

THORNYCROFT

'ANTAR/SANDMASTER'

6 x 4 CHASSIS

18' WHEELBASE ON 21-00-25 TYRES

750
4.5

3750
3000

5375

This chassis is a special extra duty 6 x 4 version of the "Sandmaster," fitted with a 300 B.H.P. engine, semi-automatic gearbox and large sand tyres, providing exceptional performance on sand and similar terrain.

SPECIFICATION

ENGINE

Rolls Royce six-cylinder, turbo-charged oil engine, type C6TFL.

Bore 5.125 in. (130.2 mm.).

Stroke 6.0 in. (152.3 mm.).

Maximum gross b.h.p. 300 at 2,100 r.p.m.

Maximum net b.h.p. 279 at 2,100 r.p.m.

Maximum torque (net) 850 lb.ft. at 1,300 r.p.m.

Engine Lubrication

Semi-dry sump type lubrication with triple full flow filters. Oil capacity 6½ gallons (29 litres).

Fuel System

Simms fuel injection equipment with preliminary and twin main filters. The fuel tank, which is not part of the basic chassis, is incorporated with the headache rack; maximum capacity 750 imperial gallons (3,400 litres).

Cooling System

Pressurized cooling system with 29 in. diameter (735 mm.), close cowled fan.

CLUTCH

20 in. diameter fluid clutch mounted on the engine flywheel.

GEARBOX

Self Changing Gear Co.'s compounded epicyclic gearbox with air pressure operation. Eight forward speeds and two reverse.

Ratios: 0.68, 1.02, 1.45, 2.20, 3.09, 4.64, 6.57, 9.98.

Reverse: 2.54 and 11.53:1.

The gearbox is separately mounted on the chassis frame and is driven by a universally jointed shaft from the clutch.

PROPELLER SHAFTS

Three Hardy Spicer type propeller shafts: clutch to gearbox, gearbox to foremost driving axle and inter-axle.

REAR AXLES

Overhead worm and epicyclic double reduction axles. Axles located by longitudinal and transverse radius arms. Single semi-elliptic spring each side which carries vertical loads only. Axle ratio 14.4:1.

FRONT AXLE

Non-driven, rectangular section beam axle. Hubs run on taper roller bearings. Semi-elliptic spring each side.

STEERING

Marles cam and double roller gear. Hydraulic power assistance from engine driven pump. Gear ratio 28.5 : 1.

BRAKES

Air pressure operated cam brakes on all wheels. Multi-pull mechanical handbrake to rear wheels. Brake dimensions, front 19 in. x 4 in. (482 x 102 mm.), rear 19 in. x 7 in. (482 x 178 mm.).

WHEELS AND TYRES

Disc wheels, 15.00 x 25 in., mounted on sixteen 1 in. studs. Tyres 21.00 x 25 in., sand type, singles.

ELECTRICAL EQUIPMENT

24 volt system with 135 Ah. lead-acid battery and compensated voltage control charging system from 5½ in. diameter dynamo. Axial starter. Full lighting equipment and brake operated stop lights.

CHASSIS DIMENSIONS

Wheelbase	18' 0"	(5.49 m.)
Back of cab to centre line bogie	12' 5"	(3.78 m.)
Back of winch to centre line bogie	8' 10"	(2.56 m.)
Centre line bogie to end of frame	5' 11½"	(1.82 m.)
Overall length	30' 8¾"	(9.36 m.)
Overall width	10' 0"	(3.05 m.)
Frame height laden at bogie	4' 5¼"	(1.37 m.)
Front track at ground	7' 9"	(2.36 m.)
Rear track	7' 8"	(2.34 m.)

WEIGHTS

Chassis and cab, with winch, fifth wheel, full running order 42,500 lb. (19,300 kg.)

Max. imposed load on fifth wheel (hard roads) ... 53,000 lb. (24,000 kg.)

Max. gross train weight (sand) 128,000 lb. (58,000 kg.)

Max. gross train weight (hard roads) 172,000 lb. (77,500 kg.)

The above loadings are based on tyre capacities and vehicle performance.

Axle capacities are :

Front axle ... 22,000 lb. (10,000 kg.)

Rear bogie ... 80,000 lb. (36,300 kg.)

ROAD SPEEDS

The maximum road speed in top gear, allowing 8% governor run-up, is 38 - 44½ m.p.h. (61 - 71½ k.p.h.) depending upon the make of tyres fitted.

OPTIONAL FITTINGS

Reinforced plastic resin driver's cab with accommodation for driver and two passengers.

Headache rack incorporating fuel tank and tool box.

Fifth wheel with guide ramp suitable for 100,000 lb. (45,400 kg.) capacity semi-trailer.

Winch with capacity of 80,000 lb. (36,000 kg.).

NOTE : The Company cannot guarantee that chassis will conform in all details with this specification, but dimensions as indicated on the body-builders drawing issued for each order will be adhered to. The chassis weight will vary according to the material and equipment available at the time of construction. All orders placed with us or with any of our distributors will be deemed to have been given on this understanding.

TRANSPORT EQUIPMENT (THORNYCROFT) LIMITED

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P R E S S R E L E A S E

A New Development in Fast, economical bulk liquid transportation and distribution by road.

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SYNOPSIS. By using an all-aluminium structure which combines tank-body, cab and chassis all in one unit, this new rear-engined road tanker achieves 70% payload with low centre of gravity and excellent roadworthiness. Carries mixed cargo in six compartments; total capacity 4,000 gals. 24-ton gross rating. Body 2 feet lower than conventional tanker.

There will be a new look about road tankers carrying oil and petrol when the British Petroleum Company puts into service the entirely new type of distribution vehicles which they are developing for use in all parts of the world served by BP.

The new type of tanker will be sleeker and much less cumbersome than its present counterpart and, being much lower, will be very much more roadworthy. It will carry greater loads more economically and more quickly over the very widely varying types of terrain which BP encompasses. Its gradual introduction into service will bring a smart, eye-appealing uniformity to the BP service, and there is little doubt that these attractive vehicles will become favourably well known in the public eye.

The first of these tankers, called the "BP Autotanker", built to British Petroleum's specification by Thompson Bros. (Bilston) Ltd., the tank builders, in conjunction with Leyland Motors Ltd., will be on show at the forthcoming Commercial Vehicle Exhibition at Earls Court, September 23rd to October 1st 1960. It is an eight-wheeled, rear-engined, chassis-less vehicle, with stressed tank unit, designed for 24 ton gross rating, and capable of carrying an assorted cargo of 4,000 gallons in six compartments.

At first glance this new tanker looks like a modern high-speed coach without passenger windows. There is little sign of the conventional tank shape. The driver is in the fully-forward control position, with a magnificently commanding view of the road ahead and to each side through the full 'wrap-around' windscreen. To his rear he has a very wide view through a specially developed periscopic system, with its rear-lens situated at the rear top of the vehicle and with the viewing mirror in the normal position over the windscreen.

Although the engine is situated at the rear of the vehicle, the driver has no need of audible or visual rev: counting for gear changing, for he changes gear smoothly and silently, solely by moving a small lever on the steering column. There is no clutch pedal, his only driving controls being the accelerator and brake pedal. Driving effort is still further reduced by the provision of power assistance for the steering and hand brake. Access to the driver's cab is at the front, below the level of the windscreen.

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The outstanding feature of the vehicle is its form of construction, by which its constructors have made possible the achievement of its primary aims- economy in operation, simpler maintenance with less 'time out', greater speed, greater roadworthiness and safety, and attractive styling which could bring uniformity and favourable public recognition to the operator's widespread fleet. This feature is a complete break with convention in road tanker construction. Instead of considering the project as one of fitting the most suitably designed tank to a suitable chassis, it has been considered, right from fundamental planning, as a whole. This has resulted in the building of a single integral unit taking the place of tank, chassis frame and cab structure.

For lightness, this integral tank/chassis/cab unit is built of aluminium alloy. Considerable reduction in deadweight is therefore achieved in two ways: by the use of lightweight material, and by the elimination of some heavy structural parts such as frame members.

By employing a rear-mounted engine the front-to-rear propeller shaft is eliminated, and this has permitted a much lower centre of gravity to be achieved by placing the liquid container nearer the ground. The overall height of the vehicle is some two feet lower than the average conventional tanker. This lower height and lower centre of gravity gives, of course, very much greater stability and roadworthiness, and will permit faster road performance and greater safety over both good and indifferent road surfaces. It will also allow the use of tanker service where it has previously been prohibited by surface or road conditions.

In this connection an important feature of the design is that the lower centre of gravity has been achieved without recourse to a tank shape having abrupt changes of section.

In addition to the advantages gained in reduction of deadweight and in roadworthiness, there are further advantages claimed for this new vehicle in the saving of time out of maintenance. An automatic chassis lubrication system fitted to the vehicle cuts out the need for routine workshop greasing, and the mounting of the power unit at the rear is so arranged that a complete engine change can be made in 30 minutes.

In service, this new type of tanker will be used to handle mixed cargoes of various products, aviation and turbine fuels, motor spirits, kerosines, gas oils, diesel and light oils. It is therefore compartmented accordingly and designed for open-fill, with gravity discharge to the side opposite the driver. It allows, however, for the fitting of bottom pressure loading equipment and discharge connection on each side.

The basic tank/chassis/cab structure, having six compartments, is made completely of aluminium alloy, argonarc welded throughout. Its rigidity is provided by box-section runners welded-in, with box-section stiffeners welded to the compartment divisions. The main loads are not therefore transmitted to the panels of the tank. At the front, the lower runners extend to support the cab and front axle shackles. At the rear, extensions are employed to support the power unit. The lower runners are 8 inches deep, increased to 10 inches over the driving axle, and the engine mounting brackets are also underslung from this wider section.

On the "roof" of the tank body, running from front to rear on the off-side, is a walkway from which service can be given to the manhole lids of the tank compartment. Built-in, in a tube running under this walkway, is the periscopic rearview system. This optical unit, specially designed for the vehicle, and manufactured by Barr and Stroud, gives a 40 degree cone of sight to 3 degrees above the horizon and to within 5 ft of the rear of the vehicle.

The running units of the vehicle are those used in the Leyland "Dromodary" 8-wheeled, rear-engine chassis, with, in addition, an air suspension system. The power unit, comprising engine, gearbox, power take-off and radiator, is mounted on a sub frame behind the rear axle. It is immediately accessible and can be removed and replaced as a unit in under 30 minutes. The engine is a Leyland six-cylinder 'Power-Plus' vertical direct injection diesel unit of 11.1 litre capacity, developing 200 b.h.p. The clutch is single-plate centrifugal type, starting engagement at 500 r.p.m. with 100% positive drive at 750 r.p.m. A power take-off of 20 h.p. drives a Dowty hydraulic pump fitted on the engine. The Pneumo-Cyclic gearbox in unit construction with the engine, is of the semi-automatic epicyclic type with electro-pneumatic shift, the gearshift being made solely by the movement of a small gate-change lever on the steering column. It provides 4 forward speeds and reverse. Transmission to the rear axle is by an angle drive taken through a pair of helical reduction gears and Hardy Spicer propeller shaft.

Rear axles and bogie consist of one driven and one undriven axle. The driving axle is two-speed, having spiral bevel drive for the high-speed ratio and an epicyclic gear train reduction for the low-speed ratio. Gear change from high (4.09 to 1) to low ratio (5.56 to 1) is electrically operated from a control in the driving compartment. With these ratios the vehicle is capable of climbing 1 in 6 gradients and maintaining a cruising speed of 50 m.p.h. over long distances.

Constant riding quality of the vehicle, whether full, partially filled or empty, is achieved by the form of suspension employed. At the rear axles the variation under laden and unladen conditions is not great, due to the rear location of the engine unit. At the front axles, a constant ride is given by leaf-air springs. It is probable that this suspension represents the first application of air springs to the twin steering axles of a multi-wheeled vehicle, and the numerous problems of matching the characteristics of the leaf springs and air bellows to load requirements have been very effectively solved.

The air brakes on the vehicle are diaphragm operated, working on the first, third and fourth axles.

THOMPSON BROTHERS (BILSTON) LTD.A new development in fast, economical bulk liquid transportation and distribution by road.SYNOPSIS.

By using an all aluminium structure which combines tank-body, cab and chassis all in one unit, this new rear-engined road tanker achieves 70% payload with low centre of gravity and excellent roadworthiness. Carries mixed cargo in six compartments; total capacity 4,000 gals. 24-ton gross rating. Body 2 foot lower than conventional tanker.

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THOMPSON BROTHERS (BILSTON) LTD.

SPECIFICATION

"BP AUTO TANKERS"

General description:- The "B.P. Auto tanker" has been designed specifically as a tank vehicle, not as a carrying tank mounted on a lorry chassis. The tank, together with its integral framework forms an immensely strong, rigid but lightweight structure, to which are fitted the "power pack" motive unit, axles and controls. The resulting vehicle is both stronger and lighter than conventional tank vehicles of equivalent capacity. It is therefore possible to convey liquids of specific gravities up to approx. .84 without short loading, within the 24 ton gross vehicle weight limit.

TANK Special section giving lowest possible centre of gravity for maximum stability, constructed by the "Argonarc" welding process from NS 6 Aluminium alloy. New type ends and divisions obviate the necessity for "cleaning rings". Welded on, box section runners at top and bottom, in conjunction with boxed stiffeners across all divisions, form the main load bearing structure.

COMPARTMENTS: To suit customer, and liquid being carried. Lids, Outlets and bottom loading gear to customers requirements. Shape of tank ensures easy cleaning of compartments.

CAB Designed to give maximum comfort, visibility and safety. Seats with head rest, adjustment for position and drivers weight, and fitted with safety belt. Large wraparound screen with powerful wipers and built in large capacity washers. Crash padding in roof. Fresh air heating and ventilating system built-in.

MOTIVE UNIT: Of Leyland Design and Manufacture, consists of a rear-mounted "power pack", comprising powerful six cylinder Diesel engine, coupled through an automatic clutch and four speed semi-automatic gearbox to a bevel-gear transfer box. Spiral bevel two speed rear axle. Dead forward rear axle. Twin steered front axles. Large air operated brakes. Air servo operated steering and handbrake. Complete power-pack can be removed and replaced in less than one hour, giving freedom from costly overhaul periods.

PANELLING:- Along both sides of unit to cover all pumping and outlet gear. Side panelling blends into cab and rear engine cover.

Road Performance:-

Max. Speed - Approx. **45** m.p.h.

Dimensions.

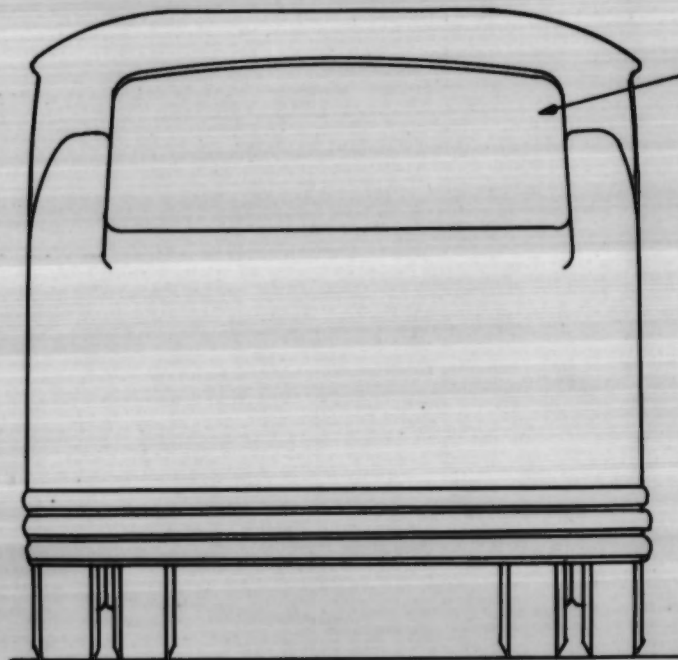
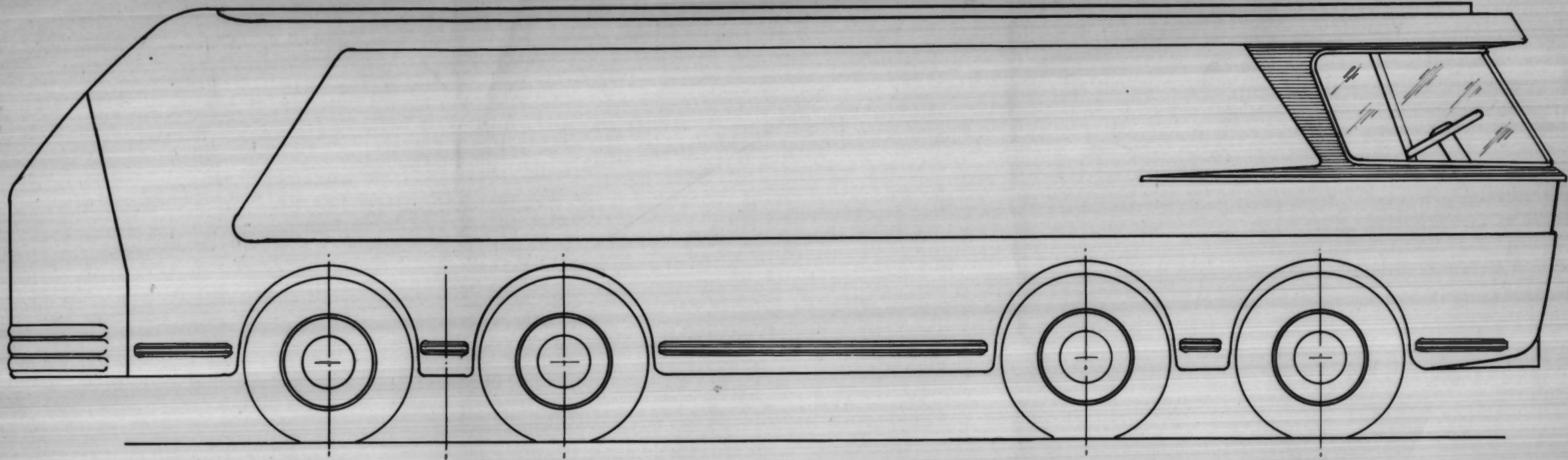
Overall length - 29' - 11" (9.12 m)
Overall width - 7' - 10 1/2" (2.40 m)
Overall heights - 8' - 4" (2.54m)
Wheelbase - 16' - 10" (5.13m)
Track (front) - 6' - 1 1/4" (1.86m)
Track (rear) - 5' - 11 1/8" (1.82m)
Tyres C20 Metallic.

Rear Overhang - 8' - 4 3/4" (2.56m)
Front overhang - 4' - 8 1/2" (1.43m)

Weights

	<u>1st Axle</u>	<u>2nd Axle</u>	<u>Rear Bogie</u>	<u>Total</u>
Unladen	3120 lbs (1420 Kg.)	2800 lbs (1272 Kg.)	14330 lbs (6500 Kg.)	20250 lbs. (9192 Kg.)
Laden	9450 lbs (4290 Kg.)	8520 lbs (3870 Kg.)	35790 lbs (16250 Kg.)	53760 lbs. (24410 Kg.)

THOMPSON BROS. (BILSTON) LTD. BRADLEY, BILSTON, STAFFS.



REAR DISPLAY PANEL

"B.P. AUTO TANKER" 4000 GALLON ⁶/COMPT. TANK.