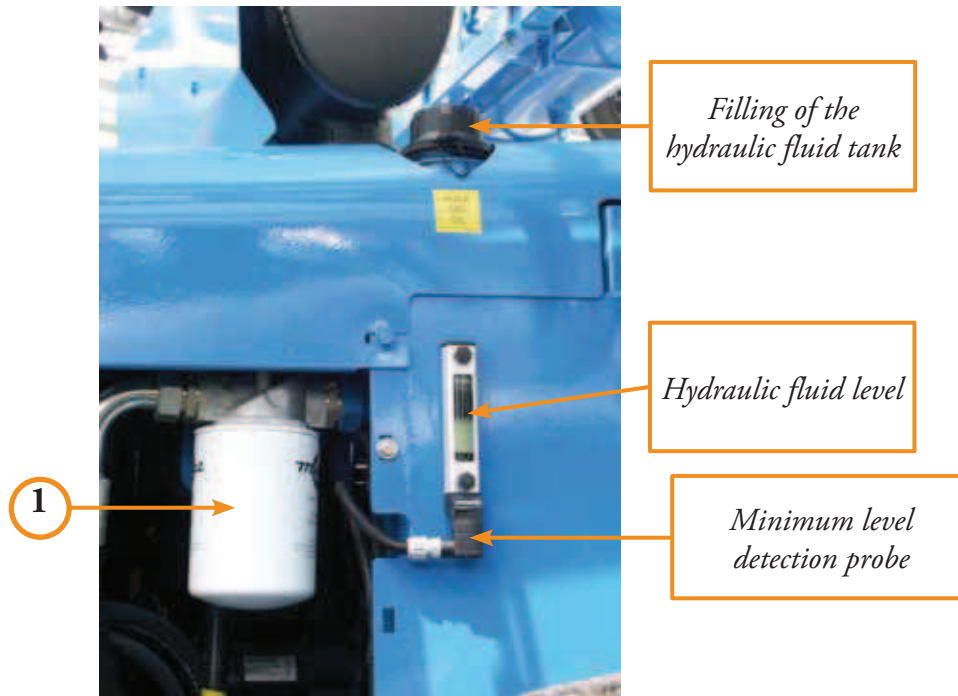


# VI. MAINTENANCE

## 6.1. Hydrostatic transmission

### 6.1.1. Filtration Filtration

Suction filter between the tank and pump.



In normal operating conditions, the filter ① must be replaced at the following intervals:



50 operating hours after initial start-up<sup>1</sup>  
400 operating hours after initial start-up  
And then: refer to the *maintenance log for the M24D Hellios*

**Filter cartridge reference: 161 209 000**

The filter cartridge must be changed with the combustion engine stopped.

To replace the cartridge:

- unscrew the cartridge using a strap wrench,
- clean the surface of the filter casing seal,
- fill the cartridge with **fresh oil**,
- rescrew the new cartridge on firmly (add oil to the seal).

Only original MATROT ÉQUIPEMENTS parts are covered by the warranty of your self-propelled machine.

<sup>1</sup> The self-propelled machine is delivered with a filter cartridge with a life cycle of 50 hours.



**Check that no leakage exists: leakage on the suction circuit can seriously damage the pump and the hydraulic motor.**

If a buzz is heard during operation, cut the combustion engine, as the buzz indicates that the cartridge is clogged.

The cartridge must then be changed irrespective of the replacement intervals mentioned in the maintenance log.



**Never disconnect the electrical probe as this could cause substantial damage to the pump and the hydraulic motor.**

In cold weather, the buzzer will activate:  
Wait until the oil temperature climbs.

### 6.1.2. Top up with oil and check level

In normal operating conditions, hydraulic fluid must be replaced:



every 800 hours or every 2 years

- Indicator ② plus the audio signal indicate an oil level defect.
- Drain the circuit when the oil is hot.
- Oil must be filled to the upper  $\frac{3}{4}$  mark of the hydraulic tank window.
- Dispose of waste oil in accordance with environmental legislation (*directive no. 87/101/EEC*).



*Hydraulic fluid  
drainage cap*



Huiles claires

Product	Bright oils
Level of dangerousness	Dangerous
Specific regulations	No. General regulations on oils
Possible re-use	Substance
Advice	- Do not mix with other products - Store in sealed and well closed containers - Contact an approved collector of oils and/or a bright oil recycler/regenerator for collection and recycling

ADEME information

The M24D Hellios self-propelled machine is supplied with TOTAL EQUIVIS ZS 46 oil.

**References: 175 110 000 in 20-litre containers.**

**175 279 000 in 60-litre containers.**



**After emptying the tank, change the filter cartridge, fresh oil can contain impurities.**

**Fill the filter cartridge with the recommended oil prior to refitting.**



Refer to the maintenance log for the M24D Hellios for more information.

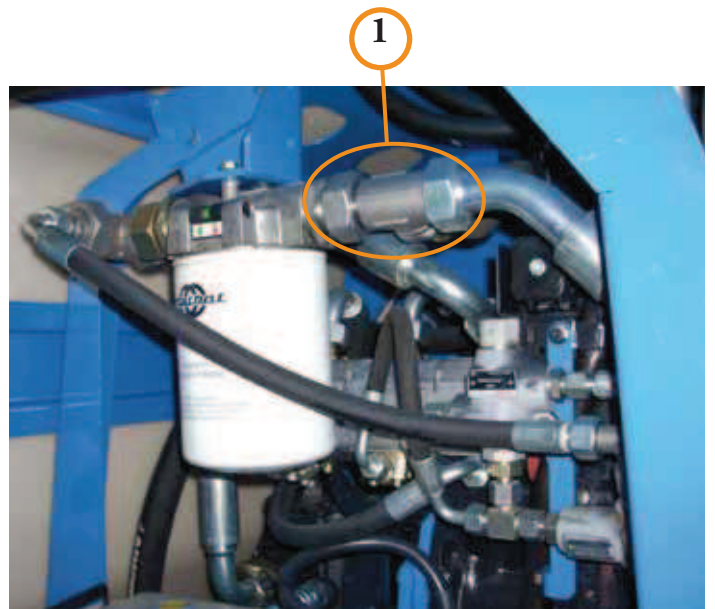
### 6.1.3. Precautions after changing filter cartridges or oil

- Start the engine and run at idle for **1 minute** to prime the booster pump appropriately.
- Check that no leaks occur on the suction pipe.
- Drive the self-propelled machine forward and reverse to check proper operation.

#### 6.1.4. Practical tips



- a) If a hydrostatic pump or hose must be changed for the pump, after assembly and **before starting the engine**, fill the pump casing using the drainage pipe orifice ①.
- b) Sealing on hydraulic circuits must be checked regularly.
- c) The oil cooler must be cleaned regularly ② (clean the honeycombs).
- d) All dismantling and re-assembly operations must be carried out in a clean location.



**Never store the machine with the hydraulic circuit empty.**

**Never start the combustion engine if the circuit is empty of fluid.**



#### SAFETY

If oil levels drop abnormally, an audio signal will activate (system connected to the audio warning system) as well as the cab indicator (photo 48).

Cut the combustion engine immediately and determine the cause.

Top up with the recommended oil.

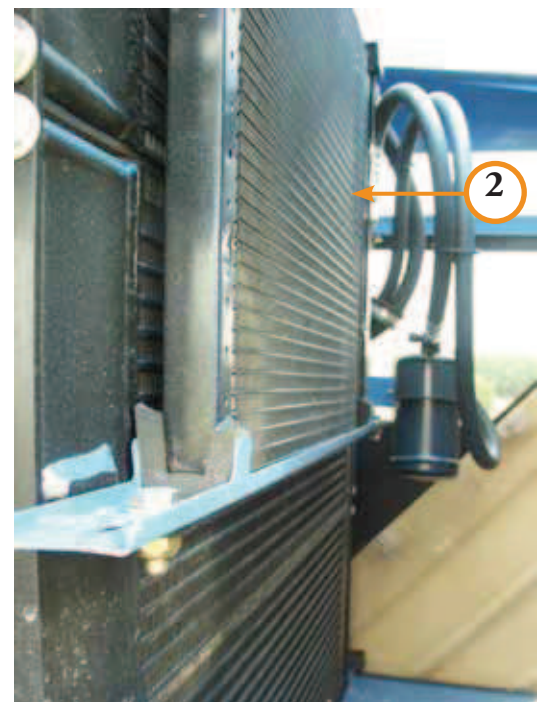


Photo 48

## 6.2. Adjusting hydraulic pressure



Pressures are pre-set at the factory and must only be modified with precaution and the approval of MATROT Équipements or personnel of MATROT Équipements.  
Pressure must be adjusted using a pressure gauge.



**Hydraulic fluid may be at a high temperature.**

### 6.2.1. The distribution unit >(lifting, extension & retraction of booms; deployment, slopes)

- This unit is located under the cab (photo 85),
- For improved access, pivot the unit after loosening the 2 bolts.
- Connect the pressure gauge (to the boom blocking actuator),
- Loosen the locknut ① (photo 86),
- Tighten/loosen the screw to increase/decrease pressure ②,
- Retighten the locknut.
- Pressure: 180 bar (max. 200 bar).



Photo 85 ▲, photo 86 ▼

### 6.2.2. The spray pump control distributor (Photo 87)

- Remove the cap ⑤ and connect the pressure gauge,
- Loosen the locknut ④,
- Tighten/loosen the screw to increase/decrease pressure ③,
- Retighten the nut.
- Pressure: 180 bars.

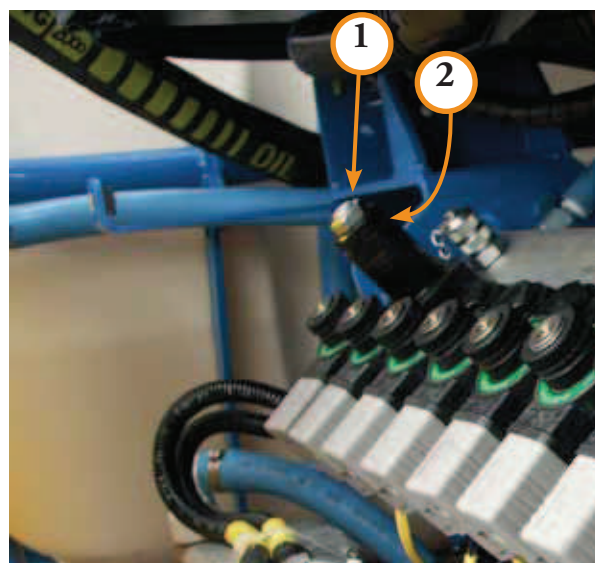
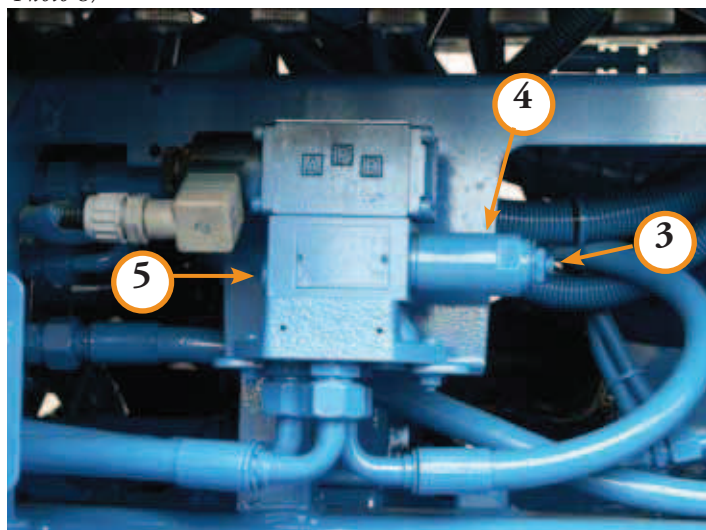


Photo 87



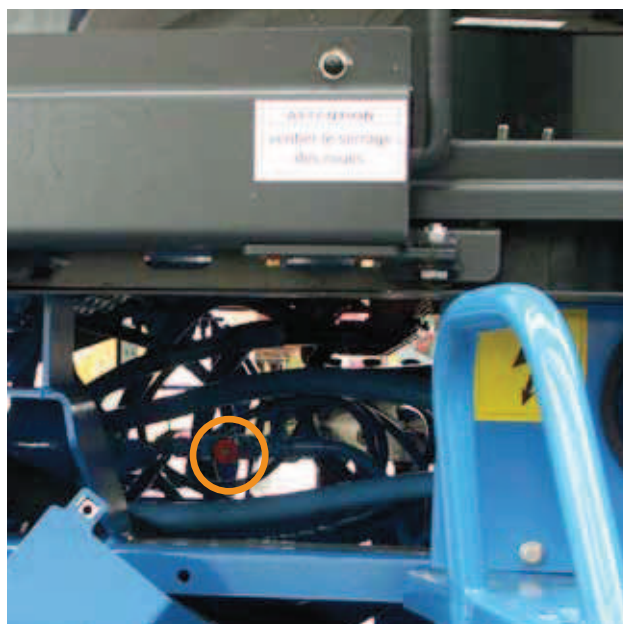
### 6.2.3. Hydrostatic pump (forward movement)

See paragraph 6.2.6 page 48.

### 6.2.4. Adjusting up/down speed



This speed is pre-set at the factory and must only be modified by a MATROT Équipements' technician or other member of personnel.



### 6.2.5. Adjusting boom extension speed and slope correction



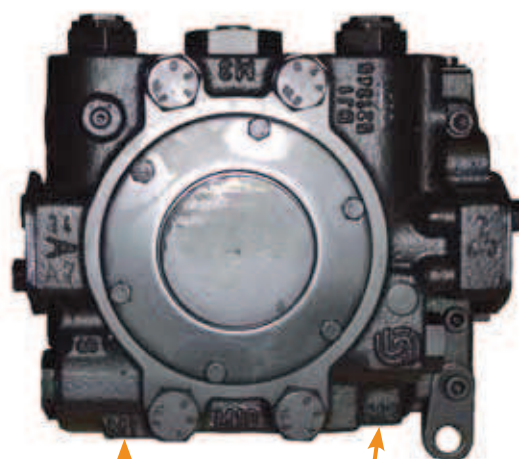
- This speed is pre-set at the factory and must only be modified by a MATROT Équipements' technician or other member of personnel.
- Flow controllers for boom extension actuators are jets located in the connector at the actuator inlet.
- The diameters of the jet orifices are determined based on the widths of the booms and their usages.
- Boom actuators are fitted with adjustable flow limiters: one for lifting and one for lowering the boom ⑥. They are configured at the factory; if they need adjusting: loosen the small screw on the handle, and adjust progressively (screw to slow down and unscrew to speed up). Retighten the small screw on the handle.



## 6.2.6. Pump and engine pressure tap



Booster pressure tap M3



Pressure tap M2 connection B

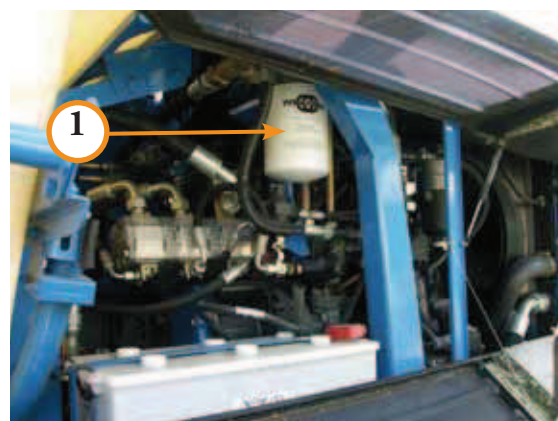
Pressure tap M1 connection A

## 6.3. Connections circuit

The filter cartridge ① must be replaced at the following intervals:

50 operating hours after initial start-up  
400 operating hours after initial start-up  
**And then:** refer to the *maintenance log* for the M24D Hellios

**Filter cartridge reference:**  
161 209 000



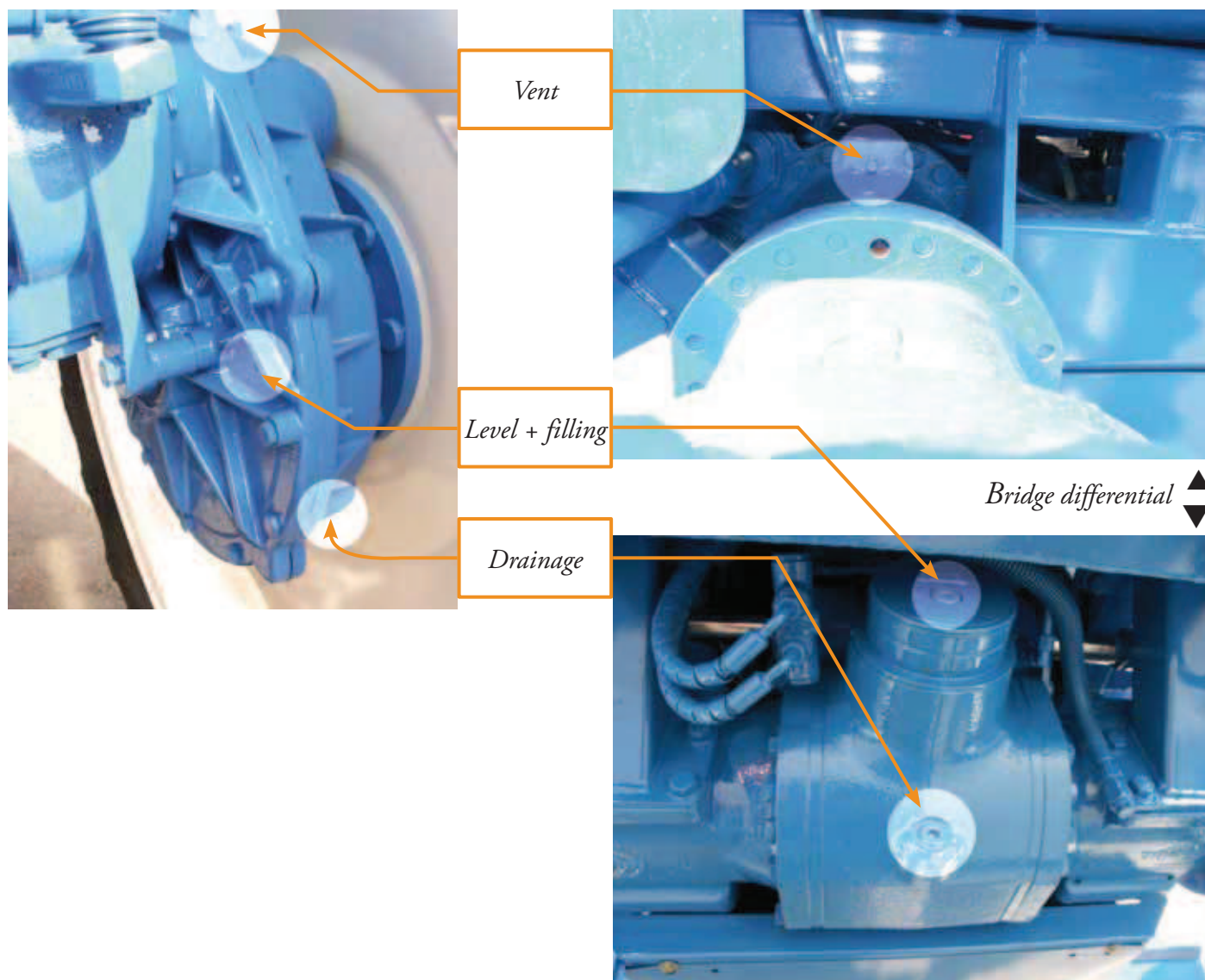
Filter cartridges can be changed earlier if the clogging indicator on the filter casing lights up red ②.

All filter cartridges are identical

Only original MATROT ÉQUIPEMENTS parts are covered by the warranty of your self-propelled machine.

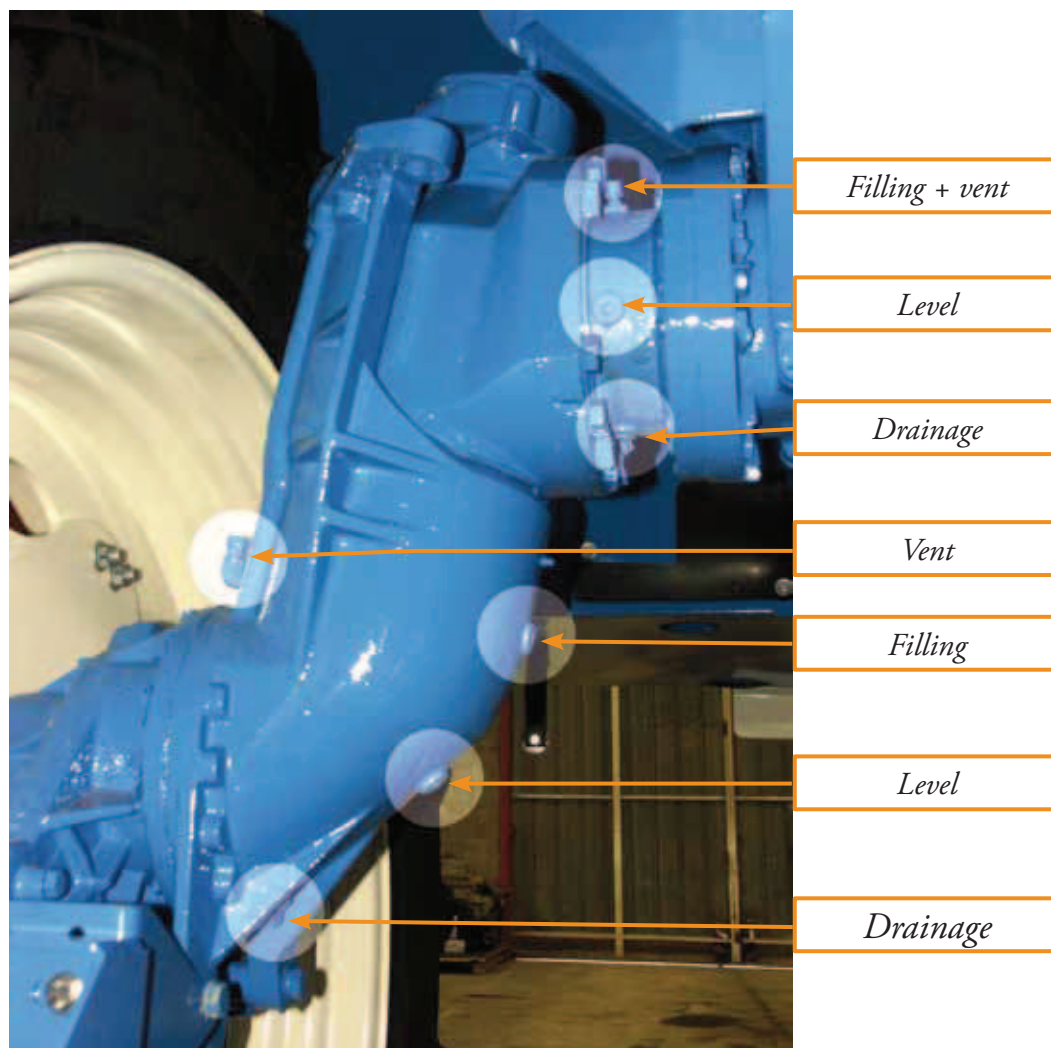
## 6.4. Mechanical transmission

### 6.4.1. Driving axle (ground clearance = 1 m, depending on the tyre fitting)

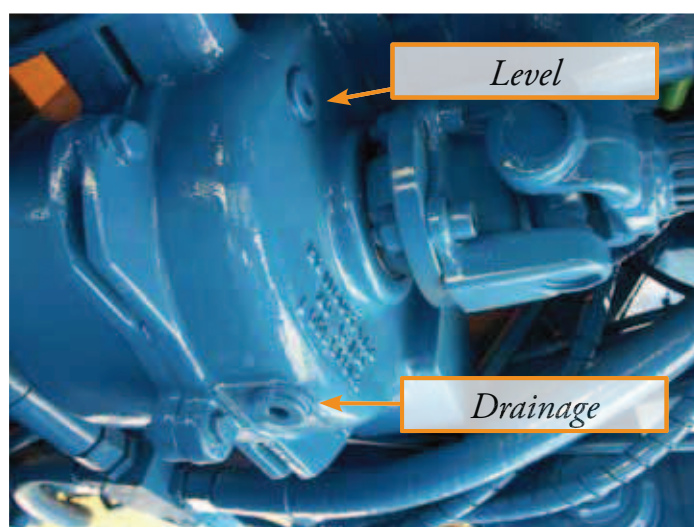
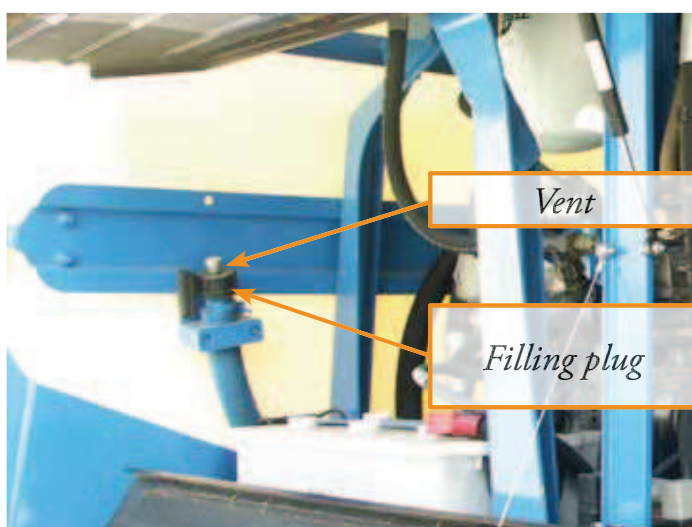




### 6.4.2. Driving axle (ground clearance = 1.3 m or 1.6 m, depending on the tyre fitting)



### 6.4.3. Transfer gearbox



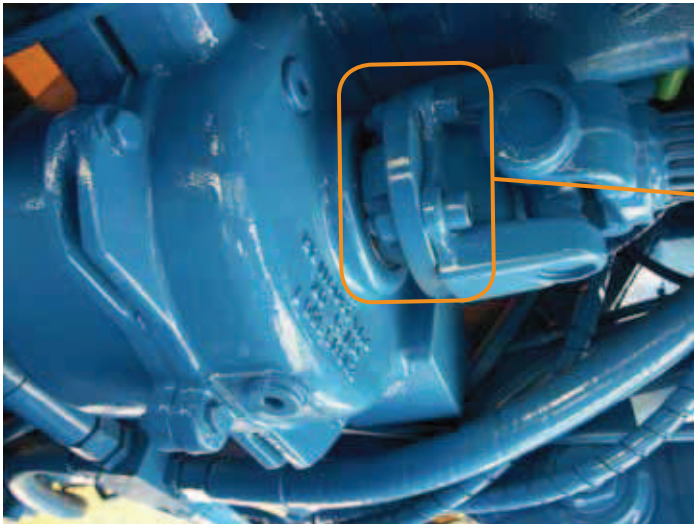
Level and drainage points can be accessed by removing the casing from the rear transmission PTO



#### REMINDER

Do not spill waste oil on the ground. Eliminate the oil in accordance with legislation on the protection of the environment ! (*directive no. 87/101/CEE*)

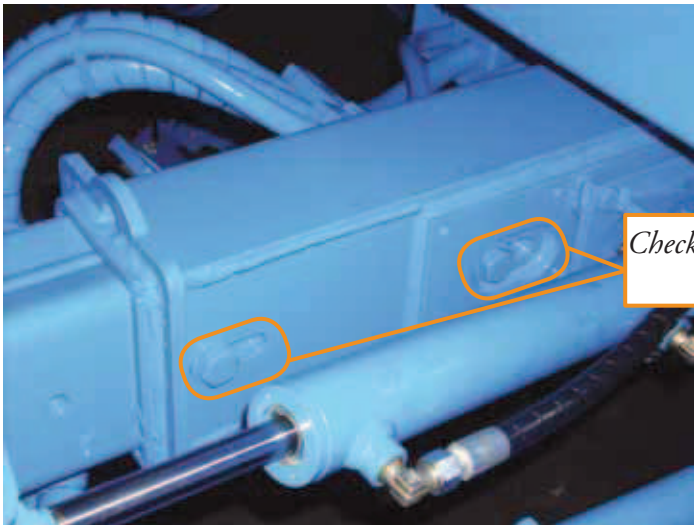
Huiles claires



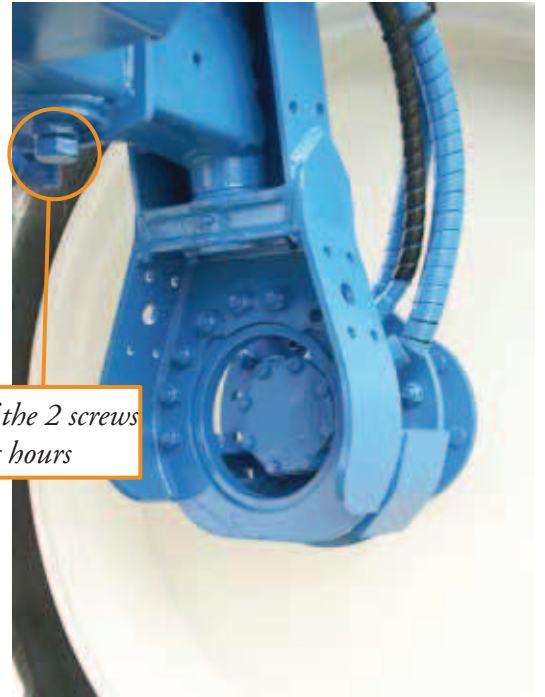
- *Check the tightening of the 2 screws after 50 operating hours.*
- *And every subsequent 50 operating hours.*

#### 6.4.4. Assisted front axle

The hydraulic motors on this type of axle are maintenance-free.



*Check the tightening of the 2 screws after 50 operating hours*



## 6.5. Motor



For more information, refer to *the DEUTZ instruction manual 2012* supplied at the delivery of the self-propelled machine.

### 6.5.1. Recommended lubrication



Refer to the *DEUTZ instruction manual 2012*, paragraph 4.  
The engine oil used to fill the engine casing is API "CD/SF" **TOTAL RUBIA SAE 30 grade oil suitable for the running-in period.**

### 6.5.2. Drainage period



1<sup>st</sup> drainage after 50 operating hours  
2<sup>nd</sup> drainage after 200 operating hours  
And then every subsequent 200 hours



Refer to the *M24D Hellios maintenance log*

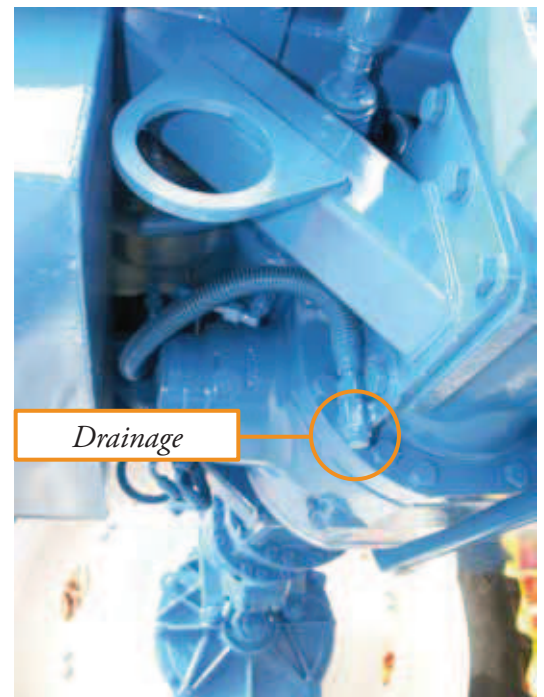
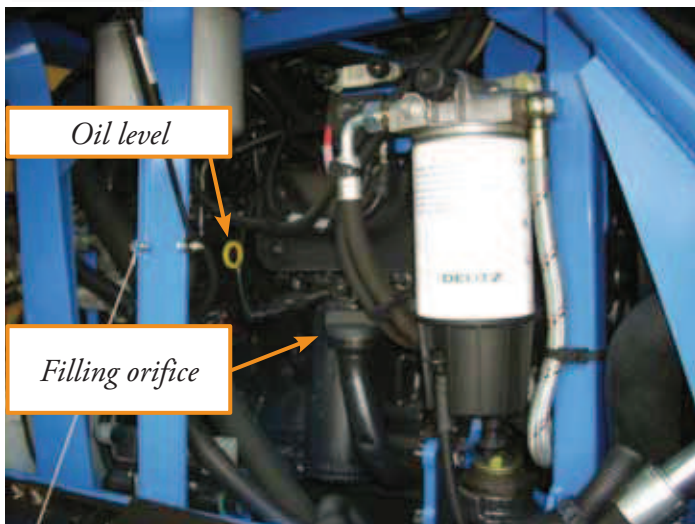


Do not spill waste oil on the ground. Eliminate the oil in accordance with legislation on the protection of the environment ! (*directive no. 87/101/CEE*)

Huiles noires

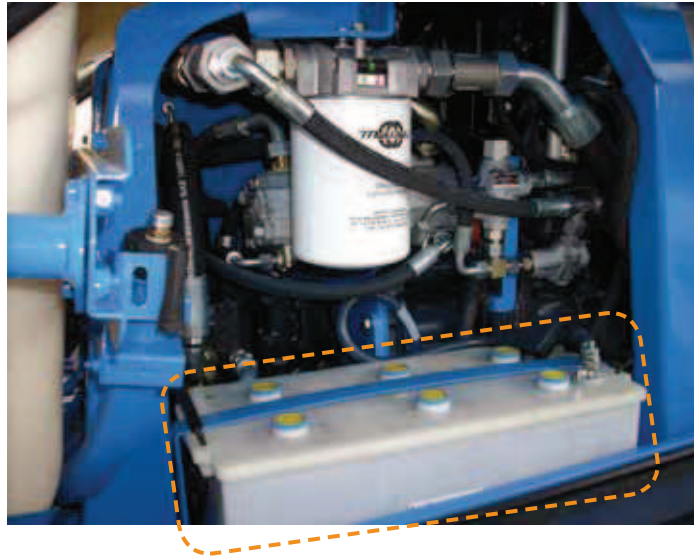


**CHECK THE OIL LEVEL EVERY MORNING**





## CHECK BATTERY ELECTROLYTE EVERY 125 HOURS



### 6.5.3. Air filter

The M24D Hellios self-propelled machine is equipped with a dry air filter.



Refer to paragraph 6 of the *DEUTZ instruction manual 2012* for more practical advice.



For information on how often to clean the air filter and replace filter cartridges, refer to the *M24D Hellios maintenance log*.

To access filter cartridges:

- Release the clips ①
- Remove the lid ②

References of the air filter cartridges:

- Primary cartridge: **236 363 000**
- Safety cartridge: **236 364 000**

A clogging indicator ③ will light up when the cartridges are clogged.



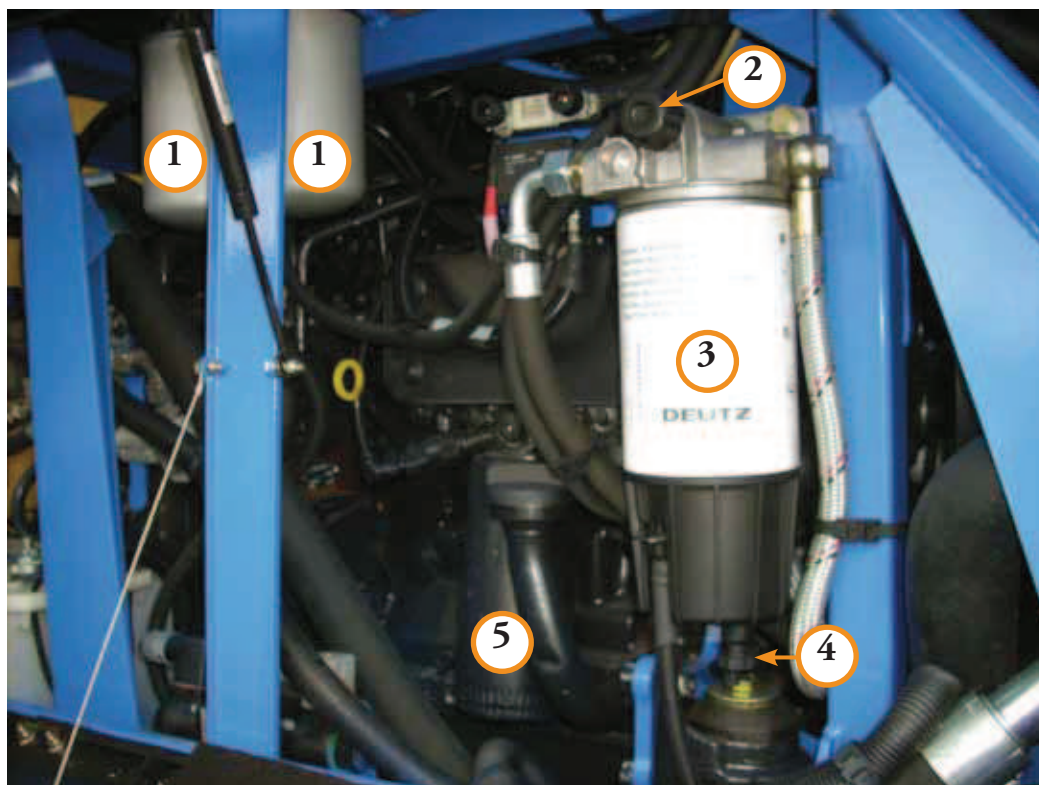
#### 6.5.4. Oil filter



Refer to paragraph 6 of the *DEUTZ instruction manual* for more information.



You could also refer to the *M24D Hellios maintenance log* for the frequency of maintenance operations.



#### 6.5.5. Fuel filters

Refer to paragraph 6 of the *DEUTZ instruction manual* for more information.

You could also refer to the *M24D Hellios maintenance log* for the frequency of maintenance operations.

Drainage screw and water bleed point ④.

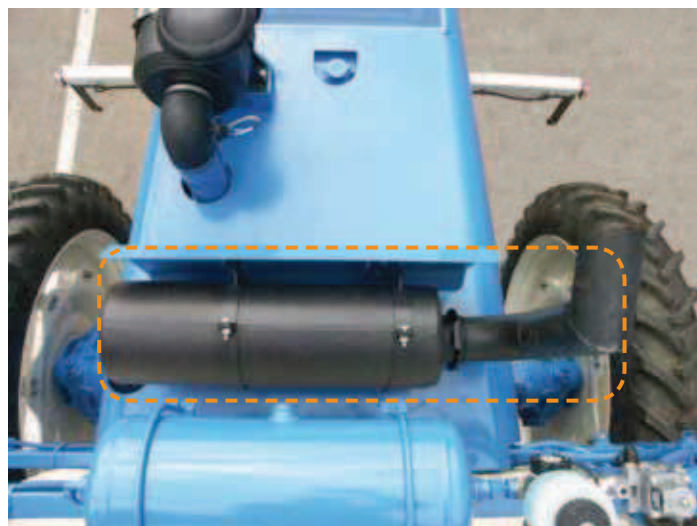
Fuel circuit choke control ②.

Number	Description	References
①	Fuel filter cartridge	242 176 000
③	Fuel pre-filter strainer	242 434 000
⑤	Oil filter cartridge	242 444 000

Only original MATROT ÉQUIPEMENTS parts are covered by the warranty of your self-propelled machine.

## 6.5.6. Exhaust and intake manifold connectors

Regularly check the tightening of collars and the condition of hoses.



## 6.5.7. Engine cooling system



Refer to paragraph 6 of the *DEUTZ instruction manual* for more information.

You could also refer to the *M24D Hellios maintenance log* for the frequency of operations.



The cooling circuit is filled with anti-freeze product (-35°C).

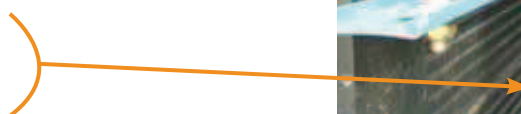
Never add water to the coolant.

A Deutz digital display shows the temperature (photo opposite).

MATROT Équipements cannot be held liable in the event of freezing or incorrect maintenance.



Clean the cooling radiator on a regular basis (honeycombs).



## 6.6. Type of oil and capacity

### 6.6.1. Motor

1<sup>st</sup> drainage after 50 operating hours  
2<sup>nd</sup> drainage after 200 operating hours  
And then every subsequent 200 hours

COMPONENTS		TYPE (TOTAL brand)	CAPACITY in litres		
Combustion engine TCD 2012 L04 2V		See specifications below TOTAL RUBIA TIR 8600	12.5 litres without the filter 14.0 litres with the filter		
Engine series	DEUTZ quality class	Lubrication oil quality			
		DQC I-02	DQC II-05	DQC III-05	DQC IV-05
		Greasing intervals in operating hours			
TCD 2012 2V		-	200	200	200

### DEUTZ recommendations



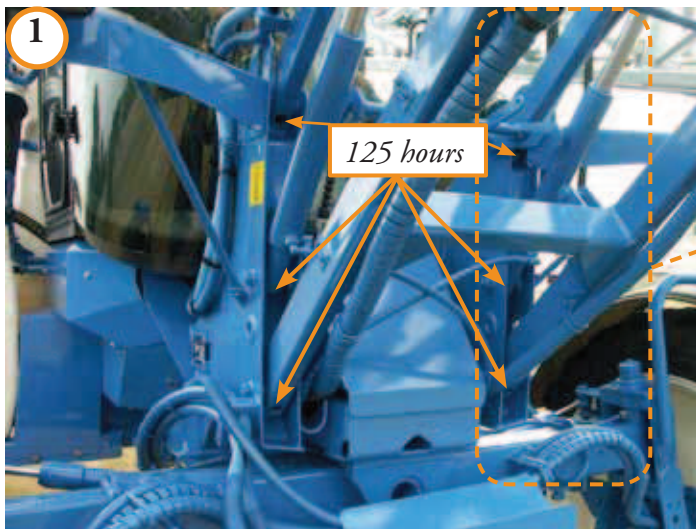
Refer to the *DEUTZ instruction manual 2012*, paragraph 4.

DEUTZ lubrication oil quality class	DQC I-02	DQC II-05	DQC III-05	DQC IV-05
DEUTZ oil	DQC I-02	DQC II-05	DQC III-05	DQC IV-05
ACEA classification	E2-96	E7-04 or E3-96 or E5-02 or E4-07 or E6-04	-	-
API classification	CF or CF-4	CG-4 or CH-4 or CI-4 or CI-4 Plus or CJ-4'	-	-
International specification	-	DHD-1	-	-

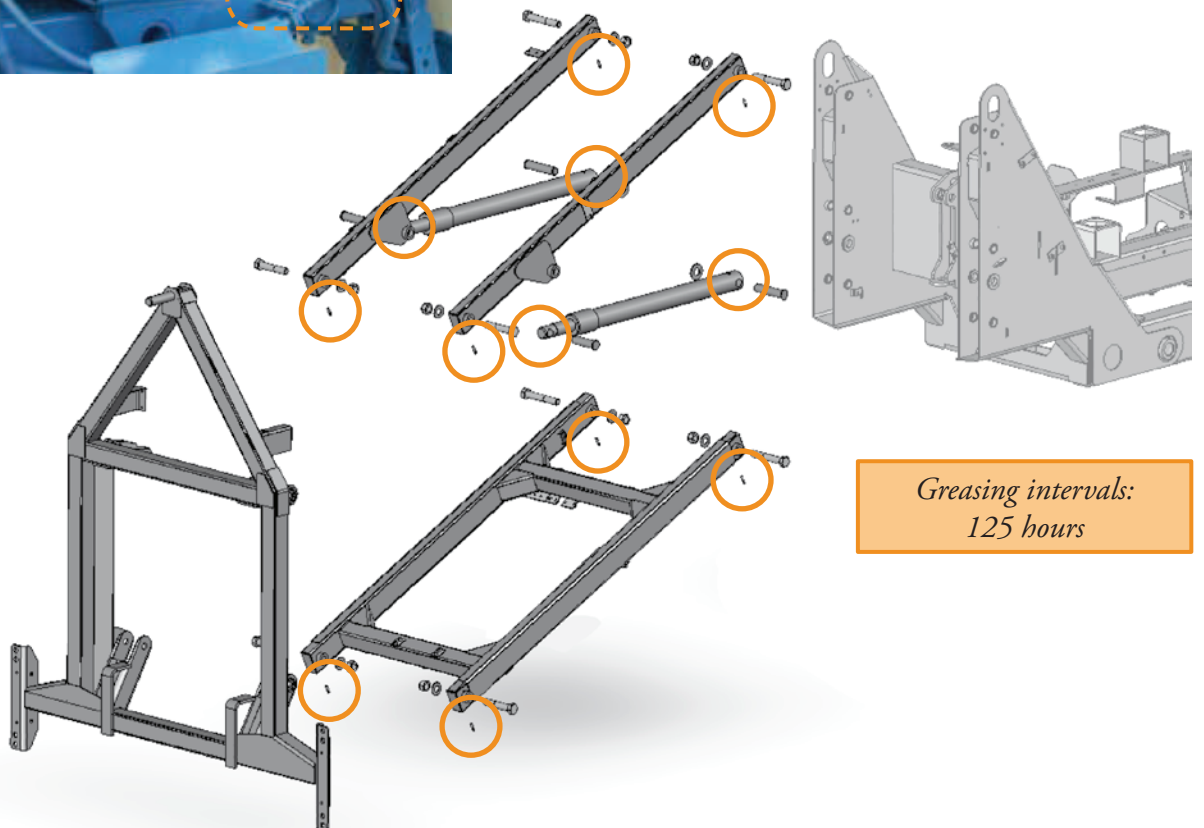
### 6.6.2. Transmission components

COMPONENTS		TYPE (TOTAL brand)	CAPACITY in litres
Ground clearance: 1.00 m	Track: 1.80 - 2.00 m	Transmission DA	13.0 litres
	Track: 1.90 - 2.10 m		14.0 litres
	Track: 2.25 - 2.40 m		18.0 litres
Ground clearance: 1.30 m	Upper corner bracket	Transmission EP 80 W 90	2.3 litres
	Lower corner bracket		1.3 litres
	Track: 2.25 m	Transmission DA	16.0 litres
	Track: 2.40 m		17.0 litres
Ground clearance: 1.60 m	Upper corner bracket	Transmission EP 80 W 90	2.3 litres
	Lower corner bracket		1.3 litres
	Track: 2.25 m	Transmission DA	16.0 litres
	Track: 2.40 m		17.0 litres
Final reducer	25 km/h	Transmission EP 80 W 90	6.5 litres
	40 km/h		6.5 litres
Transfer gearbox	25 km/h	Transmission EP 80 W 90	3.5 litres
	40 km/h		3.0 litres

## 6.7. Greasing

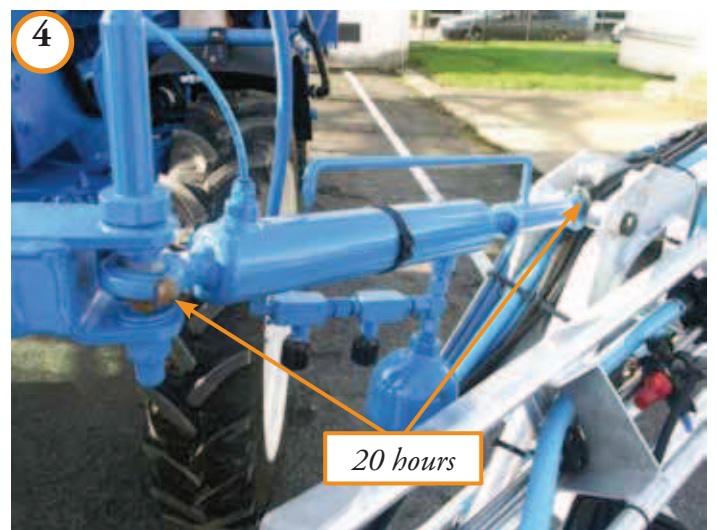
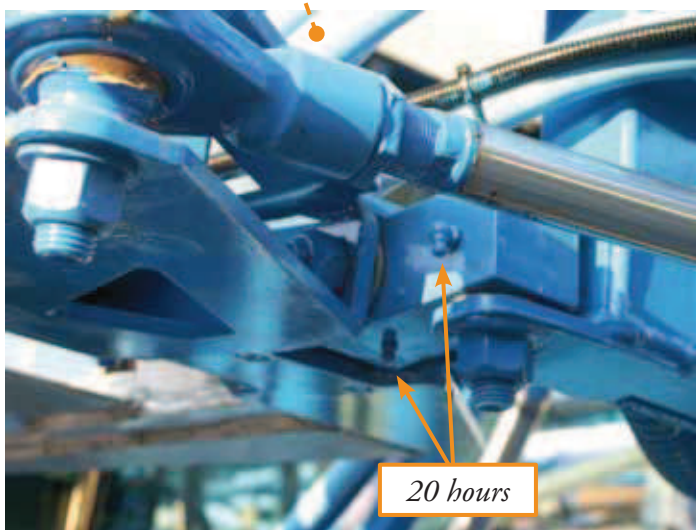
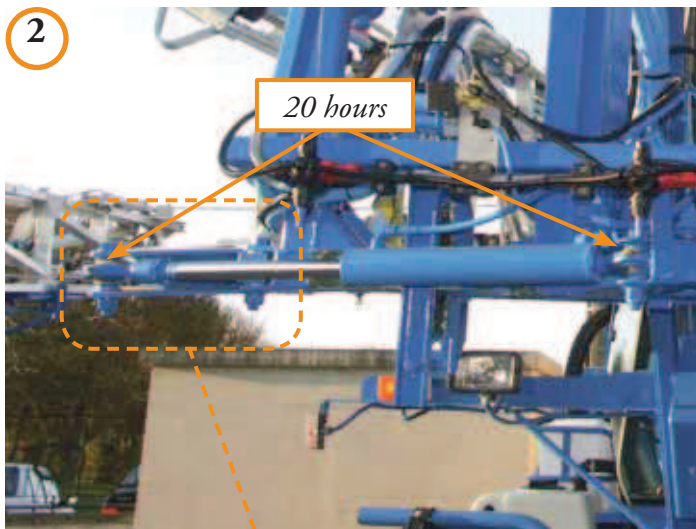
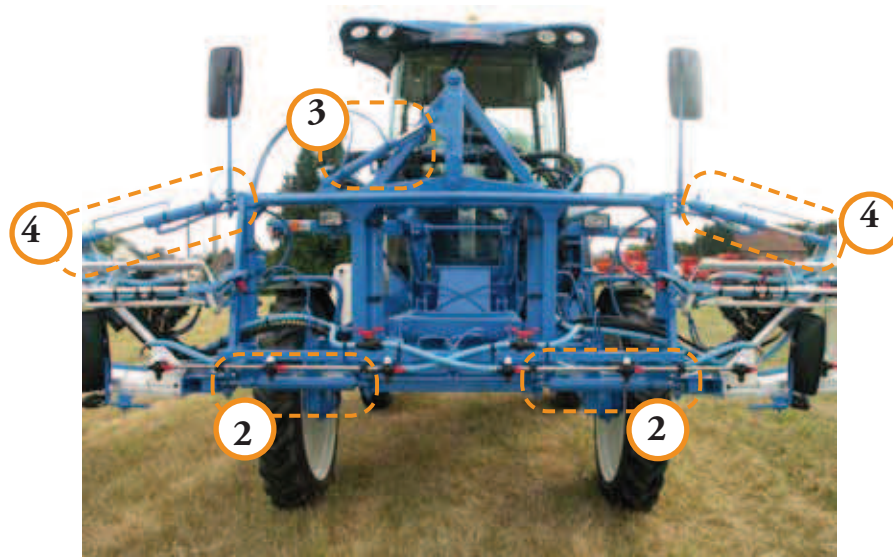


The lifting parallelogram is fitted with grease nipples at each end of the arms and actuators.  
(Cf. the diagram below).



Greasing intervals:  
125 hours



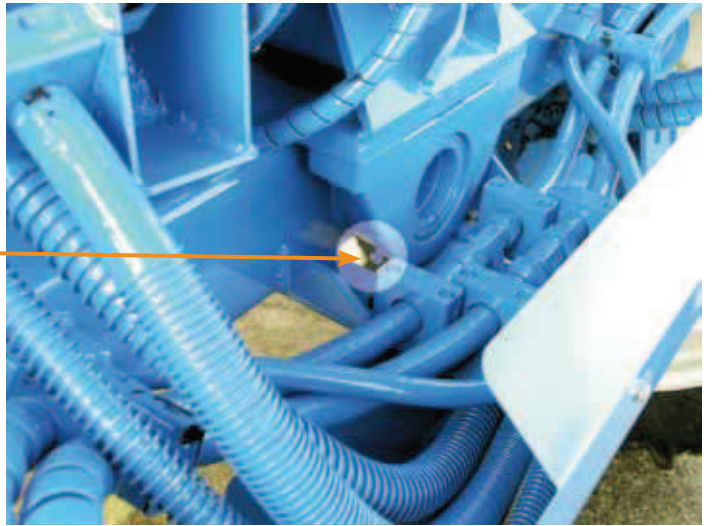




20 hours



20 hours

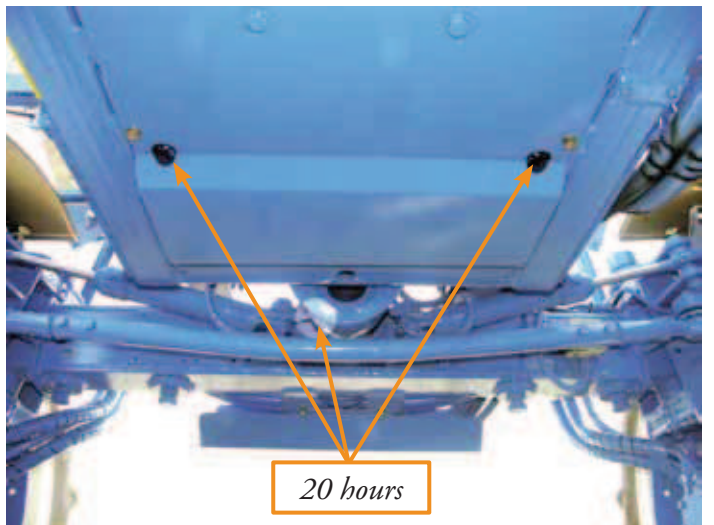


▲ Front track pivot

Front axle pivot ▲



20 hours



20 hours

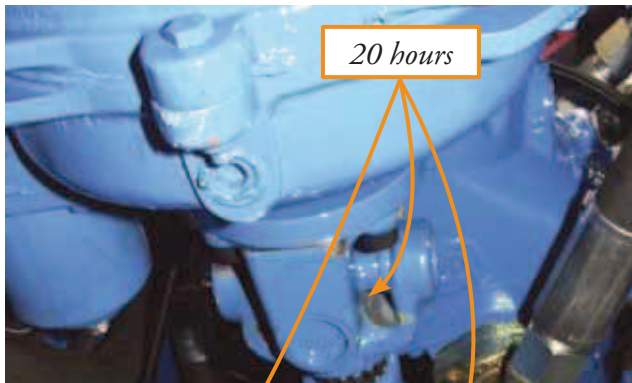


▲ Rear left track pivot



Rear right track pivot ▲

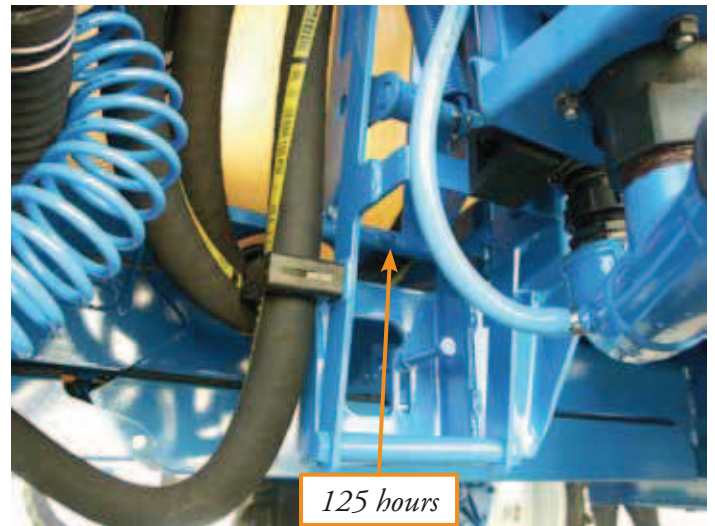
20 hours



20 hours

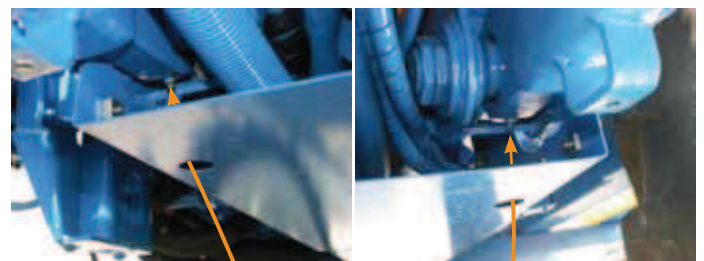


20 hours



125 hours

Mixing hopper bracket ▲





*Check that the pads are always greased to allow parts to slide adequately*



## 6.8. Relays and Fuses

- Protection devices (fuses, see photo above)

Fuses are located behind the arm rest. Move the seat forward and fold the back down for easier handling.

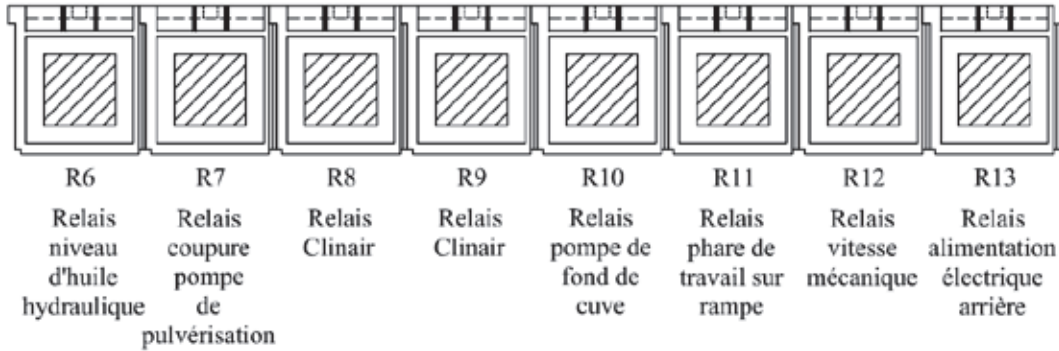
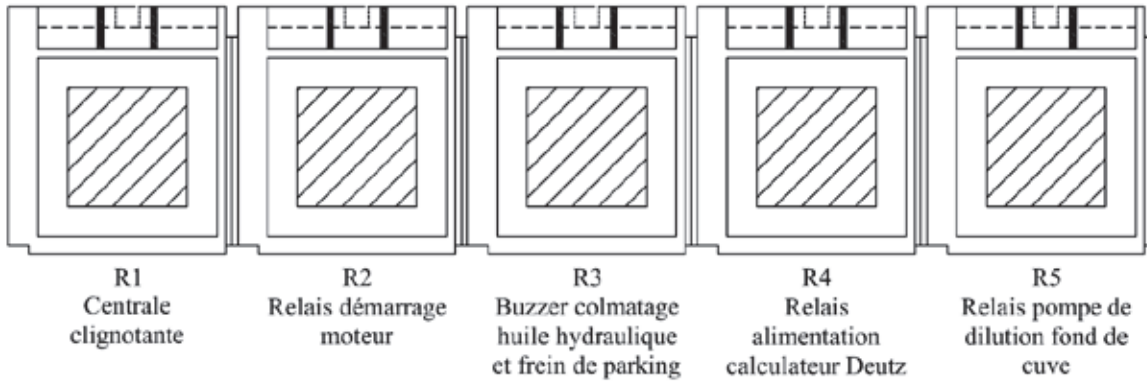


**Relays and fuses**



*Fuses*

*Relays*



F1	F5	F9	F13	F17	F21	F25	F29	F33	F37	F41
General pre-ignition supply 25A	Pre-ignition supply 5A Teejet casing	Pre-ignition supply 10A Cab work lights	Pre-ignition supply 15A Cab ventilation	Pre-ignition supply 15A Windscreen wiper and washer	Pre-ignition power supply 25A Relay R5 (residual volume dilution pump)	Post-ignition supply 15A Section valves and Teejet casing	Post-ignition supply 7.5A Deutz computer and Deutz troubleshooting socket	Post-ignition supply 15A Lighting switch	Pre-battery breaker supply 25A Relay R4 ( Deutz computer supply)	Joystick card supply 3A via the 12V converter
General pre-ignition supply 25A	Pre-ignition power supply 20A Relay R10 (residual volume drainage pump)	Pre-ignition supply 10A Cab work lights	Pre-ignition supply 2A Cab heating solenoid valve	Pre-ignition supply 10A Rotating beacons	Pre-ignition power supply 25A Relay R5 (residual volume dilution pump)	Post-ignition supply 15A Residual volume valve and spray pump	Post-ignition supply 3A Deutz display	Post-ignition supply 2A For the 3 ventilation speed relay windings	Relay R2 power supply 25A Motor startup	Speed switch supply 7.5A , Hydraulic system, via the 12V converter
Pre-ignition supply 5A Horn	Pre-ignition power supply 15A Relay R7 (boom work light)	Pre-ignition supply 10A Cab work lights	Pre-ignition supply 2A A/C compressor	Pre-ignition supply 10A Car radio, ceiling light and boom inter-lights		Post-ignition supply 15A Boom extension / retraction card	Post-ignition supply 10A Relay R14 (mechanical gear change)		Alternator charge 3A	
Pre-ignition supply 10A Turning indicator system	Pre-ignition power supply 15A Relay R13 (rear power supply)	Pre-ignition supply 10A Cab work lights	Pre-ignition supply 5A Automatic heating control circuit	Pre-ignition supply 15A 12 V socket		Post-ignition supply 10A Left and right side jets	Post-ignition supply 7.5A Buttons, probes and indicators		Rear steering card supply 5A Via the hydraulic speed switch	
F4	F8	F12	F16	F20	F24	F28	F32	F36	F40	F44

## 6.9. Filtration



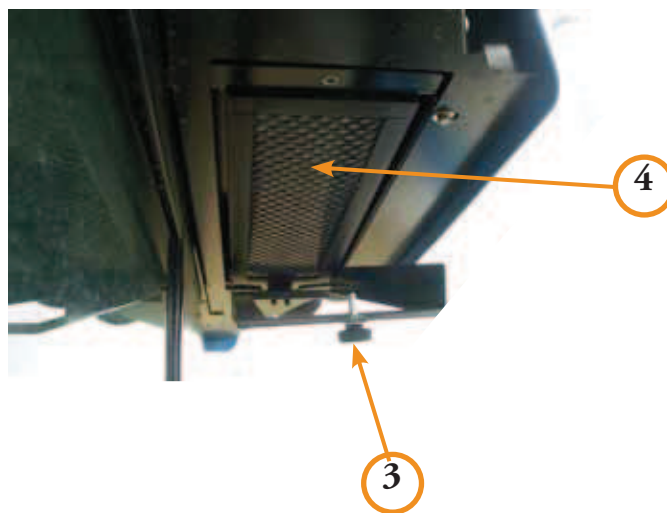
The filter is located under the roof behind the cab.

The activated carbon filter must be changed when saturated and every 400 hours or annually as a minimum. Refer to the *M24D Hellios maintenance log*.

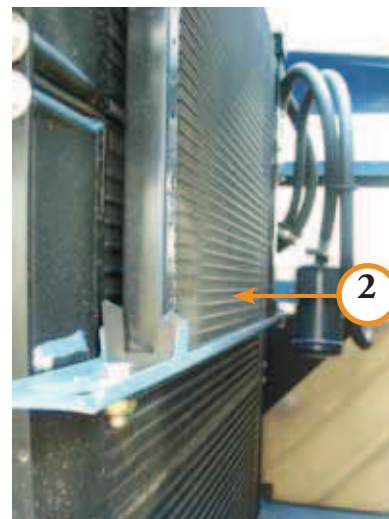
- Unscrew the screw ③ and open the flap to reach the filter ④

Filter reference:

	Reference
Paper / carbon filter	232 925 000



Clean the condenser periodically (honeycomb) ②.

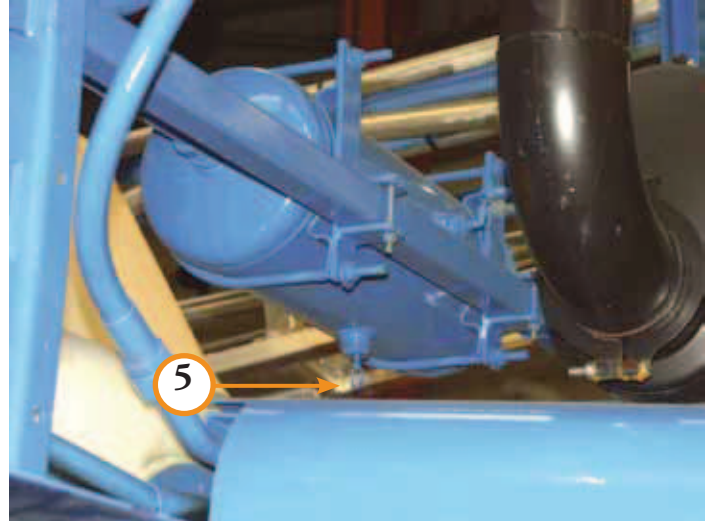
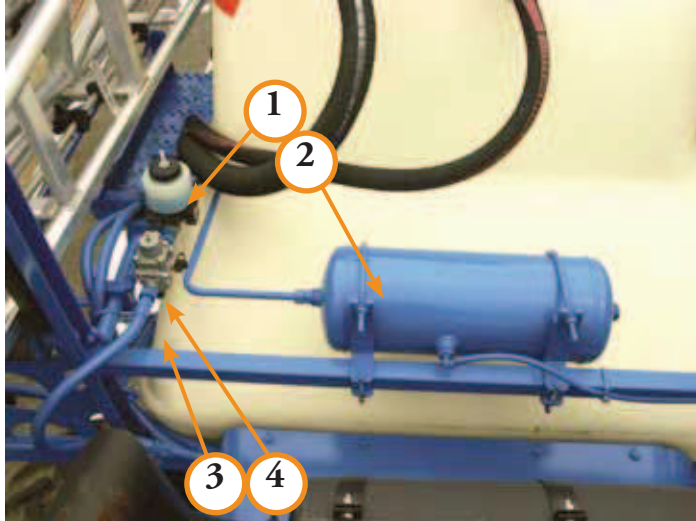


## VII. AIR CIRCUIT

This component is available on the M24D Hellios 25 km/h machine as an option (for pneumatic seat, bellows and pneumatic spray cutout options).

It is fitted as standard on the M24D Hellios 40 km/h machine for switching from 25 to 40 km/h mode. However, the pneumatic seat, bellows and pneumatic cutout remain options.

A mechanical compressor fills a cylinder with air at 10 bar.



1. Anti-freeze device
2. Air cylinder
3. Regulator bleed
4. Air circuit regulator
5. Air cylinder bleed

*Air circuit bleed frequency:  
20 hours*

*Anti-freeze fluid (1-litre bottle)  
Ref.: 244 141 000*

## VIII. SUSPENSION

The cylinder provides an air pressure of 10 bar.

The regulator maintains a constant pressure (7 bar) in the suspension bellows.

*Anti-freeze device*

*Regulator*

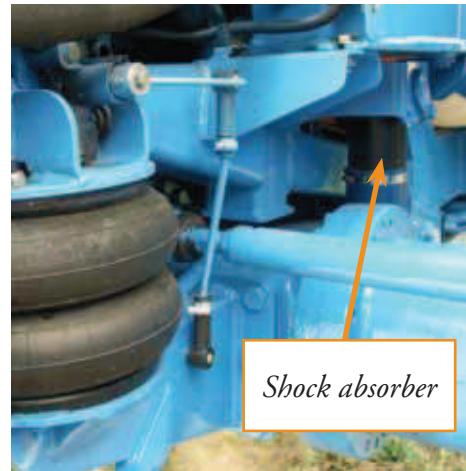
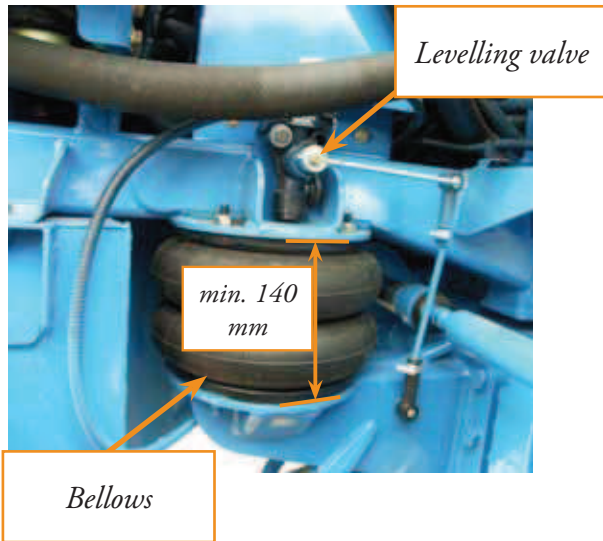


*Air cylinder*



A levelling valve is associated with each tank (1 FRONT and 2 REAR)  
This valve will maintain a constant suspension height irrespective of load (full tank/empty tank.)  
The shock absorbers fitted on each axle prevent rebound.

### Rear suspension



### Front suspension

