

HANOMAG

Wheel Loader 70E

170 kW/228 SAE net hp
Bucket capacity: 3.5-6.0 m³

- 6-cylinder HANOMAG diesel engine, model D 964 T — 10,809 cc displacement
- Minimum fuel consumption
- HANOMAG torque converter and full powershift transmission with electric twist lever control
- All-wheel drive with internal multi-disc brakes, self-locking differentials and planetary reduction gears
- Automatic two-stage hydraulics
- Long wheelbase: 3500 mm
- Static tipping load: 16350/15000 kg (26.5-25 tyres)
- "Centronic" — central electronic checking, warning and safety system
- ALS (Automatic Load Stabilizer) optional



Wheel Loader 70E



Engine

Make	Hanomag
Model	D 964 T
Type	Diesel
Power rating at 2200 rpm	170 kW/228 hp SAE net* 170 kW/230 PS DIN 70020
Max. torque ratings at 1400 rpm (DIN 70020)	945 Nm
No. of cylinders	6
Bore	128 mm
Stroke	140 mm
Displacement	10.809 cm ³
Compression ratio	15.5 to 1
Fuel injection	Direct
Cooling system	Dual circuit, thermostatically controlled liquid cooling
Electrical system	24 volts
Batteries	2 x 12 v., 143 amp. h. (DIN)
Three-phase alternator	35 amp.
Air cleaner	Heavy-duty, dry type, with aspirator

* Net horsepower at flywheel of engine operating under ambient conditions of 25° C and 760 mm Hg., equipped with fan, air cleaner, muffler, water, oil and fuel injection pumps, and, alternator not charging.



Transmission

Converter transmission	Hanomag G 522-3 with single stage torque converter
Conversion ratio	3.2 to 1
Shift transmission	Hanomag G 423, full powershift
Speeds	4 forward/4 reverse



Travel speeds

Work speeds (max.)	
forward	1. gear 0 — 5.7 / 6.2* km/h 2. gear 0 — 10.8 / 11.7* km/h 3. gear 0 — 19.0 / 20.5* km/h 4. gear 0 — 34.8 / 37.6* km/h
reverse	1. gear 0 — 6.0 / 6.5* km/h 2. gear 0 — 11.4 / 11.7* km/h 3. gear 0 — 19.9 / 21.6* km/h 4. gear 0 — 36.6 / 39.6* km/h

* Tyre 26.5-25



Axles

System	Four wheel drive with planetary reduction gears in each wheel hub
Front axle	Planetary axle with multi-disc self locking differential
Rear axle	Planetary axle with multi-disc self locking differential, oscillating
Locking action	45%
Oscillating angle, max.	30°
Tyres	23.5-25 EM 20 PR 26.5-25 EM 18 PR



Steering

System	Articulated steering
Type	Hydrostatic steering with load-controlled flow divider
Articulated joint	No adjustment required
Steering angle lock	40°
Steering pump	
Operating pressure	180 bar
Output	265 l/min
Minimum turning radius	
Outside edge wheels	6380 mm
Outside edge bucket	6860 mm
Emergency steering	Via additional pump



Brakes

Service brake	Hydraulic pump accumulator brake system, internal, wet-type multi-disc brakes (all-wheel brake system)
Parking brake	Mechanical, disc type on drive shaft



Hydraulic system

System	Fully closed, two stage hydraulic, two-pump system with main and shut-off pump
Loader operating pressure	
Stage 1	150 bar
Stage 2	220 bar
Loader operating flow	
Stage 1	445 l
Stage 2	265 l



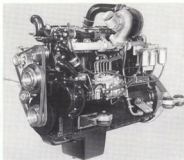
Loader

Stalling tipping load, straight	
With 23.5-25 EM tyres	15,950 kg
With 26.5-25 EM tyres	16,350 kg
Static tipping load, articulated	
With 23.5-25 EM tyres	14,600 kg
With 26.5-25 EM tyres	15,000 kg
Breakout force	263 kN
Payload	6,700 kg
Operating weight, approx.	
With 23.5-25 EM tyres	20,000 kg
With 26.5-25 EM tyres	20,600 kg

Specifications according to SAE J 732 C with 23.5-25 EM L2 tyres, 3.7 m³ loading bucket and ROPS.

Cycle times (rated bucket load)	
Roll back	1.2 s
Lift	5.7 s
Dump	1.3 s
Lower	3.5 s

Automatic lift shutoff, bucket position indicator.



▲ HANOMAG six cylinder turbocharged diesel engine with direct injection. The right engine for construction machinery with high displacement and enormous power reserves.

Compact yet powerful construction machinery engine

Power is provided by the new high-volume 6-cylinder turbocharged diesel, further developed and built by HANOMAG.

Displacement: 10,809 cc, rating: 170 kW/228 hp. Characteristic advantages of this construction machinery engine: ample power reserves, responsive torque, favourable torque rise across a broad engine rpm, full power at less than rated engine rpm, extremely smooth, quiet running. A depression in the piston head ensures highly intensive air/fuel



▲ Maintenance points are clearly and easily accessible.

swirl on the compression stroke. The outcome: excellent combustion, low fuel consumption and the result: less exhaust emission.

Unrestricted accessibility to all maintenance areas ensures swift and straightforward engine and component servicing.

Modern, compact torque converter transmission

The HANOMAG designed torque converter transmission G 522-3 is built and assembled according to progressive manufacturing techniques. The conversion ratio is 3.2:1.



▲ Quick-check panel for equipment torque converter transmission and full powershift transmission.

Proven full powershift transmission

Original HANOMAG design which has proven itself daily in thousands of construction machines. Four speeds forward and reverse; perfectly spaced, smoothly shifting even under full load.

Large, pressure-lubricated multi-disc clutches and microfiltration of the hydraulic oil are an assurance of good durability. Constant mesh gears reduce operating noise.

An easily accessible check centre allows converter and powershift transmission pressures to be measured at all times. Important for good reliability.

Rugged construction machinery axles

The heavy-duty drive axles feature planetary gear reduction. As the reduction units are mounted in the wheel hubs, in other words where maximum torque is required, pre-mounted elements like the floating axles and differential are less exposed to torsional forces. The result is improved durability. The rear axle oscillates at an angle of 30° (23.5-25 tyres).

This allows obstacles to be negotiated without the tyres losing contact with the ground.

Self-locking differentials

HANOMAG wheel loaders are equipped standard with front and rear multi-disc self-locking differentials. This ensures substantially improved performance for heavy-duty pushing work or when loading on slopes. The locking action (45%) results automatically through two multi-disc packs mounted in the differential housing with load-conditioned expansion forces.

The locking action is automatically adjusted to changing engine torque and increased torque in the various gears.

Integrated wet-type brake system

Service brakes: hydraulic dual-circuit, pump accumulator brake system. Completely sealed, oil cooled, no adjustment necessary and virtually no wear on the multi-disc brakes. This is a safety brake ensuring reliable braking action even in the event of engine failure.

As the brake is mounted between the sun and ring gears of the planetary gear units, braking torque is kept very low for good durability. An additional crowd shut-off valve disconnects power to the transmission when the engine is in gear and the



▲ Internal, wet-type multi-disc brakes

brake is applied. This valve can be overridden by a switch mounted on the instrument panel — for road travel, for instance.

Parking brake: generously dimensioned disk brake, manually operated and mounted in the universal joint shafting.

Effortless steering

The 70 E features hydrostatic articulated steering with load-controlled flow division. The main hydraulic pump delivers a constant flow of oil which is allocated when the steering wheel is applied. Priority flow goes to the steering system and is proportional to the speed of steering. In the event of pump failure, a mechanically driven emergency

steering pump is automatically switched on. At the same time, the „Centronic“ system provides visual and acoustic warning for the operator in his cab.

Modern two-stage hydraulics

The sensitively controllable loader hydraulic system is operated by a single pilot-controlled lever. This is a completely sealed, sensibly stepped system with automatic control. It adapts automatically to job conditions.

If the situation allows fast travel, the main and shut-off pump together develop up to 150 bar for the lift and dump circuits.

For heavy-duty ripping and lifting where resistance exceeds this level, the shut-off pump is automatically disconnected. The main pump then develops by itself up to 220 bar system pressure.

Sturdy loader linkage with cross-over geometry

The loader bearings are sealed for long service intervals.

Generous roll back and dump angles at all lift heights are characteristic of the cross-over loader geometry.

High dump height and wide reach of loading arm. Cross-over loader geometry makes maximum use of two-stage hydraulics.



▲ Force reversal of the cross-over linkage during the work stroke of the piston

When digging and rolling back the bucket, tremendous forces develop as oil pressure in the tilt cylinder acts on the head end of the cylinder.

When dumping, on the other hand, oil pressure acts upon the small, rod surface. Power reversal gives bucket emptying for high-speed work cycles.

The ALS-system will engage automatically when a working speed of more than 5 km/h is attained. With ALS there is no loss of material, no shocks or stresses to the 70 E and operator (ALS is optional).

Noise suppression elements

Even in its standard configuration the 70 E is exceptionally quiet (less than 80 db (A)).

Capacities

Fuel tank	475 l
Engine oil	22 l
Cooling system	68 l
Converter transmission	16 l
Powershift transmission	19 l
Front axle	39 l
Rear axle	28 l
Hydraulic system	250 l
Brakes	3 l

Buckets

Type	SAE cty	Width	Weight w/o teeth	Teeth
HD-bucket*	35 m ³	3000 mm	1860 kg	8
Bucket*	37 m ³	3000 mm	1600 kg	8
Bucket*	40 m ³	3000 mm	1700 kg	8
Light-material bucket	44 m ³	3000 mm	1900 kg	8
Light-material bucket	60 m ³	3000 mm	2000 kg	8

* Corner teeth possible

Standard Equipment

2 halogen main lights, 2 halogen working lights front and rear, 2 indicator lights, 2 combined brake-indicator-rear lights, number plate lighting, 2 side lights for bucket blade guard.

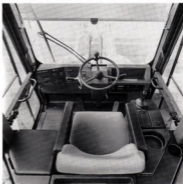
Multi-adjustable comfortable operator's seat, seatbelt.

Hourmeter, speedometer, engine coolant temperature gauge, fuel level indicator, horn.

"Centronic" - electronic monitoring of battery charging, air filter, steering circuit pressure, service brake, parking brake, coolant temperature, water level, engine oil pressure, converter temperature and transmission charging pressure; extensive noise suppression measures.

Optional Equipment

Twin-door noise-protected ROPS cab to DIN/ISO, tinted laminated glazing, sun-protecting blind, window door windows, opening-up roof ventilation, adjustable heater with fan, FOPS, automatic return-to-dig, 3rd control circuit, log clamp, forklift, cold start, hydraulic quick-attach adaptor, radio with earphones.



▲ Operator cockpit with all-glass doors: spacious and ergonomically designed

A model work-place

Long before stipulated by legislation, ROPS have been a standard feature on HANOMAG wheel loaders. Long-standing site experience is mirrored in state-of-the-art safety engineering and ergonomics.

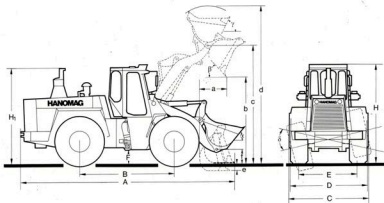
The spacious and comfortable safety cab with the all-glass doors ensures optimum allround visibility for the operator. The cab in fact is big enough to accommodate two persons.

The seat can be individually adjusted to the height and weight of the operator. Moreover, the steering column is also adjustable.

Hydraulic pilot controls for the loader, effortless hydrostatic steering, and electric four-speed twist lever controlled gear change ensures safe and relaxing work.

The neatly laid out, anti-glare instruments mounted on the fully lined panel, are instantly readable. The most important functions and the condition of the machine are continuously monitored via „Centronic“, a central electronic check and warning system. Electric front and rear windscreen wipers and washers provide good visibility whatever the weather conditions.

Wheel Loader 70E



Measurements

A	Overall length	8400 (8350) mm
B	Wheelbase	3500 mm
C	Overall width	3000 mm
D	Width less bucket	2923 (2947) mm
E	Gauge	2260 (2200) mm
F	Ground clearance	445 (505) mm
H	Overall height	3490 (3550) mm
H	Exhaust height	3400 (3460) mm

Operating data

a	Reach at full lift, 45° discharge	1150 (1080) mm
b	Dump clearance, 45° discharge	3155 (3215) mm
c	Lift height, hinge pin	4240 (4300) mm
d	Overall lift height	5645 (5705) mm
e	Dig below ground level, 0° dump	125 (65) mm
f	Carry height, hinge pin	500 mm
g	Rollback, carry	50°
h	Dump, full height	53°
i	Rollback, full height	64°
j	Oscillation	30 (24)°

All dimensions based on machine fitted with 23.5-25 EM L2 tyres
 () = 26.5-25 EM L2 tyres

Illustrations, dimensions, weights, specifications, design features subject to change without notice.

HANOMAG

HANOMAG
 Aktiengesellschaft
 Hanomagstr. 9
 Postfach 91 13 25
 D-3000 Hannover 91
 Tel. (511) 45 09-0
 Telex 9 22 273
 Telefax (511) 45 09 185