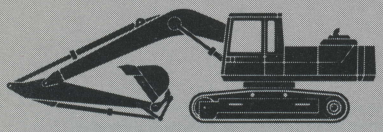


Competitive Information

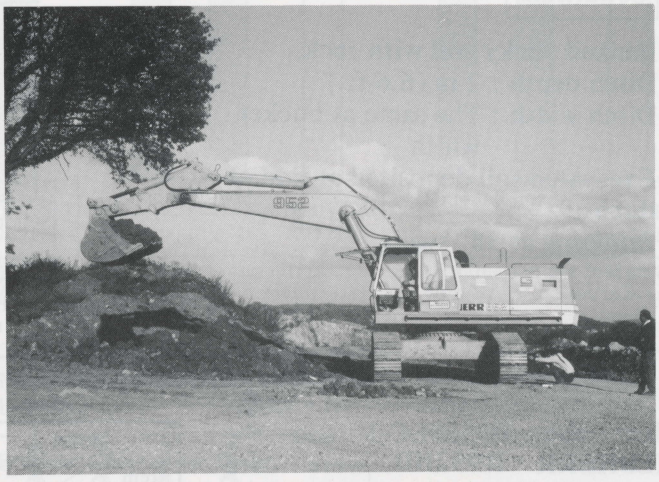
Hydraulic Excavator

INTERNAL USE ONLY

FIELD TEST REPORT

CI-J-104-E0
Mar., 1988

KOMATSU PC360LC-3 vs. LIEBHERR R952HD



Subject: Performance comparison between KOMATSU PC360LC-3 and LIEBHERR R952HD
Objective: To evaluate the working performance of both machines
Study date: Oct., 1987
Location: Moha, Belgium
Equipment studied:

Item	Model	KOMATSU PC360LC-3	LIEBHERR R952HD
Operating weight	kg (lb)	35700 (78,700)	40590 (89,500)
Flywheel horsepower	HP (kW)/rpm	212 (158)/1550	215 (158)/2100
Bucket capacity (CECE)	m^3 (cu.yd)	1.5 (1.96)	1.6 (2.09)
Arm length	mm (ft.in)	3130 (10'3")	2200 (7'3")
Track length on ground	mm (ft.in)	4450 (14'7")	4150 (13'7")
Track gauge	mm (ft.in)	2870 (9'5")	2800 (9'2")
Shoe width	mm (in)	710 (28")	600 (23.6")
Service meter	Hour	8	3010

Test results at a glance:

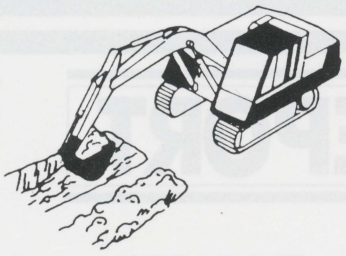
Ditching:	Hourly production:	KOMATSU PC360LC-3 (S-mode) is 35% higher than LIEBHERR R952HD.
	Fuel consumption:	KOMATSU PC360LC-3 (L-mode) is 23% less than LIEBHERR R952HD.
	Fuel efficiency (m^3/ltr.):	KOMATSU PC360LC-3 (S-mode) is 56% more efficient than LIEBHERR R952HD.
Loading:	Fuel consumption:	KOMATSU PC360LC-3 (L-mode) is 29% less than LIEBHERR R952HD.
	Fuel efficiency (m^3/ltr.):	KOMATSU PC360LC-3 (L-mode) is 32% more efficient than LIEBHERR R952HD.

KOMATSU

High productivity and economy

Featuring two-mode selection : STANDARD mode and LIGHT-DUTY mode.
The more suitable mode can be selected in response to the user's demand.

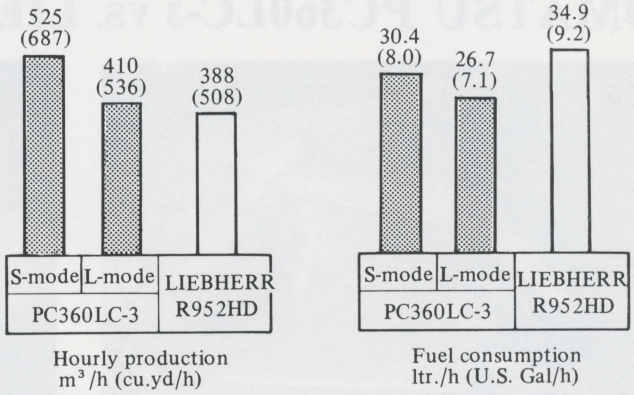
Ditching



The productivity of the PC360LC-3 in the S-mode is one class higher than the LIEBHERR R952HD.
For projects which demand economy, the fuel consumption of the PC360LC-3 in the L-mode is 23% less than the LIEBHERR R952HD.

Conditions

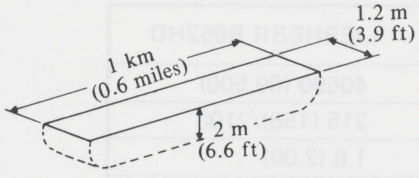
- **Banked sticky soil with rock.**
- **Ditch depth : 2 m (6.6 ft.)**
- **Ditch width : The same as bucket width**
- **Excavated soil deposited at side of ditch**
- **Dumping at 30° swing**



Hourly production m^3/h (cu.yd/h)

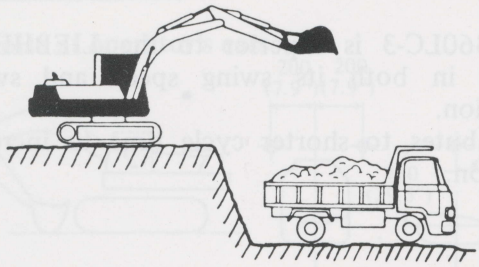
Fuel consumption ltr./h (U.S. Gal/h)

When the **PC360LC-3** and the LIEBHERR **R952HD** were used under test conditions to dig a ditch 1 km (0.6 miles) in length, the fuel and time required were as shown in the chart on the right.



Item \ Model	KOMATSU PC360LC-3		LIEBHERR R952HD
	S-mode	L-mode	
Fuel required	139 ltr [100%] (36.7 U.S.Gal)	156 ltr [112%] (41.2 U.S.Gal)	216 ltr [155%] (57.1 U.S.Gal)
Time required	4 h. 35 min.[100%]	5 h. 52 min.[128%]	6 h. 11 min.[135%]

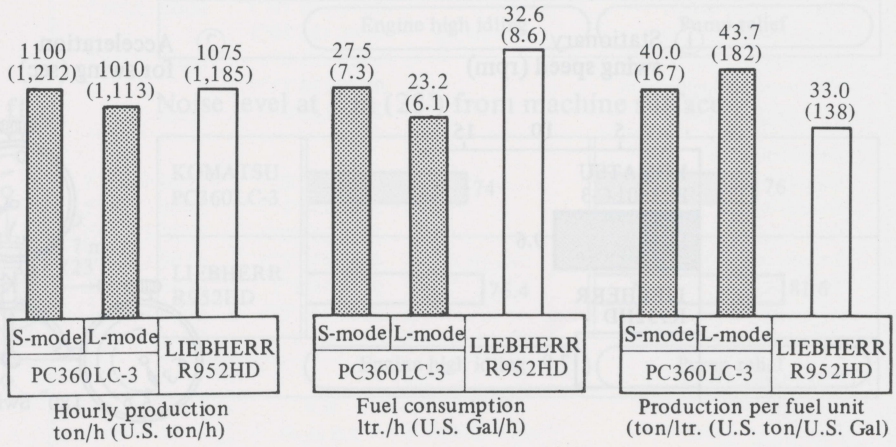
Loading



The fuel consumption of the PC360LC-3 in the L-mode is 29% less than the LIEBHERR R952HD.
The efficiency of the PC360LC-3 in the L-mode is 32% higher than of the LIEBHERR R952HD.

Conditions

- Loose soil with gravel
- Excavator and dump truck on different ground
- Loading at 90° swing
- 18 ton (20 U.S. ton) dump trucks (MAN trucks made in West Germany)
- 7 buckets loading

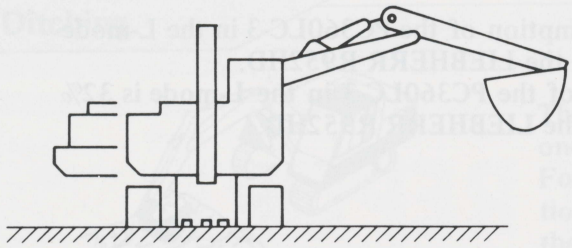


When the PC360LC-3 and the LIEBHERR R952HD were used under test conditions for one day's operations, the number of dump trucks which could be loaded and the fuel required for one dump truck were as shown in the chart on the right. The PC360LC-3 is 22% less than that of the R952HD.

Model \ Item	No. of 18-ton dump trucks which can be loaded (= 20)	Fuel consumption per dump truck
PC360LC-3 S-mode	366 [100%]	0.45 liter (0.12 U.S gal) [100%]
LIEBHERR R952HD	358 [98%]	0.55 liter (0.19 U.S. Gal) [122%]

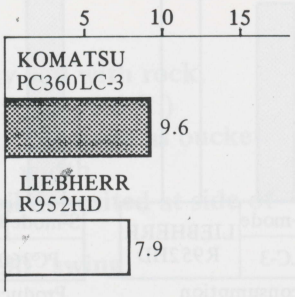
Calculation conditions :
Daily hours of operation : 8 hours
Job efficiency : 0.75
Bucket capacity :
PC360LC-3 1.5 m^3 (1.96 cu.yd)
LIEBHERR R952HD 1.6 m^3 (2.09 cu.yd)
Bucket factor : 1.0

Excellent swing performance

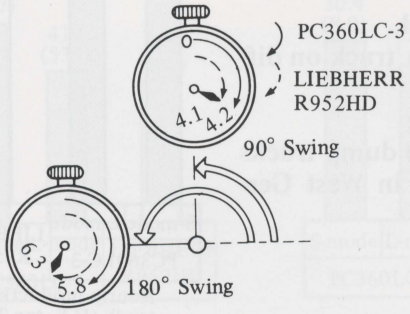


The PC360LC-3 is superior to the LIEBHERR R952HD in both its swing speed and swing acceleration.
It contributes to shorter cycle time to increase production.

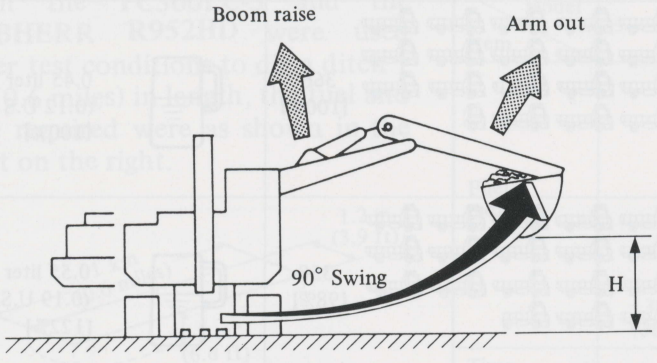
① Stationary swing speed (rpm)



② Acceleration for swing (sec)

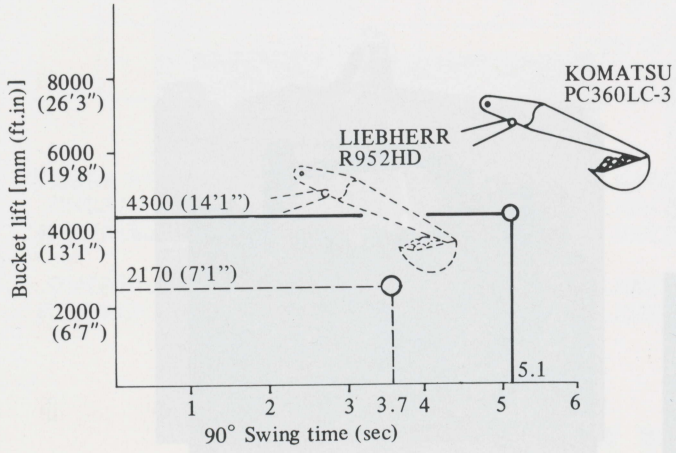


Outstanding simultaneous ability



Conditions

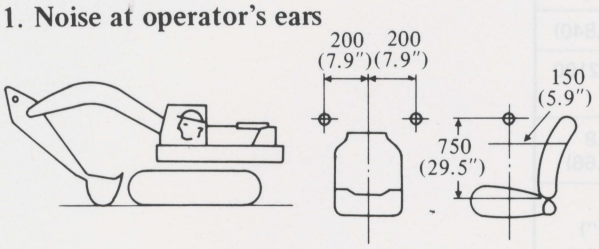
Swing, boom raise & arm out are controlled simultaneously with the bucket loaded. The bucket raised height "H" and the 90° swing time were measured.



The compound operation of swing, boom raise and arm out is one of the most frequently used movements in daily operations. The PC360LC-3 has the best match of bucket lift and swing time.
The R952HD's bucket is lifted only 1/2 as high as the PC360LC-3.
This means the swing must be controlled after 90° swinging.

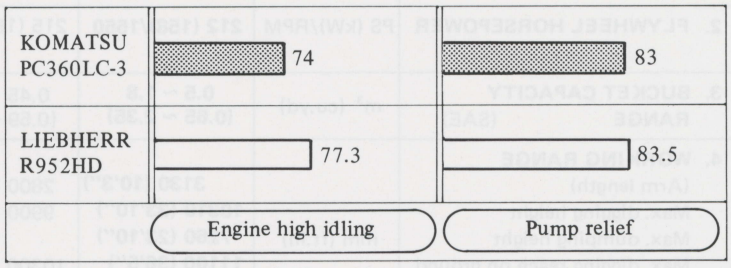
Noise

1. Noise at operator's ears

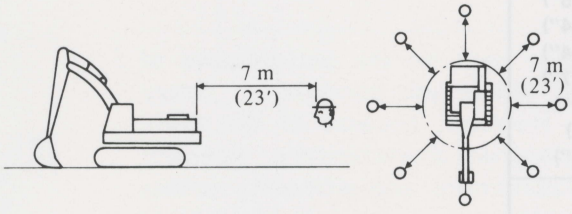


Noise level at operator's ears

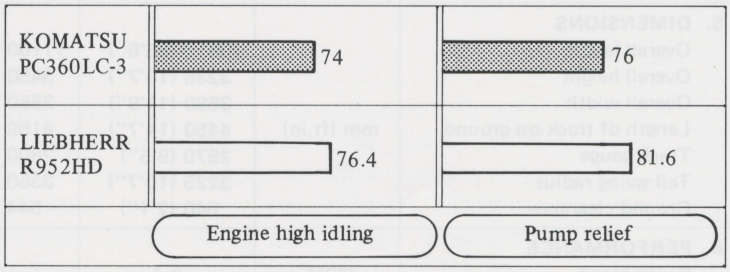
unit: dB (A)



2. Noise around the machine [7 m (23 ft.)]



Noise level at 7 m (23') from machine surface



Speedy work equipment

The work equipment speed of the PC360LC-3 is same as that of R952HD.

Item			Model	
			PC360LC-3	R952HD
Boom	Raise	sec	4.3	4.7
	Lower	sec	3.2	4.2
Arm	In	sec	4.3	5.2
	Out	sec	3.4	3.2
Bucket	Curl In	sec	4.8	3.1
	Curl Out	sec	2.8	2.5
Total		sec	22.8	22.9

Conditions

Engine speed; full
Bucket; no load

It is difficult for the LIEBHERR R952HD to perform finishing operations because the work equipment speed is slow and the time lag is large when operating the bucket or arm in a vertical position.

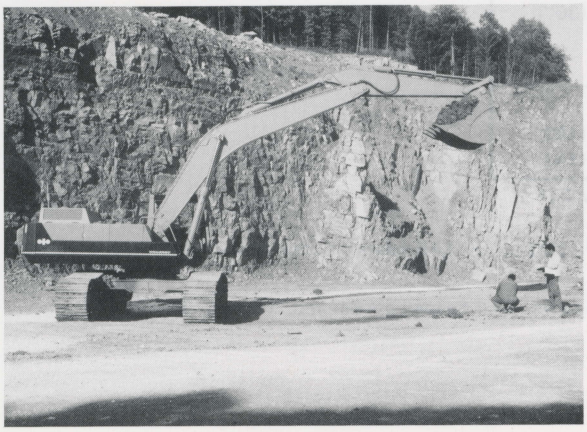
Time lag

Unit: sec

Item	PC360LC-3	R952HD
Boom	0.5	1.8
Arm	1.2	4.6
Bucket	3.1	4.8

Conditions

Engine speed; low idling
Bucket; no load



Comparative specifications (Catalog value)

Item \ Maker / Model		KOMATSU PC360LC-3	LIEBHERR R952HD
1. OPERATING WEIGHT*	kg (lb)	**35700 (78,700)**	41650 (91,840)
2. FLYWHEEL HORSEPOWER	PS (kW)/RPM	**212 (158)/1550**	215 (158)/2100
3. BUCKET CAPACITY RANGE (SAE)	m^3 (cu.yd)	**0.5 ~ 1.8 (0.65 ~ 2.35)**	0.45 ~ 2.8 (0.59 ~ 3.66)
4. WORKING RANGE			
(Arm length)	mm (ft.in)	**3130 (10'3")**	2800 (9'2")
Max. digging height		**10310 (33'10")**	9900 (32'6")
Max. dumping height		**7260 (23'10")**	–
Max. digging reach on ground		**11100 (36'5")**	10300 (34'1")
Max. vertical wall depth		**6060 (19'11")**	–
Max. digging depth		**7160 (23'6")**	7000 (23')
5. DIMENSIONS			
Overall length	mm (ft.in)	**10810 (35'6")**	11100 (36'5")
Overall height		**3235 (10'7")**	3450 (11'4")
Overall width		**3580 (11'9")**	3550 (11'4")
Length of track on ground		**4450 (14'7")**	4150 (13'7")
Track gauge		**2870 (9'5")**	2800 (9'2")
Tail swing radius		**3225 (10'7")**	3350 (11')
Ground clearance		**640 (2'1")**	544 (1'9")
6. PERFORMANCE			
Swing speed	RPM	**9.4**	7.1
Max. travel speed	km/h (MPH)	**2.3 (1.4)**	3.0 (1.9)
Gradeability	% (degree)	**70 (35)**	80 (39)
(Arm length)	(mm (ft.in))	**3130 (10'3")**	2800 (9'2")
Max. crowd force (arm)	kg (lb)	**13000 (28,660)**	20000 (44,100)
Max. digging force (bucket)	kg (lb)	**17200 (37,920)**	22000 (48,500)
7. ENGINE			
Model		**KOMATSU S6D125**	CUMMINS LT10-C225
Piston displacement	ltr. (cu.in)	**11.05 (674)**	10.0 (610)
No. of cylinder-bore x stroke	mm (in)	**6–125 x 150 (4.9" x 5.9")**	6–125 x 136 (4.9" x 5.4")
8. HYDRAULIC SYSTEM			
Hydraulic pump		**2 x Veriable piston pump**	2 x Variable piston pump
Max. oil flow	ltr. (U.S.Gal)/min	**556 (147)**	504 (133)
Max. oil pressure (work equipment)	kg/cm^2 (PSI)	**320 (4,550)**	300 (4,350)
9. TRACK SHOE WIDTH	mm (in)	**610 (24")**	500 (20")
		710 (28")	600 (24")
		760 (30")	750 (30")
		810 (32")	
		910 (36")	
10. CAPACITY (Refilled)			
Fuel tank	ltr. (U.S.Gal)	**510 (135)**	615 (162)
Hydraulic tank		**225 (59.4)**	540 (143)

NAM-204

* Operating weight of each above mentioned machine is indicated as follows:
PC360LC-3: 6.47 m (21'3") one-piece boom, 3.13 m (10'3") arm, 1.7 m^3 (2.22 cu.yd) SAE heaped bucket and 710 mm (28") triple-grouser shoe.
R952HD: 6.4 m (21') one-piece boom, 2.8 m (9'2") arm, 1.7 m^3 (2.22 cu.yd) SAE heaped bucket and 750 mm (30") triple-grouser shoe.

This information has been gathered to provide data on the performance of KOMATSU and competitive machines under actual job conditions. Every effort was made to ensure reliable results. However, because of the many variables peculiar to each job (including material characteristics, operator efficiency, labor and other costs, haul road conditions and altitude), neither KOMATSU LTD. nor any of its distributors can or does warrant expressly or implicitly that the Komatsu or competitive equipment referred to will achieve the performance or incur the costs indicated under other, though similar, circumstances.

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