DONG FENG

Factory Direct Tractors

Operator's Manual

ZB 75c

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 or four cylinder, direct inject diesel engine that provides high torque, reduced vibration and low noise.

Great features include, four wheel drive, hydraulic power steering and two-speed P.T.O..

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 awareness of your machine. With a little care you can look forward to a lifetime of service on a lifestyle property.

Dongfeng Tractors,
Australia.

November 2013

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Specifications

Tractor Model	**ZB75c**
Drive type:	4WD
Horsepower:	75HP
Overall length (front weight to link end): (mm)	3890
Overall width (outer wheel tread): (mm)	1980
Height to R.O.P.S (top): (mm)	2700
Height to cabin (top): (mm)	2735
Height to steering wheel: (mm)	1890
Ground clearance: (mm)	390
Tractor weight with ballast: (kg)	3150
Minimum turning radius: (m)	4.1
Speed: forward (km/hr)	1.57-36.61
backward (km/hr)	1.60-36.81
Engine Model	LR4B3-T67
Type:	Direct injection, vertical Liquid Cooled 4 Cyl Diesel
Gross power (12hr rated power kw/hp):	55.2/75
Cylinders:	4 Cyl
Bore and stroke: (mm)	105 x 135
Compression:	17.0 : 1.0
Displacement: (L)	4.76
Speed rated at: (rpm)	2300
Gearbox:	Synchromesh/shuttle Shift
Gears:	(4+4) X 3
	12 Forward, 12 Reverse
Brake type:	Wet Multi Disc
Clutch type:	Dry Type Dual Stage
Rear differential lock:	Mechanical
P.T.O. type:	Live
P.T.O. rotating speed:	540/1000
P.T.O. kW/HP:	43.6/58.5
3PL capacity at Ball End: (kg)	1200kg (cat 2 linkage)
Hydraulics: Main pump:	38L/min
Power steer pump: (L)	2L
Fuel capacity: (L)	60
Engine Oil: (L)	10
Transmission Oil: (L)	25
Hydraulic Oil Reservoir: (L)	15
Front Differential Oil: (L)	6
Front Hubs Oil: (L)	2 X 1
Front tyre size - Agricultural:	11.2-24
Rear tyre size - Agricultural:	16.9-30

Safety Precautions

• Recognize safety information

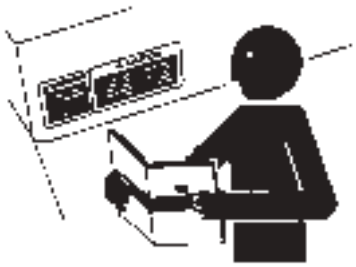
This is a safety — alert symbol. When you see this symbol on your machine or in this manual, it is to alert you to the potential for personal injury. Follow recommended precautions and safe operating practices.

• 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

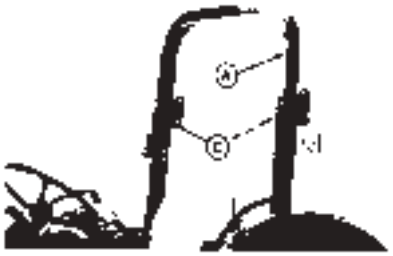
Avoid possible injury or death from machinery runaway.
Do not start engine by shorting across starter terminals.
Machine will start in gear If normal circuitry is bypassed.

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

• 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 R-clips
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.

• Operate Tractor Safely

Features designed into your tractor make operation Safer and let it perform a wide variety of jobs. Use your tractor only for specified jobs it was designed to perform: implement carrier, load mover, remote power source, or transport Unit - not a recreational vehicle.

Careless use or misuse can result in unnecessary accidents. Be alert to hazards of tractor operation.
Understand causes of accidents and take every precaution to avoid them. Most common accidents are caused from:

- Tractor misuse.
- Improper starting procedures
- Crushing and pinching during hitching
- Collisions with other motor vehicles
- Getting entangled in P.T.O. shafts
- Falls from tractors

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.

• 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.

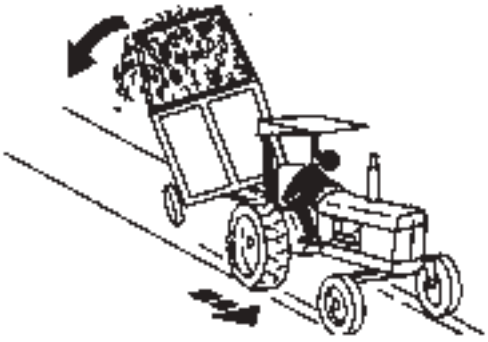
• Hearing safety

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.

• 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.

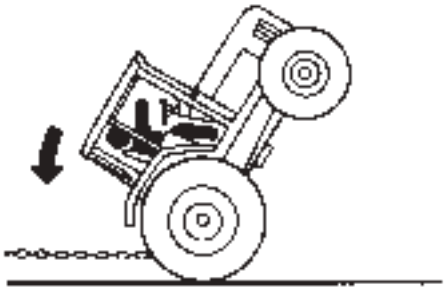


• Operator only

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.



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 P.T.O..
- 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.

• 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.

• 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 P.T.O. driveline is stopped before making adjustments, connections, or cleaning out P.T.O. 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.

• 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.

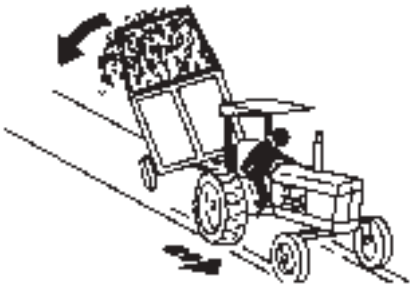
Never tow a tractor at a speed greater than 16 km/h (10mph). An operator must steer and brake the tractor under tow.

• 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.

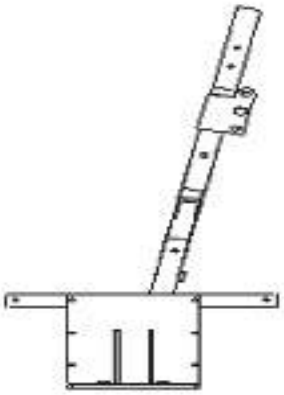
Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse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



• 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.

• 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.

• 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

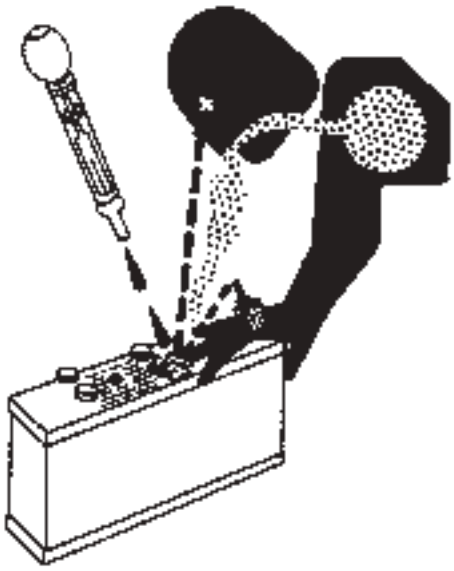
Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders.
Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond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

• 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.



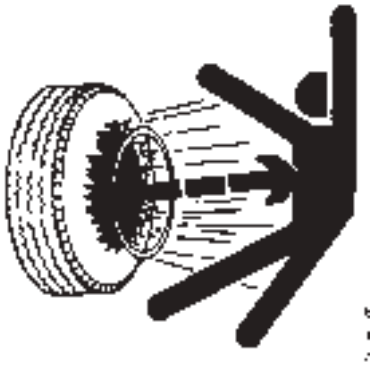
Avoid the hazard by:
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoid breathing fumes when electrolyte is added.
4. Avoid spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



• 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.

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 continue to follow the guidelines for maintenance and repair given in this operation manual.
The tractor must only be used, serviced or repaired by qualified people. Operators must be authorised and well trained in the tractors handling characteristics 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.

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.

Starting the tractor

Before starting the engine, check that the parking brake is on and transmission and P.T.O. 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.
-

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.

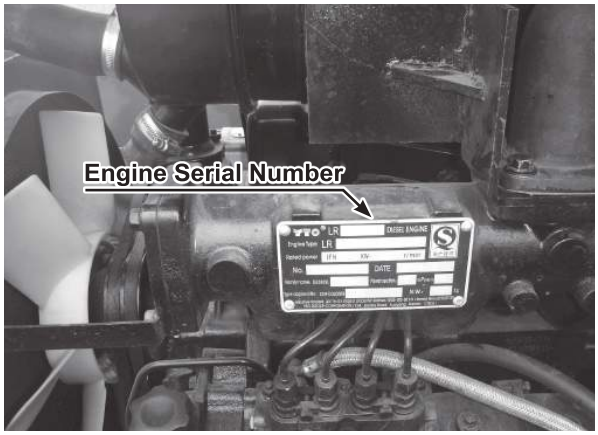
1. Request For Dealer Service

Thank you for purchasing an Dongfeng tractor. Your Dongfeng dealer is interested in 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 in several places. At the rear of the tractor below the PTO output shaft, on the Identification Plate pop riveted to the rear mudguard and on the ROPS Identification Plate on the ROPS. The engine serial number is on the Engine Identification Plate fixed to the intake manifold located on the left side of the engine crankcase. It is also stamped on the block behind the injector pump governor housing on the same side.

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



Model: _____

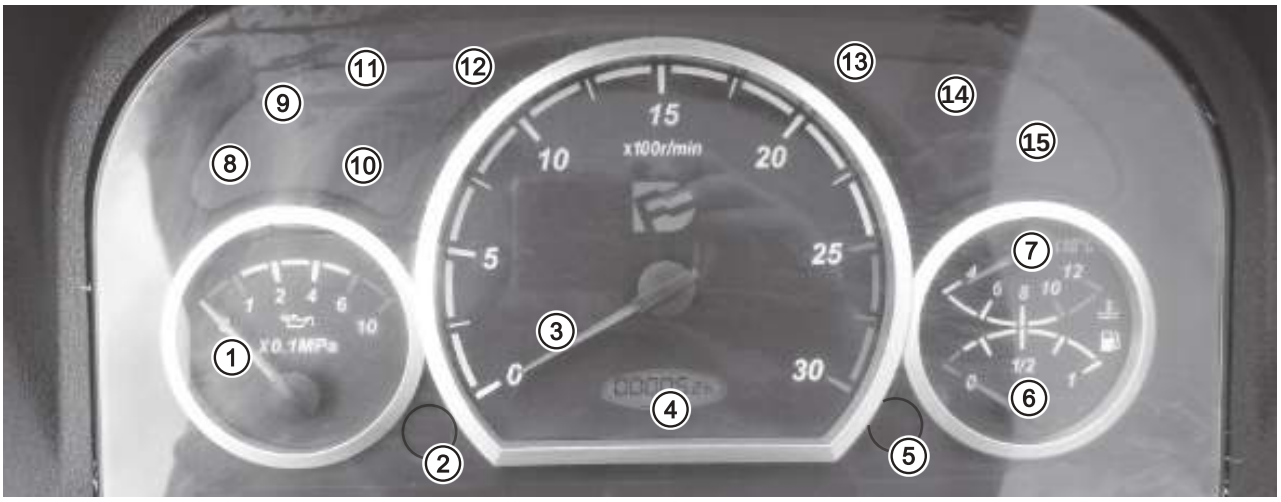
Tractor Serial No: _____

Engine Serial No: _____

Date of purchase: _____

(To be filled in by purchaser)

2. Instrument Panel And Controls

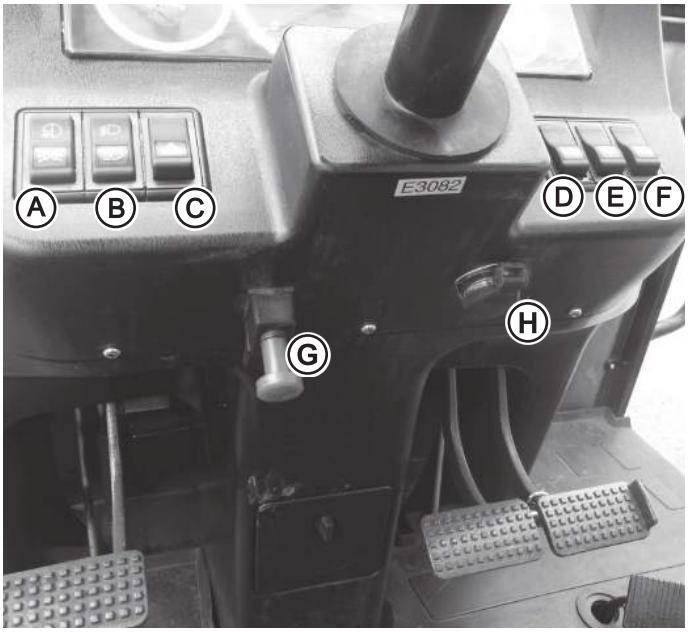


2.1 Instrument panel display

1 – Oil Pressure Gague
2 – Low Bean Indicator
3 – Tachometer
4 – Hour Meter
5 – Ignition On
6 – Fuel Gauge
7 – Temperature Gauge
8 – Oil Warning
9 – Battery Warning
10 – High Beam Headlight
11 – Brake Warning
12 – Left Indicator
13 – Right Indicator
14 – Fuel Warning
15 – Temperature Warning

Dash - board buttons:

A – Rear Work Light / Dash and Tail Lights
B – Headlights, High and Low beam
C – Hazard Lights
D – Left Turn Indicator
E – Right Turn Indicator
F – Horn
G – Fuel Cut Off “Stop Button”
H – Ignition Switch

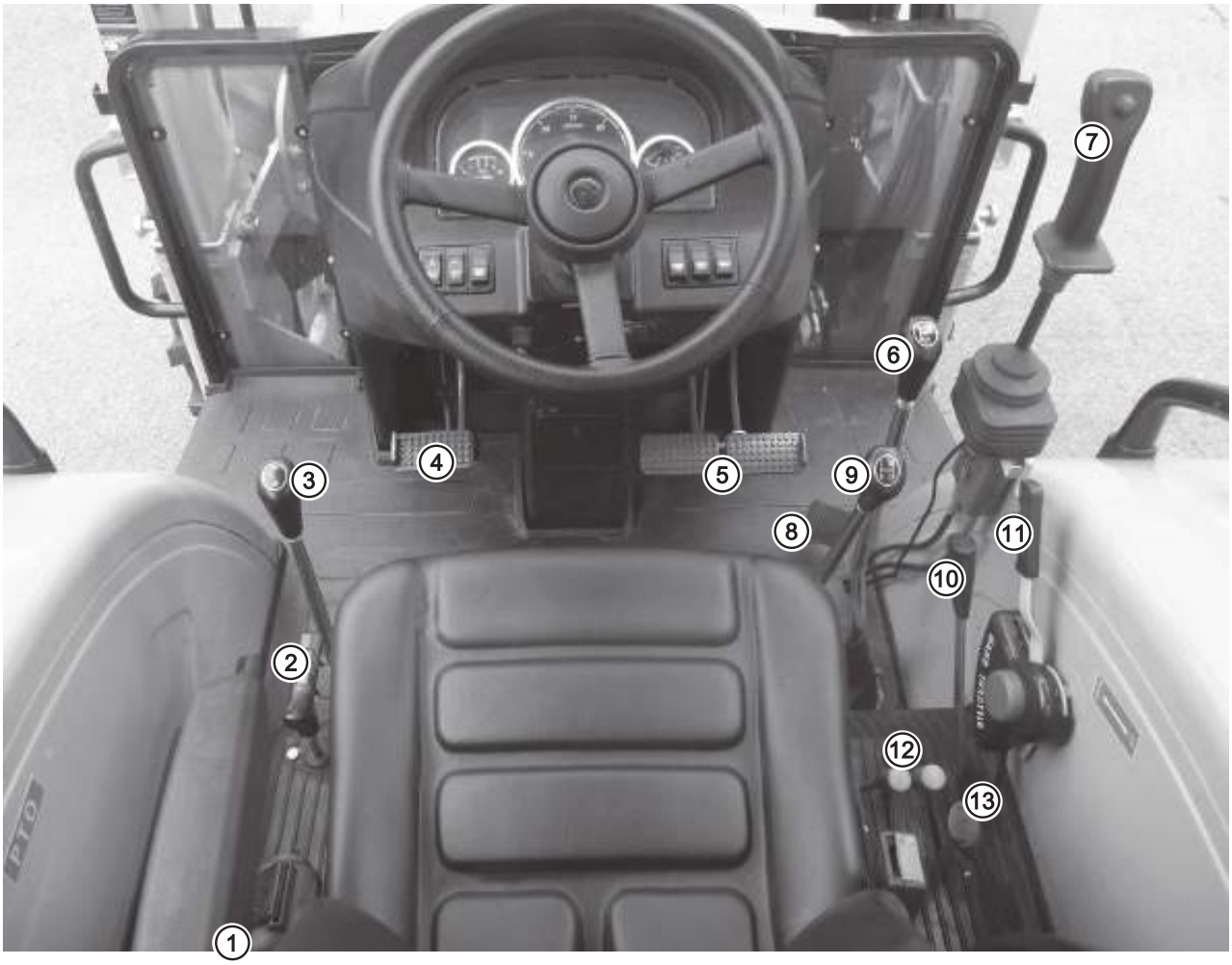


2.1.1 Hour meter

The hour meter is electronic, and records the engine hours of operation. Use the hour meter to schedule your service and maintenance program found in chapter 6. Always run the engine with the ignition switch turned ‘on’.

2.1.2 Headlights switch

The Headlight switch is an on-off-on rocker button ‘B’ and only works with the ignition on. Pushing the rocker forward turns on the low beam showing a green indicator on the dash. Pushing the switch back turns on the high beam showing a blue indicator on the dash.



Control Layout

1 – P.T.O. Lever
2 – 4WD Lever
3 – Shuttle Shift
4 – Clutch Pedal
5 – Brake Pedals
6 – Range Lever
7 – Joystick Loader Control
8 – Foot Throttle
9 – Gear Lever
10 – Position Control (3PL)
11 – Hand Throttle
12 – Remote Hydraulic Lever x2
13 – Draft On/Off (3PL)

2.1.3 Horn button

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

2.1.4 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.

2.1.5 Fuses

The fuses are located on the left hand side behind the clutch pedal and are there to protect the electrical circuits. When a fuse blows, find the cause and fix the problem before replacing with a new fuse. If you or your mechanic can't find the problem, call your Dongfeng dealer for assistance. Ensure the electrical circuits are carrying normal amperage. Spare fuses are available from your Dongfeng dealer.

2.2 Controls

2.2.1 Accelerator

The tractor is equipped with both a hand and foot accelerator. When seated the hand throttle is

located by your right leg. Move the hand throttle lever up and back to speed up the engine and forward and down to slow the engine. In addition, the engine is sped up by stepping on the accelerator pedal while the hand throttle lever left in the down position. To stop the engine, reduce the engine revs to idle and pull the red fuel cut off switch. Generally the foot throttle is used to drive the tractor from place to place while the hand throttle is used to set the engine to work at a constant speed.

2.2.2 Hydraulic lift system-Three Point Linkage

The hydraulic lift system provides both position control and draft control using two separate levers.

Position Control

Position control is used to control the position of the implement fitted to the three point linkage that operates above ground, such as slashers, carryalls, grader blades. It can also be used to position tillage implements like a ripper, but will provide no resistance feedback to the hydraulic lift system.

The position control is the outer linkage lever beside your right hip when seated. Make sure the inner lever (draft control) is up and back when using position control. The position control lever is indexed. When the position control lever is up and back the linkage is raised. As the position lever is moved forward and down, the linkage will lower to a corresponding position, with the lever full forward and down giving the lowest three point linkage position. Note: To achieve full position control the draft lever must be firmly up and back.

Draft Control

The draft 'on/off' lever is the inner linkage lever beside your right hip when seated.

Draft 'ON' is used to control tillage or 'in ground' working equipment mounted on the three point linkage such as a ripper or plough. It allows control of ground resistance through a feedback mechanism fitted to the top linkage of the three point linkage. Use the top hole of the top link mount on the tractor for more sensitive control, middle for less sensitive and bottom hole for least sensitive control.

Use position control (outer lever) to position the implement with Draft OFF when transporting the implement to the work site. At the worksite lower the tillage implement to the ground then push the draft lever firmly forward and down to draft ON, turning the draft facility on. Manage the implement depth/ resistance using the outer position lever. With the position lever up and back for light resistance and shallow penetration and moving forward and down increasing resistance for deeper penetration. The load (resistance) on the three point linkage varies with implement penetration and soil condition. This load feeds back through the top link providing control input adjusting the linkage for constant load. The load is managed by the operator using the position lever with the draft lever in the ON position to maintain wheel traction while achieving the desired implement penetration.

Response Control

The response control wheel is located behind the panel below the seat. It is a needle valve in the oil gallery that controls the flow of oil from the linkage when the three point linkage is lowering. Turn the wheel clockwise like turning off a tap to slow the flow of oil slowing the downward movement of the linkage. Screw it right down to stop the oil flow and stop the linkage from lowering. Likewise turn it anti-clockwise and increase the rate of fall. Note: Never climb under an implement on the three point linkage unless it is supported by a mechanical safety device.

2.2.3 Main gear, range and shuttle leavers

The tractor is equipped with a four speed synchromesh transmission with three ranges. Couple this with the synchromesh shuttle shift to be provided with twelve (12) forward and twelve (12) reverse gears.

The synchro shuttle lever conveniently provides the selection of forward or reverse direction. Use the clutch when selecting gears and changing between forward and reverse.

2.2.4 P.T.O. lever

The P.T.O. lever engages the tractor power take off providing 540 or 1000 RPM at rated engine speed. Caution: When operating implements, ALWAYS use 540rpm. Only use 1000rpm when specified by the implement manufacturer. The standard PTO operation speed in Australia is 450rpm, and should be used on slashers and finishing mowers.

2.2.5 Four wheel drive lever

The four 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 surging during rotary hoeing hard soil.

Pull the 4WD lever up (located by the left knee when seated) to engage the front wheels, selecting four wheel drive. Push the 4WD lever down to release the front wheels returning to two wheel drive. Never operate the tractor in 4WD on hard standing.

Note:

Operating in 4WD will often cause 'windup' between the front and back wheels making it difficult to disengage 4WD.Driving forward or back with the steering on the opposite lock while pushing down on the lever will sometimes free windup and allow disengaging. If fitted with a front end loader, push the bucket down firmly to raise the front axle and release the windup. Disengagement should now be easy.

Caution:

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

2.2.6 Clutch pedal

The tractor is equipped with a two stage clutch. Pushing down the clutch pedal first disengages the transmission, and when depressed fully disengages the PTO drive. To start the tractor the clutch pedal must be fully depressed to engage the safety start switch.

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:

Use the clutch pedal whenever changing gears or using the shuttle shift.

2.2.7 Brake pedals (left & right)

The left and right brake pedal operates the rear wheel brakes independently when not interlocked.

Safety precaution:

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

2.2.8 Parking brake lever

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

2.2.9 Differential lock pedal

The Differential Lock is located by your right heel when seated and is applied in the case of excessive wheel slip. Locking the differential provides power equally to both wheels. This is achieved by lightly stepping on the differential lock pedal with your right heel and holding the pedal down.To unlock, lift your heel to release the pedal. Never activate the diff lock in 4 WD at high speed or when turning.

2.2.10 Seat Safety precautions

To accommodate the operator, an adjustable suspension seat is provided. Forward and back adjustment is made using the seat adjust leaver below the seat pan and the suspension mechanism can be adjusted for the weight of the operator using the spring tension screw behind the seat frame.

3. Running-in

How the tractor is handled in the first 100 hours of its working life has a big impact on how long it lasts and its performance during its 'life'. In order to get the best out of your tractor and prolong its service life, it is essential to follow the procedure outlined below for a new tractor (new or overhauled engine). The run-in period is the first 100 hours.

3.1 Engine run-in without load

Caution:

If the engine will not start, do not grind it over with the key for more than 15 seconds at a time or the starter motor could be damaged.

1. Please read Safety Precautions and Safety First in this Operation Manual before carefully starting the engine.

To start the engine:

Before starting, know how to stop the engine, see 3.1. After carrying out the daily safety and service checks, sit firmly in the seat. Adjust the seat to a position in which you can fully operate all the tractor controls and secure your seat belt. Ensure the gear levers are in neutral position and the PTO is disengaged. Move the hand throttle to the medium position and push the clutch pedal firmly to engage the safety switch. Ensure the fuel cut off button is pushed right in and turn the ignition key clockwise or right to the normal start position. The tractor will start. Release the key and it will return to the 'ignition on' position.

2. After starting, let the engine run at medium or low speed, until the engine temperature reaches 50°C. Ensure the oil pressure gauge is indicating normal. Avoid running the engine at high speeds right after starting. While the engine is warming up, check for any water, oil or air leakage and that all instruments and indicators are working normally.
3. Once warmed to operating temperature, run the engine for 5 minute at maximum speed, keeping an eye on the engine's instruments to monitor its working status. Then vary the engine rpm cycling between medium to low speed. Run the engine without load for a minimum of 20 to 30 minutes.

3.1 Stopping the engine

1. Drive the tractor to a safe flat location.
2. Disengage the PTO, gear and range levers and apply the park brake.
3. Lower the implement / loader to the ground, and close the throttle to reduce engine speed.
4. Turn the ignition off.
5. Pull the red fuel cut off button and hold it out till the engine stops
6. Push the button back in, remove the ignition key and release your seat belt.

3.2 Tractor –No Load

1. Drive the tractor into a safe open 'test' area with enough room to carry out the following manoeuvres.

2. At varying slow to medium speeds, run the tractor in every forward and reverse gear for half an hour respectively. Run third and forth gear in medium or low range. Use the steering from lock to lock without holding on full lock. Manoeuvre at medium and low speeds, applying LH brake and RH brake in sync with the steering. With the brakes interlocked, try emergency braking when the tractor is running in gears 11 and 12 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. While running in the transmission system, the P.T.O. should be "disengaged".

3. Engage the P.T.O., and operate the hydraulic linkage system repeatedly to ensure all the linkage joints are working smoothly together.

4. If a front end loader is fitted, drive the tractor to a safe level position and operate the lift, crowd and bucket rams through their full range of movement for at least 12 cycles.

3.3 Run-in tractor - loaded

1. Running-in the loaded hydraulic linkage system should be done before running-in the transmission system. Fit a slasher to the linkage system, (don't fit the P.T.O. shaft) fully lift and lower the slasher as least 20 times while the engine is working at the rated speed.

2. When operating the tractor with a load during the running-in period, the load must be added gradually and gears changed sequentially 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.

3. If the above running-in condition can't be achieved, then light-load operation can be used as a substitute. For example, pulling a light implement for shallow-tillage or towing a skid (log or heavy harrow) to provide light resistance. Alternatively a trailer loaded with 1.5 ton of cargo may also be used to provide a load on the tractor.

Points for attention:

- Don't operate the tractor at full speed for the first 100 hours.
- Vary the engine speed often and don't run the engine at speeds faster than necessary.
- Warm the engine up fully, before putting the tractor to work.
- Don't start quickly or apply the brakes suddenly.
- Don't operate the tractor at fast speeds. Slow down to a suitable speed on rough roads or paddocks.
- Keep an eye on the operation of all parts and assemblies at every stage of the run-in process. If any abnormal condition occurs during the run-in period, adjust or repair it immediately.

3.4 30HR run-in service

Refer to section 6 for your 30 hour service schedule. Carry out all tasks listed.

4. Operating Instructions

4.1 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.

4.2 Starting and stopping

4.2.1 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 neutral.
4. Move the hand accelerator lever 'on' from half to two thirds and ensure the fuel cut off (stop button) is pushed firmly in.
5. Insert the key into the ignition switch.
6. Fully depress the clutch pedal and turn the key switch to the start position and the engine will start.
7. 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.
8. Allow the engine to warm-up by running it at fast idle to medium speed. Watch the temperature gauge to identify when the engine has warmed up.

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 15 seconds, switch off for about 20 seconds. 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. Make sure to warm-up the engine regardless of the ambient temperature. If the tractor is used before the engine warms up, performance is reduced, and the tractor service life will be adversely 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. lever to neutral positions and fully disengaging the clutch. If this procedure is not observed, the tractor may dangerously lunge forward as the engine starts. Australian Dongfeng tractor models have been factory fitted with a clutch operated safety start switch.

Caution:

When the ambient temperature is less than 0º, remove the battery from the tractor and store it somewhere warm until next operation.

4.2.2 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. Select neutral with the gear lever, shuttle shift and P.T.O., then release the clutch.
3. Turn the ignition key switch off, pull the red fuel cut off button and remove the key.

4.3 Driving

4.3.1 Starting

1. With the park brake engaged, lift the front end loader and implement if fitted to minimum safe height for transit.
2. Depress the clutch pedal to disengage the clutch.
3. Shift the main and range gear shift levers to the desired gear.
4. Select forward or reverse with the shuttle shift lever.
5. Release the park brake.
6. Speed up the engine by pulling the hand throttle

lever up, or using the foot accelerator.

7. Slowly release the clutch pedal and the tractor will start to move.

Caution:

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

Safety precautions:

1. Releasing the clutch pedal suddenly can make the tractor lunge forward dangerously.
2. It is best to avoid shifting gear while you are driving. Select the gear you want to work in, then move off. To change gear, stop the tractor by stepping firmly on the clutch pedal.
3. Interlock the left and right brake pedals before starting. Uneven braking can result in a sharp turn, unbalancing the tractor, which could even tip it 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 its weight, 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 P.T.O. 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 to free-wheel when travelling down steep slopes.

4.3.2 Stopping

1. Slow the engine down.
2. Step on both the clutch and brake pedal and the tractor will stop moving.
3. Move the main gearshift and shuttle shift 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, take an added precaution against rolling by placing stones or a wheel chock against the rear wheels on the down hill side.
3. Before getting off the tractor, make sure you stop the engine and lower the implement to the ground for safety.

4.4 Check during driving

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

4.4.1 Coolant

Prior to starting the engine, follow the pre-start checks outlined in the service schedule 6.2.1 on page 6-1. Also check and rectify the following:

1. Low coolant level or coolant leaks.
2. Foreign matter on the radiator screen and dust and dirt between the radiator fins.
3. Fan belt drive tension.
4. Unnecessary addition of anti-freeze in climate locations that don't freeze.

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 on a hot engine, allows scalding coolant to spray out burning the operator.

4.4.2 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, or the oil warning lights up immediately stop the engine and check:

1. The engine oil level. (See page 6-1).
2. External engine oil leaks.
3. Electrical connection at the gauge & sender.

4.4.3 Fuel

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

4.4.4 Exhaust fumes

1. Exhaust fumes are colourless during normal operation.
2. Exhaust fumes become a little coloured 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 damaging the engine.

4.4.5 Emergency engine stop

Should the following unusual 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 service checks of the above situations, consult your dealer or service agent.

4.5 Operating the differential lock

Using the differential lock properly 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 aware 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 ploughing, 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 applied 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. Do not engage diff lock while operating in 4WD.

4.6 Control and usage of tractor’s working devices

4.6.1 Hydraulic lift system
Lifting & lowering the three point linkage

Position Control (see Fig. 4-6).

Position the Draft Control lever (lever closest to the seat) firmly up and back to turn draft off, allowing the Position Control lever (outer lever closest to the mudguard) to be used for above ground position control. Position control is indexed, as the lever is moved forward and down the three point linkage lowers to a corresponding position with linkage fully down when the position control outer lever is firmly down. When using Position Control, preferentially pin the top link to the tractor in the bottom hole of the top link mount.

4.6.2 Draft Control - Three Point Linkage

The three point linkage is equipped with draft control using the top link for the draft control input. Use the top and middle hole of the top link mount when hitching up ‘draft’ implements. Use the top hole for most draft sensitivity.

1. With the Draft lever up and back in the 'Draft Off' position, lower the implement to the ground using the position lever. Push the draft lever forward and down to the 'Draft On' position engaging draft control which is managed using the position lever.

Caution:

Ensure the draft lever is off (up and fully back) before raising the implement with the position control. If draft control is suddenly pulled up and back suddenly turning draft off when the position lever is right back, the linkage will quickly lift with the attached implement to its full height and damage may result.

2. The response control wheel is located behind the panel below the seat. Increase the linkage 'fall' speed by screwing it up anti clockwise increasing oil flow. Remember the linkage will not work with the response wheel screwed right down creating a hydraulic lock.
3. Adjusting the lift linkage. Use the top link to adjust and level the implement front to back. The lift arm levelling assemblies can be adjusted individually to level the implement side to side. Make sure you tighten the linkage locknuts to secure the adjusted position. 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.

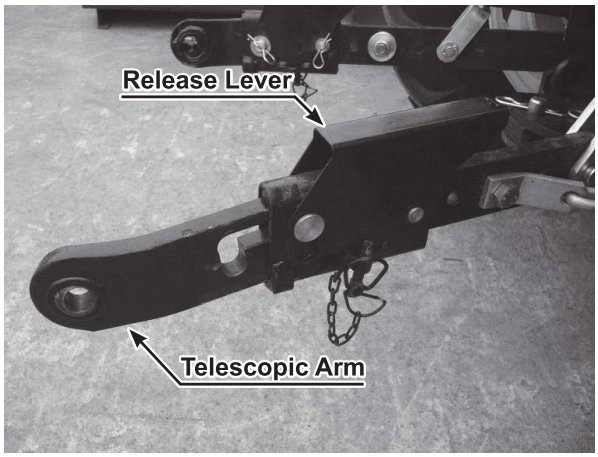
Position Control Summary

With the implement on the ground:

1. Push the position lever (outer lever) forward and down. (if the implement was up, this will lower it to the ground provided you don't have a hydraulic lock).
2. Pull the draft lever up and firmly back to 'Draft OFF' position and keep it there.
3. Using the position lever lift the implement to the required height.
4. If desired set the implement fall speed by adjusting the response control valve.

Draft Control Summary:

1. Push the position lever forward and down till the implement rests on the ground.
2. Push the draft lever forward and firmly down to the 'Draft ON' position and keep it there.
3. Drive forward and control the implement penetration with the position lever. Up and back for shallow tilth and moving forward and down for deeper penetration.
4. The position of the top link, in the tractors three position top link mount will vary the draft sensitivity of the implement with most draft sensitivity at the top position and least draft sensitivity at the bottom position.



4.6.3 Attaching a Three Point Linkage Inplement

1. Attaching an 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.
2. QUICK LINKS fitted to the lower links of the three point linkage make easy work of hitching up heavy or cumbersome implements. Back up as square as possible to the implement. Adjust the lower link lift arms to be close in height to the mounting height of the implement. Select neutral and engage the park brake before dismounting

from the tractor. At the rear linkage quick links, push down on the release lever and extend the telescopic arm, manoeuvring it to align with the implement mount point and engage the implement mount pin. Ensure the mount pin is securely locked with a lynch pin. Repeat on the other side. Do not attach the top link till the tractor has been backed up fully inserting the telescopic arms which will snap lock in place with the spring loaded release lever. Once the quick links are retracted and locked the top link can be attached and adjusted to the correct length.

4.6.4 Linkage: 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. Lift implements, especially tillage equipment before driving off or turning.
3. Do not manoeuvre or turn the tractor while a ripper tyne is in the ground. Lift the ripper – or other tillage implement first.
4. Make sure the implements fit the tractor well and there is no interference to the implements lifting or lowering.
5. 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.

4.6.5 Towing, hauling and dragging

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 offer 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 or safe place 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.

4.6.6 Operating the P.T.O.

1. The two speed P.T.O. provides standard 540 as well as 1000 rpm. The P.T.O. control is a three position lever. Push the lever forward for 540rpm, and rearward for 1000 rpm with neutral in between.
2. Most P.T.O. driven implements in Australia are designed to run at 540rpm. Do not run 1000 speed P.T.O. rpm unless it is specified by the implement manufacturer.
3. Engage the P.T.O. by fully depressing the clutch and shifting the P.T.O. control lever forward for 540 rpm rating. Release the clutch slowly when driving an implement then increase the tractor engine rpm using the hand throttle to operating speed.
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.

5. Mechanical Adjustment

5.1 Engine

Please refer to the engine operation manual for adjustment and maintenance.

5.2 Clutch

5.2.1 Dual stage clutch

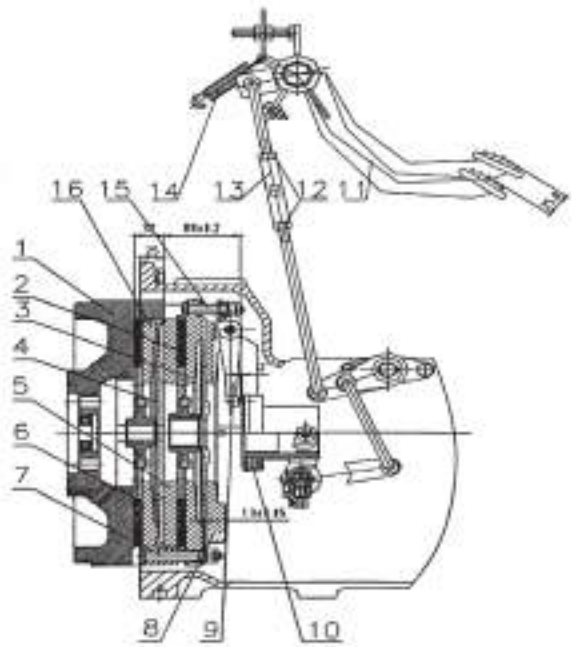
Under normal operation the clutch will wear and need to be checked and adjusted at regular service intervals as required. Avoid excessive clutch slip.
If the clutch is not immediately adjusted to stop abnormal slipping, premature clutch plate wear will occur with possible damage to the clutch assembly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

5.2.2 Clutch assembly

Clutch assembly and adjustment should be carried out by a qualified technician.
The dual stage clutch structure is shown in Fig. 5-2-1.

Two Stage Clutch Adjustment:

1. Remove the clutch inspection cover on the side of the bell housing.
2. First adjust the main pull rod (15) so that the threaded end of the pull rod protrudes 1mm past its 16mm lock nuts. There are two other Main release fingers (9) to be adjusted. Use the throw out bearing as a guide by measuring the gap between the first adjusted finger (9) and the throw out bearing (10) to adjust the other two fingers so they are within 0.25mm on the same vertical plane. The three release fingers should contact the throw out bearing at the same time when the clutch pedal is pushed.
3. Adjust the three Sub pull rods (7) using their two lock nuts so that the gap between the washer and main clutch pressure plate (3) is 0.5mm. You need to rotate the clutch assembly to gain access to the three adjustment points.
4. Finally adjust the pedal free play at the adjustable pull rod (13) when the clutch pedal is at rest so that the clearance between the main release fingers (9) and release bearing (10) is 3mm.
5. Test the clutch operation.



1. Flywheel
2. Main clutch driven plate assembly
3. Main clutch pressure plate
4. Dish spring
5. Fixed clutch pressure plate
6. Sub-clutch driven plate assembly
7. Sub pull rod
8. Clutch cover
9. Main release fingers
10. Release bearing
11. Clutch pedal
12. Adjusting nut
13. Adjustable pull rod
14. Return spring
15. Main pull rod
16. PTO clutch pressure plate

Fig. 5-2-1 Manual double-acting clutch

Note: The main clutch should release when the pedal is half way down its stroke and the PTO clutch should release 30 – 40mm before the bottom of the pedal stroke. Readjust as required.

5.3. Wheel adjustments

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

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

Adjusting toe-in:

1. Steer the front wheels straight forward.
2. Measure the front and rear distances between the steering wheels at axle height to the centre of the tyre tread.
3. Adjust the steering tie rod till the front distance is 4 to 12 mm less than the rear distance.
4. Tighten the lock nuts on both ends of the steering tie rod.

Note: One side of the steering tie rod has a left hand thread.

5.3.2 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.

5.3.3 Rear wheel track – 4WD

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

5.3.4 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.

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

Points for attention:

1. After adjusting the wheel track make sure the front and rear wheels are symmetrical about the tractor centreline.
2. Rear lug tyred wheels, can be swapped side to side when adjusting the wheel tracks. (for rear wheels only).
3. Make sure that the direction of lugs are correct for traction when moving forward.

5.3.5 Front drive axle

Oil is drained using three plugs. One at the diff centre and the other two on the outside of the front wheel hubs. The oil plug on the front wheel hubs is also used as fill and oil level indicator by rotating the front wheel hub to the required position. The oil level should be half way up the hub. The front axle oil is filled through the fill and dip stick plug on the right hand side of the axle housing near the breather tube.

5.4 Power steering structure and points for attention

The power steering reservoir is located under the bonnet near the radiator. As long as the engine is running, the hydraulic pump will provide power steering to the tractor which won't be affected when using the hydraulic linkage system.

1. Power steering is provided through the hydraulic steering orbital. It requires a light force of 4 – 5 Nm (2.5 – 3.5ftlb) to steer the tractor in normal dry conditions. If the steering jambs or becomes heavy do not use excessive force or wrench the steering wheel as damage could result.
2. If moving the tractor manually by towing or pushing, do not apply a force greater than 250Nm (180ftlb) to the steering wheel.
3. Servicing and maintaining the hydraulic orbital gear should be carried out by a qualified trade's person.
4. Ensure the nuts, bolts and hydraulic connections

are checked and tensioned to avoid oil leaking from couplings and connections.

5. Make sure dirt, dust and grit can't contaminate the hydraulic power steering system through the reservoir, pump, oil lines and galleries when carrying out maintenance.
6. Power steering oil / fluid should be changed regularly along with cleaning or replacing the filter as per the service schedule.
7. When using full lock do not hold the steering wheels tight against the stops, back the steering off about an inch or 25mm. When held hard on full lock the hydraulic steering pump will load up with pressure and activate the relief valve making a recognisable noise, usually drowned by the sound of the diesel motor. Consistently holding the steering on full lock can damage the hydraulic relief valve.

5.5 Brakes

The tractor is fitted with wet brakes that will wear with time and usage requiring adjustment and eventually replacement.
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 in the brake system.

5.5.1 Brake adjustment

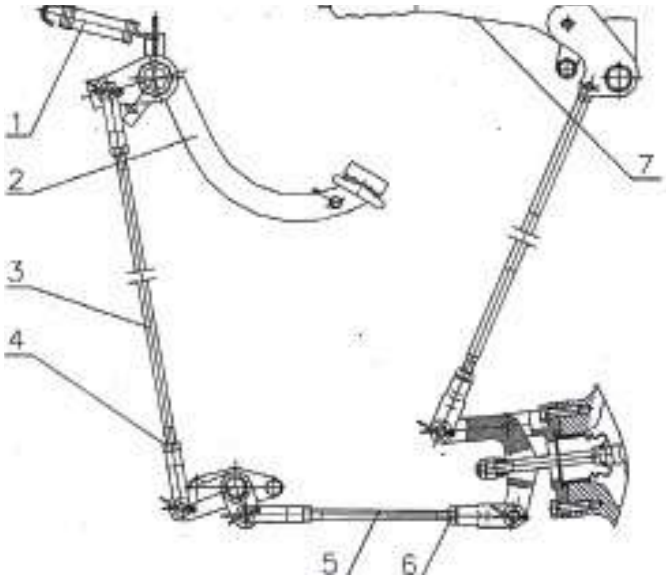
When the brakes need adjusting, adjust both sides using small increments and test.

Eventually some internal brake parts will wear out and require replacing. This should be done by a qualified trade technician. For your safety regularly check and maintain the brakes to keep them working well. Don't wait till they are unbalanced, out of adjustment and dangerous to use.

The wet brakes on this tractor are very effective and will require minimal adjustment. Before adjusting the brakes, thoroughly inspect the linkage system and pivot points. Damaged or ceased parts need to be rectified before any adjustment is carried out. Brake adjustment consists of adjusting the length of up pull rod (3) or lower pull rod (5) so the brake pedals fully engage and lock the rear wheels between 75 – 100mm of travel. If brake pedal travel is too long, shorten either pull rod one turn at a time. Check that the brakes are engaging simultaneously when the pedals are interlocked. Adjust as required.

5.6 Electrical system

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



1. Return spring
2. Brake pedal
3. Up pull rod
4. Adjusting nut
5. Lower pull rod
6. Adjusting nut
7. Park brake control lever

Fig. 5-5-1 Dongfeng DFS 654 / DFS 854 Brake Adjustment

5.6.1 Battery

The tractor is equipped with a 12 volt 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. Ensure 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 the positive terminal to the body of the tractor. The electrolyte level of the battery lies between the "UPPER" and "LOWER" marks on the battery case. 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 measures between 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.
5. Battery replacement: contact your dealer for the correct battery to suit your model.

5.6.2 Fuse

The fuses are located on the inner side of the clutch pedal well.

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.

5.7 Final drive system

If metal filings, shavings, shards or pieces are found during regular maintenance, contact a qualified trades person for assistance.

6. Technical Maintenance

6.1 Oil and lubrication

6.1.1 Diesel oil and lubricants : (Oil Table)

6.1.2 Lubrication points

Oil fill locations:
Front diff and front hubs
Power steering reservoir
Engine sump – tappet cover
Transmission – under floor matt
Rear diff housing – back right hand side
Hydraulic oil reservoir

6.1.3 Grease nipples

1 x Front axle swivel housing
2 x Tie rod ball joints
4 x Front axle steering joints (2 x top and 2 x bottom)
2 x Power steering ram pivot and ball joints
1 x clutch pedal pivot
2 x brake pedal pivot

6.1.4 Oil level inspection points

Engine dipstick
Power steering reservoir dipstick
Transmission dipstick
Front wheel drive axle dipstick.
Front wheel hub level plug (when plug is horizontally centred)
Rear axle dip stick
Hydraulic oil reservoil

6.1.5 Oil drain plugs on

Bottom of the engine sump
Under front diff
On front wheel hubs (when oil plug is rotated low)
Under transmission
Under rear axle (above drawbar).

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 that does not meet specification 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. Also keep records and receipts of all oils and filters purchased for each and every service.

Refer to Chapter 5 Mechanical Adjustment and Chapter 7 Maintenance Checks for 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.

6.2 Maintenance schedule

6.2.1 Daily checks

1. Check engine oil level and fill as required.
2. Check front diff and front wheel hubs.
3. Inspect radiator core for blockage, blow out and reinspect, clean as required.
4. Check filter and dust bowl for contaminant 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 and hydraulic reservoir 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 and stops (and water pump bearings (if grease nipple fitted)).

6.2.2 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, change hydraulic reservoir oil and filer & change front wheel hubs oil.
5. Change front diff oil.
6. Change hydraulic steering oil, clean strainer and refill with new oil.
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.

6.2.3 50 Hourly service

1. Inspect radiator core for blockage, blow out and reinspect, clean as required
2. Check air filter and dust bowl for contaminant and clean as required, replace every 50 hours in very dusty conditions. Inspect daily. Inspect inlet manifold and hoses for leaks, repair as required.
3. Check coolant level and top up or replace as required.
4. Check fan belt and adjust as required.
5. Check gearbox & hydraulic reservoir oil and top up as required.
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. Inspect hydraulic hoses and rams for leaks and repair as required.
9. Inspect machine for loose or broken bolts, tighten or replace as required.
10. Check brake and clutch adjustment and adjust as required. Request technical support if unsure how to carry out adjustments.

6.2.4 100 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 front hub 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 & hydraulic reservoir and top up as required -change oil and filter every 200 Hrs / 2 years.*

    Note: Transmission oil change interval: -Machines garaged under cover - every 2 years. - Machines left out in the open - annually.
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).
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.

6.2.5 250 Hourly service

Complete the 50 Hourly Interval Service and

1. Check tappet clearance and adjust as required.
2. Inspect engine, transmission and final drives for oil leaks and repair as required.

6.2.6 500 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 front hubs oils.
5. Change hydraulic steering oil, clean strainer and refill with new oil.
6. Change gearbox & hydraulic reservoir 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.

6.2.7 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 hub oils.
5. Change hydraulic steering oil, clean strainer, refill with oil.
6. Change gearbox & hydraulic reservoir 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.

6.3 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.

6.4 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. Failur e to complete maintenance intervals will void machine warranty.

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	every100Hr/annually	
Engine oil filter	Replacement	O		O		O		O		O		O	every100Hr/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 reservoir	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	every100Hr/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	every100Hr/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	

* Every year or every 4 cleaning cycles.
** Replace only if necessary.
*** Ask your East Wind dealer to perform this service.

7. Maintenance

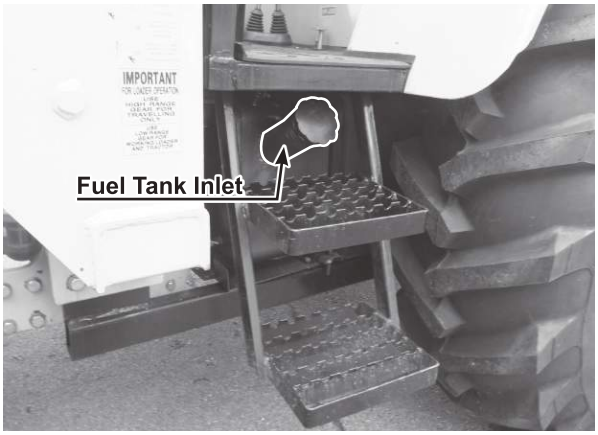
7.1 Fuel

7.1.1 Refuelling–Diesel fuel tank

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' (purge air from the fuel system) before normal operation can continue.

Fuel tank capacity

DFS 654 / DFS 854	60 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.

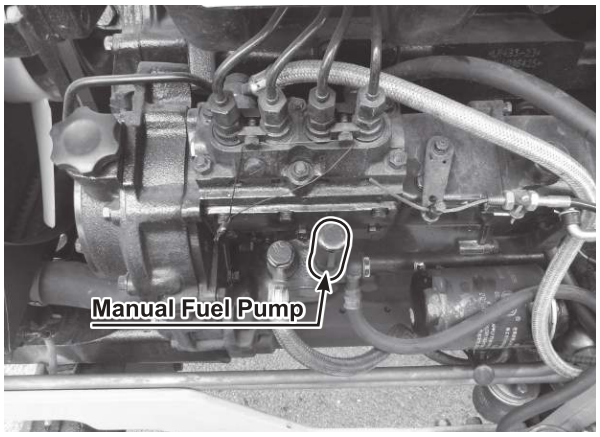
Caution:

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.

7.1.2 Bleeding the fuel system

Air must be removed:

1. When the fuel filter is replaced and fuel piping has been disconnected.

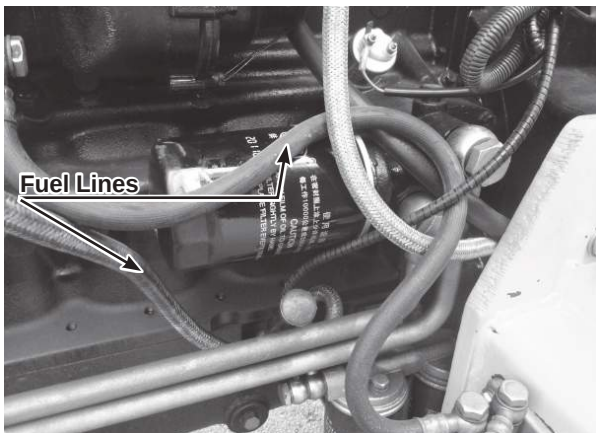


2. When fuel is used up and tank is low or dry.
3. When driving on a slope and fuel has sloshed away from the fuel outlet.

7.1.3 Bleeding procedure is as follows:

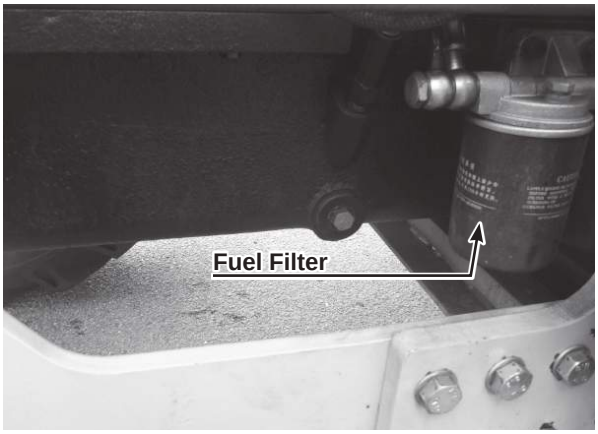
1. Fill the fuel tank with fuel, and open the fuel tap.
2. Twist open the air bleed screw plug on the fuel injection pump with one turn.
3. Push the manual fuel pump plunger several times as required.
4. When bubbles disappear from fuel coming out of the plug, close the bleed screw.

7.1.4 Checking fuel lines



Although checking the fuel line 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 hours of service. Change the rubber fuel pipe together with the hose clamps every two years and securely tighten.
3. If the fuel pipe and hose clamps are found damaged or degraded earlier than two years, then change as necessary.
4. After the fuel pipe and hose clamps have been changed, bleed the fuel system.

Safety precautions

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

7.1.5 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 new 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 injectorpump as per 7.1.3 Bleeding procedure.

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.

7.2 Engine 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.
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 Dongfeng, Multi Farm 1 Special Blend oil.

7.2.1 Engine oil change

Oil Capacity

DFS 654 / DFS 854	15 L

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.

7.2.2 Power Steering

Power Steering Oil

DFS 654 / DFS 854	2 L

Stop the engine before servicing the power steering.

Service the power steering system as per the service schedule. The power steering reservoir is fitted with a washable filter. The washable filter is spring loaded and sits between the oil outlet at the bottom of the reservoir and the dimple at the top near the oil fill breather cap. It is easier to clean and service the filter by removing the reservoir from the tractor, draining the oil then removing the filter through the oil filler. Removing the filter can be achieved while the reservoir is still attached to the tractor. The filter should be removed, cleaned and replaced when changing the oil.

Inspect the hydraulic lines for damage or leaks. Ensure steering hardware, hydraulic ram, steering ball joints and fixtures are securely tightened.

Note: Steering is by hydraulic ram. There is no mechanical linkage between the steering wheel and the front wheels. With the engine off the steering wheel can be turned with firm gentle pressure, aligning it as required without turning the front wheels.

7.3 Transmission oil

Transmission Oil Capacity

DFS 654 / DFS 854	40 L

Unscrew 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 Dongfeng, Multi Farm 1 Special Blend Oil.

7.3.1 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 underneath and at the back of the transmission case. After draining, clean and replace the drain plugs and fill with new Dongfeng Multi Farm 1 Special Blend Oil.

7.3.2 Replacing hydraulic oil filter

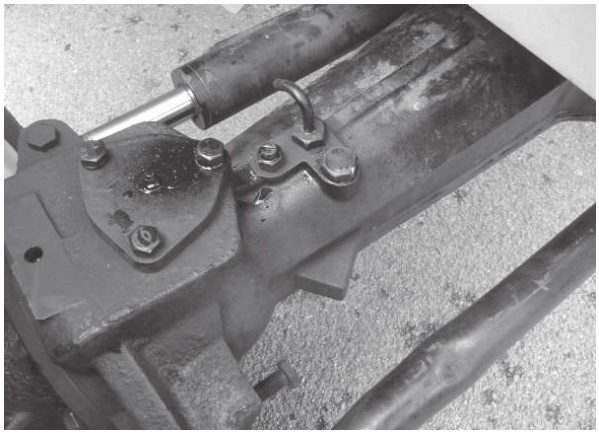
Hydraulic Oil Reservoir Capacity

DFS 654 / DFS 854	15 L

When changing the oil in the hydraulic reservoir, also replace the spin on hydraulic filter as indicated 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 oil, which could damage the high pressure hydraulic pump.

7.4 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: Dongfeng Multi Farm 1 Special Blend Oil.

7.5 Grease before operation

Front Axle Oil Capacity

DFS 654 / DFS 854	7 L

Front Hub Oil Capacity

DFS 654 / DFS 854	2 x .5 L

Grease the following points before starting.

7.5.1 King pins, rod ends and centre pin

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

7.5.2 Pedal shafts

Grease the clutch and brake pedal shaft.

7.6 Radiator

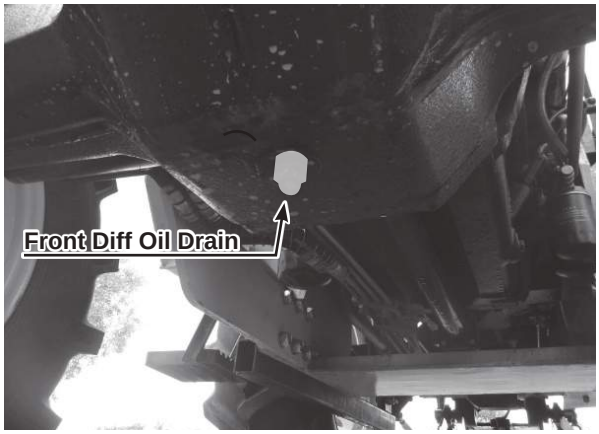
Keeping your radiator maintained and in good working order is vital to minimizing engine

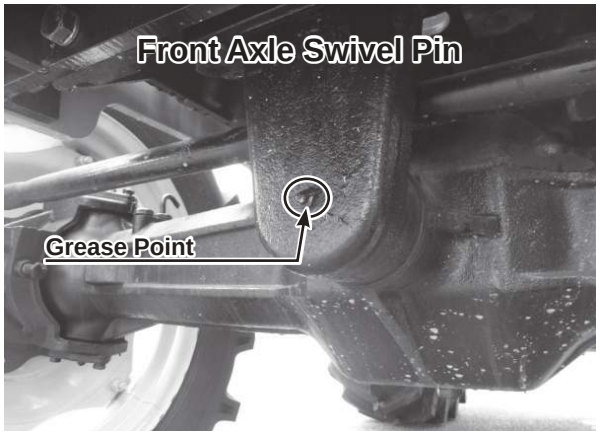
Coolant Capacity

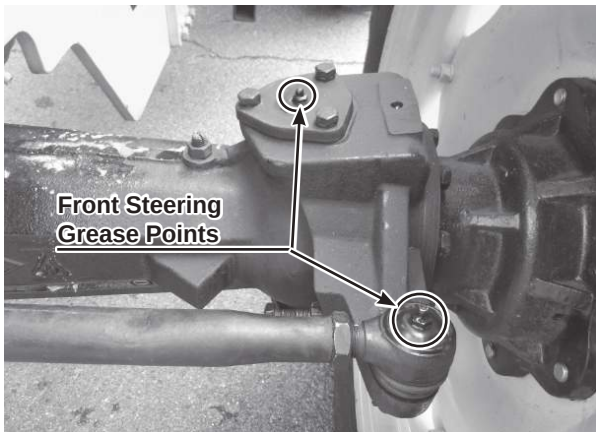
DFS 654 / DFS 854	12 L

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.

7.6.1 Checking, maintaining and changing







the cooling water

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.

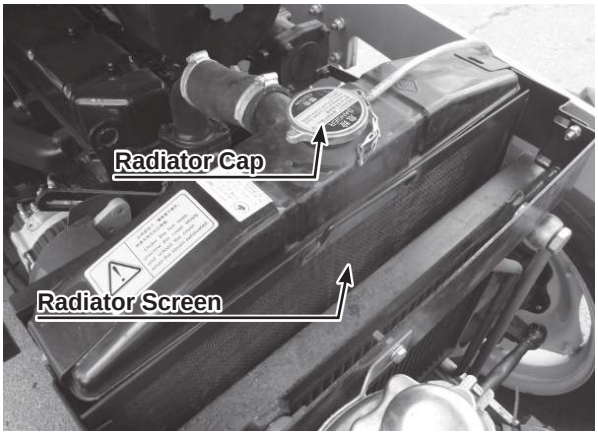
Caution:

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

corrosion 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



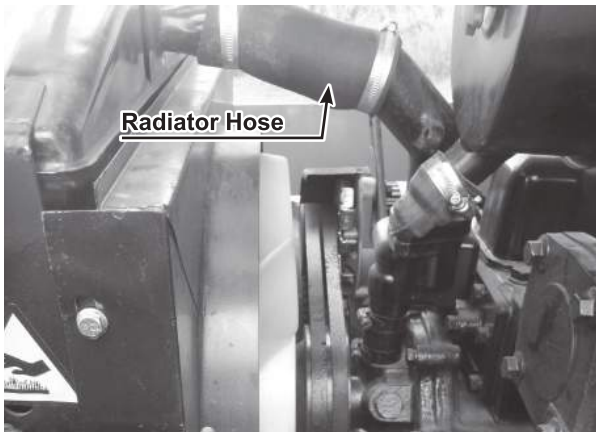
stopped, otherwise, hot water may spray out, scalding the operator. Let the engine cool for at least 5 minutes before opening the cap, carefully.

7.6.2 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.

7.6.3 Check and replace radiator hoses.

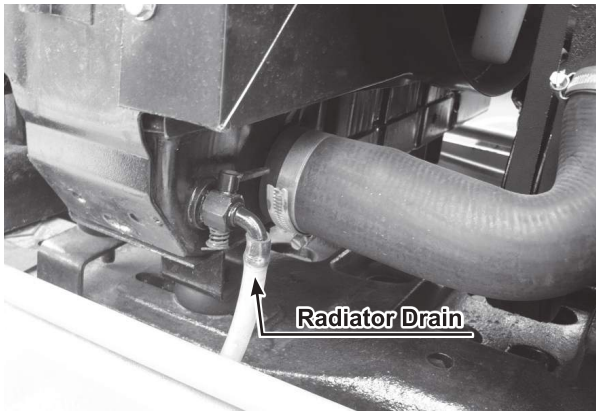
1. Check radiator hose clamps for tightness every 150 hours, or 6 months.
2. If the hose clamp is loose, securely retighten and apply a light coat of rubber grease.
3. The radiator hoses are made from rubber and



will deteriorate. They must be changed every two years. Replace the hose clamps and tighten as required.

7.6.4 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.

7.6.5 Anti-freeze

If the coolant freezes in the engine cylinder and

Cooling system capacity

DFS 654 / DFS 854	12 L

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 adding anti freeze to circulate it thoroughly.

1. 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. Ensure the cooling system is completely clean.

2. Check with your anti freeze supplier for the correct concentration for your conditions.

3. Thoroughly miix the anti-freeze with clean water and then pour the mixture into the radiator. Run the engine to circulate it thoroughly.

4. When the anti-freeze coolant 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.

7.7 Tyre pressure

The tyres are the ‘shock absorbers’ of your tractor.

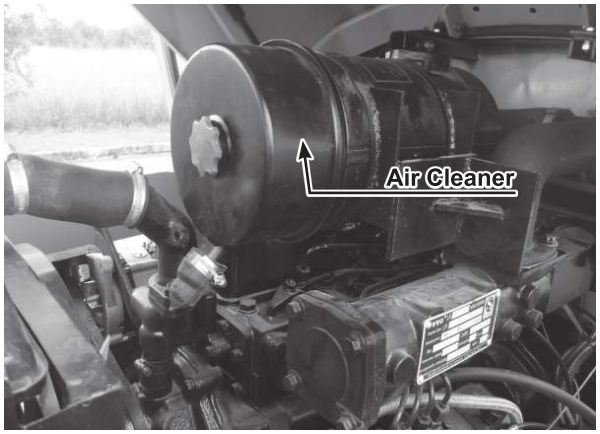
Lug tyre pressure guide

	Front	Rear
DFS 654 / DFS 854	220-250kpa (2.2-2.5kg/cm²) approx 30psi	100-150kpa (1-1.5kg/cm²) approx 15psi

Tyre pressure drops naturally over time and you can get punctures, so check them daily. The 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.

7.8 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.
6. In very dusty conditions check the air cleaner daily.

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.

7.9 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.

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

7.10 Three point linkage adjustment

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

7.10.1 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.

7.10.2 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.

7.10.3 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.

8 Trouble-Shooting Guide

8.1 Engine

8.1.1 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	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.

8.1.2 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.

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.

8.1.3 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

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.

b. White smoke

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

c. Blue smoke

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.

8.1.4 Engine low on power

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

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.

8.1.5 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.

8.1.6 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.

8.1.7 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.

8.1.8 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.

8.1.9 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.

8.1.10 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.

8.1.11 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.

8.1.12 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.

8.2 Chassis

8.2.1 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.

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.

8.2.2 Brake

a. Ineffective braking

Troubles & possible causes	Solutions
a. Brake pulling to one side.	Adjust linkage to synchronise brake application.
b. Excessive pedal free travel.	Readjust pedal free travel.

b. Brake bias

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.

Brake disengages incompletely and gets overheated

8.2.3 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.

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.

8.2.4 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.

8.2.5 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.

8.2.6 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.

8.3 Electrical system

8.3.1 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.

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.

8.3.2 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.

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.

8.3.3 Starter

a. Starter motor not working

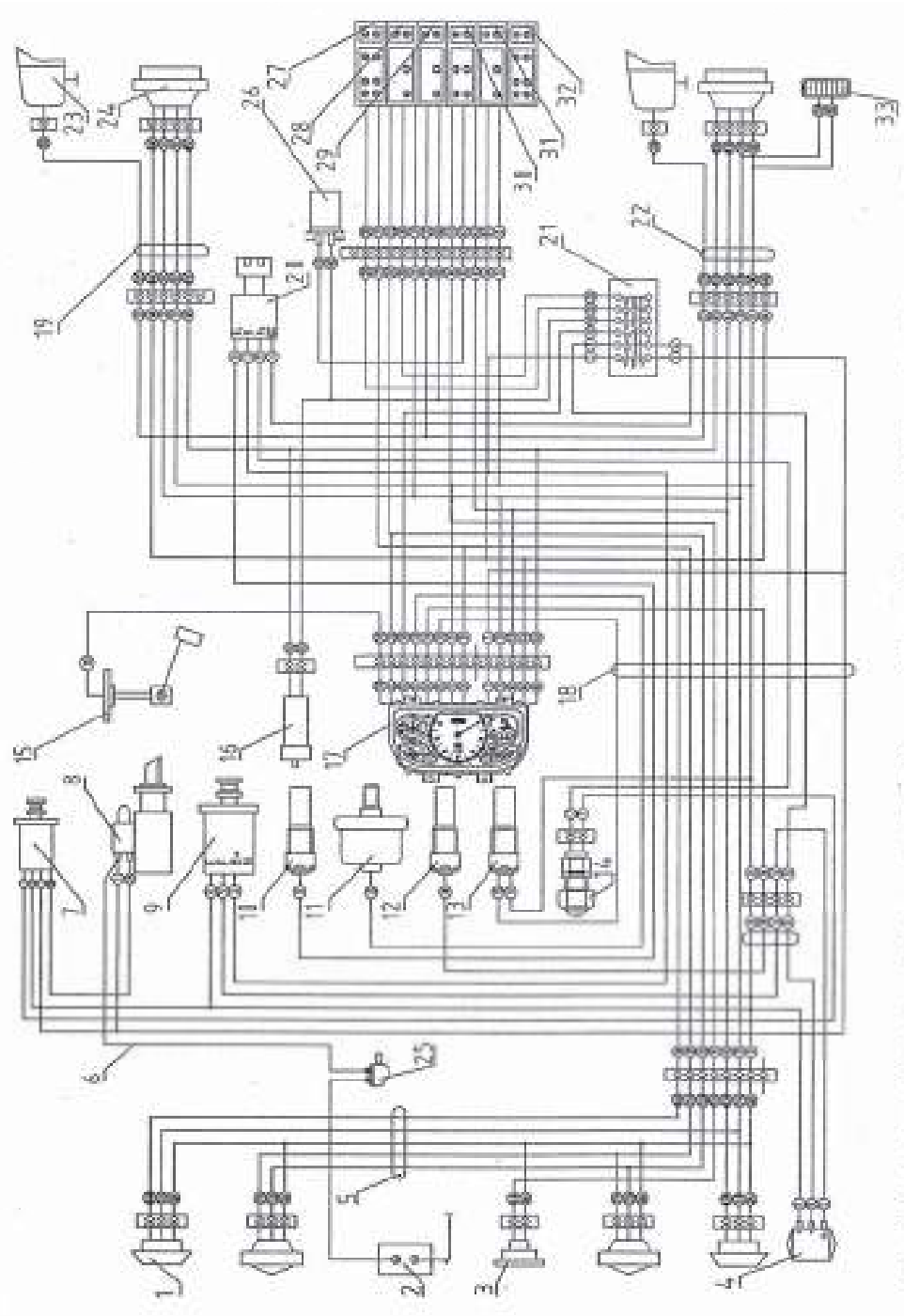
Troubles & possible causes	Solutions
a. Poor or broken electrical connection in the wiring loom or ignition switch.	Solder broken connection or replace the wire. Clean and tighten all electrical connecting points.
b. Fuse blown.	Repair the cause of the broken fuse, replace with the fuse of specified 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.

Wiring Diagram

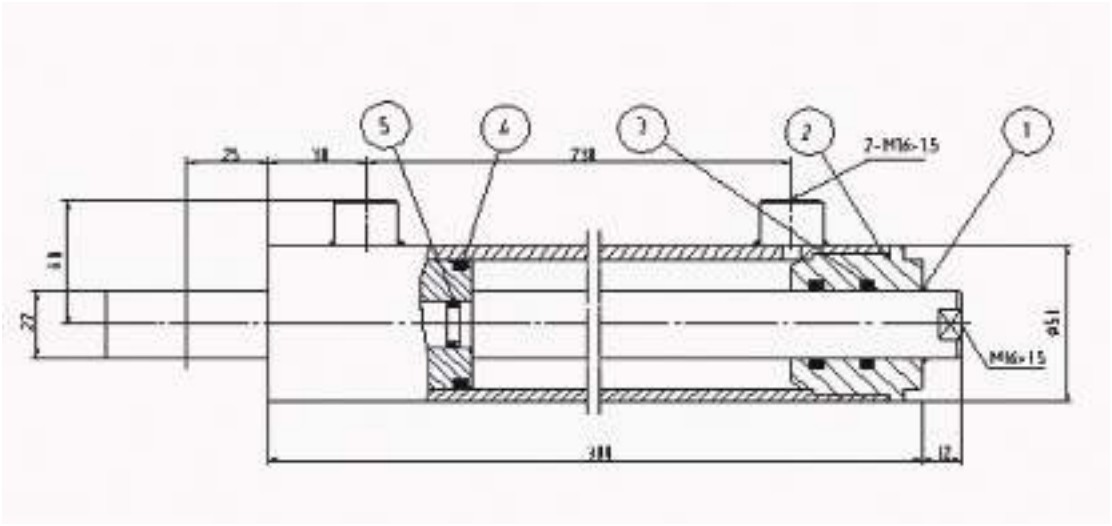
Appendix 1.



1. Headlight
2. Battery
3. Electric Horn
4. Voltage regulator
5. Front harness
6. Battery positive pale cable
7. Starter relay
8. Starter motor
9. Generator
10. Electrothermic plug
11. Oil pressure sensor
12. Water temperature sensor
13. Tachometer
14. Starter safety switch
15. Oil gauge sensor
16. Braking lamp switch
17. Combination metre
18. Tachometer
19. Right fender harness
20. Electric buttonhole
21. Fuse block
22. Left fender harness
23. Rear working lamp
24. Combined rear lamp
25. Mail power switch
26. Flasher
27. Rear working lamp switch
28. Left turn indicator switch
29. Right turn indicator switch
30. Parking flasher light switch
31. Horn button
32. Headlight switch
33. License plate light

Steering Cylinder Diagram

Appendix 2.

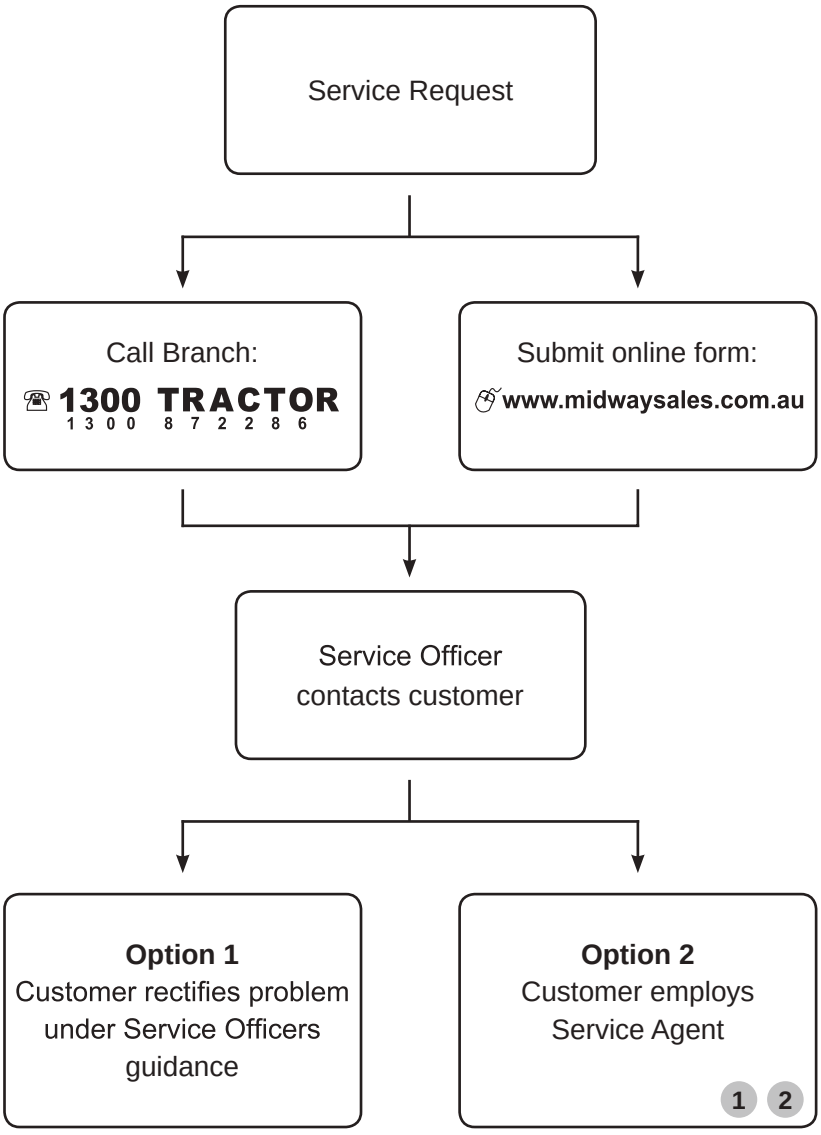


Steering cylinder specifications

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

Service Flow Chart

Appendix 3.

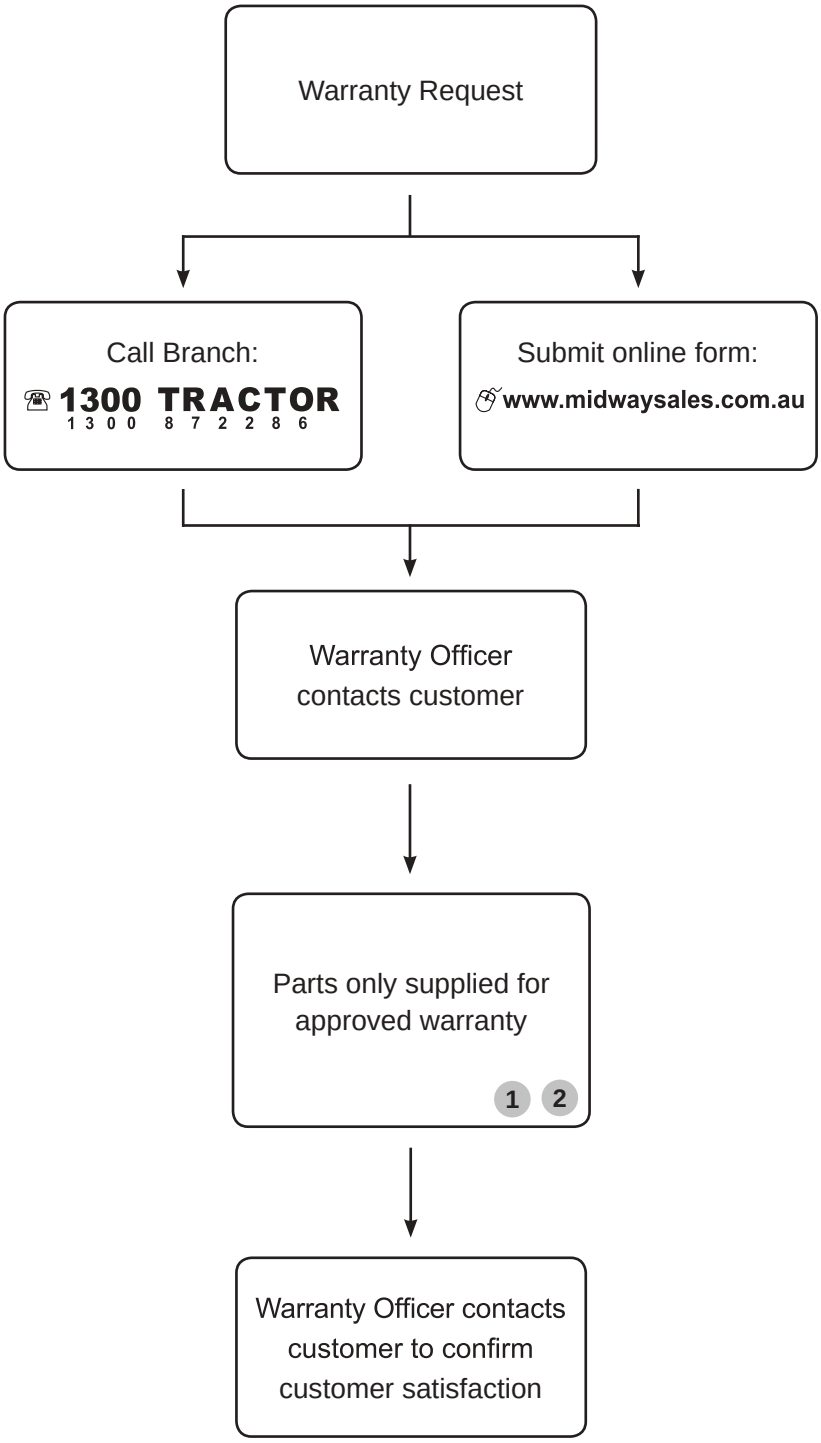


1. Transport & freight at customers expense.
2. Service Agent fees apply.

Note: Servicing is at customers expense

Warranty Flow Chart

Appendix 4.



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 by qualified technician at the appropriate intervals and recorded on this sheet It is the purchaser's responsibility to follow the maintenance schedule listed in Chapter 6. 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 Hourly					
100 Hourly					
150 Hourly					
200 Hourly					
250 Hourly					
300 Hourly					
350 Hourly					
400 Hourly					
450 Hourly					
500 Hourly					
550 Hourly					
600 Hourly					
650 Hourly					
700 Hourly					
750 Hourly					
800 Hourly					
850 Hourly					
900 Hourly					
950 Hourly					
1000 Hourly					

The 1st Service should be carried out at 30hrs (hrs shown on dash), then after a further 50hrs worked (80hrs shown on dash), the 50 hourly service will need to be carried out.

Midway Sales Tractor Induction Certificate

Tractor Model:…… **Stock No:…..** **Invoice No:……**

Customer:…….. **Induction Date:……** **Induction Time:…….**

1. Safety precautions – see Operation Manual. Do not coast refer page 2 ☐
2. Daily pre start checks – water, radiator, engine oil, fuel, and clutch free travel ☐
3. Engine start: cold start / hot start. Pre-heat – Very cold conditions. ☐
4. Engine stop ☐
5. Clutch: Operation, free travel adjustment/service, No foot resting on pedal or engine hunting ☐
6. Engaging: range box, transmission, shuttle shift, diff lock, 4WD, P.T.O. ☐
7. Power steering – reservoir and full lock applications ☐
8. Position control – three point linkage / lift limiter // Hydraulic remotes: Constant & Momentary ☐
9. Response control - three point linkage – Location & Operation ☐
10. Air cleaner, oil filters, fuel filters. Oil fill points & drains ☐
11. Tyres / track pressure. Wheel nuts – 150ft lbs; outer rim & weights – 75ft lbs ☐
12. Brake adjustment / park brake ☐
13. Bolt tensioning – Wheels, Loader, slasher etc. ☐
14. Servicing - 30 hour oil change – 1st service, all fluids & filters, keep service records ☐

Front End Loader. Safety: see Operation Manual. Keep loader down ≤ 300mm, Ref page 5.

15. Caution when operating. Do not clamp overhead/immovable objects; do not dig with loader. ☐
16. Use low range only filling and operating the bucket, give examples. Don't slip the clutch. ☐
17. Remove lock pins before operating / release hydraulic pressure when parking. ☐
18. Implements: - Safety, Refer implement Operation Manual before fitting and operating. ☐

Comments: Customers / Induction Officer

This induction was carried out in person at the…….. .. branch ☐

OR this induction was carried out by telephone. Phone number:…….. ☐

Induction Officer:……..Signature:……Date:……..

Continued Over page

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 these safety measures.

- Do you feel comfortable / competent to operator your new tractor Yes ☐ No ☐
- If **NO** advise the customer to seek training from an Accredited Training Organisation

Customers Name:……..Signature: ……Date: ……..

ALL COMPLETED INDUCTION PAPERWORK TO BE RETURNED TO THE SALES ADMINISTRATOR

PRE-DELIVERY SERVICE

STATIC SERVICE CHECKS

1. Roll over protection structure ROPS fitted ☐
2. Canopy fitted ☐
3. Safety mirror fitted ☐
4. Tyre pressure and condition ☐
5. Radiator corrosion inhibitor coolant level ☐
6. Radiator removable screen installed ☐
7. Fan / alternator V belt ☐
8. Engine oil level ☐
9. Transmission / real axle oil level ☐
10. Front axle differential oil level (4WD) ☐
11. Brake adjustment and pedal equalisation ☐
12. Top link, drawbar and pin ☐
13. Wheel-to-rim clamp bolts and lock nuts for tightness ☐
14. Wheel disc-to-hub nuts for tightness ☐
15. Front axle support bolts for tightness ☐
16. Front wheel toe-in (4WD) ☐
17. Fuel level ☐
18. Paint and detail ☐
19. Lubricate all grease fittings ☐
20. Air cleaner element and hose connections ☐
21. Seat mounting and adjustment ☐
22. All electrical cables, terminals and wires ☐

SAFETY ITEMS CHECK:

1. Seat belt installed ☐
2. Safety decals installed ☐
3. Neutral start switches operative ☐
4. Parking brake operation ☐
5. Flashing lights/tail lights operation ☐
6. Operator's Manual supplied ☐
7. P.T.O guard installed ☐
8. S.W.L.embleminstalled(whereapplicable) ☐

DYNAMIC SERVICE CHECKS

All operative checks are to be performed with the tractor at normal operating temperature.

1. Lights and instruments for proper operation ☐
2. Fluid and oil leaks ☐
3. Maximum no-load speed and idle speed adjustments and fuel shut-off ☐
4. P.T.O Operation ☐
5. Hydraulic System: Selector levers for Position Control operation ☐
6. Flow control operation (Response Control) ☐

PERFORMANCE SERVICE CHECKS:

1. Engine operation including throttle and governor response ☐
2. Transmission, including clutch & shuttle ☐
3. Steering control ☐
4. Diff-lock engagement and disengagement ☐
5. Brake action ☐
6. All optional equipment and accessories ☐

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.

INSPECTION PERFORMED – WARRANTY EXPLAINED – INSTALLATION COMPLETED.

TRACTOR MODEL NO. ……..

TRACTOR SERIAL NO. ……..

OWNER'S SIGNATURE
DATE

DEALER'S SIGNATURE
DATE

MIDWAY SALES®

TRACTORS & MACHINERY

Brisbane•Sydney•Melbourne

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V 2013.11.29

DONG FENG
Factory Direct Tractors