

DAVID BROWN



INSTRUCTION BOOK

**850, 880 and 990 Tractors
Implematic and
Implematic Livedrive**

Pub. 9-5712

David Brown Tractors Ltd

A Tenneco Company

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DAVID BROWN

850, 880 and 990 TRACTORS

IMPLEMATIC and IMPLEMATIC LIVEDRIVE

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VAD 2C/40	—	VAD 2D/40
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VAD 2C/36	—	VAD 2D/36
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DIESEL ENGINE TRACTORS

INSTRUCTION BOOK

If required, further copies of this book may be obtained (only from your dealer) at nominal cost



By Appointment
to Her Majesty Queen Elizabeth II
Manufacturers of Agricultural Machinery
David Brown Tractors Limited

DAVID BROWN TRACTORS LIMITED

MELTHAM HUDDERSFIELD YORKSHIRE

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Introduction

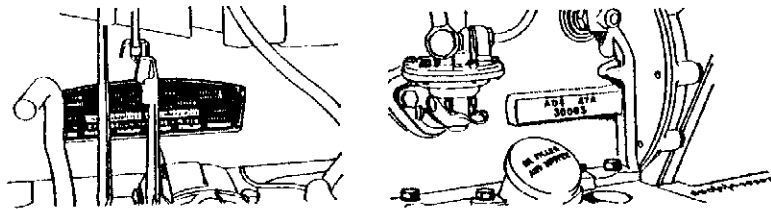
The David Brown tractor, in addition to having the most comprehensive specification of any tractor in volume production in the world, is constructed to close manufacturing tolerances from the finest materials. The potential life is long and efficiency high, but to retain these requires the co-operation of the user whose responsibility it now becomes to carry out the regular greasing and maintenance outlined in this book. A little time spent making oneself familiar with the servicing procedure, and conscientious attention to carrying it out, will be amply repaid in the long run.

Section 1 deals with the routine maintenance which must be carried out regularly (the modern equivalent of feeding and grooming the horse—and just as important).

Section 2 contains, in alphabetical order, a detailed account of the general servicing.

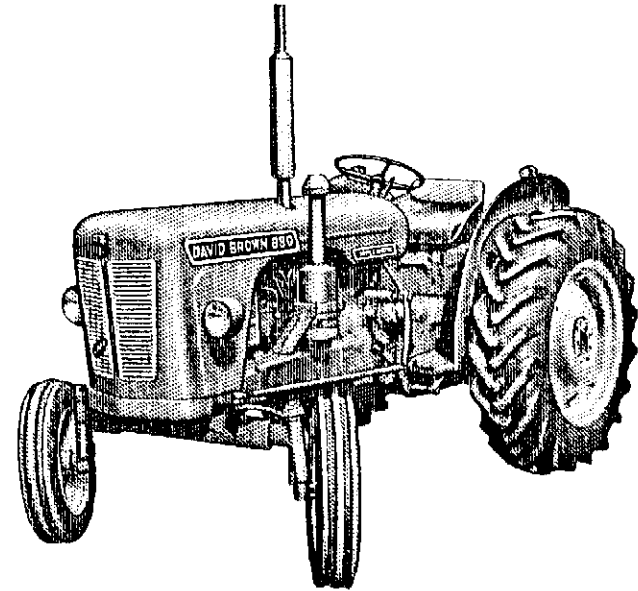
Section 3 gives technical data, tables of speeds and capacities, etc., followed by a list of accessories and allied equipment.

Your David Brown dealer will be pleased to give you any advice and assistance you may require. In order to identify the exact model please quote the FULL PREFIX and SERIAL NUMBER of the tractor and also the ENGINE TYPE and NUMBER.



Name Plate and Serial Numbers

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Contents

	Page
SECTION 1—MAINTENANCE	4-13
Greasing Diagram	7
Recommended Lubricants	12
SECTION 2—SERVICING INFORMATION	14-35
Wiring Diagram	35
SECTION 3—INFORMATION AND DATA	36-43
Capacities	37
Alternative Equipment and Accessories	44
Allied Equipment	45

Section I

Regular Maintenance

To avoid expensive overhauls, excessive wear, and premature failure; **regular maintenance is essential**. For this reason the David Brown maintenance procedure has been made very simple. It consists of a daily inspection and additional attention 16 times each 1 000 hours (approximately 1 year). The work is divided into five Service Tasks; A, B, C, D and E. It is only necessary to keep an eye on the hour meter, and when the hours shown in the facing table are reached, carry out the service task indicated at the first suitable opportunity. The full scheme is completed in 1 000 hours and the routine starts again from the beginning.

Tables of the service tasks will be found at the end of this book. Spaces have been left against the appropriate items so that the date when the task is completed can be entered by the operator. This will give a record of the tractor servicing and will assist in ensuring that it is carried out regularly and at the right time.

TABLE OF SERVICE TASKS

Hour Meter Reading	Task A	Task B	Task C	Task D	Task E
60	X	†			† (1 to 4)
125	X	X			
185	X				
250	X	X	X		
315	X				
375	X	X			
440	X				
500	X	X	X	X	
560	X				
625	X	X			
685	X				
750	X	X	X		
815	X				
875	X	X			
940	X				
1 000	X	X	X	X	X

† New and Reconditioned Tractor only.

Following the recommended times will ensure adequate servicing under normal temperate climate and working conditions. In exceptionally wet conditions more frequent greasing is recommended. In very dusty conditions such as stationary work or in hot dry climates, extra oil and filter changes and attention to the air cleaner should be made.

DAILY INSPECTION

1. **Inspection**—Check for oil, water and fuel leaks.
2. **Engine Oil**—Top up the engine sump if below the safe limit.
3. **Fuel**—Top up the fuel tank to within 1½ in. (4 cm) of the top. This ensures a good supply and reduces condensation in the tank. Visually check the fuel water trap for excessive dirt or water. Clean if necessary.

4. **Air Cleaner**—In dusty conditions clean and refill the air cleaner oil bath to the bead with new engine oil. Remove and clean the detachable gauze element. Refit the sealing rings.



5. **Greasing**—In dusty or wet and muddy conditions apply lubricant to the following points (see Fig. 1.). Clean the nipples before applying the gun.

SAE 140 OIL to the—

King Pins.

Front Axle Trunnions (2 points).

GREASE to the—

Front Hubs.

Steering Box Cross-shaft (3 points).

Rear Hubs.

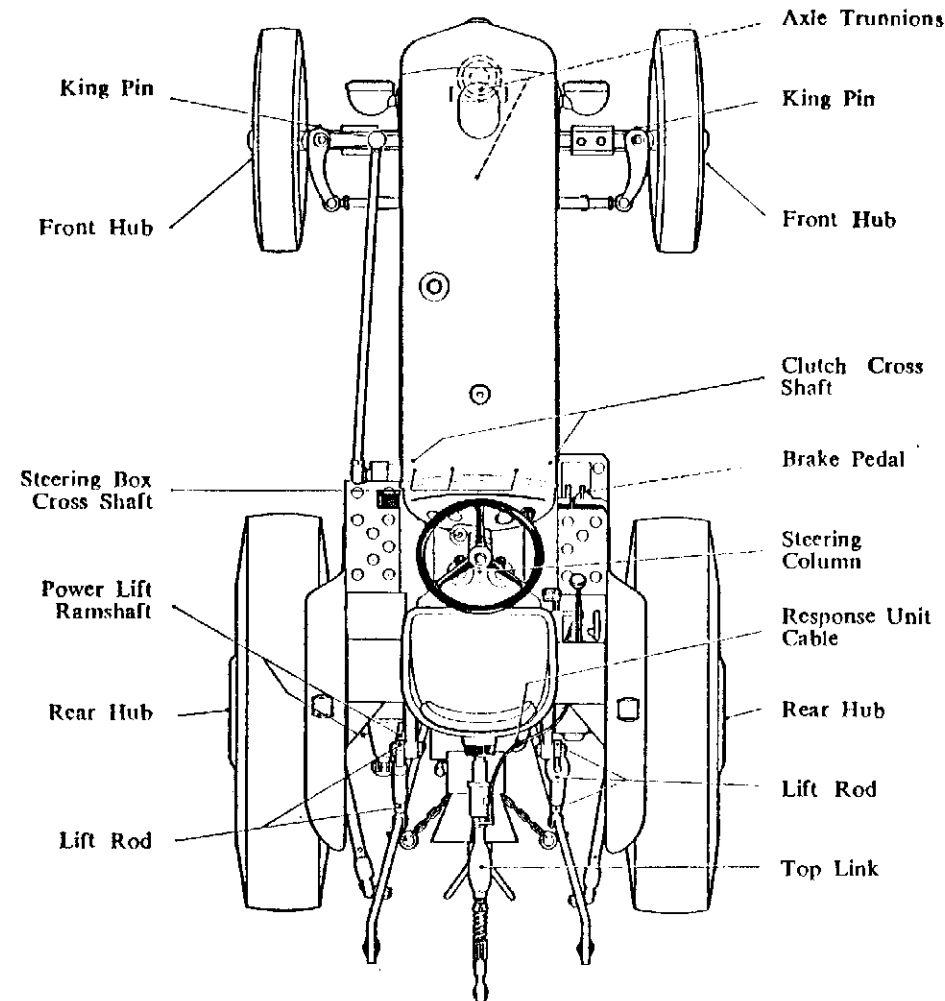


FIG. 1. Greasing Chart

In addition to the above points, the water pump should be greased with High Melting Point Grease every 500 hours only

SERVICE TASK A

(Every 60 hours under normal conditions—more often if necessary).

1. **Air Cleaner**—Clean and refill the air cleaner oil bath to the bead with new engine oil. Lever out the wire filter, clean and replace. Ensure the inlet pipe and pre-cleaner are clear. Refit the rubber sealing rings.
2. **Gearbox Oil**—Top up the gearbox oil to within the safe marks on the dip stick if necessary.
3. **Water**—Top up the radiator, if necessary, to within 1 in. (2.5 cm) of the neck to allow for expansion. Release the cap slowly as the System is pressurised. **Note**—the Radiator Hatch Cover may be released by turning the screw with the back of the Isolating Switch Key.
4. **Greasing**—Apply lubricant after cleaning the nipples.

SAE 140 OIL to the—

King Pins.

Front Axle Trunnions (2 points).

GREASE to the—

Front Hubs.

Steering Box Cross-shaft (3 points).

Steering Column top bearing.

Clutch Cross-shaft. (2 points).

Rear Hubs.

Brake Pedal (1 point).

Response Unit—Top Link Cable.

Hydraulic Lift Ram-shaft (2 points).

Top Link

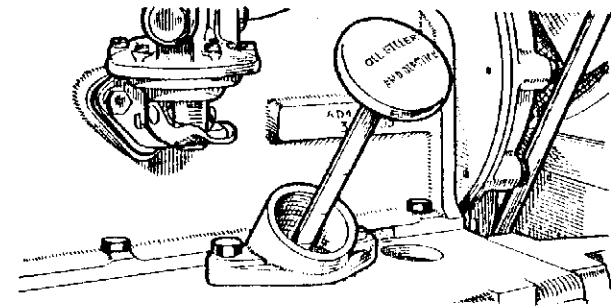
Lift Rods (5 points).

5. **Tyres**—Inflate tyres to correct pressures—see Driver's Guide page 25. **Note**—When using 5.00-15 tyres on 850 Tractor at speeds in excess of 10 mile/h the pressure should be increased to 32 lb/in².
6. **Batteries**—Top up the batteries with distilled water to just above the tops of the separators. Dry off the top of the battery and ensure the vent holes in the caps are clear. The batteries will require more frequent attention in hot, dry conditions.
7. **Controls**—Lubricate the control rod pivots with new engine oil. In dry, dusty conditions these points are best left unlubricated.
8. **Clutch**—Check free-play. Reset if less than $\frac{1}{4}$ in. (12 mm).

SERVICE TASK B

(Every 125 hours under normal conditions—more often if necessary).

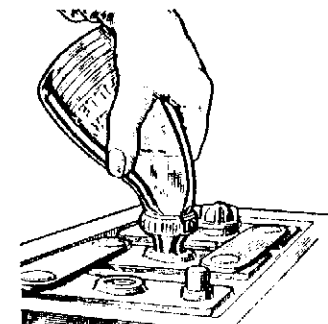
1. **Engine Oil Change**—Drain the engine sump whilst hot. Refill to within the safe marks on the dipstick with new oil.
2. **Final Drive Oil Check**—Top up the final drive reduction units to the plug with new oil if necessary. Check that the hole in the breather bolt is clear. (The uppermost bolt on the cover plate).
3. **Engine Breather**—In dusty conditions clean or replace engine breather (see Task C).



SERVICE TASK C

(Every 250 hours under normal conditions—more often if necessary).

1. **Oil Filter Renewal**—While the engine oil is being drained, remove the oil filter and fit a new element. (Some tractor identity plates may incorrectly call for filter replacement every 360 hours).
2. **Engine Breather**—Remove and clean the engine breather in petrol or paraffin, allow to drain then replace. On 990 models it is only necessary to fit a new element. The cover should not be over-tightened.



SERVICE TASK D

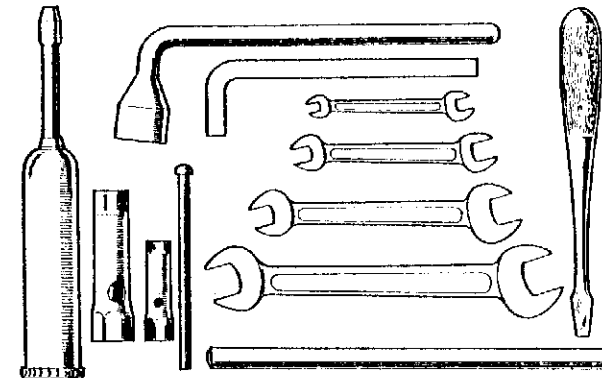
(Every 500 hours under normal conditions—more often if necessary).

1. **Gearbox Filter**—Drain the gearbox and transmission into a clean container. Remove the sump and clean the gauze and magnetic filter. Allow the oil to stand while completing the servicing operations. Refill with the original oil except for the last gallon which should be discarded. Top up with new oil.
2. **Fuel Water Trap**—Clean out the fuel water trap and sediment bowl. Refill the bowl with fuel before replacing to prevent an excessive amount of air entering the system. Bleed at the inlet to the first filter.
3. **Injectors**—Remove the injectors for cleaning by a David Brown or C.A.V. agent. Cleaning at this period is **essential** otherwise re-conditioning will be necessary before the normal time of 1 500 to 2 000 hours use.
4. **Valve Clearance**—Check and reset the valve clearances.
5. **Fan Belt**—Check the tension by deflecting midway between the pulleys. Adjust this, if necessary, to be 1 in. (2.5 cm).
6. **Fuel Filter**—Renew the first fuel filter element and vent the system.
7. **Inspection**—Check over the tightness of external nuts, etc.
8. **Water Pump**—Apply high melting point grease sparingly to the water pump greaser.
9. **Dynamo**—Apply one or two drops of thin oil to the lubricating pad at the end of the dynamo. Replace the rubber plug.

SERVICE TASK E

(Every 1 000 hours under normal conditions—more often if necessary).

1. **Engine Oil Pump**—Clean the oil pump gauze.
2. **Gearbox**—When hot, drain the oil from the two plugs, gearbox and rear hole. Replenish through the PTO cover with new oil.
3. **Final Drives**—When hot, drain the oil from the final drive reduction housing and refill to the top plug with new oil.
4. **Belt Pulley**—Where fitted, drain off the oil and refill to the level of the lower plug with the same grade of oil as used for the Gearbox and Hydraulic System.
5. **Fuel Filter**—Renew the second fuel filter element at least once a year.
6. **Inspection**—Check the front hub, front axle and steering for wear and adjustment.
7. **Brakes and Clutch**—Check the adjustment of the brakes and clutch.
8. **Top Link Unit**—If sluggish response is experienced when using implements controlled by the implematic system, ensure that the Top Link Response Unit Spring Housing is free to slide and not choked with dust and dirt. Dismantle if necessary to clean.



APPROVED LUBRICANTS—BRITISH ISLES

UNIT	S.P.	CASTROL	ESSO	MOBIL	SHELL	VIGZOL
Engine and Air Cleaner	Energol Diesel D SAE 20W	Agricastrol HD 20	Tractorlube 20	Mobiland Diesel 20 Tractor Oil	Rotella 20/20W	New Ace 20/20W
Transmission and Hydraulic System, Belt Pulley and Steering Box	Energol Tractor Gear Oil 50	Agricastrol Heavy	Tractorlube Gear Oil ST 90	Mobiland Gear 90 Tractor Oil or Mobilube C 90	Tractor Oil 50	Y50 Tractor Oil
Reductions King Pins and Front Trunnions	Energol Tractor Gear Oil 140	Agricastrol Gear Oil Medium	Tractorlube Gear Oil ST 140	Mobiland Gear 140 Tractor Oil	Tractor Oil 140	Gearoil 140
Power Steering	Energol Automatic Transmission Fluid	Hysin 70	Eso Automatic Transmission Fluid	Mobilfluid 200	Donax T6	DL 10 Hydraulic Oil
Grease Points	Energol Universal	Agricastrol AP Grease	Eso Multi-Purpose Grease H	Mobilgrease MP	Farm Grease Universal	L2 Lithium Grease
Multi-Purpose Oil*	Energol Tractor Oil Universal	Agricastrol Multi-Use	Eso Tractorlube (Universal)	Mobiland Universal	Tractor Oil Universal	Vitamatic Tractor Oil

*NOTE—Multi-purpose oils may be used, if desired, for the Engine, Transmission and Reduction Units. They should not be used in engines in poor mechanical condition.

HIGH SULPHUR FUELS—Diesel fuel of the highest quality is recommended for use in David Brown engines. If for some reason low grade fuel having a sulphur content of more than 1% is used, a more highly detergent oil is recommended. The following types are suitable: B.P. Energol DSI, Agricastrol HD-1 or Castrol CR, Esso Tractorlube HDX, Mobiland 851 Tractor Oil Series or Delvac Oil S-100 series, Shell Rotella T, Vigzol New Ace Sup./1.

APPROVED LUBRICANTS—OVERSEAS

UNIT	TEMPERATURE	S.P.	CASTROL	ESSO	MOBIL	SHELL	VIGZOL
Engine and Air Cleaner	Below -7°C (Below 20°F)	Energol DD 10W	Castrol CR10 or Agricastrol HD10	Essolube HD 10W	Mobiloil 10W or Delvac Oil 910	Rotella 10W	New Ace 10W
	-7°C to 32°C (20°F to 90°F)	Energol Diesel DD 20W	Castrol CR20 or Agricastrol HD20	Essolube HD20	Mobiloil Arctic or Delvac Oil 920	Rotella 20/20W	New Ace 20/20W
	Above 32°C (Above 90°F)	Energol Diesel DD 30	Castrol CR30 or Agricastrol HD 30	Essolube HD30	Mobiloil A or Delvac Oil 930	Rotella 30	New Ace 30
Transmission and Hydraulic System, Belt Pulley and Steering Box	Below -7°C (Below 20°F)	Energol SAE 80	Castrol ST80 or CR30 or Agricastrol Medium	Eso Gear Oil ST80	Mobilube C90 or Mobiloil A or Delvac Oil 930	Dentax 80 or Rotella 30	Gearoil 80 or New Ace 30
	-7°C to 32°C (20°F to 90°F)	Energol SAE 90	Castrol ST or Agricastrol Heavy	Eso Gear Oil ST90	Mobilube C90	Dentax 90	Gearoil 90
	Above 32°C (Above 90°F)	Energol SAE 140	Castrol D or Agricastrol Gear Oil Medium	Eso Gear Oil ST140	Mobilube C140	Dentax 140	Gearoil 140
Reductions King Pins and Front Trunnions	All Temperatures	Energol SAE 140	Castrol D or Agricastrol Gear Oil Medium	Eso Gear Oil ST140	Mobilube C140	Dentax 140	Gearoil 140
Power Steering	All Temperatures	Energol Automatic Transmission Fluid	Hysin 70	Eso Automatic Transmission Fluid	Mobilfluid 200	Donax T6	DL 10 Hydraulic Oil
Grease Points	All Temperatures	Energol L2	Castrol LM or Agricastrol AP Grease	Eso Multi-Purpose Grease H	Mobilgrease MP	Retinax A	L2 Lithium Grease
Multi-Purpose Oil*	-7°C to 32°C (20°F to 90°F)	Energol Tractor Oil Universal	Agricastrol Multi-Use	Eso Tractorlube Universal	Mobiland Universal	Tractor Oil Universal	Vitamatic Tractor Oil

*NOTE—Where available Multi-purpose oils may be used for Engine, Transmission and Reduction Units if desired for temperatures between -7°C and 32°C (20°F and 90°F). They should not be used in engines in poor mechanical condition.

HIGH SULPHUR FUELS—Diesel fuel of the highest quality is recommended for use in David Brown engines. However, in certain countries it may not be possible to obtain such fuel, and where the sulphur content exceeds 1% a more highly detergent engine oil should be used. The following types are suitable: B.P. Energol DSI, Castrol CR-11 or Agricastrol HD-11, Esolube HDX, Mobil Delvac Oil S-100 series, Shell Rotella T, Vigzol New Ace Sup./1.

Section 2 Servicing Information

The following pages give sufficient information to enable the driver-mechanic to carry out the routine servicing and adjustments required to maintain the high efficiency of the tractor.

Before removing any caps, plugs or covers, all surrounding dirt must be cleaned off. Dust or dirt must not be allowed to enter any part of the tractor at any time.

PRECAUTIONS IN FROSTY WEATHER

If the tractor is to stand for any length of time the radiator and cylinder block must be drained unless anti-freeze is used. The radiator cap must be removed to ensure complete drainage.

ANTI-FREEZE SOLUTION

If anti-freeze solution is used in diesel engines there is the possibility of severe corrosion of the cylinder block taking place, with subsequent blockage of the radiator, etc., unless the following precautions are taken. (1) Use only a brand having a manufacturer's guarantee that it has been formulated for use in diesel engines. (2) Ensure that the system is free from corrosion by flushing the system with a reliable flushing compound. (3) Use only pure water for making the mixture, i.e., fresh rain water, some forms of tap water are unsuitable. (4) When topping-up, use a mixture of anti-freeze and water. (5) Discard at the end of the winter (never keep the mixture for future use), flush the system and refill with a summer coolant to keep the system free from corrosion. (6) Ensure that the system is free from leaks at hose joints, etc. (7) If cylinder head gasket blowing is suspected, attend to the leakage at once, and refill with a brand new anti-freeze mixture.

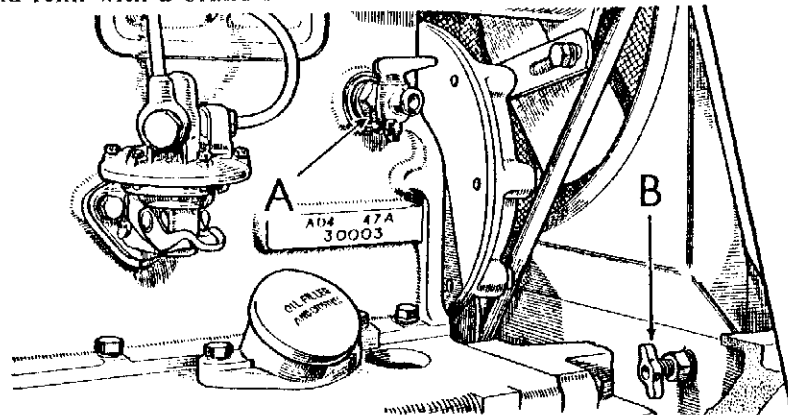


FIG. 2. 990 Tractor Drain Taps

A. Cylinder Block
Drain Tap

B. Radiator Drain Tap
(Screw anti-clockwise to drain)

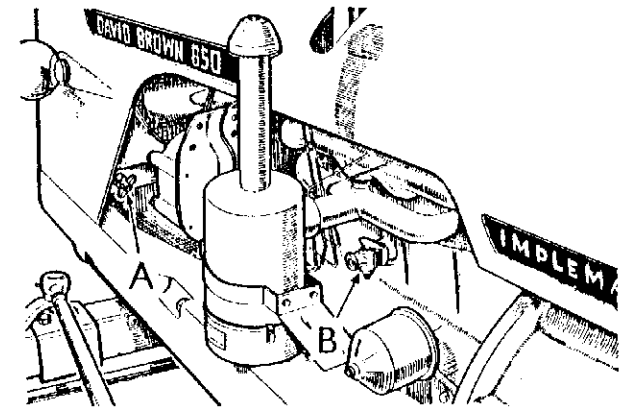


FIG. 3. 850 and 880 Drain Taps

A. Radiator Drain Tap

B. Cylinder Block Drain Tap

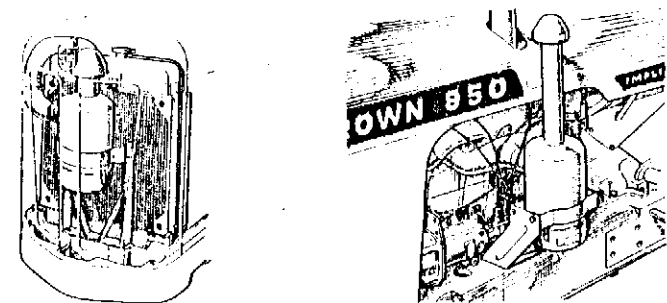
AIR CLEANER

On the 990 tractor the air cleaner is fitted in front of the radiator and the grill must be removed to gain access. To remove the pre-cleaner it is necessary to remove the bonnet.

In dry and dusty weather the oil bath may require changing several times a day. In normal, and especially in damp conditions the oil may not be contaminated in several weeks. Inspect periodically and clean when there is more than $\frac{1}{4}$ in. (6 mm) depth of solid sediment or if the oil is very dirty. Let experience and conditions guide future inspection.

Release the clips and lower the oil pan. The wire mesh is a detachable unit and should be levered out of the cleaner body. Clean thoroughly in paraffin, relubricate with engine oil before replacing. Empty the oil from the pan, clean with a fluffless rag, refill to the step on the outside of the pan with new engine oil, re-fit rubber sealing rings.

Every third or fourth oil change, remove the pre-cleaner and clean out the dust. Inspect the inlet pipe while the pre-cleaner and oil pan are off and remove any dirt or obstruction.



990 Tractors

850 and 880 Tractors

FIG. 4. Air Cleaners

BATTERIES

In hot weather, or climates, the electrolyte should be checked frequently and topped up to just above the separators, with distilled water or soft clean rain water. The top of the battery should be dried off and cleaned. Smear a little petroleum jelly on each terminal.

BONNET REMOVAL.

Remove the front grilles by pulling out at the top and lifting clear, disconnect the wires to the head lamps by pulling apart the connectors under the right hand side of the bonnet. Remove the two thumb screws inside each side of the bonnet front at the bottom, release the two spring clips at the rear which hold down the top to the fuel tank. Remove the silencer by pulling upwards. Lift the bonnet over the fuel tank filler as shown in Fig. 5 and draw forward. It can then be lifted clear of the tractor as shown in Fig. 6.

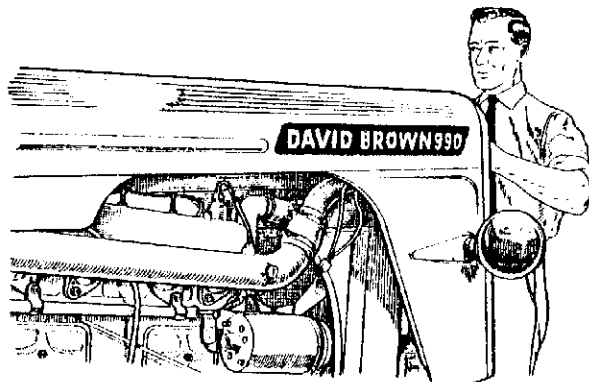


FIG. 5. Lifting the Bonnet

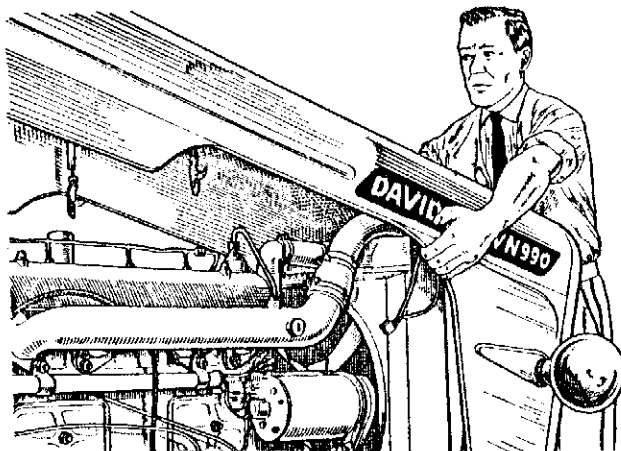


FIG. 6. Removing the Bonnet

BRAKES

The brake gear is not compensated and each side requires individual adjustment. Jack up both rear wheels and with the pedals interlocked press them approximately $1\frac{1}{2}$ in. (4 cm). Pull up the hand brake just sufficient to 'hold' the brakes in this position. At the front end of the brake rods, just under each foot plate, release the locknuts A, Fig. 7 and screw each adjusting screw one way or the other until both wheels are equally stiff to turn by hand. Retighten the locknuts and release the hand brake. Ensure that the wheels are free to turn and the brakes not binding. A greaser is provided as shown at D, Fig. 7.

When the limit of adjustment has been reached it is an indication that the brakes require relining.

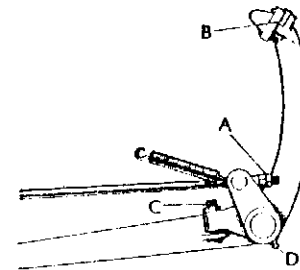


FIG. 7. Brake Adjustment
A. Lock Nut B. Locking Bar
C. Locking Bar Alignment Adjuster

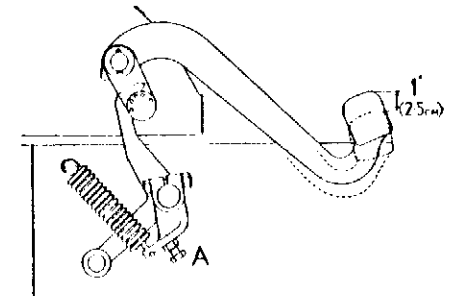


FIG. 8. Clutch Adjustment
A. Free Play Adjusting Nut

CLUTCH

Check the free-play regularly. This must not be allowed to fall below $\frac{1}{2}$ in. (12 mm). Adjust if necessary as follows referring to Fig. 8.

- When an overload release is fitted, slacken back the lock nut on the rod to the hand lever to give $\frac{1}{4}$ in. (6 mm) or so clearance.
- Adjust bolt A, to give $\frac{3}{4}$ in. to 1 in. (2.0 to 2.5 cm) free movement of the clutch pedal.
- Reset the adjustment on the rod to the hand clutch to give $\frac{1}{8}$ in. (1.5 mm) clearance.

If it is found with the 2-stage clutch (Livedrive) that the PTO/Belt Pulley cannot be freed completely with the pedal fully depressed, new transmission clutch facings will be required. If not excessively worn a new period of life may be obtained by adjustment to the three adjustable pegs in the clutch. Adjustment to these should only be carried out by a competent service engineer and your David Brown dealer should be consulted.

COOLING SYSTEM

Only clean soft water should be used in the cooling system except for the inclusion of anti-freeze or corrosion inhibitor.

When anti-freeze is used in diesel engines it is essential to remove corrosion deposits before introducing it. To do this a proprietary flushing solution may be used or alternatively the system filled with a 4% solution in water of citric or tartaric acid. Run the engine for 20 minutes, drain and thoroughly flush with clean water.

To prevent rust from forming during the summer a corrosion inhibited summer coolant should be used. The inhibitor in this, as also in anti-freeze, becomes exhausted after a few months of use and must be discarded after use.

Ensure that at all times the hose connections are tight and the system free from leaks.

CYLINDER HEAD TIGHTENING

The sequence of tightening the cylinder head is shown in Fig. 9. If a Torque wrench is available this should be set to 90 lb ft (12.5 kg/m). The valve clearances should be checked after tightening the head.

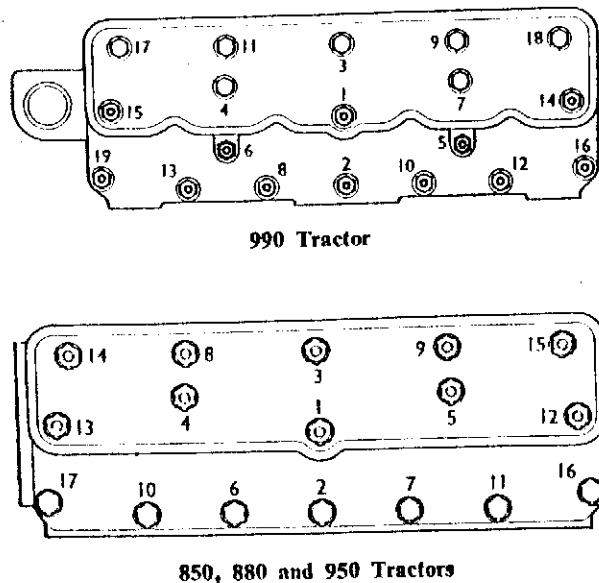


FIG. 9. Cylinder Head Tightening Sequence

DYNAMO

Apply a few drops of lubricating oil to the pad through the hole in the centre of the end cover after removing the rubber plug. Replace the plug afterwards.

After about 2 year's use the dynamo should be overhauled by a David Brown or Lucas Agent.

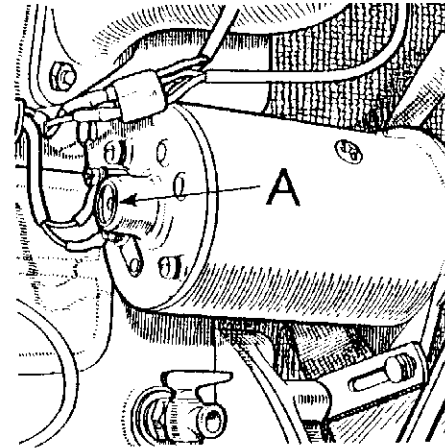


FIG. 10. Dynamo Lubrication
A. Oil Hole
(replace rubber plug)

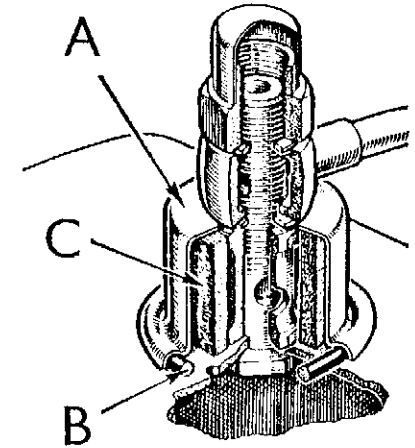


FIG. 11. Engine Breather 990
A. Cover C. Element
B. Sealing Ring

ENGINE BREATHER

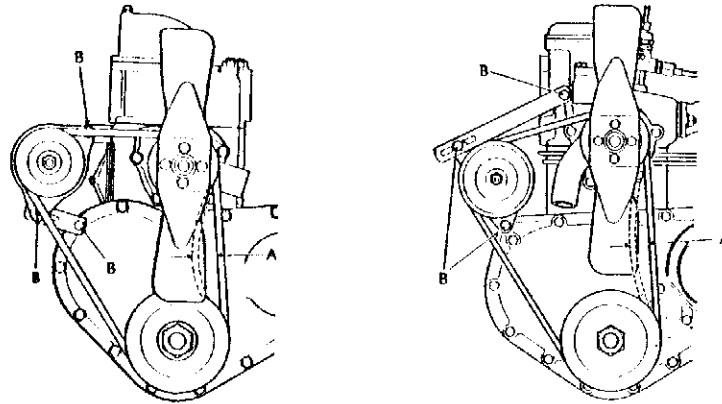
On 850 and 880 tractors the engine breather is a push fit in the rocker cover and its pipe a push fit in the manifold. Removal is effected by pulling the whole assembly upwards. Cleaning consists of washing in petrol or paraffin and allowing to drain.

On the 990 tractor the breather has a replaceable paper element. Unscrew the pipe from the manifold and from the top of the breather housing. Remove the nut from the top of the housing, lift off the housing. Remove the old filter and fit a new one.

If the threaded connection turns when trying to remove the pipe, it will be necessary to remove the rocker cover and prevent the connection from turning with a screwdriver.

FAN BELT

Refer to Fig. 12. The fan, dynamo and water pump drive belt should never be run taut. The correct adjustment allows one inch of deflection on the drive side of the fan pulley. If incorrect, slacken the bolts B, and pivot the dynamo about the lower bolt to give the correct tension. Retighten the clamping bolts after adjustment has been made.



990 Tractor
850 and 880 Tractors
FIG. 12. Fan and Dynamo Belt Drive Adjustment
A. Deflection 1 in. (2.5 cm) B. Securing Bolts

FRONT AXLE

Refer to Figs. 13 and 14 for the location of the grease points. The nipples should be carefully cleaned before application of the grease gun. Jack up the front of the tractor and check the steering king pins and axle trunnion bearings. If wear is apparent, through neglecting to grease regularly, your David Brown dealer should be consulted.

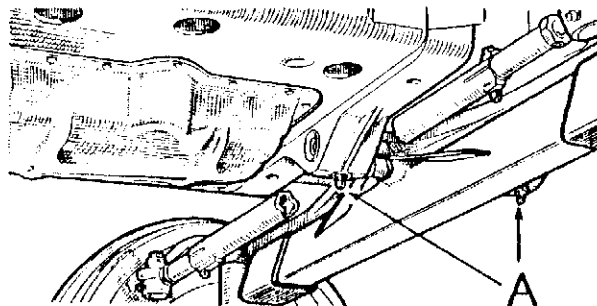


FIG. 13
Front Trunnion Greasing
A. Greasers

FRONT HUB

Clean the grease nipple before applying the grease gun. Lubricate until grease is seen at the inner end of the hub. Besides lubricating, frequent greasing has the added advantage of forcing out any water or dirt which may have found its way in.

If the hub bearings require adjustment, remove the hub caps and take the split pins out of the castellated nuts. The nuts should be screwed up until all play is just removed. Fit the split pin at the nearest castellation either tighter or slacker. Notice that there are two split pin holes in the shaft so it should not be necessary to move the nut more than $\frac{1}{8}$ th of a turn. Caution: this adjustment must be carried out with the wheel jacked clear of the ground.

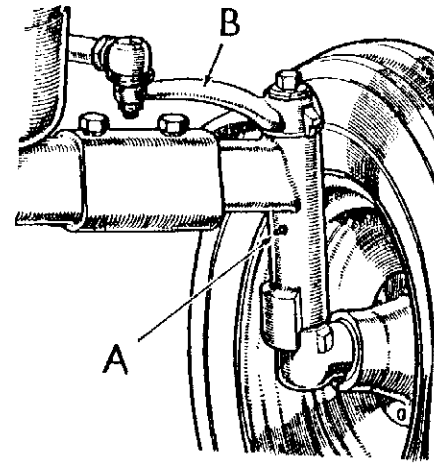


FIG. 14.
A. King Pin Greaser

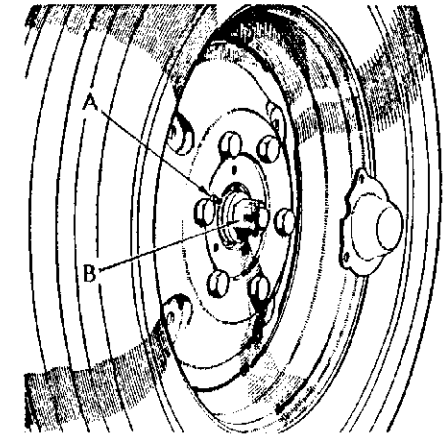


FIG. 15.
A. Front Hub Greaser
B. Hub Bearing Adjusting Nut

FUEL

The fuel pump and injection equipment are machined with extremely small clearances. Only sufficient room is allowed for a film of fuel to provide a lubricant. The smallest particle of dirt will cause scoring of the surface, rapid wear, and reduced efficiency. The injector needles may stick, causing erratic or poor engine power and permanent damage to the injector if not serviced immediately.

It is important that only clean fuel be put in the tank. Being able to refuel under cover is an advantage. Correct storage of the fuel will help to make sure it is not contaminated. The following notes should be observed when preparing storage facilities.

1. The size of the tank should be ample to cover expected requirements but not so large that draining and refilling periods are infrequent.

2. The tank should be high enough to allow gravity feeding direct into the tractor tank and should be under cover or at least protected from extremes of temperature by surrounding walls.
 3. The tank should slope towards the rear with a drain tap at the lowest point.
 4. The draw-off tap should be at the front, at least 3 in. (7.6 cm) above the drain tap.
 5. The draw-off should be through a filter with provision for cleaning or changing the element.
 6. There should be a vent at the top adequately protected by a fine mesh gauze.
 7. The filling pipe should be within reasonable access of a bulk delivery tanker and kept scrupulously clean.
 8. Sludge and water should be drained from the drain tap every month.
- Note—Galvanised material should **not** be allowed to come into contact with diesel fuel or the fuel will be contaminated by the zinc.

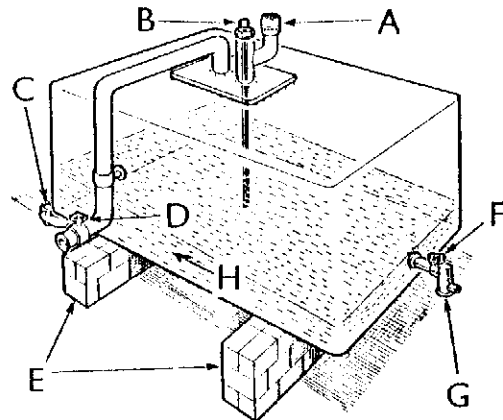


FIG. 16
Fuel Storage
A. Vent Pipe
B. Dipstick
C. Drain Valve
D. Fill Pipe Valve
E. Cradle
F. Draw-off Valve
G. Filter
H. Fall

FUEL FILTER ELEMENT

The David Brown diesel tractor has two paper element fuel filters in series. The first filter should be removed at regular intervals but the 2nd filter will only require occasional replacement. The precise life will be governed by the condition of the fuel used. Fuel supplied from a tank, such as described above, being clean and free from water, should give a life of 500 hours at least for the first filter and approximately two years for the second. With barrel storage and the attendant contamin-

ation, life of the first filter will be reduced to perhaps only 100 hours and the second filter about 500-1 000 hours especially where water is present as this causes the paper to swell and fail to pass fuel.

To change the element proceed as follows, refer to Fig. 17.

1. Close the fuel tap.
2. Clean the outside of the filter.
3. Unscrew the bolt A supporting the body with the other hand.
4. Discard the used element and flush out the inside of the body until clean.
5. Fit a new paper element. Refit the body, taking care to seat it on the rubber sealing ring in the cover. Fit a new sealing washer under bolt A. The filter must be lowered to do this.
6. Clean out the sediment bowl under the fuel tap before priming the system. See instructions under VENTING THE FUEL SYSTEM.

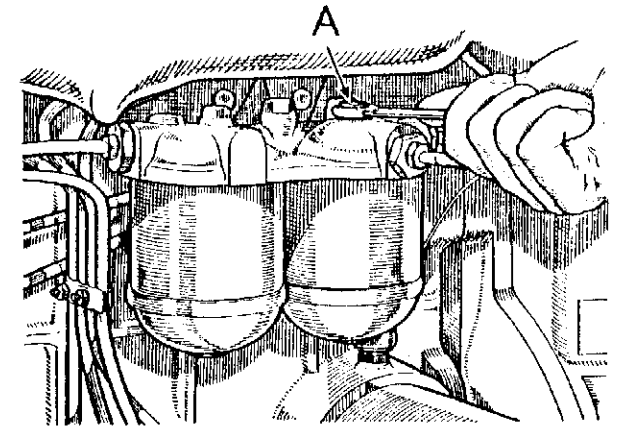


FIG. 17
Renewing the First Fuel
Filter Element
A. Securing Bolt

FUSE

A standard 1½ in. (3 cm) cartridge fuse of 25 amp. rating is fitted in the bayonet type holder next to the starter button. The fuse should not be replaced until the cause of blowing has been traced and the fault rectified.

GOVERNOR

The mechanical type governor on diesel engines is contained in the body of the fuel injection pump. It is fully lubricated, being submerged in fuel oil obtained by a controlled leakage from the pumping element. The overflow is taken from the front of the pump, back into the filter. It requires no maintenance.

The only adjustments are the maximum speed and idling speed stops on the speed control lever on top of the pump. These are set on the tractor before delivery and should not be disturbed.

GREASING

S.A.E. 140 oil should be used in the grease gun for the king pins and front axle trunnions. A good quality grease should be used for the remaining points excepting the water pump which requires a high melting point type. In order to reduce the number of grease guns required, a high melting point grease may be used for all points except those requiring oil. The positions of the grease points are shown on the chart, Fig. 1, page 7.

The periods of greasing given should be used as a guide only. The various points, especially the front and rear hubs, rely in part upon the pressure of grease for their protection against ingress of water and mud under adverse conditions. When conditions are extreme greasing should be carried out daily. Make sure that all dirt is wiped off the nipples before applying the grease gun. The water pump on the engine is packed with grease during manufacture and sealed, therefore greasing should not be carried out more frequently than every 500 hours.

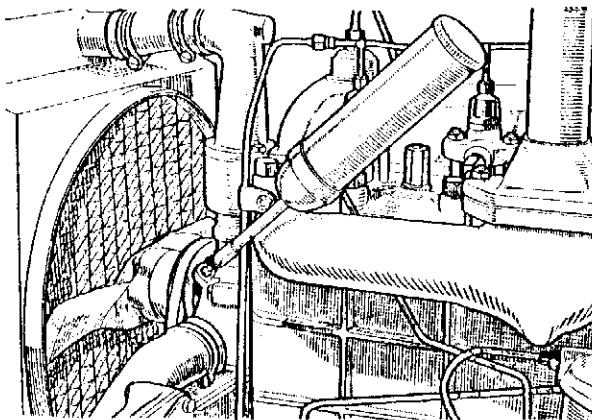


FIG. 18
Water Pump Greasing

INJECTORS

The injectors are a high precision piece of equipment, and upon their condition and treatment depends the engine's performance. They should be treated carefully and protected against dirt. To remove them from the engine, for servicing by an approved dealer or C.A.V. agent, proceed as follows:

1. Turn off the fuel tap. Thoroughly clean off all external dirt before attempting to carry out any work on the fuel system.
2. Disconnect the leak-off pipe from its connections at each end.
3. Undo the unions on the top of each injector. Remove the pipe and store away from dirt.

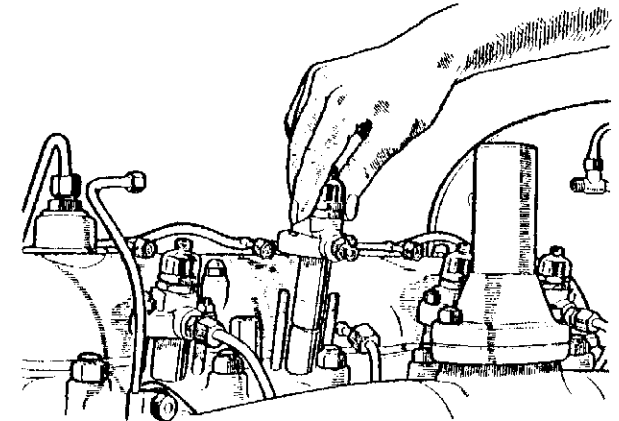


FIG. 19
Injector Removal

4. Disconnect the high pressure pipes at the unions.
5. Slacken the injector holding down nuts—each side of an injector should be slackened in stages to prevent distortion of the injector.
6. Withdraw the injectors carefully, lever under the lugs of the injector if stuck in position by carbon. Blank off the inlet union to prevent ingress of dirt, and fit a protection sleeve to the nozzle tip to prevent damage to the fine spray holes.
7. Clean out the inside of the injector port in the head and remove the old copper washer. Plug with clean material to prevent dirt entering the engine until the injectors are replaced.

When replacing the injectors fit the new copper washer and tighten each side down evenly, each nut a part turn alternately. Do not overtighten but make sure that they are firmly seated to seal against engine combustion pressure. Reconnect all pipes in the reverse order to their removal. It is suggested that tightening of the high pressure lines is left till last. Turn on the fuel and turn the engine until fuel appears at each union. This will eject air and dirt. Tighten the unions but not overtight, start up the engine and check for fuel leaks.

OIL

Always drain the sump while the engine is still hot with the tractor on level ground. Allow about 5 minutes before replacing the sump plug so that oil can drain down the walls. Refill to the safe marks on the dipstick using the recommended oil, see page 12. If the oil filter element has been changed, the engine should be turned by hand to fill the oil filter housing. It may be found necessary to add a little extra oil to compensate for this when filling the sump.

It is important not to allow any dirt to enter the engine. Always clean the filler caps before removing them and also the surrounding surface of the housing. Clean the drain plug before replacing. Keep oil containers clean and wipe the tops and necks before pouring the oil; it is advisable to pour oil through a funnel with a gauze strainer, and do it under cover.

The oil recommended for diesel engines contains additives to reduce sludge and carbon formation within the engine. After renewing the oil it may be noticed to discolour rapidly. This does not affect the lubricating qualities and is only due to the absorbent nature of the oil.

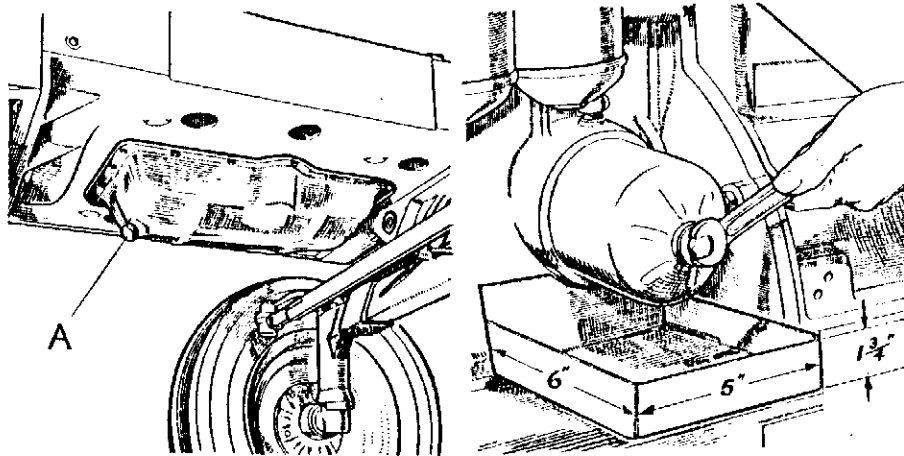


FIG. 20. Draining the Sump
A. Drain Plug

FIG. 21. Oil Filter Element

OIL FILTER ELEMENT

Place a shallow tray under the oil filter and remove by unscrewing the bolt in the bottom of the unit, Fig. 21. Remove and discard the dirty element and wash the cover in paraffin using a small brush. A cloth should not be used as any fluff will foul the seat of the by-pass valve in the base of the cover.

Fit the new element and ensure that the rubber sealing ring in the cylinder block is satisfactory before refitting the unit. It is recommended that the securing bolt be tightened to 10 lb ft torque (1.4 kg m). Turn the engine to refill with oil and top up the sump if necessary. Restart the engine and check the cover for leakage.

OIL PUMP GAUZE

Refer to Fig. 22. The strainer surrounding the oil pump is readily accessible after removing the sump cover. Drain the oil from the engine from plug A, and remove the sump cover. Remove the setscrew from the centre of the oil strainer base. The strainer will then fall free from the pump. Clean the strainer by washing in paraffin. A small brush may be used to disturb any sludge or dirt but never use a cloth. Refit the gauze, sump cover, and plug, making sure that the gasket is serviceable, refill with the correct oil.

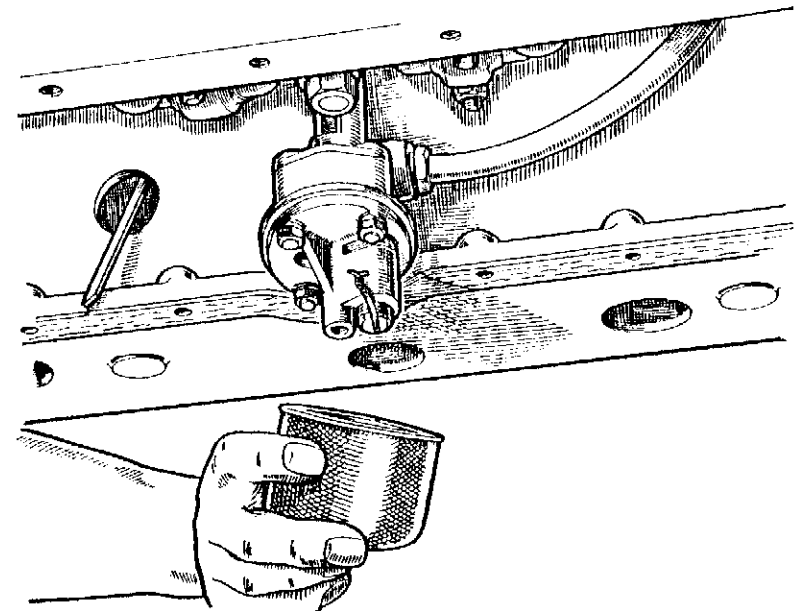


FIG. 22. Removing the Oil Pump Gauze

POWER TAKE OFF AND BELT PULLEY—TWO-SPEED

The oil in the PTO unit is automatically maintained from the gearbox and does not need attention.

The belt pulley may be fitted on either side according to the direction or rotation required. The pulley should be filled, with the same grade of oil as used in the transmission gearbox, only to the level of the lower plug A as fitted to the tractor.

Fitting Instructions—Unless the belt pulley unit is supplied fitted to the tractor, it will be necessary on the first fitting to replace the four cover bolts, which are symmetrically disposed round the PTO shaft, with the special studs B, Fig. 23. To avoid leakage of oil, these should be replaced one at a time, making sure to fit the nylon sealing washer C. Note that the end of the stud with the longest plain portion is screwed into the PTO Housing. Once fitted, these studs should be left in position and when it is desired to fit the Belt Pulley Unit, slide it onto the PTO shaft in the position required and secure with four nuts and spring washers.

Note—The PTO gear lever should be in neutral when not in use. Stop the engine, or fully depress the PTO clutch on livedrive models, before attempting to engage the high or low ratio.

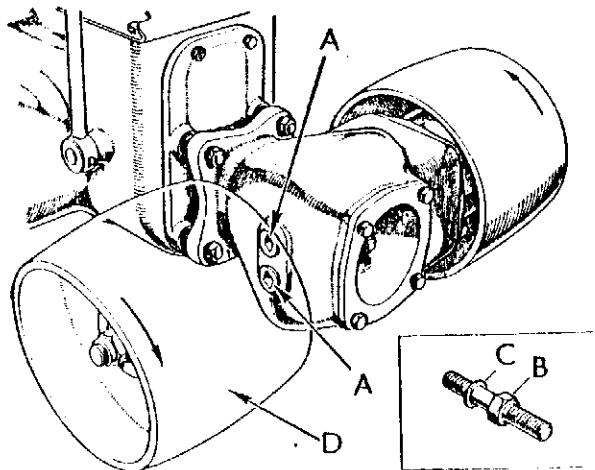


FIG. 23

Belt Pulley Unit

- A. Filler plugs — fill to lower plug only
- B. Special Stud
- C. Nylon Sealing Washer
- D. Alternative Pulley position

REGULATOR AND CUT-OUT

This is situated below the instrument panel. If a fault is suspected consult your dealer or Lucas agent.

SEDIMENT BOWL

It is advisable to clean the sediment bowl and filter before venting the fuel system to prevent carry over due to the high speed of fuel flow. Wash the bowl and filter in petrol, and replace. Refer to Fig. 24. Do not clean with a cloth because of the risk of including fluff. Renew the gasket if the old one is damaged. When replacing the bowl it is best to turn on the fuel before tightening the bowl to allow the air to escape and fill the bowl with fuel. Loosen the connection to the lift pump and bleed until free of air.

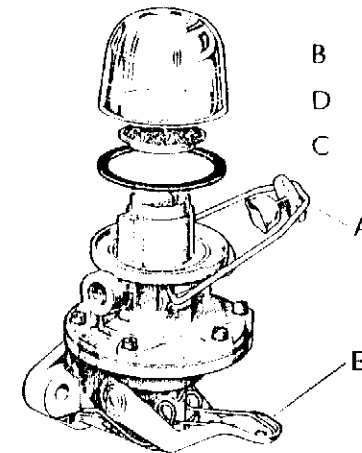


FIG. 24

Sediment Bowl

- A. Bowl Securing Screw
- B. Sediment Bowl
- C. Sealing Ring
- D. Filter Gauze
- E. Lift Pump Priming Lever

STARTER

This is a 12 volt axial type incorporating a solenoid relay switch. Maintenance consists of periodical lubrication only. Do not attempt to renew or adjust the brushes or relay mechanism. Failure of the starter motor to operate may be due to the discharged condition of the batteries. Although there may be sufficient current for the lights it may not be able to give the very heavy discharge required by the starter. The reasons for failure may be slackness of battery or starter terminals or faulty relay mechanism. If the starter fails to operate do not keep trying or damage may result to starter or batteries, consult an authorised agent.

TRANSMISSION

Draining of the transmission system should be carried out after the tractor has been working, whilst the oil is still warm.

Complete draining is obtained by removing the plug under the rear axle casing and plug B, Fig. 25.

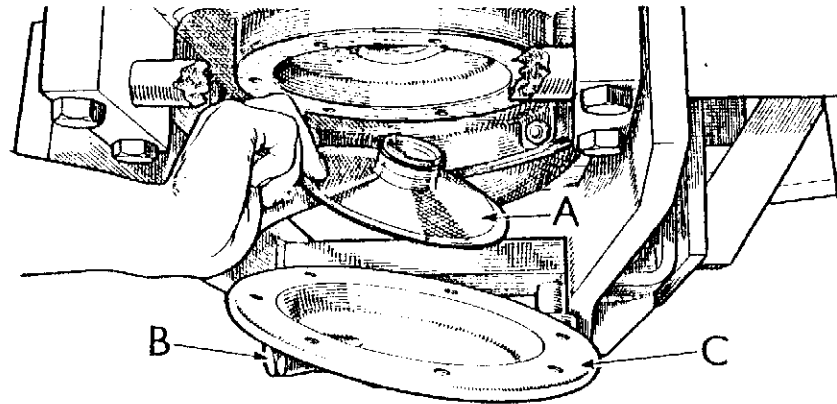


FIG. 25. Draining the Transmission
A. Filter and Magnet B. Drain Plug C. Cover Plate

To clean the magnetic filter and power lift gauze it is only necessary to drain from plug B. Remove the plate C which releases the gauze and magnetic filter from the hydraulic pump suction pipe. The magnet should be removed to enable it to be wiped free of adhering bits.

Clean the gauze with paraffin and allow it to drain before replacing.

The final reductions have separate lubrication. The drain plug is denoted by B and the filler plug by A in Figs. 26 and 27. Refill to the level of the filler plug with the correct oil.

Clean round filling points, and use clean containers and funnels for refilling. Avoid dirt entering the transmission system.

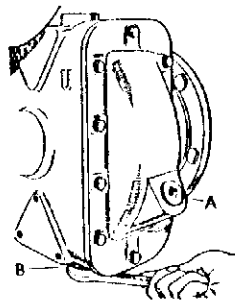


FIG. 26. Final Drives
990 Tractor

A. Filling Plug B. Draining Plug

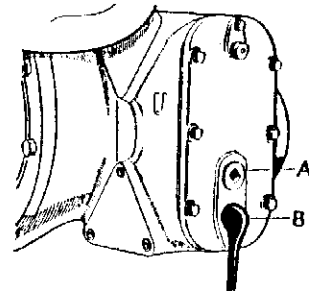


FIG. 27. Final Drives
850 and 880 Tractors

VALVE CLEARANCE

The valve clearance is shown cast on the top of the rocker cover, and is measured between the tip of the rocker arm and top of the valve stem with a feeler gauge as shown at C, Fig. 28. Remove the bonnet and rocker cover. Starting at the front, the inlet valves are No. 2, 3, 6 and 7 and the exhaust valves No. 1, 4, 5 and 8. Adjustment is made by slackening the locknut B, and adjusting the screw A, in or out until the correct clearance is obtained. When tightening the locknut, hold the adjustment screw to avoid it turning.

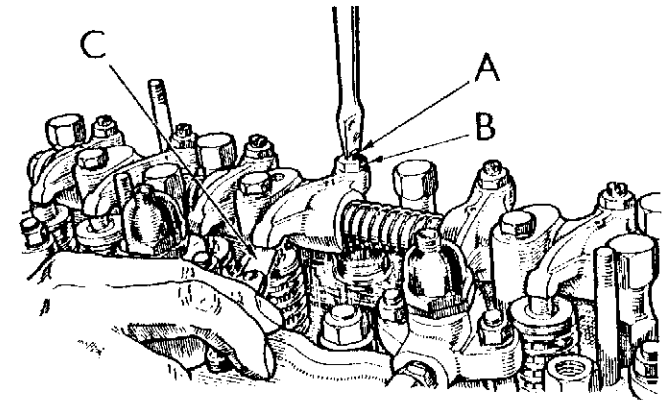


FIG. 28. Setting the Valve Clearance

The adjustment is best carried out when the injectors have been removed for servicing. The engine may then be turned by the fan belt. See Data section for valve clearances.

If it is desired to turn the engine with the injectors in situ it will be necessary to use a special box spanner on the crankshaft pulley nut. This may be purchased from your dealer.

To facilitate positioning the cam correctly, proceed in the following order:—

Adjust No. 1 valve with No. 8 valve fully open

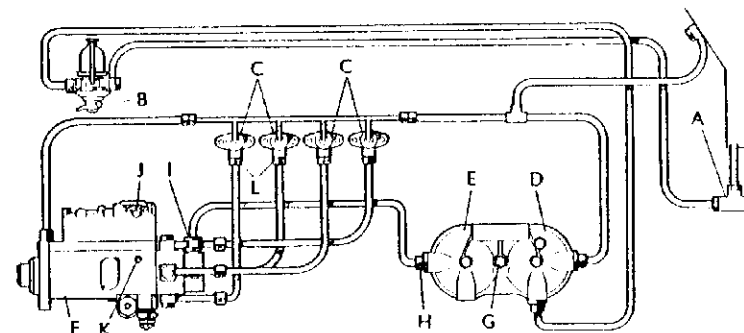
"	"	6	"	"	3	"	"	"
"	"	4	"	"	5	"	"	"
"	"	2	"	"	7	"	"	"
"	"	8	"	"	1	"	"	"
"	"	3	"	"	6	"	"	"
"	"	5	"	"	4	"	"	"
"	"	7	"	"	2	"	"	"

An easy way to remember the above table is to notice that in every case the sum of the two valves concerned is always 9.

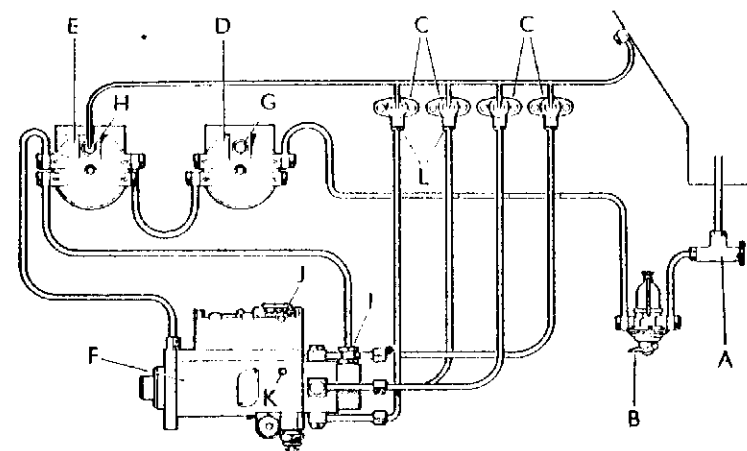
VENTING FUEL SYSTEM

It is essential that any air trapped in the system be cleared. If difficulty in starting is experienced, or if any of the fuel system has been disturbed, vent the system in the following way.

1. Fill the tank with a minimum of 2 gallons (9 litres) of fuel.
2. Ensure that the fuel tap is on, and check the glass bowl and all fuel joints for leaks.
3. Refer to Fig. 29. Clean the outside of the filters. Remove the plugs or slacken the unions G and H. Operate the lift pump and tighten in the order G then H, as the fuel appears at each point.
4. Slacken plug J on the injection pump, prime until all air is expelled, then tighten J. Repeat this operation with plug K.
5. Slacken connection I and prime until free from air, then retighten.
6. Slacken Nos. 1 and 2 high pressure pipes at the nozzle end L, then with the fuel cut-off lever in the 'run' position and the throttle fully open, operate the starter until fuel is ejected. Tighten the pipe connections and press the starter button, ensuring that the isolating switch is on. The engine should then start. Run for a few minutes and check all points for leaks. Dry off all fuel from joints and observe whilst the engine is running.



990 Tractor



850 and 880 Tractors

FIG. 29. Diagram of Fuel System

- | | |
|--------------|--------------------|
| A. Fuel Tap | D. 1st Fuel Filter |
| B. Lift Pump | E. 2nd Fuel Filter |
| C. Injectors | F. Injection Pump |

Section 3

Information and Data

DIESEL ENGINES—ALL MODELS

	AD4/47 A and B	AD4/40 T and U	AD4/36 A and B
Displacement—4 Cylinders	185.3 in ³ (3 045 cm ³)	165 in ³ (2 705 cm ³)	154 in ³ (2 523 cm ³)
Bore	3 $\frac{1}{8}$ in. (92.1 mm)	3 $\frac{1}{8}$ in. (92.1 mm)	3 $\frac{1}{2}$ in. (88.9 mm)
Stroke	4 $\frac{1}{2}$ in. (114.3 mm)	4 in. (101.6 mm)	4 in. (101.6 mm)
Rated Speed	1 800 rev/min	1 800 rev/min	1 800 rev/min
Maximum full load speed ..	2 200 rev/min	2 200 rev/min	2 000 rev/min
Gross maximum power	52.0 BHP	42.5 BHP	35 BHP
Valve Clearances—SET COLD			
—inlet ..	0.015 in. (0.38 mm)	0.015 in. (0.38 mm)	0.015 in. (0.38 mm)
—exhaust	0.012 in. (0.30 mm)	0.015 in. (0.38 mm)	0.015 in. (0.38 mm)

Cooling System—Thermostat set to open at 180°F controls flow through cylinder head from water pump. Thermo-syphon circulation in cylinder block. Fan fitted to water pump drive pulley.

Fuel Equipment—Distributor type injection pump with mechanical governor. Automatic retard device for starting, with manual lock for very cold weather and ether pad in manifold for sub-zero conditions. Mechanically operated diaphragm type lift pump. Static timing set to mark on flywheel 11° b.t.c. Four-hole injectors direct into cylinders; setting pressure 175 atmospheres. Two paper-element fuel filters in series.

Lubrication—Gear type oil pump incorporating a main relief valve set to commence opening at 40 lb/in² (2.8 kg/cm²). Filtration is by means of a paper element full-flow filter with a low pressure valve to by-pass oil if the element is allowed to become blocked. The overhead valve gear is supplied by intermittent restricted feed from the rear camshaft bearing. Firing order—1, 2, 4, 3.

Compression Ratio—17 : 1.

Valve Timing—

Inlet opens 8° before top centre.
Inlet closes 38° after bottom centre.
Exhaust opens 36° before bottom centre.
Exhaust closes 10° after top centre.

CHASSIS

CAPACITIES (Approximate initial fill)

	850-880	Models 990
Air Cleaner oil bath	1 $\frac{1}{2}$ pints (0.85 litres)	1 $\frac{1}{2}$ pints (0.85 litres)
Cooling system	3 gallons (13.6 litres)	3 gallons (13.6 litres)
Engine lubricating oil	13 pints (7.4 litres)	13 pints (7.4 litres)
Transmission	4 $\frac{1}{2}$ gallons (20.5 litres)	4 $\frac{1}{2}$ gallons (20.5 litres)
Final drive reductions (each)	2 pints (1.1 litres)	4 pints (2.3 litres)
Steering Box	2 pints (1.1 litres)	2 pints (1.1 litres)
Belt Pulley Unit	1 pint (0.55 litres)	1 pint (0.55 litres)
Fuel Tank	8 $\frac{3}{4}$ gallons (40 litres)	11 $\frac{1}{2}$ gallons (52.2 litres)

DIMENSIONS—on standard tyres

	850	880	Narrow Models	990
Overall length ..	113½ in. (288.6 cm)	115 in. (292 cm)	114 in. (289.5 cm)	121 in. (307 cm)
Height—over exhaust pipe	82 in. (208.3 cm)	87 in. (221 cm)	—	83 in. (213 cm)
Height—bonnet top	51½ in. (131 cm)	52½ in. (134 cm)	47½ in. (120.6 cm)	56 in. (142 cm)
Overall width ..	62½ in. (159.3 cm)	64 in. (163 cm)	48 in. (122 cm)	64 in. (163 cm)
Wheel base ..	75¼ in. (191 cm)	75¼ in. (191 cm)	74 ½ in. (190.2 cm)	78 ½ in. (200 cm)
Ground clearance	18½ in. (47.0 cm)	19½ in. (49.5 cm)	14 in. (35.6 cm)	20 in. (51 cm)

CLUTCH

990 Livedrive—Double dry-plate clutch.

Transmission clutch—11 in. (27.9 cm) dia., 110 in² (709.7 cm²) surface area.

PTO clutch—10 in. (25.4 cm) dia., 98 in² (632.2 cm²) surface area.

990—Single dry-plate clutch.

11 in. (27.9 cm) dia., 110 in² (709.7 cm²) surface area.

850, 880 Livedrive—Double dry-plate clutch.

Transmission clutch—10 in. (25.4 cm) dia., 98 in² (632 cm²) surface area.

PTO Clutch—10 in. (25.4 cm) dia., 98 in² (632 cm²) surface area.

850, 880—Single dry plate clutch.

10 in. (25.4 cm) dia., 98 in² (632 cm²), surface area.

DRAWBARS

Universal Swinging Drawbar—950 and 990 models

Height from ground—10½ in. to 16 in. (27.3 cm to 40.6 cm).

Lateral swing—6 in. (15.2 cm) each side of the centreline.

Permanent Drawbar

Height from ground—850 and narrow models—13½ in. (34.9 cm)

880 model 14½ in. (38.8 cm).

PERFORMANCES

	850	880	990
PTO Horse Power at 2 200 rev/min engine	—	40.0	48.0
PTO Horse Power at 2 000 rev/min engine	33.0	—	—
PTO Horse Power at 1 800 rev/min engine	31.0	35.5	43.0
PTO Horse Power at 1 100 rev/min engine	20.0	22.0	28.0
Drawbar Horse Power at 2 200 rev/min engine	—	36.0	43.0
Drawbar Horse Power at 2 000 rev/min engine	30.0	—	—
Drawbar Horse Power at 1 800 rev/min engine	28.5	31.0	39.0
Maximum Drawbar Pull (On tarmac with ballast)	5 500 lb (2 495 kg)	6 000 lb (2 720 kg)	7 000 lb (3 175 kg)

POWER LIFT

Maximum lift at the end of the links is 1 800 lb (816 kg).

TWO SPEED PTO (Power take-off) and BELT PULLEY

British standard 6 spline shaft—1½ in. (34.9 mm) diameter. Clockwise rotation viewed from rear. Offset from centre line of the tractor ½ in. (9.5 mm) to the left-hand side. Belt Pulley 5½ in. (14.6 cm) wide, 8½ in. (21.6 cm) diameter, may be fitted to left or right. Rotation clockwise viewed from the open end.

PTO Ratio	Engine Speed rev/min	PTO Speed rev/min	Belt Pulley		
			rev/min	ft/min	metres/min
Low	1 800	532	751	1 670	509
High	1 100	550	776	1 727	526
High	2 000	1 000	1 412	3 140	957

Speed Ratio

Engine to PTO— Low 3.383 : 1

— High 2 : 1

PTO to Belt Pulley — 1 : 1.412

Height of shaft from ground:

850	880	Narrow Models	990
22.4 in. (56.9 cm)	23.4 in. (59.5 cm)	20.6 in. (52.5 cm)	25½ in. (64.1 cm)

SEATING

An upholstered single tip-up seat with "Dunlopillo" cushion and adjustable back rest is fitted as standard. There is 3 in. (7.6 cm) fore and aft adjustment.

TRACK ADJUSTMENT (all except narrow models)

Front—52 in. to 76 in. (132 cm to 193 cm) in 4 in. (10 cm) steps, with an additional position off-set 2 in. (5 cm) to the left.

Rear—52 in. to 76 in. (132 cm to 193 cm) in 4 in. (10 cm) steps.

TRACK ADJUSTMENT (narrow models)

Front—42 in. (106.8 cm), 48 in. (122 cm), 52 in. (134 cm), 56 in. (142.3 cm), 60 in. (152.5 cm) and 64 in. (162.8 cm).

Rear—37½ in. (94.5 cm), 47½ in. (120 cm), 51½ in. (130.5 cm), 55½ in. (140.5 cm) and 58½ in. (150.8 cm.)

UNIVERSAL LINKAGE

Standard fitting on 990, 950 and 880 model tractors (except 880 narrow). Enables Category I or Category II implements to be fitted.

	Category I	Category II
Nominal diameter of Lower Pins	$\frac{7}{8}$ in. (2.22 cm)	$1\frac{1}{8}$ in. (2.86 cm)
Nominal diameter of Top Pin	$\frac{3}{4}$ in. (1.90 cm)	1 in. (2.54 cm)
Recommended length of Implement Cross Shaft. (distance between shoulders of pins)	26½ in. (68 cm)	32½ in. (82.5 cm)
Recommended height between upper and lower hitch points	22 to 25 in. (53.4 to 63.5 cm)	22 to 25 in. (53.4 to 63.5 cm)

CATEGORY I LINKAGE

Standard fitting on 850 model tractor and on Narrow model tractors. See table above for Category I pin sizes.

ROAD SPEEDS - 880 Tractor

Creeper Gear	Gear	Overall Ratio	Vehicle Speed on 12.4-28 Tyres					
			1 100 rev/min		1 800 rev/min		2 200 rev/min	
			Mile/h	Km/h	Mile/h	Km/h	Mile/h	Km/h
S	L1	318.5	0.47	0.76	0.77	1.23	0.94	1.51
S	L2	192.0	0.78	1.25	1.27	2.04	1.55	2.50
S	H1	142.4	1.04	1.69	1.71	2.76	2.09	3.37
N	L1	124.9	1.20	1.93	1.96	3.15	2.40	3.86
† S	L3	105.1	1.42	2.29	2.33	3.74	2.84	4.59
† S	H2	85.83	1.74	2.80	2.84	4.59	3.47	5.61
N	L2	75.31	1.98	3.18	3.24	5.21	3.96	6.37
N	H1	55.86	2.67	4.30	4.37	7.03	5.34	8.59
† S	H3	46.95	3.19	5.14	5.19	8.39	6.39	10.3
N	L3	41.21	3.62	5.84	5.93	9.54	7.25	11.7
N	H2	33.66	4.43	7.14	7.25	11.7	8.86	14.3
N	H3	18.41	8.15	13.1	13.3	21.4	16.3	26.2
S	LR	193.4	0.77	1.24	1.26	2.03	1.54	2.49
S	HR	86.50	1.72	2.78	2.82	4.55	3.45	5.57
N	LR	75.86	1.97	3.17	3.22	5.18	3.94	6.34
N	HR	33.92	4.40	7.10	7.20	11.6	8.80	14.2

ROAD SPEEDS - 990 Tractor

Creeper Gear	Gear	Overall Ratio	Vehicle Speed on 11-32 Tyres					
			1 100 rev/min		1 800 rev/min		2 200 rev/min	
			Mile/h	Km/h	Mile/h	Km/h	Mile/h	Km/h
S	L1	430.51	0.38	0.61	0.62	1.00	0.76	1.22
S	L2	259.51	0.63	1.02	1.03	1.66	1.26	2.03
S	H1	192.50	0.85	1.36	1.39	2.24	1.69	2.72
N	L1	168.83	0.96	1.55	1.58	2.54	1.93	3.11
† S	L3	142.04	1.14	1.84	1.88	3.02	2.29	3.68
† S	H2	116.00	1.41	2.26	2.30	3.70	2.81	4.52
N	L2	101.77	1.60	2.57	2.62	4.22	3.20	5.15
N	H1	75.49	2.16	3.48	3.53	5.68	4.32	6.95
† S	H3	63.44	2.57	4.14	4.20	6.76	5.14	8.27
N	L3	55.70	2.93	4.70	4.79	7.71	5.85	9.41
N	H2	45.49	3.58	5.75	5.87	9.44	7.17	11.50
N	H3	24.88	6.55	10.55	10.70	17.20	13.10	21.10
S	LR	261.43	0.63	1.00	1.02	1.64	1.25	2.01
S	HR	116.87	1.39	2.25	2.28	3.67	2.79	4.49
N	LR	102.52	1.59	2.56	2.60	4.18	3.18	5.12
N	HR	45.83	3.56	5.70	5.82	9.36	7.11	11.40

† Use nearest direct gear for continuous heavy work such as 3 and 4 furrow ploughing.

Creep Gear	Gear	Overall ratio	Vehicle Speed on 10-28 Tyres									
			1 100 rev/min		1 800 rev/min		2 000 rev/min		2 200 rev/min			
			Mile/h	Km/h	Mile/h	Km/h	Mile/h	Km/h	Mile/h	Km/h		
S	L1	318.5	0.45	0.73	0.74	1.19	0.82	1.33	0.91	1.46		
S	L2	192.0	0.75	1.21	1.23	1.98	1.36	2.20	1.50	2.42		
S	H1	142.4	1.01	1.63	1.65	2.66	1.84	2.96	2.02	3.25		
N	L1	124.9	1.15	1.86	1.89	3.04	2.10	3.38	2.31	3.72		
† S	L3	105.1	1.37	2.20	2.25	3.61	2.49	4.00	2.74	4.39		
† S	H2	85.83	1.68	2.71	2.74	4.43	3.05	4.90	3.35	5.41		
N	L2	75.31	1.91	3.08	3.13	5.04	3.48	5.60	3.83	6.16		
N	H1	55.86	2.58	4.15	4.22	6.79	4.69	7.55	5.16	8.30		
† S	H3	46.95	3.06	4.90	5.01	8.08	5.57	8.94	6.12	9.84		
N	L3	41.21	3.49	5.61	5.72	9.20	6.35	10.2	6.99	11.2		
N	H2	33.66	4.28	6.90	7.00	11.30	7.78	12.5	8.56	13.8		
N	H3	18.41	7.80	12.5	12.8	20.6	14.2	22.8	15.6	25.1		
S	LR	193.4	0.75	1.20	1.22	1.96	1.35	2.18	1.49	2.40		
S	HR	86.5	1.66	2.67	2.72	4.39	3.03	4.86	3.32	5.33		
N	LR	75.86	1.90	3.06	3.11	5.00	3.45	5.55	3.80	6.11		
N	HR	33.92	4.24	6.81	6.94	11.2	7.72	12.4	8.48	13.6		

* 880 Tractor only.

† Use the nearest direct gear for continuous heavy work such as 3 and 4 furrow ploughing.

				Total	Rear Axle	Front Axle
990	Livedrive	..	..	4 312 lb (1 960 kg)	2 716 lb (1 232 kg)	1 596 lb (724 kg)
990	..	..	..	4 272 lb (1 940 kg)	2 696 lb (1 222 kg)	1 576 lb (715 kg)
880	Livedrive	..	..	4 040 lb (1 830 kg)	2 470 lb (1 120 kg)	1 570 lb (710 kg)
880	..	..	..	4 000 lb (1 815 kg)	2 450 lb (1 110 kg)	1 550 lb (705 kg)
850	Livedrive	..	..	3 750 lb (1 700 kg)	2 350 lb (1 065 kg)	1 400 lb (635 kg)
850	..	..	..	3 710 lb (1 680 kg)	2 330 lb (1 055 kg)	1 380 lb (625 kg)
Narrow	Livedrive	..	..	3 620 lb (1 642 kg)	2 300 lb (1 042 kg)	1 320 lb (600 kg)
Narrow	..	..	..	3 580 lb (1 626 kg)	2 280 lb (1 035 kg)	1 300 lb (591 kg)

13-24 tyre	490 lb (220 kg)
10-28 tyre	230 lb (104 kg)
12-4-28 tyre	450 lb (204 kg)
13-28 tyre	540 lb (245 kg)
11-32 tyre	360 lb (163 kg)

	990	880	850	Narrow Models
Front				
Standard	6-00-16	5-50-16	5-00-15	5-00-15
Optional Oversize	—	—	5-50-16	—
Rear				
Standard	11-32	12-4-28	10-28	10-28
Optional Oversize	13-28	13-24	12-4-28	—

page 42

ALTERNATIVE EQUIPMENT AND ACCESSORIES

The following Units are applicable to the models as shown by a **X** in the list below. The units are stocked by the Parts Department of David Brown Tractor (Sales) Ltd., and may be ordered in the same way as service parts. Ask your dealer for full details and prices.

Unit No.	Description	Models to which applicable			
		850	880	990	Narrow Tractors
U241	Air Cleaner Extension ..	X	X		X
U413	Belt Pulley Unit 5½ in. (14.5 cm) wide ..	X	X	X	X
U414	Belt Pulley Guard ..	X	X	X	X
U440	Belt Pulley 8 in. (20.2 cm) wide ..			X	
U415	Drawbar—Permanent ..	X	X		X
U461	Drawbar (used with U463) ..	X	X		
U463	Support Frame for U461 and U462 ..	X	X		
U291	Drawbar—Linkage ..	X	X	X	
U418	Electric Lighting ..	X			
U429	Electrical Lighting ..				X
U371	Exhaust Brake ..			X	
U442	Exhaust Brake ..	X	X		
U392	Exhaust—Downswept ..	X	X	X	
U435	Exhaust—Upswept ..				X
U377	Foot Throttle ..	X	X	X	
U412	Horn and Push Button ..	X	X		X
U439	Horn and Push Button ..			X	
U382	Linkage Stabiliser ..			X	
U403	Linkage Stabiliser ..	X	X		
U399	Overload Release (Livedrive) ..		X	X	
U400	Overload Release (Non-Livedrive) ..		X	X	
U401	Overload Release (Livedrive) ..	X			
U402	Overload Release (Non-Livedrive) ..	X			
U462	Pick-up Hitch (used with U463) ..	X	X		
U385	Pick-up Hitch ..			X	
U378	Power Take-Off Guard ..	X	X	X	
U483	Power Assisted Steering Unit ..			X	
U512	Power Assisted Steering Unit ..	X	X		
U342	Radiator Blind ..	X	X		X
U383	Radiator Blind ..			X	
U417	Rear Number Plate Light ..	X	X	X	
U430	Rear Number Plate Light ..				X
U438	Thermometer (Electric) ..	X	X	X	X
U184	Wheel Weights—Rear (4×90 lb each) ..			X	
U406	Wheel Weights—Rear (4×100 lb) ..	X	X		X
U427	Wheel Weights—Front (4×85 lb) ..			X	
U432	Wheel Weights—Front (Internal) (2×75 lb) ..	X			X
U436	Wheel Weights—Front (2×85 lb) ..		X		
U505	Weights—Chassis Ballast (Total 430 lb) ..	X	X	X	
U445	Weight—Chassis Ballast (110 lb) ..	X	X		X
U279	Valve—3 Way Hydraulic ..	X	X	X	

ALLIED EQUIPMENT

The following equipment although not manufactured by David Brown Tractors Ltd., has been developed with their co-operation and is fully approved for use with the tractors covered in this book except where otherwise stated.

David Brown-Portland Cab

Sheet steel cab with toughened glass windscreen. Rear curtain available. Easily and quickly removable.

Bloomfield Steel Wheels

A steel skeleton wheel which bolts to the existing wheel centre, special design ensures clean running even in very bad conditions.

Agrotillers

Linkage mounted rotary cultivators, available in 40, 50, 60 and 70 in. (101.5 cm, 127 cm, 152.5 cm and 178 cm) widths.

Howard Rotavators

Linkage mounted rotary cultivators, available in 50, 60 and 70 in. (127 cm 152.5 cm and 178 cm) widths.

Teasdale and Metcalfe Mounted Folding Harrows

Units available for working widths of 6 ft (183 cm) to 18 ft (550 cm).

Belton Brothers and Drury "Belbro" Flexible Hoe

A rear mounted steerage hoe available for 4, 5 or 6 rows. Adjustable for different row widths.

Robot Potato Planter

Linkage mounted 2 row or 3 row planter which handles both chitted and un-chitted seed. Available with or without fertilizer distributor attachment.

Russell Mk. III Cotton and Hard Seed Planter

A linkage mounted 2-row machine for a range of seeds including maize, over a range of row widths and seed rates.

Pettit Trailers

A range of wood or steel bodied trailers available with or without hydraulic rear or 3 way tipping gear.

Cameron Gardner Rearloader

A rear mounted hydraulic loader fitted on 3 point linkage, lifts 7 cwt (355.6 kgm) to a height of 8 ft (244 cm). Maximum "tearout" capacity 12½ cwt (635 kgm).

Bomford and Evershed "Powerdozer" (for 880 and 990 Tractors)

A front mounted hydraulically controlled earthmoving and levelling implement. Blade may be angled and offset. Fitted with double acting ram giving powered penetration.

Bomford and Evershed Rear Grader

Mounted on 3 point linkage, the blade may be traversed and tilted right or left. A castor wheel can be supplied for accurate work.

Allman "Model 60" Field Sprayer

A linkage mounted sprayer with 60 gallon tank (273 litres), Rollervane pump, "Genimec" control system. Sprays 18 ft 2 in. (5.54 m) wide spray.

Evers and Wall Sprayers

Mounted sprayers available with 60 gallon (273 litres) and 100 gallon (454 litres) tanks. Spraying widths up to 25 ft (7.6 m) available or hand lances can be supplied. Models also available for narrow tractors.

David Brown Portland Lift Box

An all steel linkage mounted transport box for carting milk churns, bags of seed, bales, etc.

McConnel Power Arm

A linkage mounted attachment carrying a range of Arm-heads enabling the tractor to be used for hedge cutting, mowing, as a saw bench, etc.

McConnel Saw Bench

Linkage mounted saw for cross cutting or ripping.

Robot Post Hole Digger

Linkage mounted. Augers available to dig holes 4 to 12 in. (10 to 30.5 cm) diameter up to 48 in. (122 cm) deep, and 18 in. (45.7 cm) diameter up to 24 in. (61 cm) deep.

Edwards PTO Air Compressor

Simply and quickly attached to the PTO shaft this unit provides compressed air for inflating tyres, spraying paint, etc.

Small Electric Motors Welding Alternator

A linkage mounted alternator providing "on the spot" welding facilities for repairing farm equipment.

Tamkin Concrete Mixer

A linkage mounted mixer of 5 ft 3 in. (141 litres) dry capacity. Driven from the PTO.

Mono Linkage Mounted Pump—Type CD60R2

Will handle small solids in the water and has an output of up to 3 250 gal/h (14 750 litres/h).

Sta-Dri Cabs

A full range of cabs for tractors with or without loaders fitted. Complete with backcloth.

Low Rowcrop Equipment

Fruit plough and narrow cultivators for use with narrow tractors.

Robot Transplanters

2-, 3-, and 4-row machines either complete or for attaching to proprietary toolbar.

Paterson Earth Scoop

A rear mounted scoop of approx. 8 cu ft (0.226 cu m) capacity. A grader blade may be attached to the scoop if required.

Harper and Eede Drainer

A mounted implement available as a mole drainer or a subsoiler. Max. depth 22½ in. (57 cm), 2½ in. (6.4 cm) and 3 in. (7.6 cm) expanders available.

Gloster Mid Power Hoe

A mid mounted hoe with powered penetration available for 4-, 5-, or 6-rows. Wheelmark eliminators and rear mounted weeders can also be supplied.

Pettit Offset Mounted Disc Harrow

A robust mounted implement available with plain or cutaway discs. Widths 5 ft 3 in. (160 cm), 6 ft 0 in. (183 cm) and 6 ft 9 in. (206 cm) fitted with 20 ins (51 cm) or 22 in. (56 cm) discs.

Service Tasks

The tables on this and the following pages will enable the operator to write in the date at which the task is carried out.

CARRY OUT THE TASK AT THE NEAREST OPPORTUNITY TO THE TIME INDICATED BELOW

Hour Meter Reading	Task A	Task B	Task C	Task D	Task E
60					1 — 4
125					
185					
250					
315					
375					
440					
500					
560					
625					
685					
750					
815					
875					
940					
1 000					

NOTE:—With a new tractor, carry out TASK B and TASK E 1 to 4 only at 60 HOURS.

DON'T FORGET THE DAILY TASK

*CARRY OUT THE TASK AT THE NEAREST OPPORTUNITY TO THE
TIME INDICATED BELOW*

Hour Meter Reading	Task A	Task B	Task C	Task D	Task E
1 060					
1 125					
1 185					
1 250					
1 315					
1 375					
1 440					
1 500					
1 560					
1 625					
1 685					
1 750					
1 815					
1 875					
1 940					
2 000					

DON'T FORGET THE DAILY TASK