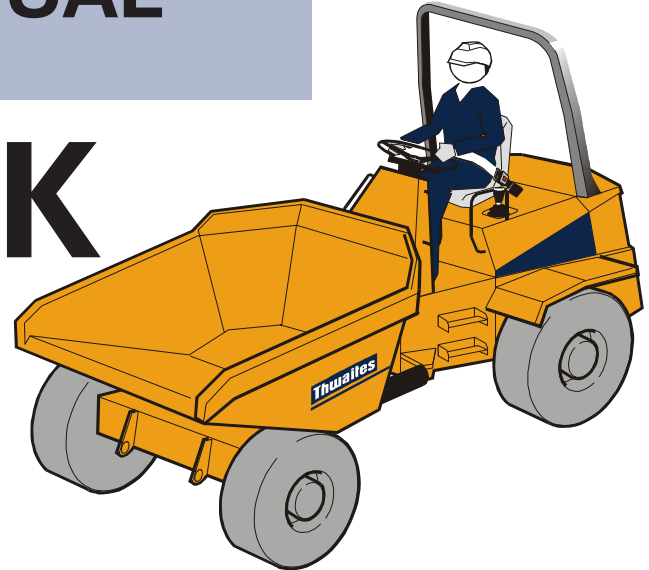
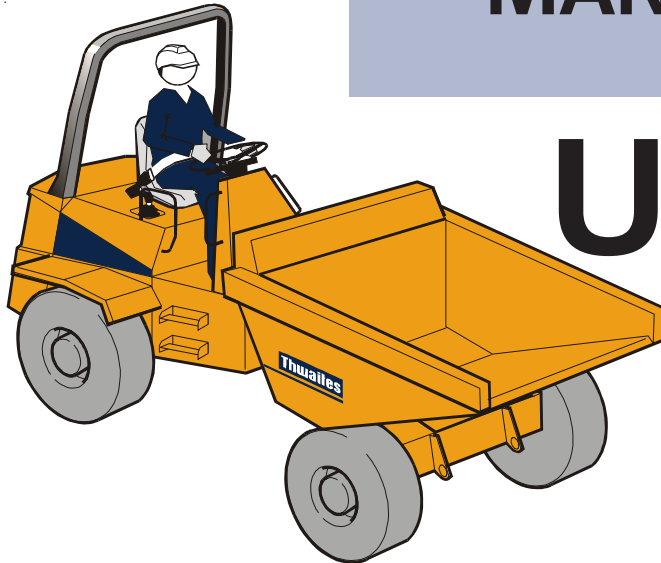


3-4 Tonne

Thwaites

OPERATOR INSTRUCTION MANUAL

UK



Thwaites Limited put Safety First.

It is the policy of Thwaites Limited to promote safety in the operation of its machines and to create a general awareness of site safety and safe working practices for the operators of its machines.

This Operator Manual is intended for both new and experienced machine operators. It should remain with the machine at all times. All operators should be aware of its location and contents.

It is important that all operators are fully trained and familiar with the machine and that they have read and understood the information contained within this book before they attempt to operate in the site conditions for which the machine was designed.

This book details practices and operations which Thwaites Limited recommend. DO NOT operate this machine in ways other than those detailed within this book.

This machine is designed for customary construction site operations, and the transportation of bulk materials commonly carried on such sites; that is their 'intended use'. Under certain controlled conditions the dumper may be used for towing wheeled loads.

Safety Symbols.



- **Attention!**
- **Become Alert!**
- **Your Safety Is Involved!**



Correct action.



**Incorrect action/
procedure which
should NOT be carried out.**

Signal words:

Signal words are used on the machine and within this manual to identify levels of hazard seriousness.



DANGER



WARNING



CAUTION

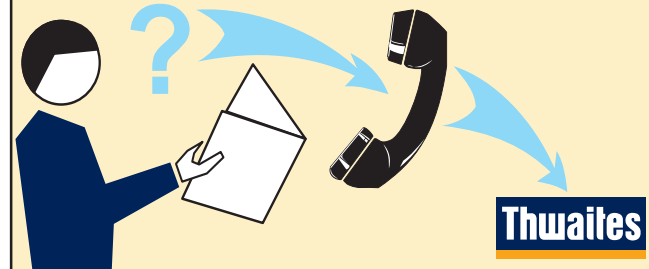
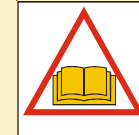
1 Before You Operate This Machine

Thwaites



Read Operator Instruction Manual.

1. Questions - contact:
Thwaites representative.



2. Learn to operate this dumper.
3. Ensure you are fit to operate.
4. Wear correct safety clothing and ensure safety equipment is available.

Complete Checks in Section

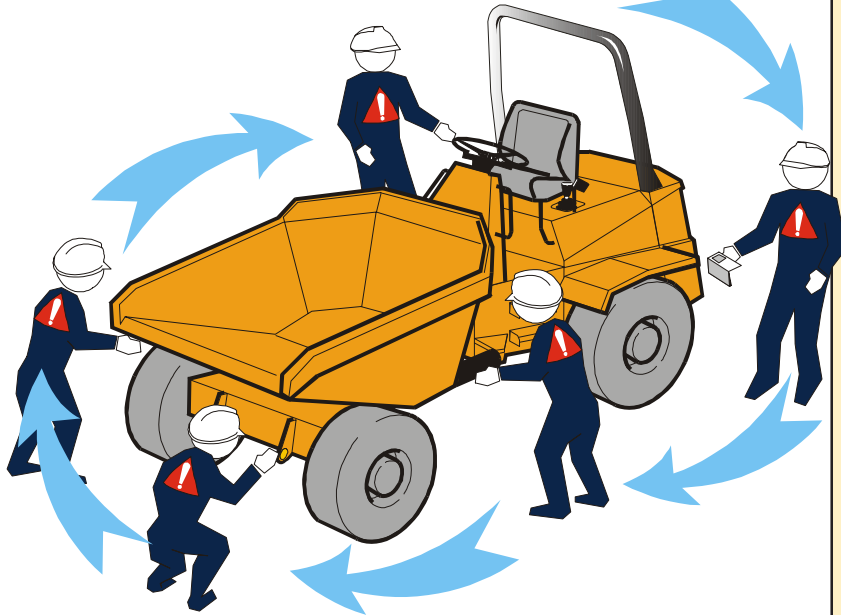
1

Before Starting The Engine

1 Before You Operate This Machine

Thwaites

Walk Around The Machine



Visually Check The Machine

- 1 Chassis/Skip Locks - Disengaged.
- 2 Controls - Clean/Clear debris.
- 3 Roll Over Protective (ROPS) frame - Secure/Fully upright/Undamaged.
- 4 Seatbelt Anchorage - Secure/Serviceable.
- 5 Covers and Mudguards - Secure.
- 6 No Fluid Leaks.
- 7 All Labels - Legible.
- 8 Tyres - No Cuts/Splits.
- 9 Bolts - Tight/In Position.
- 10 **Perform Daily Maintenance Tasks.**
(See Rear Cover)
11. Report all faults immediately.



**DO NOT OPERATE UNTIL ALL
FAULTS HAVE BEEN RECTIFIED.**

Complete Checks in Section



Before Starting The Engine

1 Before You Operate This Machine

Thwaites



Mount Machine & Check Controls

- 1 Use grabrails and footsteps provided to reach machine seat.
(Mount and dismount facing machine).
- 2 Engine Cover - Secure/Locked.
- 3 Seat - Adjust for Comfort/Reach.
- 4 Wear Seatbelt - Adjust.
- 5 Check Parking Brake - ON.
- 6 Controls - to Neutral.
- 7 Foot Brake - Pressure.
- 8 Learn and check all control functions explained in the following pages.

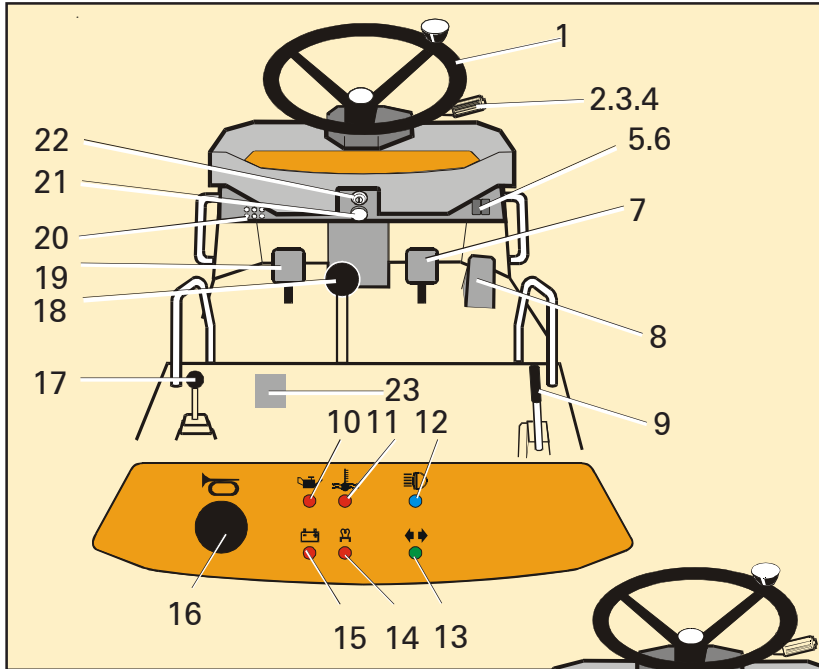
WARNING

Seatbelt **MUST BE WORN** when operating machines fitted with Roll Over Protective frame.

Complete Checks in Section  Before Starting The Engine

1 Controls Function - Layout

Thwaites

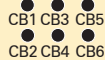


Controls Location & Functions

1. Steering Wheel.
2. Direction Indicator Selector - Forward = Left turn - Back = Right turn.*
3. Lights - Twist 1 = Sidelights ON - Twist 2 = Dipped headlights ON.*
4. Up = Flash. Down = Main beam.*
5. Hazard Warning Light Switch.*
6. Beacon Switch.
7. Foot Brake Pedal.
8. Throttle Pedal.
9. Parking Brake Lever.
10. Engine Oil Pressure Warning Light.
11. Water Temperature Warning Light.
12. Headlamp Main Beam Pilot light.*
13. Direction Indicator Pilot Light.*
14. Heat/Start Pilot light.
15. Battery Charging Warning Light.
16. Horn Push.
17. Bucket Raise/Lower/Rotate Lever.
18. Gear Lever.
19. Clutch Pedal (Start Inhibitor).
20. Circuit Breakers (Push to reset).
21. Ignition & Parking Brake Warning Buzzer.
22. Ignition Switch.
23. Maxi Fuse (under engine cover).

* Optional items

- 20
- CB1 Fuel/Direction Solenoids.
 - CB2 Instrumentation/Warning.
 - CB3 L/H Sidelights.*
 - CB4 R/H Sidelights.*
 - CB5 Ignition Fed Lights.*
 - CB6 Battery Fed Lights.*

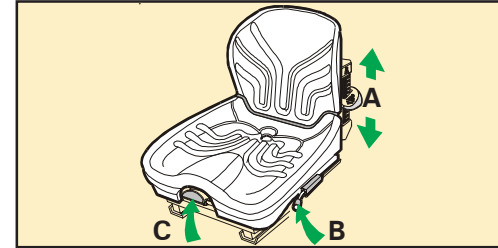


Complete Checks in Section **1** Before Starting The Engine

1 Controls Function - Explained

Seat Adjustment

- A - Push down to set driver weight (seat empty).
Push fully down and release to reset (seat empty).
- B - Lift to slide seat assembly forwards/backwards.
- C - Lift to slide cushion forward and set backrest.

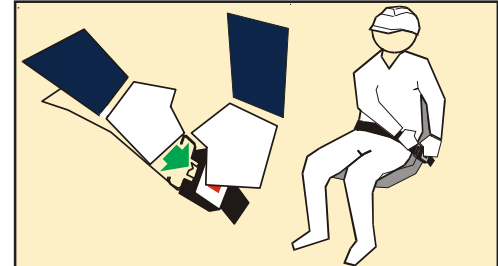


Seatbelt (If Fitted)

- Adjust length of belt when sitting on machine.
- Press buckle blade into buckle lock.
- Pull belt webbing through buckle blade to remove slack.



Seatbelt should not be worn loose, it should pass comfortably across hip bones and not the abdomen.



(8)- Throttle Pedal - Right Foot

- Press down pedal, to increase speed.
- Lift pressure from the pedal to reduce speed.

(7) - Foot Brake Pedal - Right Foot

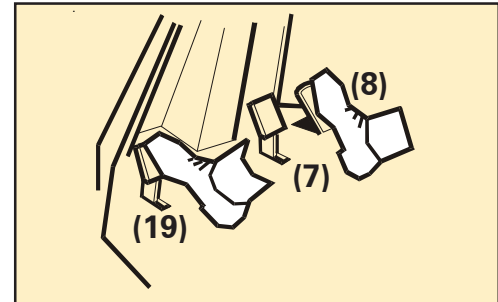
- Push down on the pedal to slow/stop the machine.

(19) - Clutch Pedal - Left Foot

- Press down before each gear change - select gear and release.



Start inhibitor fitted - press down clutch pedal before starting engine.



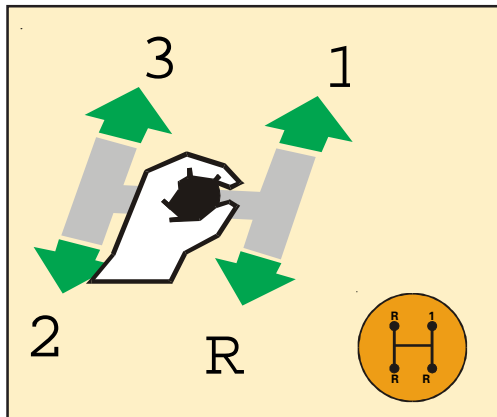
Complete Checks in Section



Before Starting The Engine

1 Controls Function - Explained

Thwaites



(18) Gear Lever - Left Hand

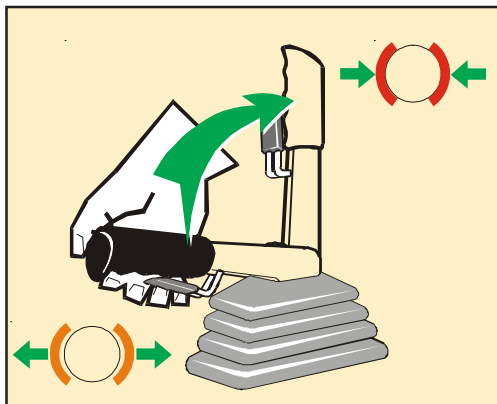
Forward Left
Third Gear

Forward Right
First Gear

Neutral

Back Left
Second Gear

Back Right
Reverse



(9) Parking Brake Lever - Right Hand

When the machine is stationary (or in an emergency):

Pull up to apply.

Pull catch and lower to release.



An audible warning device is fitted to your machine.

This will sound when the parking brake is engaged.

Complete Checks in Section




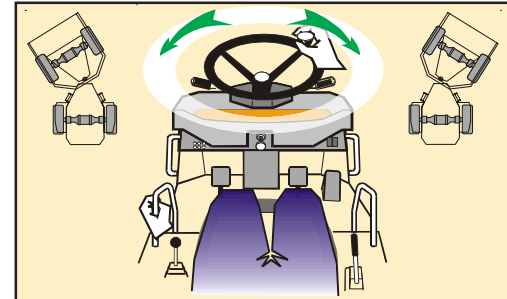
Before Starting The Engine

1 Controls Function - Explained

(1) Steering Wheel - Both Hands

Turn the wheel to the right (*clockwise*) to turn machine to right.
Turn the wheel to the left (*anticlockwise*) to turn machine to left.

 When using the spinner knob for low speed single handed steering ensure the non steering hand is on the engine cover grab rail.




(17) Tipping Control Lever (Forward Tip Models) - Left Hand

Push forward to raise skip.

Push backwards to lower skip.

(17) Tipping Control Lever (Swivel Skip Models) - Left Hand


Raise skip 100 mm (4") to disengage pivot centring lock.

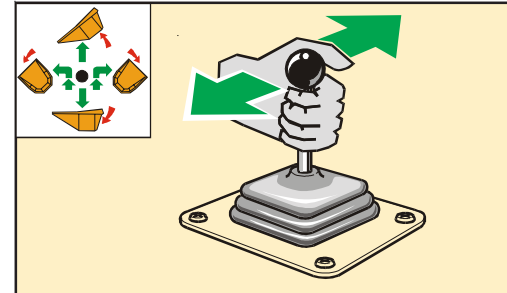
 Rotate skip, fully lowered, to automatically engage centring lock.

Raise skip and Push lever to the right to rotate skip to right.

Raise skip and push lever to the left to rotate skip to left.

Increased engine speed reduces cycle times.

 Movement of the bucket is disabled if the steering wheel is moved (Priority Steering).

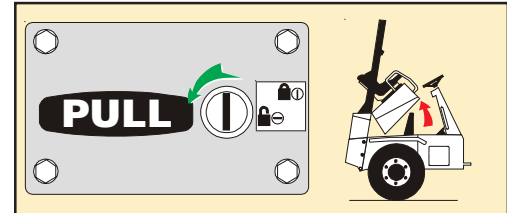


Engine Cover Open/Close

Insert ignition key and turn anticlockwise to unlock.

Pull handle to release and raise cover.

Lower cover, secure and lock before driving.



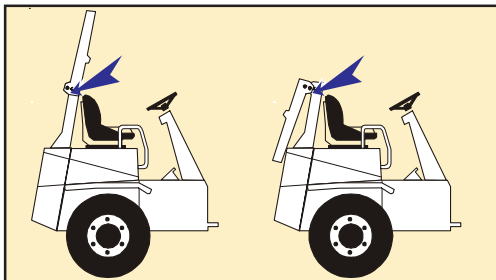
Complete Checks in Section



Before Starting The Engine

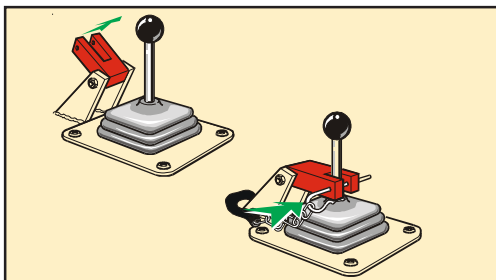
1 Controls Function - Explained

Thwaites



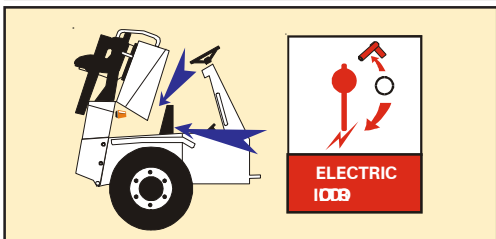
Folding Roll Over Protective Frame - Lower & Raise

Remove linch pins and withdraw frame lock pins.
Lower frame and insert lock pins and linch pins in new position.
Reverse the procedure to raise the frame.
Ensure all pins are secure before driving.



Tipping Lever Lock (If fitted)

Place yolk over tipping lever and secure with linch pin.



Beacon Stowage

Unplug and remove beacon.
Secure beacon on bracket provided beneath bonnet.

Battery Isolator (*Beneath engine cover*)

Turn key anticlockwise to isolate the battery power supply.

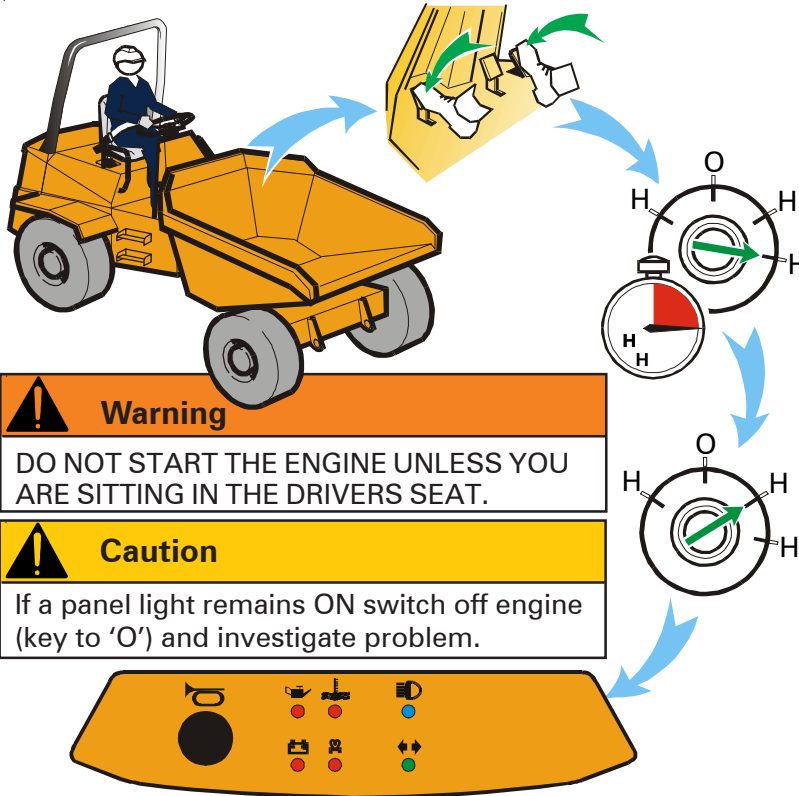
Complete Checks in Section



Before Starting The Engine

2 How to START and STOP the engine

Thwaites



To Start The Engine

- Depress Clutch Pedal.
(Start Inhibitor fitted).
- Depress accelerator pedal fully and turn the key clockwise to the start position (S).

All panel lights self test (illuminate) and should extinguish on start-up.

- Allow the engine to turn for 15 seconds max.
If the engine does not start within 15 seconds return key to position O and wait 30 seconds before turning to S again.

- When the engine fires, release key.
(Springs back to 'Run' position (R)).
- Reduce accelerator pedal pressure to prevent over revving.

Cold Start Aid - 

Turn key to position (H). When panel Light extinguishes start engine (as above).

To Stop The Engine

- Turn key to position (O).

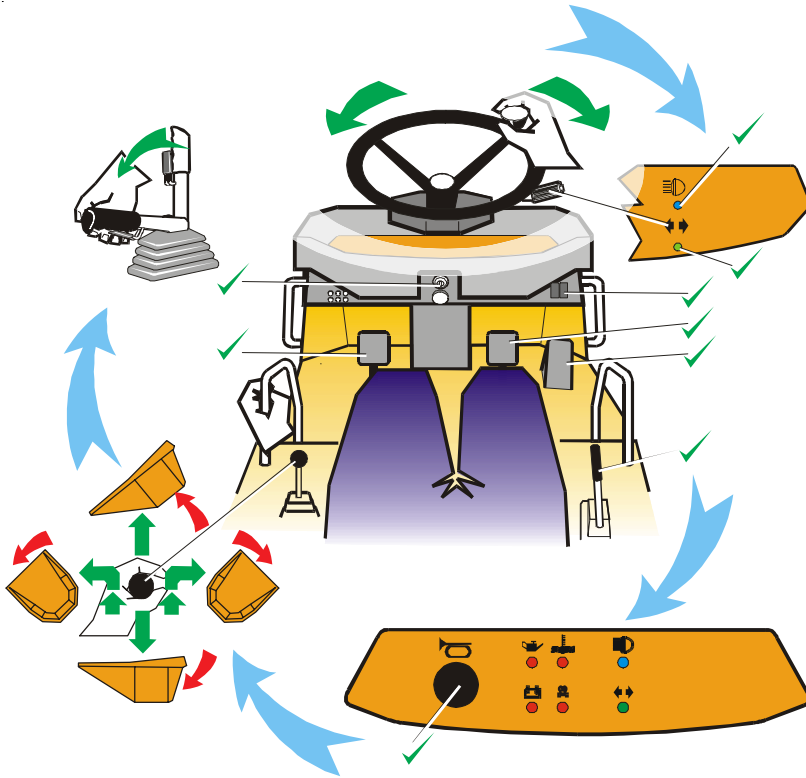
Caution

Do not use unauthorised starting aids.
Do not TOW or BUMP start.

Complete Checks In Section  Before Loading The Machine

2 Check the following Control Functions

Thwaites



Function Checks - Engine ON

Brakes

- Foot Brake pedal for firm feel.
 - Parking Brake.
- Carry out Park Brake Test (*Described on next page*).

Steering

- Rotate steering wheel left to right - right to left.

Electrics

- Horn Sounds.
- Reverse Alarm sounds (Optional).
- Beacon Flashes.
- Lights (Optional)-
 - Side
 - Main
 - Stop
 - Indicators
 - Hazards

Tipping Lever

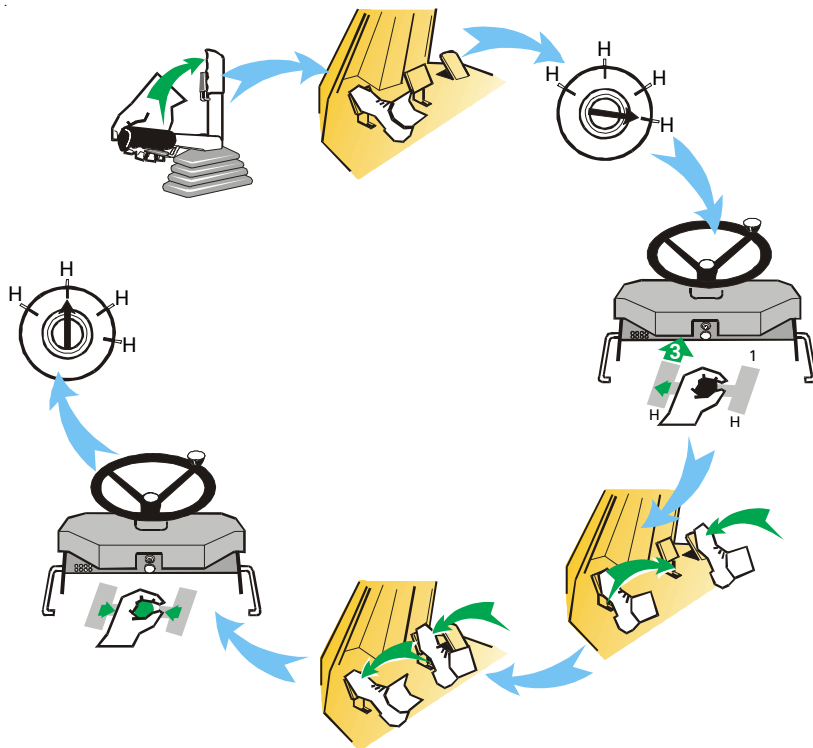
- Raise/Lower Bucket.
 - Rotate - Right to left/Left to Right.
- (*Swivel model only*).



Complete Checks In Section **2** Before Loading The Machine

2 How to Test the Parking Brake

Thwaites



Warning

Before testing Parking Brake ensure the machine is on firm level ground and the area is clear of people.

- Apply parking brake .
- Depress clutch pedal and start engine.
- Select 3rd gear.
- Use the throttle pedal to gradually increase engine speed to full revs.
- Gradually release the clutch pedal.
- Release throttle and apply clutch and foot brake if the machine moves forwards.



You should be able to stall the engine before the machine moves.

- Select neutral.
- Turn ignition key to off position.



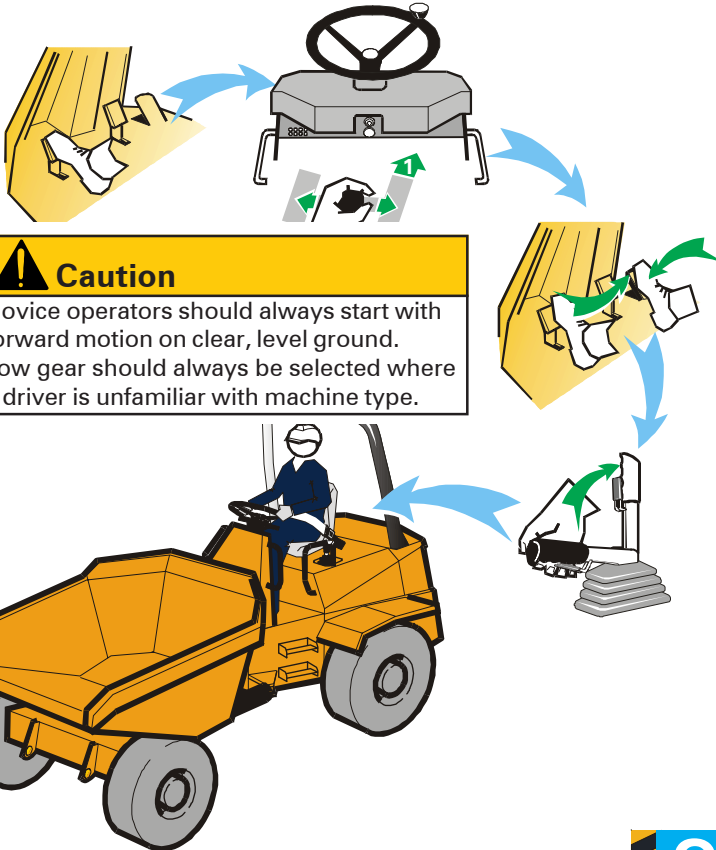
Warning

Do Not Operate a machine that has moved during the above parking brake test.

Complete Checks In Section  Before Loading The Machine

2 Driving Procedure and Safe Parking

Thwaites



⚠ Caution

Novice operators should always start with forward motion on clear, level ground. Low gear should always be selected where a driver is unfamiliar with machine type.

Moving From Rest and Stopping

- Depress clutch pedal.
- Select gear- One.
- Slowly depress accelerator pedal, release clutch pedal and parkbrake lever and move slowly.
- Hold steering wheel with both hands.
- Remove foot from accelerator pedal.
- Brake gently to a halt, using foot brake pedal, and press clutch pedal to prevent stalling.
- Apply park brake and select neutral.

Changing Speed/Direction

- Release accelerator pedal.
- Depress clutch pedal.
- Select next gear.
- Release clutch pedal and press accelerator pedal.
- STOP motion and engage parking brake before changing direction (forward/reverse).

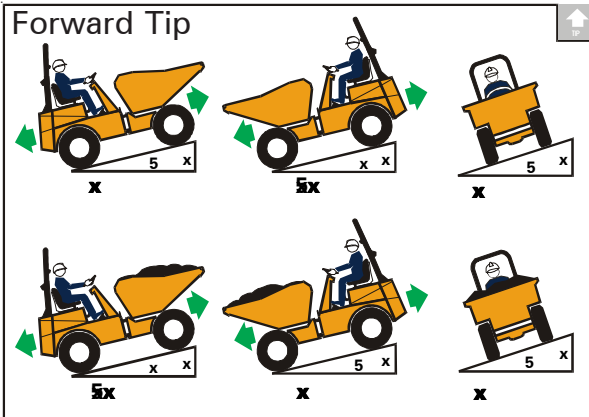
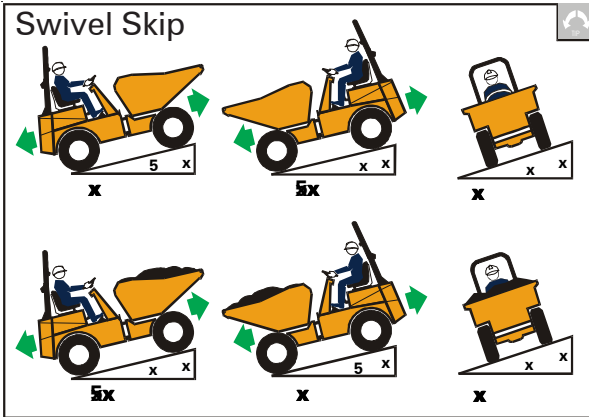
After Operating - Park Safe

- Always leave bucket empty when not in use.
- Ensure machine is on firm level ground.
- Apply parking brake.
- Engage neutral.
- Hydraulic system at rest in a safe condition
- Stop engine and remove key.
- Lock engine cover.

Complete Checks In Section **2** Before Loading The Machine

3

DANGER IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH



WORKING ON GRADIENTS



DO NOT exceed maximum stated gradients.



DO NOT turn across gradients.



DO NOT brake suddenly in wet, muddy, icy conditions or when operating on loose surfaces.



DO NOT run down hill with controls in neutral.



Travel straight up, down or along a gradient.



Keep speed to a minimum and use the foot brake to reduce speed when travelling down gradients.



Always engage parking brake when stopped on sloping ground and in addition chock wheels securely when leaving the machine unattended to prevent movement.

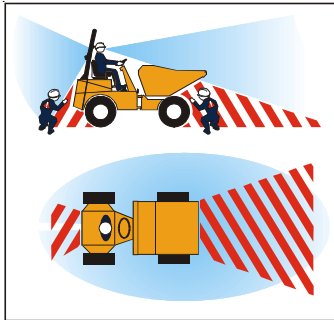


Always position swivel bucket in central lock.

3 !

IMMEDIATE HAZARDS WHICH DANGER WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites



! VISIBILITY

Check ahead and behind machine before operation.

Be aware of low visibility areas when operating.

Sound the horn to warn people in the immediate area before operating.

! CRUSH ZONE

Stay clear of articulation area when the engine is running.

Never operate machine controls when standing on either side of machine.

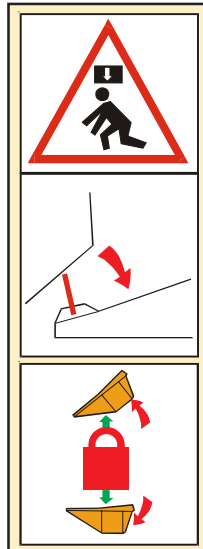
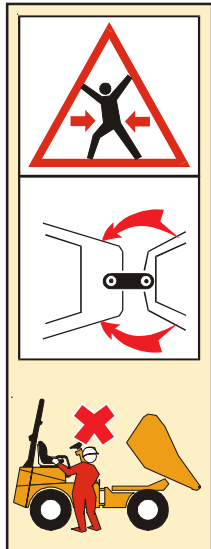


! WORKING UNDER A RAISED BUCKET

Lock bucket Safety Prop during maintenance.

Never work under an unproped bucket.

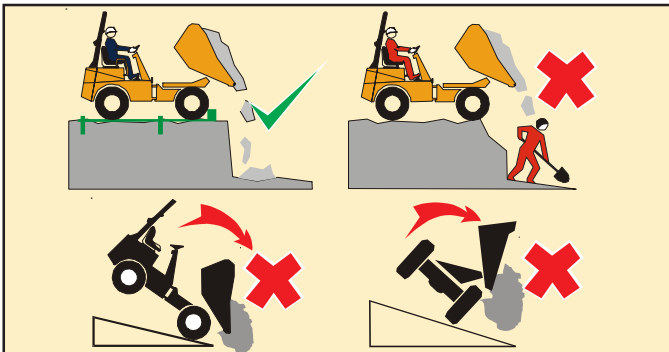
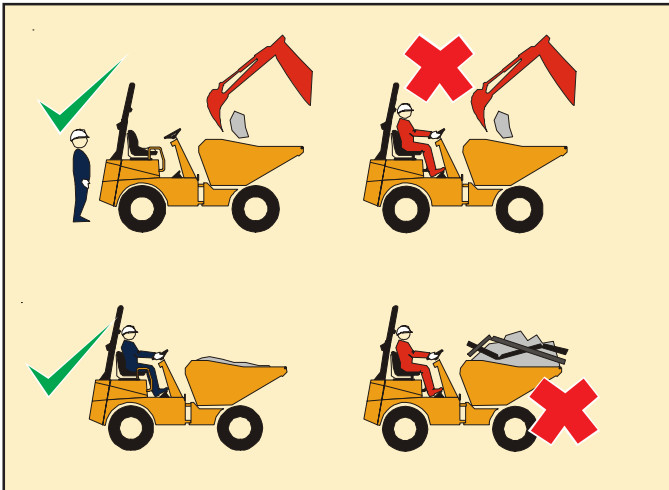
When using bucket Safety Prop engage Tipping Lever Lock. *(If fitted)*



Attention! Section **3** Correct and Incorrect Working Practices

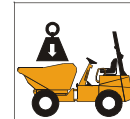
3 WARNING

HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH



LOADING

DO NOT exceed machines' rated capacity.



Parking Brake **ON**, drive to **NEUTRAL**, engine **OFF**, **STAND CLEAR**.

Clear debris from controls.

Ensure **SAFE STABLE LOW** load which allows good visibility.

Reduce payload if materials being carried are not free flowing.

UNLOADING

Use **STOPBOARDS** and **SUPPORT** walls on trenches.

DO NOT tip bucket if load is sticking.

DO NOT discharge load when working on sloping ground.

3



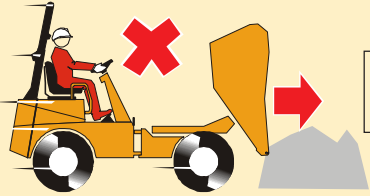
WARNING


HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites




DRIVING




 DO NOT drive with the bucket tipped (bulldozing)




 NEVER dismount from a moving machine




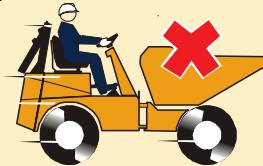
 DO NOT carry passengers




 Avoid confined work areas - exhaust fumes and noise can be a hazard



 Avoid hazardous site conditions - people, weather, ice etc.



 DO NOT operate with the roll over protective structure folded down.

Attention! Section

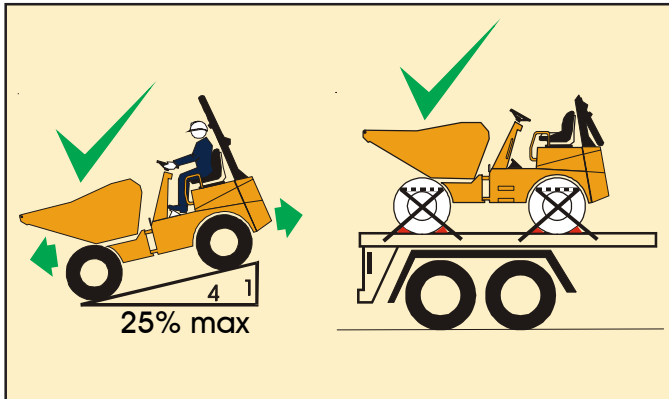
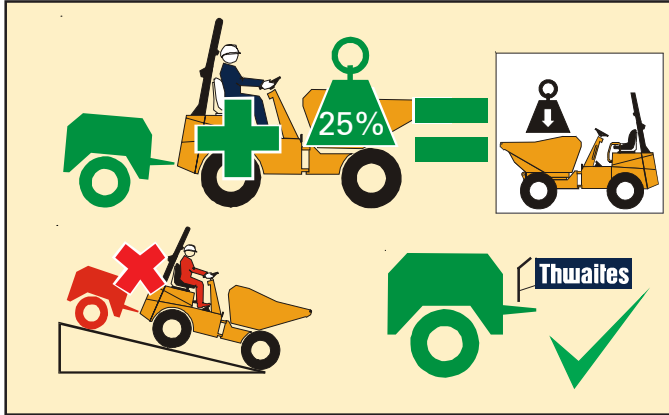


Correct and Incorrect Working Practices

3 WARNING

HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites



TOWING A TRAILER



Place minimum 25%, of machine's rated payload, ballast load in skip.



Gross weight to be towed, plus ballast load, **MUST NOT** exceed rated payload of machine.



DO NOT exceed maximum tow bar pull or vertical load.



Towing must not be carried out on sloping ground.



Always use Thwaites approved towing pin.

TRANSPORTATION



Reverse machine slowly onto a suitable trailer.



DO NOT drive forward up ramp when loading.



Apply parking brake.

Stop engine.



Chock wheels. *(To prevent movement).*

Engage chassis locking bar.

Secure to trailer.

Ensure legal load. *(Height/weight).*



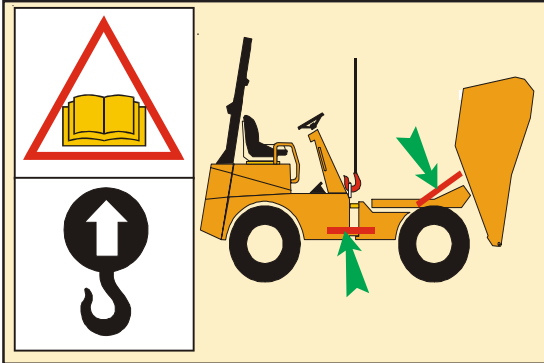
3



CAUTION

HAZARDS OR UNSAFE PRACTICES WHICH **COULD** RESULT IN MINOR PERSONAL INJURY OR PRODUCT OR PROPERTY DAMAGE.

Thwaites



LIFTING

- Tip bucket fully forward.
- Engage bucket safety prop.
- Engage chassis locking bar.
- Lift using centre eye provided.



PARKING BRAKE




DO NOT apply parking brake if dumper is moving. Except in an emergency.



SLOPING SURFACES

DO NOT step on rear mudguards sloping surfaces.

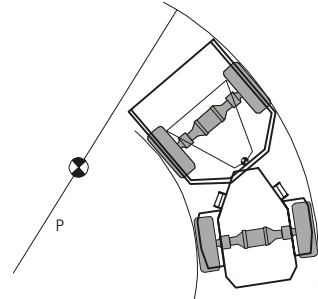
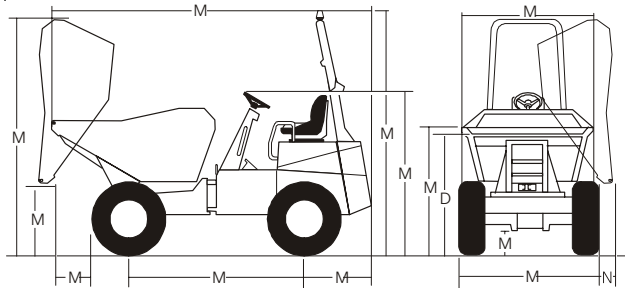
4 Machine Fault - Checks you can make



| Problem | Reason | Solution |
|---|---|---|
| Engine will not start | Isolator switch OFF Clutch Pedal not pressed Battery voltage too low. Faulty fuel supply. Electrical stop on fuel pump defective. Circuit breaker tripped. | Switch on Press Clutch Pedal. Check battery and connections. Check fuel level and connections. Check connections. Reset (Push to reset). |
| Complete loss of electrical functions | Maxi fuse blown | Rectify electrical fault and replace fuse |
| Maxi Fuse blown | Faulty starter motor/solenoid (Current drawn by solenoid exceeds 25A) Short circuit on main feed or starter solenoid cables | Replace motor/solenoid and maxi fuse (only replace with a 30 amp fuse) locate and repair |
| Engine starts and stops | Blocked fuel or air filter. Air in fuel system. | Replace fuel or air filter. Check fuel line connections. |
| Black engine smoke | Air filter clogged (Indicator red). Fuel system defect. Wrong fuel. | Replace or clean air filter. Contact Thwaites dealer. Replace fuel and filter. |
|  ● Engine oil pressure  ● High engine temperature  ● Irregular alternator | Low oil level. Radiator choked. Low coolant level. Defective or loose alternator belt. | Top up engine oil Clean radiator. Top up coolant. Adjust replace alternator belt. |

Always investigate panel warning lights, tripped circuit breakers and blown maxi fuse.

4 Power Swivel - Data Chart

Thwaites

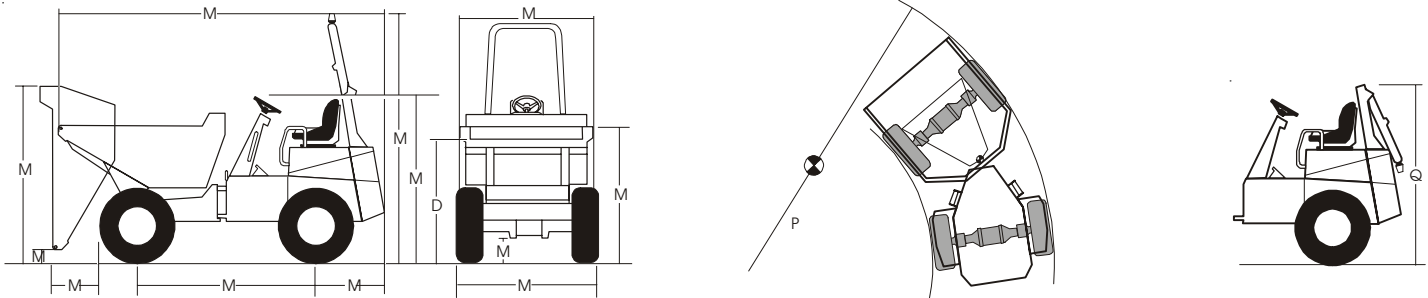


| Dimensions (mm) | 3T | 4T | Weight (Kg) | 3T | 4T | Noise |
|--------------------------------|------|------|----------------------|---------|---------|---|
| A. Length | 4010 | 4107 | Unladen | | | Airborne (10m) |
| B. Width | 1770 | 1910 | Front axle | 750 | 800 | |
| C. Height (ROPS & Beacon) | 2964 | 2993 | Rear axle | 1510 | 1615 |  |
| D. Bucket lip height | 1500 | 1565 | Total | 2260 | 2415 | |
| E. Width over tyres | 1760 | 1859 | Rated payload | | |  |
| F. Wheelbase | 1930 | 1979 | Laden | | | |
| G. Ground clearance | 271 | 305 | Front axle | 3255 | 4500 | Operator |
| H. Bucket load height | 1600 | 1713 | Rear axle | 2005 | 1915 | |
| I. Axle to rear | 1130 | 1130 | Total | 5260 | 6415 | |
| J. Tipping ground clearance | 1150 | 1068 | Towbar (Max) | | | |
| K. Tipping tyre clearance | 475 | 422 | Pull load | 2250 | 3000 | |
| L. Height tipped (Bucket) | 3290 | 3408 | Vertical load | 580 | 800 | |
| M. Max height without ROPS | 2013 | 2041 | Tyre Pressure | | | |
| N. Tipping side clearance | 260 | 221 | Bar (psi) Front | 3.4(50) | 4.0(59) | |
| P. Tyre clearance diameter (m) | 8.2 | 8.4 | Rear | 2.0(29) | 2.5(37) | |
| Q. Height (ROPS folded) | 2460 | 2267 | | | | |

Typical vibration levels - whole body 0.7 - 0.8 m/s². Hand/arm less than 2.5 m/s².

4 Forward Tip - Data Chart

Thwaites



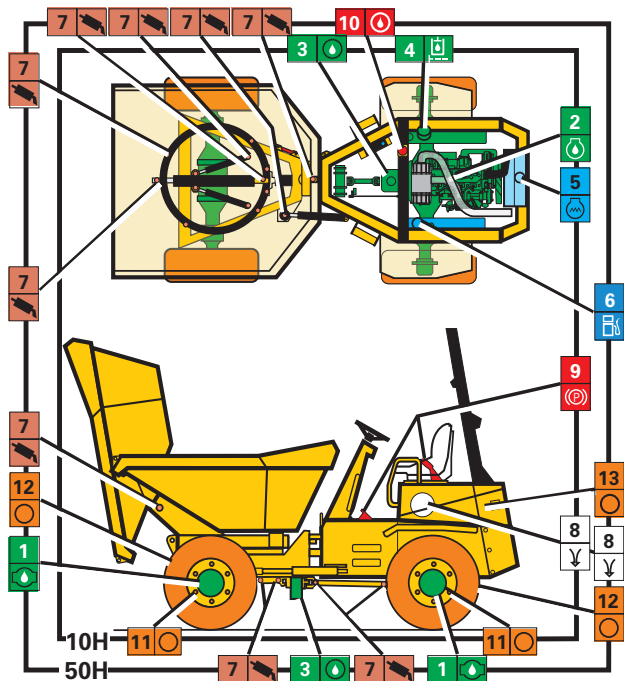
| Dimensions (mm) | 3T | 4T | Weight (Kg) | 3T | 4T | Noise |
|-------------------------------|------|------|----------------------|---------|---------|----------------|
| A. Length | 3848 | 3848 | Unladen | | | Airborne (10m) |
| B. Width | 1930 | 1980 | Front axle | 725 | 750 | |
| C. Height (ROPS & Beacon) | 2964 | 2993 | Rear axle | 1450 | 1585 | |
| D. Bucket lip height | 1447 | 1467 | Total | 2175 | 2335 | |
| E. Width over tyres | 1857 | 1859 | Rated payload | | | |
| F. Wheelbase | 1930 | 1980 | Laden | | | |
| G. Ground clearance | 312 | 342 | Front axle | 3160 | 3990 | Operator |
| H. Bucket load height | 1506 | 1599 | Rear axle | 2015 | 2345 | |
| I. Axle to rear | 1131 | 1131 | Total | 5175 | 6335 | |
| J. Tipping ground clearance | 175 | 365 | Towbar (Max) | | | |
| K. Tipping tyre clearance | 620 | 422 | Pull load | 2250 | 3000 | |
| L. Height tipped (Bucket) | 2110 | 3408 | Vertical load | 580 | 800 | |
| M. Max height without ROPS | 2013 | 2042 | Tyre Pressure | | | |
| P. Tyre clearance diameter(m) | 9.3 | 9.5 | Bar (psi)Front | 3.4(50) | 3.5(51) | |
| Q. Height (ROPS folded) | 2238 | 2267 | Rear | 2.0(29) | 3.0(44) | |

Typical vibration levels - whole body 0.7 - 0.8 m/s². Hand/arm less than 2.5 m/s².

4 Daily/Weekly Checks

Thwaites

240/245/270/273



10 - 50hr CHECKS

| | | | |
|--|-------------------------|-----------|--|
| | AXLE OIL | 1 | Mobil Fluid 422 |
| | ENGINE OIL | 2 | SAE 10W 30 |
| | TRANSMISSION OIL | 3 | Mobil EP 90 |
| | HYDRAULIC OIL | 4 | Mobil DTE 24 |
| | COOLANT LEVEL | 5 | H₂O + 33% Antifreeze |
| | FUEL LEVEL | 6 | Diesel |
| | GREASE | 7 | Fill All Points |
| | AIR CLEANER | 8 | Check Indicator |
| | BRAKES | 9 | Test Park & Foot Brake |
| | BRAKE OIL | 10 | Mobil DTE 24 |
| | WHEEL NUTS | 11 | 271Nm (200lb ft) |
| | TYRE PRESSURE | 12 | See Data Chart |
| | FAN BELT | 13 | Condition/Tension |

This machine must be serviced after first 50 hours

Normal service intervals:

250 hours 500 hours

1000 hours 2000 hours

Contact local Thwaites Distributor for details or www.thwaitesdumpers.co.uk