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TECHNICAL DATA

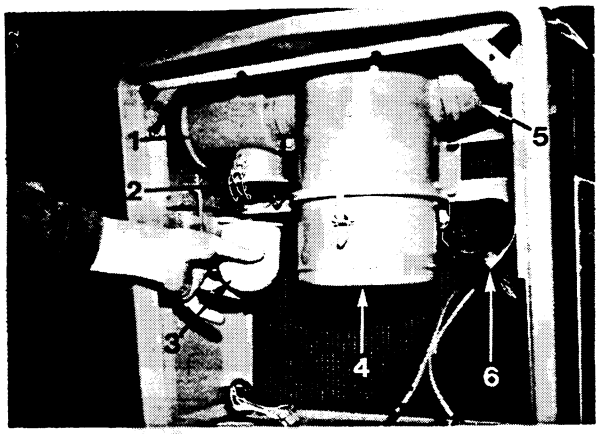
	553	654
Engine	***D 179***	***D 206***
	3 – cylinder 4 cycle Diesel with direct injection and pressure feed lubrication	4 – cylinder 4 cycle Diesel with direct injection and pressure feed lubrication
Rated speed	2180 rpm	2180 rpm
Low idle speed	770 – 870 rpm	650 – 750 rpm
Max. idle speed	2410 rpm	2410 rpm
Piston displacement	179 cu. in. = 2934 ccm	206 cu. in. = 3382 ccm
Cylinder bore	3.87 in. = 98.4 mm	3.87 in. = 98.4 mm
Stroke	5.06 in. = 128.5 mm	4.37 in. = 111.1 mm
Firing order	1 – 3 – 2	1 – 3 – 4 – 2
Compression ratio	16 : 1	16 : 1
Injection timing – static	14° BTDC	12° BTDC
Valve clearance (engine warm)		
Intake valve	.010 in. = 0.25 mm	.010 in. = 0.25 mm
Exhaust valve	.012 in. = 0.30 mm	.012 in. = 0.30 mm
Storage battery	one 12 V 135 Ah or 2 of 6 V 88 Ah	one 12 V 135 Ah or 2 of 6 V 88 Ah
Nozzle holder	Bosch KBL 90 S 104/4	Bosch KBL 90 S 104/4
Injection nozzles	Bosch DLL 150 S 2641	Bosch DLL 150 S 2641
Injection pressure	2910 – 3024 PSI = 205 – 213 kg/cm^2	2910 – 3024 PSI = 205 – 213 kg/cm^2
Injection pump	Bosch EP/VA3/100H1090CRV3373	Bosch EP/VA4/100H/1090CRV3349
Starting motor	Bosch 1.8 HP or 4 HP	Bosch 1.8 HP or 4 HP
Generator	Bosch 11 Amp. or 16 Amp.	Bosch 11 Amp. or 16 Amp.

Capacities

			All–wheel drive version				All–wheel drive version	
	liters	US gal	liters	US gal	liters	US gal	liters	US gal
Engine crankcase	7.5	2.0	7.5	2.0	9.0	2.4	9.0	2.4
Transmission case–standard	42.0*	11.0	45.5*	12.0	42.0*	11.0	45.5*	12.0
–Powershift	35.0*	9.2	38.5*	10.2	35.0*	9.2	38.5*	10.2
Hydraulic lift housing	16.5	4.4	16.5	4.4	16.5	4.4	16.5	4.4
Planetary final drive	3.7	.98 each	3.7	.98 each	3.7	.98 each	3.7	.98 each
Oil–bath air–cleaner	1.0	.26	1.0	.26	1.0	.26	1.0	.26
Fuel tank	70.0	18.5	70.0	18.5	70.0	18.5	70.0	18.5
Cooling system	15.5	4.1	15.5	4.1	17.5	4.6	17.5	4.6
Front drive axle Differential			5.6	1.5			5.6	1.5
Planetary wheel hubs			.45	.12 each			.45	.12 each

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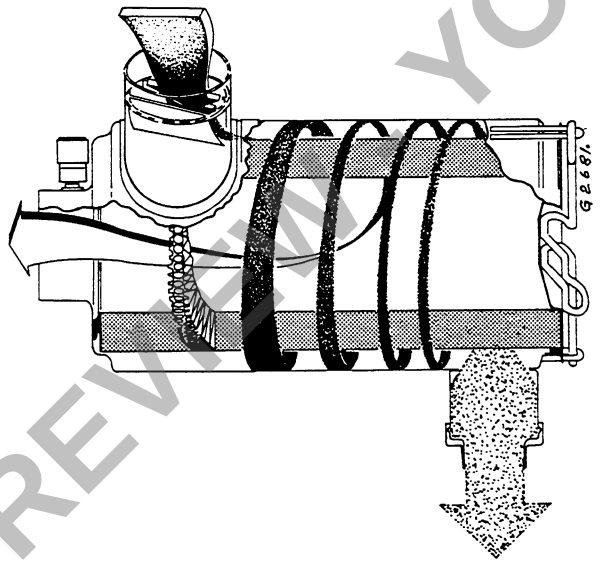
Illust. 53

1 — Pre—cleaner
2 — Clamps
3 — Dust bowl
4 — Air cleaner oil cup
5 — Suction hose
6 — Signal horn

Remove and empty the dust bowl (3) at intervals as shown under maintenance schedule or even more often, depending on dust conditions. Excessive dirt accumulation in this bowl will impair the cleaning efficiency of the filter.

Dry Typ Air Cleaner

To prevent premature wear on moving engine parts, intake air must be thoroughly filtered before entering the cylinders.



Illust. 54
Functional diagram of the air cleaner shows flow pattern of air and contaminants.

Air enters the cleaner inlet neck and is given a cyclonic twist by passing through the fins in the neck (4) Illust. 56. Most of the contaminants are separated from the air by the inertial force caused by the cyclonic twist. The separated contaminants are thrown from the main air stream into the dust unloader valve (6) where they are ejected. The precleaned air flows through the element, which removes the remaining contaminants.

Precautions

As a precaution against dirt entering the engine:

All gaskets and rubber hoses between the air cleaner, and intake manifold, and between the manifold and cylinder head must be in good condition and the joints or connections must be tight.

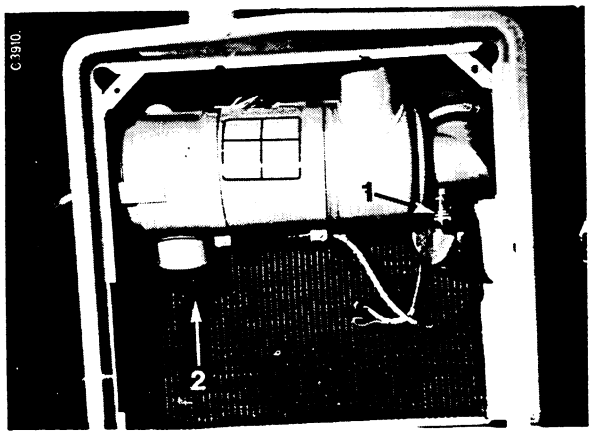
Never operate the engine unless a filter element is in place and the automatic dust unloader is installed.

Never remove the element from the air cleaner while the engine is running.

Service Indicator

The service indicator (1) Illust. 55 operates by the low pressure of engine suction.

With the engine running and the element clogged, a vacuum builds up on the suction side of the engine which forces the piston of the service indicator up. When the indicator piston remains in its locked position showing the red marking in the control window after the engine is stopped, the element must be changed.



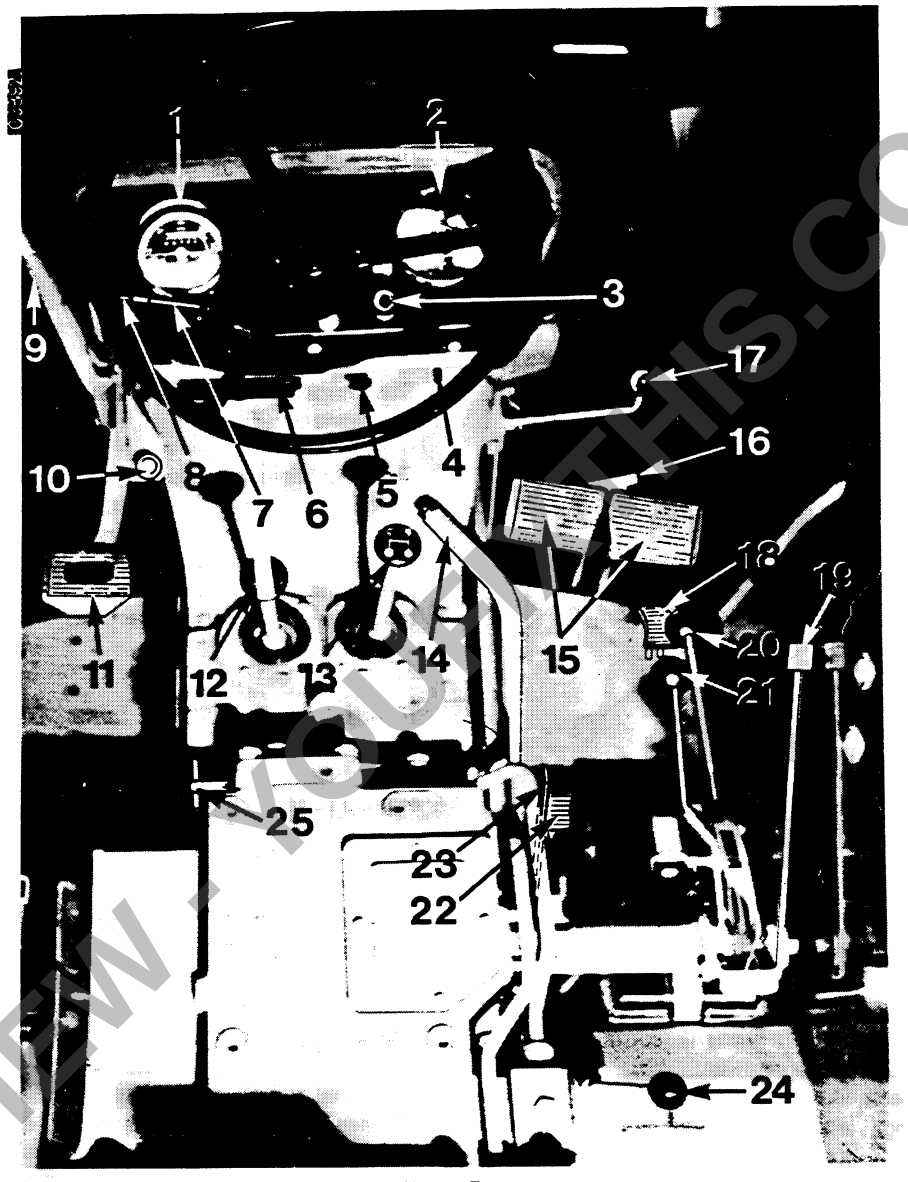
Illust. 55

1 — Service indicator
2 — Automatic dust unloader

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INSTRUMENTS AND CONTROLS

Regardless of previous experience as a tractor operator, you must be thoroughly familiar with the location and use of all instruments and controls before operating this tractor. Check all instruments, immediately after starting, again upon reaching operating temperatures and at frequent intervals during operation to assure proper care through prompt detection of irregularities. If any of the instruments do not register properly, stop the engine; locate and correct the cause immediately.



Illust. 5

1 – Tractormeter
2 – Instrument cluster
3 – Hazard warning light switch (if so equipped)
4 – Light switch
5 – Glow starter switch
6 – Fuse box
7 – Directional signal light
8 – Horn button
9 – Pto clutch hand lever
10 – Starting and shut–off control
11 – Clutch pedal
12 – Speed range lever
13 – Gearshift lever
14 – Parking brake lever
15 – Brake pedals
16 – Brake pedal latch
17 – Hand throttle
18 – Accelerator pedal
19 – Marker lever
20 – Draft control lever
21 – Position control lever
22 – Differential lock
23 – Pto shifter lever
24 – Auxiliary valve operating leve
25 – Lowering speed control

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Breaking—in Period

In order to obtain best "breaking—in" results tractor and engine must not be subjected to full load or speed, during the critical first 20 hours of operation. Experience has shown that gradually increasing the load with alternating engine speeds is the best way of introducing a new tractor to a long and satisfactory service life.

Following schedule should be adopted:

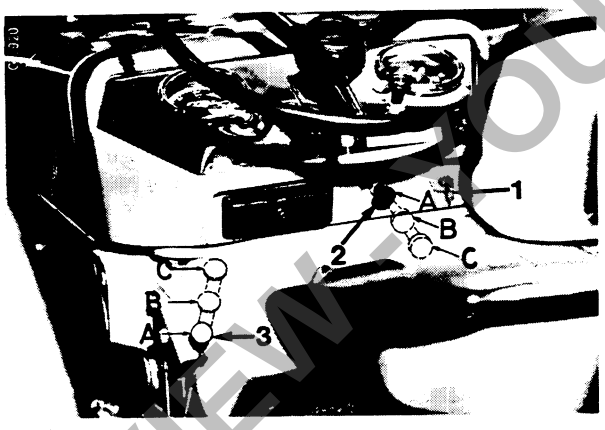
1st – 4th operating hour 1700 rpm on a light (1/4) load.
5th – 20th operating hour full rated speed and medium load.

Avoid high engine speeds without load during the breaking—in time. After 20 operating hours the engine should be subjected to full load for short periods as part of the breaking—in program.

Starting the Engine

Be sure gear shift and pto shifter lever are in neutral.

Open fuel shut—off valve.



Illust. 16

1 – Switch key
2 – Glow starter switch

A – Neutral position
B – Pre—heating
C – Starting

3 – Starting and shut—off control
A – Operating position
B – Starting position
C – Shut—down position

Place hand throttle in high idle position (full throttle).

Turn switch key (1) Illust. 16 in position "1", see Illust. 7.

Pull out control (3) to its first stop position (B) and hold it there.

Pull out glow starter switch (2) all the way to engage the starting motor.

Note: If the engine does not fire within 10 seconds, release the starter button until the starting motor has come to rest, then try again. Never pull the starter button while the flywheel is turning or damage may occur to the starting motor or flywheel ring gear.

As soon as the engine fires, release the starter button which will automatically return to neutral position.

However hold starting control (3) for about 20 seconds in position (B). Then push to operating position (A). Operate hand throttle and allow the engine to warm up at medium speed.

Starting in Cold Weather

When starting in cold weather pull out the glow starter switch (2) to position (B) and hold it there for 30—60 seconds depending on prevalent temperatures.

For the protection of the storage battery it is advisable to hold the starter button in the preheating position a few seconds longer so that the engine will fire the first time.

Stopping the Engine

Note: It is very important to operate the engine at half throttle (no load) for three to five minutes before shutting down. These few minutes allow the lubricating oil and coolant to carry heat away from the iron masses. If a hot engine is shut down repeatedly without previous idling the temperature in certain engine parts, rising sharply after the cooling system ceases to function, may cause serious damage.

Return hand throttle lever to idle position and pull out shut—off control (3) all the way to stop the engine.

When engine is at rest turn switch key to "0" position.

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implements used. Control valves for single—acting or double acting power cylinders are available optionally. Both types are installed in the same manner.

Connection to remote control cylinders is either by direct line or by self — sealing break — away couplings.

For lifting always pull the lever (8) Illust. 35 back completely to avoid excessive heating of the pressure oil.

Immobilize control valve levers of single—acting control valves by inserting lock bushing (9) when respective implements are not being used. This will lock out valves completely and prevent inadvertent operation of any of the levers.

Double — acting control valves are immobilized by removing the control valve lever. Loosen clamping nut and remove lever.

Note: Make sure when hitching additional remote control hydraulic equipment that the oil filling of this equipment corresponds with the oil in the hydraulic system of the tractor. Most oils do not permit mixing without adverse effects on the hydraulic system.

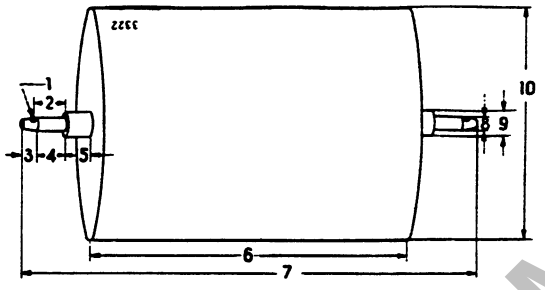
Front Loader

This sturdy front loader makes your tractor more versatile to save manpower, time and money all the year round. A complete range of front loader equipment is available through IH—service parts channels. Your IH—Dealer will gladly furnish detailed information regarding recommended front loader tools, on request.

Loading capacity of front wheel tires should be raised by increasing tire pressure to max. 3 kg/cm^2 (44 PSI).

Adjust the front axle to the narrowest tread position. For better weight distribution fit rear wheel weights and fill the rear wheel tires with water.

For difficult operating conditions the use of an additional counterweight is recommended to improve wheel traction. A weight, easily made locally, is shown in the following sketch. Material is concrete, the batch mixture being 1 : 4. Add a liberal quantity of iron scrap to increase weight. A counterweight made according to these directions will weigh approx. 370 kg (820 lbs). It is mounted to the three—point linkage in the same manner as mounted implements.



Illust. 41
Counterweight for three—point suspension hitch

Dimensions

Ref. No.	Category I mm	Category I inches	Category II mm	Category II inches
1	12 Ø	15/32 dia	12 Ø	15/32 dia
2	51	2	59	2 5/16
3	25	1	19	3/4
4	45	1 3/4	54	2 1/8
5	41	1 5/8	112	4 13/32
6	600	23 5/8	600	23 5/8
7	822	32 3/8	970	38 3/16
8	22 Ø	.860/.870 dia	28	1.105/1.115 dia
9	46 Ø	1 13/16 dia	46	1 13/16 dia
10	450 Ø	17 3/4 dia	450 Ø	17 3/4 dia

When working with the front loader observe the following:

1. Move the bucket or scoop at right angles into the stock pile and make sure the load is evenly distributed.

2. Avoid sudden braking or reversing when the loader is raised to maximum height and loaded to capacity.

3. Lower the load as far as possible when driving on steep grades or when making sharp turns.
Do not exceed 6 km/h = 4 mph tractor speed.

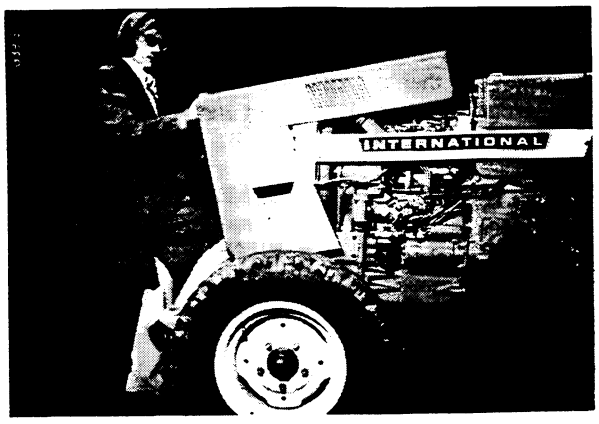
4. When driving without load raise the lifting frame as high as possible. When driving on public roads make allowance for head clearance under bridges, overhead lines etc.

Belt Pulley

The belt pulley attachment can be fitted subsequently and is especially useful to operate hammer mills, circular saws, threshing mills etc.

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Illust. 47
Removing or installing the engine hood

Changing Engine Oil

The life of any engine depends upon the care it is given. Proper lubrication is a very important part of that care. Any carelessness in this respect will cause engine trouble and excessive wear.

Engine lubricating oils should be of well – refined petroleum oils of the heavy – duty (HD) type. For details refer to "Recommended Lubricants".

The new engine is filled with break–in and preservative oil which must be replaced with regular engine oil after the intitial 20 operating hours (at the first inspection). Thereafter, service at the regular scheduled intervals.

Note: When using Diesel fuels with more than 1.5% sulphur content, it is necessary to change the oil more often. Use "Series 3" engine oil.



Illust. 48
Draining the engine oil

1 – Drain plug
2 – Filler tube
3 – Oil filter

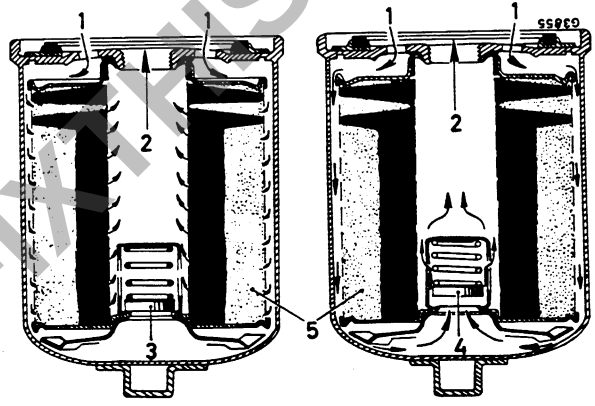
Drain the old oil while the engine is warm, Illust. 48. Be sure to clean the drain plug of sediment and abrasion.

Before replacing the drain plug clean the hollow of sludge and sediment.

Fill up crankcase with the specified brand to the upper mark of the level gauge Illust. 4.
Replace the oil filter every time the engine oil is changed.

Oil Filter

The engine is equipped with an oil filter which continually cleans the oil while the engine is running. All impurities separated from the oil accumulate in the oil filter element.



Clean filter Clogged filter

Illust. 49

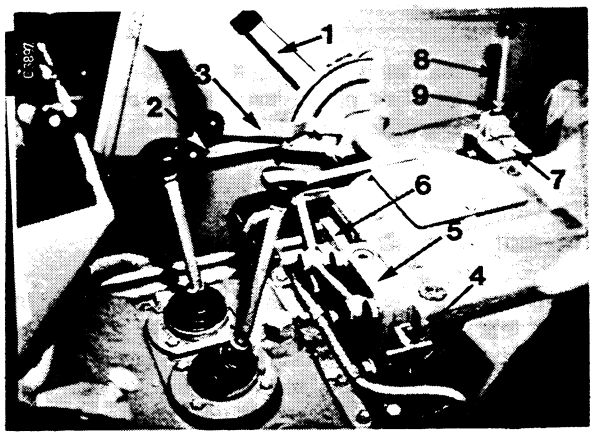
1 – In–flowing oil from pump
2 – Out–flowing oil to main gallery
3 – Safety valve closed
4 – Safety valve, open
5 – Paper element

When the oil filter element is contaminated so that the oil flow is restricted or the element is clogged, the safety valve (4) Illust. 49 is opened by the oil pressure, allowing the lubricant (2) to bypass direct into the main oil gallery of the engine.

Oil by–pass through the safety valve is unfiltered, but a continuous supply is fed to the moving engine parts and pressure in the main gallery is normal. A clogged element can, therefore, not be detected by oil pressure control lamp. It is of vital importance, therefore, to replace the filter, whenever the engine oil is changed.

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Illust. 35
Operating controls

1 — Marker lever
2 — Draft control lever
3 — Position control lever
4 — Lowering speed control
5 — Cylinder head
6 — Draft- and position control valve
7 — Mounting block for auxiliary control valves
8 — Auxiliary valve control lever
9 — Lock bushing

Position Control

The position control is mainly used for out—of—ground implements requiring no depth control.
Push draft lever (2) Illust. 35 down all the way to make it ineffective. Implements are controlled with the position lever (3) only.

The setting of position lever (3) corresponds with a definite position of the rocker arms or the implement.

If for example lever (3) is moved upward the rocker arms will follow up this movement until they reach their pre—selected position. At this point the follower on the power arm automatically cuts lifting power.
The bottom position of the control lever (3) is the float position.
The system is equipped with a block valve which prevents lowering when the engine is stopped.

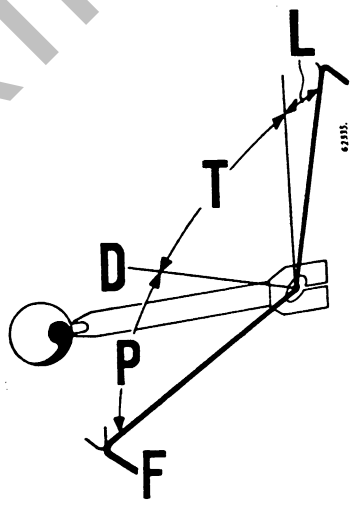
Take care, not to operate the position control lever once the engine is stopped. The implement, not being able to follow while the engine is stopped, will be raised or lowered inadvertently once the engine is started. Be sure, therefore, to lower the raised implement or load before stopping the engine.

Draft Control

The draft control is especially designed for heavy tillage implements, such as plows, cultivators etc.
Move position control lever (3) down all the way to make it ineffective.
The position of the draft control lever (2) corresponds with a definite resistance of the implement being pulled through the ground. The implement penetrates into the ground until the preselected operating resistance is reached. At this point the draft control linkage (upper link, bellcrank, leaf spring, bellcrank pin and draft link plunger) acting on the control valve will maintain this uniform resistance, acting as a depth control.

If operating resistance changes the draft control linkage transmit signals for lifting or lowering to the control valve until the pre—selected resistance is reached again.

This system, working on the principle of operating resistance, makes for a uniform depth control on the various soil conditions and ground contours.



Illust. 36
Operating range of draft control lever

L — Lifting range (10°)
T — Tension range (45°)
D — Dead range
P — Pressure range (45°)
F — Float position

Depending on the design of the plow it will either work in the tension range (T) Illust. 36 or in the pressure range (P). With plows operating in the tension range, max operating resistance is reached before dead range (D). If the draft control lever is pushed down past the dead range into the pressure range (P) the system will operate in float position, i.e. the draft control system is rendered ineffective.

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