L&T Earthmover News

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# 4000th L&T-Komatsu PC200-6 Hydraulic Excavator

*Group photograph of BICPL Directors flanked by L&T-Komatsu and L&T personnel.*

*Mr. U N Bhat, former Chief Executive of LTK, handing over a silver plaque to Mr. Mukesh Dokania and Mr. Manish Dokania of Balajee Infratech & Construction Pvt. Ltd. in Bangalore.*

L&T-Komatsu Limited (LTK) has crossed another landmark in the manufacture of PC200-6 hydraulic excavator with the handing over of the keys of the 4000th excavator on June 20, 2007 to Balajee Infratech & Construction Pvt. Ltd. (BICPL), Mumbai.

Balajee group of companies is one of the leading contractors in Mumbai. They have regional and branch offices at Central, Western and Southern zones of the country to carryout infrastructural construction business.

Balajee is promoted by a group of dedicated and well experienced professionals with excellent skills in the field of

- Infrastructure
- Site grading for road construction, including WBM/ WMM/asphalting
- Mechanized mining of rock
- Drilling, blasting, loading and transportation
- Operation & Maintenance of crushers/WMM/HOTMIX plant.

They started their operations in 1995 with L&T 90-3 hydraulic excavators. Balajee Groups now have over 15 nos. of L&T-Komatsu excavators working in their projects. They have standardized on L&T Komatsu equipment at their sites.

PC200-6 continues to be the most popular hydraulic excavator in the 20-tonne class in Indian market. Its performance, reliability and aesthetics are unmatched by other excavators in its class, and it is the most popular choice of customers in construction industry.

PC 200-6 hydraulic excavator was introduced to Indian market in January 1999. The 1000th machine rolled out 60 months after the launch; the 2000th, 20 months later; the 3000th machine in the next 13 months; better still, the 4000th machine rolled out in a mere 8 months.

# L&T-Komatsu PC130-7 Hydraulic Excavator

L&T-Komatsu Limited has launched the sturdy, rugged and reliable model PC130-7 hydraulic excavator manufactured under licence from Komatsu Ltd., Japan, at its Bangalore Works, which has ISO 9001 accreditation for design, manufacture and service, ISO 14001 certification for Environment Management System and OHSAS 18001 certification for Occupational Health and Safety Management Systems.

L&T offers a wide range of machines which incorporate contemporary technology as well as advanced features based on feedback received from users of the equipment. Every machine is engineered to deliver a high level of performance.

## PC130-7 hydraulic excavators

L&T-Komatsu's PC130-7 hydraulic excavator has flywheel horsepower of 89 hp/66 kw @ 2200 rpm, operating weight of 12,600 kg (27,778 lb) and bucket capacity of 0.64 Cu.m. (SAE)

Building on the technology and expertise that Komatsu has accumulated since its inception in 1921, **G**enuine **A**nswers for **L**and and **E**nvironmental **O**ptimisation (GALEO**)** presents customers worldwide with a strong, distinctive image of technological innovation and exceptional value. The GALEO brand is now employed for Komatsu's full lineup of advanced construction and mining equipment. Designed for high productivity, with safety and environmental considerations in mind, the machines in this line reflect Komatsu's commitment to contributing to the creation of a better world.

## HydrauMind System

HydrauMind is a technologically complex yet mechanically simple system which supervises the work operations of the excavator. HydrauMind is not computer-dependent, as it is essentially hydraulic, not electronic. Its strength lies in its simplicity. The system incorporates many major breakthroughs and has helped Komatsu earning almost 200 patents.

## Benefits of HydrauMind

Hydraumind ensures power, versatility, manoeuvrability, controllability…. Never has an excavator been so easy to operate, so natural, so intuitive. For example, when the ground condition changes while digging, you don't have to think about changing your lever strokes because the HydrauMind instantly, silently, automatically sends just the right amount of oil to the actuators at just the right pressure to accommodate the change. When you move the boom, arm and bucket simultaneously, all the equipment work organically with the optimum combination of speed and power as if it were a human hand.

The HydrauMind also makes it easy to change or add valves and work equipment. Moreover, because the

system is hydraulic and not electronic, it ensures the best service availability in the industry.

**Hydraulic System equipment with engine speed sensor**

The pump is controlled by the engine speed sensor, so maximum horsepower is used at all times. This contributes to higher production and shorter cycle times.

**Other advantages include:**

- Easy serviceability
- Engine conformity to emission control standards
- Sleek and impressive design
- Safety features
- Operator comfort

## The HydrauMind System Makes Everything Easy

It is easier to fully load the bucket, because during simultaneous operation, the work equipment moves slowly at maximum power, without being influenced by the other actuators, so it is easy to fully load the bucket.

It is easy to carry out digging work along the faces of walls. The machine can carry out operations easily without any undue chassis vibration.

Lateral power pushing is powerful, allowing digging operation to be carried out efficiently. During simultaneous operations, there is no change in the work equipment speed caused by change in load, thus, there is minimal chassis vibration. Even without operating the lever to the maximum position, maximum digging power can be obtained, making it possible to carry out slow control.

It is easy to dig soft rock or excavate boulders because it is easy to control the boom raise, so the cutting edge does not deviate from the boulders.

## Operating Features

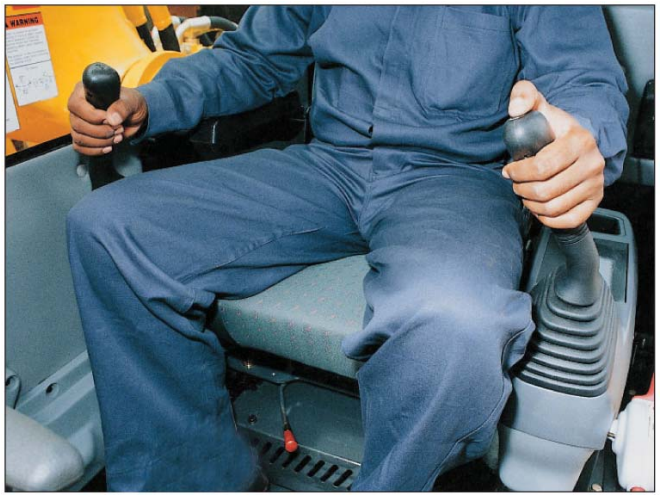
Comfortable operator environment keeps work efficiency high with the following service features:

***Adjustable seat and control levers**

The seat slides forward and backward together with the work equipment control levers to ensure the best operating position at all times.

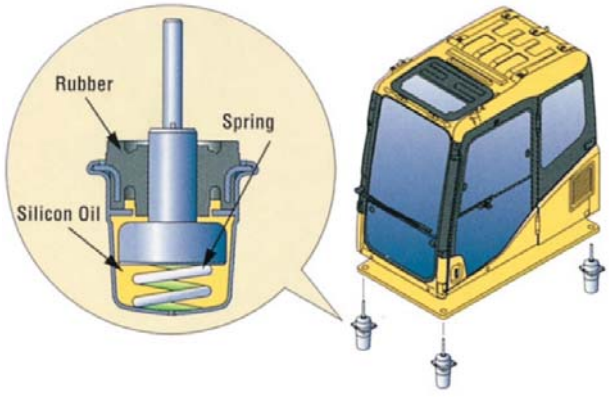
***Spacious Cab Interior**

The cab interior is spacious. An ergonomically-designed operator's seat and easy access to all control levers ensure maximum operator comfort.



***Low Vibration with Cab Damper Mounting**

L&T-Komatsu PC130-7 uses a new, improved cab damper mount system that incorporates longer stroke and the addition of a spring. The new cab damper mounting combined with a strengthened left and right side deck aids vibration reduction at the operator's seat.




## Environment-friendly Features

***Low Emission Engine**

Komatsu SAA4D95LE-3 has cleared EPA, EU and Japan Tier II emission regulations and reduced NOx emission.

***Environment Oriented Mode (Economy Mode)**

Economy mode meets the needs of the 21st Century. Economy mode offers the user fuel savings, less $CO_2$ emission and quiet operation. Fuel consumption is reduced (compared with Active mode)

***Thermal and Fan Guards**

High temperature parts of the engine and fan drive are covered with guards.

***Easy Maintenance**

Service parts of the excavator are easily accessible. As a result, routine maintenance and servicing are made easier and less likely to be missed, thereby reducing potential machine downtime. Some of the service features found on the excavator are:

***Oil-Water Separator**

The standard equipped oil-water separator removes water that has been mixed with fuel, thus preventing damage to the fuel system.

***The Orderly Arranged Cooling System**

Since the radiator, after cooler and the oil cooler are arranged in parallel manner, it is easy to clean, remove and install.

***Skid-Proof Surface**

The steps with its skid-proof surface help to ensure safer maintenance and servicing.

***Easy-to-Change Engine Oil Filter**

The engine oil filter is conveniently fitted for easy accessibility.

## Productivity Features

***High Productivity and Low Fuel Consumption**

The increased output and fuel savings of the Komatsu SAA4D95LE-3 engine result in increased production and improved productivity per unit of fuel.

***Engine**

The L&T-Komatsu PC130-7 gets its exceptional power and work capacity from a Komatsu SAA4D95LE-3 engine. Output is 89 HP/66 kW, providing increased hydraulic power and improved fuel efficiency.

***Hydraulics**

Unique two-pump system ensures smooth compound movement of the work equipment. HydrauMind controls both pumps for efficient engine power use. This system also reduces hydraulic loss during operation.



## Four Working Modes

### *Working Mode Selection

The L&T-Komatsu PC130-7 excavator is equipped with four working modes (A, E, B and L mode). Each mode is designed to match engine speed, pump speed and system pressure with the current application. This provides the flexibility to match equipment performance to the job at hand.

## Reliability and Durability

### *Sturdy Frame Structure

The revolving frame, center frame and undercarriage are designed by using the most advanced three-dimensional CAD and FEM analysis technology.

### *Grease Sealed Track

L&T-Komatsu PC130-7 uses grease sealed tracks for extended undercarriage life.

### *Track Link with Strut

L&T-Komatsu PC130-7 uses track links with strut providing superb durability.

### *Reliable Components

All of the major machine components, such as engine, hydraulic pumps, hydraulic motors and control valves are exclusively designed and manufactured by Komatsu.

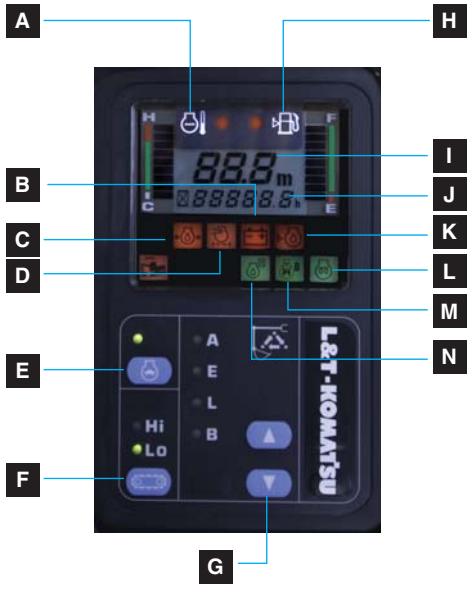
### *Highly Reliable Electronic Devices

Exclusively designed electronic devices such as Controller, Sensors, Connectors, Heat resistant wiring have passed severe testing.

Metal Guard Rings protect all the hydraulic cylinders and improve reliability.

## Self-Diagnostic Monitor

L&T-Komatsu PC130-7 features the most advanced diagnostics system. The Komatsu exclusive system identifies maintenance items, reduces diagnostic times, indicates oil and filter replacement hours and displays error codes.




| | | | |
|---|---|---|---|
| A | Engine Water Temperature | H | Fuel Level Monitor |
| B | Battery Charge | I | User or Trouble Code Display |
| C | Engine Oil Pressure | J | Service Meter Display |
| D | Air Cleaner Clogging Monitor | K | Engine Oil Level |
| E | Auto-Decel Switch | L | Engine Preheat |
| F | Travel Speed Select Switch | M | Swing Lock Display |
| G | Working Mode Select Switch | N | Oil Maintenance |

## Continuous Machine Monitoring System

When turning start switch ON, the operator checks before starting for any caution display on the liquid crystal panel. If abnormalities are found, a warning lamp blinks and a warning buzzer sounds. The continuous machine condition checks help prevent the development of serious problems and allows the operator to concentrate on the controls.

## Abnormalities on Electronic System Display with Code

When an error occurs during operation, a user code is displayed. When an important user code is displayed, a caution lamp blinks and a warning buzzer sounds to prevent the development of serious problems.

## Oil Maintenance Function

When the oil or filter replacement is nearing, the oil maintenance monitor lights glow, thus helping the operator to reckon the necessity of replacing the respective one.


### L&T-KOMATSU PC130-7 Technical Features

- Komatsu SAA4D95LE-3 66 kW direct injection, after-cooled, turbocharged engine
- Double element air cleaner with dust indicator and automatic dust evacuator.
- Engine stop key
- Alternator 24V/25A
- Battery 2 x 12V/65Ah
- Starter motor 24V/3.0kw
- Electronic Closed Centre Load Sensing (E-CLSS) hydraulic system (HydrauMind)
- 4 working mode selection system; active mode, economy mode, breaker mode and lifting mode
- Counterweight
- Power Max function
- Auto deceleration function
- Corrosion resistor
- Fan guard structure
- Pre-Fuel Filter
- Water separator
- Working mode selection system
- Engine overheat prevention system
- Fuel control dial
- PPC control levels and pedals for steering and travelling
- 2-speed hydrostatic travel system with planetary gear unit and hydraulic brake disc
- Lockable fuel tank cap and cover
- Boom safety valves
- Large handrails and rear view mirror
- Standard signs (labels)
- 500 mm triple grouser track
- Adjustable seat
- Electric horn
- Monitor panel – 7 segment
- Working lights – 2 (Boom & RH)
- Track roller – 7 each side
- One piece boom 4600 mm
- Arm 2100 mm
- Bucket – 0.64 Cu.m.

## L&T-Komatsu PC71 at Dharmasthala


Padmashri Dr. Veerendra Heggade, Head of Sri Manjunatheshwara Temple in Dharmasthala (Dakshin Kannada District, Karnataka) bought the temple's third L&T-Komatsu PC71 Hydraulic Excavator on the 30th of June this year.

This machine is primarily to develop the temple premises, and also for land development in the surrounding areas, as a part of their continuing humanitarian services to the society.

Dharmasthala is one of India's most revered pilgrimage centers, dedicated to Lord Manjunatheshwara. The temple is the family shrine of the Heggade family and is now being managed and maintained by the family's 21st generation. Dr. Veerendra Heggade, successor to the Dharmadikara Peetha, has endeared himself to the public and scholars alike for his numerous efforts in public service and in upholding traditions and enriching the region's cultural heritage.

Mangalore is one of L&T's biggest PC71 markets. Supported by excellent sales and after-sales service support by L&T's dealer, M/s. Anugraha Construction Equipment Services, Mangalore has seen a growing influx of L&T and L&T-Komatsu machines over the years. With the increasing number of projects in the region, this trend is expected to continue.

# Tips for Tyre Life

Tyres are among the highest cost consumable items on rubber-tyred earthmoving, construction and mining equipment.

One simple step towards ensuring extended tyre life is to keep your work area floor clean off rocks and other obstacles during operation.

Other key area to maximise tyre life is its proper care.

There are broadly two main factors that affect tyre life and performance:

- Maintenance practices
- Operation conditions

Taking care of both these areas and following the recommendations as outlined below will certainly ensure maximum tyre life and reduced machine downtime.

## Proper Maintenance

Proper maintenance of tyres is essential to ensure extended life of tyres. It will be the joint responsibility of equipment operators and site maintenance staff.

To start with correct inflation is very critical. Improper inflation is the single most common cause of premature tyre removal.

Results of improper inflation include:

- Increased wear rates
- Irregular tread wear
- Reduced casing durability
- Lower fuel economy

But remember, both over-inflated and under-inflated tyres cause problems.

## Over-inflated tyres:

- are more rigid and less able to withstand shocks
- are more vulnerable to hazards that can lead to cuts, punctures and carcase breaks
- wear faster

## Under-inflated tyres:

Generate heat – and heat is the primary cause of premature tyre failure.

Because most tyres eventually need to have air added, under-inflation is one of the most common problems.

It is imperative to know exactly what the correct pressure for the tyre based on application, which means taking into account loads, weight distribution over axles, haul distances, etc. You should consult with your tyre supplier on this issue and follow the recommendations provided in operation and maintenance manuals. Remember that the tyre pressures can not be guessed at glance; it's essential that you use a proper tyre gauge to measure. By the time tyre pressure has dropped far enough to be obvious to the eye, it's likely to be well under what it should be, and heat damage may have already occurred.

Tyre pressures should be checked at least weekly – and when the tyres are cold.

## Some more tips for keeping tyres in good condition:

Carry out daily visual inspections, looking out for cuts, uneven wear, damage, cracks, etc. Any of these can indicate that you need to look at operational factors (haul road condition, operating practices) as well as mechanical factors (wheel alignment)

Don't let dry and caked mud accumulate on tyres. And remove any wedged rocks or other obstructions.

Rotate tyres regularly and ensure they are properly aligned.

Inspect even damaged and worn out tyres; it may be possible to repair or retread them, or put them on machines with less onerous duties.

Keep the valve caps on the valve stems. This is the cheapest and most effective protection against air loss.

Check for leaky grease fittings. Oil and grease can cause rapid deterioration of tyres.

Check wheel rims and flanges. If they're bent, chipped or broken, they can damage the tyre. Rust, oil or grease on the wheels can also contribute to tyre deterioration.

## Proper Operation

Condition of haul road and correct operation will influence the life of tyre as much as the maintenance practices followed.

Keeping your haul roads in good condition is a vital step towards maximising tyre life.

Steep grades and sharp turns result in increased slippage, leading to faster abrasive tyre wear.

Loose rocks or other obstacles increase tyre cutting and damage. They will also slow down haul and travel speeds.

Poor drainage results in mud and potholes, resulting in tyre spinning, faster wear, cuts and higher fuel consumption.

Proper operational techniques will also contribute to longer tyre life. Operators should be instructed to:

Inspect tyres on a daily basis as part of the pre-operating walk-around inspection.

Avoid spinning the drive wheels.

Avoid sharp objects or rocks and muddy areas on haul roads. Report the conditions to staff concerned promptly.

Avoid driving over berms and windrows when possible

Slow down in loading areas, where rocks may have fallen off the loading tool or other trucks.

Do not turn steering wheel unless the machine is moving; doing so, causes very high stress and sheer forces within the tyres.

Promptly report mechanical problems, such as wheel misalignment, loose or broken suspension or grabbing brakes.

On jobsites where there are boulders or sharp rocks, install tyre protection/mesh chain.

**Know Tyre Size Designation**

Generally speaking, the designation of tyres refers to size in inches and the ply rating. Size of tyre means the width and diameter of the rim while the ply rating shows the strength of the caracass. And for radial tyres, star marks are used to indicate the strength of tyre.

Consider following example indication designation of both bias and radial tyres:

| Bias Tyre | Nominal Tyre width | Nominal Rim Diameter | Play rating |
|---|---|---|---|
| | 24.00 | 49 | 48 PR |

| Radial Tyre | Nominal Tyre width | Nominal Rim Diameter | Star Mark |
|---|---|---|---|
| | 24.00 | 49 | * * |

**Approximate Tyre Life**

The life varies with brand, material, selection, operation and maintenance. Tyres may be used above or below the tyre life expectancy given in this table:

*In equipment Operation Hours*

| Machine | Easy Condition | Medium Condition | Severe condition |
|---|---|---|---|
| Off-Highway Dump Trucks | 4000 - 6000 | 2000-4000 | 1000 – 2000 |
| Articulated Dump Trucks | 3500 | 2500 | 1500 |
| Motor Graders | 3000 | 2000 | 1000 |
| Wheel Loaders / Dozers | 3000 | 2000 | 1000 |
| Hydraulic Excavators | 3000 | 2000 | 1000 |

## Service Camp at Hamirpur

L&T's Lucknow team of Construction Equipment Business, along with the authorized dealer M/s. Chintamani Enserve Pvt. Ltd., conducted a service camp at Hamirpur. Hamirpur is mainly the sand mining belt and has a large population of L&T-Komatsu PC200-6 Hydraulic Excavators.

The objective of the camp was to re-emphasise the importance of scheduled maintenance of the machines and the usage of genuine spare parts. As part of the exercise, initial inspection of the machines and PM clinics were conducted and the customers were suitably guided.


Photograph alongside shows the team imparting training on the maintenance of the equipment.

# Maintenance Points - We normally ignore

How is the maintenance of the machine? This is perhaps the most frequently asked question when one sits down to analyze a failure of a component or a system in a machine. The answer is a standard one. – It is OK; oil and filters are replaced on time. A probing few try to gather documentary evidences for the scheduled maintenance carried out and then the focus quickly shifts to how the machine can be made good and brought back to work. - Failure being attributed to either wrong operation, poor workmanship or manufacturing defect.

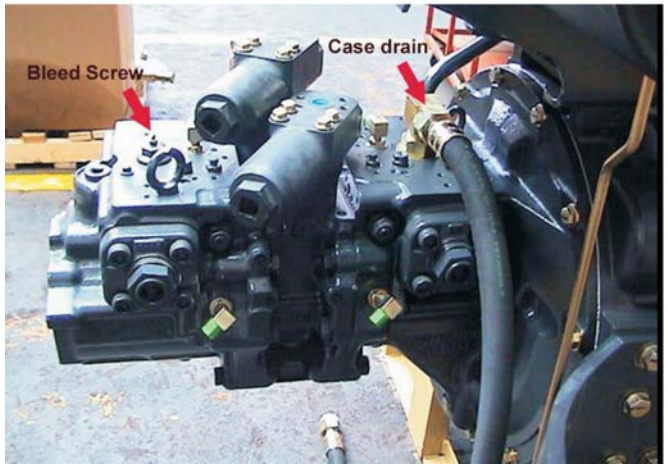
Let us take a closer look on maintenance. Is it only timely replacement of oil and filters, daily greasing of pins and bushes, and cleaning of air filters everyday? Definitely not! The manufacturer along with a new machine provides operation and maintenance manuals that run into several hundred pages and the maintenance portion comfortably is around half the book. That means proper maintenance is certainly a little more that what we commonly perceive. Many a times we notice that even when the machine becomes old, yet the maintenance manual remains new indicating that not many people (particularly the people who matter-maintenance team) have gone through it. The age-old concepts of maintenance are followed and the team leader passes on instructions based on his experience with so many other machines to the team who blindly follow the routine. The wrong practices if any, are not rectified by referring to the manual and are repeated and the blame game continues.

In the following paragraphs some key areas are touched upon which if paid attention to, can be useful to derive the best out of your machine. (Points are more apt for hydraulic excavators)

### 1. Bleeding Air from Hydraulic Systems

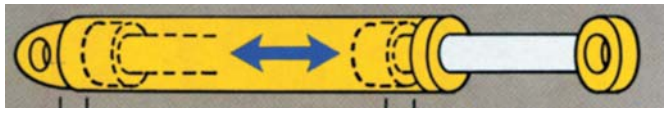
Whenever a hydraulic system is drained either for repair or hydraulic oil change, bleeding has to be done. Trapped air is one of the biggest enemies of hydraulic systems and has to be purged out before operation.

**Pump:** The bleed screw is located on the highest point on the pump and on loosening oil, should ooze out. Air trapped in the pump comes out through the bleed screw and when oil free from bubbles start to flow, the bleed screw should be tightened. If oil does not ooze out, remove the case drain hose from the pump and fill clean oil in the pump till oil comes out freely from the

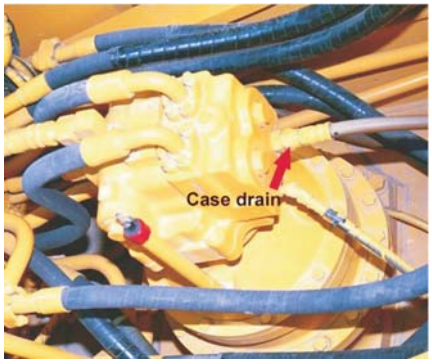



bleed plug. Hold the removed hose firmly, if possible higher than the oil level in the hydraulic tank, so that oil will not spill out of the hose. After bleeding is complete, first tighten the bleed plug and then install the hose. If the pump is run when the pump case is not full of oil, there will be abnormal generation of heat and this will lead to premature failure of the pump.

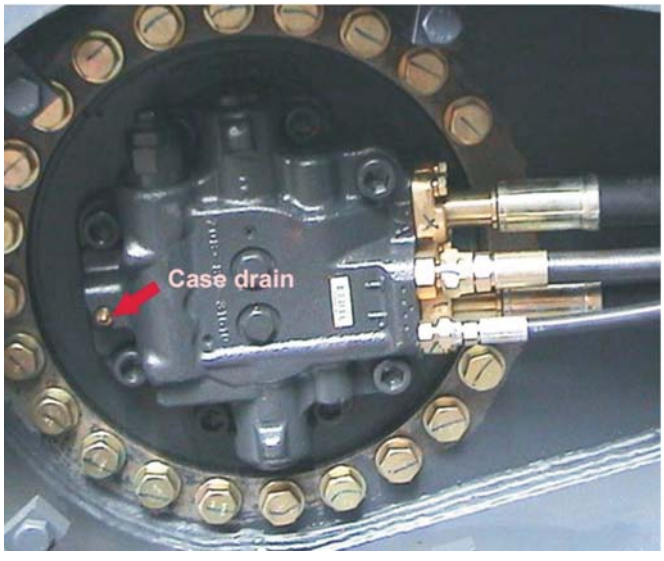
**Cylinder:** Bleeding should be done after seal replacement has been carried out or the cylinder has been drained. Run the engine at low idling and extend and retract the cylinder 4-5 times to a point 100 mm from the end of stroke. (Be **careful not to operate to the end of stroke).** Next operate the cylinder 3 to 4 times to the end of stroke. Finally, with engine a high speed operate cylinder to the end of stroke to completely remove air. If engine is immediately run at high speed or cylinder is operated to the end of its stroke, the air inside the cylinder will burst and cause damage to the piston packing.



**Swing Motor:** Run the engine at low idling and loosen the case drain hose as shown and check that oil oozes out of the hose. If oil does not come out, fill the motor case with hydraulic oil, and ensure oil devoid of air bubbles flow out freely from the casing. Run engine at low idling and slowly swing at least two rotations uniformly to the left and right. If air is not bled from swing motor, there is a danger that the motor bearings will get damaged.




**Travel motor:** Bleed air from travel motor only when the motor case has been drained. Run the engine at low idling and loosen the bleed screw. If oil spills out, tighten the plug. With engine at low idling, jack up the machine till the track is raised above the ground. Rotate the track under no load for two minutes -. Equally both forward and reverse.




The chart summarizes the bleeding procedure and can be a handy reference.

| Air bleeding item and procedure / Nature of work | 1 Fill pump with oil | 2 Start engine | 3 Bleed air from cylinder | 4 Bleed air from swing motor | 5 Bleed air from travel motor | 6 Start operations |
|---|---|---|---|---|---|---|
| •Replace return filter element | | ● | | | | ● |
| •Change hydraulic oil<br>•Clean strainer | | ● | ● | ● | | ● |
| •Replace or repair pump<br>•Remove suction piping | | ● | ● | ● | | ● |
| •Replace or repair control valve | | | | | | |
| •Replace or repair cylinder<br>•Remove cylinder piping | | ● | ● | | | ● |
| •Replace or repair swing motor<br>•Remove swing motor piping | | ● | | ● | | ● |
| •Replace or repair travel motor or swivel joint<br>•Remove travel motor or swivel joint piping | | ● | | | ● | ● |

**2. Cleaning of Air cleaner element:** It is a common practice to clean air cleaner elements daily, without checking the clog indicator that is provided on the intake manifold line after the air cleaner. This is followed as a strict exercise routine, contrary to the fact that there is no time interval fixed for it's cleaning. This has to be cleaned only when required, when the clog indicator goes to the red zone. In the process we do more harm than good to the engine. Modern machines like PC300-7 have air clog indicator caution lamp on the monitor panel itself, and operators need not have to check gauges before deciding the cleaning time. Machine manufacturers in the maintenance manual highlight that if element is cleaned frequently before the clogging indicator flashes, the air cleaner will not be able to display its performance fully and the cleaning efficiency will also go down.

Majority of the people will not be aware of the correct air pressure that should be used to clean air cleaners. The answers in most cases vary from 25 to 35 PSI ( 2-2.5 Kgf/$cm^2$). This was true some twenty years back. Today, maintenance manuals prescribe you to direct compressed air less than 7kgf/$cm^2$ or 99PSI to clean the outer element. And then also gives the procedure how it should be cleaned. Such inputs can be shared between the maintenance team only if one goes through the manual. Normally the youngest team member who may not have the knowledge to do it the right way performs air cleaner cleaning job.

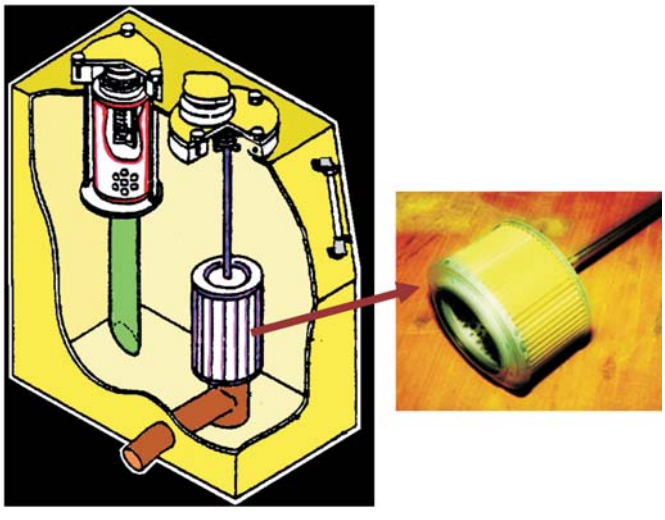
**Fuel Tank Cap:** Fuel filling necks have a strainer fitted so that big particles, if any, can be prevented from entering the fuel tank. This, however, slows down the filling speed and one finds is convenient to remove and fill directly, thereby defeating the entire purpose. The strainer should be cleaned if clogged but never eliminated. Similarly the fuel cap has breather holes to allow atmospheric pressure in the tank. If breather hole of the cap is

clogged, the pressure in the tank will drop and fuel will not flow freely to the engine. This hole should be cleaned from time to time.

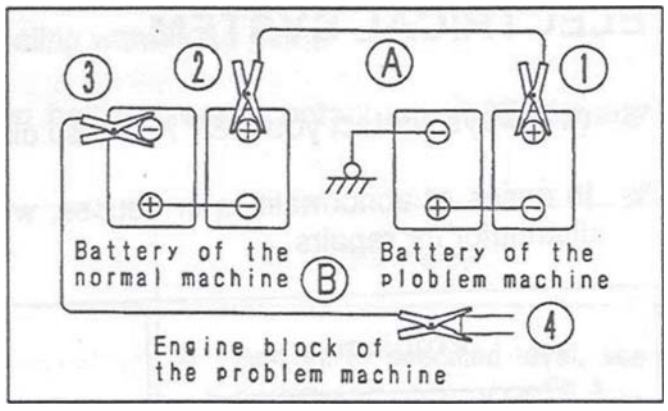
### Cleaning Hydraulic Tank Strainer

Komatsu hydraulic excavators like PC200-6, PC300-7 etc. have strainers fitted in the hydraulic tank in the suction line to the pump. This has to be cleaned every 2000 hours. This is generally omitted. People have a feeling that as the oil change interval is 5000 hrs., this should also be cleaned at that interval only. A dirty strainer will restrict free flow of oil to the pump and cause vibrations, overheating and gradually reduce the life of costly hydraulic components.

**Starting engine with booster cable:** This is a very common occurrence in the job site, where a machine has to be started with booster cables and batteries, as the machine's battery has become weak and is unable to start. A variety of methods are adopted to make connections between the faulty machine and a good



machine – most of which are neither same for the machine or the person who works. One common practice is to make contact between a good machine and problem machine, and use only one booster cable. This can be very harmful, as the starting current has to pass through many loose joints like the swing gear, or swing motor where a spark can take place and harm the machine. The adjacent schematic gives the correct and safe process.




**Booster cable connection**

1. Keep the starting switch of the problem machine and the normal machine in OFF position.
2. Connect one clip of booster cable (A) to the positive (+) terminal of the problem machine.
3. Connect the other clip of booster cable (A) to the positive (+) terminal of the normal machine.
4. Connect one clip of booster cable (B) to the negative (-) terminal of the normal machine.
5. Connect the other clip of the booster cable (B) to the upper structure of the problem machine.
6. Make sure that the clips are firmly connected to the battery terminals.
7. Start the engine of the normal machine and keep is running at high idle.
8. Start the problem machine with the starting switch. If the engine fails to start try after two minutes or so.

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

Only a few common points have been covered in this column. The entire operation and maintenance manual is loaded with inputs, which if followed correctly will enhance the life of the machine, and will consistently perform to its peak potential. We urge all users to take advantage of the expertise of machine manufacturers which is provided in the operation and maintenance manual.

*In the next edition of this magazine we shall update you with something equally important and interesting. Keep track of the next issue of L&T Earthmovers News.*

*The average pencil is seven inches long, with just a half inch eraser in case you thought optimism was dead.*

*– Robert Branet*

# Training Programmes at Igatpuri & Chakan

In order to impart training to all the staff of customers in a location convenient to them and also for obviating time loss to the customers, L&T's Pune team of Construction Equipment Business along with our Authorised Dealer, M/s Aryan Earthmovers, organised tailor made training programmes in April 2007 at 2 sites on Sundays.

During the training programme, the participants were apprised on the periodic maintenance, preventive action to be taken, locations and working of various components on the machine, including troubleshooting of various problems at site. The participants were also elucidated on the correct operations of machine and the advantages of using Komatsu recommended lubricants and genuine parts. Cut-away sections of Genuine & Non-Genuine parts were shown and differences explained to the operating staff. They were also advised about the failures that may occur due to use of non-genuine parts and non-recommended consumables. This was followed by practical training on the machine.

The first training programme was conducted at the site of one of our renowned and valued customers, M/s. Nirman Construction at Igatpuri. 23 participants attended this training programme.

*Hands on training at Chakan site*

The second training programme was conducted at Chakan (Volkswagen site) for leading land development contractors in Pune – M/s. K.J.Jadhav and M/s. R.S. Kamthe, which was attended by 27 participants.

*Classroom training programme*

*Nirmal Construction participants posing in front of the Hydraulic Excavator.*

*Doing easily what others find difficult is talent*
*Doing what is impossible for talent, is genius*

*– Henri Frederie Amiel*

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