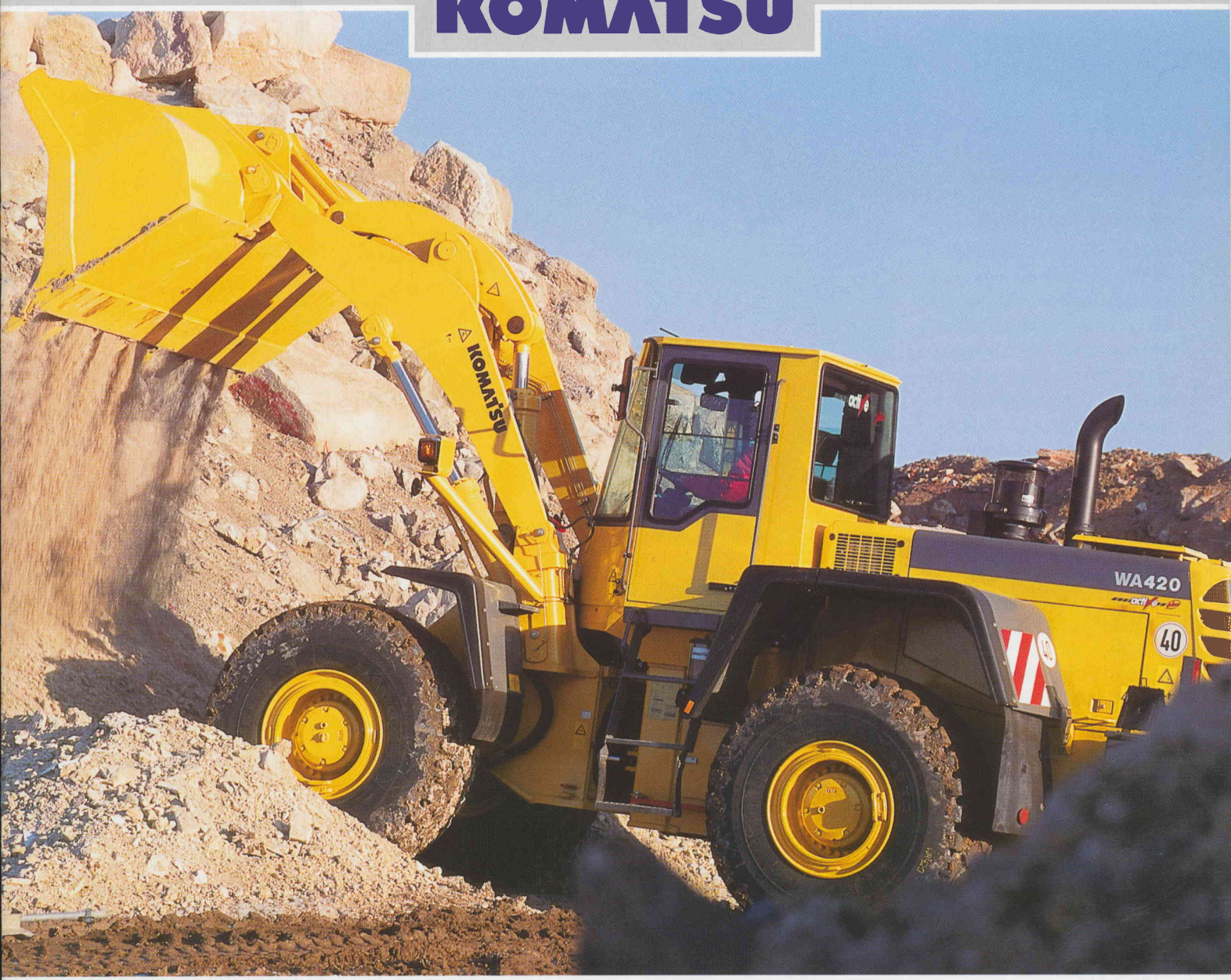
PRODUCT BROCHURE WA420-3 ACTIVE PLUS WHEEL LOADER

KOMATSU



WA420-3

active plus

Compact power with high manoeuvrability.
Top performance and user-friendly in everyday work.

Engine output:	**162 kW/220 hp (ISO 9249)**
Bucket sizes:	**3.6 – 4.2 m³**
Operating weight:	**20.1 t**

Loads better comfort • Loads better for the environment • Loads better performance

The philosophy behind the design of the WA420-3: Ruggedness, power and manoeuvrability.

Fast in rubble recycling.

The best of both worlds.

It can safely be said that the WA420-3 sets new standards in the field of 3.5 - 4.0 m^3 wheel loaders. The WA420-3 wheel loader combines the know-how of two different worlds, because design engineers from Japan and Germany have both brought their long experience and expertise to the design and production of these high-capacity machines. This particularly applies for the active plus line now introduced to the market. These special wheel loaders put high value on operating comfort and environmental awareness.

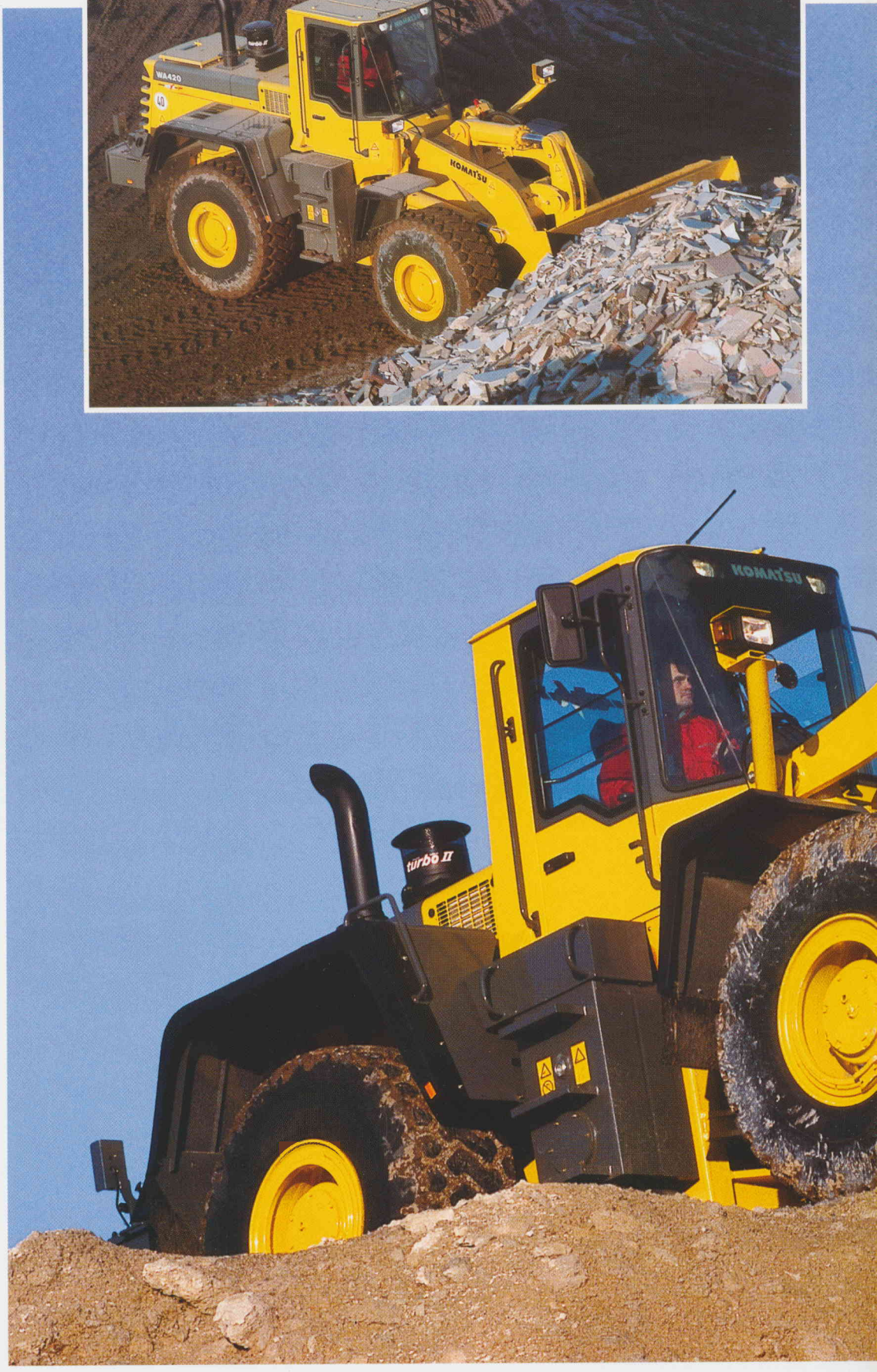
The WA420-3 active plus is one example of the high quality and the outstanding performance of the WA series.

Durability - a design requirement.

During the development of the WA420-3 active plus, particular emphasis was placed on the requirement for rugged components, particularly in areas of specific stress.

This helps to explain the tough axle layout and the rigid chassis, which have been designed for long machine life.

All the other features and dimensions of the machine, from engine to bucket-linkage, have been designed to meet this fundamental philosophy.



WA420-3 in load & carry operation.

The operator feels at home straight away.

Not just because he can reach his workplace easily through wide opening doors, but because he is surrounded by ideal ergonomics, as the extremely low noise level means he can work "in peace" and because the air conditioning fitted as standard provides him with a really pleasant working environment and driving comfort comparable to that of a passenger car.

Jack-of-all-trades with staying power.

Whatever the job you assign to the WA420-3 - it will do rehandling work as professionally as rubble recycling. To achieve this new AMS Application Mode helps the operator to choose the optimum mode for the job.

A positive answer to the question of economy.

A lot of value for money is what you are bound to get with the WA420-3: When using the novel AMS-system the operating costs can be reduced further. The result is an even greater efficiency per working hour - for instance in rehandling work where it fills a semitrailer easily in 4 loading cycles. Thanks to top quality, a sensible overall concept and, by no means least, the guaranteed service friendliness. An investment in a WA420-3, therefore, pays for itself in the shortest of time.

What a workplace: Climb in and feel at home.

Ergonomically designed main monitor.

Climb in and feel at home.

The design of the workplace is decisive for an employee's commitment. Everybody who feels good, works better. Whether earning his pay at a desk or on a machine. That is why everything has been done on the WA420-3 to create an ideal workplace.

The force of peace.

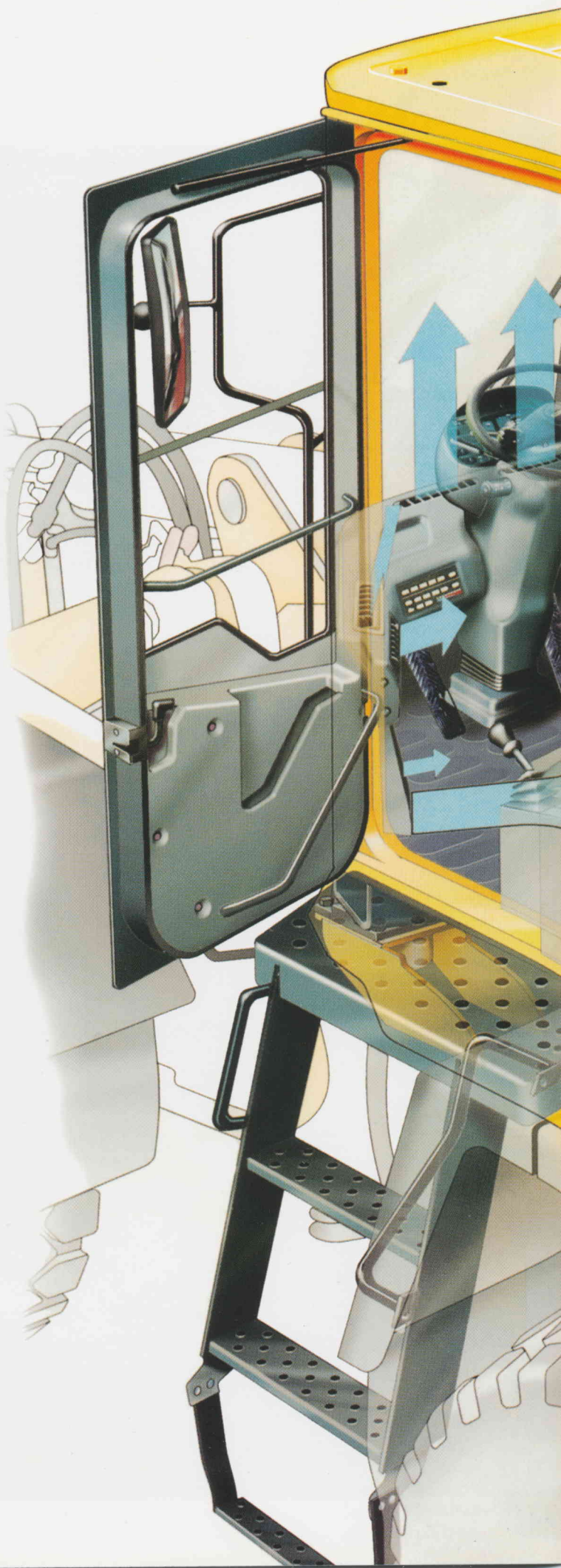
The low noise level inside the cab results from specially designed features: the operator's cab is connected to the chassis by hydrobearings, the transmission "floats" on rubber buffers. The transmission of structure-borne noise from the drive units is prevented or reduced to a minimum.

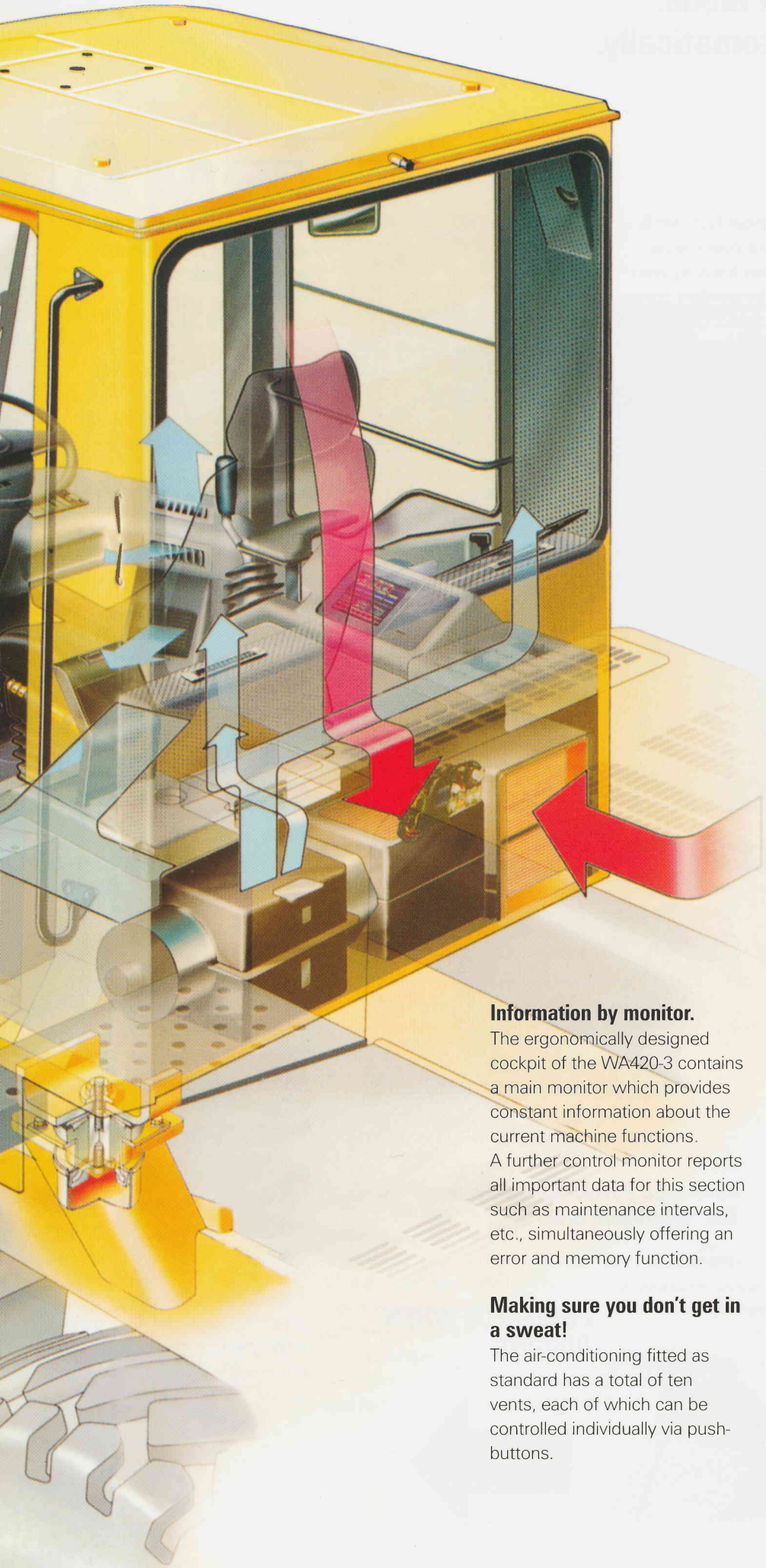
Everything in view, everything in reach.

The first thing you notice inside the operator's cab is the expanded legroom and the ergonomically arranged control elements. The steering column including the monitor panel can easily be adjusted to perfectly suit the driver's position. The sitting position on the standard air suspension seat is high, providing complete all round vision and a direct view of the front wheels through the tinted windows.

The precision two-lever hydraulic control (optional single-lever or multi-function lever operation) is servo controlled and, coupled with the jerk-free automatic transmission, enables speeds to be adjusted to individual working conditions, with ease.

The "kick-down" function makes work even easier. It is topped off by the "gear-hold" switch which allows the operator to use the braking effect of the engine when driving downhill.





Ergonomic access and a spacious cab further increase the operating comfort.

Information by monitor.
The ergonomically designed cockpit of the WA420-3 contains a main monitor which provides constant information about the current machine functions.
A further control monitor reports all important data for this section such as maintenance intervals, etc., simultaneously offering an error and memory function.

Making sure you don't get in a sweat!
The air-conditioning fitted as standard has a total of ten vents, each of which can be controlled individually via push-buttons.

In each situation the right mode: On button pressure or automatically.

ALS ELECTRONIC

The Electronic Automatic Load Stabiliser System, protecting man and machine (optional extra).

Strictly reduced vibrations and jolts thanks to the ALS Electronic.

This outstanding shock reduction system works with two pressures stages (full or empty bucket) and is automatically activated at 5 km/hour.
Vibrations and jolts are reduced to a minimum. The result: reduced stress for man and machine for instance under fast load & carry conditions over uneven ground. The electronic system senses input parameters covering travelling speed, gearing and the pressure in the bucket cylinder. The system adjusts automatically to constantly-changing operating conditions.

APS SYSTEM

The Automatic Power-Speed-System – speed or power? The system decides.

Extremely flexible.

The APS system is a hydraulic system which automatically adjusts to individual operating conditions. The system decides for itself when power is called for, or when speed would be more advantageous.

Actually it's quite simple why things suddenly go fast.

"Fast" hydraulics are required when you need to carry out short loading cycles in extremely restricted spaces. Main and alternating pumps together supply a high flow-rate at a maximum of 328 l/min at an oil pressure of 160 bar. The result: fast bucket lift and fast tipping.

Actually it's quite simple why power is suddenly concentrated.

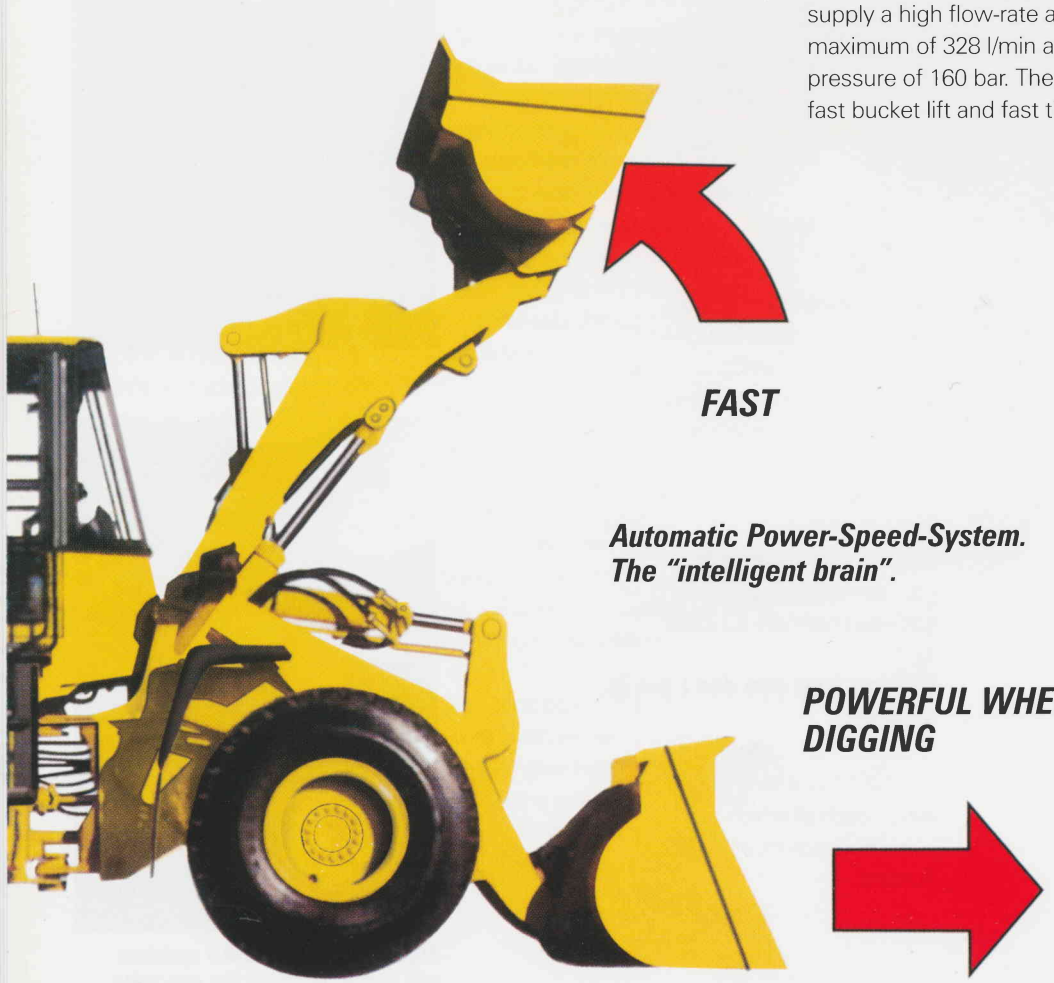
During heavy tear-out and lifting work, the resistance acting on the hydraulic system rises.
At this point, the alternating pump switches off automatically and the main pump alone will supply a reduced oil flow-rate of 217 l/min.
The system pressure rises to a maximum of 210 bar, and the entire power will be transferred to the bucket, or is made available to the transmission for powerful traction into the material.

Power reversal via Z-kinematics.

The Z-kinematics are characterised by a high tear-out force and bucket discharge. This is achieved by power reversal of the tilt ram.
When filling the bucket (tear-out) the oil pressure acts on the large piston surface, whereas it acts on the smaller differential surface of the piston during the dumping process. This empties the bucket extremely rapidly and largely prevents the adhesion of cohesive materials. Due to the double-sealed bearing joints, extremely long maintenance intervals are also achieved.

Rigid and torsion-free frame.

The frame is very rigid due to large dimensions between joints. This grants maximum strength to the overall construction and reduces the load on the articulated joint. The 40° turning angle gives the machine its extremely high manoeuvrability.



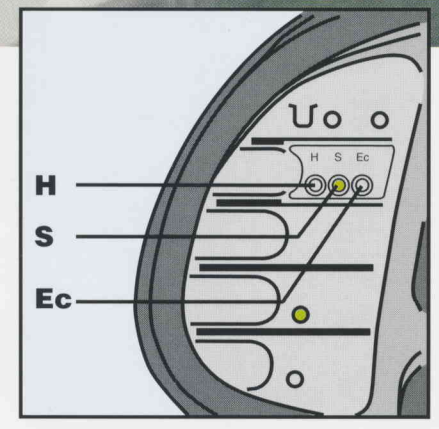
AMS

Efficiency – by the press of a button.
The operator adapts the wheel loader to each operation by button pressure. Ergonomically integrated into the instrument panel all important main components such as engine, transmission and hydraulic system are adjusted optimally to the wishes of the operator and the requirements of the job.

Selected modes

High:
Powerful for fast V-shape loading, for example for the loading of trucks. The APS 2-stage hydraulic system and a maximum engine rpm guarantee fast hydraulic cycle times. The "late" gear shift from the 2nd to the 3rd gear ensures the maximum tractive power and fast loading and dumping sequences.
This mode should be selected when maximum performance is required .

Standard:
Smooth for road travel as well as slow V-shape loading and "load & carry". The "early" gear shift reduces engine rpm and fuel consumption. The permanent disconnection of the switch pump reduces hydraulic loss and therefore fuel consumption. The reduced engine speed at "load & carry" means reduced engine wear and a reduction of noise level. The maximized engine rpm guarantees fast travel speed on the road.



Powerful, smooth or efficient – make your own choice.

Economy:
Efficient for Load & Carry and light duty job applications. This selected mode provides lowest operating costs and highest efficiency. Further to the adaptions carried out to the transmission and hydraulic systems the engine management is controlled. The reduction of the engine rpm effected with this selected mode leads to a further reduction of fuel consumption when accelerating.

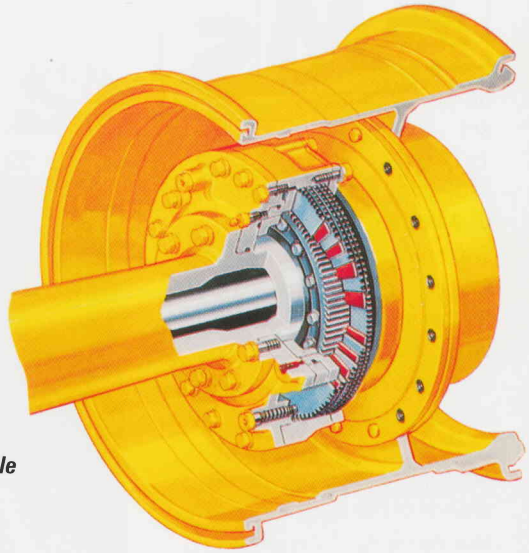
JSS JOY-STICK

To steer with the little finger.
A further innovative feature is the optional joy stick. Integrated into the arm of the operator's seat it provides the operator easy and low effort steering during reversing in a loading operation. "To steer with the little finger" saves a thousand turns of the steering wheel every day and keeps the operator fit.

All-round toughness: A powerful engine, a robust chassis and ruggedly-built axles.

Maximum performance calls for stamina.
A wheel loader is subject to extreme conditions because it has to cope with a wide variety of jobs: Driving from site to site, reversing, lifting, breaking out, pushing earth loads, etc. The machine is under incredible stress, from the axle right down to the smallest bolt. That is why the WA420-3 - like all the other wheel loaders in the WA active plus series - has a "sturdy constitution". And constructive features that make these machines exceedingly robust.

Under pressure it feels at its best.
The double-sealed bucket bolts and the KOMATSU heavy-duty axles easily handle any load. The state of the art KOMATSU SAA6D114E low-emission engine with intercooler keeps everything moving under power. With an impressive result.



Outboard planetary final drives and multiple wet disc brakes.

162 kW/220 hp - an exceedingly powerful, state of the art low-emission engine.

The turbocharged 6-cylinder engine with charge-air intercooler from KOMATSU gives the WA420-3 exceptional smoothness, flexibility and high torque. This gives you the power reserves you need – whether in mining, in sand or in recycling. Very moderate fuel consumption and excellent combustion are significant factors for economy and resolute environmental awareness. And easily accessible service points for easy maintenance go without saying.

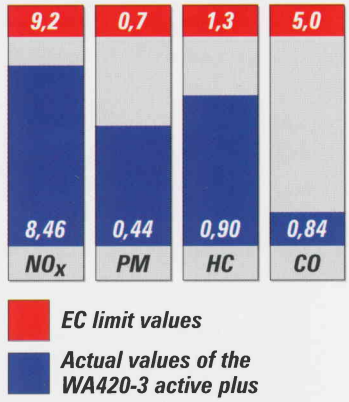
Multiple wet disc parking brake.

Designed as multiple wet disc type, oil-immersed and integrated in the transmission case, the brake is completely enclosed thus preventing wear and making it completely maintenance free. Furthermore, the multi-disc service brake is an oil-immersed type and protected against mud and dust. The brake system is fully hydraulic giving a further step towards a maintenance-free machine.

Central lubrication factory fitted.

The optional KOMATSU-central lubrication system in the particularly robust heavy-duty design provides clean maintenance and low down time even in the heaviest operations.

Exhaust limit values in g/kWh in accordance with ISO 8178



Making sure the wheels always grip.

Self-locking differentials front and rear with a locking value of 45 % are a guarantee for good traction at all times, even on soft ground, for heavy pushing work, or on slopes (option). TPD torque proportioning differentials guarantee the wheel loader's powerful feed and low tire slip making it a real low-cost solution.

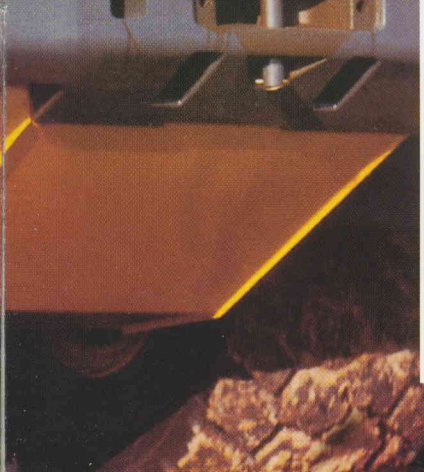
Into gear smoothly.

There are four gears each for forward and reverse drive. The gear ratios are practice-related and provide jerk-free gear-change and reversing even under full load. The automatic transmission is particularly advantageous and takes the burden off the operator, as does the "kick-down", for changing down to 1st gear in a flash in order to move into the material at full power. Furthermore the new AMS-system provides optimized gear shifts and increased efficiency.

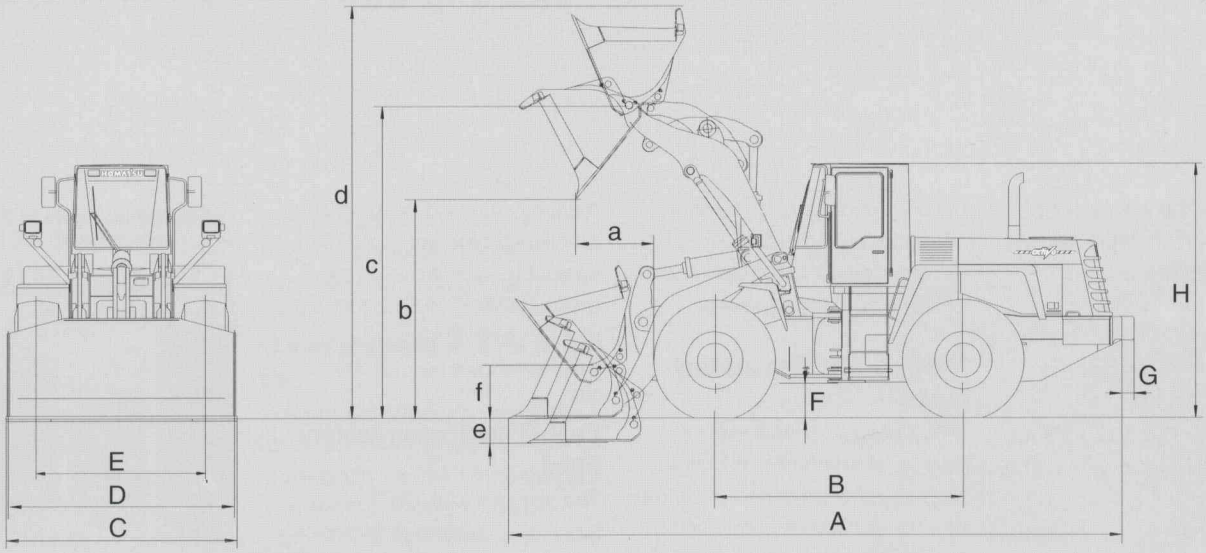
In harmony with the environment - not only due to the low exhaust values.

We hardly think it worth mentioning that our low-emission engines are well within the future European and international exhaust directives. The high-pressure injection plus a modified turbocharger give the wheel loader low-noise force and staying power. The hydraulic system operates optionally with bio-oil and is thus in perfect harmony with the environment, for instance in water-protected areas. Taken altogether - an investment which pays for itself in the shortest of time.

Easily accessible service points for cab filter and the engine and transmission make service work simple and clean.



Dimensions and operating data.



Buckets (capacities according to ISO 7546)		m³	3.6	4.0
	Specific density	t/m³	1.8	1.6
	Bucket weight without teeth	kg	1,845	1,975
	Static tipping load (straight)	kg	15,600	15,120
	Static tipping load (at a 40° angle)	kg	13,660	13,240
	Breakout force, hydraulic	kN	182.7	171.7
	Hydraulic lifting capacity, on ground	kN	211	250
	Operating weight**	kg	20,120	20,250
a	Reach at 45°	mm	1,016	1,072
b	Dumping height at 45°	mm	3,035	2,980
c	Lift height, hinge pin	mm	4,186	4,186
d	Height to upper edge of bucket	mm	5,720	5,720
e	Digging depth	mm	35	35
f	Bucket height when travelling	mm	470	470
A	Overall length	mm	8,020	8,100
B	Wheelbase	mm	3,300	3,300
C	Bucket width	mm	3,000	3,000
D	Width across tyres	mm	2,880	2,880
E	Track	mm	2,200	2,200
F	Ground clearance	mm	465	465
H	Overall height	mm	3,450	3,450

These values refer to a machine fitted with 26.5 R 25 XHA L-3 tires.
When using 23.5 R 25 tires, the vertical dimensions will be reduced by 50 mm.
When using 705/70 R 25 tires, the vertical dimensions will be reduced by 70 mm.

Special buckets:
3.6 m³ HD bucket (recycling)
5.8 m³ light-material bucket

The standard 3.6/4.0 m³ buckets shown in the table can also be supplied with bolt on cutting edges to increase capacities to 3.7/4.2 m³.

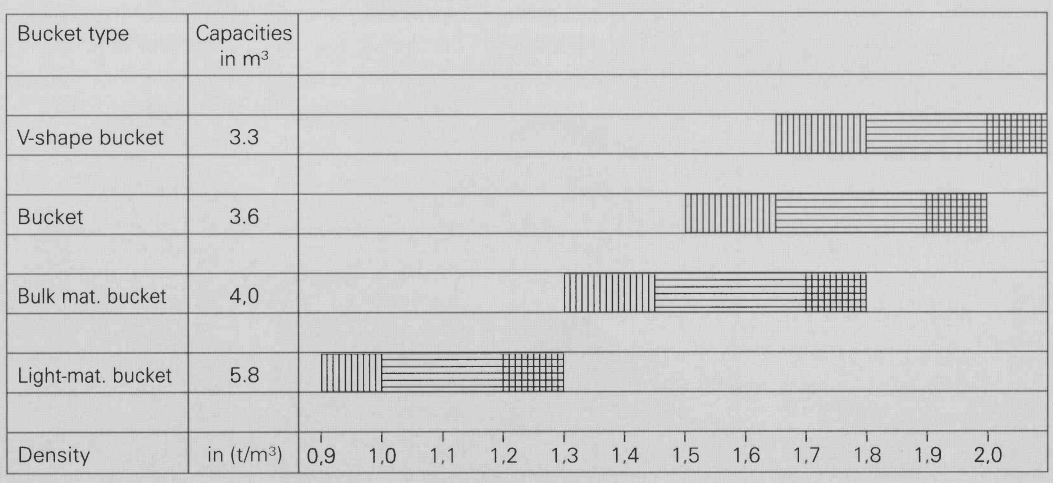
Data will be modified according to:

	Additional counter-weight	Tire filling 26.5 R 25
Weight	+ 325 kg	+1560 kg
Tip load:		
0°	+ 875 kg	+ 2530 kg
40°	+ 730 kg	+ 2225 kg
Overall length (G)	+ 175 mm	–

L_{pA} = 73 dB(A)*
L_{wA} = 108 dB(A)*

* according to directive 95/27/EC (new dynamic measurement).

** machine without additional counterweight.



The actual volume will usually exceed the ISO/SAE classification. The table shows optimum bucket data, depending on the material involved.

Material	Bucket-contents %	Density t/m³
Earth	100–115	1,5–1,6
Clay	110–120	1,5–1,7
Sand	100–110	1,4–1,8
Gravel	85–110	1,5–2,0
Rock	75–100	1,6–2,0

Technical data at a glance.

Engine

Make	KOMATSU low-emission engine
Model	SAA 6D114 E-1
Type	Turbocharged, intercooled diesel engine
Power output at engine speed	162 kW/220 hp (ISO 9249) 2,200 rpm
Max. torque/speed	900 Nm at 1300 rpm
No. of cylinders	6
Bore/stroke	114/135 mm
Displacement	8270 cm^3
Compression ratio	15,5 : 1
Combustion system	direct injection
Cooling system	dual-circuit, thermostatically controlled liquid cooling
Electrical system	24 volt
Batteries	2 x 12 volt, 143 amp/h
Alternator	50 amp/h
Air filter	HD dry-air filter

Transmission

Make	KOMATSU
Type	Fully-automatic 4-speed full powershift transmission with "kick-down" and "gear-hold"
Convension ratio	3.27:1

Steering

Type	Hydrostatic
System	Articulated joint
Articulated joint	Needs no readjustment
Steering angle	40° each side, hydraulically limited
Steering pump	
Operating pressure	210 bar
Delivery	111 l/min
Minimum turning radius	
Outside edge wheel	6,054 mm
Outside edge standard bucket	6,600 mm
Emergency steering	Via additional pump

Filling capacities

Fuel	340 l
Engine oil	22.4 l
Cooling System	50 l
Converter transmission/ powershift transmission	60 l
Front axle	60 l
Rear axle	60 l
Operating hydraulics/brake system	210 l

Hydraulic system

System	2-stage, 3-pump system with main and 2 switch pumps
Operating pressure	
stage 1	160 bar
stage 2	210 bar
Operating flow	
stage 1	328 l
stage 2	217 l
Loading times	
Lift (full load)	6.7 sec
Dump	1.5 sec
Lower	3.6 sec

Automatic boom kick-out, automatic return-to-dig

Axles

System	All-wheel drive, planetary reduction in the wheel hobs
Front axle	Planetary axle with TPD torque proportioning differential
Rear axle	Planetary axle with TPD torque proportioning differential, oscillating
Oscillating angle	13° each side
Tires	705/70 R 25 XLD70 L3, Michelin 26.5 R25 XHA L3, Michelin 26.5 R25 SPT 7LD, L3, Dunlop 26.5-25 PG 6S, 20PR, L3, Dunlop 26.5 R25 XLDD 1A, L4, Michelin 26.5 R25 XLDD 2A, L5, Michelin 26.5 R25 RL-2+, L2/3, Goodyear The listed 26.5 R 25 tire proviles are also available in size 23.5 R 25

Travel speeds

Forward	1st gear 0 - 6.7 km/h 2nd gear 0 - 12.3 km/h 3rd gear 0 - 22.0 km/h 4th gear 0 - 38.5 km/h
Reverse	1st gear 0 - 6.7 km/h 2nd gear 0 - 12.3 km/h 3rd gear 0 - 22.0 km/h 4th gear 0 - 38.5 km/h

Brakes

Operating brakes	Hydraulic pump accumulator brake system, wedge-type multi-disc brakes in wheel hubs (all-wheel brake)
Hand brake	Wedge-type multi-disc brake in transmission, spring-loaded, opening hydraulically

Standard Equipment

Low-emission engine • two-door, noise-insulated high comfort cab (equipped with ROPS/FOPS) • air conditioning • air suspension operator's seat • openable door windows • stereo cassette radio • 2 halogen main lights • halogen work lights, front and rear • vandalism protection • AMS Application Mode Selection (H, S, Ec selected mode • automatic transmision with additional kick-down and gear-hold • two-lever hydraulic operation • TPD differentials in front and rear axle • emergency steering • electronic checking system (EDIMOS II) • automatic power-speed hydraulic system (APS system) • automatic return-to-dig • automatic boom kick-out • 705/70 R 25 (radial) tires • all loading kinematics and bearing points sealed • integrated noise insulation • noise values: L_{WA} 108 dB(A), L_{pA} = 73 dB(A).

The WA420-3 is equipped in accordance with the professional safety regulations and fulfils the low-emission directives of ISO 8178 and the EC directive 95/27/EC.

Optional Equipment

23.5 R25 / 26.5 R25 tires • high-lift attachment • fold-down radiator grille • limited-slip differential, front and rear • StVZO German road safety compliance • electronically controlled load stabiliser (ALS-Electronic) • 3-spool valve • single-lever hydraulic operation • weighing _facility • backup alarm • additional counterweight (325 kg) • additional counter weight II (460 kg) • central lubrication • special colour • rock and special buckets • special tires (e.g. rock, recycling, sand, clay, etc·) • tire chains • protective grille for windscreen • catalyst • speed limitation • TURBO II air-pre-cleaner • multi-function lever for transmission and hydraulic control • travel lock • for operation in quarry • hydraulic quick coupler • equipment for the wood industry (log grapple, light material- and high tip bucket) • additional working lights • roof railing • 3rd and/or 4th spool valves for additional hydraulic functions • heated operator's seat.

WA420-3 active plus All highlights at a glance.

KOMATSU wheel loaders: The best of both worlds.

Wheel loaders of the WA 3-series were the first products developed and built in Hanover for Europe. The new actiVe plus-series is the logical further development of this successful series. Apart from the construction of wheel loaders the plant in Hanover is also specialized in the design and fabrication of waste compactors, axles and transmission.

KOMATSU

KOMATSU HANOMAG
Aktiengesellschaft

Hanomagstr. 9
30449 Hannover
Germany

Tel.: ++49 511/45 09-0
Fax: ++49 511/45 09-185
http://www.komatsuhanomag.de
http://www. komatsu.com

VESS074702

Edition: 02/00. All data subject to modification at any time.
Diagrams and pictures may deviate from standard equipment.