



BE75 HYDRAULIC EXCAVATOR

OPERATION & MAINTENANCE MANUAL

FOREWORD

This manual describes procedures for operation, handling, lubrication, maintenance, checking and adjustment. It will help the operator or anyone realise peak performance through effective, economical and safe machine operation and maintenance.

- Please read this manual carefully BEFORE operating the machine.
- Please continue studying this manual until properly acquired and is completely reinforced into personal habit.
- This manual describes the basic techniques. Operation or maintenance skill is improved as the operator or anyone get the correct knowledge and operates the machine.
- Operation, inspection and maintenance should be carefully carried out and the safety must be given the first priority. Safety precautions are indicated with
 - The mark and technical precautions with * mark in this manual. The safety information contained in this manual is intended only to supplement safety codes, insurance requirements, local laws, rules and regulations.
- Some photographs and illustration pictures are different from your machine as technical improvement is continuously reflected on it. Revision to up-date manual's content is performed in later editions.

BREAKING IN YOUR NEW MACHINE

Each machine is carefully adjusted and tested before shipment. However, a new machine requires careful operation during the first 100 hours to break in the various parts.

If a machine is subjected to unreasonably hard use at the initial operation stage, the potential of performance will prematurely deteriorate and the service life will be reduced. A new machine must be operated with care, particularly with regard to the following items.

- After starting, let the engine idle for 5 minutes to allow proper engine warmup prior to actual operation.
- Avoid operation with heavy loads or at high speeds.
- Sudden starting or acceleration, unnecessarily abrupt braking and sharp turning should be avoided.

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SAFETY HINTS

OPERATION GENERAL

- Wear well-fitting safety shoes and working clothes. If the nature of the work requires safety, wear protective goggles or mask, thick gloves, ear plugs or other protection.
- Accidents or injuries are liable to occur when the operator is careless or slack. It is most important to bear safe operation in mind at all times.

Take care of your health. Do not operate when tired, or under influence of alcohol.

- Learn the prohibitions, cautions and rules about work procedures in the work site.
 When there is a leader, fix standard signals and always follow these signals when operating.
- If there should be an accident or fire or any other such unexpected mishap, deal with it quickly, using the nearest apparatus.

Learn beforehand the locations of the first aid boxes and fire extinguishers and how to use them.

It is also important to know the emergency contact system.

- Learn about the safety devices on your own machine and about how to use them. Confirm that they are correctly attached in the prescribed position. Such safety devices include:
 - * Protective-Devices
 - * Seat Belts
 - Exhaust gas is dangerous. When running the engine for long periods in a poorly ventilated area, there is a danger of gas poisoning, so open the windows or doors to ensure a good supply of fresh air.

Read the Operaton and Maintenance Manual carefully. Learn how to use the control devices, gauges and warning devices. Be sure you understand the meaning of the caution plates. Remember the check points and checking method for engine oil, fuel, cooling water and hydraulic oil levels.

- When operating inside a building always be sure of the clearance of the ceiling, entrances, aisles, etc., and the load limit of the floor.
- Never allow other person to ride on the machine during operation.

- Examine the lay of the land and the kind of soil at the work site to determine the dangerous points and the best method of operation. Proceed with the work only after making safety arrangements about the dangerous points.
- Inspect leakages from the fuel, lubricating and hydraulic systems. Check that the shoe bolts are not loose, and that no other parts are damaged or missing. Machines having such failures should not be operated.
- When getting on or off the machine, use the handrail provided. Do not jump up or down from the machine.

- Do not leave loose parts or tools lying around the vicinity of or on the floor of the operator's cab. Keep everything in its proper place.
- Wipe off thoroughly any grease, oil or mud on the handrail, floor or control levers. The same applies when using the inverted bucket. Failure to do this may cause you to slip.
- Check the level of the fuel, lubricants and cooling water. Extinguish cigarettes before checking or replenishing. Check that the radiator cap and oil filler caps or plugs are firmly tightened.



- Adjust the operator's seat until it is in the most comfortable position for operating. Always be seated while operating. Do not operate the machine from any other position.
- To ensure the safety of persons near the machine, always sound the horn to warn them before starting the engine and moving the machine. Be particularly careful to check that the rear is clear before backing the machine.
- Inspect the inside of the engine room and remove any dead leaves or papers. Dead leaves or papers are highly inflammable and can cause fires.
- Before starting the engine, confirm that all control levers are in NEUTRAL/LOCKED CONDITION.

AFTER STARTING THE ENGINE

- Confirm that all gauges and warning devices are functioning correctly and that the gauge readings are within the prescribed range.
- Check the play of each lever.
- Operate the work equipment to confirm that they are functioning normally.
- Before operating the traveling and steering levers, check whether the track frame is forwards or backwards. If the track frame is facing backwards, operate the traveling and steering levers in the reverse manner to that when the track frame is facing forward.

- Move the machine slowly and listen carefully to the engine or gears to confirm that they are not making any unusual noises.
- Choosing a safe place, turn the machine to the left and right to confirm that the traveling/steering levers are functioning normally.
- If these tests reveal anything wrong, however slight is may be, contact the man in charge of the machine and operate the machine only after obtaining his confirmation/ permission.
- Maintain the bucket at a height of 40 to 50 cm above the ground so that it can be quickly lowered to the ground and the machine stopped in an emergency.

- As far as possible, operate the machine so that it remains stable. (Do not tilt it by more than 30 deg. in either the forward, rear, left or right directions, even under static conditions.)
- Always operate slowly in crowded places. On haul road or in narrow places, give way to loaded vehicles.
- Do not allow unauthorised persons into the work area.
- Before reversing or turning ensure that there is nobody in the vincinty. Also, be careful of obstacles.
- When operating on slope as far as possible, avoid turning the machine. It may cause the machine to roll over or slip sideways.

- When moving the machine along a road, retract the work equipment to improve machine stability. As far as possible proceed along a flat road.
- The machine should always be travelled at a speed where it can be correctly controlled. Never do the following:
- 1) Speeding
- 2) Sudden starting, Sudden Stopping, Sudden Turning
- 3) Snaking
- 4) Coasting
- When operating on uneven ground or in places where there are obstacles, remember the following points:
- * Operate at as low a speed as possible and avoid sudden changes in direction.

Whenever possible, avoid travelling over large rocks, fallen trees, tree stumps and other such obstacles. Either use the work equipment to remove them, or travel round them.

When it is impossible to avoid travelling over them, reduce speed and mount over the obstacle. Just before the front of the machine tips down reduce speed even more to make the shock of hitting ground as small as possible.

* Never mount over an obstacle at angle, never disengage one travelling/steering lever to travel over an obstacle.



- The machine condition can be judged from many factors; Changes in the gauges, sound, vibration, exhaust gas color or response of the control levers can indicate the occurrence of some disorder. If any disorder occurs park the machine immediately in a safe place and take appropriate action. Be especially careful in the case of a fuel leak as there is danger of fire.
- The work area should be made as flat as possible. If the work area is flat operation is made much easier and this also reduces operator fatigue.

- Always concentrate. It is extremely dangerous to allow yourself to be distracted or to think of other things when operating a machine. In dangerous places, or where there is restricted visibility it is important to get down from the machine and confirm whether it is safe before continuing work.
- Be careful of those around you and always confirm that there is no person or obstacle in the way before moving or turning the machine.
- When using the work equipment be sure to keep your eyes on it all the time. Failure to do this may result in an accident.

- When passing through a narrow space, be careful of the side and overhead clearances. Take special care not to touch any obstacles on either side or overhead. If necessary, have someone outside the machine to call out instructions.
- Be careful not to operate the machine into a bog. In the event that the machine goes into a bog extract it in the following manner.
- If only one track of the machine is in the bog, push the bucket down aginst the ground on the side of the machine which is stuck so as to float the track, then place logs or timber underneath the track and free the machine.

- * When raising the undercarriage by means of the boom or arm push the bottom of the bucket against the ground (on no account use the teeth) until the angle between the boom and the arm is 90 deg to 110 deg.
- 2) If both tracks of the machine are in the bog and slip is preventing the machine from getting in, place logs or timber under the tracks in the manner described in (1), then thrust the bucket into the soil in front of the machine and drag it out by bending the arm in the same manner as when excavating and putting the traveling and steering lever into the forwarded position.
- If the equipment is deployed in Earthquaked area, confirm that the ground is still firm; after blasting, confirm that there are no unexploded charges remaining
- When working on river embankments or other places made of piled soil, there is the danger that the weight and vibration of the machine may cause the machine to sink into the piled soil, so be extremely careful when operating in such places.
- When continuing operations after rain, remember that conditions will have changed from those before the rain started, so proceed with caution.
 - Be particularly careful when approaching the shoulder of the road of cliffs, as they may have been loosened by the rain.
- Check the load limits of bridges before crossing.
- When working in water or marshy ground, be careful of the following.
- * When working on soft ground place thick boards on the ground to prevent the machine sinking. Place the boards horizontally and arrange them as neatly as possible.



- When operating in water or when crossing shallows, first check the bed soil condition and the depth and flow speed of water, then proceed, taking care not to go beyond the permitted depth.
- * First check the water depth, the firmness of the ground and the strength of the current. Do not enter if the water exceeds the permissible depth (up to the bottom of the swing circle).
- When operating in fog, mist or smoke, where visibility is bad be especially careful to confirm first whether operation is safe.

When visibility drops below safety level, stop work and wait for the visibility to improve.

- When operating at night, remember the following points:
- * Be sure to arrange an adequate lighting system.
- * At night it is very easy to make mistakes in assuming the distance and height of objects and land.
- Be very careful not to touch electric wire, always bearing in mind that there is a possibility of receiving an electric shock.
- * Wear rubber or leather soled shoes.
- * Position a full-time watcher at the site to ensure that operator is not exposed to the risk of electric shock.

* Depending upon the supply voltage it is conceivable that an electric shock may be received by merely coming into the vicinity of an electric feeder wire. Accordingly, observe the minimum distances given in the table, taking into account the inertia of the boom when in motion.

Supply voltage	Minimum safe
(no.of insulators)	separation
6.6kv (distribution line	e) 3m
33.0 (1 to 3 insulators) 4m
66.0 (5 to 8 insulators) 5m
154.0 (10 to 18 insula	tors) 8m
275.0 (16to 30 insulators	ors) 10m

- * Become familiar with the necessary measures to be taken in the event that an operator receives an electric shock.
- Do not perform excavation at the bottom of a precipice as it is dangerous practice.
- If it is unavoidably necessary to operate the work equipment lever when traveling in the vicinity of a precipice, road shoulders on sloping ground or through a confined space, stop the machine momentarily before operating the work equipment lever in order to minimize danger.
- When working on loose, crumbly soil, do not dig deeply and back the machine off similarly. If the ground crumbles, preventing the machine from getting away in time do not panic and raise the work equipment. It is often better in the interest of stability to leave it down.

- Do not undercut the machine, unless absolutely necessary. If necessary, always take care to prevent the machine falling.
- When operating at the edge of a cliff or on the shoulder of a road remember the following points.
- * When operating in a place where there is danger of the machine falling over the side be doubly careful. Do not approach the edge of the cliff or road shoulder by mistake.



- If you suspect that there are buried facilities (water or gas pipes etc.) at the work site, check with the authorities responsible for looking after such facilities and also try a different method of excavation. Then after confirming the existence and location of such facilities, carefully carry out excavation work.
- Take care not to swing the bucket against the sides of trenches or dump trucks. Load the truck from the rear.

PARKING

When parking the machine park it in a safe place outside the working area, or in the specified place. The following factors should be considered when choosing a parking place. It should be on flat, firm ground where there is no danger of rock falls, landslides or floods. If the machine has to be parked on a slope it should be parked facing directly up or down the slope and chocks should be placed under the track. When the machine is facing downhill, lower the bucket so that it cuts slightly into the ground to further increase the safety.

- When parking the machine, lower the bucket to the ground and put all safety levers in the lock position. Switch off the engine and remove the key.
- Before leaving the machine ensure the following.
- * Lower the bucket to the ground
- * Put the work equipment/travel lever in neutral.
- * Stop the engine and remove the key to prevent other people using the machine.
- * Lower safety lock lever
- Lock the cab

GENERAL LOCATIONS



- 1. Bucket
- 2. Bucket cylinder
- 3. Arm
- 4. Arm cylinder
- 5. Boom
- 6. Boom cylinder
- 7. Sprocket
- 8. Track frame
- 9. Idler
- 10. Track shoe
- 11. Dozing Blade

INSTRUMENTS AND CONTROLS

MONITOR PANEL

This monitor consists of monitor lamp group (A), meter group (B) and switch group (C).



To check the monitor system, turn the starting switch to ON before starting the engine. Then all the monitor lamps light up and the alarm buzzer sounds intermitantly. If any monitor lamp does not light up, ask your BEML distributor/ service engineer to inspect the monitor lamp.

(A) CAUTION MONITOR GROUP (Caution/Emergency stop items)

If any abnormality occurs while the engine running, the appropriate monitor lamp will glow and the alarm buzzer will sound intermittently at the same time.

If any monitor lamp glows stop the engine take appropriate remedial action immediately.

(B) METER GROUP

This group consists of engine water temperature gauge, fuel gauge and service meter (Hour meter).

(C) SWITCH GROUP.

This group consists of gauge/ boom light switch, wiper switch, and speed selector switch.

(A) CAUTION MONITOR GROUP (Caution / Emergency stop items)



If any abnormality occurs while the engine is running, the appropriate monitor lamp will glow to indicate the abnormality.

1. CHARGE MONITOR



This monitor indicates an abnormality in the charging system while the engine is running. If the monitor lamp glows, check the charging circuit.

- * Park the machine on level ground and check the monitor lamp.
- If monitor lamp does not light, ask your Beml distributor / service engineer to inspect that monitor lamp.

(B)CAUTION



2.ENGINE OILPRESSURE MONITOR



This monitor indicates a low engine oil pressure. If the alarm buzzer sounds intermittently and this lamp glows, the engine oil pressure is below the lower limit. Immediately stop the engine.

* This monitor lamp lights and the alarm buzzer sounds when the starting switch is turned to **ON**. Immediately after the engine is started the lamp goes off and buzzer stops sounding under normal condition.

(B) METER GROUP



1. ENGINE COOLING WATER TEMPERATURE GAUGE

This gauge indicates the temperature of the cooling water. The temperature remains within 95°C during normal operation. If it exceeds 95°C stop the machine and run the engine at low idling speed until temperature goes below 95°C.

2. FUEL GAUGE

This gauge indicates the amount of fuel in the fuel tank.

3. SERVICE METER

This meter shows the total operation hours of the machine. The service meter advances while the engine is running - even if the machine is not being operated.

(C) SWITCH GROUP



1. GAUGE/BOOM LIGHT

With this switch in first **ON** position gauges are illuminated and switch in second **ON** position head lamp and working lamp will light.

2. WIPER SWITCH

This switch is used to turn on the front windshield wiper.

3. SPEED SELECTOR

With this switch in OFF position lower travel speed is selected while in ON position the higher travel speed is selected.

SWITCHES AND LAMP



1. HORN SWITCH

When this switch is pressed, the horn will sound

2. STARTING SWITCH



OFF

Key insertion-withdrawal position. None of electrical circuits active.

ON

Charging and lamp circuits activate. Keep key at ON after starting.

START

At this key position, the starting motor will crank the engine. Release key immediately after starting.

HEAT (Optional)

Use this position when starting in cool weather.

Release the key to allow it to return automatically to OFF and then, without delay, turn it to START.

* When Starting, be sure to use the starting key.

3. ROOM LAMP / FAN

The operator cabin is provided with a room lamp and fan







1.SAFETY LEVER (for work equipment) The safety lever is used to



lock the working equipment levers.

When stopping the machine or leaving the machine, be sure to lower the bucket to the ground then operate the levers to lock the left and right working equipment levers.

2. LEFT WORKING EQUIPMENT LEVER (arm/swing control lever)



(N) Neutral:

When the lever in this position the upper structure and the arm will be retained in the position in which they stop.

Arm operation

- (A) Arm movers out
- (B) Arm moves in.

Swing operation

- (C) Upper structure swings to the right.
- (D) Upper structure swings to the left.

3. RIGHT WORKING EQUIPMENT LEVER (boom/bucket control lever)



(N) Neutral:

When the lever in this position, the boom and the bucket will be retained in the position in which they stop.

Boom operation

- (1) Boom raises
- (2) Boom lowers

Bucket operation

- (3) Bucket dumps
- (4) Bucket curls

4.FUEL CONTROL LEVER



This lever is used to control the engine speed on output

- (1) Low idling position Push the lever fully.
- (2) High idling position. Pull the lever fully from low idling position (1).

5.TRAVELING/STEERING LEVERS



The traveling/steering levers are used to operate the left and right motors.



(1) Travel Forward:
Push the levers forward together
(2) Travel Reverse:
Pull the levers backward together
(N) Neutral

No external effort on levers

6.TRAVELING/STEERING PEDALS



These pedals are used to operate the left and right travel motors as traveling and steering levers.

(1) Travel Forward

Depress the front part of pedals.

(2) Travel Reverse

Depress the rear part of pedals

Do not place your foot on the pedals unnecessarily. Before operating the traveling/steering levers or pedals, check whether the track frame is facing forward or backward. If the track frame is facing backwards, operate the traveling/

steering levers or pedals in the reverse manner to obtain desired motion.

7. DOZER BLADELEVER



Operate this lever forward or backward to lower or raise the dozer blade.

DUST INDICATOR



DOOR LOCK

CEILING WINDOW



This device indicates clogging of the air cleaner element. When red piston appears in the transparent part of this indicator, the element is clogged. Immediately clean element.

After cleaning, push indicator button to return red piston to original position.

Dust indicator is mounted on the plate at the air inlet on the engine. The door can be locked in fully open postion after opening it.

The door will become fixed in place when it is pressed against magnetic catch (1) To release the door, pull knob (2) on the left side of the operator's seat so as to remove the lock.

* When in open condition fix it firmly to the magnetic catch.

Ceiling window is opened by releasing the lock in the direction of the arrow and pushing the handle.

* When opening or closing the ceiling window, grasp the handle.

Do not push by grasping stay damper (A).

FRONT WINDSHIELD



It is possible to pull up the front windshield flush with the ceiling of the cab.

* Before opening or closing the windshield, be sure to lower the work equipment with machine on level ground stop the engine and lock the left and right work equipment levers.

OPENING SEQUENCE



- When lock pins (A) at the left and right of the top of the front windshield are pulled to the inside, the lock will be removed.
- 2. Disconnect the wiring of the wiper motor at socket (B).
- 3. Grip the lower handle with the left hand and the upper handle with the right hand from the inside of the operator's cab, then pull up the windshield and push it firmly against catch (C).



4. Then after checking that the windshield is properly locked, be sure retain it with left and right lock pins (A).







CLOSING SEQUENCE

- 1. Free left and right lock pins (A)
- 2. To release the lock front catch (C) move release lever (D) in the direction of the arrow. (When releasing the lock, grasp the handle at the lower part of the front windshield with the left hand and the

upper part of the windshield with the right hand, then carefully lower the front windshield)

- 3. Be sure to retain the windshield with left and right lock pins(A).
- 4. Connect the wiring of the wiper motor at socket(B).

OPERATOR'S SEAT



The seat adjustment should be checked at the beginning for better operator comfort position.

Forward backward adjustment

Move lever (1) to the right, move the seat to the best position and release the lever. The seat can be moved forward or backward over 160 mm in eight stages.

Height adjustment

Turn(2) clockwise to lower seat.

Turn counterclockwise to raise.

The adjustable amount is 190mm.

Backrest adjustment

Pull lever (3) in the direction of arrow, move the back-rest to the desired position and release the lever.

* A limiter is provided to enlarge the reclining angle at the seat forwards position. Return the backrest to its original position when moving the seat backward.

OPERATOR'S SEAT BUCKET TYPE (If equipped)

The seat adjustment should be checked at the beginning of each shift and when operators change.





Forward-backward adjustment

Move lever (1) to the right, move the seat to the best position and release the lever. The seat can be moved forward or backward within a range of 150mm.

Backrest adjustment

Lower lever(2), and tilt the seat backward or pull it forward.





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Seat cushion adjustment

The ride of the seat can be adjusted according to the weight of the operator 50 to 120 kg).

- For a firmer ride: Turn the knob of adjustment handle (4) to the plug (+) side, and move the handle.
- 2) For softer ride:

Turn the knob of adjustment handle (4) to the minus (-) side, and move the handle. When sitting on the seat, the ride of the seat is adjusted properly if indicator panel (5) is vertical. If it tilts backward, it is too soft.



Seat height and angle adjustment

Both the height and angle of the seat can be adjusted.

 Adjusting the height of the seat remove lock bolt (6), set the rear of the seat to the desired height, then tighten the bolt. Move lever (7) upward, and set the seat to the desired height. The



seat can be set within 60mm.

2. Adjusting the angle of the seat Move lever (7) upward and set the seat to the desired angle. It can be set to four steps within 60mm.



Seat height adjustment

Turn knob (8) clockwise to lower the seat, and vice versa. The seat can be adjusted within a range of 190mm.
SEAT BELT (If equipped)



Before fastening the seat belt, inspect the securing brackets and belt for abnormal conditions. Fasten the belt and remove it in the following manner.

- 1. Adjust the seat with the operator's back against the backrest.
- Sit in the seat. Hold buckle
 (1) and insert (2) into buckle (1) adjust the length with (3).
- 3. When removing the belt, push the portion indicated by an arrow.
- If the seat belt is scratched or frayed or if any of the fittings are broken or deformed from long service, replace the seat belt immediately.

INSTRUMENTS AND CONTROLS



FUSE BOX

Remove cover (1).

* Replace a fuse with another of the same capacity.

Before replacing a fuse, be sure to turn off the starting switch. Fuse arrangement and circuit



* Spare fuses are kept in thespare fuse box.

LOCKING CAP

FUEL TANK CAP

HYDRAULIC TANK CAP

Locking caps are available for fuel tank cap and hydraulic tank cap. Opening and closing is as follows:

1. To open the cap

- 1) Insert the key into the cap.
- 2) Turn the key counterclockwise and bring the rotor groove in line with aligning mark on the cap. Turn the cap slowly until a "clicking" sound is heard. This releases the lock and allows the cap to be opened.
- 2. To lock the cap
- 1) Place and turn the cap into place.
- 2) Turn the key clockwise and take the key out.







INSTRUMENTS AND CONTROLS

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FUEL TANK CAP

HYDRAULIC TANK CAP







CHECK BEFORE STARTING

Pre-operation checks prevents machine trouble. Never neglect them.

a. WALK AROUND CHECK

- 1. Check for oil leak at hydraulic hoses, pipe joints and hydraulic cylinders ports.
- 2. Check tightness of battery terminal.
- 3. Check radiator for water leak.
- 4. Check around the engine for water and oil leaks.
- 5. Check swing and track drive gear box for oil leaks.
- 6. Check track tension.



b. CHECK AND REFILL COOLANT

c. CHECK OIL LEVEL IN ENGINE OIL PAN



- 1. Open the engine hood and check the cooling water level in the radiator top tank.
- 2. Refill if level is too low.
 - * If the volume of coolant added is more than usual, check for possible water leakage.
- When removing the cap, release radiator pressure little by little by loosening cap slowly, then remove cap.



- 1. Use the dipstick (G) to check the oil level.
- 2. The oil level should be between mark L and H, if necessary, add oil at the oil filler (F).
- The type of lubricated depends on the ambient temperature. Select according to the table "FUEL, COOLANT AND LUBRICANTS".

- * Stop the engine when checking the oil level.
- * Make an oil level check



d. CHECK FUEL LEVEL



- before starting engine or 15 minutes after the engine is stopped.
- Upon completion of work, pour in additional fuel from filler (F) until the fuel tank is full.
- If breather hole (1) in the cap is blocked up, fuel flow to the engine may stop. Accordingly clean it from time to time.
- * Fuel capacity :122 liters.

e. CHECK OIL LEVEL IN HYDRAULIC TANK





 Run the engine at low speed, retract the arm and slightly extend bucket cylinder, lower the boom until the bucket touchs the ground as shown above and then stop the engine.

- 2. Move each operation lever (for working equipment and travel) to its full travel to release the internal pressure.
- If the level of hydraulic oil is not between top H and bottom L lines of sight gauge (G), pour in additional engine oil from filler (F).
- * The type of lubricant used depends on the ambient temperature. Select according to the table "FUEL, COOLANT AND LUBRICANTS".

- * Do not pour in additional oil if the level is above the top line H of the sight gauge.
- * Do not operate the equipment when the oil level is below "L" of sight gauge.

f. CHECK DUST INDICATOR



g. CHECKFOR SEDIMENTAND WATER IN THE WATER SEPARATOR



When air cleaner element is clogged, the red piston of dust indicator reaches service level and gets locked.

In that case, clean element referring to the section "WHEN REQUIRED".

After cleaning element, push button to return red piston.

The water separator separates water mixed in the fuel. For the draining procedure, see section "WHEN REQUIRED".

* Even with water separator be sure to check the fuel tank for water and sediment in the fuel.

OPERATING YOUR MACHINE

OPERATING YOUR MACHINE

BEFORE STARTING THE ENGINE



2. Ensure the travelling/ steering control levers (1) are in the N (neutral) position.



- 1. Carry out an initial inspection. (For details of the inspection, see CHECK BEFORE STARTING)
- 3. Ensure the left and right working equipment levers are in neutral position and lock the safety lever (2).



TO START THE ENGINE



1. Pull fuel control lever (1) a little towards you from the low-idling postion.



CHECKS AFTER STARTING

After starting, make the following checks.

- 1. Pull fuel control lever (1) to middle and run the engine at medium speed. Then run the engine for about 5 minutes



2. Turn starting key (2) to the start position.



3. When engine is started, release starting key (2) and the key will return automatically to ON.



- If engine will not start, repeat the starting procedure after about 2 minutes.
- * Do not leave the key in START for more than 20 seconds.
- * Do not put the key in OFF postion while the engine is running.

 Holding bucket control lever (2) in either pushing or pulling side, run the engine under load for about 5 minutes to warm up the hydraulic oil (confirm the safe position of the work attachment).



- 3. After warm-up run is completed, check gauges, monitor lamps for proper operation.
- Continue to run the engine until the engine water temperature is in the green region.

- 4. Check if the exhaust color is normal or whether there is any abnormal noise or vibration.
- * Avoid abruptly accelerating the engine until the completion of warm-up.
- * Oil temperature should ideally lie within the range 50 to 80 deg.C.

TOMOVETHEMACHINEOFF

1. Pull the dozer blade lever (1) backwards to rise the raise the dozer blade up.





2. Pull fuel control lever (2) to increase engine speed.



3. Free safety lever (3). Move the work equipment levers (4) and raise it to a height of about 40 to 50 cm above ground.



 Slowly push or pull left and right travelling/steering levers (5) together to move forward or backward.



- Check whether the track frame is facing forward or backward before operating the traveling/steering levers.
- Avoid abruptly operating the traveling/steering levers with the fuel control lever in high idle as this will cause the machine to move suddenly.

OPERATING YOUR MACHINE

TURNING

Operate the two travelling/ steering levers in the following manner.

Left pivot turn (forward)



Left Pivot turn (reverse)



Right pivot turn (forward)



Right pivot turn (reverse)



- When changing the direction of a stationary machine

When making a left turn, push the right traveling/steering lever forward to cause the machine to turn left in the forward direction, or pull it back to make the machine turn left in the reverse direction.

In the case of a right turn, operate the left traveling/steering lever in a similar manner to the above.

 When changing the direction of a running machine (when left and right traveling and steering levers are inclined in the same direction)

When making a left turn, return the left traveling/steering lever to the neutral positon. This will cause the machine to make a pivot turn to the left.

In the case of a right turn, operate the right traveling/steering lever in a similar manner to the above.

Counterrotation turn (left) Counterrotation turn (right)

- When performing counterrotation





To counterrotate the machine to the left, pull back the left traveling/steering lever and push forward the right traveling/ steering lever.

- * The above applies to the running operation of the undercarriage. When the upper work is facing backward as opposed to the track frame, the various traveling/steering operation methods will be reversed. It is therefore necessary to always keep in mind the direction of the track frame when operating the machine.
- * Avoid abruptly changing the direction of the machine as far as possible. In particular, before counterrotating the machine, first bring it to a halt.

OPERATION OF THE WORK EQUIPMENT



N. Neutral

- 1. Arm out
- 2. Arm out and swing right
- 3. Swing right
- 4. Arm in and swing right 5. Arm in
- 6. Arm in and swing left
- 7. Swing left
- 8. Arm out and swing left

The work equipment is operated by means of the left and right work equipment levers. The left lever is used to operate the arm and swing and the right lever is used to operate the boom and the bucket.



The motion of the lever and work equipment is as shown in the diagrams.

* Before swinging the upper frame, make sure that the swing lock lever has been free.



TO STOP THE MACHINE



1. Put the left and right traveling/steering levers (1) in the neutral position.



2. Lower the engine speed using fuel control lever (2).



- 3. Lower the bucket horizontally until its underside touches the ground.
- 4. Lower safety lever (3).



When stopping the machine select flat hard ground and avoid dangerous places. If it is unavoidably necessary to park the machine on a slope, insert blocks underneath the track shoes. As an additional safety measure, thrust the bucket into the ground.

TO STOP THE ENGINE



1. Push the fuel control lever (1) from high idling to low idling position. Run the engine for about 5 minutes at low speed to allow it to gradually cool down.



2. Pull the stop cable (2) fully to stop the engine.

3. Return starting key (3) to the OFF position and remove key.



- If the engine is abruptly stopped before it has cooled down engine life may be greatly shortened. Consequently, do not abruptly stop the engine apart from an emergency.
- * In particular, if the engine has overheated, do not abruptly stop it but run it at medium speed and allow it to cool gradually, then stop it.

PRECAUTIONS FOR OPERATION

- Be careful not to compact the soil or damage earth mounds as a result of the swinging force.
- When swinging, do not dig the bucket teeth into the soil.
- Do not atempt to excavate while travelling
- When working with the machine, do not move the cylinder to the end of its stroke but leave a small safety margin.
- Do not not use the dropping force of the bucket as a pickaxe, breaker, or pile driver.
- Do not use the dropping force of the machine for digging.



- It is better to excavate hard rocky ground after breaking it up by some other means. This will not only reduce damage to the machine but result in operational economy.
- Do not immerse the machine in water by more than the permissible depth (under swing circle(1)). In addition, ensure proper greasing of all points before and after operation in immersed condition.

- To brake the machine during downhill runs, put the traveling/steering lever in the neutral position. This will cause the brake to be automatically applied.
- When descending a steep slope, adjust the speed by means of the traveling/ steering levers and the fuel control lever.
- When climbing a hill, if the shoes slip or the travel motor relieves, preventing the machine from climbing by means of the tracks alone, it is possible to use the force of the arm as an aid.
- When the engine stops on a slope, move the traveling/ steering levers to neutral position and lower the bucket thereafter, turn starting key to START.

- Note that the following phenomena are no faults:
- 1) During free arm-in operation it sometimes stops when it becomes more or less vertical.
- 2) The arm may sometimes stop when the bucket teeth become more or less horizontal.
- At the beginning and end of a swinging, a noise may sometimes be emitted from the brake valve and relief valve.
- 4) When descending a steep slope at low speed, a noise may sometimes be emitted from the travel motor. Adjust the speed with the travel lever and fuel control lever.

If the grade exceeds 15 deg, set the machine in the posture shown in the diagram above, and reduce the engine speed.

Do not travel on slopes of over 30 deg. as their is a danger that the machine may overturn.

HOW TO ESCAPE FROM MUD

- Always operate carefully to avoid getting stuck in mud. If the machine does get stuck in mud, use the following procedures to get the machine out.
- When one side is stuck When only one side is stuck in mud, use bucket to rise track, then lay boards or logs and drive the machine out. If necessary, put a board under the bucket in contact with the ground. (Never push the teeth) the angle between the boom and arm should be 90 deg. to 110 deg.
- When both sides are stuck. When the tracks on both side are stuck in mud and the machine cannot move, lay the boards below board tracks. Dig the bucket into the ground in front/back. Then pull in the arm as in normal digging operations and put the travel levers in the FORWARD/REVERSE position depending on the ground condition to pull the machine out.

EXCAVATOR'S WORK

In addition to the following, it is possible to further increase the range of applications by using various attachments.

BACK HOE WORK



A back hoe is suitable for excavation at a position lower than the machine. It is possible to effectively move the arm through 30 deg. in the direction towards the machine and 45 deg. in the direction away from the machine, making for efficient work.

LOADING WORK

About half of the time spent during excavating and loading work is taken up swinging. Maximum work efficiency can be attained by carrying out work in such a way that the swinging angle is kept as small as possible in accordance with the terrain.

When loading, it is better to fit the machine in the longitudinal direction of the dump truck and to load from the front of the dump truck body. This both facilities loading and also enables a greater amount of material to be loaded as compared with loading from the side of the truck.

DITCH DIGGING WORK

Ditch digging work can be performed efficiently by attaching a bucket to match the width of the ditch and then setting the tracks parallel to the line of the ditch to be excavated.

To excavate a wide ditch, first dig out both sides and then finally remove the center portion.

HANDLING OF BATTERY

PRECAUTIONS FOR CHARGING BATTERY

- Before charging, disconnect the cable from the negative (-) terminal of the battery. Otherwise, and unusually high voltage will damage the alternator.
- 2. While charging the battery, remove all battery plugs for satisfactory ventilation.

To avoid gas explosions, do not bring fire or sparks near the battery.

- 3. If the electrolyte temperature exceeds 45 deg.C., stop charging for a while.
- 4. Turn off the charger as soon as the battery is charged. Overheating the battery may cause following:
- 1) Decreasing the quantity of electrolyte

- 2) Damaging the electrode plate.
- 5. If the electrolyte gets on your skin or clothes, immediately wash with plenty of clean water.
- Do not mix up cables (positive(+) to negative(-) or negative(-) to positive (+)), as it will damage the alternator.
- 7. When inspecting or servicing a battery, be sure to stop the engine and turn the starting switch key to "OFF" position.
- 8. When performing any service to battery besides checking the electrolyte level or measuring the specific gravity, disconnect cables from the battery.

REMOVAL AND INSTALLATION OF BATTERY

- When removing battery, first disconnect the cable from the ground (normally, from the negative (-) terminal). If a tool touches a cable connecting the positive terminal and the chassis, there is danger of sparks being emitted.
- When installing battery, the ground cable should be connected to the ground terminal as the last step.

STARTING ENGINE WITH A BOOSTER CABLE

When starting up the engine with a booster cable, do as follows:

- 1. Before connecting the booster cable
- Size of booster cable and clip should be suitable for the battery size.
- Check cables and clips for breaks corroded surfaces, etc.,
- 3) Make sure cables and clips are firmly secured.
- 4) Keep the starting switch in "OFF" position.
- 5) The battery of the running engine must be the same capacity as that of engine to be started.
- 2. Connect the booster cables in the following manner.

- Connect the clip of booster cable A to the positive (+) terminal of the engine to be started.
- 2) Connect the other clip to the positive (+) terminal to the engine which is running.
- Connect one clip of booster cable B to the negative (-) terminal of the engine which is running.
- 4) Connect the other clip to the engine block to be started.

 Make sure the clips are firmly connected to battery terminals. Then, start the engine.







Make sure that the booster cable connections are correct. Connect the booster cable to the engine block as far as possible from the battery.



3. Starting engine

- 1) Turn the starting switch to START position and start up the engine.
- 2) If the engine doesn't start at first, try again after 2 minutes or so.

After the engine has started, the booster cables should be disconnected in the reverse order in which they were connected.

- 1. Disconnecting the booster cables:
- 1) Disconnect the clip of booster cable B from the engine block which was started.
- 2) Disconnect the other clip from the negative (-) terminal of the running engine.
- Disconnect the clip of booster cable A from the positive (+) terminal of the running engine.

4) Disconnect the other clip from the positive (+) terminal of the engine which was started.



TRANSPORTATION

When transporting the machine, observe the various road rules, and transportation vehicle laws and vehicle limit ordinances, etc. It is a good idea to obtain a special platform for loading and unloading the machine. When it is unavoidably necessary to use a gangplank, however, at the very least observe the following for the sake of safety.

- 1. Properly apply the brakes on the trailer and insert blocks beneath the tires to ensure that it does not move. Then fix the gangplank in line with the centers of the trailer and the machine.
- * Make sure the gangplank has sufficient width, length and thickness to enable the machine to be safety loaded and unloaded.

If the gangplank sags appreciably, reinforce it with blocks, etc.

- * Lock the upper works using the swing lock lever.
- 2. Determine the direction of the gangplank, then slowly load or unload the machine.

- * Move the machine backward to get on the trailer.
- Do not on any account change the direction of the machine while it is on the gangplank. To change the direction of the machine, first take it down from the gangplank.
- 3. Correctly load the machine onto the specified portion of the trailer.

After loading the machine, fully extend the bucket and arm cylinders, then slowly lower the boom.

When transporting the machine place rectangular timber under one end of the bucket cylinder to prevent it touching the ground, thereby saving it from possible damage.

- 4. When transporting the machine place rectangular timer underneath the front and rear track shoes to prevent the machine from moving about. Also, hold it down with chains or rope. Be particularly careful to ensure that the machine does not slip sideways.
- 5. Lock the swing lock lever and apply the lock to the work equipment lever and apply the lock to the work equipment levers.
- * Determine the route for transporting the machine by taking into account the width, height and weight of the machine.

COLD WEATHER OPERATION

PREPARATION FOR LOW TEMPERATURE

- Change lubrication oil by that with prescribed viscosity.
- Fuel of low pour point shall be used. ASTM D975 No.1 diesel fuel should be used at atmospheric temperature lower than -10 deg.C.
- Add antifreeze in the cooling water

When the atmospheric temperature drops lower than 0 deg.C while the machine is stopped, prevent freezing by adding antifreeze to the cooling water. The mixing rate of antifreeze is determined according to the e x p e c t e d m i n i m u m temperature. The following table shall be used.

Mixing range of water and antifreeze.

Min. atmospheric - 5 -10 -15 -20 temperature (deg.C) Amount of 6 5 antifreeze 3.5 4 5 Amount of water 10.5 10 9 7.5 (1)

Coolant capacity: 10L

* Cautions for using antifreeze

- 1. Permanent type antifreeze shall be used.
- 2. Soft water (ex:city water) shall be used as mixing water.
- 3. Cooling system must be throughly flushed before filling with antifreeze mixture.

4. When the climate becomes normal replace by clean water after perfectly cleaning the cooling system.
 Take care to prevent fire as antifreeze is inflammable.

-Battery

As ambient temperature drops, battery capacity will drop, and electrolyte may sometimes freeze if battery charge is low. Maintain battery at a charge level of approx. 100% and insulate it against cold temperature so that machine can be readily started the next morning.

 Measure specific gravity of fluid and obtain rate of change from the following conversion table.

Temp.of fluid	20 deg.C	0 deg.C	-10 deg.C	-20 deg.C
Rate of charge				
100%	1.28	1.29	1.30	1.31
90%	1.26	1.27	1.28	1.29
80%	1.24	1.25	1.25	1.27
75%	1.23	1.24	1.25	1.26

- * When electrolyte level is low, add distilled water in the morning before work instead of after the day's work. This is to prevent fluid from freezing at night.
- * When temperature rises, change lubricating oil in each unit to that of recommended viscosity.

Completely drain antifreeze from cooling system and fill with soft water (ex: city water) after thorough flushing.

CAUTIONS AFTER COMPLETION OF WORK

1. Mud and water on the machine body should be completely removed.

Park the machine on concrete or hard ground, if this is impossible, park the machine on wooden boards. This will prevent the accessories from freezing or the track and under carriage from freezing to the ground thereby preventing vehicle movement the next morning. Particular attention should be given to water drops collected on the surface of the hydraulic cylinder piston rods. Such droplets must be fully wiped off because if water is frozen to the rod when the cylinder is utilised the cylinder oil seals may be damaged.

- 2. Drain water collected in fuel system to avoid water freezing at night.
- 3. As battery capacity drops at low ambient temperature, cover the battery or remove it from the machine to be kept warm at night.

PERIODIC MAINTENANCE

Proper lubrication and maintenance assure trouble-free operation and long machine life. Time and money spent for scheduled periodic maintenance will amply compensated by prolonged machine operation and reduced operating cost.

All hourly figures given in the following descriptions are based on service meter readings. In practice, however, it is recommended to rearrange all of them into units of days, weeks and months to make the maintenance schedule more convenient. Under rough job site or operating conditions, it is necessary to somewhat shorten the maintenance intervals stated in this manual.

PRECAUTIONS FOR MAINTENANCE

SAFETY

Wear well-fitting helmet, safety shoes and working cloths. When drill, grinding or hammering, always wear protective goggles.

- Fuel or oil are dangerous substances.

Never handle fuel, oil, grease or oily clothes in places where there is any fire or flame.

As preparation in case of fire always know the location and directions for use of fire extinguishers and other firefighting equipment.

- Do not handle electrical equipment while wearing wet gloves, or in wet places, as this can cause electric shock

- During maintenance do not allow any unauthorised person to stand near the machine.
- Exhaust gas is dangerous. When working inside, be particularly careful to have good ventilation.
- Unless you have special instructions to the contrays, maintenance should always be carried out with the engine stopped. Lock the swing lock lever and also all of the safety levers. If maintenance is carried out with the engine running, there must be two men present: one sitting in the operators seat and the other one performing the maintenance. In such a case, never touch and moving part.
- When working underneath the machine, place a sign to that effect on the operator's seat and, if necessary, put a similar signs in the vicinity as well.
- Do not go underneath the machine after raising it up using the boom and the arm.
- When working with others, choose a group leader and work according to his instructions. Do not perform any maintenance beyond the agreed work.

Method of relieving pressure

- When maintenance has to be carried out with the work equipment raised, they must be securely supported by blocks.
- Always remember that the hydraulic oil circuit is under pressure. When feeding or draining the oil or carrying out inspection and maintenance, release the pressure first.
- Lower the work equipment to the ground and stop the engine after idling it for two or three minutes. Then operate the various operation levers. (Work equipment, traveling and steering lever through their full stroke in each direction)
- 2) Gradually unscrew the cap of the hydraulic tank and leave it for a few minutes.

- Flames should never be used as light. Never use a naked flame to check leaks or the level of oil fuel antifreeze or electrolyte.
- Immediately remove any oil or grease on the floor of the operator's compartment, or on the handrail. It is very dangerous if someone slips while on the machine.
- Be particularly careful when removing the radiator cap. if this is done immediately after stoping the machine, there is a danger that boiling water may spurt out.

- Do not check the fan belt tension while the engine is running. Be sure to turn off the engine before inspecting other rotating parts and the vicinity thereof.
- Do not allow anybody other than the necessary workers to go near the machine while it is being inspected or maintained. Also, be careful of people in the vicinity. It is necessary to exercise particular care when performing grinding or welding, or when swinging a large hammer.
- Use the tool which is suitable for the maintenance work.
- Remove the minus terminal from the battery in maintaining the electrical system.

- When the tracks are removed never put your fingers between the shoes.
- When carrying out the other difficult maintenance works, carrying them out carelessly can cause unexpected accidents. If your consider the maintenance is too difficult, always request Beml distributor to carry out it.

MISCELLANEOUS

- Thoroughly wash the machine, particularly the oiling and greasing parts and the vicinity, thereof, in order to prevent the ingress of dust.
- Use genuine Beml replacement parts specified in the parts list.
- Use Beml specified oil and grease. Use oil and grease having the recommended viscosity for the particular ambient temperature.
- Use clean oil and grease and keep them in clean containers to avoid the ingress of dust.
- Inspect or replace oil in a dust free location to prevent the ingress of dirt.

- Drain off used oil after heating it to a suitable temperature (about 30 to 40 deg.C.)
- After replacing oil, filter element or strainer, bleed the air from the circuit.
- When the strainer is located in the oil filler, the strainer must not be removed while adding oil.
- When adding oil or checking the oil level, check that the oil is of the correct type.
- After greasing up, always side off the old grease that was forced out.
- When changing the oil or filter, check the drained oil and filter for any signs of excessive metal particles or other foreign materials.

- When removing parts containing O-rings, gaskets or seals, clean the mounting surface and replace with new sealing parts.
- When washing the machine, ensure that water does not get onto the alternator.
- Special measuring apparatus is needed for testing hydraulic pressure.
- Thoroughly wash the machine in particular, be careful to clean the filler caps, grease fittings and the area around the dipsticks. Be careful not to let any dirt or dust into the system.

- When checking an open cover there is a risk of dropping things in. Before removing the covers to inspect, empty everything from your pockets. Be particularly careful to remove washers and nuts.
- When working on the sea shore, check that the various plugs and valves, etc., are tightened up properly. After the completion of work, thoroughly wash the machine and carefully clean all electrical equipment to ensure that is does not corrode.

- Before working in muddy water, rain or snow, check that the various plugs, valves, are properly screwed up. Upon completion of work, wash the machine, then check the various parts for cracks, scratching, loose or missing nuts and bolts. Also, oil and grease the prescribed parts of the machine.
- When working on rocky ground, be careful of damage to the undercarriage parts. Also, adjust the track tension so that it is a little slacker than usual.
- When working in a dusty location, be carefull of the following:

- Inspect the dust indicator to see whether the air cleaner is blocked up. Clean the air cleaner as soon as it becomes dirty.
- 2) Clean the radiator core so that it does not become blocked up.
- 3) Clean or replace the fuel filter as soon as it becomes dirty.
- 4) Clean the electrical equipment particularly the starting motor and alternator, to prevent accumulation of dust.
- When installing car radio and a walkie-talkie or citizen band, contact your Beml distributor.

- When washing the machine, take care not to splash water over the electrical equipment if it is soaked with water, it may not operate normally.
- After disconnecting any connector, cover it with a vinyl bag to to prevent oil or dust from sticking to its contact section.
- When welding, be careful of the following.
- 1) Ensure disconnecting the battery earth terminal.
- 2) Turn OFF the power (starting switch)
- 3) Do not continuously apply more that 200V
- 4) Install the ground cable at least 1 m from the range to be welded.
- 5) Take care not to install the seals between the grounded point and the range to be welded.

MAINTENANCE TABLE

No. ITEM	SERVICE	PAGE
CHECKBEF		
a Walk-around check	37	
b Coolant	Check and fill	38
c Engine oil pan	Check and fill	38
d Fuel	Check and fill	39
e Hydraulic tank	Check and fill	40
f Dust indicator	Check	41
g Water separator	Check	41
EVERY 100 H		
a Fuel tank	Drain water and sediment	72
b Lubricating		
-1 Boom cylinder foot pin	Lubricate 1 point	73
-2 Boom foot pin	Lubricate 1 point	73

No. ITEM	SERVICE	PAGE
-3 Boom cylinder rod end pir	Lubricate 1 point	74
-4 Arm cylinder foot pin	Lubricate 1 point	74
-5 Boom-arm coupling pin	Lubricate 1 point	74
-6 Arm cylinder rod end pin	Lubricate 1 point	74
-7 Bucket cylinder foot pin	Lubricate 1 point	74
-8 Arm bucket coupling pin	Lubricate 1 point	74
-9 Link coupling pin	Lubricate 1 point	75
-10 Link coupling pin	Lubricate 1 point	75
-11 Bucket-link coupling pin	Lubricate 1 point	75
-12 Bucket cylinder rod endpin	Lubricate 1 point	75
No. ITEM SERVICE PA	AGE	
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EVERY 250 HOURS SERVICE

a.	Final drive case	Check and fill	76
b.	Water pump belt	Check tension	76
C.	Hydraulic filter	Replace element	77
d.	Swing circle	Lubricate 4 points	78
e.	Battery electrolyte	Check fluid level	78

EVERY 400 HOURS SERVICE

a.	Engine oil & Filter	Change oil & filter	79
b.	Water & Mud Separator	Drain & Clean	80
c.	Radiator Water	Replace with fresh water	80

No.	ITEM	SERVICE	PAGE	
	EVERY 500 HOURS SERVICE			
а	Swing cirlcepinion	Lubricate with grease	81	
b	Radiator fins and oil cooler fins	Clean	81	
С	Fuel filter	Replace cartridge	82	

No. ITEM	SERVICE	PAGE	
EVERY 2000 HOURS SERVICE			
a Hydraulic tank	Change oil	85	
b Hydraulic tank strainer	Clean	87	
c Final drive case	Change oil	87	
d Alternator and starting motor	Check	88	
e Engine valve clearance	Check valve clearance	88	

No. ITEM	SERVICE	PAGE
EVERY 4000 HOURS SERVICE		
a Water pump	Check	89
WHENREQUIRED		
a Coolant	Change twice a year or every 1000 hours	90
b Air cleaner element	Check, clean or replace when required	91
c Track tension	Check and adjust	94
d Track shoe bolts	Check and retighten	95
e Bucket teeth	Replace	95
f Water separator	Drain water	96

OIL FILLER AND LEVEL GAUGE POSITIONS



Final drive case oil filler
Final drive case drain valve

- 3. Engine oil pan oil filter
- 4. Engine oil pan level gauge
- 5. Cooling water inlet
- 6. Hydraulic tank oil filler
- 7. Fuel tank filler cap
- 8. Fuel tank drain plug
- 9. Hydraulic tank level gauge
- 10. Hydraulic tank drain plug
- 11. Cooling water drain valve
- 12. Engine oil pan drain plug



EVERY 100 HOURS SERVICE

EVERY 100 HOURS SERVICE

CHECK BEFORE STARTING

See the section CHECK BEFORE STARTING aforementioned.

EVERY 100 HOURS SERVICE



a. FUEL TANK

Loosen valve (1) on the bottom of the tank so that the precipitation and mixed water will be drained along with fuel.

c. LUBRICATING

Apply grease to the engine fittings shown by arrows.



1. Boom cylinder foot pin (1 point)



2. Boom foot pin (2 points)



3. Boom cylinder rod end pin (1 point)



4. Arm cylinder foot pin (1 point)



5. Boom - Arm coupling pin (1 point)



6. Arm cylinder rod end pin (1 point)



EVERY 100 HOURS SERVICE

7. Bucket cylinder foot pin (1 point)



8. Arm - Bucket coupling pin (1 point)



9. Arm - Link coupling pin (1 point)



10. Link coupling pin (2 points)



11. Bucket - Link coupling pin (1 point)



12. Bucket - cylinder rod end pin (1 point)



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EVERY 250 HOURS SERVICE



a. FINAL DRIVE CASE

- Set the machine on flat surface with plug (F) at the middle level of the sprocket.
- 2. Remove plug (F) and check that the oil level is near the bottom of the plug hole. If necessary, add engine oil through the plug hole.
- * The type of lubricant used depends on the ambient temperature. Select according to the table "FUEL, COOLANT AND LUBRICANTS".

b. WATER PUMP BELT



- The belt tension should normally deflect by about 10 mm when pressed with finger at a point midway between the alternator and the water pump pulley (approx. 6 kgf).
- 2. To adjust the belt tension, loosen bolt and nut in the tension adjusting lever and shift alternator slightly.



- 3. After adjustment, tighten bolt and nut securely.
- * When adjusting the V-belt, do not attempt to push alternator directly with a bar or the like, but use a woodpad to prevent damage to the core.

- ^r Check each pulley for damage, and V-grooves and V-belt for wear. Particularly, check whether V-belt is in contact with bottom of V-groove through wear.
- Replace belt if it has stretched, leaving no allowance for adjustment, or if there is a cut or crack on belt.

c. HYDRAULIC FILTER



- 1. Open the cover and remove cap (F).
- 2. Remove cover (1), spring (2) and valve (3) at the top of the hydraulic tank, then remove element (4).
- 3. Clean removed parts and install a new element.
- * Be sure to use a genuine Beml element.



- When removing the cap, turn it slowly to relieve inner pressure.
- When removing the cover (1), undo the bolts (4 bolts) gradually to prevent the cover flying off under the force of the spring(2).

d. SWING CIRCLE



Lubricate the 4 grease fittings located 90 deg apart on bearing cicumference.



e. BATTERY ELECTROLYTE

- 1. Open the front right side cover.
- 2. If the electrolyte level is lower than the prescribed level (10 to 12 mm above the plate), supply distilled water.
- Should any of the acid be spilt, have it replenished by the nearest battery shop with acid of the correct specific gravity.

*

- When inspecting electrolyte level, clean the air hole of the battery cap (1).
- If the electrolyte gets on your skin or clothes, immediately wash with plenty of clean water.

To avoid gas explosions, do not bring fire or sparks near the battery.

EVERY 400 HOURS SERVICE

a. ENGINEOILPAN & FILTER





- 1. Remove drain plug to drain oil. After draining, tighten the drain plug.
- 2. Unscrew the centre bolt of the filter and remove bowl and filter element. Clean the bowl in clean diesel oil.
- 3. After replacing the cartridge, pour in the specified quantity of engine oil from oil filler (F).
- 4. After pouring in oil, run the engine for several minutes, then once again check the oil level and ensure that it is correct.
- * Refill capacity : 12.5 liters
- * The type of lubricant used depends on the ambient t e m p e r a t u r e . S e l e c t according to the table "FUEL, COOLANT & LUBRICANTS".



- * Be sure to fit a genuine Beml cartridge.
- Replace once every 6 months, regardless of the number of hours operated.
- * When supplying oil be careful not to get oil on the alternator.
- * If filter cartridge is removed immediately after stopping the engine, oil will spill. Wait at least 10 minutes after stopping the engine before replacing the filter cartridge.

b. WATER AND MUD SEPARATOR



Drain the water from water separator and clean the mud separator.

c. RADIATOR WATER



Drain water from bottom of the radiator and fill fresh water from filler (F).

EVERY 500 HOURS SERVICE

* Maintenance for every 100,250 and 400 hours should be carried out at the same time.

a. SWING CIRCLE PINION



- 1. Remove mounting bolts (2nos) on thru hole in a revolving frame (refer above figure) and remove cover.
- 2. Check with scale that grease depth is about 15 mm. If there is insufficient grease, replenish it.



If the grease is particularly milky due to ingress of water, etc., then remove cover (3) from the bottom of the track frame and remove the grease. Replace all of the grease with new grease. The total amount of grease is approximately 6 liters.

b. RADIATOR FINS AND OIL COOLER FINS



Clean the radiator fins and oil cooler fins clogged with mud, dust and leaves with compressed air. Steam or water may be used instead of compressed air.

* The rubber hose should be checked at the same time. If the hose is found to have cracks or to be hardened by aging, such hose should be replaced by new one. Further, loosened hose clamp should also be checked.

EVERY 500 HOURS SERVICE

c. FUEL FILTER



- 1. Loosen the center bolts and remove the bowls, and fit the primary filter element.
- 2. Fill the bowl with fuel and refit it after applying a dab of oil to the gasket face.
- Loosen the vent screw of the primary fuel filter. Operate the fuel lift pump (feed pump) till fuel oil flows without air bubbles.



- Tighten the vent screw and then similarly bleed the micro filter by opening the vent screw on microfilter and tighten after removing the air lock.
- Loosen the vent screw of the fuel pump gallery operate the fuel lift pump till the fuel flows free of air bubbles. Tighten the vent screw.
- Repeat the above for micro fuel filter.





- * After replacing the bowl start up the engine and check the filter seal face for possible oil leakage.
- * Be sure to use genuine Beml parts.

Maintenance for every 100,250 and 400 hours should be carried out at the same time.

EVERY 2000 HOURS SERVICE

a. HYDRAULIC TANK



- 1. Retract the arm and slightly exten the bucket cylinder, then lower the boom and put the the bucket in contact with ground as shown above.
- 2. Remove cover and cap (F).



When removing the cap, turn it slowly to relieve inner pressure.



Maintenance for every 100, 250, 500 and 1000 hours should be carried out at the same time.

- 3. Remove drain plugs (P1) and (P2) to drain off the oil. After draining off the oil, tighten up drain plugs (P1) and (P2).
- 4. Pour in the specified amount of oil from oil filler (F). (Refer to CHECK BEFORE STARTING.)



- The type of lubricant used depends on the ambient temperature. Select according to the table "FUEL, COOLANT AND LUBRICANTS".
- * The type of lubricant used depends on the ambient temperature. Select according to the table "FUEL, COOLANT AND LUBRICANTS".

EVERY 2000 HOURS SERVICE



* After changing oil, put the control levers in N (Neutral) position and run the engine at low idling speed for a few minutes before operation of working equipment.

Refill capacity: 100 l

*

When the hydraulic oil or the main pump is replaced, or when the suction pipe of the pump is removed, bleed the air according to the following procedure.

Loosen the hose at L-port which is connected to the hydraulic tank.

Start the engine at low idling, the air with oil flows out of L-port hose adaptor. After air bleeding, fully tight the hose.

 If the pump is not filled with oil and is driven, abnormal heat will occur and the pumpwill soon break down.

b. HYDRAULIC TANK STRAINER



- 1. Open the cover (1) and remove cap (F).
- 2. Remove cover (1) and lift up the top of rod (3) from above to take out spring (2) and strainer (4).
- 3. Wash the strainer with fuel oil. If strainer (4) is damaged, replace it with a new one.
- 4. Refit strainer (4) by inserting it into tank projecting part (5).



- When removing the cap, turn it slowly to relieve inner pressure.
- When removing the cover (1), undo the bolts (4 bolts) gradually to prevent the cover flying off under the force of the spring (2).

c. FINAL DRIVE CASE



- Set the machine on flat surface with plug (F) at the middle level of sprocket.
- Drain the oil from drain plugs (P) on both sides of the machine after draining, tighten the drain plugs.
- 3. Then, supply new oil through oil filler (F) respectively to the specified level (Refer to EVERY 250 HOURS SERVICE.)

* The type of lubricant used depends on the ambient temperature. Select according to the table "FUEL, COOLANT AND LUBRICANTS".

Refill capacity: 1.8 I (each side)

d. ALTERNATOR AND STARTING MOTOR.

As the hours of engine employement indicate that the brushes are already worn out, you should request repair from a beml distributor.

* They should be repaired every 1000 hours, if the machine is frequently operated at night.

e. ENGINE VIBRATION DAMPER

Check for cracks or separation in the item. If a fault is found, consult Beml distributor.

f. ENGINE VALVE CLEARANCE

Contact BEML distributor to check this.

EVERY 4000 HOURS SERVICE

a. WATER PUMP

Inspect, the water pump for play in the pulley (1), grease leakage and water leakage. If any fault is detected, ask Beml disributor to disassemble and repair or replace.

* Maintenance for every 100, 250, 400, 500 and 2000 hrs should be carried out at the same time.



WHEN REQUIRED

WHEN REQUIRED

a. CHANGE COOLANT

Perform twice a year in spring and autumn (when cleaning antifreeze solution.) In case antifreeze is not used, change coolant every 1000 hours.

Water filler



- 1. Stop the engine, Open drain plug (1) at the bottom of the radiator to drain off the cooling water.
- 2. After draining off the cooling water, wash out the cooling system using commercially available detergent. Follow the instructions on the detergent container.

Drain plug (bottom of radiator)



- After washing the cooling system, drain off all the water, then close up drain plug (1) and pour in soft water (ex.: city water) up to the vicinity of the water filler.
- 4. When the water reaches the vicinity of the water filler, put the engine at low idling, open drain plug (1) and then pass water through the cooling system until clean water comes out from drain plug (1).
- 5. When the water becomes completely clean, stop the engine, close drain plug (1) and supply water upto the vicinity of the water filler.

b. CHECK, CLEAN AND REPLACE AIR CLEANER ELEMENT.

6. After filling the cooling system



minutes later supply water again up to vicinity of the water filler and tighten water filler cap (3). Replace water after first cleaner

 Replace water after first parking the machine on a level surface.

with water, run the engine for 5 minutes at low idling and then for another 5 minutes at high idling to eliminate air trapped in the cooling system (leave water filler cap (3) off during this operation). 7. Stop the engine and 3

Do not remove the cap while cooling water is hot. Hot water may spurt out. When removing the cap, turn it slowly to relieve inner pressure. When the red piston in dust indicator appears, clean the air cleaner outer element. Stop the engine when cleaning the element. Cleaning or replacing outer element



- 1. Loosen wing nut (2), remove dust cup (3) and the outer element.
- 2. Clean the air cleaner body interior and the removed cover.
- 3. Clean and inspect the element. (See the item "Cleaning outer element" for cleaning procedure). Install the cleaned element.
- 4. Push the dust indicator reset button to return the red piston to the original position.

* Replace the outer element which has been cleaned 6 times repeatedly or used throughout a year.

Replace the inner element after three outer element changes.

- * Replace outer element when the dust indicator red piston appears soon after installing the cleaned outer element even though it has not been cleaned 6 times.
- * Remove one seal from the outer element has been cleaned can be seen by the number of removed seals.

- Check inner element mounting nuts for looseness and, if necessary, retighten.
- * Replace seal washer (5) or wing nut (4) if they are broken.



WHEN REQUIRED Replacing inner element.

- 1. First remove the cover and the outer element, and then remove the inner element.
- 2. Place the cover over the air intake part to prevent dust entering.

Clean the air cleaner body interior then remove the cover from the air intake port.

- 3. Fit a new inner element and tighten it with nuts.
- 4. Install the outer element and the cover. Push the dust indicator reset button.
- NOTE: Do not attempt to reinstall a cleaned inner element.

Do not clean or replace the air cleaner element with the engine running.

Cleaning outer element.

With compressed air

Direct dry compressed air (Less than 3.5 kg/sq.cm)to element from inside along its folds, then direct it from outside along its folds and again from inside, and check element.

When using compressed air wear safety glasses and other things required to maintain safety.

The following methods require spare parts.

With water

Dash city water (less than 3 kg/ sq.cm) on element from inside along folds, then from outside and again from inside. Dry and check it.

With cleaning agent

For removing oils and fats as well as carbon etc. attached on the element, the element may be cleaned in lukewarm solution or mild detergent, then rinsed in clean water and left to drip dry.

* Drying can be speeded up by blowing dried compressed air less than 3 kg/sq.cm) from the inside to the outside of the element.

Never attempt to heat the element.

- * Using warm water (abour 40 deg.C) instead of soapy water may also be effective.
- * If small holes or thinner parts are found on element when it is checked with an electric bulb after cleaning and drying, replace the element.

- * If element is usable, wrap it and store it in dry place.
- * Do not use element whose folds or gasket or seal are damaged.
- When cleaning element, do not hit it or beat it against something.

Cleaning precleaner

Remove the lid by unscrewing the wing nut and clear the debris collected and refit the lid.



c. CHECK TRACK TENSION

The wear of pins and bushings on the undercariage will vary with the working conditions and soil properties. It is thus necessary to continually inspect the track tension so as to maintain the standard tension on it.

If the track tension is not at the standard value, adjust it in the following manner:

Inspection

Raise the machine by means of the boom and arm and measure the clearance between the tread of third and fourth track roller from the sprocket and the roller contact face of the track link. If the clearance is between 40 and 80 mm, the track tension is normal.





Adjustment

To increase the track tension insert grease from grease fitting (1) of lubricator (2), and conversely to reduce tension, gradually return lubricator (2) to expel grease.



It is permissible to insert grease untill S becomes 0 mm. If, despite doing this, the track tension is still low, the pin and bushing have become excessively worn and must either be inverted or replaced. Have this work done by Beml distributor.

When loosening lubricator (2), do not slacken it by more than one turn Also during this operation, do not loosen any part other than the lubricator. (This is because of the danger of grease spurting out under high pressure.) If the grease comes out sluggishly, move the machine slightly backward and forward.

d. TRACK SHOE BOLTS



Shoe bolts (1) which secure track shoes to links will break if used in a loosened state. Tighten all loosened bolts.

 Track shoe bolts tightening torque:22<u>+</u>3 kgm.

e. REPLACE BUCKETTEETH Replace the point before the adapter starts to wear.

* Set the bucket so that its bottom is horizontal.

The point is installed by inserting it in the adapter, turning by 90° in the direction shown and is held in place by a vertical pin driven in with a hammer. The pin can be removed by driving it out for dis-assembly

DIRECTION OF MARK ON PIN

- 1. Use a hammer and drift to drive out lock pin which is fixing point to the bucket.
- 2. Check lock pin If the rubber of lock pin is cracked the point may come off the bucket. Replace them with new ones.
- 3. Clean the surface of adapter and remove the soil from it with a knife.
- 4. Clean the inside of point and install it to adapter. If it is stained with soil or has projections, it will not fit to the adapter.
- 5. Use hammer to drive rubber pin lock between the point and the adapter. Take care that the rubber pin lock does not project out of adapter.

- After replacing a bucket tooth, confirm that it is installed securely by doing the following:
- 1) Confirm that the surface of the lock pin is secured against the point.
- 2) Lightly hit lock pin in the reverse direction from which it was hit in.
- Lightly hit the tip of the point from above and below, and hit its sides from right and left.
- * The life of the point can be lenghened and the frequency of its replacement can be reduced by turning it upside down so that it will wear evenly.
- * When replacing the point, replace the rubber pin with new one. This will prevent the point from falling.

f. WATER SEPARATOR



Drain the water according to the following procedure.

- 1. Loosen drain plug and drain the accumulated water.
- 2. Tighten drain plug.
- 3. If the air is sucked into fuel line then drain the water, be sure to bleed air in the same manner as for the fuel filter.

ADJUSTMENT

ADJUSTMENT OF BUCKET CLEARANCE





If there is excessive free play on the couling section of the bucket arm, adjust the bucket clearance in the following manner.

* Set the work equipment in the posture as above.

- 1. Loosen 4 bolts (2), bolt (3) and plate (1).
- 2. Take out shims (4) equivalent in size to free play "a"
- * Thickness of shim (4) is 0.5 mm.
- * When free play "a" is less than 0.5 mm, do not compress the shims by tightening bolt (2).
- Tighten 4 bolts (2) and bolt (3). Then, clearance "b" becomes larger and free play "a" becomes smaller.

TROUBLE SHOOTING GUIDE

This guide is not intended to cover every conditions, however many of the more common possibilities are listed.

ELECTRICAL SYSTEM

Lamp does not glow brightly even when engine runs at high speed.

Lamp flickers while engine runs

- Check for loose terminals and open-circuit wiring
- Adjust belt tension

Charge monitor does not go out even when engine runs at high speed.

- Replace the alternator
- Inspect and repair wiring

Unusual noise is emitted from the alternator

- Replace the alternator

Starting motor does not turn when starting switch is turned on.

- Inspect and repair the wiring
- Change the battery

The pinion of the starting motor keeps going in and out.

- Charge the battery

Starting motor turns the engine sluggishly

- Charge the battery
- Replace the starting motor

The starting motor disengages before the engine starts up.

- Check and repair the wiring
- Charge the battery

The engine oil pressure does not light up when engine is stationary (When the starting switches is ON position)

- Check bulb
- Inspect electronic controller and wiring

Charge monitor does notlight up when the engine is stationery.(When the starting switch is in ON position)

- Check bulb and alternator connection
- Inspect and repair the wiring

ENGINE

The engine oil pressure monitor flashes when engine speed is raised after completion of warmup

- Add the oil to the specified level
- Replace the oil element
- Check oil leakage from the pipe or the joint
- Replace the monitor

Steam emitted from the top part of the radiator (the pressure valve).

- Study the cooling water and check leakage
- Adjust fan belt tension
- Wash out inside of cooling system
- Clean or repair the radiator fin
- Replace the thermostat
- Tighten the radiator cap firmly or replace the gasket.
- Replace the monitor

The engine does not start when the starting motor is turned over.

- Add fuel
- Repair where air is leaking in to fuel system
- Replace the injection pump or the nozzle
- Check the valve clearance
- Check engine compression pressure
- Refer to the section of electrical system

Exhaust gas is white or blue

- Adjust to specified oil quantity
- Replace with specified fuel

Exhaust gas occasionally turns black

- Clean or replace the cleaner element
- Replace the nozzle
- Check engine compression pressure
- Clean or replace the turbocharger

Combustion noise occasionally changes to breathing sound

- Replace the nozzle

Unusual combustion noise or mechanical noise

- Replace with specified fuel
- Check over-heating
- Replace the muffler
- Adjust valve clearance

CHASSIS

Slow speed of travel, swing, boom, arm and bucket

- Add oil to specified level

Unusual noise emitted from pump

- Clean the hydraulic tank strainer

Excessive oil temperature rise of hydraulic oil

- Clean the oil cooler
- Adjust the belt tension of fan
- Add oil to specified level

Track slip out of place Excessive wear of the sprocket

- Adjust tension of track

Bucket either rises slowly or not at all

- Add oil to specified level

STORAGE

BEFORE STORAGE

To place the machine in storage for an extended period of time, the following measures must be taken to insure that it can be returned to operation with minimum of service.

After every part is washed and dried, the machine shall be housed in a dry building. Never leave it outdoors. Incase it is indispensable to leave it outdoors, lay wood plates on the ground, and park the machine on the wood plates and cover it with canvas etc.

- Completely fill fuel tank, lubricate and change oil before storage.
- Apply a thin coat of grease to metal surface (hydraulic piston rods and front idler adjusting rods).
- As to batteries, remove the terminals and cover them, or remove them from the machine and store separately.
- When the ambient temperature is anticipated to drop below 0 deg C. always add antifreeze in the cooling water.
- The fuel control lever shall be set to low idle position.

DURING STORAGE

- Operate the engine and move the machine for a short distance once a month so that new oil film will be coated over movable parts and component surfaces.
- Before operating the working equipment wipe off the grease on the hydraulic piston rod.
- If it is unavoidably necessary to carry out runpreventive operation while the machine is indoors, open up doors and windows to improve ventilation and prevent gas poisoning.
AFTER STORAGE

After storage (when it is kept without cover or the rustpreventive operation once a month is not made), you shall apply the following treatment before operation.

- Loosen the drain plugs on oil pan and other cases and drain mixed water.
- Remove the cylinder head cover hand lubricate sufficiently valves and rocker arms and inspect the valve operation.
- After the engine is started, operate it until it is warmed up completely.

WEAR PARTS

Replace wear parts such as filter element, work equipment's tips and so on at the time of periodic maintenance or before the wear limit is reached. Replace wear parts without fail to utilize the machine more effectively. Use genuine Beml parts.

ltem	Part name	Qty.	Replacement frequency
Hydraulic filter	Element	1	Every 250 hours
Engine oil filter	Cartridge	1	Every 400 hours
Fuel filter	Cartridge	2	Every 500 hours
Air Cleaner	Element assy	1	When req.
	Tooth	4	-
	Pin	4	-
	Cutter(L)	1	-
	Cutter(R)	1	-

SERVICE METER

This meter indicates the integrated work hours. So, use it according to the following instructions.



- Record the readings at the start and the end of work. This is the work record of the machine.
- This record will indicate, when periodical maintenance is due.
- It also indicates the integrated working hours when machine problems are encountered.

* How the meter progresses

Least significant digit of the service meter progresses by 1 When the engine is operated for 6 minutes, regardless of the engine speed.

Consequently, if the engine is running the service meter will advance even if the machine does not move.

MACHINE AND ENGINE SERIAL NUMBERS

- When calling for a service of mechanic or when making replacement-parts order, be sure to give BEML distributor the machine and engine serial numbers as well as the service meter reading before mentioned. These numbers are founds on the plates shown in the photos below.
- Location of the machine serial number mark



This is seen on the bottom left of the cab

- Location of engine serial number mark



This is seen on the upper right of the cylinder block, when seen from the fan side.

FUEL, COOLANT AND LUBRICANTS

PROPER SELECTION OF FUEL, COOLANT AND LUBRICANTS



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NOTE

(1) When fuel sulphur content is less that 0.5% change oil in the oil pan every periodic maintenance hours described in this manual. Change oil according to the following table if fuel sulphur content is above 0.5%.

Fuel sulphur conte	nt Change interval of oil in engine oil pan
0.5% to 1.0%	1/2 of regular interval
Above 1.0%	1/4 of regular interval

(2) Use API classification CD as engine oil and if API classification CC, reduce the engine oil change interval to half

Recommended Oils and Lubricants with brand name

Specification	Cleasification	Company	ny Recommended Oils & Lubricants with brand name(Revise			vised-2001)		
and Grade	Classification	Standard	IOC	CHEMOLEUMS	IBP	BL	BPCL	тwo
SAE30 (Eng.&T/M Oil)	API-CD	C6002-03	Servo Ultra Komatsu BEML 30	BEML Superclean ET30	IBP Ultra-30	Protomac ULT-30	MAK CD-30	Veedol 903-S3-30
SAE10 (Hydraulicoil)	API - CD	C6002-02	Servo Ultra Komatsu BEML10W	BEML Superclean EH10W	IBP Ultra-10W	Protomac ULT-10W	MAK CD-10W	Veedol 903-S3-10W
20W40-CD (Multi Grade)	API - CD	C6002-01	Servo Premium 20w40	Turbo 300 SAE 20W40	MIL-C MG 20W40	Protomac PMG 20W40	MAK CD 20W40	20W40 CDOIL
Lithium Base Grease-EP2	NLGI 2	C6003-04	-	-	Lithox EP-2	Liprex EP-2	Lanthex EP-2	Alithex 20 Grease

02. M/S. Chemoleums

04. BL : M/S. Balmer Lawrie & Co. 06. TWO M/S Tide Water Oil Co.

BE75

Performance

1. Bucket capacity (standard)	0.3 Cu.m
2. Travel speeds	2.6 km/h
	4.4 km/h
3. Swing speed	11.8 rpm
Track shoe	

Triple grouser (standard)	450 mm (width)
---------------------------	----------------

Operating weight

(.....)

7500 kg

Engine

1. Model	KOEL 4R 1040NA
2. Rated rpm	2000 rpm
3. Flywheel horsepower	57 HP
4. Starting system	24V

Battery

2x12V; 75 Ah

SPECIFICATIONS





DIMENSIONS (mm)

A - Overall length/B-Width	5850/2280
C - Overall httop of boom/D-cab	2615/2495
E - Track length on ground/K-Height	2060/680
F - Track gauge/T-Width	1700/450
G - Min ground clearance/J-Cwt	405/760
H -Tail swing radius	1830
L - Crawler overall length	2645
M - Sprocket axis to axis of rotation	1030
N - Cab width / P-length / R-height	940/1590/1618
S - Shipping height	1865

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WORKING RANGE AND DIGGING FORCES					
	Description	Standard (ARM,1650MM)(BOOM,3710MM)			
	WORKING RANGE (mm)				
	 A. Max. digging height B. Max. dumping height C. Max. Bucket loading clearance D. Max. vertical wall digging depth E. Max. digging depth of cut for 2440 mm level bottom F. Max. digging reach at ground level G.Max.digging depth H.Min reach at ground reference plane J.Reach to bucket pin center at Max. height K.Max. bucket hinge pin height EOPCES kN (ka) 	7120 4995 5000 3580 3775 6225 4090 818 2705 6385 2530 6065			
F F	Bucket digging force	48.3(4923)			
		51.4(5002)			

BACI		
	STD	
Bucket capacity:cu.m SAE heaped	0.3	
Bucket width: mm Without side Cutters	740	
With side Cutters	920	
Bucket weight :kg		
Without side Cutters	220	
With Side Cutters	244	
No. of Bucket teeth	4	

"Usage of BEML Genuine Spare Parts Enhances Equipment Life"

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