

EN

OPERATING INSTRUCTIONS

# TRACKED MINIDUMPER **CARRY 110**

serial numbers from nr.:  
MD\*00030

(Original instructions)



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1) **DICHIARAZIONE "CE" DI CONFORMITÀ** (ORIGINALE)  
(Direttiva 2006/42/CE, allegato II, 1A)

2) Fabbricante: **KATO IMER S.p.A.**

3) Indirizzo: località CUSONA - 53037 SAN GIMIGNANO (SI) - ITALY

4) File tecnico compilato da: Direttore tecnico **KATO IMER S.p.A.**

5) Indirizzo: località CUSONA - 53037 SAN GIMIGNANO (SI) - ITALY

6) Dichiaro che la macchina categoria: CRAWLER COMPACT DUMPER

7) Tipo: **CARRY 110**

8) Numero di serie: **MD** \_\_\_\_\_

9) Potenza netta installata (kW/rpm): 11,7 / 3600

10) È conforme ai requisiti della Direttiva Macchine **2006/42/CE**, come modificata e alla legislazione nazionale che la traspone.

11) È conforme alle condizioni della Direttiva 2000/14/CE modificata dalla 2005/88/CE "emissione acustica ambientale delle macchine ed attrezzature destinate a funzionare all'aperto" e alla legislazione nazionale che la traspone. (Dlgs.262/2002)

- Categoria macchina: *Dumper annesso I n°18*

- Procedure applicate per le valutazioni di conformità: *controllo interno della produzione con valutazione della documentazione tecnica e controlli periodici, all. VI. (1ª procedura)*

- Ente notificato: *ECO S.p.A. - via Mengolina, 33 - 48018 Faenza (RA) - Italy*

- Livello di potenza sonora misurato: **L<sub>WA</sub> 100 dB**

- Livello di potenza sonora garantito: **L<sub>WA</sub> 101 dB**

12) È conforme alle condizioni della seguente direttiva: 2014/30/CE

13) Sono state applicate le seguenti norme armonizzate: EN ISO 12100; EN ISO 3744; EN 474 -1; EN 474 -6

14) Luogo/Data: San Gimignano..... - .....

.....  
15) Nome: **Tsutomu Kikuchi**

16) Posizione: Presidente **KATO IMER S.p.A.**

## ENGLISH (Translation)

- 1) DECLARATION OF CONFORMITY  
(Directive 2006/42/EC , Annex II, 1A)
- 2) Manufacture:
- 3) Address:
- 4) Technical file compiled by: KATO IMER S.p.A. Technical department manager
- 5) Address:
- 6) Hereby we declare that the machine category: DUMPER.
- 7) Type:
- 8) Serial number:
- 9) Net power installed (kW/rpm):
- 10) Is in conformity with the provisions of the <<Machinery Directive>> 2006/42/EC, as amended and the regulations transposing it into national law;
- 11) Also complies with the provisions "noise emission in the environment by equipment for use outdoors" directive 2000/14/EC and the regulations transposing it into national law  
- Machine category: dumper, (Annex I 37)  
- Conformity assessment procedure followed: internal control of production with assessment of technical documentation and periodical checking, annex VI. (1<sup>st</sup> procedure)  
- The notified body :  
- Measured sound power level:  
- Guaranteed sound power level:
- 12) The following respective requirements fulfill:
- 13) Harmonized EN - standards taken:
- 14) Place/Date :
- 15) Name :
- 16) Position:

## FRENCH (Traduction)

- 1) DECLARATION « CE » DE CONFORMITE  
(Directive 2006/42/CE, annexe II, 1A)
- 2) Nom du constructeur:
- 3) Adresse:
- 4) Fichier technique rédigé par: Directeur technique KATO IMER S.p.A.
- 5) Adresse:
- 6) Déclare que la machine décrite ci-dessous désignée: TRANSPORTEUR.
- 7) Type du matériel:
- 8) Numéro de série:
- 9) Puissance net installée:
- 10) Est conforme aux dispositions de la directive «machines » 2006/42/CE modifiée et aux législations nationales la transposant :
- 11) Est également conforme aux dispositions de la directive « émissions sonores des équipements utilisés à l'extérieur des bâtiments » 2000/14/CE et aux législations nationales la transposant.  
- Machine: transporteur, (annexe I 37)  
- Procédure appliquée pour l'évaluation de la conformité : *procédure de contrôle interne de la production, avec évaluation de la documentation technique et contrôle périodique, annex VI.*  
- Organisme notifié :  
- Niveau de puissance acoustique mesuré :  
- Niveau de puissance acoustique garanti :
- 12) Est également conforme aux dispositions de la directive suivantes :
- 13) Est conforme aux normes harmonisées suivantes:
- 14) Adresse /Date :
- 15) Signataire :
- 16) Qualité du signataire :

## SPANISH (Traducción)

- 1) DECLARACION "CE" DE CONFORMIDAD  
(Directriz 2006/42/CE, anexo II, 1A)
- 2) Fabricante:
- 3) Dirección:
- 4) Archivo técnico compilado por: Director técnico KATO IMER S.p.A.
- 5) Dirección:
- 6) Con el presente documento declaramos que la máquina categoría: TRANSPORTADOR.
- 7) Tipo:
- 8) Número de serie:
- 9) Potencia neta instalada:
- 10) Cumple la Directriz Maquinas 2006/42/CE, incluidas las modificaciones de la misma:
- 11) Cumple la Directriz 2000/14/CE sobre "emisiones sonoras en el entorno debidas a las máquinas de uso al aire libre" incluidas las modificaciones de la misma:  
- Categoría máquina: transportador, (anexo I 37)  
- Procedimiento de evaluación de la conformidad que se ha seguido: *control de la producción con evaluación de la documentación técnica y comprobaciones periódicas, anexo VI.*  
- Organismo notificado:  
- Nivel de potencia acústica medido:  
- Nivel de potencia acústica garantizado:
- 12) Satisfacen la siguiente directriz:
- 13) Cumplen las normas armonizadas:
- 14) Dirección /Data
- 15) Nombre:
- 16) Puesto:

## GERMAN (Übersetzung)

- 1) EG-KONFORMITÄTSERKLÄRUNG  
(Direktive 2006/42/EG, Nachtrag II, 1A)
- 2) Hersteller:
- 3) Adresse:
- 4) Technische Datei erstellt von: Technischer Leiter KATO IMER S.p.A
- 5) Adresse:
- 6) Erklärt hiermit, dass die Maschine-Kategorie: TRANSPORTER.
- 7) Typ :
- 8) Seriennummer:
- 9) Installierte Nutzleistung
- 10) Konform ist mit den einschlägigen Bestimmungen der EG-Maschinenrichtlinie (EG-Richtlinie 2006/42/EG) inklusive deren Änderungen, und der nationalen Gesetzgebung, welche diese Bestimmungen umsetzt:
- 11) Konform ist mit den Bedingungen der EG-Richtlinie 2000/14/EG über «umweltbelastende Geräuschemissionen von zur Verwendung im Freien vorgesehenen Geräten und Maschinen», inklusive deren Änderungen.  
- Maschine-Kategorie: Transporter, (Nachtrag I 37)  
- Angewandtes Konformitätsbewertungsverfahren : *interne fertigungskontrolle mit begutachtung der technischen unterlagen und regelmässiger prüfung, Anhang VI.*  
- Der beteiligten benannten Stelle :  
- Gemessener Schalleistungspegel :  
- Garantierter Schalleistungspegel :
- 12) Konform ist mit den folgenden Bedingungen der EG-Richtlinie :
- 13) Folgende harmonisierte Normen zur Anwendung gelangen:
- 14) Adresse /Datum :
- 15) Name :
- 16) Position:

## DUTCH (Vertaling)

- 1) EG-VERKLARING VAN OVEREENSTEMMING  
(EG-Richtlijn 2006/42/EG, Anhang II, 1A)
- 2) Fabrikant:
- 3) Adres:
- 4) Technisch bestand opgesteld door: Technisch directeur KATO IMER S.p.A.
- 5) Adres:
- 6) Hierbij verklaren wij dat onderstaande machines categorie: DUMPER.
- 7) Type:
- 8) Serie Nummer:
- 9) Netto geïnstalleerd vermogen:
- 10) Overeenstemmen met de gewijzigde richtlijn EG-Richtlinie 2006/42/EG en de naar nationale wetgeving transponerende regelingen.
- 11) Voldoet bovendien aan de bepalingen van de richtlijn 2000/14/EG „Geluidsemissie in het milieu door materieel voor gebruik buitenshuis“ en de naar nationale wetgeving transponerende regelingen.  
- Machines categorie: dumper , (anhang I 37)  
- Overeenstemmingsbeoordelingsprocedure: *interne controle van productie met beoordeling van technische documentatie en periodieke keuring, bijlage VI.*  
- Betrokken aangemelde instantie:  
- Gemeten geluidsvermogensniveau:  
- Gewaarborgd geluidsvermogensniveau:
- 12) De volgende respectievelijke eisen voldoen:
- 13) Geharmoniseerde EN-Standaarden:
- 14) Adres /Datum:
- 15) Naam:
- 16) Functie:

## DANISH (Oversættelse)

- 1) OVERENSSTEMMELSESERKLÆRING  
(EF-direktiv 2006/42/EF, bilag II, 1A)
- 2) Produktion:
- 3) Adresse:
- 4) Teknisk dossier udarbejdet af: Teknisk direktør KATO IMER S.p.A.
- 5) Adresse:
- 6) Vi erklærer herved, at maskinen i kategorien: GRAVEMASKINE.
- 7) Type:
- 8) Serienummer:
- 9) Nettoydelse:
- 10) Er i overensstemmelse med Maskindirektivet 2006/42/EF, som ændret og inkorporeret i national lovgivning
- 11) Er i overensstemmelse med EU-direktiv 2000/14/EF om "støjudslip i miljøet for udendørs udstyr" som inkorporeret i national lovgivning:  
Maskinen i kategori: gravemaskine, (bilag I 37)  
Procedure anvendt til vurdering af overensstemmelse: *intern kontrol af produktion med vurdering af den tekniske dokumentation og periodisk kontrol, bilag VI.*  
- Bemyndiget organ:  
- Mål støjniveau:  
- Garanteret støjniveau:
- 12) Opfylder kravene i følgende direktiv
- 13) Følgende harmoniserede EN-standard er anvendt:
- 14) Adresse / Dato
- 15) Navn:
- 16) Stilling:

### **SVENSKA (översättning)**

- 1) EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE  
(Direktiv 2006/42/EC, Annex II, 1A)
- 2) Tillverkare:
- 3) Adress:
- 4) Den tekniska filen har ifyllts av: den tekniska chefen vid KATO IMER S.p.A
- 5) Adress:
- 6) Det intygas att maskinen i kategorin: GRÄVSKOPA FÖR LASTNING
- 7) Typ:
- 8) Serienummer:
- 9) Installerad nettoeffekt (kW/rpm):
- 10) Överensstämmer med kraven i maskindirektivet 2006/42/EG, med ändringar, samt med den italienska lagstiftningen som införlivar direktivet.
- 11) Uppfyller villkoren som omnämns i direktiv 2000/14/EG "buller från maskiner och utrustning som är avsedda för utomhusanvändning", samt med den lagstiftning som införlivar direktivet:  
Maskinkategori: grävskopa för lastning (bilaga I 37)  
Rutiner som har tillämpats för att bedöma överensstämmelsen: en intern kontroll av produktionen och en bedömning av den tekniska dokumentationen med periodiska kontroller, *bilaga VI*.  
- Anmält organ:  
- Uppmätt ljudeffektnivå:  
- Garanterad ljudeffektnivå:.
- 12) Uppfyller villkoren som omnämns i följande direktiv:
- 13) Följande harmoniserade standarder har tillämpats:
- 14) Ort/Datum:
- 15) Namn:
- 16) Befattning:

### **NORSK (oversettelse)**

- 1) SAMSVARSKLÆRING (ORIGINAL)  
(Direktiv 2006/42/EF, vedlegg II, 1A)
- 2) Produsent:
- 3) Adresse:
- 4) Teknisk dokumentasjon utarbeidet av: Teknisk ansvarlig KATO IMER S.p.A.
- 5) Adresse:
- 6) Med dette erklærer vi at maskinkategorien: HJULLASTER
- 7) Type:
- 8) Serienummer:
- 9) Installert nettoeffekt (kW/rpm):
- 10) Er i samsvar med kravene i Maskindirektivet 2006/42/EF, med endringer og den nasjonale lovgivningen som gjennomfører disse;
- 11) Den er også i samsvar med Direktiv 2000/14/EF "Støyemisjon fra maskiner og annet utstyr til utendørs bruk" og nasjonal lovgivning som gjennomfører disse.  
Maskinkategori: hjullaster (vedlegg I 37)  
Prosedyrer brukt for samsvars vurdering: intern kontroll av produksjonen med vurdering av teknisk dokumentasjon og periodisk kontroll, (vedlegg. VI).  
- Teknisk kontrollorgan:  
- Målt lydteffektnivå:  
- Garantert lydteffektnivå:.
- 12) Den er i samsvar med kravene i følgende direktiv:
- 13) Følgende harmoniserte normer brukes:
- 14) Sted/Dato:
- 15) Navn:
- 16) Stilling:

**KATO IMER S.p.A.**

53037 San Gimignano (SI) Loc. Cusona - Italy  
Phone: +39 0577 951 21 - Fax: +39 0577 982 400  
info@katoimer.com | www.katoimer.com

## SCHEDULED MAINTENANCE

Proper maintenance is essential to long service life and optimal operation. KATO IMER has scheduled a series of controls and work to be done at our authorised service centres.

**WARNING:** Scheduled services are required by the Manufacturer. Failure to observe this requirement voids the warranty.

## PROGRAMMED SERVICE TABLE

OPERATION \ HOURS	HOURS								
	20/50	200	400	600	800	1000	1200	1400	1600
Oil and engine filter change	●	●	●	●	●	●	●	●	●
Check / replace engine air filter	●	●	●	●	●	●	●	●	●
Check and adjust track tension	●	●	●	●	●	●	●	●	●
Replace hydraulic circuit filter		●	●	●	●	●	●	●	●
Change hydraulic fluid				●			●		



## PREFACE


This manual provides all the procedures and instructions required for operating, inspecting and servicing the minidumper. The procedures are designed to provide the best possible performance, productivity and safety. Please note the following rules:

- The manual must be kept on board the machine in the provided compartment.
- Before operating the machine, read this manual throughout.
- Experience will augment the prescriptions of this manual, and will be gained in supervised operation of the machine.

Some of the illustrations given in the manual may not be identical with your machine due to intervening technological developments. If you have any questions about your machine or this manual, please contact your reseller for the most recent updates.

## SAFETY INFORMATION

This manual is a practical safe guide to the safe operation and control of the machine. Before operating the machine, read the manual in full. This is the best way to avoid accidents. Incorrect operation, control or servicing of the machine may cause injury or death.

Precautions are highlighted in the manual and on the machine itself with the symbol  and classified with the words **DANGER - WARNING - CAUTION**, depending on the degree of hazard.

The classification is as follows:



A dangerous situation which may cause injury or death.



A potentially dangerous situation which may cause injury or death.



A potentially dangerous situation which may cause light or moderate injury. May also be used to indicate the potential for damage to the machine or its parts.

We have made every effort to reduce the risks associated with correct use of the machine and, nonetheless, we cannot be held responsible for predicting every kind of danger in all unintended operating conditions.

We have taken every effort to prevent accidents during the machine's operation, however we are not liable for all hazards in all working conditions.

The owner or operator must **ALWAYS** take care during work and have read and understood this manual sufficiently to have the basic knowledge required to operate the machine correctly.



- **BEFORE OPERATING, INSPECTING OR SERVICING THE MACHINE, READ THIS MANUAL AND MAKE SURE YOU HAVE UNDERSTOOD ITS CONTENTS.**
- **INCORRECT OPERATION OR SERVICING MAY CAUSE ACCIDENTS, INJURY OR DEATH.**
- **KEEP THIS MANUAL AT HAND FOR REFERENCE AT ALL TIMES.**
- **IF LOST OR DAMAGED, ASK YOUR RESELLER FOR ANOTHER COPY.**
- **CONSTRUCTION EQUIPMENT IS COVERED BY A VARIETY OF FEDERAL, NATIONAL AND LOCAL LEGISLATION. SINCE THIS LEGISLATION IS CONTINUALLY CHANGING AND DIFFERS FROM COUNTRY TO COUNTRY, WE CANNOT INCLUDE IT IN THIS MANUAL. THE OWNER OR OPERATOR ARE RESPONSIBLE FOR INFORMING THEMSELVES IN THIS REGARD.**
- **THE MACHINE'S COMPONENTS AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.**
- **MAKE SURE THAT THE SUPPLIED OPERATING MANUAL CORRESPONDS TO THE FEATURES OF THE MACHINE, IN CASE OF DOUBT CONTACT KATO IMER ASSISTANCE SERVICE.**
- **KATO IMER RESERVES THE RIGHT TO CHANGE THE FEATURES OF THE MACHINE AND/OR THE CONTENTS OF THIS MANUAL, WITHOUT BEING REQUIRED TO UPDATE THE PREVIOUS MACHINE AND/OR MANUALS.**

## 1 SAFETY MEASURES

### 1.1 GENERAL



BEFORE USING THE MACHINE MOVE AWAY EVERYONE NEARBY.

#### 1. MAKE SURE YOU HAVE READ AND UNDERSTOOD THE INSTRUCTIONS AND WARNINGS

This manual, the nameplates and labels on the machine provide the information required for correct and safe operation of the machine. The user is responsible for reading and understanding the said information; failure to do so may lead to serious injury. Do not leave anything you have failed to understand to chance. Your reseller will provide any additional information you may require. If you lose or damage the manual, nameplates or labels, your reseller will replace them.

#### 2. CHECK THE MINIDUMPER

Before starting work, check the minidumper and make sure there are no persons or obstacles in your work area. Before starting, carefully check the machine for signs of wear and defects.

#### 3. HEALTH

Take special care of your mental and physical health and note that the operator of a complicated machine should be **PHYSICALLY FIT**. **NEVER** operate the machine under the influence of alcohol, medicines or drugs of any kind.

#### 4. SNUG FITTING WORK CLOTHES

Your work clothing must be snug, without loose sleeves, rings or other jewelry, as they may become trapped in moving parts. Always wear the necessary clothes and accessories, including: helmet, safety gloves, visible clothing, safety boots and ear defenders.

#### 5. BEFORE STARTING THE MACHINE

Since all equipment is hydraulically operated, it is **EXTREMELY IMPORTANT** that the hydraulic fluid be at temperature **BEFORE** you start working. While the fluid is heating up, the operator should check the machine's operation and whether it needs servicing. Remember; the basic principle of hydraulics is flow of hydraulic fluid. If you hear a loud noise, this means that the pump is insufficiently lubricated due to cavitation, often caused by the use of too heavy or dense oil. **NEVER OPERATE THE MACHINE** in such conditions; it can seriously damage the pump.

#### 6. MOVING PARTS

**DO NOT** approach moving parts. Do not hold anything close to moving parts. This may cause serious accidents.

#### 7. TAKE CARE IN THE VICINITY OF THE MACHINE'S HOT PARTS

Keep the engine away from buildings and other equipment during operation. Keep flammable materials away and not place anything on the engine while it is running.

**DO NOT** touch the engine or exhaust when the machine is running or before it has had time to cool down. These parts are very hot and cause serious burns.

#### 8. GETTING ON AND OFF THE MACHINE

When getting on and off the machine, **ALWAYS** grip the handles.

**NEVER** grip the control levers when getting on or off the machine.

**NEVER** get on or off the machine while it is in motion.

Never attempt to get onto the machine with your hands full.

**9. MAINTAIN GOOD VENTILATION**

Do not use the machine for indoor works. Take all precautions to vent exhaust gas externally before starting the engine if working in a hole in the ground, tunnel or trench. In such a place, the air tends to stagnate. Breathing exhaust gas is very dangerous. Note that exhaust gases are fatally poisonous.

**10. LIGHTING**

The machine is designed to work in building jobsites and it does not have own lighting. It must be used in enough illuminated places.

**1.2 USE OF THE MACHINE****1. EXECUTE EACH MANOEUVRE, WITH RESPECT OF SAFETY**

Execute all manoeuvres carefully. Operating brusquely the machine this can cause damages and reduce consistently efficiency. Take care of regulations that warrant safety on job site. Leave after a sufficient safety distance between machine and obstacle. Leading the machine on foot raise the platform assuring the hook.

**2. DO NOT OVERLOAD**

Never overload any cylinder enough to trigger the opening of the safety valve. This would cause an excessive rise in the oil temperature, lowering the useful life of the hydraulic components.

**3. SECURE FOOTING FOR SAFE OPERATION**

Check that the machine footing is level and firm to avoid skidding or overturning if you need to use the machine on the shoulder of a road or a slope.

**4. MACHINE OPERATING LIMITS**

The machine should be operated on a flat surface, but if you are moving material on sloping ground, be sure that the tracks are positioned in the direction of the slope and not crossways. If you need to work on soft, rough or unlevelled ground, take care to avoid overturning.

**5. TIPPING**

Be careful, during the reversal of accessory the center of gravity of the machine can moves, so the operation must be done on a stable and not yielding surface.

### 1.3 DRIVING SAFETY

#### 1. WORKING MANEUVERS

In normal conditions (not emergency) **ALWAYS** steer as slowly as possible. Steering jerkily or while stationary reduces the service life of the machine and its tracks. Steer slowly so as not to overload the drive wheels, especially on uneven or sloping ground.

#### 2. MOVING THE MACHINE IN SPECIAL CONDITIONS

If the ground is very uneven or rocky, drive the machine very slowly. **NEVER CAUSE** impacts on the machine or its tracks.

#### 3. TAKE CARE WHEN DRIVING ON SLOPES

When operating the machine on sloping ground, drive uphill in reverse, and operate the machine from the ground. Even slight roughness can cause the machine to bump around or tip over

**DRIVE IN REVERSE, THE OPERATOR MUST BE UPHILL OF THE LOAD AT ALL TIMES.**



CAUTION

***MAX. CLIMBABLE GRADIENT 20° - 36%***



CAUTION

***MAX. CLIMBABLE GRADIENT WITH MAXIMUM LOAD 11° - 20%***

**NEVER STEER** on sloping or unstable ground; the machine may tip over.

**NEVER DRIVE ACROSS A SLOPE.** When working on sloping ground, always drive uphill or downhill. Take great care on icy ground as the machine may skid.

### 1.4 LOADING AND TRANSPORT

#### 1. PRECAUTIONS WHEN LOADING/UNLOADING THE MINIDUMPER

**ALWAYS** load and unload the dumper on flat ground.

**ALWAYS** use sufficiently thick, wide and long ramps.

Remove any ice, snow or friable material from the ramps and truck bed before loading the machine.

**NEVER** steer on ramps.

#### 2. TRANSPORT

Secure the machine to the truck with steel ropes and other locking equipment.

## 1.5 PARKING



### WARNING

**IF PARKED ON SLOPING GROUND OR WHEN THE MACHINE IS OUT OF SERVICE, ALWAYS ENGAGE THE PARKING BRAKE.**

**IF THE MACHINE IS TO BE PARKED FOR A LONG TIME ON VERY SLOPING GROUND, CHOCK THE WHEELS WITH ADDITIONAL CHOCKS.**

### 1. PARKING ON EMBANKMENTS AND SLOPES

**NEVER LEAVE THE MACHINE PARKED** on or near to an embankment, or on the edge of a dig or quarry. They may collapse under its weight. Move the machine away from such danger areas if it is to remain inactive for any time. If possible, park it on flat ground.

### 2. PARKING ON THE ROAD

If the machine must be parked on the road, warn other road users of its presence with barriers, flags, illuminated notices and signs.

### 3. LEAVING THE MACHINE UNSUPERVISED

Before leaving the machine unsupervised, **ALWAYS** switch off the engine. Make sure its chocks are placed and the parking brake engaged.

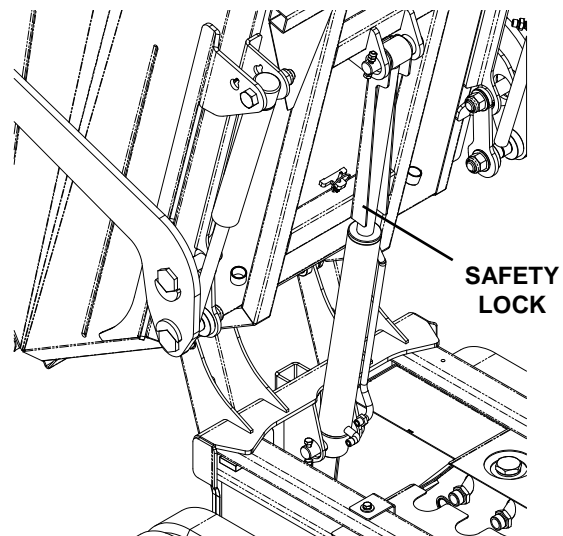
## 1.6 SERVICE

### 1. ROUTINE MAINTENANCE

Maintenance may be risky if not done with appropriate caution. Maintenance staff must be aware of the risks and implement suitable safety procedures. Before servicing or repairing the machine, always refer to the instruction manual. Before **ANY** service work, stop the engine and engage the parking brake to prevent unexpected movements which may cause injury, raise the accessory and fit its safety lock.

**NEVER ALLOW ANYONE** to work on the undercarriage with the accessory raised if it is not securely locked.

During maintenance operations, mark the control levers with labels. These labels can only be removed by aware personnel able to ensure that safety rules are fully observed.



### 2. CLEANING THE MACHINE

Keep the machine clean. Remove all dirt and grease, and check the machine's equipment. Never leave flammable materials in the machine's work area.

### 3. ADJUSTING THE HYDRAULIC PRESSURE

The hydraulic pressure must be measured and adjusted by qualified staff using suitable equipment. If such staff is not available, contact your reseller.

## FIRE AND EXPLOSION

Always keep petrol, lubricants and coolants as far away as possible from sources of heat and ignition. Many liquids are extremely flammable. Dry immediately eventual overflows.

**NEVER FILL THE FUEL TANK** or lubricate the machine with the engine running.

**NEVER SMOKE** while filling the fuel tank or in the vicinity of flammable materials.

## 4. ELECTROLYTIC BATTERY MAINTENANCE

Do not touch the internal battery elements.

Battery acid burns the skin and can cause blindness if it is splashed into the eyes.

In the event of contact with the acid, rinse the skin contacted with lots of water.

Use bicarbonate of soda to neutralise the acid.

If the acid gets in your eyes, rinse thoroughly and call for medical treatment immediately.

During battery servicing, remember that charging or discharging generates a highly explosive mixture of hydrogen and oxygen.

A flame or spark can ignite these gases.

**ALWAYS** wear protective glasses and gloves when working with the battery.

## 5. HYDRAULIC SYSTEM MAINTENANCE

Before disconnecting a hydraulic line on the machine, be sure that:

- the shovel, if present, is on the ground
- the tool holder is in the lowered position
- the engine is off
- the pressurised air has been relieved from the hydraulic tank
- the control levers are moved repeatedly to lower the pressure in the pistons.

Before switching on the engine, make sure that all the connections are firmly tightened and that all the pipes and fittings are in good conditions.

**If you are struck by escaping pressurised hydraulic fluid, serious reactions can occur if proper medical treatment is not administered immediately.**

## 1.7 SAFETY LABELS AND SIGNS

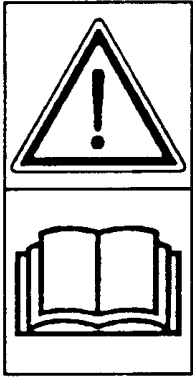
The machine bears a variety of safety signs and labels. This section indicates where they are located and the respective hazards. Make sure that all safety labels are legible. Clean and replace damaged and illegible signs. Clean the labels with a rag, water and soap. Do not use solvents or petrol to do so. If the label is attached to a part which must be replaced, take care to fit the new part with a new label.

**Symbol illustrated**

**Warning, explanation**

**Symbol illustrated**

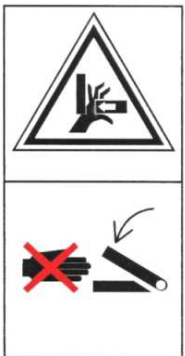
**Warning, explanation**



① **Caution!**  
Read the manual before operating, servicing or transporting the machine.



② The sign indicates the danger of burns due to contact with high temperature parts. Do not touch hot parts while the machine is operating or before having given it time to cool down after being switched off; use suitable safety equipment if necessary.



③ The sign indicates the shearing hazard associated with the bucket. Keep your hands away from the bucket arm while the bucket is operating.



④

The sign indicates the hazard of being struck by objects thrown up by the tracks during movement. Read the manual before using the machine to ensure all operations are done correctly.



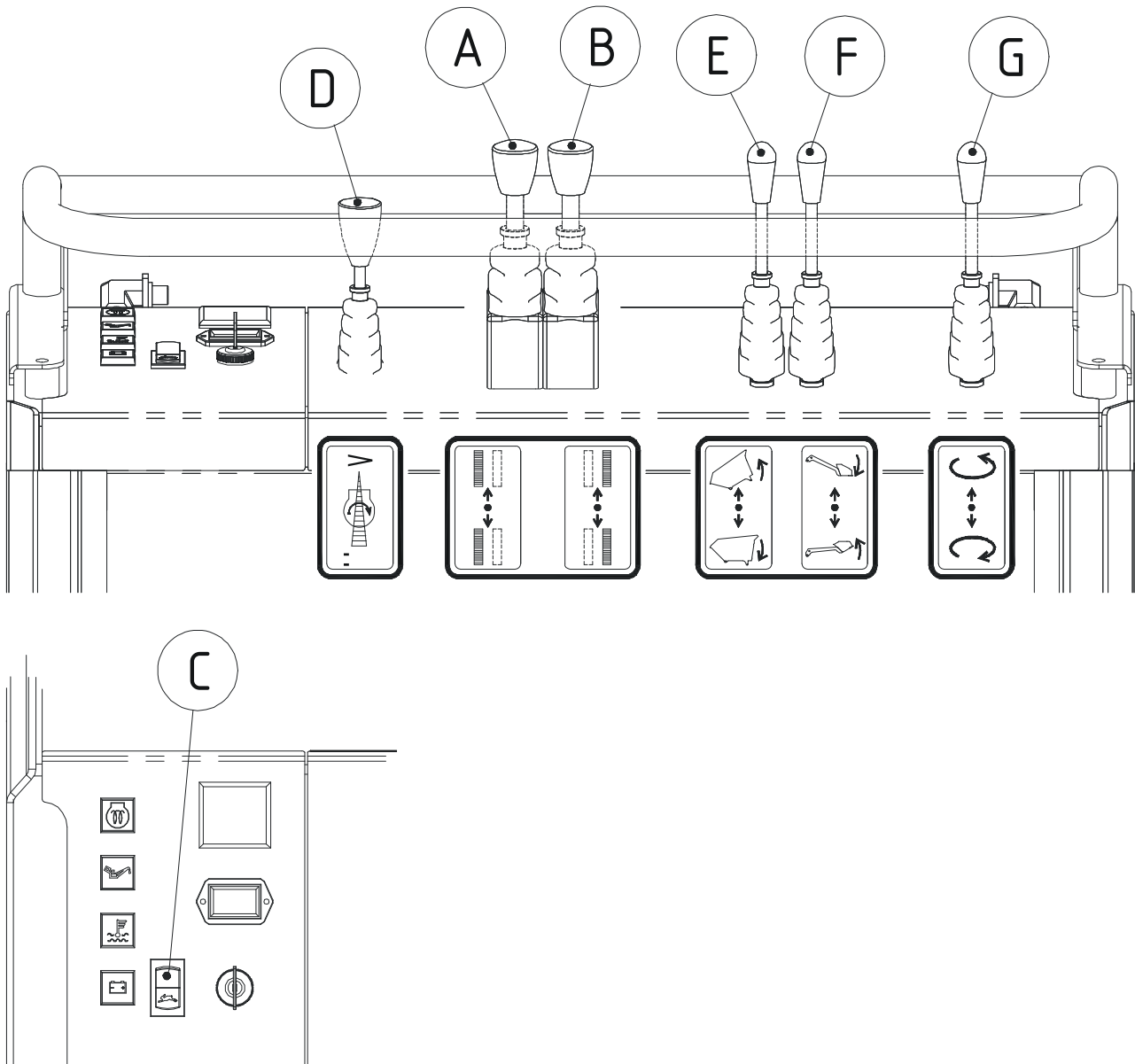
⑤ The sign indicates the hazard of crushing by unexpected movements of the accessory or shovel (if present). Keep a safe distance when the machine is operating. Always completely lower the shovel or accessory before leaving the machine unsupervised.

The nameplate on the chassis gives the manufacturer's data and machine serial number.



## 2 OPERATING INSTRUCTIONS

### 2.1 MACHINE CONTROLS



#### 2.1.1 MOVING THE MACHINE (Levers A and B)

1. Move the engine speed lever to the desired position.
2. Check the RH and LH travel levers as follows.

##### STRAIGHT TRAVEL

###### - FORWARDS travel

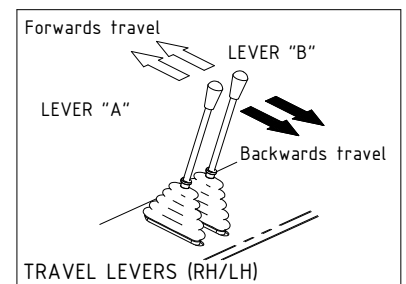
Push both levers gradually forwards. The machine will move off in a forwards direction.

###### - STOP

Move both levers gradually back to the middle position to stop the machine.

###### - BACKWARDS travel

Pull both levers gradually back. The machine will move off in a backwards direction.



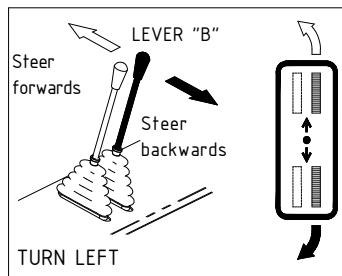


**STEERING**

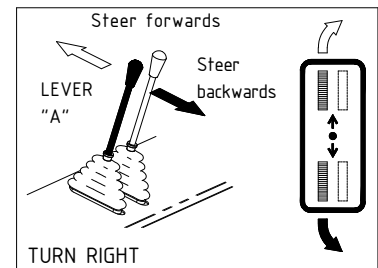
To steer the machine, operate the levers as shown.

**- Steering left.**

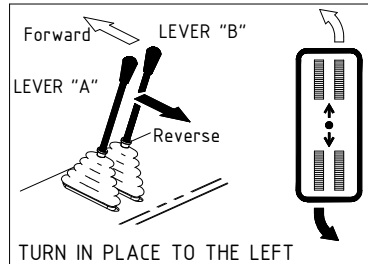
Push the RH lever (B) forwards to turn left when travelling forwards, and back to turn left when travelling backwards.

**- Steering right.**

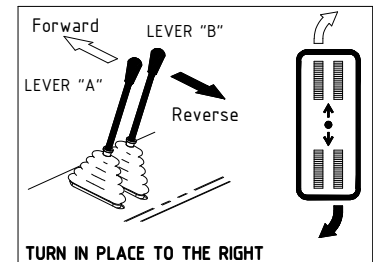
Push the LH lever (A) forwards to turn right when travelling forwards, and back to turn right when travelling backwards.

**TURNING IN PLACE****- Turning to the left.**

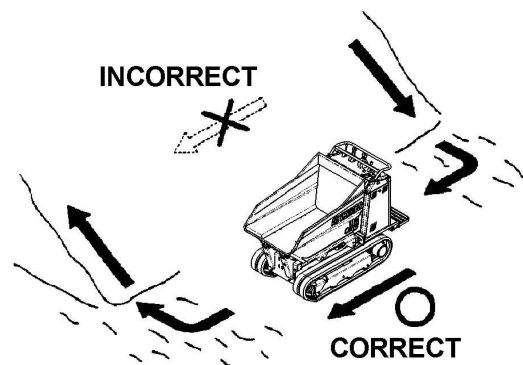
Push the RH lever (B) forwards and the LH lever (A) back. This results in a fast turn to the left without moving.

**- Right pivot turn.**

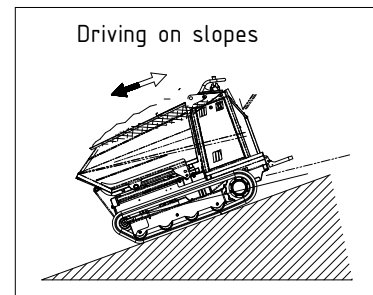
Push the LH lever (A) forwards and the RH lever (B) back. This results in a fast turn to the right without moving.

**DRIVING ON SLOPING GROUND****WARNING**

- LOWER THE ENGINE SPEED.
- DO NOT CHANGE THE TRAVEL SPEED WHEN DRIVING DOWNHILL.
- WHEN DRIVING ON SLOPING GROUND, MAKE SURE THAT THE TRACKS ARE IN LINE WITH THE SLOPE AND NOT ACROSS IT.
- NEVER DRIVE ACROSS A SLOPE.
- AVOID STEERING ON SLOPES AS THIS CAN RESULT IN SKIDDING OR TIPPING OVER.
- WHEN DRIVING ON SLOPES, KEEP THE SHOVEL AS CLOSE TO THE GROUND AS POSSIBLE (IF FITTED).



Driving on slopes

**2.1.2 TRAVEL SPEED (Button C)****Low speed.**

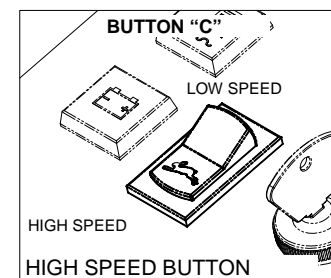
Set the button to the neutral position. Drive a low speed on rough and soft ground and when loading and unloading the machine from trucks or when driving on sloping ground.

**High speed.**


Set the button to the marked position. Drive at high speed on level, hard, even ground.


**WARNING**

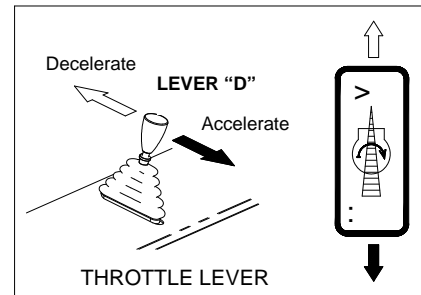
- DO NOT CHANGE THE TRAVEL SPEED WHEN DRIVING DOWNHILL..
- NEVER DRIVE AT HIGH SPEED ON SLOPING GROUND OR WHEN LOADING/UNLOADING THE MACHINE FROM TRUCKS.



### 2.1.3 THROTTLE LEVER (Lever D)

**Decelerate** (  ): push the lever forwards to reduce the engine speed.

**Accelerate** (  ): pull the lever back to increase the engine speed.



### 2.1.4 IMPLEMENT LINKAGE LEVER (Lever E)

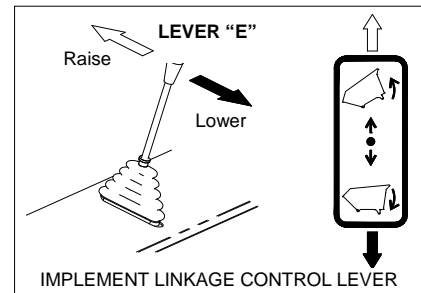


#### WARNING

**WITH THE ENGINE STOPPED, PULL THIS LEVER BACKWARD TO LOWER THE LINKAGE UNDER ITS OWN WEIGHT.**

**Raise the linkage:** Push the lever forwards to raise the linkage.

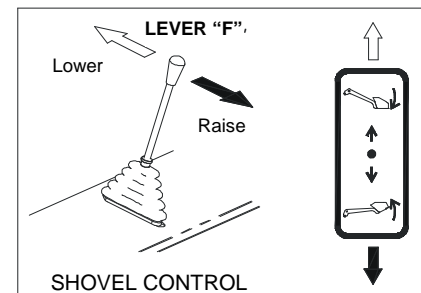
**Lower the linkage:** Pull the lever back to lower the linkage.



### 2.1.5 LOADER SHOVEL LEVER (Lever F)

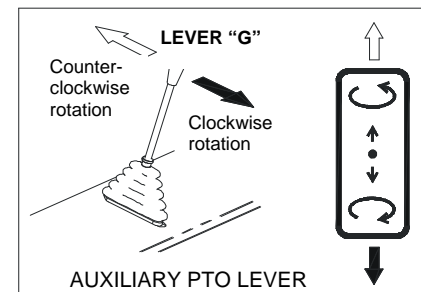
**Lower shovel:** push the lever forwards to lower the shovel and pick up material.

**Raise shovel:** pull the lever back to raise the shovel and dump the material into a bin.



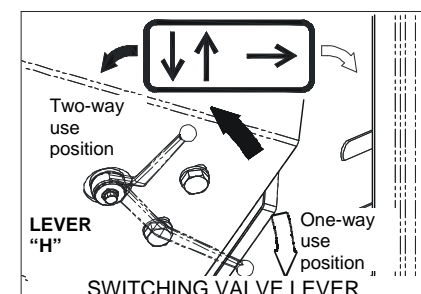
### 2.1.6 USING THE AUXILIARY HYDRAULIC PTO (Lever G) (Cement mixer kit, demolition hammer, shears, etc)

The auxiliary hydraulic PTO has a two-way flow. Move the lever in the direction required to operate the tool. The lever is equipped with a one-way lock to facilitate its use with special tools.



### 2.1.7 AUXILIARY SWITCHING VALVE LEVER (Lever H)

Enables and facilitates use of one-way tools such as demolition hammers, hydraulic drills, water pumps, cement mixer kit, etc., by directing the return flow to the tank. Move the lever to the position marked → for one-way use (moves in one direction only), and to ↓↑ for two-way use (moves in both directions).



## 2.2 USING THE IC ENGINE

### CHECKS BEFORE STARTING THE ENGINE

Check the hydraulic fluid, engine oil and fuel levels.

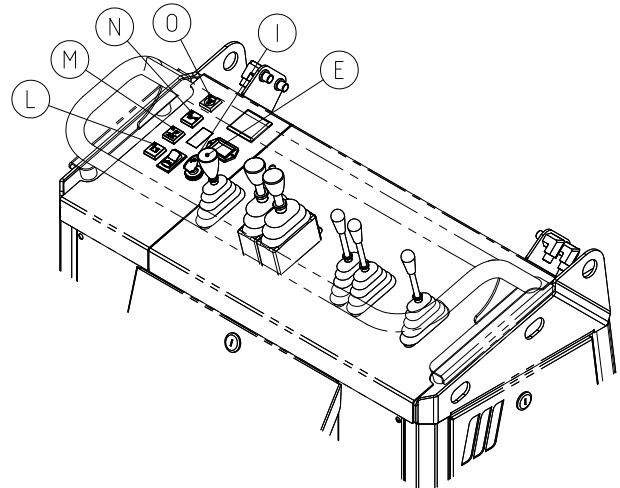
For these checks, see the section "Daily checks" in this manual.

This paragraph gives the basic instructions for starting the engine. However, you must supplement this information by referring to the **engine manufacturer's manual** supplied with the machine and kept in the document compartment.

### 2.2.1 STARTING THE ENGINE

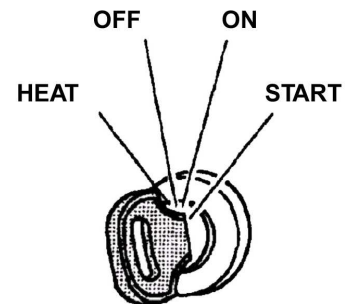
#### STARTING AT NORMAL TEMPERATURE

1. Move the throttle lever (E) to the middle position.
2. Turn the key (I) to "ON". Indicators (L) "battery charge", (M) "oil pressure", (N) "water temperature" and (O) "glowplug preheating" turn on.
3. Wait a few seconds for indicator (O) "glowplug preheating" to turn off.
4. Turn the key (I) to "START" and wait for the engine to start. Release the key (I) once the engine has started. Indicators (L) (M) and (N) turn off. Do not run the starter motor for more than 15 sec., allow it to cool down for 2 minutes and try again. Turn the key (I) to "OFF" before attempting to start the engine again.
5. Reduce the engine speed to allow it to warm up.



#### STARTING AT LOW TEMPERATURE

1. Repeat the procedure given in point 1 of the paragraph "STARTING AT NORMAL TEMPERATURE"
2. Turn the key to "HEAT" to preheat the interior of the engine. After around 15 seconds indicator (O) "glowplug preheating" turns off. This indicates that the engine is ready to be started.
3. Repeat the procedure given in points 4 and 5 of the paragraph "STARTING AT NORMAL TEMPERATURE"



Starter switch

### 2.2.2 SWITCHING OFF THE ENGINE

Move the throttle lever (E) to minimum speed, and turn the key (I) to "OFF".

## 2.3 PREHEATING THE MACHINE

For all hydraulic systems, the hydraulic fluid must be up to temperature before they are operated.

The time required to preheat the fluid can be spent in running maintenance checks. Before operating the machine at full load let the engine heat up slowly at low speed for 5 minutes.

## 2.4 LIFTING THE MACHINE



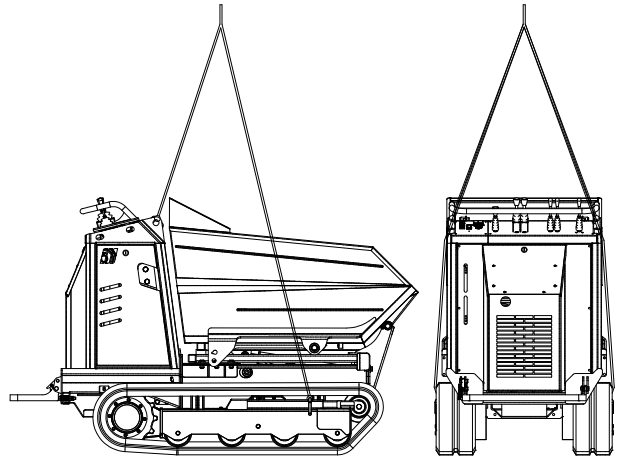
### WARNING

- **USE ADEQUATE STEEL ROPES AND EQUIPMENT FOR LIFTING. THE LIFTING ROPES MUST BE LONG ENOUGH TO BE SECURELY FIXED TO THE LIFTING EQUIPMENT.**
- **MAKE SURE NO-ONE IS IN THE HANDLING AREA.**
- **USE LIFTING EQUIPMENT ABLE TO SUPPORT THE WEIGHT OF THE MACHINE.**
- **NEVER LIFT THE MACHINE WITH ANYONE ON-BOARD.**
- **ALWAYS USE ROPES AND OTHER EQUIPMENT RATED TO LIFT AT LEAST 4 TON LOADS.**

### LIFTING PROCEDURE.

The machine is equipped with 4 attachment points marked with stickers, two near to the drive levers and the others on the LH and RH track frames.

1. Park the machine on the ground with the accessory lowered and the shovel fully raised.
2. Stop the engine
3. Connect the lifting harnesses to the 4 attachment points using 4 snap hooks of adequate strength.
4. Hook the harnesses to the lifting hook.
5. Check that there are no obstacles or persons in the vicinity of the machine
6. Lift the machine a few centimetres off the ground and check that it is well balanced.



## 2.5 LOADING AND UNLOADING THE MACHINE



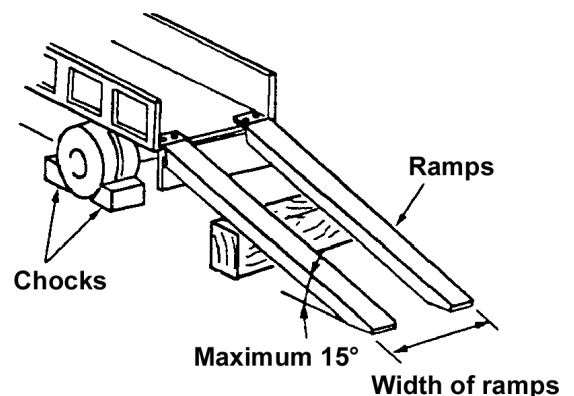
### WARNING

- **LOAD AND UNLOAD THE MACHINE ON LEVEL, STABLE GROUND.**
- **USE RAMP WHICH IS SUFFICIENTLY LONG, WIDE AND THICK TO SUPPORT THE WEIGHT OF THE MACHINE.**
- **TO PREVENT SKIDDING ON THE RAMPS AND SLIDING ABOUT DURING TRANSPORT, CLEAN ALL GREASE, OIL, ICE AND SO ON OFF THE MACHINE, RAMP AND LOAD BED BEFORE PROCEEDING.**
- **NEVER USE THE DOUBLE TRAVEL SPEED WHEN LOADING/UNLOADING THE MACHINE FROM A TRUCK.**
- **NEVER STEER ON THE LOADING RAMP. IN CASE OF NEED, DRIVE BACK OFF THE RAMP TO CHANGE DIRECTION.**

### LOADING THE MACHINE ONTO A TRUCK

**ALWAYS** use ramps for loading and unloading the machine and observe the following procedures in full.

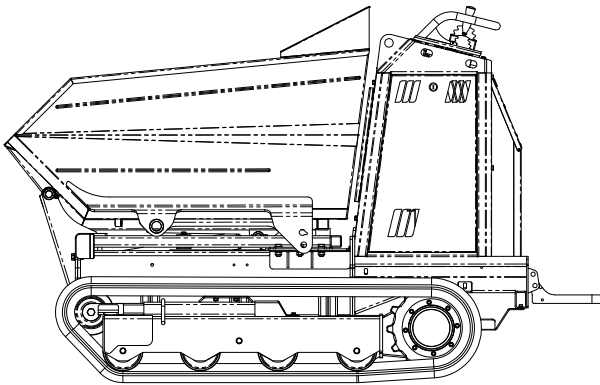
1. Block the truck wheels before loading the machine.
2. Lower the truck's sides.
3. Secure the ramps to the truck. The ramps should form no more than 15° angle with the ground. The ramps must be wide enough for the tracks.
4. Position the machine so that it is in front of and with its tracks parallel with the ramps. Do not operate the control levers, except for the travel levers, when the machine is on the ramps.
5. Keep the centre of gravity of the machine within the area of the loading ramps.
6. Make sure the ramps are stable.



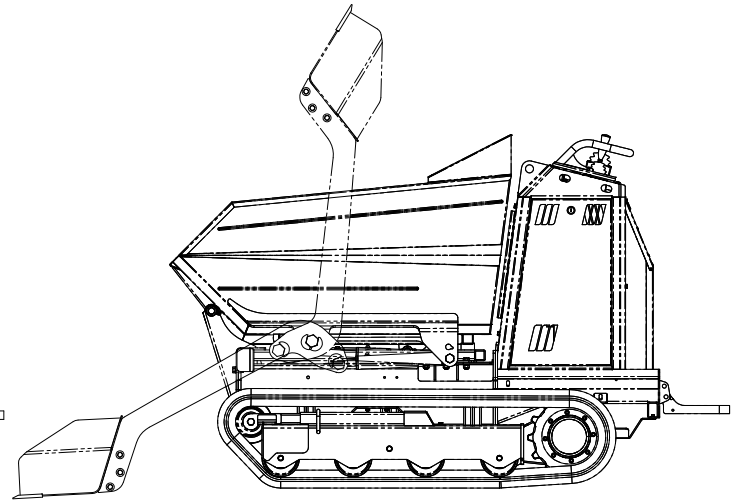
### SECURING THE MACHINE FOR TRANSPORT

1. Switch off the engine.
2. Fix the tracks and secure the machine to the load bed with chains or steel rope.

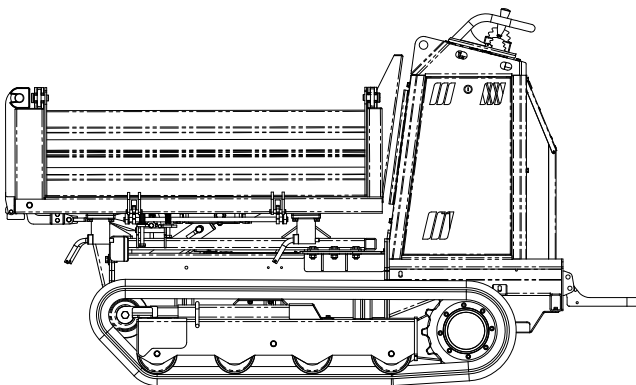
## 2.6 EQUIPMENTS



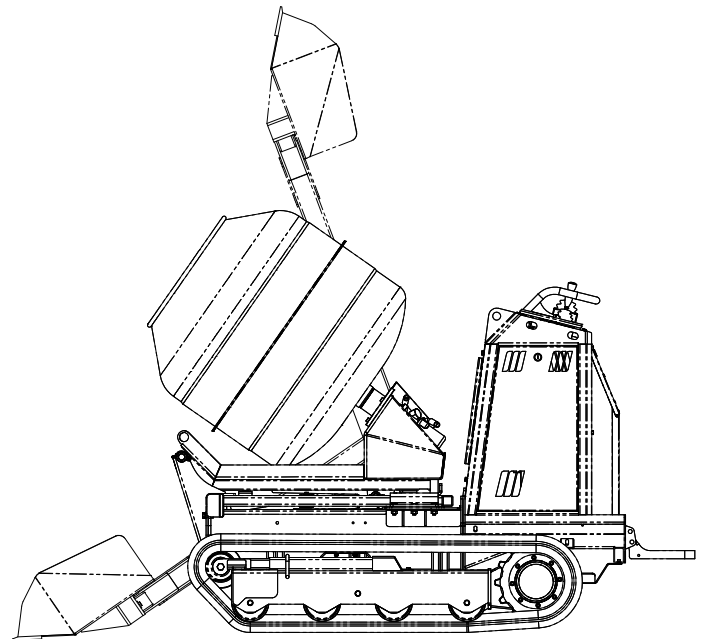
SKIP



SKIP WITH SHOVEL



TRILATERAL PLATFORM

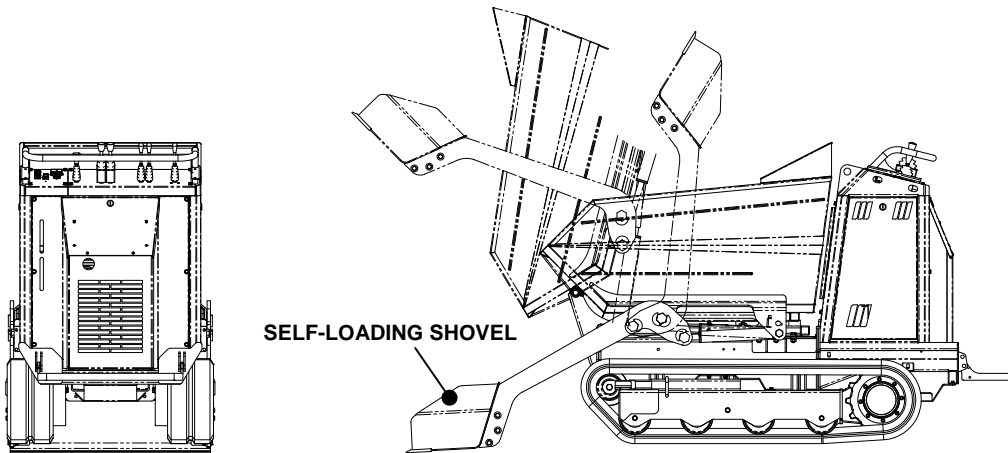


CEMENT MIXER WITH SHOVEL KIT

## 2.7 USE AND ACCESSORIES

### 2.7.1 SKIP

The 0.42 m<sup>3</sup> skip is the most suitable accessory for moving rubble, earth, rena, gravel, aggregate, conglomerate, concrete and other all materials used for in construction work. The skip combines with the self-loading shovel. Once the skip is full, move the machine to the material unloading area and proceed as explained in point 2-1-4. If the machine is equipped with a self-loading shovel, fully raise it when unloading.



### 2.7.2 SELF-LOADING SHOVEL

The self-loading shovel, which fits directly to the skip, can only be used for loading rubble or loose materials. **NEVER USE IT FOR DIGGING.**

To load:

- Lower the shovel to the ground
- Move the machine closer to the heap slowly, until the shovel is completely full
- Raise the shovel and lower speed when unloading so as to avoid material falling out of the shovel and onto the driver's position.

### 2.7.3 TRILATERAL PLATFORM

The platform is a multifunctional accessory used for many purposes in construction work, greenhousing and civil engineering. It is specially designed to tip and hence unload on three sides, which is especially useful when unloading to the side of the direction of travel, since it obviates the need to position the machine head on.

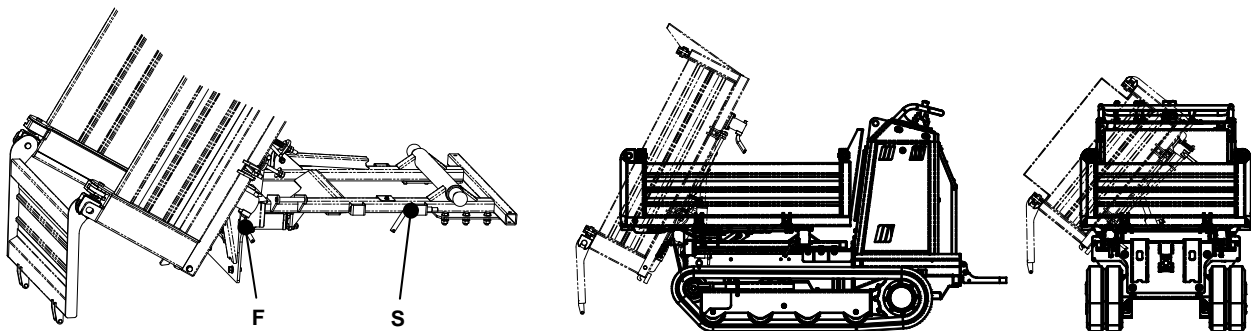
The three mobile sides are hinged at the top to enable them to swing open. The sides can be locked or released when tilting or levelling the platform. The sides can also be operated manually.

**Note for final user: THE TRILATERAL PLATFORM IS AN ACCESSORY NOT SUITABLE FIT TO THE TRANSPORT OF SANDY OR FINE GRAIN SOIL MATERIAL.**



#### WARNING

- **BEFORE TIPPING, POSITION THE FULCRUM PINS (F) ON THE TIPPING SIDE.**
- **POSITION THE OTHER TWO PINS IN THEIR MOUNTS (S).**



### 2.7.4 CEMENT MIXER KIT

The cement mixer kit is composed of a 350 L mixing tank driven by a hydraulic motor. It is suited to mixing construction conglomerates, concrete and cement; composite earths and similar materials in greenhouses; foodstuffs and so on in agriculture.

For even mixing, the tank should be run at 24/25 rpm. Set the speed with the engine speed adjustment or with the standard valve.

The cement mixer kit can only be mounted to machines with the AUXILIARY PTO.

This accessory is particularly versatile due to the possibility of loading at a defined station, mixing while on the move and unloading even at a distant location.

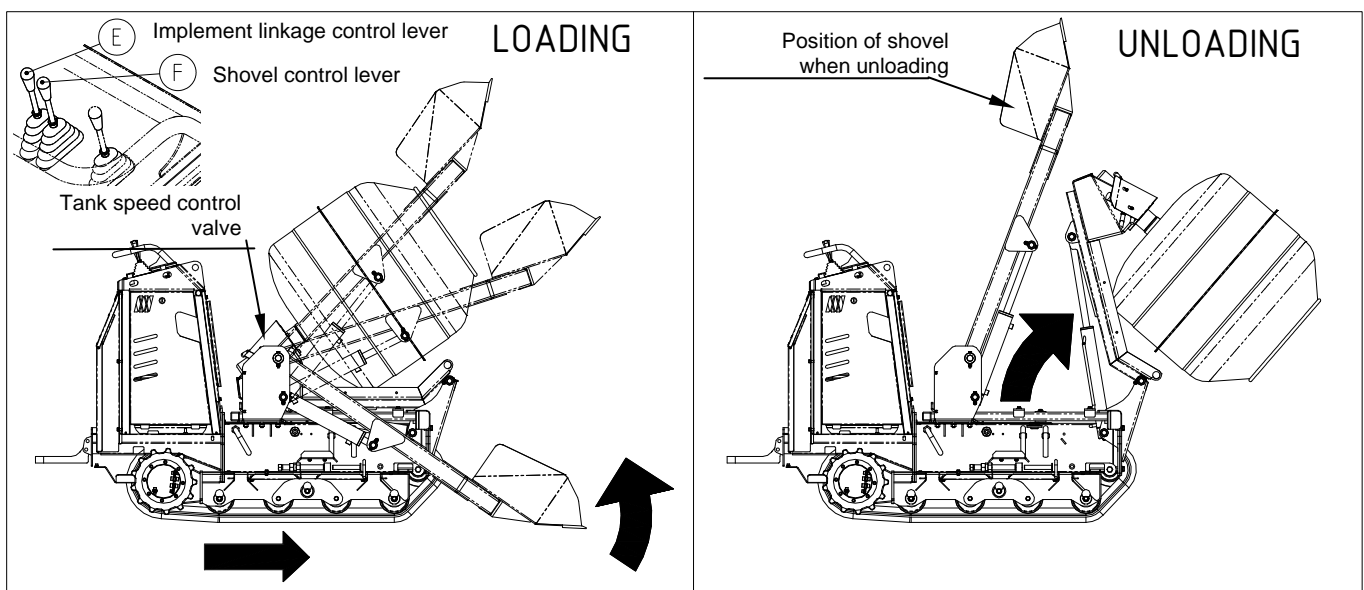
To unload, proceed as explained in point 2-1-4.

It combines with a special self-loading shovel.

Be careful to position the shovel properly when unloading. Move the shovel to the fully up position to avoid interfering with the tank.

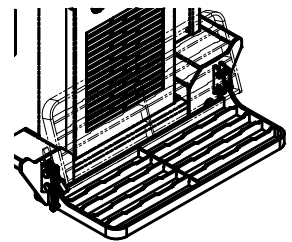
To load with the shovel, use the "shovel control lever" near the operator handle and proceed as follows:

- Lower the shovel to the ground
- Move the machine closer to the heap slowly, until the shovel is completely full
- Raise the shovel and lower speed when unloading so as to avoid material falling out of the shovel and outside the tank.



### 2.7.5 FOOTPLATE

The footplate is hinged to the chassis. When closed, it enables safe driving from the ground since there is no risk of its hitting the driver's legs. When open, it allows the operator to drive the machine in the on-board position. It is fitted with a vibration damper to protect the legs. For total operator safety, the footplate is equipped with a lock (spring-loaded) which stops it from closing accidentally.

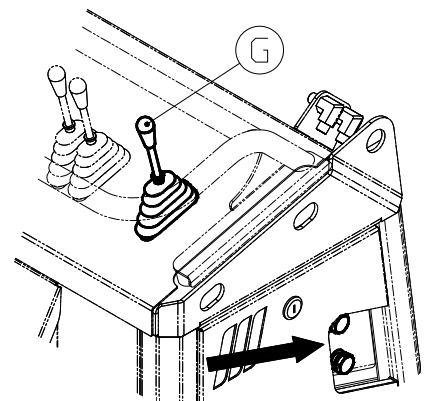


### 2.7.6 USING THE AUXILIARY HYDRAULIC PTO AND SWITCHING VALVE (fluid flow rate 26 l/min.)

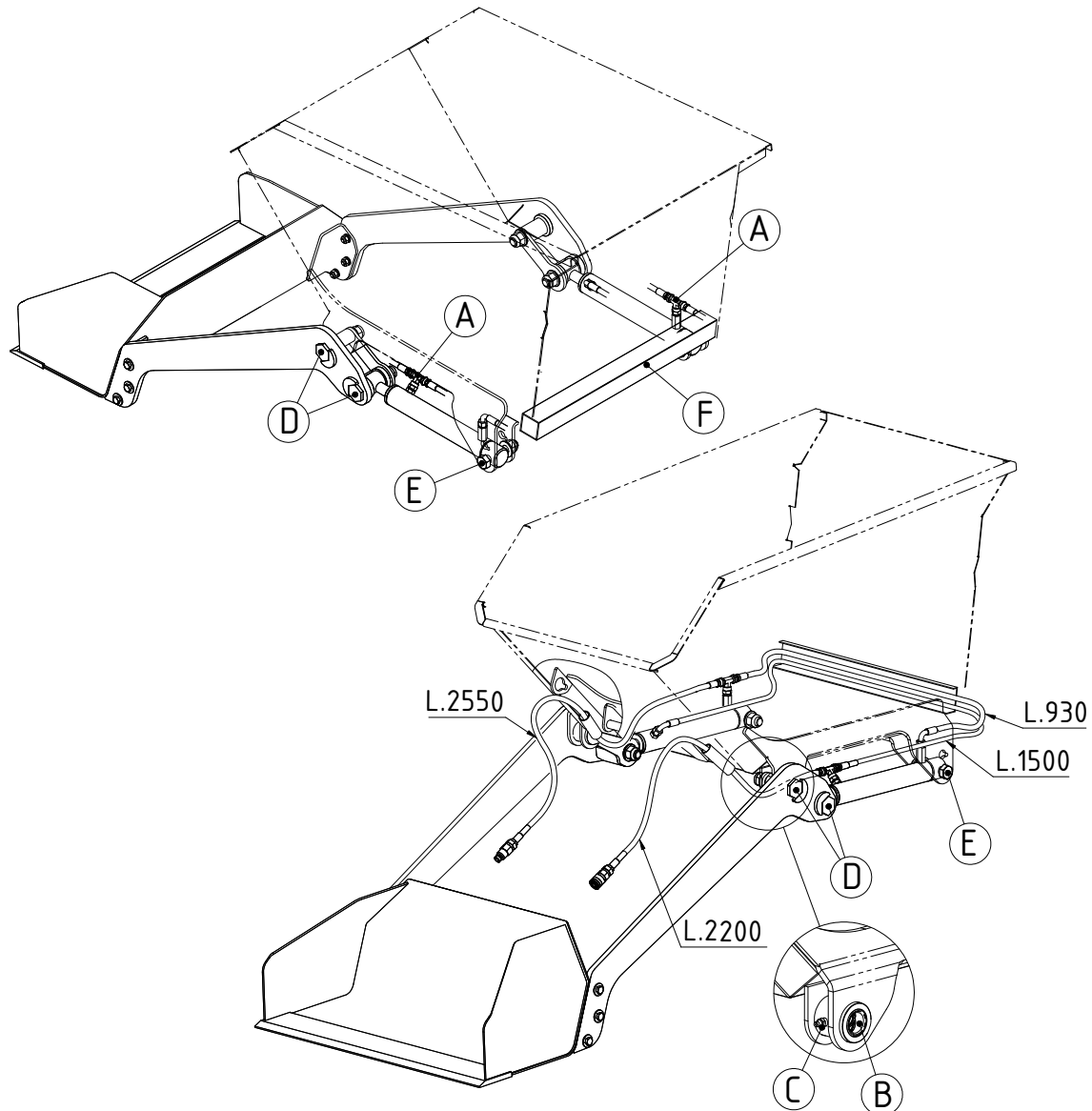
The PTO terminals are located on the RH side of the machine. For ease of use, fit the terminals with hydraulic snap fittings, male 3/8" and female 3/8". To fit the snap fittings, depressurise the hydraulic circuit by undoing the fluid filler cap, remove the caps and fit the snaps fittings with their washers.

Now repressurise the circuit by extending all cylinders and tightening down the fluid filler cap (see point 3.7). Fluid delivery is controlled with lever "G". The fluid has a two-way flow. Move the lever in the direction required to operate the tool. The lever is equipped with a one-way lock to facilitate its use with special tools, such as the cement mixer kit or implements to be operated at a distance such as hammers, drills, shears and so on.

The auxiliary switching valve (lever "H") enables and facilitates use of one-way tools such as demolition hammers, hydraulic drills, water pumps, cement mixer kit, etc.. Move the lever to the mark → to direct the return fluid flow directly to the tank (see point 2-1-7).



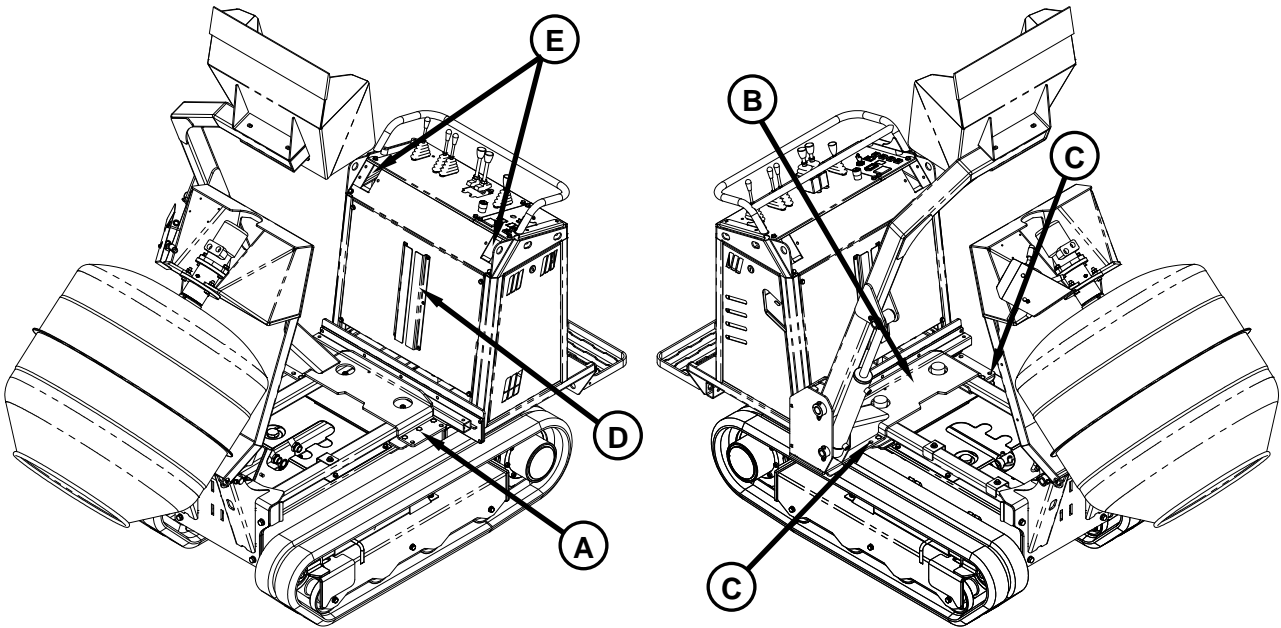
## 2.7.7 INSTALLING THE SELF-LOADING SHOVEL (OPTIONAL)



- 1 Fit the T fittings (ref. A) to the cylinders. RH cylinder with base connector fitting, LH cylinder with head connector fitting.
- 2 Fit the steel bushes (ref. B) to the skip and fit the grease fitting (ref. C).  
WARNING, use appropriate tools to fit the bushes.  
WARNING, do not use hammers or other blunt instruments; the mounts welded to the skip could be deformed, thus preventing assembly.
- 3 Fit the shovel arms to the skip using the hex head pins (ref. D). Fully tighten down the pin locknut.
- 4 Mount the cylinders to the arms (RH cylinder to RH arm, etc) using the provided hex head pins (ref. D) and fully tighten down the pin locknut.
- 5 Fit the hydraulic lines to the cylinders in accordance with their length. Route the two L=930 and L=1500 lines into the rear guide (ref. F) welded under the skip. Route the hydraulic lines L=2200 mm and L=2550 mm into the guides on the skip; now fit the female snap fittings to the ends of both with their seal washers.
- 6 Mount the cylinders to the skip using the bolts (ref. E) and locknuts. DO NOT TIGHTEN the nuts down; the cylinder must be free to rotate.
- 7 Fit the shovel taking care that it is tightly mounted to the arms.
- 8 Secure the L=2200 and L=2550 lines to the linkage frame with their brackets.
- 9 Connect the lines to the machine's PTO using the snap fittings.

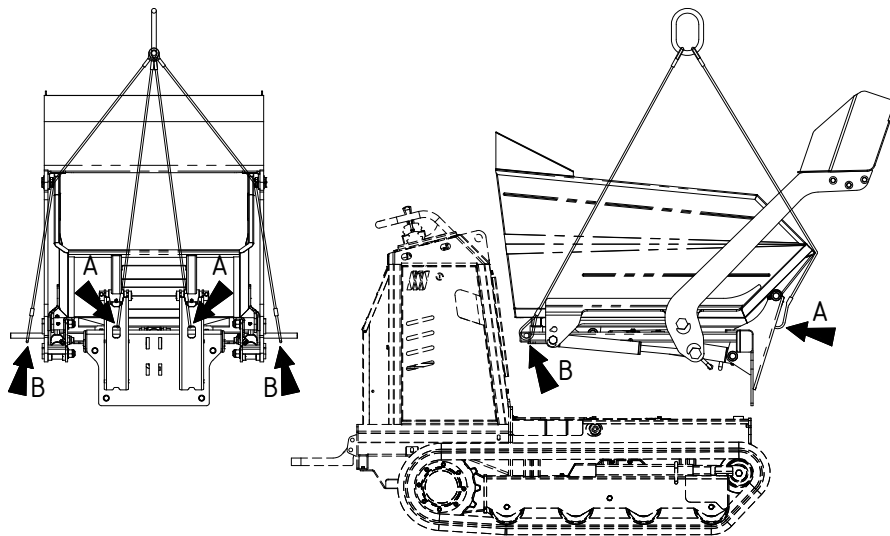


## 2.7.8 INSTALLING THE CEMENT MIXER KIT SELF-LOADING SHOVEL (OPTIONAL)



- 1) Move the mixer tank to the unloading position. Fit the cylinder safety.
- 2) Remove the six bolts (A) at the rear securing the linkage to the machine's chassis.
- 3) Locate and secure the shovel frame (B) to the linkage and chassis using the six bolts removed at previous step.
- 4) Fix the shovel frame to the linkage using the four bolts supplied with it (C). This secures the shovel to the cement mixer so as to facilitate accessory changeovers.
- 5) Fit the hydraulic lines into the guides in the front casing (D) in the proper positions. Connect the lines to the machine's PTO (E) using the snap fittings.
- 6) Remove the cylinder safety and fully lower the tank.

## 2.8 REPLACING THE ACCESSORY

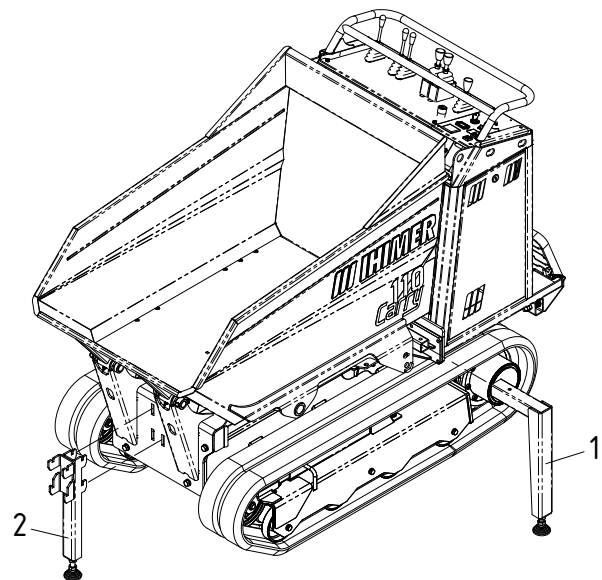


## 2.8.1 REMOVING THE ACCESSORY

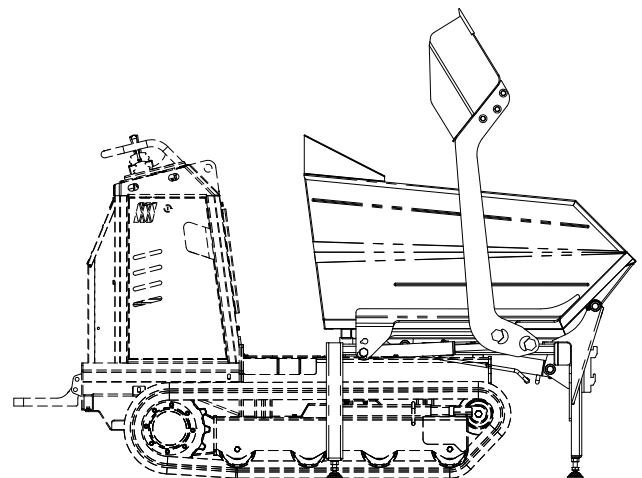
1. Park the machine on level, solid ground
2. Partially tip the accessory to remove the six bolts at the rear securing the linkage to the machine's chassis. Return the accessory to the fully down position.
3. Remove the accessory from the machine in one of the following ways:

**REMOVING THE ACCESSORY WITH LIFTING EQUIPMENT**

1. If you have suitable lifting equipment, harness the accessory at the four points (A) and (B) shown in the figure. Use steel ropes with a minimum load rating of 300 kg.
2. Release the hydraulic snap fittings.
3. Remove the four bolts at the front securing the linkage to the machine's chassis.
4. Raise and remove the accessory by lifting.

**REMOVING ACCESSORIES WITH REPLACEMENT KIT (OPTIONAL)**

1. Fit the mounts (1) and (2) to the accessory's frame as shown in the figure.
2. using the supplied wrench, undo the rotating feet until they are slightly tensioned.
3. Release the hydraulic snap fittings.
4. Remove the four bolts at the front securing the linkage to the machine's chassis.
5. Undo the feet alternately until the linkage frame has risen about 20-30 mm off the machine's chassis.
6. Start the engine and back off slowly until the linkage is free.



## 2.8.2 MOUNTING ACCESSORIES

1. Park the machine on level, solid ground
2. Mount the accessory to the machine in one of the following ways:

### MOUNTING THE ACCESSORY WITH LIFTING EQUIPMENT

1. If you have suitable lifting equipment, harness the accessory at the four points (A) and (B) shown in the figure. Use steel ropes with a minimum load rating of 300 kg.
2. Raise the accessory and locate it on the machine's chassis.
3. Locate and screw in the four front bolts.
4. Lock the hydraulic snap fittings.
5. Start the engine.
6. Partially tip the accessory to fit the six bolts at the rear securing the linkage to the machine's chassis. Tighten down all bolts. Fit the hydraulic lines into the guides in the front casing in the proper positions. Return the accessory to the fully down position.
7. Remove the lifting harness.

### MOUNTING ACCESSORIES ONTO THE REPLACEMENT KIT (OPTIONAL)

1. Start the engine and slowly approach the accessory making sure to keep the machine centred relative to the mounts. Continue approaching until the two frames are fully coupled.
2. Stop the engine. With the provided wrench, screw the feet in alternately until the accessory frame is resting on the machine's chassis and the supports are free to be completely removed.
3. Locate and screw in the four front bolts.
4. Lock the hydraulic snap fittings according to their positions.
5. Start the engine.
6. Partially tip the accessory to fit the six bolts at the rear securing the linkage to the machine's chassis. Tighten down all bolts. Fit the hydraulic lines into the guides in the front casing.
7. Return the accessory to the fully down position.



### WARNING

- **USE ADEQUATE STEEL ROPES AND EQUIPMENT FOR LIFTING. THE LIFTING ROPES MUST BE LONG ENOUGH TO BE SECURELY FIXED TO THE LIFTING EQUIPMENT.**
- **MAKE SURE NO-ONE IS IN THE HANDLING AREA.**
- **USE LIFTING EQUIPMENT ABLE TO SUPPORT THE WEIGHT OF THE MACHINE.**
- **NEVER LIFT THE MACHINE WITH ANYONE ON-BOARD.**
- **ALWAYS USE ROPES AND OTHER EQUIPMENT RATED TO LIFT AT LEAST 4 TON LOADS.**

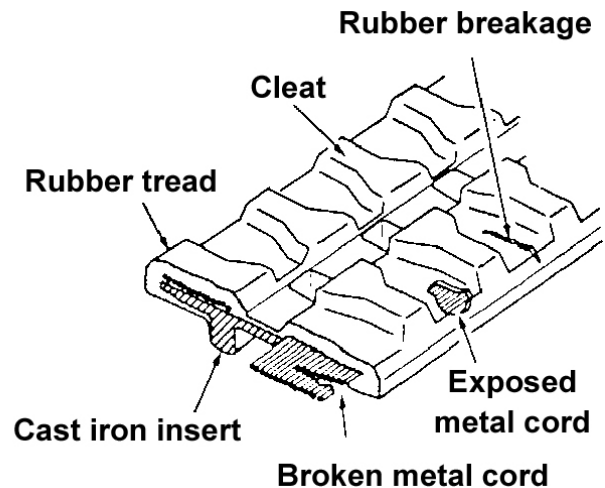
## 2.9 PRECAUTIONS WHEN USING RUBBER TRACKS

### STRUCTURE OF RUBBER TRACKS



#### WARNING

IF A CRACK IN THE RUBBER PROPAGATES AS FAR AS THE METAL CORDS, THEY MAY RUST, CORRODE AND BREAK. AS SOON AS YOU SEE A CRACK, VULCANISE THE TRACK TO REPAIR IT.



### PRECAUTIONS IN OPERATION

1. The tension of the tracks must be adjusted frequently.
  - too low tension allows the tracks to jump out of their guides and wears the drive wheels and metal inserts of the tracks themselves very quickly.
  - too much tension increases the resistance to travel and this may result in wear of the undercarriage as well as overtensioning the tracks which may break prematurely.
2. The following situations can damage the rubber tracks and are to be avoided
  - quarries and sharp rocks
  - metal bars and waste material
  - edges and corners of metal and concrete objects
  - fire and other sources of heat
  - driving in contact with cement flooring and walls
3. Clean any diesel, hydraulic fluid and grease off the tracks.
4. Do not turn the machine quickly on the tracks.
5. If the machine is not used for a long time (more than 3 months) store the tracks away from direct sunlight and rain.
6. When using rubber tracks, only operate the machine in the temperature range  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ .

## 2.10 PARKING THE MACHINE

At the end of the day's work, proceed as follows:

### PARKING THE MACHINE

Drive the machine to safe area with level ground.

1. Push the throttle lever forwards to reduce the engine speed.
2. Release the travel levers to stop the machine.
3. Lower the loader shovel (if mounted) to the ground and apply a slight contact pressure.
4. Switch off the engine.

### IN FREEZING CONDITIONS

In very low subzero temperatures, clean any mud and dirt off the tracks, and park the machine on wooden boards.

### 3 MAINTENANCE

#### 3.1 MAINTENANCE INTERVALS


**WARNING**

REFER TO THE ENGINE MANUAL FOR SERVICE INSTRUCTIONS

Check Point	Service
<b>Whenever necessary</b>	
Tracks	Check and adjust tension
Fuses	Fuses maintenance
Battery	Clean and check acid level
Parts with grease points	Grease
<b>Daily (every 8 hours of operation)</b>	
Diesel engine	Check the oil level
Hydraulic Fluid Tank	Check the hydraulic fluid level
Fuel tank	Check the fuel level
Inspection	Check the overall condition of the machine
Air cleaner	Check visual blockage indicator
Engine	Check fuel sludge filter water level
Hydraulic System	Check filter
Radiator	Check coolant level
Radiator	Check cooling fins for blockage
<b>Every 250 hours of operation (before the above service jobs)</b>	
Engine	Oil change
Air cleaner	Replace filter element
Travel reducer gear	Check oil level
<b>Every 600 hours of operation (before the above service jobs)</b>	
Hydraulic System	Change fluid and clean filter element
Travel reducer gear	Change reducer casing oil
Engine coolant	Change coolant
<b>The above intervals depend on the conditions in which the machine is working: very dusty conditions require more frequent air cleaner services.</b>	

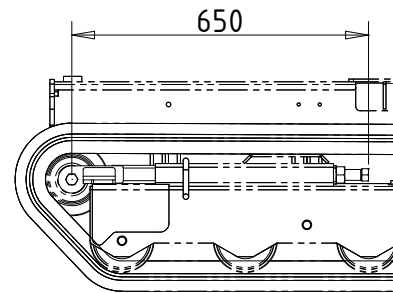
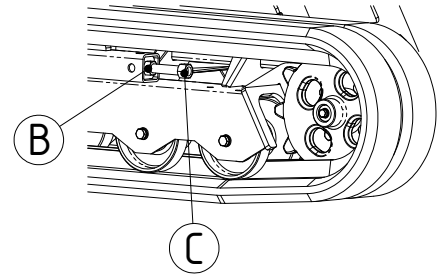
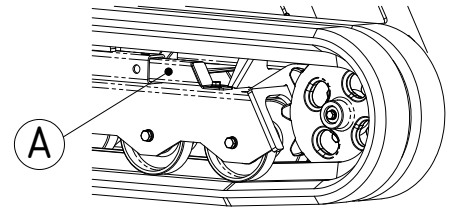
#### 3.2 TABLE OF LUBRICANTS

Position	Quantity	Features
YANMAR engine 3TNM68	1.2 litres 2.6 litres (WITH FILTER)	SAE 20W40
HYDRAULIC FLUID	Total quantity 25 litres Tank capacity 19 litres	LONG LIFE HYDRAULIC FLUID ISO N° 46
GENERAL LUBRICATION POINTS	-	EP-2 lithium grease
DRIVE MOTORS	0,30 litres each	

### 3.3 REACTIVE CHECKS AND SERVICE JOBS

#### 3.3.1 CHECKING THE TRACK TENSION

When the tracks are evidently loose or jumping the drive wheel teeth, their tension must be checked. Check the distance between the idle wheel hub and the tensioner screw.



#### 3.3.2 ADJUSTING THE TRACK TENSION

1. Remove guard A by slackening off the M8 bolt, clean off the protective grease, slacken off locknut B (counterclockwise), and tighten down screw C to restore the correct tension. (Tensioning distance  $L=650\text{mm}$ ).
2. To ensure the tension on both sides is equal, drive the minidumper back and forth and check the evenness of the tension once more.
3. Finish by tightening down locknut B, apply the protective grease, and refit guard A with its bolt.

#### 3.3.3 RUBBER TRACK MAINTENANCE



#### WARNING

- RUBBER TRACKS MUST BE REPLACED OR REPAIRED AT THE TIMES INDICATED BELOW.
- IF YOU HAVE TO REPAIR OR REPLACE A TRACK, CONTACT YOUR DEALER.

##### 1. DEPTH OF TREAD

Rubber tracks may be used if worn however, if excessively worn, the tracks may skid and require greater power from the engines. If the remaining tread is less than 5 mm, it is advisable to replace the track with a new one.

##### 2. EXPOSURE OF THE STEEL CORDS

If the steel cords of a rubber track are exposed due to excessive wear or damage, replace the track with a new one.

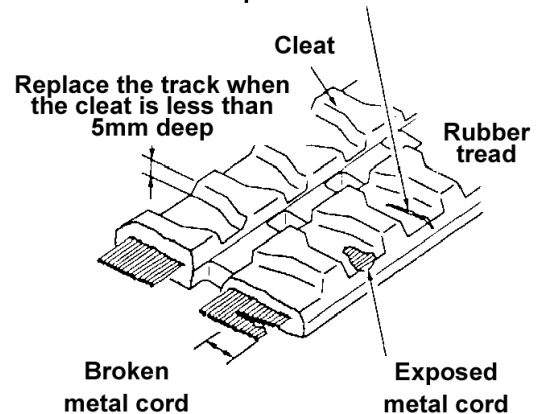
##### 3. CUT STEEL CORDS

If any of the steel cords are cut, replace the rubber track immediately. If it is not replaced, the track may break suddenly while the machine is working, which can result in serious accidents.

##### 4. CRACKS IN THE RUBBER SURFACE

If you see a crack of 30 mm or more in length and 8 mm or more deep, repair the track immediately. If the steel cords are visible, even though the crack is smaller than indicated above, repair the track immediately. Otherwise, water in the crack may rust the cords and result in the track breaking.

Repairs are necessary if the break is deeper than 30 mm

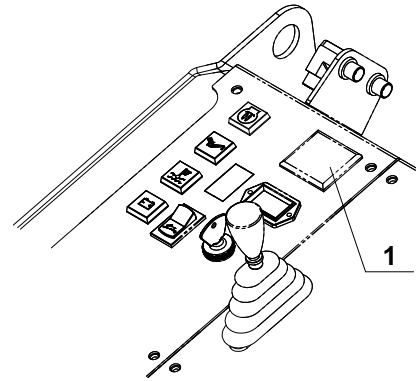


### 3.3.4 FUSES MAINTENANCE

#### FUSES

The fuse box (1) is located on the controls panel.  
The fuses protect the electrical circuit from damage due to overloads and short circuits.

Always replace fuses with equivalently rated units of the same size.  
Before replacing a fuse, find the reason for its failure and repair the damage

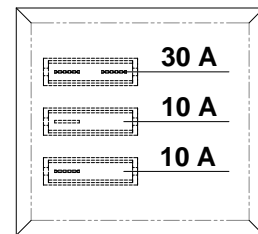


#### REPLACING FUSES

1. Release and remove the fuse cover.
2. Change the damaged fuse with a new one

We list below the circuits protected by each fuse and their amperages:

1. Engine stop solenoid, timers, hourmeter. - 30A
2. double speed switch, oil and water sensor - 10A
3. Generator - 10A



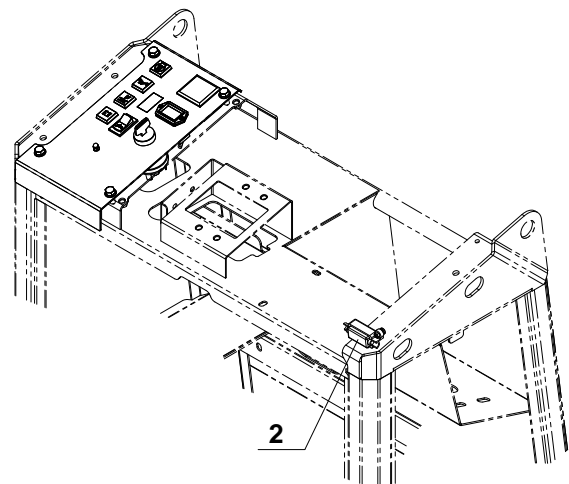
#### MAIN FUSE

A fuse (2) is located between the positive terminal and the key switch to protect the cabling against short circuits. In case of power failure, check this fuse and identify and resolve the short circuit before replacing it if it has tripped.



**WARNING**

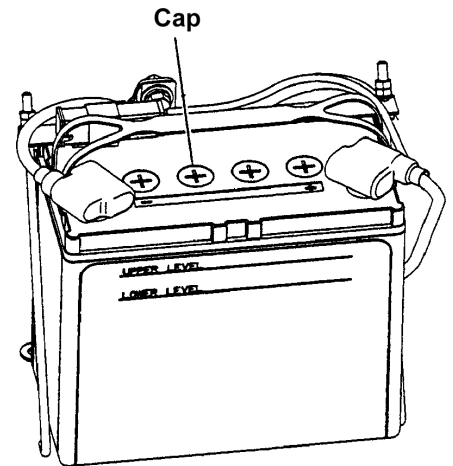
- **BEFORE SERVICING ANY LIVE (ENERGIZED) PART, REMOVE THE FUSE FROM ITS HOUSING TO ISOLATE THE BATTERY CIRCUIT.**



## 3.3.5 BATTERY MAINTENANCE

**WARNING**

- BATTERIES GIVE OFF FLAMMABLE FUMES THAT CAN EXPLODE.
- DO NOT SMOKE WHILE CHECKING THE BATTERY.
- THE BATTERY ACID CAN CAUSE BURNS IN CONTACT WITH THE SKIN OR EYES.
- WASH ANY PART OF THE BODY THAT HAS COME INTO CONTACT WITH THE ACID WITH ABUNDANT WATER AND SEEK IMMEDIATE MEDICAL ATTENTION.
- ALWAYS WEAR SAFETY GLASSES WHEN WORKING ON THE BATTERY.

**1) Cleaning**

Clean the battery's casing. Keep the terminal clamps clean and covered with vaseline grease.

Fit the terminal covers after greasing them.

**2) Recharging the battery**

Do not leave the battery discharged for a long time: Charge it from time to time when the machine is not being used.

Check the battery's charge one a month and recharge it briefly so that it stays at full charge.

Partial charging it not advisable; when recharging the battery, make sure the acid temperature does not exceed 40°C (52°C for batteries with low density acid for tropical climates).

**3) Checks**

Check the level of acid in all battery elements or check that the acid is up to the battery's level line.

Check the cells weekly in extreme temperatures as acid consumption may be higher in such conditions.

**4) Topping up the battery acid**

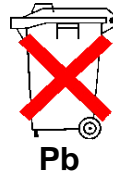
Keep the acid topped up to just below the filling hole or at least above the level mark; add water as necessary.

If you spill any acid, replace it with sulphuric acid at the same concentration as that remaining inside the battery.

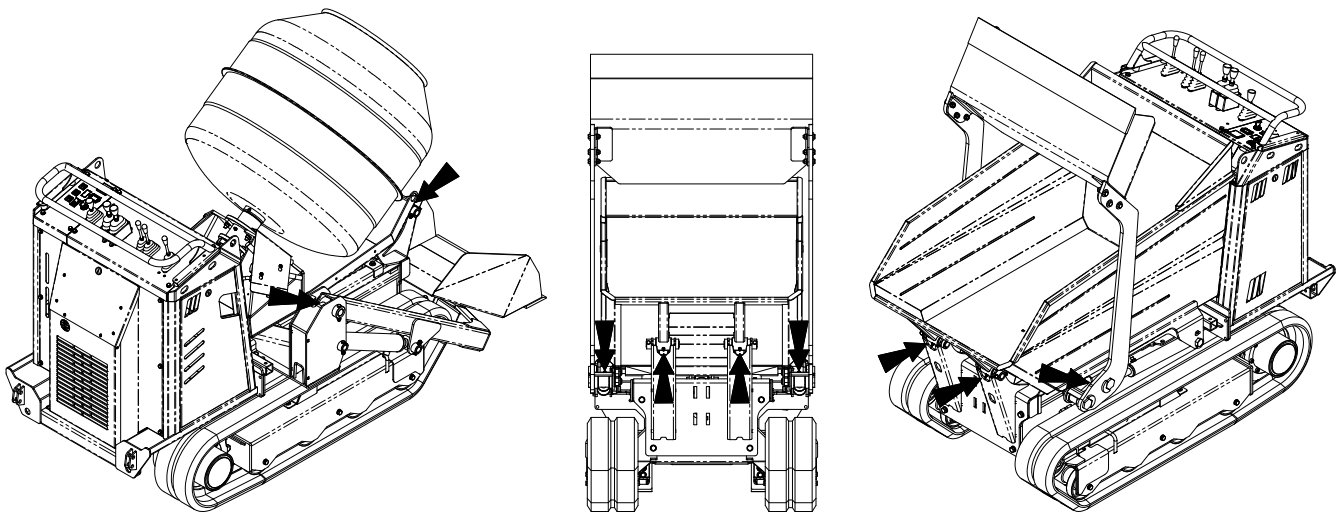
The acid level must never drop below the upper edge of the battery plates.

**5) Disposal**

Dead batteries must be disposed of as required by law.



## 3.3.6 GENERAL LUBRICATION



Lubricate the indicated points when necessary as specified in the "Lubrication table"



### 3.4 DAILY CHECKS AND MAINTENANCE

#### 3.4.1 ENGINE OIL LEVEL AND CHANGE



#### DANGER

- CHECK THE OIL LEVEL WITH THE ENGINE STOPPED. NEVER CHECK THE OIL WITH THE ENGINE RUNNING.
- TO AVOID PROBLEMS WITH THE ENGINE, NEVER EXCEED THE MAXIMUM OIL LEVEL. TOO MUCH OIL IN THE ENGINE CAN CAUSE IT TO BREAK.
- NEVER RUN THE ENGINE WITH THE OIL ABOVE THE MAX OR BELOW THE MIN LEVEL.
- HOT OIL AND SURFACES CAN CAUSE INJURY. NEVER TOUCH HOT OIL OR SURFACE.

Check the engine oil level at least 15 minutes after the engine has stopped. After the first 50 hours of operation, change the oil completely. Refer to the engine manual for instructions on how to check the oil level.

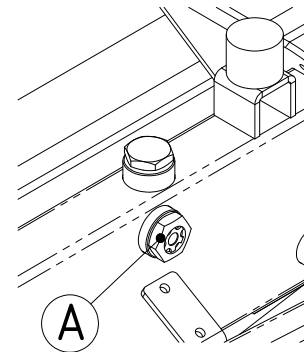
#### 3.4.2 HYDRAULIC FLUID TANK LEVEL



#### CAUTION

- ALWAYS CLEAN AROUND THE CAP BEFORE REMOVING IT
- NEVER OVERFILL THE TANK (MAX LEVEL)
- DO NOT OPERATE THE MACHINE WITH THE TANK FILLED ABOVE THE MAX LEVEL OR BELOW THE MIN LEVEL

1. Park the machine on level ground with the linkage, shovel and extendible undercarriage pistons completely retracted.
2. Check that the fluid level (indicator A) is at the maximum.
3. If necessary, top up the fluid (see "Changing the hydraulic fluid" in chapter 3 - 7).



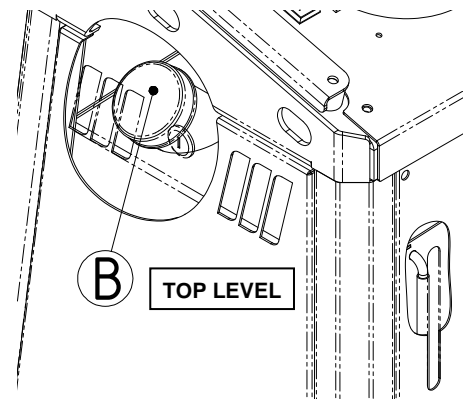
#### 3.4.3 FILLING THE FUEL TANK



#### WARNING

- NEVER REFUEL THE MACHINE WITH THE ENGINE RUNNING.
- DO NOT SMOKE WHEN REFUELLING.
- FUEL SPILLS ONTO HOT SURFACES CAN CATCH FIRE.
- DO NOT INHALE FUEL FUMES. REFUEL THE MACHINE OUTDOORS OR IN A WELL VENTILATED AREA.

Always use clean containers for the fuel. Use fuel without water. Take special care when filling the fuel tank if it is raining. Fill the tank to the top mark. To add fuel, remove cap B on top of the tank inside the engine compartment (remove the LH side panel) and add as much fuel as is required with the provided funnel. Make sure to completely tighten down the filler cap afterwards. Clean all fuel spills off the machine.



### 3.4.4 INSPECTING THE MACHINE

1. Check that the linkage bolts are fully tightened down.
2. Check that all bolts are fully tightened down. Fully tighten down all loose fasteners and replace any damaged ones.
3. Check for breakage at the cylinder mounts. Repair any damaged parts.
4. Check for breakage and wear of the cylinder and blade mounts. Repair/replace where necessary.
5. Check for leaks along the hydraulic circuit. Check the hydraulic fluid tank, cylinders, lines, caps, fittings and accessories. Repair as necessary.
6. Check the seal of the drive engines. Check the engine oil for leaks.
7. Clean the engine compartment thoroughly.
8. After every use, at the end of the day, carefully clean all accessories (skip, platform, cement mixer, self-loading shovel etc.)

### 3.4.5 AIR CLEANER BLOCKAGE INDICATOR



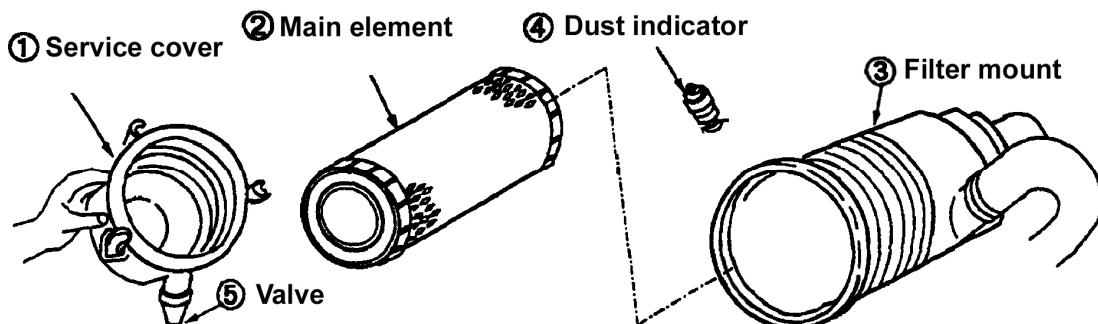
#### CAUTION

- **SERVICE THE AIR FILTER ELEMENT IF THE RED SIGNAL APPEARS ON THE INDICATOR WITH THE ENGINE RUNNING AT HIGH SPEED OR AFTER A TEST RESET**
- **SERVICE THE AIR CLEANER WITH THE ENGINE STOPPED TO AVOID DAMAGE TO IT**
- **HANDLE THE FILTER ELEMENTS CAREFULLY. REUSING OR CONTINUING TO USE DAMAGED AIR FILTERS CAN RESULT IN DAMAGE TO THE ENGINE**
- **WEAR A PROTECTIVE MASK AND SAFETY GLASSES WHEN CLEANING THE FILTER ELEMENT WITH COMPRESSED AIR.**

#### Maintenance intervals:

- Check the indicator: *daily*.
- Cleaning: After 250 hours or when indicated by the disappearance of the dust indicator's red signal
- Replacement: After five cleaning cycles, after a year or when any part of the cleaner is damaged.

Check the air cleaner dust indicator. If the indicator is in the red zone and after a test reset, clean/replace the filter element as indicated below.

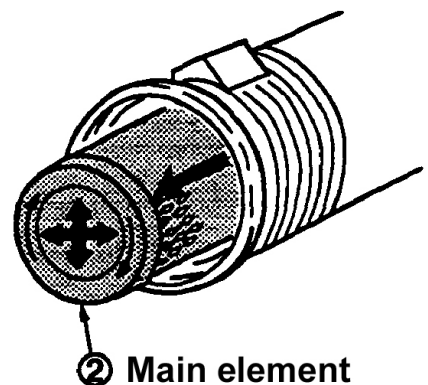


### CLEANING THE AIR CLEANER ELEMENT

1. Stop the engine
2. Release the three retainers and remove the service cover (1).
3. Remove the element (2) from the air cleaner housing (3).

**Note:** Carefully remove the element's gaskets. The gaskets seal the exterior of the element against the filter housing. To slacken off the gaskets, rock the exterior of the element carefully down and up or right and left, or rotate the element to remove it from its mount. Do not allow the dust to escape from the removed element.

4. Clean the inside of the cleaner housing (3) and cover (1).



**Note:** Clean the element's mount. Any dust left in the element mount can end up in the engine.

- Clean the main filter element with compressed air (max pressure 200 kPa - 2 kgf/cm<sup>2</sup>). Direct the jet of air along the fins of the element.
- Inspect the filter element after cleaning. Do not use a filter element which is bent or has damaged gaskets.

**Note:** Used elements may have foreign bodies in the mounting surfaces which cause leaks; if you see streaks of dirt on the surface of the gaskets this means that the element is leaky. If you see such dirt, look for foreign bodies inside and outside the gasket casing.

- Fit the clean main element (2) and fit and secure the service cover (1) with the valve (2) pointing downwards.

**Note:** Insert a new element. When the gasket is correctly seated in the tube, it forms a snug fit with the inlet. For a better seal, press the end of the filter element against the external ring.

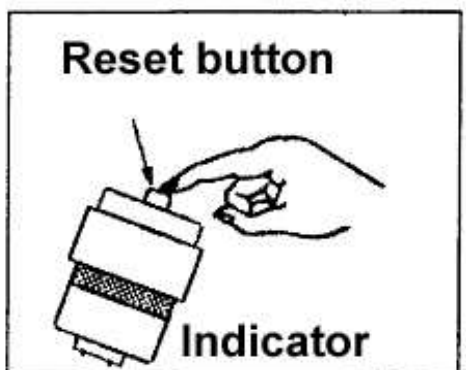
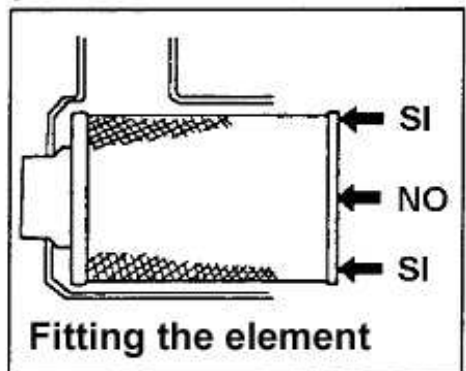
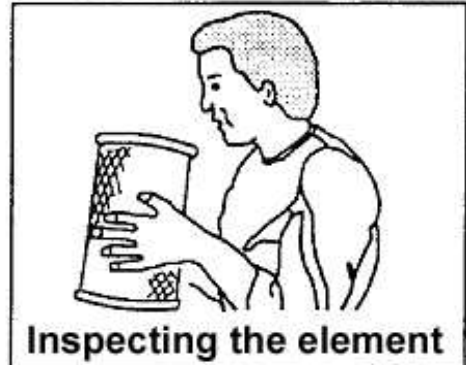
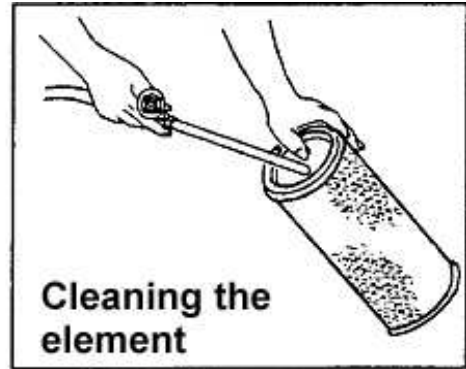
- Reset the dust indicator with the reset button.
- If the dust indicator refuses to reset, replace the element.

#### REPLACING THE AIR FILTER ELEMENT.

- Remove the service cover (1) from the filter housing (3).
- Remove the element (2) from the filter housing (3). Cover the open engine air intake.
- Clean the inside of the cleaner housing (3) and cover (1). Remove the open air intake cover.

**Note:** Clean the element's mount. Any dust left in the element mount can end up in the engine.

- Fit the new element (3).
- Refit the service cover (1) with the valve pointing downwards.
- Reset the dust indicator with the reset button.



### 3.4.6 CLEANING THE FUEL SLUDGE SUMP

Maintenance intervals:

- Check Level: *daily*.
- Purge water and residue: *when present in the sludge sump*.



WARNING

FUEL SPILLS ONTO HOT SURFACES CAN CATCH FIRE

The sludge sump is inside the engine compartment directly under the fuel tank. To access it, remove the engine compartment LH side panel.

**Clean it as follows:**

1. Switch off the engine.
2. Drain out the water and sludge into a container under the sump by opening the cock under the sump itself.

**Note:** *observe established waste liquid disposal regulations.*

3. Once the water and sludge have been drained from the sump, close the cock again.

**Note:** *do not start the engine until the fuel system maintenance cycle is completed.*

### 3.4.7 COOLANT LEVEL CHECK



WARNING

- **WHEN UP TO OPERATING TEMPERATURE, THE RADIATOR IS HOT AND UNDER INTERNAL PRESSURE.**
- **STEAM CAUSES BURNS.**
- **CHECK THE COOLANT ONLY WITH THE ENGINE STOPPED AND WHEN THE FILLER CAP HAS COOLED ENOUGH TO BE REMOVED WITH BARE HANDS.**
- **REMOVE THE FILLER CAP SLOWLY TO ALLOW THE RADIATOR TO DEPRESSURISE.**

**Maintenance intervals:**

- Check Level: *daily*.
- Add coolant to the maximum level mark.

1. Open the hatch on the engine compartment's rear panel.
2. Slacken off the radiator cap slowly to depressurise it, then remove it.
3. Check the coolant level and condition. Top up to the maximum level mark if necessary.

**Note:** *If the coolant is dirty or foamy, change it. See the coolant change instructions elsewhere in this manual.*

4. Check the cap gasket and replace it if damaged. Refit the radiator cap and make sure to close it tightly.

### 3.4.8 CLEANING THE ENGINE COOLING EQUIPMENT

#### Maintenance intervals:

- Check: *daily*.
- Clean the dirt filter and radiator body: *when dirt prevents free movement of the air*.

1. Switch off the engine.
2. Remove the rear panel from the machine.
3. Remove the dirt filter mesh from the panel.
4. Clean the mesh thoroughly using compressed air, pressurised water cleaner, etc..
5. Clean the radiator body in the same way, especially the radiator heat exchanger fins.
6. Refit the dirt filter mesh to the panel.
7. Refit the rear panel to the machine.

### 3.4.9 CHECKING AND REPLACING THE HYDRAULIC CIRCUIT FILTERS

The filters are under the linkage cylinders

- Check their condition: *daily*.
- *Replace the filter element if the indicator requires it*

1. Raise the linkage.
2. check the filter status indicators on the filters themselves. If the indicators are in the red, replace the filter elements as instructed below, otherwise go to point 14.
3. Fit the cylinder safety and switch off the engine.
4. Slacken off the oil filler cap (1) to depressurise the circuit
5. Clean the area to keep dirt out of the filter body (2).
6. Place a container under the filter to catch any hydraulic fluid leaks while replacing the filter cartridge.

**Note:** *always observe the established regulations governing the disposal of exhausted oils and filters.*

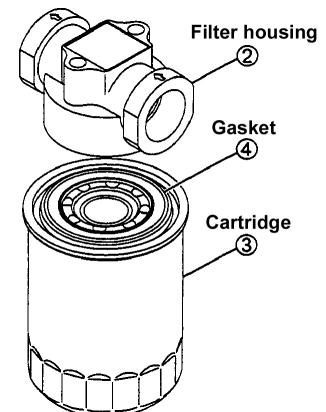
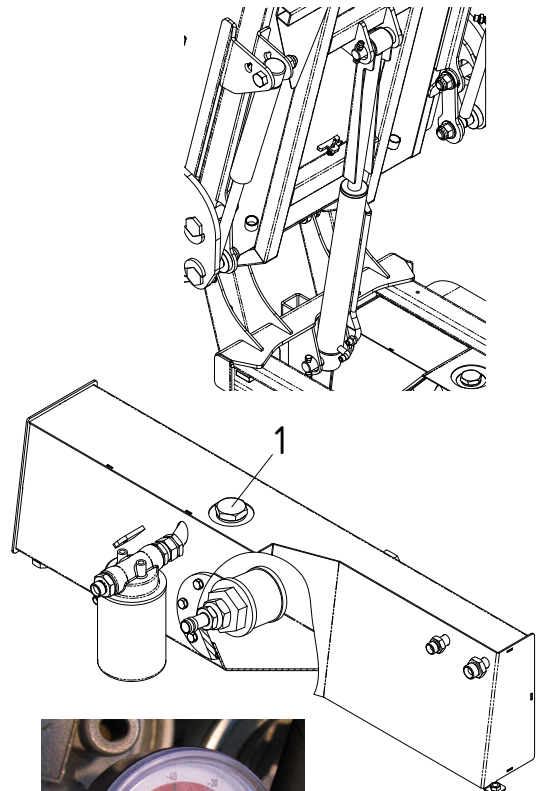
7. Clean the body (2). Use a wrench to release the filter cartridge (3) (turn it counterclockwise).

**Note:** *the filter cartridge must be replaced. Do not attempt to re-use a used cartridge.*

8. Apply a bit of oil to the gasket (4).
9. Fit the new cartridge, press it in by hand, then tighten it down with the wrench.
10. Repeat the sequence for the other filter if necessary.

**Note:** *Make sure the replacement cartridges have the correct filtering capacity.*

11. Start the engine and check the hydraulic fluid level - top it up if necessary.
12. Repressurise the tank: After completely extending all cylinders with the cap (1) open, close the filler cap again.
13. Check for leaks from the cartridges (3)
14. Lower the linkage



### 3.5 250 HOURS MAINTENANCE AND CHECKS

#### 3.5.1 ENGINE OIL CHANGE

- Check the condition: *daily*.
- *Change the oil after 250 hours of operation or if its condition makes an oil change imperative.*

Refer to paragraph 3.4.1 of this manual and the engine instruction manual for the oil change procedure.

**Note:** *always observe the established regulations governing the disposal of exhausted oils and filters.*

#### 3.5.2 REPLACING THE AIR FILTER ELEMENT

- Check the condition: *daily*.
- Replacement: After five cleaning cycles, after a year or when any part of the cleaner is damaged.

Refer to point 3.4.5 of this manual for the replacement procedure

**Note:** *always observe the established regulations governing the disposal of exhausted filters.*

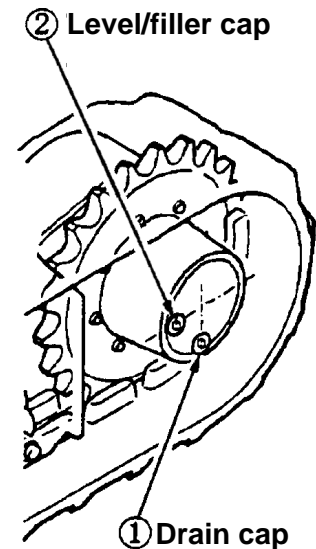
#### 3.5.3 DRIVE MOTOR REDUCER GEAR OIL LEVEL CHECK



#### CAUTION

IF THE AMOUNT OF OIL HAS INCREASED TO AN ABNORMAL EXTENT, CHECK THE HYDRAULIC MOTOR OIL SEAL; IF YOU FIND LEAKS, CONTACT THE ASSISTANCE SERVICE.

- Check the condition: *after 200 hours of operation*.
1. Orient the reducer so that the drain cap (1) is pointing down.
  2. Remove the oil level/filler cap (2). The oil should be at the rim of the open oil level hole.
  3. Top up to the rim if necessary.
  4. Clean the oil level / filler cap and apply sealant. Replace the cap.
  5. Repeat with the other reducer gear.



## 3.6 600 HOURS MAINTENANCE AND CHECKS (or 2 YEARS)

## 3.6.1 HYDRAULIC FLUID CHANGE

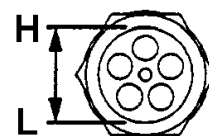
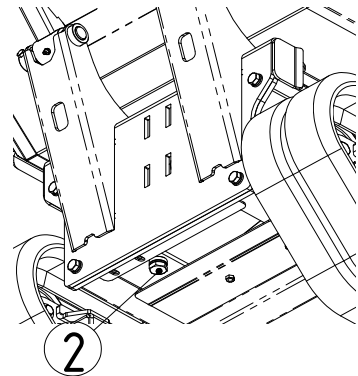
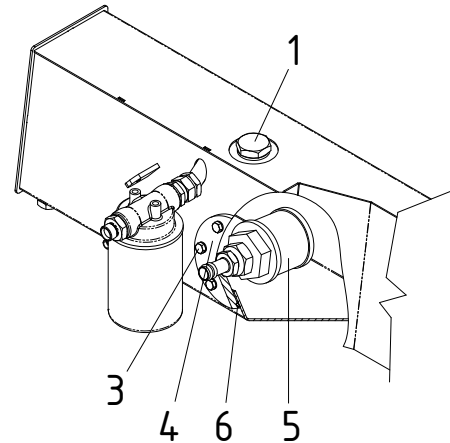
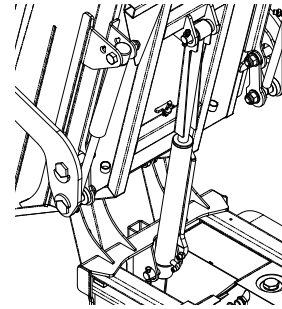
 CAUTION

- CONTACT WITH FLUID AND HOT SURFACES CAN RESULT IN BURNS.
- AT RUNNING TEMPERATURE, THE FLUID TANK IS HOT AND PRESSURISED.
- REMOVE THE FILLER CAP (1) SLOWLY TO ALLOW THE TANK TO DEPRESSURISE.
- REMOVE THE FILLER CAP ONLY WITH THE ENGINE STOPPED AND WHEN IT HAS COOLED ENOUGH TO BE REMOVED WITH BARE HANDS.

- Check the condition: *daily*.
  - Replacement: *after 600 hours of operation*.
1. Park the machine on level ground with the linkage and shovel pistons completely extended.
  2. Fit the safety against accidental lowering of the implement and switch off the engine.
  3. Clean the area to keep dirt out of the tank.
  4. Slacken off the filler cap (1) to depressurise the circuit.
  5. Remove the drain cap (2) and drain the circuit completely into a container.

**Note:** observe established regulations governing the disposal of exhausted oil and filters.

6. Remove the suction line. Remove the bolts (3), filter cover (4) and suction filter (5) from the tank.
7. Check the gasket (6) on the filter cover (4) and replace it if damaged.
8. Clean the interior of the tank with fresh oil.
9. Clean and refit the suction filter (5), filter cover (4) and suction line.
10. Clean and refit the drain cap (2).
11. Fill the tank with hydraulic fluid. (See the table in paragraph 3 - 2).
12. Run the engine at low speed for five minutes.
13. Operate the control levers to charge the circuit.
14. Restore the machine to its initial condition and switch off the engine.
15. Check the hydraulic fluid level - top it up if necessary to the MAX mark (H).
16. Pressurise the hydraulic fluid tank. With the linkage and shovel pistons completely extended. Remove and refit the filler cap (1).
17. Remove the cylinder safety and lower the linkage, lower the shovel to the ground and switch off the engine.



Oil level indicator

### 3.6.2 REPLACING THE DRIVE MOTOR OIL

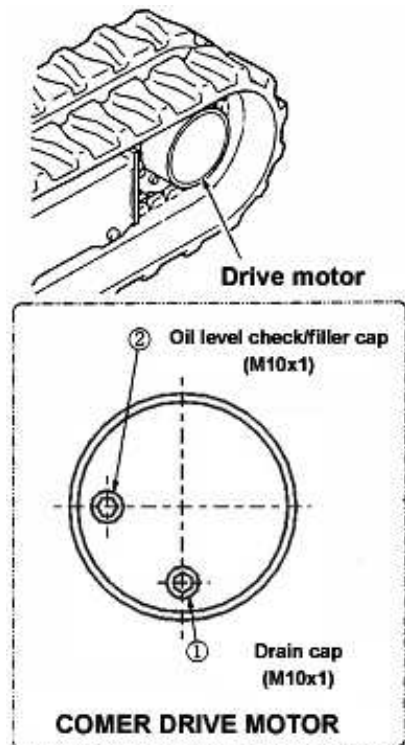
- Check the condition: *after 200 hours of operation.*
  - Replacement: *after 600 hours of operation.*
1. Orient the reducer so that the drain cap (1) is pointing down as shown.
  2. Remove the drain cap (1) and the oil level/filler cap (2). Collect the oil in a container.

**Note:** observe established regulations governing the disposal of exhausted oil.

3. Clean the caps and apply sealant.
4. Refit the drain cap (1).
5. Fill the reducer to the rim of the oil cap hole.

RECOMMENDED OIL	TOTAL CAPACITY
ISO engine oil - VG320 (SAE 90)	0.30 litres

6. Refit the oil level/filler cap (2).
7. Repeat with the other drive motor.
8. Switch on the engine and run the drive motors for a few cycles.
9. Switch off the engine and check the reducer oil level.
10. Check for metal particles in the used oil. If you find any, contact the technical assistance service.



### 3.6.3 REPLACING THE ENGINE COOLANT



#### WARNING

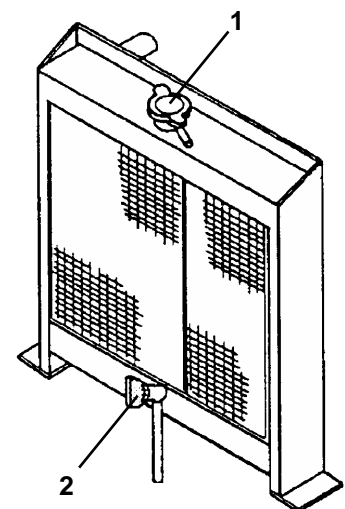
- **WHEN UP TO OPERATING TEMPERATURE, THE RADIATOR IS HOT AND UNDER INTERNAL PRESSURE.**
- **STEAM CAUSES BURNS.**
- **CHANGE THE COOLANT ONLY WITH THE ENGINE STOPPED AND WHEN THE FILLER CAP HAS COOLED ENOUGH TO BE REMOVED WITH BARE HANDS.**
- **REMOVE THE FILLER CAP SLOWLY TO ALLOW THE RADIATOR TO DEPRESSURISE.**

#### Changing the coolant.

- Check the condition: *daily.*
  - Replacement: *after 600 hours of operation or two years of service; also change the coolant when it is dirty or foamy.*
1. Place the machine on firm and level ground. Stop the engine
  2. Slacken off the radiator cap (1) slowly to depressurise the radiator, then remove it.
  3. Open the drain cock radiator (2) and drain the coolant into a container.

**Note:** observe established regulations governing the disposal of exhausted coolants.

5. Close the radiator cock (2) and fill the radiator using fresh water and detergent.
6. Run the engine for around 30 minutes. Switch off the engine and drain out the detergent solution.
7. Rinse out the engine (not running) until the water draining out of it is clean.
8. Close the cock (2) and fill the radiator with fresh water. Run the engine for 5 minutes, then switch it off and drain out the water.





9. Repeat step 7 several times until the water drained out is clear.
10. Add coolant
11. Run the engine for 5 minutes with the radiator cap off (1).
12. Fill the radiator until the level reaches the neck of the filler.
13. Replace the cap if the gasket is damaged. Close the radiator cap (1).

### Selecting the coolant

the machine is delivered with long life coolant. This is a corrosion and deposit resistant antifreeze. The machine can then be used for two years without changing the coolant either in summer or winter. When it is time to change it, we recommend using a similar long life coolant.

### Mixture percentage for coolants

The long life antifreeze/water ratio determines the freezing point of the solution. Select a dilution that corresponds to a freezing point around 5°C below your lowest foreseeable temperature. The normal ratio is 30 % to 50 %. If less than 30 %, rust formation may be a problem, while more than 50 % can cause overheating. Always use fresh clean water for mixing the coolant.

Freezing point (°C)	-15°C	-25°C	-35°C
Liquid/water ratio (%)	30%	40%	50%

## 3.7 SPECIAL OPERATING CONDITIONS

Working in extreme atmospheric conditions (very high altitude, very high/low temperatures, salty water or very dusty/sandy worksites) can make special maintenance necessary. If the machine is to work in such conditions, certain precautions must be adopted to prevent damage and minimise wear and degradation of the components.

### EXTREMELY LOW TEMPERATURES.

1. Condensation may form in the fuel tank and freeze. The ice may block the flow of fuel in the ducts, thus stopping the engine. This hazard can be reduced by keeping the fuel tank as fully topped up as possible during the cold season. If the water in the fuel should condense in the tank, drain the tank and fill it with fresh fuel.
2. Always use the recommended lubricants in relation to the ambient temperature - see the table in the manual's Lubrication Chapter.
3. The battery is probably the component most vulnerable to low temperatures, and the electrolyte will freeze more easily the lower the battery charge. On machines with batteries, keep the battery charged, especially if the machine is not used for a long time. The battery could also discharge if the terminals are covered with ice or snow and short circuit. Make sure to keep the terminals and clamps dry. Remove any signs of corrosion with water and sodium carbonate. In case of long periods of disuse at very low temperatures, remove the battery and keep it out of the cold.



### WARNING

**IT MAY HAPPEN THAT THE DISTILLED WATER FREEZES BEFORE IT CAN MIX WITH THE ACID.**

**AT VERY LOW TEMPERATURES, ONLY ADD WATER TO THE BATTERY IMMEDIATELY BEFORE RUNNING THE ENGINE, OR EVEN WITH THE ENGINE ALREADY RUNNING.**

**IF THE ENGINE CANNOT BE RUN FOR WHATEVER REASON, ADD WATER WITH THE BATTERY'S TERMINALS CONNECTED TO THE EXTERNAL BATTERY CHARGER.**

4. Pay special attention to the hydraulic fluid.

**WARNING**

**BEFORE WORKING WITH THE MACHINE, HEAT UP THE HYDRAULIC FLUID AS INSTRUCTED IN PARAGRAPH 1.1**

5. At the end of periods of work or if the machine is not used for a long time, park the machine on a dry, solid surface to prevent ice forming under it, such as: wood, cement, asphalt or similar.

#### **VERY HIGH TEMPERATURES**

Special precautions must also be taken in this case to protect the battery and lubrication system.

1. Use more viscous lubricants in very hot conditions, but not ones that degrade more quickly if subjected to heat. Refer to the lubrication section of this manual for lubricants suited to high temperatures. Remember that the engine's heat dissipation capacity also depends on the amount of oil in the engine casing; check the level frequently and top up as required.
2. When it is very hot, evaporation can cause a drop in the battery acid level; check it frequently and add distilled water as necessary.
3. The air circulation around the machine must not be impeded, make sure the air intakes and exhausts are not blocked by leaves, paper or similar materials.
4. Keep the engine clean of grease and other substances which prevent efficient heat dispersal.
5. Switch off the engine when not working.

#### **VERY SANDY/DUSTY CONDITIONS**

Particles in the air can accelerate the wear of the machine's components; they exercise an abrasive action on moving parts. To prevent this, lubricate the machine more frequently and service the air intakes and filters more often.

1. Take care not to let sand or dust into the hydraulics; keep the tank well closed and keep an eye on the filter.
2. Do not let sand or dust enter the fuel tank.
3. The engine's air intakes and the air cleaner must be checked more frequently. The engine oil and filter must be replaced more frequently to ensure the oil is clean.
4. Before greasing parts with a manual gun, clean off all traces of residual grease. Then pump in a generous amount of grease so as to clean the interior parts of residues.
5. When working on sandy ground, a support may be required for the tracks.
6. Do not allow them to dig themselves into the sand. To ensure a good support, it may be necessary to back off and fill the loose area with more compact earth.
7. The increased frequency of maintenance operations depends on the effective conditions of use and will vary from case to case, in relation to the results of the checks which will show accumulation of dust in the filters and the intakes.

### HIGH HUMIDITY AND SALINITY

In some locations, for instance, coastal areas, the machine may be attacked by a combination of salinity and humidity. To protect exposed metal surfaces, electrical wiring and gaskets, take care to keep the machine dry and grease the metal surface abundantly.

1. Eliminate traces of rust as soon as they appear and paint over the affected area.
2. When painting is not an option - machined surfaces - apply grease or water-repellent lubricant.
3. Keep the bearings and their vicinity well lubricated to prevent water infiltration.
4. Never use saline water in the cooling system - this causes serious problems of corrosion and may require all affected parts to be replaced.
5. Frequently wash the machine when working near to saline water, and clean all moving parts with an oily cloth.
6. If the machine is working wet, take good care not to allow the water to reach the top of the tracks. If this should occur, you must remove, clean and lubricate the entire undercarriage.

### HIGH ALTITUDE

Changes in altitude change the air/fuel mixture injected into the engine combustion chambers, so that the engine's performance may be affected; high altitudes have a lower atmospheric pressure and less oxygen in the air. Over 1500 metres above sea level you may have to adjust the fuel injection for the machine to run properly. Refer to the Technical Assistance Service for details. To reduce the problems attendant on the lower density of the air it is important to keep the air clean as clean as possible. Keep an eye on the engine temperature as it will tend to overheat.

## 3.8 LENGTHY STORAGE



### WARNING

**IMPLEMENT THE ENGINE STORAGE PROCEDURE GIVEN IN THE MANUALS.  
IF THE MACHINE IS INSIDE A WAREHOUSE, MAKE SURE THE AREA IS WELL VENTILATED TO PREVENT RUSTING.**

Proceed as follows when storing the machine for a long time:

- Clean the machine and store it under cover. If you have no choice but to store it outdoors, park it on level ground and cover it with a tarp.
- Grease all exposed parts of the cylinder pistons
- Completely drain the fuel circuit.
- Disconnect the battery's negative terminal.

Switch the machine on once a month during storage to maintain the lubricant film

When taking the machine out of storage:

- remove the grease from the cylinder pistons
- make sure the fuel and lubricant tanks are topped up.

## 4 TROUBLESHOOTING

### 4.1 TROUBLESHOOTING TABLE

Note down anything abnormal in the machine's daily operation.

Try to determine the cause of all anomalies, and take immediate action to remedy them.

If anomalies are not dealt with as soon as possible, they may lead to more serious problems in the future.

PROBLEM	PROBABLE CAUSE	REMEDY
Control valve lever hard to operate or does not return of its own accord.	<ul style="list-style-type: none"> <li>Interference with the panel</li> <li>Control valve fault.</li> </ul>	<ul style="list-style-type: none"> <li>Adjust assembly</li> <li>Request assistance service.</li> </ul>
No movement possible, power lacking.	<ul style="list-style-type: none"> <li>Insufficient hydraulic fluid.</li> <li>Hydraulic fluid filter blocked.</li> <li>Engine power low.</li> <li>Pump or coupling fault.</li> <li>Adjuster valve pressure low.</li> <li>Defective control valve.</li> </ul>	<ul style="list-style-type: none"> <li>Top up to level.</li> <li>Service fluid filter.</li> <li>Service air cleaner, check fuel supply and water separator.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> </ul>
Drive on one or both sides lacking.	<ul style="list-style-type: none"> <li>Foreign body - rock or some such - jammed in track.</li> <li>Poor drive motor operation.</li> <li>Brake fault</li> </ul>	<ul style="list-style-type: none"> <li>Remove jammed material.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> </ul>
The machine does not steer straight.	<ul style="list-style-type: none"> <li>Jamming in tracks.</li> <li>Track tension not even on both sides.</li> <li>Pump fault</li> <li>Servocontrol fault.</li> <li>Drive motor failure.</li> </ul>	<ul style="list-style-type: none"> <li>Remove jammed material.</li> <li>Adjust the tension on both sides.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> </ul>
No shovel raise power.	<ul style="list-style-type: none"> <li>Hydraulic fluid insufficient.</li> <li>Adjuster valve pressure low.</li> <li>Control valve damaged.</li> <li>Hydraulic cylinder fault.</li> </ul>	<ul style="list-style-type: none"> <li>Top up to level.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> <li>Request assistance service.</li> </ul>
Tools move in the opposite direction to that shown on their stickers.	<ul style="list-style-type: none"> <li>Snap fittings mounted in reverse</li> </ul>	<ul style="list-style-type: none"> <li>Swap the snap fittings around</li> </ul>

### 4.2 SPARE PARTS



#### WARNING

- REPLACE WORN AND DAMAGED PARTS WITH ORIGINAL KATO IMER SPARE PARTS.
- USING NON-ORIGINAL SPARE PARTS CAN CAUSE DAMAGE AND INJURY.
- KATO IMER IS NOT LIABLE FOR DAMAGE CAUSED BY THE USE OF NON-ORIGINAL SPARE PARTS, UNLESS EXPRESSLY AUTHORISED.



#### WARNING

- IT IS FORBIDDEN TO MAKE CHANGES OF ANY SORT TO THE STRUCTURE AND THE PLANT DESIGN OF THE MACHINE BECAUSE THIS MAY COMPROMISE ITS SAFE USE.

# 5

# HYDRAULIC SYSTEM DIAGRAM

MINIDUMPER  
CARRY 110

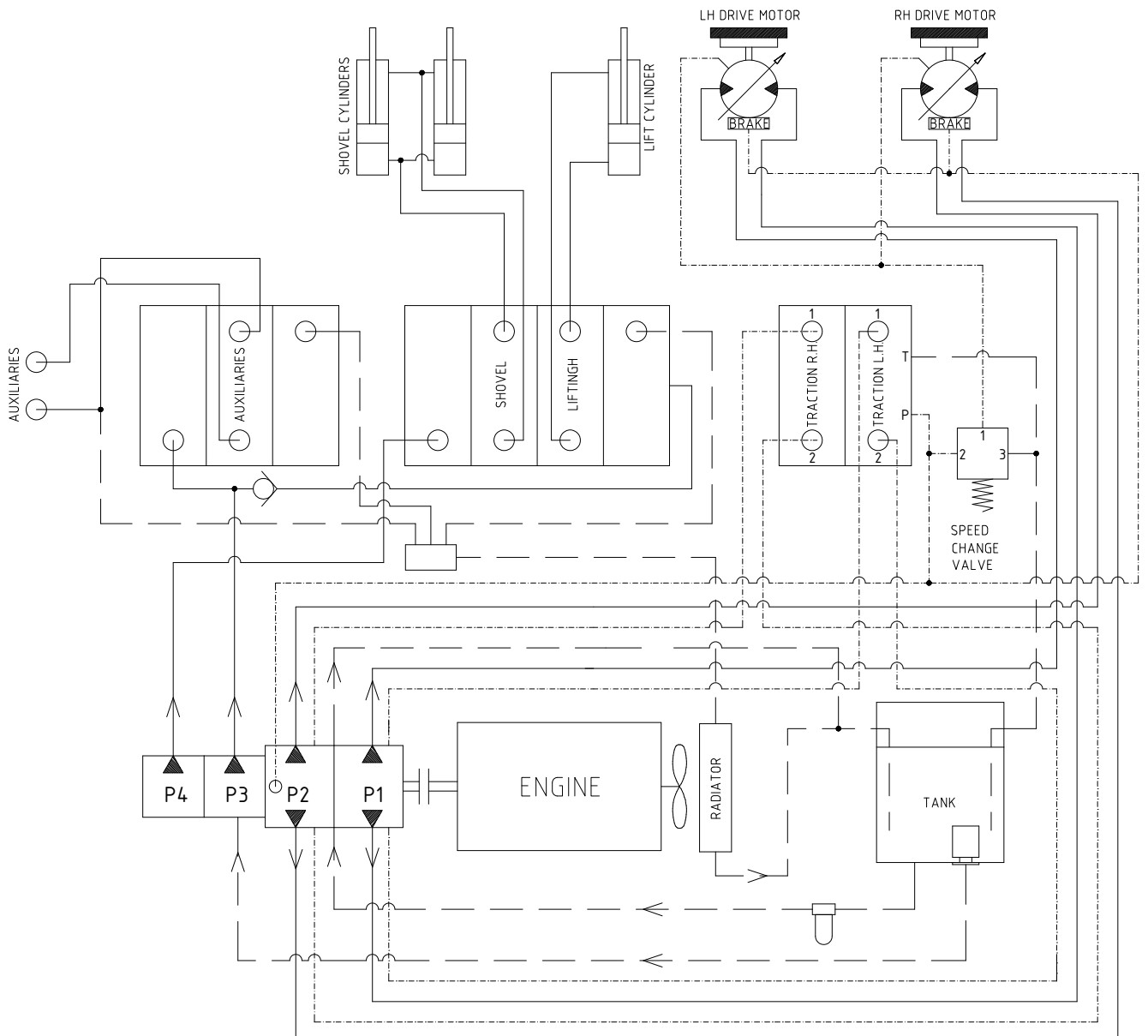
## 5 HYDRAULIC SYSTEM

### 5.1 SPECIFICATIONS

NOMENCLATURE	PRESSURE	
	Mpa	Kgf/cm <sup>2</sup>
Pump P1-P2	21.5	220
Shovel	16,7	170
Dump	16.7	170

AUX. PTO	Mpa	Kgf/cm <sup>2</sup>	Litres/min
MAX pressure	16.7	170	-
MAX capacity	-	-	26

### 5.2 HYDRAULIC SYSTEM DIAGRAM





## 7 TECHNICAL SPECIFICATIONS

### 7.1 GENERAL SPECIFICATIONS

#### GENERAL PERFORMANCE DATA

Travel speed	km / h	2.6-4.0
Maximum slope	% (° Incl.)	34% (20°)
Maximum slope when loaded	% (° Incl.)	20% (11°)
Load	Kg	1000
Ground contact pressure	Kg / cm <sup>2</sup>	0,57
Operating temperature range	°C	-20 / +46

#### WEIGHT

Weight of machine	Kg
AE diesel basic machine	690
Skip / Skip with shovel	140 / 210
Trilateral loading platform	240
Cement mixer kit / Cement mixer kit with shovel	178 / 278

the **weight of the machine** depends on the weight of the basic version plus the weight of any accessories mounted.

#### ENGINE

DIESEL ENGINE	YANMAR 3TNM68	784 cc	14.1kW / 19.2HP	3600rpm
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#### NOISE LEVEL PETROL AND DIESEL ENGINES

		Diesel
Sound power level, guaranteed:	LwA	101 dB
Sound pressure at operator's ear	LpA	85 dB

### 7.2 DIMENSIONS

#### DIMENSIONS

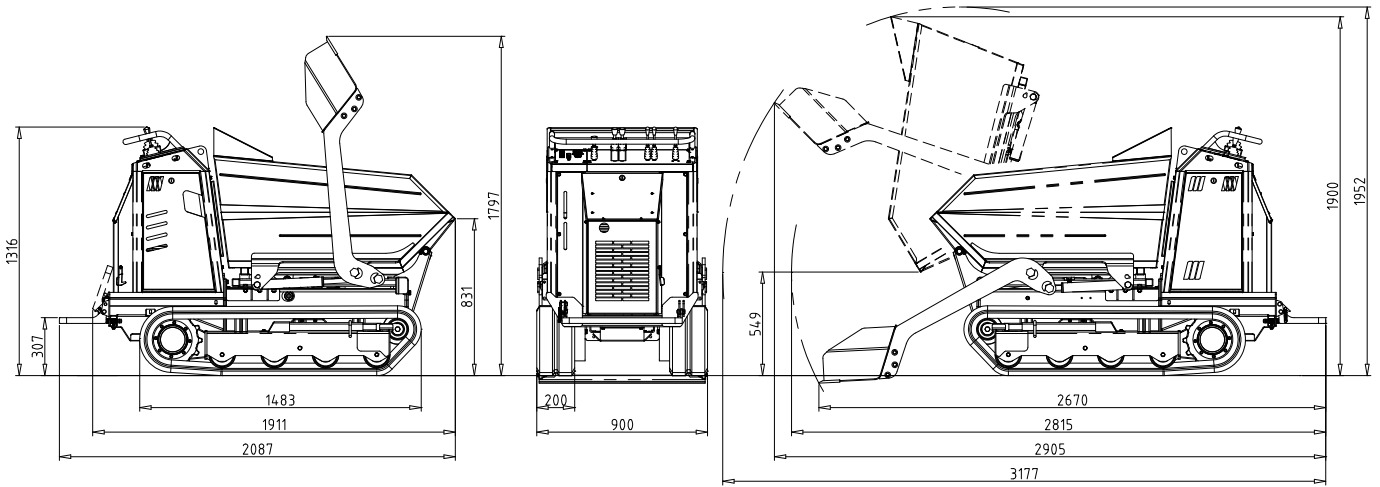
Nomenclature		Rubber tracks	
Track width		mm	200
Length of track		mm	1450
Width of machine		mm	900
Height of machine at controls		mm	1300
Turning radius		mm	950
Minimum ground clearance		mm	160
Skip: Volume		m <sup>3</sup>	0.42
Trilateral platform (Optional): Dimensions [length x width x height]		mm	1300x970x300
Cement mixer kit (Optional)	Capacity tank / Production volume	l	350 - 280

### 7.3 CEMENT MIXER KIT SPECIFICATIONS

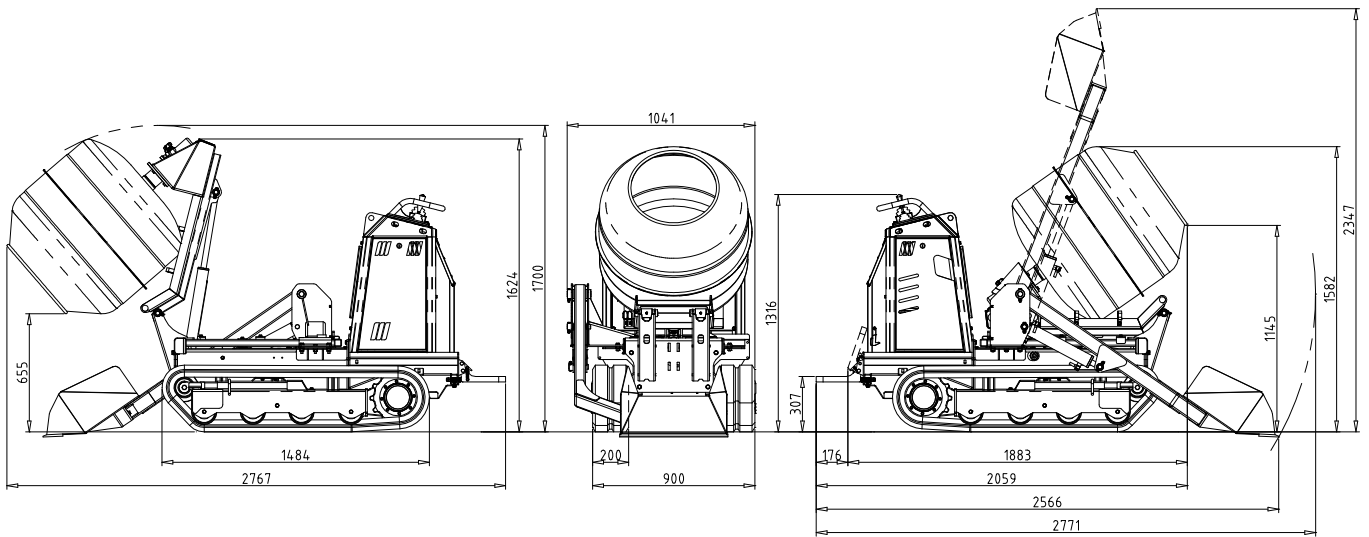
MIXER TANK CAPACITY	Litres	350
PRODUCTION VOLUME	Litres	280
OPTIMAL TANK SPEED	rpm	24 - 25
REQUIRED HYDRAULIC FLOW	l/m	12 - 14
PRESSURE	bar	150

7.4 DIMENSIONS OF MACHINE

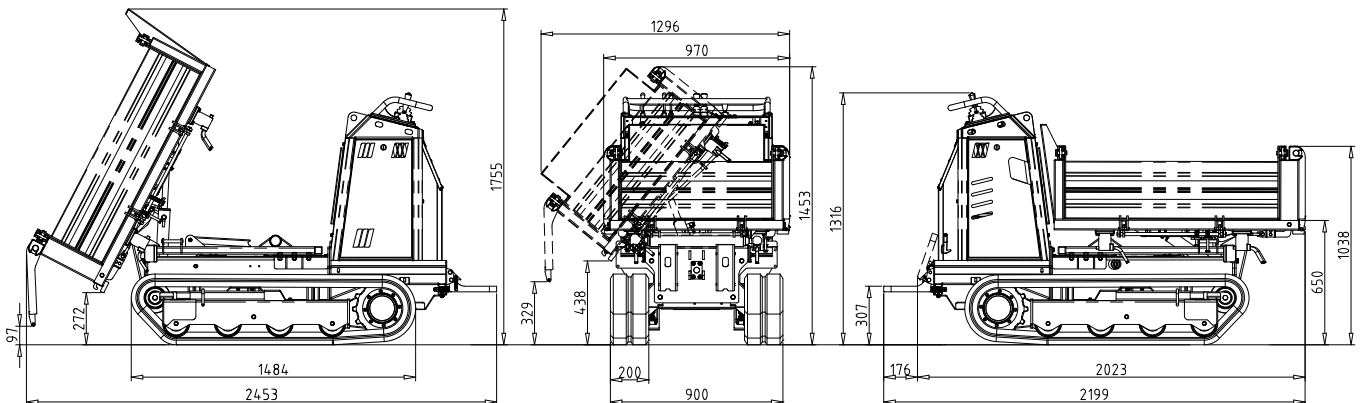
KIT + SHOVEL



CEMENT MIXER + SHOVEL



PLATFORM





**TRACKED MINIDUMPER**

**CARRY 110**

**PUBLISHED: MARCH 2017**

**KATO IMER S.p.A.**

**ITALY**



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**KATO IMER S.p.A.**

53037 San Gimignano (SI) Loc. Cusona - Italy  
Phone: +39 0577 951 21 - Fax: +39 0577 982 400  
info@katoimer.com | www.katoimer.com