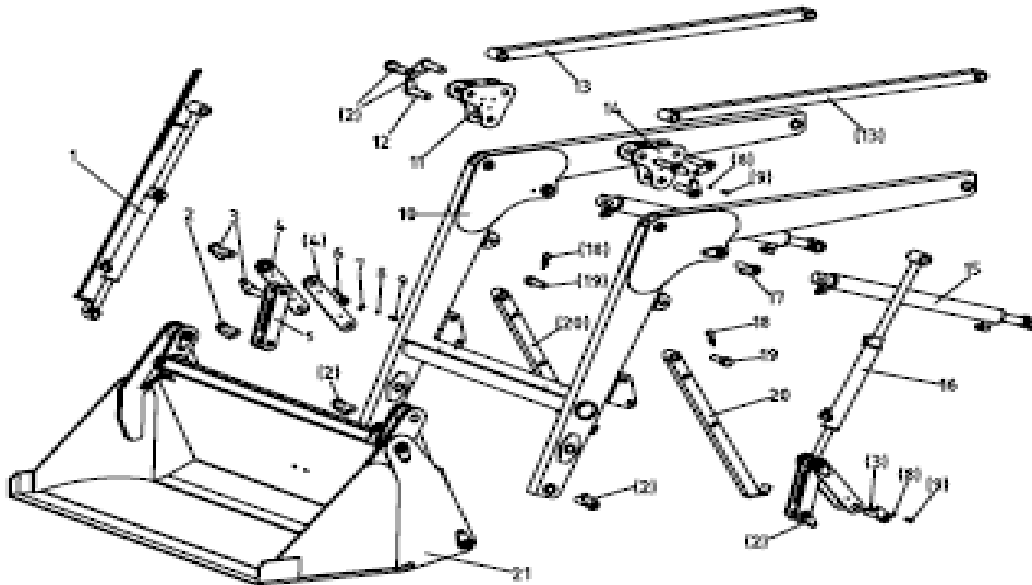
Trouble	Possible causes	Solution
Lifting and/or bucket cylinders operation relieve to control valve lever position	Hydraulic hoses connected incorrectly	Correct hydraulic hose connections.
Loader drop with control valve spool in "centered" position Note: A gradual drop over an extended period of time is a normal condition.	1. Cylinder piston assembly leakage.	Check cylinders for leakage.
	2. Control valve internal leakage.	Replace control valve.
Control valve spools(s) will not return to centered position.	1. Control lever linkage binding.	Determine origin of binding and repair
	2. Control valve spool centering is broken.	Replace centering spring.
	3. Control valve spool binding in valve body spool bore.	Disassemble valve for inspection and repair.
Bucket cutting edge wear is uneven side to side	Bucket is not level to ground.	Check rear tyre inflating and adjust to level bucket to ground
Abnormal sound	1. Loose or missing nuts and bolts	Tighten loose ones and replace missing ones.
	2. Insufficient lube oil causing dry friction.	Add oil with the oil of correct specification.
	3. Incorrect lube oil in use or impurity in oil.	Replace with the oil of correct specification.
Excessive foam in oil tank	1. Improper hydraulic oil usage.	Refer to tractor's manual and replace hydraulic oil using recommended hydraulic oil.
	2. Oil below specific level	Refill oil to the specific level
	3. Air leaking into suction side of hydraulic pump.	Check for loose or defective connections between reservoir and hydraulic pump.
Abnormal noise of the oil pump	1. Excess foam in oil tank.	Replenish oil and bleed air
	2. Oil intake pipe or oil filter clogged.	Clean oil filter and intake pipe
Acting speed of the bucket is slow and insufficient	1. Large interior leakage in gear pump or control valve	Replace or repair it.
	2. Oil filter is clogged.	Clean the filter.
	3. Oil level is low, oil type is incorrect	Fill with specified oil type to specified level.
	4. Interior leakage in cylinder.	Inspect hydraulic system, replace seals according to specified setting of cylinder.

CHAPTER 5. TROUBLE SHOOTING

Oil leakage	1.O-ring damaged.	Replace rubber oil seal.
	2. Gasket damaged.	Replace with a new one.
	3. Loose hydraulic connection.	Tighten loose connections.
	4. Control valve spool or body damaged or worn.	Replace control valve
	5. Cylinder rod packing set leakage.	Check cylinders for leakage. Repair as needed

FRONT END LOADER. ILLUSTRATED PARTS CATALOGUE

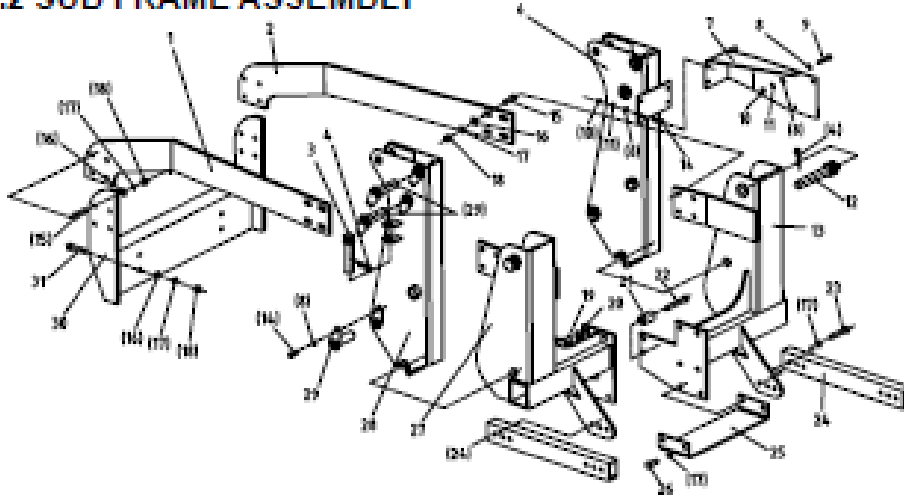
6.1 BOOM AND BUCKET ASSEMBLY



Item NO	FEL250 Part NO.	FEL350 Part NO.	FEL450 Part NO.	Name & specifications	Qty
1	ZL-25P.065	ZL-YTO354.065	ZL-DF654.065	Bucket cylinder(R)	1
2	ZL-FT254.083	ZL-FT254.083	ZL-DF654.083	Pin	8
3	ZL-FT254.085	ZL-FT254.085	ZL-DF654.085	Pin	4
4	ZL-FT254.301	ZL-FT254.301	ZL-DF654.301	Swing link	4
5	ZL-FT254.077	ZL-FT254.077	ZL-DF654.077	Attachment link	2
6	LW-7.01.101	LW-7.01.101	LW-7.01.101	Pin	4
7	GB96-85-8	GB96-85-8	GB96-85-10	Plain washer	4
8	GB93-87-8	GB93-87-8	GB93-87-10	Spring washer	20
9	GB5783-86-M8X25	GB5783-86-M8X25	GB5783-86-M10X25	Bolt	20
10	ZL-FT254.015	ZLYTO354.015	ZL-DF654.015	Boom weldment	1
11	ZL-FT254.079	ZL-FT254.079	ZL-DF654.079	Triangular plate(R)	1
12	ZL-FT254.084	ZL-FT254.084	ZL-DF654.084	Pin	2
13	ZL-FT254.078	ZL-YTO354.078	ZL-DF654.078	Quadrate adapting pipe	2
14	ZL-FT254.080	ZL-FT254.080	ZL-DF654.080	Triangular plate(L)	1
15	ZL-25P.063	ZL-YTO354.063	ZL-DF654.063	Lifting cylinder	2
16	ZL-25P.064	ZL-YTO354.064	ZL-DF6354.064	Bucket cylinder (L)	1
17	ZL-FT254.082	ZL-FT254.082	ZL-DF654.082	Pin for upright	2
18	ZL-25.106	ZL-25.106	ZL-25.106	Big R pin	2
19	ZL-FT254.209	ZL-FT254.209	ZL-FT654.203	Pin for stabilizer	2
20	ZL-FT254.021	ZL-FT254.021	ZL-FT654.021	Stabilizer	2
21	ZL-DF254.011	ZL-DF354.011	ZL-DF654.011	Quick Connect Bucket	1

FRONT END LOADER ILLUSTRATED PARTS CATALOGUE

6.2 SUB FRAME ASSEMBLY



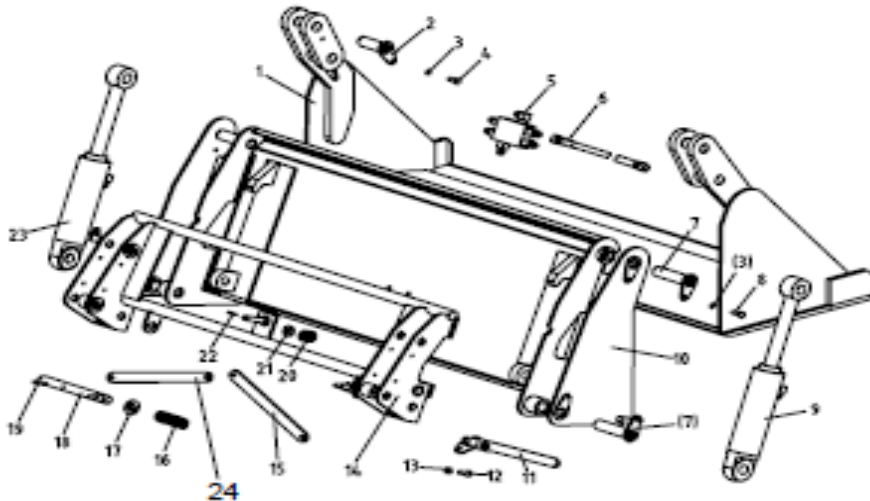
Item NO.	FEL250 Part NO.	FEL350 Part NO.	FEL450 Part NO.	Name & Specifications	Qty
1	ZL-DF25-30.309	ZL-DF25-30.309	ZL-DF25-30.309	Mounting bracket (L0	1
2	ZL-DF25-30.310	ZL-DF25-30.310	ZL-DF25-30.310	Mounting bracket (R)	1
3	ZL-DF254.210	ZL-DF254.210	ZL-DF254.210	Safety Pin	2
4	ZL-25.106	ZL-25.106	ZL-25.106	"R" Pin	4
6	ZL-FT254.013	ZL-FT254.013	ZL-FT254.013	Upright (R)	1
7	ZL-25.027	ZL-25.027	ZL-25.027	Bracket for valve Mounting	1
8	GB97.1-85-8	GB97.1-85-8	GB97.1-85-8	Plain washer	17
9	GB5783-86-M8x50	GB5783-86-M8x50	GB5783-86-M8x50	Bolt	3
10	GB6170-86-M8	GB6170-86-M8	GB6170-86-M8	Nut	7
11	GB93-87-8	GB93-87-8	GB93-87-8	Spring lock washer	7
12	ZL-FT254.202	ZL-FT254.202	ZL-DF654.202	Locked pin	2
13	ZL-DF25-30.018	ZL-DFM404.018	ZL-DF654.019	Right support weldment	1
14	GB5783-86-M8x25	GB5783-86-M8x25	GB5783-86-M8x25	Bolt	11
15	GB5783-86-M12x45	GB5783-86-M16x50	GB5783-86-M16x50	Bolt	16
16	GB97.1-85-12	GB97.1-85-16	GB97.1-85-16	Plain washer	20
17	GB93-87-12	GB93-87-16	GB93-87-16	Spring lock washer	34
18	GB6170-86-M12	GB6170-86-M16	GB6170-86-M16	Nut	20
19	GB5783-86-M16x45	GB5783-86-M16x45	GB5783-86-M16x70	Bolt	8
20	GB93-87-16	GB93-87-16	GB93-87-16	Spring lock washer	8
21	N/A	ZL-DMF404.135	ZL-DMF554.151	Spacer	3
22	N/A	GB5782-86-M14x10	GB5782-86-M16x120	Bolt	3
23	GB5782-86-M12x70	GB5782-86-M12x70	GB5782-86-M12x100	Bolt	10
24	ZL-DF254-30.134	ZL-DFM404.134	ZL-DF654-30.089	Longeron	2
25	ZL-20.132	ZL-20.132	ZL-DF654.088	Cross plate	1
26	GB5783-86-M12x35	GB5783-86-M12x35	GB5783-86-M12x50	Bolt	8
27	ZL-DF254-30.017	ZL-DF254-30.017	ZL-DF254-30.018	Left support weldment	1

FRONT END LOADER ILLUSTRATED PARTS CATALOGUE

Item NO	FEL250 Part NO.	FEL350 Part NO.	FEL450 Part NO.	Name & Specifications	Qty
28	ZL-FT254.014	ZL-FT254.014	ZL-FT254.012	Upright (L)	1
29	ZL-FT254.081	ZL-FT254.081	ZL-FT254.081	Pin for upright	8
30	ZL-DF254.012	ZL-DF254.012	ZL-DF254.092	Front support	1
31	GB5783-86 M12x40	GB5783-86 M12x40	GB5783-86 M12x55	Bolt	4

FRONT END LOADER ILLUSTRATED PARTS CATALOGUE

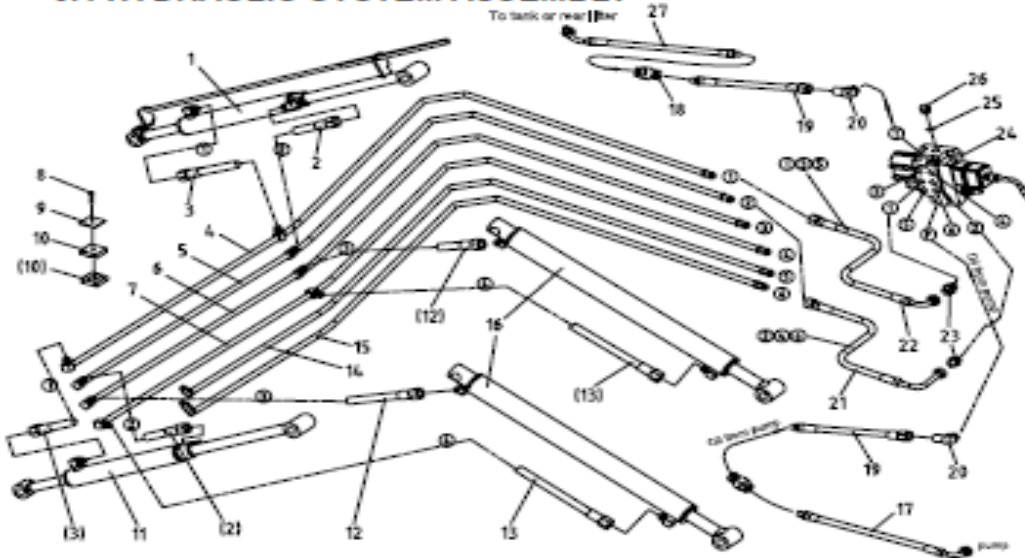
6.3 QUICK CONNECT BUCKET ASSEMBLY



Item NO	FEL250 Part NO.	FEL350 Part NO.	FEL450 Part NO.	Name & Specifications	Qty
1	ZL-DF254.021	ZL-DF254.021	ZL-DF254.021 B	Bucket body for DF254	1
2	ZL-DF254.091	ZL-DF254.091	ZL-DF254.091	Oil cylinder pin	2
3	GB93-87-8	GB93-87-8	GB93-87-8	Spring washer	6
4	GB5783-86-M10x25	GB5783-86-M10x25	GB5783-86-M10x25	Bolt	2
5	ZL-25TK.050	ZL-25TK.050	ZL-25TK.050	Oil cylinder valve	1
6	ZL-DF254.093	ZL-DF254.093 B	ZL-DF254.093 C	Hose	4
7	ZL-DF254.090	ZL-DF254.090	ZL-DF254.090	DYH cylinder pin	4
8	GB5783-86-M10x20	GB5783-86-M10x20	GB5783-86-M10x20	Bolt	4
9	ZL-DF254.089	ZL-DF254.089	ZL-DF254.089	Oil cylinder (R)	1
10	ZL-DF254.022	ZL-DF254.022	ZL-DF254.022	1420 Bucket bracket	1
11	ZL-DF254.023	ZL-DF254.023	ZL-DF254.023	Handhold	1
12	GB5783-86-M10x30	GB5783-86-M10x30	GB5783-86-M10x30	Bolt	1
13	GB889-86-M10	GB889-86-M10	GB889-86-M10	Locking nut M10	2
14	ZL-DF254.025	ZL-DF254.025	ZL-DF254.025 A	Bucket bracket	1
15	ZL-DF254.026	ZL-DF254.026	ZL-DF254.026	Pullrod	1
16	ZL-DF254.320	ZL-DF254.320	ZL-DF254.320	Lock pin spring	2
17	ZL-25P.120	ZL-25P.120	ZL-25P.120	Washer	2
18	ZL-DF254.024	ZL-DF254.024	ZL-DF254.024 A	Shaft pin	2
19	GB879-86-8X45	GB879-86-8X45	GB879-86-8X45	Elastic cylinder pin	2
20	FM120.00.125	FM120.00.125	FM120.00.125	Compression spring	1
21	ZL-DF254.365	ZL-DF254.365	ZL-DF254.365	Washer	1
22	GB879-86-5X30	GB879-86-5X30	GB879-86-5X30	Elastic cylinder pin	1
23	ZL-DF254.088	ZL-DF254.088	ZL-DF254.088	HYD cylinder (L)	1
24	ZL-DF254.321	ZL-DF254.321	ZL-DF254.321	Pullrod	1

FRONT END LOADER ILLUSTRATED PARTS CATALOGUE

6.4 HYDRAULIC SYSTEM ASSEMBLY

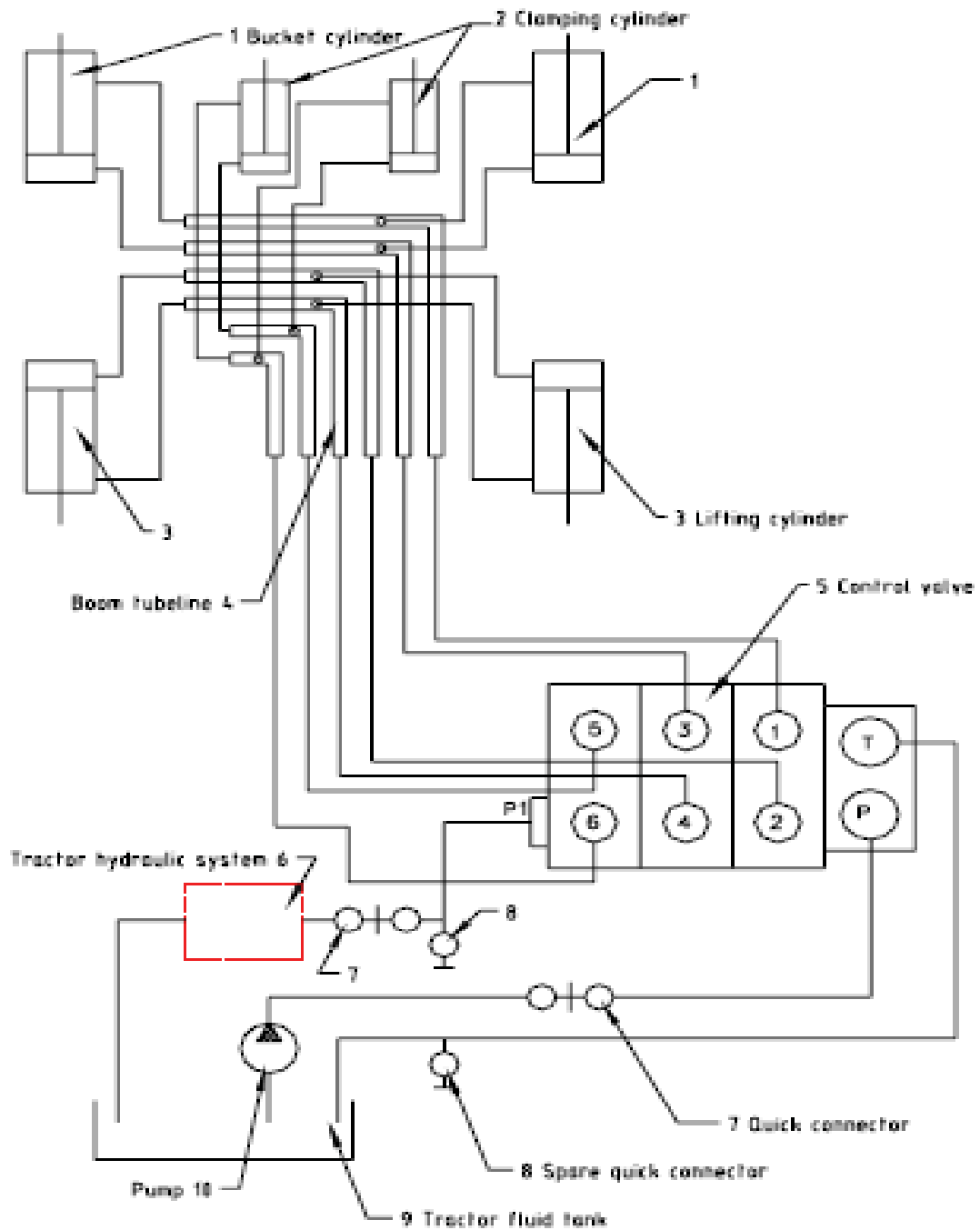


Item NO	FEL250 Part NO.	FEL350 Part NO.	FEL450 Part NO.	Name & Specifications	Qty
1	ZL-25P.065	ZL-YTO354.065	ZL-DF654.065	Bucket cylinder (R)	1
2	ZL-25.039	ZL-25.030	ZL-DF654.029	Out oil hose for bucket cylinder	2
3	ZL-25.039	ZL-25.039	ZL-25.039	In oil hose for bucket cylinder	2
4	ZL-25.034	ZL-DFM404.034	ZL-DF654.034	In oil tube for bucket cylinder	1
5	ZL-25.033	ZL-DFM404.033	ZL-DF654.033	Out tube for bucket cylinder	1
6	ZL-25.038	ZL-DFM404.038	ZL-DF654.038	Out oil tube for lifting cylinder	1
7	ZL-25.032	ZL-DFM404.032	ZL-DF654.032	In oil tube for lifting cylinder	1
8	GB5782-86-M6x40	GB5782-86-M6x40	GB5782-86-M6x40	Bolt M6x40	6
9	ZL-25.213	ZL-25.213	ZL-25.213	Pressing plate	6
10	ZL-25.211	ZL-25.211	ZL-25.211	Pressing plate (Rubber)	15
11	ZL-25P.064	ZL-YTO354.064	ZL-DF654.064	Bucket cylinder (L)	1
12	ZL-25.030	ZL-YTO354.030	ZL-DF654.030	Out oil hose for lifting cylinder	2
13	ZL-25.031	ZL-25.031	ZL-DF654.031	In oil hose for lifting cylinder	2
14	ZL-25K.047	ZL-DFM404.039	ZL-DF654.039	Out oil tube for bucket cylinder	1
15	ZL-25K.046	ZL-DFM404.040	ZL-DF654.040	In oil tube for bucket cylinder	1
16	ZL-25P.063	ZL-YTO354.063	ZL-DF654.063	Lifting cylinder	2
17	N/A	N/A	ZL-DF504C.051	Midway Hose	1
18	G 1/2COUPLING	G 1/2COUPLING	G 1/2COUPLING	Quick Coupling	1
19	ZL-JM254.042	ZL-JM254.042	ZL-DF654.042	Out oil hose	2
20	ZL-25.042	ZL-25.042	ZL-25.042	90° Joint	2
21	ZL-DFM404.036	ZL-DFM404.036	ZL-DFM404.036	In-out oil hose, vale-tube	3
22	ZL-DFM404.035	ZL-DFM404.035	ZL-DFM404.035	In-out oil hose, vale tube	3
23	ZL-25.028	ZL-25.028	ZL-25.028	Adapter	6
24	ZD1-F15L	ZD1-F15L	ZD1-F15L	Change valve	1

FRONT END LOADER ILLUSTRATED PARTS CATALOGUE

Item NO.	FEL250 Part NO.	FEL350 Part NO.	FEL450 Part NO.	Name & Specifications	Qty
25	GB3452.1-15x.65	GB3452.1-15x.65	GB3452.1-15x.65	O-ring 15x2.65	1
26	ZL-25.214	ZL-25.214	ZL-25.214	Sealing bolt	1
27	N/A	N/A	ZL-DF504C.052	Midway Hose	1

APPENDIX HYDRAULIC SYSTEM SCHEMATIC



Redline



Implements

Tel: 0800 872 2767

www.jinma.co.za/implements.html

Model: FL-25
FL-60



Important:

Read these instructions before installing and using this implement.

**Front-end
Loader**