



DAVID BROWN

780 SELECTAMATIC

**Instruction
book**

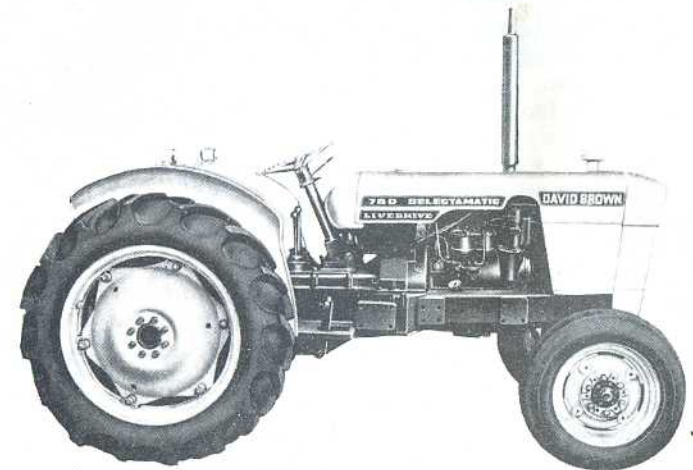
SAFETY POINTS

-  Don't operate the independent foot brake when travelling at high speed.
-  Don't run on the highway without locking the two foot brake pedals together.
-  Don't run the PTO or Belt Pulley without a guard.
-  Don't wear loose clothing near moving parts of the tractor, engine or implements.
-  Don't start the engine without putting the gear lever in neutral.
-  Don't leave the isolating/starter key in the tractor when unattended, especially where children have access.
-  Don't swerve or turn sharply at speed.
-  Don't let the clutch in suddenly on a slope, or brake fiercely if running backwards down hill, or the tractor may rear up.
-  Don't use the differential lock on the public highway.
-  Don't try to make a sharp turn unless the differential lock is out of engagement.
-  Don't operate the tractor on dangerously steep ground. Move cautiously on steep slopes, the sudden swing of a heavy implement, or the pull of a trailer, may cause trouble. Use the clutch, brakes, throttle and steering *slowly*. Beware especially of slippery surfaces.
-  Don't carry passengers on the tractor or linkages.
-  Don't turn with a projecting implement without making sure there is room for it.
-  Don't hitch trailed implements above the centre line of the rear axle.
-  Don't use the narrow front wheel settings when power-assisted steering is fitted.

DAVID BROWN

780 Selectamatic Livedrive

INSTRUCTION BOOK



780/1 — Livedrive

With 3-cylinder Diesel Engine

DAVID BROWN TRACTORS LIMITED

MELTHAM, HUDDERSFIELD, ENGLAND, HD7 3AR

Publication No. TP646

INTRODUCTION

The 780 Selectamatic tractor with 3-cylinder diesel engine incorporates the latest refinements of technical design and is the culmination of many years of development and rigorous field testing. In fact, it is a tractor which does a wide range of farming jobs well, reliably and efficiently.

Good design is backed up by skilled manufacture on some of the most modern machines currently available in Europe. The potential life and efficiency which is built into the tractor by careful choice of materials, close manufacturing limits and expert assembly, requires the co-operation of the user whose responsibility it is to carry out the *regular* lubrication and maintenance outlined in this book.

Almost any but the complete novice will be able to carry out the various work which a tractor driver is required to do. But to do this in the easiest, quickest and most efficient way, not to mention the *safest* way because a tractor can be a dangerous machine if handled carelessly and without thought, requires knowledge and skills which have to be acquired. This book gives the necessary information, armed with which the user will quickly gain skill after a little practice.

It is suggested that time spent in reading the Operation and Regular Maintenance sections of this book *before* the new tractor is put into use, will be amply repaid. It is appreciated that the tractor will only be used occasionally for some tasks and the book should be kept readily available at all times so that one's memory may be refreshed. For ease of use the book is divided into 4 sections as indicated in the contents list opposite.

In case of difficulty of any kind, the person most fitted to assist you is your David Brown dealer. Besides having specialist knowledge of the product, he has a great experience of local conditions which will be especially useful to you. In any query always quote the full *prefix* and *serial number* of the tractor and also the *engine type* and *number*.

Note: A List of Abbreviations used in this book is given on page 88.

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PRECAUTIONS WITH A NEW TRACTOR

Although every engine is tested and part run-in at the factory care should be taken during the first 25 to 50 hours' use. Avoid excessive speeds or heavy loading. Do not allow the engine to labour, change to a lower gear instead. Use the middle range of engine speeds from 1200 to 1800 rev/min. If possible use light loads to begin with and gradually increase the loading until the engine is fully run-in. If higher speed or heavy loading must be used, keep this down to very short periods interspersed with periods of light load.

Periods of idling should be avoided as the rate of carbon formation is fairly high at low temperatures.

FIFTY-HOUR SERVICE

After 50 hours, change the engine oil and filter element. Change the transmission oil and hydraulic filter element. The transmission gearbox should be flushed and the wire mesh screen cleaned. Clean the small Nylon filter situated in the hydraulic by-pass valve assembly. Change the oil in the final drive reduction housings. Check the valve clearances and tightness of cylinder head and main external nuts and bolts especially rear wheel nuts.

Note—The transmission gearbox is filled at the factory with special oil having inhibitors to prevent corrosion and assist initial bedding in. This oil **must** be discarded after 50 hours and the gearbox refilled with new oil of the type recommended on pages 48 to 51.

SECTION 1. OPERATION

STARTING THE DIESEL ENGINE

1. With fuel in the tank and the tap turned on, pull the fuel cut-off rearward to the running position, and drop into the retaining slot.
2. Open the throttle wide (towards the driver).
3.  **Put the gear (shift) lever in neutral** (the right-hand lever).
4.  Depress the clutch pedal fully. In certain markets an isolating switch is fitted so that the starter cannot be energised until the clutch is pushed down.
5. Switch on and operate the starter switch (turn the key to the right against the spring).

Release the starter switch immediately the engine runs and close the throttle to give about 1000 rev/min to warm up. Check that the oil warning light goes out.

STARTING IN COLD WEATHER

The wing nut on the side of the Injection Pump should be screwed in **before** trying to start the engine. As soon as the engine is running, the screw must be unscrewed otherwise erratic running with black exhaust will occur. In conditions when starting is difficult the use of ether or a proprietary starting fluid is recommended. This should be used on the felt attached to the plastic plug in the top of the manifold. Replace and start immediately. When starting is difficult, short presses on the starter will be of no avail. The engine should be kept turning by the starter until the engine runs unaided. However, if it fails to run, release the starter switch after 25 seconds and wait 20 seconds before trying again, otherwise the battery will be overheated and damaged.

Use of the starter places a heavy drain on the battery and adequate running time should be allowed to enable the dynamo to replace the charge. Use of the correct grade of oil in the engine and pressing the clutch whilst starting will help to reduce the load on the starter.

STOPPING THE ENGINE

Reduce engine speed, lift the fuel cut-off and allow it to move forward to the stop position. Switch off and remove the key.

STOPPING THE TRACTOR

Reduce travel speed by closing the throttle and apply the foot brakes. Just before the tractor comes to a halt, disengage the clutch and stop the engine. Apply the handbrake securely and park the tractor in a low gear ratio. To prevent accidental starting, ensure that the isolating key is removed and the fuel cut-off in the 'stop' position.

CONTROLS

The engine and tractor controls are shown in Fig. 1/1 and 1/2.

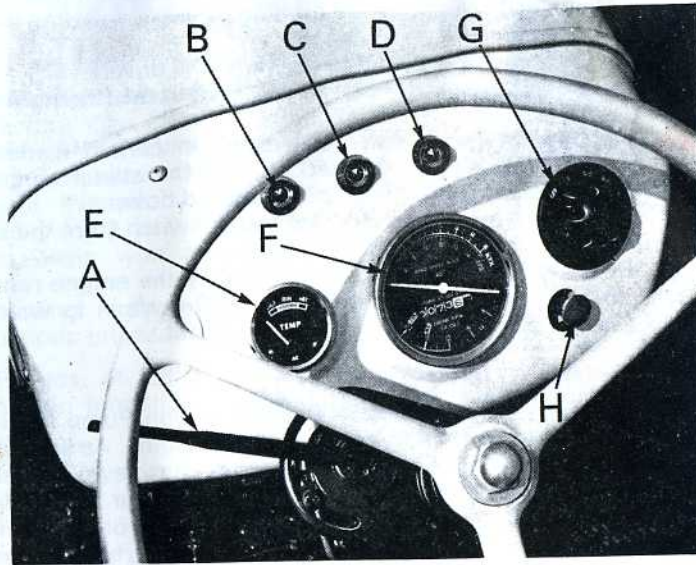


FIGURE 1/1. INSTRUMENTS AND CONTROLS

- | | |
|---------------------------------------|------------------------|
| A. Throttle lever | E. Water temperature |
| B. Charge warning light (Red) | F. Tractormeter |
| C. Filter warning light (Yellow) | G. Light switch |
| D. Oil pressure warning light (Green) | H. Engine stop control |

NO CHARGE WARNING LIGHT

The red light is illuminated when the isolating switch is turned on but should extinguish as soon as the dynamo commences to charge.

TRANSMISSION FILTER WARNING LAMP

When the fall in pressure across the full flow filter element in the hydraulic system is high enough to open the valve and allow oil to by-pass the filter element, the yellow warning lamp illuminates. This may occur (a) when the filter element is blocked with dirt and requires changing for a new one or (b) when the oil is cold and engine speed is high.

It is also arranged to light when the isolating switch is turned on and the driver should check that the bulb is intact each time before starting the engine. A faulty bulb should be replaced as soon as it fails.

If the bulb glows or flickers at idling speeds, this should be ignored.

The warning lamp may illuminate at less than full engine speeds when the oil is cold. The engine speed should be adjusted so that the light is not kept on for more than a few minutes otherwise proper filtering of the oil will not take place.

When the filter element becomes blocked with dirt it will be found impossible to run the engine at high speeds, even when the oil is warm, without the warning lamp illuminating.

! When the bulb lights at 1800 rev/min after a warming up period of 30 minutes the full flow filter element **must** be changed for a new one at the first opportunity.

ENGINE OIL WARNING LIGHT

The green light is illuminated when oil pressure is too low. Ensure that it lights when the isolating switch is turned on and goes out when the engine runs.

THROTTLE CONTROL LEVER

When fully rearwards the diesel engine is governed to its maximum speed. The rated speed of the engine is 1800 rev/min and may be set by observing the tractormeter. This speed should be used for most purposes to conserve fuel and engine life. It also gives a PTO speed of 532 rev/min.

LIGHT SWITCH

This has 4 positions, and depending on whether single or double filament headlamps are fitted, gives the following positions.

Single filament	Double filament
1. Off	1. Off
2. Side and Tail *	2. Side and Tail *
3. Side and Tail *	3. Side, tail and head (low beam) *
4. Side, tail and head *	4. Side, tail and head (high beam) *

*The rear plough lamp may be switched on by its own switch in these positions

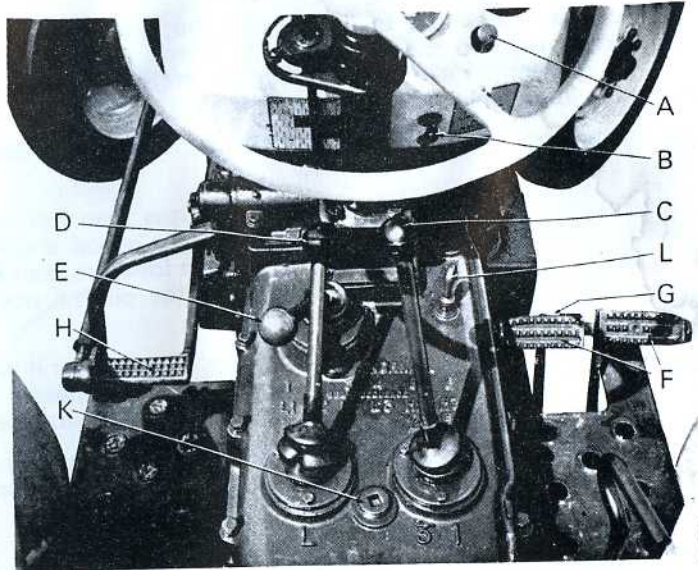


FIGURE 1/2. CONTROLS

- | | |
|---------------------------------|-----------------------------|
| A. Engine stop control | F. Brake pedals |
| B. Isolating/starter switch key | G. Locking bar |
| C. Gear (shift) lever | H. Clutch pedal |
| D. H/L range lever | K. Transmission filler plug |
| E. S/N (creep) lever | L. Transmission dipstick |

BRAKES

Twin foot pedals at the right-hand side give independent control of the brakes to assist steering in confined spaces. To ensure full braking power on the road, the locking bar G, Fig. 1/2 should be used on the highway. However, the balance of the braking system should be checked each week or whenever the tractor is taken on the road after working extensively where one brake is used much more than the other for turning at headlands, etc. If this precaution is not taken, an unexpected and dangerous swerve may occur.

LIVEDRIVE CLUTCH

There are two main stages of pedal movement. Stage 1 — Complete disengagement of the transmission clutch is denoted by an increase in pedal pressure at point A, Fig. 1/3. In practice the pedal should always be pressed to this point. "Easing" of the clutch to reduce forward speed, when baling etc., to allow the implement to clear a heavy patch, is detrimental to the life of the clutch plates. When moving off with a loaded trailer on road haulage, engine speed should be kept

as low as possible. Full engagement of the clutch should be obtained as quickly as possible, then, the throttle opened. The clutch should not be operated at full engine speed or excessive wear will result.

Stage 2 — Fully depressing the clutch pedal also disengages the PTO (B. Fig. 1/3). If the PTO clutch is not used frequently, the pedal should be fully operated once a week and the PTO "freed" to prevent binding of the plates.

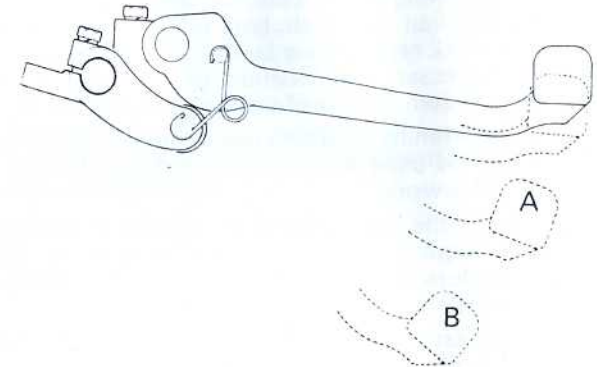


FIGURE 1/3. LIVEDRIVE CLUTCH

- A. Transmission disengaged
B. Transmission and PTO disengaged

ENGINE SPEED INDICATOR

The engine speed indicator fitted to the instrument panel should be used in conjunction with the chart attached to the bonnet (hood).

The travel speed in any gear can be obtained by reading the engine speed on the indicator and transferring this to the bottom line of the chart. The speed can be read off where a vertical line projected upwards crosses the required horizontal gear line.

Alternatively any travel speed in an appropriate gear can be projected downwards and the necessary engine speed determined. The throttle can then be set to give the required engine speed as observed on the engine speed indicator. The vertical red lines indicate the engine speed to be set to obtain standard PTO speeds of 540 or 1000 rev/min in high PTO ratio. The blue line shows the setting for 540 rev/min in low PTO ratio.

Any desired travel speed may be obtained by noting which gear line bears the nearest desired speed where it crosses the vertical line. This gear should then be selected. Note

that belt pulley work should be carried out at 1000 rev/min PTO in high ratio. This setting should also be used for transmitting high horsepowers on PTO work.

2-SPEED TRANSMISSION GEAR BOX

The main transmission gearbox controlled by the right-hand (shift) lever has 3 forward and 1 reverse speed. The secondary transmission gearbox, controlled by the left-hand (shift) lever, has two ratios — high and low (H and L). The combination of these two ratios gives a choice of 6 forward and 2 reverse speeds. The order of the speeds 1 to 6 and the necessary combination of the gear (shift) lever settings is shown on top of the transmission cover.

The H/L gear (shift) lever also has a neutral position mid-way and should be used when the tractor is stationary for belt pulley or PTO work.

Experience is the best guide to the choice of speeds for any particular requirement, but if the engine is labouring, denoted by loss of speed when the load is applied, select a lower gear ratio.

The transmission is of the sliding gear type, and gear changing (shifting) while the tractor is in motion must only be undertaken by an experienced driver.

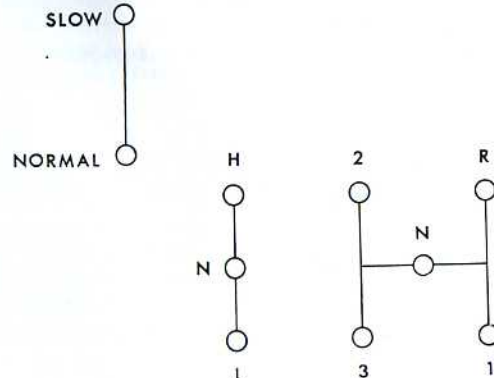


FIGURE 1/4. POSITIONS OF GEAR (SHIFT) LEVERS

6-SPEED TRANSMISSION GEARBOX

Twelve-speed tractors have three shift levers. The H/L range and main levers are as shown in Fig. 1/4 with a third lever on the left. The extra lever has two positions: normal (marked "N") and slow (marked "S"). In the normal rearward position "N", the speeds obtainable are the same as the 6-speed gearbox. In the forward position "S", an additional slower range of speeds is available.

The 12 forward speeds and the positions of the gear (shift) levers are shown on the chart on the instrument panel. Direct drive (Normal) with the gear (shift) lever rearward, is shown in the yellow or white sections of the chart. The slow speeds, with the gear (shift) lever forward, are shown in the red sections of the chart.

The first three speeds in the shaded section use indirect drive to give slow speeds for planting, transplanting, hedging, PTO and similar operations. Gear ratios 5, 6 and 9, in the red part of the chart, are driven from the same gear train and provide ratios for light traction or PTO work.

The above ratios are suitable for all normal types of work. However, for work involving continuous heavy traction, gears 4, 7, 8, 10, 11 and 12 are the most suitable since these are direct drive ratios.

TRAVEL SPEEDS

ENGINE SPEED 1800 rev/min

PTO SPEED 540 rev/min

Gear		Lever Positions	Travel Speed	
6-speed	12-speed		Mile/h	Km/h
1	1	SL1	0.76	1.23
	2	SL2	1.27	2.05
	3	SH1	1.72	2.76
	4	NL1	1.96	3.15
	5	SL3	2.32	3.74
	6	SH2	2.85	4.57
2	7	NL2	3.24	5.20
3	8	NH1	4.36	7.03
	9	SH3	5.20	8.36
4	10	NL3	5.92	9.49
5	11	NH2	7.25	11.7
6	12	NH3	13.3	21.4
1R 2R	1R	SLR	1.26	2.03
	2R	SHR	2.82	4.54
	3R	NLR	3.22	5.17
	4R	NHR	7.20	11.6

THE SELECTAMATIC HYDRAULIC SYSTEM

INTRODUCTION

The David Brown Selectamatic System embodies a most advanced system of implement control devised for tractor mounted equipment. This is achieved with the utmost simplicity of operation. The following points have been catered for in its design.

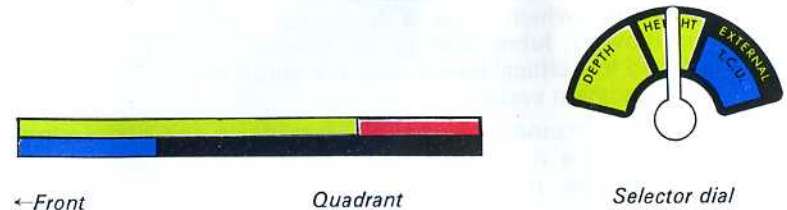
1. **Simple control** — Whatever mode of operation is required, the implement is fully controlled by a single hand lever. Lift, hold, drop, height position, depth position, and TCU (weight transfer) are all available at the hand lever.
2. **Simple change from one service to another** — Selection is by means of a 3-position pointer.
3. **Ease of control of the implement** — The sensitivity of the hand lever is automatically adjusted to suit the mode of operation. A large movement of the hand lever is used for adjustments requiring precise setting. Finger guides are provided for repetition of settings. The depth and height settings of the hand lever are not affected by variations in engine speed.
4. **Reliability** — Satisfactory reliability is ensured by a full-flow suction filter in the hydraulic oil system. This will remove particles of dirt which could interfere with the working of high pressure hydraulic valves.
5. **Ease of service** — The control valve has been designed as a single separate unit which can be fully bench tested before fitting to the tractor. There are a minimum number of connections and three simple adjustments to be made after fitting to the tractor, only one of which need be made with the engine running.
6. **Variable rate of drop** — The rate of drop can be adjusted by the user to suit the type of work. When set by a small handwheel, the rate is fixed at the chosen speed and is constant regardless of load.

DESCRIPTION OF THE SELECTAMATIC CONTROLS

Before turning to the operation of the four services available with the Selectamatic hydraulic system it is useful to have a knowledge of the action of each of the units of the mechanism.

HAND LEVER

This operates in a quadrant and controls the hydraulic system according to the mode determined by the selector dial pointer.



SELECTOR DIAL POINTER

A small pointer on a dial mounted on the rear axle casing is turned to one of three positions, "DEPTH", "HEIGHT" or "EXTERNAL/TCU", to select the mode of operation required. To ensure the dial pointer is free to turn, the hand lever should be held rearwards in the "select" position. When set, the control valve receives information from the appropriate source, i.e. the sensing unit for depth control, from the ramshaft (rockshaft) for height control, or from the hand lever for TCU and external equipment. The "EXTERNAL/TCU" position is equally applicable to depth wheel (gauge wheel) controlled implements and external hydraulic equipment.

SENSING UNIT

The top (upper) link is attached to a spring loaded sensing unit which is connected to the control valve by a cable which transmits information regarding the implement draught. When the selector pointer is in the "DEPTH" position, the cable causes the control valve to adjust the depth of the implement to maintain a constant draught. The hand lever overrides the sensing unit to determine the draught around which the control valve operates and thus the depth can be determined by the operator.

FINGER GUIDES

Two finger guides are provided which can be clamped to the quadrant by thumb screws in any suitable position so that the

hand lever may be returned quickly to the same place when required.

3-WAY VALVE

The 3-way valve is an optional fitment mounted on the left-hand front of the rear axle case. It enables external single acting light duty auxiliary units such as loaders, tipping trailers, etc. to be controlled from the tractor Selecta-matic Hand Lever. It has a quick selection 4-position lever. Two external supply points are available.

Lubrication of the gearbox and PTO is supplied by overflow oil from the hydraulic pump. When using external equipment which uses a large continuous flow of oil (i.e. mower), lubrication to the gearbox and PTO may be reduced to a critical level unless the return oil is fed back into the lubrication system.

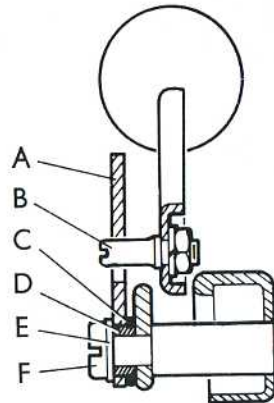
The return connection should be made to the connecting block on the right-hand side of the seat on top of the rear axle case; point A, Fig. 3/22.

If this point is not available because a live double-acting take-off valve has been fitted, it will be necessary to fit the special oil return plate (U1056) under the blanking plate at the left-hand side of the seat on top of the rear axle case. The connecting point is at the right-hand end of this plate and is threaded $\frac{7}{8}$ UNF, point C, Fig. 3/23.

CATCH UNIT

FIGURE 1/5. CATCH UNIT

- A. Catch
- B. Peg
- C. Rubber washer
- D. Sleeve
- E. Washer
- F. Existing setscrew



When external equipment is being used with the 3-way valve which includes its own hydraulic control valve, a

continuous pressure of oil is required from the internal system. In order to hold the hand lever in the lift position against the spring, a Catch Unit-U730 is available for fitting to the rear setscrew of the quadrant as shown in Fig. 1/5.

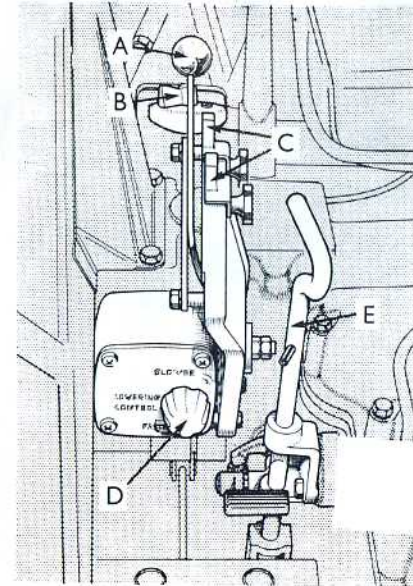


FIGURE 1/6. CONTROLS

- D. Lowering adjustment
- E. Parking brake

LOWERING ADJUSTMENT

The rate of lowering may be adjusted by turning a knob on the front of the axle casing. Lowering is governed by a flow control valve and the speed is independent of the load on the system.

LIFT LATCH

A latch is provided on the left-hand ramshaft (rockshaft) bracket for stowing the links in the top position when not in use.



Never pass the hand under the lift rod and ramshaft (rockshaft) arm to release the lift catch. Serious injury will occur if the links should fall.

When the latch lever is pushed downwards the links will be automatically held at the top when fully raised. To raise the links fully when a load is attached, it will be necessary to pull the hand lever fully rearwards past the spring loaded stop to override the automatic hold which occurs just before the lift latch is reached.

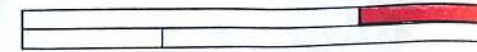
Before attempting to release the latch the linkages must be fully raised, either by pulling the hand lever fully rearwards or, if there is no weight on the links, by hand if preferred. The latch lever is then pulled upwards to release the latch.

Do not use the lift latch when transporting a heavy implement; set the hydraulic system to maximum height on "Height Control".

OPERATION OF SERVICE 1

Implements with depth wheel (gauge wheel) and use of TCU

SETTINGS

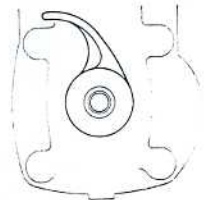


Red band — Select

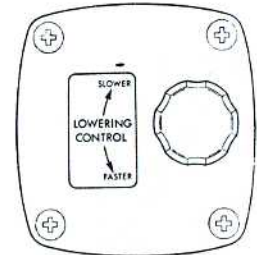


1. Pull the hand lever fully rearwards in the red band to "select" and while holding there against the spring, turn the selector dial pointer to "TCU".

2. With the engine running, pull the hand lever fully rearwards against the spring and pull the lift latch upwards to disengage it.

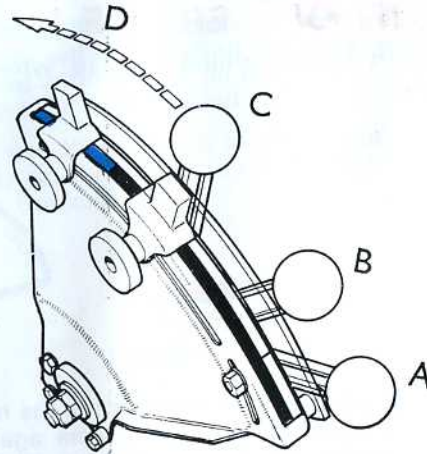


3. Set the lowering adjustment temporarily to mid-position and adjust later by trial to give the required rate of lowering for the work in hand.



4. Set the first finger guide to the lower position.*
5. Set the second finger guide approximately 1 inch in front of the first guide.

* Lowering will occur over a range of movement of the hand lever but only one position will give maximum rate of drop with completely free evacuation to the sump. This is most easily found without anything attached to the linkages and is correct when they will fall under their own weight after having been raised hydraulically. Once found in this way, the position should be noted for future reference.



Black band — Lift, hold, lower
Blue band — TCU

FIGURE 1/7.

HAND LEVER POSITIONS WITH DIAL POINTER AT TCU

- | | |
|-------------------|------------------|
| A. Lift position | B. Hold position |
| C. Lower position | D. Range of TCU |

OPERATION

At the beginning of the furrow, push the hand lever forward to the lower position. When the plough has reached its full working depth any required amount of TCU (weight transfer) may be applied by pushing the hand lever further forward. Maximum TCU is obtained when the hand lever is fully forward. When the correct amount of TCU has been determined, the second finger guide should be re-positioned into line with the hand lever for future reference.

At the headland, pull the hand lever fully rearward past the spring loaded stop. Release it when the implement has fully lifted. The hand lever will spring back to the hold position.

To avoid variation in depth, TCU should be maintained to the end of the furrow. In order to get proper penetration the hand lever should not be pushed forward to the TCU position until the proper working depth has been reached. On the other hand, application of TCU should not be delayed too long or

wheel slip will occur before TCU becomes effective. Once wheel spin has occurred it is difficult to stop. The correct timing and anticipation of the required quantity of TCU is a matter of skill which comes very quickly with a little practice.

LINKAGE ADJUSTMENT WHEN USING TCU

Because of the different forces acting on the plough when using TCU a slight re-adjustment to the settings may be required.

1. The top (upper) link should be shortened slightly to counteract the tendency of the plough to ride out of the ground. It should however, be used as long as possible consistent with obtaining the required depth.
2. To correct a tendency of the front furrow to become shallow, lengthen the right-hand levelling lever slightly.
3. On soft ground raise the depth wheel slightly to maintain the correct depth. Some of the weight is taken off the depth wheel and so it will not sink so deeply into soft earth as it would without TCU.

OPERATION OF SERVICE 2 "DEPTH CONTROL"

Implements without depth wheel (gauge wheel)

SETTINGS

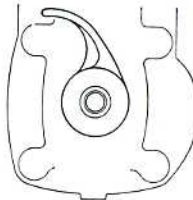


Red band — Select

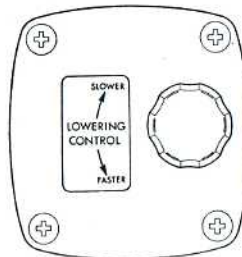


1. Pull the hand lever fully rearwards in the red band to "select" and while holding it there against the spring, turn the selector dial pointer to "DEPTH".

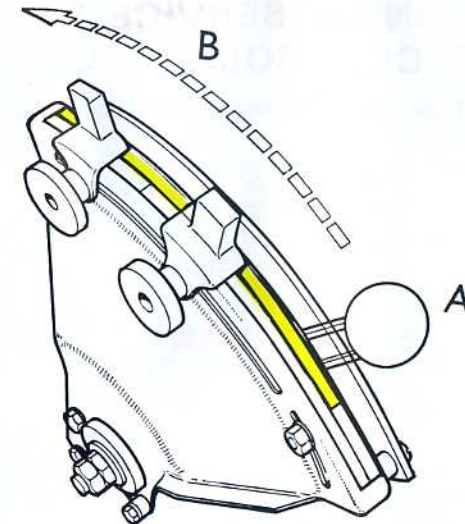
2. With the engine running, pull the hand lever fully rearwards against the spring and pull the lift latch upwards to disengage it.



3. Set the lowering adjustment temporarily to mid-position and adjust later by trial to give the required rate of lowering for the work in hand.



4. Set the first finger guide temporarily to a mid-position.
5. Push the second finger guide to the front of the quadrant.



Yellow band — Range of depth

FIGURE 1/8

HAND LEVER POSITIONS WITH DIAL POINTER AT DEPTH

A. Lift position B. Range of depth

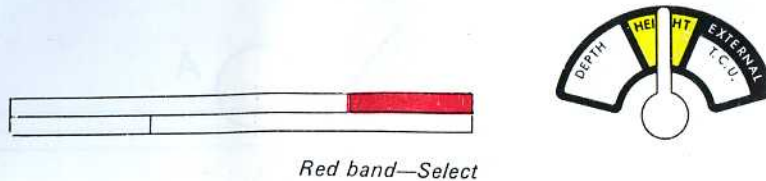
OPERATION

At the beginning of the furrow, push the hand lever forward to the finger guide. Adjust the hand lever forward to increase depth and rearward to decrease depth until the required depth has been found by trial. Set the finger guide in line with the hand lever so that the same depth can be found easily on subsequent furrows. At the headland, pull the lever rearwards up to the spring loaded stop to lift the implement. If wheel slip occurs, differential lock should be used as described on page 28.

OPERATION OF SERVICE 3 "HEIGHT CONTROL"

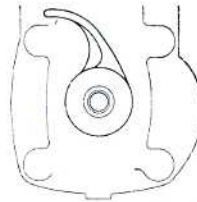
Light draught, or implements working above ground level

SETTINGS

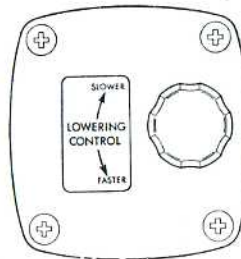


1. Pull the hand lever fully rearwards in the red band to "select" and while holding it against the spring, turn the selector dial pointer to "HEIGHT".

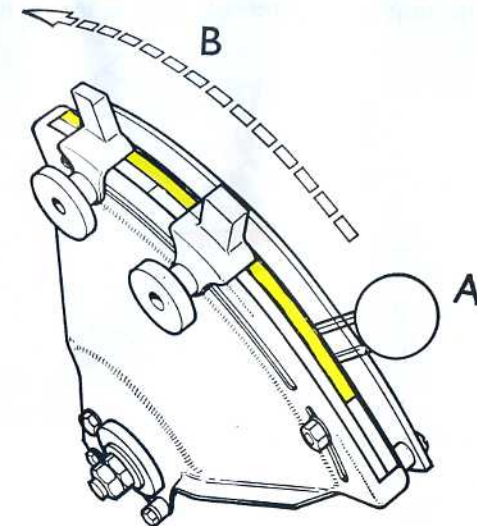
2. With the engine running, pull the hand lever fully rearwards against the spring and pull the lift latch upwards to disengage it.



3. Set the lowering adjustment temporarily to mid-position and adjust later by trial to give the required rate of lowering for the work in hand.



4. Set the first finger guide temporarily to mid-position.
5. Set the second finger guide fully forward to the front of the quadrant.



Yellow band—Range of height

FIGURE 1/9.

HAND LEVER POSITIONS WITH DIAL POINTER AT HEIGHT

A. Lift position

B. Range of height

OPERATION

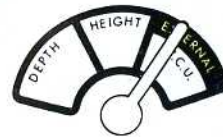
Raise the implement by pulling the hand lever rearwards up to the spring loaded stop. Push the lever forward until the implement is lowered to the required height. Set the finger guide into line with the hand lever so that the same height may be found again easily.

OPERATION OF SERVICE 4

External Equipment operated by the tractor hydraulic supply

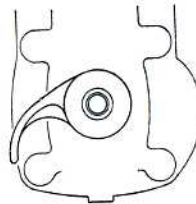


Red band—Select



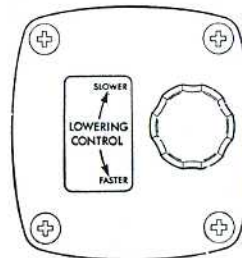
1. Pull the hand lever fully rearwards in the red band to "select" and while holding it against the spring, turn the selector dial pointer to "EXTERNAL".

2. Stow the links on the lift latch (push the lift latch downwards and pull the hand lever fully rearward against the spring until the linkages rise above the latch).



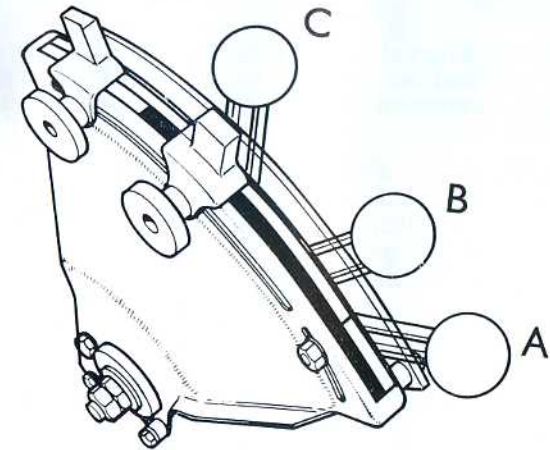
3. Set the 3-way valve lever to the external system required. See page 26.

4. The lowering adjustment should be set by trial to give the required rate of lowering for the work in hand.



5. Set the first finger guide to the lower position.*
6. Push the second finger guide fully forward to the front of the quadrant.

*See footnote on page 17.



Black band—Lift, hold, lower

FIGURE 1/10.

HAND LEVER POSITIONS WITH DIAL POINTER AT EXTERNAL

A. Lift position B. Hold position C. Lower position

OPERATION

It is advisable to ensure that there is sufficient oil in the sump to feed the external system, approximately half a gallon extra will be needed for a trailer or loader. Up to one gallon extra may be added when necessary. To pump oil to the external equipment, pull the hand lever fully rearward past the spring loaded stop. To stop the flow of oil, release the hand lever which will spring back to the hold position (in this position the pump is unloaded and the oil locked in the external equipment). To return oil to the sump, push the hand lever forward to the finger guide.

Do not go forward beyond the lower position or TCU pressure will be applied and this is sufficient to drive a mower or raise an empty loader.

For external equipment with its own hydraulic controls and requiring continuous pressure, hold the hand lever in the rear position by using the Catch Unit-U730 (see page 14).

3-WAY VALVE

Connections

The two external connections are available on the front of the unit and are supplied sealed with $\frac{3}{4}$ UNC plugs. The upper connection is designated No. 1 and the lower one No. 2.

Any equipment which requires a continuous supply of oil, such as a hydraulic mower, should have its return oil taken to a point which enters the gearbox lubrication system, otherwise the gearbox and PTO will not be properly lubricated. See page 70.

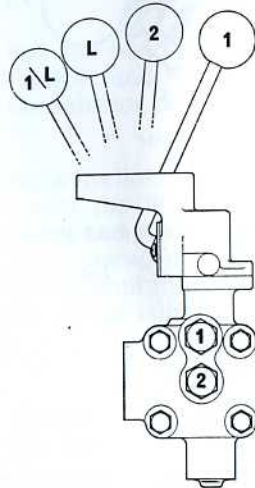


FIGURE 1/11.
3-WAY VALVE

1. Output connection 1
2. Output connection 2

Operation

The selector lever moves sideways and it is only necessary to place it in line with the symbol on the transfer referring to the equipment required as follows:

1. Connects to outlet 1.
2. Connects to outlet 2.
- L. Connects to internal ram to operate linkages.
- 1/L. Connects to outlet 1 and linkages at the same time.

Control is then carried out by the Selectamatic hand lever as described on the previous page. For use of dump valve (where fitted) see page 37.

OPERATION OF LIVE EXTERNAL EQUIPMENT

(Optional Unit)

Either a single (U844) or twin (U845) live double-acting take-off valve may be fitted in place of the external hydraulic connection housing at the right-hand side of the seat on top of the rear axle case.

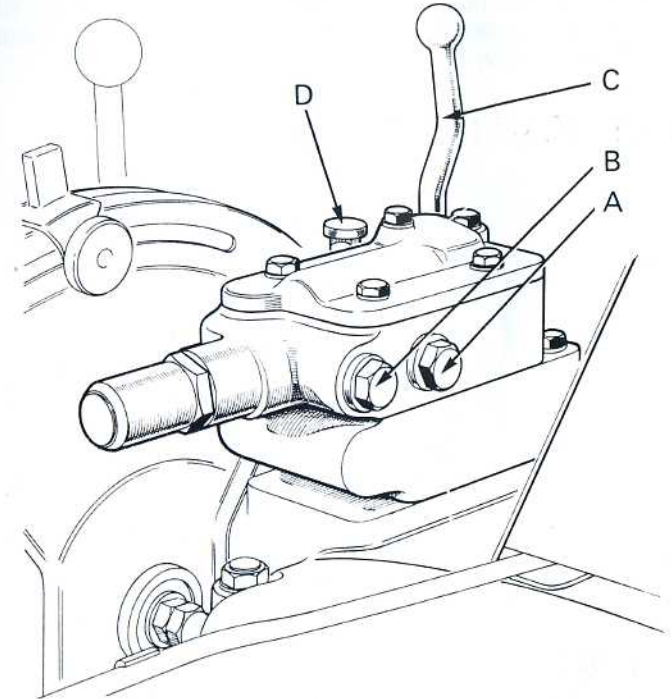


FIGURE 1/12. LIVE, DOUBLE-ACTING, TAKE-OFF VALVE MOUNTED ON THE DISTRIBUTOR BLOCK

- A. Output to this connection when lever C is forward
- B. Output to this connection when lever C is rearward
- C. Operating lever
- D. Dump valve

Connections to the double-acting take-off valve are shown at A and B in Fig. 1/12. When the control lever is pushed forward, oil is fed to connection A and returned to the sump via connection B. When the control lever is pulled rearward the oil flow is reversed. Both positions have an indent so that the

lever is retained when pushed to the extreme of its movements. An automatic reject valve is incorporated so that the lever is returned to the centre position and cuts off the oil flow when the external ram reaches the end of its travel and the pressure increases.

When connecting external equipment it is advisable to arrange the connections so that when the lever is pulled rearwards the implement raises, and lowers when the lever is pushed forward.

When a second live-valve is fitted, this is identical to the first; connections and operation are similar. It works quite independently.

DIFFERENTIAL LOCK

This locks the drive so that both rear wheels turn at the same speed, thus one wheel cannot slip unless the other one does.

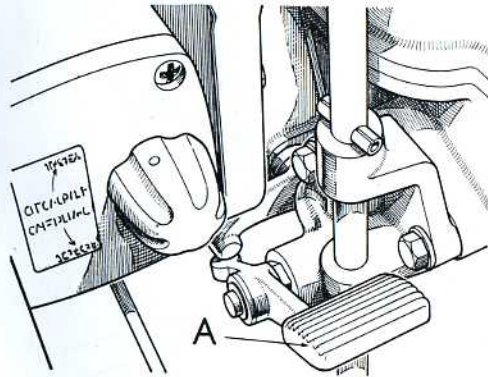


FIGURE 1/13.
DIFFERENTIAL LOCK
A. Pedal

ENGAGING

To engage differential lock, press the pedal firmly with the right heel **before** slip occurs. **If slip has occurred, close the throttle or de-clutch before pressing the differential lock pedal.** Re-engage the clutch gradually. Maintain a steady pressure on the pedal until the differential lock engages. Ensure that the pedal is pressed down the full amount. Retain the lock in engagement by resting the heel on the pedal.

DISENGAGING

The differential lock is spring loaded so as to push it out of engagement but any tendency to slip will create a binding action which will prevent it from disengaging. To disengage

it is only necessary to momentarily relieve the load or ~~reverse~~ the load. This is done by pressing quickly first on one brake pedal, then on the other. When ploughing it is usually only necessary to press on the landwheel brake.

If differential lock is used for trailer work with the brakes locked together, disengagement can be obtained by steering first to one side then to the other.

Note. If the tractor is stopped and the differential lock remains in engagement, it may be released by momentarily reversing the tractor.

Warning. The differential lock must not be used in the higher gears, at high speeds, or on the public highway.

BALLAST

Ballast may be added to restore the balance of the tractor where heavy equipment is mounted on the front or rear of the tractor. Weight may be added in the form of front chassis weights, front or rear wheel weights or water ballast in the tyres.

Wheel slip, which wastes fuel as well as wearing the tyres, should be reduced by the use of TCU wherever possible. For trailed implements or trailers where TCU cannot be used, ballast weight can be effective but remember that excessive weight can do more harm than good because power is consumed in transporting the weight. The maximum all up ballasted weight is given on page 82.

Note. When water ballasting use an anti-freeze solution if freezing temperatures are encountered and do not fill the tyre completely—Consult your Dealer or the tyre manufacturer's literature for details of tyre filling procedure.

WHEEL WIDTH ADJUSTMENT

TRACK SETTINGS FOR PLOUGHING

For 12 in. to 16 in. ploughs (30.5 to 40.6 cm) the rear track should be set to 56 in. (142 cm) and the front track to 52 in. (132 cm). This brings the insides of the front and rear tyres into line.

For ploughs of 8 in. to 12 in. widths (20 cm to 30.5 cm), the rear wheels should be set to 52 in. (132 cm) and the front axle to 48 in. (122 cm) width to bring the inside of the front tyres into line with the inside wall of the rear tyres.

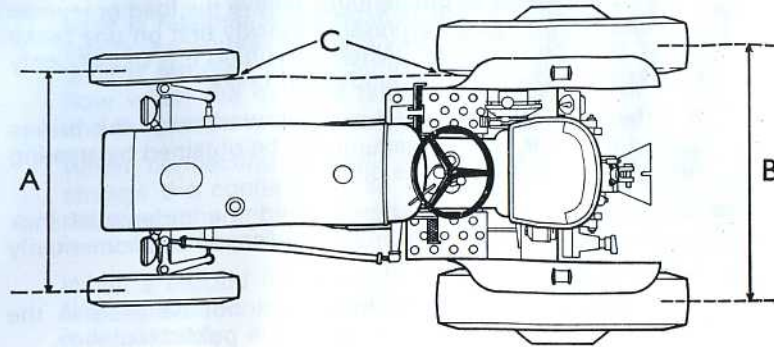


FIGURE 1/14. WHEEL SETTINGS FOR PLOUGHING

- A. Front setting 4 in. (10 cm) less than rear setting B
C. Tyre walls in-line

REAR TRACK ADJUSTMENT

The rear track width can be varied by 4 in. (10 cm) steps. The wheel centres are dished so that they can be fitted to the hub either way around. The lugs on the wheel rim are off-centre so that by fitting the wheel either way round, a variation is obtained. A further variation is obtained by fitting the wheel rim lugs either side of the dished centre. The full range of settings is shown in Fig. 1/15.

Note. When fitting rear wheels observe the correct direction of rotation of pneumatic tyres. The tread pattern must be such that when looking down on top of the tyre, the Vee of the tread points forward.

Important. Take care to place the jack on firm ground under a solid part of the tractor. Before removing a wheel, place some pieces of stout wood under the tractor frame to support it should the jack become dislodged.

FRONT TRACK ADJUSTMENT

The axle extension is secured by two bolts A Fig. 1/16. The position B is only used for the 72 in. (183 cm) setting. These are screwed into threaded holes in the axle and do not require the use of nuts. To adjust the track width, jack up the axle, remove the adjustment nut and bolt C from the track rod, remove completely the two bolts A and slide the axle

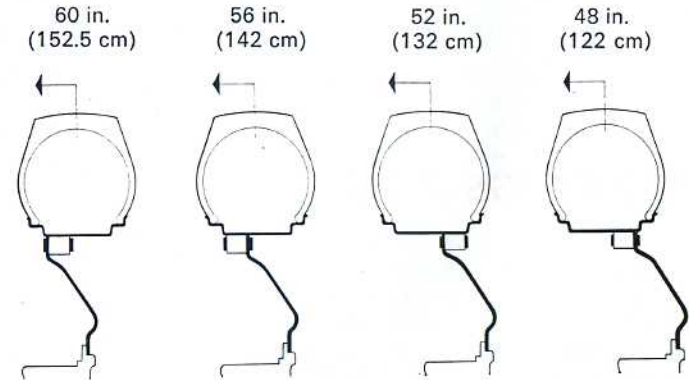
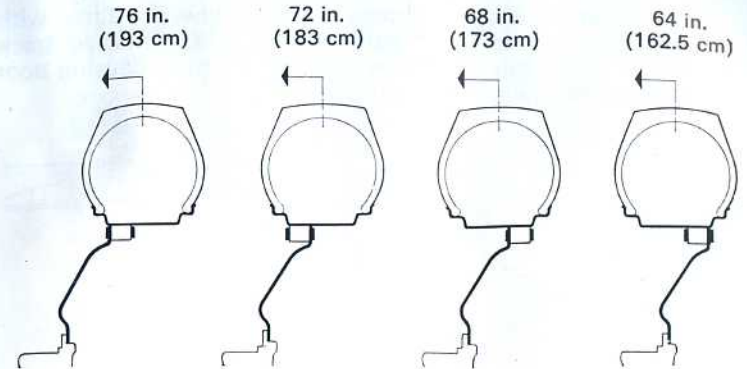


FIGURE 1/15. REAR WHEEL-POSITIONS OF RIMS AND CENTRES

extension to the required position and refit the bolts. Ensure that the spring washers are used and the bolts fully tightened. When both halves of the axles have been adjusted, re-fit the nut and bolt through the track rod to position the wheels parallel when straight ahead.

Where possible the wheels should be set to one of the wider settings to ensure stability, especially with loaders or trailers. Where the narrower settings must be used, care should be taken on steep hillsides when following a contour.

Note: On no account should the front wheel be fitted with the wheel centre dish outwards to give increased track width. Doing this upsets the steering geometry causing poor steering and heavy tyre and pivot wear.

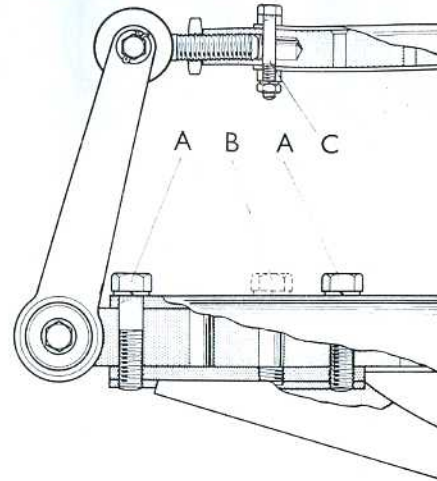


FIG. 1/16. FRONT AXLE TRACK ADJUSTMENT

- A. Axle securing bolts
- B. Inner bolt position for 72 in. (183 cm) setting
- C. Track rod bolt

TYRE PRESSURES

Tyres are expensive and it pays to check the pressure frequently. Incorrect pressure, either too high or too low, is the chief cause of tyre wear and damage. Check pressures once a week. If water ballasted, the pressures should be checked very frequently.

Front tyres—general work	..	25 lb./in ² (1.76 kg/cm ²)
—with loader, 6 ply tyres	..	45 lb./in ² (3.16 kg/cm ²)
Rear tyres	{ field work	.. 12 lb./in ² (0.84 kg/cm ²)
	{ road work	.. 14 lb./in ² (0.98 kg/cm ²)

LINKAGE SETTINGS

CATEGORY I only

This linkage is only suitable for category 1 (Narrow) implements. The lift rods and check chains are attached as shown in Fig. 1/17.

Left- and right-hand lower links are not interchangeable. The hole for the lift rod is nearer the top edge and forward of the check chain hole which is mid-way along the length of the link. When correctly set, both ends of the links should be parallel to the centre-line of the tractor while the major part

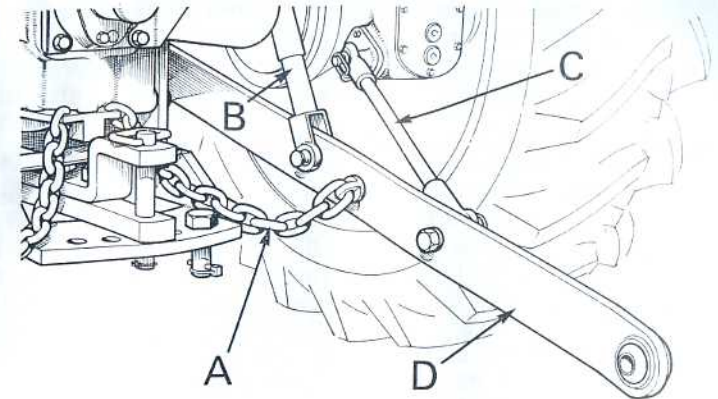


FIGURE 1/17. POSITIONS OF LINKAGE CHECK CHAINS AND STABILISER BAR (Category 1 Linkage)

- A. Check chains
- B. Levelling lever
- C. Right-hand stabiliser bar (Optional)
- D. Lower link

of the links converge towards the tractor hitches. When side movement must be avoided, a stabiliser bar may be fitted as shown in Fig. 1/17 using the rearmost hole in the lower link. The links are still free to lift up and down.

DUAL CATEGORY LINKAGE

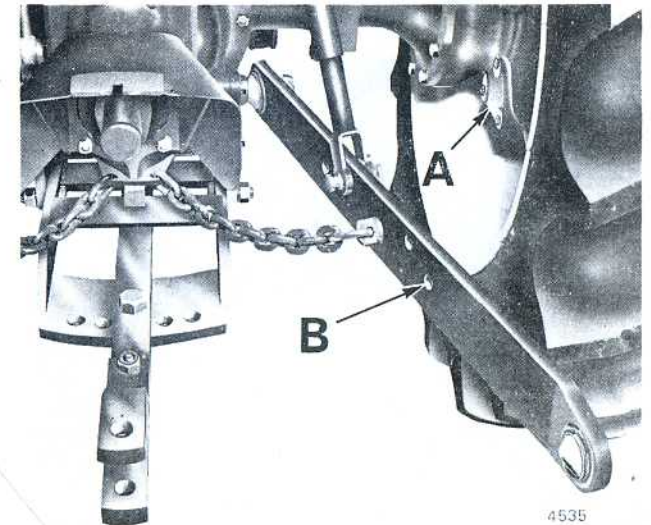


FIGURE 1/18. POSITIONS OF LINKAGE, CHECK CHAINS AND STABILISER BAR (Dual Category Linkage)

- A. Mounting pad for linkage stabiliser
- B. Hole for linkage stabiliser

With dual category linkage, the links are reversible for use with either category 1 or 2 implements.

Settings for Category 1 Implements

The uncranked end of the lower link with the larger ball is fitted to the hitch pin using the sleeve (supplied in the tool box) to bring the pin to the diameter of the hole in the ball. Ensure that the links are correctly handed so that the crank at the rear end is turned inwards and the two offset holes for the lift rods are closer to the upper edge, see figure 1/18. The lift rod is connected to one of these holes which is closer to the tractor. The check chain should be secured through the centre hole.

Settings for Category 2 Implements

The cranked end of the lower link with the smaller ball is fitted to the hitch pin without the sleeve (the sleeve should be placed in the tool box for subsequent use). The crank should turn outwards and the offset holes for the lift rods should be closer to the upper edge. Secure the lift rod to one of these holes which is closer to the tractor and the check chain to the centre hole, see figure 1/19.

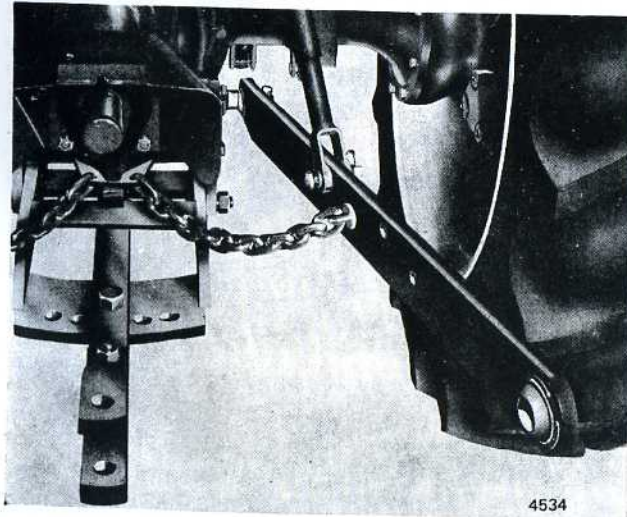


FIGURE 1/19. POSITION OF LINKAGE AND CHECK CHAINS
(Dual Category Linkage)

LIFT RODS

For ploughing the lift rod and levelling lever should be set initially to $15\frac{3}{8}$ in. (39 cm) measured between the pivot centres.

N.B. The lift rod must not be extended to more than $17\frac{5}{8}$ in. (44.8 cm) between pivot centres, otherwise there will be excessive strain on the remaining thread. Similarly the levelling lever must not be extended beyond $17\frac{7}{8}$ in. (45.4 cm).

When not attached to the lower links *i.e.* when the drawbar is used and the lower links removed, the check chain pins should be inserted to prevent the lift rods unscrewing and falling off.

DRAWBAR

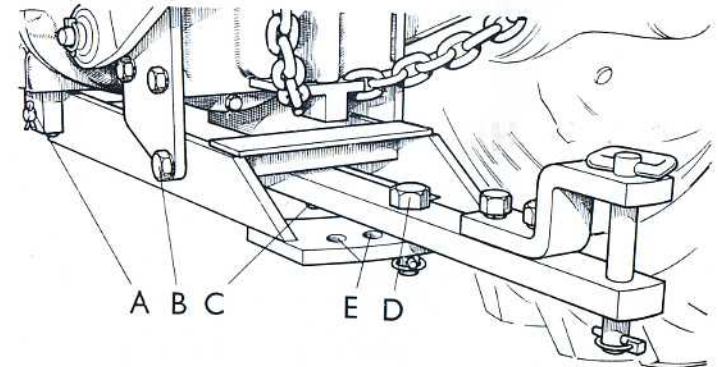


FIGURE 1/20. DRAWBAR—EXTENDED POSITION

- | | |
|----------------------|-----------------------|
| A. Hinge bar | D. Short securing pin |
| B. Rear support bolt | E. Off-set holes |
| C. Centre fixing pin | |

This consists of a hinge bar assembly—U635 which is bolted under the rear axle casing. The front of the drawbar frame is supported by the hinge bar A Fig. 1/20 and the rear is bolted to the hitch bracket by bolt B. The drawbar may then be fitted in the forward position by sliding the front between the two pegs in the frame and securing by the drawpin through the centre hole as shown in Fig. 1/21. This position may be used for drawing trailers which impose a load on the tractor in excess of 1200 lb (545 kg). Maximum permitted load is 2000 lb (907 kg).

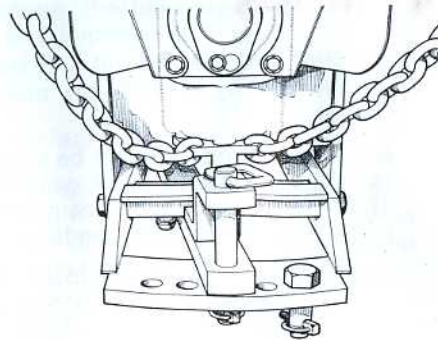


FIGURE 1/21
DRAWBAR FORWARD
POSITION

For PTO driven implements which do not exert a load on the drawbar of more than 1200 lb (545 kg) the extended position should be used. The key-hole shaped hole in the front of the drawbar is hooked onto the centre fixed pin C Fig. 1/18 and the short pin D secured through one of the holes E in the drawbar frame as shown. In addition to the central position there are two off-set positions on either side.

PICK-UP HITCH

(Optional Units—U1099 and U635)

The Pick-up Hitch—U1099 must be used in conjunction with the hinge bar assembly—U635 which is also the support for the drawbar U1097. Because of the slotted lift rods it is not necessary to remove the pick-up hitch when it is desired to use the links. The pin F should be transferred to hole G to secure the pick-up frame to the hitch brackets and the lift rods slid onto the same pin before securing with the latch pin.

FITTING INSTRUCTIONS

If not already fitted the hinge bar bracket should be bolted to the underside of the rear main frame.

Refit the lift rod and levelling lever to the **outside** of the tractor lift arms using the new longer bolts B and fit the lift arm extensions C to the **inside** of the tractor lift arms using the same bolts. Fully tighten these nuts and bolts.

Fit the slotted lift rods E. It is important that the washers D are fitted before securing with the linch pins.

Fit the hinge bar through the front of the towing hook frame at A and the support brackets on the axle case. Secure with the linch pins. Fit the pins F provided, through the rearmost

holes in the towing hook and through the bottom of the slotted lift rods. Secure with linch pins. When not in use the towing hook frame and lift rods may be secured to the hitch bracket using the same pins. Because of the slots in the lift rods, the links are free to use independently when the towing hook is secured in this way.

Note. The maximum load at the towing hook is 2000 lb (907 kg).

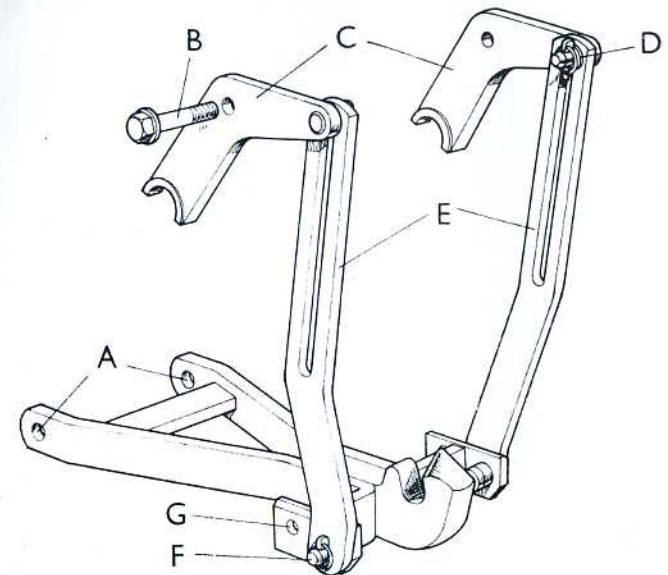


FIGURE 1/22. PICK-UP HITCH

- | | |
|---|----------------------|
| A. Hinge bar pivot holes | D. Washer |
| B. Long securing bolts | E. Slotted lift rods |
| C. Lift arm extensions | F. Securing pin |
| G. Pin hole for securing to hitch bracket | |

DUMP VALVE (Optional fitting)

The dump valve allows a much quicker rate of lowering of external ram operated equipment used with the selectamatic system via a 3-way valve. It must **not** be used for linkage mounted implements although it may be used to lower the pick-up hitch to facilitate quick coupling.

The valve control knob is situated on top of the rear axle case to the right of the seat, adjacent to the select position of the hydraulic control lever (D, Fig. 1/12 on page 27).

Operation

1. Push the hydraulic control into the 'lower' position.
2. Press down the dump valve knob and turn through 90° (either direction) and pull upwards.
3. When the implement is fully lowered, push the knob down and twist about 90° until it locates in the retention indent.

SECTION 2. REGULAR MAINTENANCE

Regular routine maintenance is essential. The importance of carrying this out regularly cannot be over emphasised. A properly maintained tractor retains its efficiency longer and remains reliable and ready for use at any time. Failure to carry out the maintenance properly can lead to unnecessary repairs, usually at unexpected and awkward times and in the long run is much more expensive than the cost of the regular attention. Because of its importance, the David Brown maintenance procedure has been made very simple. To this end the requirements have been divided into a daily inspection and greasing, plus 5 tasks A, B, C, D, and E to be carried out at set periods. The frequency of these tasks is shown in the table (page 40) and it is only necessary to keep an eye on the hour meter. The recommended times are for normal temperate conditions and in areas of dry dust or wet mud, the daily greasing and inspection of the air cleaner, should be carried out twice a day or more often if dictated by experience. The other tasks should also be carried out at correspondingly shorter intervals.

It is strongly recommended that the task be carried out at the end of the day on which the hour meter reaches the stipulated time. The oils will then be warm and will drain away easily.

NOTE. Attention to cleanliness is very important. All grease points must be cleaned before applying the grease gun. Sump plugs and filler caps must be wiped clean before removing and any containers used for filling the engine, gearboxes or fuel tank must be kept perfectly clean. The smallest grain of dust in the fuel system can cause faults with loss of power and early replacement. It is recommended that servicing be carried out under cover wherever possible.

TABLE OF SERVICE TASKS

In addition to the Daily Inspection and greasing, carry out the tasks marked X at the times shown.

Note. Recommended times are for normal conditions. In very wet and muddy conditions—grease more often. In dry dusty conditions (i.e. stationary work or hot climates)—clean the air filter, oil and fuel filters and carry out oil changes more frequently.

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				
1000	X	X	X	X	X

† New and Reconditioned Tractor only.

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 as follows every 8 hours or as found necessary by experience (see page 54).

Empty and clean the oil bath bowl (cup) and refill to the bead with clean engine oil. Detach the wire mesh element and clean in petrol (gasoline) or kerosene (fuel oil). If necessary clean the pre-filter and centre tube of the oil bath filter. Refit the wire mesh element with its sealing ring and secure the oil bath firmly with the 3 toggle clips.

If a paper element pre-filter is fitted, this must be cleaned and replaced.



FIGURE 2/1.
AIR CLEANER

- 5. Greasing**—In dusty or wet and muddy conditions apply lubricant to the following points (see Fig. 2/2). Clean the grease points (fittings) before applying the gun.

SAE 140 OIL { King Pins.
Front Axle Trunnions (2 points).

GREASE { Front Hubs.*
Steering Box Cross-shaft (2 points).
Rear Hubs.*

* Continue until grease exudes from inside of hub. This is not a sign that the hub seal is faulty.

6. **Wheels**—Tighten the wheel securing nuts each day for the first 50 hours when new or after the nuts have been disturbed. Tighten until no further movement can be detected indicating that they have fully bedded into the conical seats.

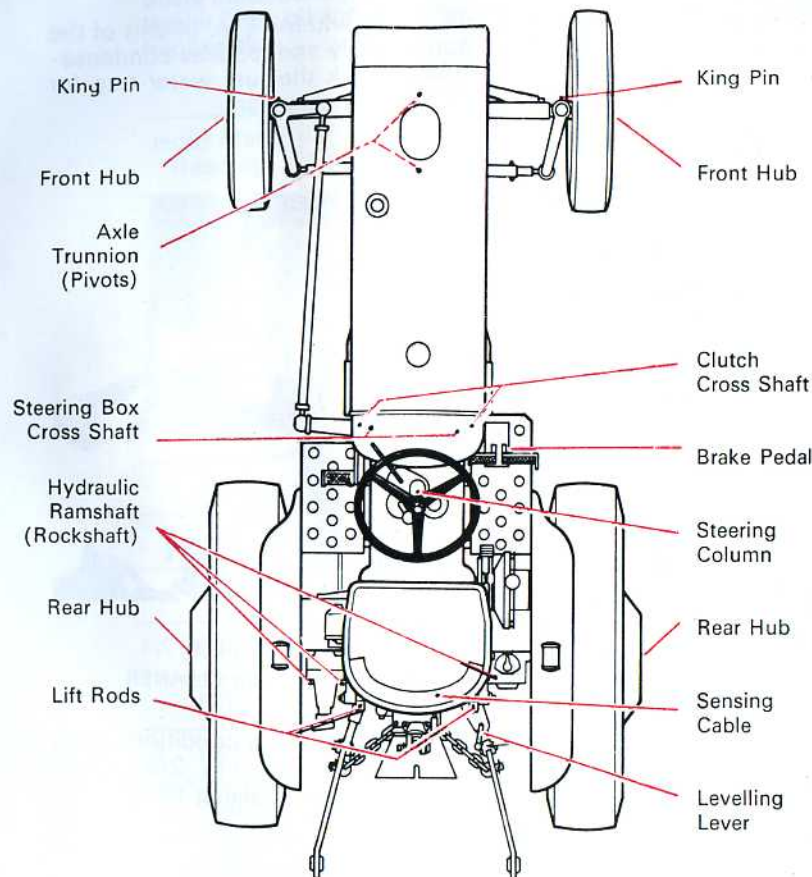


FIGURE 2/2 LUBRICATION CHART

In addition to the above points, the greaser on the hand brake housing should be injected with one shot of SAE 140 oil every 250 hours.

SERVICE TASK A

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

1. **Air Cleaner**—See page 54—Empty and clean the oil bath bowl (cup) and refill to the bead with new clean engine oil. Detach the wire mesh element and clean in petrol (gasoline) or kerosene (fuel oil). If necessary clean the pre-filter and centre tube of the oil bath filter. Refit the wire mesh element with its sealing rings and secure the oil bath firmly with the 3 toggle clips. It is essential that all joints are air tight to prevent dust being drawn in. If the rubber sealing rings on the oil bath becomes damaged, a new one must be fitted. If a paper element pre-filter is fitted, this must be cleaned and replaced.



FIGURE 2/3. ENGINE OIL FILLER

2. **Gearbox Oil**—Top up the gearbox oil to within the safe marks on the dip stick if necessary.

3. **Greasing**—Apply lubricant after cleaning the grease points (fittings).

SAE 140 OIL

King Pins.
Front Axle Trunnions (2 points).

GREASE

Front Hubs.
Steering Box Cross-shaft (2 points).
Steering Column top bearing.
Clutch Cross-shaft. (2 points).
Rear Hubs.
Brake Pedal (1 point).
Sensing Unit Cable.
Hydraulic Lift Ramshaft (3 points).
Lift Rod and levelling lever (5 points).

4. **Controls**—Lubricate the controls and pivots with new engine oil. In dry, dusty conditions these points are best left unlubricated.
5. **Brakes**—Check the foot brakes for adjustment and balance with the locking bar connecting the pedals (see page 70).
6. **Clutch**—Check free-play and reset to $\frac{3}{4}$ to 1 in. (1.9 to 2.5 cm) if necessary.
7. **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.

8. **Battery**—Top up the battery 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 battery will require more frequent attention in hot, dry conditions.

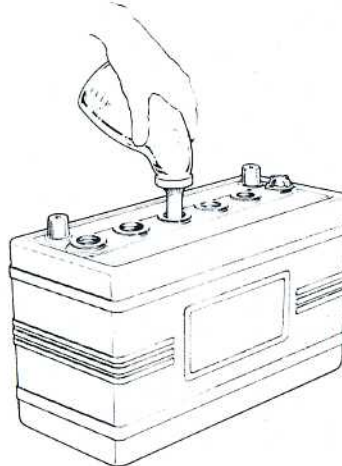


FIGURE 2/4. BATTERY

9. **Tyres**—Inflate tyres to correct pressures.
Front tyres—general work 25 lb/in² (1.76 kg/cm²).
—with loader, 6 ply tyres—45 lb/in² (3.16 kg/cm²).
Rear tyres { field work 12 lb/in² (0.84 kg/cm²).
 road work 14 lb/in² (0.98 kg/cm²).
10. **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 (see page 61).
11. **Wheels**—Check the tightness of all wheel nuts.

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.

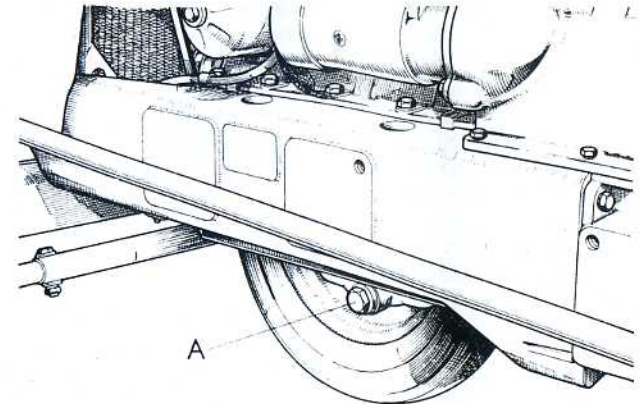


FIGURE 2/5. ENGINE SUMP DRAIN

A. Oil drain plug

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 vent plug is clear.

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 (see page 62).
2. **Hand Brake**—The greaser on the housing of the hand brake handle should receive one shot of SAE 140 oil. Do not use grease or over lubricate or the action of the pawl will be affected.

SERVICE TASK D

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

1. **Gearbox Filter**—Drain the gearbox and transmission housing into a clean container. Cover the container and allow the oil to stand while completing the servicing operations. Remove the full flow filter housing, clean out with fuel oil and a stiff brush, making sure that the wire screen is also clean and free of bits. Fit a new paper element filter and re-assemble. Refill with the original oil except for the last gallon which should be discarded with any sediment. Top up with new oil. Cleanliness is most essential as the transmission oil is used in the Selectamatic hydraulic system.

NOTE: It may be necessary to fit a new element assembly before 500 hours. The filter warning lamp will indicate this, see page 6.

Clean the nylon filter in the by-pass valve plunger situated in the hydraulic control valve assembly.

2. **Injectors**—Remove the injectors for cleaning by a David Brown or C.A.V. agent. Cleaning at this period is **essential** otherwise **reconditioning** will be necessary before the normal time of 1500 to 2000 hours use (see page 59).
3. **Valve Clearance**—Check and reset the valve clearances (see page 64).
4. **Fan Belt**—Check the tension by deflecting midway between the pulleys. Adjust this, if necessary, to be 1 in. (2.5 cm) total (see page 56).
5. **Fuel Filter**—Renew the first fuel filter element and vent the system (see page 58).

6. **Inspection**—Check over the tightness of external nuts, etc.
7. **Water Pump**—Apply high melting point grease sparingly to the water pump grease point (fitting) (see page 66).
8. **Dynamo**—Apply one or two drops of thin oil to the lubricating pad at the end of the dynamo. Replace the rubber plug (see page 75).

SERVICE TASK E

Every 1000 hours under normal conditions—more often if necessary.

1. **Engine Oil Pump**—Clean the oil pump wire mesh (see page 63).
2. **Gearbox**—When hot, drain the oil from the two plugs, (main frame and rear axle). Replenish with new oil (see page 68).
3. **Final Drives**—When hot, drain the oil from the final drive reduction housing and refill to the plug with new oil (see page 71).
4. **Belt Pulley**—Where fitted, drain off the oil and refill to the level of the plug with the same grade of oil as used for the Gearbox and Hydraulic System (see page 73).
5. **Fuel Filter**—Renew the second fuel filter element at least once a year (see page 58).
6. **Inspection**—Check the front hub, front axle and steering for wear and adjustment (see page 66).
7. **Brakes and Clutch**—Check the adjustment of the brakes and clutch (see pages 70 and 72).

FUEL, GREASE AND ANTI-FREEZE SPECIFICATIONS

DIESEL FUEL—BRITISH ISLES

Farm diesel fuel of high quality is recommended for use in David Brown Engines. Fuels with not more than 0.5% by weight sulphur should be used when available. A high sulphur content fuel requires an engine lubricating oil with high detergent characteristics to prevent carbon build-up in the nozzles and combustion chambers, and to neutralise the acid created by sulphur.

DIESEL FUEL—OVERSEAS

For temperatures above 0°C (32°F) use No. 2D fuel (ASTMD 975) with a minimum cetane rating of 45.
For temperatures below 0°C (32°F) use No. 1D fuel (ASTMD 975) with a minimum cetane rating of 50.

Note — For low temperature operation a fuel with a pour point 6°C (10°F) below lowest starting temperature should be specified.

Fuels with not more than 0.5% by weight sulphur should be used when available. A high sulphur content fuel requires an engine lubricating oil with high detergent characteristics to prevent carbon build-up in the nozzles and combustion chambers and to neutralise the acid created by sulphur.

GREASE

A good quality multi-purpose grease should be applied to all grease fittings (except water pump which requires a high melting point grease applied very sparingly every 500 hours). A high melting point grease may be used for all fittings except those which require oil.

ANTI-FREEZE

Use only a brand formulated for use in diesel engines to British Standard 3151 : 1959 type B, or its equivalent. This specifies an ethylene glycol type anti-freeze with sodium benzoate or sodium nitrite inhibitors. Topping-up should be carried out with the same type of anti-freeze in the appropriate strength. It is not recommended that any anti-freeze should be retained longer than 2 years.

APPROVED LUBRICANTS—BRITISH ISLES

APPLICATION	GRADE Recommended	Alternative	AMOCO	B.P.	CASTROL	ESSO	MOBIL	SHELL
Engine & Air Cleaner	Multi-purpose Oil	SAE 20/20W	AMOCO 100 Engine Oil 20W-30 or VITAMATIC Engine Oil 20W-30	Tractor Oil Universal	Agricacrol Multi-use	Esso Tractorlube (Universal)	Mobiland Universal	Tractor Oil Universal
Transmission & Hydraulic System & Belt Pulley	Multi-purpose Oil	SAE 80	AMOCO 100 Engine Oil 20W-30 or VITAMATIC Engine Oil 20W-30	Tractor Oil Universal	Agricacrol Multi-use	Esso Tractorlube (Universal)	Mobiland Universal	Tractor Oil Universal
Final Drive Reductions King Pins & Front Trunnion & Steering Box	SAE 140 or 90/140		AMOCO Gear Lubricant 140	Farm Gear Oil Universal	Agricacrol Gear Oil Medium	Esso Gear Oil GP 90/140	Mobilube C 140	Farm Gear Oil Universal
Power Assisted Steering	SAE 10		AMOCO Indoil 15	Energol HL65	Hyspin 70	Esso Automatic Transmission Fluid or Nuto H44	Mobil DTE 24	Tellus 27
Alternative Grade Oils	SAE 20/20W		AMOCO 200 Engine Oil 20-20W	BP Vanellus SAE 20W	Castrol CRI 20 or Agricacrol 20	Essolube HD20	Mobil 20W/20 or Delvac 1120	Rotella S 20/20W
	SAE 80		AMOCO Gear Lubricant 80 or AMOCO 200 Engine Oil 30	Tractor Oil 30	Castrol ST80 or CRI 30 or Agricacrol 30	Essolube HD 30	Mobilube C80 or Mobiloil 30 or Delvac 1230	Tractor Oil 30

APPROVED LUBRICANTS—EXCEPT BRITISH ISLES

APPLI- CATION	A.P.I. Classn. †	Air Temperature	GRADE Recomm.	Alternative	AMOCO	B.P.	CASTROL	ESSO	MOBIL	SHELL
Engine and Air Cleaner *	DM, DG, MS (SA-SB/ CA-CB)	Below -7°C (20°F)	Multi- purpose 10W/30	SAE 10W	AMOCO HD-M Engine Oil 10W-30	Tractor Oil Universal	Agricastrol Multi-use 10W/30	Esso Tractorlube Universal 10W/30	Mobiloil Super	Rotella M Multigrade 10W/30
	DM, DG, MS (SA-SB/ CA-CB)	-7°C to 32°C (20°F to 90°F)	Multi-purpose 20W/30 or 20W/40	SAE 20W	AMOCO HD-M Engine Oil 20W-30	Tractor Oil Universal	Agricastrol Multi-use 20W/30	Esso Tractorlube Universal 20W/30	Mobiloil Special 20W/50	Rotella M Multigrade 20W/40
	DM, DG, MS (SA-SB/ CA-CB)	Above 32°C (90°F)	Multi-purpose 20W/30 or 20W/40	SAE 30	AMOCO HD-M Engine Oil 20W-30	Tractor Oil Universal	Agricastrol Multi-use 20W/30	Esso Tractorlube Universal 20W/30	Mobiloil Special 20W/50	Rotella M Multigrade 20W/40
Transmission and Hydraulic System and Belt Pulley		Below -7°C (20°F)	Multi-purpose 20W/30 or 20W/40	SAE 80	AMOCO HD-M Engine Oil 20W-30	Tractor Oil Universal	Agricastrol Multi-use 20W/30	Esso Tractorlube Universal 20W/30	Mobiloil Special 20W/50	Rotella M Multigrade 20W/40
		-7°C to 32°C (20°F to 90°F)								
Power-Assisted Steering		Above 32°C (90°F)	Multi-purpose 20W/30 or 20W/40	SAE 90	AMOCO Indoil 15	Energol HL65	Hyspin HWS 32 or Castrol TQ	Esso Automatic Transmission Fluid or NutoH44	Mobil DTE 24	Tellus 27
		All temps.	H 10	SAE 10						

* ENGINE OIL

Under normal operating conditions the engine oils should be marked with viscosity grade and API classification as shown in the above table. Oils marked with service classification DM are recommended when one or more of the following conditions is present: abnormally high operating temps., intermittent operation at low temps., or fuel contains more than 1% sulphur. In climates where the ambient day temperature often exceeds 22°C (70°F), an SAE 30 straight mineral oil may be used in the Air Cleaner to prevent frothing and "pull-over" into the engine. Do not overfill the bowl.

† Note: If in doubt about the viscosity or A.P.I. classification, consult your Dealer who has been issued an explanation of these terms. The revised A.P.I. classifications are shown in brackets.

APPLICATION	AIR TEMPERATURE	GRADE	AMOCO	B.P.	CASTROL	ESSO	MOBIL	SHELL
Final Drive Reductions, King Pin and Front Trunnion (Pivot) and Steering Box	Below -7°C (20°F)	SAE 90	AMOCO Gear Lubricant SAE 90	Gear Oil SAE 90	Castrol ST or Agricastrol Light	Esso Gear Oil GP90/140	Mobilube C90	Dentax 90
	-7°C to 32°C (20°F to 90°F)	SAE 140	AMOCO Gear Lubricant SAE 140	Gear Oil SAE 140	Castrol D or Agricastrol Medium	Esso Gear Oil GP90/140	Mobilube C140	Dentax 140
	Above 32°C (90°F)	SAE 10W	AMOCO HD-M Engine Oil 10W	BP Vanellus SAE 10W	Castrol CRI 10 or Agricastrol 10	Essolube HD10W	Mobiloil 10W or Delvac Oil 1210	Rotella S 10W
DETAILS OF ALTERNATIVE GRADE OILS		SAE 20W	AMOCO HD-M Engine Oil 20/20W	BP Vanellus SAE 20W	Castrol CRI 20 or Agricastrol 20	Essolube HD20	Mobiloil 20W/20 or Delvac 1220	Rotella S 20/20W
		SAE 30	AMOCO HD-M Engine Oil 30	BP Vanellus SAE 30	Castrol CRI 30 or Agricastrol 30	Essolube HD30	Mobiloil 30 or Delvac 1230	Rotella S30
		SAE 80	AMOCO Gear Lubricant SAE 80	Gear Oil SAE 80	Castrol ST80 or CRI 30 or Agricastrol 30	Essolube HD 30	Mobilube C80 or Mobiloil 30 or Delvac 1230	Dentax 80
		SAE 90	AMOCO Gear Lubricant SAE 90	Gear Oil SAE 90	Castrol ST or Agricastrol Light	Esso Gear Oil GP90/140	Mobilube C90	Dentax 90

SECTION 3. SERVICE INFORMATION

The following pages give sufficient information to enable the operator 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.

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BONNET (HOOD) REMOVAL

Access to the battery and air cleaner is gained by removing the front grille. Release the 2 Zeus fasteners by pressing in and turning half-left with a coin or screwdriver. Pull out at the top and lift clear.

Full access to the engine, radiator and so on, is gained by removing the bonnet (hood) as follows.

Disconnect the wires to the head lamps by pulling apart the connectors.

Remove the thumb screw inside the front of the bonnet (hood) 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 and also where fitted, the air cleaner pre-filter and extension pipe. Lift the bonnet (hood) at the front to clear the retainer stud in the front extension, as shown in Fig. 3/1. Then lift it over the fuel tank filler as shown in Fig. 3/2 and clear of the tractor.



FIGURE 3/1.
LIFTING THE
BONNET FROM
THE FRONT
EXTENSION.

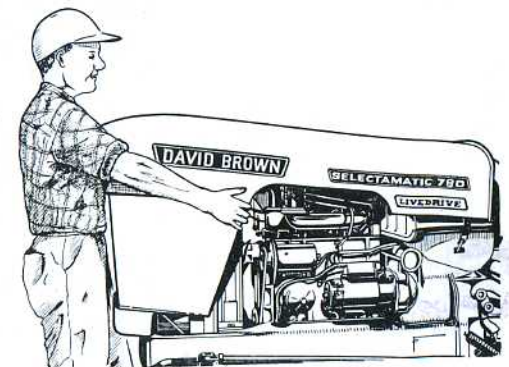


FIGURE 3/2.
REMOVING THE
BONNET

ENGINE

AIR CLEANER

A 3-stage filter system is used to provide the best possible protection to the engine. The first stage is a centrifugal pre-filter. A pre-filter with a removable paper element can be fitted as an alternative. The second and third stages consist of the oil bath and the detachable wire mesh.

In servicing the cleaner, the aim is to prevent more than $\frac{1}{4}$ in. (6 mm) of dirt accumulating in the oil bath and to prevent the detachable wire mesh becoming choked with oily dust. If the dust collected by the cleaner is not removed frequently, it will reach the stage where it will be carried over into the engine. This will cause premature wear and excessive oil consumption.

In dry and dusty conditions, cleaning and refilling may be required several times a day. In clean and in damp conditions the cleaner will remain efficient for several weeks. Inspect frequently to begin with and clean when there is $\frac{1}{4}$ in. (6 mm) of solid sediment, the oil is very dirty or the detachable wire mesh is thick with oily dust. Let experience then guide future inspection periods. Don't forget to inspect more frequently if conditions become worse.

It is important to clean the wire mesh with petrol (gasoline) and to clean the inlet passages at the same time as cleaning and renewing the oil bath.



FIGURE 3/3
AIR CLEANER
A. Oil pan
B. Wire mesh
C. Rubber seals
D. Inlet pipe
E. Cleaner Body

Where a paper element pre-filter is fitted, the element should be cleaned with a brush or by tapping the element gently on its side so that the dust falls off it. Care should be taken not to damage the paper. If it becomes perforated or if it is damp, a new element must be fitted.

COOLING SYSTEM

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

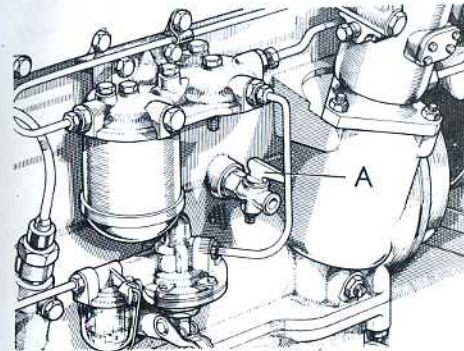


FIG. 3/4. CYLINDER BLOCK DRAIN
A. Drain Tap

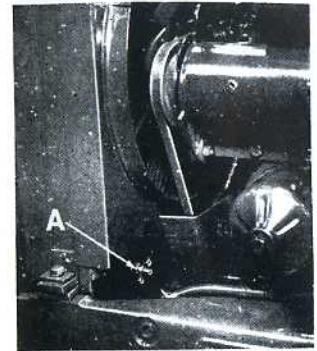


FIG. 3/5. RADIATOR DRAIN
A. Drain Tap

Precautions in freezing weather

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

The use of anti-freeze is strongly recommended in climates where freezing occurs. The strength should be such as to withstand the lowest temperature likely to be encountered. The correct ratio to achieve this will be recommended by the manufacturer and is usually 5:1 in the U.K.

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.

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.

FAN BELT ADJUSTMENT

Refer to Fig. 3/6. The fan, dynamo (generator) and water pump drive belt should never be run taut. The correct adjustment allows $\frac{1}{2}$ in. (12.7 mm) of deflection on the drive side of the dynamo (generator) pulley. If incorrect, slacken the bolts A, and the rear mounting bolt, and pivot the dynamo about the lower bolts to give the correct tension. Retighten all the bolts after adjustment has been made.

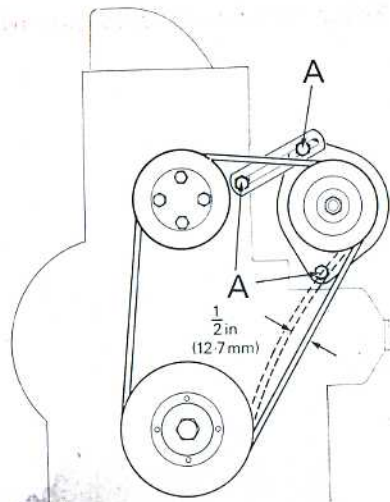


FIGURE 3/6.
FAN BELT DRIVE
ADJUSTMENT
A. Securing bolts

FUEL STORAGE

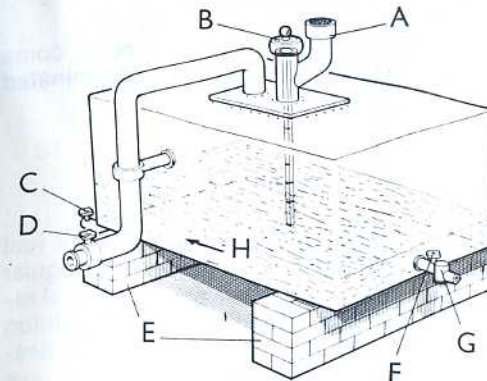


FIGURE 3/7.
FUEL STORAGE
A. Vent pipe
B. Dipstick
C. Drain valve
D. Fill pipe valve
E. Cradle
F. Draw-off valve
G. Filter
H. Fall

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, therefore refuelling should be carried out under cover where possible. Correct storage of the fuel will help to make sure it is not contaminated and consideration should be given to the following points.

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 wire mesh.
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.

FUEL FILTER ELEMENTS

The David Brown diesel tractor has two paper element fuel filters in series. The first filter should be removed at regular intervals but the second 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 at least 500 hours for the first filter and approximately two years for the second. With barrel storage and the attendant contamination, 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.

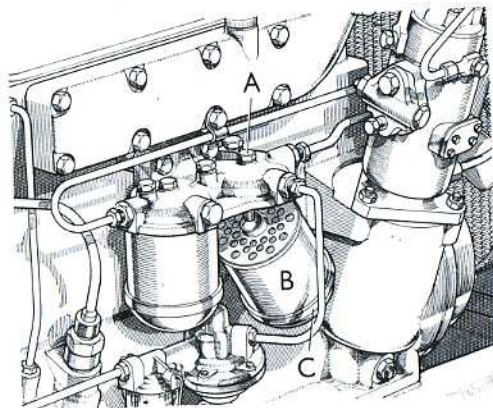


FIGURE 3/8
RENEWING THE
FIRST FUEL FILTER

- A. Securing bolt
- B. Filter element
- C. Base

To change the element proceed as follows, refer to Fig. 3/8.

1. Clean the outside of the filter.
2. Unscrew the bolt A supporting the body with the other hand.
3. Discard the used element B and flush the base C until clean.
4. Fit a new sealing washer under bolt A. Fit the new ele-

ment, taking care to seat it on the rubber sealing rings in the cover and base.

5. Clean out the sediment bowl on the fuel pump before priming the system. Vent as instructed under VENTING THE FUEL SYSTEM on page 61.

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 (gasoline), and replace. Refer to Fig. 3/9. Do not clean with a cloth because of the risk of including lint. Renew the gasket if the old one is damaged.

Loosen the connection to the lift pump and bleed until free of air. If contaminated fuel has been inadvertently allowed into the tank, or excessive condensation has taken place, the fuel should be drained from the plug under the fuel tank.

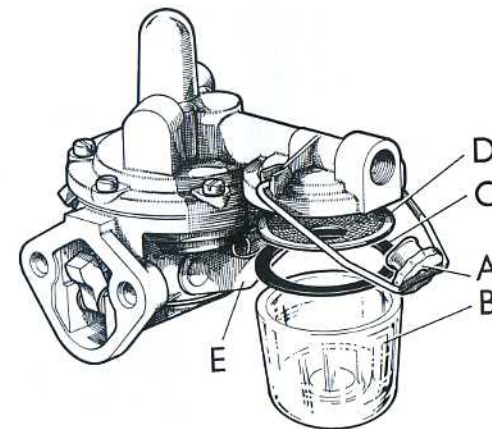


FIGURE 3/9.
SEDIMENT BOWL

- A. Bowl securing screw
- B. Sediment bowl
- C. Sealing ring
- D. Filter
- E. Fuel pump priming lever

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. 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.
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, use a bar 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.

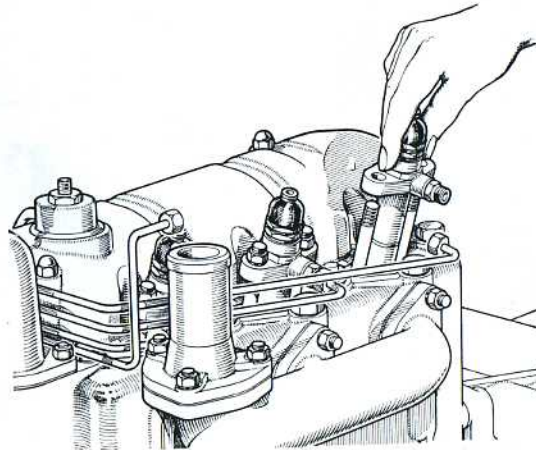


FIGURE 3/10.
INJECTOR
REMOVAL

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.

VENTING THE 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. Check the glass bowl and all fuel joints for leaks.
3. Refer to Fig. 3/11. Clean the outside of the filters. Remove the plug G and slacken the union H. Operate the fuel 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 the high pressure pipes at the nozzle end, 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 operate the starter. 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.

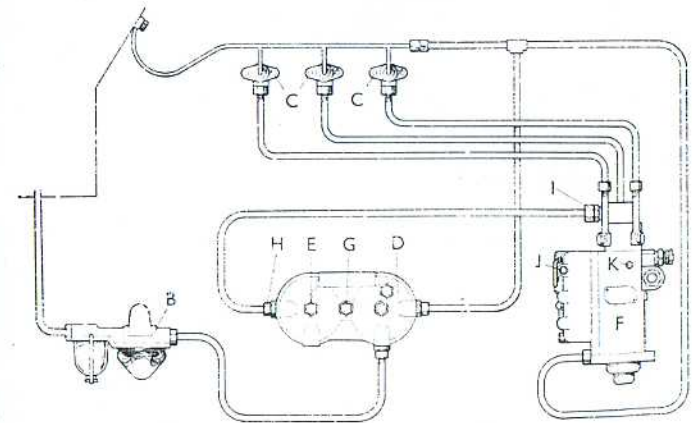


FIGURE 3/11. DIAGRAM OF FUEL SYSTEM

- | | |
|--------------------|-----------------------|
| B. Fuel pump | E. 2nd fuel filter |
| C. Injectors | F. DPA injection pump |
| D. 1st fuel filter | G. to K. Vent points |

GOVERNOR

The mechanical governor on the diesel engine 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 the side of the pump. These are set on the tractor before delivery and should not be disturbed.

ENGINE LUBRICATING 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 49. If the oil filter element has been changed, motor the engine on the starter to fill the oil filter housing. It may be found necessary to add a little extra oil to compensate for this after 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 fine mesh 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.

OIL FILTER ELEMENT

Remove by unscrewing the bolt A in the end of the unit, Fig. 3/12. Remove and discard the dirty element B and wash the cover in diesel oil using a small brush. A cloth should not be used as any lint 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). Motor the engine to refill the filter with oil and top up the sump if necessary. Restart the engine and check the cover for leakage.

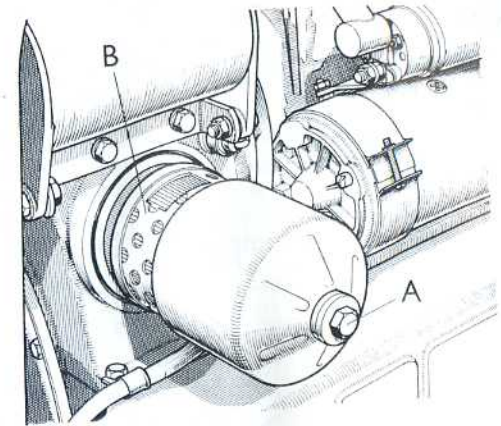


FIGURE 3/12.
ENGINE OIL
FILTER

A. Securing bolt
B. Filter element

OIL PUMP WIRE FILTER

The filter surrounding the oil pump inlet is readily accessible after removing the sump cover. Drain the oil from the engine and remove the sump cover. Remove the set screws from the flange connection of the pipe from the gauze to the oil pump as shown in Fig. 3/13. 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. New gaskets should be used. Refill with the correct oil.

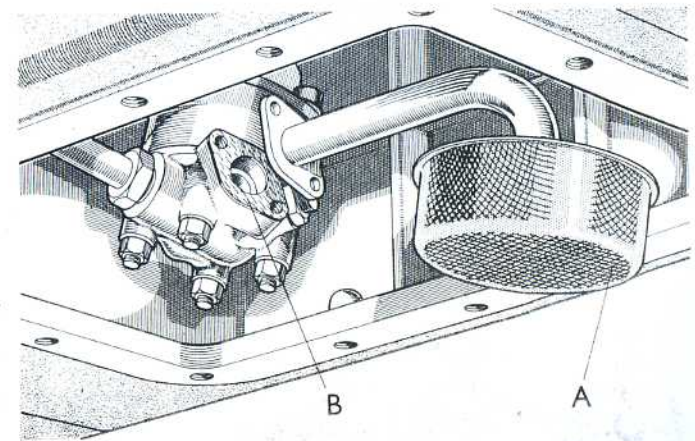


FIGURE 3/13. REMOVING THE ENGINE OIL PUMP FILTER
A. Filter assembly
B. Gasket

VALVE CLEARANCE

The valve clearance should be set cold to 0.010 in. (0.25 mm) inlet, 0.010 in. (0.25 mm) exhaust 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. 3/14. Remove the bonnet (hood) and rocker cover. 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.

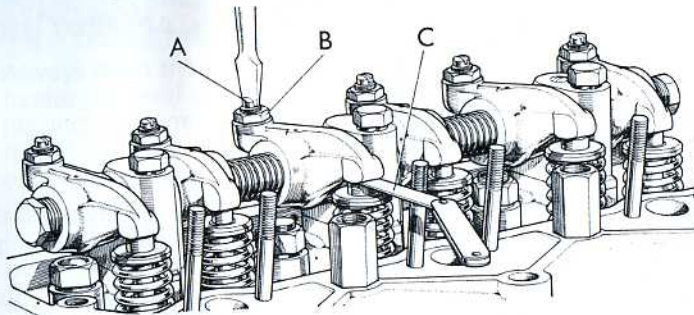


FIGURE 3/14. SETTING THE VALVE CLEARANCE

A. Adjusting screw B. Locknut C. Feeler gauge

It is important to set the clearance with the tappet on the base of the cam. This is achieved by proceeding as below.

The relative positions of the valves are as follows.

No. 1 Cylinder (Front)		No. 2 Cylinder (Centre)		No. 3 Cylinder (Rear)	
Exhaust	Inlet	Exhaust	Inlet	Exhaust	Inlet

Turn the engine forward slowly and observe which exhaust valve is closing (*i.e.* spring expanding to its full length) and continue until the inlet valve of the same cylinder just commences to open (spring begins to compress). When the inlet and exhaust valves are just open by the same amount, stop turning. It is permissible to turn the engine backwards and forwards to find the correct point. This position is known as

having the valves "rocking". Proceed to set the valve clearances of the corresponding valves as shown in the table below. Then turn the engine forward until the next set of valves are "rocking" and repeat the above procedure. Repeat again to complete the job.

Valves Rocking	Set Valves	
No. 1	No. 2 Inlet	No. 3 Exhaust
No. 2	No. 3 Inlet	No. 1 Exhaust
No. 3	No. 1 Inlet	No. 2 Exhaust

CYLINDER HEAD TIGHTENING

The sequence of tightening the cylinder head is shown in Fig. 3/15. 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.

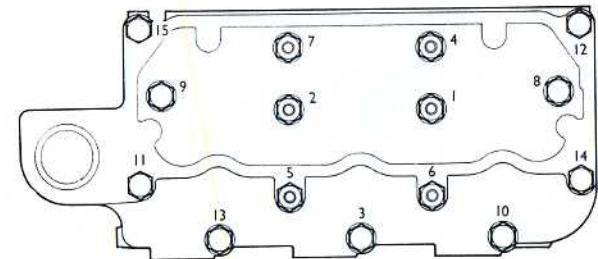


FIGURE 3/15. CYLINDER HEAD TIGHTENING SEQUENCE

CHASSIS

LUBRICATION

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. 2/2, page 42.

The periods of lubrication 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, lubrication should be carried out daily. Make sure that all dirt is wiped off the grease points 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.

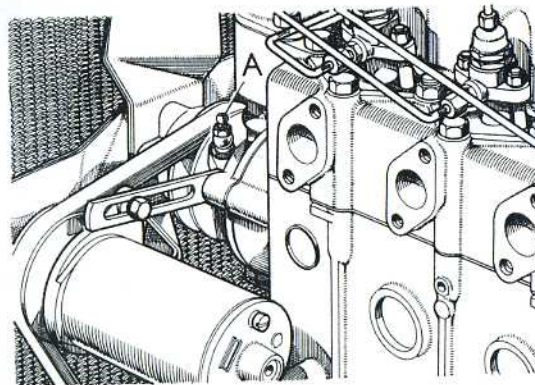


FIGURE 3/16.
WATER PUMP
A. Greaser

FRONT AXLE

Refer to Figs. 3/17 to 3/19 for the location of the grease points. These 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 (pivot) bearings. If wear is apparent, through neglecting to grease regularly, your David Brown dealer should be consulted.

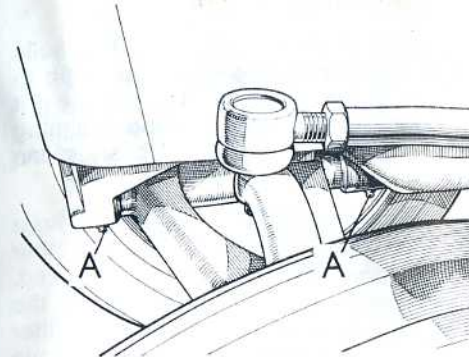


FIGURE 3/17.
FRONT TRUNNION
(PIVOT) GREASING
A. Grease fittings

FRONT HUB

Clean the grease point before applying the grease gun. Lubricate until grease is seen at the inner end of the hub. Grease at this point does **not** indicate a faulty hub seal. 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 $\frac{1}{16}$ th of a turn. Caution: this adjustment must be carried out with the wheel jacked clear of the ground.

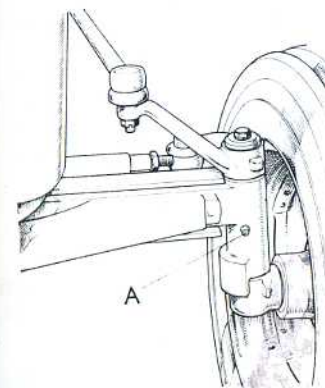


FIGURE 3/18. FRONT AXLE
A. King pin greaser (fitting)

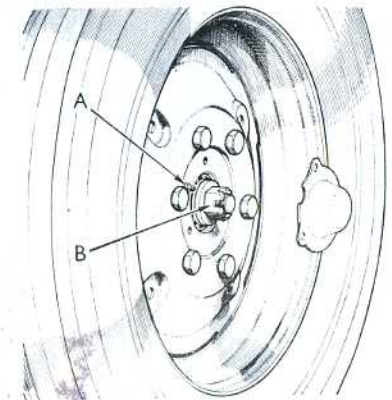


FIGURE 3/19. FRONT HUB
A. Front hub greaser (fitting)
B. Hub bearing adjustment nut

TRANSMISSION AND HYDRAULIC SYSTEM

The transmission oil is used in the Selectamatic hydraulic system, the valve unit of which operates at pressures up to 2000 lb/in² (140 kg/cm²). It is essential that no dirt or grit is allowed to contaminate the oil. Clean round the plug holes before removing and use only scrupulously clean funnels and containers.

The full flow filter should be changed at the first 50 hour service and subsequently at least every 500 hours, whether or not the yellow warning lamp indicates that it is blocked. If the warning lamp remains lit at 1800 rev/min after the oil has been allowed to warm up for 30 minutes, the filter element must be renewed even though it may not have completed 500 hours' service.

On no account must any attempt be made to clean the paper element; a new replacement must be used. The edges of the element are exposed and easily split when dry. A damaged element is useless. Examine for damage and handle with care when fitting.

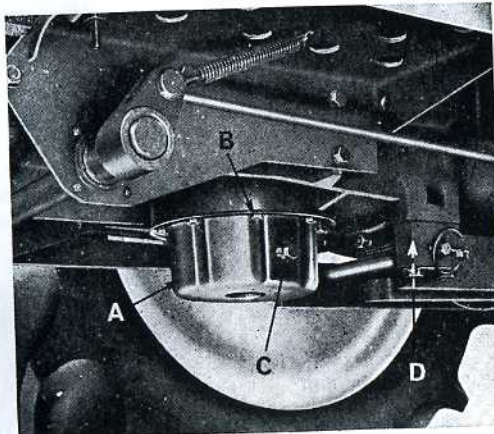


FIGURE 3/20. HYDRAULIC FILTER HOUSING

- | | |
|-----------------------------|----------------------------|
| A. Hydraulic filter housing | C. Transmission drain plug |
| B. Retaining bolts | D. Rear axle drain plug |

To replace the full flow filter element, it is necessary to drain from plug C, Fig 3/20. To completely drain the rear axle case, when renewing the oil, plug D must also be removed.

Where a filter element change only is being carried out, drain into a clean container, keep covered while standing and refill with all except the last gallon which should be discarded with any sediment. Top up with new oil.

Unscrew the retaining bolts B, Fig 3/20 and remove housing A to gain access to the filter element.

The Nylon Filter in the by-pass valve plunger situated in the hydraulic control valve assembly should be cleaned every 500 hours. Remove the dump valve or cover plate. Unscrew the right-hand of the two 3/8 UNF domed plugs and withdraw the spring and plunger. Take care of the washer under the plug head. Unscrew the plug within the plunger and lift out the restrictor and filter. Clean the filter with a jet of air and re-assemble. If in doubt, ask your dealer to show you the operation.

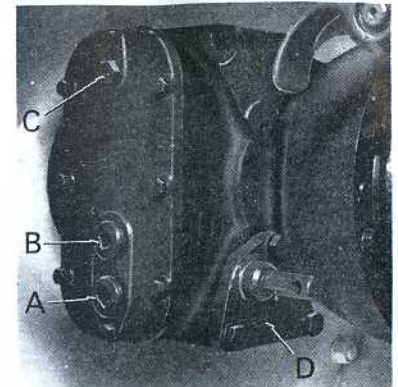


FIGURE 3/21.
FINAL REDUCTION
UNITS

- | |
|---------------------------|
| A. Drain plug |
| B. Filling plug |
| C. Vent plug |
| D. Bracket for stabiliser |

The final reductions have separate lubrication. The drain plug is denoted by A and the filler plug by B in Fig. 3/21. Refill to the level of the filler plug with the correct oil. Ensure that the vent plug C is not blocked with dirt.

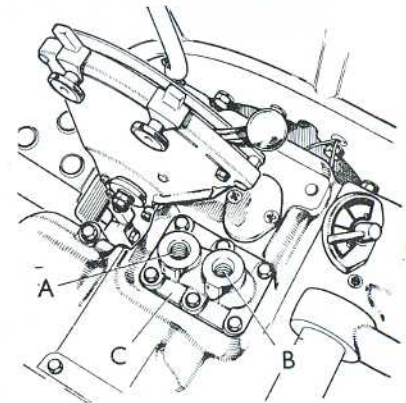


FIGURE 3/22.
EXTERNAL
HYDRAULIC
CONNECTION

- | |
|----------------------|
| A. Return connection |
| B. Supply connection |
| C. Housing |

EXTERNAL HYDRAULIC EQUIPMENT

When oil is taken from the 3-way take-off valve to supply external motors and so on, requiring a continuous supply, a return flow must be connected to the internal lubrication pipe system. Returning to the gearbox cover would result in starvation of the gearbox and PTO.

The return connection may be made to point A, Fig. 3/22 or to the plug A, Fig. 3/23 at the left-hand side of the seat on top of the rear axle case. The connecting point is threaded $\frac{7}{8}$ UNF.

Oil returned to these points lubricates the gearbox and PTO which otherwise would be starved when the hydraulic hand lever is in the lift position.

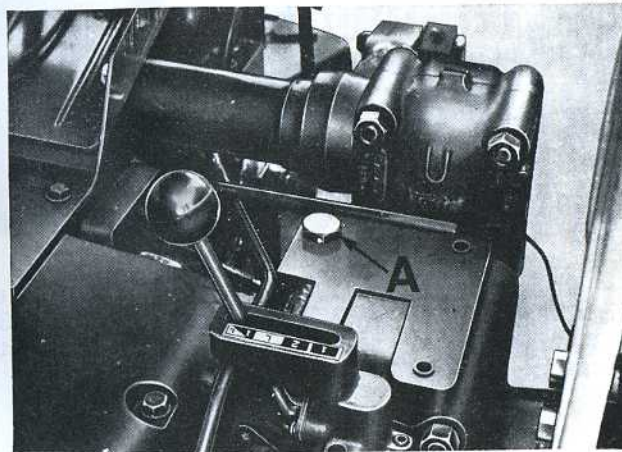


FIGURE 3/23. HYDRAULIC RETURN POINT

A. Return connection point

BRAKES

The independent foot brakes must be adjusted as the brake linings wear. They should be adjusted with the pedals interlocked using the locking bar B so that when used together on the highway there is no tendency to swerve. Frequent use of one of the brakes for steering assistance will cause that brake to wear more quickly and to become out of adjustment one

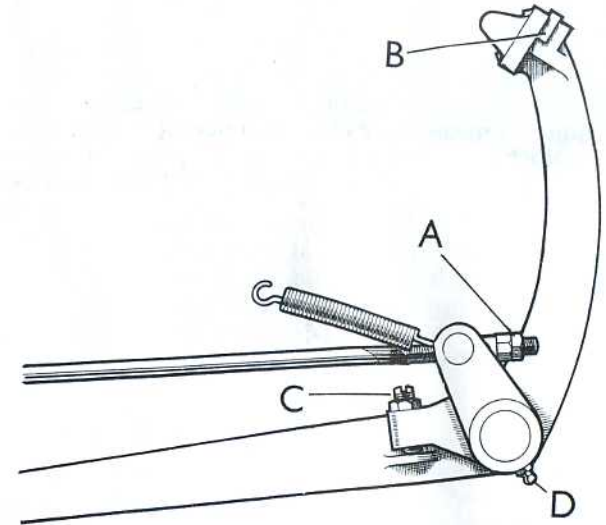


FIGURE 3/24. BRAKE ADJUSTMENT

A. Locknut
B. Locking bar
C. Locking bar adjuster
D. Greaser

with the other. This should be corrected as soon as it becomes evident. Make regular checks weekly and also before pulling a trailer.

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. 3/24 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 grease fitting is provided as shown at D, Fig. 3/24.

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

CLUTCH

Check the free play frequently, say once a week when used on work involving frequent use of the clutch as with a front loader. This must not be allowed to fall below $\frac{3}{4}$ in. (19 mm). Adjust if necessary as follows referring to Fig. 3/25. Slacken the locknut C and adjust the stop D until the free movement 'a' is $\frac{3}{4}$ to 1 in. (1.9 to 2.5 cm). Re-tighten the locknut.

As the clutch facings wear, the pedal will operate at a slightly higher position at each adjustment of the stop D. Take up the free play and check the height above the foot platform. A new lease of life may be gained when this height reaches 9 in. (22.9) by re-positioning the clutch operating lever E on its shaft.

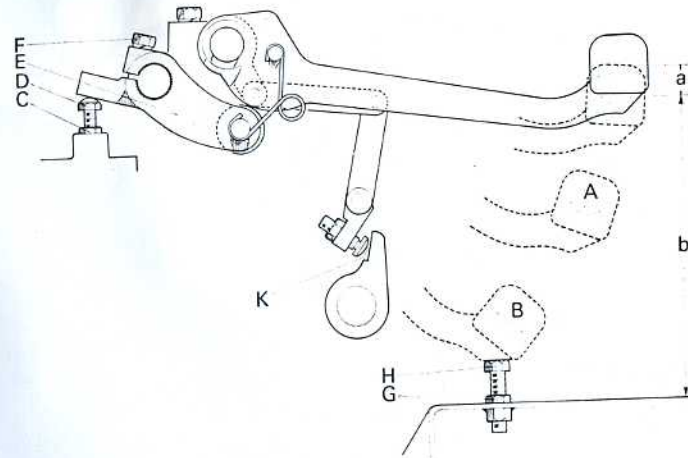


FIGURE 3/25. CLUTCH ADJUSTMENT

- | | |
|------------------------------------|---|
| A. Transmission disengaged | F. Securing bolt |
| B. Transmission and PTO disengaged | G. Locknut |
| C. Locknut | H. Lower stop adjustment |
| D. Upper stop adjustment | K. Clutch stop clearance— $\frac{1}{16}$ in. (1.6 mm) |
| E. Clutch operating lever | |

- a. Free play $\frac{3}{4}$ to 1 in. (1.9 to 2.5 cm)
 b. Height above platform—Livedrive $7\frac{1}{2}$ to 9 in. (19 to 22.9 cm)

Scribe a line across the end of the clutch shaft and lever so that its original position can be determined. Slacken and remove bolt F. Pull the lever off the straight splines (after removing the springs) and replace the lever one spline clockwise looking on the free end of the shaft. Re-set the stop D to give the correct free-play. Re-check the height of

the foot pad above the platform after taking up the free-play. This must not be less than $7\frac{1}{2}$ in. (19 cm). Replace and tighten bolt F.

The lower stop H is set initially to $\frac{1}{4}$ in. (6.3 mm) below the point at which the PTO clutch just disengages.

If the PTO cannot be completely freed 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.

Clutch stop

When the clutch pedal is depressed an associated linkage operates a band brake on a drum mounted on the clutch drive shaft bringing the revolving gears to a stop in under 2 seconds allowing a new gear to be selected. With the clutch pedal fully upwards there should be $\frac{1}{16}$ in. (1.6 mm) clearance between the adjusting nut and operating lever as shown at K, Fig. 3/25.

POWER TAKE-OFF

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

Note. The PTO gear lever should be in neutral when not in use. Before attempting to engage, push the clutch pedal fully down to disengage the drive to the PTO.

BELT PULLEY

Belt pulley units may only be fitted to tractors supplied with a 2-speed PTO.

For high power outputs the high PTO ratio must be used giving 1000 rev/min. This gives a British Standard belt speed of 3140 ft/min (957 m/min) at an engine speed of 2000 rev/min. This provides maximum belt horsepower with minimum torsional loading. Although a belt speed of 1695 ft/min (520 m/min) may be used with the PTO speed of 540 rev/min in low ratio, this is not recommended for long

periods of continuous operation because the torsional loading is twice that in high ratio.

Lubrication

The pulley should be filled with the same grade of oil as used in the transmission gearbox to the level of the plug A.

Mounting instructions

The belt pulley may be mounted on either side according to the direction of rotation required.

Unless the unit is supplied on the tractor, it will be necessary on the first mounting to replace the four cover bolts, which are symmetrically disposed round the PTO shaft, with the special studs B, Fig. 3/26. Replace the studs one at a time. 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. The bracket for the belt pulley guard fits on the two studs on the side adjacent to the pulley before the washers and nuts are attached. The other support bracket fits on the studs securing the pulley support bearing and necessitates the removal of the pulley rim from its flange.

Note. The PTO gear lever should be in neutral when not in use. Fully depress the clutch before attempting to engage.

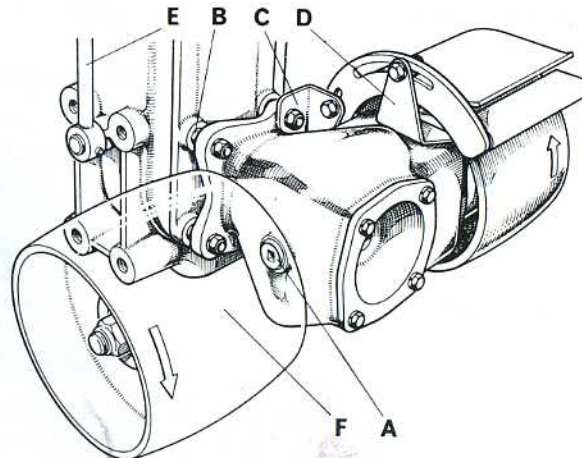


FIGURE 3/26. BELT PULLEY UNIT

- | | |
|----------------------------------|--------------------------------|
| A. Filler plug | D. Guard Bracket |
| B. Special stud | E. Speed change lever |
| C. Pulley guard mounting bracket | F. Alternative pulley position |

ELECTRICAL

DYNAMO (GENERATOR)

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. Refit the plug afterwards.

After about 2 years' use the dynamo (generator) brushes should be checked for wear and replaced if necessary. The interior of the dynamo (generator) should be thoroughly cleaned of dust and the bearings re-lubricated. This work is best carried out by your David Brown Dealer or Lucas Agent.

If for any reason the dynamo has to be renewed, ensure that the correct one for a negative earth system is used.

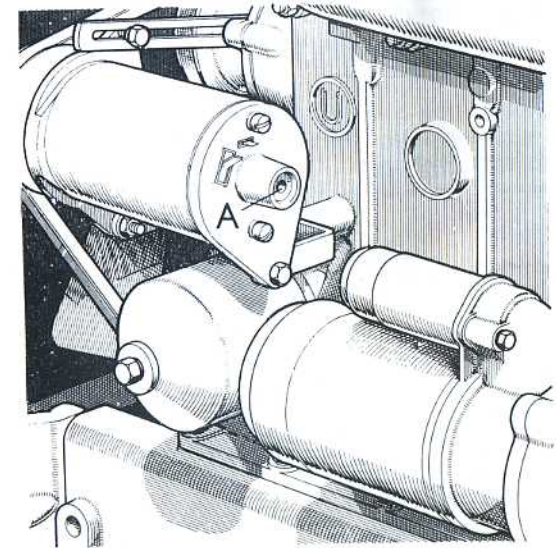


FIGURE 3/27. DYNAMO (GENERATOR) LUBRICATION

A. Oil hole
(replace rubber plug)

FUSE

A standard $1\frac{1}{2}$ in. (3 cm) cartridge fuse of 25 amp. rating is fitted in the bayonet type holder. The fuse should not be replaced until the cause of blowing has been traced and the fault corrected.

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 battery. Check that the fan belt is correctly adjusted and sufficient running is done to re-charge the battery. 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 battery; consult an authorised agent.

WIRING

Most connections are made with snap connectors which pull apart for disconnection of the part concerned. All wires are colour coded for easy identification as shown in the wiring diagram.

Maintenance consists only of visual checking for loose or dirty terminals and frayed, burnt or broken wires. A frayed or broken wire if touching the frame will run down the battery rapidly.

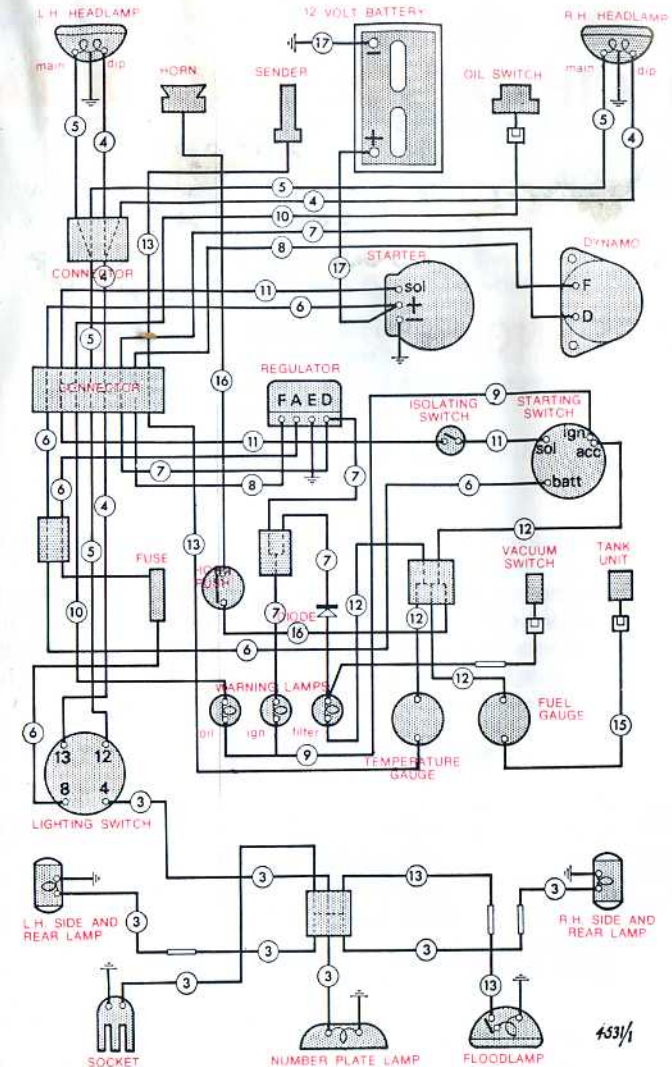


FIGURE 3/28. WIRING DIAGRAM

WIRING COLOUR CODE

1. Black	7. Brown/Yellow	12. Green
2. Black/Light Green	8. Brown/Green	13. Green/Brown
3. Red	9. White	15. Green/Black
4. Blue/Red	10. White/Brown	16. Purple/Black
5. Blue/White	11. White/Red	17. Heavy Duty Cable
6. Brown		

SECTION 4. SPECIFICATION AND DATA

DIESEL ENGINE

Type 355011 (Livedrive)

The engine is a compact and robust power unit applying the cross flow head technique for economy coupled with high performance. The three throw crankshaft is supported in 4 main bearings ensuring rugged dependability and is fully balanced giving very smooth running.

Displacement—3 cylinders	164.4 in ³ (2695 cm ³)
Bore	3 $\frac{1}{8}$ in (100 mm)
Stroke	4 $\frac{1}{2}$ in (114.3 mm)
Rated speed	1800 rev/min
Maximum full load speed	2200 rev/min
Maximum no load speed	2350 rev/min
Gross maximum power ..	46 b.h.p. at 2200 rev/min
Compression Ratio ..	17 : 1
Firing order	1, 2, 3

Valve clearances — SET COLD

—inlet	0.010 in. (0.25 mm)
—exhaust	0.007 in. (0.18 mm) up to engine No. 6038
	0.010 in. (0.25 mm) from engine No. 6039

Cooling system — The thermostat is set to commence opening at 82°C (180°F) and to be fully open at 94°C (200°F). It controls the flow of coolant through the cylinder head from the water pump. Circulation through the block is by thermo-syphon. A 7-blade fan is fitted to the water pump drive pulley. The radiator coolant is pressurised by means of a relief valve fitted in the radiator cap.

Fuel equipment — A distributor type injection pump, having a mechanical governor, is mounted vertically and driven through spiral gears from the front of the camshaft. A built-in automatic retard device ensures easy starting, with manual lock for very cold weather and an ether pad in the manifold for sub-zero conditions.

A diaphragm type lift pump, operated by push rod from the camshaft, has a water trap built in.

Static timing is set to a dimple on the flywheel by means of a peg through the left-hand side of flywheel housing.

The injectors spray fuel direct into the cylinders through four holes. A combustion chamber is machined in the top of the piston. The pressure setting of the injectors is 175 atmospheres (180 kg/cm²).

Filtration is by means of 2 paper-element units in series.

Lubrication System — A gear type pump, driven from the camshaft on the same axis as the fuel injection pump, incorporates 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.

Air Intake — The air intake is through a 2-stage 6 in. (15.2 cm) diameter oil bath air cleaner plus a centrifugal type pre-filter. A paper-element pre-filter or an extension inlet pipe may be fitted as alternatives for very dusty conditions.

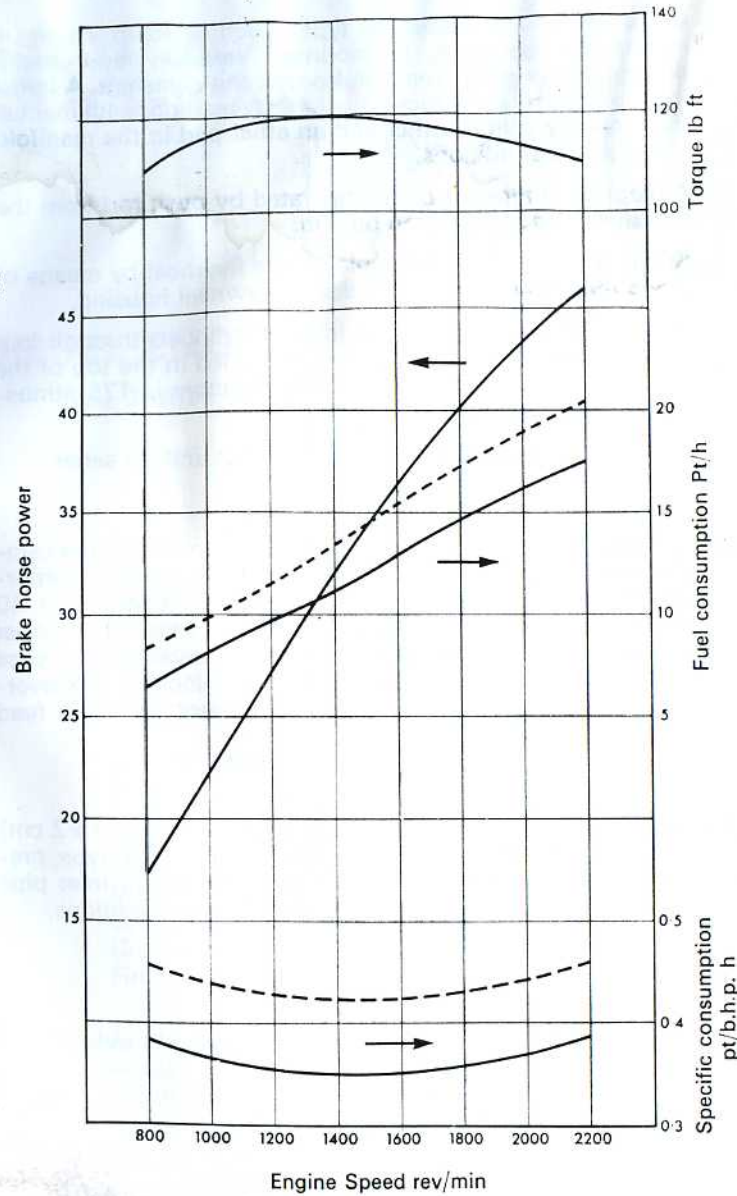


FIGURE 4/1. TYPICAL ENGINE PERFORMANCE CURVES
----- U.S. rating

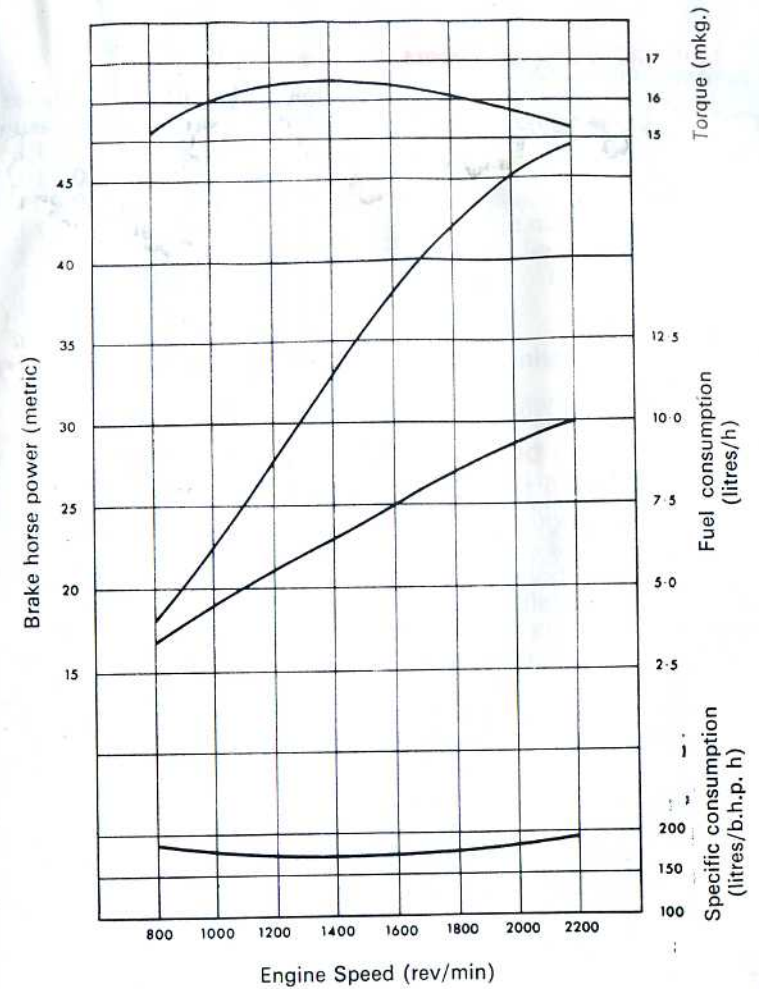


FIGURE 4/2. TYPICAL ENGINE PERFORMANCE CURVES
(Metric)

CHASSIS

CAPACITIES (Approximate initial fill)

	Imperial Measure	U.S. Measure	Metric Measure
Cooling system ..	2 gal	2½ gal	9.1 l.
Air Cleaning oil bath ..	1¼ pt	1½ pt	0.71 l.
Engine lubricating oil ..	11 pt	6½ qt	6.25 l.
Transmission oil ..	5 gal	6 gal	22.7 l.
Final drive oil (each) ..	2 pt	2½ pt	1.1 l.
Steering oil ..	2 pt	2½ pt	1.1 l.
Belt Pulley ..	1¼ pt	1½ pt	0.7 l.
Fuel Tank ..	8 gal	9½ gal	36.4 l.
Power Steering Reservoir	1½ pt	1¾ pt	0.85 l.

WEIGHTS and DIMENSIONS

on 600-16 front, 12.4/11-28 rear tyres

Overall length ..	114¾ in. (292 cm)
Height over exhaust pipe ..	82½ in. (210 cm)
Height — bonnet top ..	49 in. (125 cm)
Height — Safety Cab ..	85 in. (216 cm)
Overall width — minimum ..	64 in. (163 cm)
Bonnet width ..	18¾ in. (47.5 cm)
Wheelbase ..	75½ in. (193 cm)
Ground clearance under front axle	17½ in. (44.5 cm)
Ground clearance under drawbar frame	11¾ in. (29.9 cm)

Weight — with oil,

fuel, etc.—	without cab	with cab
—total	3710 lb (1690 kg)	4150 lb (1880 kg)
—rear axle	2375 lb (1080 kg)	2765 lb (1250 kg)
—front axle	1335 lb (610 kg)	1385 lb (630 kg)

Maximum recommended ballasted weight
5250 lb (2380 kg)

Water ballast in the rear wheels adds the following weights per wheel.

12.4/11-28 tyre ..	330 lb (150 kg)
Front wheel weights (each) ..	85 lb (38.5 kg)
Rear wheel weights (each) ..	100 lb (45.4 kg)

Turning radius on 48 in. (122 cm) track:

—without brakes ..	132 in. (335 cm)
—with brakes ..	118 in. (300 cm)

PERFORMANCE

Maximum PTO horsepower ..	42.9*
Standard PTO horsepower (540 rev/min) ..	37.1* at 1828 engine rev/min

†Standard PTO horsepower (1000 rev/min) .. 40.3* at 2000 engine rev/min

Maximum drawbar horsepower ..	38.9*
Maximum drawbar pull (ballasted)	5700 lb (2586 kg)*

* NIAE Test Report No. 590/OECD

† Two-speed PTO unit

POWER LIFT

Maximum load at the end of the links 1600 lb (725 kg).

The hydraulic pump is of the balanced gear type and is mounted in the rear axle case. The pump is still driven when the transmission is de-clutched. Pump delivery is 5 gal/min (6 U.S. gal/min) (22.3 litres/min) at 1800 rev/min engine at a maximum pressure of 2000 lb/in² (140 kg/cm²).

A full flow replaceable paper element filter is fitted in the transmission sump. Visual indication when the element is blocked is provided by warning lamp on the instrument panel.

CLUTCH

Livedrive — A double dry plate clutch.

Transmission clutch — 10 in. (25.4 cm) dia., surface area 82 in² (530 cm²).

PTO clutch — 10 in. (25.4 cm) dia., surface area 94 in² (606 cm²).

SWINGING DRAWBAR — optional

The drawbar has a normal trailer position or may be fully extended for PTO work.

Clevis height from ground — 14 in. (35.6 cm).

Lateral adjustment — 6 in. (15.2 cm) each side of centre.

PICK-UP HITCH — optional

Slotted lift rods allow the hook to be stowed and the linkage to be used independently.

POWER TAKE-OFF (Single speed)

British Standard (B.S. 1495) 6-spline shaft	
Diameter	1 $\frac{3}{8}$ in. (34.9 mm)
Offset	$\frac{3}{8}$ in. (9.5 mm) to left of centre
Height	23 $\frac{1}{2}$ in. (59 cm).
Speed	532 rev/min at 1800 rev/min engine.
Rotation	Clockwise viewed from rear.

TWO SPEED POWER TAKE-OFF — optional

Details are as given for the single speed PTO except for additional high ratio : see table below.

BELT PULLEY — optional

This unit is only suitable for use with the 2-speed PTO.

Width	..	5 $\frac{1}{8}$ in. (13 cm)
Diameter	..	8 $\frac{1}{2}$ in. (21.6 cm)
Rotation	..	Clockwise viewed from open end

PTO Ratio	Engine Speed rev/min	PTO Speed rev/min	Belt Pulley		
			rev/min	ft/min	metres/min
Low	1800	532	751	1670	509
High	1100	550	776	1727	526
High	2000	1000	1412	3140*	957

*British Standard belt speed

Speed Ratio

Engine to PTO — Low 3.385 : 1
— High 2 : 1

PTO to Belt Pulley— 1 : 1.412

SEATING

The seat is an upholstered tip-up pan seat with a foam rubber cushion and an adjustable backrest. The seat support gives fore and aft adjustment with simultaneous height variation giving optimum seating position for varying leg lengths. Adjustment is easily carried out while seated.

A de-luxe suspension seat using rubber in torsion, is available as an optional fitment. Adjustment is provided to suit the weight of the operator and should be altered to bring the two support arms horizontal when the operator's weight is on the seat.

STEERING

Recirculating ball and nut type, with a 16 in. (40.6 cm) diameter wheel.

TRACK ADJUSTMENT

Front—Adjustable by means of telescopic extensions from 48 in. to 72 in. (122 cm to 183 cm) in 4 in. (10 cm) steps. Crop clearance is 17 $\frac{1}{2}$ in. (44.5 cm) on 6.00-16 front tyres.

Rear—Adjustment is from 48 in. to 76 in. (122 cm to 193 cm) in 4 in. (10 cm) steps by means of the dished wheel centres and off-set wheel rim lugs.

When a safety cab is fitted to the 780 Tractor (now standard fitment in the U.K.) the minimum rear track setting is 52 in. (132 cm).

UNIVERSAL LINKAGE

Three-point linkage enables Category 1 (narrow) implements to be fitted.

	Category 1
Nominal diameter of lower pins	$\frac{7}{8}$ in. (2.22 cm)
Nominal diameter of top pin	$\frac{3}{4}$ in. (1.90 cm)
Recommended length of implement cross shaft (distance between shoulders of pins)	26 $\frac{7}{8}$ in. (68 cm)
Recommended height between upper and lower hitch points	22 to 24 in. (55.9 to 61.0 cm)

WHEEL EQUIPMENT

Front — 600-16 (4 or 6-ply rating)

Rear — 12.4/11-28 (4 or 6-ply rating)

TRAVEL SPEEDS—on 12.4/11.28 rear tyres (rolling radius 22.8 in.)

Gear	Lever Posi- tions	ENGINE SPEED										Overall Ratio
		700 rev/min		1100 rev/min		1800 rev/min		2000 rev/min		2200 rev/min		
		mile/h	km/h	mile/h	km/h	mile/h	km/h	mile/h	km/h	mile/h	km/h	
1	SL1	0.30	0.48	0.47	0.75	0.76	1.23	0.85	1.37	0.94	1.51	318.5
2	SL2	0.49	0.80	0.78	1.25	1.27	2.05	1.41	2.27	1.56	2.50	192.0
3	SH1	0.67	1.07	1.05	1.69	1.72	2.76	1.91	3.07	2.10	3.37	142.4
4	NL1	0.76	1.23	1.20	1.92	1.96	3.15	2.17	3.50	2.39	3.85	124.9
5	SL3	0.90	1.45	1.42	2.29	2.32	3.74	2.58	4.15	2.84	4.56	105.1
6	SH2	1.11	1.78	1.74	2.80	2.85	4.57	3.16	5.09	3.48	5.59	85.83
7	NL2	1.26	2.03	1.98	3.19	3.24	5.20	3.60	5.80	3.96	6.36	75.31
8	NH1	1.70	2.74	2.67	4.30	4.36	7.03	4.86	7.82	5.34	8.59	55.86
9	SH3	2.02	3.26	3.18	5.11	5.20	8.36	5.78	9.30	6.36	10.2	46.95
10	NL3	2.30	3.71	3.62	5.83	5.92	9.49	6.58	10.6	7.23	11.6	41.21
11	NH2	2.82	4.54	4.43	7.13	7.25	11.7	8.06	13.0	8.86	14.3	33.66
12	NH3	5.16	8.30	8.11	13.0	13.3	21.4	14.7	23.7	16.2	26.2	18.41
1R	SLR	0.49	0.79	0.77	1.24	1.26	2.03	1.40	2.25	1.54	2.48	193.4
2R	SHR	1.10	1.77	1.73	2.78	2.82	4.54	3.14	5.05	3.45	5.54	86.50
3R	NLR	1.25	2.01	1.97	3.17	3.22	5.17	3.58	5.76	3.93	6.32	75.56
4R	NHR	2.80	4.51	4.40	7.08	7.20	11.6	8.00	12.9	8.80	14.2	33.92

Maximum speed light running 2350 rev/min engine in H.3—17.4 mile/h (27.9 km/h).

ACCESSORIES

The following units are stocked by the Parts Department of David Brown Tractors (Sales) Ltd., and may be ordered through your Dealer in the usual way. Ask for full details and prices.

Unit No.	Part No.	Description
U825	911809	Air cleaner extension
U1159	918597	Air cleaner—paper element pre-filter
U413	907602	Belt pulley—fits 2-speed PTO only
U414	907847	Belt pulley guard
U730	911471	Catch unit for power lift lever
U1097	918394	Drawbar—(use with U635 hinge bar)
U635	911292	Drawbar—hinge bar assembly for use with U1097 and U1099
U291	85782	Drawbar—linkage
U716	911418	Exhaust—downswept
U1006	918291	Horn and push button
U1180	922283	Linkage stabilisers—left and right hand
U1099	918398	Pick-up hitch (used with U635)
U733	911594	Power-assisted steering
U378	906988	Power take-off guard
U1213	922269	Radiator blind (not with Tropical radiator)
U1013	918299	Rear number plate light
U1313	925859	Seat rails—full fenders
U1349	925990	Super comfort seat
U1005	918290	Thermometer—electric
U1119	918595	Tool kit
U729	911480	Wheel weights—rear (4×100 lb)
U436	907954	Wheel weights—front (2×85 lb)
U1362	925919	Weights—chassis ballast—460 lb
U844	918957	Valve—Single live take-off
U845	918938	Valve—Twin live take-off
U1230	922498	Valve—3-way hydraulic with pipe and coupling
U1054	918360	Valve—3-way hydraulic less pipe and coupling
U1229	922497	Valve—3-way hydraulic with pipe and quick-release coupling
U1122	918520	Universal Coupling—quick-release to Exactor
U1123	918521	Universal coupling—quick-release to Dowty
U939	918195	Valve-Dump (quick drop)

GLOSSARY OF ABBREVIATIONS

Abbreviations used in this publication are based on the recommendations of British Standard 1991 : 1954. Note that the abbreviation remains the same for both singular and plural.

Minute (time)	..	..	min
Revolutions per minute	..	..	rev/min
Inch	..	..	in
Feet	..	..	ft
Feet per minute	..	..	ft/min
Cubic inch	..	..	in ³
Square inch	..	..	in ²
Pounds per square inch	..	..	lb/in ²
Atmosphere (pressure)	..	..	atm
Centimetre	..	..	cm
Millimetre	..	..	mm
Brake horse power	..	..	b.h.p.
Kilogramme	..	..	kg
Gramme	..	..	g
Pint	..	..	pt
Quart	..	..	qt
Gallon	..	..	gal
Litre	..	..	l
Hour	..	..	h
Miles per hour	..	..	mile/h
Degree Centigrade	..	..	°C
Degree Fahrenheit	..	..	°F
Power take-off	..	..	PTO
Weight transfer (Traction Control Unit— a David Brown patent)	..	..	TCU

DAVID BROWN PRODUCTS

Ask your dealer for details of any of the following

Full Range of Tractors

Mid-Mounted Hydraulic Mower

Ditcher/Digger/Loader

Front-mounted Loader

Super Loader

Mouldboard Ploughs

Reversible Ploughs

Match Plough

Disc Ploughs

David Brown policy is one of continuous development and improvement and therefore the specification details may have been altered since this book went to press. Moreover, as the David Brown tractor is offered in a variety of forms to cover a large number of markets and applications, this handbook may contain details of items not applicable to the particular tractor for which it has been supplied.



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