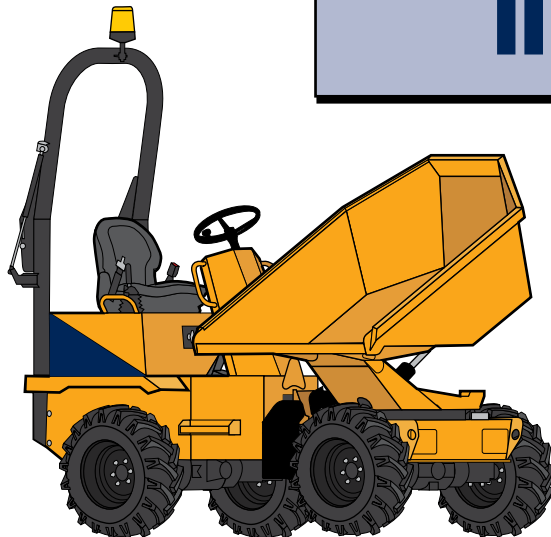


2.0 - 3.0 Tonne (hydrostatic)

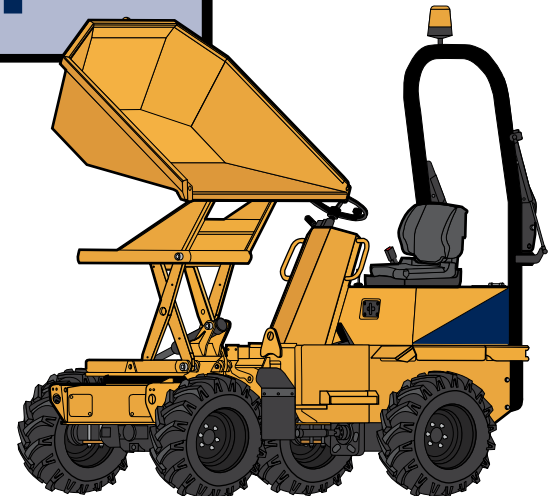
Thwaites

Mach 471  
Mach 476  
Mach 477  
Mach 580  
Mach 581

# Operator's Instruction Manual



Mach 477 - 2.3 Tonne Powerswivel



Mach 471 - 2.0 Tonne Hi Swivel



## Thwaites Limited puts 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's Instruction 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 recommends. 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.

Due to the varied nature of the operation of site dumpers and the absence of an agreed test standard, any figures quoted by Thwaites in relation to vibration values and exposure are for reference purposes only. It is the responsibility of the employer to assess vibration exposure based on the actual site conditions, and operating practices, at the point of use.

**Hand Arm Vibration** - The daily exposure Action/Limit Values of between 2.5 - 5.0m/s<sup>2</sup> (A8) are unlikely to be exceeded in an eight-hour reference period.

**Whole Body Vibration** - The daily exposure can only be accurately determined at the point of use. This exposure must be managed in respect of the Action/Limit Values of 0.5 and 1.15 m/s<sup>2</sup> (A8) respectively.

Employers should not rely solely on published vibration figures when undertaking risk assessments. Depending on the site conditions, cycle times may need to be adjusted in order to reduce operator exposure levels.

Vibration values based on typical duty cycles are available on request from Thwaites. These may be used for reference purposes only.

## 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**



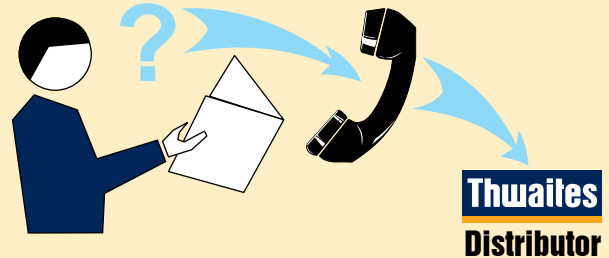
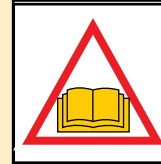
**CAUTION**

# 1 Before operating this machine

**Thwaites**



## Read this operator's instruction manual



- 1 Contact your Thwaites dealer in case of further questions
- 2 Learn to operate this machine
- 3 Ensure that you are fit to operate
- 4 Wear correct safety clothing and ensure that safety equipment is available

Complete checks in section

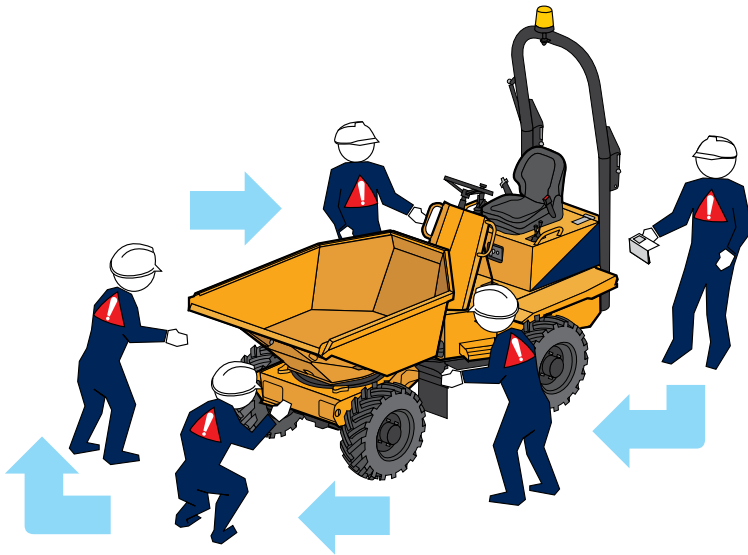


before starting the engine

# 1 Before operating this machine

Thwaites

Walk around the machine



## Visually check the machine

- 1 Are the chassis lock and the skip lock disengaged?
- 2 Are the controls, crush zone or hydraulic rams clean, and clear of any debris?
- 3 Is the Roll-Over Protective frame (ROPS frame) secure, fully upright and undamaged?
- 4 Is the seatbelt anchorage secure and serviceable?
- 5 Are the covers and mudguards secure?
- 6 Are the hoses free from fluid leaks?
- 7 Are all safety decals legible?
- 8 Are the tyres free of cuts or splits?
- 9 Are all bolts tight and in position?
10. Are the steering wheel and the steering column undamaged?
- 11 **Have the daily maintenance tasks been performed? (See rear cover)**

Report all faults immediately.



**DO NOT OPERATE THE MACHINE UNTIL ALL FAULTS HAVE BEEN RECTIFIED**

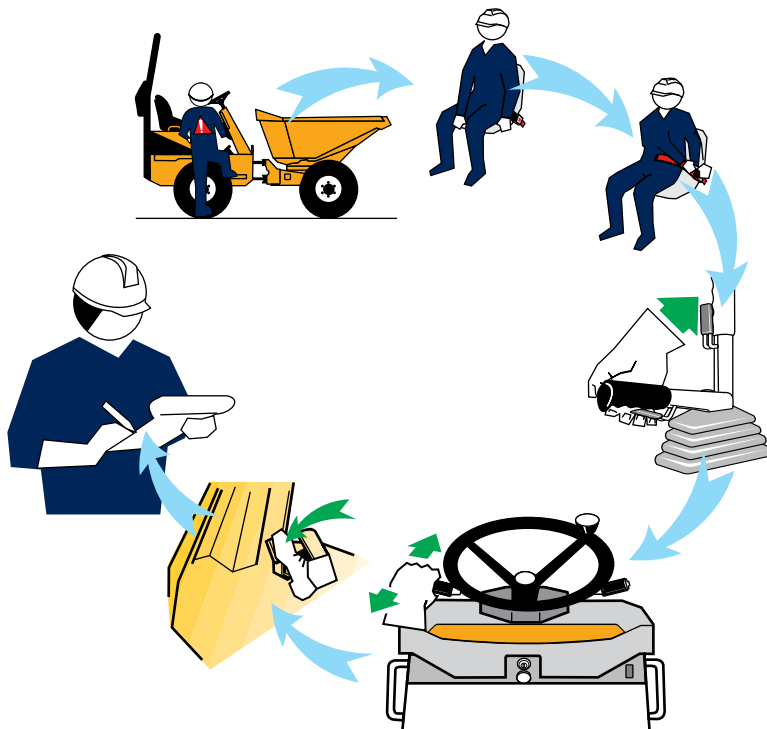
Complete checks in section



before starting the engine

# 1 Before operating this machine

Thwaites



## Mount the machine and check the controls

- 1 Use the grabrails and foot steps provided to manoeuvre into seating position. Face the machine at all times when mounting and dismounting
- 2 Is the engine cover secure and locked?
- 3 Adjust the seat position for comfort and easy access to controls
- 4 Fasten the seatbelt. Adjust accordingly for safety and comfort
- 5 Is the hand brake ON?
- 6 Set the transmission to neutral
- 7 Does the foot brake feel firm?
- 8 Do not operate the machine without understanding all its controls as described in the following pages



**WARNING**

Seatbelt **MUST BE WORN** when operating machines fitted with ROPS frame.

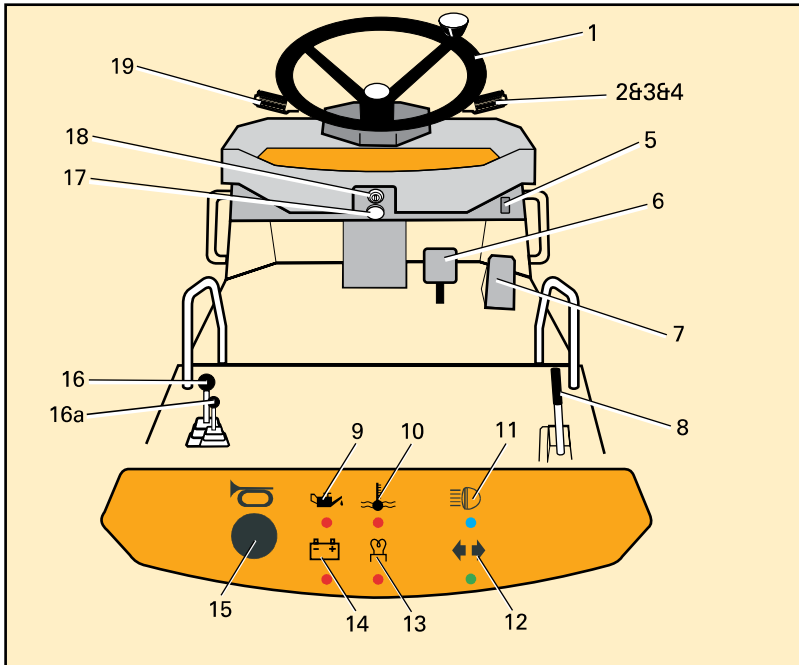
Complete checks in section



before starting the engine

# 1 Layout of controls

Thwaites



## Control 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 Foot brake pedal/inching
- 7 Throttle pedal
- 8 Hand brake lever
- 9 Engine oil pressure warning light
- 10 Water temperature warning light
- 11 Headlamp main beam pilot light\*
- 12 Direction indicator pilot light\*
- 13 Heat/start pilot light
- 14 Battery charging warning light
- 15 Horn push
- 16 Tip-skip lever (Fwd tip model)  
Tip-skip and rotate-skip lever (powerswivel and hi swivel models)
- 16a Raise-skip lever (hi swivel model only)
- 17 Warning buzzer
- 18 Ignition switch
- 19 Forward/Neutral/Reverse (FNR) lever

Complete checks in section



before starting the engine

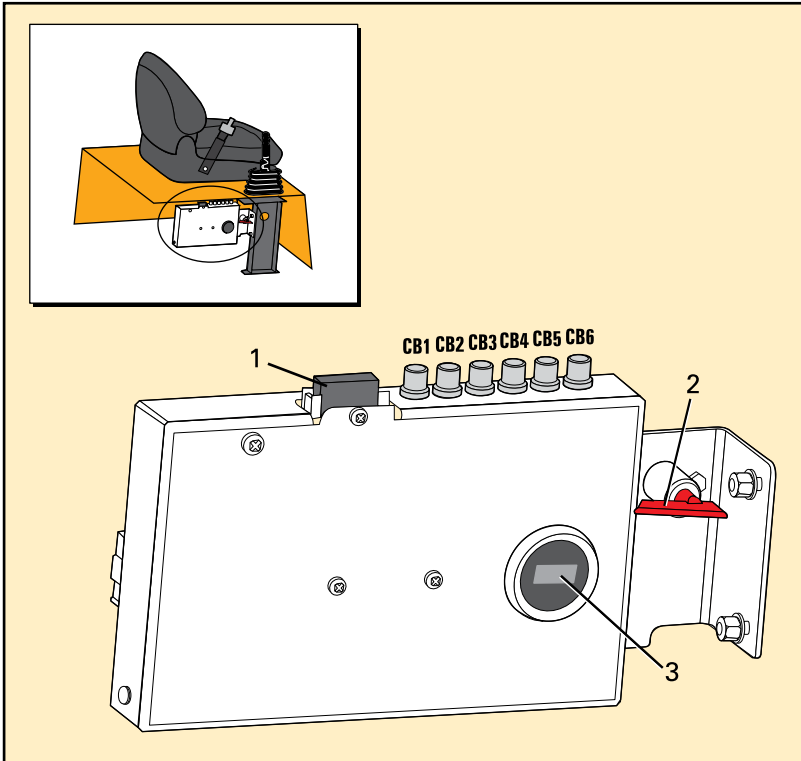
# 1 Layout of battery

Thwaites

- 1 Maxi fuse
- 2 Isolator switch
- 3 Hour meter

- CB1 Power
- CB2 Ancillaries
- CB3 Brake light\*
- CB4 Lights\*
- CB5 LH side lights\*
- CB6 RH side lights\*

*\* Optional items*



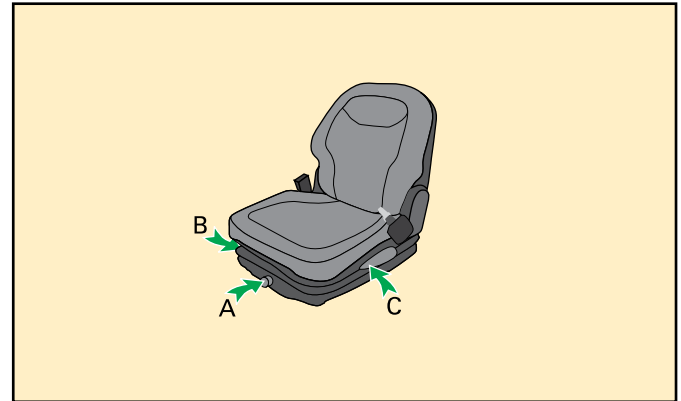
Complete checks in section **1** before starting the engine

# 1 Control functions – explained

Thwaites


## Seat adjustment

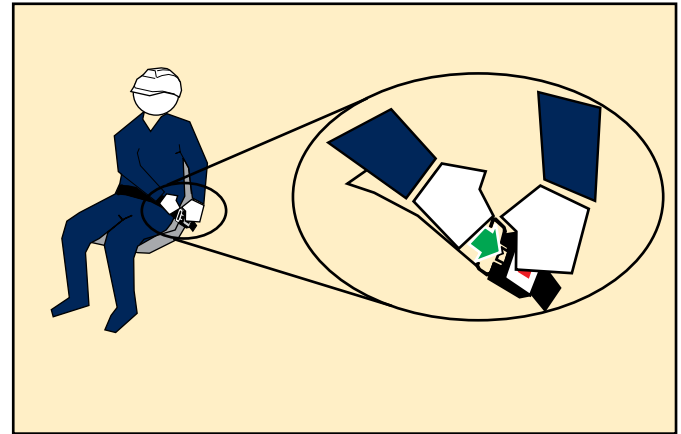
- A – Turn knob to set driver weight
- B – Lift to slide seat assembly forwards/backwards
- C – Lift handle to adjust backrest



## Adjusting the seat belt

- Adjust length of belt when seated on the 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.*



Complete checks in section



*before starting the engine*

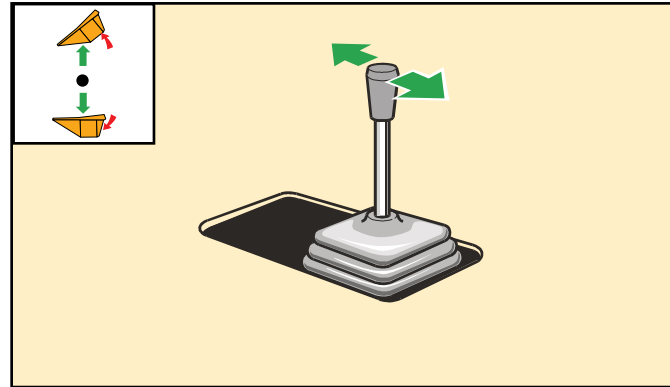


# 1 Control functions – explained


Thwaites


## Tip-skip lever (forward tip model)

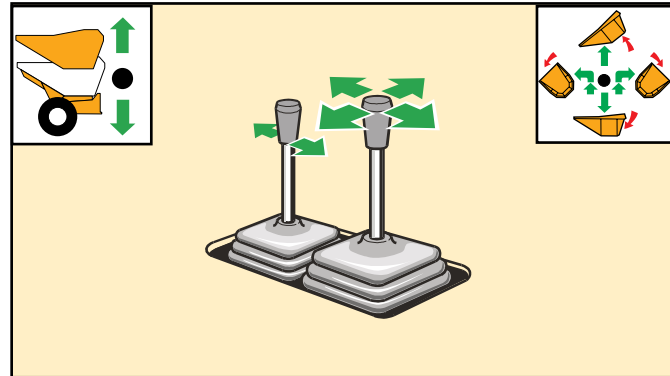
- Push forward to tip skip
- Push backwards to return skip



## Rotate-skip lever (swivel models)

- 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 bucket and push lever to the left to rotate skip to left
- Increased engine speed reduces cycle times

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



## Raise-skip lever (Hi swivel model only)

- Push forward to raise skip
- Push backwards to lower skip

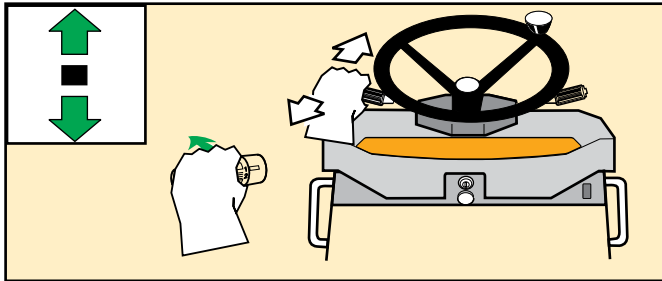
Complete checks in section



before starting the engine

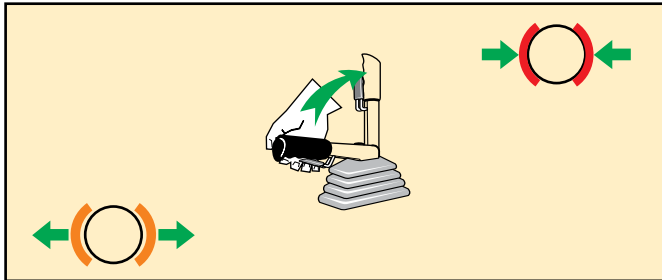
# 1 Control function – explained

Thwaites



## FNR lever


- Push forwards to travel in a forward direction
- Lever centred = neutral
- Pull back to travel in a reverse direction
- Twist lever anti-clockwise for HIGH-speed travel
- Twist lever clockwise for LOW-speed travel

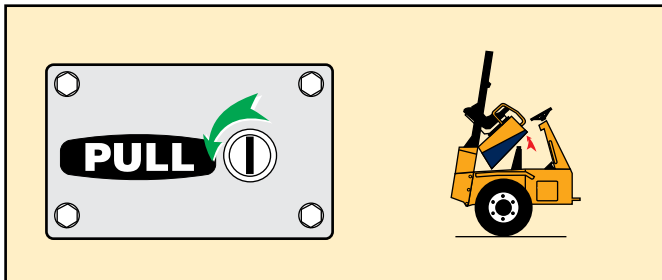


## Hand brake lever

Use only when the machine is stationary (or in case of emergency):

- Pull lever up to apply
- Pull catch and lower lever to release

 An audible warning device is fitted to your machine. This will sound when the parking brake is engaged.



## Engine cover open/close

- Insert ignition key and turn anti-clockwise to unlock
- Pull handle to release and raise cover
- Lower cover, secure and lock before driving

Complete checks in section




before starting the engine

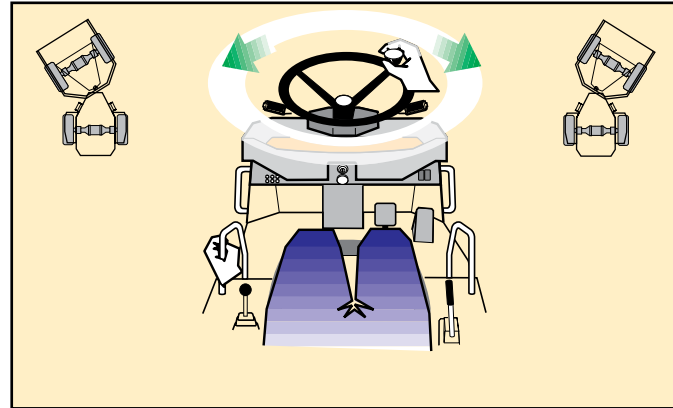
# 1 Control functions – explained

Thwaites

## Steering wheel

- Turn the wheel clockwise to turn machine to right
- Turn the wheel anticlockwise to turn machine to left

 Ensure the non-steering hand is on the engine cover grabrail when using the spinner knob for low-speed single-handed steering




## Throttle pedal – right foot

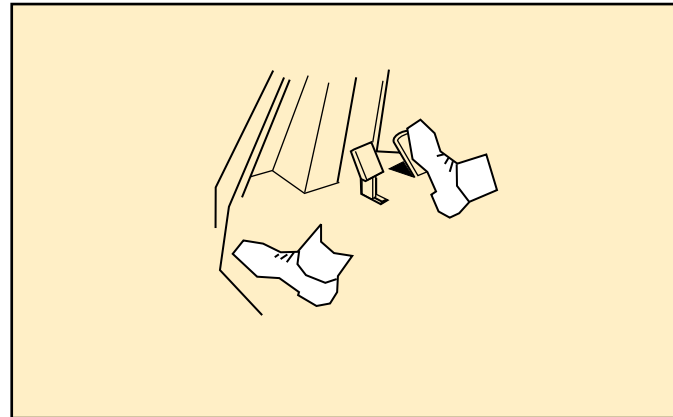
- Apply pressure to increase speed
- Reduce pressure from the pedal to reduce speed

## Foot brake pedal + inching pedal – right foot

- Apply pressure to slow or stop the machine

 Use left foot when inching is required:

Push down while pressing throttle pedal with right foot and release to move machine



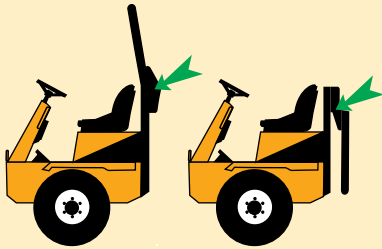
Complete checks in section



before starting the engine

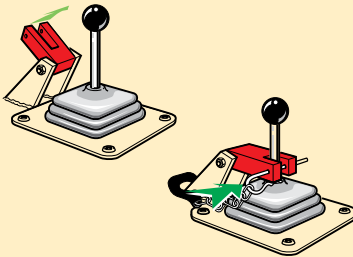
# 1 Control functions – explained

**Thwaites**



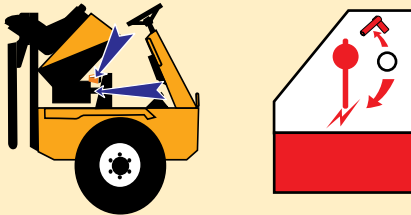
## Raising and Lowering the folding ROPS frame

- 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



## Tip-skip lever lock (*optional*)

- Place yolk over tip-skip lever and secure with linch pin



## Beacon storage

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

## Battery isolator (*beneath engine cover*)

- Turn key anti-clockwise to isolate the battery power supply

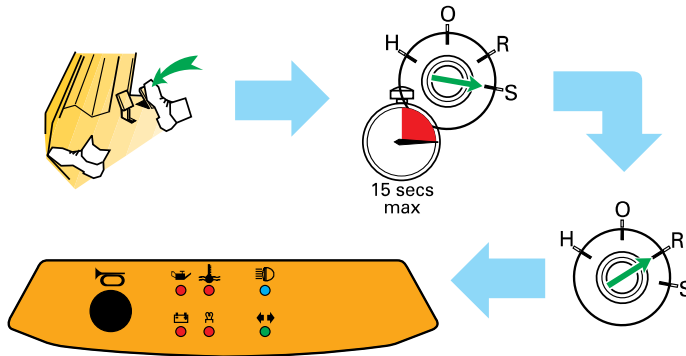
Complete checks in section



before starting the engine

# 2 How to START and STOP the engine

# Thwaites



## To start the engine

- Set FNR lever to neutral

### Cold start aid

*Turn key to position 'H'. When panel light extinguishes start engine (as above).*

- 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.

*(The key will spring back to 'Run' position 'R').*

- Reduce accelerator pedal pressure to prevent over-revving.

## To Stop The Engine

- Turn key to position 'O'.



## WARNING

DO NOT START THE ENGINE UNLESS SEATED IN THE DRIVING POSITION

## CAUTION

If a panel light remains ON switch off engine (key to 'O') and investigate problem.

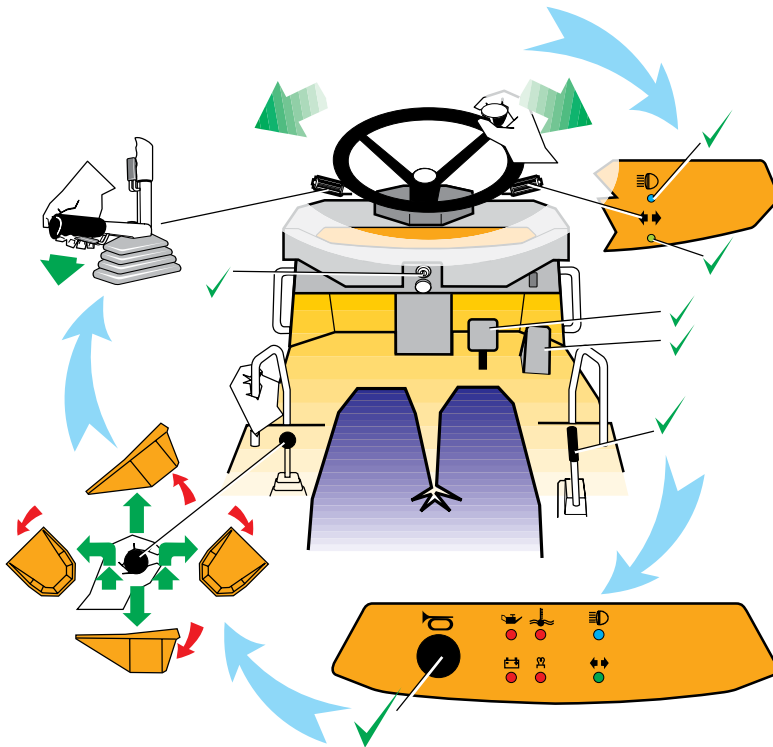
## CAUTION

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

Complete checks in section  before loading the machine

## 2 Preliminary checks

Thwaites



### Function checks - engine ON

#### Brakes

- Does the foot brake pedal feel firm?

#### Steering

- Rotate steering wheel clockwise and anti-clockwise

#### Electrics

- Does the horn sound correctly?
- Does the reverse alarm sound correctly? (optional).
- Is the beacon flashing?
- Are the lamps working correctly? (optional) –
  - \* Side
  - \* Main
  - \* Stop
  - \* Indicators
  - \* Hazards

#### Tip-skip lever/Rotate-skip lever

- Discharge/park skip
- Rotate - right to left/Left to Right. (powerswivel and hi swivel models).

#### Raise-skip lever

- Raise/Lower bucket. (Hi swivel model only)

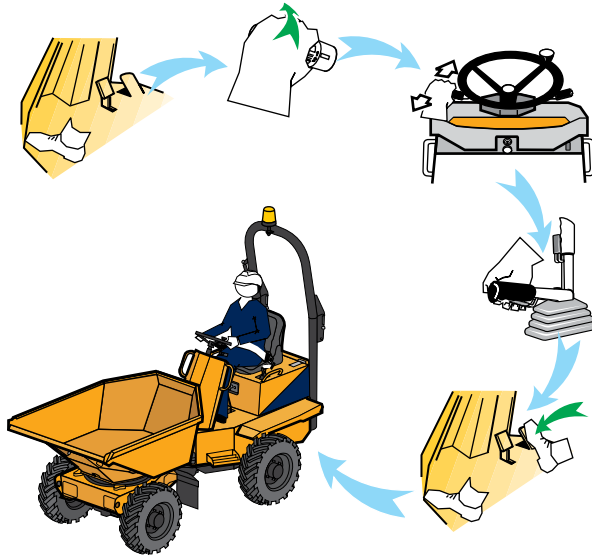
Complete checks in section



before loading the machine

## 2 Driving procedure and parking safely

Thwaites



### CAUTION

- Novice operators should always start with forward motion on clear, level ground
- A low gear should always be selected if a driver is unfamiliar with machine type

### Moving from rest and stopping

- Select forward or reverse
- Select low gear
- Release hand brake fully
- Slowly depress accelerator to move away
- Hold steering wheel with both hands
- Remove foot from accelerator pedal
- Brake gently to a halt using foot brake
- Apply hand brake

### Changing speed/direction

- Select high gear
- Before changing direction (forward/reverse), stop the machine and engage the hand brake

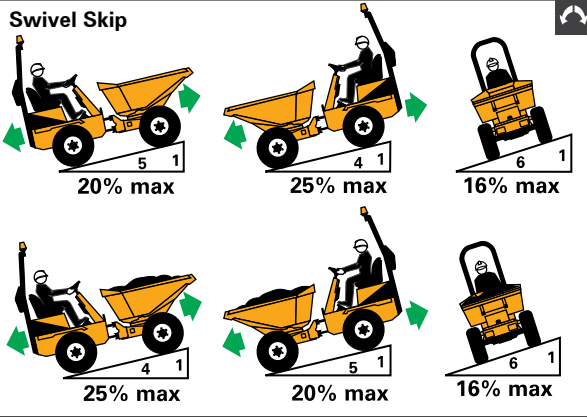
### After operating – park safely

- Always leave skip empty when not in use
- Ensure machine is on firm, level ground
- Apply hand brake
- Using the FNR lever, select neutral
- Hydraulic system at rest in a safe condition
- Stop engine and remove key
- Lock engine cover

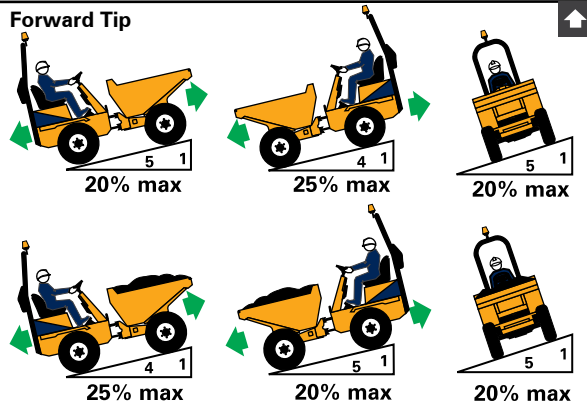


Complete checks in section  before loading the machine

#### Swivel Skip



#### Forward Tip



#### 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 downhill with controls in neutral



DO NOT operate skip-raise lever (Hi swivel model) on sloping ground.

**Check indicator**



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



To prevent movement, always engage hand brake when stopped on sloping ground. Chock wheels securely when leaving the machine unattended



Always position swivel-skip in central lock



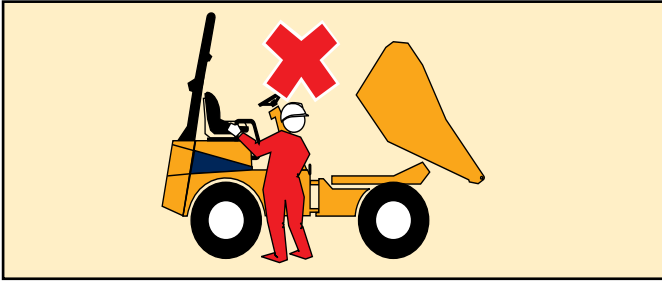
3



DANGER

IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites



**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 SKIP**

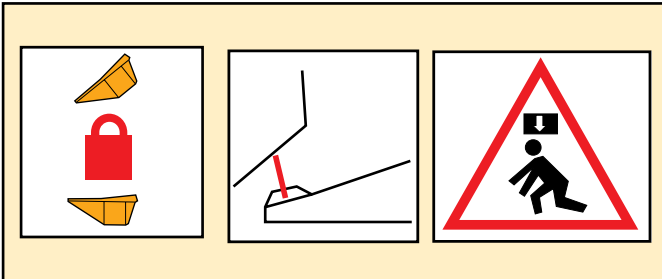
Lock skip safety prop during maintenance



Never work under an unproped skip



When using skip safety prop engage tip-skip lever lock (if fitted)



Attention! Section  correct and incorrect working practices

**3****DANGER****IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH****Thwaites****VISIBILITY**


The visibility maps show machines in standard build and travel configuration.

The maps provide an approximate indication of what can be seen by the operator and any blind spots when seated in the driving position wearing a seatbelt.

The maps have been provided to assist the operator / user and may be used as part of a risk assessment for the safe operation of the machine.

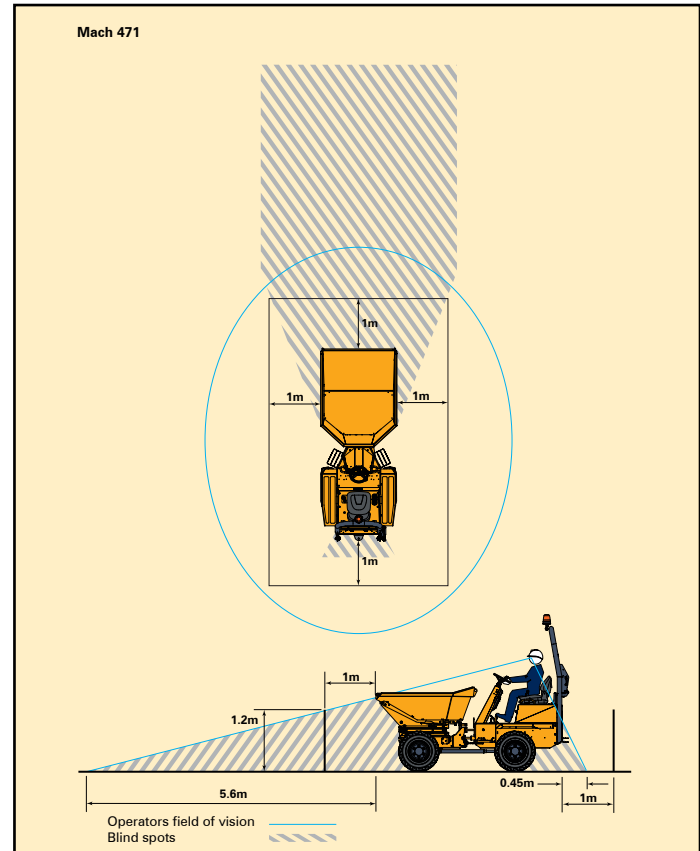
The machines are compliant with the visibility requirement given in EN 474-1 with regards to the rectangular boundary and a test object of 1.2m high and 0.3m wide and the 12m circular boundary.

- Check all around the machine before operation.
- Be sure all mirrors are adjusted before operating the machine (if fitted).
- All cameras and mirrors must be kept clean (if fitted).
- Be aware of all blind spots.

 The blind spot areas marked on the plan views of these maps are ground plane only

**WARNING**

Camera angles are factory set, any modifications to the machine configuration by any end user that may result in the restriction of visibility and will require a new risk assessment to be performed.



Attention! Section



correct and incorrect working practices

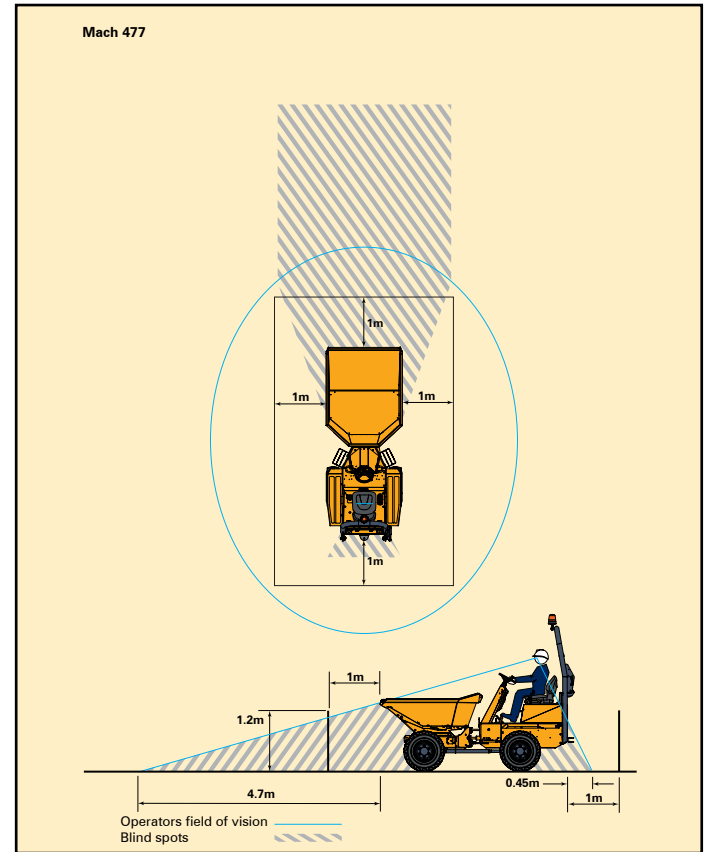
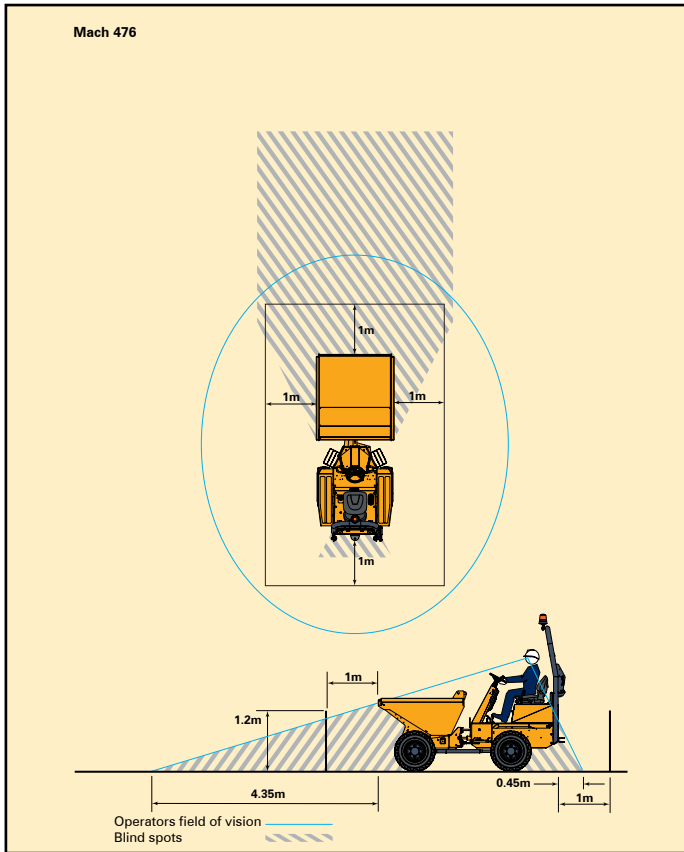
3




DANGER

IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites



Attention! Section  correct and incorrect working practices

3

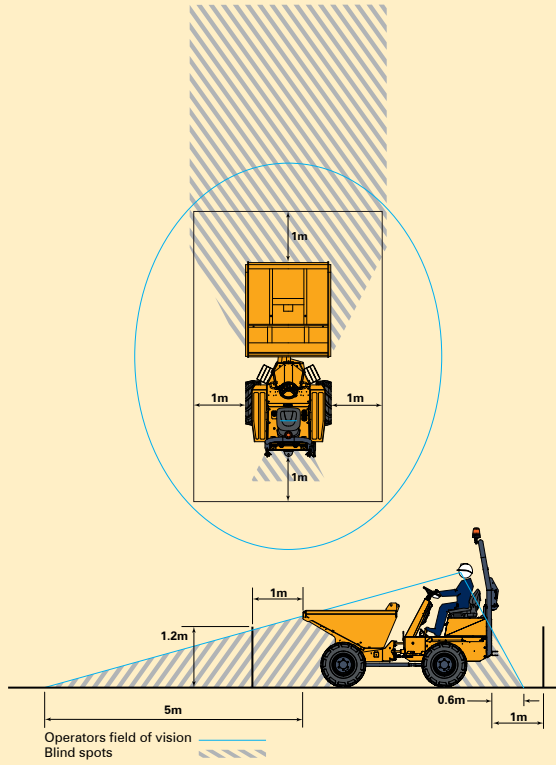


DANGER

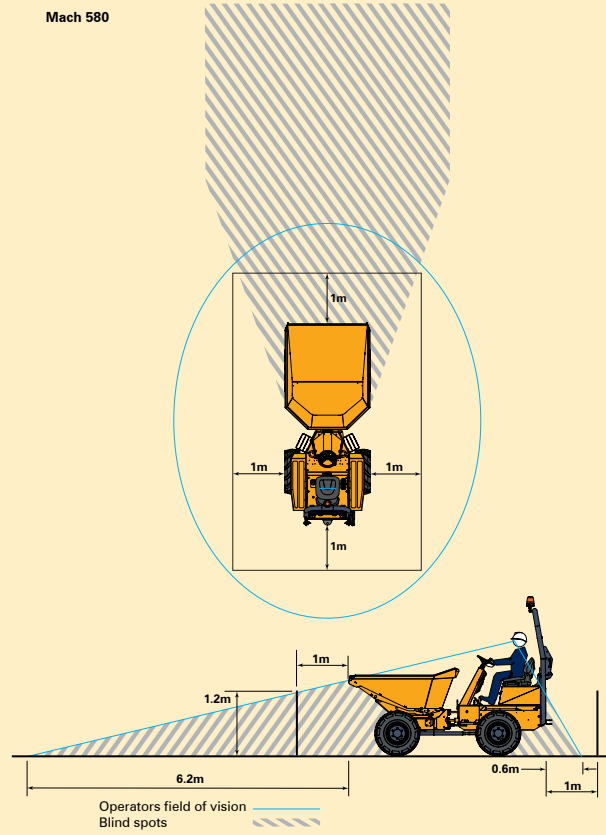
IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites

Mach 581



Mach 580



Attention! Section



correct and incorrect working practices

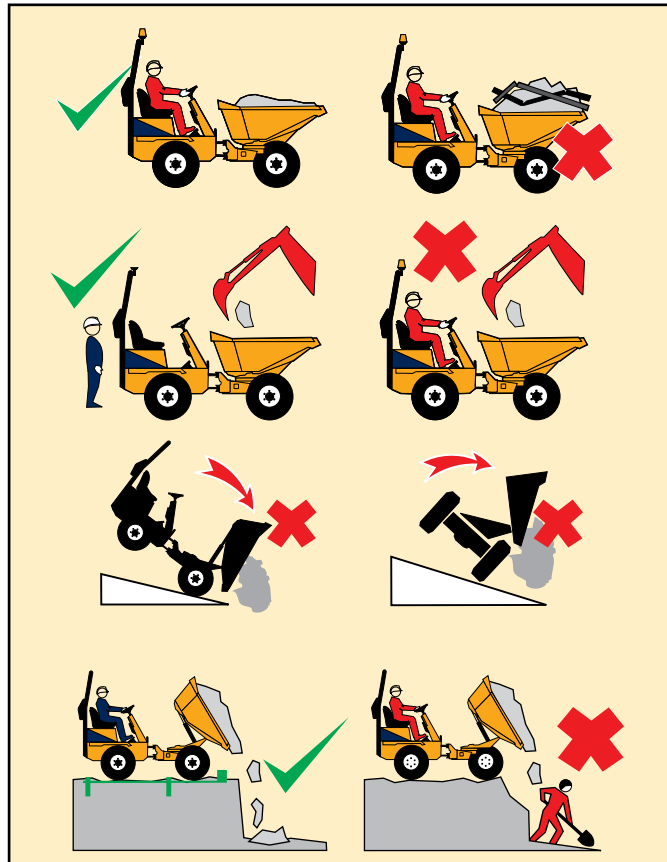
3



WARNING

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

Thwaites



### LOADING THE MACHINE



**DO NOT** exceed the machine's rated capacity



Activate the hand brake, set drive to neutral, turn the engine off, disembark the machine, and stand clear



Clear any debris from controls



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



Reduce payload if materials being carried are not free flowing



### UNLOADING THE MACHINE



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



**DO NOT** tip skip if load is sticking



**DO NOT** discharge load when working on sloping ground

Attention! Section



correct and incorrect working practices

3

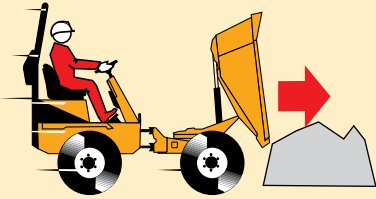


WARNING

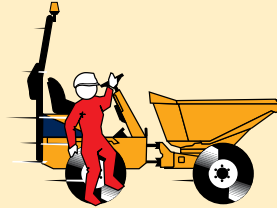
HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH

Thwaites

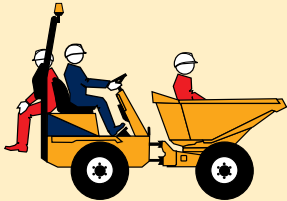
DRIVING



DO NOT drive with the skip tipped (bulldozing)



NEVER dismount from a moving machine



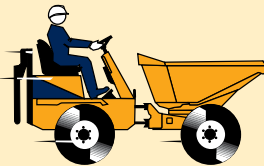
DO NOT carry passengers



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



Site hazards to avoid: adverse weather conditions; icy surfaces; people

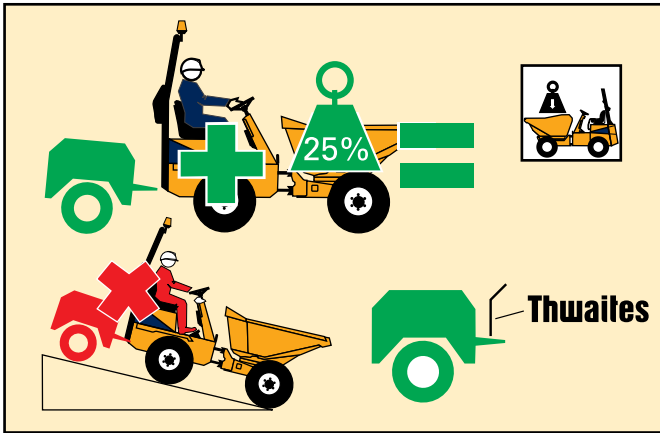


DO NOT operate with the ROPS frame folded down

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**

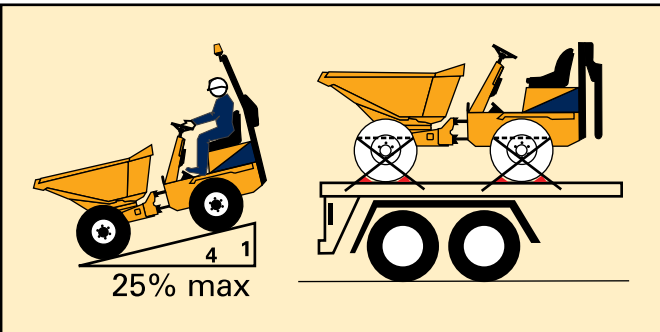
Place ballast load in skip. This load should be a minimum of 25% of the machine's rated payload

Gross weight to be towed plus the 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

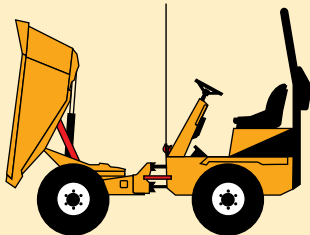
**TRANSPORTATION**

Reverse machine slowly onto a suitable trailer

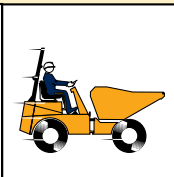
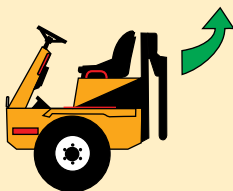
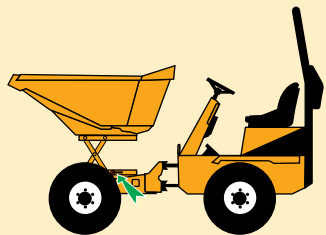
**DO NOT** drive the machine forwards when loading

- Apply hand brake
- Stop engine
- Chock wheels (*To prevent movement*)
- Engage chassis locking bar
- Secure to trailer
- Ensure legal load (*Height/weight*)

Attention! Section **3** correct and incorrect working practices

**3****CAUTION**HAZARDS OR UNSAFE PRACTICES WHICH **COULD** RESULT IN MINOR PERSONAL INJURY OR PRODUCT OR PROPERTY DAMAGE**Thwaites****LIFTING**

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

**HAND BRAKE****DO NOT** apply hand brake if machine is moving (except in an emergency)**SLOPING SURFACES****DO NOT** step on the rear mudguards' sloping surfaces**SCISSOR LIFT**

Insert locking pin when working beneath skip

**HINGED ROPS**

Use grab handles, tread grips and steps when standing on the machine to lower the ROPS frame.



Avoid wet surfaces.

Attention! Section

*correct and incorrect working practices*



**3****CAUTION****HAZARDS OR UNSAFE PRACTICES WHICH COULD RESULT IN MINOR PERSONAL INJURY OR PRODUCT OR PROPERTY DAMAGE****Thwaites****CAUTION - MACHINE RECOVERY**

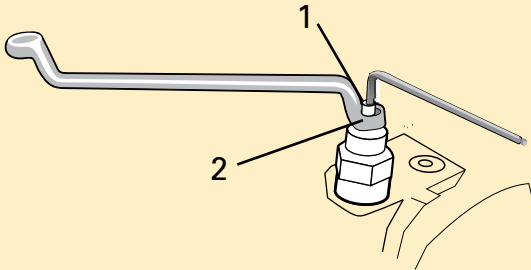
In order to tow the dumper, the high-pressure circuit at the hydrostatic pump must be opened.

To open the pump, follow this procedure:


At the left side of the pump below the floor plate there is one high-pressure control valve at the top, and another at the bottom.

To activate the hydrostatic transmission bypass:





- release lock nut (2);
- screw in grub screw (1) until flush with top of nut (2);
- tighten nut (2).
- Reverse procedure prior to machine being placed back into service.

**CAUTION - MACHINE RECOVERY**

- The maximum towing speed of 2 km/h should not be exceeded.
- The towing distance should not exceed 1 km.

Attention! Section  correct and incorrect working practices

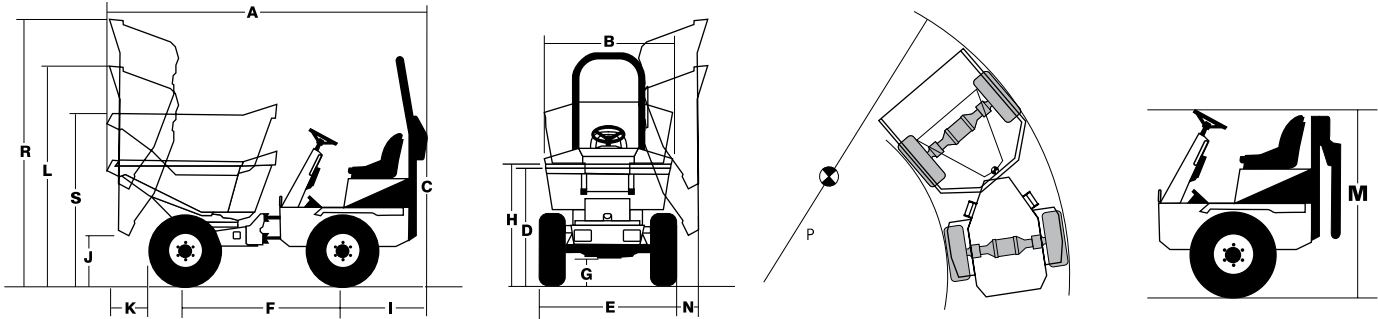
# 4 Troubleshooting

Problem	Reason	Solution
Engine will not start	Isolator switch OFF FNR not in neutral Battery voltage too low Faulty fuel supply Electrical stop on fuel pump defective Circuit breaker tripped	Switch on Shift FNR lever to neutral Check battery and connections Check fuel level and connections Check connections Rectify electrical fault and reset (push to reset)
Complete loss of electrical functions	Maxi fuse blown	Rectify electrical fault and replace fuse
Starter motor will not operate	Faulty battery	Replace
Maxi fuse blown	Faulty starter motor/solenoid (Current drawn by solenoid exceeds 25A) Short circuit on main feed or starter solenoid cables	Replace starter 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 on air filter is 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  ● Warning buzzer sounds	Low oil level  Radiator choked Low coolant level  Defective or loose alternator belt  Hand brake ON	Top up engine oil  Clean radiator Top up coolant  Adjust, or, if necessary, replace alternator belt  Release hand brake

*Always check panel warning lights, tripped circuit breakers or blown maxi fuse*

# 4 Data Chart

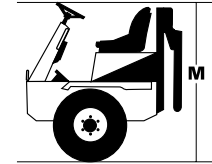
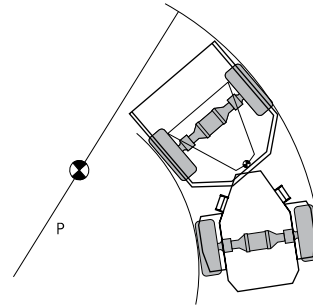
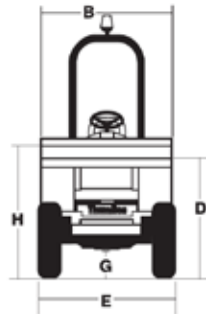
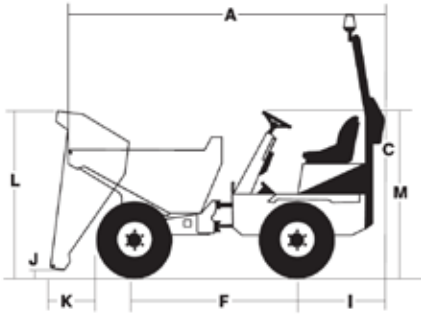
# Thwaites



Dimensions (mm)	3T	2.3T	2T	Weight (Kg)	3T	2.3T	2T	Noise
A. Length.....	3935	3735	3740	<b>Unladen</b>				Airborne (10m) 
B. Width.....	1650	1475	1475	Front axle.....	770	700	920	
C. Height (ROPS & Beacon).....	3092	3037	3037	Rear axle.....	1340	1310	1320	Operator 
D. Bucket lip height.....	1440	1340	1463	Total.....	2110	2010	2240	
E. Width over tyres.....	1650	1467	1467	<b>Laden (including driver at 80 kg)</b>				
F. Wheelbase.....	1950	1850	1850	Rated payload.....	3000	2300	2000	
G. Ground clearance.....	330	275	275	Front axle.....	3520	2790	2760	
H. Bucket load height.....	1565	1400	1520	Rear axle.....	1670	1600	1560	
I. Axle to rear.....	1032	1032	1032	Total.....	5190	4390	4320	
J. Tipping ground clearance.....	735	712	1220	<b>Towbar (Max)</b>				
K. Tipping tyre clearance.....	510	430	422	Pull load.....	2250	1725	1500	
L. Height tipped (skip).....	2825	2655	3136	Vertical load.....	375	375	375	
M. Height (ROPS folded).....	1965	1910	1910	<b>Tyre Pressure</b>				
N. Tipping side clearance.....	364	268	316	Bar (psi)Front.....	3.6(52)	3.5(51)	3.5(51)	
P. Tyre clearance diameter (m).....	9.2	7.5	7.5	Rear.....	2.0(29)	2.3(33)	2.3(33)	
R. Max height tipped (raised skip).....			3626					
S. Bucket load height (raised skip).....			2012					

Typical vibration levels - whole body 0.7 - 0.8 m/s<sup>2</sup>. Hand/arm less than 2.5 m/s<sup>2</sup>.

# 4 Forward tip – data chart

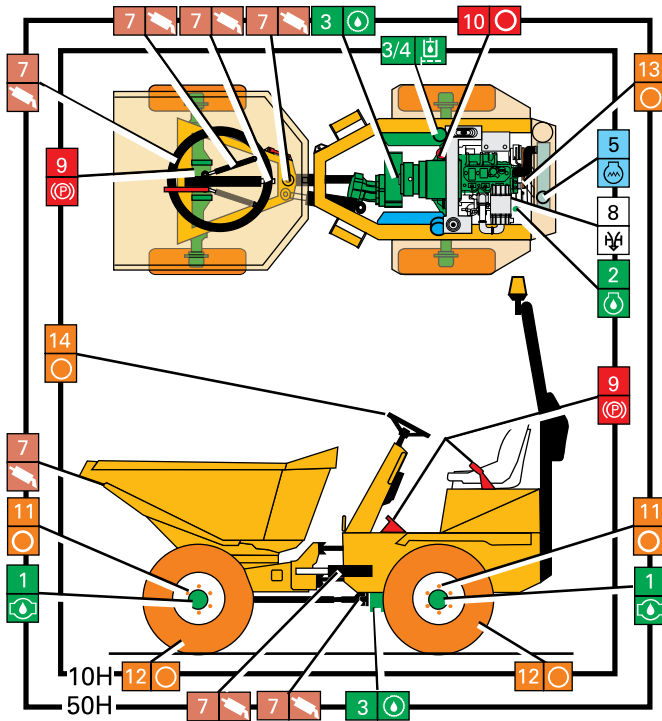


Dimensions (mm)	3T	2T	Weight (Kg)	3T	2T	Noise
A. Length.....	3774	3595	<b>Unladen</b>			Airborne (10m)
B. Width.....	1650	1475	Front axle .....	620	590	
C. Height (ROPS & Beacon).....	3092	3037	Rear axle .....	1360	1270	Operator
D. Bucket lip height.....	1365	1330	Total .....	1980	1860	
E. Width over tyres.....	1650	1467	<b>Rated payload (including driver at 80 kg)</b>			
F. Wheelbase.....	1950	1850	Laden .....	3000	2000	
G. Ground clearance.....	330	275	Front axle .....	3160	2300	
H. Skip load height.....	1508	1415	Rear axle .....	1900	1640	
I. Axle to rear.....	1032	1032	Total .....	5060	3940	
J. Tipping ground clearance.....	305	262	<b>Towbar (Max)</b>			
K. Tipping tyre clearance.....	615	620	Pull load .....	2250	1500	
L. Height tipped (skip).....	2115	1985	Vertical load .....	500	500	
M. Height (ROPS folded).....	1965	1910	<b>Tyre Pressure</b>			
P. Tyre clearance diameter (m).....	9.2	7.5	Bar (psi) Front .....	3.6(52)	3.5 (51)	
			Rear .....	2.0(29)	2.3 (33)	

Typical vibration levels - whole body 0.7 - 0.8 m/s<sup>2</sup>. Hand/arm less than 2.5 m/s<sup>2</sup>.

# 4 Daily/Weekly Checks

**Thwaites**



	AXLE OIL (centre case and hubs)	1	TRACTELF SF3
	ENGINE OIL	2	BP Vanellus C5 Global 15W 40
	TRANSMISSION OIL	3	Bartram HV46
	HYDRAULIC OIL	4	Bartram HV46
	COOLANT LEVEL	5	H <sub>2</sub> O + 50% Antifreeze
	FUEL LEVEL	6	DIESEL
	GREASE	7	FILL ALL POINTS
	AIR CLEANER	8	CHECK INDICATOR
	BRAKES	9	Check foot brake for firmness
	BRAKE OIL	10	BP Bartran HV32
	WHEEL NUTS	11	330 Nm (245 lb ft)
	TYRE PRESSURE	12	See Data Chart
	FAN BELT	13	Condition/Tension
	STEERING WHEEL/COLUMN	14	Check condition

## 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](http://www.thwaitesdumpers.co.uk)

# **Thwaites**

Normal service intervals:

10hrs, 50hrs, (first 100hrs), 250hrs, 500hrs, 1000hrs, 2000hrs

Please refer to the Thwaites service manual for further maintenance information.

[\*\*www.thwaitesdumpers.co.uk\*\*](http://www.thwaitesdumpers.co.uk)