CARGO

Built to Combat

INTRODUCTION

When the D Series was introduced in 1965 it rapidly established a pattern that others were to follow for the rest of the 60s and throughout the 70s.

The D Series owed little to its predecessor, the Trader, although lessons learned from the old models resulted in a vehicle which offered levels of performance, comfort and operating costs that even today are hard to match.

The tilt cab (only an option to begin with) could be operated by one man in a couple of minutes and this feature together with the inclined engine layout provided unmatched access to the major mechanical components.

Inevitably during its 15 year life the D Series changed a good deal, to take account of new legislative and operating requirements, so that by the last year of production the range extended from 5,893 kgs to 28,500 kgs gross weight and comprised trucks, tippers, 3 axle chassis, and artics. Production ceased on December 31 1980 and by that time more than 540,000 D Series had been built at our truck plant at Langley, Bucks. Well over 50 percent of these had been exported all over the world either as complete vehicles or in knock down form for local assembly.

The D Series story however is not just about the product, for even before its introduction Ford established its Truck Specialist Dealer network to deal specifically with the new range and, of course, the Transit which was also announced in 1965.

Now there are 134 Truck Specialist Dealers, nearly all of which are in premises segregated from the associated car dealerships and many of which are in entirely separate purpose built facilities, ready in conjunction with Truck dealers to provide the best possible service and parts backup to support the new range.

The D Series has been market leader since 1977 and by any standard has been an outstandingly successful product. However, after 16 years of success it was inevitable that our competitors would catch up in some design aspects and if we were to strengthen our number one position in the UK and also to increase our share of the market elsewhere then we would have to look closely at our future strategy.

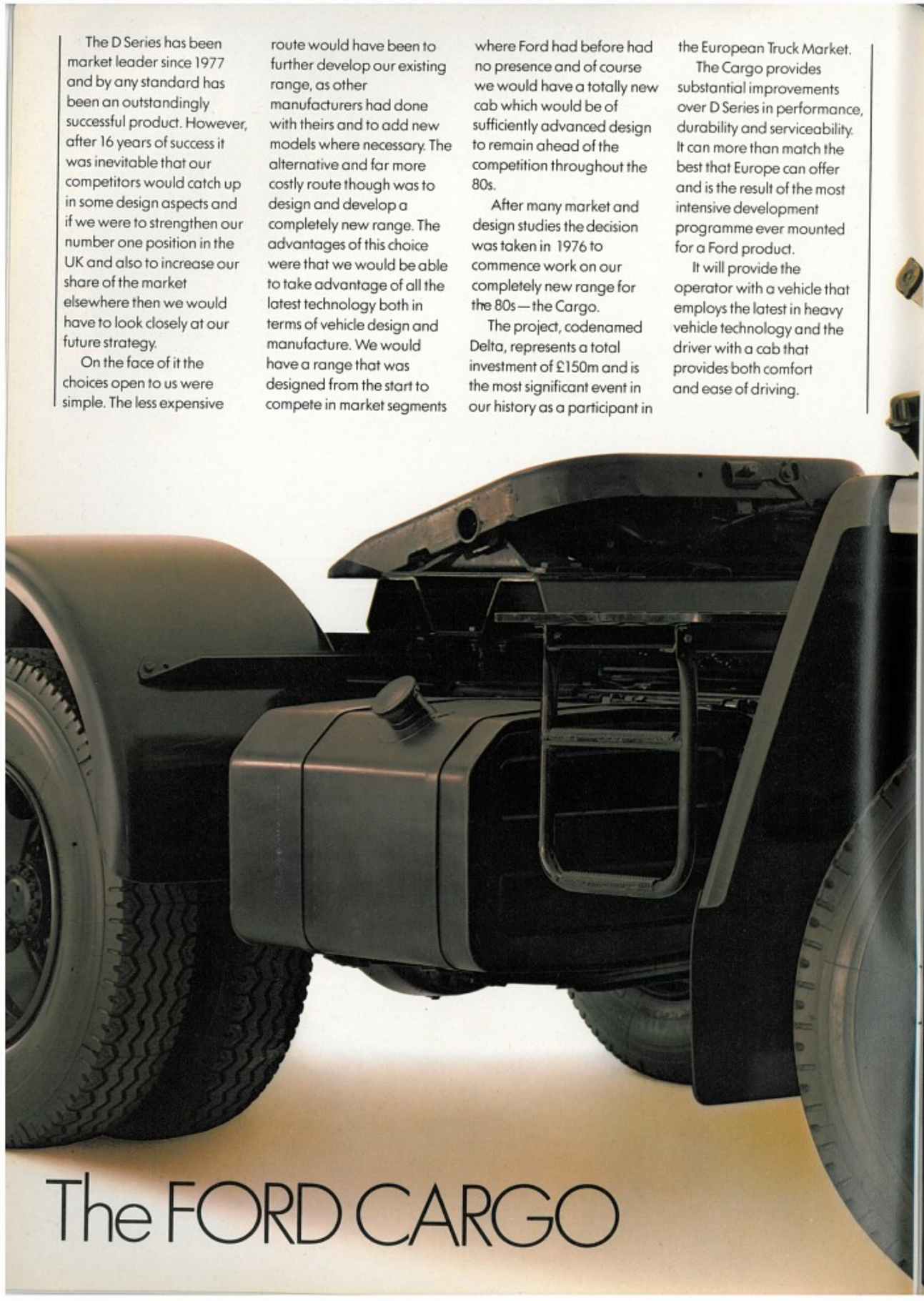
On the face of it the choices open to us were simple. The less expensive route would have been to further develop our existing range, as other manufacturers had done with theirs and to add new models where necessary. The alternative and far more costly route though was to design and develop a completely new range. The advantages of this choice were that we would be able to take advantage of all the latest technology both in terms of vehicle design and manufacture. We would have a range that was designed from the start to compete in market segments where Ford had before had no presence and of course we would have a totally new cab which would be of sufficiently advanced design to remain ahead of the competition throughout the 80s.

After many market and design studies the decision was taken in 1976 to commence work on our completely new range for the 80s — the Cargo.

The project, codenamed Delta, represents a total investment of £150m and is the most significant event in our history as a participant in the European Truck Market.

The Cargo provides substantial improvements over D Series in performance, durability and serviceability. It can more than match the best that Europe can offer and is the result of the most intensive development programme ever mounted for a Ford product.

It will provide the operator with a vehicle that employs the latest in heavy vehicle technology and the driver with a cab that provides both comfort and ease of driving.



The FORD CARGO

MODEL LINE-UP

The Cargo will replace all models previously covered by D Series but with some new additions to cater for today's changed legislation and operating requirements.

There are more wheelbases and, to reflect the need for higher power to weight ratios, there are higher powered options at lighter gross weights.

In addition tipper chassis now extend down to 7.5 tonnes from 12.5 tonnes on the D Series.

Although, as we shall see, the Cargo range is basically a completely new product, some key power train components—engine, gearbox and rear axle—are developed versions of familiar components previously used on D Series.

The four and six cylinder Ford engines have an enviable reputation for performance and durability but in Cargo further improvements will ensure even better durability as well as small increases in power.

The Perkins V8 has also had it's power increased, from 170 to 176 bhp, while lessons learned from the 'big cam' range of Cummins engines fitted to the Transcontinental have been carried over to the Cummins V8-504 resulting in significant economy improvements as well as an increase in net power.

Gearboxes too are based on units already familiar with operator and workshop alike and are based on the highly successful range of Ford 4-6-8 units. In addition, however, we are offering the options of ZF five speed all synchromesh gearboxes on all models, with in-line naturally aspirated engines, up to 14.7 tonnes GVM. All truck models have a generous Gross Train Mass making Cargo an ideal basis for drawbar operation.

Cargo models are identified, in the same way as all Ford truck models, by a four digit designation. The first two digits denote the approximate gross vehicle mass (or gross train mass in the case of artics). The second two digits denote the approximate horsepower divided by ten. (08=7.5 tonnes 11=105 bhp)

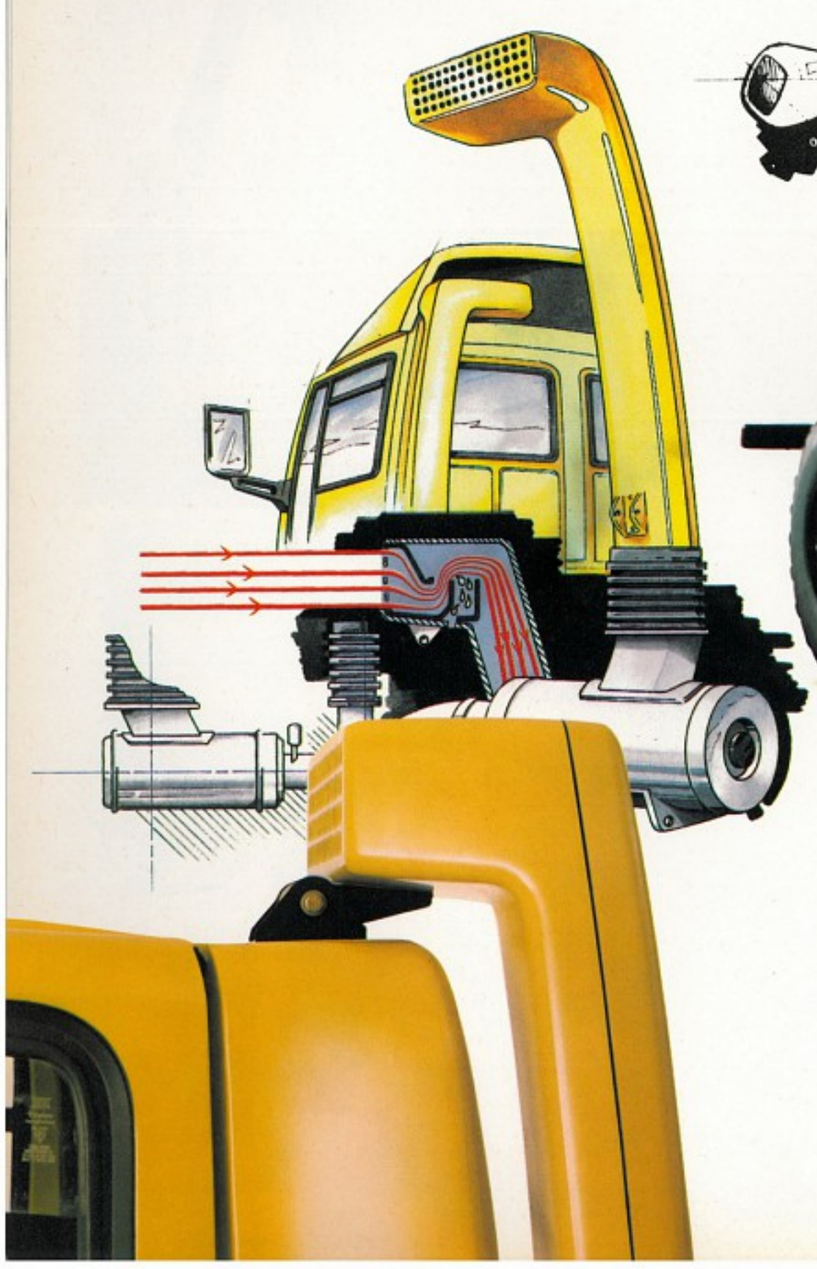
From the outset the functional styling of Cargo was to be an important feature of the whole project.

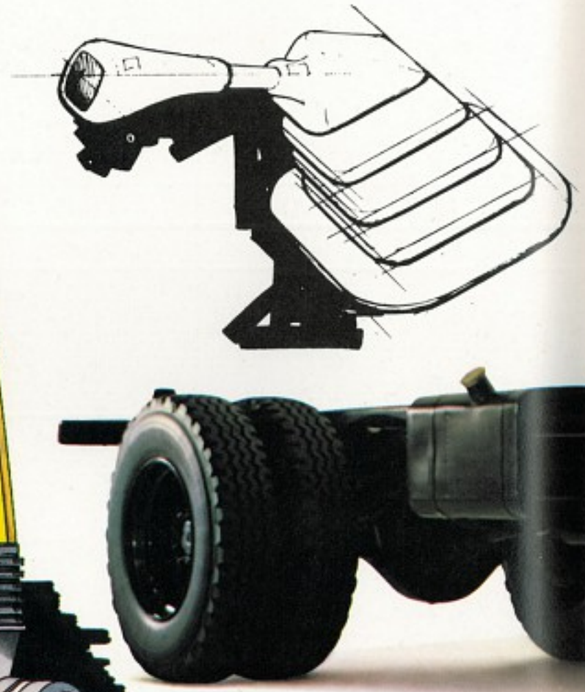
The design had to be striking and advanced enough to remain ahead of our competitors through the 80s, but more important, be totally functional and provide the best possible driver environment. In fact Cargo was designed from the inside out so that it was not until the interior dimensions had been set that exterior design could commence. The project started after the initial oil crisis of 1974 and aerodynamics obviously played a vital part in the design concept to reduce drag and fuel consumption to a minimum. Driver visibility was equally important since the congested traffic conditions of the 80s would be vastly different from those of the relatively traffic free 60s.

With this brief in mind our stylists got to work and a preferred design emerged very quickly. In fact the final design proved to be very similar to the first studies carried out.

The Cargo bears a strong relationship to the corporate Ford style established by the passenger car range and this is particularly evident in the three plane treatment of the front panel, and of course, the large smooth body panels are easy to clean and allow plenty of scope for signwriting.

ENGINEERED WITH STYLE





Every means of reducing operating costs on Cargo have been examined by our engineers, and with rapidly increasing fuel costs aerodynamics, or airflow management, has obviously been an important factor in this aim.

A number of special features have been incorporated which will significantly help in reducing fuel consumption, and particularly on vehicles with high bodywork or with high bodied trailers.

A unique collar around the back of the cab contributes to the good air flow around the body and, with high body work, an optional roof mounted air deflector can reduce the air drag coefficient by as much as 25 per cent. An under bumper air dam is also available on most models which will further reduce drag by as much as 10 per cent.

Further proof of the effort that has gone into the aerodynamics of Cargo is shown by the streamlined backs on the rear view mirrors and the fact that the drip rail has been eliminated around the roof and door opening resulting in an improvement in airflow and a reduction in noise.

SEE WITH SAFETY

Good all round visibility has always been a problem on trucks. All too often the driver is quite unaware of cyclists on the nearside and equally he is often unable to see street names mounted high up on buildings.

On Cargo we have solved these safety problems by providing some 35 percent more windscreen glass area than D Series and some 75 percent more glass area on the sides.

Despite the driver sitting higher in the cab upward visibility is improved from 10 to 16.5 degrees and the unique kerb observation windows enable the driver to have excellent vision low down on both sides of the vehicle. Large rear windows ensure the driver has excellent vision for manoeuvring an artic unit or trucks with low body height. A laminated windscreen is available as an option, which may be bronze tinted if required. An additional option provides for blanked out rear windows.

Particular attention has been paid to the rear view mirrors which meet all known current and proposed legislation and, for aerodynamic efficiency, are enclosed in streamlined back covers. To optimise rear vision the arms are asymetric in length — that on the nearside being 350mm (14 inch) and the driver's being 450mm (18 inch). As an added bonus heated mirrors are available as an option.

Powerful two speed wipers provide optimum screen coverage and intermittent wipe is a standard feature on all models.

Headlamp wash similar to that already available on Transit is available as an option.

COMFORT INSIDE

The ultra modern exterior is matched by an equally impressive interior. One luxury level of trim is provided to a very high specification and of course there are a host of additional options to provide even more driver comfort.

The driver's seat is the most important part of any cab and our engineers have devoted much attention to its design.

All seats are cloth covered and are coloured black with red striping.

The driver's seat is adjustable for height, reach, cushion angle and rake and there is the additional option of a suspension seat on all models.

For the first time on any British truck both types of driver seat are available with heated covers. A dual passenger seat is standard fitment on all models but a single, fully adjustable, passenger seat is also available if required.

An acknowledged source of driver fatigue is excessive interior noise. Our body engineers have tackled this problem at source, tuning cab panel sizes and thicknesses, so that they will not vibrate, and isolating the cab from the chassis by means of substantial rubber mounts.

The floor, roof and back panels are all heavily insulated to reduce noise levels and in standard form the noise level does not exceed 81 dB(A). As an option additional insulation reduces the maximum noise level to 77 dB(A).

Cargo's standard heater has capacity enough to raise the temperature to 22 deg C (74 deg F) against an external temperature of —20 deg C (0 deg F) 30 minutes after starting with a cold engine. A two speed fan can change the air in the cab every 40 seconds.

A heavy duty heater is also available which can raise the temperature to 27 deg C (86 deg F) under similar conditions.

Slots at the base of the screen, face level grilles in the fascia centre panel and outlets incorporated in the grab handles ensure that the side windows, as well as the windshield, remain clear at all times, while foot operated floor vents provide additional ventilation in hot weather.

FINGERTIP CONTROL

The instrument panel is angled at 45 degrees to the horizontal — so it is in the driver's natural line of sight and easily visible at all times. It is divided into two main sections with the gauges and warning lights in the binnacle immediately ahead of the driver while the other console, in the centre of the cab, houses the heater control, fresh air vents, ashtray and up to 12 switches. There is also provision for a radio. The light switch and thermostart button are on the instrument console. The instrument binnacle itself has three faces, the centre of which is normal to the driver's eye and carries the speedometer/tachograph. The other two faces, angled inwards, carry the warning lights, tachometer, when fitted, air, fuel and temperature gauges.

All controls are within easy reach of the driver and all instruments are visible through the two spoke steering wheel. The main side lamp and headlamp on/off switch is mounted on the dash panel but the headlamp dip and flash functions are performed using the right hand stalk below the steering wheel. The left hand stalk controls the direction indicators and windshield wash wipe.

A major aim in the design of Cargo was to improve access to all components and nowhere is this more evident than the ease with which daily and routine inspections can be carried out. The radiator header tank, oil filler and dip stick are grouped together behind the cab on the driver's side.

At the front of the cab the upper panel, which may be opened by a coin, gives ample access to the translucent clutch and windshield wash reservoir.

Also accessible through this panel is the complete heater unit, wiper motor and brake valve all of which can be removed in just a few minutes. The fuse panel is situated above the nearside footwell inside the cab and with the new type of colour coded fuses fitted any electrical fault can be rapidly traced and a fuse replaced with one of the two spares provided. The instrument panel can be easily opened should a warning or panel lamp need replacing.

On vehicles with air/hydraulic brakes the fluid reservoirs which are of translucent plastic are easily visible on the outside of the chassis while release rings on the air reservoirs, which extend to outside the chassis, allow for easy draining.

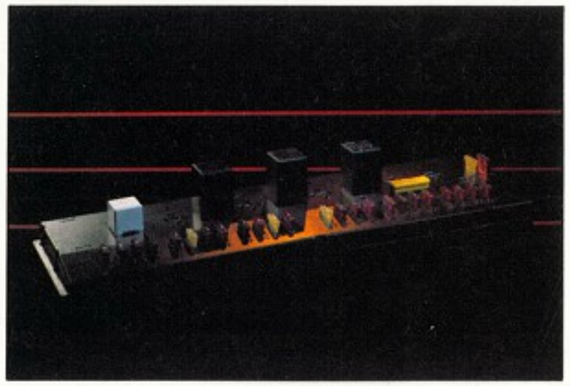
MAINTENANCE FREE

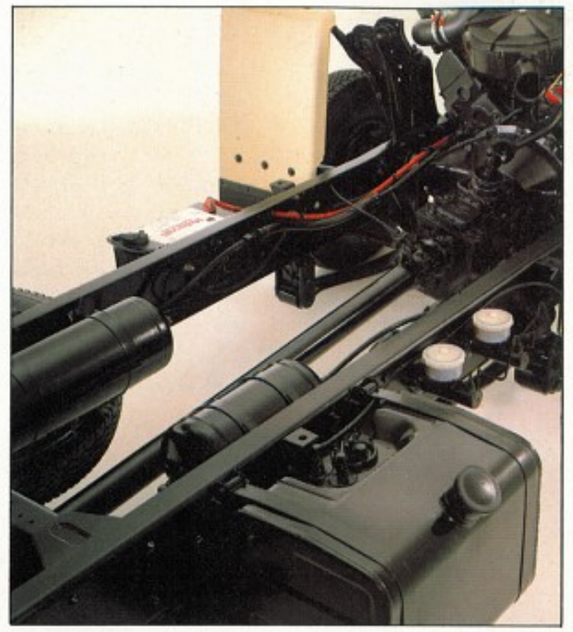
Motorcraft maintenance free batteries are fitted to all vehicles with 12 volt electrics. These batteries are of the lead/calcium rather than of the more usual lead/antimony type and because they produce a negligible amount of gas during charging they never need servicing. They have no filler plugs—just an inspection glass in the top cover—and are completely sealed and waterproof. No covers are therefore required, but the terminal retaining nuts and stainless steel posts are protected by close fitting moulded plastic caps to avoid shorting. These batteries use a lightweight polypropylene case which saves 12 kg compared to more conventional batteries.

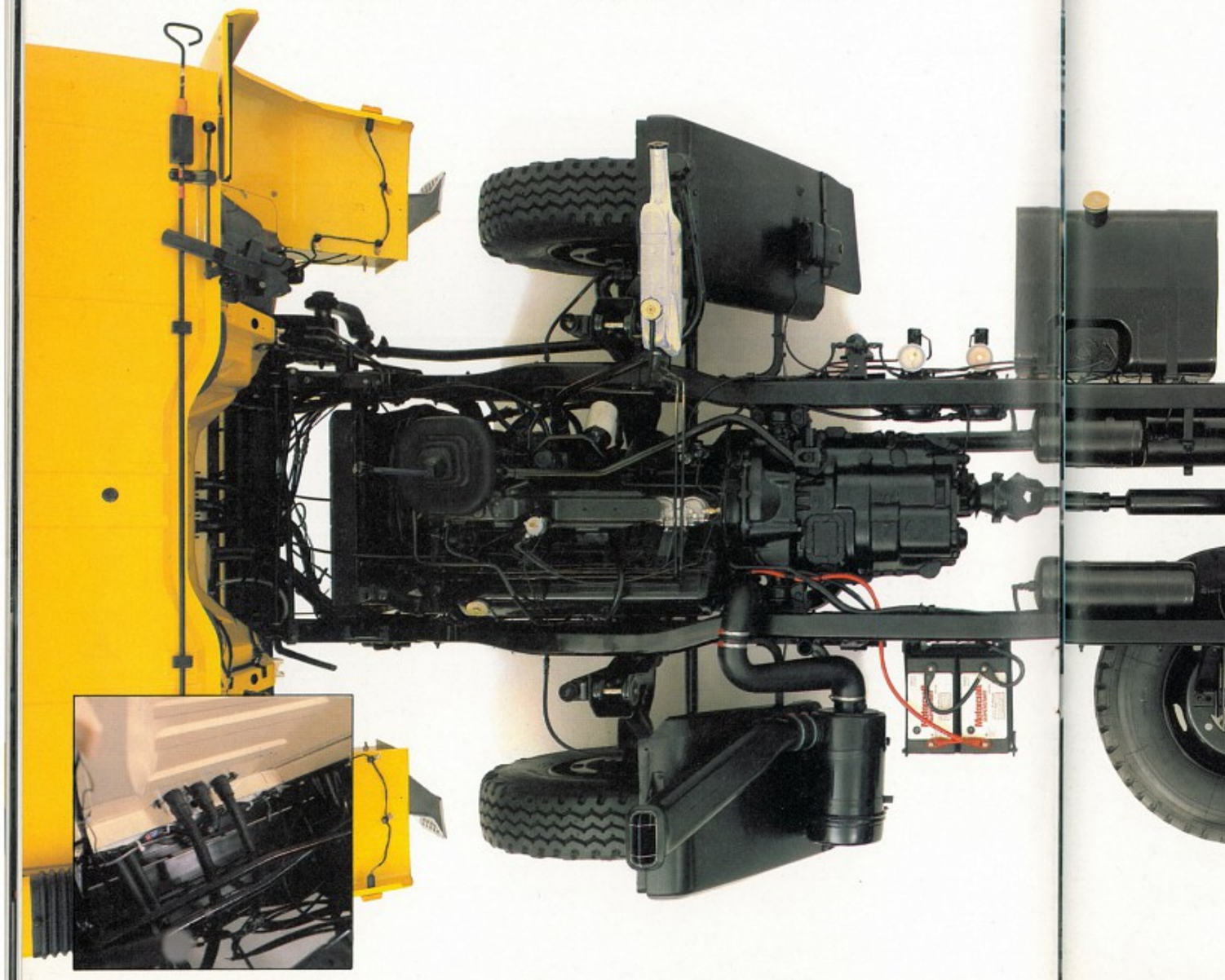
Low maintenance 24 volt batteries are fitted to V8 models which although not fully maintenance free require servicing only every 100,000 miles and also offer a small weight saving. The batteries are always mounted on the nearside of the frame to keep the cable run to the starter motor as short as possible.

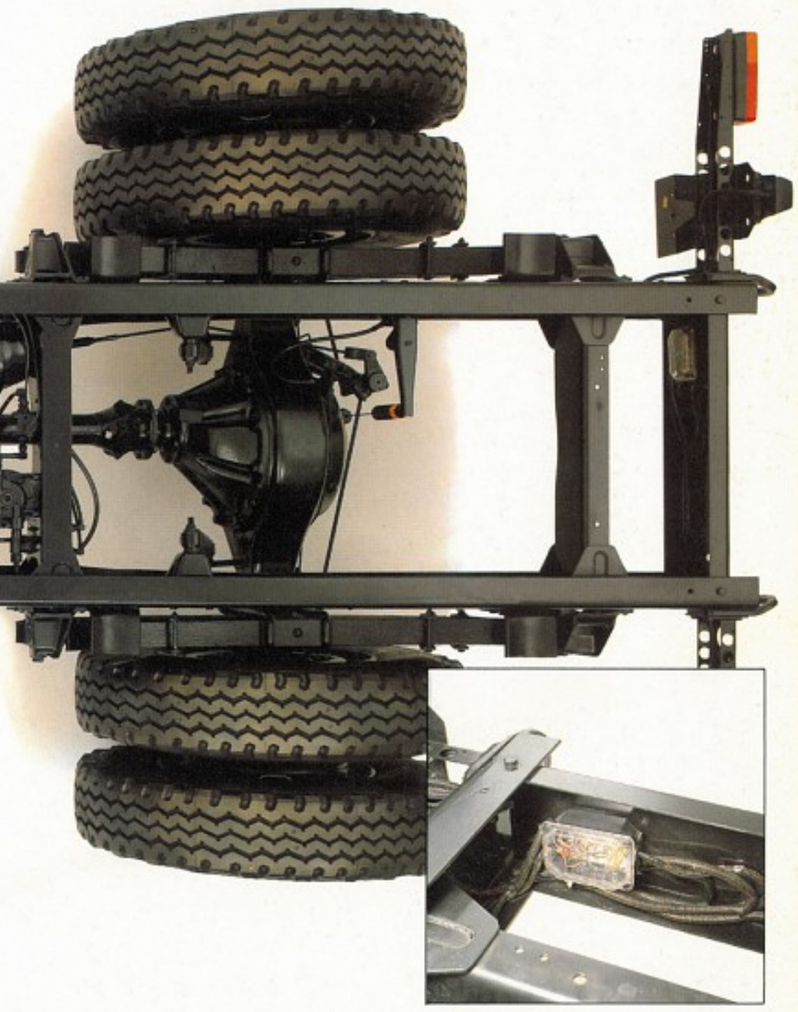
All loom connectors are of a type which eliminates mismatching. There are only three cab to chassis connections, each using vibration proof connectors, and for protection against damage all cable runs are located within the side members.

The fuse box, which is easily accessible from inside the cab, protects 24 electrical circuits and a new design of quick fit fuse makes the identification of any faults a simple matter.









POWER + ECONOMY

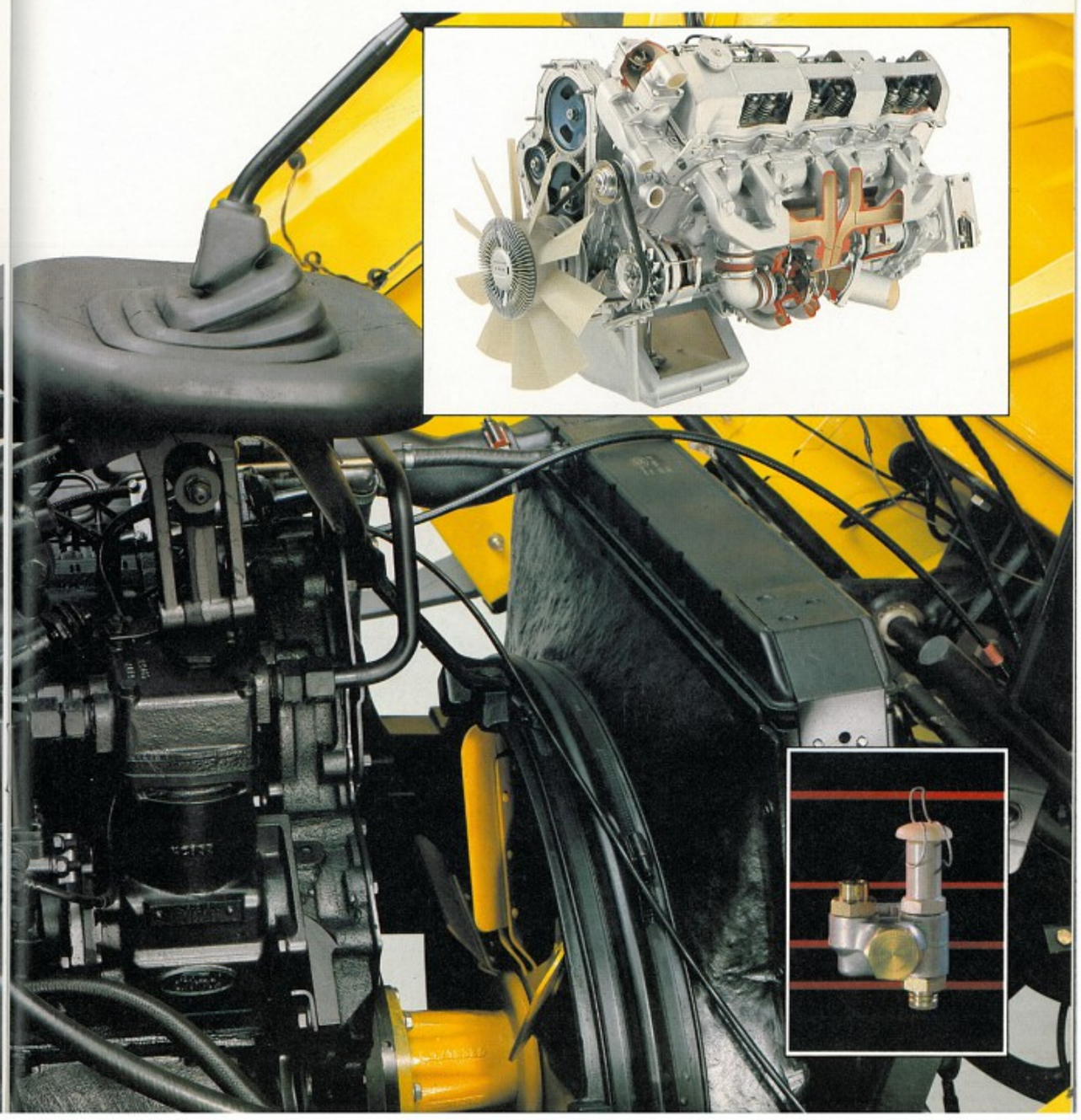
The engine line up is already familiar to operators and drivers alike. In fact the number of four and six cylinder engines, including turbocharged versions, built at Dagenham exceeds one million and well over half of these have been installed in D Series chassis over the past 16 years. The range also powers a wide range industrial, agricultural and marine equipment.

Substantial changes made in 1979 reduced fuel consumption and improved durability. For Cargo, durability is further improved by the use of steel timing gears, instead of cast iron, and a full flow bypass cooling system on all six cylinder engines. Push rod diameters have been increased and valve stem sealing improved by using nylon instead of rubber. All four and six cylinder engines now have an automatic excess fuel facility and naturally aspirated engines now follow Turbo II practice of having a positive displacement fuel lift pump.

Naturally aspirated 6 cylinder engines also have a dual bowl fuel filter, like the Turbo II, and all six cylinder engines feature an oil cooler.

Besides improving durability and reliability these changes have resulted in small increases in power on the naturally aspirated units.

Like previous models, in-line engines are mounted inclined at 45° to the vertical in order to keep the floor height as low as possible. The mounting method however has been changed to improve vibration isolation to the frames.

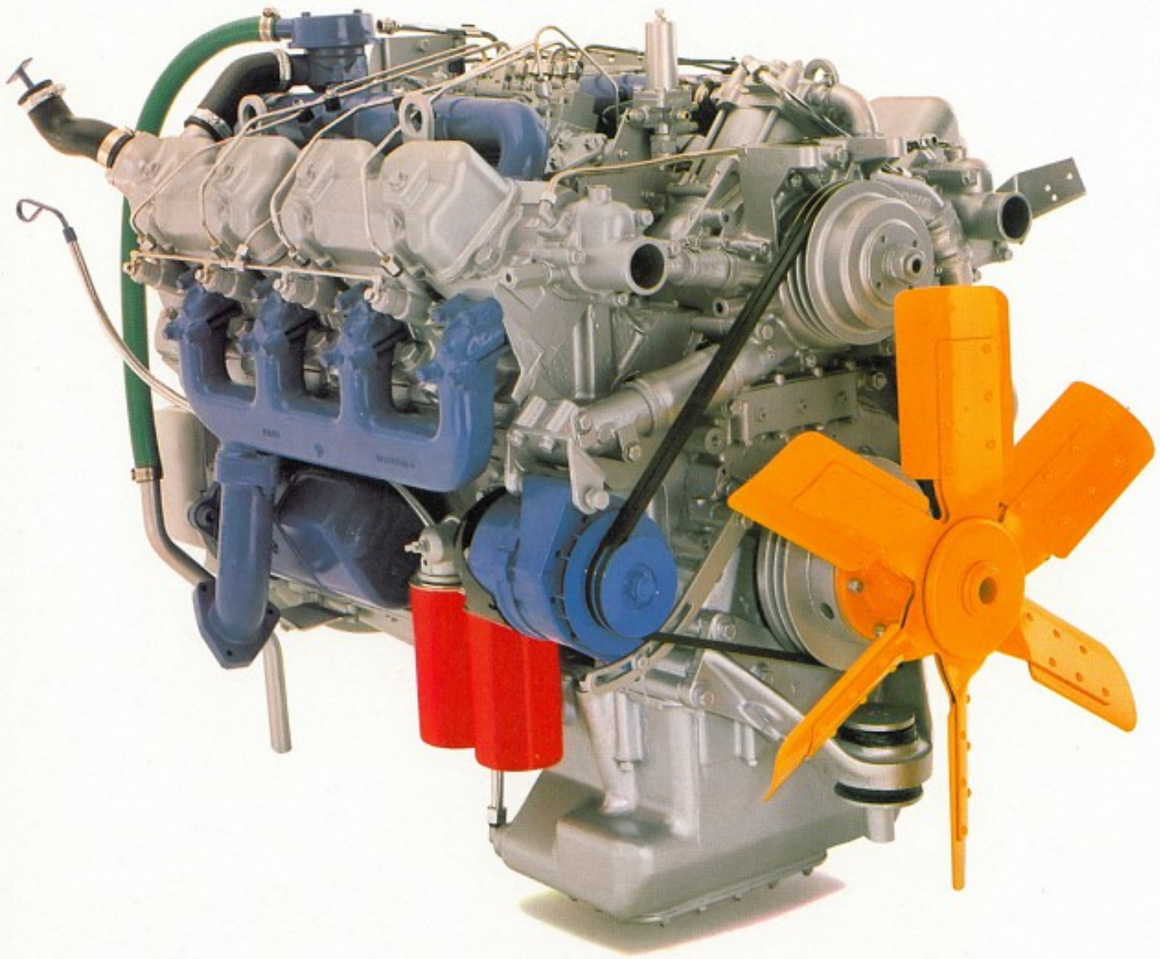


This well proven unit continues unchanged in Cargo but modifications have been made to cater for the different installation requirements of the new model which have resulted in a small power increase from 170 to 176 bhp. The oil filler for example is now on the rear right hand bank rocker cover and the dip stick is now also located at the rear of the engine.

Cold starting is improved by the use of an automatic excess fuel facility for temperatures down to —10°C. Ether injection is specified for temperatures down to —30°C.

Like the four and six cylinder units the power steering pump is now gear driven instead of by belt, to improve reliability and durability.

Perkins V8-540



The Cummins V8 504 is continued in Cargo but with modifications resulting from lessons learned on the Big Cam E-Series engines already used on Transcontinental.

The changes include a larger diameter camshaft, which allows a steeper slope on the cam, thus increasing injection pressure and matching the theoretically optimum injection point more accurately. This modification, in conjunction with a reduction of rated speed from 3000 rpm to 2800 rpm have resulted in improvements in fuel economy of up to 6 percent.

Although gross power is reduced from 146.8 kW (197 bhp) to 138.6 kW (186 bhp) net power is increased slightly from 126 kW (169 bhp) to 129 kW (173 bhp).

Cummins V8-504

Engine Performance

Engine	4.2 Litre (08)	6.0 Litre (11)	6.2 Litre (12)	6.0 Litre Turbocharged (14)	Cummins 504 Big Cam (17)	Perkins V8.540 (17)
Capacity (cc)	4161	5948	6224	5948	8259	8849
Bore (mm)	107.2	104.8	107.2	104.8	117.5	108
Stroke (mm)	115	115	115	115	95.25	121
*Gross power KW (bhp) @ rpm	60.5 (78) @ 2600	84.3 (113) @ 2600	91.75 (123) @ 2600	111.9 (150) @ 2400	139 (186) @ 2800	134 (180) @ 2600
*Gross Torque Nm (lb ft) @ rpm	258 (190) @ 1600	337 (249) @ 1600	380 (280) @ 1600	573 (349) @1800	534 (394) @ 1600	556 (410) @ 1700

*TO BS Au 141a:1971

DRIVELINE EFFICIENCY

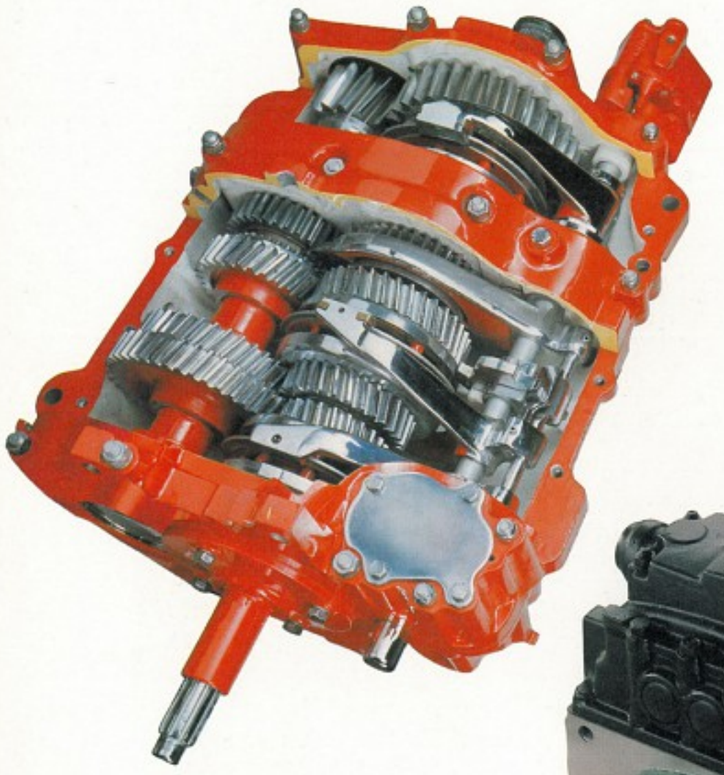
The range of transmissions has been extended on Cargo so that in addition to the Ford 4-310 four speed unit and 4-6-8 boxes we are offering ZF five speed units on models up to 14.7 tonnes with in-line naturally aspirated engines. The 4-310 unit, standard on four cylinder 6.5 tonne models, provides lightweight and ruggedness combined with synchromesh on the upper three ratios.

Our highly successful range of all synchromesh 4-6-8 gearboxes continue on Cargo but they are now fitted with a new fibrous coated material on sintered iron, in place of bronze, synchromesh rings. This change significantly improves synchro life and reduces gear shift loads.

All these gearboxes are now installed horizontally in the vehicle and the oil breathers relocated so they do not protrude above the chassis frame.

The ratios in all gearboxes remain unchanged, but there is a new wide ratio six speed unit which is optional on vehicles with single speed axles and which provides a more even ratio spread than the six speed gearbox used previously.

There are two versions of the ZF five speed range which are available for vehicles up to 14.7 tonnes. Both units have synchromesh on all forward gears and feature direct drive top gears. They have helically cut gears for quiet operation and SAE 6-bolt power take off openings on the right hand sides. The smaller S5-24 is offered on four-cylinder 06, 07 and 08 models and the S5-35 is used on 08 to 15 models.



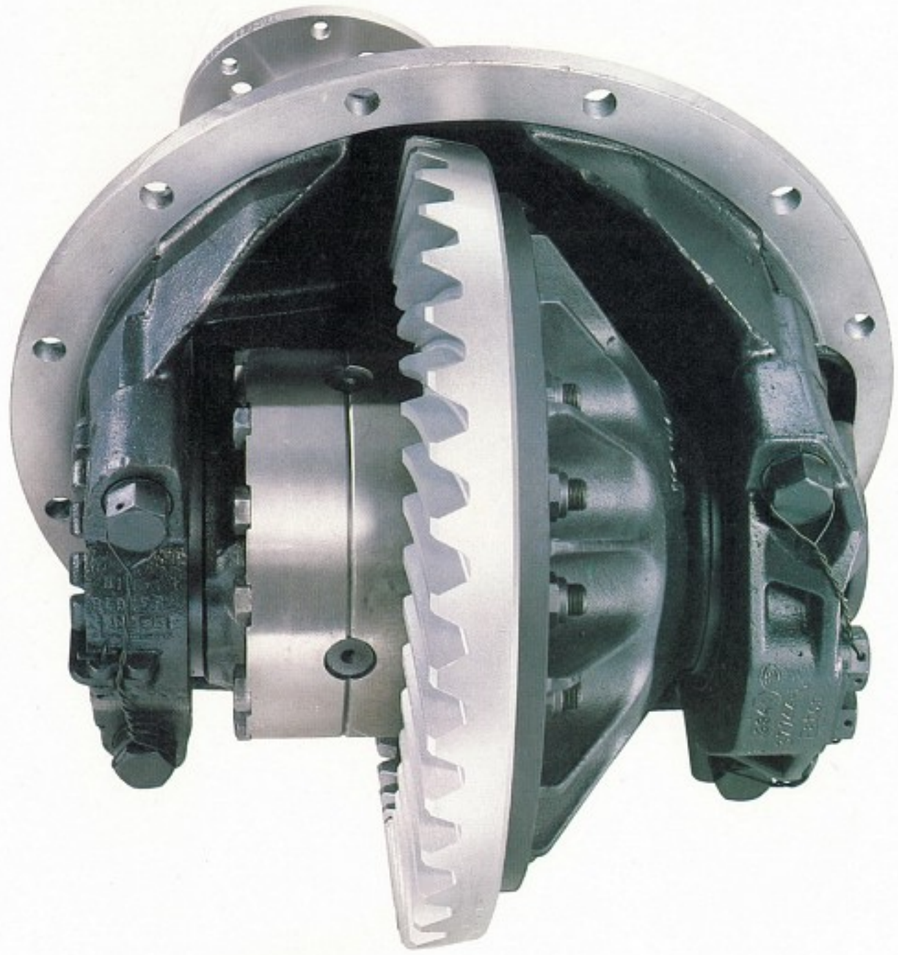
All Cargo models have hydraulically operated clutches, and with only two pipe connections between the master cylinder and slave cylinder the risk of any fluid leak is kept to a minimum.

A 305mm axial spring clutch is used on four cylinder engines, while a similar 330mm diameter unit is used behind naturally aspirated 6 cylinder units. Turbo engines have a 330mm single plate diaphragm spring clutch.

A new 350mm diaphragm spring clutch is fitted to the two V8 engines which significantly reduces replacement costs.

The pressed steel construction of the new clutch reduces its weight considerably enabling a reduction of inertia by some 40 percent. This in turn reduces gear change effort and improves synchro life.

Rear axles are identical to those fitted to D Series. In addition however, a lower final drive ratio option on models of 7.49 tonnes and below will help improve fuel economy.



A completely new range of forged alloy steel I beam front axles has been developed for Cargo.

The range consists of three nominal capacities, replacing the four used previously, and they comfortably cater for all Cargo applications.

The three capacities are 3,200, 5,000 and 6,500 kg and in general front axle ratings are higher than on their equivalent predecessors.

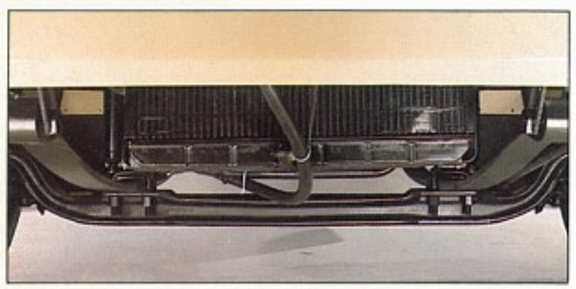
In addition the 3,000 and 6,500 kg axles have a wider track than before which significantly improves stability.

The heaviest axle uses a common Transcontinental king pin while the two lighter axles have smaller versions of this well proven design.

The two lighter axles feature bolt on steering arms whereas the heaviest axle uses a taper fit type which is also common with the Transcontinental. Significant weight savings are achieved on Cargo by specifying tubeless radial steel cord ply tyres as standard on all models. On a typical 08 model using tubeless tyres on 17.5 in wheels there is a weight saving of 28.2 kg over tubed tyres on 16 in wheels.

Spigot mounted wheels are used for the first time by Ford when 10 stud wheels are specified. With this system, which is common practice in the rest of Europe, the wheel is centred on to the hub by five hardened pins and the wheel nuts are used only to clamp the wheel to the hub.

GREATER CAPACITIES



PRECISE + EASY STEERING

Improved turning circles have been achieved by the development of new steering gear and geometry for Cargo.

In addition, to take full advantage of these steering improvements, all models are now available with power steering either as standard or as an option.

The actual improvement in turning circle, of course, depends on wheelbase but in all cases the reduction, with power steering, is never less than one metre and on the longest 5450 mm wheelbase model with the 6,500 kg front axle the reduction is 2 metres.

Recirculating ball manual steering is standard on 06 to 13 models. Power steering is available as an option on these models and is standard on all others. In all cases the power steering is of the recirculating ball integral type. The steering wheel is comfortably set at 21 degrees to the vertical and carries a two spoke "soft feel" steering wheel.

The steering column moves with the cab when it is tilted and this movement and cab suspension movements are accommodated by a sliding spline and universal joint at the base of the column.

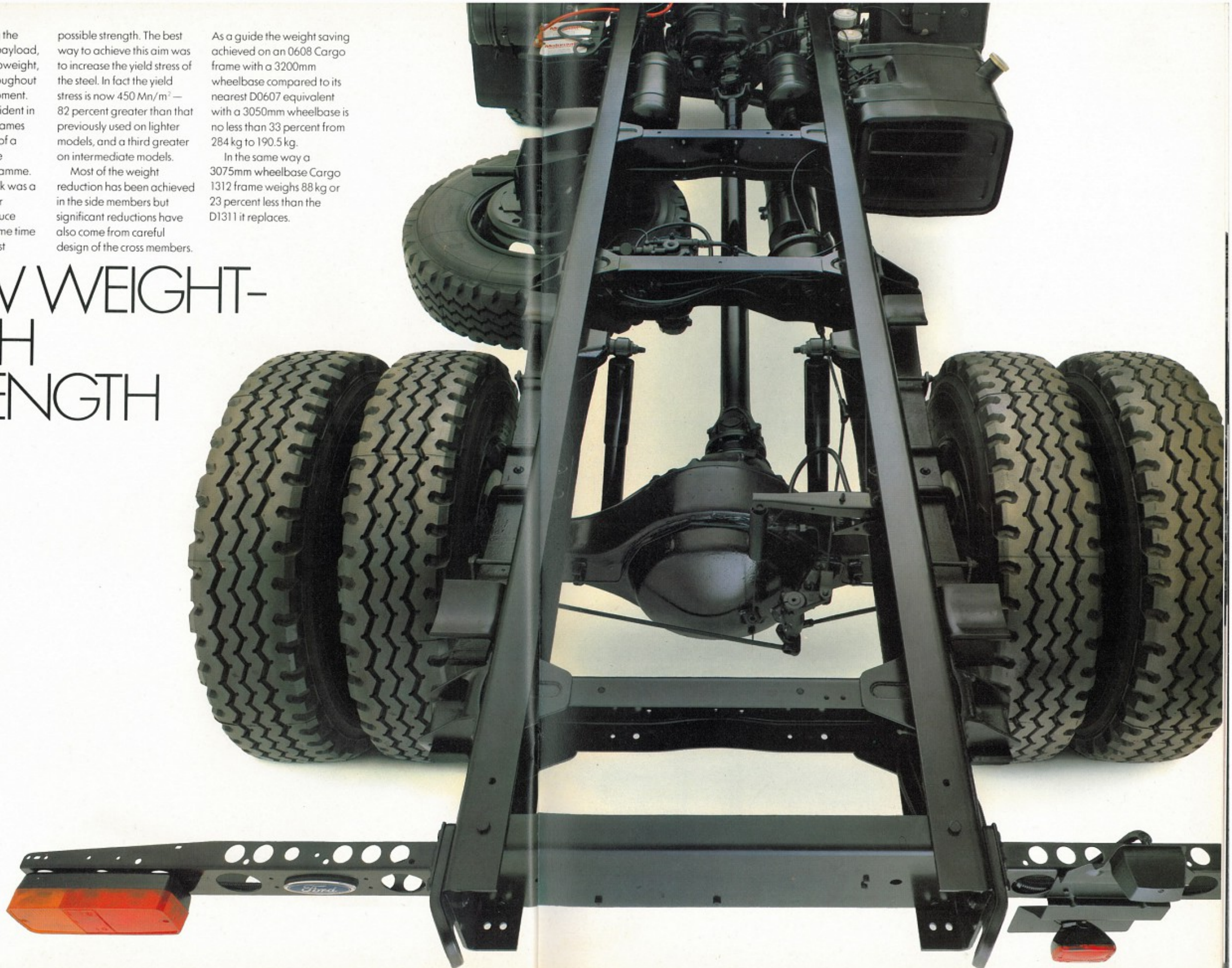
LOW WEIGHT-HIGH STRENGTH

Ways of ensuring the maximum possible payload, by reducing the kerbweight, were examined throughout the Cargo's development. This is most visibly evident in the all new chassis frames which are the result of a particularly intensive development programme.

The engineers task was a difficult one since our intention was to reduce weight but at the same time maintain the greatest possible strength. The best way to achieve this aim was to increase the yield stress of the steel. In fact the yield stress is now 450 Mn/m^2 — 82 percent greater than that previously used on lighter models, and a third greater on intermediate models.

Most of the weight reduction has been achieved in the side members but significant reductions have also come from careful design of the cross members. As a guide the weight saving achieved on an 0608 Cargo frame with a 3200mm wheelbase compared to its nearest D0607 equivalent with a 3050mm wheelbase is no less than 33 percent from 284 kg to 190.5 kg.

In the same way a 3075mm wheelbase Cargo 1312 frame weighs 88 kg or 23 percent less than the D1311 it replaces.



FRAMES FOR BODIES

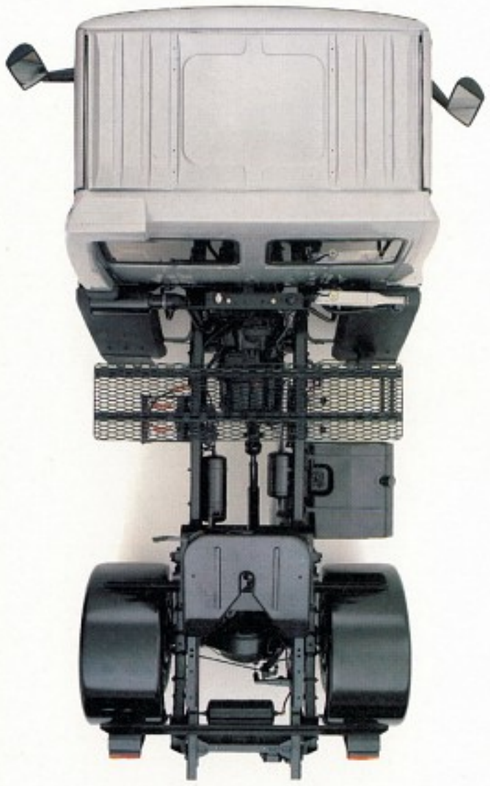
We have designed Cargo to be as adaptable as possible to take all types of bodywork with the minimum of trouble.

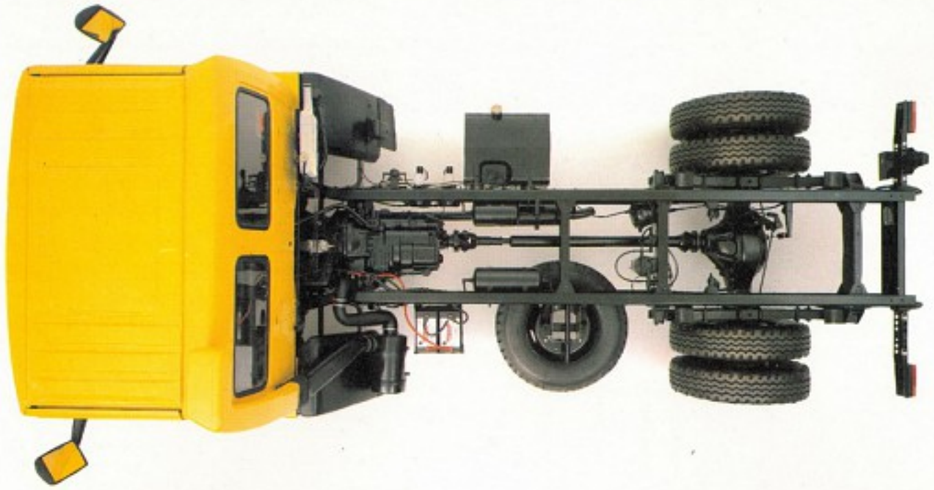
Wheelbases have been selected to cater for the most common European body lengths, of 4.2, 5.2, 6.2, 7.2 and 8.2 metres and to accommodate European pallet sizes and principal swop body systems. On 06, 07 and 08 models the front axle is set forward 125mm to reduce the likelihood of front axle overload resulting from off-loading from the rear of these lighter models, particularly if Luton bodies or refrigeration units are fitted.

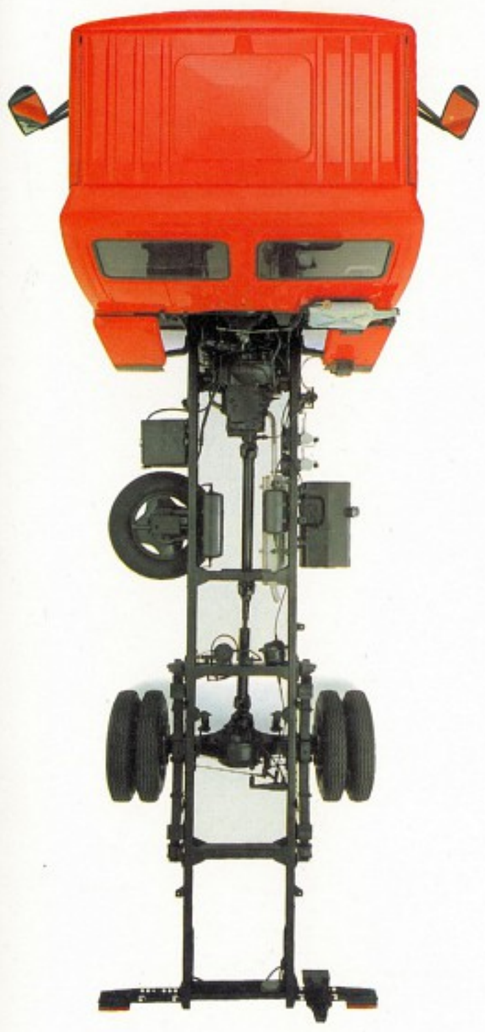
On all models front and rear axle ratings have been selected to give the best possible load distribution tolerance, and the very compact bumper to back of cab dimension of only 1593mm means that the best possible body length can be accommodated within any given overall length. To make life for the bodybuilder even easier the top flange of the frame is completely straight and free of rivets or other protrusions. Cross members are fixed to the frame sides and no item of chassis equipment — battery, fuel tank or spare wheel carrier — rises above the frame height in the critical body mounting area.

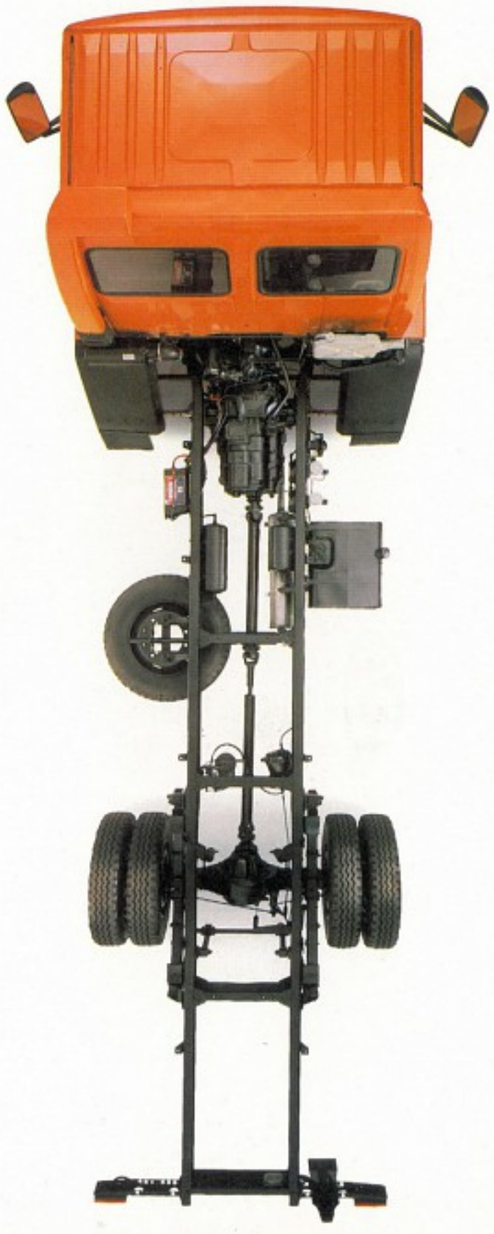
A full range of factory fitted options is available to ensure that a minimum amount of time is lost while the vehicle is being bodied.

All truck chassis are predrilled as standard and such items as mounting brackets for truck chassis and power take off equipment for tipper applications are all available as options.









PROTECTED COMPONENTS

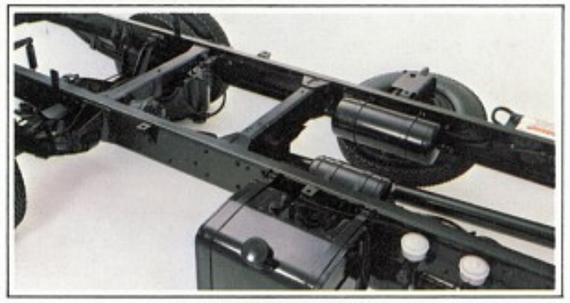
Just as protrusions above the frame have been eliminated so has equipment outside the frame been minimised.

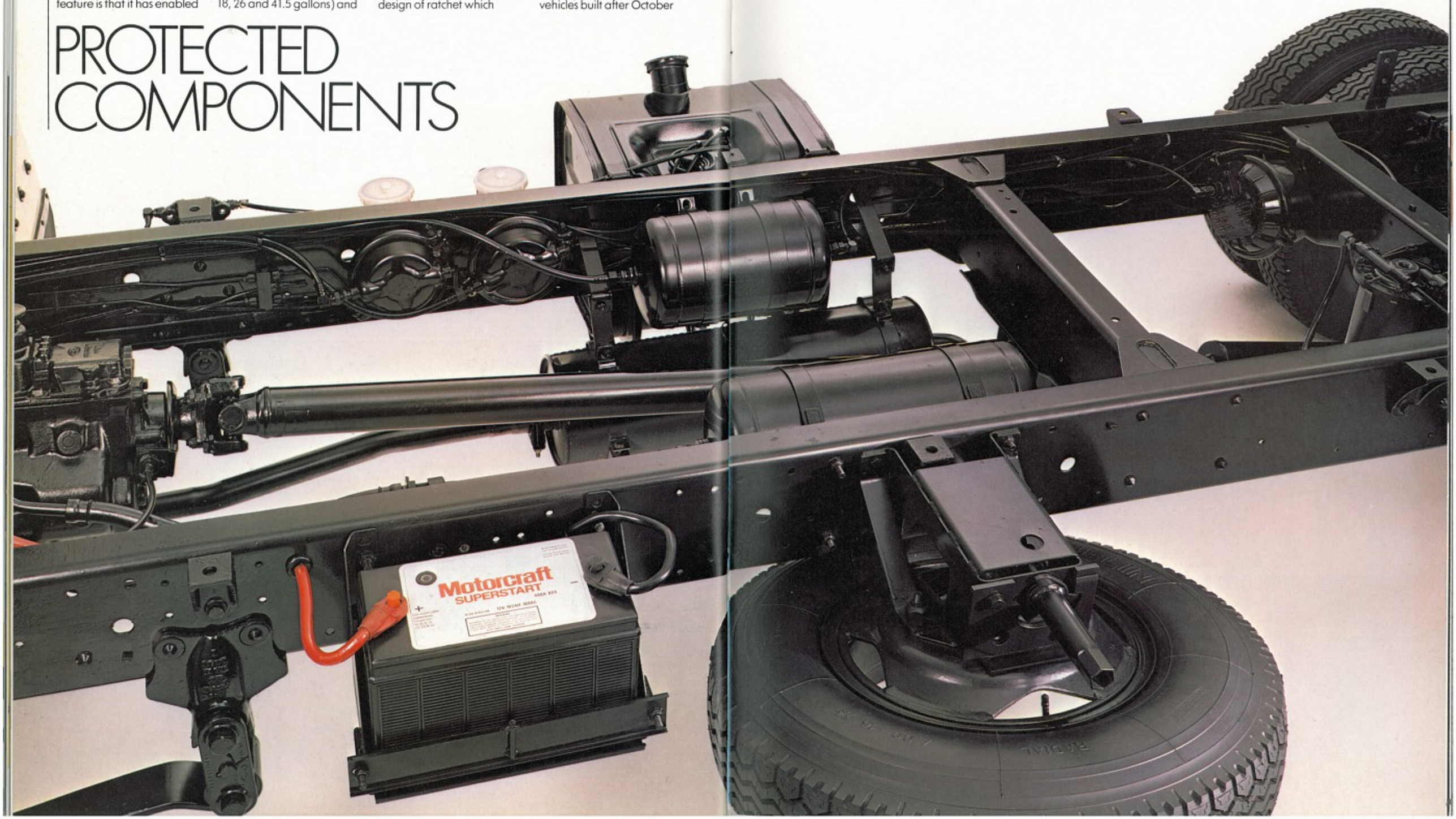
The brake diaphragms and reservoirs are located within the frame which means that they are fully protected from the elements. The added advantage of this feature is that it has enabled the number of brake connections to be reduced by 30 percent thus reducing the likelihood of air loss while standing.

With more room outside the frame we have been able to extend the range of fuel tanks available. Tanks come in four sizes—60, 85, 115 and 185 litres (13.5, 18, 26 and 41.5 gallons) and on all but four cylinder models there is the added option of twin tanks. All fuel tanks have a depression in the top face which houses supply and return pipes and the fuel gauge sender units. The spare wheel carrier, when fitted, is mounted on the near side and incorporates a patented design of ratchet which allows the spare wheel and tyre to be lowered and raised with ease and safety.

All Cargo models, except artics, are available with an optional rear underrun bumper which meets the requirements of EEC Directive 79/490. This legislation is expected to become effective in the UK for vehicles built after October 1981 and for new vehicles registered after March 1982.

The bumper is styled and incorporates the rear lamps and is fully adjustable to suit varying frame heights.





SUSPENSION SIMPLICITY

Suspension design has changed dramatically over the last few years and on Cargo we have been able to take advantage of all the latest advances.

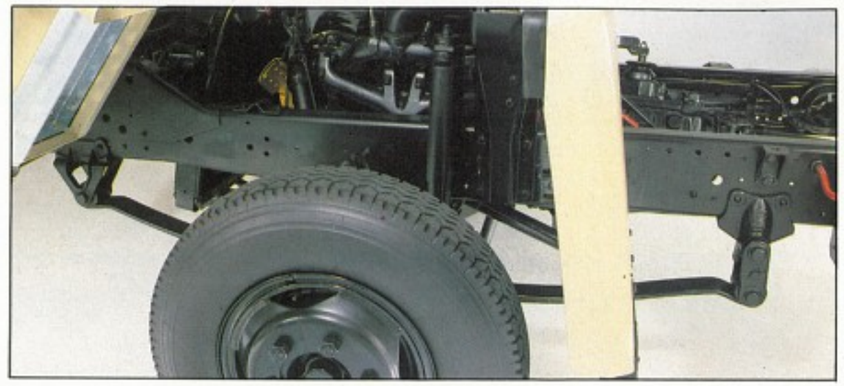
For the new range single leaf springs are fitted to all trucks, of 13.2 tonnes or less, on the front. This design, besides providing light weight enables an excellent ride to be obtained. The springs are anchored at the front by a single wrap "Berlin eye" to improve suspension geometry. In the unlikely event of a spring failure ahead of the axle a special design of rear shackle prevents the axle from moving too far rearwards.

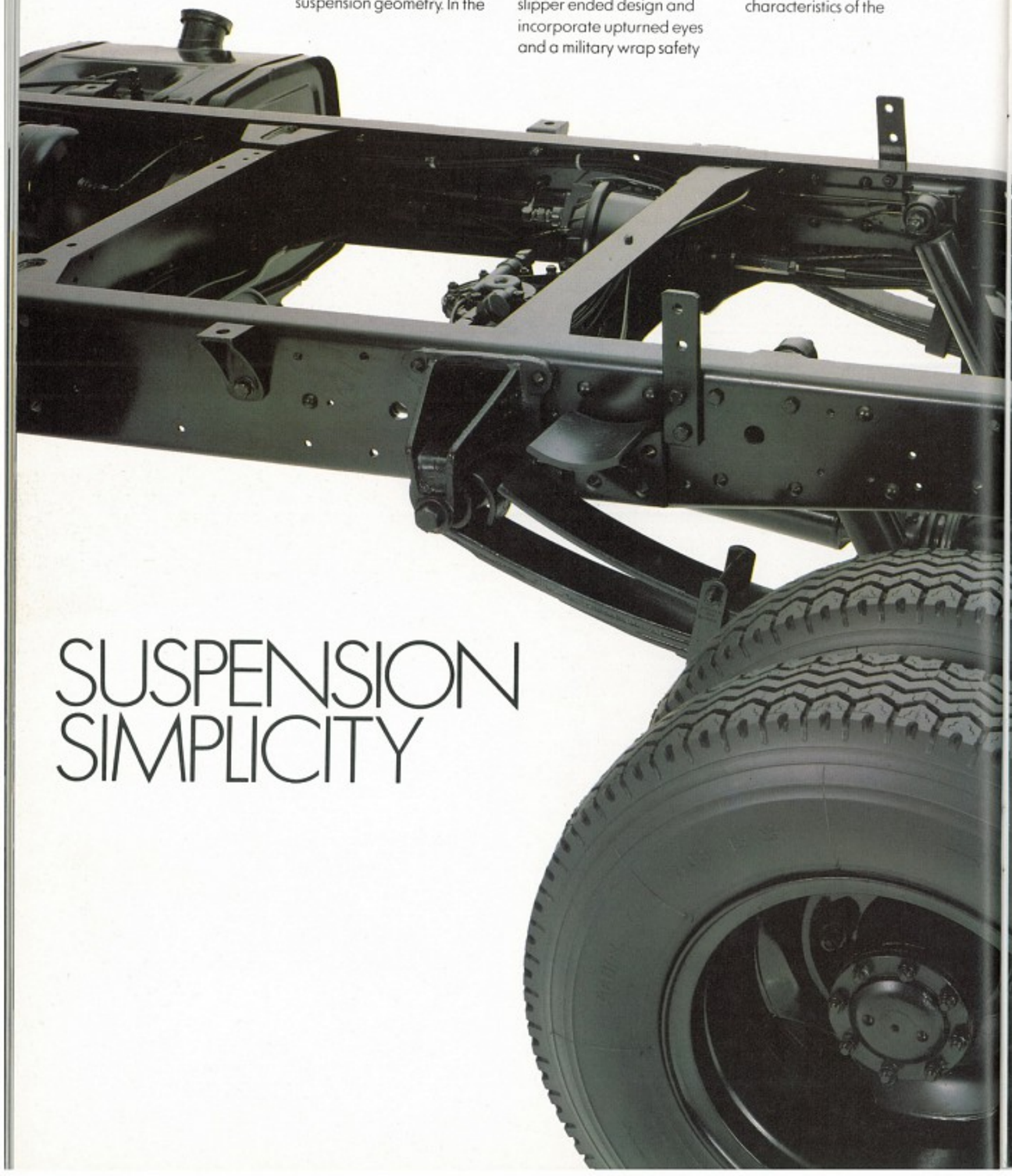
Rear axles on all models use multi-leaf springs incorporating helpers. Rear multi-leaf springs are of a slipper ended design and incorporate upturned eyes and a military wrap safety feature at the front end.

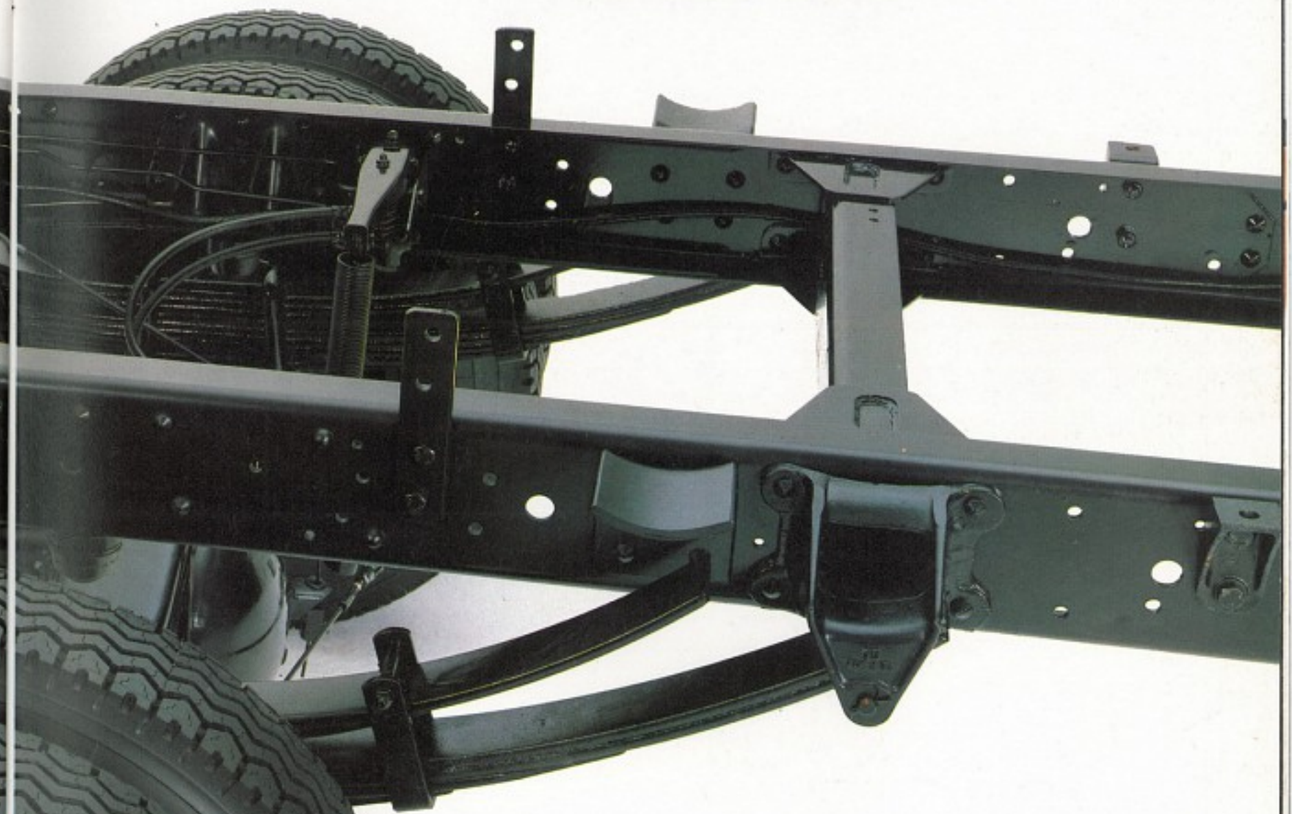
Front and rear anti-roll bars are available for both types of suspension where the vehicle is to be used with a high centre of gravity body.

Front and rear dampers are standard on all models but because of the different characteristics of the minimum leaf suspension damper settings differ from their multi leaf counter parts even at the same load ratings.

In all cases the suspension has been designed to provide the optimum ride under all load conditions.







STOPPING POWER

The braking systems on Cargo although the same in basic concept as previous models have been closely examined and virtually every component redesigned.

The design employs a unique two level air pressure system which ensures that even though the reservoir pressure drops, brake performance is not impaired.

Normally air pressure in the reservoir is maintained at around 7 bars. After repeated brake use this pressure drops and must build up to 7 bars again. The air pressure on Cargo, however, is maintained in the reservoir at 11 bars and air is then tapped off at 7 bars to actuate the brakes with consistent braking therefore assured.

Filtering and air drying has also come in for close scrutiny and a new Ford design removes up to 86 percent of moisture compared with 60 percent from conventional wet tanks and proprietary condenser units.

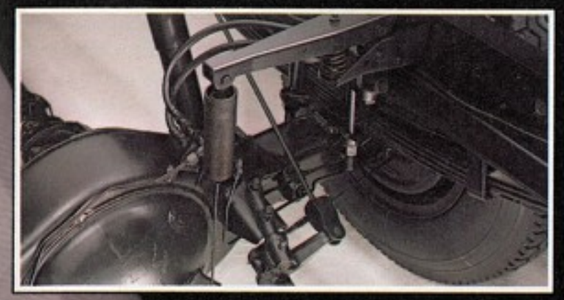
The foot valve is mounted behind the cab front access panel and greatly simplifies circuit checks and fault finding. All models have a load apportioning valve as standard.

The parking brake is of conventional spring brake chamber design and is operated by a small toggle valve situated on the left hand side of the driver's seat.

The drum and shoe sizes have also been reviewed so that, typically, the braking ratio has been changed from 50/50 to 55/45 front to rear. This has improved braking balance and also extended lining life. All brakes have automatic adjustment and have sight holes to allow lining inspection to be easily carried out.

On models of 9.0 tonnes GVM or less and artics the air/hydraulic system is of the 'L' split type where each of the two master cylinders operates one shoe in each front brake and one complete rear brake.

Heavier models with air/hydraulic brakes use a more conventional vertical split system where one master cylinder operates the front brakes and the second master cylinder operates the rear brakes.



MINIMUM SERVICE

Apart from keeping running costs as low as possible by incorporating such features as improved aerodynamics and engine performance we have been able to substantially reduce service costs on Cargo to make it one of the most economical trucks anywhere to run and operate. Service intervals are now less frequent and many service items have been eliminated altogether. The more effective use of radiators and oil coolers have enabled service intervals, oil and filter changes to be extended to every 6,000 miles. Costs are further reduced by the need for a major service only every 18,000 miles.

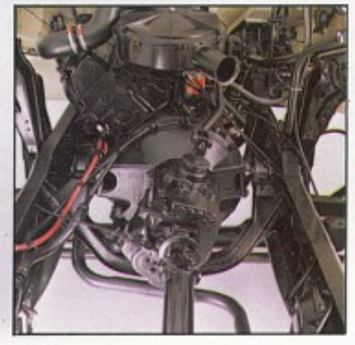
Over an operational period of 100,000 miles the Cargo will need scheduled servicing only 16 times (compared to 25 before) and actual servicing time will be reduced by approximately one third.

Among the items which no longer require servicing are such things as handbrake linkage, load apportioning valve, power steering ball joints, drag link and track rod ball joints.

In fact grease points have been reduced from 21 to only nine points on models with a single prop shaft and from 22 to 10 on models with a divided prop shaft.

Brakes and clutches on all models are self adjusting and as we have already seen models with 12 volt electrics feature maintenance free batteries.

Vastly improved access to all components also means reduced downtime. The cab, counterbalanced by torsion bars, is tilted by a simple one man operation to 40 degrees which provides excellent access to all items requiring routine maintenance. For major servicing the cab tilts to 50 degrees and access is further improved by the elimination of the cab rear support member which normally bridges the chassis in the region of the clutch/transmission. This means that the complete engine/transmission assembly can be lifted out without the need to remove any crossmembers.



BUILT TO LAST

Durability and reliability have been key words throughout the Cargo programme.

The fact that the range has been designed from scratch has enabled us to design in these features from the start—and to take full advantage of all the latest production techniques.

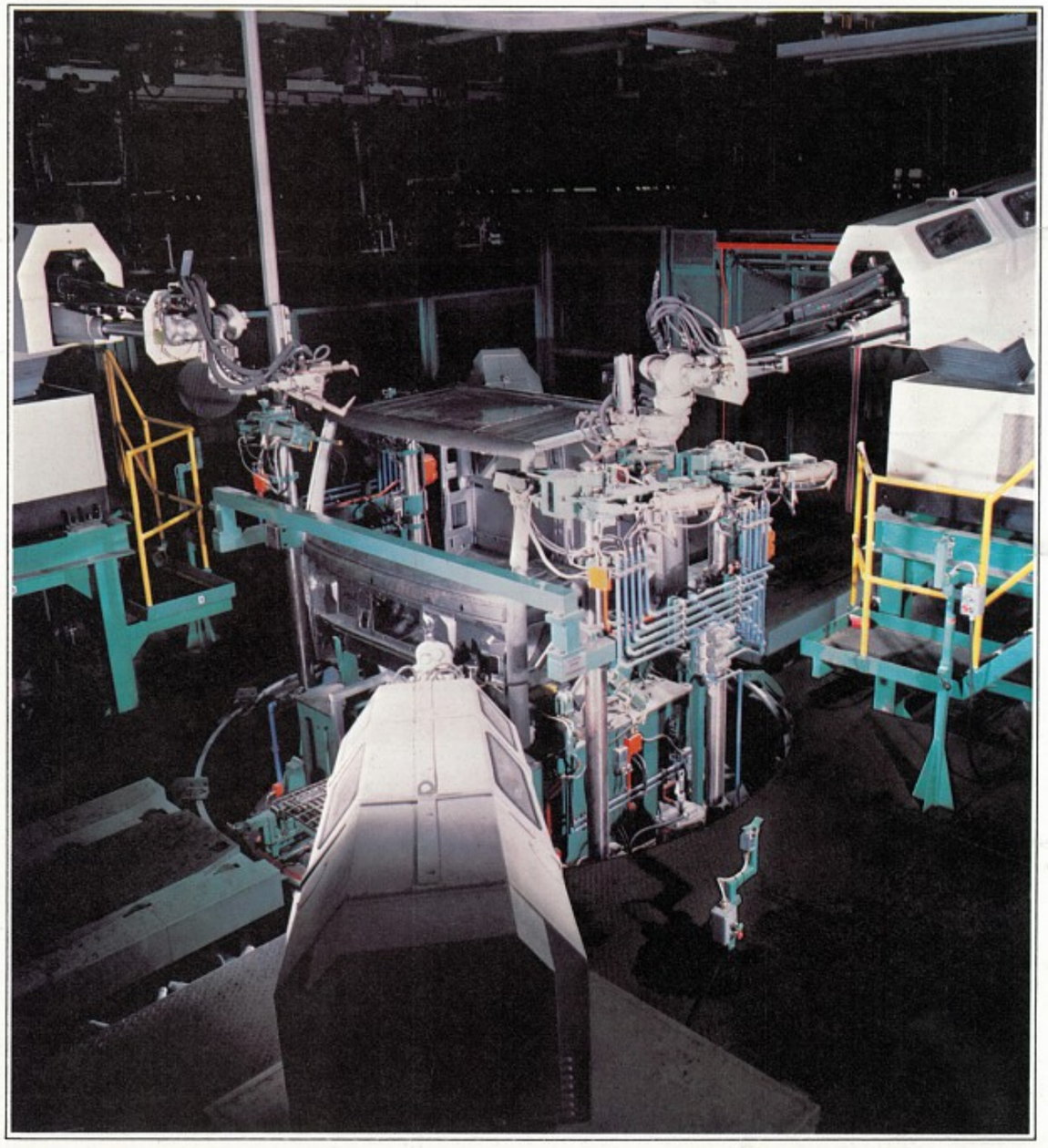
Semi automatic welders and robots, for instance, ensure that each cab assembly is constructed to a consistently high standard. The four robots, in fact, make 257 spot welding operations before the cab is automatically transferred to a holding area and then on to the painting process.

Like the welding operation the paint process is fully automated and employs the latest in corrosion protection and paint technology, already proven on Transit.

A solvent spray first loosens any dirt and oil and this is then removed using a hot alkali cleaner.

The cab is then rinsed in cold water before being treated with a zinc-phosphate which both cleans and etches the metal surface.

The cab is then rinsed again in cold water, rinsed in a chromat solution to stabilise the phosphate coat and finally rinsed in demineralised water.



Electro painting is carried out using a cathodic process and this is the key factor in the success of our anti corrosion treatment. Cathodic primers are themselves chemically superior as rust inhibitors than the anodic primers used in most other processes.

In addition, with the cab body being negatively charged, the primer has a more searching action which ensures that every part of the body is protected.

After the application of the primer the cab is rinsed twice—the second time in pure demineralised water—and is then heated to bake the primer.

All exterior panel parts are then sealed with a PVC resin and a corrosion resistant primer applied.

The body is again heated to bake the primer and after being lightly sanded and cleaned the cab is then sprayed with two coats of alkyd enamel. Ten colours are available as regular production options which include four "fashion colours", and for the first time on a commercial vehicle we are able to offer a metallic silver paint.

CAB MINIMUM EQUIPMENT

Exterior

Fixed full width louvre designed grille (black) with rectangular halogen headlights (incorporating side lights) and direction/hazard indicators. Hinged full width upper front panel giving access to—

—windscreen wiper linkage and motor and screen wash bottle

—clutch reservoir

—heater assembly

—brake valve

(Note: radiator header, oil fill and dipstick located to rear of cab. Brake reservoirs mounted on chassis frame)

254mm (10 in) deep styled bumper painted body colour incorporating towing pin with handle

Auxiliary side step with plastic tread plate RH/LH (with 1000/1100 x 20/22.5 tyres only)

Bumper to step gaiter

2 speed self park electric windscreen wipers with intermittent wipe

Electric windscreen wash

Rear view spring back door mounted mirrors with aerodynamic back covers

Flush fitting door handles and locks

Radiator header tank and oil fill and dipstick mounted to the rear of cab

Security cab release with detachable handle (stored in cab)

Front mudflaps (20 in/22.5 in wheels only)

Instruments

Grey instrument panel with red relief line surround

Printed circuit instrument cluster

Fused lighting circuits

Tachograph—24 hour dual driver (Veederoot)

Fuel gauge

Temperature gauge

Oil pressure gauge

2 air gauges

Audible warning buzzer for low brake pressure

Warning lights

—main beam

—RH/LH direction indicators incorporating hazard flashers

—ignition/charge indicator

—parking brake

—cab latch engagement

—brake pressure warning

—rear fog lamp

Driver Operated Controls

Gearshift with soft feel knob (except 8 speed box or 2 speed axle)

Soft feel steering wheel (black)

2 column mounted stalk controls

—indicator, horn, main beam flash

—2 speed wipers, intermittent wipe, power wash

Rotary headlight, side light/rear light switch—panel mounted

Rotary heater/blower fan switch—panel mounted

Column mounted key start

Manual engine stop (except when Cummins engine and/or exhaust brake fitted)

Brake pressure test switch

Hazard flasher switch

Rear fog lamp switch

Interior

Laser striped cloth trim

Driver's seat—fully adjustable for height, reach, cushion and squab rake

Dual passenger seat

Cloth covered headlining (grey)

Cloth covered back panel trim to roof level (grey)

Full width rubber insulated floor mat (black)

Fully trimmed doors (grey PVC) incorporating armrests and stowage pockets

Kerb observation windows in doors

Observation/quarter window divider bar carrying name and nomenclature

Padded fascia (grey PVC) incorporating entry assist grab handles

Lockable glove compartment

Heater and demister with illuminated controls incorporating

—face level vents (cold)

—side screen and windscreen demist (hot & cold)

—foot level vents (hot & cold)

Kick open driver and passenger fresh air vents (front foot well)

Ashtray

Fuse panel and cover

Fully shrouded steering column

Toughened windscreen and side and rear glass

Driver/passenger padded sun visors (grey)

Interior light

Seat belt anchorages

Coat hooks

CAB—OPTIONAL EQUIPMENT

Paint Finish

Cathodic electrocoat with chromic rinse

High gloss enamel

Tools

Jack and handle

Wheel nut wrench and spare wheel release spanner

Spring brake release spanners

Driver's suspension seat

Heated driver's seat

Fully adjustable single passenger seat

Passenger's single suspension seat

Seat belts

Side sun visor

Head lining stowage

Package tray behind seat

Roof vent

Opening ¼ vents

Heavy duty heater

Auxiliary cab heater

Heated rear view mirrors

Laminated windscreen

Tinted glass all round

Steering column lock

Air horns

Cigar lighter and socket

Roof marker lamps

Pantograph arm wipers

Headlamp wash

Front fog lamps

Front spot lamps

Reversing lamp

First aid kit

Breakdown warning triangle

Breakdown warning lamp

77 dB(A) noise insulation

Cab thermal insulation

Omit rear glass

PVC trim (ilo cloth)

Cab stripes

CHASSIS—OPTIONAL EQUIPMENT

Increased capacity fuel tank

Twin fuel tank (not four cyl models)

Heavy duty cooling

Body mounting brackets

Air cleaner restriction indicator

Styled stack pipe

Power steering (std on 14.7 tonnes + models)

Rear towing cross member and jaw

Rear recovery eyes

Lockable oil filler cap

Brake system protection valve

Water separator

Rear under run bumper

Heavy duty alternator

Heavy duty battery

Exhaust brake

Roof mounted air deflector

Under bumper air dam (not 16" or 17.5" wheels)

Thermo viscous fan

Trucks — Kerbweights (kg)

			wheelbase (mm)												
			3075	3200	3520	3600	3725	4250	4375	4850	4975	5000	5450	5600	6200
Model	(kg) GVM	(kg)* GTM	Kerbweights (kg)												
0608	6000	9500		2450			2516		2534		2567				
0708	6500	10000*		2460			2526		2544		2577				
0711	6500	10000*		2685			2751		2769		2802				
0712	6500	10000*		2683			2749		2767		2800				
0808	7490	10990*		2535			2602		2623		2657				
0811	7490	16250		2692			2758		2776		2809				
0812	7490	16250		2690			2756		2774		2807				
0911	8650	16250	3116			3182		3200		3332					
0912	8650	16250	3114			3180		3198		3330					
0914	8650	21600	3373			3438		3456		3588					
0911	9000	16250	3146			3212		3230		3362					
0912	9000	16250	3144			3210		3228		3360					
0914	9000	21600	3403			3468		3476		3618					
1011	10000	13500*	3264			3290		3332		3405					
1012	10000	13500*	3262			3288		3330		3403					
1011	10500	14000*	3280			3306		3348		3421					
1012	10500	14000*	3278			3304		3346		3419					
1111	11000	14500*	3336			3362		3432		3477			3572		
1112	11000	19000	3378			3404		3474		3419			3614		
1114	11000	22000	3427			3452		3522		3567			3662		
1117C	11000	26000	3771			3754		3828		3910			4005		
1117P	11000	26000	3824			3849		3918		3964			4058		
1311	12500	16000*	3647			3673		3743		3826			3883		
1312	12500	19000	3645			3671		3741		3824			3881		
1314	12500	22000	3694			3719		3789		3872			3929		
1317	12500	26000	4038			4063		4132		4215			4272		
1317	12500	26000	4092			4117		4186		4269			4326		
1311	13200	16700*	3651			3677		3747		3830			3887		
1312	13200	19000	3649			3675		3745		3828			3885		
1314	13200	22000	3698			3723		3794		3876			3933		
1317C	13200	26000	4042			4067		4136		4219			4276		
1317P	13200	26000	4096			4121		4190		4272			4330		
1512	14700	18200*				4236		4288				4305		4365	
1514	14700	22000				4237		4289				4306		4366	
1517C	14700	26000				4566		4617				4634		4694	
1517P	14700	26000				4620		4671				4688		4748	
1614	16250	19750*			4375			4453				4513		4590	4648
1617C	16250	28500			4658			4732				4794		4871	4928
1617P	16250	28500			4705			4779				4841		4918	4975

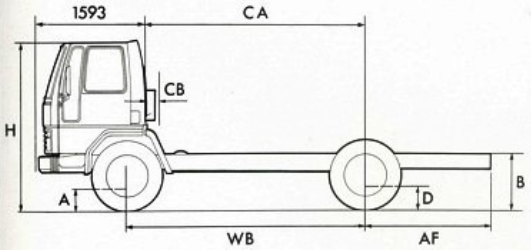
*GTM may vary according to final drive ratio specified

*overrun braked trailer only

All kerbweights and dimensions are estimated and may vary from those of production units.

Trucks — Dimensions (mm)

Model	GVM	A	B Unladen	B Laden	D	H U/L
0608	6000	162	870	715	155	2480
0708	6500	162	870	700	155	2480
0711	6500	162	865	715	155	2455
0712	6500	162	855	710	143	2455
0808	7490	170	885	705	162	2496
0811	7490	170	890	720	162	2475
0812	7490	170	885	710	150	2475
0911	9000	163	875	755	158	2495
0912	9000	163	875	755	158	2495
0914	9000	210	925	810	173	2535
1011	10000	210	945	805	231	2545
1012	10000	210	945	805	231	2545
1111	11000	210	985	835	205	2570
1112	11000	210	985	835	205	2570
1114	11000	210	965	850	173	2565
1117C	11000	229	985	850	184	2575
1117P	11000	229	985	850	184	2575
1311	13200	250	990	830	226	2595
1312	13200	250	990	830	226	2595
1314	13200	250	990	835	214	2590
1317C	13200	250	1025	870	205	2605
1317P	13200	250	1025	870	205	2605
1512	14700	249	1030	900	218	2650
1514	14700	249	1030	900	218	2650
1517C	14700	249	1035	915	218	2630
1517P	14700	249	1035	915	218	2630
1614	16250	216	1039	892	223	2660
1617C	16250	216	1039	916	223	2650
1617P	16250	216	1040	902	223	2650



Trucks — Dimensions (mm)

	W/base	CA	CB*	AF
06.08	3200	2820	215	1395
	3725	3345	215	1870
	4375	3995	215	2220
	4975	4595	215	2620
09.13	3075	2820	215	1395
	3600	3345	215	1870
	4250	3995	215	2220
	4850	4595	215	2620
	5450*	5195	195	3020
15	3600	3345	215	1100
	4250	3995	215	1220
	5000	4745	215	1470
	5600	5345	215	1870
16	3520	3265	215	1100
	4250	3995	215	1220
	5000	4745	215	1470
	5600	5345	215	1870
	6200	5945	215	2270

*5450mm wheelbase not available on 09 and 10 models.

*May be reduced to 185mm on models with 4 and 6 cylinder naturally aspirated engines and standard air cleaner.

All kerbweights and dimensions are estimated and may vary from those of production units.

Tandems — Kerbweights (kg)

			Wheelbase (mm)			
			3784	4260	4936	5500
Model	GVM	GTM*	Kerbweight			
2417C	22350	25850*	6048			
2417P	22350	25850*	6095			
2417C	24390	28500		6141	6207	6313
2417P	24390	28500		6188	6254	6360

*GTM may vary according to final drive specified
*Overrun braked trailer only

Tandems — Dimensions (mm)

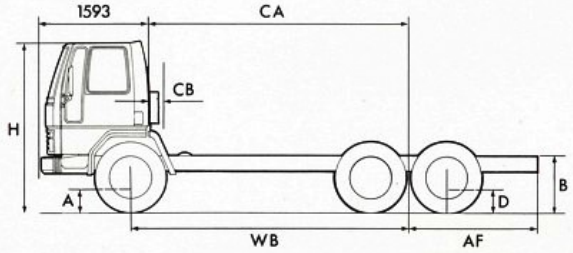
	W/base	CA	CB	AF
Model	*Truck*			
2417	3784	3529	215	1750
	4260	4005	215	2210
	4936	4681	215	2534
	5500	5245	215	2970
	Tipper			
2417	3784	3529	215	1750
	4260	4005	215	1750
	4936	4681	215	1750

Tandems — Dimensions (mm)

Model	GVM (kg)	A	B Unladen	B Laden	D	H U/L
2417 (Tipper)	22350	261	1106	1027	214	2630
2417 (Truck)	22350	261	1108	1033	214	2627
2417 (Tipper)	24390	261	1115	1037	214	2627
2417 (Truck)	24390	261	1105	1024	214	2619

Note: Chassis frame end heights will vary with wheelbase

All kerbweights and dimensions are estimated and may vary from those of production units.



Tippers — Kerbweights (kg)

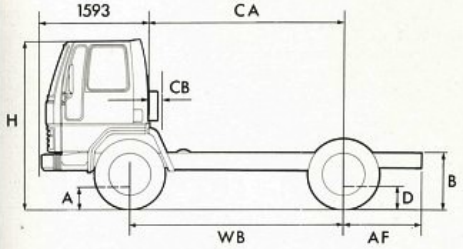
			Wheelbase (mm)				
			3075	3200	3520	3600	3850
Model	GVM (kg)	GTM (kg)*	Kerbweight (kg)				
0808	7490	10990*		2684			
0812	7490	16250		2884			
1311	12500	16000*	3785			3881	
1312	12500	19000	3783			3879	
1314	12500	22000	3828			3923	
1317C	12500	26000	4173			4267	
1317P	12500	26000	4226			4321	
1311	13200	16700*	3787			3883	
1312	13200	19000	3285			3881	
1314	13200	22000	3830			2925	
1317C	13200	26000	4180			4271	
1317P	13200	26000	4230			4325	
1512	14700	18200		4307		4374	
1514	14700	22000		4308		4375	
1512C	14700	26000		4637		4704	
1517P	14700	26000		4691		4758	
1617C	16250	28500			4689		4704
1617P	16250	28500			4736		4751

*GTM may vary according to final drive specified
*Overrun braked trailer only

Tippers — Dimensions (mm)

Model	GVM	A	B Unladen	B Laden	D	H U/L
0808	7490	170	870	705	150	2495
0812	7490	170	875	715	150	2480
1311	13200	250	980	840	226	2595
1312	13200	250	980	840	226	2595
1314	13200	250	980	840	214	2595
1317P	13200	250	980	850	205	2605
1317C	13200	250	980	850	205	2605
1512	14700	249	1030	885	218	2650
1514	14700	249	1030	885	218	2645
1517P	14700	249	1035	890	218	2635
1517C	14700	249	1035	890	218	2635
1617C	16250	261	1036	894	214	2616
1617P	16250	261	1036	894	214	2616

All kerbweights and dimensions are estimated and may vary from those of production units.



Tippers — Dimensions (mm)

Model	W/base	CA	CB*	AF
08	3200	2820	215	1100
13	3075	2820	215	1100
	3600	3345	215	1100
15	3200	2945	215	1100
	3600	3345	215	1100
16	3520	3265	215	1100
	3850	3595	215	1100

*May be reduced to 185mm on models with 4 and 6 cyl naturally aspirated engines and standard air cleaner

Kerbweight — Artic Units

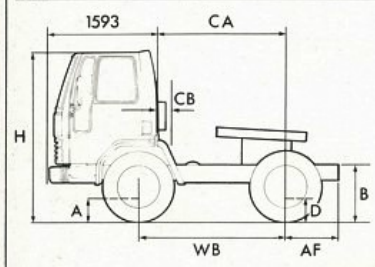
Model	GVM (kg)	GTM (kg)	Kb/wt (kg)
1712	10000	17000	3366
1912	10500	19000	3366
2014	12500	20000	3680
2114	12500	21000	3732
2517C	15000	25000	4642
2517P	15000	25000	4689
2817C	15000	28500	4644
2817P	15000	28500	4693

Artics — Dimensions (mm)

Model	GVM (kg)	A	B Unladen	B Laden	D	H U/L
1711	17000	229	940	815	205	2545
1912	19000	229	930	820	205	2590
2014	20000	250	960	840	214	2625
2114	21000	250	960	840	214	2625
2517C	25000	249	1027	918	223	2650
2517P	25000	249	1041	932	223	2650
2817C	28500	249	1027	918	214	2650
2817P	28500	249	1041	932	214	2650

Artics — Dimensions (mm)

Model	w/base	CA	CB	AF
17-28	3000	2745	215	940



MORE OF EVERYTHING

With Cargo we are providing a choice of more than 60 options to further improve aerodynamic efficiency and to make the cab an even more comfortable place in which to work.

For example an under bumper dam will significantly reduce drag, and improve fuel consumption. If the vehicle is fitted with a box body or is hauling a high bodied trailer then drag can be reduced further by specifying the styled roof mounted air deflector.

Cab options include such features as extra stowage pockets, driver's suspension seat, which like the standard seat, may be heated, fog and spot lamps, and heated rear view mirrors.

More range between fuel stops is provided by larger fuel tanks and, on most models, by specifying twin tanks.

Chassis options, depending on model, include such items as diff locks and trailer towing packs for drawbar operation as well as the normal extensive range of gearbox, engine and wheelbase options.

In addition to these regular production options our Special Vehicle Operations have engineered a wide range of options designed for more specialised purposes.

Already there are more than 20 Special Vehicle Options ranging from such items as non standard paint, front mounted exhaust systems and crankshaft driven power take offs.

There are also complete vehicle packages to provide low loader chassis for brewery and delivery applications where low loading height is critical, road sweeper and refuse collection packages and a tanker conversion to enable compliance with regulations governing the carriage of petroleum spirit.

All options from SVO are covered by the same comprehensive 12 month unlimited mileage warranty conditions which apply to all Cargo derivatives.

CARGO

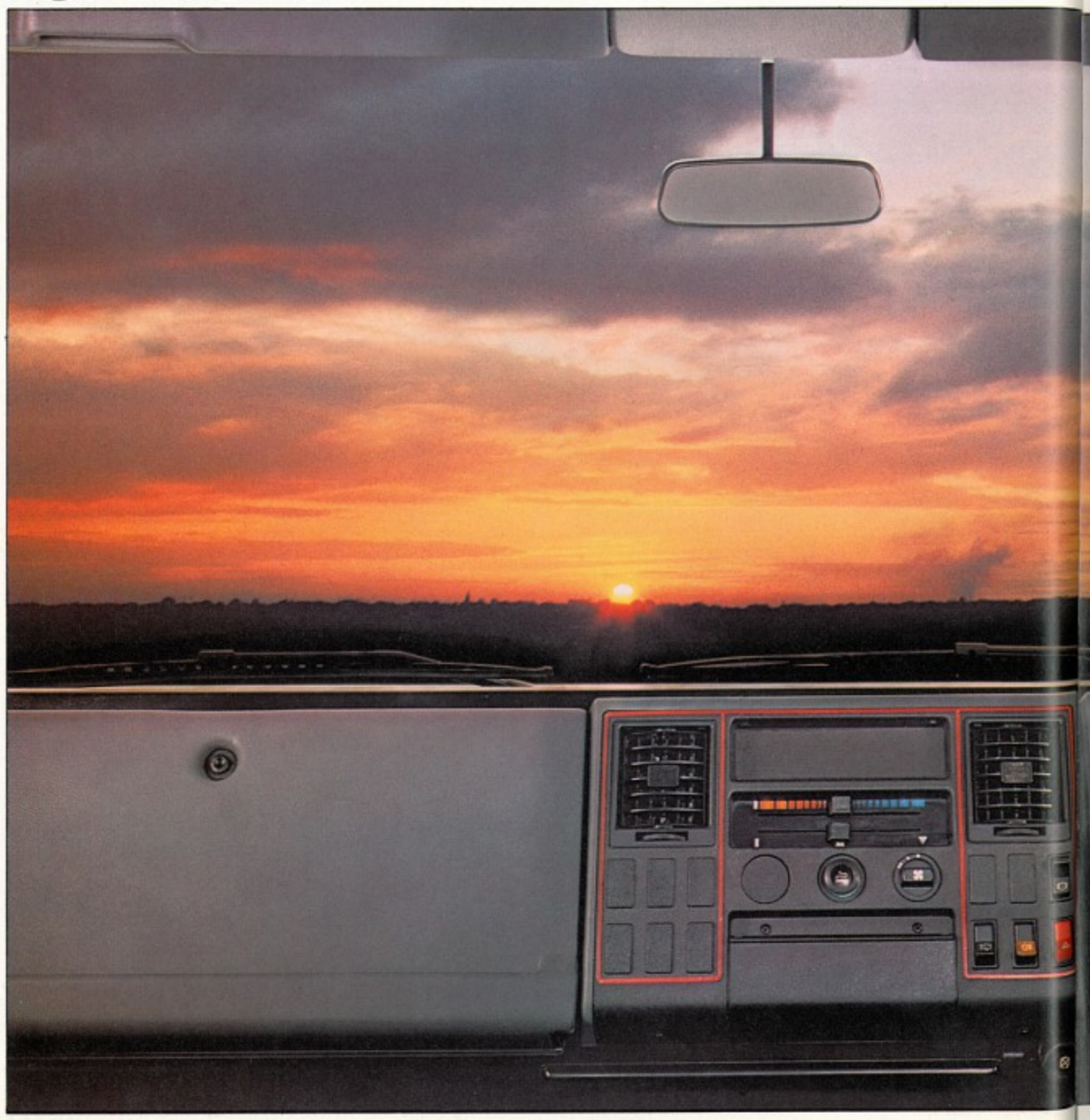
We have seen that, from the outset, Cargo has been designed to reduce operating costs by all means possible.

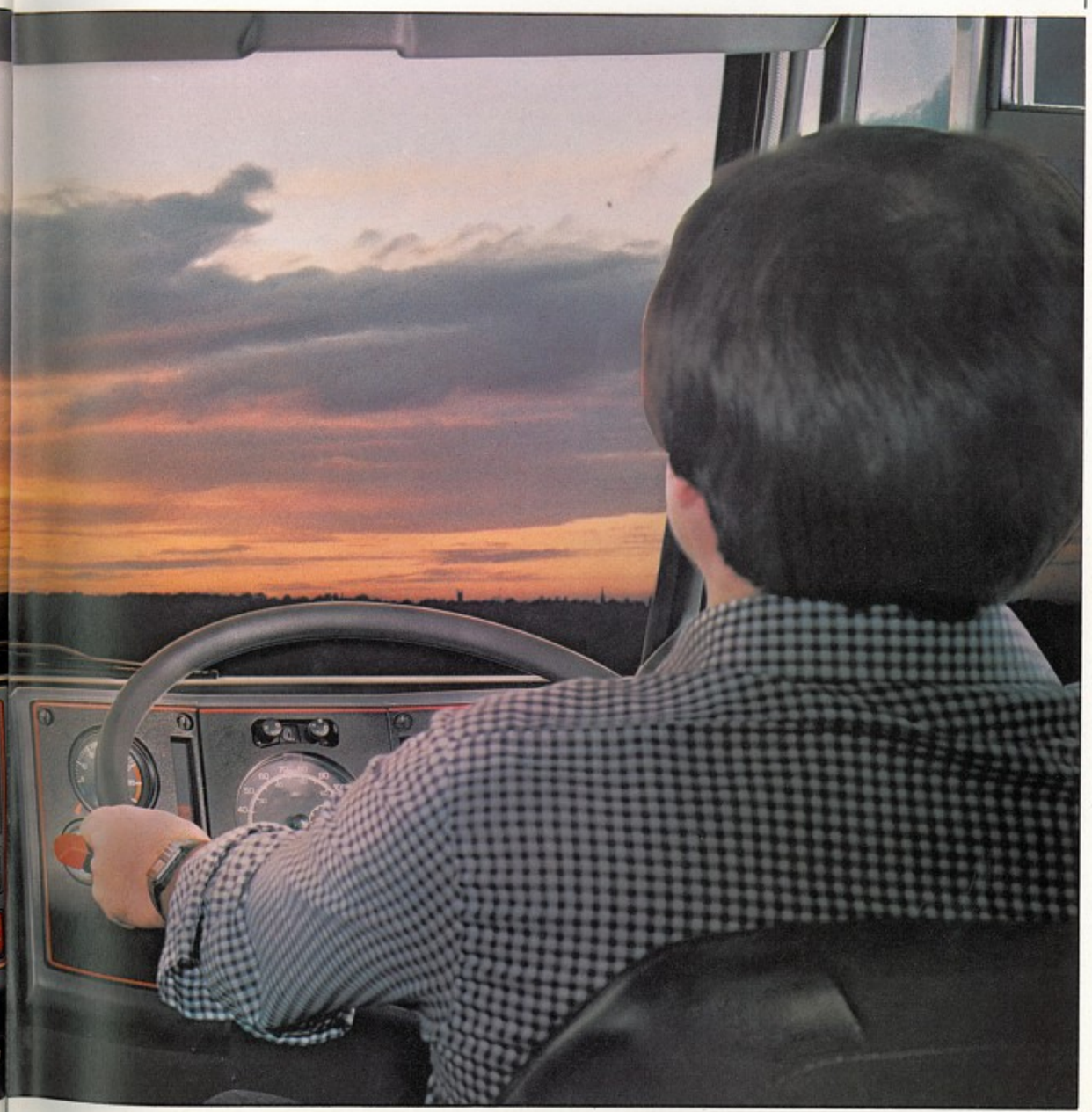
First class access to all service components means that downtime is kept to a minimum, and, in many cases, new technology has resulted in components not requiring any maintenance at all.

Cargo's smooth lines ensure that fuel consumption is also kept to a minimum while maintaining the shortest possible journey times.

Cab comfort has also been carefully considered to provide the best possible environment for the driver — an important safety factor in today's congested traffic conditions and Cargo's unrivalled glass area ensures that visibility is unimpaired at all times — another important safety factor.

Finally our extensive range of chassis and cab options means that Cargo can be specified to suit virtually any operator requirement and all options are covered by the same comprehensive 12 month unlimited mileage warranty terms that apply to the basic chassis.





Cargo is backed by more than 130 Truck Specialist Dealers in the UK of which more than 120 have individual purpose built facilities.

Our dealers have what are probably the best equipped servicing centres anywhere. In addition to the latest in servicing tools and equipment all employ technicians and staff who have undergone courses at our Service Training School.

Minimum downtime is ensured by the comprehensive range of parts stocked by every dealer and this is further backed by our Parts Distribution Centre at Daventry — which is one of the world's largest and most modern.

In addition the Ford Care System Credit Card provides operators with a credit card facility for 24 hour recovery, emergency repairs, and, by arrangement with the Ford dealer concerned, for routine maintenance.

The Ford Operating Cost and Analysis System (F.O.C.A.S.) provides confidential up to the minute analysis of operating and running costs in line with the national average for each type of vehicle.

Ford Motor Credit Company Ltd provides a full range of finance plans to suit all operators and is administered through a national network backed by specialists in the fleet and leasing business.

The Ford Code Scheme provides a framework for technical collaboration between Ford and the bodybuilding industry. By complying with Ford standards for body and equipment mounting, the bodybuilder safeguards the Customer Assurance for the chassis, maintenance, serviceability and improves reliability.

ON THE ROAD