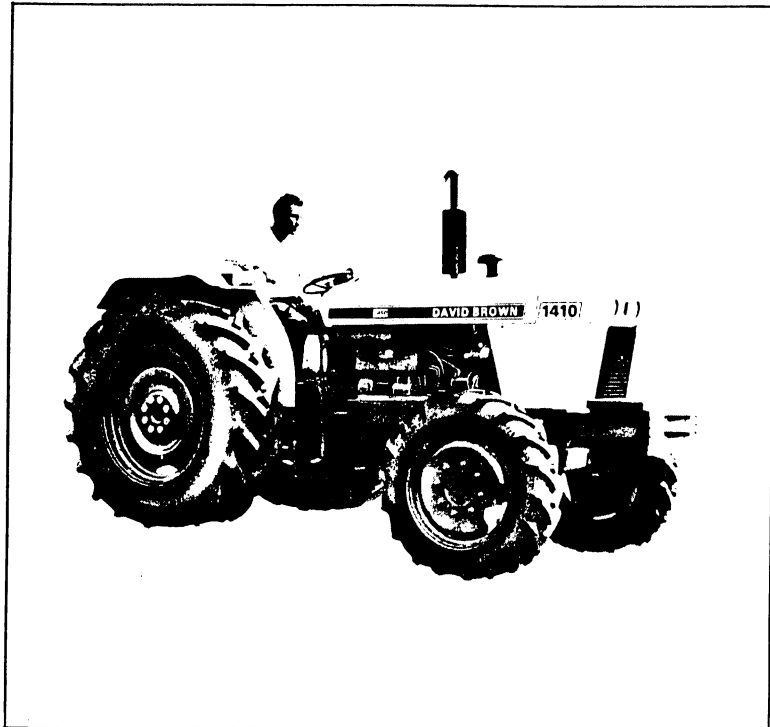


**1410, 1410 4WD  
1412 Tractors**

Operator's Manual

9-5404





**DAVID BROWN™**  
**Manual for Operators of**  
**1410, 1410 4WD & 1412**  
**Tractors**

**David Brown Tractors Limited**  
**Meltham . Huddersfield . England . HD7 3AR**

Publication No. 9-5404    July 1978

## SAFETY POINTS

**Always** ensure that PTO driven implements are not run faster than their designed speed, because a mechanical failure could occur, resulting in personal injury.

**Always** ensure the PTO is adequately guarded, and put the PTO range lever in neutral before getting down from the tractor.

**Always** remove loose clothing when working near moving parts of the tractor, engine and implements.

**Always** remove the isolating/starter key from the tractor when leaving it unattended.

**Always** operate the steering and driving controls with care, for example:—

Don't swerve or turn sharply at high speed.

Don't engage the clutch suddenly going up hill because the tractor could rear up.

Don't brake hard, especially going backwards down hill.

**Always** take extra care on steeply sloping ground. Move cautiously, as the sudden swing of a heavy implement, or pull of a trailer, could overturn the tractor.

**Always** make sure before turning that there is room for any mounted implement which will swing *outwards* at the rear.

**Always** hitch trailers to the approved drawbar or pick-up hitch which is below the centre line of the rear axle. Do not hitch above the centre line of the rear axle.

**Always** tow the tractor slowly. When towing by rope with a dead engine, power steering will be inoperative and the steering will be very difficult to turn.

**Always** stop the engine and pull the hand brake lever up before doing any work on the tractor or implement.

 **IMPORTANT DON'TS** 

**Do Not** carry passengers on the linkages or on the tractor.

**Do Not** drill into the safety frame or cab.

NOTE : Any damaged parts should be replaced immediately with new parts. Bent parts should not be straightened but replaced and no welding should be attempted on the safety frame. Bolts when replaced, must be of the correct tensile strength. After any accident to a safety frame it is advisable to report this to your local safety officer.

**Do Not** lift the tractor by the cab lifting hooks. These are designed only for removing a cab from the tractor. If the safety cab is damaged, your future safety may be reduced.

## INTRODUCTION

We recommend that even the most experienced tractor user reads the Operation and Regular Maintenance sections of this book *before* commencing operations with his new tractor. This book details the most efficient ways of carrying them out.

The most important aspect, however, is *safety*, because a tractor can be a dangerous machine if handled without due caution. Knowledge gained beforehand from this book could prevent accidents.

The **1410** tractor is fitted with the David Brown synchromesh gearbox which allows on-the-move gear changes to be made between the most useful ratios.

The **1410 4WD** (4 wheel drive) tractor has a front drive axle with reduction gears in the hubs. It is driven by a driving shaft from a transfer gearbox added to the normal transmission. Changes between 2- or 4-wheel drive (4WD) are made with the tractor moving. A different steering ram is installed parallel to and behind the left-hand side of the axle.

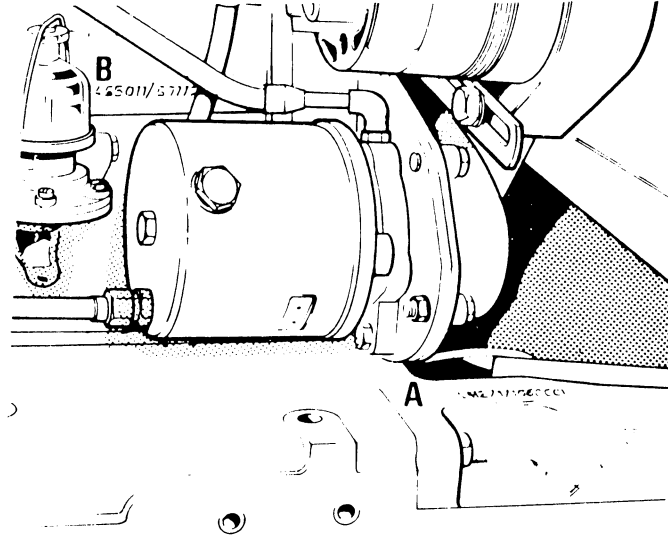
The **1412 Hydra-Shift**  $\text{R}$  tractor incorporates a semi-automatic transmission which gives on-the-move clutchless gear changes to any of four ratios in each of three forward ranges and one reverse range. This system, developed by David Brown engineers, is renowned for simplicity in operation and ease of servicing, and won the Queen's Award for technological achievement in 1974.

Both models incorporate the Selectamatic  $\text{R}$  hydraulic system, unique to David Brown tractors, and which has proved exceptionally reliable and simple to operate. On 1410 and 1412 tractors it is served by a fully-live pump driven from the front of the engine crankshaft.

The 4-cylinder diesel engine employs an exhaust driven turbo induction charger to achieve a high horsepower with maximum economy.

Oil immersed disc brakes, operated by a single pedal, provide efficient stopping power on the road or highway. For tight turns in the field or in the farmyard, two extra separate pedals operate independently, one on each rear wheel.

Whichever model you have chosen to fulfil your particular requirements, it will amply repay you provided that the simple maintenance routines outlined in this book are carried out regularly.



A. Tractor number. B. Engine number

When ordering parts or making any enquiry always quote the full prefix and serial numbers as follows:

**Tractor letters and numbers** as stamped on right-hand edge of the chassis front extension at A and on the identification plate, e.g. 1412/1/1050001.

**Engine Numbers** as stamped on the flat vertical surface on the right-hand side of the cylinder block at B and on the identification plate, e.g. 455011/10001.

For your future reference, enter details of your tractor below.

Tractor Serial No. ....

Engine Serial No. ....

Tractor Registration No. ....

## CONTENTS

	Page
Safety Points .. .. .	2
Take Special Care of your New Tractor .. .. .	10
First Service (50/100 hours) .. .. .	10

## SECTION 1 DESCRIPTION AND OPERATION

INSTRUMENT PANEL .. .. .	11
Engine Oil Warning Light .. .. .	11
Charge Warning Light .. .. .	12
Transmission Filter Warning Light .. .. .	12
Light Switch .. .. .	12
Engine Speed Indicator .. .. .	13
Direction Indicator .. .. .	14
Hazard Warning Switch .. .. .	14
Engine Stop Control .. .. .	14
LEVERS AND PEDALS .. .. .	15
Use of the Throttles .. .. .	15
Brakes .. .. .	15
Clutch .. .. .	17
1412 HYDRA-SHIFT TRACTOR TRANSMISSION .. .. .	18
Description .. .. .	18
Operation .. .. .	18
Driving the Hydra-Shift Tractor .. .. .	19
1410 SYNCHROMESH TRANSMISSION .. .. .	21
Operation .. .. .	21
Gear Selection .. .. .	21
Differential Lock .. .. .	24
4WD Control .. .. .	25
HYDRAULIC OIL COOLER .. .. .	26
STARTING AND STOPPING ENGINE .. .. .	27
Starting from cold .. .. .	27
Excess fuel button .. .. .	28
Thermostart .. .. .	28
Stopping the engine .. .. .	29
Precautions when stopping the engine .. .. .	29
Stopping the tractor .. .. .	29
SUPER COMFORT SUSPENSION SEAT .. .. .	29

	Page
<b>SECTION 2</b>	
<b>SELECTAMATIC HYDRAULIC SYSTEM</b>	
Introduction .. .. .	30
SELECTAMATIC CONTROLS .. .. .	31
Selector Dial Pointer .. .. .	31
Hand Lever .. .. .	32
Sensing Unit .. .. .	32
Finger Guides .. .. .	32
Lowering Control .. .. .	33
Dump Valve .. .. .	33
OPERATING with DEPTH CONTROL .. .. .	33
OPERATING with DEPTH WHEEL (TCU) .. .. .	35
OPERATING with HEIGHT CONTROL .. .. .	37
OPERATING EXTERNAL EQUIPMENT .. .. .	38
3-way Valve .. .. .	42
Catch Unit .. .. .	46
OPERATING via LIVE TAKE-OFF VALVES .. .. .	47
 <b>SECTION 3 – ADJUSTMENTS AND SETTINGS</b>	
LINKAGE SETTINGS .. .. .	50
Telescopic Link ends .. .. .	51
Slotted Lift Rods .. .. .	51
Semi-mounted Ploughs .. .. .	51
Stabiliser Bars .. .. .	52
Drawbar .. .. .	54
Pick-up Hitch .. .. .	55
WHEELS AND AXLES	
Front Track Adjustment .. .. .	56
Front Track 4WD .. .. .	57
Track Settings for Ploughing .. .. .	58
Rear Track Adjustment .. .. .	58
Tyre Pressures .. .. .	59
Ballast .. .. .	61
Reversible Shaft PTO .. .. .	62
MULTI SPEED PTO .. .. .	64
PTO Driven Implements .. .. .	65
SELECTIVE SENSING UNIT .. .. .	65
4WD Tractors .. .. .	67



	Page
<b>SECTION 4 — REGULAR MAINTENANCE</b>	
Introduction .. .. .	69
Table of Routine Service Tasks .. .. .	70
Daily Inspection .. .. .	71
Lubrication Chart .. .. .	73
Task A .. .. .	74
Task B .. .. .	77
Task C .. .. .	78
Task D .. .. .	79
Task E .. .. .	80
Fuel, Grease and Anti-freeze Specifications .. .. .	81
Approved Lubricants .. .. .	82 85

**SECTION 5 — SERVICING INFORMATION**

Introduction .. .. .	87
Removal of the Bonnet (hood) .. .. .	88
<b>ENGINE</b> .. .. .	<b>89</b>
Air Cleaner .. .. .	89
Cooling System .. .. .	91
Fan Belt Adjustment .. .. .	92
Fuel Storage .. .. .	92
Fuel Filter Elements .. .. .	94
Water Trap and Sediment Bowl .. .. .	95
Injectors .. .. .	96
Venting the Fuel System .. .. .	97
Injection Pump .. .. .	99
Engine Lubricating Oil .. .. .	100
Oil Filter Element .. .. .	100
Valve Clearance .. .. .	101
Cylinder Head Tightening .. .. .	102
<b>CHASSIS</b> .. .. .	<b>103</b>
Lubrication .. .. .	103
Front Axle and Steering .. .. .	103
Front Hub .. .. .	104
Final Drive Reductions .. .. .	105
Transmission and Hydraulic System .. .. .	106
Hydrostatic Power Steering .. .. .	110
Brakes .. .. .	115
Transmission Clutch .. .. .	117
PTO Clutch .. .. .	117

	Page
ELECTRICAL .. .. .	118
Alternator .. .. .	118
Auxiliary Equipment .. .. .	119
Battery .. .. .	119
Fuses .. .. .	120
Starter .. .. .	120
Wiring .. .. .	121

## SECTION 6 — SPECIFICATION AND DATA

Abbreviations .. .. .	127
Lighting Equipment (bulbs) .. .. .	128
Accessories .. .. .	130
Capacities .. .. .	131
Tyre pressures .. .. .	131
Engine .. .. .	136
Travel Speed Tables with 12-38 and 14-34 rear tyres	143
Travel Speed Tables with 15-34 rear tyres .. .. .	144

## **TAKE SPECIAL CARE OF YOUR NEW TRACTOR**

Although every engine is tested and run-in at the factory, care should be taken during the first 25 to 50 hours' use. Avoid excessive speeds or lugging. Do not allow the engine to labour unduly, instead change to a lower gear. Use the middle range of engine speeds from 1200 to 1800 r/min. Prolonged light load should also be avoided as this might lead to cylinder wall glazing with consequent high oil consumption. Best running-in is achieved by alternating between low/medium and high (not maximum) loading.

### **FIRST SERVICE (50/100 HOURS)**

The first service should be done by a David Brown dealer who will carry out a full check on the tractor. The main essentials in this service are :—

1. Change the fuel filter element.
2. Change the engine oil and filter element.
3. Remove the transmission gearbox and clean the wire mesh and magnetic filters. Install a new paper filter element and fill the gearbox with new oil.

NOTE: On 1412 tractors there is an additional wire mesh filter for the gearbox which should also be washed clean.

4. Change the oil in the final drive reduction housings.
5. Check the tightness of cylinder head bolts and the valve clearances, and the tightness of main external nuts and bolts especially rear wheel nuts.
6. 1410 4WD: Remove the oil from the front differential and both hubs. Fill to the correct level with new oil.
7. Install a new element in the external hydraulic filter.

### **Service Packs**

See your David Brown dealer for your first 50 hour service pack. Packs are also available for filter changes. Make sure you have a pack before doing a service.

# SECTION 1. DESCRIPTION AND OPERATION

## INSTRUMENT PANEL

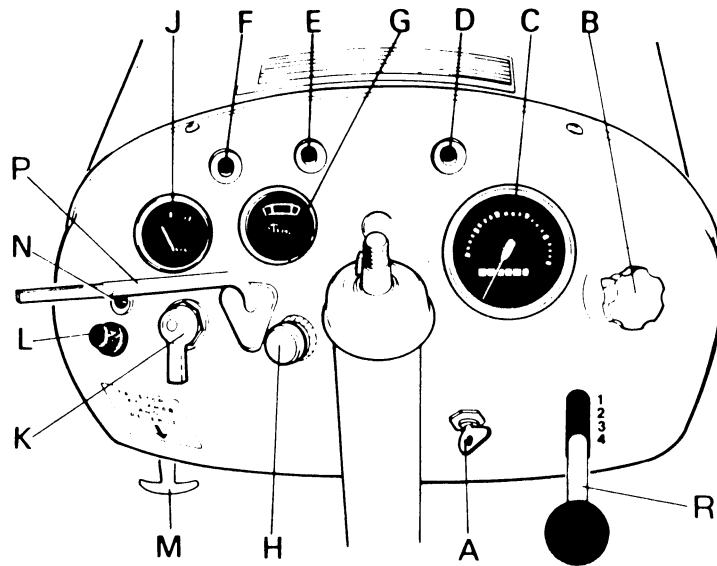


FIGURE 1'1. INSTRUMENT PANEL

- |   |   |
|---|---|
| A. Isolating starter key and switch           | H. Hazard warning lights switch           |
| B. Light switch                               | J. Fuel gauge                             |
| C. Engine speed indicator and hourmeter       | K. Flashing direction signal switch       |
| D. Charge warning light (red)                 | L. Horn push button                       |
| E. Engine oil warning light (green)           | M. Engine stop control                    |
| F. Transmission filter warning light (yellow) | N. Trailer direction signal warning light |
| G. Water temperature gauge                    | P. Hand throttle                          |
|   | R. Hydra-shift lever (1412)               |

### 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.

### **Charge warning light**

The red light is illuminated when the isolating switch is turned on but goes out as soon as the alternator 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 filter by-pass valve and allow oil to by-pass the filter element, the yellow warning light 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 also lights when the isolating switch is turned on and the driver should check that it lights 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.

When the oil is cold the warning light may illuminate at less than full engine speeds. 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.

As the filter element becomes blocked with dirt, the warning light will come on at progressively lower engine speeds so that, even when the oil is warm, full working speed may not be achieved without causing the bulb to light.

When the bulb lights at 1800 r/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.

### **Light switch**

This has 4 positions:

1. "Off"
2. Side and tail
3. Side, tail and head (low beam)
4. Side, tail and head (high beam)

The rear flood light is controlled by its own switch, mounted on the lamp housing. The lamp can be switched on when the main light switch on the instrument panel is in any of the positions 2, 3 or 4.

### Engine speed indicator

The engine speed indicator (tachometer) fitted to the instrument panel, shows the engine revolutions per minute and should be used in conjunction with the chart attached to the bonnet (hood) in order to determine the travel speed of the tractor (see Fig. 1/2).

The engine speed is marked along the bottom edge of the chart. An imaginary vertical line projected upwards will cross the various horizontal gear bands at the appropriate speed. The travel speed in any gear can, therefore, be obtained by first reading the engine speed indicator and transferring to the chart. Alternatively, any required 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.

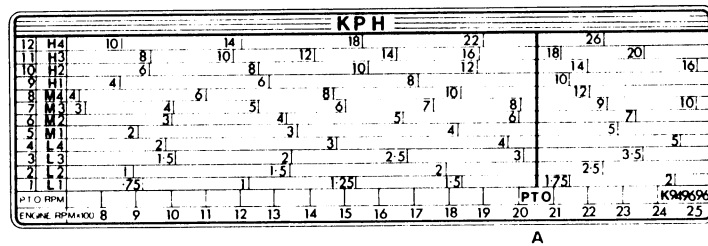


FIGURE 1/2. GEAR/SPEED CHART FOR 1412 TRACTOR

A. Red line at 540 r/min PTO

The chart has a red line at the 2050 r/min engine speed which gives 540 r/min at the PTO. Decide which forward speed is right for the job you are doing, and note where the red line crosses the horizontal band nearest to this speed. The gear ratio you need is marked at the left-hand end of this band.

**Buy Now**



Our support email:

[ebooklibonline@outlook.com](mailto:ebooklibonline@outlook.com)