# WA320-3 active plus All highlights at a glance.


*APS: the Automatic Power Speed system matches the hydraulic operating data to the actual conditions. "Fast" for short loading cycles. "Power" when moving right into the material.*

*AMS: The Application Mode System enables the operator to adjust the machine optimally to each operation requirements. Highest efficiency and lowest fuel consumption are therefore guaranteed.*

*Powerful low-emission engine: Komatsu S6D114E. 124 kW/168 hp (ISO 9249). Fulfils all future exhaust and noise regulations. LwA = 107 dB(A) (95/27/EC)*

*Driving functions and control data are monitor-displayed in the operator's field view and easy to check by the service staff using the memory function.*

*ALS-Electronic: Absorbs vibrations and protects operator and machine according to load and speed (optional).*

*Spacious operator's cab on hydrobearings. Low noise level of LpA = 73 dB(A) (95/27/EC).*

*Locking differentials for better traction with a locking value of 45 % (option), or TPD differentials (standard).*

*Fully-automatic transmission with electrical "kick-down" and "gear-hold".*

*Fully enclosed multiple wet-disc parking brake, integrated into the transmission and maintenance free.*

*Sturdy KOMATSU axles for all operations. They ensure a long machine life.*

*Optimum rear design for excellent all-round view and easy stockpiling.*

## 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 transmissions.

KOMATSU

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# PRODUCT BROCHURE WA320-3 ACTIVE PLUS WHEEL LOADER

KOMATSU


# WA320-3

active plus

**High breakout, excellent manoeuvrability and easy handling.**

| | |
|---|---|
| **Engine output:** | **124 kW/168 hp (ISO 9249)** |
| **Bucket sizes:** | **2.6 – 3.0 m³** |
| **Operating weight:** | **14.0 t** |

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

# If you rely on the WA320-3, you build on reliability for virtually every job.

**Something to rely on.**
Nothing is more reliable than a perfected machine concept based on years of wheel loader design expertise and practical experience from applications worldwide.
All of this technical know-how were bundled, refined and realised in the new WA320-3 active-plus series. Also true for the WA320-3 is that it is one of the most powerful machines in the 14 ton class. With a cubic capacity of 8.3 litres, the KOMATSU low-emission engine is outstanding for the impressive engine output and a high torque. The bucket capacities reach from 2.6 up to 3.0 $m^3$. Not to be forgotten is the perfect comfort of the WA320-3 taking the burden off the driver.

**100% optics with 100% functionality.**
The raised rear end is a typical feature of the WA series which allows the machine to reverse into the material right up to the rear wheels thus granting maximum efficiency in stockpiling work. Moreover, the rounded

frameless front windscreen and the integrated ROPS/FOPS system are purdy functional designs. This holds also true for the ease of entry which is facilitated by a wide access ladder and wide-opening doors.

***Powerful job.***


***Efficient in load & carry.***

***Fast when loading belt conveyors.***

## A concept approved of by accountants.

When planning to buy a wheel loader, the economical side plays an important part. The machine should provide a return on investment every single operating hour.

A challenge which the WA320-3 does not have to fear - due to its perfect workmanship, the use of high-quality materials and construction elements as well as its extremely easy serviceability. When using the novel and standard AMS-system the operating costs can be reduced further. 14 tons of pure economic efficiency set out to work for you.

## Excellent ergonomics are standard.

Which is why the operator will find in "his" cab not only comfort, but also a sensible and "ready-to-hand" arrangement of all operating and control elements.

A low noise level and driving characteristics plus the air conditioning finally offer the perfect travelling comfort of a car.

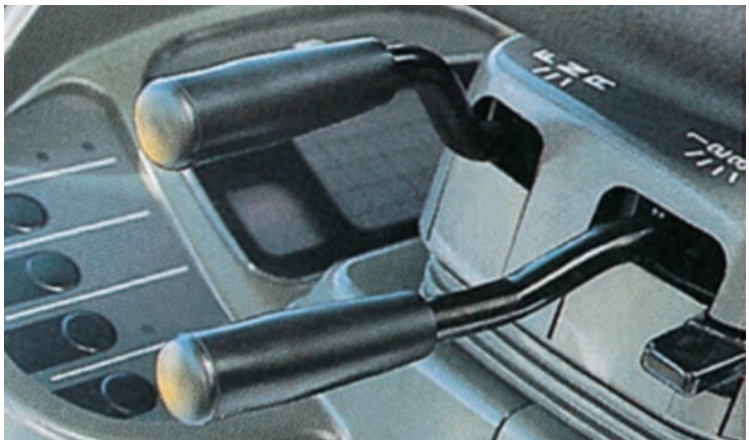
## It works hard - wherever you put it to work.

Due to its design, the WA320-3 is perfectly suited to operate on varying sites because it is easy to transport - either on its own four wheels (road safety compliance) or on a low-loader without any problem.
With this perfectly flexible "worker" you can do practically everything - from loading work in sand or gravel, the charging of recycling systems up to the digging of construction pits.

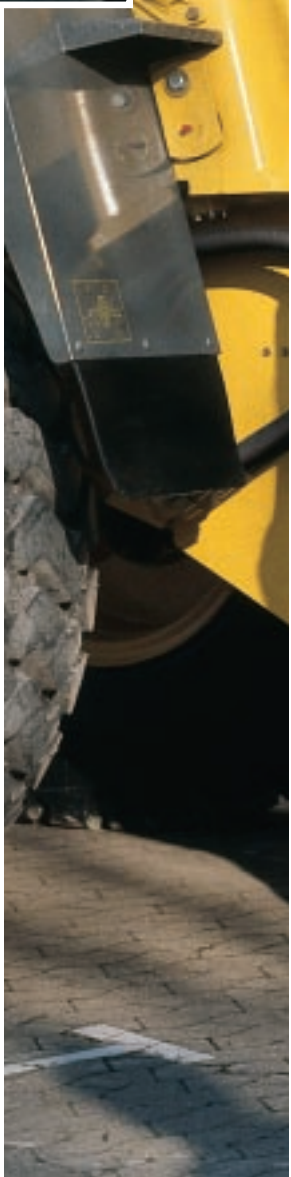
# On the one hand a comfortable workplace with all the trimmings and maximum safety . . .

*An ergonomic perfectly designed workplace featuring air-conditioning and EDIMOS II monitor system with error and memory function.*


*The main monitor keeps the operator constantly informed of the various travelling functions.*



*Easy operation of the automatic transmission.*



**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 WA320-3 to create an ideal workplace.

**The force of peace.**
The low noise level inside the cab results from special 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 (single-lever or multi-function-lever operation upon request) 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.

## Information by monitor.

The ergonomically designed cockpit of the WA320-3 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.

***Comfortable and safe ascent to the workplace.***

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

ALS ELECTRONIC

***The electronic Automatic Load Stabiliser protecting man and machine (option).***

**Drastically reduced vibrations and impact due to the Electronic ALS System.**

This outstanding shock reduction system works with big volume accumulators and is automatically activated at 5 km/hour. It drastically reduces vibrations and impacts. Result: Considerably less stress especially for man and machine, e.g. during the fast load & carry tasks on uneven ground or in transit on the road. The electronic system senses input parameters covering travelling speed and gearing. The system adjusts automatically to constantly-changing operating conditions and pays for itself by increased operating performance.

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. The hydraulic system is remotely controlled via a servo-actuated two-lever operation (single-lever or multi-function-lever operation available as an option).

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

"Fast" hydraulics are required
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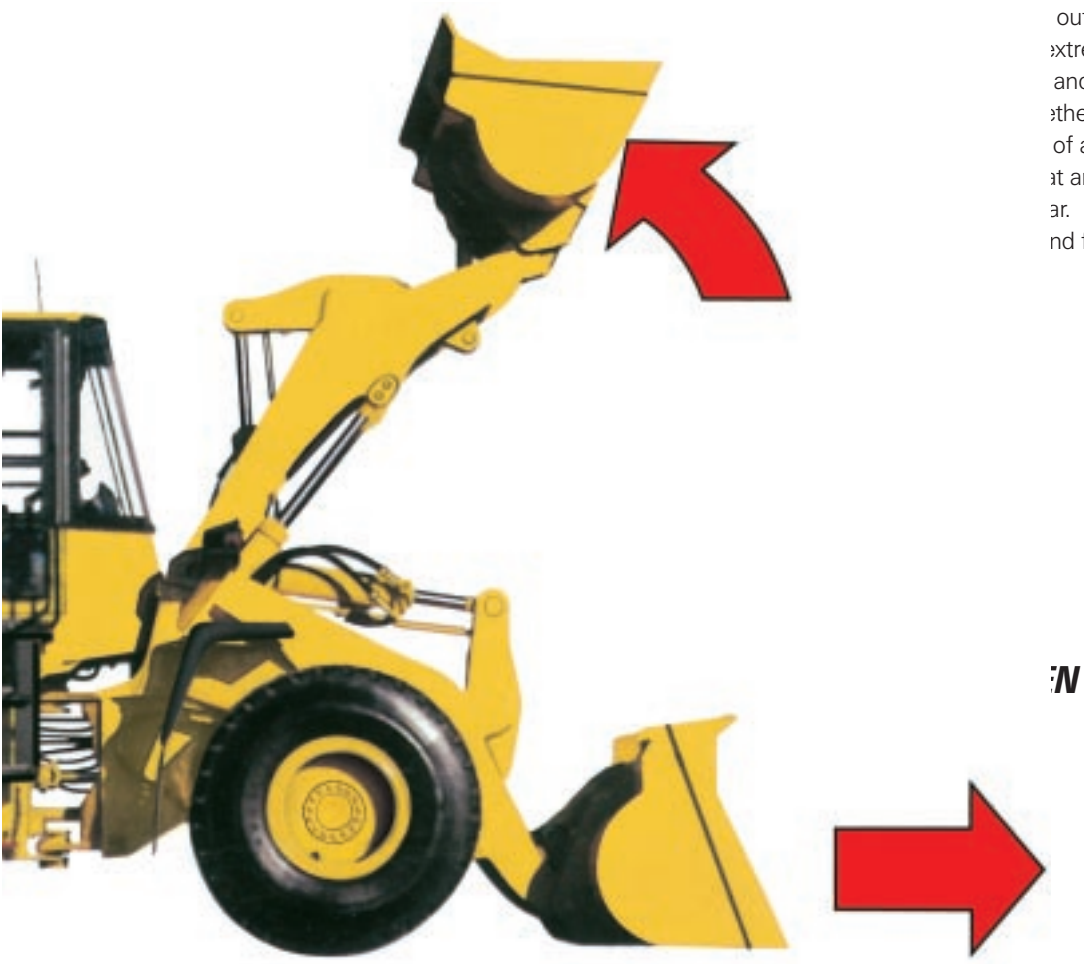


**Actually it's quite simple why power is suddenly concentrated.**

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 161 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 fast 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 the large dimensions between joints. This grants maximum stength to the overall construction and reduces the load on the articulated joint. The 40° turning angle gives the machine its extremely high manoeuvrability.

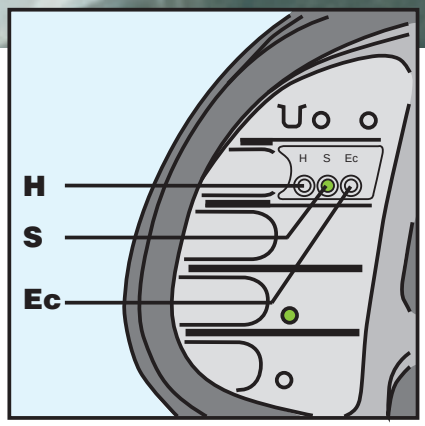
AMS

**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.

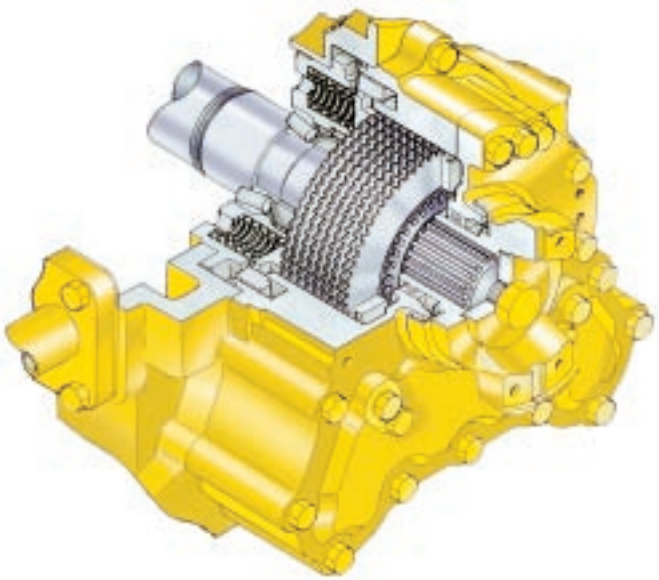
JSS JOY-STICK

**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.

# You can read below what the WA320-3 drive unit has to offer. But it would be better if you experienced it yourself.

**Maximum performance calls for rigidity.**
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 and breaking, dozing earth loads etc. The machine is under incredible stress, from the axle right down to the smallest bolt. That is why the WA320-3 - like all the other wheel loaders in the new WA-3 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 large-volume low-emission engine by KOMATSU keeps everything moving under power. With impressive results.



***Multiple parking***

## 124 kW/168 hp - a really powerful, modern low-emission engine.

The large-volume KOMATSU 6-cylinder engine with turbocharger gives the WA320-3 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.

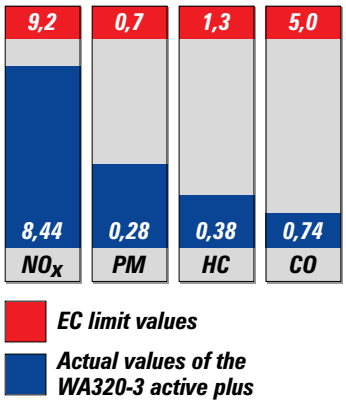
## Multiple wet disc parking brake.

Designed as multiple wet disc type, oil-immersed and integrated in the transmission case, also the parking brake prevents wear and makes it maintenance-free. Furthermore, the double 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.

TPD (torque proportional differentials) or optional front and rear locking differentials are the guarantee for a good traction at all times, even on soft ground, for heavy pushing work, or on slopes.

## Into gear smoothly.

There are four gears each for forward and reverse drive. The gear ratios are practise-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 first gear in a flash in order to move into the material at full power. Furthermore the novel AMS-system provides optimized gear shifts and increased efficiency.

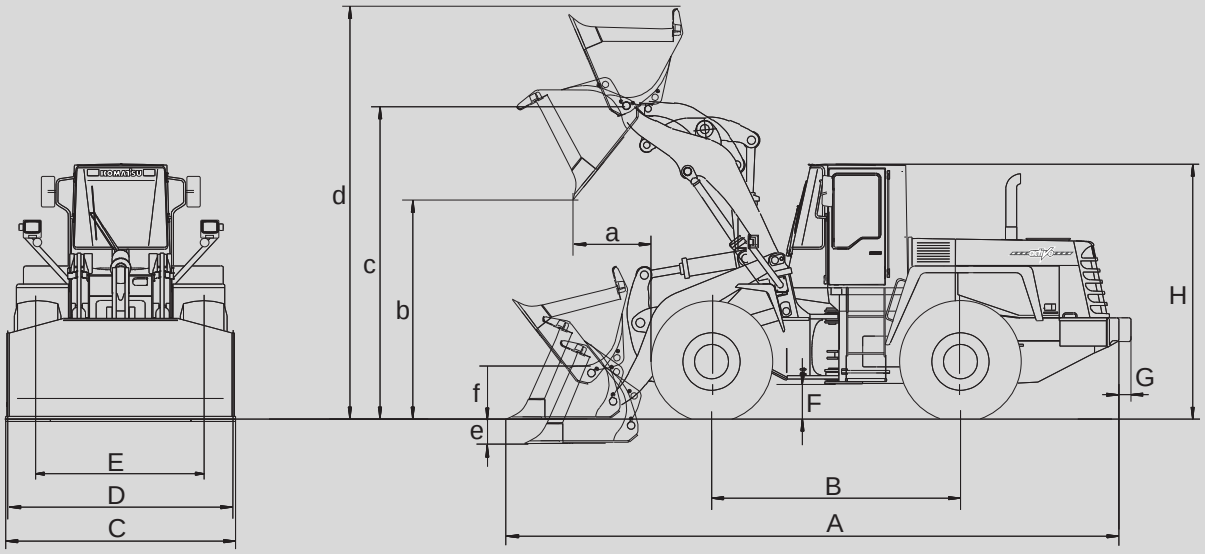
## In harmony with the environment - not only due to the low exhaust values.

We hardly think it worth mentioning that our low-emmision engines range far below 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.


***the ground for cab filter, engine and transmission make service***



# Dimensions and operating data.




| Buckets (capacities according to ISO 7546) | | m³ | 2.6 | 2.9 |
|---|---|---|---|---|
| | Specific density | t/m³ | 1.75 | 1.55 |
| | Bucket weight with teeth | kg | 1.225 | 1.310 |
| | Static tipping load (straight) | kg | 11.140 | 11.110 |
| | Static tipping load (at a 40° angle) | kg | 9.570 | 9.530 |
| | Breakout force, hydraulic | kN | 126 | 123,6 |
| | Hydraulic lifting capacity, on ground | kN | 144 | 143 |
| | Operating weight** | kg | 13.950 | 14.035 |
| a | Reach at 45° | mm | 1.063 | 1.067 |
| b | Dumping height at 45° | mm | 2.868 | 2.843 |
| c | Lift height, hinge pin | mm | 3.877 | 3.877 |
| d | Height to upper edge of bucket | mm | 5.226 | 5.226 |
| e | Digging depth (at 0°) | mm | 63 | 63 |
| f | Bucket height when travelling | mm | 390 | 390 |
| A | Overall length | mm | 7.357 | 7.376 |
| B | Wheelbase | mm | 3.030 | 3.030 |
| C | Bucket width | mm | 2.740 | 2.740 |
| D | Width across tires | mm | 2.577 | 2.577 |
| E | Track | mm | 2.050 | 2.050 |
| F | Ground clearance | mm | 375 | 375 |
| H | Overall height | mm | 3.320 | 3.320 |

These values refer to a machine fitted with 20.5 R 25 L-3 XHA tires.

Special buckets:
3.8 m³ light material buckets

The standard 2.6/2.9 m³ buckets shown in the table are also available with bolt-on cutting edges to increase capacities to 2.7/3.0 m³.

**Data will be modified according to:**

| | Additional counter-weight | Tire filling |
|---|---|---|
| Weight | + 325 kg | +850 kg |
| Dump load: | | |
| 0° | + 865 kg | + 1345 kg |
| 40° | + 725 kg | + 1180 kg |
| Overall length (G) | + 175 mm | – |

LpA = 73 dB(A)*
LwA = 107 dB(A)*

* in accordance with 95/27/EC (new dynamic measurement)

** machine without additional counterweight

| Bucket type | Capacities in m³ | 0,9 | 1,0 | 1,1 | 1,2 | 1,3 | 1,4 | 1,5 | 1,6 | 1,7 | 1,8 | 1,9 | 2,0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Earth bucket | 2.6 | | | | | | | | | | | | |
| Bucket | 2.7 | | | | | | | | | | | | |
| Bulk mat. bucket | 2.9 | | | | | | | | | | | | |
| Bulk mat. bucket | 3.0 | | | | | | | | | | | | |
| Light mat. bucket | 3.8 | | | | | | | | | | | | |
| Density | in (t/m³) | | | | | | | | | | | | |

not-economical  recommended  full utilisation

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 |

(Special bucket sizes available upon request)

# Technical data at a glance.

## Engine

| | |
|---|---|
| Make | KOMATSU low-emission engine |
| Model | S6D114 E-1 |
| Type | Turbo diesel engine |
| Power output | 124 kW/168 hp (ISO 9249) |
| at engine speed | 2,350 rpm |
| Max. torque | 671 Nm at 1,500 rpm |
| No. of cylinders | 6 |
| Bore/stroke | 114/135 mm |
| Displacement | 8270 ccm |
| Compression ratio | 17.1 : 1 |
| Fuel injection | direct |
| Cooling system | dual-circuit, thermostatically controlled liquid cooling |
| Electrical system | 24 Volt |
| Battery | 2 x 12 Volt, 143 amp/h |
| Alternator | 50 amp/h |
| Air filter | HD dry-air filter FITG II-8268 |

## Transmission

| | |
|---|---|
| Make | KOMATSU |
| Type | Fully-automatic 4-speed full power shift transmission with "kick-down" and "gear-hold" |
| Conversion ratio | 3.15 : 1 |

## Steering

| | |
|---|---|
| Type | hydrostatic |
| System | articulated |
| Articulated joint | needs no readjustment |
| Steering angle | 40° each side |
| Steering pump | |
| operating pressure | 210 bar |
| delivery | 70 l/min |
| Minimum turning radius | |
| outside edge, wheel | 5,535 mm |
| outside edge, standard bucket | 6,040 mm |
| Emergency steering | via additional pump |

## Filling capacities

| | |
|---|---|
| Fuel | 221 l |
| Engine oil | 20.4 l |
| Cooling System | 30 l |
| Converter transmission/ power shift transmission | 60 l |
| Front axle | 25 l |
| Rear axle | 25 l |
| Operating hydraulics/brake system | 165 l |

## Hydraulic system

| | |
|---|---|
| System | 2-stage, two-pump system with main and switch pump |
| Operating pressure | |
| stage 1 | 160 bar |
| stage 2 | 210 bar |
| Operating flow | |
| stage 1 | 237 l |
| stage 2 | 161 l |
| Loading times | |
| lift (Full load) | 5.1 sec. |
| dump | 1.5 sec. |
| lower | 3.0 sec. |

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

## Axles

| | |
|---|---|
| System | All-wheel drive, planetary reduction in the axle housing |
| Front axle | HD axle with self-locking differential, 45 % locking value |
| Rear axle | HD axle with self-locking differential, oscillating, 45 % locking value |
| Oscillating angle | 15° each side |
| Tires | 20.5 R 25 XHA L3, Michelin<br>555/70 R 25 XLD 70 L-3, Michelin<br>20.5 R 25 VLT, L2/3, Bridgestone<br>20.5 R 25 SPT 7 LD, L3, Dunlop<br>20.5 25 PG 6S, 12 PR, L3, Dunlop<br>20.5 R 25 XTLA, L2, Michelin<br>20.5 R 25 XRD 1A, L4, Michelin<br>20.5 R 25 XLD D 2A, L5, Michelin<br>20.5 R 25 RL-2+, L2, Goodyear<br>20.5 R 25 GP 2B, L2 Goodyear<br>20.5 R 25 GP 4B, L4 Goodyear |

## Travel speeds

| | |
|---|---|
| Forward | 1st gear 0 - 7.4 km/h |
| | 2nd gear 0 - 11.6 km/h |
| | 3rd gear 0 - 20.9 km/h |
| | 4th gear 0 - 37.6 km/h |
| Reverse | 1st gear 0 - 7.8 km/h |
| | 2nd gear 0 - 12.3 km/h |
| | 3rd gear 0 - 22.9 km/h |
| | 4th gear 0 - 39.3 km/h |

## Brakes

| | |
|---|---|
| Operating brakes | Hydraulic pump accumulator brake system, oil-bath multiple disc brakes (in axle housing) |
| Hand brake | Oil-bath multi-disc brake in transmission case, spring-loaded, opening hydraulically |

## Standard equipment

Low-emission engine • 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, each front and rear • vandalism protection • AMS Application Mode Selection (H, S, Ec selected mode) • automatic transmission with additional kick-down and gear-hold • two-lever hydraulic operation • emergency steering • electronic checking system (EDIMOS II) • automatic power-speed hydraulic system (APS system) • automatic return-to-dig • automatic boom-kickout • 20.5 x 25 radial tires • all loading kinematics and bearing points sealed • integrated noise insulation • German federal motor vehicle safety standards (StVZO).

The WA320-3 is equipped in accordance with the professional safety regulations and fulfils the low-emission directives of ISO 6393 and the directive 95/27/EC.

Noise emissions: $L_{wA}$ 107 dB(A), $L_{pA}$ 73 dB(A).

## Optional equipment

High-lift attachment • fold-down radiator grill • self-locking differentials in front and rear axle • 3-spool-valve • single-lever hydraulic control • multi function lever for transmission and hydraulic control • 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 grill for windscreen • catalyst • speed limitation • TURBO II air-pre-cleaner • handrails for working in a quarry • travel lock • 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.