SAFETY

PRECAUTIONARY STATEMENTS

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read and take the following precautions before operating the tractor. Equipment should be operated only by those who are responsible and instructed to do so.

THE TRACTOR

1. Read the operator's manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.
2. Ensure any attached equipment or accessories are correctly installed, are approved for use with the tractor, do not overload the tractor and are operated and maintained in accordance with the instructions issued by the equipment or accessory manufacturer.
3. Use an approved ROPS or safety cab and seat belt for safe operation. Overturning a tractor without a ROPS or safety cab can result in death or injury.
4. Always use the seat belt with the ROPS or safety cab.
5. Use the handholds and step plates when getting on and off the tractor to prevent falls. Keep the steps and platform clear of mud and debris.
6. Do not permit anyone but the operator to ride on the tractor; there is no safe place for extra riders.
7. Remember that your tractor, if abused or incorrectly used, can be dangerous and become a hazard both to the operator and bystanders. Do not overload or operate with attached equipment which is unsafe, not designed for the particular task, or is poorly maintained.
8. Replace all missing, illegible, or damaged safety decals.
9. Keep safety decals clean of dirt and grime.

SERVICING THE TRACTOR

1. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the system is hot. Always turn the cap slowly to the first stop and allow the pressure to escape before removing the cap entirely.
2. Do not smoke while refuelling the tractor. Keep any type of open flame away. Wait for the engine to cool before refuelling.
3. Keep the tractor and equipment, particularly brakes and steering, maintained in a reliable and satisfactory condition to ensure your safety and comply with legal requirements.
4. To prevent fires or explosions, keep open flames away from battery or cold weather starting aids. To prevent sparks, which could cause explosion, use booster cables according to instructions in this manual.
5. Stop the engine, apply the hand brake and lower the loader and backhoe to the ground before performing any service on the tractor.
6. Escaping hydraulic/diesel fluid under pressure can penetrate the skin causing serious injury.

   DO NOT use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.

   Stop the engine and relieve pressure before connecting or disconnecting lines.

   Tighten all connections before starting the engine or pressurizing lines.

   If fluid is injected into the skin, obtain medical attention immediately or gangrene may result.

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OPERATOR'S CAB (Optional)

ENTERING THE OPERATOR'S CAB

Always face the machine when you are getting into or out of the cab. Keep hands and shoes clean from grease and mud and wear loose-fitting clothes which allow freedom of movement.

To enter: unlock the cab door with the door key; push the button and pull the handle; when released from its latch the door will open quite easily.

Cab doors are hinged at the rear posts and are held fully open by gas-loaded springs which also assist in opening and closing the door.

Each door is equipped with a sturdy lock which can be locked from the outside by using the key.



Figure 2-1

DOOR OPENING AND CLOSING

Once inside the cab, to close the door from the inside, grasp the grab handle and pull it firmly to overcome the force of the gas spring.

To exit the cab, push lever, 1, downwards and push out on the door.

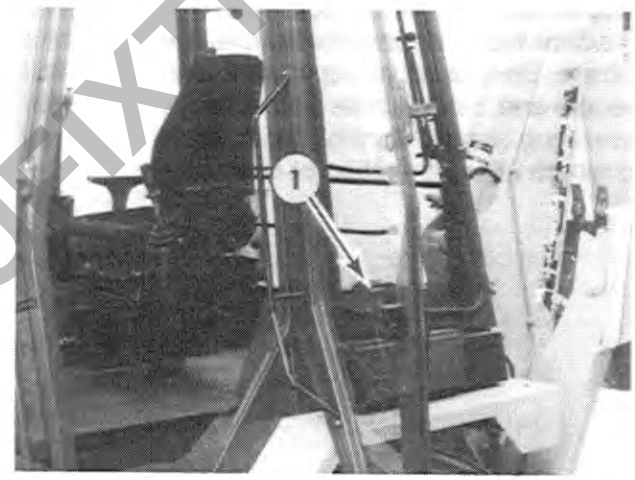


Figure 2-2

You can hold the door partially open by inserting bar, 2, into the door latch plate, 1, after freeing it from retainer, 3. Tighten knob, 4, to secure the latch bar. Make sure that the door is securely locked on the bar.

Do not drive the machine with unsecured doors; they might open unexpectedly.

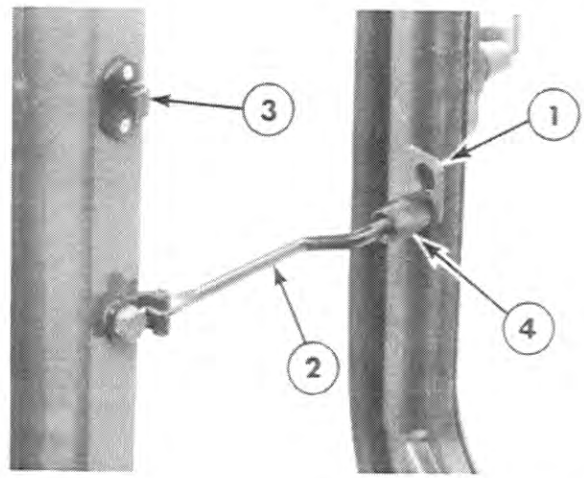


Figure 2-3

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MAINTENANCE AND LUBRICATION SCHEDULE

SERVICE INTERVAL	OPERATION NUMBER	OPERATION	CHECK	CLEAN	LUBE	CHANGE	ADJUST	DRAIN
EVERY 10 HRS OR DAILY	1	ENGINE OIL	X					
	2	RADIATOR	X					
	3	TRANSMISSION OIL	X					
	4	GREASE FITTINGS	X		X			
EVERY 100 HRS	5	HYDRAULIC FLUID	X					
	6	AXLE OIL	X					
	7	GREASE FITTINGS	X		X			
EVERY 250 HRS	8	ENGINE OIL AND FILTER				X		
	9	TRANSMISSION OIL FILTER				X		
	10	BREATHERS (ON TRANSMISSION, AXLES AND RESERVOIRS		X				
	11	ENGINE DRIVE BELT	X				X	
	12	FUEL SEDIMENTER						X
	13	AXLE RETAINING BOLTS	X					
EVERY 500 HRS	14	HYDRAULIC SYSTEMS FILTER				X		
	15	BRAKE PUMP OIL FILTER				X		
	16	ENGINE VALVE LASH					X	
	17	TRANSMISSION OIL AND FILTER				X		
	18	FUEL FILTER				X		
	19	DRIVE SHAFTS	X					
	20	AIR CLEANER				X		
EVERY 1000 HRS	21	HYDRAULIC OIL				X		
	22	AXLE OIL				X		
	23	FUEL INJECTORS	X	X			X	
	24	BATTERY	X	X				
INDICATED BY WARNING LIGHT	25	AIR CLEANER		X				
AS REQUIRED	26	ENGINE COOLING SYSTEM				X		X
	27	CAB AIR FILTER		X				
	28	TIRES	X					
	29	STEERING	X				X	
	30	WHEELS AND RIMS	X					

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SECTION 4
TROUBLESHOOTING

The following chart lists possible problems, their probable causes, and corrective action.

ENGINE

PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine will not start, or starts hard	Incorrect starting procedure	Review starting procedures
	Low or no fuel	Check fuel level
	Air in fuel lines	Bleed fuel system
	Incorrect oil viscosity	Use correct viscosity oil
	Incorrect fuel for ambient temperature	Use correct type fuel for ambient temperatures
	Contaminated fuel system	Clean fuel system
	Clogged sedimenter	Drain and clean sedimenter
	Clogged fuel filter	Replace filter element
	Malfunctioning fuel injector(s)	See your authorized dealer
	Malfunctioning fuel solenoid or solenoid relay	See your authorized dealer
Engine runs rough or stalls	Clogged sedimenter or fuel filter	Clean sedimenter and replace fuel filter element
	Contaminated fuel system	Clean system
	Fuel solenoid not properly adjusted	See your authorized dealer
	Malfunctioning fuel injector(s)	See your authorized dealer

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SECTION 6
SPECIFICATIONS

ENGINE

Make	New Holland GENESIS
No. of cylinders	4
Cycle	4 stroke
Bore	4.4″ (112 mm)
Stroke	5.0″ (127 mm)
Total displacement	304 cid (4987 cc)
Compression ratio	17.5:1
Firing order	1,3,4,2
Net horsepower (SAE)	100
Max. torque at 1200 RPM	304 ft. lb.
Idle speed	725 RPM - 775 RPM
High idle speed	2200 RPM - 2275 RPM
Rated speed	2100 RPM
Valves clearance (cold)	
Intake	0.014″ - 0.018″ (0.36 - 0.46 mm)
Exhaust	0.017″ - 0.021″ (0.43 - 0.53 mm)
Aspiration	Turbocharged

COOLING SYSTEM

Type	Bypass recirculation
Thermostat:	Starts to open at: 174 ° F -181° F (79° C - 83° C)
	Fully open at: 199° F - 205° F (93° C - 98° C)
Capacity:	22 quarts (21 L)

ELECTRIC SYSTEM

Alternator	12 V
Alternator output	70 A
Ground	Negative
Battery	143 amp/hour rated

TRANSMISSION

Full powershift transmission with single-stage single-phase torque converter.

Torque Multiplication 3:1

Countershaft type gearbox with 4 forward - 3 reverse gears. Equipped with modulating valve in first and second gear.

Gear		1st	2nd	3rd	4th
Forward speed	MPH	3.2	6.8	13.6	22.9
	(KPH)	(5.1)	(11.0)	(22.0)	(37.0)
Reverse speed	MPH	3.2	6.8	13.6	
	(KPH)	(5.1)	(11.0)	(22.0)	

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FT110

TRACTOR LOADER BACKHOE

OPERATION AND MAINTENANCE MANUAL

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PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("CAUTION", "WARNING", and "DANGER") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.



CAUTION: THE WORD "CAUTION" IS USED WHERE A SAFE BEHAVIORAL PRACTICE ACCORDING TO OPERATING AND MAINTENANCE INSTRUCTIONS AND COMMON SAFETY PRACTICES WILL PROTECT THE OPERATOR AND OTHERS FROM ACCIDENT INVOLVEMENT.



WARNING: THE WORD "WARNING" DENOTES A POTENTIAL OR HIDDEN HAZARD WHICH HAS A POTENTIAL FOR SERIOUS INJURY. IT IS USED TO WARN OPERATORS AND OTHERS TO EXERCISE EVERY APPROPRIATE MEANS TO AVOID A SURPRISE INVOLVEMENT WITH MACHINERY.



DANGER: THE WORD "DANGER" DENOTES A FORBIDDEN PRACTICE IN CONNECTION WITH A SERIOUS HAZARD.

FAILURE TO FOLLOW THE "CAUTION", "WARNING", AND "DANGER" INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

Additional precautionary statements ("ATTENTION" and "IMPORTANT") are followed by specific instructions. These statements are intended for machine safety.

ATTENTION: The word "ATTENTION" is used to warn the operator of potential machine damage if a certain procedure is not followed.

IMPORTANT: The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.

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HAZARD WARNING LIGHTS SWITCH

This switch, 1, operates the hazard flasher lights. An indicator light will flash simultaneously with the hazard lights.

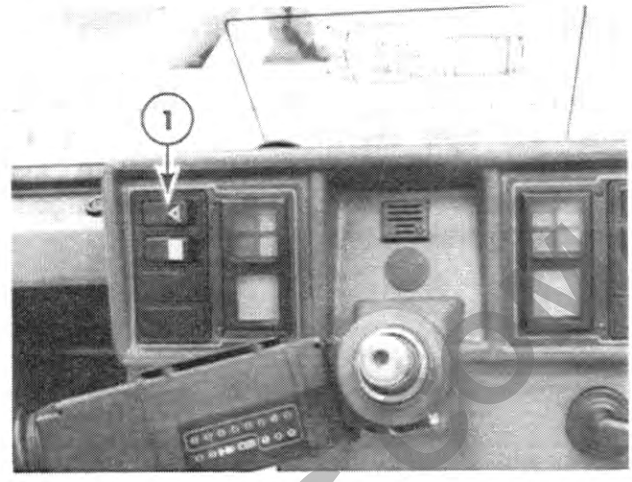


Figure 2-53

ROTATING BEACON SWITCH

This switch, 1, operates the roof-mounted rotating beacon (optional).



Figure 2-54

WINDSHIELD WIPER/WASHER SWITCH

This switch, 1, operates the front windshield wiper/washer (with cab).

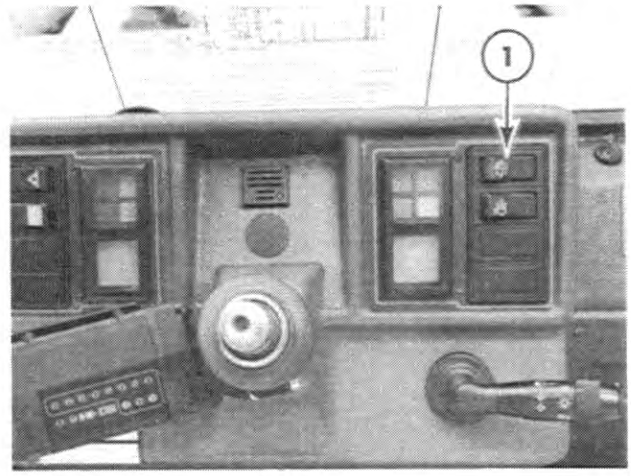


Figure 2-55

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EVERY 1000 WORKING HOURS

OPERATION 22

AXLE OIL REPLACEMENT

Prior to changing the axle oil, warm it to a temperature of about 140° F (60° C) and park the machine on level ground.

Front/Rear Axle

Remove the oil drain plugs, 1, and drain oil into a suitable container. Reinstall oil drain plugs. Refill differential to level of fill plugs, 2.

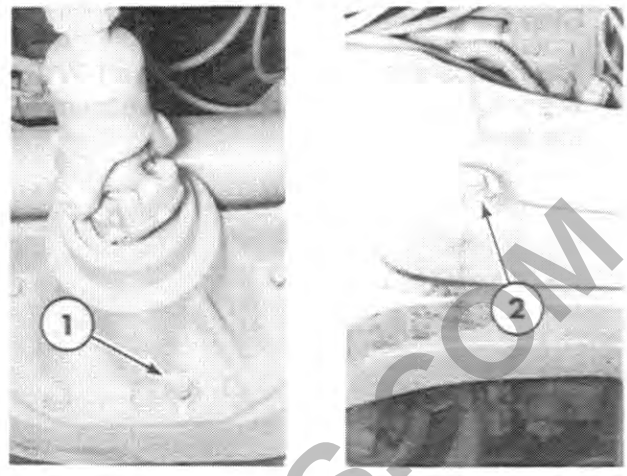


Figure 3-41

Final Drive Reduction Units

1. Move the machine until plug, 1, is at the lowest (6 o'clock) position.
2. Remove the plug and drain the oil.
3. After the oil has been drained, move the machine until the plug is located at the horizontal (3 or 9 o'clock) position.
4. Fill to the level of the plug.
5. Reinstall the plug.

Move the machine and recheck the oil level.

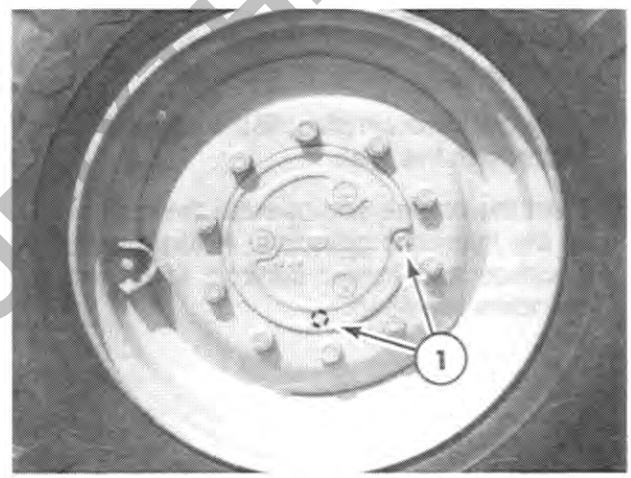


Figure 3-42

OPERATION 23

FUEL INJECTOR SETTINGS

See your authorized **FIATALLIS** dealer for cleaning and adjustment.

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ABBREVIATION INDEX

ABBREV.	ENGLISH	ITALIANO	DEUTSCH
		- A -	
A	Antwerp	Anversa	Antwerpen
AC	Air Conditioning	Condizionamento d'Aria	Kilmaanlage
ACC	Accessory	Accesson	Zubehoer
ACL	Accelerator	Accelerators	Beschleuniger
ACS	Access	Accesso	Zugang
A CLNR	Air Cleaner	Filtro dell'Aria	Luftfilter
ADJ	Adjustment	Regolazione	Anordnung
AEIC	Analogue/Digit Electronic Instrument Cluster	Analoga/Dito Gruppo Strumenti Elettronici Motore	Elektronische Instrumentgruppe
AG	Agricultural	Agricolo	Landwirtschaftlich
ALL PUR	All Purpose	Multiscopo	Allzweck
AMP	Ampere	Ampere	Ampere
APPR	Approximate	Approssimato	Ungefähr
AR	As Required	Come Richiesto	Nach Bedarf
ASC	Auxiliary Service Control	Comando di Servizio Ausiliario	Nebenanschluss-Betrieb
ASN	Used on and Above Serial Number	Usato sul e al dio soora del Numero di Serie	Verwendet auf und Über Seriennummer
ASSY	Assembly	Assieme	Kompl. Einheit
AST RAM	Assist Ram	Ausilirio Ariete Idraulico	ZusatzHubzylinder
ATT	Attaching	Fissaggo	Befestigt
AUTO HTCH	Automatic Hitch	Aggabcio Automatico	Automatische "HITCH"
AUX	Auxiliary	Ausiliario	Zusatz
AUX FL TK	Auxiliary Fuel Tank	Serbatoio Carburante Ausiliario	ZusatzKraftstofftank
AUX PH	Auxiliary Pickup Hitch	Gancio Rimorchio Ausiliario	Zusatz"HITCH"
		- B -	
B & BAS	Basildon	Basildon	Basildon
BD	Body	Corpo	Korper
BEL	Belgium	Belgio	Belgien
BH	Button Head	Testa Bottone	Knopfkopf
BIH	Binder Head	Testa Bloccaggio	Bremsenkopf
BK	Brake	Freno	Bremse
BKHOE	Backhoe	Retroescavators	Heckbagger
BR	Brass	Ottone	Messing
BRG	Bearing	Cuscinetto	Lager
BRH SSQ	Soft Round Head Short Square Neck	Bullone a Testa Rotonda Collo Corto Quadrato	Bolzen Runder Kopf Kurzer Vierkanthals
BRKT	Bracket	Staffa	Halter
BSN	Used on and Below Serial Number	Usato sul e al del Numero di Series	Verwendet auf und Unter Seriennummer
BSTR	Booster	Servodispositivo	Ladedruckregler
BTWN	Between	Fra	Zwischen

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SECTION 3 - ESSIEU AVANT ET DIRECTION
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SEZIONE 3 - ASSALE ANTERIORE E STERZO

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3A7	**Differential, Axle** Differential, Achse Différentiel, Essieu Diferencial, Eje Differenziale, Assale	3-17	G9
3A8	**Double Joint Assembly** Kompl Doppelt Gelenk Ens. Articulation De Double Ens. De ArticulaciÓn Montaggio Giunto	3-19	H2
3A9	**Planetary Reduction** Planeterräder Reduziertriebe Planétaires De Reduction Planetario De Reduccion Planetario Riduzione	3-21	H3
3B1	**Steering Column Assembly** Kompl. Lenksäule Ens. Co.Onne De Direction Ens.Columna De DirecciÓn Montaggio Colonna Sterzo	3-23	H4
3C1	**Power Steering Tubes, Frame** HilfskraftLenkung Rohrleitung, Rahmen Direction Assistée Tuyauterie, Châssis Servodirección Tubo, Marco Servosterzo Tubo, Telaio	3-25	H5
3C2	**Power Steering Tubes, Axles** HilfskraftLenkung Rohrleitung, Achse Direction Assistée Tuyauterie, Essieu Servodirección Tubo, Eje Servosterzo Tubo, Assale	3-27	H6
3C3	**Power Steering Tubes** HilfskraftLenkung Rohrleitung Direction Assistée Tuyauterie Servodirección Tubo Servosterzo Tubo	3-29	H7
3D1	**Drive Shafts** Antriebsweile Arbres de Transmission et Protections Eje de Transmisión Alberi Primari	3-30	H8

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FIG. 5B3 - HYDRAULIC, BASIC CIRCUIT
HYDRAULISCH, BASISCH KREISLAUF
HYDRAULIQUE, CIRCUIT DE ÉLÉMENTAIRE
HYDRÁULICO, CIRCUITO DE BÁSICO
IDRAULICO, CIRCUITO DE FONDAMENTALE

REF	FN	PART NUMBER		YR/SN	QTY	DESCRIPTION
1		54226099			1	Connector
2		51305820			1	Hose
3		54219704			1	Connector
4		54222764			1	Connector
5		51305900			1	Hose
6		54222706			2	Connector
7		51621424			1	Valve
8		57031107			1	Tube
9		57031112			1	Tube
10		57031114			1	Tube
11		54223211			2	Connector
12		51305350			1	Hose
13		54219711			2	Connector
14		54223252			1	Tee
15		51611009			1	Valve, Control, Refer to Fig. 5B4
16		51201956			2	Seal
17		51201944			2	Seal
18		51201951			2	Seal
19		51210820			1	Washer
20		51201123			2	Seal
21		51201132			2	Seal

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SECTION 6 - MOTEUR
SECCIÓN 6 - MOTOR
SEZIONE 6 - MOTORE

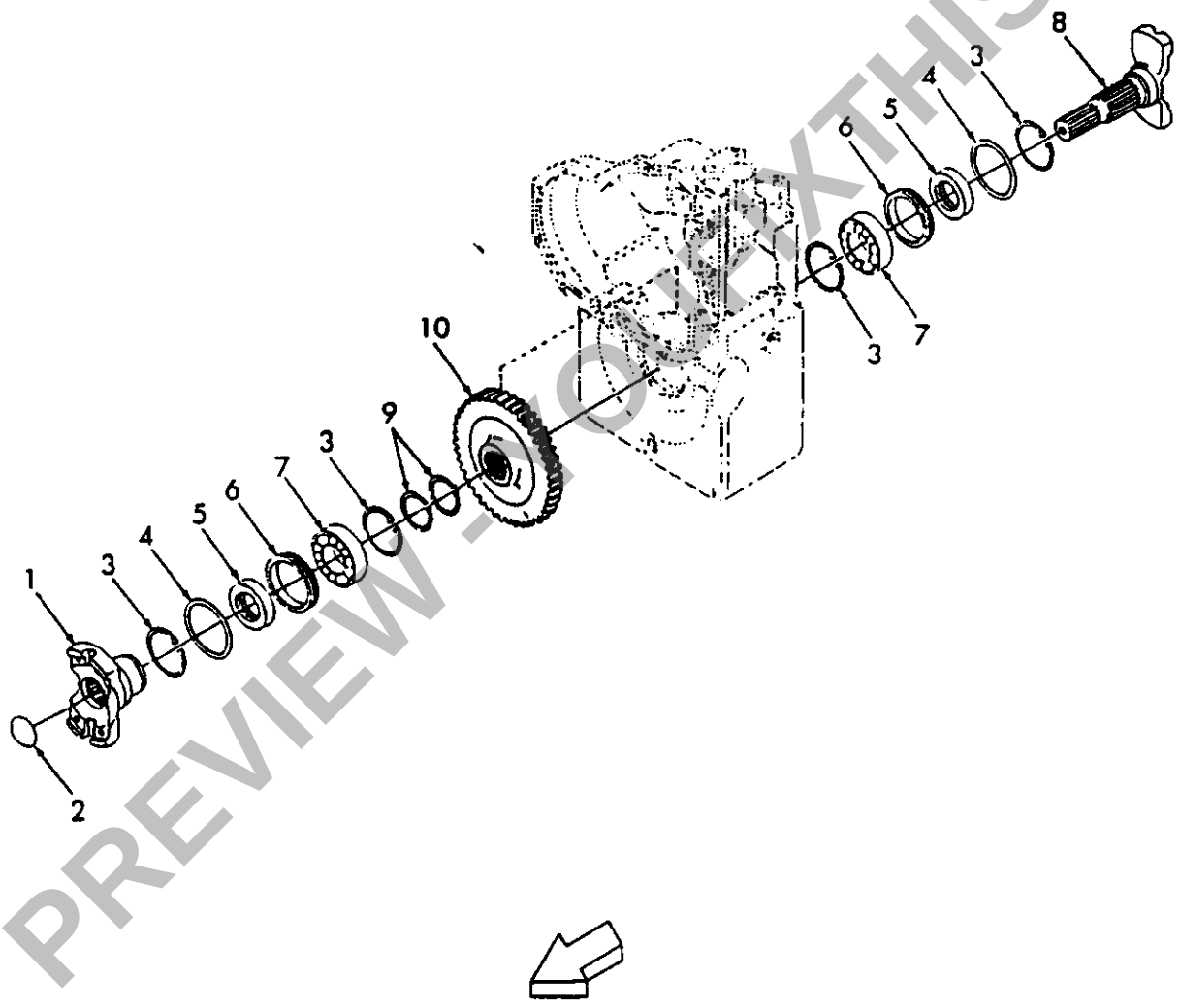
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6A1	**Cylinder Block Engine Assembly, Head & Related Parts** Kompl. Motor Zylinderblock Kopf und Zubehoerteile Ens. Moteur. Culasse Bloc-Cylindres et Pièces Relatives Montaggio Motore. Blocco Cilindri. Testata e Parti Relative Ens. Motor. Bloque de Cilindros. Cabeza y Partes Relacionadas	6-5,7	B3,B4
6B1	**Crankshaft, Flywheel & Related Parts** Kurbelwelle. Schwung scheibe und Zubehörige Teile Vilebrequin. Volant et Pièces Annexes Cigüeñal. volante del Motor y Partes Relacionadas Albero Motore. volano e Parti Relative	6-9,11	B5,B6
6C1	**Camshaft, Rocker Arm, Valves & Related Parts** Nockenwelle. Kipphebelarme. Ventile und Zubehörige Teile Arbre À Cames. Balanciers. Soupapes et PiËces Annexes Arbol de Levas. Balancins. Válvulas y Partes Relacionadas Arbero a Camme. Bilancere Braccio. Valvola e Parti Relative	6-13,15	B7,B8
6D1	**Oil Pump & Oil Pan** Oloumpe und Otwanne Pompe À Huile et Carter À Huile Bomba de Aceite y Cárter Pompa dell Olio e Coppa dell Olio	6-17	B9
6E1	**Turbocharger, Manifold & Exhaust System** Turbolader. Kruemmer und Abgassystem Collecteur et Echappement. Turbocompresseur Multibple y Sistema de Escape. Turbocargador Turbocompressore. Collettore e Sistema Scarico	6-19,21	C2,C3
6F1	**Turbocharger Assembly** Kompl. Turbolader Ens. Turbocompresseur Ens. de Turbocargador Montaggio Turbocompressore	6-23	C4

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PARTS CATALOG

FIG. 7B2 - OUTPUT SHAFT



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FIG. 9E1 - FUEL FILTER ASSEMBLY
KOMPL. KRAFTSTOFFFILTER
ENS. FILTRE POUR COMBUSTIBLE
ENS. FILTRO DE COMBUSTIBLE
MONTAGGIO FILTRO CARBURANTE

REF	EN	PART NUMBER	YR/SN	QTY	DESCRIPTION
1		1866599	95/	1	Filter Assy.
1A					Includes: Ref. 1A thru 7
2		1866602	95/	1	Head Assy.
3		1868458	95/	1	Washer, Sealing
		1868457	95/	1	Screw, Vent
4		1827346	95/	1	Washer
5		1866612	95/	1	Seal
6		1825365	95/	1	Plug
7		7840509	95/	1	Element Assy.

ADD PREFIX #8 TO SEVEN DIGIT PART NUMBERS ON THIS PAGE WHEN ORDERING PARTS.

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FIG. 12A3 - INSTRUMENT CLUSTER & RELATED PARTS. R.H. SIDE
INSTRUMENTENGRUPPE UND ZUBEHÖRIGE TEILE. RECHTS SEITE
TABLEAU DESS INSTRUMENTS ET PIECES ANNEXES. CÔTE
GRUPO DE INSTRUMENTOS Y PARTES RELACIONADAS. RECHTS LATERAL
GRUPPO STRUMENTI E PARTI RELATIVE. MANODERECHALATO DESTRO LATO

REF	EN	PART NUMBER	YR/SN	QTY	DESCRIPTION
1		54001678		1	Indicator. Electric System
2		54001370		1	Tachometer/Hourmeter
3		54001432		1	Indicator. Electric System
4		54009321		1	Holder. Indicator
5		54009323		1	Panel
6		53630512		4	Screw

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FIG. 18A3 - BUCKET
BAGGEREIMER
GODET
CANGILÓN
BENNA

REF	FN	PART NUMBER	YR/SN	QTY	DESCRIPTION
1		OW		1	Bucket Assy. Includes: Ref. 2 thru 7
2		NSS		1	Body
3		54203921		8	Tooth
4		51104013		AR	Bolt
5		51107003		AR	Nut
6		51120008		16	Washer
7	(1)	57022306		1	Cutting Edge
8		57028344		1	Cutting Edge, Reversable, Bolt On
9		51104112		16	Bolt

(1) - Welding Required

AR - As Required
NSS - Not Serviced Separately
OW - Order thru Wholegoods

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FIG. 20A7 - BACKHOE BUCKET
HECKBAGGER BAGGEREIMER
TRACTOPELLE GODET
RETROEXCAVADOR CANGILÓN
RETROESCAVATORE BENNA

REF	FN	PART NUMBER	YR/SN	QTY	DESCRIPTION
1		OW		1	Bucket Assy.
2		54203921		3	Tooth
3		51104013		6	Bolt
4		51120008		6	Washer
5		51107003		6	Nut

OW - Order thru Wholegoods

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3948300	6-5	3981426	9-13	3991490	9-7
3948451	6-13	3981427	9-13	3991667	6-13
3948687	6-9, 6-27	3981428	9-13	3991682	6-25
3949104	6-7	3981431	9-13	3992798	9-21
3949109	6-13	3981432	9-15	3993005	6-19
3949153	6-9	3981439	9-15	3995492	6-7
3952336	6-13	3981441	9-9	3996355	6-25
3955247	6-5, 6-9, 6-27	3981442	9-11	3998057	6-9
3956433	6-9	3981443	9-11	3998292	6-7
3956658	6-25	3981444	9-11	3998857	6-9
3956661	6-7	3981490	9-11	3998890	6-9
3956679	6-5	3981638	9-11	3999163	6-27
3956692	6-15	3981720	9-11	3999181	6-27
3956700	6-7	3981728	9-11	3999190	6-25
3956710	6-13	3981830	9-15	3999193	9-7
3957021	6-5	3981964	9-15	3999194	9-5
3957022	6-5	3982119	9-13	3999221	6-19, 6-27
3957023	6-5	3982120	9-17	3999236	6-13
3957025	6-5	3982122	9-17	3999247	6-19, 6-23
3957692	6-9	3982421	9-17	3999273	6-5, 6-27
3957730	6-15	3982437	9-17	3999282	6-19
3957738	8-5	3982443	9-17	3999300	6-19, 6-27
3958102	6-13	3982482	9-17	3999488	6-25
3958239	6-13	3982486	9-17	3999489	6-25
3958249	6-5, 6-27	3982497	6-7	3999491	6-25
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3959395	6-7	3982546	9-9	3999649	6-7
3959396	6-7, 6-27	3982555	9-13	3999691	6-17
3959398	8-5	3982563	9-9	3999692	6-17
3959425	8-5	3982572	9-15	3999693	6-17
3959876	6-7, 6-27	3982575	9-15	3999695	6-17
3959938	9-19	3982580	9-15	3999699	6-17, 6-27
3960174	6-13	3982598	9-15	3999742	6-13
3960218	6-5, 6-11	3982609	9-15	7790001	6-25
3960236	6-13	3982610	9-17	7790002	6-25
3960558	9-21	3982619	9-15	7790003	6-25
3960838	8-5	3982623	9-15	7790004	6-25
3962951	6-7	3982651	9-11	7790005	6-25
3963173	6-13	3982652	9-9	7790006	6-25
3963174	6-13	3982657	9-11	7790260	6-9
3963740	6-9	3982665	9-9	7790261	6-9
3963749	6-13	3982667	9-9	7790262	6-9
3964583	8-5	3982672	9-11	7790263	6-9
3971381	6-7	3982702	9-9	7790264	6-9
3976351	9-7	3982706	9-9	7790265	6-9
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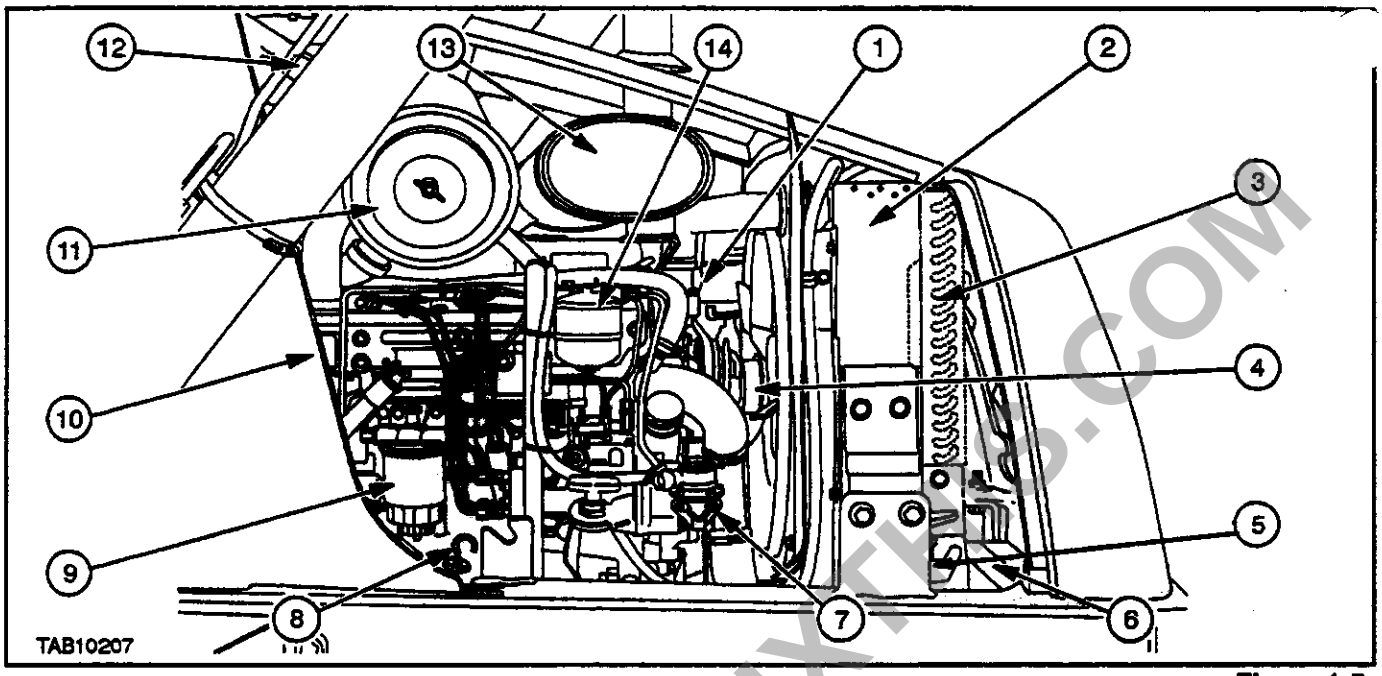
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OVERHAUL

Diesel Engine Disassembly



Right-Hand View of Engine **Figure 1-5**

1. Thermostat
2. Coolant Radiator
3. Air Conditioning Condenser (When Fitted)
4. Water Pump
5. Transmission Oil Cooler
6. Battery
7. Fuel Lift Pump
8. Engine Oil Level Dipstick
9. Fuel Filter
10. Cold Start
11. Air Cleaner
12. Coolant Recovery Tank
13. Muffler
14. Fuel Sedimentor/Separator

WARNING: ALLOW THE ENGINE TO COOL TO AMBIENT TEMPERATURE BEFORE CLEANING. CLEANING A HOT ENGINE IN COOL WATER COULD RESULT IN DAMAGE TO THE FUEL PUMP AND OTHER COMPONENTS.

In the following procedures and illustrations the engine generally is shown removed from the tractor.

The engine overhaul procedure initially describes the assembly process for rebuilding an engine using all new components. Following this section are defined headings which describe detailed repair specifications and procedures, where components are suitable for reuse. Refer to the Specifications Section to ensure components are serviceable.

Where overhaul of components is required without engine being removed from the tractor refer to the following headings, and the relevant paragraphs, in the main overhaul procedure.

Operations or repairs that can be performed with the engine still in the tractor.

- Cylinder head and associated components
- Fuel injection pump and related parts
- Water pump, thermostat and associated components
- Oil pump relief valve
- Oil pan and gasket
- Turbocharger
- Front timing cover/timing gear removal
- Oil pan removal for access to crankshaft, bearing shells, piston removal and oil pump suction tubing
- Front pulley and damper assembly

Operations or repairs that can be performed only with the engine removed from the vehicle and separated from the transmission housing, with oil pan removed.

- Crankshaft rear oil seal and carrier removal (with oil pan removed)
- Oil pump and drive gear removal

NOTE: All gaskets, seals and O-rings must replaced with new upon reassembly. Where new sealant is to be applied refer to "Engine Specifications".

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PROBLEM	POSSIBLE CAUSES	REMEDY
Low oil pressure	1. Engine oil level low	1. Top up, as necessary
	2. Wrong grade of oil	2. Drain and refill with correct grade of oil
	3. Blocked oil pump sump screen	3. Clean pump screen
	4. Oil pressure relief valve faulty	4. Install new relief valve
	5. Oil pump worn	5. Replace oil pump
	6. Excessive oil pump rotor and shaft assembly clearance	6. Overhaul pump
	7. Excessive main or connecting rod bearing clearance	7. Install new bearing inserts and/or regrind crankshaft
Excessive oil consumption	1. Engine oil level too high	1. Reduce oil level
	2. External oil leaks	2. Renew gaskets and seals, where necessary. Check mating surfaces for damage or distortion
	3. Worn valves, valve guides or bores	3. Repair
	4. Cylinder head gasket leaking	4. Replace gasket. Check head for damage or distortion
	5. Oil loss past the pistons and rings	5. Replace rings and/or rebore/ resleeve block as necessary
	6. Oil cooler leak	6. Repair/replace oil cooler assembly
	7. Rocker cover oil filter blocked	7. Change filter
Engine tends to keep firing after fuel is shut off	1. Air cleaner dirty or restricted	1. Clean or replace element
	2. Oil leak on compressor side of turbocharger where fitted	2. Overhaul turbocharger

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OVERHAUL

IMPORTANT: Whenever it is necessary to remove the intake or exhaust manifolds from the engine new sealing gaskets must be fitted upon reassembly.

Inspection

1. Clean the intake manifold in a solvent that is suitable for aluminum and check for cracks or damage. Repair where practical. Small imperfections on the joint face can be dressed with a stone, but where they exceed a stone repair the manifold must be changed.

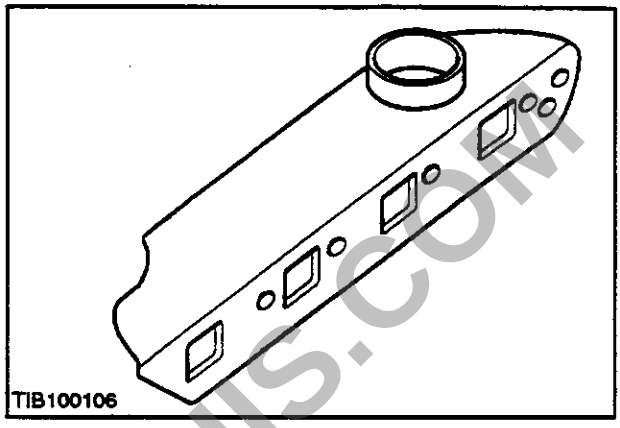


Figure 1-140

2. Clean the exhaust manifold in a suitable solvent removing the carbon deposits with a wire brush. Check for cracks or damage to the joint face that could create an air leakage. Small imperfections can be dressed with a stone, but where they exceed a stone repair the manifold must be changed.

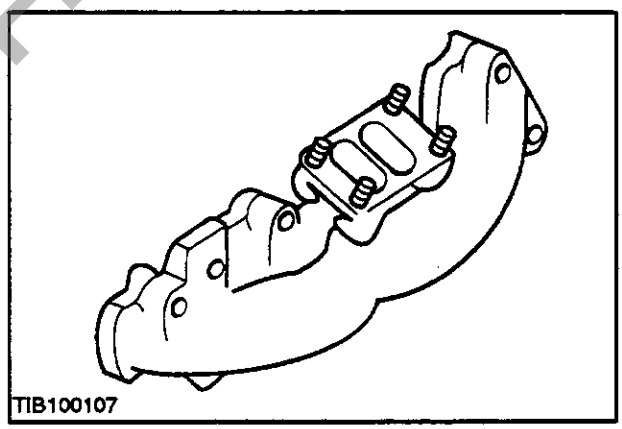


Figure 1-141

Installation

1. Prior to installing the manifolds clean the cylinder head faces with light grit paper to remove any trace of old gaskets that may have remained on the head face during disassembly.
2. Install new O-ring seals, 1, on the intake manifold bolts.
3. Place the bolts through the manifold to be fitted and through a new gasket, attach the manifold and gasket onto the cylinder head and torque the bolts on the:
   Intake manifold to 26 ft. lbs. (35 N·m)
   Exhaust manifold to 28 ft. lbs. (38 N·m)

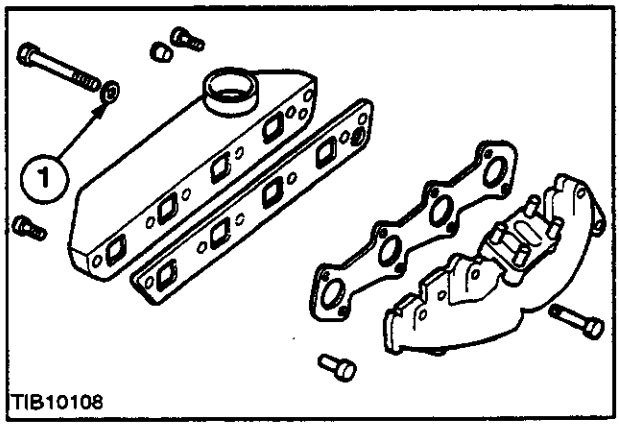


Figure 1-142

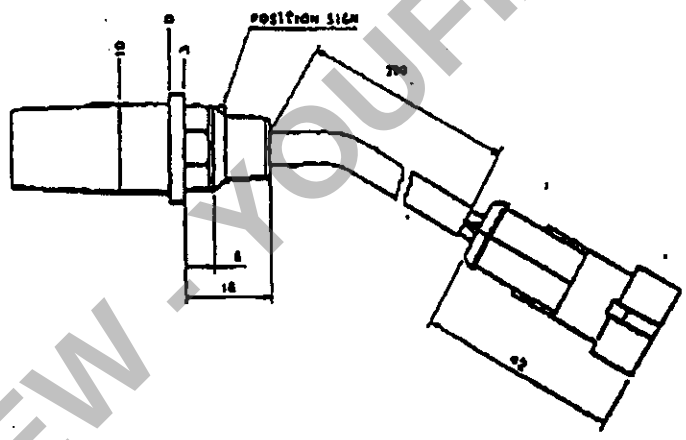
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Installation note for Speed Sensor 4202485

Clark Hurth Components introduces a new speed sensor for their T12000 transmission.

This sensor with partnumber 4202485 uses a relatively new technology called Magneto-Resistance and provides a number of important advantages over other technologies among them

- low part cost
- low installation cost
- wide sensing gap (up to 1.2 mm)
- sensing speeds down to standstill
- open connection and short circuit detection
- excellent immunity against electromagnetic disturbances (EMI)

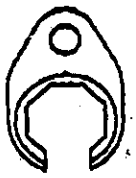


Speed sensor 4202485

Mechanical installation

When shipped, the speed sensor hole is plugged with plug 4202489.

Remove the plug and mount the sensor with support plate 4202488 and one M6x12 screw.



Support Plate 4202488

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Pedal unit - support

Through the pedal unit - support all the braking system is fixed to the machine floor plate. In this unit can be adjusted:
- the max braking pressure obtainable through the push rod stopping the return lever stroke
- the pedal tilting

Braking modules

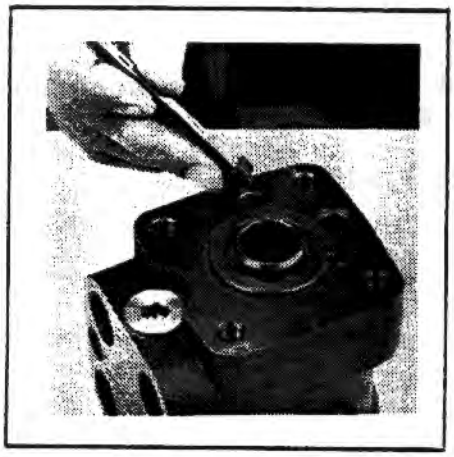
The braking modules are the control elements of the braking pressure.
Each braking module is connected with a valve and an accumulator. Accumulators are high pressure cell boxes with a special membrane subject to gas pressure on one side and oil pressure on the other side.
Three threaded outlets connect the module with the brakes, the accumulator (M14X1,5) and the pressure switch to turn stop lights on (M10X1).
The modules have three longitudinal ducts allowing the hydraulic connection with the discharge and accumulators charge circuit.

Valve for accumulator charge

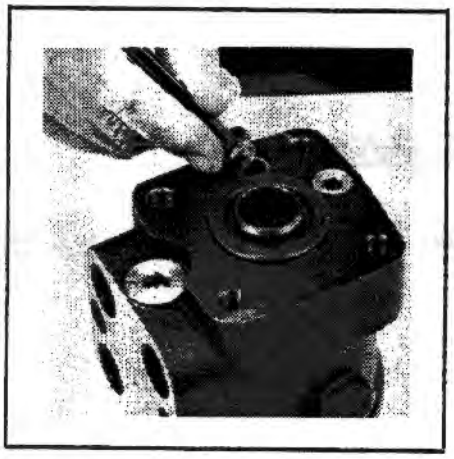
The valve keeps on a preset range the accumulators pressure value.
The valve for accumulators charge can be connected in series with other users.
For accumulators charge it takes with priority 6,51+10%/min. till the charge of the accumulators.

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75 Screw in the two setting screws using a 6 mm hexagon socket spanner. Make the pressure setting on a panel or the vehicle. (See OSPC spare parts list HN.21.L1.52).



76 Screw plug with seal ring into the two shock valves and tighten them with a torque of 3 +/-0 daNm using a 6 mm hexagon socket spanner.

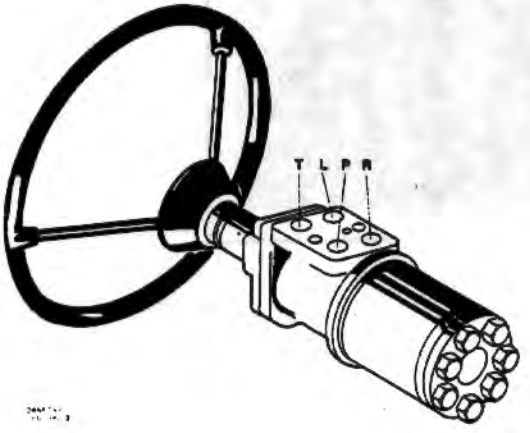
Steering unit type OSPB, OSPB LS, OSPBX LS, OSPC, OSPC LS or OSPC LSR is now assembled.

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Max. tightening torque and hydraulic connections

Screwed connection	Max. tightening torque daNm (lbf in)			
	With cutting edge	With copper washer	With aluminium washer	With O-ring
1/4 BSP.F	4 (350)	2 (180	3 (270)	
3/8 BSP.F	6 (530)	2 (180)	5 (440)	
1/2 BSP.F	10 (900)	3 (270)	8 (700)	
7/16-20 UNF				2 (180)
3/4-16 UNF				6 (530)
M 12 x 1;5	4 (350)	2 (180)	3 (270)	2 (180)
M 18 x 1,5	7 (620)	2 (180)	5 (440)	5 (440)
M 22 x 1,5	10 (900)	3 (270)	8 (700)	7 (620)

L: Left port
R: Right port
T: Tank
P: Pump



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