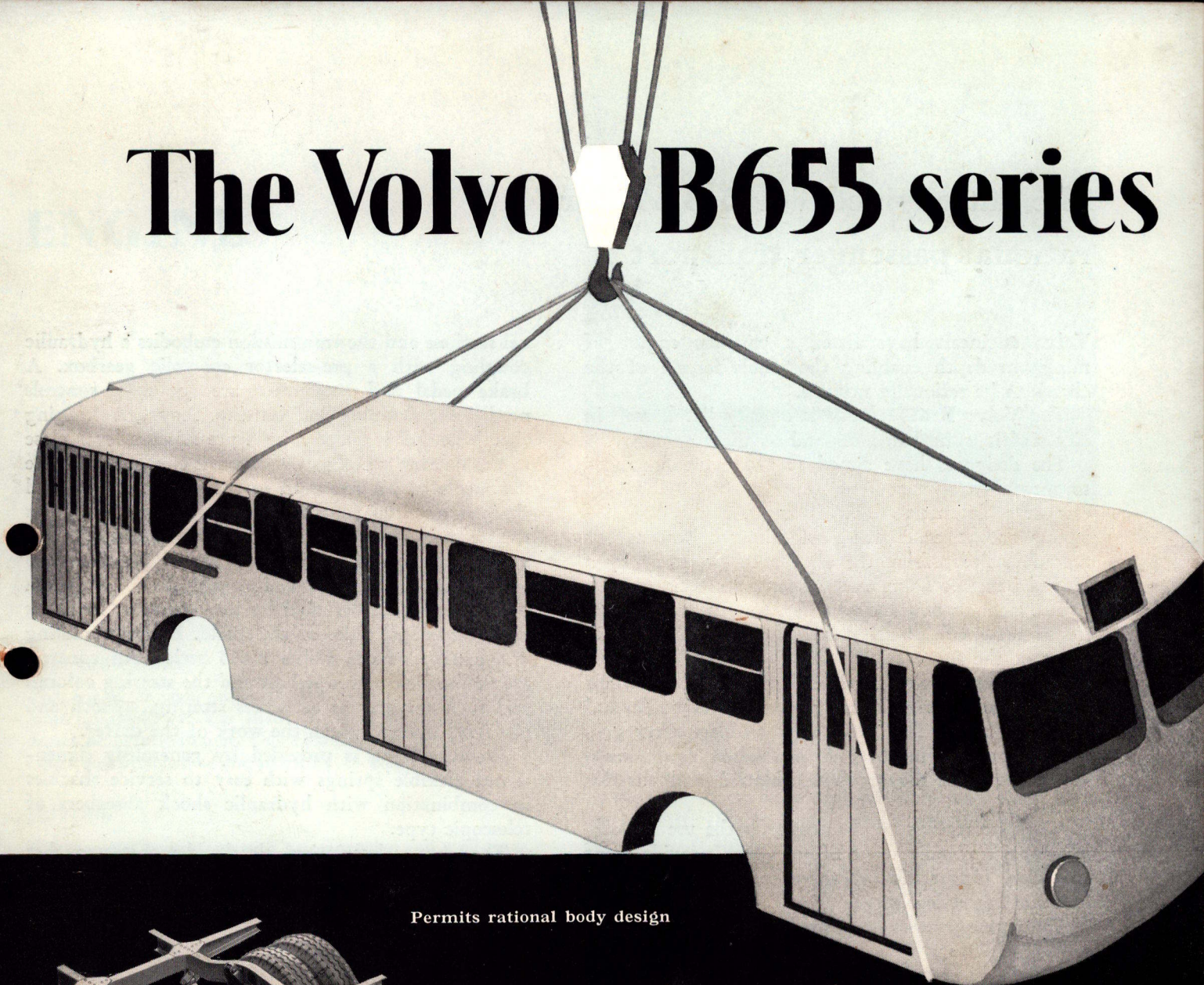


The Volvo B655 series



Permits rational body design

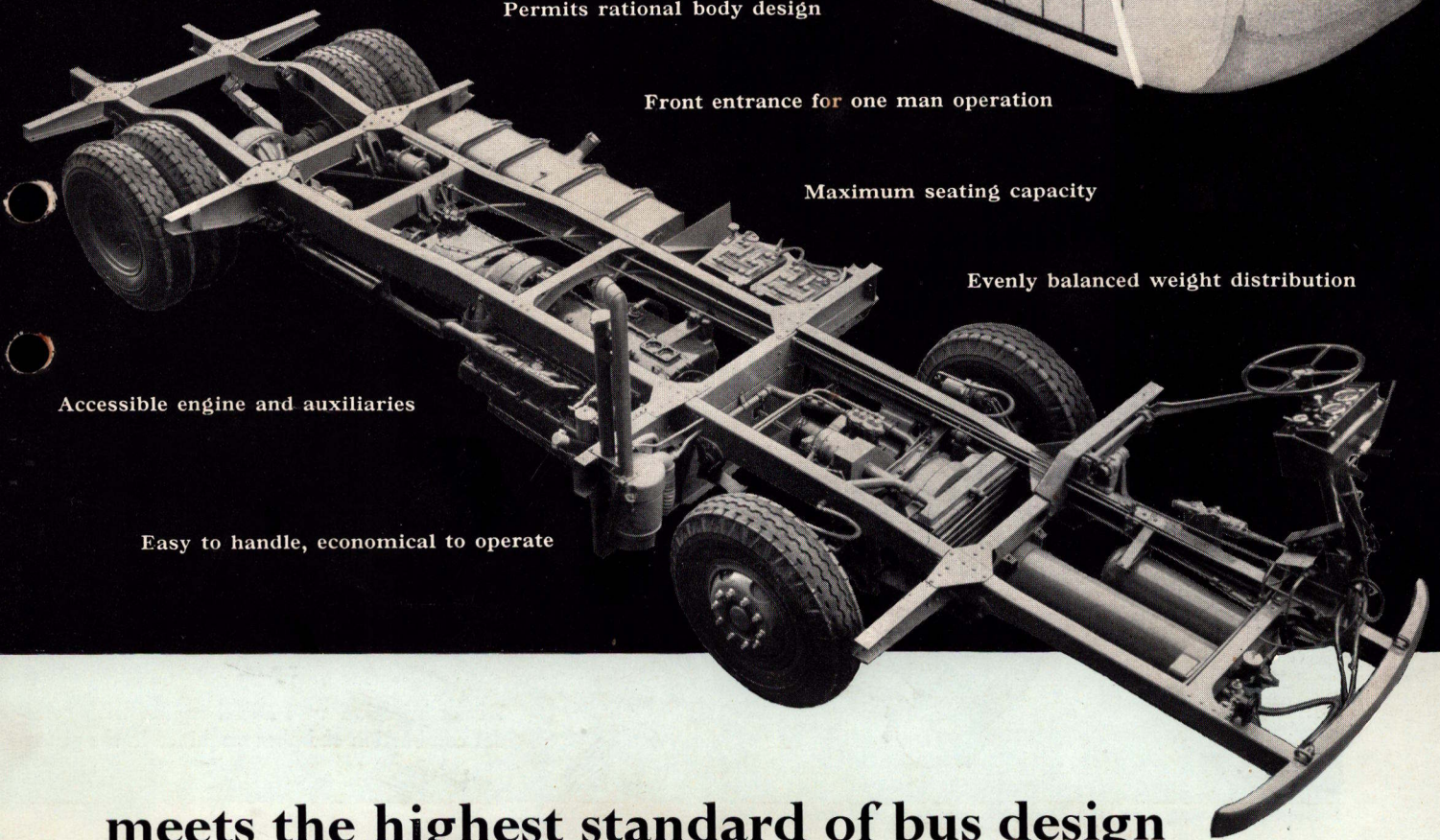
Front entrance for one man operation

Maximum seating capacity

Evenly balanced weight distribution

Accessible engine and auxiliaries

Easy to handle, economical to operate



meets the highest standard of bus design

The flat-engined Volvo B 655 for rational passenger transport

Volvo engineers have fitted a pancake engine of minimum depth enabling the whole length of the chassis to be rationally utilized.

The Volvo B 655 chassis is equally "at home" in city traffic, suburban areas and on the open road.

The designers have aimed at producing a vehicle to meet bus owner's demands for accessibility and ease of maintenance. The oil filter, fuel pump, injectors and other engine auxiliaries are immediately accessible either from the outside of the body by a hinged panel or from underneath the chassis.

The location of the engine not only provides maximum passenger capacity but also permits entry in front of the front axle.

The chassis frame is devoid of any obstructions with the exception of steering column, water filler and air intake pipes. This gives body builders every possibility of complying with the individual requirements of operators as regards both interior and exterior design.

A salient feature of the engine is the use of self-adjusting hydraulic valve lifters which provide silent operation, longer life for valves and valve seats and better idling at low speeds.

The frame consists of powerful pressed steel chan-

nel sections and the transmission embodies a hydraulic coupling with a pre-selector epicyclic gearbox. A brake pedal and accelerator are the only controls needed for stopping and starting. Any gearchanging that is needed is selected by a pre-selector lever close to the steering wheel so the driver is enabled to devote the whole of his attention to the job of driving and there is no need for him to remove his hand from the steering wheel. By merely depressing and releasing a gear change pedal the desired ratio is brought into operation by means of compressed air. This system has been successfully used by bus operators in many of the principal cities of the world. Ease of handling is a feature of the Volvo B 655 series. All controls are conveniently grouped around the steering column and such features as effortless steering, smooth and powerful brakes lighten the work of the driver.

Smooth riding is provided by generously dimensioned flexible springs with easy to service shackles in combination with hydraulic shock absorbers of telescopic type.

The above description clearly demonstrates that Volvo enters the underfloor-engined passenger vehicle market with a chassis which meets the highest standard of bus design.

SPECIFICATION OF THE B 655 SERIES

Type	D96 AL (horizontal) Diesel Engine
Number of cylinders	6
Valves	Overhead
Output	150 b.p.h. at 2200 r.p.m.
Bore	120.65 mm
Stroke	140 mm
Displacement	9.6 litres (585 cu.ins.)
Compression	16
Torque	59 kgm (428 ft/lbs) at 1100 r.p.m.

Direct injection type Diesel engine with toroidal combustion chamber machined in the piston.

ENGINE

CYLINDER BLOCK

Integral cast-iron crankcase and cylinder block fitted with dry liners.

CRANKCASE

Cast aluminium alloy finned for effective cooling and divided into two compartments forming a wet and dry sump.

CYLINDER HEAD

The engine is equipped with two special cast-iron alloy interchangeable cylinder heads in order to attain a high degree of heat resistance. One cylinder head per three cylinders and attached to the block by 14 bolts.

PISTONS

Aluminium alloy pistons with 3 compression and 2 oil rings. Upper compression ring chromium-plated.

CONNECTING RODS

Drop-forged, heat-treated, I-beam section. Drilled for oil distribution to piston pins. The big-end is split obliquely for removal through the cylinder block.

CRANKSHAFT

The drop-forged crankshaft is supported in seven bearings and is induction hardened by the "Tocco" electrical process. The crankshaft is dimensioned in such a manner that a torsion damper is unnecessary and there is a complete freedom of vibration at all speeds. Total bearing area 297 cm² (46 sq.ins.).

BEARING SHELLS

All main and connecting rod bearings are exchangeable steel-backed and lead-bronze precision-finished.

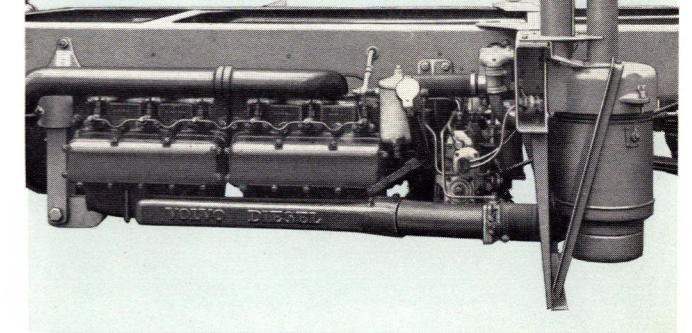
CAMSHAFT

Drop-forged case-hardened with ground cams and bearings and driven from the crankshaft by helical gears.

VALVES

Chromium-nickel-steel exhaust valves with stellite covered seats and chromium-plated stems. Hydraulic tappets with push rods operate the valve rocker gear. The inlet and exhaust valve inserts are of special alloy steel and exchangeable.

The engine is easily accessible from the right hand side. All vital components are efficiently screened by shields from mud and dust.



FUEL SYSTEM

Transverse mounted fuel-injection pump attached direct to the front of the engine and driven by bevel gears from the camshaft. The fuel feed pump is equipped with a preliminary filter and a plunge type primer. Twin fuel filters are located between the feed and injection pump. The fuel tank has a capacity of 180 litres (39½ Imp.gals.). The tank is fitted with a screen type filter, which can easily be removed for cleaning.

LUBRICATION SYSTEM

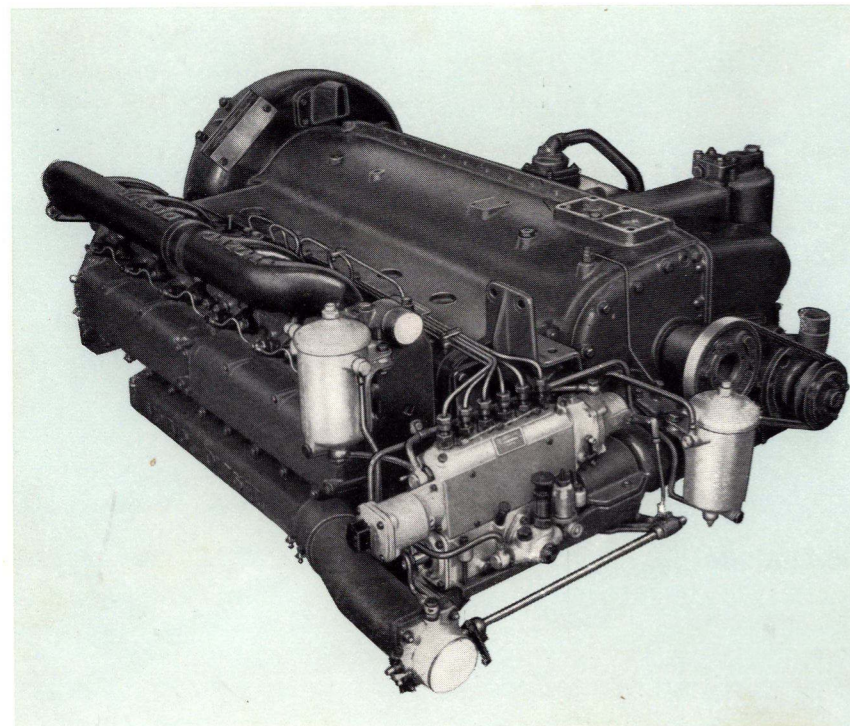
All lubricating oil is drawn to a screen and pumped through a full-flow filter, which is mounted on the sump and equipped with a replaceable element. Oil is passed from the filter to the bearings, piston pins, valve mechanism and timing gears, all of which are supplied through internally built passages. The capacity of the engine lubrication system is about 24 litres (5¼ Imp.gals.), of which 17 litres (4 Imp.gals.) are contained in the wet sump.

COOLING SYSTEM

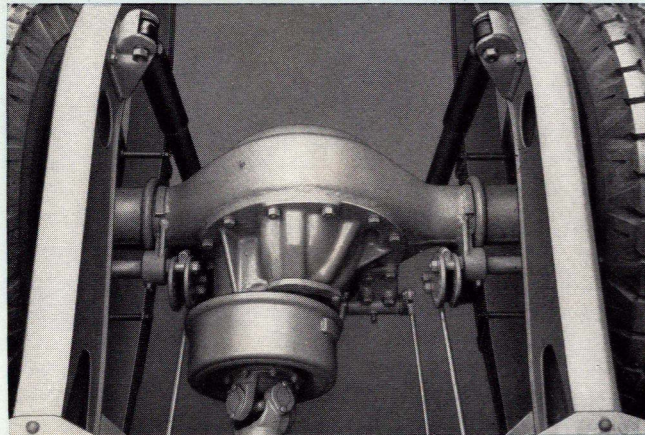
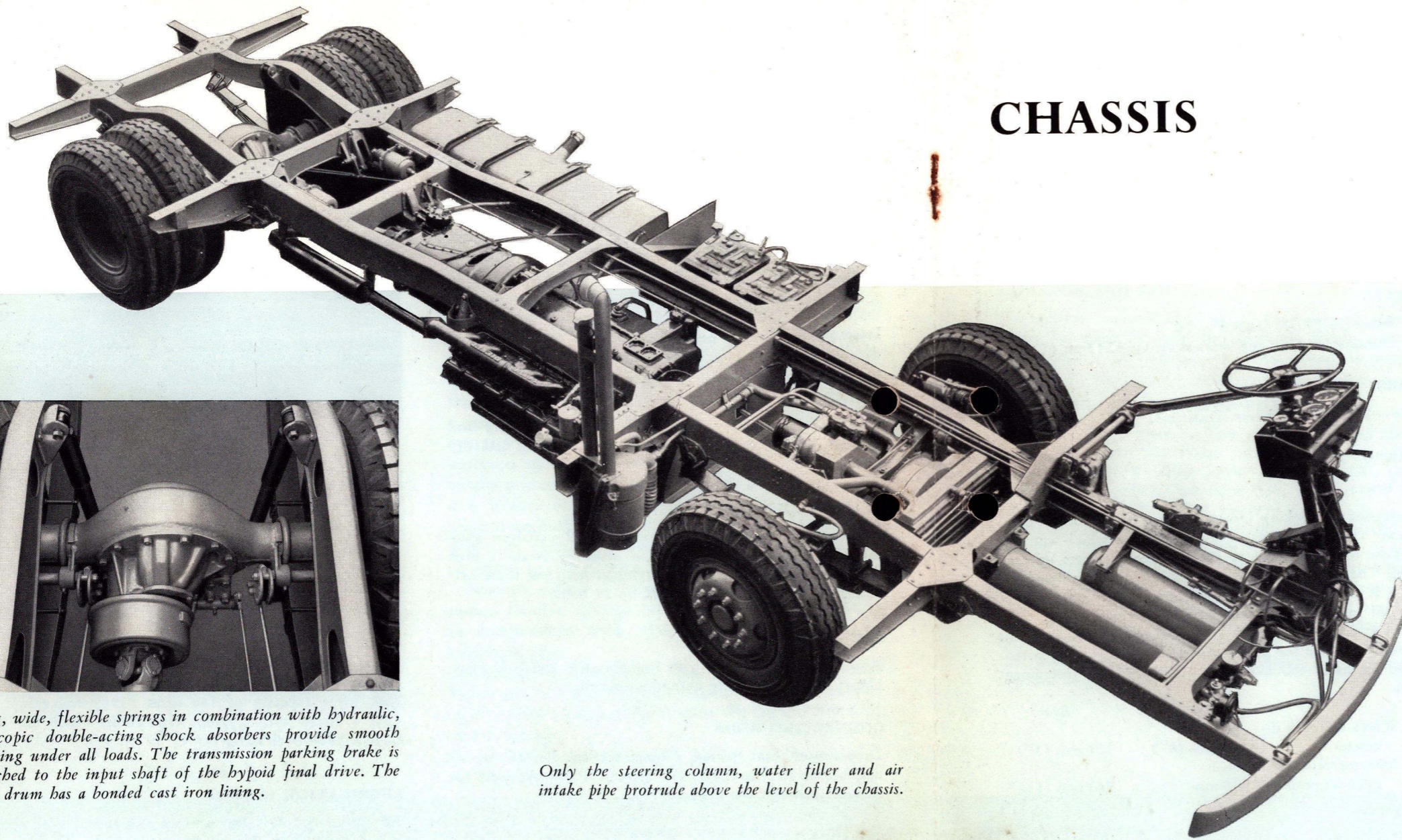
Efficient cooling under varying climatic and operating conditions is obtained by use of a centrifugal pump in conjunction with a radiator mounted ahead of the front axle. The water temperature is controlled by means of a thermostat and radiator shutters, the latter being manually controlled from the driver's seat. The cooling capacity is 45 litres (8¾ Imp.gals.).

ENGINE MOUNTING

The mounting arrangements form a parallelogram with rubber-bonded units under the flywheel case and two other units situated diagonally at the front of the engine and rear of the gearbox. For-and-aft moment is controlled

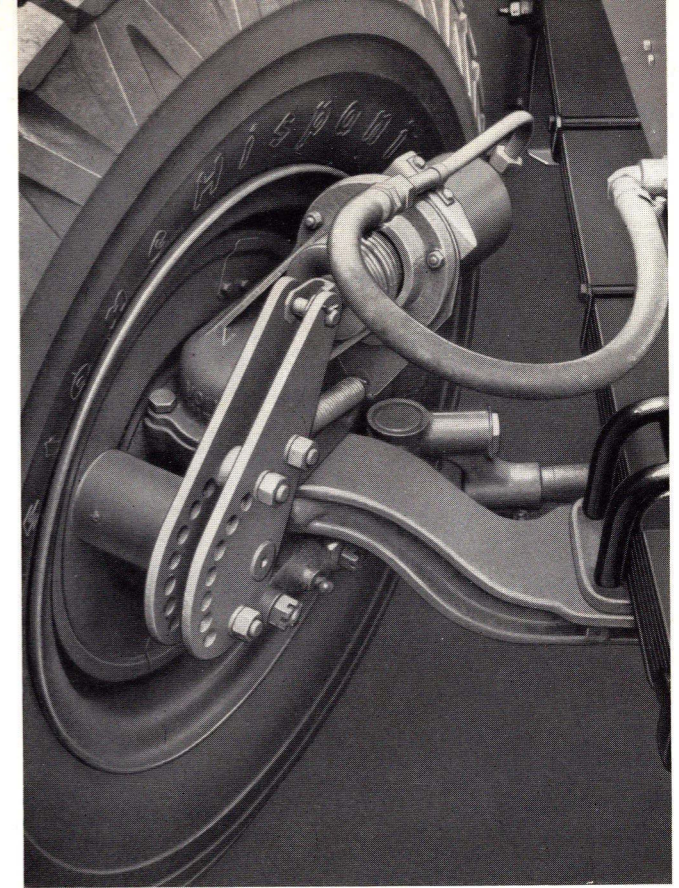


CHASSIS



Long, wide, flexible springs in combination with hydraulic, telescopic double-acting shock absorbers provide smooth running under all loads. The transmission parking brake is attached to the input shaft of the hypoid final drive. The steel drum has a bonded cast iron lining.

Only the steering column, water filler and air intake pipe protrude above the level of the chassis.



The individual brake adjustment is ingenious. The brake camshaft lever is retained in a quadrant which is drilled so that the position of the lever can be arranged to compensate wear of the facing. This arrangement enables the fitter to determine the useful life left in the facing by an external inspection of the quadrant position.

FRAME

The frame height has been reduced to a minimum. It is of pressed steel section and is curved over the rear axle and ramped at the centre adjoining the engine and gearbox bay. It is re-inforced by boxing at the rear axle and by an internal channel support amidship.

Width	.....	970 mm (38 1/4")
Height	.....	240 mm (9 1/4")
Width of flange	..	80 mm (3 9/64")
Thickness	.....	2 x 6.35 mm (2 x 1/4")

The B 657 has seven and B 658 eight cross members.

STEERING

Twin lever steering. Self centering and easy to adjust by means of a set screw. Well balanced front axle makes steering light and easy. Left or right hand drive optional.

SPRINGS

Powerful, long, semi-elliptic springs of silico-manganese steel. Underslung springs are employed at both axles. A safety stop is fitted on each rear shackle bracket in order to limit leaf travel in the event of a breakage. Composite brackets are employed resulting in easy removal of pins in the event of a seizure or breakage.

by the rear engine mounting, whilst torque reaction is restrained by a snubber blade attached at the flywheel housing, restricted in its movement by rubber blocks attached to the chassis frame.

REMOVAL OF ENGINE

Auxiliaries such as fuel injection pump, starting motor and water pump are mounted on the engine in order to facilitate easy removal and fitting of the power unit.

EPICYCLIC GEARBOX

The gears are selected by means of a small selector lever just below the steering wheel. Any gear can be selected without actual engagement well in advance of requirements and merely by depressing and releasing the gear change pedal the desired ratio is brought into operation. The gears are

engaged by compressed air. There is no clutch pedal. All that is necessary to start is to select the gear and depress accelerator pedal.

RATIOS:

1st speed	..	1:4.15	3rd speed	..	1:1.56	Reverse	....	6.1:1
2nd speed	..	1:2.36	4th speed	..	1:1			

FLUID COUPLING

Latest type giving freedom at idling combined with minimum slip at working speeds. The coupling requires a minimum of attention.

PROPELLER SHAFTS

The B 657 has one and the B 658 two propeller shafts with centre bearing.

FRONT AXLE

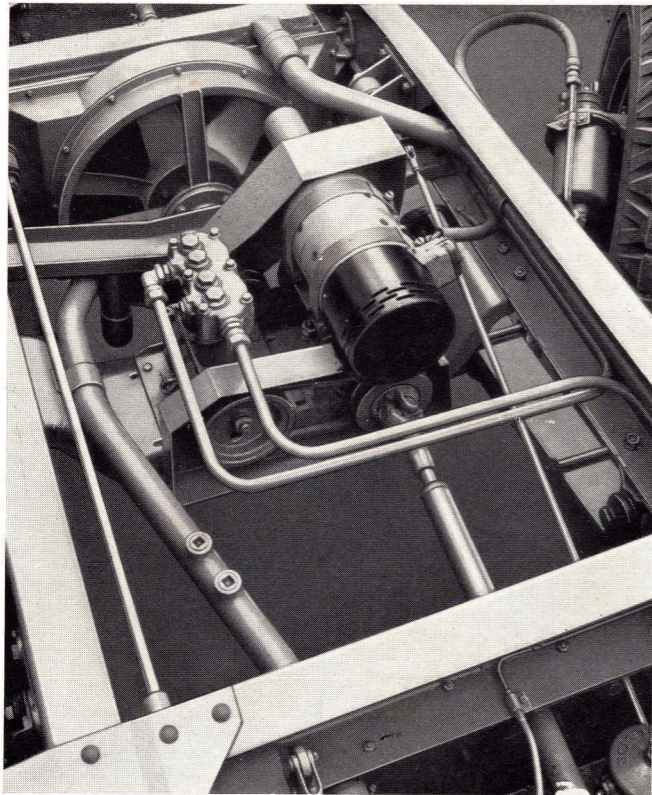
Drop-forged and heat-treated for maximum strength. Steering knuckle pins fitted with tapered roller bearings resulting in easy steering.

REAR AXLE

Full floating rear axle. Powerful drive shafts, 50 mm (1.63/64") in diameter, at splined end 50.8 mm (2"). Hypoid drive gear and pinion.

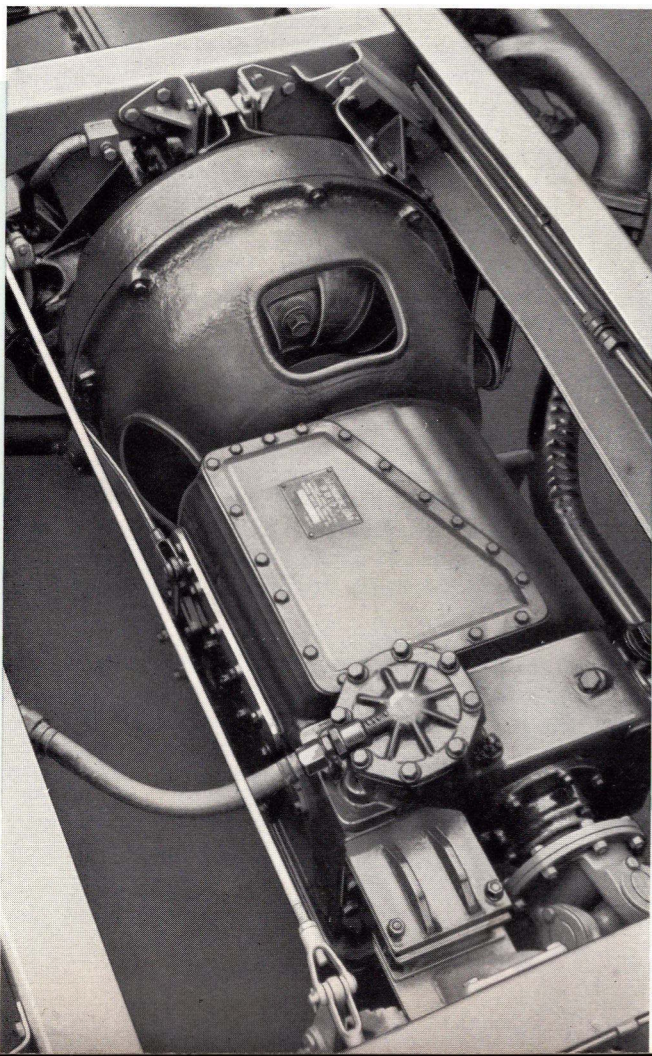
Ratios:

	1:6.5	.....	number of teeth	6/39
or	1:5.57	.....	» » »	7/39



The generator, compressor and fan are mounted on a cradle near the front axle. Light shields screen the belt drives for these components from mud and water.

The Volvo B 655 series has a fluid coupling and a pre-selective gearbox attached as a unit.



DIMENSIONS

	Length	Width
Rear Springs ..	1600 mm (63")	102 mm (4")
Front Springs ..	1600 mm (63")	102 mm (4")

SHOCK ABSORBERS

Double acting, telescopic, hydraulic shock absorbers front and rear.

WHEELS

Front 20×7.33 (20×9"—10")
Distance between dual rears at centre 324 mm (12¾")

TYRES

11,00—20" front and rear. Dual rear.

BRAKES

Foot brake

Compressed air braking incorporating a two-cylinder compressor. The brake pedal operates a valve which controls the flow of air pressure to the separate cylinders on each wheel. The brake camshaft lever is retained in a quadrant which is drilled so that the position of the lever can be arranged to compensate wear in the facings.

If for any reason there is insufficient pressure in the system to operate the brakes, the driver is warned by a red-tipped indicator rod mounted in front of the instrument panel.

	Front	Rear
Wheel cylinder diameter	100 mm (4")	125 mm (5")
Max. travel of wheel cylinder push rod	140 mm (5½")	140 mm (5½")

Handbrake

The handbrake operates separately on the transmission. The drum, made of steel with a bonded cast iron lining, is attached to the input shaft of the hypoid final drive.

The brake drums are re-inforced and of cast iron chrome alloy.

Dimensions

Diameter, front	419 mm (16½")
Diameter, rear	393.7 mm (15½")
Width of lining, front	127 mm (5")
Width of lining, rear	177.8 mm (7")
Braking surface, front	1630 cm ² (252½ sq.ins.)
Braking surface, rear	2300 cm ² (356½ »)
Total braking surface	3930 cm ² (609 »)

Electrical equipment

24 volt. Compensated voltage controlled 700—1000 watt generator. 6 h.p. start motor. Two 152 amp. hour batteries.

GENERATOR, COMPRESSOR AND FAN

An extension from the front of the crankshaft operates the generator, compressor and fan which are separated from the power unit to facilitate maintenance and are mounted

on a cradle between the radiator and engine. Light shields screen the belt drives for these components from mud or water. A shield in front of the engine likewise screens the fuel injection pump from mud thrown up by the front wheels.

RADIATOR AND FAN

The radiator, mounted ahead of the front axle, has shutters which are manually controlled from the driving seat. A high efficiency fan operates in a shroud behind the radiator.

AIR FILTER AND RADIATOR FILLER PIPES

The B 655 series chassis has been specially designed for the underfloor engine. The frame with the exception of the steering column, air filler intake and water filler pipes, is free from all obstructions from front to rear.

These two pipes have been mounted side by side so that they can be located inside the body. The air intake pipe extends to just below the window so that as clean air as possible is sucked into the filter. In those cases where a heater is fitted it can be connected to the radiator filler pipe and be used for filling the system. A single opening is all that is necessary for these two pipes. A large capacity heavy duty oil wetted type filter is fitted. Air from the filter is drawn to the engine through a re-inforced oil resistant hose.

OIL FILLER PIPE

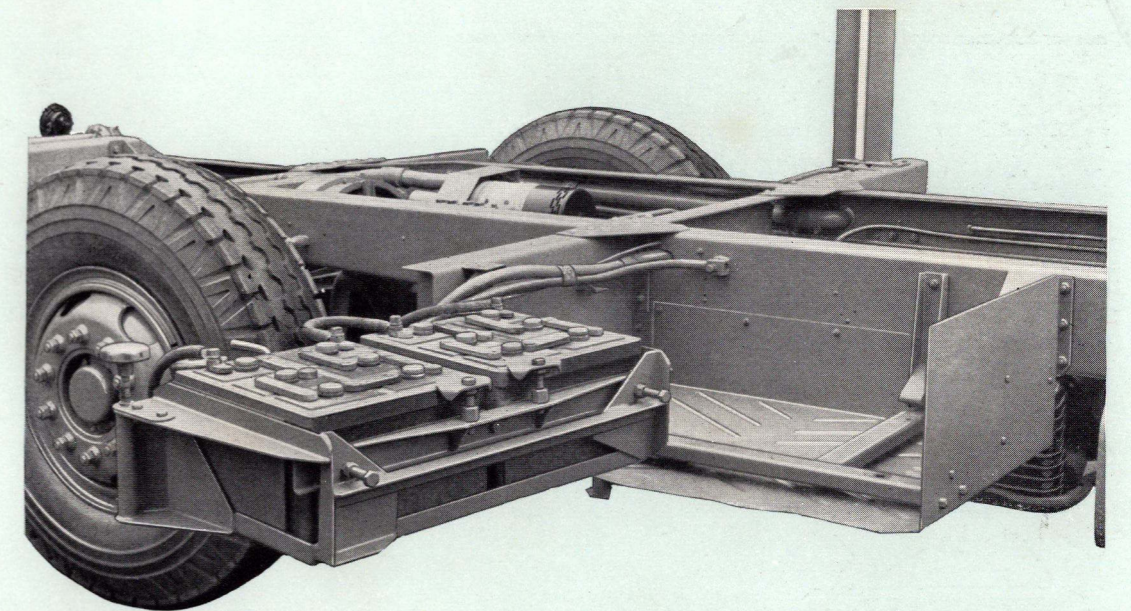
The oil filler pipe protrudes from the right hand side of the chassis, providing that the body panel from the front fender to the rear end of the gearbox can either be removed or is hinged so that it can be lifted up. This space should be free from body pillars so as to allow complete access to the air filter, fuel injection pump, valve mechanism and to facilitate the removal of the engine when necessary.

STANDARD EQUIPMENT

Instrument panel equipped with speedometer, odometer. Water temperature, oil pressure and fuel gauges. Charging control lamp, panel lighting, tell-tale lights for oil pressure, direction indicator and headlamps. Headlamp lighting and master switches. Hand throttle, radiator shutters and stop controls. Tapping point for inspection lamp. Foot operated dimmer switch. Pressed steel U-section front bumper. Spare wheel less tyre, tool kit and jack.

The instruments, manual controls and fuses are grouped in the instrument panel box fitted to the steering column. A V-shaped strut, intended for attaching to the body front panel, is fitted to the steering column.

All specifications subject to change without notice.



The battery crate is hinged at one corner so that the cells can be swung clear of the body for inspection.

MAIN DIMENSIONS AND WEIGHTS

		B 657	B 658
Dimensions	Wheelbase mm	5500 (216½")	6000 (236¼")
	Max. width over front wheels mm	2350 (92½")	2350 (92½")
	Max. width over rear wheels mm	2320 (91¼")	2320 (91¼")
	Overall length mm	9245 (364")	9745 (384½")
	Chassis max. width mm	2350 (92½")	2350 (92½")
	Track, front mm	1927 (75¾")	1927 (75¾")
	Track, rear mm	1704 (67")	1704 (67")
	Turning radius mm	10000 (394")	10900 (429")
Chassis Weight	Front kilos	2650 (5843 lbs)	2720 (5998 lbs)
	Rear kilos	2300 (5072 lbs)	2280 (5027 lbs)
	Total kilos	4950 (10913 lbs)	5000 (11023 lbs)
Max. Gross Chassis Weight	Front approx. kilos	6000 (13230 lbs)	6000 (13230 lbs)
	Rear approx. kilos	8000 (17640 lbs)	8000 (17640 lbs)
	Total approx. kilos	14000 (30870 lbs)	14000 (30870 lbs)

