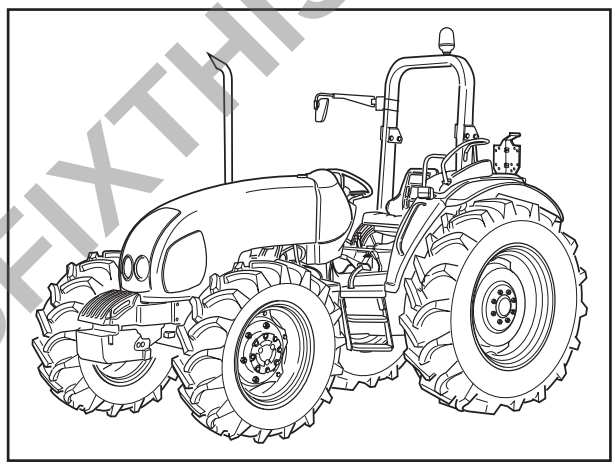
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GLOBALFARM

95 - 105 - 90 - 100



Training Manual

P/N 4208730M1

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Cap.8 ELECTRICAL SYSTEM

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3.1 Essential rules for accident prevention

The structures, systems and equipment in repair shops must conform to the current laws governing labour safety in order to safeguard the health and safety of each worker.

Although they are obviously only partial, the regulations given in this section inform the workers about the dangers they may encounter on the job.

Always bear your safety and that of others in mind whenever you work on a machine, whichever type it may be.

To work in complete safety, it is essential to know the nature of the job, to correctly use the tools and materials required and to reply on your common sense. Read the safety messages in the introductory part of this manual and pay attention to the "warning" notes when they appear in the text.

Important factors that help to prevent accidents are:

- the **behaviour** and prudent conduct of each worker;
- your **attention** and ability to remain alert and keep your actions under control;
- Your compliance with the **regulations** and rules of conduct of a general character.

To work in safety, always think before acting

⚠	Warning**:** This is the warning symbol. Pay attention when you see it on the machine or in the manual as it denotes a potential risk of injury.



Fig. 1.6

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4.3 Tabla de resumen del mantenimiento periódico

Horas de trabajo	N° operación	Operaciones de mantenimiento	Reabastecim. Nivel	Limpieza	Regulación	Sustitución	Verificac.	Lubricación
Mantenim. flexible (4)	1	Nivel aceite cárter motor	●					
	2	Nivel aceite transmisión y del circuito hidráulico elevador	●					
	3	Batería	●					
	4	Filtro combustible		●				
	5	Radiador agua motor	●					
	6	Aletas radiador agua motor		●				
	7	Nivel aceite del circuito de dirección	●					
	8	Válvula de descarga filtro aire en seco		●				
	9	Cartucho externo filtro aire en seco		●				
	10	Correa ventilador y alternador			●			
	11	Pedal mando embrague motor-cambio			●			
	12	Palanca de mano desembragado Toma de Fuerza			●			
	13	Nivel aceite circuito mando frenos hidráulicos remolque **	●					
	14	Pedales de los frenos (6)			●			
	15	FRENO DE ESTACIONAMIENTO			●			
	16	Nivel aceite reductores traseros	●					
	17	Nivel aceite puente delantero y reductores delanteros	●					
	18	Control presión de los neumáticos					●	
	varios	Control apriete de las tuercas de las ruedas					●	
		Control ajuste tornillos en general					●	
	19	Control ajuste tornillos de fijación estructura de protección antivuelco					●	
Cada 100 horas de trabajo	20	Lubricación general						●
	21	Lubricación eje delantero 4RM						●
	22	Lubricación eje delantero 2RM (si está montado)						●
Cada 250 horas de trabajo	23	Limpieza filtro aceite en la aspiración de la bomba del elevador (2)				●		
Cada 500 horas de trabajo	24	Cárter motor (5)				●		
	25	Filtro aceite motor (5)				●		
	26	Válvulas motor			○			
	27	Filtro combustible (8)				●		
	28	Limpieza filtro aceite del circuito de dirección (3)		●				
	28b	Sustitución desfogue motor de circuito cerrado (según el tipo de motor) (7)				○		

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2.1 Main technical specifications

Engine

Euro Norm Stage2	95	105
Type	Perkins Diesel, 4-stroke with direct injection	
Code	1104C-44T	1104C-44T
Fuel supply	Turbo	Turbo
Number of cylinders	4	4
Bore	105 mm	105 mm
Stroke	127 mm	127 mm
Swept volume	4,400 cc	4,400 cc
Compression ratio	18.2:1	18.2:1
ISO max. power rating	91.9/67.6 HP/kW	98.6/72.5 HP/kW
Engine rate	2200 RPM	2200 RPM
Max. torque	380 Nm	364 Nm
Max. torque rating	1400 RPM	1400 RPM
Idling speed	750 RPM	750 RPM

Timing system

Type	With overhead valve controlled by tappets	
Tappet gap, cold engine:		
Intake	0.20 mm	0.20 mm
Exhaust	0.45 mm	0.45 mm

Fuel supply

Injection pump	-	-
Firing order	1-3-4-2	1-3-4-2
Injectors	Perkins	Perkins
Injector pressure setting	294 bar	294 bar
Cold starting device	Thermostarter	Thermostarter
Air filter	dry filter with two elements removable for maintenance	

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7.1 Driving torques

Material	8.8		10.9		12.9	
Screw	Z	B	Z	B	Z	B
M8 x 1	25	27	36	38	43	46
M8 (1.25)	23	25	33	35	40	42
M10 x 1.25	50	55	70	75	85	90
M10 (1.5)	46	50	66	70	80	85
M12 x 1.25	90	97	127	135	143	055
M12 (1.75)	82	86	115	120	138	145
M14 x 1.5	142	153	200	215	240	260
M14 (2)	130	140	182	195	220	235
M16 x 1.5	215	230	300	320	360	390
M16 (2)	200	215	280	300	340	360
M18 x 1.5	310	330	435	470	520	560
M18 (2.5)	270	295	385	415	460	495
M20 x 1.5	430	460	610	660	720	770
M20 (2.5)	390	415	550	585	660	705
3/8” -24 UNF	44	47	62	67	75	80
3/8” -16 UNC	40	43	56	60	68	72
1/2” -20 UNF	105	112	147	157	175	190
1/2” -136 UNC	95	102	135	145	160	173
9/16” -18 UNF	150	160	210	225	250	270
9/16” -12 UNC	135	145	190	205	230	245
5/8” -18 UNF	205	215	285	305	345	365
5/8” -11 UNC	185	200	260	280	315	335
3/4” -16 UNF	355	380	500	535	600	645
3/4” -10 UNC	325	345	455	490	550	585

Driving torques in Nm

Z - galvanized bolt
B - burnished bolt

Torquing tolerances

Crtitical assembly	+5% / -5%
Important assembly	+5% / -15%
Secondary assembly	+5% / -30%

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2.1 Drawing of the assembly

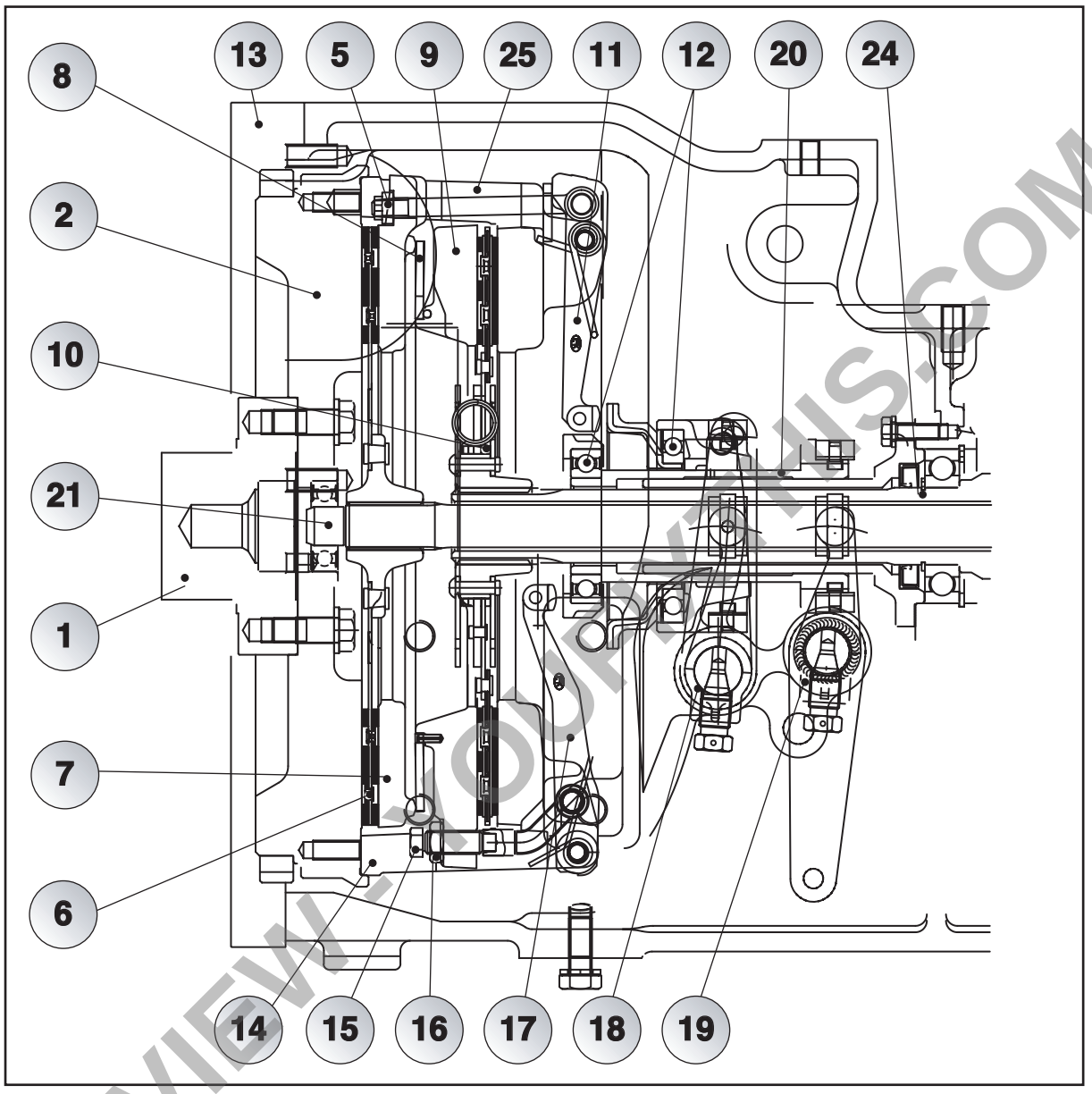


Fig. 3.1

1 - Drive shaft
2 - Flywheel
5 - PTO clutch adjuster screw
6 - P.T.O. clutch plate
7 - P.T.O. clutch pressure plate
8 - Belleville washer
9 - Main clutch pressure plate
10 - Main clutch disc
11 - P.T.O. clutch disengaging lever
12 - Thrust bearings
13 - Engine/gearbox assembly housing
14 - Clutch unit
15 - Main clutch lever adjuster screw
16 - Adjuster screw lock nut
17 - Main clutch disengaging lever
18 - PTO clutch thrust control fork
19 - Main clutch thrust control fork
20 - Clutch disengaging collar
21 - P.T.O. shaft
24 - Gearbox input shaft
25 - PTO lever rod

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2.3 Drawing of assembly and main components

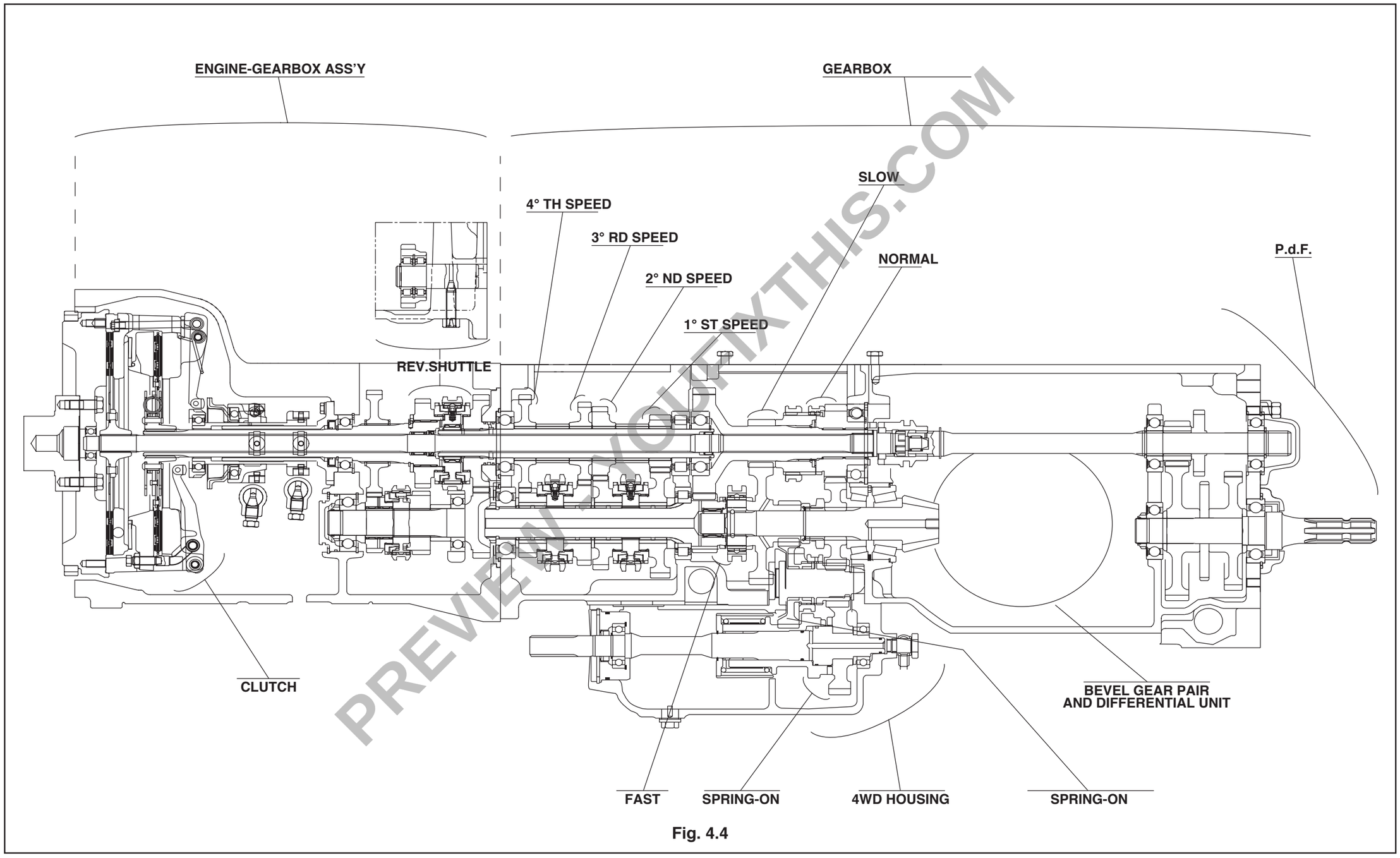


Fig. 4.4

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2.5 Control devices

Gearshift levers (12x4 version)

The gearshift levers are installed in a central position.

Thanks to the functional position of each speed, driving is easy, safe and suited to any handling requirement.

The slow, medium and fast range and reverse control lever (G) is installed on the left-hand side of the driver, near the gearshift lever (M), which allows immediate selection of the ground speed.

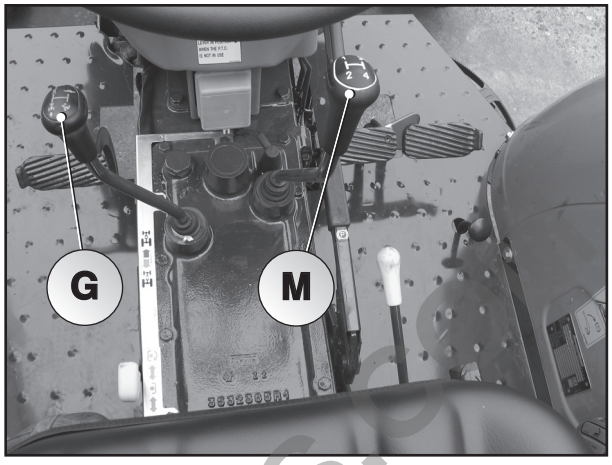


Fig. 4.6

Reverse shuttle lever (24x12 version)

The reverse shuttle lever (S) is located at the center.

The lever can be moved to three positions, corresponding to precise ways of using the ground speeds, neutral or reverse speeds of the tractor. A fourth position is used to engage the option installed in the tractor: creeper.

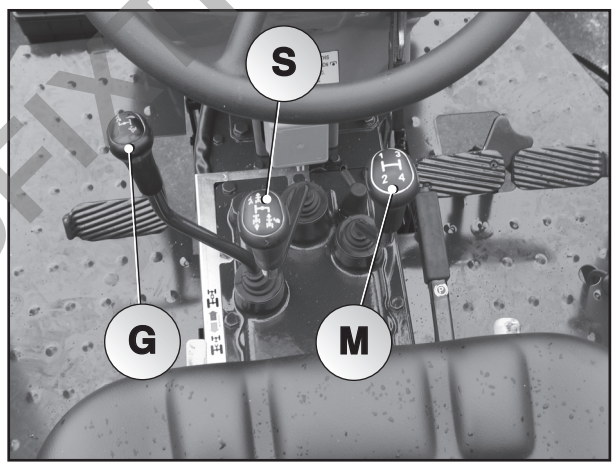


Fig. 4.7

Reverse shuttle lever (12x12 version)

The reverse shuttle lever (S) is located at the center.

The lever can be moved to three positions, corresponding to precise ways of using the ground speeds, neutral or reverse speeds of the tractor.

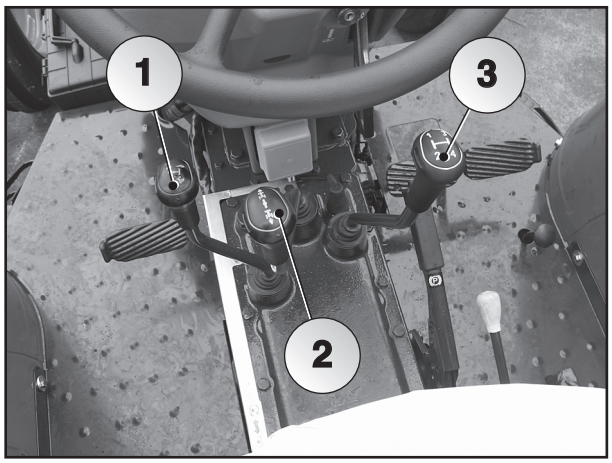


Fig. 4.8

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3.1.3 Guidelines for disassembly (version 12x12)

How to remove the engine-gearbox union

> Warning: lift and handle all heavy parts with lifting equipment of an adequate capacity. Make sure that the units or parts are supported by appropriately sized harness and hooks. Make sure that there are no bystanders near the load being lifted.

Split the engine from the axle and unscrew the fixing screws from the covers of the axle housing and gearbox housing.

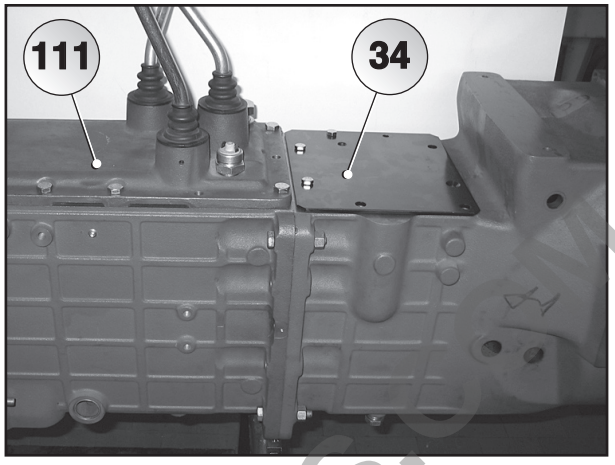


Fig. 4.18

Remove the gearbox cover (111).

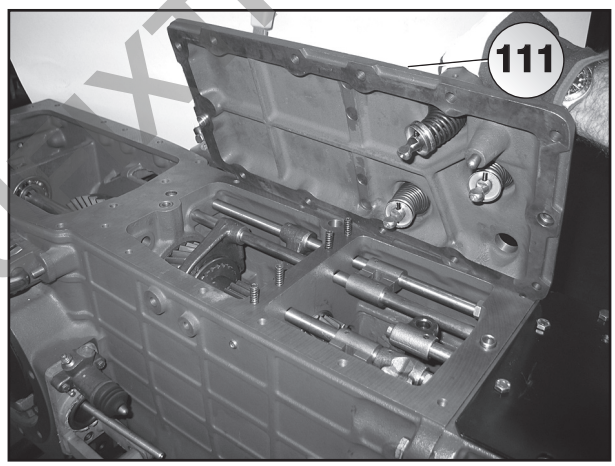


Fig. 4.19

Remove the axle cover (34).

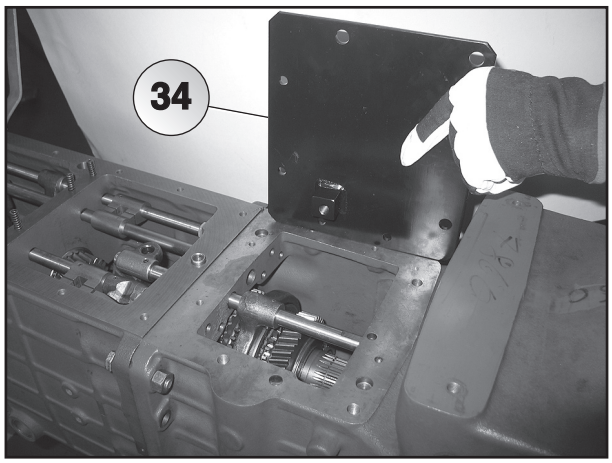


Fig. 4.20

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2.1 Main hydraulic circuit (version with mechanical differential lock)

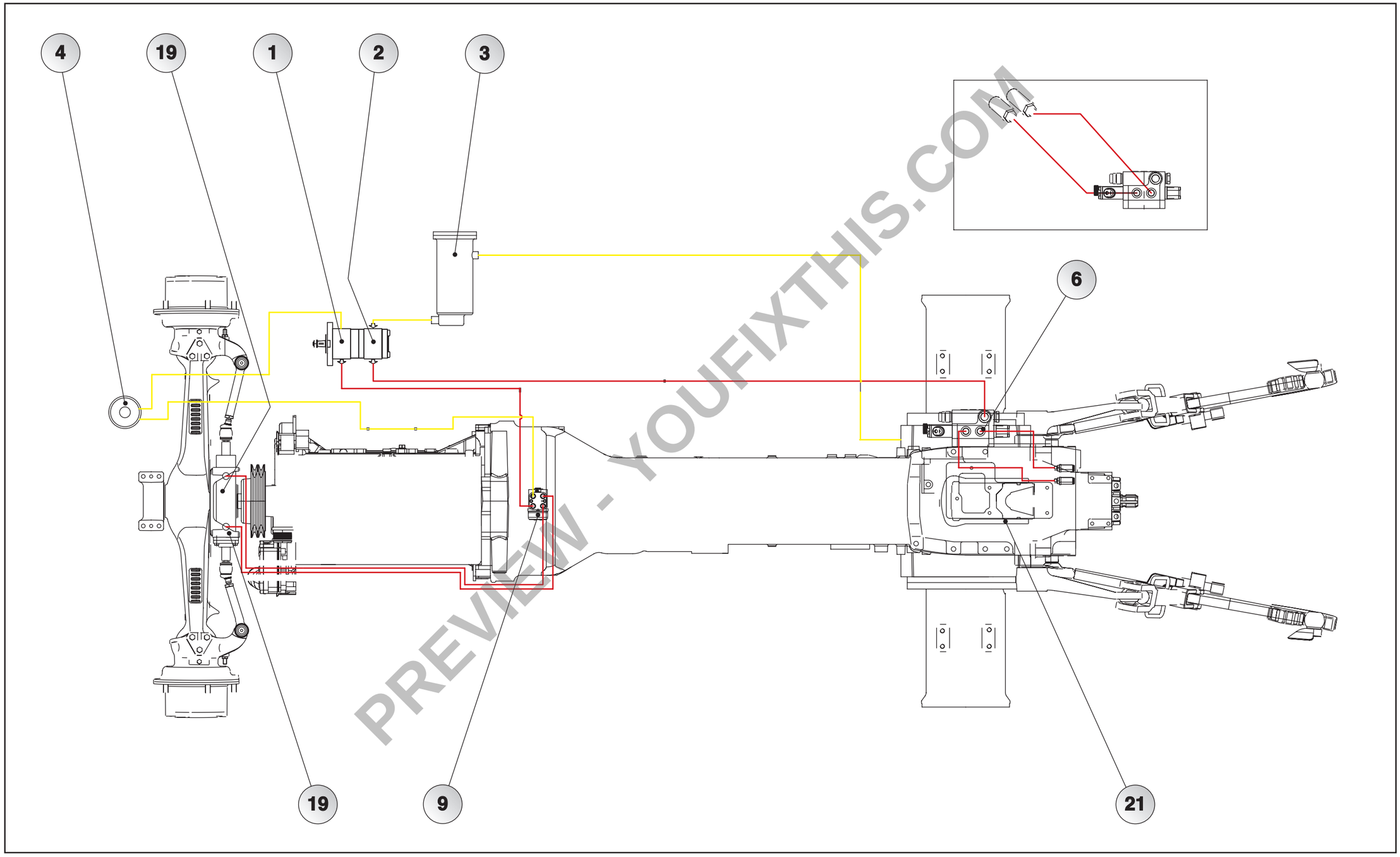


Fig. 6.1

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4.4 Troubleshooting

Faults	Probable cause	Remedy
The power lift fails to lift in the no-load condition	- Servo valve (10 Fig. 7.10) blocked in the open position	- Make sure that the valve slides freely and is tight
	- The pump fails to deliver oil as it is not primed	- Prime the pump by filling it and the suction pipe with transmission oil
The power lift fails to lift the implement or is slow in lifting	- Filter on the intake clogged - Pump inefficient - Servo valve not perfectly tight (10 Fig. 7.10) - Calibration valve (5) or safety valve (12 Fig. 7.10) with a low setting - Lower retention ring of the valve housing faulty - Leaking discharge valve (1 Fig. 7.10) - Divider retention rings faulty - Implement too heavy	- Disassemble and clean the filter - Replace the pump - Check tightness. - Check and calibrate the two valves. - Replace the ring - Check and overhaul the discharge valve. - Replace the rings. - Change the implement or move the hitch nearer.
The power lift fails to keep the implement in the raised position	- Detective seal of the non-return ball (11 Fig. 7.10)	- Subject the valve system to hydraulic tests on the bench in order to locate leaks
	- Leaking discharge valve (1 Fig. 7.10)	- Check and replace the discharge valve if necessary
	- Leaking safety valve (12 Fig. 7.10)	- Check and overhaul the safety valve
	- Upper retention ring of the valve housing faulty	- Replace the ring
	- Divider retention ring faulty	- Replace the ring
	- Lifting cylinder piston rings faulty	- Replace the ring
	- Aluminium plugs that close the machining holes on the power lift's cover and cylinder	- Replace the plugs

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3.3 Functional diagram

Part 1

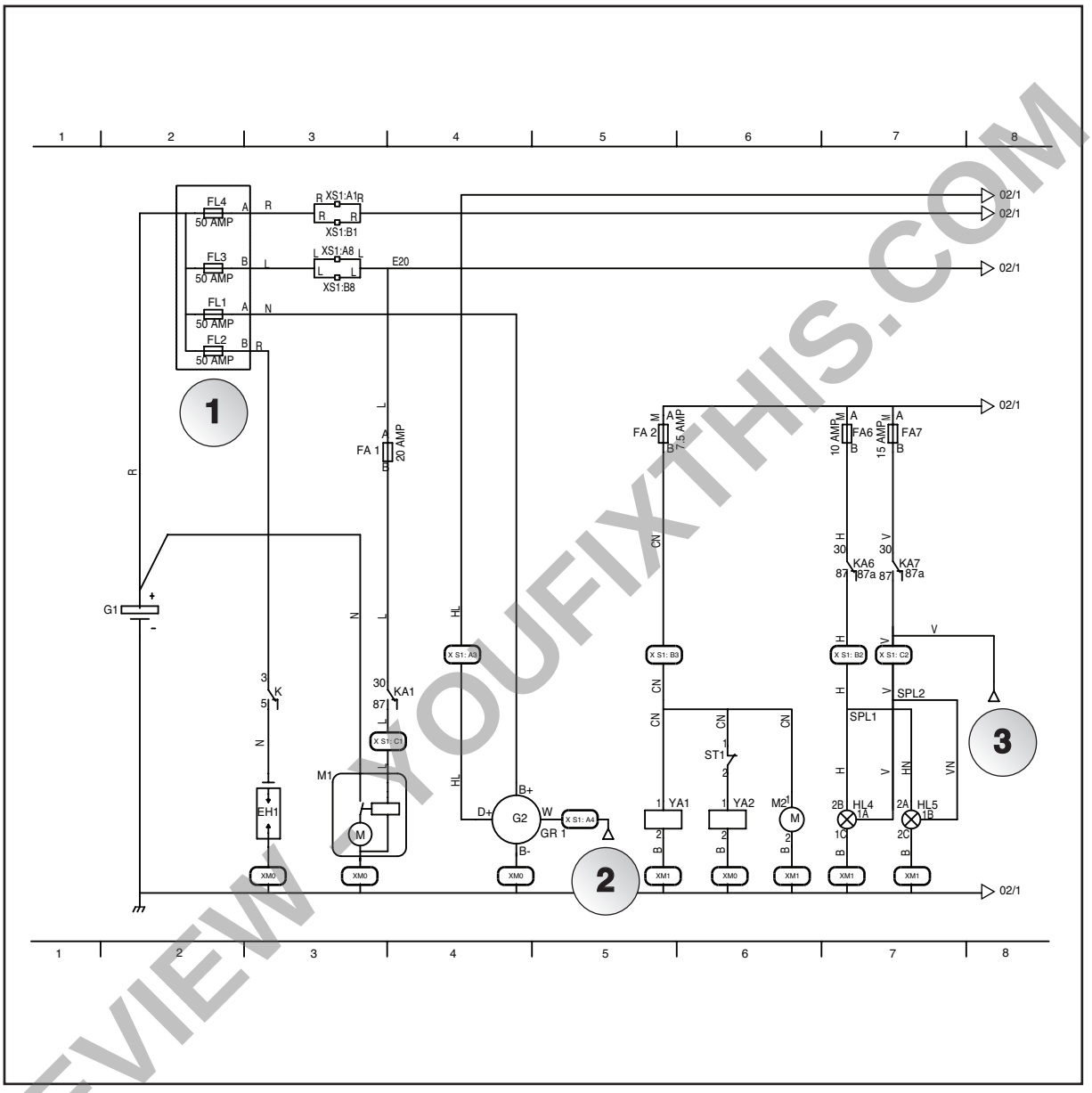


Fig. 8.20

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Connector (XS1) (24-ways) for front-dashboard line connection

pin	colour	to con. or comp.	pin	wire function
A1	R	B1 (junction)		direct powering
A2	N	K	1	glow plugs
A3	HL	G2D+	1	alternator
A4	GR	G2w	1	alternator
A5				not used
A6	ZB	SP3	1	engine oil pressure switch
A7	RV	SP4	1	air filter vacuum switch
A8	L	B2 (junction)		direct powering
B1	R	B1 (junction)		direct power
B2	H	SPL1 (junction)		lh headlight
B3	CN	ST1	1	fuel enrichment jet
B4	SG	SL1	2	fuel level
B5	S	SL1	1	fuel level
B6	VB	ST2	A	engine coolant temp.
B7	ZN	SP5	1	gearbox oil vacuum switch
B8	L	B2 (junction)		direct power
C1	L	M1	1	starter motor
C2	V	SPL2 (junction)		driving beams
C3	Z	HA1	1	horn
C4	N	YV1	1	diff lock sol.valve
C5	BR	YV1	2	diff lock sol.valve
C6	BN	XM2		ground
C7				not used
C8				not used

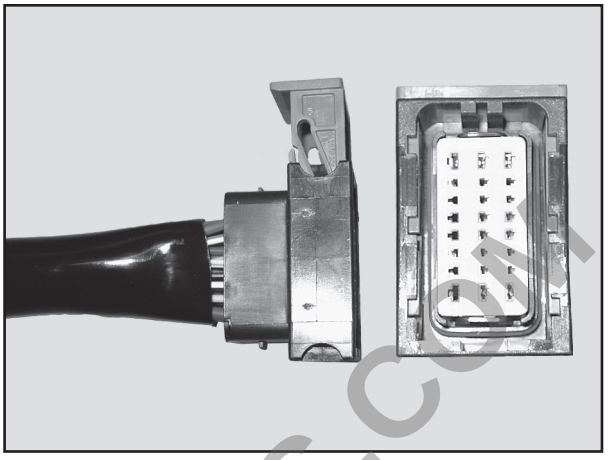


Fig. 8.100

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From Newtons to Kilograms

N	0	1	2	3	**4**
-	**kg**	**kg**	**kg**	**kg**	**kg**
-	**-**	**1.020**	**2.039**	**3.059**	**4.079**
100	**10.197**	**11.217**	**12.237**	**13.256**	**14.276**
200	**20.394**	**21.414**	**22.434**	**23.453**	**24.473**
300	**30.591**	**31.611**	**32.631**	**33.651**	**34.670**
400	**40.789**	**41.808**	**42.828**	**43.848**	**44.868**
500	**50.986**	**52.006**	**53.025**	**54.045**	**55.065**
600	**61.183**	**62.203**	**63.222**	**64.242**	**65.262**
700	**71.380**	**72.400**	**73.420**	**74.439**	**75.459**
800	**81.577**	**82.597**	**83.617**	**84.636**	**85.656**
900	**91.774**	**92.794**	**93.814**	**94.834**	**95.853**
1000	**101.972**	**102.990**	**104.011**	**105.031**	**106.051**
cc.	**5**	**6**	**7**	**8**	**9**
-	**kg**	**kg**	**kg**	**kg**	**kg**
-	**5.099**	**6.118**	**7.138**	**8.158**	**9.177**
100	**15.296**	**16.315**	**17.335**	**18.355**	**19.375**
200	**25.493**	**26.513**	**27.513**	**28.552**	**29.572**
300	**35.690**	**36.710**	**37.729**	**38.749**	**39.769**
400	**45.887**	**46.907**	**47.927**	**48.946**	**49.966**
500	**56.084**	**57.104**	**58.124**	**59.144**	**60.163**
600	**66.282**	**67.301**	**68.321**	**69.341**	**70.360**
700	**76.479**	**77.498**	**78.518**	**79.538**	**80.558**
800	**86.676**	**87.696**	**88.715**	**89.735**	**90.755**
900	**96.873**	**97.893**	**98.912**	**99.932**	**100.951**
1000	**107.071**	**108.090**	**109.110**	**110.130**	**111.149**

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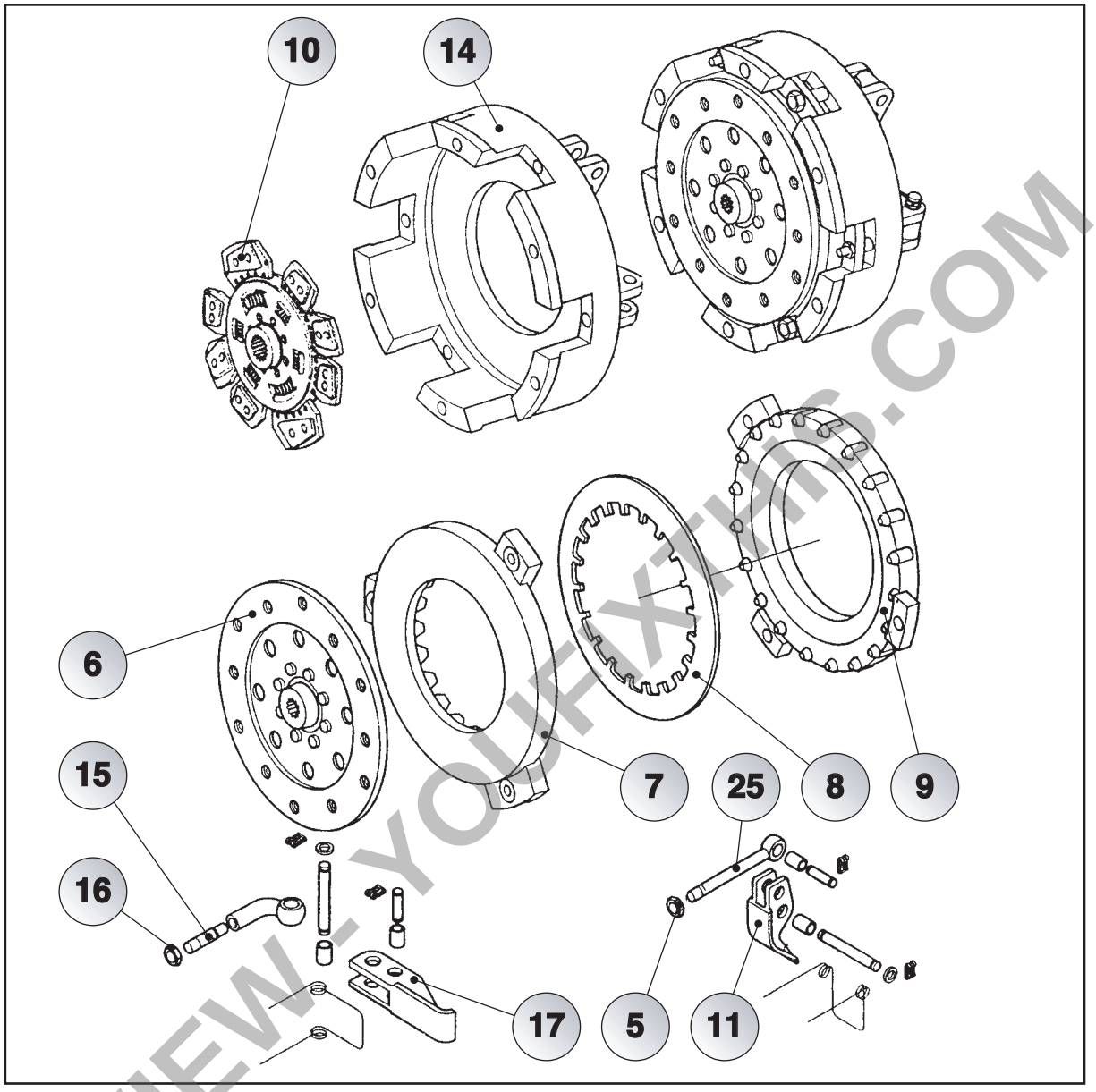


Fig. 3.2

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Re-assemble the reverse shuttle rod.

Insert the ball and spring.

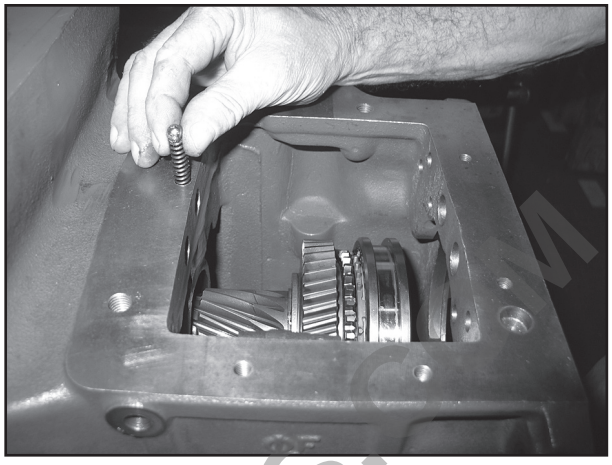


Fig. 4.74

Press on the ball with a pin driver and insert the reverse shuttle control rod (62), as shown in Fig. 4.75. Turn the control rod with the three ball housing races pointing downwards.

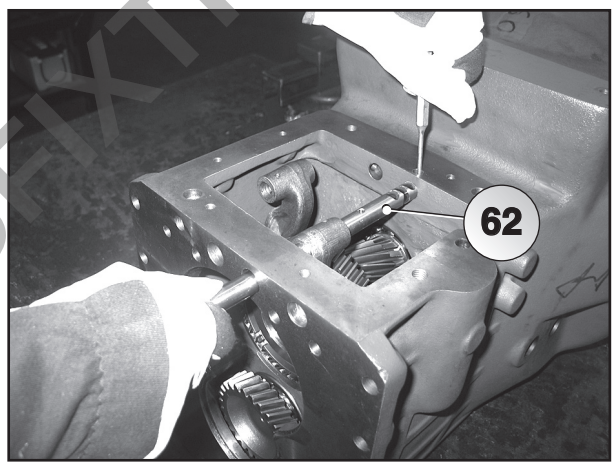


Fig. 4.75

Assemble the ball (54), the spring (56), the spacer (57) and the plug (55).

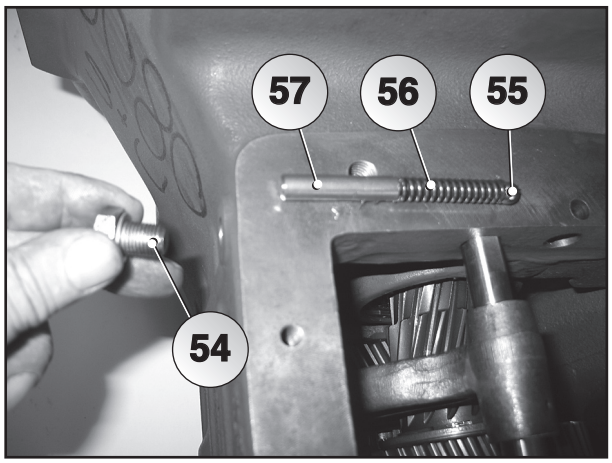


Fig. 4.76

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Removal of the intermediate gear bearing pin

Unscrew the ring nut (405).

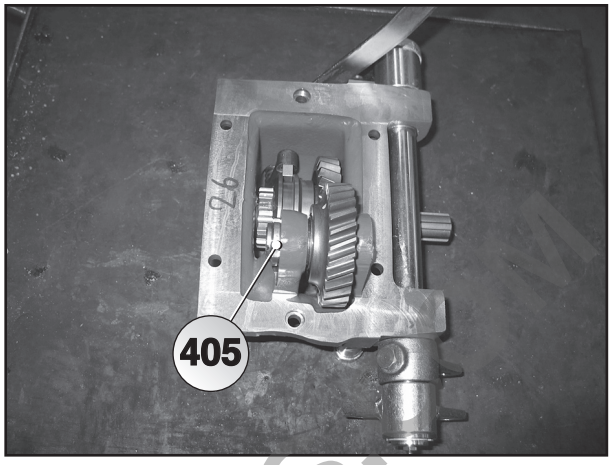


Fig. 4.199

Remove the plug (411) and remove the gear (408).

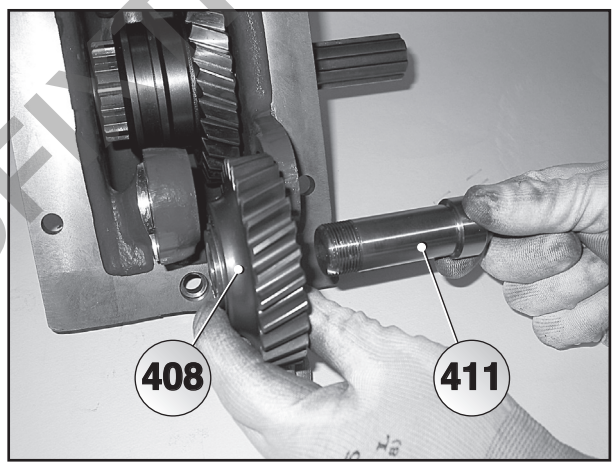


Fig. 4.200

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Sezione 2 : General description

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4.2.3 Hydraulic circuit (version with hydraulic differential lock)

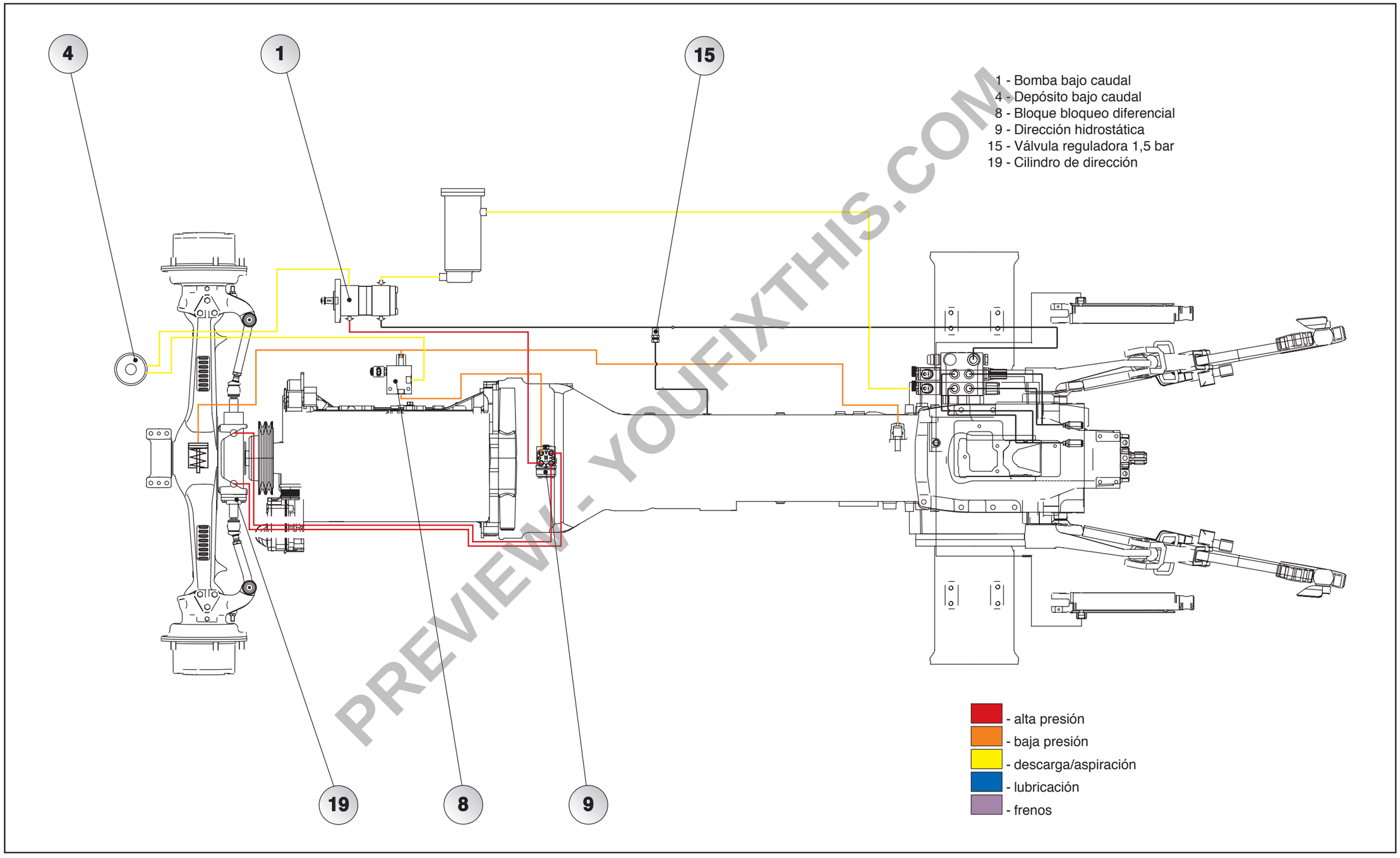


Fig. 6.12

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2.2.3 Mixed position and draft control

When work is carried out in the draft control mode on irregular ground, there may be excessive variations to the work depth which are unacceptable for cultivation in that type of soil.

In these conditions, the mixed position-draft control mode should be used. To work in this mode, dig the implement into the soil and establish the required work depth as described for the draft control mode. Once this depth has been reached, lower lever (A) and gradually move lever (B) up in order to increase the degree of position control. The power lift operates in the draft control mode but meanwhile prevents the implement from digging excessively into softer soil and producing an uneven job.

When the power lift is preset for the mixed position and draft control mode (intermix), the maximum and minimum depths at which the implement works are limited in relation to the mean value (see zone d = sandy soil; zone e = compact soil) since lever movement toward the position control setting reduces the sensitivity of the draft control action and introduces part of position control.

The positions to which the lever can be set are as many as can be obtained in the space that separates the two ends and its vicinity to one end or the other leads to a greater influence being excercised by the position or draft control functions.

During work, the operator must find the best position for the selector lever in order to obtain the best compromise between draft variation and depth.

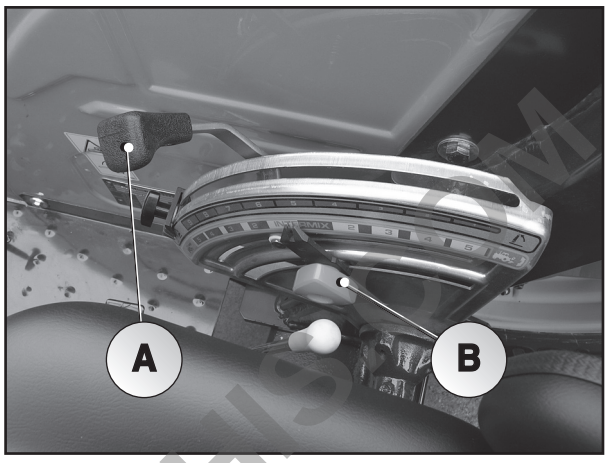


Fig. 7.7

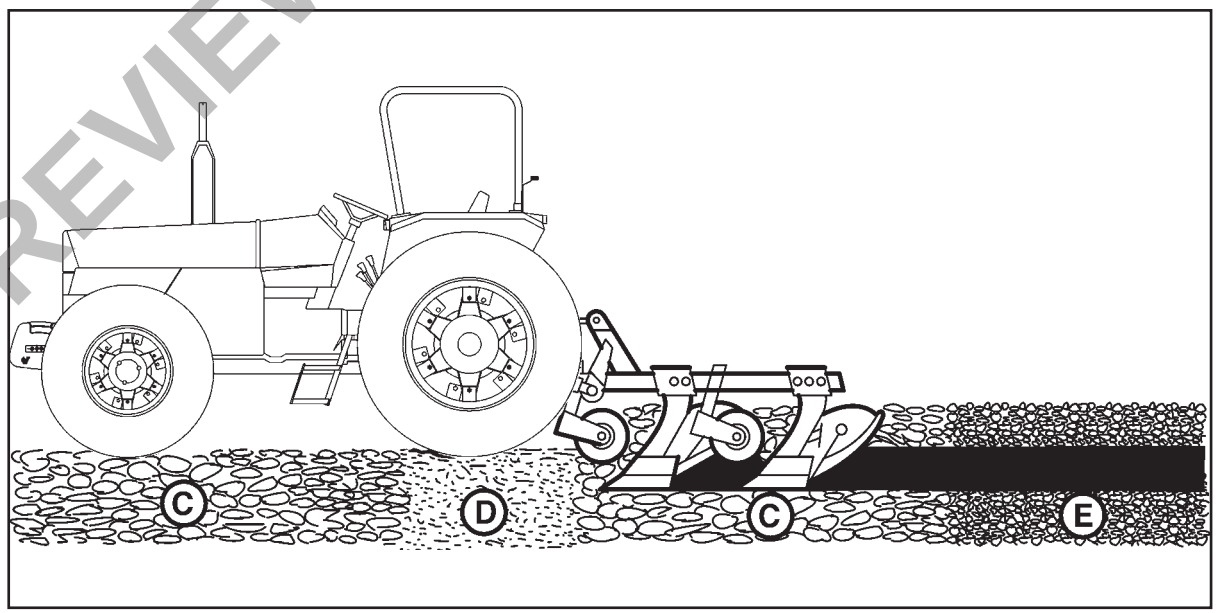
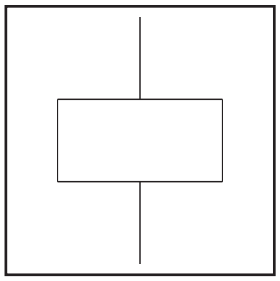
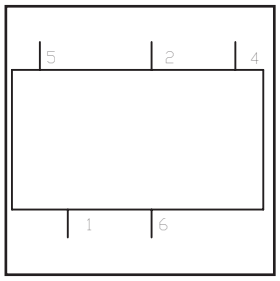
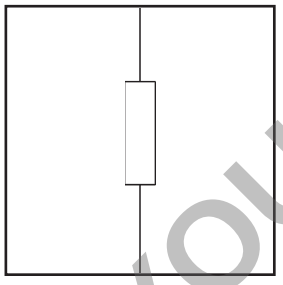
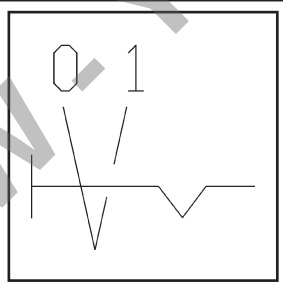
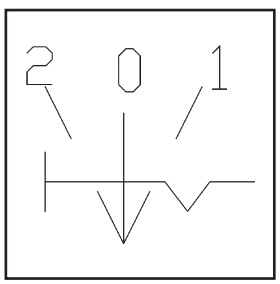
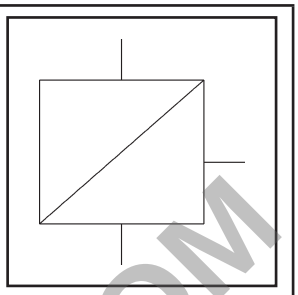
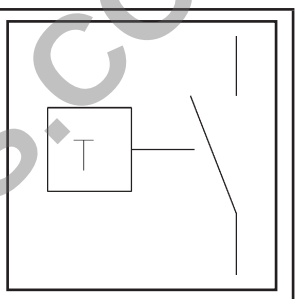
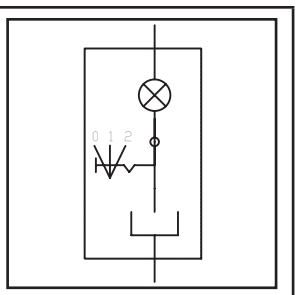


Fig. 7.8

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Relays	
Blinker	
Resistance	
2-position selector	
3-position selector	

Sensor	
Thermostat	
Ceiling light	

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5.4 Nao kit cable line

This line is used for connecting the light switch in tractors for NAO markets, by means of the connection with the relative box (K4 8.69) which houses the minirelays. The functions of the light switch vary, depending on the standards in force in the NAO markets.

The mini-relay box is installed under the dashboard cover, near the steering column.

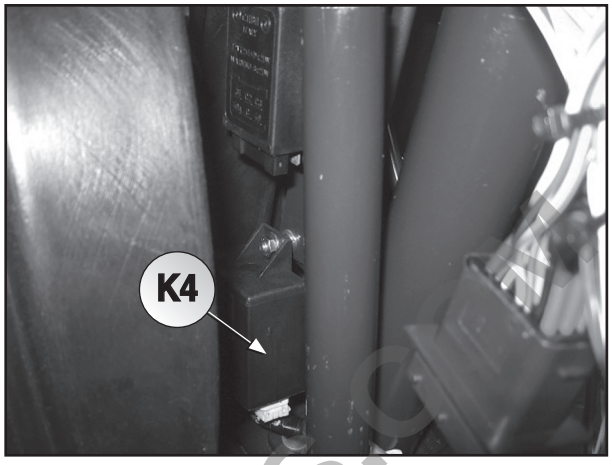


Fig. 8.69

Mini-relay connections

B	1	Weight
	2	not used
BN	3	Blinker signal
	4	not used
LR	5	Key-positive (+12)
V	6	Rh turn indicator (light switch)
G	7	Lh turn indicator (light switch)
G	8	Hazard light blinker (Lh)
G	9	Lh turn indicators
	10	not used
GR	11	Lh suppl. headlight
V	12	Hazard light blinker (Rh)
V	13	Rh turn indicators
	14	not used
VR	15	Rh suppl. headlight
	16	not used
	17	not used
	18	not used
	19	not used
	20	not used

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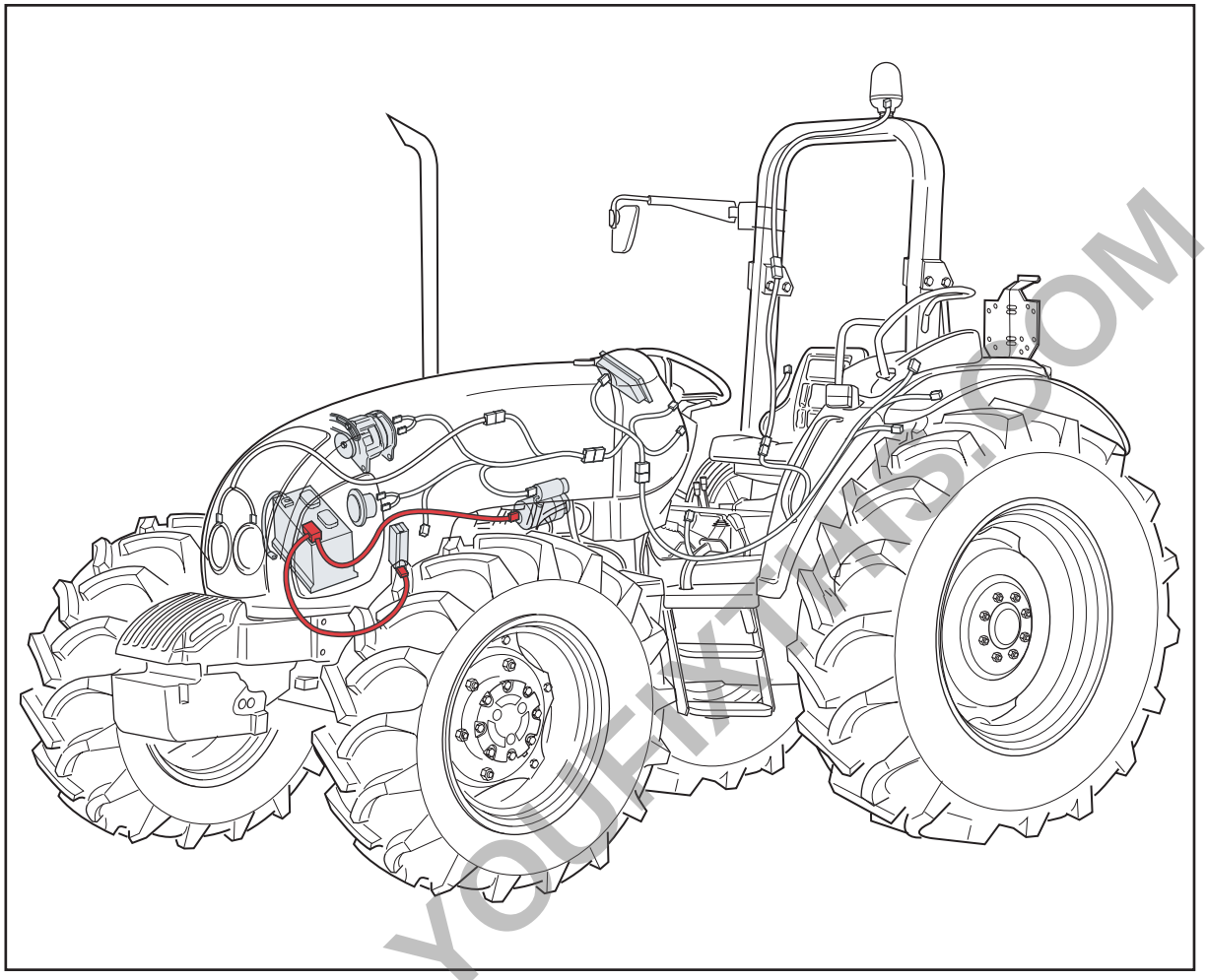


Fig. 8.152

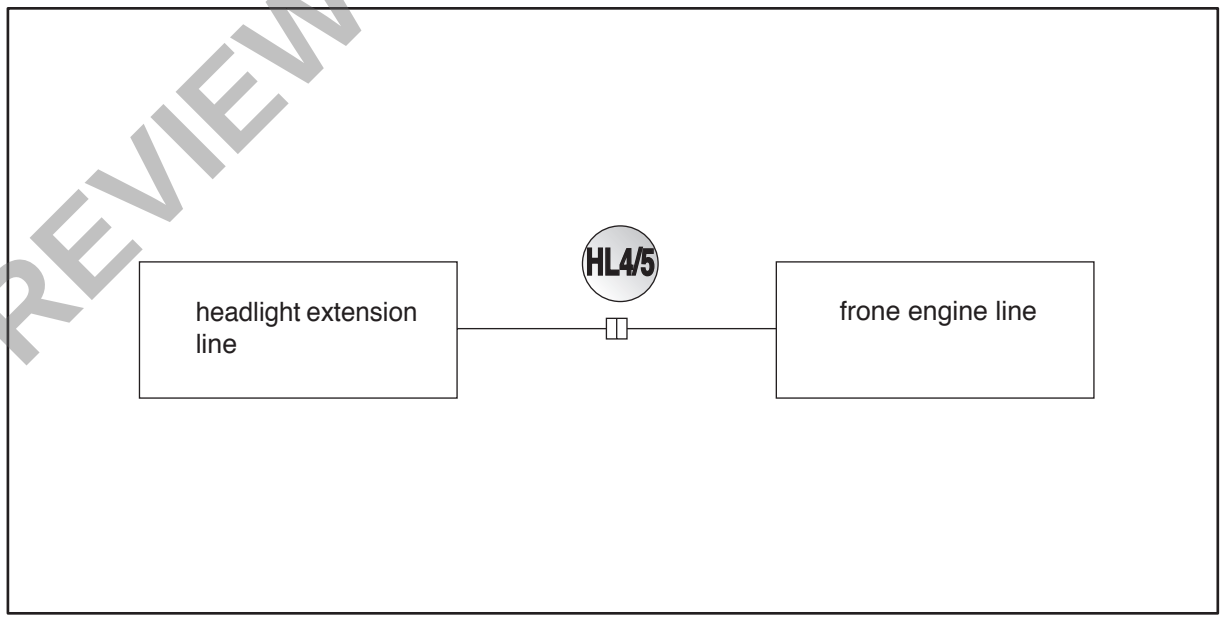


Fig. 8.153

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