BACKHOE LOADERS

Product Comparison TRAINING

KOMATSU
TAKE THE LEAD

KOMATSU vs JCB

Side-by-side feature comparison has been done with WB93R-5/WB97R-5 and 3CX in KUE in April 2005

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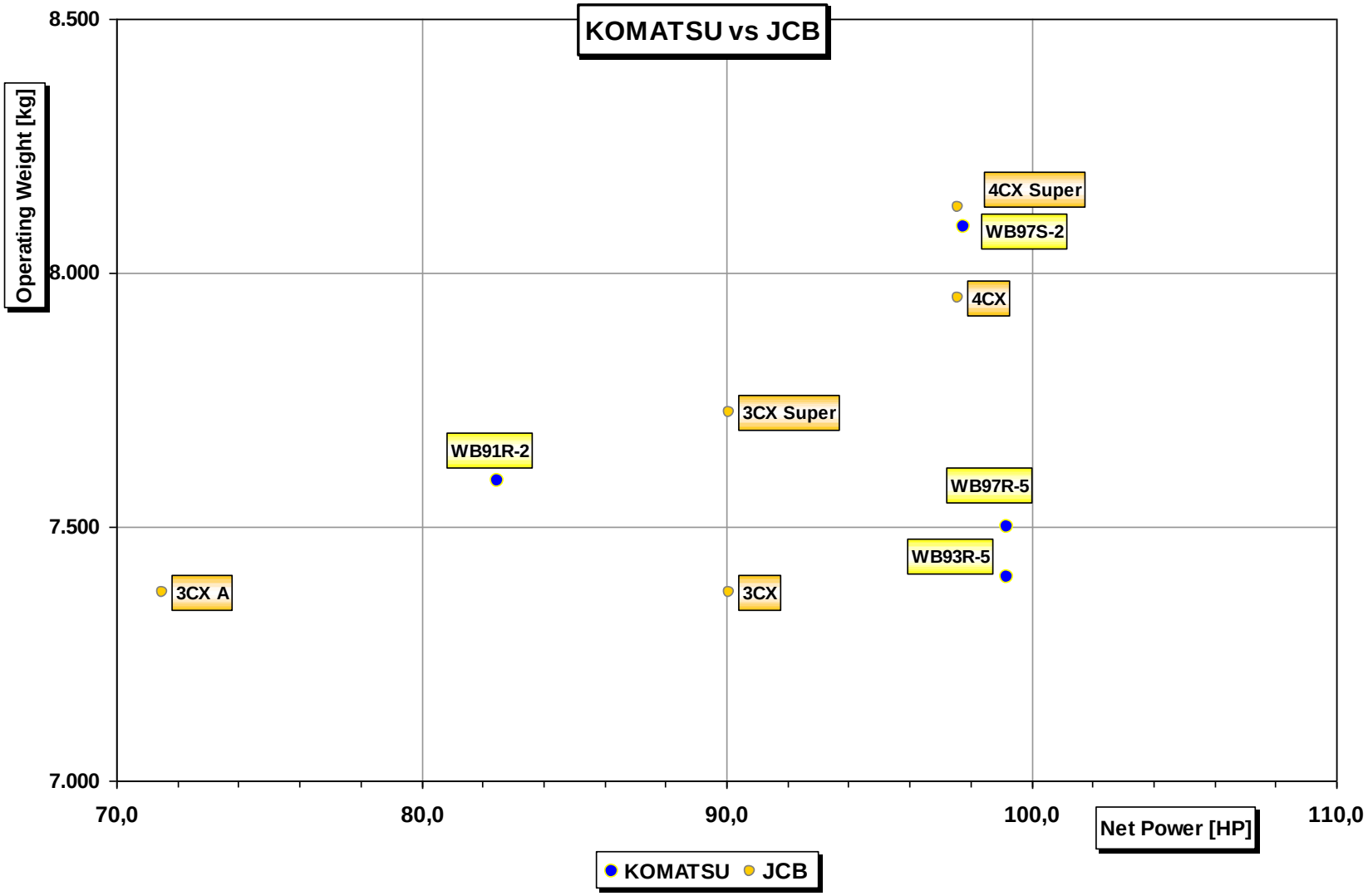

KOMATSU vs JCB
Operating Weight [kg]
8.500
8.000
7.500
7.000
70,0
80,0
90,0
100,0
110,0
Net Power [HP]
4CX Super
WB97S-2
4CX
3CX Super
WB91R-2
WB97R-5
WB93R-5
3CX A
3CX
KOMATSU
JCB

3CX

Engine	Transmission		
Standard Turbo 90HP	*Standard* P/Shuttle, 36Km/h	*Option* P/Shift, 40Km/h	-
Option Turbo 97,6HP	-	-	*Option* Auto P/Shift, 40Km/h

Hydraulic System:
Open Center, Gear Pump

3CX Contractor

Engine	Transmission		
Turbo 97,6HP	-	*Standard* P/Shift, 40Km/h	*Option* Auto P/Shift, 40Km/h

Hydraulic System:
Open Center, Gear Pump

3CX Super

Engine	Transmission		
	Standard	*Option*	
Turbo 90HP	P/Shuttle, 33Km/h	P/Shift, 38Km/h	-

Hydraulic System:
Open Center, Gear Pump

Steering System:	
4WS	2 steering modes: normal, circle

4CX Super

Engine	Transmission		
		Standard	*Option*
Turbo 97,6HP	-	P/Shift, 40Km/h	Auto P/Shift, 38Km/h

Hydraulic System:

Standard

Open Center, Gear Pump

Option

Closed Center, variable displacement Piston Pump

Steering System:

4WS	3 steering modes: normal, circle, crab

STD CONFIGURATION

- P-Shuttle
- PPC for loader
- Mechanical levers for b/h
- Net power: 99,2 HP Turbo
- Std operating weight: 7.400 kg

STD CONFIGURATION

- P-Shuttle
- Lever for loader
- Mechanical levers for b/h
- Net power: 90,1 HP Turbo
- Std operating weight: 7.370 kg

- **Totally redesigned to increase comfort and appearance**
- **Rounded glasses**
- **Large protecting roof**
- **High ergonomics of cab interior**

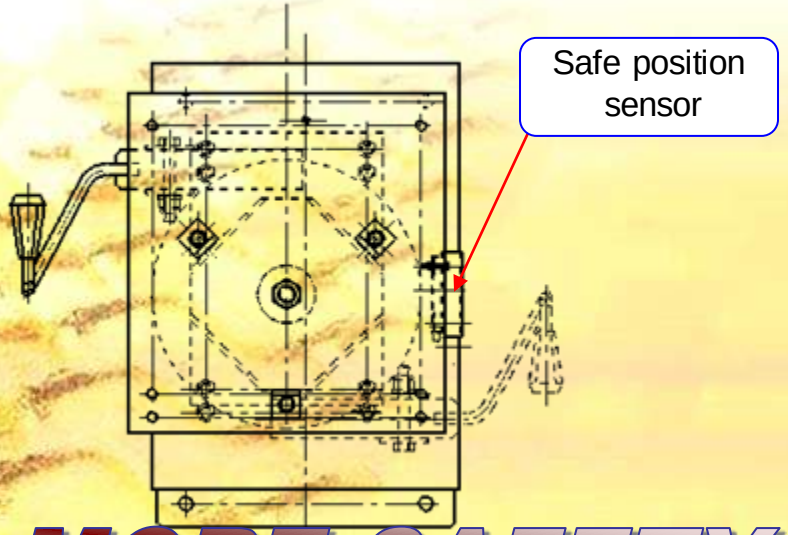
- **Rounded glasses**
- **Good cab interior**

- **Excellent visibility to the front working area thanks to the sloping engine bonnet and exhaust gas pipe at cab side**
- **Loader is well visible**

- **Exhaust gas pipe and high engine bonnet reduce visibility to the front working area**
- **Loader is not very visible**

- **Upper window gives a perfect visibility in high position for loading operations**
- **Loader is completely visible**

- **No upper window available**
- **Loader is not completely visible**

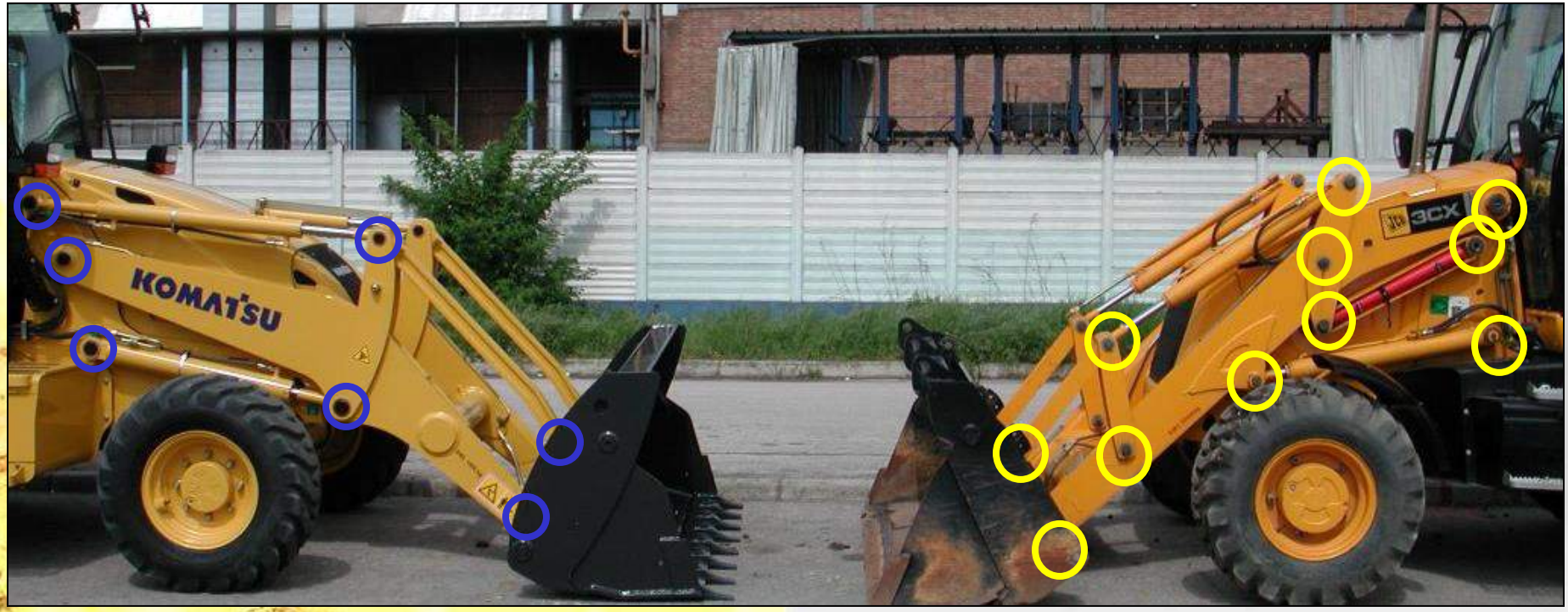


MORE SAFETY

- **The “Safe Position” seat sensor warns with an acoustic alarm the operator when the seat is out of the Loader position and the Fwd/Rev shifter is activated**
- **This application complies with the European Standard (EN 474-3)**

N/A

- **Not available**



- Parallel linkage
- Divergent structure: better stability and less torsion
- Design with 14 pins

- Parallel linkage
- Not divergent structure
- Design with 22 pins: longer greasing time and higher service cost

+17% LIFTING CAPACITY
+4% BUCKET BREAKOUT FORCE

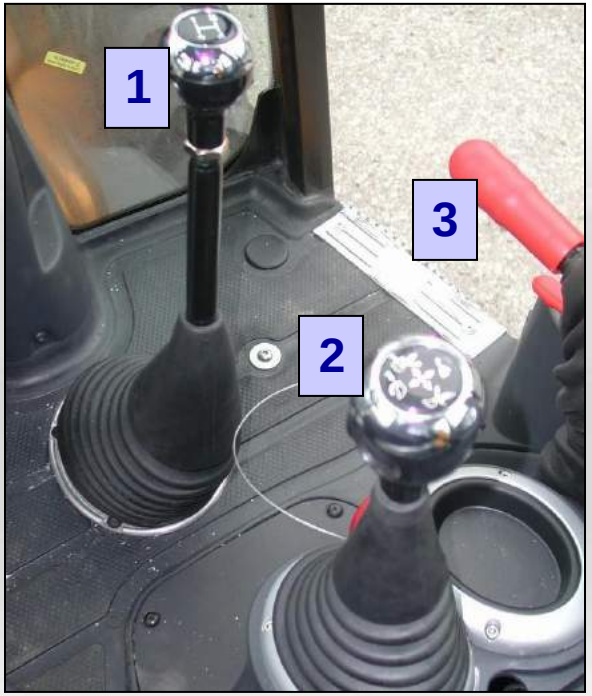
- **Lifting capacity at max height: 3.900 kg**
- **Bucket breakout force: 6.500 kg (std bucket)**

- **Lifting capacity at max height: 3.320 kg**
- **Bucket breakout force: 6.250 kg (std bucket)**

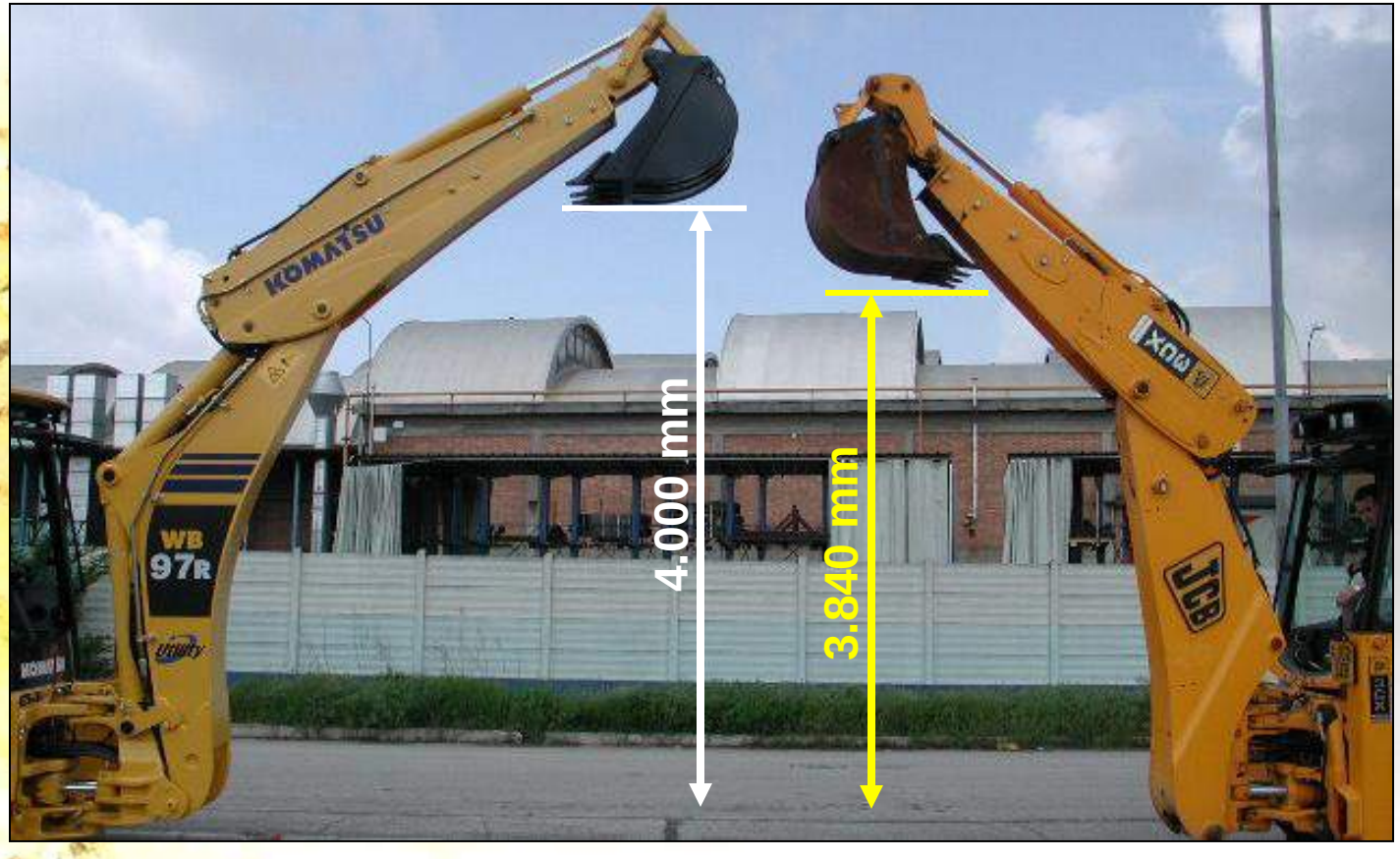
+140% SELF LEVELLING

- **Self-levelling when lifting and lowering (max angle 11°), ideal with forks**
- **Self-levelling when lifting and lowering (max angle 26°)**

- PPC joystick standard (for the whole range)
- Speed-up function standard
- Levers are located in ergonomic position (1-gear selection, 2-loader control, 3-hand brake)



- Mechanical levers standard
- Levers not in ergonomic position: gear selection is far from loader control lever



- New S-Shaped boom
- Excavator style
- Easier truck loading capacity
- Better accessibility to hoses and piping

- Straight shape boom
- Hoses are inside the boom

+32% ARM BREAKOUT FORCE

+7% BUCKET BREAKOUT FORCE

+24% LIFT CAPACITY

- Arm breakout force: 4.000 kg
- Bucket breakout force: 6.100 kg
- Lift capacity at full reach (SAE J31)
  - standard: 1.550 kg
  - with extended telesc.: 1.200 kg

- Arm breakout force: 3.010 kg
- Bucket breakout force: 5.700 kg
- Lift capacity at full reach (SAE J31)
  - standard: 1.250 kg
  - with extended telesc.: 990 kg

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+8% DIG DEPTH (WB93R)
+15% DIG DEPTH (WB97R)

- **WB93R-5 Digging depth [SAE]**
  - **standard: 4.540 mm**
  - **with extended telesc.: 5.650 mm**
- **WB97R-5 Digging depth [SAE]**
  - **standard: 4.840 mm**
  - **with extended telesc.: 6.080 mm**

- **Digging depth [SAE]**
  - **standard: 4.210 mm**
  - **with extended telesc.: 5.430 mm**

- **Mechanical levers are standard for WB93R-5**
- **Standard PPC controls for stabilisers**

- **Mechanical levers are standard (also for stabilisers)**

- PPC joysticks are standard for WB97R-5 and optional for WB93R-5
- Std PPC controls for stabilisers
- Independent tiltable columns with continuous adjustment
- Standard wrist-rests

- PPC joystick as option on the seat
- PPC controls for stabilisers
- Complex structure and design
- NOT adjustable

- In the front position 3 control levers make confusion for the operator

- Good hoses routing
- 2 positions for swing lock (RH & LH)
- Boom lock pipes are rigid and zinc plated

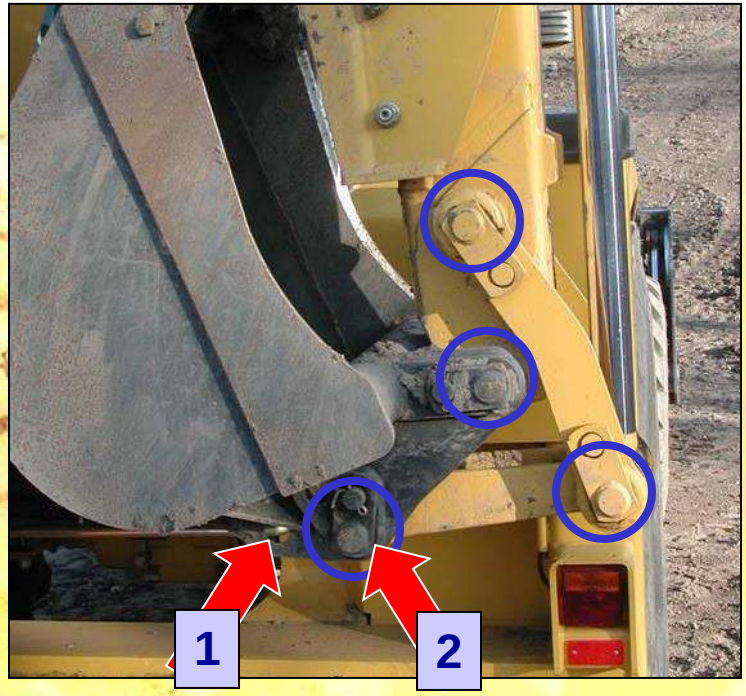
- Hoses stressed with boom 90° swung
- Only 1 position for swing lock
- Boom lock hoses are flexible and more exposed to damages

- **Electro-hydraulic boom lock with switch: more comfortable**
- **Boom stop: hydraulic cushion**

- **Boom lock mechanical, with lever & cable; more difficult to operate**
- **Boom stop: mechanical**

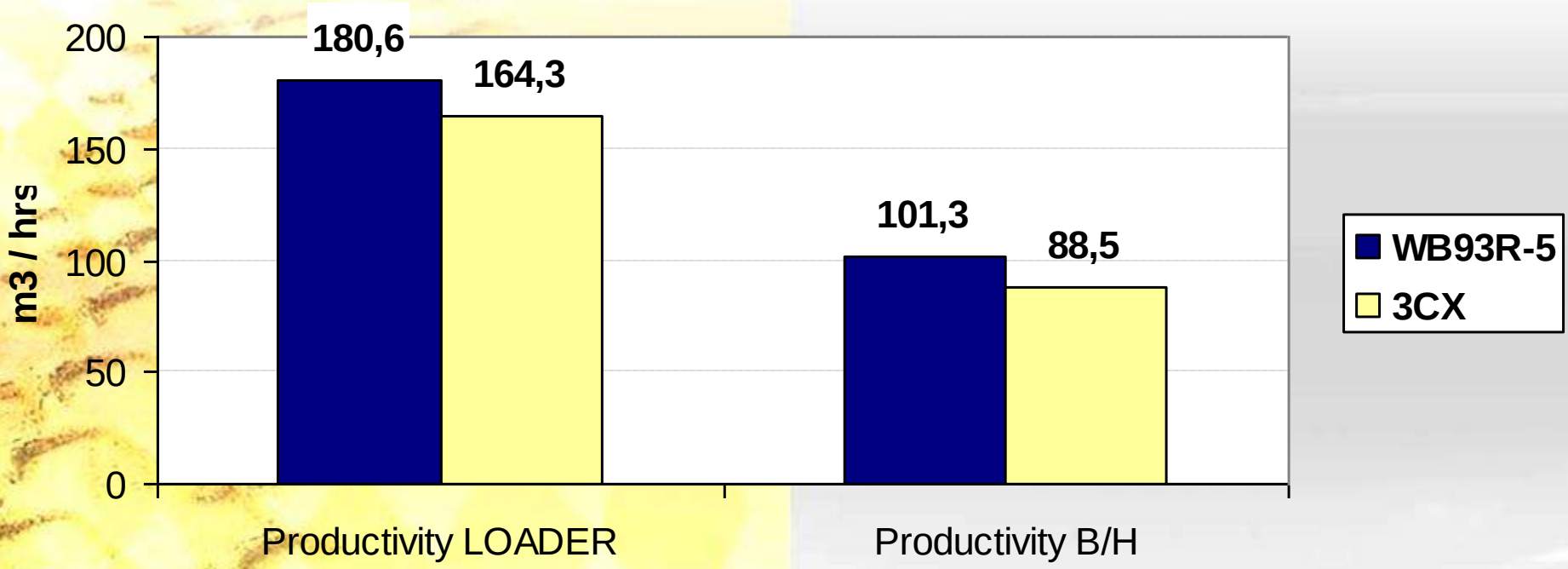
- **Hydraulic cushion on:**
  - **Swing (left and right)**
  - **Boom (lifting)**
  - **Arm (closing)**

- **Hydraulic cushion on:**
  - **Swing (left and right)**
  - **Arm (closing)**



- 2 digging positions:
  1) close to bucket teeth: plinth digging (vertical digging)
  2) far from bucket teeth: higher force and bucket rotating angle
- 4 articulation points
- 45mm bucket pins

- Only 1 digging position: no customisation
- 5 articulation points
- 45mm bucket pins
- The connecting rod with “L” shape reduces the bucket force



+10% LOADER PRODUCTIVITY

+14% BACKHOE PRODUCTIVITY

Test conditions, according to KES (Komatsu Engineering Standard):

- **LOADER: V-shape loading on a truck (2.850 mm height)**
- **BACKHOE: trench digging and dumping at 45° - 1.700 rpm**

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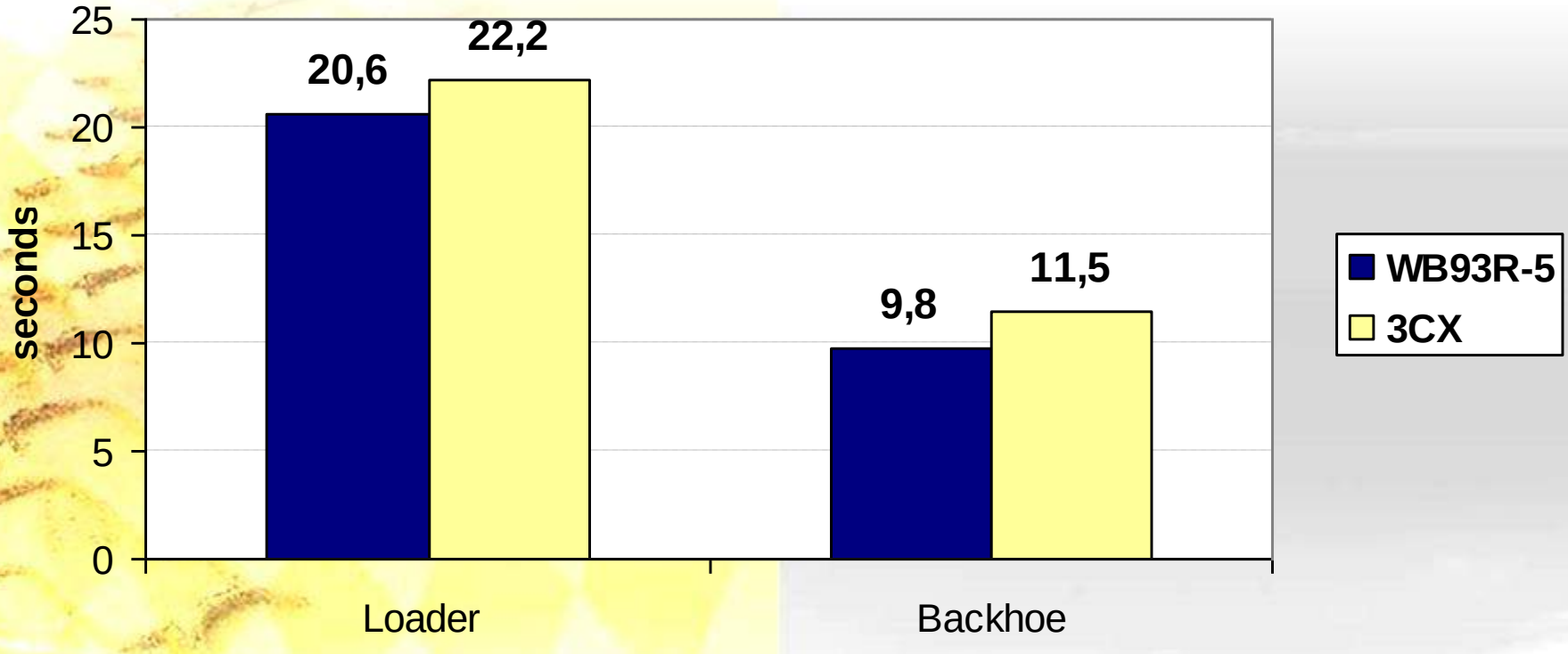
TAKE THE LEAD



+7% FAST LOADER

+15% FAST BACKHOE

Test conditions, according to KES:

- **LOADER: V-shape loading on a truck (2.850 mm height)**
- **BACKHOE: trench digging and dumping at 45° - 1.700 rpm**

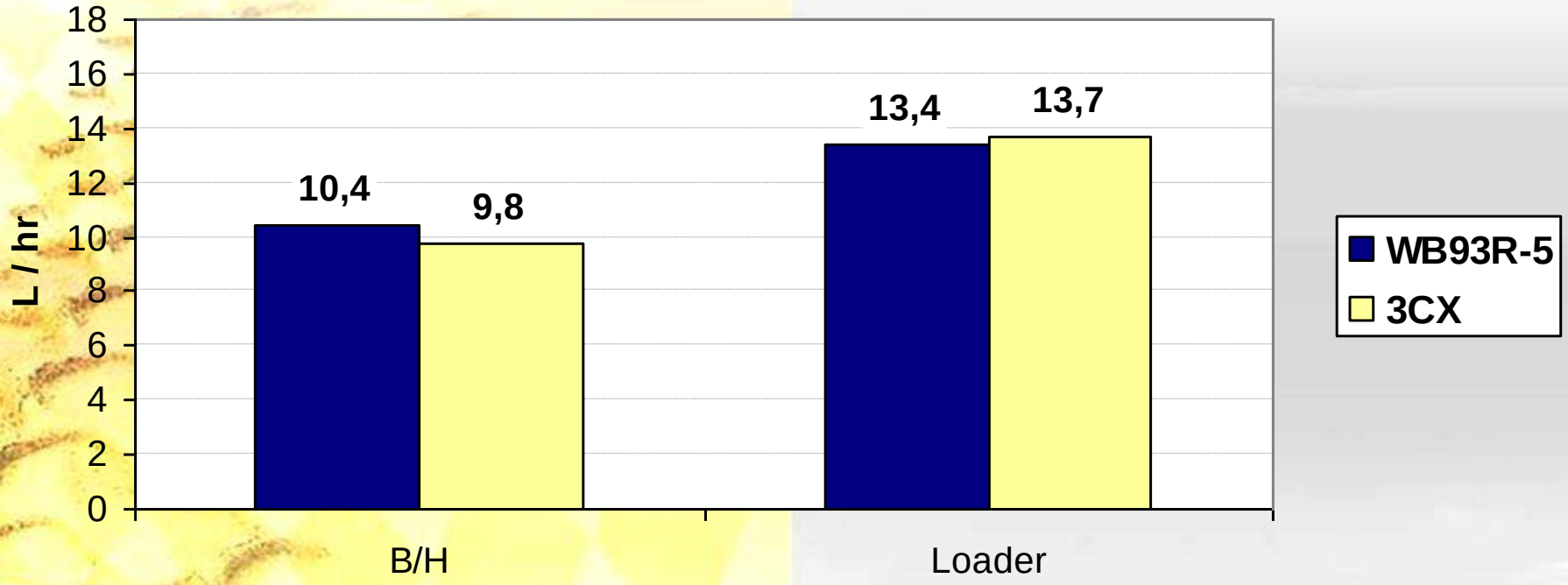
+10% POWER

+4% TORQUE

- Displacement: 4,5 L
- Aspiration: Turbo
- Power: 99,2 HP (SAE)
- Max torque: 398 Nm at 1400 rpm
- Stage 2

New

- Displacement: 4,4 L
- Aspiration: Turbo
- Power: 90,1 HP (SAE)
- Max torque: 382 Nm at 1300 rpm
- Stage 2



Test conditions, according to KES:

- **LOADER: V-shape loading on a truck (2.850 mm height)**
- **BACKHOE: trench digging and dumping at 45° - 1.700 rpm**

+11% SPEED

- **Max speed: 40km/h**
- **4-speed**

- **Max speed: 36km/h**
- **4-speed**

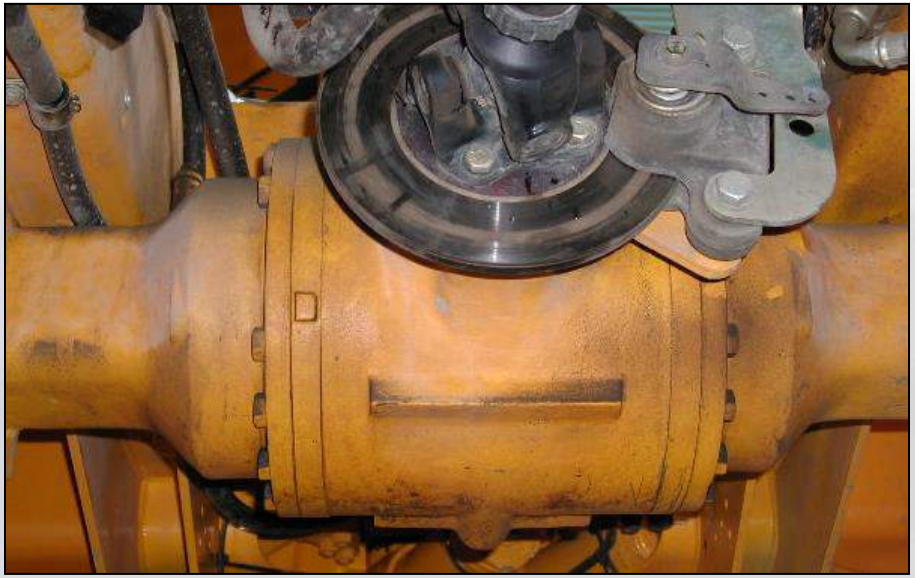
- Max speed: 40km/h
- Automatic shifting is STANDARD (twist grip):
  - Automatic and semiautomatic shifting selectable
  - Kick down standard on PPC joystick (switch)

- Max speed: 40km/h
- Automatic shifting is available only as option (6-speed)
- Kick down system only with automatic version

+54% DYNAMIC LOAD

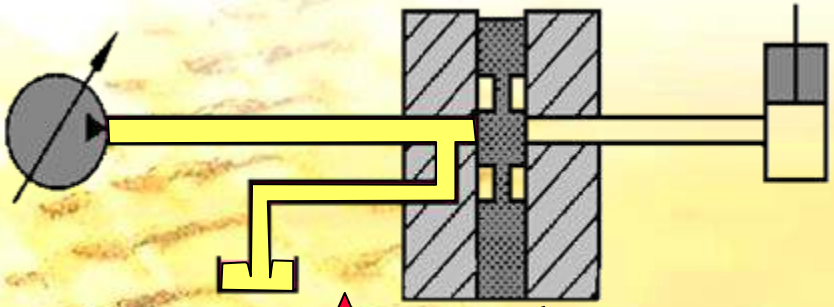
- Heavy Duty type
- Dynamic load: 8.660 kg
- Oscillation: 20° (total)
- Double acting steering cylinder
- Wheel have 8 nuts for better retention
- Remote grease fitting

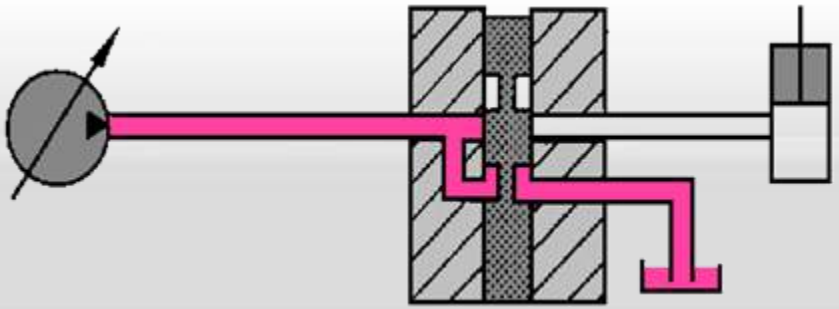
- Dynamic load: 5.610 kg
- Oscillation: 16° (total); the smallest value in the market
- Double acting steering cylinders
- Wheels have only 5 nuts



- Heavy duty type
- Dynamic load: 7.750 kg
- 100% electro-hydraulic differential lock, controlled by a switch on the PPC joystick
- Wheels have 10 nuts for better retention

- Dynamic load: 8.460 kg
- Differential lock is available only as option, limited slip
- Wheels have only 5 nuts





CLSS

- KOMATSU CLSS hydraulics
- Closed center: with levers in “Neutral” only a minimum flow (10 l/min) goes trough unloading valve
- More power to the working equipment at any engine rpm

- Open center: even with levers in “Neutral” the max flow always goes trough the control valve
- Overheating and more wear of components
- Engine is overloaded when travelling

+21% HYDRAULIC POWER

- Variable displacement piston pump
  - Flow: 165 l/min
  - Pressure: 250 bar
  - Hydraulic power: 92 Hp

- Twin gear pump, fixed displacement
  - Flow: 136 (79 + 57) l/min
  - Pressure: 251 bar
  - Hydraulic power: 76 Hp

New

Power/Economy switch

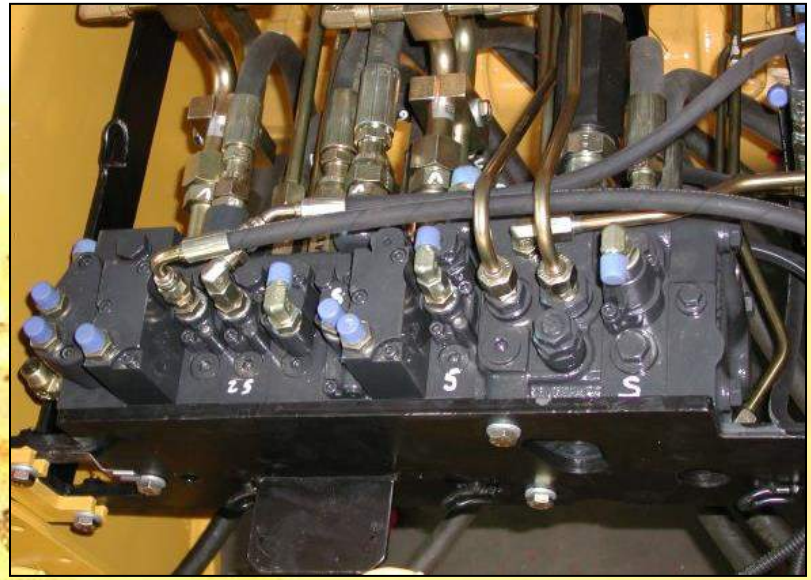
Speed-Up switch

HSC switch

MORE CONTROLLABILITY

- Backhoe
  - Power: max hydraulic power available
  - Economy: finishing works and fuel saving
- Loader
  - Speed Up: increases speed of 15%

- Backhoe
  - Working mode not available
- Loader
  - HSC (Hydraulic Speed Control) as option: it disables one section of the pump. Useful for travelling or working with loader



- LIFD (Load Independent Flow Divider): the system forces the oil to all circuits regardless the different loads
- Simultaneous and smoother movements
- One valve for Loader and Backhoe for easier maintenance

- LIFD not available
- 2 separate control valves
- Different suppliers for mechanical levers or PPC version

- Piping are screwed (with nipple) close to cylinders for easy maintenance

- Long rigid piping are welded directly on the cylinders
- This can have more expensive consequences in case of maintenance
- Vibrations cause damages on the painting and noise

MORE ACCESSIBILITY

- One piece fully tiltable bonnet
- With only one operation, the engine compartment is accessible from left, right and top

- Actual bonnet is a plastic multi-pieces: the loader arm must be raised to access the side of the engine
- the new one (presented at Samoter 05) is one piece, like Komatsu !

- **Wide toolbox, separate from the battery area**
- **Easy-access location, on the side**
- **Lockable compartment**

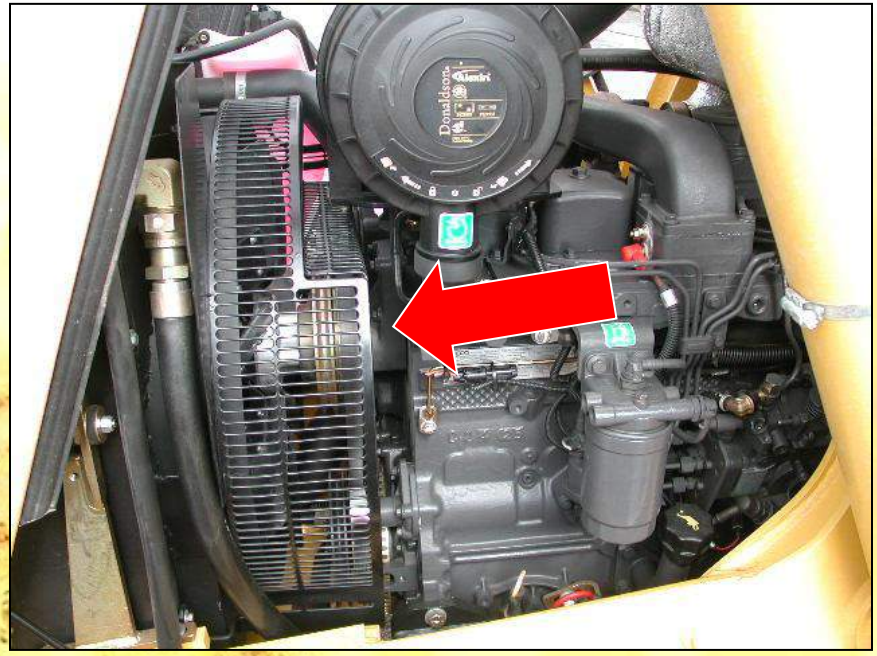
- **Toolbox: small and not very accessible**

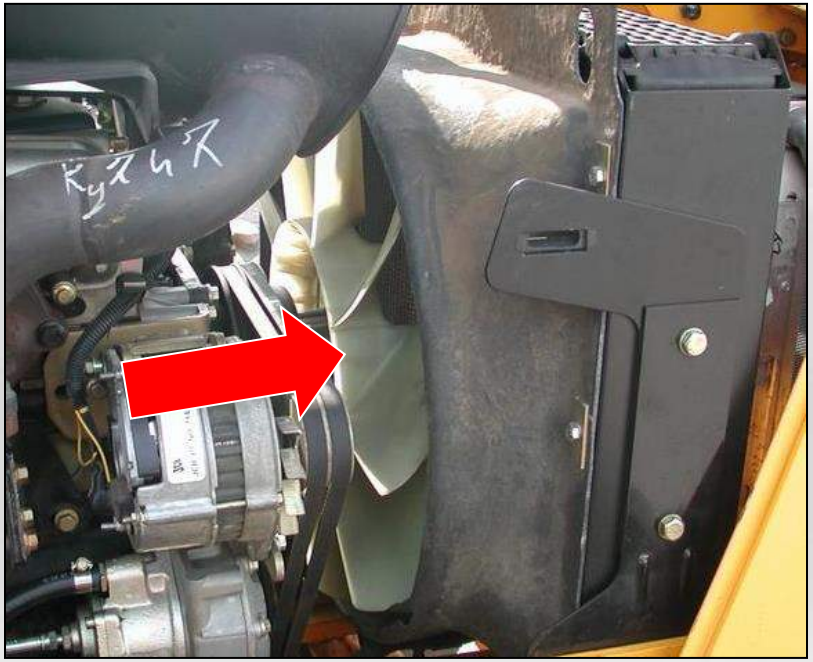
- On the same compartment of toolbox
- Easy to reach

- Battery location is in front of the radiators
- Not easy to reach: to get the access it is necessary to raise the loader arm and to remove the front grill

- Capacity: 150 liters
- The top of the tank it's a very wide step for cab entrance
- Low position: easy to refill, also with poly-tanks
- Strainer is standard
- Large step bolted on the tank

- Capacity: 150 liters
- Strainer is not available
- Steps are bolted on welded supports





MORE SAFETY

- **Fan is completely protected by a guard for operator' safety**

- **Fan guard is missing**
- **Serious SAFETY issue**

- 1 radiator with 3 separate sections side-by-side, aluminum type (T/M oil, engine water and hydraulic oil)
- Easy to clean radiator
- Better structure and quality
- Radiator is mounted on 4 elastic supports

- 2 different radiators (1 for water, 1 for T/M oil and hydraulic oil)
- Radiators are not mounted on elastic supports

- LOADER, superior performances:
  - +17% lifting capacity
  - +4% bucket breakout force
  - +140% self levelling
  - +10% productivity
  - +5% faster cycle time
- BACKHOE superior performances:
  - +24% lifting capacity
  - +32% arm breakout force
  - +7% bucket breakout force
  - +15% digging depth for WB97R-5 and +8% for WB93R-5
  - +14% productivity
  - +15% faster cycle time

- CLSS hydraulic system designed by Komatsu: more controllability, smoother simultaneous movements,
  - +21% hydraulic power
  - working modes (Speed-up, Power&Economy)
- Engine: +10% power; +4% torque
- Transmission:
  - Power Shuttle: +11% travel speed
  - Power Shift with Automatic shifting standard
- Better visibility (front and upper)
- Standard PPC servo-control for loader: better controllability
- PPC servo-controls standard on WB97R-5
- Easier serviceability: less greasing points, better accessibility

Please consider this Training for use internal only to KOMATSU Sales Network.