NEW HOLLAND

MH City
MH Plus
MH 5.6

Tier 3

Operator's Manual

Operator's Manual

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MH City - MH Plus
MH 5.6

NEW HOLLAND

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PROVEN PERFORMANCE

SECTION 7

SECTION 8

OPERATING THE MACHINE

USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury.

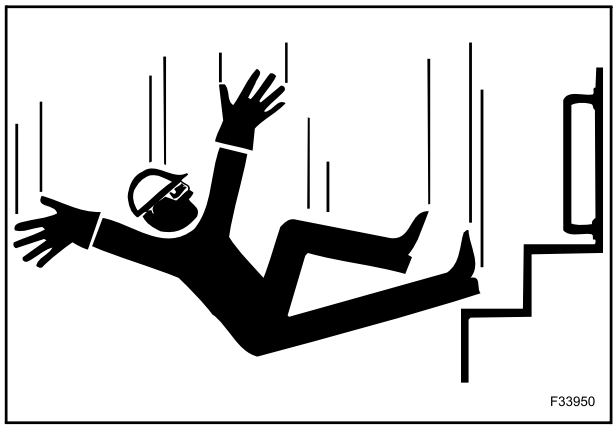
When you get on and off the machine, always maintain a three-point contact with the steps and handrails and face the machine.

Do not use any controls as hand-holds.

Never jump on or off the machine.

Never mount or dismount a moving machine.

Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



8

ADJUST THE SEAT

A seat poorly adjusted for operator or work requirements may quickly fatigue the operator leading to improper operations.

The seat should be adjusted whenever machine operator changes.

The operator should be able to fully press the pedals and correctly move the control levers with his back resting against the seat back.

If not, move the seat fore and aft, and check again.

9

DON'T CARRY RIDERS ON THE MACHINE

Riders on the machine are subject to injuries such as being struck by foreign objects and being thrown off the machine.

Only machine operator is allowed on the machine. Riders are not allowed.

Riders also obstruct the operator's visibility, resulting in the machine being operated unsafely.

PARKING THE MACHINE

Park machine on flat and firm surface.

Return the machine to basic position.

Lock the upper structure.

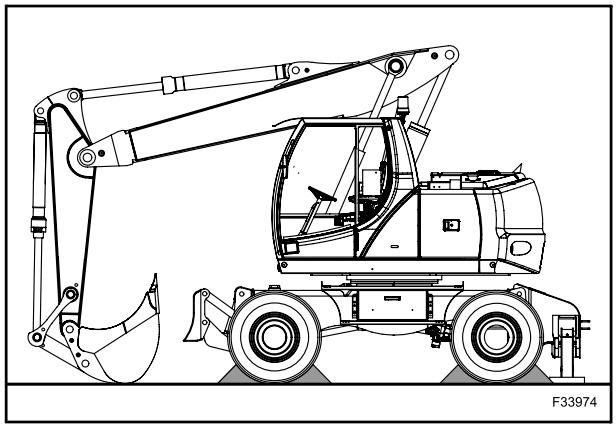
Place the attachment down on the ground.

Engage the parking brake.

Shut off the engine.

⚠ CAUTION ⚠

Do not shut off the engine when running at full speed, but let it run idle for some minutes to cool it down.



24

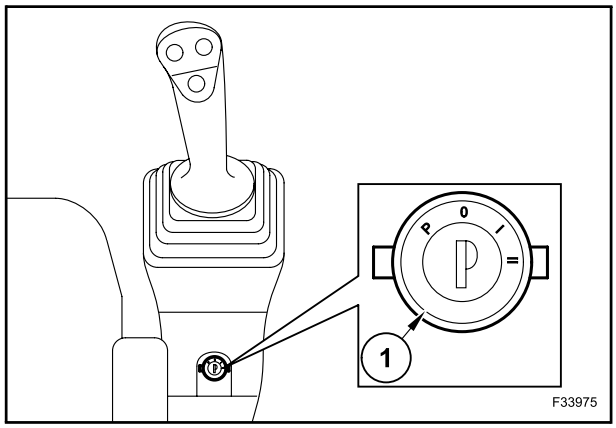
Place chocks under the wheels.

Set ignition key (1) to position “0” and pull it out.

Ignition key (1) is set to “P”. With key in this position, some electrical users are still under voltage, also with engine shut off.

If these users remain under voltage for a long time, the batteries may discharge and prevent a engine start-up.

Because of this, pay attention that the ignition key is always set to position “0”, before leaving the machine parked for long time (for instance at work shift end).

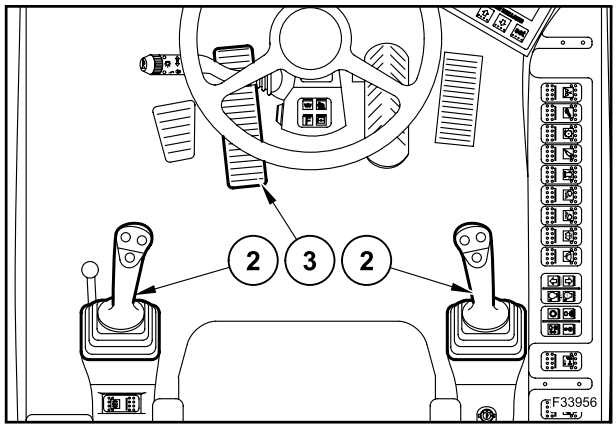


25

⚠ CAUTION ⚠

With special attachment, move both hydraulic control levers (2) and the pedal (3) in all directions, to allow all cylinders to release pressure.

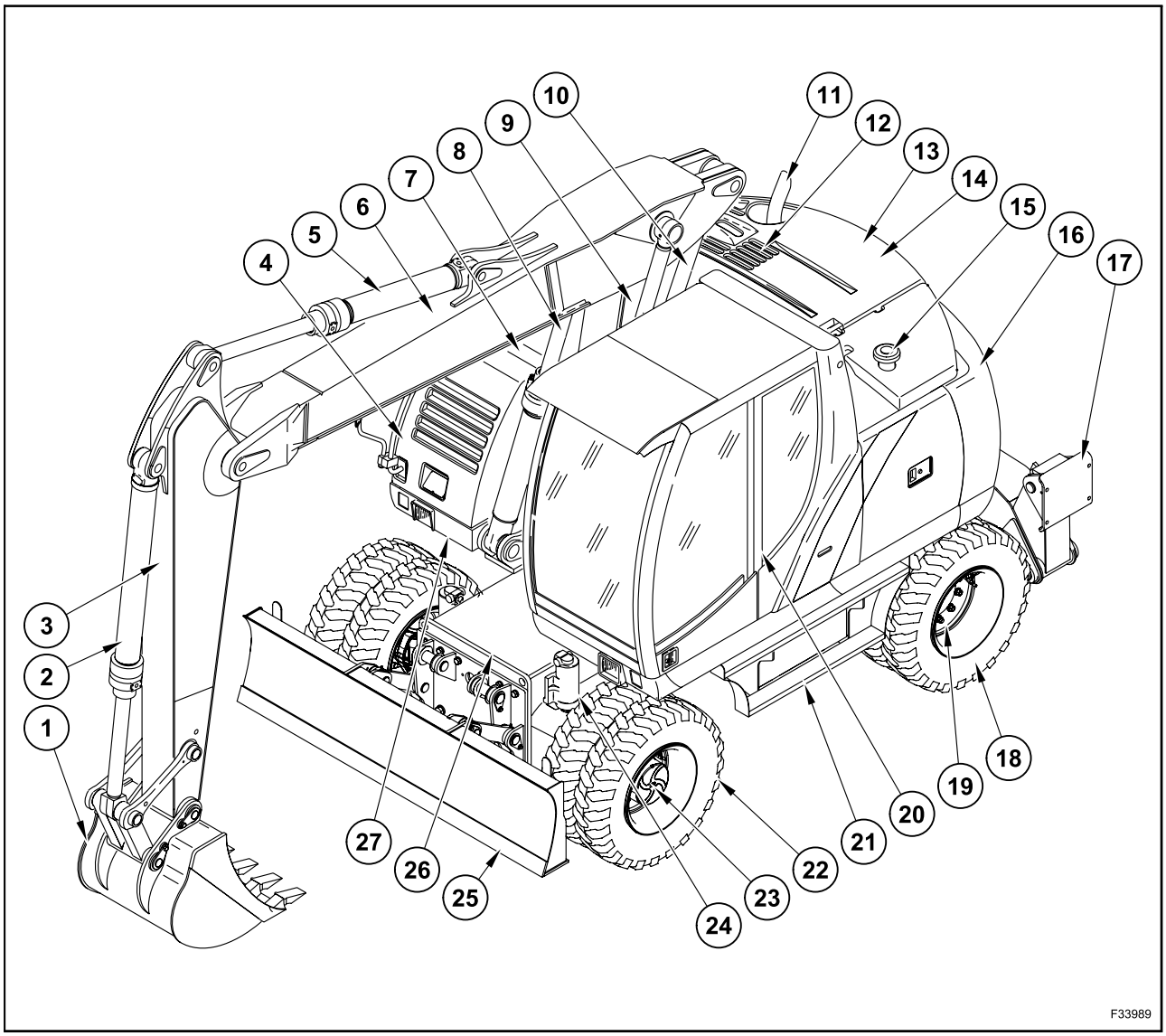
Disconnect the pilot control.



26

MAIN COMPONENTS

PLACING BOOM ATTACHMENT

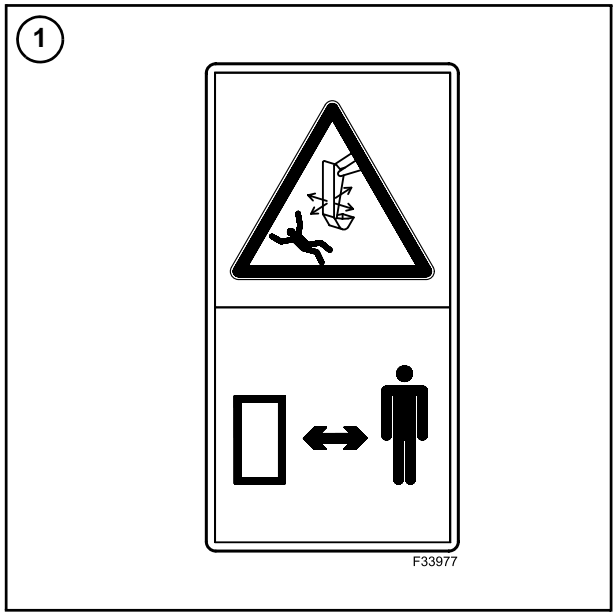


48

1. Bucket
2. Bucket cylinder
3. Dipper
4. Batteries
5. Dipper cylinder
6. Placing boom
7. Multi-cooler
8. Boom cylinders
9. Boom
10. Adjusting cylinder
11. Muffler
12. Diesel engine
13. Hydraulic oil tank
14. Hydraulic pumps
15. Fuel tank
16. Counterweight
17. Stabilizers
18. Rear wheels
19. Rear axle
20. Cab
21. Stair and storage box
22. Front wheels
23. Front steering axle
24. Axle floating locking cylinders
25. Blade
26. Undercarriage
27. Upper structure

Frontal stay dangerous

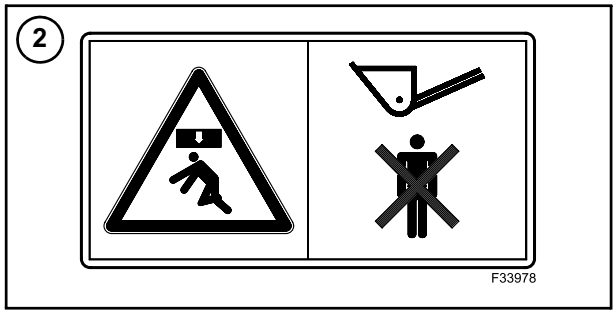
Nobody must stay in front of machine during the working stages.
Danger of injuries caused by the working attachment in motion. Move the attachment only after ensuring that nobody is staying in the area of danger.



61

Dangerous work site stay

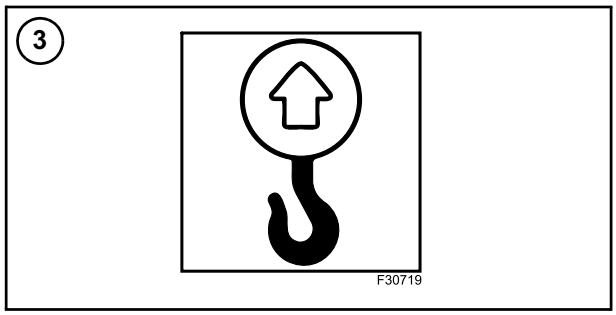
Nobody must stay in proximity of the machine during the working stages.
Risk of injury from falling loads or moving parts of the working attachment. Do not stand under suspended loads or under the working attachment.



62

Slinging points

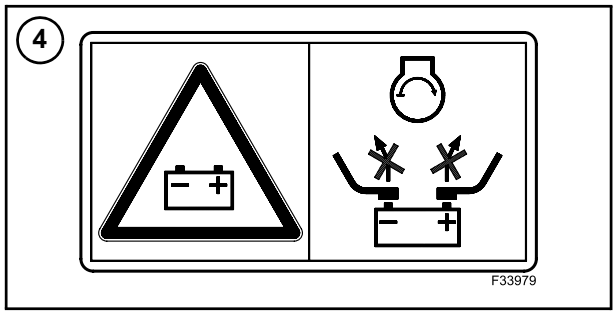
These decals indicate the points of the machine where to attach the lifting devices, when parts of the machine are to be removed. Do not use other points.



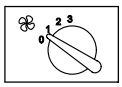
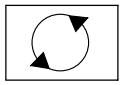
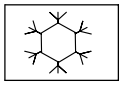
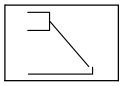
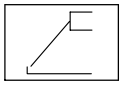
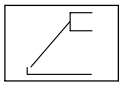
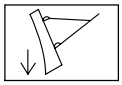
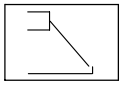
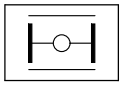
63

Battery

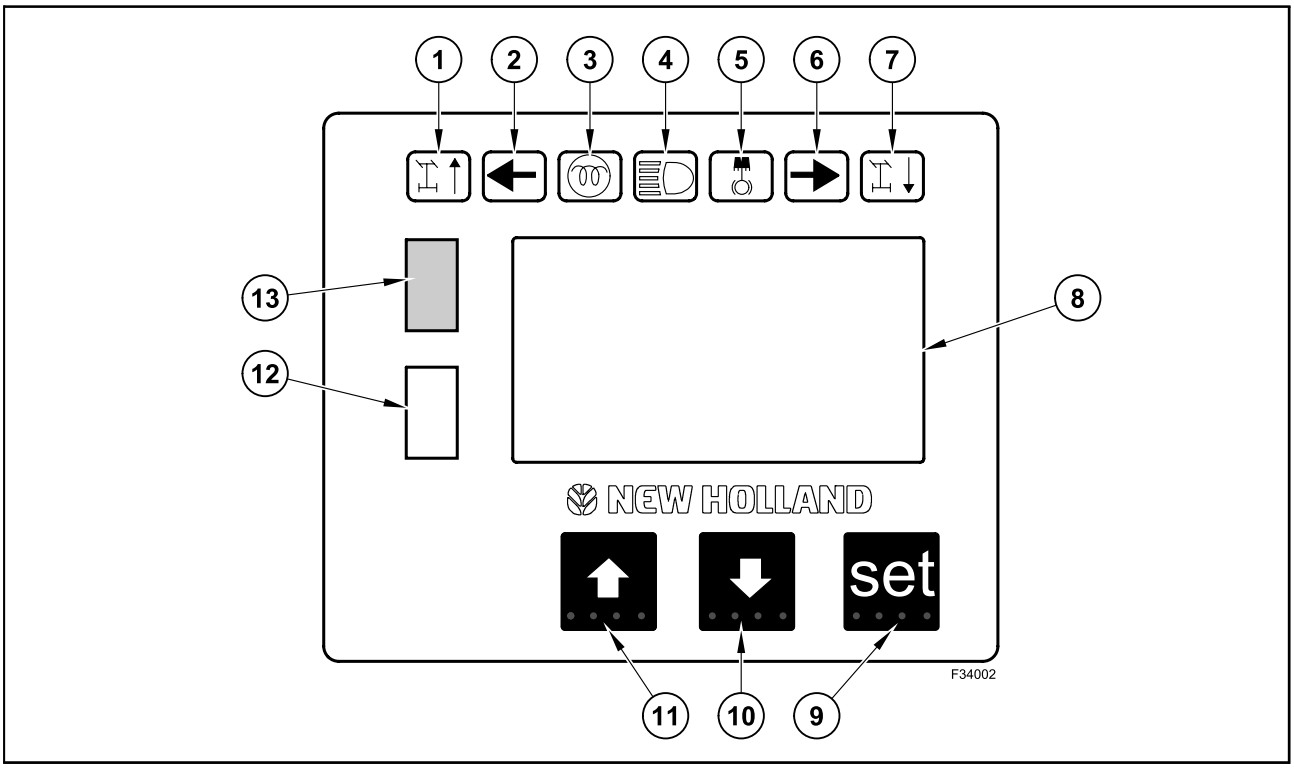
This decal shows that you have to refer to the Operator's Manual.
Shut off the engine before disconnecting the battery.



64

Ref.	Description		Operation	Symbol
1	Rotary knob/ selector	Blower	Activates the blower and has 3-speed stages: 1, 2, 3.	
2	White button	Air conditioner (optional)	Activates/deactivates the air recirculation.	
3	Blue button	Air conditioner (optional)	Activation/deactivation of air conditioner (ON/ OFF).	
4	Rotary knob/ selector	Heating	Sets the heating power: completely to the left - low heating power (blue); completely to the right - high heating power (red).	
5	Push-button	Stabilizer (optional)	Rear right stabilizer control.	
6	Push-button	Stabilizer (optional)	Rear left stabilizer control.	
7	Push-button	Stabilizer (optional)	Front left stabilizer control.	
		Blade (optional)	Blade control.	
8	Push-button	Stabilizer (optional)	Front right stabilizer control.	
9	Switch	Parking brake	Parking brake control.	
10	Push-button	Floating axle blocking	By pressing the symbol (lamp lights up) the floating axle is blocked. By pressing the symbol again (lamp turns off) the floating axle is released.	

MULTI-FUNCTION DISPLAY



4

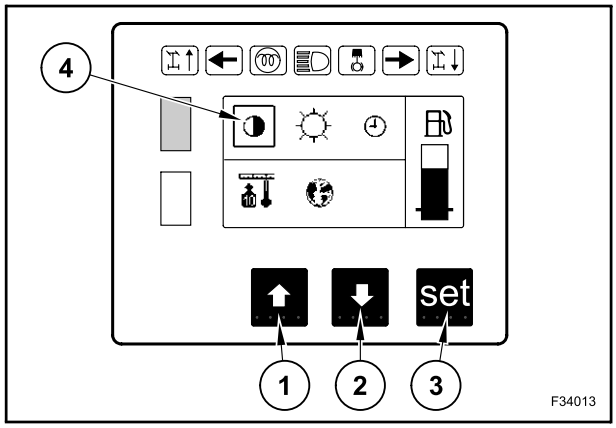
Ref.	Description		Operation	Symbol
1	Lamp	Travel direction	This light turns on when the forward travel is engaged.	
2	Lamp	Turn signal light	It flashes when the left turn signal is activated.	
3	Lamp	Preheating	It turns on during preheating.	
4	Lamp	Main beams	It turns on blue, when the main beams are activated.	
5	Lamp	Upper structure holding brake	This light turns on when the slewing brake is engaged.	
6	Lamp	Turn signal light	It turns on when the right turn signal is activated.	

CONTRAST

Under poor light conditions, strong solar light of extreme cold, the display contrast may need to be modified. In this way the readability of the informations displayed is ensured.

In operating mode depress repeatedly the arrow button, until on main menu appears “display” on grey background. Confirm with “set” button (3).

Depress repeatedly button with downward arrow (2), until the contrast symbol appears on grey background (4). Confirm the selection with “set” button (3).



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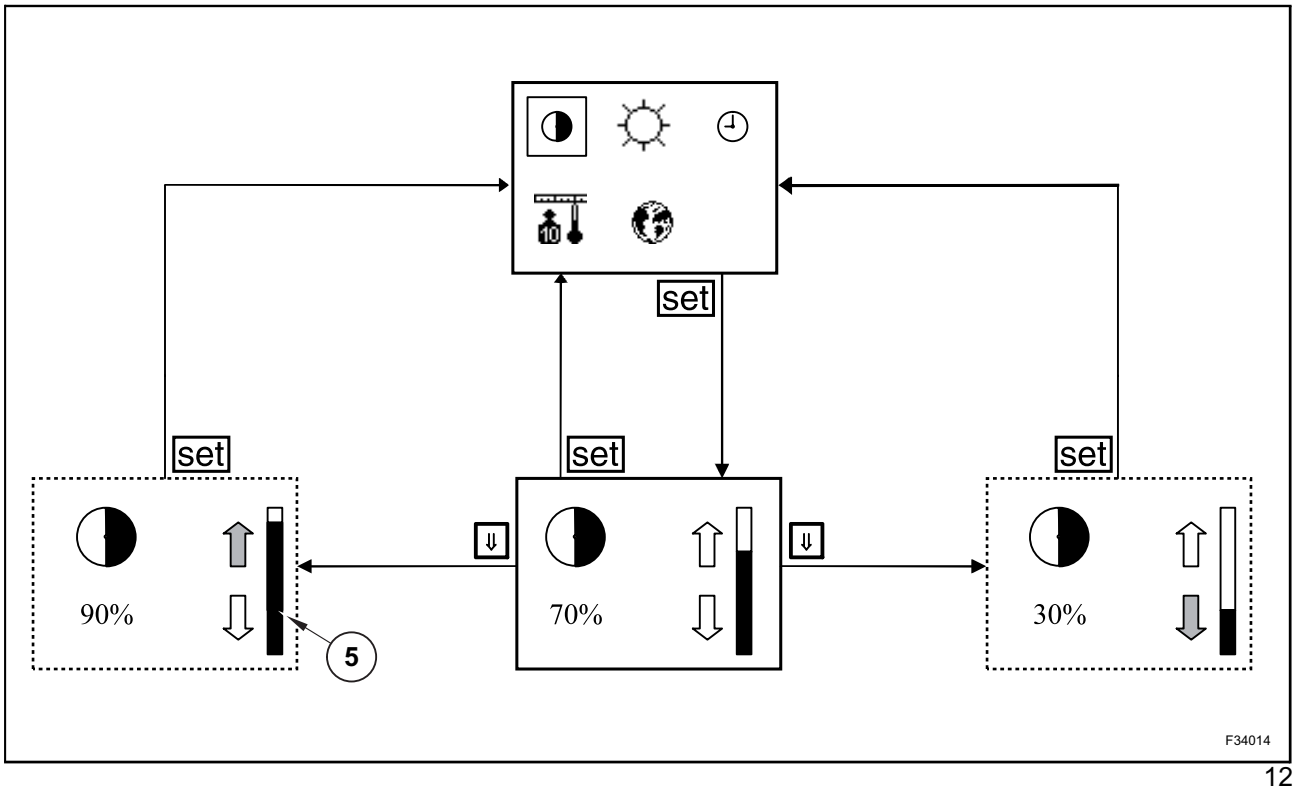
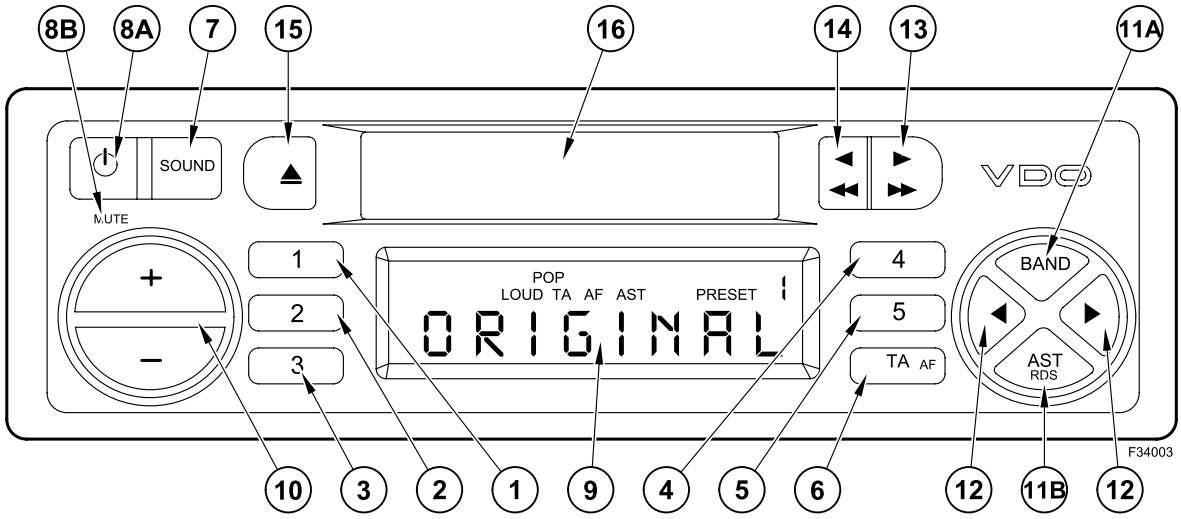


12

By depressing the button with upward arrow (1), the contrast increases, by depressing the button with downward arrow (2) the contrast decreases at little steps. The contrast setting is graphically displayed like a column (5).

With button “set” (3) you exit the sub-menu “Contrast” and return to main menu “Display”. Concurrently the contrast settings are memorized.

RADIO



26

1. Preselection button 1
2. Preselection button 2
3. Preselection button 3
4. Preselection button 4
5. Preselection button 5
6. TA activation (short pressure) and TA deactivation (long pressure)
7. Audio/sound modes selection

8A. Activation (short pressure) and Deactivation (long pressure)

8B. Audio activation and deactivation

9. Display
10. Sound level button: by depressing the top it increases, while by depressing the bottom it decreases

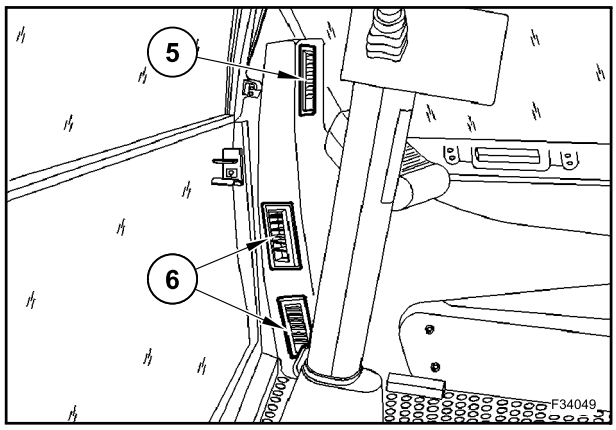
11A. Band selection

11B. RDS activation and deactivation

12. Automatic reload
13. Tape quick winding
14. Tape quick rewinding
15. Cassette ejection
16. Cassette case opening

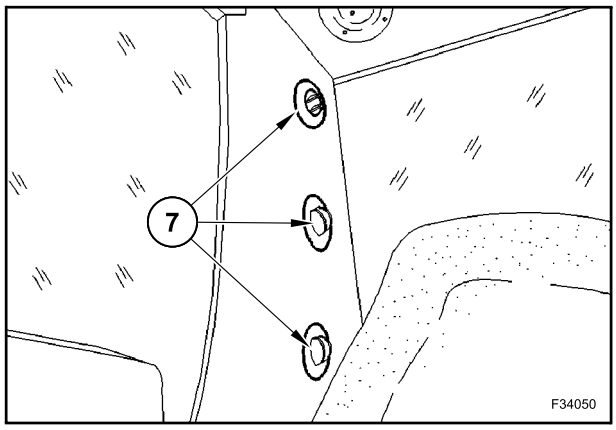
Open the two air-flow vents (5) for the front windows as wide as possible and direct onto the front windows.

Open the air-flow vents (6) for the side window as wide as possible and direct onto the side window.



48

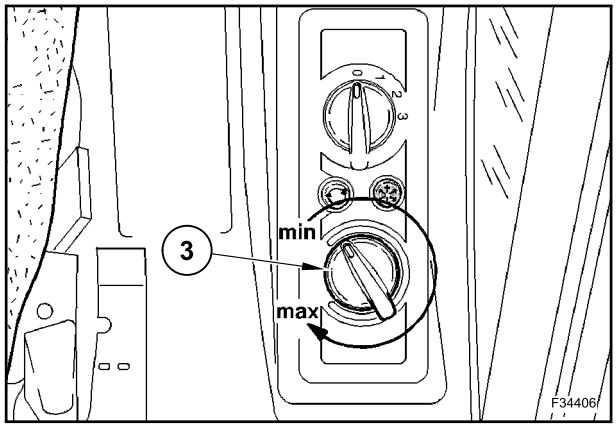
Open the air-flow vents (7) of the rear window as wide as possible and direct onto the rear window.



49

Set heating output to max.

Set the blower speed to stage 3 by means of knob (3).



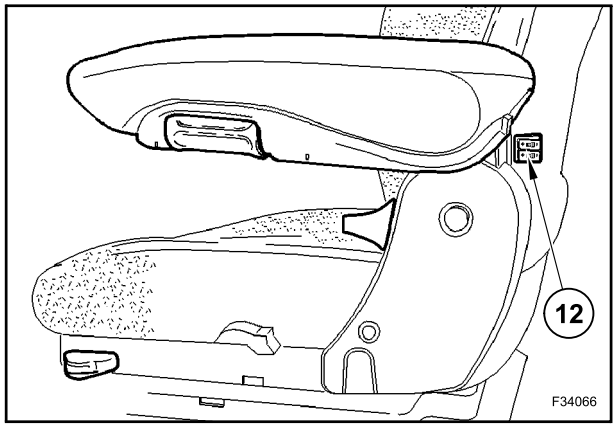
50

ADJUSTING THE LUMBAR SUPPORT

An upper and a lower air chamber are integrated into the backrest. They can be inflated or deflated independently of each other. The backrest convexity can be adapted to the shape of the operator's spine with the two push-buttons (12).

For both push-buttons:

- by pressing + the air chamber is inflated;
- by pressing - the air chamber is deflated.



68

SEAT HEATING

Two electric heating elements (seat and backrest) are installed in the operator's seat.

The maximum heating capacity is preset. The temperature is thermostat-controlled.

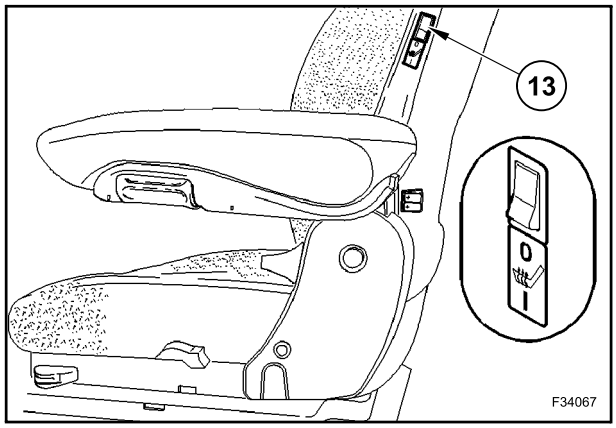
Switching on and off

This is done with a rocker switch (13) on the left side of the backrest.

"0": heating OFF

"I": heating ON

The seat heating can be switched on only if the ignition key is set to position "I" (Ignition ON).



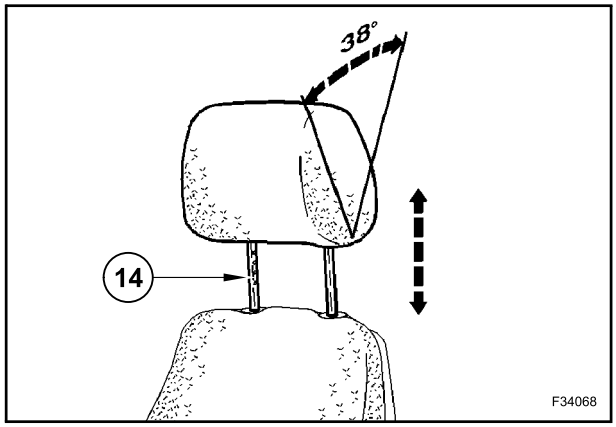
69

BACKREST EXTENSION (OPTIONAL) (HEAD SUPPORT)

The backrest extension can be suited individually in height, by pulling the same out (14) up to stroke end by means of a toothed rod.

Adjustment range: 100 mm (3.94 in) in 7 places

To remove the backrest extension, override the resistance of the stroke end with a light pull.



70

START-UP

START-UP IMMOBILIZER

This machine is equipped with an electronic immobilizer as a standard feature. When activated, the immobilizer prevents unauthorized starting of the machine.

The immobilizer is not active on delivery from the factory. It can be activated by the customer when the machine is handed over. Before activation, the customer has to enter a 4-digit code chosen by him.

NEW CODE ENTER

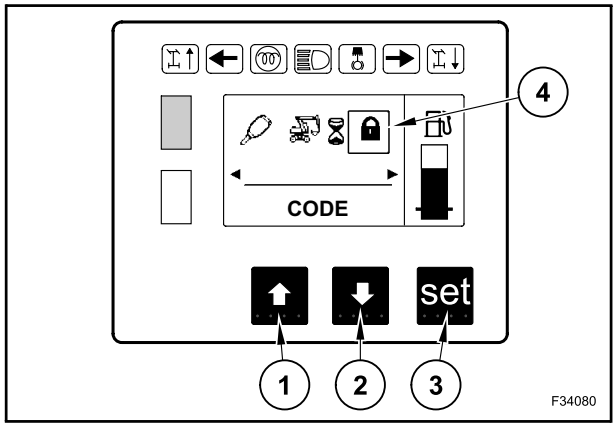
In the operating mode, press the arrow button until the lock symbol (4) is highlighted grey and the text “CODE” appears. Confirm the setting with “set” button (3).

Using the downward arrow button (2), activate the lock symbol (4) and confirm the selection with the “set” button (3).

Enter the presently valid 4-digit code with the arrow buttons and the “set” button. Attention when making the change for the first time: the code preset at the factory is 1111.
After confirming the fourth digit, you are requested to enter the new code.

NOTE: *note the code and keep it in a safe place.*

Confirming with the “set” button, saves the entered code, whereas arrow up button (1) rejects the change. This takes you back to main menu.



1

TRAVEL

BEFORE STARTING THE TRAVEL

Remove any soil, mud, snow, ice, grease and oil from your working footwear. You might otherwise slip from steps and pedals and thus initiate inadvertent movements.

Raise the working attachment only to such an extent that the machine can pass under overhead power lines without risk.

Adjust the operator's seat, the steering column and the rear view mirrors before setting off.

If the machine is equipped with seat belt, fasten it.

Close the front window and the cab door.

Warn persons in the immediate vicinity by sounding the horn before setting off.

Never travel across slopes.

Take the utmost care on slippery and greasy ground.

Check for correct tyre pressure.

Make sure the wheels have adequate grip; only then are the steering and braking properties assured.

Give the engine 2 to 3 minutes time to warm up before setting off.

Run the engine at full load only if warm.

BASIC POSITION

The specifications "forward" and "reverse" as well as "right" and "left" apply only when the machine is in basic position and the machine operator is looking through the front window towards the working attachment.

Bear in mind that the required and the actual directions of travel "forward" and "reverse" as well as the required and actual directions of cornering "right" and "left" are identical only when the machine is in basic position.

If the upper structure is turned more than 90° from the basic position, the machine moves in the opposite direction from the viewing direction of the operator.

Therefore check the position of the upper structure in relation to the undercarriage before setting off.

FLOATING AXLE BLOCKING AND UNBLOCKING

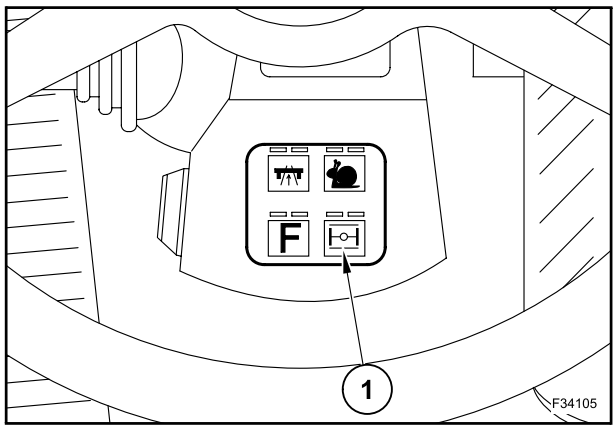
The steered axle is suspended from the undercarriage in such a way that it can float about the longitudinal axis of the machine (floating axle). This feature is an advantage when driving on uneven terrain. During working it is, however, necessary to avoid axle floating. To achieve this, the oil exchange between two hydraulic cylinders taking support on the axle is prevented. The floating axle is then blocked and the stability of the machine considerably increased. Before using the machine for driving, the floating axle must be unblocked.

OPERATION

The blocking and unblocking of the floating axle activates by depressing button (1), that has two lamps and three engagement positions:

- left and right lights out: blocking of floating axle activated;
- left light on and right light out: blocking of floating axle deactivated;
- left light out and right light on: automatic operation.

Depress button (1) many times until you achieve the required condition.



32

AUTOMATIC MODE

To select the automatic mode or to exit this mode, depress button (1) and hold for more than two seconds.

In automatic mode some of the following conditions take place:

- the floating axle is blocked if the travel pedal remains inoperative for more than 0.5 seconds;
- the floating axle is released when you depress the travel pedal;
- for the full time of stabilizers or blade operation, the floating axle is blocked. At the end of operation, the axle blocking is restored.
  Beware, at machine departure from the factory this option is disabled. This option can be enabled or disabled through the Service menu.

UPPER STRUCTURE SLEWING

Switch the upper structure holding brake into the automatic mode by depressing button (2) until lamp is lit up (this mode is selected automatically on engine start-up).

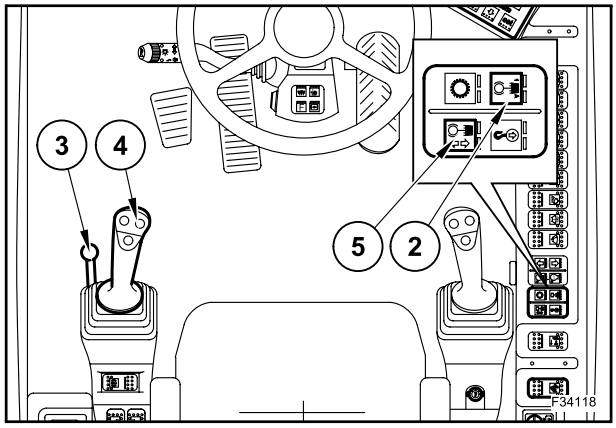
Activate the pilot control by pushing forward the safety lever (3).

Unlock the upper structure.

To slew the upper structure to the right push hydraulic control lever (4) to the right.

To slew the upper structure to the left push hydraulic control lever (4) to the left.

The slewing speed increases the further the hydraulic control lever (4) is moved to the right or to the left.



49

UPPER STRUCTURE HOLDING

The maximum slewing speed depends on the slewing features set by button (5):

- lamps out: low slewing speed;
- left lamp on: standard slewing speed;
- lamps on: high slewing speed;
- intermittent lamps: fault message.

UPPER STRUCTURE BRAKING

The slewing movement of the upper structure is braked when the hydraulic control lever returns to neutral position.

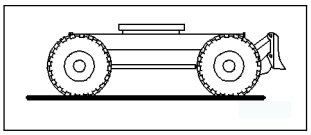
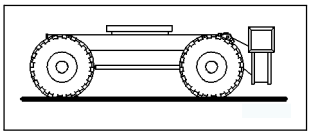
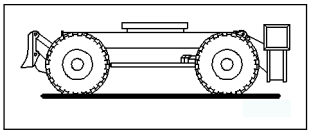
By means of push-button (5) you can set the braking effect of the upper structure holding brake. The time of braking from lever release to upper structure stop can be suited to individual requirements according to 3 levels.

- Lamps off: soft braking of upper structure slewing movement.
- Right lamp on: standard braking action.
- Lamps on: hard braking of upper structure slewing movement.

Countering (i.e. shifting the slewing control lever in the opposite direction) enhances the braking action even further.

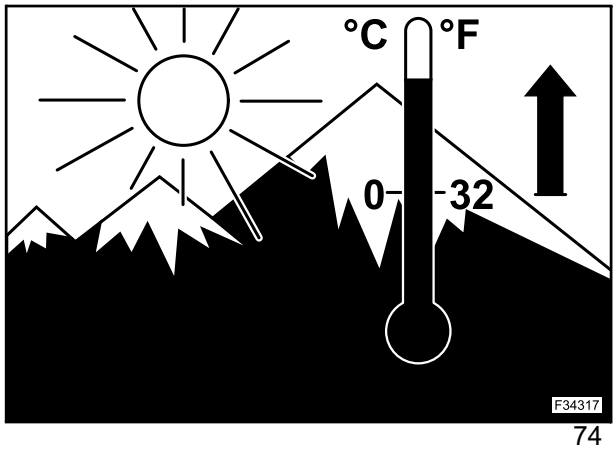
⚠ WARNING ⚠

Both lamps flash at intervals if a fault occurs in the system. Push-button (5) operation is disabled. The switching functions are blocked. In neutral position of slewing control lever, the slewing braking action is weaker. If necessary, increase the slewing braking action by moving the lever to the opposite direction (countering).

Stabilizers options	Standard stabilizers control	Independent stabilizer control	Blade
			**lowering at the rear** push hydraulic control lever forward (without switches A, B, C and D)
			raising at the rear pull hydraulic control lever backward (without switches A, B, C and D)
	**lowering at the rear** push left hydraulic control lever forward (without switches A, B, C and D)	**lowering at the rear** - rear right stabilizer: activate button (C) - rear left stabilizer: activate button (D) and push forward the left hydraulic control lever	
	raising at the rear pull left hydraulic control lever backward (without switches A, B, C and D)	**raising at the rear** - rear right stabilizer: activate button (C) - rear left stabilizer: activate button (D) and pull backward the left hydraulic control lever	
	**lowering at the rear** rear right and left stabilizers at the same time: activate button (D) and push forward the left hydraulic control lever	**lowering at the rear** - front right stabilizer: activate button (C) - rear left stabilizer: activate button (D) and push forward the left hydraulic control lever	**lowering in the front** activate button (B) and push forward the left hydraulic control lever
	raising at the rear rear right and left stabilizers at the same time: activate button (D) and pull backward the left hydraulic control lever	**raising at the rear** - front right stabilizer: activate button (C) - rear left stabilizer: activate button (D) and pull backward the left hydraulic control lever	**raising in the front** activate button (B) and pull backward the left hydraulic control lever

OPERATING THE MACHINE WITH HOT WEATHER

Air density decreases as altitude or ambient temperature increases. As a result of this, the engine's maximum output, quality of exhaust gas, temperature level and, in extreme cases, starting behaviour, are impaired. Engine can be used at altitudes up to 1000 metres (3280.83 ft) and temperatures up to 30 °C (86 °F) for mobile operations. If the engine is to operate under more severe conditions (at higher altitudes or temperatures), it will be necessary to reduce the injected fuel quantity and thus engine power.



74

Observe the following recommendations:
Maintain the correct level of coolant solution in the coolant reservoir.

Check the condition of the cooler cap before starting. Replace the cap if necessary.

Clean the radiator and the engine carefully.

Check the condition of the alternator and blower belt.

Use lubricants with the recommended degree of viscosity.

Use a suitable coolant.

BUCKET

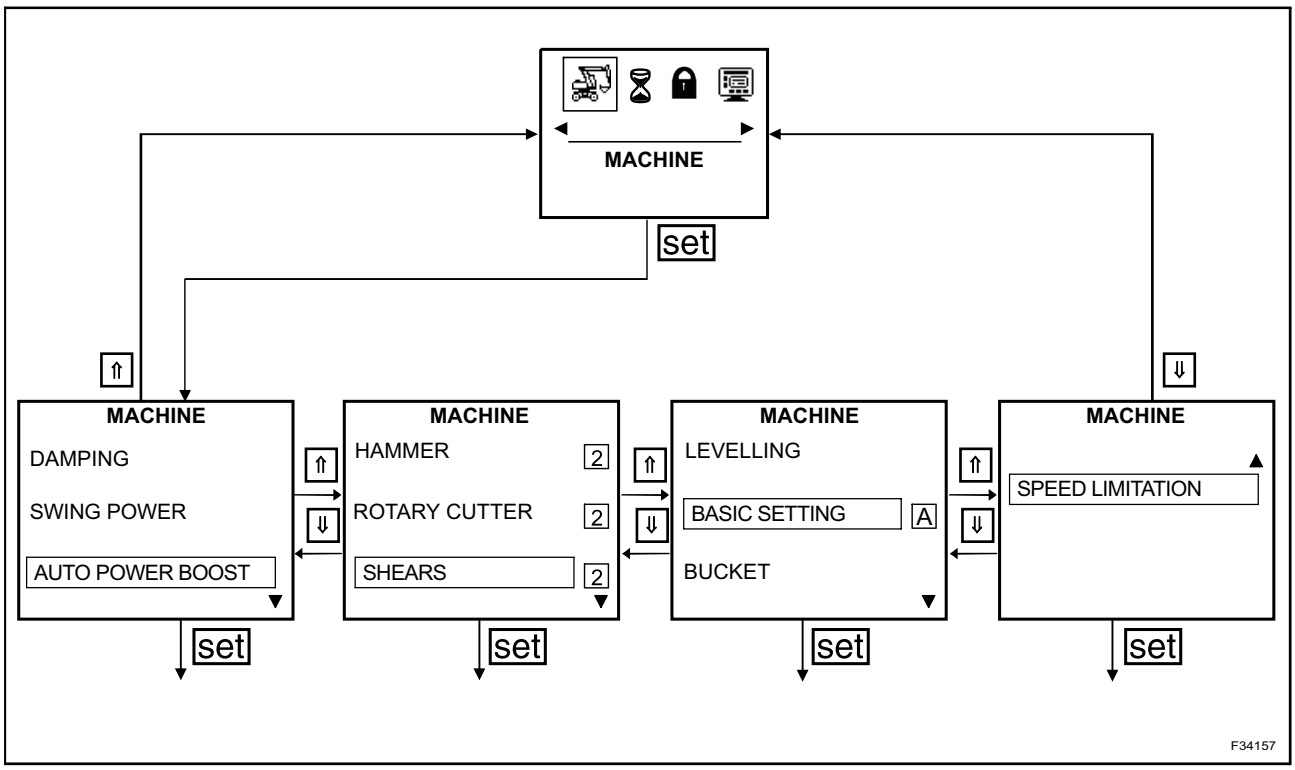
OPENING/CLOSING SPEED PARAMETERS SETTING

In the working mode, depress an arrow button until “MACHINE” appears in the lower part of the display and the machine symbol is marked by a frame. Depress “set” button.

Depress the arrow buttons until the bar is on “BUCKET”. Depress “set” button.

To get back to the “MACHINE” menu, depress the button with the upward arrow (⇑) or downward arrow button (⇓), until the beginning or the end of the display selection is reached. If, after reaching the end or the beginning, the display scrolls in the same direction, you return to the higher menu. If the buttons are not depressed for a prolonged period, the return to the next higher menu is automatic.

Confirm with “set” button, the sub-menu “BUCKET” is recalled. For the clamshell opening and closing a percentage digit is shown so as to mark the relevant speed. The delivery ex-works is performed with the relevant 50% setting.



89

WORKING HOURS / INTERVALS

A condition for the Manufacturer to take over the costs of the warranty service, is the regular performance of all inspection, maintenance and repair operations prescribed, as instructed by this Operator's Manual and the use of genuine spares.

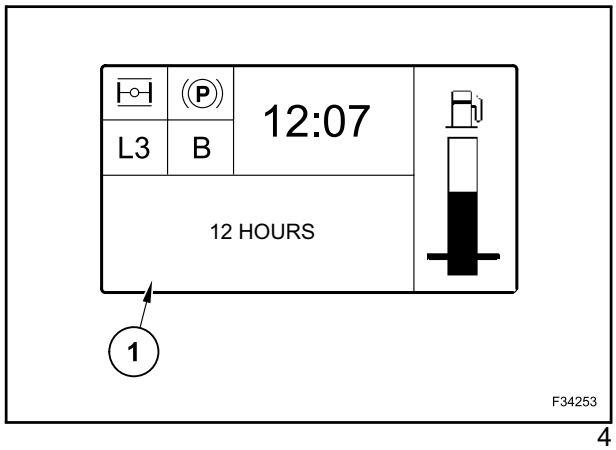
During the warranty period, all inspection works, maintenance and repair, with exception for the daily and weekly maintenance, have to be performed by the After-sales service or by an authorized workshop.

To ensure the correct operation and life of the machine and of its components, a time schedule has been established, to perform all maintenance service that has to be done.

The maintenance intervals indicated in this manual are valid for normal use conditions. If the use conditions are more severe, the intervals are shortened accordingly.

The working hours (1) necessary to determine the maintenance intervals, are shown on the multi-function display inside of the cab.

At machine start, the multi-function display shows besides an indication of the expiry and next interval type.



4

FUEL TOP UP AND REFUELLING

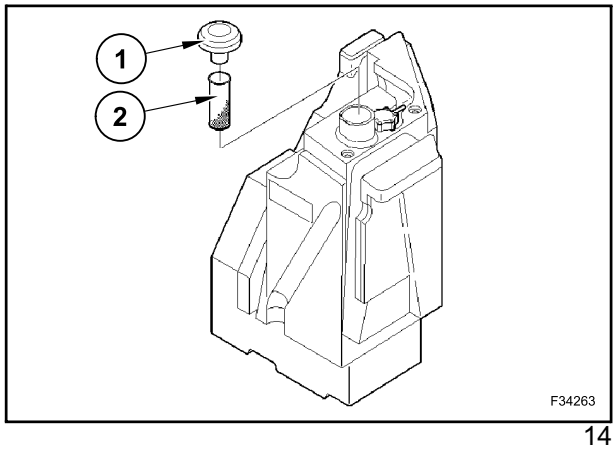
If the machine is refuelled often or regularly with fuel from cans or barrels, there is an increased risk of foreign matter and water penetrating into the fuel system.

In this case:

- always refuel through a fine mesh filter;
- user only intake hoses with a fine mesh filter;
- bleed water and sludge from the fuel tank at more frequent intervals;
- change all fuel filters at more frequent intervals.

Refuel with following operations:

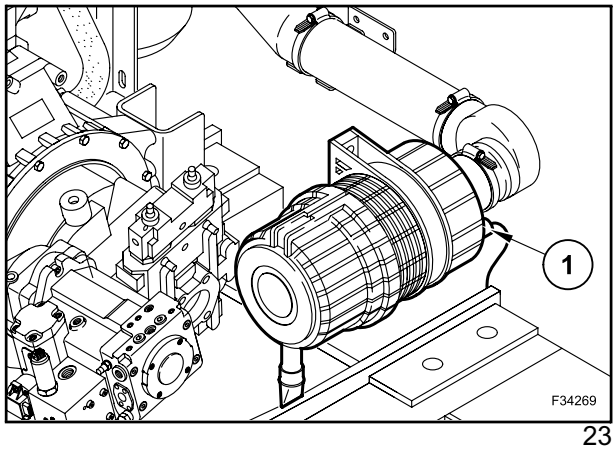
- open the filler cap cover (1);
- refuel through the filler neck filter (2). Do not remove the filter.



14

AIR FILTER - CLEANING

Besides the scheduled times for cleaning, the air filter must also to be cleaned by means of a electronic vacuum sensor (1), installed on the air filter housing, the indication of this sensor is shown on the multifunction display with a fault message.



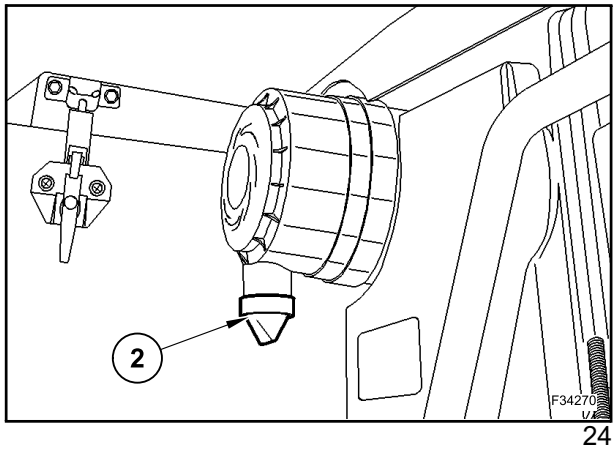
23

DUST DISCHARGE VALVE - CLEANING

The dust discharge valve (2) collects dust penetrating into the air filter case.

To discharge the dust, compress the dust discharge valve repeatedly.

The dirt is crumbled and comes out from the bottom.



24

AIR FILTER - DISASSEMBLY

Open the cover on the left side of the machine.

Push the clip (3) forward, turn the filter cover to the left (4) and remove it.

Remove the main filter element (5) carefully from the case.

The safety filter (6) remains in place.

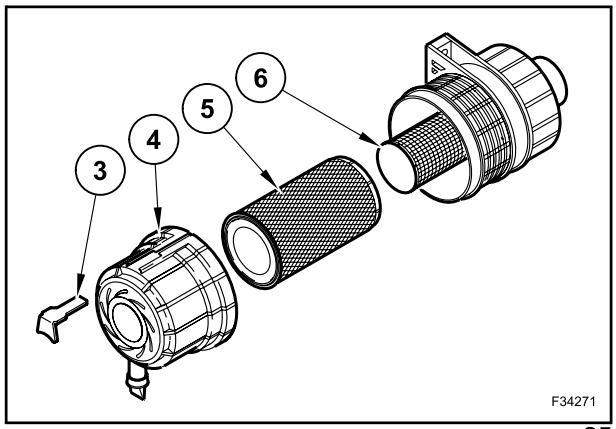
Clean the main filter element (5).

If damaged, the filter element has to be replaced.

Clean the filter case inside.

Assemble the filter element, checked and cleaned, or possibly a new element.

Assemble the cover (4) and lock it with the fastener (3).



25

Quick recharge

Respect the prescriptions of the Manufacturer of the battery charger.

Before performing the quick recharge, that is, a recharge with high density voltage, disconnect both connecting cables and disassemble the batteries.

Before performing the battery charge, unscrew the plugs to allow the release of gas from all battery cells.

A flat battery can freeze already at -10 °C (14 °F).
If the battery is frozen, it must absolutely be defrosted before quick recharge; otherwise it could explode.

The battery charger net cable has to be plugged-in to the electric socket, only after the battery charger clamps have been correctly connected to the battery poles.

red = positive

black = negative

Once the recharge is complete, reinstall the battery and perform correct connection (first the positive pole and than the negative).

BLADE AND STABILIZERS JOINTS, CARDAN SHAFT, STEERING TRUNNION PINS - GREASING

Before starting with the greasing operations place the machine in a safe condition.

By means of the greasing pump, grease all lubrication points.

Remove the protection cap from the grease nipple.

Clean the grease nipple.

Apply the pump nozzle on the grease nipple.

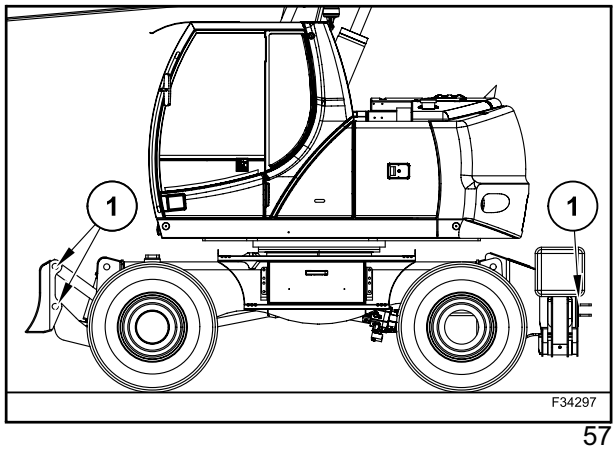
Now, pump the grease in such a quantity that the new grease can eject the old one from the articulation points.

Wipe off used grease with a cleaning rag.

After greasing, put protective cap back onto the grease nipple.

BLADE AND STABILIZERS JOINTS

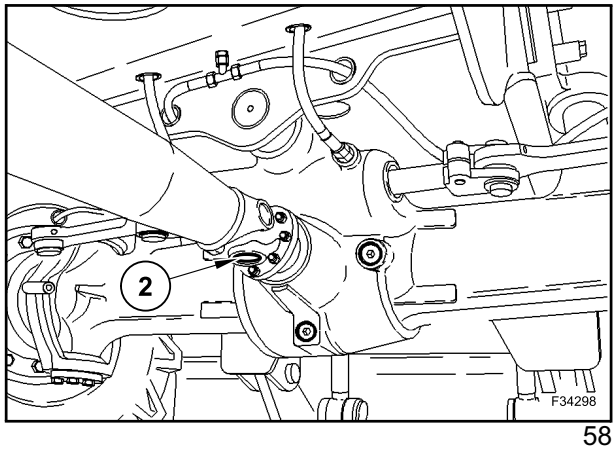
(1) = No. 12 grease nipples



57

CARDAN SHAFT

(2) = No. 2 grease nipples



58

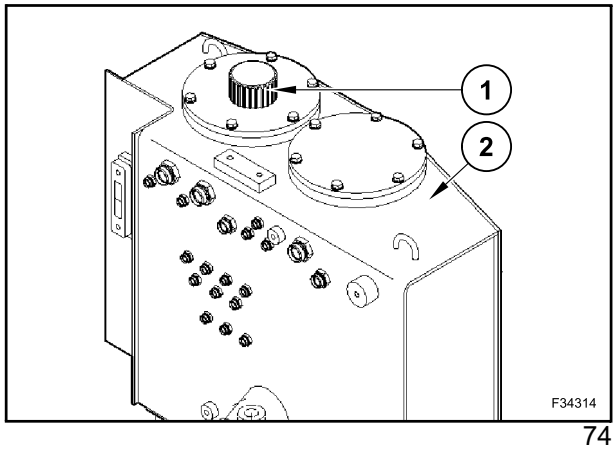
HYDRAULIC SYSTEM BLEEDING VALVE - CHANGE

The air bleeding and sucking valve (1) ensures this operation inside of the hydraulic oil tank (2), so as to compensate the hydraulic oil level floating.

This valve maintains a pressure of about 0.3 bar (4 psi) inside of the tank.

The valve (1) contains a filter element (4), that cannot neither be cleaned nor replaced. This is the reason why the valve has to be replaced completely.

The filter head is connected to the lower side, so as to be free to turn. In this way, you avoid that the valve is removed without authorization.

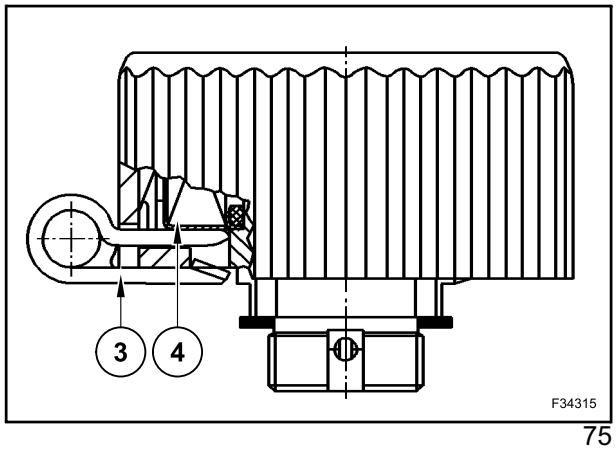


74

To unscrew the valve, insert laterally the locking pin (3), that is delivered with the new valve. Now the old valve has to be unscrewed with great care (the pressure inside of the hydraulic oil tank is released).

Insert the locking pin (3) inside of the new valve and tighten the valve manually.

Take out the locking pin and store it (for instance in the keys bunch) for a future use.



75

STEERING AXLE - OIL CHANGE

⚠ WARNING ⚠

The axle and the differential box may also be hot after a long journey.

Leave the axle and differential box to cool down and wear working gloves.

The axle and differential may be slightly over pressurized, so turn the control plug carefully, just far enough to release the excess pressure (audible hissing sound).
Collect the escaping oil and discard it without polluting the environment.

Park the machine on a level and firm surface.

Block the rigid axle wheels by placing chocks under them.

Raise the machine with the levelling blade or the working equipment until the wheels of the steering axle are clear of the ground and turn freely.

Shut off the engine.

Place the machine in a safe condition.

HYDRAULIC OIL TANK - CLEANING

⚠ WARNING ⚠

Do not use petroleum, paraffin oil or other solvents to clean the tank.
This can cause the formation of gas easy flammable and explosive.

Use therefore only hydraulic oil or paraffin oil for the special detergent for cleaning and washing the tank.

Discard hydraulic oil and dirty rags according to environment legislation.

Unscrew all screws (1) and remove the cover (2).

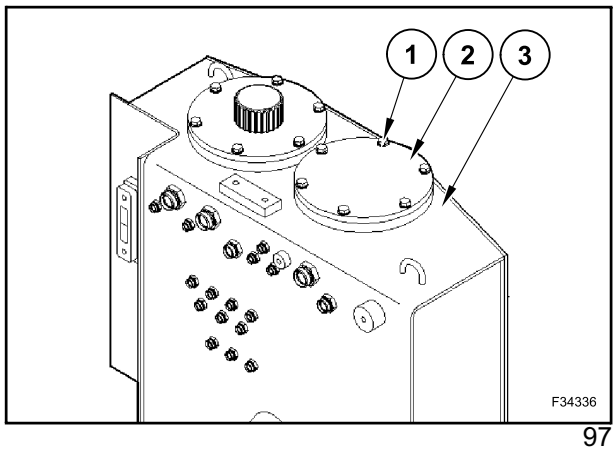
Place a container to collect detergent oil under the hydraulic oil tank.

Clean the tank (3) inside with hydraulic oil or detergent oil.

Remove all deposits and detergents residuals.

Replace the gasket under the cover (2).

Reassemble the cover (2) and fasten it with screws (1).



97

HYDRAULIC OIL FILLING

Remove the return filter cover.

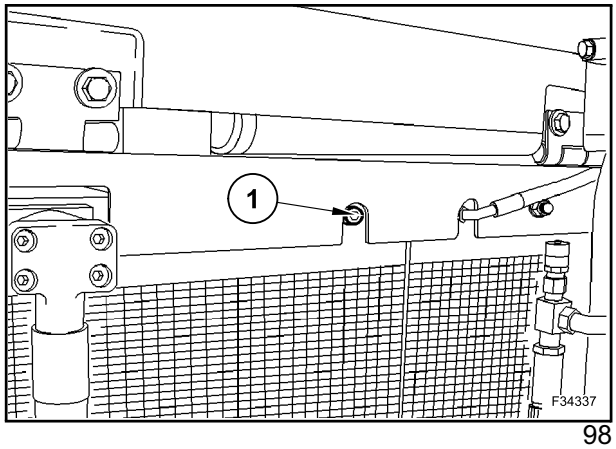
Loosen the bleeding plug on the hydraulic oil tank (1).

Fill hydraulic oil inside of filter chamber, until oil comes out from the bleeding plug (1). Tighten the bleeding plug.

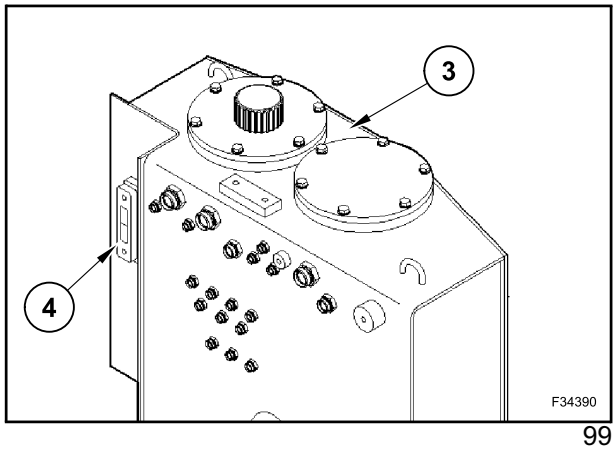
Carry on with the hydraulic oil filling, until the level on the gauge (4) reaches the “max” reference.

Bleed air from the hydraulic system.

Check the oil level on the gauge (4) inside of the hydraulic oil tank (3).



98



99

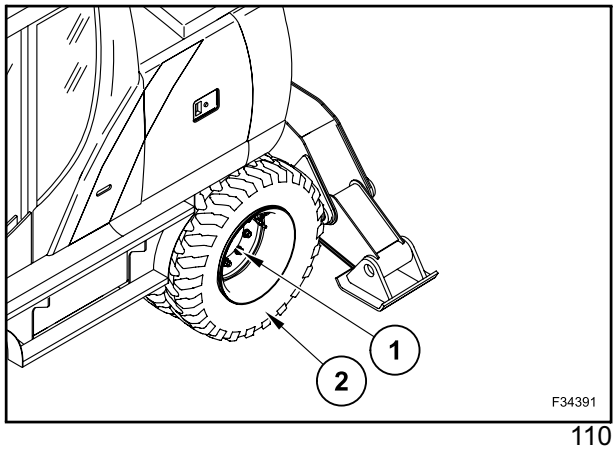
TYRES - CHANGE

Park the machine on a level and firm surface.

Engage the parking brake.

Loosen the wheel nuts (1) of the wheel (2) by approximately 1 full turn.

Raise the axle with the defective wheel slightly, until the wheels come clear of the ground. For this operation the machine can be lifted at the concerned side either with the working equipment or with the stabilizers.



110

Place wooden chocks under the lifted axle, to avoid that it lowers.

Place the machine in a safe condition.

Relieve the pressure from the tyres.

Unscrew nuts (1) from the concerned wheel (2) and the middle ring (optional).

Mark the inner wheel and the outer one. Do not lose the centering rings, the spring washers and the wheel nuts. They have to be reused for reassembly.

Fit the new tyres and inflate both of them at about 1 bar (14.5 psi).

Observe the assembly sequence:

- inner wheel (rims with greater camber angle);
- intermediate ring (optional);
- outer wheel (rims with minor camber angle). Observe the sequence absolutely, because in case of wrong assembly of the wheels, the maximum allowable with of the machine can be exceeded;
- pay attention to the tread position;
- do not damage the threads of the wheel studs;
- centre the intermediate ring;
- no foreign body must be stuck between the tyres and the intermediate ring.

Tighten the nuts (1) of the wheel (2) by hand.

Remove the wooden chocks under the raised axle and lower it.

Tighten the nuts (1) of the wheel (2) to the prescribed torque.

Inflate the tyres to the correct pressure.

Check, after some service hours, the tightening of the wheel nuts by means of a torque wrench.

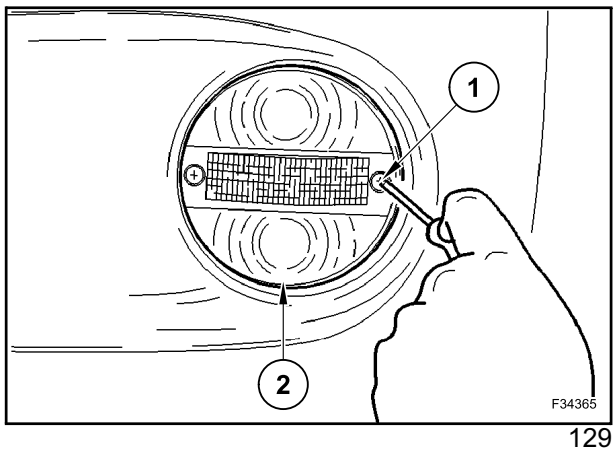
REAR FLOODLAMPS

Unscrew the fastening screws (1) of the covering glass (2).

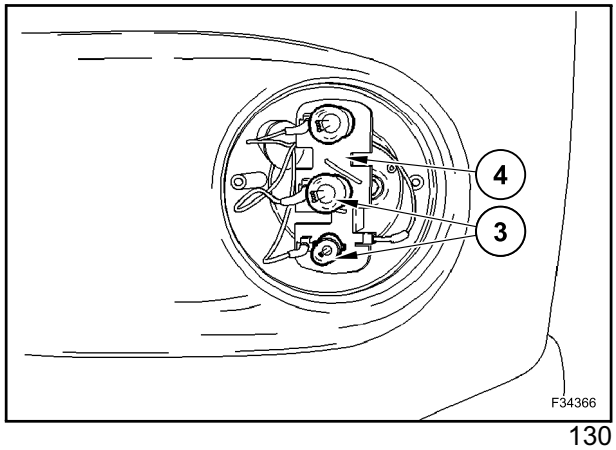
The bulbs (3) are fitted inside a plug-in bulb holder (4):

- press the bulb (3) and turn it to the left;
- take out the bulb (3);
- lock the new bulb (3) firmly inside of the bulb holder (4).

Reassemble the covering glass (2) and fasten it with screws (1).



129



130

STEERING SYSTEM

PROBLEM	POSSIBLE CAUSE	CORRECTION
Steering not operational.	Air in the hydraulic system of the steering.	Bleed the system.
Steering wheel hard.	Double pump without frictional connection.	Consult your Dealer.
Steering wheel hard to turn when travelling on level ground.	Oil level too low.	Top up hydraulic oil in correct quantity.
	Defective valves.	Consult your Dealer.
	Tyres pressure too low.	Check and inflate tyres at correct pressure.
The steering floats (needs constant adjustments).	Air in the hydraulic system of the steering.	Bleed the system.
	Internal leaks in the power steering or cylinders.	Consult your Dealer.
Steering wheel easy to turn at limit stop.	Internal leaks in the power steering or cylinders.	Consult your Dealer.
Steering wheel turns fast and uneven during steering action (steering discontinuous).	Air in the hydraulic system of the steering.	Bleed the system.
	Internal leaks in the power steering or cylinders.	Consult your Dealer.
	Oil supply rate insufficient.	Consult your Dealer.

CLAMSHELL BUCKET

PROBLEM	POSSIBLE CAUSE	CORRECTION
Clamshell rotation not operational.	Clamshell rotation pump defective.	Consult your Dealer.
	Hydraulic oil level too low.	Top up with hydraulic oil in correct quantity.
	Malfunction of clamshell-rotation pressure-limiting valve.	Consult your Dealer.
	Clamshell rotation valve defective.	Consult your Dealer.
	Button on hydraulic control lever defective.	Consult your Dealer.
	Clamshell rotation solenoid defective.	Consult your Dealer.
	Clamshell rotation motor defective.	Consult your Dealer.
	Pinion and ring gear worn.	Replace pinion and ring gear.
Clamshell rotates very slowly.	Malfunction of clamshell-rotation pressure-limiting valve.	Consult your Dealer.
	Clamshell rotation solenoid defective.	Consult your Dealer.
	Clamshell rotation motor defective.	Consult your Dealer.
At cylinders stroke end the clamshell does not rotate.	Malfunction of clamshell-rotation pressure-limiting valve.	Consult your Dealer.
	Clamshell blades or limit stops worn out.	Replace.

BATTERIES STORAGE

For extended machine downtime periods, remove batteries and store on dry, well ventilated premises at about 20 °C (68 °F).
Observe the following points:

Clean battery.

Check acid density and battery fluid level once a fortnight.

Charge batteries when acid density has fallen to 1.23 kg/dm^3 (85.71 lb/ft^3) or earlier.

Keep batteries clean and dry externally.

RECOMMISSIONING THE MACHINE AFTER PROLONGED STORAGE

Before recommissioning the machine after a prolonged storage, observe the following points:

Remove engine preservation. Fill in new engine oil.

Install batteries and reconnect them to the electrical system. Check batteries charge, if necessary recharge them. Check electrolyte density.

Check the hydraulic oil level in the tank.

Check tyre pressure.

Degrease piston rods of hydraulic cylinders.

Check operation of the electrical system.

Check operation of braking and steering systems.

Check fuel level in the tank and top up if necessary.

Commission engine.

⚠ DANGER ⚠

Do not run the engine in confined spaces without proper ventilation and/or a suitable system capable to remove harmful exhaust gases.

Bring machine into driving position and engage the parking brake.

Bleed air from the hydraulic system.

IMPORTANT: *if the machine has not been used for a long time, oil layers on the sliding surfaces may have deteriorated.*
Operate travel, swing and digging hydraulic systems 2 or 3 times to lubricate sliding surfaces.

HYDRAULIC SHEARS

SELECTING THE HYDRAULIC SHEARS

Considering that the weight of the hydraulic shears is higher than the weight of the bucket, you have to select a shears model having the features suitable for the excavator to avoid possible troubles or machine instability.

⚠ CAUTION ⚠

For the selection of the hydraulic shears type most suitable to the machine features, address to Dealer as well as for the adjustment of power supply and service pressure required by the selected tool.

SAFETY INSTRUCTIONS

All persons must be kept clear of the hazard zone of the hydraulic shears.

Risk of flying or falling rock fragments.

Therefore stop work as soon as any persons enter the hazard zone of the shears or the machine.

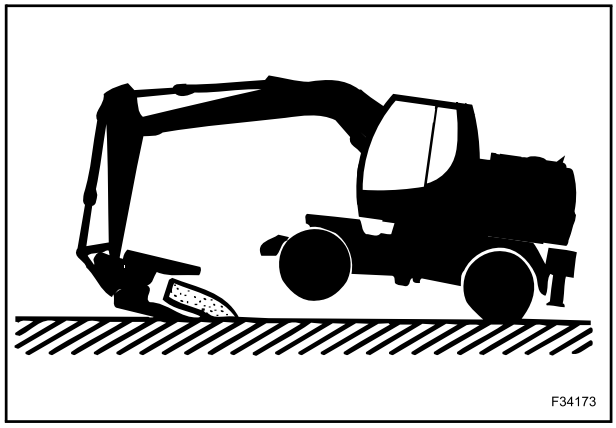
Resume the work only when bystanders have left the working area.

Close the front window of the machine before starting up the shears.

Install the protective grating.

Operate the shears from the operator's seat only.

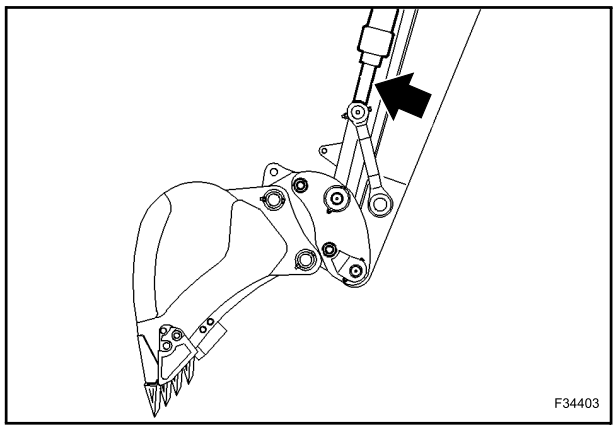
Never support the machine weight by prying on the hydraulic shears and the cylinders completely extended or retracted because this could damage the front attachment. In particular, with shears cylinder completely extended, the front attachment can get damaged more easily.



13

To allow the engagement of the safety device, retract completely the bucket cylinder rod, by moving the bucket hydraulic control lever.

IMPORTANT: *if a visual check is not possible when sitting, dismount from the machine and check if the working attachment is properly secured with the safety device hooked.*



28

DISASSEMBLY

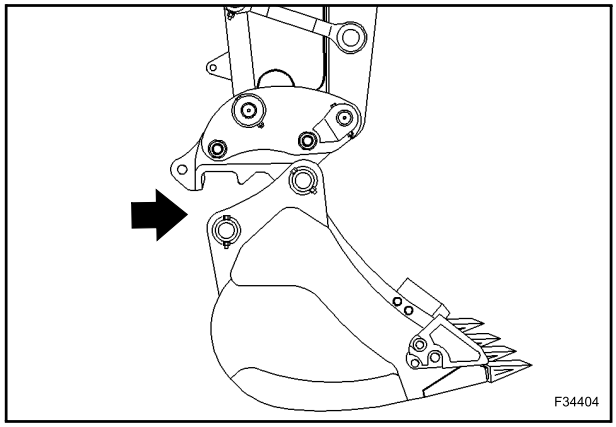
By moving the dipper hydraulic control lever, place this one to vertical position, slightly tilted toward the cab, so as to release the safety device.

By moving the bucket hydraulic control lever, lean the bucket on the ground on a flat and firm surface.

Set the switch to unlocking position. The acoustic alarm sounds.

Pull out the bucket cylinder rod completely and hold it under pressure, to allow the locking hook to retract.

Lift the dipper and leave the bucket on the ground.

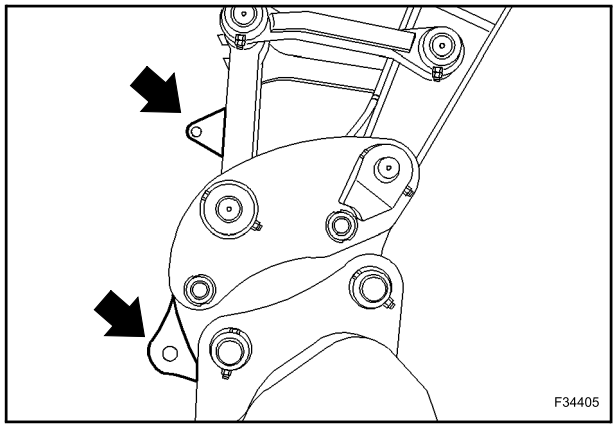


29

HANDLING OF LOADS

When lifting loads, the ropes and chains have to be secured to the proper lifting eyes of the bucket link or quick coupler.

IMPORTANT: *the maximum load carrying capacity of the lifting eyes or quick coupler has not to be exceeded.*



30

If the settings for cutter 3 are to be changed, depress the button with the downward arrow (⇓). Enter the four digit code and change the settings with the arrow buttons. Depress the button with the upward arrow (⇑), the number increases of one unit. By depressing the button with the downward arrow (⇓), the number decreases of one unit. By depressing button “set”, the setting is confirmed and the cursor slides to the right. When the cursor is on the last digit of a set value, a press on the “set” button moves it on to the first digit of the next set value.

After changing the set values, depress the “set” button. The following options are available:

- to reject selected cutter 3 with the newly selected values and to retain the setting of cutter 2. Depress the button with the upward arrow (⇑);
- to activate cutter 3 with the changed settings. Depress the “set” button. The setting is saved;
- the arrow buttons always scroll to higher menu. The return is automatic if the buttons are not pressed for a prolonged period;
- for queries concerning the hydraulic oil volume flow and oil pressure settings or the specified setting range please contact our Service Department.

CENTRALIZED LUBRICATION

SAFETY INSTRUCTIONS

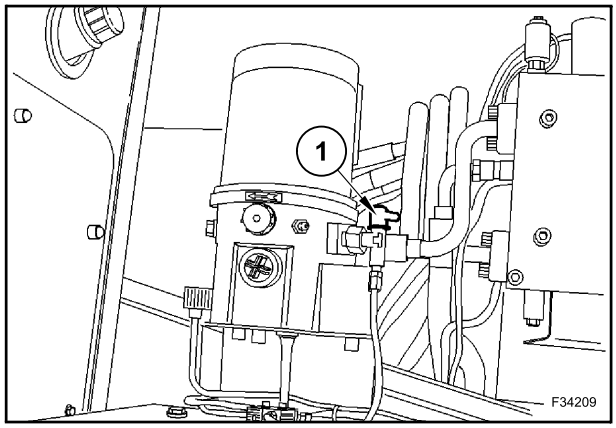
Place the machine in a safe condition.

The centralized lubrication system, connected to the pump tank is secured through the pressure limiting valve (1). The whole system can be checked visually on the pressure limiting valve. If during the flow rate the pressure limiting valve is releasing fuel, the system is somewhere clogged.

Danger of injuries caused by the escape of fuel under high pressure.

An improper treatment can cause damages due to the lack or excess of lubrication on bearings and articulation points.

Modifications or application of the system have to be carried out only after agreement and Manufacturer approval.

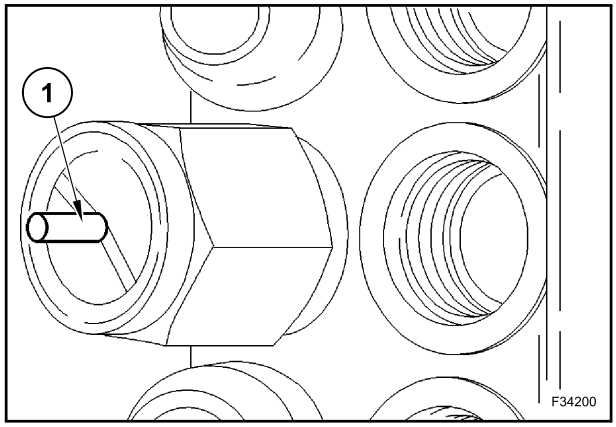


65

OPERATION

OPERATION VISUAL CHECK

The distribution manifolds can be equipped with checking plug (1). The checking plug is connected to a little piston inside of the distribution manifold and during the delivery phase it moves fore and back. If the system gets clogged, the checking plug remains stuck.



66

mm

Dipper	A	B	C	D	E	F	G*	H	I	L	M	N	O	P	Q	R
2000	2550	500	1240	1750	320	2805	2500	3030	3900	360	5784	930	2540	1070	9264	9404
2300	2550	500	1240	1750	320	3101	2500	3030	3900	360	5865	930	2540	1070	9345	9485
2600	2550	500	1240	1750	320	3402	2500	3030	3900	360	5780	930	2540	1070	9260	9400

in

Dipper	A	B	C	D	E	F	G*	H	I	L	M	N	O	P	Q	R
78.74	100.39	19.68	48.82	68.90	12.60	110.43	98.42	119.29	153.54	14.17	227.72	36.61	100.00	42.13	364.72	370.23
90.55	100.39	19.68	48.82	68.90	12.60	122.09	98.42	119.29	153.54	14.17	230.90	36.61	100.00	42.13	367.91	373.42
102.36	100.39	19.68	48.82	68.90	12.60	133.94	98.42	119.29	153.54	14.17	227.56	36.61	100.00	42.13	364.57	370.08

G = tyres maximum width

O = machine maximum width

* = dimension determined with single tyres 18R-19.5.

With twin tyres 10.00-20 ..... 2520 mm (99.21 in)
With twin tyres 315/80-22.5 ..... 2535 mm (99.80 in)
With single tyres 600/40-22.5 ..... 2490 mm (98.03 in)

Dipper (mm) (in)	Rear blade (kg) (lb)	Rear stabilizers (kg) (lb)	Front blade and rear stabilizers (kg) (lb)
2000 (78.74)	14816 (32595)	14786 (32529)	15256 (33563)
2300 (90.55)	14866 (32705)	14836 (32639)	15306 (33673)
2600 (102.36)	14916 (32815)	14886 (32749)	15356 (33783)

mm

Dipper	A	B	C	D	E	F	G*	H	I	L	M	N	O	P	Q	R
2000	2650	390	1270	2050	320	3000	2500	3090	3900	350	5015	1010	2540	1040	8675	8705
2400	2650	390	1270	2050	320	2990	2500	3090	3900	350	5000	1010	2540	1040	8660	8690
2800	2650	390	1270	2050	320	3090	2500	3090	3900	350	5030	1010	2540	1040	8690	8720

in

Dipper	A	B	C	D	E	F	G*	H	I	L	M	N	O	P	Q	R
78.74	104.33	15.35	50.00	80.71	12.60	118.11	98.42	121.65	153.54	13.78	197.44	39.76	100.00	40.94	341.53	342.72
94.49	104.33	15.35	50.00	80.71	12.60	117.72	98.42	121.65	153.54	13.78	196.85	39.76	100.00	40.94	340.94	342.12
110.24	104.33	15.35	50.00	80.71	12.60	121.65	98.42	121.65	153.54	13.78	198.03	39.76	100.00	40.94	342.12	343.31

G = tyres maximum width

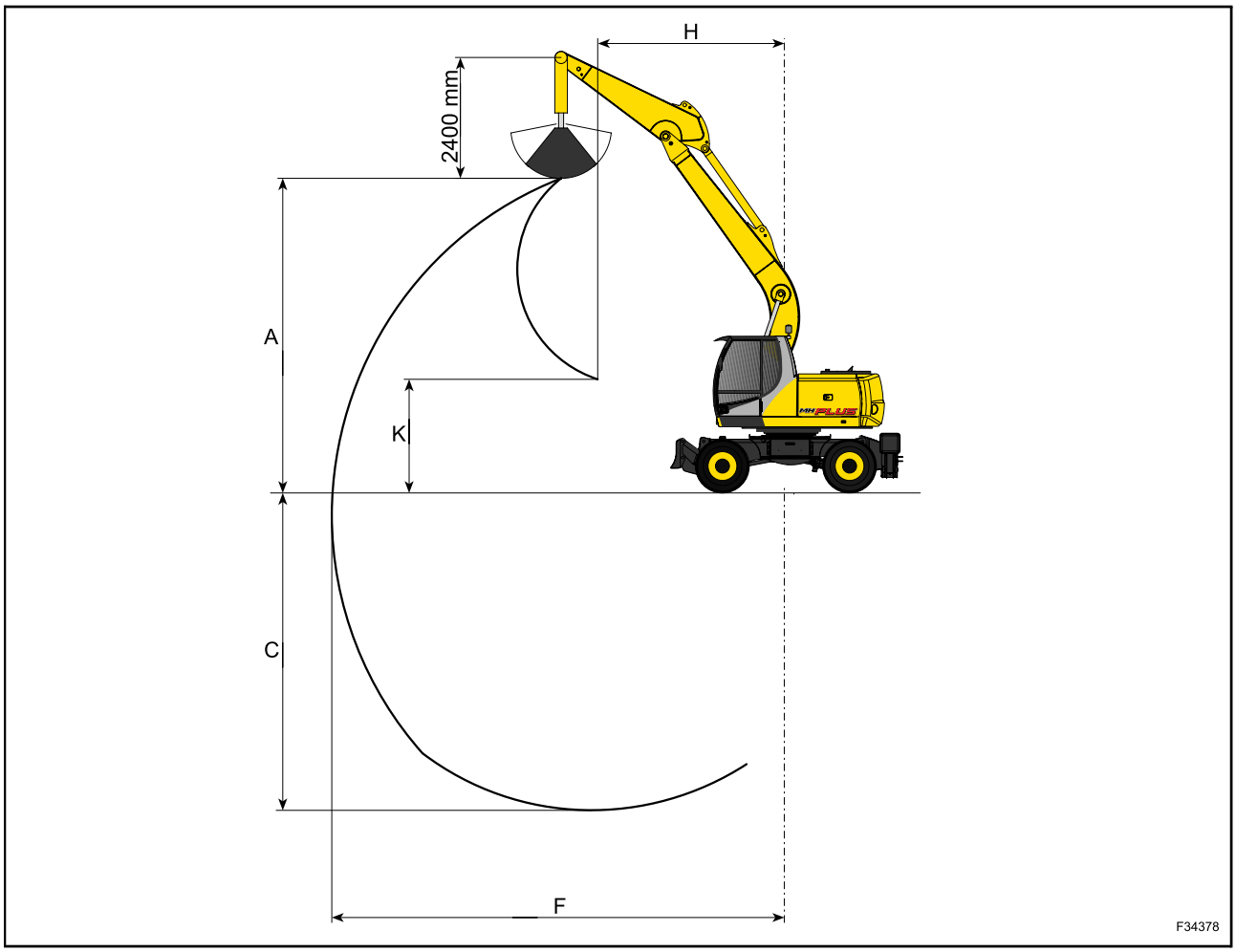
O = machine maximum width

* = dimension determined with single tyres 18R-19.5.

With twin tyres 10.00-20 ..... 2520 mm (99.21 in)
With twin tyres 11.00-20..... 2545 mm (100.20 in)
With single tyres 600/40-22.5 ..... 2490 mm (98.03 in)

Dipper (mm) (in)	Rear blade (kg) (lb)	Rear stabilizers (kg) (lb)	Front blade and rear stabilizers (kg) (lb)	Front and rear stabilizers (kg) (lb)
2000 (78.74)	18370 (40414)	18415 (40513)	18995 (41789)	19455 (42801)
2400 (94.49)	18430 (40546)	18475 (40645)	19065 (41943)	19525 (42955)
2800 (110.24)	18520 (40744)	18575 (40865)	19155 (42141)	19615 (43153)

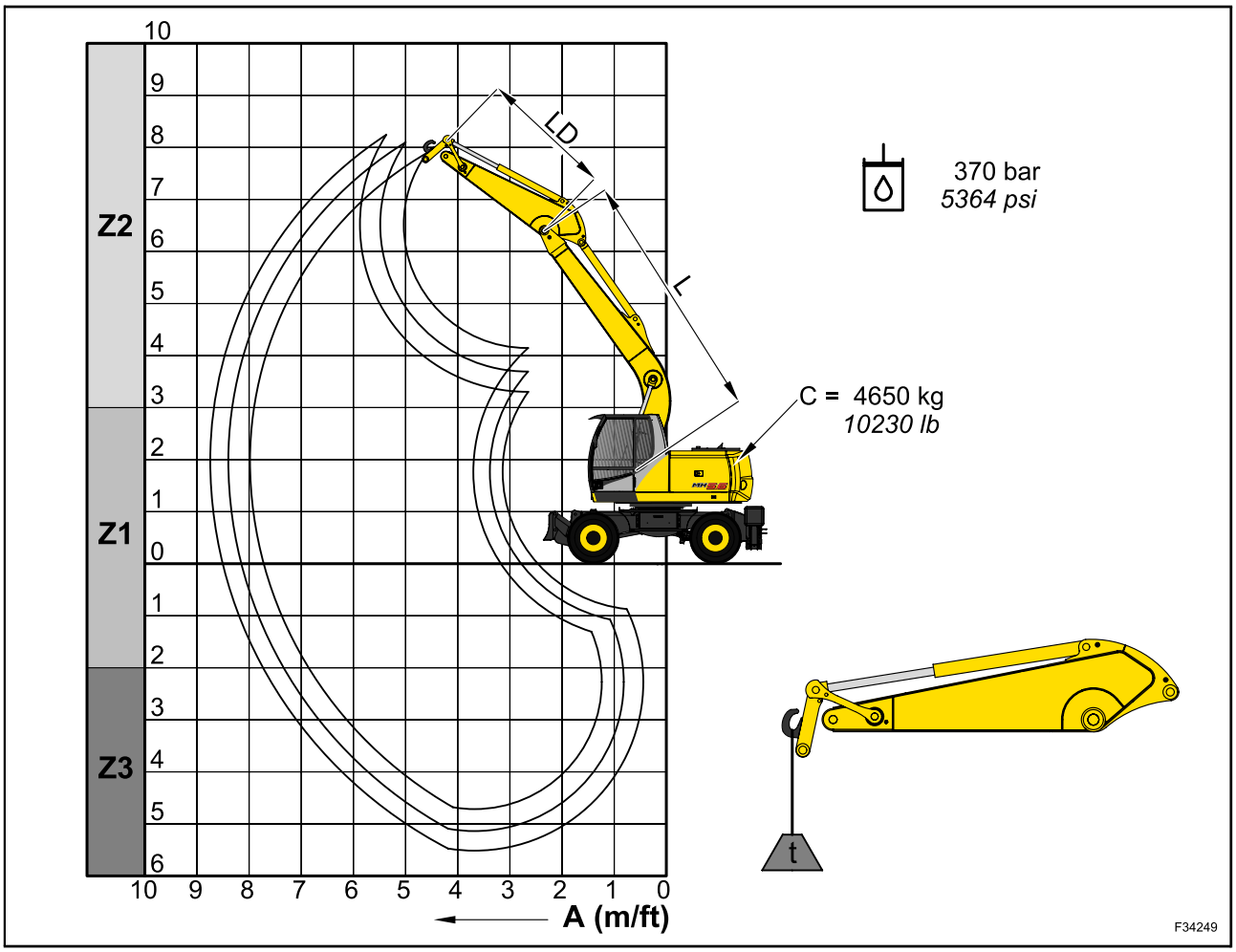
Monoboom



34

	Dipper	mm	in	2300	90.55	2600	102.36	2900	114.17
A	Maximum loading height	mm	in	5300	208.66	5400	212.60	5600	220.47
C	Maximum depth	mm	in	6500	255.90	6800	267.72	7100	273.53
F	Maximum outreach	mm	in	7400	291.34	7600	299.21	7900	311.02
H	Front swing radius	mm	in	2600	102.36	2600	102.36	2700	106.30
K	Minimum loading height	mm	in	1600	62.99	1300	58.18	1000	39.37

OUTFIT WITH MONOBOOM



44

		360°																			
A (m) (ft)		3.0 (9.84)	4.5 (14.76)	6.0 (19.68)	7.5 (24.61)	3.0 (9.84)	4.5 (14.76)	6.0 (19.68)	7.5 (24.61)	3.0 (9.84)	4.5 (14.76)	6.0 (19.68)	7.5 (24.61)	3.0 (9.84)	4.5 (14.76)	6.0 (19.68)	7.5 (24.61)	3.0 (9.84)	4.5 (14.76)	6.0 (19.68)	7.5 (24.61)
LD = 2.0 m (6.56 ft)	Z2	9.1 (29.86)	4.6 (15.09)	3.0 (9.84)	2.1 (6.89)	11.3 (37.07)	5.7 (18.70)	3.7 (12.14)	2.6 (8.53)	11.3 (37.07)	6.6 (21.65)	4.9 (16.08)	3.5 (11.48)	11.3 (37.07)	6.6 (21.65)	5.3 (17.39)	4.2 (13.78)	7.8 (25.59)	4.0 (13.12)	2.6 (8.53)	1.9 (6.23)
	Z1	7.3 (23.95)	3.9 (12.79)	2.7 (8.86)	2.0 (6.56)	9.1 (29.86)	5.0 (16.40)	3.4 (11.15)	2.5 (8.20)	9.1 (29.86)	6.9 (22.64)	4.5 (14.76)	3.3 (10.83)	9.1 (29.86)	8.7 (28.54)	5.6 (18.37)	4.1 (13.45)	6.1 (20.01)	3.3 (10.83)	2.3 (7.55)	1.7 (5.58)
	Z3	7.4 (24.29)	3.9 (12.79)	2.7 (8.86)		9.7 (31.82)	5.0 (16.40)	3.4 (11.15)		10.4 (34.12)	5.5 (18.04)	4.5 (14.76)		10.4 (34.12)	5.5 (18.04)	5.6 (18.37)		6.2 (20.34)	3.4 (11.15)	2.3 (7.55)	
LD = 2.4 m (7.87 ft)	Z2		4.6 (15.09)	3.0 (9.84)	2.1 (6.89)		5.8 (19.03)	3.5 (11.48)	2.6 (8.53)		7.0 (22.97)	3.5 (11.48)	3.5 (11.48)		7.0 (22.97)	3.5 (11.48)	4.2 (13.78)		4.0 (13.12)	2.6 (8.53)	1.9 (6.23)
	Z1	6.1 (20.01)	3.9 (12.79)	2.6 (8.53)	1.9 (6.23)	6.1 (20.01)	4.9 (16.08)	3.3 (10.83)	2.4 (7.87)	6.1 (20.01)	6.8 (22.31)	4.4 (14.44)	3.3 (10.83)	6.1 (20.01)	8.1 (26.57)	5.5 (18.04)	4.0 (13.12)	5.9 (19.36)	3.3 (10.83)	2.2 (7.22)	1.7 (5.58)
	Z3	7.2 (23.62)	3.9 (12.79)	2.6 (8.53)		8.9 (29.20)	4.9 (16.08)	3.3 (10.83)		8.9 (29.20)	6.5 (21.32)	4.4 (14.44)		8.9 (29.20)	6.5 (21.32)	5.5 (18.04)		6.0 (19.65)	3.3 (10.83)	2.2 (7.22)	
LD = 2.8 m (9.17 ft)	Z2	8.8 (28.87)	4.7 (15.42)	3.1 (10.17)	2.1 (6.89)	11.2 (36.74)	5.8 (19.03)	3.8 (12.47)	2.6 (8.53)	11.8 (38.71)	6.4 (21.00)	4.0 (13.12)	3.5 (11.48)	11.8 (38.71)	6.4 (21.00)	4.0 (13.12)	3.6 (11.81)	7.5 (24.61)	4.1 (13.45)	2.7 (8.86)	1.8 (5.90)
	Z1	5.4 (17.72)	3.8 (12.47)	2.5 (8.20)	1.9 (6.23)	5.4 (17.72)	4.9 (16.08)	3.2 (10.50)	2.4 (7.87)	5.4 (17.72)	6.7 (21.98)	4.4 (14.44)	3.2 (10.50)	5.4 (17.72)	7.5 (24.61)	5.5 (18.04)	4.0 (13.12)	5.4 (17.72)	3.2 (10.50)	2.2 (7.22)	1.6 (5.25)
	Z3	7.0 (22.97)	3.8 (12.47)	2.5 (8.20)	1.9 (6.23)	9.4 (30.84)	4.6 (15.09)	3.2 (10.50)	2.4 (7.87)	10.2 (33.46)	4.6 (15.09)	4.4 (14.44)	3.2 (10.50)	10.2 (33.46)	4.6 (15.09)	4.9 (16.08)	4.0 (13.12)	5.9 (19.36)	3.2 (10.50)	2.2 (7.22)	1.6 (5.25)