DONG FENG

Factory Direct Tractors

Operator's Manual

ZB25 ZB35 ZB45



FOREWORD

Congratulations on your purchase of a new Dongfeng Tractor.

The ZB Series is built to exacting Dongfeng standards at the Changzhou Dongfeng Agricultural Machinery Factory. They are designed to meet the needs of the Australian Lifestyle Farmer while representing outstanding value. Safety is our highest priority and your tractor is fitted with a certified Roll Over Protective Structure

Performance is taken care of with a three-cylinder, direct inject diesel engine that provides high torque, minimal vibration and low noise.

Great features include, four wheel drive, hydraulic power steering and two-speed PTO.

A number of implements can be fitted to your tractor enabling you to take on a wide variety of tasks around your farm. Hanmey implements are ideally suited to your tractor. Find out more at hanmey.com.au

Dongfeng Tractors are subject to continuous improvement and change without notice. Therefore, there may be some difference between the manual and illustrated parts catalogue and your actual tractor. Dealers or operators are requested to provide the serial number, stock number (if available) and date of manufacture of the tractor when placing an order for spare parts. This helps to ensure the correct part is provided.

Take the time to read this manual carefully for your safety and the longevity of your machine. With a little care you can look forward to a lifetime of service on a lifestyle property.

Dongfeng,
Australia.
August 2011

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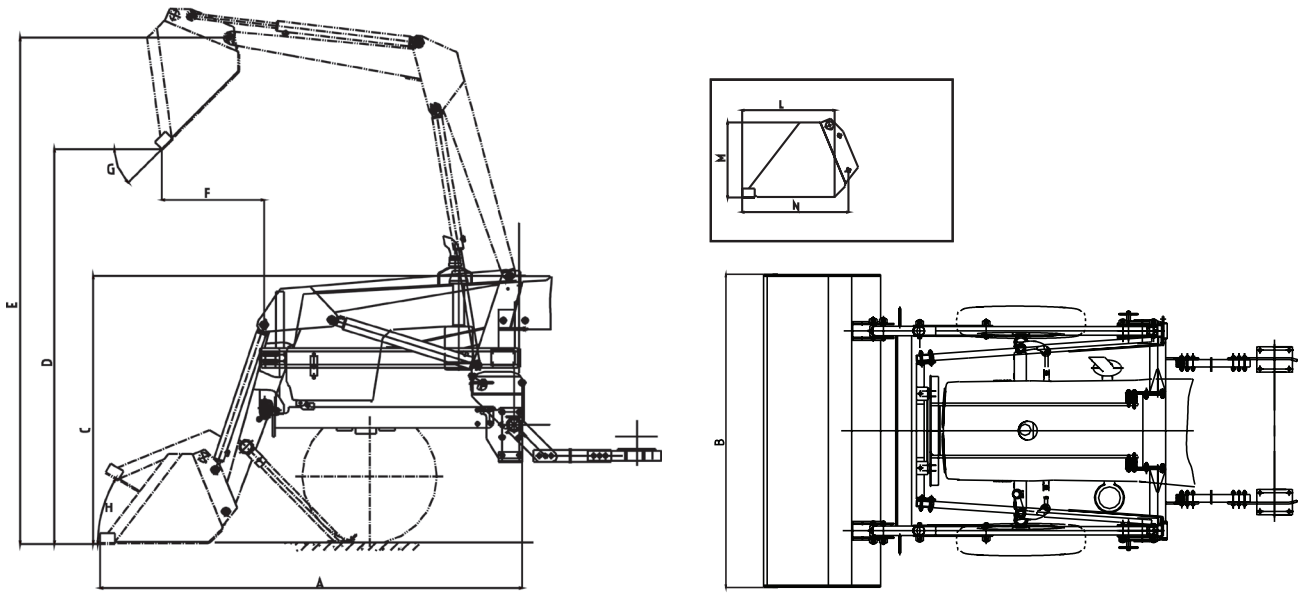
Tractor Specifications

Tractor Model	**ZB25**	**ZB35**	**ZB45**
Drive type:	4WD	4WD	4WD
Horsepower:	25HP	35HP	45HP
Overall length (front weight to link end):	3195mm	3370mm	3460mm
Overall width (outer wheel tread):	1360mm	1500mm	1550mm
Height to R.O.P.S (top):	2213mm	2315mm	2350mm
Height to steering wheel:	1570mm	1620mm	1650mm
Ground clearance:	290mm	358mm	405mm
Tractor weight with ballast:	1530kg	1850kg	2000kg
Minimum turning radius:	3.15m	3.85m	3.85m
Speed:	Forward(0.98-21.97 km/h)	Forward(1.74-30.68 km/h)	Forward(1.75-32.20 km/h)
	Reverse(1.16-5.99 km/h)	Reverse(2.26-11.70 km/h)	Reverse(2.30-11.92 km/h)
Engine Model	**KM385**	**TY395**	**4L68**
Type:	Direct injection, vertical liquid cooled 3cyl diesel		Direct injection, vertical liquid cooled 4cyl diesel
Gross power (12hr rated power kW/hp):	18.4/25	25.8/35	36.8/45
Cylinders:	3	3	4
Bore and stroke:	85X95	95X105	95X100
Compression:	22.0:1.0	22.0:1.0	18.0:1.0
Displacement:	1.532L	2.23L	2.83L
Speed rated at:	2350 rpm	2400 rpm	2400 rpm
Gearbox: Sliding Gear	(4+1)X2		
Gears:	8 x Forward/ 2 x Reverse		
Brake type:	Sealed shoe brake	Dry multi disc	Dry multi disc
Clutch type:	Dry type single stage	Dry type dual stage	Dry type dual stage
Rear differential lock:	Mechanical	Mechanical	Mechanical
PTO type:	Single Clutch	Live	Live
PTO rotating speed:	540/730 rpm	540/1000 rpm	540/1000 rpm
PTO kW/HP:	16.56/22.5	23.33/31.5	33.12/40.5
3PL capacity at Ball End:	423kg	580kg	665kg
Hydraulics: Main pump:	27.6 L/min	33.6 L/min	33.6 L/min
Fuel capacity:	25L	28L	28L
Engine Oil:	4.5L	4.5L	5L
Gearbox and Differential Oil:	20L	25L	25L
Front Differential Oil:	5.5L	6L	6L
Front tyre size - Agricultural:	6.00-12	6.50-16	7.50-16
Rear tyre size-Agricultural:	9.5/24	11.2-24	12.4-24

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Front End Loader Specifications

	Loader attachment model	BL-25	BL-35	BL-45
A	Overall length (mm) (With bucket on the ground)	2458	2390	2463
B	Bucket width (mm)	1500	1700	1700
C	Overall height (mm) (With bucket on the ground)	1245	1344	1544
D	Clearance with bucket dumped	1610	1729	1930
E	Maximum lifting height (mm) (From ground to bucket pivot)	2363	2498	2699
F	Reach the bucket (mm) (Bucket fully lifted and at 45° dumping angle)	718	680	700
G	Bucket dumping angle	65º	71º	72º
H	Bucket rollback angle	30º	35º	35º
L	Depth of bucket (to back of inner shell) (mm)	620	620	620
M	Height of bucket (mm)	452	452	452
N	Depth of bucket (to pivot pin) (mm)	762	762	762
	Maximum opening angle of clamping bucket	86.2	86.2	86.2
	Bucket cubage (m^3)	0.26	0.27	0.3
	Carrying capacity (kg)	350	400	500
	Mass of loader attachment (kg)	480	520	520
	Minimum operating flow required	20L/min	20L/min	20L/min
	Maximum operating flow allowed	35L/min	35L/min	35L/min
	Minimum operating pressure required	10MPa	10MPa	10MPa
	Maximum operating pressure allowed	16Mpa	16Mpa	16Mpa



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Safety Precautions

• Recognize safety information

This is a safety — alert symbol. When you see this symbol on your machine or in this manual, it is to alert you to the potential for personal injury. Follow recommended precautions and safe operating practices.



• Warnings and cautions

DANGER, WARNING, and CAUTION — is used in this safety manual to alert you to safety issues. DANGER identifies the most serious hazards. DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



• Follow safety instructions

Carefully read all safety messages in this manual and on your machine. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your Dongfeng dealer.
Learn how to operate the machine and how to use the controls properly. Do not let anyone operate without instruction. Keep your machine in proper working condition.
Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.
If you do not understand any part of this manual and need assistance, contact your Dongfeng dealer.



• Key start your tractor only

Avoid possible injury or death from machinery runaway.
Do not start engine by shorting across starter terminals.
Machine will start in gear If normal circuitry is bypassed.

NEVER start engine while standing on the ground. Start engine only from operator's seat, with transmission in neutral or park.



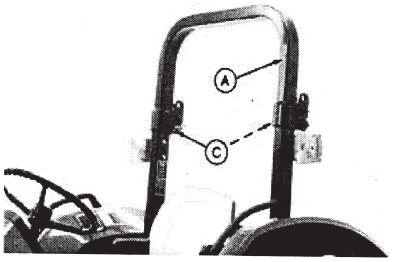
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• Use seat belt and foldable ROPS properly

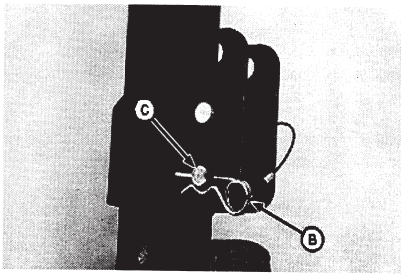


Only operate the tractor when the ROPS is locked out in the 'up' or extended position, ALWAYS use your seat belt to minimize the chance of injury from an overturn accident.

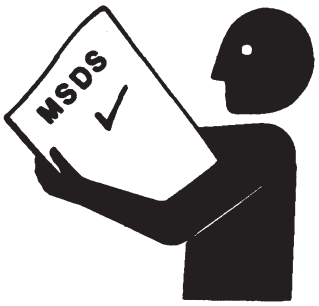
Only fold the ROPS to access low clearance areas. DO NOT operate the tractor with the ROPS down or not properly installed. Dongfeng Tractors are equipped with a foldable Roll-Over Protective Structure (ROPS). The ROPS (A) should be kept in the 'up' or extended position (as pictured) with lock out pins (C) retained with R-clips (B), except when it is necessary to fold it for low clearance access.



A ROPS
B zzz
C Lock out Pin



• Handle chemicals safely



Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Dongfeng equipment include such items as lubricants, coolants, paints, and adhesives.

Before you start any job using a hazardous chemical, you should know exactly what the risks are and how to do the job safely. Then follow procedures and use recommended safety equipment.

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• Safe tractor operation

The tractor was designed to perform a wide variety of jobs safely. Use your tractor only for the jobs it was designed to perform: carrying and operating implements, moving loads, as a remote power source, and towing implements. It is not a recreational or passenger vehicle.

Misuse or careless use of your tractor or implement can result in unnecessary accidents. Be aware of operational hazards.
Understand the causes of accidents and take every precaution to avoid them. Most common accidents are caused from:

- Tractor misuse.
- Improper starting procedures
- Crushing and pinching when hitching implements
- Collisions with other motor vehicles
- Getting entangled in PTO shafts
- Falls from tractors
- Tractor or implement overturn

Avoid accidents by taking the following precautions:

Before dismounting, put the transmission in NEUTRAL and APPLY the PARK BRAKE. Leaving the transmission in gear with the engine stopped will NOT prevent the tractor from moving. Be sure everyone is clear of the tractor and attached equipment before starting the engine.

Never try to get on or off a moving tractor.

When the tractor is left unattended, place the transmission in NEUTRAL, apply the park brake, lower implements to the ground, stop the engine and remove the key.

⚠ CAUTION

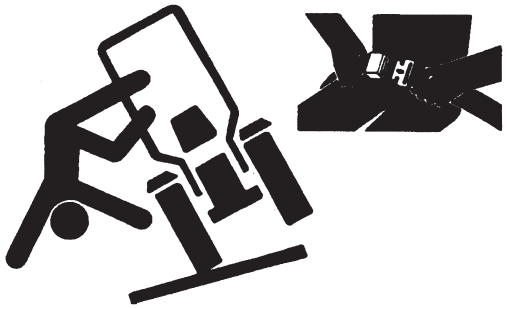
1. Read Operator's manual before operating this tractor.
2. Keep all shields in place.
3. Hitch towed loads only to drawbar to avoid rearward upset.
4. Make certain everyone is clear of machine before starting engine or operation.
5. Keep all riders off tractor and equipment.
6. Keep hands, feet and clothing away from power-driven parts.
7. Reduce speed when turning or applying individual brakes or operating around hazards, on rough ground or steep slopes.
8. Couple brake pedals together for road travel.
9. Use flashing warning lights on highway unless prohibited by law.
10. Stop engine, lower implement to ground and shift to "PARK" or set brakes(s) securely before dismounting.
11. Wait for all movement to stop before servicing machinery.
12. Remove key if leaving tractor unattended.



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• Hillside safety



Always wear your seat belt with the ROPS in the up extended position.

Avoid holes, ditches, and obstructions which could cause the tractor to tip, especially on hillsides. Avoid sharp, uphill turns.

Never drive near the edge of a gully or steep embankment, as it might cave in.

Driving forward out of a ditch or up a steep slope could cause the tractor to tip over rearward. Back out of these situations if possible.

While mechanical front wheel drive greatly increases traction, it DOES NOT increase the stability of the tractor With mechanical front wheel drive engaged, the tractor can climb steeper slopes than a two wheel drive tractor can negotiate, but it does not become more stable. Use extra caution when negotiating steep slopes in four wheel drive.

Danger of overturn increases greatly with a narrow wheel track, at high speed, and on slopes.

Hitch towed loads only to the drawbar. When using a chain, take up the slack slowly.

• Hearing safety



Prolonged exposure to loud noise can cause hearing loss or impairment.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against hearing loss from loud noise.

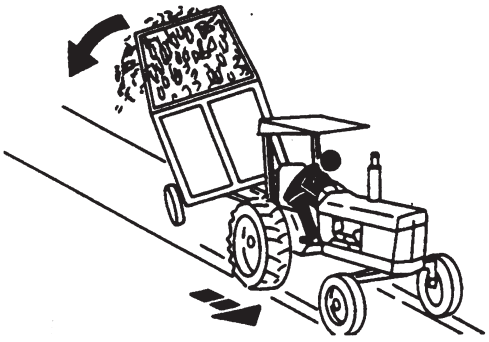
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• Use low gear on hills

Shift to a low gear before descending a steep hill. This improves your control of the tractor with little or no braking. Use engine braking to reduce speed before applying the tractor brakes. Run-away tractors often tip over. Never coast downhill.

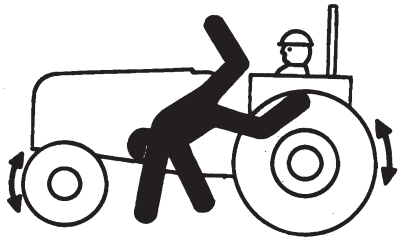
When driving on icy, wet or graveled surfaces reduce speed and be sure the tractor is properly ballasted to avoid skidding and loss of steering control. For best control, engage mechanical front wheel drive (if equipped).

Additional ballast may be needed for transporting heavy linkage mounted implements. When the implement is raised, drive slowly over rough ground, regardless of how much ballast is used.



• Operator only

Only allow the operator on the machine. Keep riders off Riders or passengers on the machine are subject to injury such as being struck by foreign objects, being jolted and thrown off, and slipping and falling of the machine. Riders also obstruct the operator's view resulting in the tractor being operated in an unsafe manner.

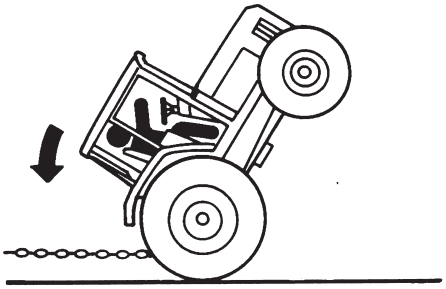


• Getting out of sticky situations safely

Attempting to free a stuck machine can involve safety hazards such as the tow tractor tipping backwards and overturning. The tow chain or tow bar can also fail and recoil from its stretched condition causing injury and damage.

Back your tractor out if it gets bogged down in mud unhitch any towed implements. Dig mud from behind the rear wheels. Place boards behind the wheels to provide a solid base and try to back out slowly. If necessary, dig mud from the front of all wheels and drive slowly ahead.

If towing with another unit, use the tow bar and a long chain (a cable is not recommended). Inspect the chain for flaws. Make sure all parts of the towing equipment are of adequate size and strong enough to handle the load always hitch to the drawbar of the towing unit. Do not hitch to the front push bar attachment point. The hitch point should never be above the rear drive axles.





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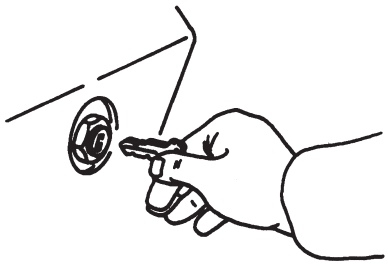
Before moving, clear the area of people. Apply power smoothly to take up the slack. A sudden pull could snap any towing equipment causing it to whip or recoil dangerously.

• **Avoid high-pressure fluids**



Escaping fluid under pressure can penetrate the skin causing serious injury.
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.
Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

• **Park tractor safely**



To park tractor safely:
- Disengage the PTO.
- Lower the equipment to the ground.
- Put the gear shift lever into neutral.
- Apply the hand brake.
- STOP the engine.
- Remove the key.

Before you leave the operator's seat, wait for the engine and attachment parts to stop moving.

• **Fuel and fire safety**



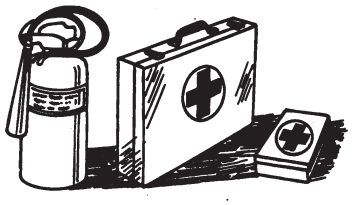
Handle fuel with care; it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.
Always stop the engine before refueling the machine Fill the fuel tank outdoors.
Prevent fires by keeping the machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.

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• **Prepare for emergencies**

Be prepared if a fire starts.
Keep a first aid kit and fire extinguisher handy. Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



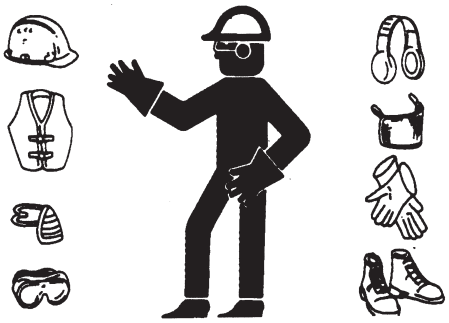
• **Do not use starting fluid**

DO NOT use starting fluid to start Dongfeng tractors.



• **Wear protective clothing**

Wear close fitting clothing and safety equipment appropriate to the job.
Prolonged exposure to loud noise can cause hearing impairment or loss.
Wear a suitable hearing protective device such as earmuffs or earplugs to protect against hearing loss from uncomfortable loud noises.
Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine.



• **Work in ventilated area**

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.
If you do not have an exhaust pipe extension, open the doors and ventilate the area with clean outside air.



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• Avoid contact with pesticides



The enclosed cab does not protect against inhaling harmful pesticides. Respiratory protection is required. If pesticide / herbicides are used and respiratory protection is required, wear an appropriate respirator inside the cab.

Within the cab, wear personal protective equipment as required by the hazardous chemical safety instructions.



Remove protective equipment and store in a closed box or some other type of sealable pesticide resistant container, such as a plastic bag.

Clean your shoes or boots to remove soil or other contaminated particles prior to entering the cab.

• Stay clear of rotating drivelines



Entanglement in rotating driveline can cause serious injury or death.
Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely. Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

• Use safety lights and devices



Avoid collisions with other road users when using slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn indicators.
Use headlights, flashing warning lights, and turn indicators day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order.
Replace or repair lighting and marking that has been damaged or lost. A safety lighting kit is available from your Dongfeng dealer.

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• Safety chains

A safety chain will help control towed equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location.



Provide only enough slack in the chain to permit turning.

See your Dongfeng dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine.
Do not use safety chain for towing.

• Transport safety

A disabled tractor is best transported on a flatbed carrier. Use chains to secure the tractor to the carrier.

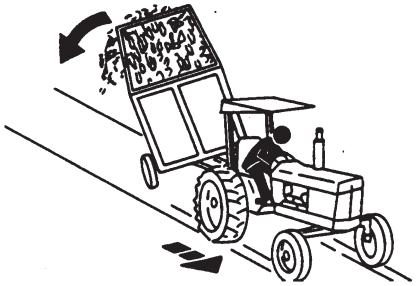


Never tow a tractor at a speed greater than 16 km/h (10mph). An operator must steer and brake the tractor under tow.

• Tow loads safely

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its size.
Observe recommended maximum road speeds, or local speed limits which may be lower:

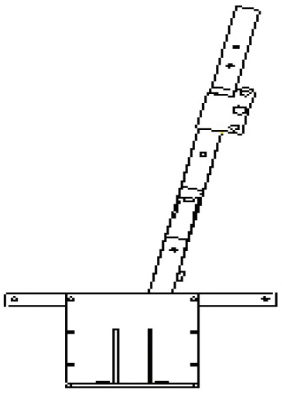
- If towed equipment does not have brakes, do not travel more than 20 km/hr and do not tow loads more than 1.5 times the tractor weight.
- If towed equipment has brakes, do not travel more than 30 km/hr and do not tow loads more than 3 times the tractor weight.



Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

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• Keep ROPS installed properly



Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.

• Practice safe maintenance



Understand service procedure before doing work. Keep area clean and dry.
Never lubricate, service, or adjust machine while it is moving.
Keep hands, feet, and clothing from power-driven parts.
Disengage all power and operate controls to relieve pressure.
Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.
Securely support any machine elements that must be raised for service work.
Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts.
Remove any buildup of grease, oil, or debris.
On self-propelled equipment, disconnect battery ground Cable (-) before making adjustments on electrical systems or welding on machine.
On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

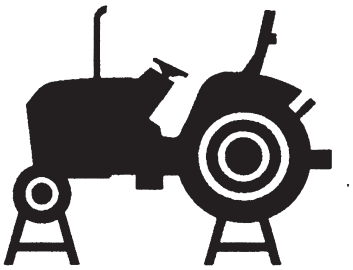
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• Service cooling system safely



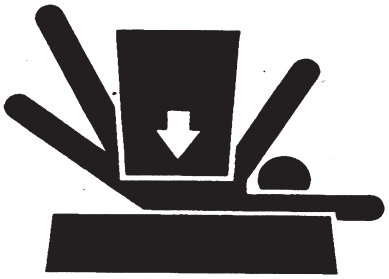
Explosive release of fluids from pressurized cooling system can cause serious burns.
If radiator cap must be removed, do not remove when engine is hot. Shut engine off and wait until cap is cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

• Service tractor safely



Do not service the tractor while it is in motion or while the engine is running.
When servicing front-wheel-drive-equipped tractor with rear wheels supported off ground and rotating wheels by engine power, always support front wheels in a similar manner.
Engaging front-wheel drive will pull rear wheels off support if front wheels are not raised.
Tighten wheel hardware to correct torque as specified in Wheels, Tyres and Tread section. Torque at intervals shown in Break-In Period and Lubrication and Maintenance sections, to ensure that wheel hardware does not loosen.
Reinstall protective covers removed during service.

• Support machine properly



Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment. If left in a raised position, hydraulically supported devices can settle or leak down.
Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack.
Follow recommended procedures in this manual.
When implements or attachments are used with a tractor, always follow safety precautions listed in the implement operator's manual.

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• **Remove paint before welding or heating**

Avoid potentially toxic fumes and dust.
Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.
Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.
Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



• **Avoid heating near pressurized fluid lines**

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders.
Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the Immediate flame area.



• **Store attachments safely**

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death. Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.

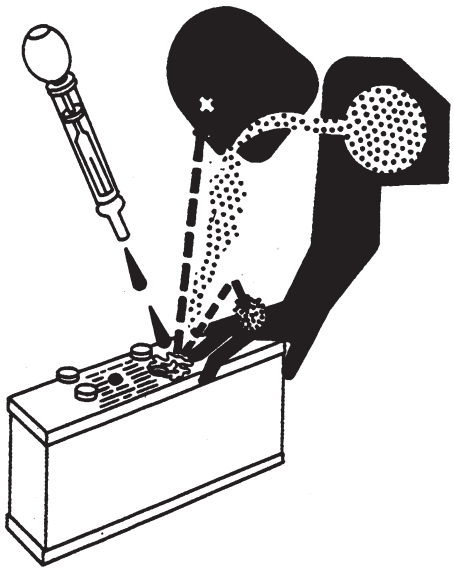


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• Prevent acid burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.



Avoid the hazard by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoid breathing fumes when electrolyte is added.
4. Avoid spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes.
4. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2L (2 quarts).
3. Get medical attention immediately.

• Service tyres safely

Explosive separation of a tyre and rim can cause serious injury or death.

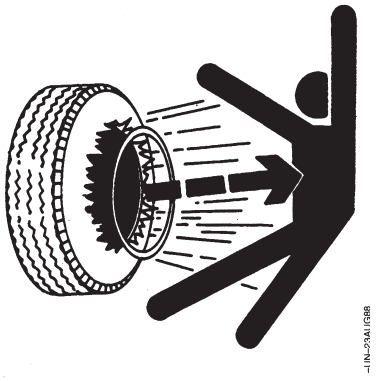
Do not attempt to mount a tyre unless you have the proper equipment and experience to perform the job.

Always maintain the correct tyre pressure. Do not inflate the tyres above the recommended pressure. Never weld or heat a wheel and tyre assembly. The heat can cause an increase in air pressure resulting in a tyre explosion.

Welding can structurally weaken or deform the wheel.

When inflating tyres, use a clip—on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tyre assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

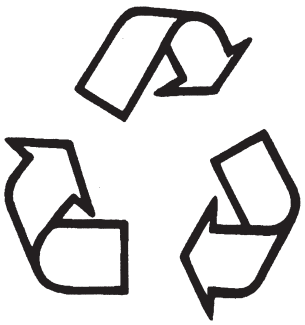


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• **Dispose of waste properly**

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with equipment includes such items as oil, fuel, coolant, brake fluid, filters, and batteries.



Use leak proof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.
Do not pour waste onto the ground, down a drain, or into any water source.
Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.
Inquire about the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your Dongfeng dealer.

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Safety First

Important notices

This tractor has been designed and manufactured specifically and solely for agricultural use. Any other application will be considered non-compatible by the manufacturer who, shall not be held responsible for any damage to people or property or the machine itself or third party property, derived from its use. Always understand that you the operator assume personal responsibility for any consequence associated with the improper use of this tractor.

Understand and respect the safety rules of tractor use. The manufacturer will continue to support you as long as you persist in following the guidelines for maintenance and repair given in this operation manual.

The tractor must only be used, serviced or repaired by qualified people. They must be authorised and well trained in the tractors handling features as well as adhering to the safety rules of operation.

The operator of the tractor is always responsible for the strict observance of general safety and accident prevention, as well as traffic regulations when driving the tractor on public or open roads.

Any unauthorized and arbitrary modification made to the tractor will relieve the manufacturer of all responsibilities for any damage or injury derived from such modification.

The Manufacturer and all the organizations associated with its distribution network, including but not limited to national, regional or local distributors, shall decline any and all responsibilities for damages that may derive from the abnormal performance and behaviour of those machine parts or components not specifically authorized by the Manufacturer of the tractor, including those used for the maintenance and/or repair again though they were fabricated or distributed by the Manufacturer, previously.

In any event, no warranty of any sort is issued or prescribed for damages deriving from abnormal behaviour of parts and/or components not authorized by the Manufacturer of the tractor.

Caution

Read the Operator’s Manual carefully before starting, using, maintaining, refuelling or making other adjustments to the tractor.

Comply strictly with safety regulations and follow the suggested safety measures in order to look after yourself and the environment around you.

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Maintenance

Use genuine Dongfeng parts only.
Failure to do this will:
-- Cost you more
-- Not result in complete satisfaction.
-- Seriously risk the proper functioning of the tractor.

The tractors are designed with the owner in mind and effort has been made to simplify maintenance. The purpose of this handbook is to familiarize the operator with the operation and regular servicing of the tractor. Remember that the time spent on maintenance extends the life of your tractor.
Pay particular attention to the instructions covering fuel filtering, air cleaner maintenance and lubrication. Remember that badly filtered fuel results in injection system deterioration and irregular air cleaner maintenance leads to premature engine wear. Please keep in mind that the engine oil should be replaced thoroughly after every 50 working hours, and at least once a year.

Safety precautions

General

- Your tractor was designed with safety very much in mind. However, there is no real substitute for caution and attention to prevent accidents. Once an accident has happened, it is too late to think about what you should have done.
- Read this manual carefully, before attempting to start, operate, service, refuel or carry out any other adjustments to your tractor. A few minutes dedicated to reading will save time and trouble later.
- Remember that your tractor was designed and produced exclusively for agricultural use. If the owner of the tractor is to use it for any other purposes, he needs to get the prior authorization from the Manufacturer in advance.
- Keep a first aid kit handy.
- Do not wear loose garments that could get caught in moving parts. Check that all rotating parts connected to the power take-off shaft are fitted with safety guards.
- Before operating the tractor, the driver needs to be fully trained in safety and maintenance, and appropriately authorised before operating the tractor.
- Do not attempt to increase the maximum engine rpm by altering the setting of the fuel injection system.
- Do not alter the hydraulic pressure relief settings of the hydraulic lift and remote control valves.
- Do not operate the tractor if you feel unwell or physically unfit, in which case you should stop working.

Always operate with an undamaged cab or ROPS (roll over protective structure), complete with all components and correctly installed on the tractor. Periodically check the mounting bolts for tightness and the frame and structures to make sure they are free from damage.
Replace damaged ROPS.

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Starting the tractor

Before starting the engine, check that the parking brake is on and transmission and PTO are in neutral.

- Make sure all implements are fully lowered to the ground before starting the engine.
- Before starting the engine, make sure that all protective guards and shields are correctly installed on your tractor.
- Do not attempt to start or drive the tractor unless sitting in the operator's seat.
- Before moving the tractor, always make sure that there are no people or obstacles within range.
- Do not run the engine inside closed premises without adequate ventilation as exhaust fumes are harmful to health or may even become deadly.

Tractor operation

Select the wheel track width setting best suited to the work, always keeping tractor stability in mind.

- Engage clutch gradually. Abrupt engagements, particularly if pulling out of a rough area, ditch or muddy ground, or driving over a steep gradient, may cause dangerous tractor pitching. Immediately disengage the clutch if front wheels tend to come up off the ground.
- When driving downhill, keep the transmission gear engaged. Never disengage the clutch and never coast your tractor downhill in neutral.
- With the tractor in motion, the operator should be correctly seated on driver's seat with the seat belt fastened.
- Do not get on or off a moving tractor.
- Always press the brake pedal gently.
- Do not corner at high speed.
- Always operate the tractor at a safe speed for the type of ground being worked. When operating on rough ground, use proper caution to assure tractor stability.
- When working on sloping grounds, as for example on hillsides, drive at moderate speed, slow the tractor down particularly when cornering.
- When driving with wheels close to the edge of a ditch or bank, proceed with extreme caution.
- Never carry passengers.
- When driving on public roads, be sure to respect traffic rules and regulations.
- Do not override brake and clutch pedals.
- When driving on roads, latch the brake pedals together by using the latch plate. Braking with pedals unlatched may cause the tractor to side skid. Avoid overworking the brakes.

Towing and transport

To ensure the tractor is stable when working, adjust the towing attachment to suit the trailer or drawn implement.

- For your personal safety, trailers should be equipped with an independent braking system.
- Drive slowly when towing heavy loads.
- Always use the drawbar and towing equipment to pull heavy loads. Avoid towing or connecting heavy loads to the three point linkage, lower links or to the top link, because of increased rearing and tipping danger.
- When towing, never negotiate bends with a locked differential because you will not be able to steer the tractor.

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Using agricultural implements and machinery

• Do not connect implements or machinery requiring a higher power rating than your tractor class.
• Never stand between tractor and implement to facilitate hitching while the tractor is being backed up.
• Making sure no one is within operating range of the tractor and implement before actuating the power take-off shaft connected to the machine.

Stopping the tractor

• Never leave implements in a raised position while the tractor is stationary, lower the implement before switching the engine off.
• Before leaving the tractor seat, move the transmission control lever to neutral position, disengage the power take-off shaft, apply the hand brake by pushing the brake pedals and setting the hand brake lever and turn the engine off last. Always remove the key from the starter switch when leaving the tractor unattended.
• Look for level ground to park the tractor on. On sloping ground, shift into a gear and lock the hand brake. Shift into low range first forward gear if facing uphill or into low range reverse gear if facing downhill. For more safety, use a wheel chock on the rear wheels. Be sure to use a wheel chock if parking your tractor with a trailer on a hill.

Tractor maintenance

• Allow the engine to cool off sufficiently before removing the radiator cap. After the engine is shut down for some time, slowly turn the cap to release pressures before removing it completely.
• Disconnect the negative (-) cable from the battery before starting any work on the electrical system, parts or components.
• Before disconnecting any hydraulic line or hose, release the oil pressure by moving the hydraulic levers back and forth for a few seconds with the engine off.
• Hydraulic oil escaping under pressure could cause serious personal injury. When searching for or detecting oil leaks, make sure to use adequate safety protection such as shields, goggles and gloves.
• Prior to carrying out any maintenance on the tractor or connected implement, including inspections, adjustments and cleaning, make sure that the engine is turned off, transmission is in neutral, brakes are locked, the power take-off is disengaged and all other moving parts are stationary.
• Do not repair or adjust wheels and tyres unless you have suitable tools and the necessary experience. Incorrect tyre installation may seriously affect your personal safety. If in any doubt, call a qualified trades person.
• Do not fill the fuel tank completely when you expect to work in full sunlight as the fuel can expand and escape. In which case, promptly wipe up any fuel spill.
• Tractor fuel is flammable and may be dangerous. Never refuel while the engine is running, still hot, near an open flame, or when you are smoking.

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Front End Loader Safety

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 safe 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.

Safety Rules and Precautions

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 set 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.
- 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 judgement.
- 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.

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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 lock 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 judgement is necessary by the operator in using this loader. Use extra caution when rear wheel weights and tyre ballast 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.
- 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 travelling up or down a hill with a heavy load. Avoid "free wheeling".
- 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 loaded attachment in the raised position alters the center of gravity of the machine and increases the possibility of mishaps.

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- 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 areas that may contain underground services 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 a loader, be alert of bucket position at all times. With loader in raised position rolling bucket back can dump material on tractor causing damage to tractor or injury to operator.
- 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 key before leaving the tractor.
- 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 bucked attached to loader.

5. Performing Maintenance

- Carefully review, understand, and follow 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 servicing 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.

Caution

- Loader: Do not operate the front end loader while the safety lock-out pins are in place, or major damage may occur. When the loader is in operation you must engage low range. Failure to comply will void warranty.
- Operating: This is not an industrial strength bucket. Once the bucket is ‘clammed’ over a heavy or immovable object (stump), the weight and traction of the tractor can bend or damage the bucket if it is used incorrectly.

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- Do not use a bucket to scrape or as a dozer blade, unless the bucket is titled 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.
- Hydraulics: When parking the tractor, release the hydraulic pressure by shutting down the engine and place the loader control lever into the 'Float' position. After five seconds, replace the lever to the neutral position.

Note: Do not operate the three point linkage with the loader control in float position.

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 decals(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.



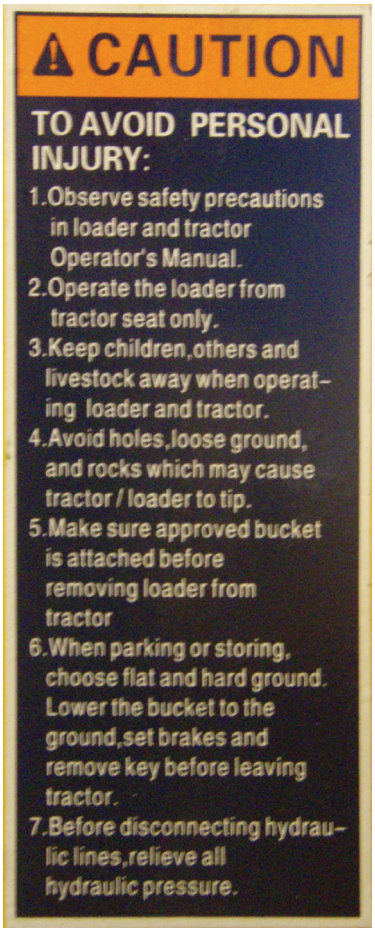
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1. DONG FENG

2. ROL 350KG

3.


⚠ CAUTION
TO AVOID PERSONAL INJURY:
1.Observe safety precautions in loader and tractor Operator's Manual.
2.Operate the loader from tractor seat only.
3.Keep children,others and livestock away when operating loader and tractor.
4.Avoid holes,loose ground, and rocks which may cause tractor / loader to tip.
5.Make sure approved bucket is attached before removing loader from tractor
6.When parking or storing, choose flat and hard ground. Lower the bucket to the ground,set brakes and remove key before leaving tractor.
7.Before disconnecting hydraulic lines,relieve all hydraulic pressure.

4.


⚠ WARNING
TO AVOID INJURY FROM FALLS OR BEING CRUSHED:
1.DO NOT stand or work under raised loader or bucket.
2.DO NOT use loader as a jack for servicing.
3.DO NOT use loader as a work platform.
4.NEVER connect chain,cable or rope to loader bucket while operating loader.

5.


⚠ CAUTION
TO AVOID INJURY FROM CRUSHING:
1.Do not utilize the valve lock for machine maintenance or repair.
2.The valve lock is to prevent accidental actuation when implement is not in use or during transport.

6.


Caution!
* Use ROPS and seatbelt at all times.
* Add required rear ballast with loader.
* Move wheels to widest setting when working on slopes.
* Operate tractor at low speeds.
* Carry all loads close to the ground.
* Do not walk or perform service under a raised loader.
* Always lower loader and implements to the ground when parked.

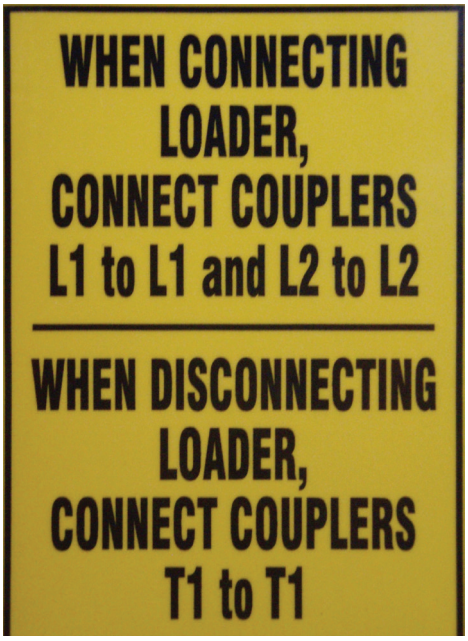
7.


ATTENTION
Your responsibilities before operating this machine are:
* Read. Understand and Follow the safety procedures manual.
* Train operators before using & review safety procedures regularly.
* Ensure that all guards are in place before operating.
* Keep Hands, Feet, Hair and Clothing away from all moving parts.
* Avoid wearing loose clothing whenever possible.
* Disengage the PTO drive when transporting or when not in use.
* Maintain as per schedule in the safety procedures. Especially Blades, and securing Hardware, due to the hazard they present should any part break loose during operation.
* During maintenance, use suitable support stands. Don't rely on the tractors' Linkage & Hydraulics.
* DO NOT allow any persons to ride on the equipment.

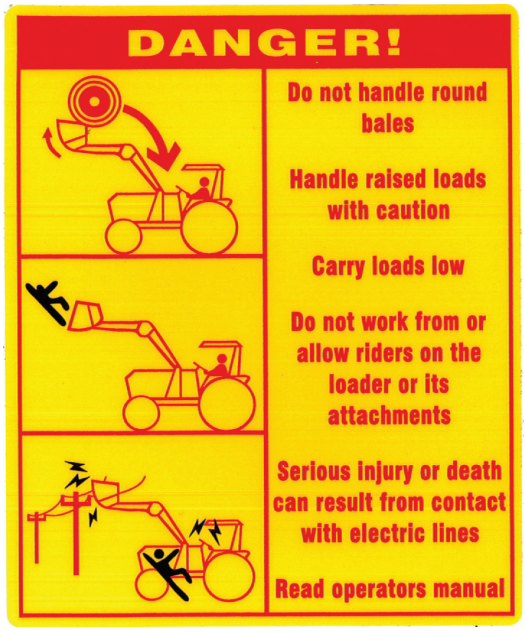
8.


CAUTION
*BOTH loader lock pins to be installed when working under raised loader.
*Lower loader slowly to rest on both lock pins.
*BOTH lock pins to be removed before operation resumes.

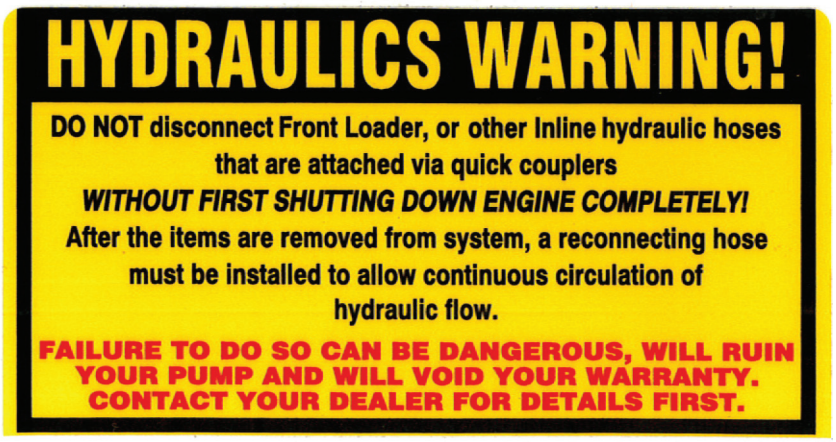
9.


WHEN CONNECTING LOADER, CONNECT COUPLERS L1 to L1 and L2 to L2
WHEN DISCONNECTING LOADER, CONNECT COUPLERS T1 to T1

10.


DANGER!
Do not handle round bales
Handle raised loads with caution
Carry loads low
Do not work from or allow riders on the loader or its attachments
Serious injury or death can result from contact with electric lines
Read operators manual

11.


HYDRAULICS WARNING!
DO NOT disconnect Front Loader, or other Inline hydraulic hoses that are attached via quick couplers
WITHOUT FIRST SHUTTING DOWN ENGINE COMPLETELY!
After the items are removed from system, a reconnecting hose must be installed to allow continuous circulation of hydraulic flow.
FAILURE TO DO SO CAN BE DANGEROUS, WILL RUIN YOUR PUMP AND WILL VOID YOUR WARRANTY. CONTACT YOUR DEALER FOR DETAILS FIRST.

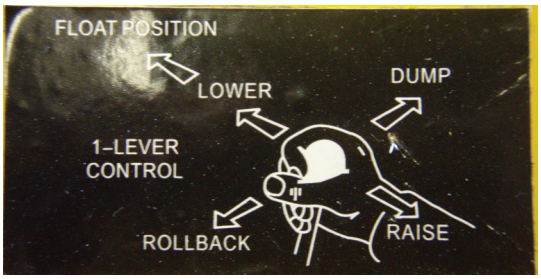
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13.



14.



15.



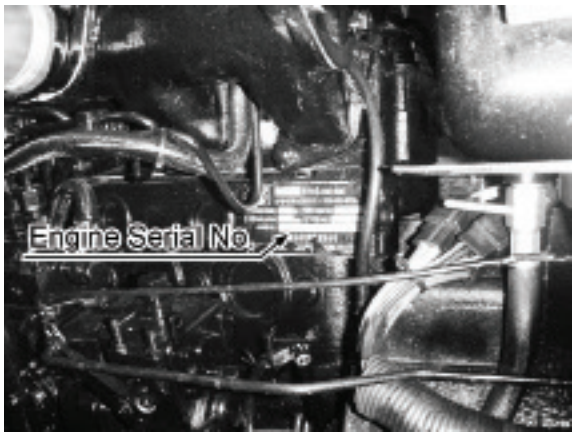
1. Request For Dealer Service

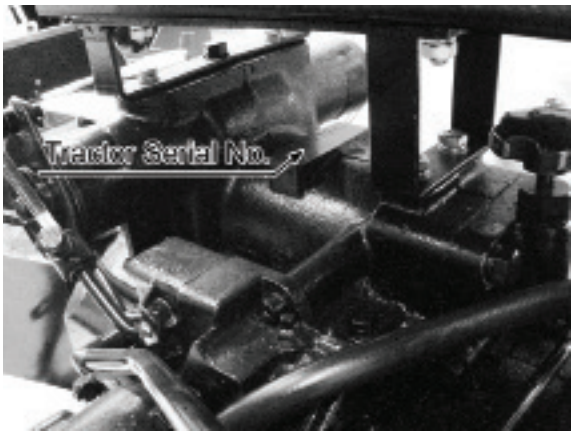
Your Dongfeng dealer is here to support your new tractor and has the knowledge, parts and backup to help you get the best value from it. After reading this manual thoroughly, you will find that you can do many of the regular service jobs quickly and easily.

When you need service, parts or advice, have the tractor model and both the engine and serial numbers ready to provide to your Dongfeng dealer or service agent.

The tractor serial number is located on the front right side frame and identification plate pop riveted to the rear mudguard or vertical face of the instrument panel. In some cases it is located under the seat. The engine serial number is also located on the left or right side of the engine crankcase, depending on the model.

Locate the serial numbers now and record them in the space provided.









Model: _____

Tractor Serial No: _____

Engine Serial No: _____

Date of purchase: _____

(To be filled in by purchaser)

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2. Quick Reference Guide

This guide is a quick overview of your tractor.

1. **Bonnet:** To open the bonnet, first tilt the 'scrub bar' by releasing the spring loaded pull button. Lift the bonnet from just behind the dash panel. The bonnet is hinged from the front near the scrub bar.
2. **Battery:** The battery is located under the bonnet in front of the radiator.
3. **Power Steering:** On some models the power steer reservoir is mounted under the bonnet in front of the radiator. This should be periodically checked and topped up with East Wind Multi Farm 1 Universal Oil as required. If no reservoir is present, the power steering receives its oil from the transmission.

   Do not hold on full lock. When turning sharply avoid holding the steering wheel against the stop. Release the wheel 25mm (1/2 to 1 inch) to gain a hydraulic lock on the steer wheels. This will enable you to withstand shock loadings on the steering without breakages.
4. **Radiator Screen:** Located in front of the radiator on slide rails. This screen should be periodically removed and cleaned as required.
5. **Radiator:** When the engine is cold, remove the cap and fill with coolant as required. Periodically check that the core is not blocked. If blocked, it will need cleaning with compressed air being careful not to bend the cooling fins.
6. **Air Cleaner:** Is situated under the bonnet. In normal conditions the element should be blown out every 25 hours and replaced every 150 hours. This cleaning schedule should be brought forward to every 5 hours in dusty conditions. Be careful not to use compressed air to blow out the air filter housing as it will discharge dust straight to the engine. To clean out the housing, use a damp rag.
7. **Fuel Tank:** The fuel tank can be accessed through the bonnet. If you are lifting the bonnet, first tilt the scrub bar forward. Only use clean uncontaminated diesel fuel. If you are experiencing fuel problems, use of an injector cleaning additive can help.
8. **Oil - Injector Pump:** Check the oil level at the breather tube located at the front of the injector pump. Oil should be filled to this height. If a dip stick is fitted to the injector pump check the oil level at the dip stick.
9. **Oil - Lubrication:** The engine oil fill point is located on the tappet cover in front of the air cleaner. *East Wind Multi Farm 1 – Special Blend, can be used in all the following reservoirs.
   - **Engine:** Dip stick located on the side of the block indicates the oil level. Screw type dip sticks need to be screwed down before reading the correct oil level off the mark.
   - **Gear Box & Transmission:** One piece fill plug and dip stick located in front of the seat on the gear housing. Fill to number 2 on the dipstick.
   - **Front Axle / Final Drives:** Dip stick and fill point is on top of the axle on the opposite side to the breather tube. We recommend using *East Wind Multi Farm 1 – Special Blend. Drain plugs are on the underside of the axle and the bottom of either final drive.
10. **Single Stage Clutch:** Is operated by the left foot pedal. When operating you will feel two levels of resistance. Firstly, a light resistance which is pedal free play and secondly, a stronger resistance which is the transmission clutch.
11. **Two Stage Clutch:** Is operated by the left foot pedal. When operating the clutch you will feel three levels of resistance. Firstly a light resistance which is the pedal free play. Secondly a stronger resistance which is the transmission clutch, and finally the heaviest resistance which is the PTO (Power Take Off) clutch.

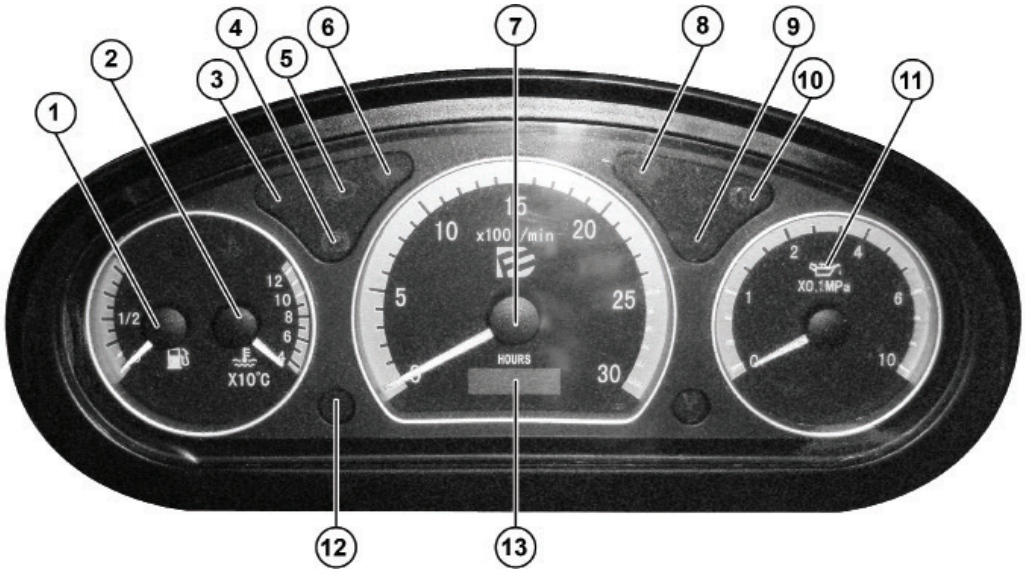
*Alternative oil must meet with East Wind oil specification, using unspecified oil may damage your engine and void warranty.

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12. **Brakes:** The two pedals on the right foot operate the brakes. In normal use they will be coupled together. They can be simply uncoupled by the “swing lever” situated behind the pedals and used independently to facilitate sharp turning. Brake adjustment can be made using the lock nuts protruding from the brake housings. The brake housings are on either side, below the seat.
13. **Park Brake:** The park brake is set by hand using a brake pedal lock lever. Always apply park brake by pushing brake pedal first. Park brake must be applied when the tractor is stationery.
14. **Transmission:**
    - The Tractor is equipped with heavy straight cut bull gears. When using the selectors, do not apply excessive force to the levers as this will only cause damage. Double Clutching, that is depressing and releasing the clutch several times will facilitate selecting the gears. Another method is to apply light pressure to the lever and gently release the clutch till the gears align and selector eases into position.
    - **Gear Selector:** Tall lever located in the prominent position. 4 forward and 1 reverse.
    - **Range Selector:** Heel and toe lever on the right hand side of the gear box housing. Toe down – high range, heel down – low range. It is used to select high or low range. Use low range when high power low speed is required such as filling the front end loader bucket.
15. **PTO Selector:** 3 position lever located on the left hand side of seat giving 540 and 750/1000 rpm with neutral in the central position. The secondary pto speed is 750 on the ZB25 and 1000 on the ZB 35.
16. **4WD Selector:** Located behind the left foot position when sitting in the seat, selecting 2 or 4 wheel drive. Select 4WD when required for traction, and then disengage. Never use 4WD on hard standing as it is likely to damage the drive train. It will also reduce your manoeuvrability and wear out the front tyres. Use 4WD only when needed.
17. **Diff - Lock Pedal:** Located behind the right heel. Engage in low range by tramping on the pedal at low engine revs. Never use the diff-lock at high speed or when turning.
18. **Three Point Linkage:** Control lever located beside the seat on the right hand side. When not in use this lever should be returned to the neutral (middle) position. Push forward to lower, and then return the lever to neutral. Push back to raise, then return the lever to neutral. It is good safety practice to lift implements only as high as required to clear obstacles.
19. **Response Control Wheel:** Located below the front of the seat. This is a ‘needle valve’ that controls the flow of oil to the lowering of the three point linkage. Turn clockwise to reduce the flow rate slowing the downward movement of the three point linkage, or anti clockwise to increase its speed of movement. When screwed right down, it will lock the position of the three point linkage. Never climb under an implement on the three point linkage that is not supported by a mechanical safety device.
20. **Hydraulics:** Front End Loader. Do not start the tractor while the hydraulic hoses are disconnected. Warning signs are posted on the side of the front end loader near the quick release couplings. On parking and turning the engine off, it is good practice to release the hydraulic pressure in the lines. Once the engine is off, select ‘float’ position (loader lever in the “Full up” position) for a few seconds to release the hydraulic pressure in the lines. Always return the lever to the centre (neutral) position. Never operate the three point linkage whilst the loader control is in float position.
21. **Tyre Pressure:** Tyres are the shock-absorbers of the tractor. The correct pressure will vary with operating weight and track conditions, and be around 15psi for the rear tyres and 30psi for the front tyres. All tractors with front end loaders fitted have their rear wheels half filled with water. Lug tyred rear wheels have wheel weights fitted.

*Alternative oil must meet with East Wind oil specification, using unspecified oil may damage your engine and void warranty.

3. Instrument Panel And Controls



3.1 Instrument panel display

1 – Fuel Gauge
2 – Temperature Gauge
3 – Low Beam Headlight
4 – Brake / Park Brake
5 – High Beam Headlight
6 – Left Indicator
7 – Tachometer
8 – Right Indicator
9 – Dash & Clearance Lights
10 – Ignition On
11 – Oil Pressure
12 – Low Fuel Indicator
13 – Hour Meter

In cold conditions preheat the combustion chamber by turning the key in the opposite direction for 10 – 20 seconds. After preheating engine, turn the ignition key right to the normal start position. Release the key and it will return to the 'ignition on' position.

3.1.1 Hour meter

As the hour meter is electronic, it starts to work as soon as the key is switched on and engine is running, or switched to preheat.

3.1.2 Headlights switch

Pulling the headlights switch one click, turns on the headlights.

3.1.3 Horn button

Press the horn button to sound the horn. The ignition Switch needs to be on for the horn to work.

3.1.4 Engine oil pressure gauge

The engine oil pressure gauge indicates if engine oil pressure is sufficient and oil is circulating throughout the engine. The oil pressure gauge operates when the engine is running.

3.1.5 Fuses

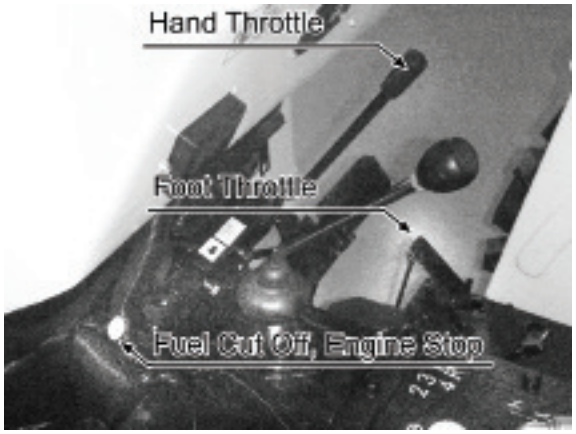
The fuses are located conveniently below the front panel and are there to protect the electrical circuits. When a fuse is blown, examine the cause to eliminate the trouble and replace with a new fuse. If you can't find the cause you need the services of an auto electrician to ensure the problem is rectified and avoid further difficulties. Ensure the electrical circuits are carrying normal amperage. Spare fuses are available from your Dongfeng dealer.

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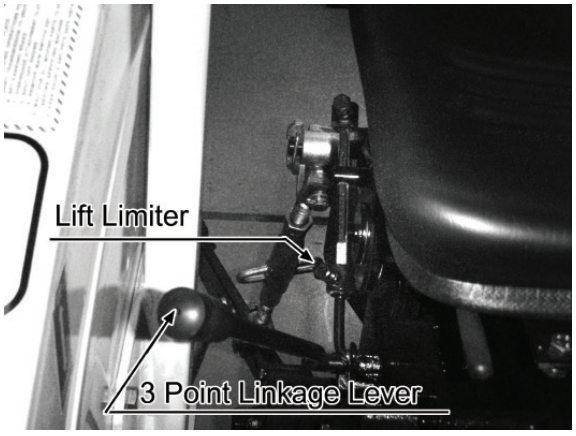
3.2 Controls

3.2.1 Accelerator rod and pedal

Moving the hand throttle lever backward to speed up the engine and moving it forward slows down the engine. In addition, the engine is sped up by stepping on the accelerator pedal with the hand throttle lever left in the forward position. To stop the engine, pull the engine stop – fuel cut off control.

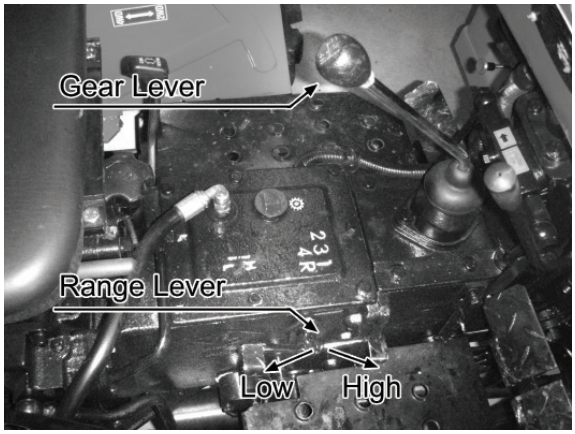


3.2.2 Hydraulic control lever



The Hydraulic control lever is a three position lever, with neutral – home position in the middle. It controls the hydraulic lift arms, which controls the elevation of the tractor implement. Moving the lever forward and down lowers the implement and moving it up raises the implement. When the implement reaches the upper or lower limit the lever automatically returns to the neutral position. When the lever is moved to the neutral position while the implement is moving up or down, it will immediately stop and remain at that level.

3.2.3 Main gear shift lever and high-low gear shift lever



There are 5 positions for the gear shift lever and 2 positions for the foot operated heel and toe high-low range lever. Combined operation of both speed control levers makes 8 forward speed changes and 2 reverse speed changes available.
Specifically, 4 forward speeds and one reverse speed are achieved with the high-low gear shift lever set at Low while 5th to 8th forward speed and 2nd reverse speed are achieved with the high-low gear shift lever set at High. Toe down - high, heel down - low.

3.2.4 PTO lever

The PTO lever engages the tractor power take off providing 540 RPM at rated engine speed.



Caution:

When operating implements, ALWAYS use 540rpm. Only use 730 or 1000rpm when specified by the implement manufacturer.

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3.2.5 Front wheel drive lever DFB 254 and DFB 354

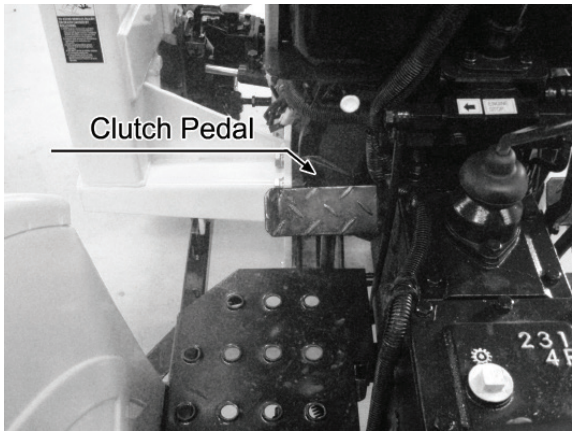


The front wheel drive lever is used in the event that greater traction is required on a slope or a wet paddock or to stop the tractor from lunging during rotary hoeing hard soil.
Move lever Backward to engage the front wheels-4 wheel drive.

Caution:

Only use 4wd when required, operating the tractor full time in 4wd on a hard surface will cause damage and void warranty.

3.2.6 Clutch pedal



Fully depressing the clutch pedal disengages the engine from the transmission.

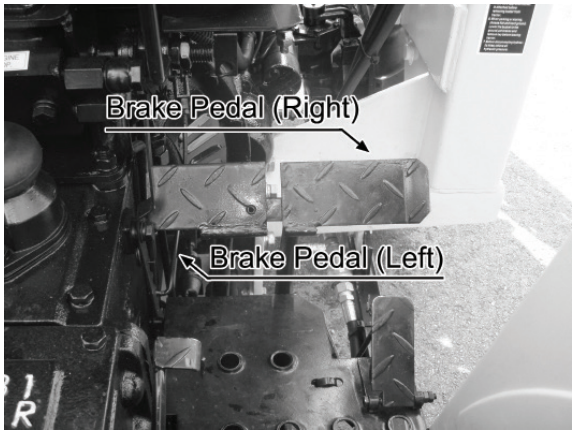
Caution:

- Release the clutch pedal slowly when operating the tractor.
- If using a front end loader, select low range for operating the loader and high range for travelling. If high range is used when working the front end loader, premature clutch wear will occur.
- Do not 'ride' the clutch to adjust speed while in operation or premature clutch plate wear and pressure plate damage will result. Premature clutch wear is not warranted.

Safety precautions:

Whenever changing gears, be sure to use the clutch pedal.

3.2.7 Brake pedals (right and left)

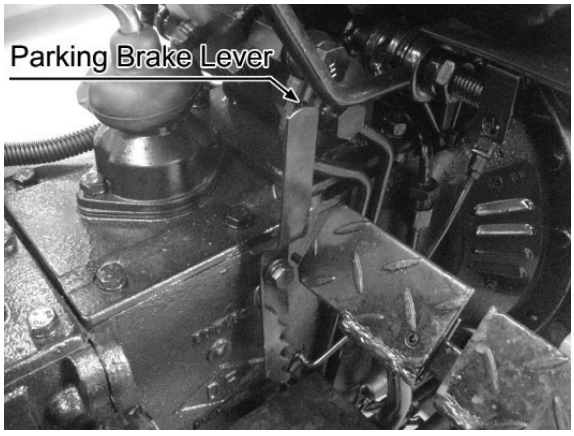


The right and left brake pedal operate the rear wheel brakes independently.

Safety precaution:

When operating the tractor, be sure to interlock the left and right pedals as illustrated above. Only use independent pedals in low range to assist steering.

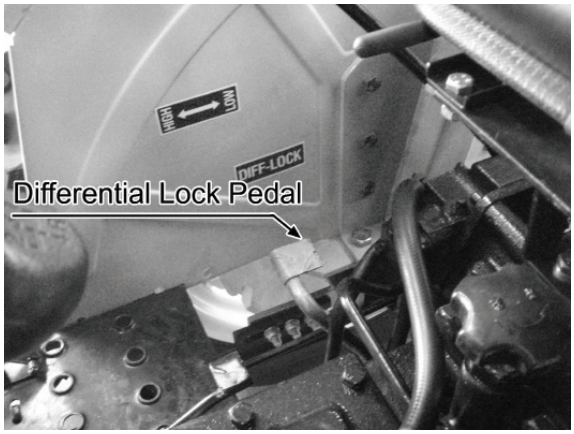
3.2.8 Parking brake lever



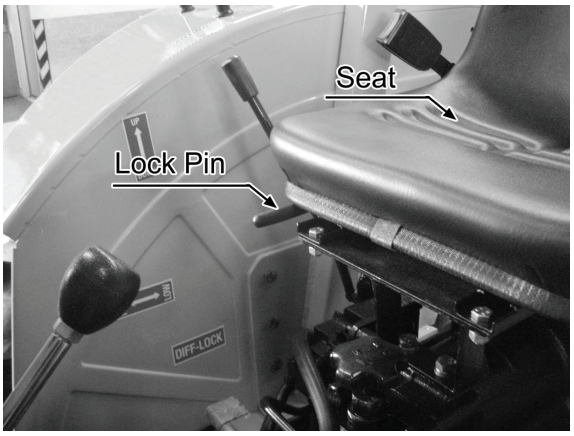
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Interlock the left and right brake pedals, step on the pedals and set the park brake lever.
This procedure locks the brake. To release the parking brake, step on the brake pedals again and release the park brake lever.

3.2.9 Differential lock pedal



Differential Lock is applied in cases of excessive wheel slip where locking the differential provides power equally to both wheels. This is achieved by lightly stepping on the differential lock pedal with the heel.
To unlock, just release the pedal. Never activate the diff lock at high speed or when turning.



3.2.10 Seat

To accommodate the operator, the seat can be adjusted to several pre-set positions. The adjustment is made with the seat adjusting lever below the seat pan.

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4. Running-in

In order to prolong the service life of tractors, it is essential to follow the running-in procedure for a new tractor (or immediatly after major overhaul) before putting it into service.

4.1 Running-in the engine without load

1. Please read the engine operation manual before carefully starting the engine.

2. After starting, let the engine run at medium or low speed, and then gradually speed it up after water and oil temperature rises. Avoid running the engine at high speeds right after starting. Check whether there is any water, oil and air leakage and whether all instruments and indicators work well while the engine is warming up.

3. Let the engine run for 5 minutes at maximum speed and observe engine's working status, the total running-in time of engine without load needs to be 20~ 30 minutes.

4.2 Running-in the tractor without load after warm up

1. Drive the tractor away from rest according to directions set forth in this operation manual.

2. Run the tractor in every forward and reverse gear for half an hour respectively. Carry out steering manoeuvres at medium and low speeds, applying LH brake or RH brake in sync with the steering. Try emergency braking when the tractor is running in gears 7 and 8 with limited throttle. Engage the front wheel drive if the tractor is a four-wheel drive model. Never operate in four-wheel drive on hard surfaces.

3. Engage the PTO, and operate the hydraulic lifting system repeatedly so as to run-in the hydraulic system and PTO drive system.

4.3 Running-in the tractor with load

1. When operating the tractor with a load during the running-in procedure, the load must be added gradually and gears changed gradually from low to high. The engine should not be left at idle for long periods. A slasher can be used to 'load' the engine. Use a higher gear than normal when cutting grass to load the engine, making it work hard. Keep the revs up high to stop it from stalling while working the tractor at the same time. Carry this out for approximately 2 – 3 minutes then return to normal operation. Alternate normal and 'loaded' operation for a period of 45 minutes, then use the tractor as normal.

2. Running-in the hydraulic lift system with load is to be done with a plow mounted. It should be done before running-in the transmission system, repeat the lift and lower operation at least 20 times while the engine is working at the rated speed.

3. If the above running-in condition could not be satisfied, then light-load operation can be used as a substitute. For example, shallow-tillage in soil with low resistance or hauling operation with 1.5 ton of cargo loaded in the trailer may also be adopted for running in the tractor.

Points for attention:

Observe the working conditions of all parts and components in every stage of the running-in process. If any abnormal condition occurs during the running-in period, rectify it immediately. While running in the transmission system, the PTO should be "disengaged".

4.4 Service after running-in

Refer to section 7 for your 30 hour service schedule. Carry out all tasks stated.

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5. Operating Instructions

5.1 Pre-start checks

Prior to starting the engine, follow the pre-start checks outlined in the service schedule 6.2.1 on page 6-1.

5.2 Starting and stopping

5.2.1 Starting

1. Sit down on the operator's seat and fasten the seat belt.
2. Step on the brake pedals and engage the park brake.
3. Set the main gear shift lever and the P.T.O lever to the neutral position.
4. Move the hand accelerator lever 'on' from half to two thirds.
5. Insert the key into the ignition switch. If the ambient temperature is more than 15º go to (7)
6. Turn the key switch left, waiting for at least 20 seconds until the preheating coil in the combustion chamber is fully heated (only required for cold climates). The lower the ambient temperature, the longer the preheating time. To calculate the necessary preheating time, refer to the table below:

Temperature	Preheating Time
Over 0ºC	15 - 30 sec
0 to -5ºC	30 – 40 sec

7. Fully depress the clutch pedal and turn the key switch to the start position and the engine will start.
8. Make sure that the engine oil pressure indicator has registered. If the indicator is not working normally, immediately stop the engine and check the lubrication system.
9. Perform warm-up operations by running the engine at medium speed.

Caution:

1. While the engine is running, do not turn the ignition switch off.
2. If the engine does not start when holding the ignition key on after 10 seconds, switch off for about 20 seconds. Then reheat and repeat the procedure above. If the ignition switch is continuously turned to the start position for more than 30 seconds it may lead to problems with the starter motor.
3. Be sure to perform warm-up operations regardless of the ambient temperature. If the tractor is run before the engine warms up, the engine performance is reduced, and the tractor life will also be affected.
4. Don't use starting fluid to aid engine start. Doing so may cause serious damage to the engine.

Safety precautions:

1. Do not start the engine in an enclosed room. This will contaminate the air with exhaust, fumes and lead to the risk of poisoning.
2. Make it a habit to start the engine after moving the main gear shift lever and P.T.O speed change lever to the neutral positions and fully disengaging the clutch. If this procedure is not observed, the tractor may dangerously lunge forward the moment the engine starts. The tractor has been factory fitted with a clutch operated safety start switch.

Caution:

When the ambient temperature is less than 15º, remove the battery from the tractor and store it somewhere warm until next operation.

5.2.2 Stopping

1. Slow the engine speed down to less than 1000 rpm by moving the hand throttle lever forward and releasing the accelerator pedal.
2. Fully pull the stop control button (fuel cut-off) and the engine will stop.
3. Turn the ignition key switch off and remove the key.

5.3 Driving

5.3.1 Starting

1. Depress the clutch pedal to disengage the clutch.
2. Shift the main and range gear shift levers to the desired speed positions.
3. Release the park brake.
4. Speed up the engine by pulling the hand throttle lever backward, or using the foot accelerator.
5. Slowly release the clutch pedal and the tractor will start to move.

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Caution:

1. Do not drive the tractor with the park brake on.
2. Do not drive with your foot on the clutch pedal.

Safety precautions:

1. Suddenly releasing the clutch pedal can make the tractor lunge forward dangerously.
2. The gear shift cannot be shifted during driving. To change gear, be sure to stop the tractor by fully stepping on the clutch pedal.
3. Interlock the left and right brake pedals before starting. Uneven braking results in a sharp turn which may even turn the tractor over.
4. Do not allow any person other than the driver to ride on the tractor.
5. Do not drive the tractor close to the edges of ditches or banks which may break under the weight of the tractor, especially when the ground is loose or wet.
6. When turning the tractor, slow the engine speed down and, if necessary, engage a lower gear.
7. Do not drive the tractor on the road with the PTO engaged and the implement in motion.
8. After using the diff lock, make sure it has been released.
9. When going down a slope, use the slowed engine to control the speed, (engine braking). Relying only on the brake pedal is dangerous. Never depress your clutch when traveling down steep slopes.

5.3.2 Stopping

1. Slow down the engine.
2. Step on both the clutch and brake pedal and the tractor will stop.
3. Move the main gearshift lever to the neutral position and release the clutch pedal.
4. Interlock the left and right brake pedals then apply the park brake.

Safety precautions:

1. When parking, be sure to apply the park bake.
2. If you have no other option than to park on a slope, be sure to take an added precaution against rolling by placing stones or a wheel chock behind the wheels.
3. Before getting off the tractor, be sure to stop the engine and lower the implement to the ground for safety.

5.4 Check during driving

While driving check the instrument gauges to make sure all systems are functioning normally.

5.4.1 Cooling water

If the temperature of the cooling system rises above 100ºC, immediately stop the engine. Carry out the following checks, and remedy as required, keeping in mind all safety precautions.
1. Low coolant level or leakage of coolant.
2. Foreign matter on the radiator screen and dust and dirt between the radiator fins tube.
3. Fan drive belt tension.
4. Unnecessary addition of anti-freeze in the coolant. (Not in cold weather).

Safety precautions:

To remove the radiator cap, wait for about 10 minutes after stopping the engine. Release the cap slowly to release any remaining pressure carefully. Immediate removal of the radiator cap lets the hot coolant spray out, scalding the operator.

5.4.2 Engine oil pressure indicator

The oil pressure gauge indicates whether the engine is receiving adequate oil pressure. If the indicator shows an incorrect operating pressure, immediately stop the engine and check:
1. The engine oil level. (See page 6-1).
2. The condition of the lubricating system.

5.4.3 Fuel

Do not run the fuel dry. Using the top two thirds of the tank is recommended. If air is sucked into the fuel system, the system must be bled.

5.4.4 Exhaust fumes

1. Exhaust fumes are colorless at normal operation.
2. Exhaust fumes become a little colored with increased engine power. If the exhaust turns dark continuously during driving, it probably indicates an engine overload. In this case reduce the load on the engine. If the situation continues have it checked by a diesel technician to avoid damage to the engine.

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5.4.5 Urgent engine Stop

Should the following abnormal events take place, immediately stop the engine.
1. The engine slows down or speeds up unexpectedly.
2. Unusual noises are suddenly heard.
3. Exhaust fumes rapidly become very dark.
4. The engine oil pressure gauge indicates an abnormal pressure.
5. For checks and service for the above situations, consult your dealer or service agent.

5.5 Operating the differential Lock

The proper use of the differential lock will enhance your tractor performance in extreme wheel slip situations, while its incorrect use may subject the operator to serious dangers and lead to tractor problems.
Be conscious of the following considerations when applying the diff lock.
1. The diff lock can be used in the following situations:
• The tractor is lightly bogged because of one wheel slip, for example coming out of a drain or entering a paddock in slippery conditions.
• One rear wheel is caught in a loose area of the paddock and the tractor cannot move due to wheel-spin.
• When plowing, the rear wheel closer to the ridge is caught in the loose soil and is spinning due to limited traction.
2. The use of the diff lock must be limited to a particular application and cannot be applie beyond that limit, which is usually for a short time only.
3. When the rear wheel is subjected to excessive loads and the rear axle is ‘wound up’, the differential will sometimes remain locked even though the diff lock pedal has been released. Lightly tapping the brake pedal opposite to the turn will sometimes release the lock. Likewise driving the tractor straight will release the axle ‘wind up’ allowing the Diff to unlock.
4. Do not engage the diff lock at high speed or when turning. The tractor cannot turn with the diff lock engaged and attempting this is very dangerous and will void any warranty.

5.6 Control and usage of tractor’s working devices

5.6.1 Hydraulic lift system

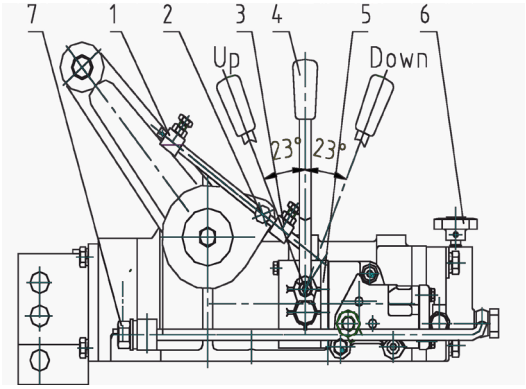


Fig. 5-6 Hydraulic lift

1. Lower Limiter
2. Slide Block
3. Lift Limiter
4. Control handle
5. Hydraulic oil distributor
6. Response valve
7. External delivery plug

1. Lifting & lowering the three point linkage (see Fig. 4-6). Move the control handle (4) forward, and the attached implement will be lowered. Adjust the lower limiter block (1) in a position that the slide block (2) will act on the lower limiter block (1) moving the control handle (4) back to neutral. This positions the implement at the desired level/ depth. To lift the implement, move the handle (4) backward, the implement will lift on the linkage until the slide block (2) pushes on the lift limiter (3), pushing the handle (4) to the neutral position. A variety of heights can be achieved by adjusting the lift and lower limiter blocks to different positions.
Manual linkage adjustments can be made from the seat by the operator, moving the control handle forward to lower the linkage and back to neutral to ‘hold’ its position, or move the control handle back to raise the linkage. The control handle must be moved to the neutral position right after the adjustment is made. If lifting speed needs to be adjusted, use the response control wheel (6) by screwing it up for faster response or down to slow the response. Screwing the response control wheel right down will achieve a hydraulic lock and hydraulically lock the lift linkage.
2. Farm implements with height adjustment wheels or skids. Push the control handle (4) forward to the “Down” position, the implement will drop down to the ground by its own weight. Adjust the response control valve to regulate the lowering speed. The implement height is controlled by its wheels or skids.

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5.6.2 Points for attention:

1. Move the control handle to neutral position immediately after the linkage is fully lifted to avoid activating the hydraulic relief valve.
2. Release the response control wheel by screwing it anti clockwise to the desired linkage speed. Remember the linkage wont work with the response wheel screwed right down.
3. Attaching implement to the tractor. Back the tractor up to the implement as square as possible. Adjust the lift arms to be close in height to the mounting points on the implement. Having the tractor linkage a little lower may be an advantage at times as they can be lifted a little by hand while aligning the attachment pins. Ensure the mount pins are securely locked with lynch pins. Keep a few spare lynch pins on hand as they are easy to misplace or lose.
Adjust the top link to the correct length and attach it in position with a top link pin.
4. Adjusting the lift linkage Use the top link to adjust and level the implement front to back.
The lift arm levering assemblies can be adjusted individually to level the implement side to side. Make sure you tighten the linkage locknuts to secure the adjusted position of the lift arm levelling assembly. The adjustable stabiliser links can now be set to allow minimal sideways movement. A properly adjusted implement will make working more enjoyable and efficient and ensure the least amount of wear and damage can occur while the implement is in operation.

5.6.3 Points for attention:

1. NEVER adjust the top link and the left and right vertical arms to the minimum length at the same time, otherwise the implement may lift too high causing damage to the cabin or driver when it is rising to the highest position.
2. To avoid activating the hydraulic relief safety valve, never move the control handle backward after the implement reaches the highest position and gets neutralized automatically.
3. Lift implements, especially tillage equipment before driving off or turning.
4. Do not manoeuvre or turn the tractor while a ripper tyne is in the ground. Lift the ripper – or other implement first
5. Make sure the implements fit the tractor well and there is no interference to the implements lifting or lowering.
6. Avoid dragging implements along roads or across paddocks. Use a slow gear for traversing rough paddocks to avoid implements from shaking violently. This will improve the longevity of both tractor and implements.

5.6.4 Towing and dragging operations

1. Use the drawbar supplied with the tractor. The drawbar is equipped with a clevis and clevis pin and can be used with the clevis up, down or removed to suit the requirements. Mounting holes are provided along its length to provide a range of adjustments to suit the application.
It is recommended to remove the drawbar when not in use and store it in the shed for use when needed.
2. Ensure the tractor has sufficient ballast to control the trailer/implement in the environment and conditions it is being operated in. Make certain the tractor is not overloaded with ballast.

5.6.5 Operating the PTO

1. The two speed PTO provides standard 540 as well as higher rpm. The PTO control is a three position lever. Push the lever forward for 540rpm, and rearward for higher rpm with neutral in between.
2. Most PTO driven implements in Australia are designed to run at 540rpm. Do not run higher speed PTO rpm unless it is specified by the implement manufacturer.
3. Engage the PTO by fully depressing the clutch and shifting the PTO control lever forward or back to the desired rpm rating. Release the clutch slowly when driving an implement then increase the tractor engine rpm to operating speed. An over-run clutch is required when driving a slasher fitted to a tractor equipped with a single stage clutch.
4. Ensure the tractor is firmly secured with the park brake engaged when carrying out stationary operations, such as wood chipping, log splitting and using the backhoe.

PTO Speeds

ZB25	540 / 730rpm
ZB35 / ZB45	540 / 1000rpm

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6. Mechanical Adjustment

6.1 Engine

Please refer to the engine operation manual for adjustment and maintenance

6.2 Clutch

The single stage clutch on the **ZB25** will wear and require adjustment at regular service intervals. Refer to point 1 for the release finger setting when replacing the clutch plate or after removing the clutch assembly from the back of the engine. For regular service, check point 1 and make any adjustments point 2 and 3.

6.2.1 Single clutch – ZB25

1. Remove the inspection window on the bell housing and check the position of the clutch release levers. The clutch release fingers should be parallel with the clutch pressure plate, adjust as required at adjusting nut (1). The fingers are factory set and should not require resetting during the normal course of clutch maintenance. Check that all three fingers are on the same vertical plane by depressing the clutch pedal until the throw-out bearing contacts the fingers, and ensure all fingers contact the bearing at the same time. If not, adjust the fingers as required by using the adjusting nut (1).

2. Adjust the clutch free play using the pull rod (5) and lock nut (6) so that the gap between the end of the release fingers and the throw-out bearing is 3mm. This will give free-travel at the pedal of about 40mm.

3. Test that the clutch operation is normal and recheck the release finger clearance and vertical alignment of the three fingers. Adjust as required. Note: Some clutch adjustments will settle in and may require resetting.

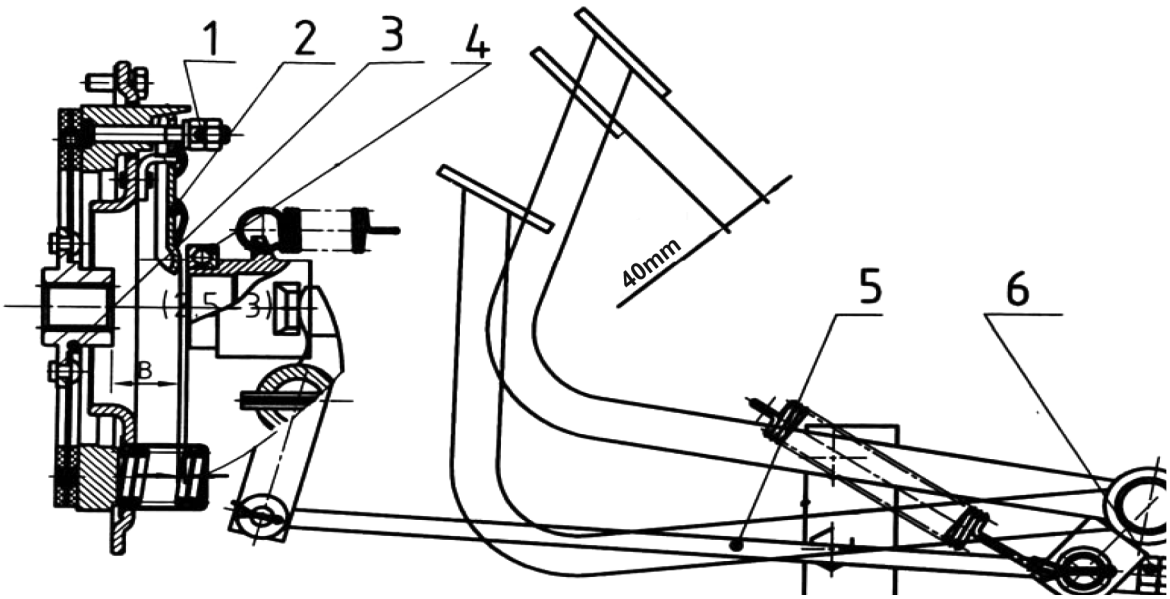


Fig. 6-2-1 Clutch assembly

1. Adjusting nut
2. Release lever
3. Clutch plate
4. Throw-out bearing
5. Pull rod
6. Lock Nut

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6.2.2 Two stage clutch – ZB35 / ZB45

Under normal operation the clutch will wear and require checking and adjusting at regular service intervals as required. Avoid excessive clutch slip. If the clutch is not immediately adjusted to stop excessive slipping, premature clutch plate wear will occur with possible damage to the clutch assembly through over heating, or metal on metal wear.

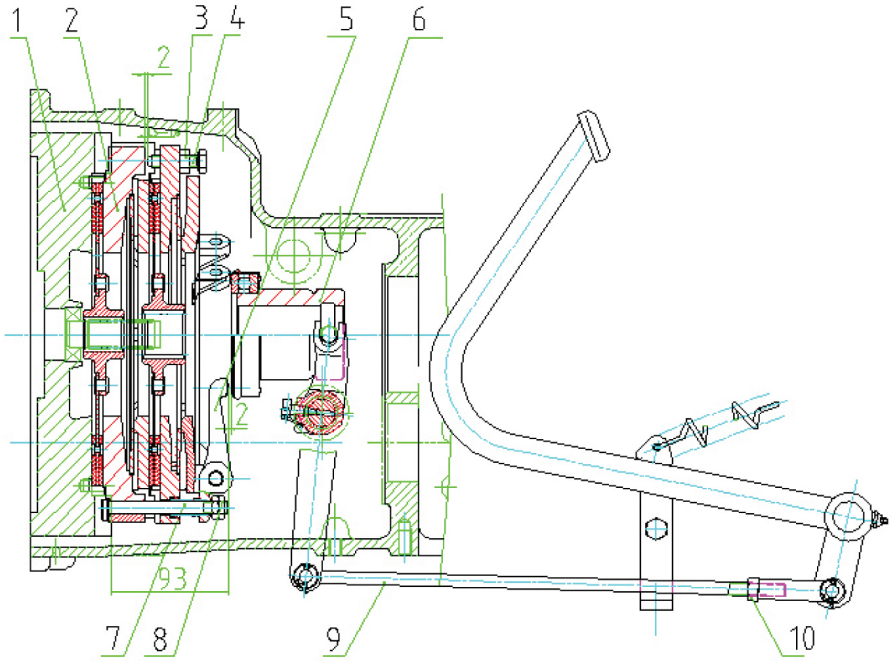


Fig. 6-2-3 Linkage-type double-acting clutch

1. Flywheel
2. Main clutch pressure plate
3. Lock Nut M10×1
4. PTO Clutch adjusting bolt
5. Release finger
6. Throw-out bearing assembly
7. Release finger adjusting bolt
8. Lock nut M10×1
9. Pull rod
10. Lock nut M10×1

6.2.3 Clutch assembly.

Clutch assembly and adjustment should be carried out by a qualified technician.
The structure of the linkage-type, double acting clutch is shown in Fig. 6-2-3.

When the clutch is fully assembled and adjusted there should be:
1. 3mm clearance between the release fingers (5) and the throw-out bearing (6).
2. 1mm clearance between the head of the adjusting bolt (4) and main pressure plate housing (2).
3. 40mm free travel on the clutch pedal by adjusting the pull rod (9)

When adjusting the clutch ensure that the three release fingers are in the same plane and contact the face of the throw out bearing at the same time when depressing the clutch pedal. Likewise the head's of the adjusting bolts (4) should all contact the main pressure plate housing (2) at the same time.

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6.3. Front wheel – 4WD

6.3.1 Toe-in adjustment (see Fig. 5-3-1)

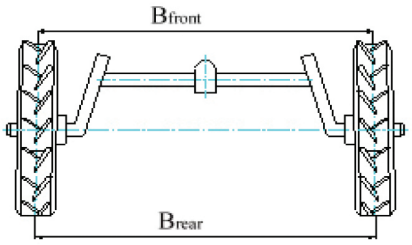


Fig. 6-3-1 Toe-in adjustment

In normal operation the front wheels will require toe-in adjustment due to normal wear and tear. If the adjustments are not carried out, rapid or uneven tyre wear will occur.

The procedures of adjusting the toe-in:
1. Steer the front wheels straight forward.
2. Measure the front and rear distances between the steering wheels at the same height to the centre of the tyre tread.
3. Adjust the steering tie rod till the front distance is 5 to 8 mm less than the rear distance.
4. Tighten the nuts on both ends of the steering tie rod.

6.3.2 Front axle pivot

The front axle pivot housing should have some clearance with the front axle support bracket on the tractor. This ensures the front axle can swing through its limited range without slopping back and forth on the pivot pin. Check and adjust the clearance by removing the pivot pin and adding or removing shims as required.

6.3.3 Wheel track – 4WD.

The rear wheel track can be set to a number of positions. Only use the maximum setting when required. Industrial tyres and rims have one setting only. The front wheels should remain as factory set or increased pressure will be applied to the steering equipment and damage may result.

6.3.4 Rear wheel track

Rear wheels can be fitted with the concave side of wheel disk facing either inward or outward. The wheel track width is different for each of these fitting positions. (see Fig. 6-3-4)

Danger!

Only remove the rear wheels, when the tractor has been stabilised with suitable mechanical safety stands, or an approved hoist.

Points for attention:

1. After the adjustment make sure the front and rear wheels are symmetrical about the tractor centreline.

2. Rear lug tyred wheels, can be swapped side to side for adjusting the wheel tracks. (for rear wheel only).

3. Make sure that the direction of lugs are correct for forward travel.

4. Do not turn the front wheels out wide. Steering geometry is affected and damage to the front end and steering may result.

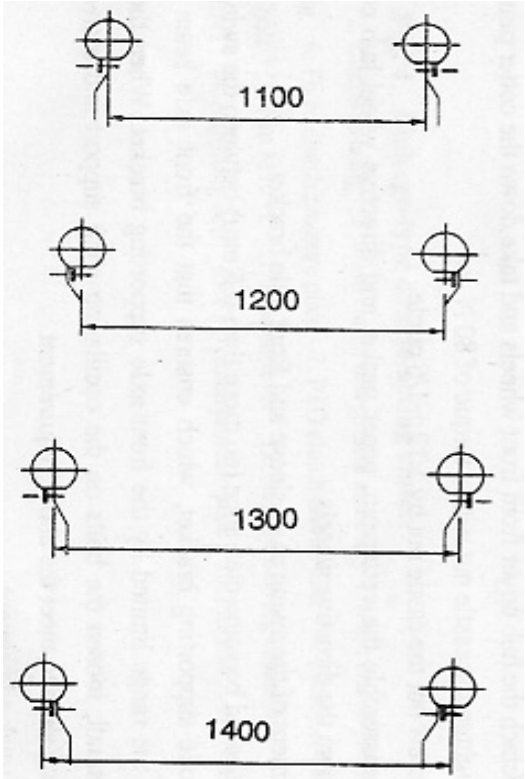


Fig. 6-3-4 Rear wheel track selection

6.3.6 Front drive axle

When assembling the front axle, pay special attention to precise clearance and alignment of the paired gears. This will have a marked effect on the efficiency and noise level of the front drives.
Front wheel drive is achieved by pairs of bevel gears and drive shafts from the centre differential to the final drives. Shims are used to adjust the clearance and alignment of the paired gears.
Steering is achieved using a swivel hub that is aligned with shims. The swivel hub also houses a bush and oil seal so that lubrication oil communicates between the differential and final drives.
Oil is drained using three plugs. One at the diff centre and two on the final drives. Oil is filled from one common fill point on the axle housing. When replacing the front diff oil, keep checking the level until it stabilises. Oil can take some time to fill the final drives.

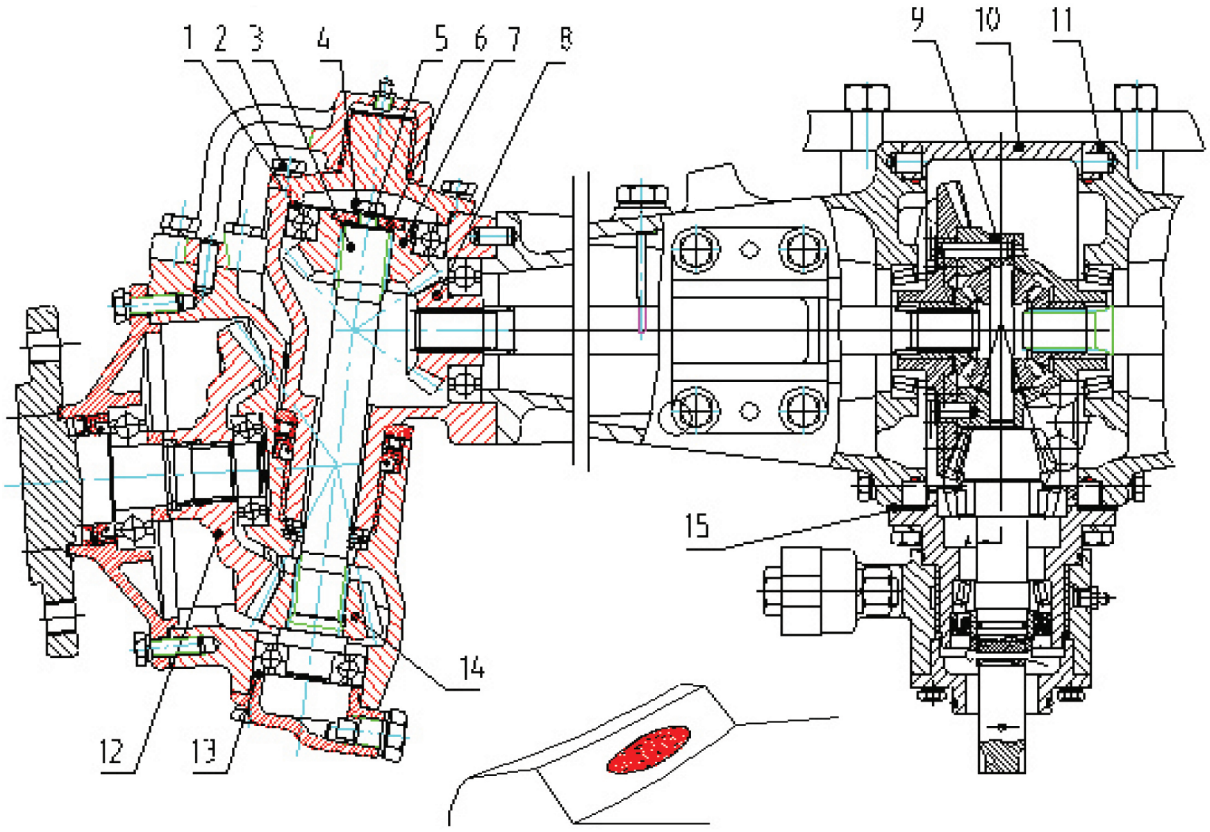


Fig. 6-3-6 Diagram of front drive axle & Correct bevel gear mesh point

1. Shims / bearing
2. Bolt M10×25
3. Upright shaft
4. Retainer ring / lock tab
5. Retaining bolt for upright shaft
6. Shims
7. Driven bevel gear
8. Driving bevel gear
9. Differential
10. Main drive case
11. Shim
12. Final reduction driven gear
13. Shim
14. Final reduction drive gear
15. Bearing seat adjusting shim

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6.4 Power steering

The power steering is driven by its own dedicated hydraulic pump fitted with a constant flow valve.

6.4.1 Working principle of the full hydraulic power steering. (See Fig. 6-4-1)

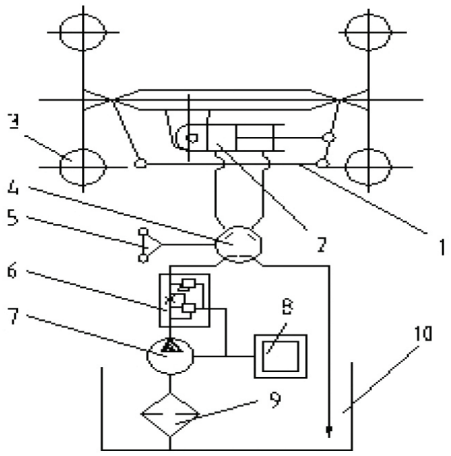


Fig. 6-4-1 Working principle of the Full hydraulic steering gears

1. Steering drag link
2. Steering cylinder (See Appendix 10)
3. Front driving wheel
4. Hydraulic steering orbital gear
5. Steering-wheel
6. Flow divider valve (On single hydraulic pump models)
7. Gear pump
8. Diesel engine
9. Oil strainer - washable
10. Oil tank - transmission

The transmission provides the oil reservoir for the power steering. On some models a dedicated power steering oil tank is provided. As long as the engine is running, the hydraulic pump will provide power steering to the tractor which will not be effected when using the hydraulic linkage system.

6.4.2 Power steering structure and points for attention.

1. The hydraulic power steering is actuated by the Steering orbital, through a light force of 4-5 Nm. (2.5 – 3.5ftlb). If the steering is found to be quite heavy or even jamming, please do not carelessly turn the steering wheel with heavy force but to thoroughly check and fix the problem first.
2. Applying heavy force to the steering wheel can damage the power steering system. If the tractor is to be moved manually by towing or pushing, never apply a force greater than 250Nm (180ftlb) to the steering wheel.
3. Maintenance of the hydraulic orbital gear should be carried out by a qualified trades person.
4. Ensure the nuts and bolts are regularly checked and tightened to avoid oil leaking from couplings and connections.
5. Make sure dirt and grit can't contaminate the oil lines or galleries and hydraulic pumps when carrying out maintenance on the power steering system.
6. Power steering oil / fluid should be changed regularly as per the service schedule.

6.5 Brakes

The brake linings will wear during normal use. This will be noticed over time as extra pedal travel. Sometimes uneven wearing will occur. When this is noticed the brakes should be checked and adjusted to bring them back into sync. Incorrect adjustment can lead to brake dragging and accelerated wear or burning of the brake lining.

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6.5.1 Shoe brake (see Fig. 5-5-1)

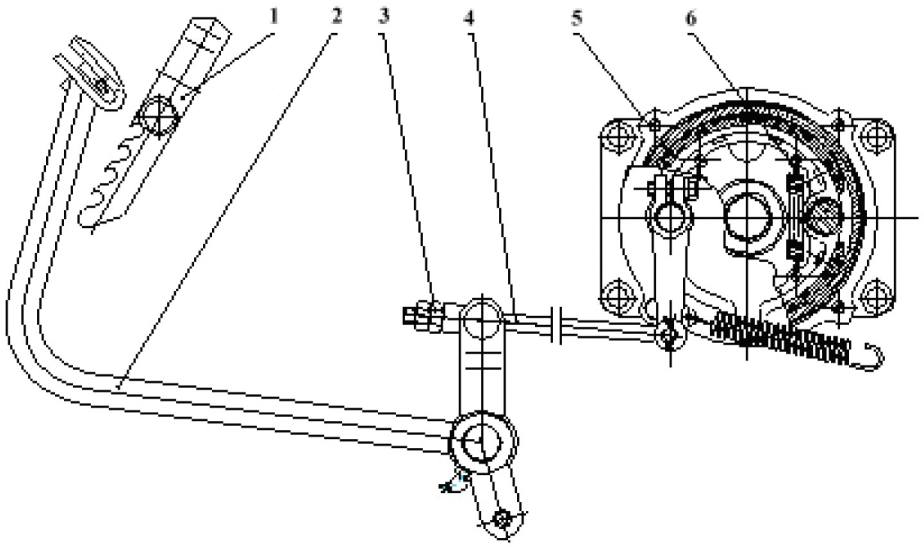


Fig. 6-5-1 Brake Adjustment

1. Park brake lock
2. Brake pedal
3. Lock nut
4. Pull rod
5. Brake shoe lining
6. Supporting pin

Loosen the Lock nut (3), screw the adjusting nut in or out, adjusting the length of the pull rod (4).
This will vary the free travel of the Brake pedal (2). Adjust the free travel to be within the range of 55 to 65 mm. After the brake adjustment is made on both sides, tighten the lock nut (3) and interlock the brake pedals.
After the adjustment, test the brakes out on the road. If the tractor pulls left or right while braking, the brakes are not adjusted properly. Readjust the brakes by lengthening the pull rod on the side with the longest skid mark or shorten the pull rod on the side with the shortest skid mark and test again. Repeat the adjustments until the brakes are synchronised and well balanced.
Eventually the brake shoe lining (5) will wear out and require replacing. For your safety regularly check and maintain the brakes to keep them working well. Don't wait till the linings are completely worn out causing damage to other brake system components.

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6.5.2 Disc brake: (see Fig. 5-5-2)

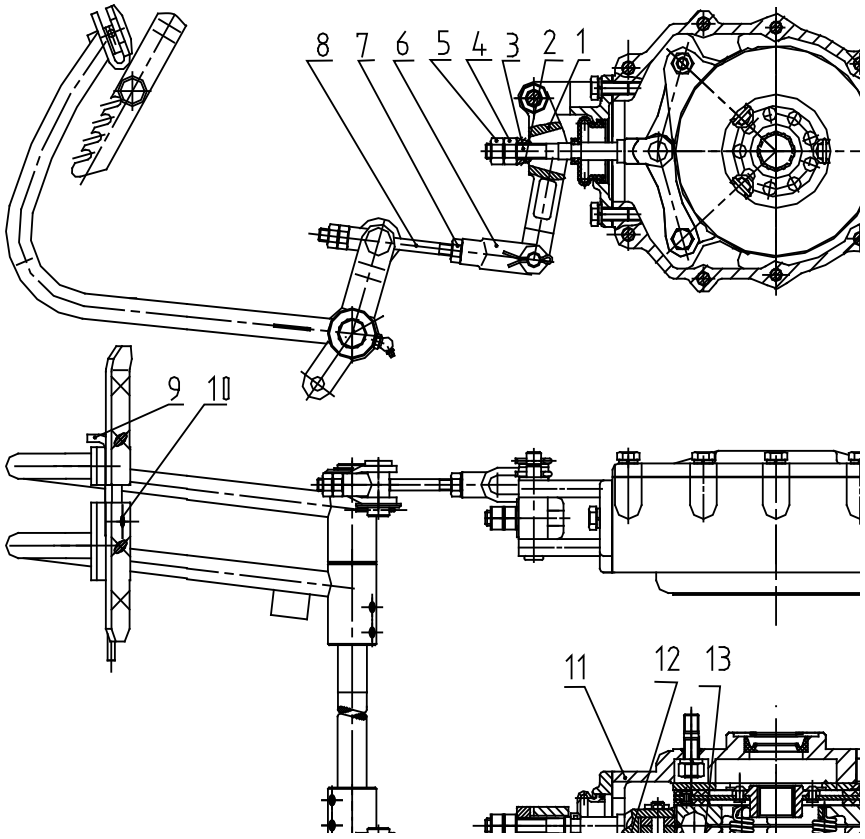


Fig. 6-5-2 Disc brake adjustment

1. Rocker Arm
2. Self-centring pivot
3. Adjusting rod
4. Adjusting nut M12
5. Lock nut M12
6. Connecting clevis
7. Clevis lock nut M10
8. Pull rod
9. RH Brake pedal
10. LH Brake pedal
11. Brake housing
12. Paper gasket
13. Brake cover

Adjustment Method (see Fig. 6-5-2)

1. Loosen the outer lock nut M12 (5) on adjusting rod (3) and turn the adjusting nut M12 (4) to change the mounting angle of the rock arm (1) through the longitudinal motion of the self-centring pivot (2). Ensure that the central connecting line of the upper and lower holes incline to the rear from the plumb line. After adjustments are made, tighten the lock nut (5).

2. Brake pedal travel adjustment: Loosen the clevis lock nut (7) on the pull rod connecting clevis (6) and on the brake pedal end of the pull rod, to change the length of the pull rod (8). Adjust until the displacement (from the highest position of the brake pedal to the pedal position when the brakes are completely applied is 75-85 mm. When the left and right pedals are locked together, stepping on the pedal will simultaneously brake the left and right wheels. After adjustment is completed, lock pull rod with the lock nuts (7).

3. Left and right rake synchronisation:
After the adjustment, test the brakes out on the road. If the tractor pulls left or right while braking, the brakes are not adjusted properly. Readjust the

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brakes by lengthening the pull rod (8) on the side with the longest skid mark or shorten the pull rod on the side with the shortest skid mark and test again. Repeat the adjustments until the brakes are synchronised and well balanced.
Eventually the brake pads will wear out and require replacing. For your safety regularly check and maintain the brakes to keep them working well. Don't wait till the linings are completely worn out causing damage to other brake system components.

6.6 Electrical system

The tractor is fitted with a 12V electrical system and is negative-earth as per standard convention.

6.6.1 Battery

The tractor is equipped with a 6-QA-100S battery.
When the ammeter's pointer turns towards the "+", positive side the battery is charging, and when ammeter's pointer turns towards "-", the negative side the battery is discharging. The battery is charging while the tractor is working in normal conditions.
An AVO meter can be used to check the batteries charge state. Do not short circuit the battery to assess its state of charge. A hydrometer can also be used to check the batteries charge level. Do not connect positive to the body of the tractor. The electrolyte level of the battery lies between the "UPPER" and "LOWER" marks on the battery. Once it is under the "LOWER" mark, distilled water should be added.
When the battery is low on charge, the tractor will be hard or impossible to start. The battery needs to be charged from an external power source. Persistently trying to start the engine with a low charge battery can damage the electrical system including the starter motor.

Points for attention:

1. When charging the battery, loosen or remove all battery vent plugs.
2. Make sure that all cells of the battery are immersed in electrolyte. Add distilled water in a well-ventilated area as required.
3. When the specific gravity of the electrolyte becomes 1.28 - 1.29g/cm3, the charging process has completed. (Using the hydrometer)
4. After charging, let the battery 'rest' for at least 40 minutes before putting it into service.

6.6.2 Fuse

Before replacing a blown fuse with a new one of the same current rating, determine the exact causes of the failure and make the necessary repairs.

Fuse box

Fuse No.	Electric circuits to be protected	Current rating
1	Main power circuit	30A
2	Oil pressure gauge, Water temp gauge and horn	10A
3	Electronic voltage regulator	5A
4	Headlight, left & right turning indicator lamp	10A
5	Clearance lights, Rear working light, Brake light	10A

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6.7 Rear axle

6.8 Final driv

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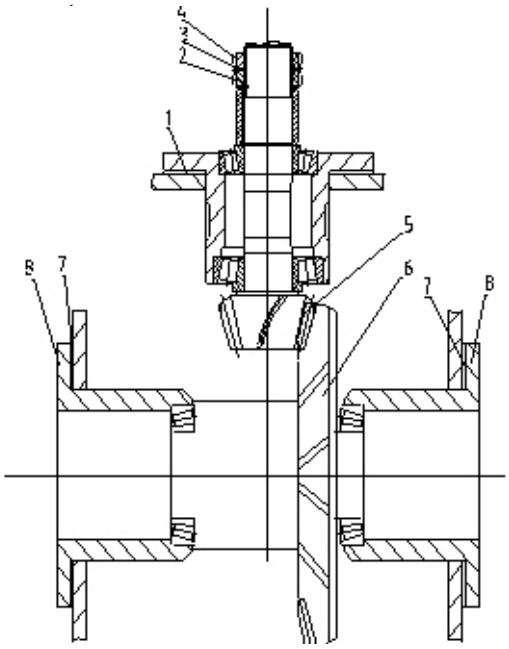


Fig. 6-7 Main drive mounting diagram & Meshing zone diagram

1. Pinion gear adjusting shims
2. Lock nut
3. Check washer
4. Lock nut
5. Pinion gear
6. Crown gear
7. Adjusting shim of crown gear
8. Bearing seat
9. Rear axle housing

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7. Technical Maintenance

7.1 Oil and lubrication

7.1.1 Diesel oil and lubricants

Position	Lubrication
Fuel tank	Diesel
Clutch release bearing Other grease nipples	Lithium-based grease GP grease
Gearbox, rear axle, front axle, hydraulic system	East Wind Multi Farm 1, or Valvoline Farmplus Universal
Engine sump	East Wind Multi Farm 1, or Valvoline Farmplus Universal

7.1.2 Lubrication points

Oil inlet:
Engine: Top of the tappet cover, and Injector pump. (please refer to the Engine operation manual)
One on transmission and rear axle housing - top cover
One on Front axle - left & right sides of the housing

7.1.3 Grease nipples:

Water pump bearings (not all models)
Two on the turnbuckles of the left & right levelling assemblies
One on upper link
Two on front & rear joint of the steering ram
Two on left & right joint of the steering tie rod
Two on left & right front wheel hubs
Two on left & right steering arms
Two on rear pedestal (four wheeled drive only)
Two on left & right steering drag link (four wheel drive only)
One on clutch operating shaft
One on brake operating shaft
One on the front axle pivot pin

7.1.4 Oil level inspection points:

Engine dipstick
Transmission cover dipstick
Front wheel drive axle dipstick. On the left hand side.
Injector pump dip stick or level –overflow tube.

6.1.5 Oil drain plugs on:

Bottom of the engine sump
Lower-left side of the gearbox
Lower-rear side of the rear axle housing
Bottom of front wheel drive housing (four wheel drive only) and final drives
Bottom of transfer case housing

7.2 Maintenance schedule

In order to keep your Tractor in good serviceable condition and prolong the life of the machine the following service guide must be followed. Dongfeng recommends using genuine oil and filters for all services to ensure all components of the machine are protected and operate within manufactures specifications. The use of non genuine parts including filters and oil's will void your warranty. Please fill out the Maintenance Service Record at the rear of this manual to keep track of the machine's service history. Please keep records of all oils and filters purchased for each and every service.
Refer to Chapter 5 Mechanical Adjustment and Chapter 7 Maintenance Checks for all instructions and specifications on carrying out tractor maintenance. If any information is not supplied, or your machine differs from the one in the manual please contact your nearest dealer for information and guidance.

7.2.1 Daily checks

1. Check engine oil level and fill as required.
2. Check front diff and final drive oil level.
3. Inspect radiator core for blockage, blow out and reinspect, clean as required.
4. Check air filter and dust bowl for contaminant

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and clean as required, replace every 50 hours in very dusty conditions. Be sure to wipe out intake with a damp cloth. Do not use compressed air to blow it out, as this will push dust particles into the engine.
5. Check coolant level and top up as required.
6. Check hydraulic steering oil and top up as required.
7. Check fan belt and adjust as required.
8. Check gearbox oil and top up as required.
9. Check fuel level and fill before each shift.
10. Check wheel nut tension and tyre pressures, adjust as required.
11. Inspect machine for loose or broken bolts, tighten or replace as required.
12. Inspect hydraulic hoses and rams for leaks and repair as required.
13. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).

7.2.2 30 Hour 1st service

1. Change engine oil and filter.
2. Change fuel filter and clean inline strainer.
3. Change injector pump oil.
4. Change gearbox oil and filter.
5. Change front diff and final drive oils.
6. Change hydraulic steering oil, clean strainer and refill with new oil (where P/S tank supplied).
7. Check tappet clearance and adjust as required.
8. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect inlet manifold and hoses for leaks, repair as required.
9. Drain coolant, flush cooling system and refill with new coolant.
10. Check wheel nut tension and tyre pressures, adjust as required.
11. Inspect radiator core for blockage, blow out and reinspect, clean as required.
12. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).
13. Inspect machine for loose or broken bolts, tighten or replace as required.
14. Inspect engine, transmission and final drives for oil leaks and repair as required.
15. Check brake and clutch adjustment and adjust as required. Request technical support if unsure how to carry out adjustments.

7.2.3 50 Hourly service

1. Change engine oil and filter.
2. Change injector pump oil.
3. Inspect radiator core for blockage, blow out and reinspect, clean as required.
4. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect inlet manifold and hoses for leaks, repair as required.
5. Check coolant level and top up or replace as required.
6. Check fan belt and adjust as required.
7. Check gearbox oil and top up as required.
8. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).
9. Check wheel nut tension and tyre pressures, adjust as required.
10. Inspect hydraulic hoses and rams for leaks and repair as required.
11. Inspect machine for loose or broken bolts, tighten or replace as required.
12. Check brake and clutch adjustment and adjust as required. Request technical support if unsure how to carry out adjustments.

7.2.4 100 Hourly service

1. Change engine oil and filter.
2. Change fuel filter and clean inline strainer.
3. Change injector pump oil.
4. Change front diff and final drive oils.
5. Change hydraulic steering oil, clean strainer and refill with new oil.
6. Inspect radiator core for blockage, blow out and reinspect, clean as required.
7. Check head tension and tighten, as required, to manufactures specifications.
8. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect inlet manifold and hoses for leaks, repair as required.
9. Drain and flush cooling system, refill with new coolant.
10. Check fan belt and adjust as required.
11. Check gearbox oil and top up as required.
12. Check wheel nut tension and tyre pressures, adjust as required.
13. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).

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14. Inspect hydraulic hoses and rams for leaks and repair as required.
15. Inspect machine for loose or broken bolts, tighten or replace as required.
16. Check brake and clutch adjustment and adjust as required. Request technical support if unsure how to carry out adjustments.

7.2.5 250 Hourly service

1. Change engine oil and filter.
2. Change injector pump oil.
3. Change front diff and final drive oils.
4. Change hydraulic steering oil and clean strainer.
5. Change gearbox oil and replace filter.
6. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).
7. Check wheel nut tension and tyre pressures, adjust as required.
8. Check tappet clearance and adjust as required.
9. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect inlet manifold and hoses for leaks, repair as required.
10. Drain coolant, flush cooling system and refill with new coolant.
11. Inspect radiator core for blockage, blow out and reinspect, clean as required.
12. Inspect machine for loose or broken bolts, tighten or replace as required.
13. Inspect engine, transmission and final drives for oil leaks and repair as required.
14. Check brake and clutch adjustment and adjust as required. Request technical support if unsure how to carry out adjustments.

7.2.6 500 Hourly service

1. Change engine oil and filter, check oil pressure relief valve and adjust as required.
2. Change fuel filter and clean inline strainer.
3. Change injector pump oil, check spill timing and adjust as required.
4. Change front diff and final drive oils.
5. Change hydraulic steering oil, clean strainer and refill with new oil.
6. Change gearbox oil and filter, flush transmission housing and refill.
7. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).
8. Check wheel nut tension and tyre pressures, adjust as required.
9. Check tappet clearance and adjust as required.
10. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect inlet manifold and hoses for leaks, repair as required.
11. Drain coolant, flush cooling system and refill with new coolant.
12. Inspect radiator core for blockage, blow out and reinspect, clean as required.
13. Inspect machine for loose or broken bolts, tighten or replace as required.
14. Inspect engine, transmission and final drives for oil leaks and repair as required.
15. Check brake and clutch adjustment and adjust as required. Request technical support if unsure how to carry out adjustments.

7.2.7 1000 Hourly service

1. Change engine oil and filter, check oil pressure relief valve and adjust as required.
2. Change fuel filter and clean inline strainer.
3. Change injector pump oil, check spill timing and adjust as required.
4. Change front diff and final drive oils.
5. Change hydraulic steering oil, clean strainer, refill with oil.
6. Change gearbox oil and filter, flush transmission housing, and refill.
7. Grease loader pins, pedal shafts, tie rod ends, king pins, drive shafts, steering stops and water pump bearings (if grease nipple fitted).
8. Check wheel nut tension and tyre pressures, adjust as required.
9. Check tappet clearance and adjust as required.
10. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect inlet manifold and hoses for leaks, repair as required.
11. Drain coolant, flush cooling system and refill with new coolant.
12. Inspect radiator core for blockage, blow out and reinspect, clean as required.
13. Inspect machine for loose or broken bolts, tighten or replace as required.
14. Inspect engine, transmission and final drives for oil leaks and repair as required.
15. Check brake and clutch adjustment and adjust as required. Request technical support if unsure

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how to carry out adjustments.

7.3 Tractor storage

When your tractor is to be kept in storage for an extended period of time, carry out the following instructions.

• Engine maintenance should be carried out as per the instructions in the engine manual.

• Thoroughly clean the tractor. Brush a protective coating on any unpainted or scratched metal parts; store the tractor under cover, in a dry well-ventilated area.

• Ensure that all controls are in neutral, off or released position (including the ignition switch and the park brake).

• Do not leave the key in the starter switch.

• Make sure that all hydraulic piston rods are fully withdrawn.

• Fill the fuel tank to maximum level.

• Remove battery, clean battery top and coat terminal clamps and leads with vaseline. Ideally store the battery in a dim well ventilated area with temperature remaining above 10^{0}.

• Put stands or other supports under the front and rear axle in order to bear the tractors weight. With the tractor being propped up, it is advisable to deflate the tyres.

• Cover the tractor with non-waterproof canvas.

• Drain the radiator thoroughly for storage through a freezing winter.

7.4 Maintenance service

Scheduled maintenance must be completed by a qualified technician at the appropriate intervals and recorded on this sheet. Records of filters and oils purchased for each service must accompany this record sheet as proof of service. It is the responsibility of the purchaser to follow this maintenance schedule. Failure to complete maintenance intervals will void machine warranty.

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7.5 Maintenance check list

Tick or fill in the indicator circles as you progress through the service.

		Break-in											Since then	Refer-ence page
		30	50	100	150	200	250	300	350	400	450	500		
Engine oil	Change	O		O		O		O		O		O	every 100 Hr / annually	
Engine oil filter	Replacement	O		O		O		O		O		O	every 100 Hr / annually	
Fuel filter element	Replacement	O		O		O		O		O		O	every 100 Hr	
Fuel line	Check		O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Replacement*												every 2 year	
Injector pump oil	Change	O		O		O		O		O		O	every 100 Hr	
Front diff & final drive oil (4WD only)	Change	O		O		O		O		O		O	every 100 Hr	
Transmission fluid	Change	O				O				O		O	every 200 Hr / 2 year	
Hydraulic oil filter	Cleaning	O				O				O		O	every 200 Hr / 2 year	
Front axle case front-back play range	Check		O			O				O			every 200 Hr	
Power steering oil	Check	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Change	O		O		O		O		O		O	every 100 Hr	
Radiator	Cleaning	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Drain	O		O		O		O		O		O	every 100 Hr / annually	
Radiator hose	Check		O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Replacement			O		O		O		O		O	every 2 year	
Valve clearance	Check**	O		O			O					O	every 250 Hr	
Head tension	Check			O									1 x retension	
Air Cleaner element	Clean	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Replacement***			O		O		O		O		O	every 100 Hr / annually	
Fan belt tension	Check	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
Water pump (grease nipple) if supplied	Check	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
Wheel nuts / Tyre pressure	Check	O	O	O	O	O	O	O	O	O	O	O	visual check daily	
Toe-in	Check		O	O		O		O		O		O	every 100 Hr	
Greasing		O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
Clutch adjustment	Check / Inspect	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Adjust												adjust as required	
Brake adjustment	Check	O	O	O	O	O	O	O	O	O	O	O	every 50 Hr	
	Adjust												adjust as required	
Battery electrolyte level	Check		O	O	O	O	O	O	O	O	O	O	every 50 Hr	

* Replace only if necessary.

** Ask your dealer to perform this service.

*** Every year or every 4 cleaning cycles.

7.6 Recommended oil

Multi Farm 1 - Special Blend

Super Universal Tractor Oil



Multi Farm 1 (20w/40)
100% Australian Made
Engine & Tranmission Applications

Product Description

Multi Farm 1 (20w/40) is a premium quality “Super Tractor Oil Universal”, a truly universal multi-purpose tractor oil for use where a common oil is required for all applications in older model tractors, including Massey Ferguson and International.

Multi Farm 1 (20w/40) can be used for engines (where a 20W/40 grade is required), as well as main transmissions, agricultural hydraulic systems, tractor gearboxes and ancillary equipment.

Equipment operating under low temperature conditions will also benefit from the product’s ability to be pumped quickly to all moving parts of the equipment when it is first started.

Applications

Meets or exceeds the requirements for Engine Performance of:

- ACEA E2
- API CF-4, CF, CE, SF
- MB-Approval 227.1, 228.1, 228.3
- MIL-L-2104D
- MAN 271

As well as

- ACEA E7 level of Soot control and piston cleanliness
- ACEA E4-08 level of wear performance

Meets or exceeds the followings specifications for agricultural and off highway applications of:

- John Deere JDM J27 (Specification obsoleted 2005)
- Ford M2C159-B
- Massey Ferguson CMS M1145
- Massey Ferguson CMS M1144
- Massey Ferguson CMS M1139
- Allison C-4
- API GL-4
- Caterpillar TO-2
- ZF TE-ML 06B
- ZF TE-ML 06C
- ZF TE-ML 06D
- ZF TE-ML 07B

Specifications

Property	Typical Value
• Density, kg/L	0.892
• Colour	3.0
• Kinematic Viscosity at 40C, cSt	115
• Kinematic Viscosity at 100C, cSt	14.4
• Viscosity Index	130
• Sulfated Ash. %wt	1.55
• Zinc, %wt	0.16

NOTE: Values stated herein are typical and do not represent a specification.

Packaging

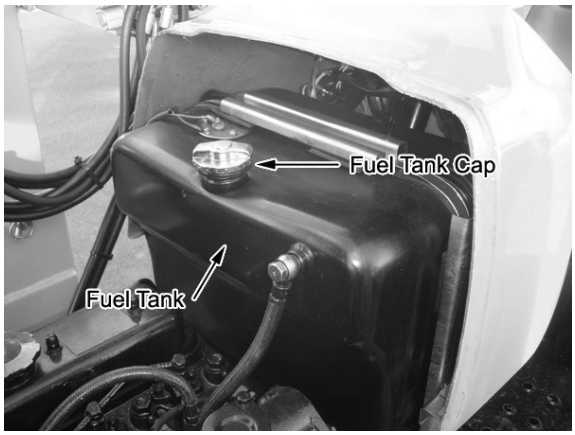
1000L IBC, 205 litre drum, 20 & 5 litre containers

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8. Maintenance

8.1 Fuel

8.1.1 Checking and refuelling



1. Check the fuel level. It is recommended that you use the top two thirds of the tank. Do not run the fuel tank dry. If air is sucked into the fuel system it will need to be 'bled' before normal operation can continue.

Fuel tank capacity

ZB25	25 L
ZB35 / ZB45	28 L

2. Drain and clean the tank if it becomes contaminated with water or fluids other than diesel.
3. Change fuel filters at the recommended interval or when the fuel system has become contaminated.

Safety precaution:

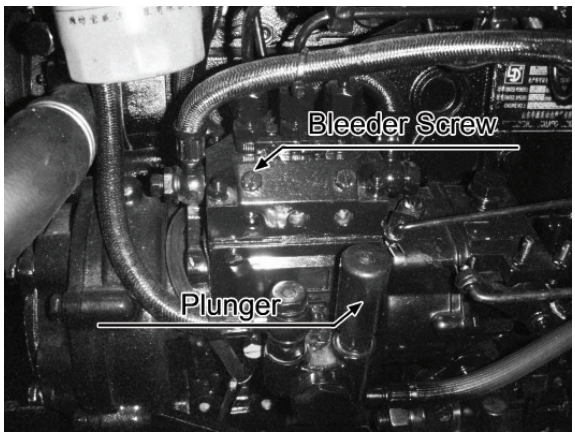
Stop the engine before adding fuel. Keep fuel away from sparks and flames.

Caution:

1. Only use clean diesel fuel. Use a filter funnel when filling from a jerry can or portable drum, to remove foreign particles and avoid damage to the injector pump.

8.1.2 Bleeding the fuel system

Air must be removed:
1. When the fuel filter is replaced and fuel piping has been disconnected.
2. When fuel is used up and tank is low or dry.
3. When driving on a slope and fuel has sloshed



away from the fuel outlet.

8.1.3 Bleeding procedure is as follows:

1. Fill the fuel tank with fuel, and open the fuel tap.
2. Twist open the air bleed screw plug on the fuel injection pump with one turn.
3. Push the plunger several times as required.
4. When bubbles disappear from fuel coming out of the plug, close the bleed screw.

8.1.4 Checking fuel lines

Although checking the fuel pipe connections is recommended every 100 service hours, it should be done every 6 months if operation does not exceed 100 hours in 6 months.
1. If the hose clamp is loose, apply a light coat of lubricant onto the threads and securely retighten it.
2. The fuel pipe is made of rubber and ages regardless of period of service. Change the rubber fuel pipe together with the hose clamp every two years and securely tighten.
3. If the fuel pipe and hose clamp are found damaged or degraded earlier than two years, then change as necessary.
4. After the fuel pipe and hose clamp have been changed, bleed the fuel system.

Safety precautions

1. Stop the engine when servicing the fuel system as described above.

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2. Check and maintain the fuel lines regularly as damaged or degraded fuel lines increase the risk of fire.

Caution:

The fuel pump is precision measuring equipment. When servicing the fuel system ensure that no dirt or dust enters the fuel pipes or injector pump as it may cause the pump to malfunction. Keep the work area, equipment and tools clean and tidy to help keep the open fuel system protected from dust and other contamination.

8.1.5 Replacing the spin on fuel filter

At the appropriate interval and no more that 100 hours change the fuel filter as follows:
1. Close the fuel filter tap.
2. Unscrew and remove the spin on fuel filter.
3. Apply a small amount of lubricant grease to the rubber seal of the fuel filter.
4. Firmly screw new fuel filter to the housing.
5. To bleed the air from fuel system, open the fuel tap and bleed the system at the injector pump as per 7.1 Bleeding the fuel system.

Caution:

If dust and dirt enter the fuel, the fuel pump and injection nozzles are subject to quick wear. To stop premature wear change the fuel filter as per maintenance checks above.

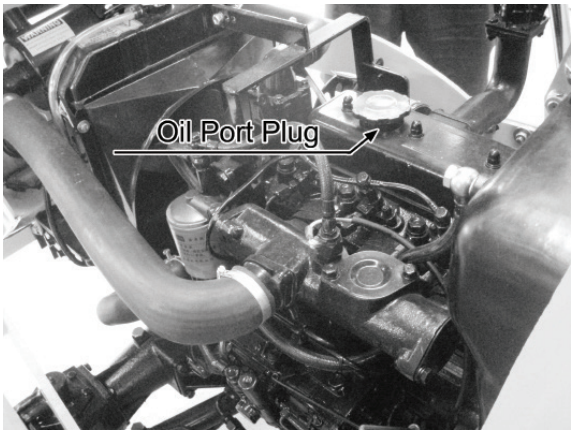
8.2 Engine oil

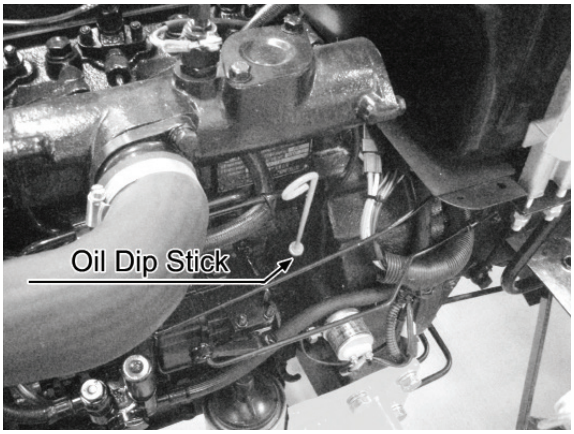
8.2.1 Oil level check and replacement

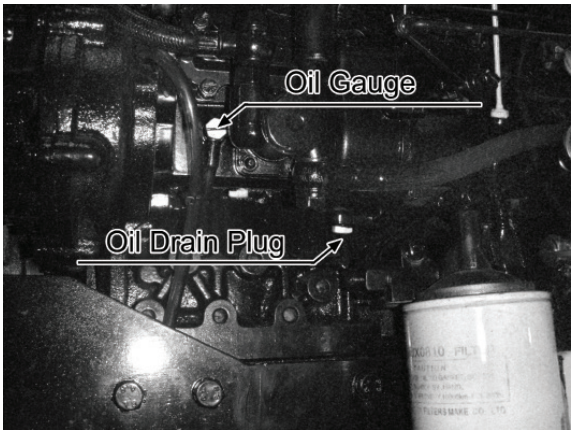
1. Check the engine oil either before starting the engine or at least 5 minutes after the engine has stopped.
2. To check the oil level, use the engine oil dip stick, wipe it clean, dip it and read the oil level which should be between the two notches.
3. If the level is low, add engine oil at the oil inlet on the tappet cover, to the required level.

Oil Capacity

ZB25	4.5 L
ZB35 / ZB45	4.5 L / 5 L





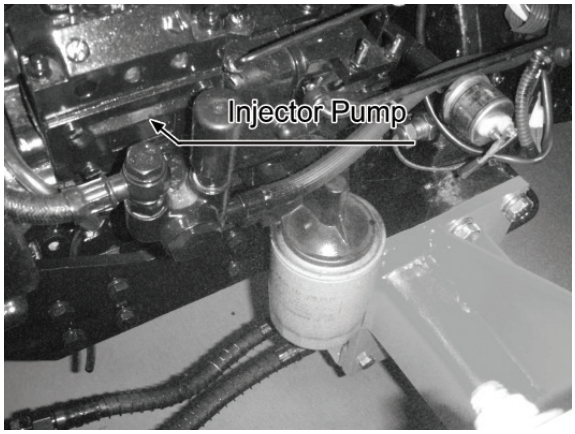


4. Never mix two different types of oil. When using an oil of different type, make or viscosity from the previous one, remove all of the old oil.
5. Use East Wind Multi Farm 1 Universal Oil or Valvoline Farmplus Universal Oil.

8.2.2 Engine oil change

1. Warm up the engine. Running the slasher for half an hour is a good way of warming the engine. Park the tractor in an appropriate place and switch it off.

Using a drain pan to collect the warm oil without spillage, remove the drain plug at the bottom of the engine. Allow the oil to drain completely.
2. Remove the spin on oil filter and replace it with a new one. Top up with new oil up to the upper notch on the oil dip stick.



Safety precaution:

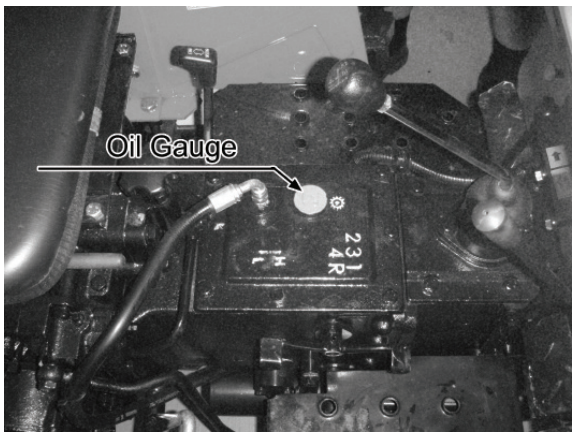
Before changing the oil, be sure to stop the engine.

8.3 Transmission oil

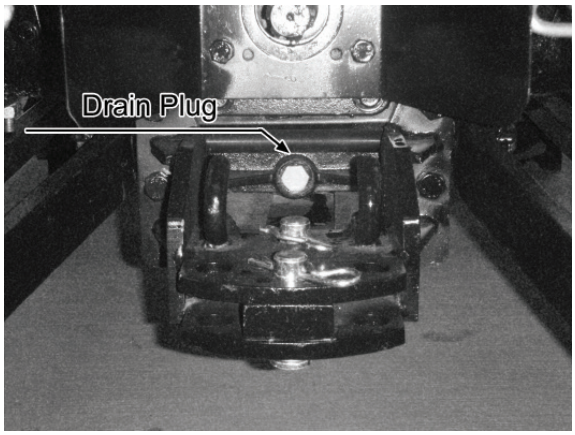
Pull out the transmission oil dip stick located on top of the transmission case and wipe it clean. Dip the stick to determine the oil level. The appropriate oil level is to the upper notch. If low, add oil through the oil port as required. Use East Wind Multi Farm 1 Universal Oil or Valvoline Farmplus Universal.

Transmission Oil Capacity

ZB25	20 L
ZB35 / ZB45	25 L



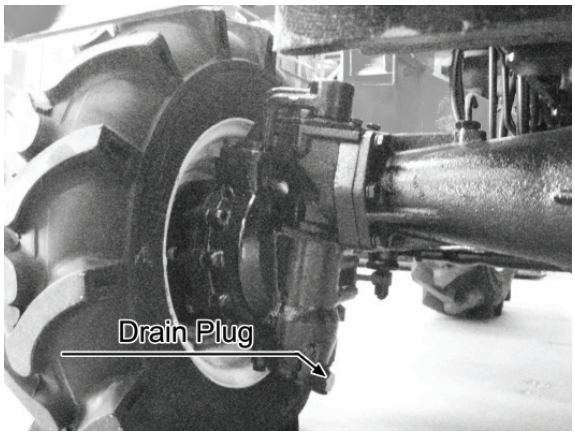
8.3.1 Transmission oil change



The oil in the transmission case is also used for the hydraulic drive system. To drain the transmission case, place an oil collection pan underneath the transmission case and remove the drain plugs at the back of the transmission case.
After draining, clean and replace the drain plug and fill with new East Wind Multi Farm 1 or Valvoline Farmplus Universal oil.

8.3.2 Replacing hydraulic oil filter

When changing the transmission oil, also replace the spin on hydraulic filter or clean the washable hydraulic filter as described in Chapter 6. Technical Maintenance. Hydraulic filters are located on the intake side of the hydraulic pump.
Ensure that dust and dirt is not introduced into the hydraulic/transmission oil, which could damage the high pressure hydraulic pump.



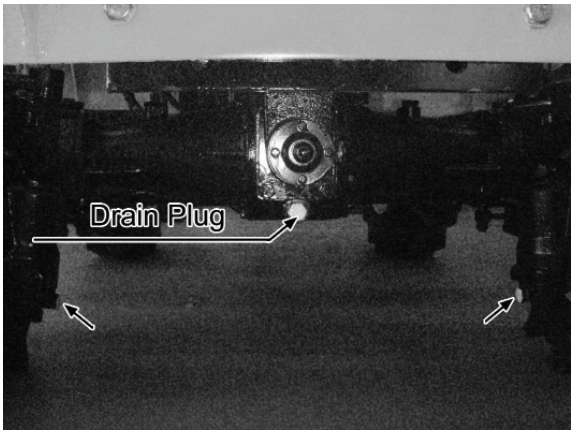
8.4 Changing front axle case oil

Remove the three drain plugs, at the bottom of axle case and the left & right final drive gear cases.

After draining replace the drain plugs and fill with new oil through the filler plug.
Type of oil: East Wind Multi Farm 1 or Valvoline Farmplus Universal.

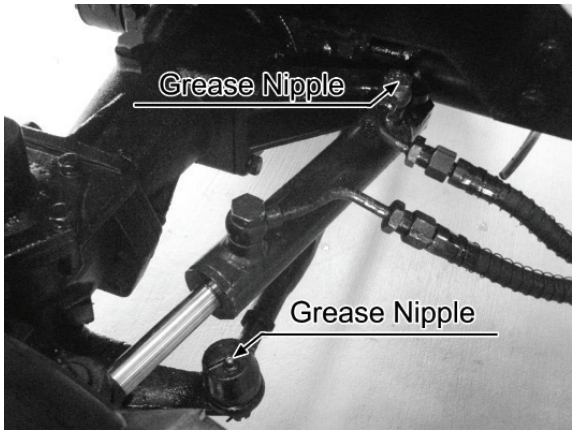
Front Axle Oil Capacity

ZB25	5.5 L
ZB35 / ZB45	6.0 L



8.5 Grease before operation

Grease the following points before starting.

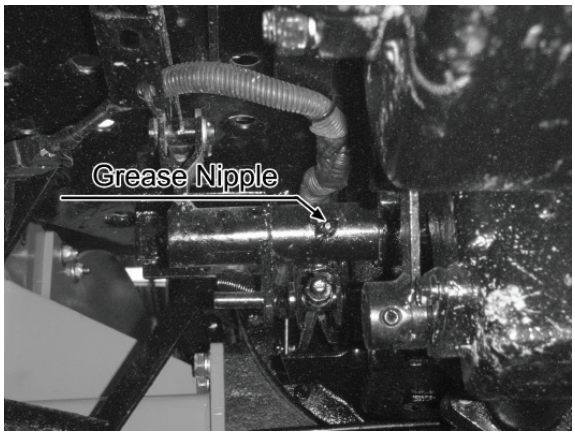


8.5.1 King pins, rod ends and centre pin

Grease the king pins, rod ends and centre pivot pin.

8.5.2 Pedal shafts

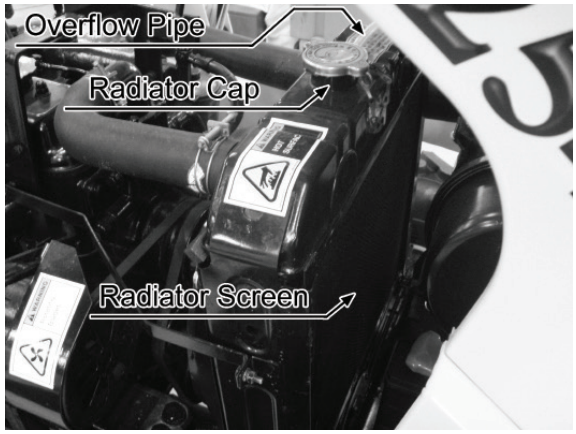
Grease the clutch and brake pedal shaft.



8.6 Radiator

Keeping your radiator maintained and in good working order is vital to minimizing engine problems. Keep the external core clean for air flow and transfer of heat. A slide out radiator screen is fitted to help keep the radiator core clean. Clean the core carefully to avoid damage to the cooling fins.

8.6.1 Checking, maintaining and changing the cooling water



1. When the engine is cold remove the radiator pressure cap and check to see that the coolant level is just below the port. If low, add coolant.

Coolant Capacity

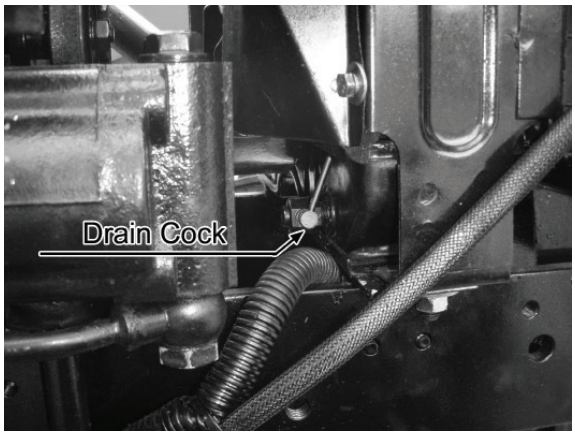
ZB25	10.0 L
ZB35 / ZB45	8.2 L

Caution:

1. Never fill with muddy or salt water. Only use clean water and a recommended radiator corrosion

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inhibitor such as Sky Cool.
2. Securely tighten the pressure cap.
3. When draining the used cooling water, open the water drain cock and the pressure cap at the same time. With the pressure cap closed, complete drainage is not achieved.



4. Be sure to close the radiator cap securely. If the cap is loose or improperly closed, it may leak under pressure causing a coolant shortage.
5. In Australia, Anti-freeze is not usually required. For normal operation, use a radiator corrosion inhibitor such as Sky Cool.

Safety precautions:

1. Do not change or flush the cooling system while the engine is running.
2. Do not open the radiator cap while the engine is running or immediately after the engine has stopped, otherwise, hot water may spray out, scalding the operator. Let the engine cool for at least 5 minutes before opening the cap, carefully.

8.6.2 Check and clean the radiator and screen

1. Insects, grass, seeds and chaff can get caught in the screen and block the radiator core, decreasing the cooling performance. Lift out the screen and clean.
2. Clean the core using compressed air being careful not to bend the fins.
3. Tighten the fan drive belt as required.

8.6.3 Check and replace radiator hoses.

1. Check radiator hose clamps for tightness every 150 hours, or 6 months.
2. If the hose clamp is loose, securely retighten and apply a light coat of rubber grease.
3. The radiator hoses are made from rubber and will deteriorate. They must be changed every two years. Replace the hose clamps and tighten as required.

8.6.4 Cleaning the cooling system

The water cooling system should be cleaned on the following occasions:
• At the first 30 hour service and every 100 hours following.
• When adding Inhibitor/anti-freeze additives.

8.6.5 Anti-freeze

If the coolant freezes in the engine cylinder and radiator, the engine may be damaged by cracking.
In cold weather when the temperature drops below 0ºC drain out the coolant or add the required amount of anti-freeze. Run the engine after the anti freeze is added to circulate it thoroughly.
1. There are two types of anti-freeze additives, permanent type (PT) and semi-permanent type (SPT). Be sure to use the permanent type.
2. When anti-freeze is used for the first time, thoroughly flush the cooling system by filling and draining the system two or three times using clean water. Be certain the cooling system is completely clean.
3. Check with your anti freeze supplier for the correct concentration for your conditions.

Cooling system capacity

ZB25	10.0 L
ZB35 / ZB45	8.2 L

4. Mix the anti-freeze well with clean water and then pour the mixture into the radiator. Run the engine to circulate it thoroughly
5. When the cooling water mixed with anti-freeze decreases due to evaporation, replenish with water only. If loss has been due to leaking, add water and anti-freeze mixture with the same mix ratio as the original preparation.

8.7 Tyre pressure

The tyres are the ‘shock absorbers’ of your tractor. Tyre pressure drops naturally over time and you can get punctures, so check them daily. The

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correct pressure will vary with the load. Use an air compressor or hand pump to inflate the tyres. If water ballast has been added, rotate the valve to the top of the rim before checking the pressure and inflating the tyre.

Lug tire pressure guide

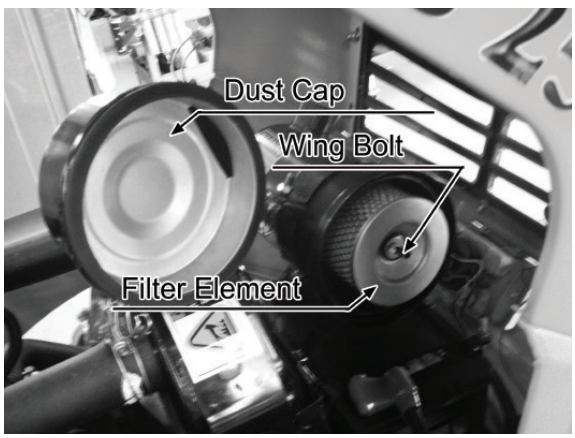
	Front	Rear
ZB 25 / 35 / 45	220-250kpa (2.2-2.5kg/cm²) approx 30psi	100-150kpa (1-1.5kg/cm²) approx 15psi

8.8 Air cleaner

1. As the air cleaner uses a dry element, never apply oil.
2. Do not let dust build up to more than half of the dust cup. Detach the dust cap and clean it away from the tractor every week in normal conditions and more frequently in dusty conditions.
3. Clean the element by tapping it lightly on an edge and blowing with compressed air from the inside.
4. Do not blow out the filter housing, use a damp rag.
5. Change the element every 50 hours in normal conditions and more frequently in dusty conditions.

Caution:

Be sure to refit the dust cup with the arrow embossed on the rear, upright. If the dust cup is improperly refitted, dust bypasses the dust cup, sticking directly to the element, badly affecting its service life. Make certain the seal on the filter element and dust cap is complete, intact and in position.



8.9 Battery

Keeping the battery maintained and charged adds to its service life.
1. If the battery is flat, the engine is difficult to start and the lights become dull. It is important to check the battery daily and recharge before problems occur.
2. Water in the electrolyte evaporates during recharging. Low electrolyte levels damages the battery, and excessive electrolyte spills over and damages the tractor body. If low, top up to the bottom of the plugs or level line indicated on the side of the battery, with distilled water.
3. To charge the battery, loosen the electrolyte caps to avoid building up internal pressure and connect the battery positive terminal to the charger positive terminal and the negative to the negative terminal, then recharge in the standard fashion. Remember to tighten the caps after charging.
4. A boost charge is only for emergencies. It partially charges the battery at a high rate in a short time. When using a boost-charged battery, it is necessary to recharge the battery fully as early as possible. Failure to do this adversely affects the service life of the battery.

Caution:

1. When connecting the battery, do not reverse the polarities. Connecting reverse polarities damages the battery and electrical system of the tractor.
2. When disconnecting the battery from the tractor, start with the negative terminal first. When connecting, start with the positive terminal. This avoids the possibility of short-circuiting, if a screwdriver or spanner bridges the terminal and body of the tractor.

Safety precaution:

Be careful not to allow battery acid to spill on your body or your clothes. Battery acid is hazardous and must be treated with care.

8.9.1 Directions for storage

1. When storing the tractor for long periods of time, remove the battery from the tractor, charge it, and adjust the electrolyte to the proper level. Store in a dry place off the cement out of direct sunlight.
2. Batteries lose charge while in storage. Recharge

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once a month in hot seasons and every two months in cold seasons.

8.10 Three point linkage adjustment

The tractor is fitted with single acting three point linkage. The linkage does not provide down pressure.

8.10.1 Top link

Implement 'tilt' can be adjusted by changing the length of the top link. For example, shortening the top link, tilts the implement forward, increasing the angle on the ripper tyne.

8.10.2 Lift arms

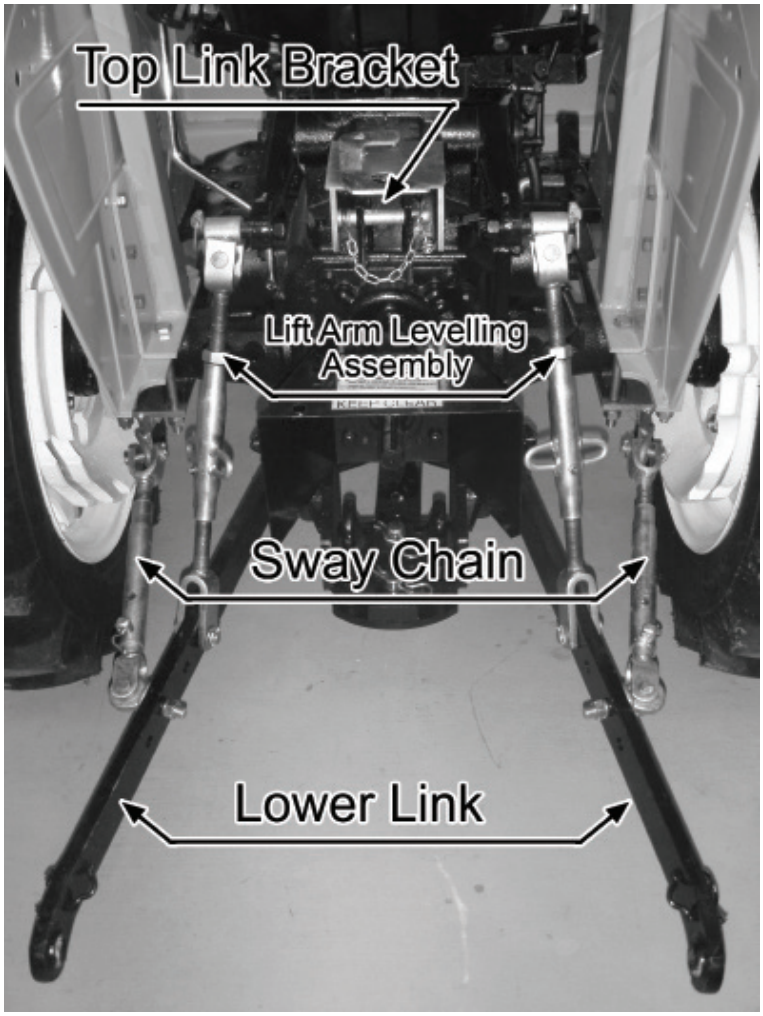
The lift arms can be adjusted by the lift arm levelling assemblies. Both left and right lift arm levelling assembly can be adjusted manually to level an implement. Once adjusted, tighten the lock nut to secure the setting.

8.10.3 Stabiliser links

The stabiliser links prevent linkage mounted implements from swaying and keeps the lift arms from rubbing against the inside of the rear tyres. The stabiliser links may be adjusted by turning the turnbuckle. If the stabiliser links are too loose, the implement will sway and possibly damage the linkage, implement or tyres. To properly set the stabiliser links, adjust the turnbuckle and insert the lock pin to allow minimal sideways movement.

Caution:

Over tightening the stabiliser links will unduly strain the three point linkage as the implement is moved up and down, potentially damaging or breaking the linkage components.



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9. Trouble-Shooting Guide

9.1 Engine

9.1.1 Diesel engine fails to start

a. Fuel system problems

Possible causes	Solutions
a. No fuel in fuel tank.	Add fuel.
b. Air in fuel system.	Bleed air, find out the reason and rectify.
c. Fuel system blockage.	Replace the fuel filter, and check the fuel delivery line.
d. Injector pump, plunger and barrel worn-out.	Replace with a new one.
e. Injector blocked or bad atomization.	Replace with a new one or service it.

b. Low compression

Possible causes	Solutions
a. Insufficient valve clearance or incorrectly adjusted decompression screw.	Adjust as per specifications.
b. Valve leak	Replace with new one or grind it.
c. Blown head gasket.	Replace with a new gasket and tighten cylinder head down as per specifications.
d. Piston ring by-pass.	Replace damaged rings, clean the sticking ones or reassemble them.

c. Other causes

Possible causes	Solutions
a. Incorrect injector pump or valve timing	Readjust as per specifications.
b. Low ambient temperature.	Use the glow plugs, or fill the radiator with hot water.
c. Wrong lube oil.	Use the engine oil as specified.
d. Water leaking into cylinder.	Check and fix damaged parts.

9.1.2 Oil pressure problems

a. Low or no oil pressure

Possible causes	Solutions
a. Oil level too low.	Refill as per specified.
b. Oil pump sucking air.	Check whether the oil intake is broken.
c. Oil filter malfunction.	Replace the oil filter.
d. Oil filter pressure regulator valve spring is out of shape or broken.	Replace it.
e. Oil pump warn out.	Replace it or reduce its paper gasket.
f. Too much bearing clearance.	Check and replace them as necessary.

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b. Excessive oil pressure

Possible causes	Solutions
a. Pressure regulator valve of filter is out of order.	Check and adjust or replace it.
b. Oil becomes too thick at low temperature.	Replace with specified engine oil.

c. No lube oil on the rocker shaft

Possible causes	Solutions
a. Oil pressure is too low	Make adjustment
b. Lubrication system is blocked	Find the problem and rectify.

9.1.3 Exhaust smoking

Normally, poor atomization in the combustion chamber causes black smoke. White smoke is often an indication to un-burnt fuel and possibly water in the cylinder. Burning engine oil in the cylinder will produce blue smoke.
a. Black Smoke
b. White smoke

Possible causes	Solutions
a. Injector nozzle slow or partially blocked.	Replace or service it.
b. Overloading the engine.	Adjust the gearing.
c. Incorrect fuel injection timing.	Adjust it.
d. Poor valve sealing or incorrect timing.	Check and adjust it.
e. Injector pump or injectors delivering fuel unevenly.	Check and service injectors and injector pump – specialist operation.
f. Air filter blocked.	Clean or replace as per maintenance schedule.
g. Worn cylinder liner and piston rings.	Replace them with new ones.

c. Blue smoke

Possible causes	Solutions
a. Low injector pressure results. in poor atomization with oil drops.	Check, adjust or replace the injector pump.
b. Cooling water temperature too low.	Cover the radiator with a cotton pad.
c. Water leaking in to cylinders.	Check, adjust or replace the injector pump. Cover the radiator with a cotton pad.

9.1.4 Engine low on power

Possible causes	Solutions
a. The third ring is fitted upside down.	Refit it, with the ring face marked ‘(up)’ upward.
b. Worn piston rings and valve guides.	Replace them with new ones.
c. Too much oil in the crankcase.	Drain oil to the correct level.

Generally, fuel and air problems will produce abnormal combustion resulting in low power.

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Possible causes	Solutions
a. Blocked diesel filter.	Clean it and replace filter element if necessary.
b. Poor atomization at nozzle.	Service or replace it.
c. Injector pump plunger and barrel worn.	Replace with a new one.
d. Governor spring deformed resulting in low engine rpm.	Adjust it or replace with a new spring.
e. Incorrect injector timing.	Adjust.
f. Blocked air filter.	Clean it or replace it if necessary.
g. Intake and / or exhaust valves leaking.	Check valve clearance and sealing effectiveness. Service as required.
h. Incorrect valve timing.	Check and adjust, or replace cam shaft if necessary.
i. Insufficient compression.	Replace cylinder liner or piston rings.

9.1.5 Abnormal sound.

Possible causes	Solutions
a. Injector timing advanced.	Adjust it
b. Injector needle valve seized.	Loosen the high-pressure fuel lines in turn to detect the defective injector (if any one is seized, then it will not give an injection sound), replace the seized one with a new one.
c. Valve clearance is too big, rhythmic valve hammering can be heard clearly.	Adjust the valves.
d. Piston knocks the bottom of cylinder head.	Replace the cylinder head gasket with a thicker one.
e. Valve spring is broken.	Replace the broken one with a new one.
f. Connecting rod bearing or the small end bush is too loose.	Check and replace the failed parts.
g. Too much clearance between piston and cylinder liner.	Replace with a new piston or cylinder liner.

9.1.6 Serious vibration

Normally, caused by uneven cylinder firing, or by incorrect assembly.

Possible causes	Solutions
a. Large differences in compression ratio and fuel metering across the cylinders.	Check and make necessary adjustment.
b. Air in fuel lines.	Bleed air.
c. Diesel engine is misaligned at the mountings, or mounting bolts are somewhat loose.	Align the engine and fasten the mounting bolts again.
d. Piston knocking makes engine run rough.	Check injector nozzles and fuel timing.

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9.1.7 Engine overheating

Possible causes	Solutions
a. Piston ring blow past.	Replace with new rings.
b. Incorrect engine oil level or contaminated with water.	Check and replace the engine oil or adjust the oil level by draining or filling to the required level.
c. Bearings are fitted too tight	Check and adjust.
d. Water pump is broken or its drive belt is too loose, resulting in water overheating.	Check and adjust.
e. Temperature thermostat is out of order, or insufficient coolant in tank.	Check and replace the thermostat or replenish coolant.
f. Cylinder head gasket is blown.	Replace it with a new one.
g. Too much scale in the water jacket.	De-scale the water jacket.
h. Injector seized.	Replace it with a new one.
i. Engine overloaded.	Adjust the gearing.
j. Injector timing is too advanced.	Adjust as per specification.

9.1.8 Engine using too much oil

Possible causes	Solutions
a. Incorrect oil specification.	Use engine oil as specified.
b. Piston rings worn out.	Replace them with new ones.
c. Piston ring sticking, oil return hole in piston ring groove plugged up.	Remove carbon deposit and clean the piston.
d. Rear main seal leaking.	Check, replace with new rear seal and its cover.
e. Oil level too high.	Drain oil to correct level.

9.1.9 Engine oil level rising

Possible causes	Solutions
a. Water leakage from cylinder head gasket.	Check and replace it. Flush the crankcase.
b. Water leaking from cylinder head or welsh plug in the engine block.	Replace it with a new welsh plug. Flush the crankcase.

9.1.10 Runaway engine

Possible causes	Solutions
a. Injector pump oil delivery control rod seized at the maximum position.	Check and repair it.
b. Governor Sliding disc sleeve seized.	Check and replace it.
c. Fuel rack broken, seized or separated from fork.	Check and replace it.
d. Too much lube oil in the injector pump.	Drain out to the required level.
e. Too much lube oil entering into cylinder.	Check and repair it.

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9.1.11 Engine hunting

Possible causes	Solutions
a. Uneven diesel delivery to each cylinder, fuel delivery adjusting fork screw loosened.	Check and adjust it.
b. Too much clearance of the fork adjusting arm and the sliding disc worn out.	Replace them.
c. Sleeve of sliding disc dragging.	Use fine sand cloth to polish it or replace it.
d. Too much cam shaft axial clearance.	Adjust with copper shims.
e. Air in the fuel lines.	Bleed the fuel lines.

9.1.12 Engine stalls

Possible causes	Solutions
a. Air in the fuel lines or filter element blocked.	Check, bleed air or replace the filter element.
b. Piston seizing.	Check and replace it.
c. Bearing bush burning-out.	Check and replace it.
d. Governor, plunger or sliding disc sleeve seized.	Check, repair or replace them.

9.2 Chassis

9.2.1 Clutch

a. Clutch slip

Trouble & possible causes	Solutions
a. Friction disc stained with oil.	Wash friction disc with petrol and repair the oil leak.
b. Pressure plate spring weakened or broken.	Replace with a new one.
c. Limited or no clutch pedal free travel.	Readjust pedal free travel as specified.
d. Clutch plate warped, worn unevenly or worn out.	Rectify or replace with a new one.
e. Ends of the three release levers misaligned.	Adjust and align the lever ends in the same plane.

b. Clutch disengaged incompletely, resulting in difficult gear shifting or noisy gear shifting and tractor vibrating and starting to move.

Trouble & possible causes	Solutions
a. Excessive free travel of clutch pedal.	Adjust the pedal free travel as specified.
b. Clutch plate excessively warped.	Rectify or replace with a new one.
c. Ends of the three release levers not aligned in the same plane.	Adjust the release levers.
d. Clutch plate broken.	Replace with a new one.

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c. Vibration and noise in clutch

Trouble & possible causes	Solutions
a. Release lever spring broken.	Replace with a new spring.
b. Release bearing Insufficiently lubricated or damaged.	Lubricate or replace with a new one.
c. Clutch plate spline worn or clutch splined shaft worn out.	Replace the worn out parts with new ones.
d. Clutch front bearing damaged.	Replace with a new one.

9.2.2 Brake

a. Ineffective braking

Troubles & possible causes	Solutions
a. Brake lining stained with oil.	Wash brake lining with gasoline and repair oil leakage.
b. Brake lining or brake drum worn out.	Replace the worn out parts with new ones.
c. Brake cam worn out excessively.	Replace with a new brake cam.
d. Excessive pedal free travel.	Readjust pedal free travel.

b. Brake bias

Brake disengages incompletely and gets overheated

Troubles & possible causes	Solutions
a. Brake shoe return spring weakened.	Replace with new springs.
b. Brake pedals unable to return.	Check whether the pedal return spring is damaged, or operating shaft is seized and fix as required.
c. Limited or no pedal free travel.	Readjust the pedal free travel.

9.2.3 Gearbox

a. Abnormal sound in gearbox

Troubles & possible causes	Solutions
a. Gearbox bearings or needle rollers excessively worn out or damaged.	Check and replace worn out bearings or needle rollers with new ones.
b. Abnormal meshing of main drive gears.	Examine gear meshing zone print and backlash, adjust them as per specifications.
c. Spline shafts and sliding gears worn out.	Replace worn out parts with new ones.

b. Gears jumping out

Troubles & possible causes	Solutions
a. Selector fork excessively worn out or deformed.	Replace with a new one.
b. Fork shaft locking spring weakened.	Replace with a new one
c. Tooth profile or spline excessively worn out.	Replace worn out parts with new ones.

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c. Overheating gearbox

Troubles & possible causes	Solutions
a. Too much or too little backlash.	Adjust as required.
b. Insufficient or excessive lubrication oil.	Add or drain the transmission oil to the specified level.
c. Old or contaminated oil.	Change oil and filter.

9.2.4 Wheel and steering system

a. Front - wheel wobble

Troubles & possible causes	Solutions
a. Excessive free - play of the front wheel bearing or kingpin.	Adjust bearing clearance or replace kingpin bush with a new one.
b. Toe - in, out of alignment.	Readjust toe - in.
c. Steering ball joint excessively worn.	Replace the ball joint with a new one.
d. Pitman arm and ball joint nut loose.	Check and tighten the nut.

b. Premature front tyre wear

Troubles & possible causes	Solutions
a. Incorrectly adjusted toe - in.	Readjust toe - in.
b. Low front tyre pressure.	Inflate tyres to specified pressure.

9.2.5 Full hydraulic steering gears

a. Heavy steering

Troubles & possible causes	Solutions
a. Insufficient oil delivery from the hydraulic pump.	Check the hydraulic pump suction line and filter. Fix as required.
b. Air bubbles in the hydraulic system.	Bleed air out of the system, check the suction pipe and rectify any leakage.
c. Power steering oil low.	Refill oil to the required level.
d. Power steering oil too thick – high viscosity.	Replace with the specified oil.

b. Oil leakage

Troubles & possible causes	Solutions
a. O - ring seals damaged.	Replace with new ones.
b. Banjo fittings - bolts and nuts loose.	Tighten the bolts and nuts as required.
c. Poor welding.	Re-weld.

c. Steering failure

Troubles & possible causes	Solutions
a. Incorrect mounting position for the rotor and follow-up shaft.	Return to the dealer for repairing.
b. Failure of the steel ball check valve in valve body.	Return to the dealer for repairing.
c. Fails to steer manually.	Return to the dealer for repairing.

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9.2.6 Hydraulic system

a. Three point linkage not lifting

Troubles & possible causes	Solutions
a. Oil level too low or incorrect specification of oil in the transmission.	Add or replace with specified oil to the correct level.
b. Oil filter blocked	Replace the filter.
c. Air being sucked into hydraulic system.	Bleed air in the system and tighten connector or replace seal ring.
d. Oil pump seal ring badly worn out causing serious internal leakage.	Replace the oil pump seal ring.
e. Main control valve seized.	Operate lift control lever several times and adjust the main control valve with a screw driver, if still seized, disassemble and service as required.
f. Main control valve badly worn out.	Replace worn out parts.
g. Safety valve failure.	Readjust or repair safety valve.
h. Cylinder leaking seriously.	Replace seal ring or replace the worn out parts as necessary.
i. Leakage at distributor seal rings.	Replace seal rings.

b. Implement not lowering

Troubles & possible causes	Solutions
a. Main control valve seized or the response control valve is closed.	Operate lift control lever several times and adjust the main control valve with a screw driver, if still seized, disassemble and service as required, or screw up the response control valve to the highest position.

9.3 Electrical system

9.3.1 Battery

a. Insufficient battery power

Troubles & possible causes	Solutions
a. Low electrolyte level.	Add electrolyte to specified level.
b. Short circuit among the battery terminals.	Clean off deposits, change electrolyte and replace terminal clamps.
c. Terminals sulphurised.	Pour hot water over terminals and lubricate with grease.
d. Alternator or regulator failure.	Repair alternator or regulator.
e. Poor electrical connection.	Check wire connections and rectify problem.

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b. Battery overheat

Troubles & possible causes	Solutions
a. Short circuit between terminals.	Clean off deposits, change electrolyte and replace terminal clamps.
b. Overcharging the battery.	Check and adjust regulator.

c. Battery capacity evidently decreased

Troubles & possible causes	Solutions
a. Terminals sulphurised.	Pour hot water over terminals and lubricate with grease.
b. Sulphuric acid contaminated.	Change with the proper electrolyte as specified.
c. Terminals damaged, short circuit to the mounting bracket.	Replace with new terminal clamps and insulate from battery mounting clamp.

9.3.2 Alternator

a. Alternator not working

Troubles & possible causes	Solutions
a. Rectifier damaged.	Check and replace with a new one if necessary.
b. Carbon brush seized and not contacting the collector ring.	Examine carbon brush size and spring force, repair or replace as required.
c. Broken circuit, short circuit of stator or rotor windings, or poor insulation of earth circuit.	Repair or replace with new ones.

b. Low current output form the alternator

Troubles & possible causes	Solutions
a. Generator belt too loose.	Adjust belt tension or replace worn out belt with a new one.
b. Rectifier damaged.	Replace damaged rectifier with a new one.
c. Poor contact of carbon brushes.	Repair or replace.
d. Short circuit of partial windings of rotor or stator.	Repair or replace rotor or stator windings with new ones.

c. Alternator output current fluctuating

Troubles & possible causes	Solutions
a. Alternator belt too loose.	Adjust belt tension or replace the belt with a new one.
b. Rotor and stator windings damaged causing intermittent short circuits.	Repair or replace rotor or stator windings with new ones.
c. Carbon brush spring weakened causing poor electrical contact.	Repair or replace carbon brush spring with a new one.
d. Terminals loosened.	Check and repair.

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d. Abnormal sound from alternator

Troubles & possible causes	Solutions
a. Alternator mounted incorrectly.	Remount the generator correctly.
b. Alternator bearings damaged.	Repair or replace carbon brush spring with a new one.
c. Rotor hitting stator or other parts.	Check and repair.

9.3.3 Starter

a. Starter motor not working

Troubles & possible causes	Solutions
a. Poor or broken electrical connection in the wiring loom or ignition switch.	Solder broken connection or replace the wire. Clean and tighten all electrical connecting points.
b. Fuse blown.	Repair the cause of the broken fuse, replace with the fuse of specified current rating.
c. Battery nearly flat	Charge battery.
d. No contact of carbon brushes with the commutator.	Check carbon brushes and adjust brush spring force to get good contact.
e. Inner short circuit of starter.	Remove short circuit.
f. Solenoid switch contacts damaged.	Repair / replace solenoid switch contacts.

b. Starter running continuously after engine being started

Troubles & possible causes	Solutions
a. Solenoid switch contacts damaged.	Repair / replace solenoid switch contacts.
b. Sticky ignition switch.	Lubricate or replace ignition switch.

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10. Loader Operation

10.1 Tractor Preparation

Attachment / Compatibility

Dongfeng 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 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) cab or frame for your protection. See your tractor operator's manual for correct seat belt usage.

Tractor Hydraulic System

The 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 tractor 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, etc. 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.

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

Wheel Track 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.

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10.2 Loader Attachment and Removal

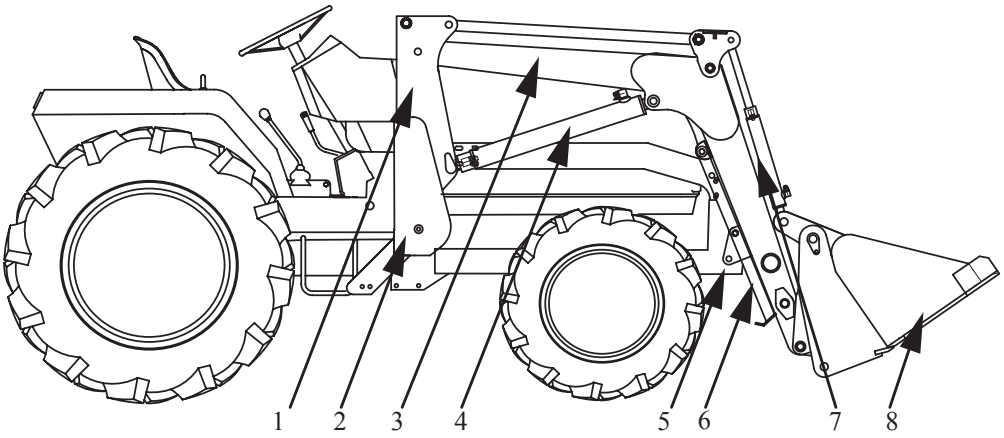


Fig 10.2 Main components of the loader

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

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.

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.

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.

Caution: Never allow weight of tractor to be put on the parking legs / stand when mounting loader

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10.2.1 Attaching the 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 the oil input and output correctly.
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).
6. Start the tractor, raise the loader off the ground and put bucket in dumped position. Lower loader to position bucket cutting edge on ground and shut the tractor OFF. Remove the parking legs (refer photo 5).and return to storage position.



Photo 1

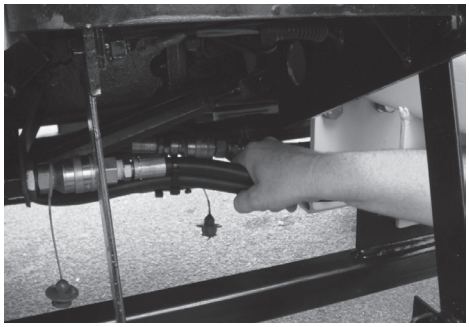


Photo 2



Photo 3



Photo 4



Photo 5

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10.2.2 Removal of Loader

NOTE – The removal of bucket only can be done very quickly and easily (See 3.2.4). For your convenience, only remove complete loader assembly if absolutely necessary.

1. Position loader on hard 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 5). Re-use pins to secure parking legs in “down” position.
3. Raise loader and fully retract bucket. Lower the loader until the parking legs make contact on the ground. Tip the bucket until bucket cutting edge and the parking legs touch the ground.
4. 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.)
5. Start the tractor and slowly retract the bucket cylinders until the bottom of the bucket rests firmly on the ground.
6. 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.
7. Shift the control valve into the neutral position.
8. Check that the uprights will clear the front tyres. If additional clearance is required, extend the lift cylinders (refer photo 3).
9. Shut the tractor OFF and disconnect the hydraulic hoses to ensure they will be clear of the tractor. Connect couplers T1 to T1 on the tractor.
10. Start the tractor and carefully back out of the loader.
11. Provide additional supports (not included) under both upright assemblies to ensure loader unit is stable and will not topple over (refer photo 1).

10.2.3 Installation of Bucket

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.

10.2.4 Removal of Bucket

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 6).
3. Turn tractor on. Raise leading edge bucket 50mm off ground at a 45o dump position.
4. Turn tractor off. Pivot lever upwards to release lower lock pins (refer photo 7).
5. Turn tractor on. Use hydraulic control to “unhook” bucket from boom (refer photo 8).

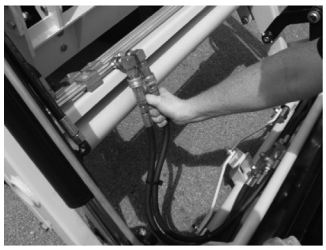


Photo 6



Photo 7

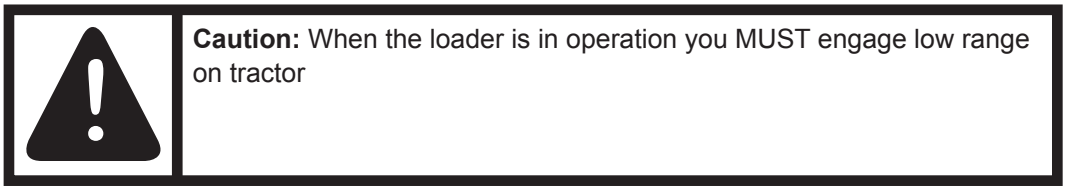


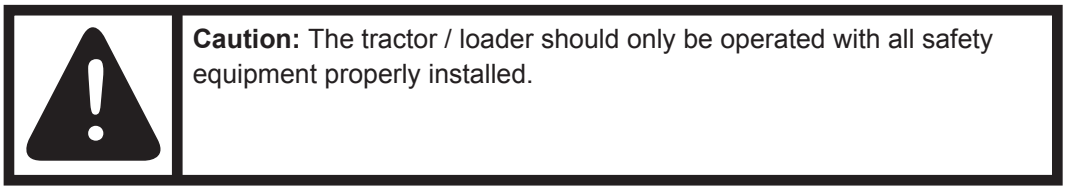
Photo 8

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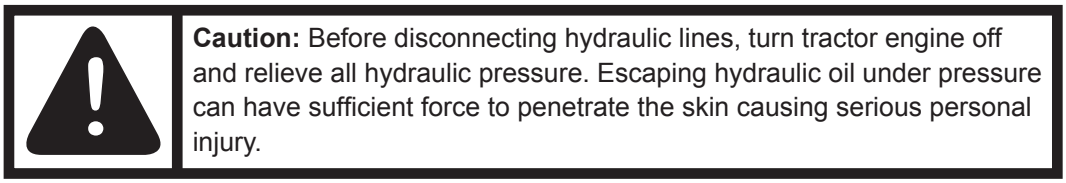
10.3 Operating the Loader

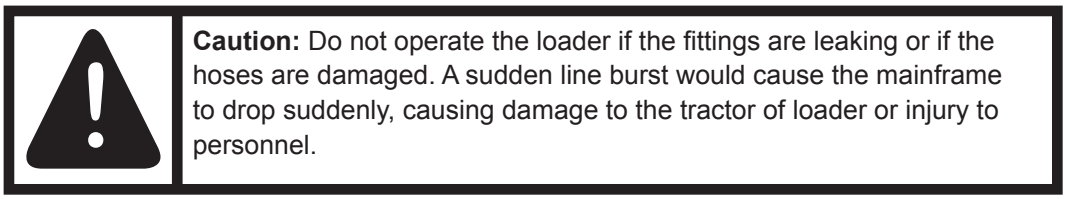




Initial Loader Operation

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





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.

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Transporting a Loader Bucket

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

> Caution: When using a loader, be aware of bucket location at all times. When raising a loader with bucket rolled back, material can dump onto tractor causing damage to tractor or injury to operator.

Scraping

When scraping, the float position must be used to keep the bucket on the ground and at 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" or "Backgrading", 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 "Backgrading" and increases loader efficiency during "Backfilling".

Control Rate of Loader Functions

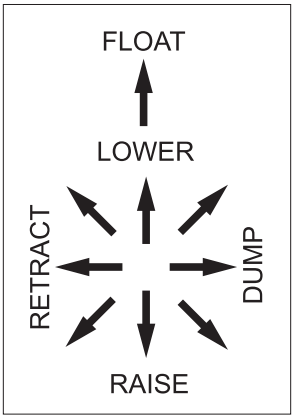
By "feathering" the control lever, reduced operational speeds can be achieved. This action controls the position of the valve spool in the valve body and regulates flow of oil to / from cylinders. It is important to use this practice when lowering loader boom with a loaded bucket of material.

Loader Hydraulic Controls

The loader hydraulic valve features dual lever controls. Refer to the diagram to reference the loader control functions.

The diagram located on the right of the control valve is visible when operating the valve.

The upper lever controls boom, whereas the lower lever opens and closes of the bucket.



BOOM CONTROL
UPPER LEVER



BUCKET CONTROL
LOWER LEVER

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" and will remain there until the operator pulls 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.

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11. Loader Maintenance

11.1 Maintenance

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 9.

Caution: Do not service / adjust the loader while it is operating. Remove all power from both tractor and loader while servicing the loader.

Caution: Before disconnecting hydraulic lines, turn tractor off and relieve 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.

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.



Photo 1

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 East Wind dealer for suitable disposal / recycling options.

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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 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.
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 recommendations.

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 result in bucket not being 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.

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11.2 Storing 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 couplers to prevent dirt contamination of the hydraulic oil system or connect them together.

11.3 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 if necessary.
4. Tighten loose bolt 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 operate.

11.4 General torque specification

American standard cap screws with UNC or UNF threads			Metric cap screws		
SAE grade No.		GR 5 or GR 8	Property class		8.8 Approx. SAE GR5
1/4	(N-m) (kgf-m) (ft-lbs)	9.8 to 11.7 1.0 to 1.2 7.2 to 8.6	M6	(N-m) (kgf-m) (ft-lbs)	9.8 to 11.7 1.0 to 1.2 7.2 to 8.6
5/16	(N-m) (kgf-m) (ft-lbs)	19 to 23.1 1.9 to 3.4 14 to 17	M8	(N-m) (kgf-m) (ft-lbs)	19 to 23.1 1.9 to 3.4 14 to 17
3/8	(N-m) (kgf-m) (ft-lbs)	33.9 to 40.7 3.5 to 4.2 25 to 30	M10	(N-m) (kgf-m) (ft-lbs)	33.9 to 40.7 3.5 to 4.2 25 to 30
1/2	(N-m) (kgf-m) (ft-lbs)	88.1 to 105.8 9.0 to 10.8 65 to 78	M12	(N-m) (kgf-m) (ft-lbs)	88.1 to 105.8 9.0 to 10.8 65 to 78
9/18	(N-m) (kgf-m) (ft-lbs)	122 to 146.4 12.4to 14.9 90 to 108	M14	(N-m) (kgf-m) (ft-lbs)	122 to 146.4 12.4to 14.9 90 to 108
5/8	(N-m) (kgf-m) (ft-lbs)	176.3 to 211.5 18.0to 21.6 130 to 156	M16	(N-m) (kgf-m) (ft-lbs)	176.3 to 211.5 18.0to 21.6 130 to 156

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12. Loader Trouble Shooting

Trouble	Possible causes	Solution
Lifting and bucket cylinders not working	1. Transmission short of lube oil (oil level below the scale line on dipstick).	Replenish oil.
	2. Hydraulic hoses connected improperly.	Check and correct hydraulic hose connections.
	3. Low system pressure from hydraulic pump.	Check system pressure. Replace or repair pump.
	4. Control valve linkage broken.	Inspect. Repair as required.
	5. Quick disconnect coulpers are not fully connected.	Check coulpe connections. Replace coulpers 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.

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Trouble	Possible causes	Solution
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 load.
	5. Quick disconnect coupler restriction or coupler “Flow Checks”	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 need.
	8. Control valve leaking internally.	Replace control valve.
Lifting and/or bucket cylinders operate in wrong direction relative to control vale lever position.	Hydraulic hoses connected incorrectly.	Correct hydraulic hose connections.
Loader drops with control valve spool in “centred” 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 centred position.	1. Control lever linkage binding.	Determine origin of binding and repair.
	2. Control valve spool centreing is broken.	Replace centreing 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 inflation 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 when necessary
	3. Incorrect lube oil in use or impurity in oil.	Replace with the oil of correct specification.

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Trouble	Possible causes	Solution
Excessive foam in oil tank	1. Improper hydraulic oil usage.	Refer to tractor operator'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.
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.

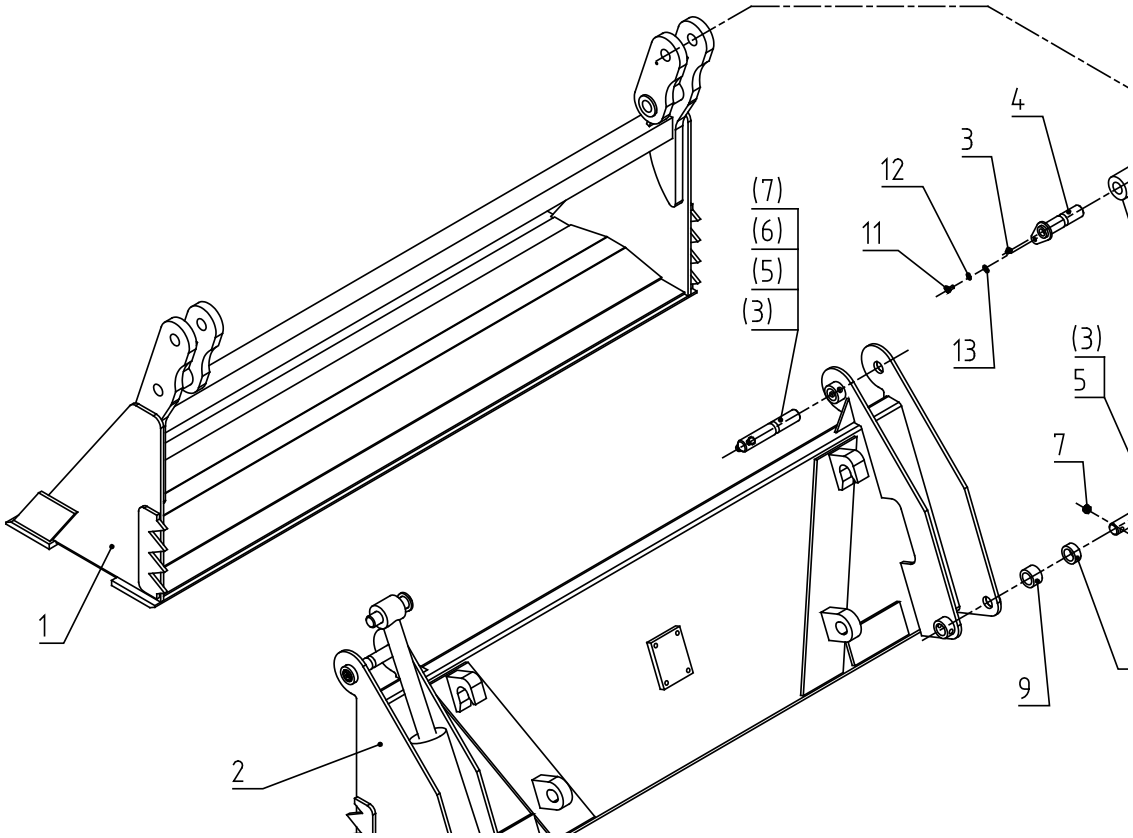
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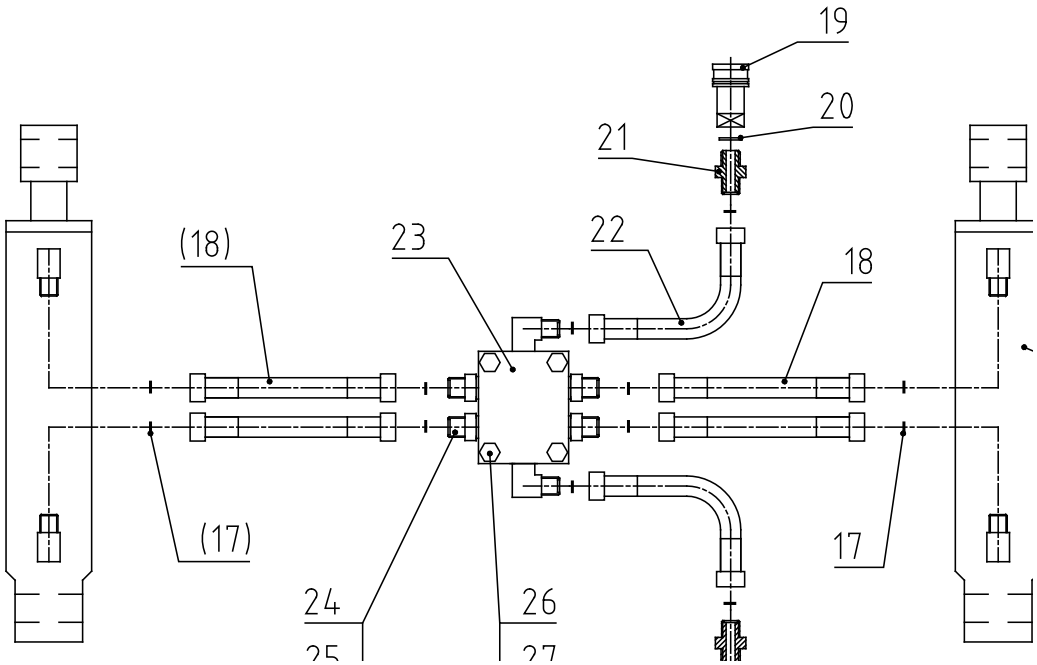
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13. Loader Parts

13.1 BUCKET ASSEMBLY





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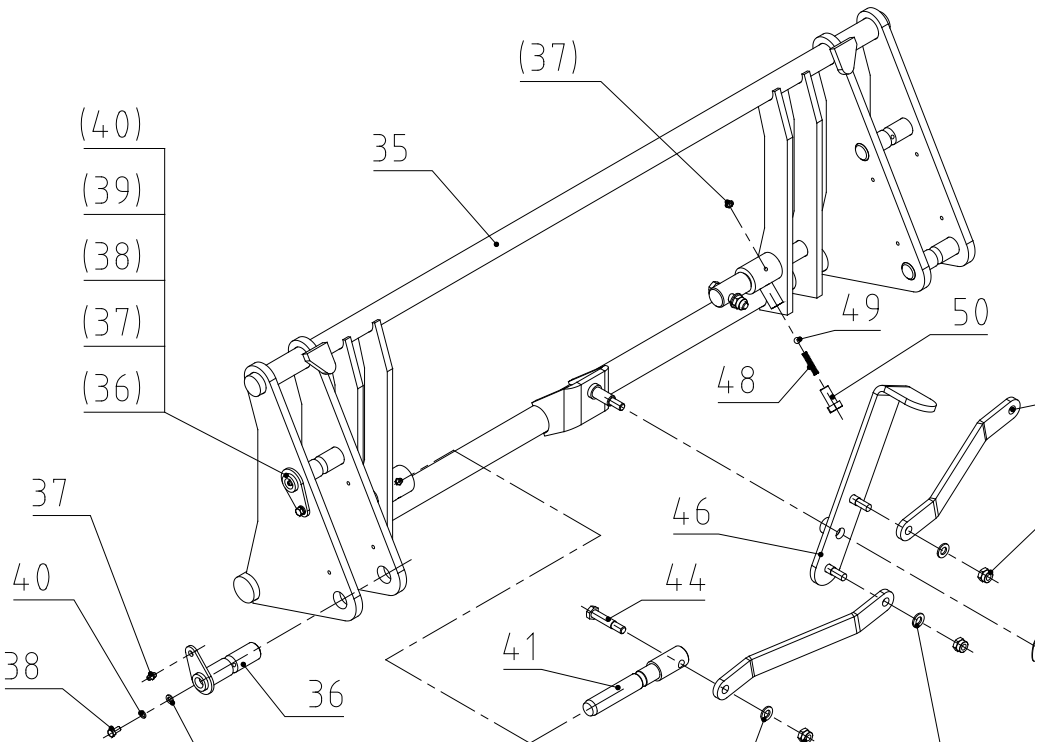
13.1 BUCKET ASSEMBLY

Item No.	Part No.	Name & Specification	QTY	Comment
1	DKT147.011	Front bucket weldment	1	
	DKT152.011	Front bucket weldment	1	
	DKT167.011	Front bucket weldment	1	
2	DKT147.012	Rear bucket weldment	1	
	DKT152.012	Rear bucket weldment	1	
	DKT167.012	Rear bucket weldment	1	
3	JB/T7940.1-M6	Zerk M6	6	
4	DKT147.101	Pin 105	2	
5	DKT147.102	Pin 152	4	
6	GB5782- M8x50	Bolt M8x50	4	
7	GB/T889.1-M8	Nut M8	4	
8	DKT142.013	Cylinder	2	
9	DKT147.106	Space 21	2	
10	DKT147.107	Space 17	2	
11	GB5783-M6X12	Bolt M6X12	2	
12	GB93-6	Spring washer 6	2	
13	GB97.1-6	Plain washer 6	2	
17	GB3452.1-11x2.4	O-ring 11x2.4	12	
18	DKT147.014	Hose 705	4	
	DKT152.014	Hose 730	4	
	DKT167.014	Hose 805	4	
19	GB8606-XZG3/8-F	Quick coupling F	1	
20	JB4454-17	Gasket 17	2	
21	SL25.40.112	Adapter M16-G3/8	2	
22	DKT142.015	Hose 800	2	
23	DKT142.104	Valve	1	
24	DKT142.103	Adapter M16-M18	4	
25	JB4454-18	Gasket 18	4	
26	GB5782- M8X55	Bolt M8X55	4	
27	GB93-8	Spring washer 8	4	
28	GB8606-XZG3/8-M	Quick coupling M	1	

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13.2 TOOL CARRIER ASSEMBLY



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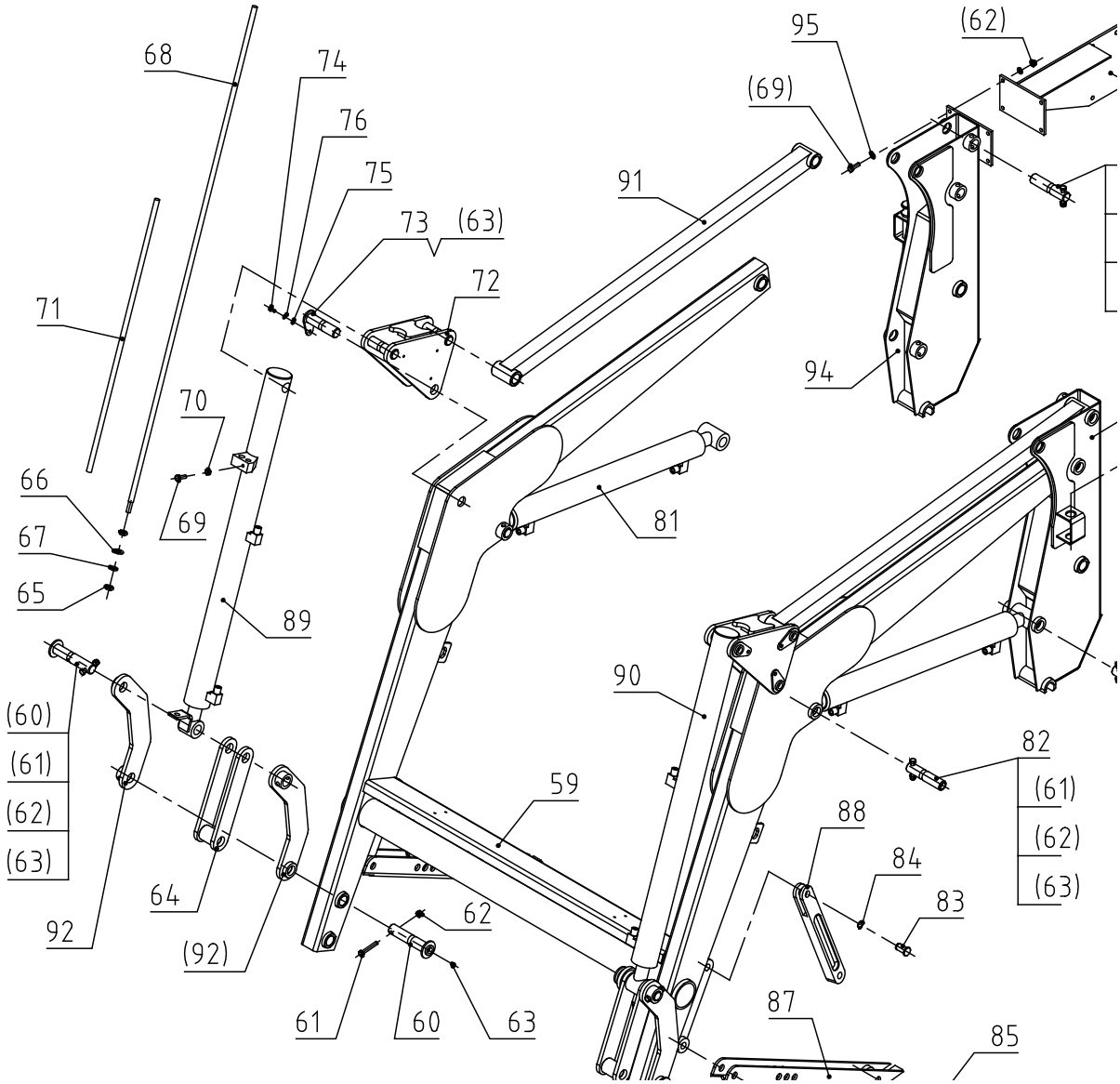
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13.2 TOOL CARRIER ASSEMBLY

Item No.	Part No.	Name & Specification	QTY	Comment
35	CT10.011-1	Tool carrier weldment	1	
36	DKT147.101	Pin 105	4	
37	JB/T7940.1-M6	Zerk M6	6	
38	GB5783- M6x12	Bolt M6x12	4	
39	GB97.1-6	Plain washer 6	4	
40	GB93-6	Spring washer 6	4	
41	CT10.102-1	Glide pin	2	
42	GB/T889.1-M10	Nut M10	5	
43	GB97.1-10	Plain washer 10	5	
44	GB/T27-M10x55	Bolt M10x55	2	
45	CT10.103	Pull plate	2	
46	CT10.012	Handle weldment	1	
47	CT10.104	Disk spring	1	
48	CT10.105-1	Stop spring	1	
49	CT10.106-1	Bearing ball φ8	1	
50	GB5783- M12x25	Bolt M12x25	1	

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13.3 ARM ASSEMBLY



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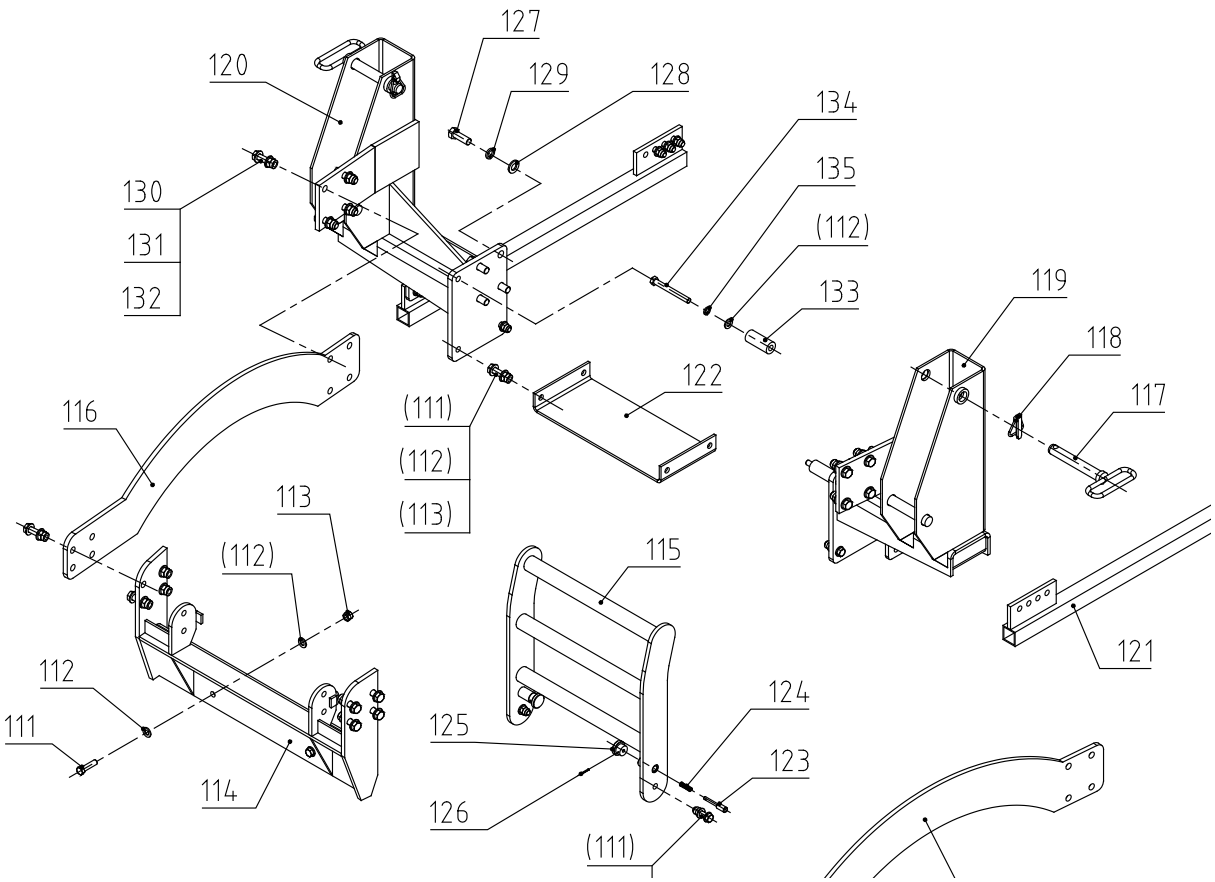
13.3 ARM ASSEMBLY

Item No.	Part No.	Name & Specification	QTY	Comment
59	BL25.10.011	Arm weldment	1	
60	BL25.10.101	Pin 131	4	
61	GB5782-M8x50	Bolt M8x50	12	
62	GB889.1-M8	Nut M8	16	
63	JB/T7940.1-M6	Zerk M6	18	
64	BL25.10.012	Linkage, inner	2	
65	GB6172.1-M12	Nut M12	2	
66	GB97.1-12	Plain washer 12	1	
67	GB93-12	Spring washer 12	1	
68	BL25.10.102	Indicator, glide	1	
69	GB5783-M8x25	Bolt M8x25	5	BL / ML
70	GB6170-M8	Nut M8	1	
71	BL25.10.103	Indicator, fixed	1	
72	BL25.10.013	Triangular plate, weldment	2	
73	BL25.10.104	Pin 100	6	
74	GB5783-M6x12	Bolt M6x12	6	
75	GB97.1-6	Plain washer 6	6	
76	GB93-6	Spring washer 6	6	
77	BL25.10.105	Pin 114	6	
78	BL25.10.014	Valve bracket, weldment	1	BL / ML
79	BL25.10.106	Safety pin	2	
80	BL25.10.107	R pin (φ5)	2	
81	BL25.10.015	Boom cylinder	2	
82	BL25.10.108	Pin 98	2	
83	BL25.10.109	Pin	2	
84	GB894.1-16	External retaining snap ring 16	2	
85	GB882-16x60-B	Pin, stabilizer	2	
86	BL25.10.110	R pin (φ3.2)	2	
87	BL25.10.016	Stabilizer	2	
88	BL25.10.111	Supporting bar	2	
89	BL25.10.018	Bucket cylinder, R	1	
90	BL25.10.019	Bucket cylinder, L	1	
91	BL25.10.020	Level bar, weldment	2	
92	BL25.10.021	Linkage, outer	4	
93	BL25.10.022	Upright, L	1	
94	BL25.10.023	Upright, R	1	
95	GB97.1-8	Plain washer 8	8	
96	GB5782-M16x75	Bolt M16x75	2	
97	GB97.1-16	Plain washer 16	4	
98	GB889.1-M16	Nut M16	2	

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13.4 MOUNTING KIT ASSEMBLY



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13.4 MOUNTING KIT ASSEMBLY

Item No.	Part No.	Name & Specification	QTY	Comment
111	GB5783-M12X45	Bolt M12X45	22	BL25
	GB5783-M12X45	Bolt M12X45	10	BL35
	GB5783-M12x75	Bolt M12x75	12	
	GB5783-M12X45	Bolt M12X45	22	ML30
	GB5783-M12X45	Bolt M12X45	22	ML45
112	GB97.1-12	Plain washer 12	46	BL25
	GB97.1-12	Plain washer 12	48	BL35
	GB97.1-12	Plain washer 12	46	ML30
	GB97.1-12	Plain washer 12	44	ML45
113	GB889.1-M12	Nut M12	22	BL25
	GB889.1-M12	Nut M12	22	BL35
	GB889.1-M12	Nut M12	22	ML30
	GB889.1-M12	Nut M12	22	ML45
114	BL25.20.011	Front support, weldment	1	BL25
	BL35.20.011	Front support, weldment	1	BL35/ML30/ ML45
115	BL25.20.015	Protection frame, weldment	1	
116	BL25.20.101	Support plate	2	BL25
	BL35.20.101	Support plate	2	BL35
	ML30.20.101	Support plate	2	ML30
	ML45.20.101	Support plate	2	ML45
117	BL25.20.102	Pin	2	
118	BL25.20.103	Lock pin 12	2	
119	BL25.20.012	Mounting kit, L	1	BL25
	BL35.20.012	Mounting kit, L	1	BL35
	ML30.20.012	Mounting kit, L	1	ML30
	ML45.20.012	Mounting kit, L	1	ML45
120	BL25.20.013	Mounting kit, R	1	BL25
	BL35.20.013	Mounting kit, R	1	BL35
	ML30.20.013	Mounting kit, R	1	ML30
	ML45.20.013	Mounting kit, R	1	ML45
121	BL25.20.014	Subframe	2	BL25
	BL35.20.014	Subframe	2	BL35
	ML30.20.014	Subframe	2	ML30
	ML45.20.014	Subframe	2	ML45
122	BL25.20.104	Cross plate	1	BL25
	BL35.20.104	Cross plate	1	BL35
	ML30.20.104	Cross plate	1	ML30
	ML45.20.104	Cross plate	1	ML45
123	BL25.20.105	Pin	2	
124	BL25.20.106	Spring	2	

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13.4 MOUNTING KIT ASSEMBLY

Item No.	Part No.	Name & Specification	QTY	Comment
125	BL25.20.107	Handle	2	
126	GB879.2-3×24	Pin 3x24	2	
127	GB5783-M16X45	Bolt M16x45	8	
128	GB97.1-16	Plain washer 16	8	
129	GB93-16	Spring washer 16	8	
130	GB5783-M14x45	Bolt M14x45	16	
131	GB97.1-14	Plain washer 14	32	BL25
	GB97.1-14	Plain washer 14	32	BL35
	GB97.1-14	Plain washer 14	32	ML30
	GB97.1-14	Plain washer 14	34	ML45
132	GB889.1-M14	Nut M14	16	
133	BL25.20.112	Space	2	
	BL35.20.112	Space	4	
	ML30.20.112	Space	2	
	ML45.20.112	Space	2	
134	GB5782-M12x110	Bolt M12x110	2	BL25
	GB5782-M12x60	Bolt M12x60	4	BL35
	GB5782-M12x100	Bolt M12x100	2	ML30
	GB5782-M14x110	Bolt M14x110	2	ML45
135	GB93-12	Spring washer 12	2	BL25
	GB93-12	Spring washer 12	4	BL35
	GB93-12	Spring washer 12	2	ML30
	GB93-14	Spring washer 14	2	ML45 / SL40

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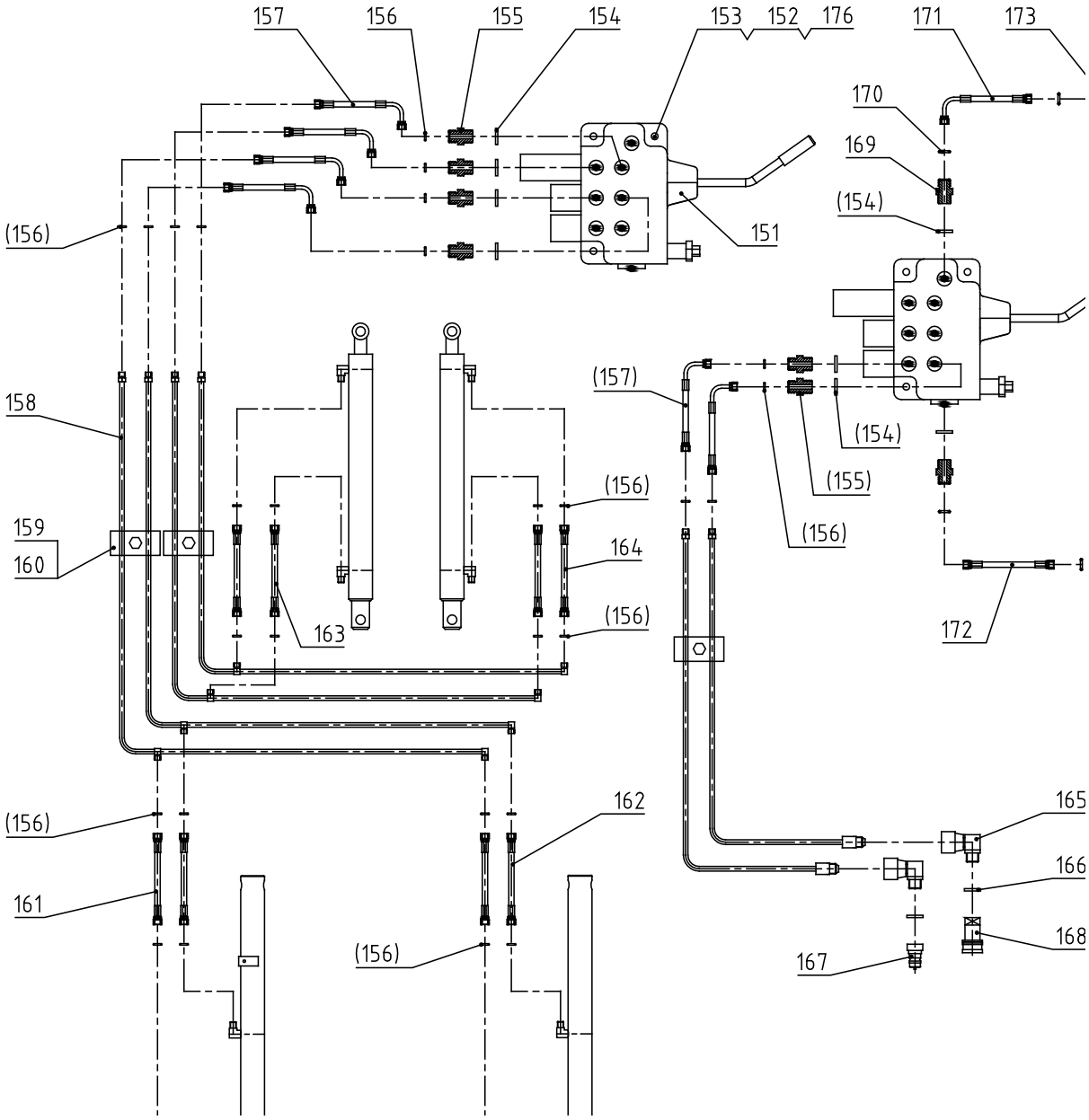
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13.5 HYDRAULIC SYSTEM ASSEMBLY
BL/ ML MODELS - 2 LEVER CONTROL



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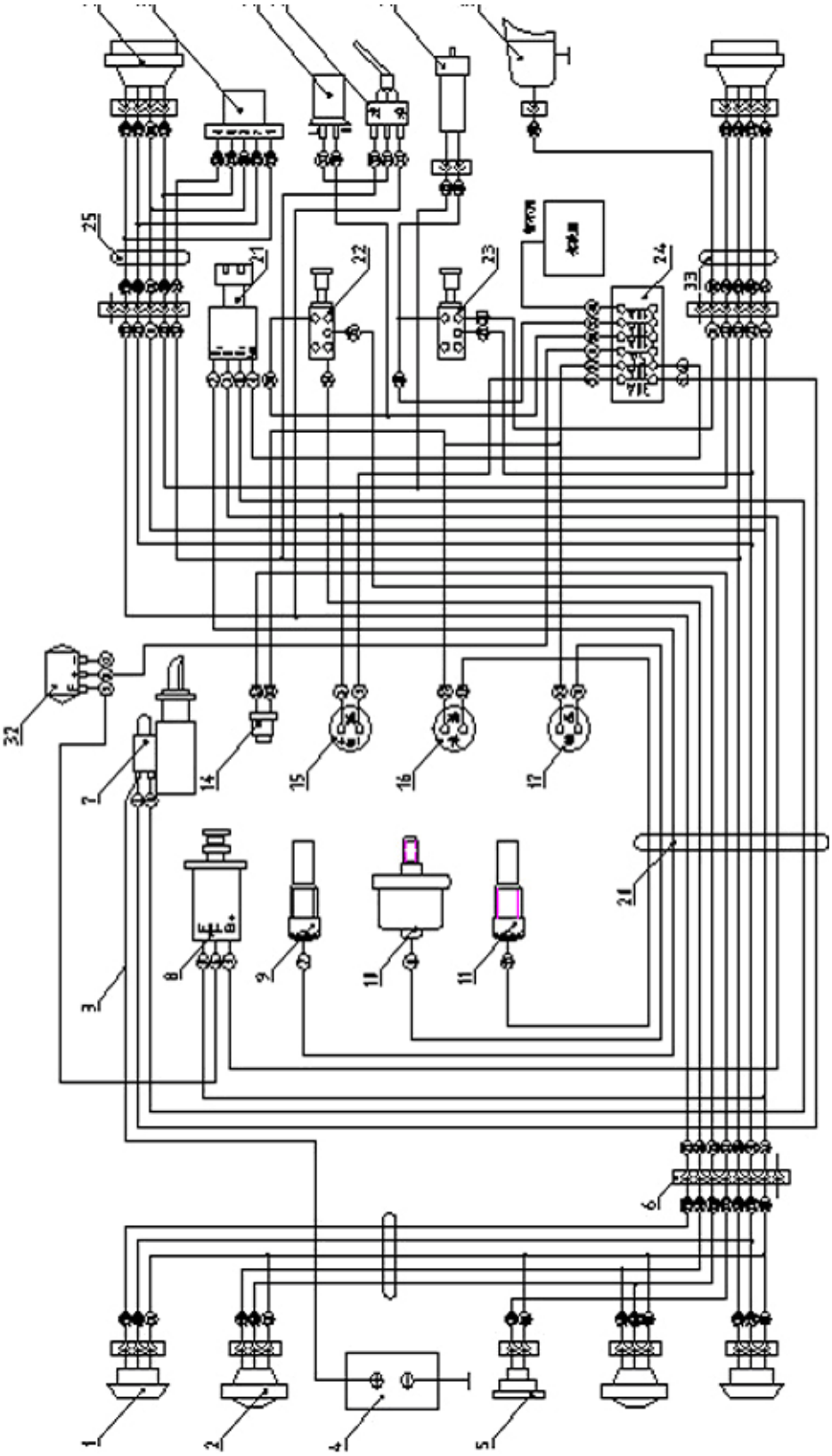
13.5 HYDRAULIC SYSTEM ASSEMBLY
BL/ ML MODELS - 2 LEVER CONTROL

Item No.	Part No.	Name & Specification	QTY	Comment
151	DL350D	Valve DL350D	1	
152	GB5782-M8x45	Bolt M8x45	3	
153	GB889.1-M8	Nut M8	3	
154	JB4454-18	Gasket 18	8	
155	DKT142.103	Adapter M16-M18	6	
156	GB3452.1-11x6.2x2.4	O-ring 11x2.4	28	
157	BL25.40.021	Hose	6	
158	BL25.40.022	Pipe assembly	1	
159	FEL300S.073	Clamp 12 assembly	8	
160	GB5782-M6x40	Bolt M6X40	8	
161	BL25.40.023	Hose	2	
162	BL25.40.024	Hose	2	
163	BL25.40.025	Hose	2	
164	BL25.40.026	Hose	2	
165	SL25.40.116	Adapter G3/8-M18	2	
166	JB4454-17	Gasket 17	2	
167	GB8606-XZG3/8-M	Quick coupling M	1	
168	GB8606-XZG3/8-F	Quick coupling F	1	
169	BL25.40.101	Adapter M18-M18	2	
170	GB3452.1-13x8.2x2.4	O-ring 13x2.4	4	
171	BL25.40.027	Hose	1	
172	BL25.40.028	Hose	1	
173	BL25.40.102	Adapter M18-R1/2	2	
174	GB8606-XZG1/2-M	Quick coupling M	1	
175	GB8606-XZG1/2-F	Quick coupling F	1	
176	GB97.1-8	Plain washer 8	6	

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Wiring Diagram

Appendix 1.

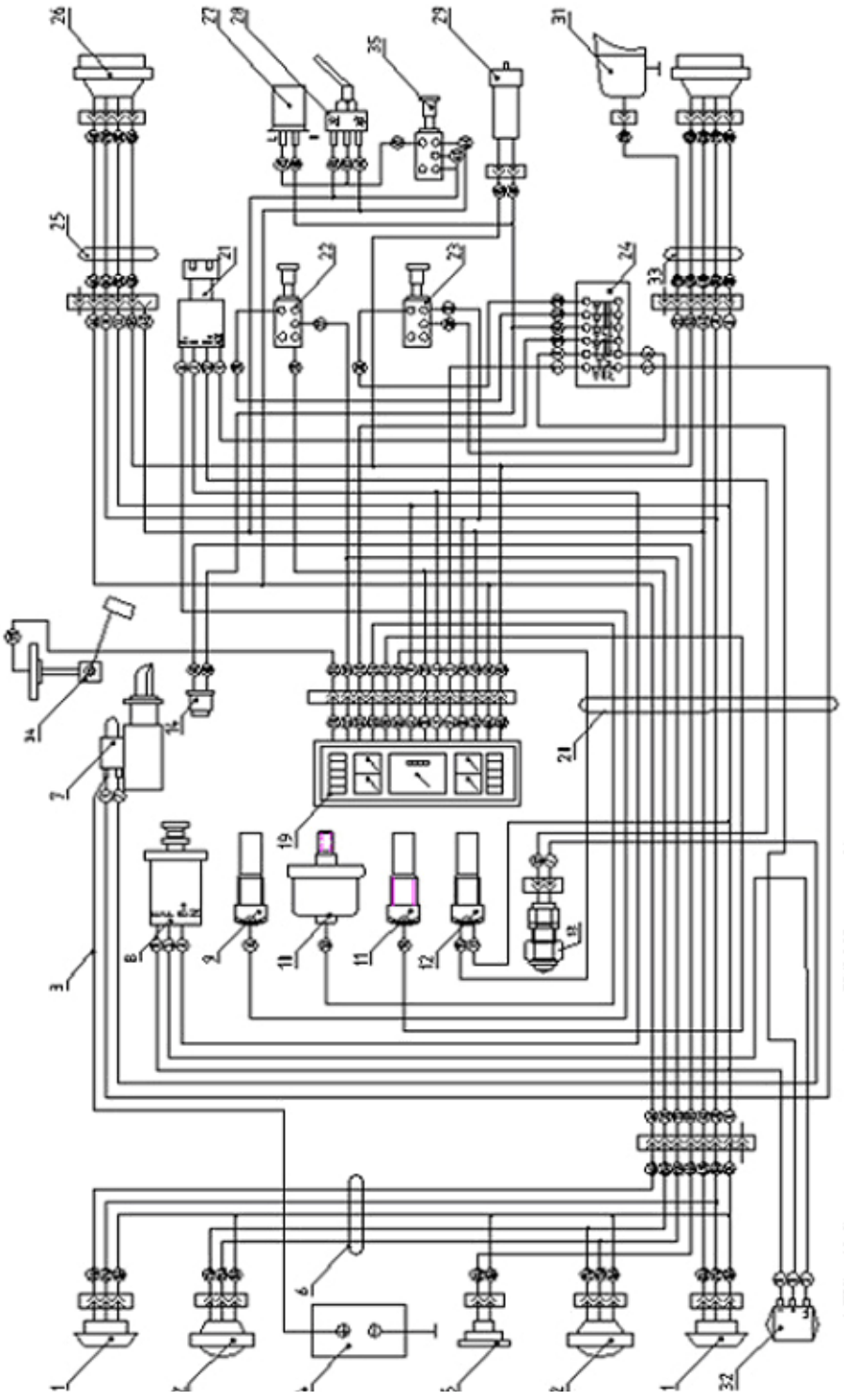


1. Front parker light
2. Headlight
3. Battery cable
4. Battery
5. Electric horn
6. Front harness
7. Starting motor
8. Alternator
9. Electro thermal plug
10. Oil pressure sensor
11. Water temperature sensor
14. Horn button
15. Ammeter
16. Water thermometer
17. Oil pressure gauge
18. Tachometer
20. Main harness
21. Ignition switch
22. Headlight switch
23. Rear work light switch
24. Fuse block
25. Right fender harness
26. Brake / clearance light
27. Flasher unit
28. Turning indicator
29. Brake lamp switch
31. Rear working lamp
32. Voltage regulator
33. Left fender harness

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Wiring Diagram with Combination Meter

Appendix 2.



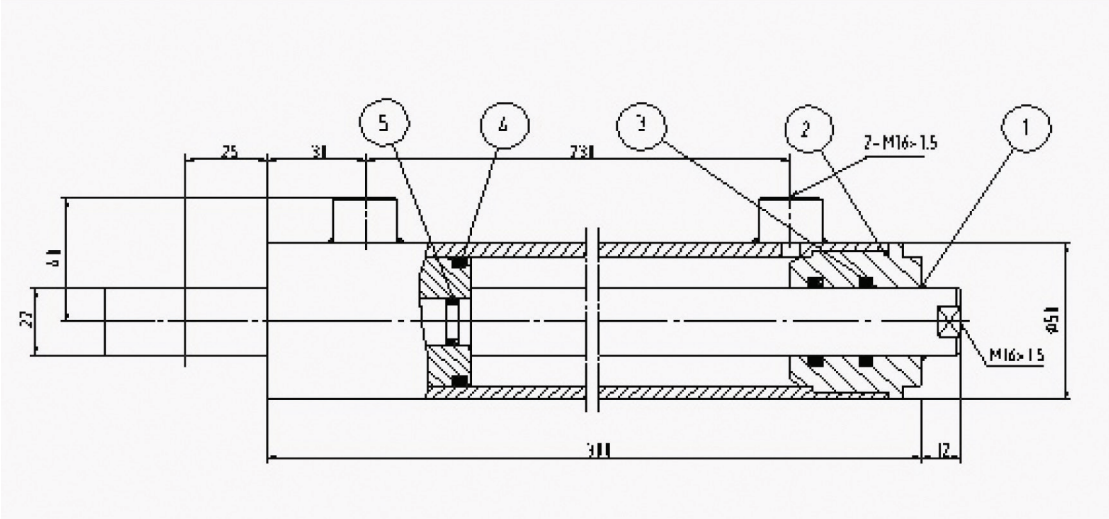
1. Front parker light
2. Headlight
3. Battery cable
4. Battery
5. Electric horn
6. Front harness
7. Starting motor
8. Alternator
9. Electro thermal plug
10. Oil pressure sensor
11. Water temperature sensor
12. Tachometer
13. Safety start switch
14. Horn button
19. Combination meter
20. Main harness
21. Ignition switch
22. Headlight switch
23. Rear work light switch
24. Fuse block
25. Right fender harness
26. Brake / clearance light
27. Flasher unit
28. Turning indicator
29. Brake lamp switch
30. Trailer plug
31. Rear working lamp
32. Voltage regulator
33. Left fender harness
34. Fuel sensor
35. Mid harness

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Steering Cylinder Diagram

Appendix 3.



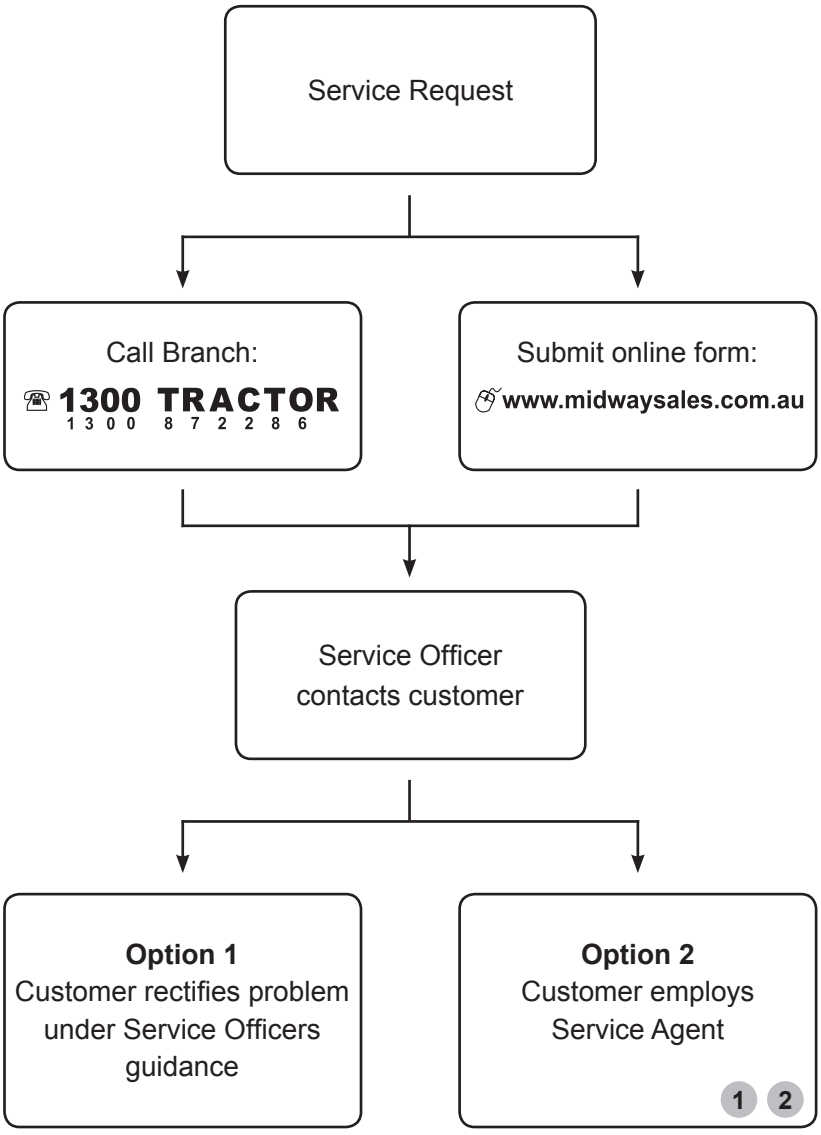
Steering cylinder specifications

Hydraulic system working pressure (MPa)	16
Bore × stroke (mm×mm)	40/20×160

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Service Flow Chart

Appendix 4.

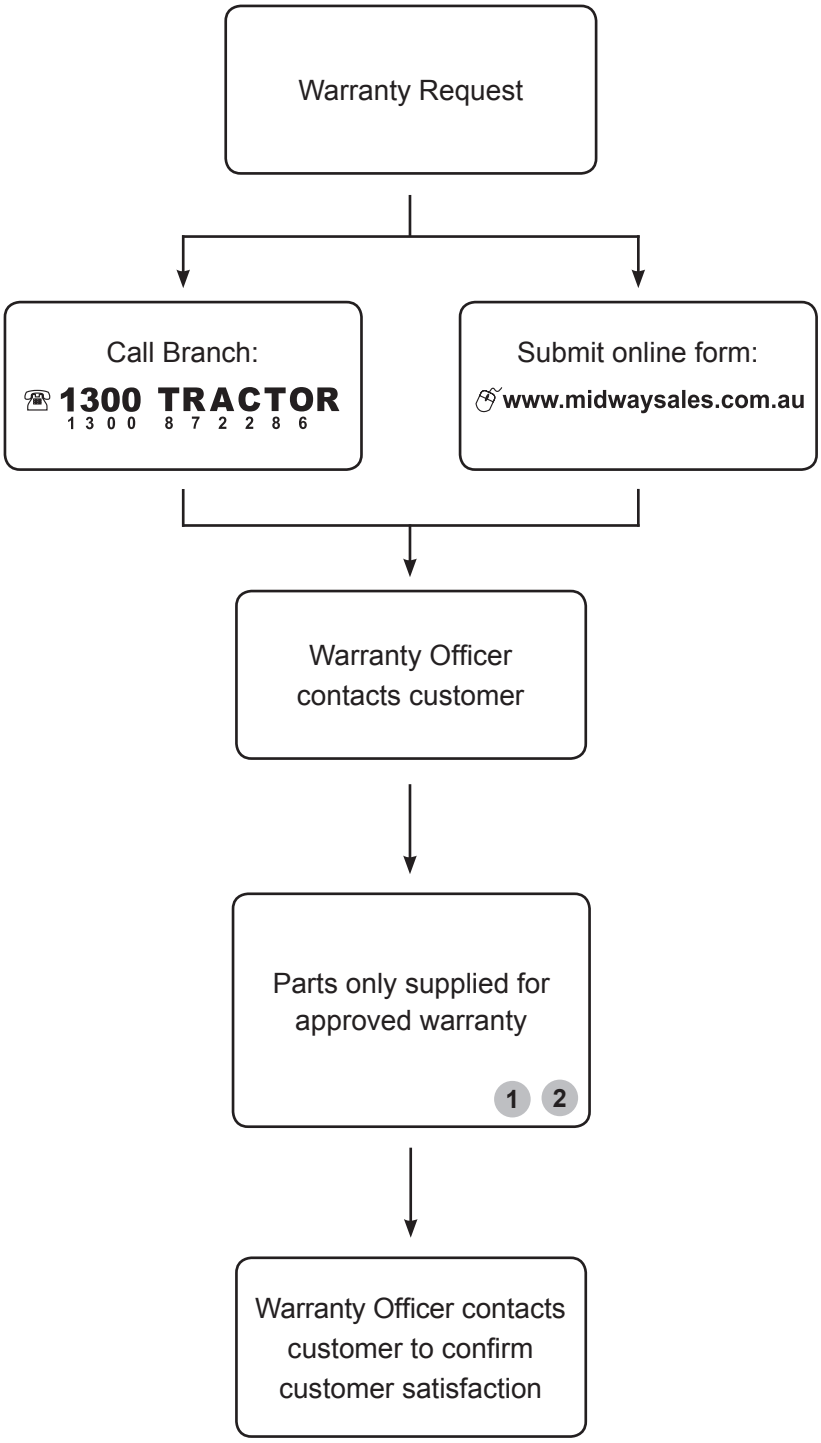


1 Transport & freight at customers expense.
2 Service Agent fees apply.

Note: Servicing is at customers expense

Warranty Flow Chart

Appendix 5.



1. Pick up from Midway Sales Branch.
2. Freight at customers expense, ex Midway Sales branch.
3. Approved warranty covers parts only .

Note: Servicing and non-approved warranty claims at customers expense.

Maintenance Record

Scheduled maintenance must be carried out at the appropriate intervals and recorded on this sheet It is the purchaser's responsibility to follow the maintenance schedule listed in Chapter 7.
Failure to complete maintenance intervals will void machine warranty.

Model	Stock No.	Serial No.	Engine No.	Invoice No.

For Service Information please refer to the maintenance section of the owner's and operator's manual. If any information is not available, please contact your nearest distributor service department for further assistance.

Maintenance Intervals	Date	Hour Meter	Service Technician Invoice		
			Name	Phone	Qualification
30 Hr 1st Service					
50 Hr					
100 Hr					
150 Hr					
200 Hr					
250 Hr					
300 Hr					
350 Hr					
400 Hr					
450 Hr					
500 Hr					
550 Hr					
600 Hr					
650 Hr					
700 Hr					
750 Hr					
800 Hr					
850 Hr					
900 Hr					
950 Hr					
1000 Hr					

The 1st Service should be carried out at 30hrs (hrs shown on dash). The interval + Major Service to be carried out as per service schedule and recorded on the Maintenance Service Record.

DongFeng Induction

Model: _____ Serial No: _____

Stock No: _____ Engine No: _____

Invoice No: _____

Safety:

1. Safety precautions – see operator's manual ☐
2. ROPS & Seatbelt ☐
3. Safety stickers ☐
4. Safety start switch (clutch operated) ☐
5. Safety guards, PTO cover ☐
6. Water in rear tyres – FEL operation ☐
7. Foot & Handbrake ☐

Operation:

1. Daily pre start checks – water, engine oil, fuel ☐
2. Fuses ☐
3. Start up procedures: cold start / hot start ☐
4. Engaging: Range, transmission, 4WD, P.T.O. ☐
5. Power steer - reservoir and full lock ☐
6. Position control – 3pl / lift limiter ☐
7. Response control – 3pl ☐

Service:

1. Oil levels, fill points and drains ☐
2. Oil & fuel filters ☐
3. Air cleaner ☐
4. Tyres: Track / pressure. Wheel hub nut-150ft lbs; outer rim & weights - 75ft lbs ☐
5. Brake adjustment / park brake ☐
6. Bolt tensioning ☐
7. Recommend a first 30 hour oil change ☐

Front End Loader:

1. Caution when operating. Do not clamp over heavy or immovable objects ☐
2. Do not dig with the loader ☐
3. Remove lockout pins before operating ☐
4. Hydraulic quick couplers - FEL ☐
5. Release hydraulic pressure when parking ☐
6. Implements: safety, starting, & Maintenance ☐

IMPORTANT
WARRANTY

- 2 year Parts Only from date of dealer dispatch.
- Warranty excludes Labour, Transport and Freight.

See Registration of Purchase for full details.

IMPORTANT

Warranty will be null and void unless machine is maintained as specified by Midway Sales*

Scheduled maintenance records must be completed and supported with receipts for filters and oil.

*Factory Requirement.

This Induction was carried out in person at the .....Branch

OR This Induction was carried out by telephone. Ph:.....

MS Staff: ..... Sign: ..... Date: .....

I understand the hazards, and have been instructed in the safe operation of this machine, including safety controls and the possible need for further training. I accept responsibility to train any operator to follow the safety instructions contained in the Safety Operation Manual.

* Do you feel comfortable / competent to operate your new tractor? Yes ☐ No ☐

* Do you require operating lessons at $150 p/h? Yes ☐ No ☐

Customer:..... Sign: ..... Date:.....

ALL COMPLETED HAND-OVER PAPERWORK TO BE RETURNED TO THE SALES ADMINISTRATOR



Dongfeng Tractors is a Division of Midway Sales Australia

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Australia

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