

VOLVO BM 861



Specification Volvo BM Dumptruck 861

RELIABLE

The 861 is designed throughout for tough, demanding service. It has a simple basic construction with compatible tried-and-tested Volvo standard components. The 861 is therefore very reliable, requiring a minimum of maintenance and service to achieve optimum economy.

PERFORMANCE

The powerful, fuel-thrifty Volvo turbo-charged engine gives the 861 power to spare. Good acceleration and good negotiability make for high average speeds and fast haulage cycles.

NEGOTIABILITY

The 861 has six large wheels with independent suspension producing excellent "floatability". Four-wheel drive, articulated steering, bogie and differential locks all go to make the 861 the premier off-road haulage vehicle.





ENGINE

Make Volvo
 Model TD 60B
 Type Turbo charged diesel engine

| | |
|---------------------|--|
| Flywheel rating | 107.5 kW at 41.5 r/s, DIN 70020 (146 hp at 2 500 r/min) |
| Gross rating | 125 kW at 41.5 r/s, SAE gross J 816 (170 hp at 2 500 r/min) |
| Max. torque | 445 Nm at 33.5 r/s, DIN 70020 (328 lbf ft at 2 000 r/min) |
| Max. torque, gross | 503 Nm at 33.5 r/s, SAE J 816 (317 lbf ft at 2 000 r/min) |
| Number of cylinders | 6 |
| Cylinder diameter | 98.425 mm (3.87 in) |
| Stroke | 120 mm (4.72 in) |
| Displacement | 5.48 dm ³ (334 in ³) |
| Compression ratio | 16:1 |
| Cold start | Richer fuel mixture |
| Air filter | Dry air cleaner |



TYRES

| | |
|---|--|
| Front: | Rim 13.00—25 Tyre 18.00—25 Radial or Cross-ply |
| Rear: | Rim 17.00 W—25 Tyre 20.5—25 Radial or Cross-ply |
| Ground pressure: see special table on page 4. | |



STEERING SYSTEM

Articulated steering with hydraulic operation of two double-acting cylinders.

| | |
|---------------------------------|-----------------------------------|
| Max. working pressure | 12 MPa (1700 lb/in ²) |
| Turns of wheel between locks | 3.5 turns |
| Steering angle from centre line | 45° |
| Lock-to-lock steering time | ~ 5.2 s at 25 r/s (1500 r/min) |
| Steering cylinders, type | Double-acting |



ELECTRICAL SYSTEM

| | |
|---------------|-------------|
| Voltage | 12 V |
| Battery | 150 Ah |
| Alternator | 450 W |
| Starter motor | 3 kW (4 hp) |



TRANSMISSION

| | |
|--------------------------------|---|
| Torque converter, type | single-stage with free-wheel stator and automatic loc-up |
| Conversion ratio | 2.3:1. With loc-up 1:1 |
| Hydraulically operated gearbox | type Power shift |
| Make | Volvo BM |
| Number of gears | 4/4 |
| Speeds, forward — reverse | 0—6 km/h (0—3.7 mph) 0—10 km/h (0—6.2 mph) 0—18 km/h (0—11.2 mph) 0—30 km/h (0—18.6 mph) |



HYDRAULIC SYSTEM

Pump, type (working hydraulics & steering): Vane pump

The hydraulic pump is mounted on the righthand side of the engine and is driven directly from the engine.

| | |
|-------------------------------|--|
| Make | Vickers |
| Capacity at 41.5 r/s | 2500 r/min 130 l/min 2.2 dm ³ /s (34 US gal/min, 29 Imp. gal/min) |
| Working pressure | 12 MPa (1700 lb/in ²) |
| Ratio engine — hydraulic pump | 1:0.8 |
| Filter: | |
| Suction line | Strainer |
| Return line | Replaceable paper filter over magnetic core (full flow) |
| Refill | Paper filter |



AXLES

Tractor unit: integral part of transmission

| | |
|-------------------|----------|
| Make | Volvo BM |
| Differential lock | 100 % |

| | |
|-----------------------------|---------------|
| Trailer (bogie) drive axle: | |
| Make | Volvo |
| Type | RAN 181 |
| Differential lock | 100 % locking |
| Trailing axle: | |
| Make | Volvo BM |



TIPPING MECHANISM

| | |
|-------------------------|-----------------------|
| Tipping cylinders, type | 6-stage single-acting |
| Tipping angle | 70° |
| Tipping time with load | ~ 18 s |
| Lowering time | ~ 18 s |



BRAKE SYSTEM

Type: Dual-circuit brake system

| | | |
|-----------------|---------------------|---------------------|
| Driving brakes: | Front Air-hydraulic | Rear Air-mechanical |
|-----------------|---------------------|---------------------|

| | | |
|-----------------------------------|--------------------------------------|---------------------|
| Parking brake | Spring-actuated brake on bogie axles | |
| Front axle, type | Disc brakes | |
| Diameter of disc | 460 mm (18 in) | |
| Number of friction pads per brake | 2 | |
| Bogie, type | Drum brakes | |
| Make | Drive axle Volvo | Trailing axle Volvo |
| Diameter of brake drum | 394 mm (15.5 in) | 413 mm (16.3 in) |
| Friction pads, number/drum | 2 | 2 |



PNEUMATIC SYSTEM

| | |
|-------------------------|---|
| Compressor, make | Bosch |
| Displacement | 0.225 dm ³ (13.7 in ³) |
| Drive | V-belt |
| Outlet for tyre pumping | Yes |

| | |
|---------------------------|--|
| Pressure regulator: | |
| Relief pressure, max. | 0.75 MPa 106 (lb/in ²) |
| Compressed air reservoir: | |
| Tractor unit | 6 + 15 dm ³ (l) (1.6 + 40 US gal, 1.3 + 3.3 Imp gal) |
| Trailer unit | 6 + 15 + 20 + 20 dm ³ (l) (1.6 + 4.0 + 5.3 + 5.3 US gal, 1.3 + 3.3 + 4.4 + 4.4 Imp gal) |



FRAMES

The frame oscillation joint permits continuous rotation. Torsional stresses in the framework are eliminated. This has permitted the use of a rigid rear frame made of welded box sections and a front frame made of pressed channel sections.

Tractor unit, type
Trailer unit, type

Open channel sections
Welded box sections



VOLUMES

| | |
|--|--|
| Engine oil, incl. filter | Approx 17 dm ³ (l) (4.5 US gal, 3.7 Imp gal) |
| Fuel tank | 225 dm ³ (l) (59 US gal, 49 Imp gal) |
| Cooling system | 30 dm ³ (l) (8.0 US gal, 6.6 Imp gal) |
| Hydraulic system | 160 dm ³ (l) (42.3 US gal, 35 Imp gal) |
| Hydraulic tank | 135 dm ³ (l) (35.7 US gal, 29 Imp gal) |
| Hydraulic transmission | 22 dm ³ (l) (5.8 US gal, 4.8 Imp gal) |
| Hydraulic transmission at oil change | 18 dm ³ (l) (4.8 US gal, 4.0 Imp gal) incl oil filter |
| Differential — final drive, tractor unit | 90 dm ³ (l) (23.7 US gal, 19.8 Imp gal) |
| Reduction gearbox | 1.6 dm ³ (l) (0.42 US gal, 0.35 Imp gal) |
| Differential and hub reduction, trailer unit | 28 dm ³ (l) (7.4 US gal, 6.2 Imp gal) |

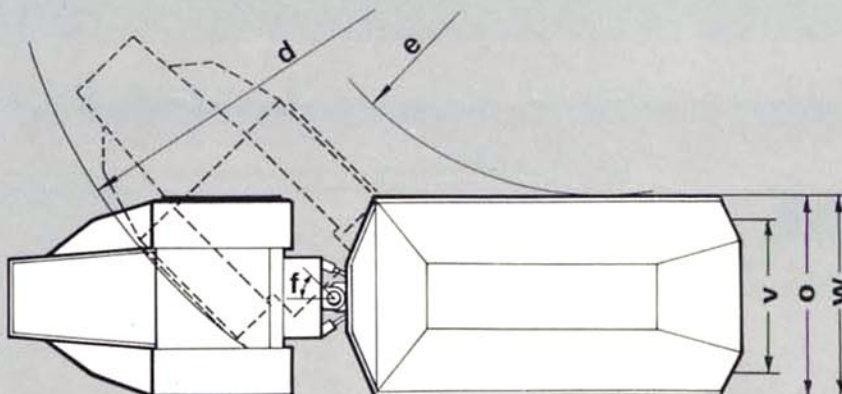
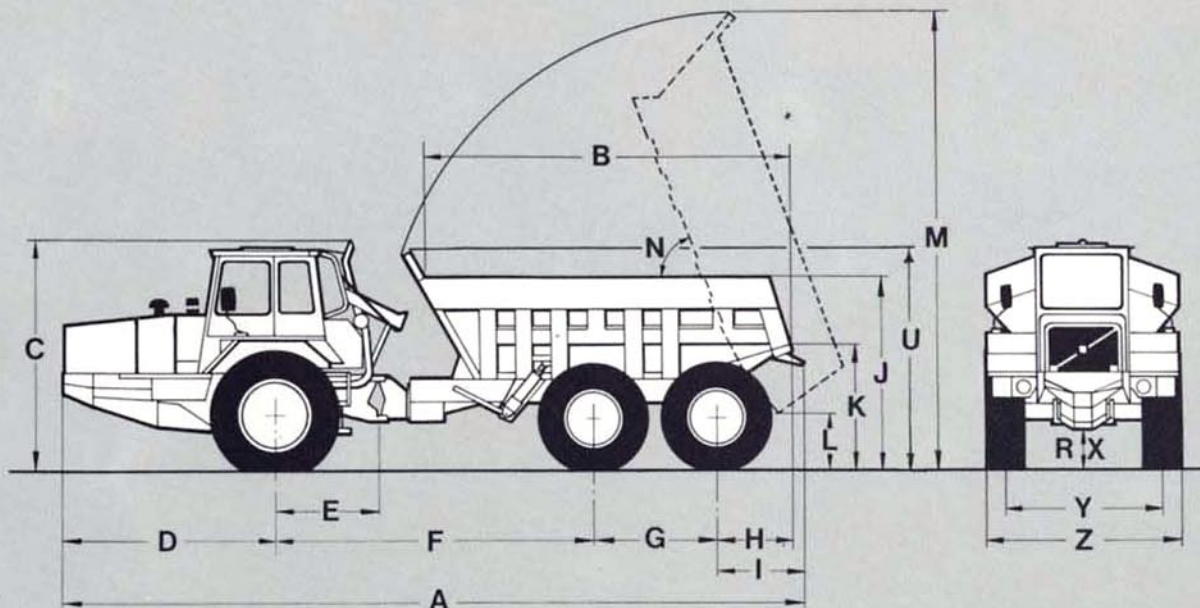


CAB

The cab is mounted on rubber pads, insulated weathertight and has a flat floor with a rubber mat. Tested and approved as a safety cab in accordance with the ROPS standards.

Heater and defroster: Heating element with fresh air heating and two-speed fan plus defroster.

| | |
|--------------------------------------|-------------------------|
| Upholstery | Flameproof |
| Points of attachment for safety belt | Yes |
| Number of exits | 3 (doors and cab hatch) |



STANDARD MACHINE DIMENSIONS 861

| | |
|---------------------------|----------------------|
| A = 9400 (370) | |
| B = 4655 (183) | |
| C = 2890/2900* (114/118)* | |
| D = 2720 (107) | |
| E = 1280 (50) | |
| F = 4050 (159) | |
| G = 1540 (61) | |
| H = 1010 (40) | |
| I = 1090 (43) | |
| J = 2440/2495* (96/98)* | |
| K = 1585/1640* (63/65)* | |
| L = 720/775* (28/31)* | |
| M = 5719/5775* (225/227)* | |
| N = 70° | |
| | mm (in) |
| | O = 2480 (89) |
| | R = 395 (15.6) rear |
| | U = 2800 (110) |
| | V = 1940 (76) |
| | W = 2500 (98) |
| | X = 420 (16.5) front |
| | Y = 1960 (77) |
| | Z = 2500 (98) |
| | d = 7500 (295) |
| | e = 4100 (162) |
| | f = 45° |

* = unladen machine
(cross ply tyres 18.00—25/20.5—25)

L with rear extension = 280 mm (11 in)



WEIGHTS

Working weight (oils, coolant, fuel tank, driver, cross ply tyres and standard body).

| | Front axle | Bogie | Total weight |
|--|------------------------|------------------------|------------------------|
| Unladen machine | 7290 kg (16072 lb) | 5890 kg (13000 lb) | 13180 kg (29072 lb) |
| Machine with max. load, 18500 kg (40785 lb) | 10500 kg (23150 lb) | 21200 kg (46150 lb) | 31700 kg (69900 lb) |

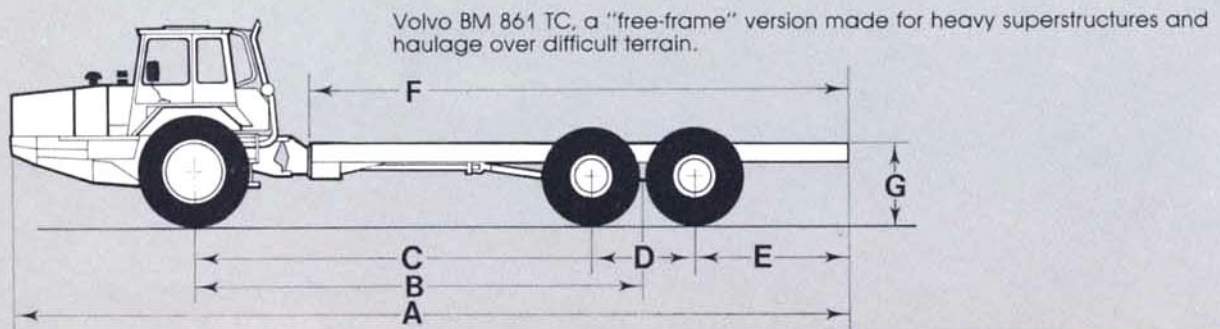


GROUND PRESSURE

Ground pressure at 15 % slump of unladen diameter and 10500 kg (23500 lb) front axle load, 21200 kg (47180 lb), bogie load.

| | Tyres | Unladen kPa (lb/in ²) | Laden kPa (lb/in ²) |
|------------|------------------------|--------------------------------------|------------------------------------|
| Front axle | 18.00–25 | 88 (12.8) | 132 (19) |
| Bogie | 20.5–25 | 38 (5.5) | 138 (20) |
| Front axle | 23.5–25 | 73 (10.4) | 109 (15.5) |
| Bogie | 14.00–24 twin tyres | 29 (4.1) | 104 (14.8) |

TERRAIN CHASSIS 861 TC



| | TC 59 mm (in) | | | TC 40 mm (in) | | |
|-------------------------------------|-------------------------------|---------------|---------------|-------------------------------|---------------|---------------|
| Frame length, trailer unit | 8010 (315) | | | 4145 (163) | | |
| Max. width, front | 2500 (98) | | | 2500 (98) | | |
| Track, front | 1960 (77) | | | 1960 (77) | | |
| Max. width, rear | 2500 (98) with 20.5×25 tyres | | | 2500 (98) with 20.5×25 tyres | | |
| Track, rear | 1940 (76) with 20.5×25 tyres | | | 1940 (76) with 20.5×25 tyres | | |
| | Front | Rear | Total | Front | Rear | Total |
| Chassis weight*, kg (lb) | 6840 (15080) | 4260 (9390) | 11100 (24470) | 6740 (14860) | 3860 (8510) | 10600 (23370) |
| Load, incl. superstructure, kg (lb) | 3660 (8070) | 17140 (37790) | 20800 (45860) | 3760 (8290) | 17540 (38670) | 21300 (46960) |
| Total weight, kg (lb) | 10500 (23150) | 21200 (46150) | 31700 (69900) | 10500 (23150) | 21200 (46150) | 31700 (69900) |

DIMENSIONS 861 TC, mm (in)

| | TC 59 mm (in) | TC 40 mm (in) |
|---------------|--------------------------|-------------------------|
| A | 2430/12650** (489/498)** | 9200/9420** (362/371)** |
| B | 6630 (261) | 4818 (190) |
| C | 5910 (233) | 4050 (159) |
| D | 1600 (63) | 1540 (61) |
| E | 2200 (87) | 250 (10) |
| F | 8010 (315) | 4145 (163) |
| G | 1207 (47) | 1175 (46) |
| H frame width | 840 (33) | 840 (33) |

* Chassis weight includes oils, coolant, full fuel tank, driver, cross ply tyres.

** With front-mounted hydraulic pump.



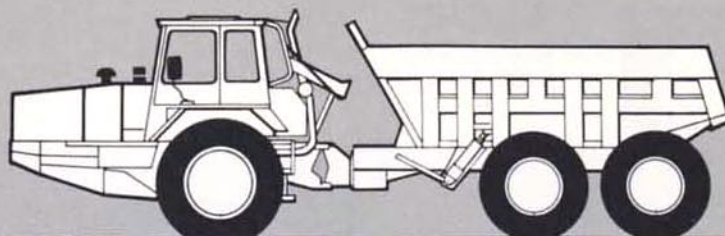
DUMPER BODIES

Standard body

The body is of a robust and heavy-duty design. In order to reduce weight and increase payload capacity, a hardened impact-resistant steel plate is used which possesses particularly high impact resistance even at low temperatures.

The sides of the body are externally reinforced and strengthened with pressed channel sections. The body is prepared for exhaust gas heating through ducts along the sides.

The body volume, payload capacity, body length and loading height of the 861 have been designed for efficient loading by all loaders and excavators on the market. The body volume is designed for a full load of ordinary, loosely-packed excavated materials.



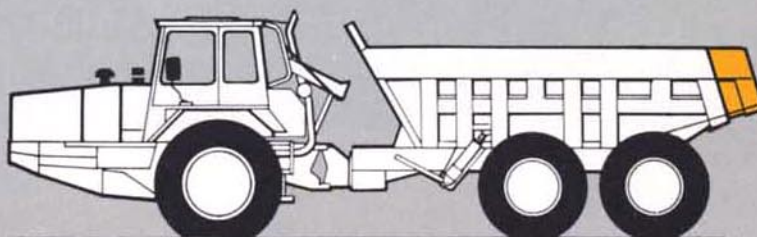
| Body volumes (SAE 2:1*) | Without tailboard | With underhung tailboard | With underhung/overhung tailboard |
|--|-------------------|--------------------------|-----------------------------------|
| Body volume, struck, m ³ (yd ³) | 8.7 (11.4) | 9.0 (11.8) | 9.3 (12.2) |
| heaped SAE, m ³ (yd ³) | 11.0 (14.4) | 11.5 (15.0) | 12.0 (15.7) |

Standard body equipped with wear plates. Weight increases 800 kg (1 764 lb). Standard body equipped with wear plates should be used for forced loading of rock materials or other abrasive material. The wear plates prevent the sidepanels from being dented and protect against wear.

Extended body

(Weight increase 210 kg, 463 lb)

The body extension is 500 mm (20 in) long. It facilitates tipping in mine shafts and crushers. The body extension partly replaces the tailboard. The body extension cannot be combined with the tailboard.



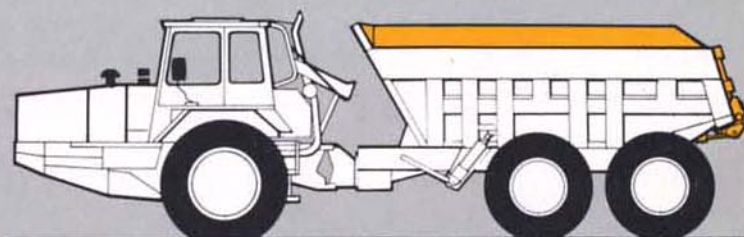
| | |
|---|-------------|
| Body volumes SAE 2:1* | |
| extended, struck, m ³ (yd ³) | 9.8 (12.8) |
| heaped SAE, m ³ (yd ³) | 12.5 (16.4) |

Extended body with wear plates. Weight increase 1 080 kg (2 381 lb). An extended body with wear plates should be used for loading of rock or other abrasive materials. The wear plates are made of the same grade of steel as the wear plates on the standard body.

Elevated body

Density of material \approx 1300 kg/m³
(weight increase 270 kg, 595 lb)

The elevated body is 275 mm (11 in) higher than the standard body and is suitable for light materials e.g. light sand. Body elevation alone is not recommended; it should be combined with body extension or overhung/underhung tailboard.



| | | |
|---|--|-----------------------------------|
| Body volumes (SAE 2:1*) | | With underhung/overhung tailboard |
| Elevated, struck, m ³ (yd ³) | | 12.1 (15.8) |
| heaped SAE, m ³ (yd ³) | | 15.0 (19.6) |

Extended and elevated body

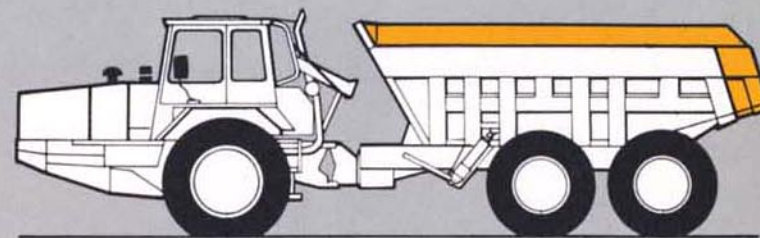
Density of material \approx 1300 kg/m³
(weight increase 500 kg, 1 100 lb)

This body is suitable for hauling light materials, e.g. coal.

* In the case of bodies with struck volumes of less than 10 m³ (13 yd³), the volume shall be specified to the nearest 0.5 m³.

In the case of bodies with struck volumes of 10 m³ (13 yd³) or more, heaped volumes shall be specified to the nearest m³.

Struck volume is given in m³ (yd³) to one decimal place.



| | |
|--|-------------|
| Body volumes (SAE 2:1*) | |
| Elevated and extended, struck, m ³ (yd ³) | 12.6 (16.5) |
| heaped SAE, m ³ (yd ³) | 15.0 (19.6) |

STANDARD EQUIPMENT



SAFETY AND COMFORT

- Impact-tested ROPS safety cab
- Heater with fresh air intake and defroster
- Adjustable, sprung driver's seat
- Windshield wipers
- Windshield washers
- Rear-view mirrors
- Sun visor
- Attachment points for safety belt
- Bally plates front unit
- Cigarette lighter and ashtray
- Horn
- Main headlights, bright/dim
- Reverse lights
- Direction indicators
- Cab lighting
- Indicator for air cleaner
- Complete tyre pumping unit
- Protective grille for rear window
- Hazard flashers
- Cab hatch
- Tool kit
- Brake lights
- Position lights



INSTRUMENTATION

- Pilot lamp, extra lighting
- Pilot lamp, air cleaner
- Pilot lamp, charging
- Pilot lamp, direction indicators
- Pilot lamp, oil pressure, engine
- Pilot lamp, bright lights
- Pilot lamp, high and low gear
- Air pressure gauge
- Fuel gauge
- Pilot lamp, coolant temp.
- Pilot lamp, parking brake
- Pilot lamp, oil temperature, transmission
- Pilot lamp, oil pressure, transmission
- Revolution and hour counter gear

EXTRA EQUIPMENT

- Cab ventilator
- Safety belt
- Compressor horn
- Rotating warning beacon
- Engine heater, electric
- Preheated intake air
- Heavy-duty air cleaner
- Narrow fenders for driving in confined spaces
- Protective plate for propeller shaft
- Radiator protection
- Tow hitch
- Body heater (exhaust gas)
- Underhung tailboard
- Overhung tailboard
- Headlight washer
- Headlight grilles
- Extra fuel filter
- Speedometer
- Radio
- Elevated dumper body
- Extended dumper body
- Elevated and extended dumper body
- Wear plates for standard body and for body extension



UNDERHUNG TAILBOARD

An underhung tailboard with operating mechanism which automatically opens the tailboard when the body is tipped.

If the tailboard is subjected to excessively high load, a gas spring is released and the tailboard opens. When the load is relieved, the tailboard closes automatically.

A tailboard should always be used for road haulage in order to prevent spillage. The tailboard cannot be combined with a body extension.

The tailboard increases the weight of the body by 100 kg (220 lb).



OVERHUNG TAILBOARD

On all machines equipped with a underhung tailboard, it is possible to mount an upper tailboard which, together with the lower tailboard, closes off the entire opening on the dumper body. This extra tailboard is intended to be used for hauling gravel, sand and fluid materials. The design of the tailboard does not permit rock, boulders and solid clay to be carried. For such haulage, the tailboard should be removed.

An overhung tailboard cannot be combined with a body extension.

The tailboard increases the weight of the body by 130 kg (287 lb).

VOLVO BM

VOLVO BM AB ESKILSTUNA SWEDEN

Under our policy of continual product improvement, we reserve the right to change specifications and design without notice. The illustrations do not necessarily show the standard version of the machine.

Ref.No. 21 1 669 1431
ENGELSKA

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