



**THE BOLINDER-MUNKTELL  
MOTOR GRADER**

**VHK 85**

**A new  
Motor Grader  
of  
up-to-date  
design**



Now a successor to the well-known line of Bolinder-Munktell graders has arrived: the VHK 85. A large, heavy machine, completely redesigned and incorporating all the new features, the VHK 85 is proving its efficiency in both new-road construction and in maintenance work.

The generously powered new grader has tandem drive, large steering and driving wheels, and an appropriate wheelbase. The weight is balanced to provide correct blade pressure under all operating conditions. The blade lift, centre shift, and blade settings are designed to meet every requirement of new-road construction.

The mechanical power controls are simple, dependable and constructed for long life. Carefully chosen gear ratios make the controls easy to operate. The roomy cab provides comfort for the driver and a clear view of the blade. Thorough sound-proofing and an adjustable seat are additional features drivers will like.

The rugged construction of the VHK 85 promises that it will live up to the reputation for long life established by other Bolinder-Munktell road machines.

## Main Specification

Weight without driver, fuel, scarifier and windrow eliminator ..... approx. 21,150 lb. (9600 kg.)

Engine: Volvo Model D67 A, 6-cylinder diesel with direct injection; swept volume 6.73 litres, developed h.p. at 1600 r.p.m. .... 85 b.h.p.

Wheelbase ..... 18' (5500 mm.)

Tire size, front and rear wheels 13.00 — 24, 12-ply

Tread, front and rear wheels .... 6'1" (1850 mm.)

Turning radius ..... 32'6" (9900 mm.)

Blade length ..... 10' (3050 mm.)

Blade height ..... 2' (600 mm.)

Blade lift above ground ..... 1'8" (500 mm.)

Front wheels adjustable for lean.

Tandem axle drive at rear wheels.

Hydraulic foot brake with Hydrovac servo unit. Mechanical power control for blade settings, front wheel lean, and scarifier (when the latter is included in the equipment)



# THE VHK 85 BOLINDER-MUNKTELL MOTOR GRADER

## Technical data

### Weight

— without driver, fuel, scarifier, and windrow eliminator

Total weight approx. . . 21,150 lb. (9600 kg.)

Weight on front wheels 6,170 lb. (2800 kg.)

Weight on rear wheels 14,980 lb. (6800 kg.)

Blade load with 1,100 lb. (500 kg.) on front wheels ..... 8,930 lb. (4050 kg.)

Percentage blade load with 1,100 lb. (500 kg.) on front wheels . . 42 % of total wt.

Unit pressure on 10-ft. blade (3050 mm.) with 1,100 lb. (500 kg.) on front wheels ..... 75 lb./in. (13.25 kg/cm.)

Blade load with front axle lifted —

10,800 lb. (4890 kg.)

Rear wheel load with 8,930 lb. (4050 kg.) on the blade ..... 11,130 lb. (5050 kg.)

### Dimensions

Overall length ..... 24'8" (7520 mm.)

Overall width ..... 7'4" (2230 mm.)

Overall height including cab, 9'8" (2950 mm.)

Wheelbase between centre of transmission rear wheel shafts to front wheel centre —

18' (5500 mm.)

Tread, front and rear wheels, 6'1" (1850 mm.)

Tandem axle spacing, centre-to-centre —

4'9" (1450 mm.)

Min. turning radius (measured to outside of front tires, wheels vertical) —

32'6" (9900 mm.)

Blade to front axle .... 7'9" (2360 mm.)

Ground clearance at middle of front axle —

2' (615 mm.)

### Engine

Volvo Model D67A diesel with direct injection

Number of cylinders ..... 6

Bore and stroke —

4 1/8" × 5 1/8" (104.77 × 130 mm.)

Swept volume ..... 411 cu.in. (6.73 l)

Compression ratio ..... 17:1

Developed h.p. at 1600 r.p.m. . . 85 b.h.p.

Max. torque —

289 lb.-ft. (40 kgm.) at 1200 r.p.m.

Engine speed under centrifugal governor control from idling to 1600 r.p.m.

*Cylinder head:* Overhead push-rod-operated valves, replaceable valve seats. Exhaust valve seats stellite-faced.

*Cylinder and pistons:* Replaceable wet cylinder liners. Double gaskets between water jackets and crankcase. Aluminium-alloy pistons with three compression rings and two oil scraper rings. Top ring chromium-plated.

*Crankshaft:* A generously designed alloy-steel unit, hardened and tempered, dynamically balanced. Seven steel-backed lead-bronze main bearings. All journals induction-hardened.

*Lubrication:* Pressure lubrication to all crankshaft bearings, piston pins, valve mechanism, and timing gears. Self cleaning section filter for lubricating oil.

*Hour recorder:* Counts number of operating hours.

### Clutch

14-inch heavy-duty double-plate type with clutch brake.

### Transmission

Eight speeds forward, two reverse. All forward speeds have constant-mesh gears. These permanently engaged gears need not be shifted. They turn freely and silently and are manipulated on the transmission shafts by light, easily operated shifting dogs.

### Speeds

Forward: Gear	1st	2nd	3rd	4th
Speeds (m.p.h.)	2.2	3.2	4.4	9.4
„ (km/h.)	3.5	5.2	7.1	15.1
Gear	5th	6th	7th	8th
Speeds (m.p.h.)	6.7	8.7	11.7	17.7
„ (km/h.)	10.8	14.0	18.8	28.5
Reverse: Gear	Low	High		
Speeds (m.p.h.)	2.8	4.2		
„ (km/h.)	4.5	6.8		

(Lower speeds available by throttle control.)

### Differential and differential lock

The differential can be locked when necessary.

### Wheels

Tire sizes, front and rear wheels —

13.00 — 24, 12-ply

Front wheels can be leaned; max. lean 23°.

The tandem axles are chain-driven from the transmission rear wheel shafts. The axle housings are welded box sections.

### Brakes

Hydraulic foot brake with Hydrovac servo unit; 17" × 4" brake drums on rear wheels. Mechanical hand brake acting on same drums as foot brake.





### Steering

Cam-and-twin-lever movement with roller-bearing-mounted studs provides exceptionally easy steering.

### Main frame

Welded box-section unit with internal reinforcements.

Frame flexure, measured by approved Swedish method,  $\frac{1}{4}$ " (6 mm.). The measurement is taken by stretching from the front axle to the rear axle housing a cord equal in length to the wheelbase. On a cord hanging plumb at the middle of the frame, the point of intersection with the horizontal cord is marked. The front end of the grader is then lifted by blade pressure, and the frame flexure is measured.

Weight of frame per metre —  
approx. 330 lb. (150 kg.)

Ground-to-frame clearance —  
 $4'8\frac{1}{2}"$  (1435 mm.)

### Blade support circle

Diameter .....  $4'10\frac{1}{2}"$  (1486 mm.)  
Circle centre to front axle centreline —  
 $7'1\frac{1}{2}"$  (2173 mm.)

Rotability in both directions .....  $360^\circ$

Construction: Welded box-section.

Induction-hardened gear teeth.

Case-hardened pinion.

Circle setting in drawbar:

1. Circle thickness vertically adjustable up to  $\frac{1}{4}$ " (6 mm.) with shims.
2. Circle centring horizontally adjusted with set screws.

### Drawbar

Two welded box-section beams.

### Blade dimensions

Length ..... 10' (3050 mm.)

Height ..... 2' (600 mm.)

Blade is reinforced with a welded box section on back.

### Blade settings

Max. lift over ground at  $30^\circ$  cutting angle  
 $1'8"$  (500 mm.)

Side shift, each side, in relation to circle  
 $2'9"$  (840 mm.)

Max. cutting angle obtainable with toothed  
arm settings .....  $110^\circ$

Min. cutting angle obtainable with toothed  
arm settings .....  $30^\circ$

Max. side shift without resetting side shift  
rod and without resetting blade in rela-  
tion to circle .....  $3'3\frac{1}{2}"$  (1000 mm.)

Max. blade reach, measured from outside of  
wheels to blade tip, after resetting side  
shift rod and setting max. blade shift in  
relation to circle .....  $5'11"$  (1800 mm.)

Max. elevation, both sides .....  $90^\circ$

For bank cutting, the blade can be set at  
a  $45^\circ$  angle to the direction of travel, and  
can also be tilted  $45^\circ$ . The lower end of the  
blade is then on or outside a line connecting  
the outer edges of the front and rear  
wheels.

### Controls

Mechanical power control through worm-  
and-gear lift driven by power control box.

Lifting speed per sec. ....  $3"$  (80 mm.)

Hardened steel worm, bronze gear.

Self-adjusting bronze lift-arm shaft bearings.

Shim adjustment for play in ball-and-socket  
joint.

### Universal joints

Needle-bearing type throughout, supplied  
by a leading maker.

### Cab

The cab is standard equipment. Heater and  
defroster are available as extras.

Cab is of steel, has effective sound insula-  
tion and ventilator. The doors, which  
extend down to the floor, allow good  
visibility and make cab cleaning easy. All  
panes are safety glass.

The seat, which is adjustable up, down,  
and sidewise, accommodates three persons.

The blade and all controls are clearly  
visible from the seat. Control levers are  
readily accessible from both sitting and  
standing positions.

Floor area ..  $4'2" \times 2'5\frac{1}{2}"$  (1270  $\times$  750 mm.)

Height, ground to floor  $3'5\frac{1}{2}"$  (1050 mm.)

### Electrical equipment

Battery: 133 amp-hr. at 10-hr. discharge  
rate; voltage ..... 24

Cab lighting.

Front headlights ..... 2

Working headlights ..... 2

Rear headlight ..... 1

Red tail lights ..... 2

Cat's-eye reflectors, front, white ..... 2

Cat's-eye reflectors, rear, red ..... 2

Direction signals (blinker type) ... 2

Horn ..... 1

### Windshield wipers

Operated by vacuum tank and vacuum  
pump ..... 3

### Tools

In tool compartment under driver's seat.

### Extra Equipment

#### Scarifier

For mechanical power control. Power con-  
trol box has take-off for scarifier, and  
scarifier mountings are provided on grader  
frame.

#### Windrow eliminator

For hydraulic control.

#### Snow plough and other attachments

For mechanical or hydraulic control. Mount-  
ing plate provided at front end.

#### Hydraulic control system

For windrow eliminator, snow plough, and  
other attachments.

#### Cab heater and defroster



**The BOLINDER-MUNKTELL  
Motor Grader for road con-  
struction and maintenance**



**AB BOLINDER-MUNKTELL ESKILSTUNA SWEDEN**