Grader Specifications

F 106
F 106 A

Service weight	up to 11.5 t
Engine output	92 kW
Standard mouldboard	3360 mm
Thrust	up to 64/84 kN

- ZF Ergopower transmission
- More powerful Cummins engine
- Hydrodynamic drive
- No-spin differential
- Direct-control load-sensing hydraulics
- Automatic levelling
- EDC Electronic Drive Control
- Encapsulated precision-roller slewing ring

O&K

Impressive dozing performance and maximum

CE seal according to EC Machinery Directive

TÜV certificate for compliance with DIN ISO EN 9001

.

Hydraulically adjustable slewing yoke for mouldboard radius of over 90°

Load sensing for precision control

Wheel lean for slope work

All-wheel drive with Electronic Drive Control for optimum traction on difficult terrain

Roller-mounted internal-gearing swing ring, completely encapsulated. Backlash- and maintenance-free mounting

precision under all conditions.

Spacious cab with outstanding visibility, control console locks in a choice of 4 working positions

Outstanding all-round visibility, improved rear safety with rounded, sloping tail-end

Water-cooled Cummins engine, powerful and fuel-efficient

Maintenance-friendly design, easy to service from ground level

Nivomatic 6, with 5-fold ultrasonic measurement and/or proportional laser sensing (optional)

No-spin differential for full power transmission to the rear wheels, tandem axle articulates

Outstanding visibility, standard-setting ergonomics and safety emphasis

The O&K grader cab is a model of ergonomics. The operator's station is positioned for maximum visibility all-round through large, tinted windows to the front, the sides, and also right down to the ground. Even when seated the operator has full view of both mouldboard ends. When reversing, the rounded tail-end allows excellent and safe visibility of any persons or objects within the machine's proximity.

For working standing or seated the operator can lock the nearly laid out control console in one of four positions for easy access to the controls at all times. The operator adopts the most comfortable, least tiring position.

A highly effective heating/ventilation system creates an agreeable working climate and prevents window fogging.

Alongside such exceptional operating comfort and visibility, the oversized ROPS/FOPS cab has plenty of additional safety features and a seat providing a firm hold even when working along slopes. Sliding doors allow easy access from either side.

F 106 A with EDCV Electronic Drive Control

On the all-wheel drive models, the front wheels are driven by a swashplate pump and hub-mounted motors. Electronic drive control EDCV uses a differential lock to match oil volume and hence the front-wheel speed automatically to that of the rear wheels. Besides ensuring maximum use of engine power, EDCV delivers very high thrust forces for superb earthmoving and grading performances, especially when the going gets tough. Combined with wheel lean, the outcome is precision tracking. To take the stress off the drive components, front-wheel-drive disconnects during road travel.

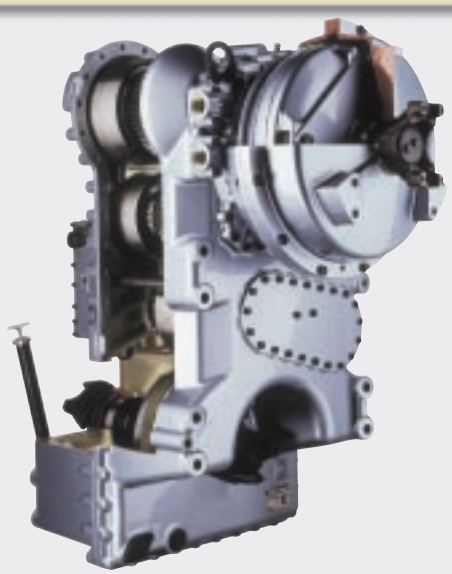
Rugged Cummins construction machinery engine

The turbocharged, water-cooled Cummins engine has been beefed up quite considerably. Low engine speeds result in extended durability and reduced operating costs. The outstanding torque curve and low engine speed combine to deliver high lugging forces at low fuel consumption.

New ZF Ergopower transmission

The new Ergopower transmission is a standard-setter in terms of travel performance, shiftability and noise reduction. Slim-contoured gearing, generous helical overlapping and distortion-proof short shafts combine to cut noise emissions by over one half. As each of the six couplings has its own pressure regulator, shifting is smooth, with no interruption in tractive force. In fact, the operator barely notices the automatic gear shifting, his spine is spared, and a surface of ultimate smoothness is the outcome.

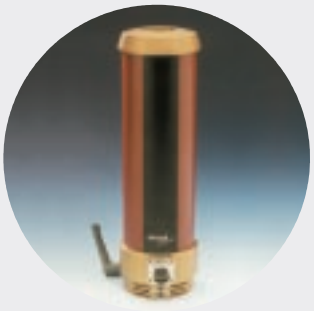
All the important operating data is continuously logged and any variances from preset values are displayed. The machine's own diagnosis system constantly monitors all the main control components and if any part should fail, the control system shifts back into a safer mode. Extended diagnosis facilities reduce the risk of damage, extend durability and simplify servicing.



A perfect finish and a neat slope

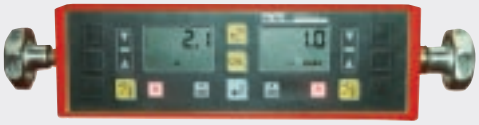
Nivomatic 6 – For maximum precision pre-fitted for 3-D control

System components are all digitized. The console is compact and allows full work area visibility. It is easy to operate yet facilitates maximum precision. Nivomatic 6 applies two different techniques for automatic height and transverse slope adjustment.



Ultrasound: The 5-fold ultrasonic system uses sonic-skiing to scan the ground surface, wire or pavement edge to offset any irregularities. A sixth sensor has a temperature compensating function.

Laser: Laser scanning using a proportional sensor that evaluates each individual cell for proportional and hence high-precision control.



Jolt-free mouldboard movement and load-sensing hydraulics

The roller-mounted slewing ring, with internal gearing, sealed and backlash free, develops very low friction while generating extraordinary torque for jolt-free, smooth mouldboard functions. The mouldboard has a slewing radius of over 90°, fine-tuned through sophisticated geometry and a hydraulically adjustable slewing yoke. Stepless cutting angle adjustment is also hydraulic. A wide variety of ground conditions and tasks are easily handled.

Load-sensing hydraulics is high efficient and allows high-precision controllability. A directly actuated axial-piston pump delivers only as much oil as is needed at any one time. Where time is of the essence a high-speed function comes into play. Pressure compensation in the control valves allows the mouldboard to be lifted/lowered parallel.

Engine

Cummins diesel	6BT 5.9

Water cooled • Direct injection, turbocharged

Engine output ISO 9249	92 kW / 2 100 RPM
Max. torque at 1400 RPM	527 Nm
Cylinders / displacement	6 /5 880 cm^3
Bore / stroke	102 mm / 120 mm
Voltage	24 V
2 batteries	je 12 V / 92 Ah
Alternator	1680 W / 70A
Starter	4 kW

Exhaust emissions to COM 1 and TIER 1

Hydraulics

Load sensing with variable displacement pump • Zero oil delivery under no-function conditions and hence power savings • Closed system with pressurized tank • Pressure relief valve

Hydraulic pump	Swashplate, variable displacement
Output	max. 94.5 l/min.
Max. pressure	200 bar
Pressure relief setting	215 bar

Torque converter

Single-stage, integrated with transmission. Torque automatically adapts to changing travel conditions.

Conversion ratio	1.87 : 1
Cooling by heat exchanger	

Transmission

Full powershift transmission, 6 forward and 3 reverse speeds shifting-on-the-go • Electric single-lever shifting, with reverse lock in gears 3 to 6.

Speeds				
in km/h (at rated RPM)			**Tractive forces (kN)**	
Gears	**Forward**	**Reverse**	**F 106**	**F 106 A**
1st gear	4.0	4.0	64	84
2nd gear	6.0	9.5	64	84
3rd gear	9.5	21.0	42	57
4th gear	14.0		27	36
5th gear	21.0		19	25
6th gear	32.0		13	17
6th gear	37.0 (**at governed speed**)			

Front axle

Oscillating axle, with wheel spindle steering and hydraulic axle lean

Axle articulation	+/- 15°
Lean angle, left/right	+/- 17°
Ground clearance	500 mm

Rear axle, tandem drive

O&K grader axle drive with automatic no-spin differential • Oscillating tandem with power transfer through heavy-duty roller chains

Articulation	+/- 15°
Dimensions tandem box:	
Height	**450 mm**
Width	**170 mm**
Wall thickness	**14 mm**
Chain pitch	**38 mm**
Tandem wheelbase	**1250 mm**

F 106 A – all-wheel drive

Selectable in addition to the hydrodynamic rear-wheel drive: Hydrostatic front-wheel drive with EDCV Electronic Drive Control. A bi-directional swashplate pump (forward/reverse) drives wheel-hub mounted motors in each of the front wheels • Hydraulic no-spin differential prevents one-sided wheel spin and proportions torque when cornering • A microprocessor monitors and matches front- and rear-wheel drive forces • A stepped switch allows the operator to adapt front-wheel thrust to existing job conditions.

Brakes

Hydraulic dual-circuit accumulator pump braking system with 4 drum brakes acting on the tandem wheels.

Parking brake: drum brake acting on the transmission.

Steering

Operated from the adjustable steering and control console • Front wheel spindle steering, all-hydraulic, volume control

Steering wheel lock, left/righ	45°

Artic frame, with 2 double-flow steering cylinders

Artic. angle	+/- 28°
Minimum turning radius	
across tyres	6500 mm
across front blade	7300 mm

Tyres

Tyres:	405/70 R 20, SPT9

425/75 R 20, XM 27 • 455/70 R 20, SPT9 • 18-20 EM, E58 • 14.5 - 20 MPT • 22 - 20 E 7 SS • 405/70 R24, SPT9

Contact O&K for recommended tyres for specific applications.

Cab

Elastically mounted, noise insulated ROPS/FOPS cab with two sliding doors locking into place • Either-side access, two rear sliding tinted side windows • Rear-frame mounted cab • Heater/defroster nozzles • Ventilation options: recirculation/outside air, filter unit

ROPS according to EEC sample testing and DIN/ISO 3471
FOPS to DIN/ISO 3449

Capacities F 106/F 106 A

Engine	14 l
Transmission/torque converter	17 l
Axle drive	18 l
Tandem, 15.5 l each	31 l
Hydraulic tank	70 l
Hydraulic oil, total	105/120 l
Fuel	190 l
Coolant	30 l

Mouldboard control

Load-sensing for maximizing function controllability • Control levers for precision metering of adjustment speed • Pressure compensation in each of the control valve units permits parallel mouldboard lifting or simultaneous operation of two other functions, with no disruptive interaction • A pedal allows the operator to switch to max. output for faster functioning (high-speed mode) • Unlockable check valves maintain lift/cutting angles and wheel lean cylinders constant

Mouldboard

Welded rugged steel A-form • Cross-section: 125 x 120 x 8 mm

Slewing ring

Internal gearing, sealed, roller-mounted, backlash-free, self-adjusting • Driven by oil motor and mouldboard mechanism

Diameter	1150 mm
Action radius	360°

Blade

Wear-resistant high-grade steel with hardened guides * Replaceable, split main and side blades.

Length	3360 mm
Height / thickness	530 / 16 mm
Blade height / thickness	150 / 20 mm
Bolt diameter	16 mm

Mouldboard settings

Shifting to the right	500 mm
to the left	700 mm
Reach across tyres w/o artic. steering:	
right, horizontal	1865 mm
left, horizontal	1525 mm
Reach across tyres with artic. steering:	
right, horizontal	2490 mm
left, horizontal	2150 mm
Max. slope angle:	
right	117°
left	76°
Max. lift height above ground	394 mm
Max. scraping depth	456 mm
Cutting angle adjustment, hydr.	50°

Frame

Front frame: stiff, welded section from high-strength fine-grain steel.

Cross-section	270 x 270 mm
Wall thickness	12 mm
Rear frame	stiff, unitized frame
Cross-section	220 x 80 mm

Standard equipment

Elastically mounted, insulated, removable ROPS/FOPS cab • Tinted windows • 2 sliding windows side rear • Windscreen wipers front and rear • Washer • Sunshade front and rear windows • Engine oil heater with ample capacity • Three ventilation modes (fresh, recirculated, mixed air) • Road traffic lighting • 2 cab-mounted spotlights • Adjustable, vibration-cushioned seat • Adjustable steering and operating console

Electronic monitor with central acoustic warning signal for the following functions: torque converter oil temperature, transmission oil pressure, engine oil temperature, engine oil pressure, parking brake, service brake pressure, battery charge, coolant temperature

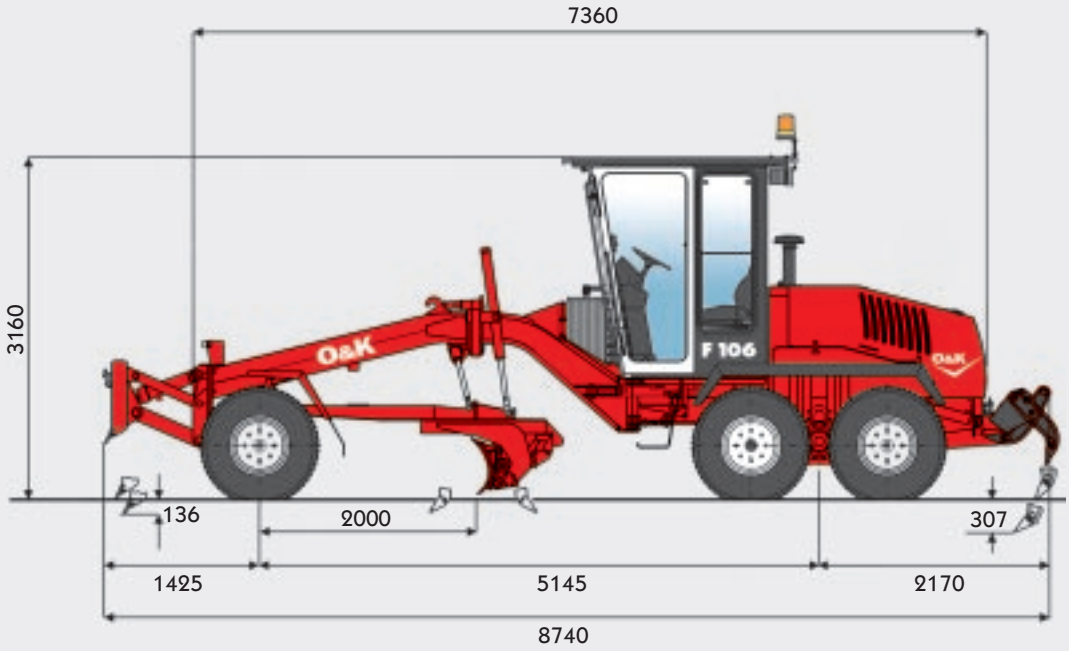
Additional warning lights and displays: fuel meter, operating hour meter, speedometer, hazard beacon, directional indicators, main beams, time, etc.

• Noise insulation • Standard toolkit • Fitted for road travel • Fitted to German safety standards • CE seal • Electronic immobilizer

Optional equipment

Dozer blade • Rear ripper • Mouldboard ripper • Front counterweight • Mouldboard side attachments, right and left • One-sided (right-hand) mouldboard extension 610 mm • Slip clutch for slew ring, overload safety device for mouldboard motor • Main battery switch • Electric refuelling • Hydr. float position for mouldboard • Eco-friendly hydr. oil • Electr. ventilator for cab • A/C • Stereo cassette/radio • Hazard beacon, amber • Tachograph • Acoustic reverse travel alarm • Air filter with ejector (instead of standard filter) • Gear lock for max. 20 km/h • Front-mounted towing coupling • Rear-mounted towing coupling, with ripper removed • Special paint • Additional tool Nivomatik – automatic mouldboard control: O&K Nivomatik, automatic mouldboard control for slopes with angle compensation • Ultrasonic height sensor single, double • Height sensor laser, single and double

Weights and dimensions



Track: 1900 mm; across the tyres: 2310 mm,
with standard 405/70 R20 tyres

Service weight Basic unit		F 106	F 106 A
(excluding equipment listed below):			
Total weight	kg	9 200	9 500
Front axle weight	kg	2 500	2 600
Rear axle weight	kg	6 700	6 900
Additions:			
Front blade	kg	+ 600	+ 600
Ballast, front	kg	+ 510	+ 510
Mouldboard ripper (4 teeth)	kg	+ 70	+ 70
Rear ripper (3 teeth)	kg	+ 430	+ 430
Rear ripper (5 teeth)	kg	+ 480	+ 480
Ballast, rear	kg	+ 280	+ 280
Nivomatik 6 (fully aut.)	kg	+ 200	+ 200
Gross vehicle weight rating	kg	11500	11500

Service weight includes all lubricants, a full tank, standard tyres, and operator

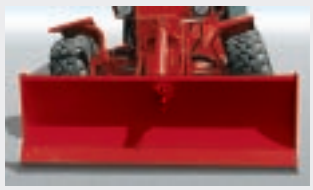
Service-friendly design for rapid maintenance work

Easy accessibility to all the inspection and maintenance items saves time and raises productivity. Another advantage is the extended maintenance intervals—such as the fully encapsulated slewing ring or backlash-free mounting, which eliminate any need for adjustment work.

Front blade and rear ripper

Two options to make the F 106/A grader from O&K even more versatile.

Wheel lean adjustment



For neat and clean work along slopes and embankments, with no thrust loss through repeated steering adjustments.

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