



# BAUER

*FOR A GREEN WORLD*

## OPERATING INSTRUCTIONS

for

### Rainstar HE with hydraulic drive

#### Supplement to Manual RAINSTAR E / E Plus

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## 1. DESCRIPTION

### 1.1. RAINSTAR HE

Instead of a turbine, Rainstar HE is equipped with a drive assembly consisting of an engine and a hydraulic drive unit.

Water is fed directly into the Rainstar's pipe-reel axle through a connecting bend. There is no turbine. The HE system, on the one hand, is indicated for distributing soiled liquids such as slurry and waste water for instance, for which the turbine drive is not suited, on the other hand it is designed for high retraction speeds which are impossible to reach with the turbine drive.

This drive systems consists of the following components:

- 100-litre tank for hydraulic oil mounted on the Rainstar turntable
- Honda engine 8 kW, vertical construction, 2.3 litre fuel tank (optional 50 litre fuel tank mounted on the Rainstar frame, for longer operating times)
- Hydraulic pump flanged directly on the engine
- Hydraulic motor with flexible coupling mounted directly on the Rainstar gearbox
- Large-dimensioned hydraulic lines, oil filter in return line
- Flow divider with servomotor for controlling the hydraulic motor speed
- Electronic control unit (ECOSTAR) for regulation of retraction speed
- Shut-off sensor for automatic engine shut-down at end of irrigated strip

Retraction speed: approx. 20 – 350 m/h

(Minimum and maximum values may vary depending to the respective Rainstar model)

## 1.2. RAINSTAR HE

### Actuating the hydraulic machine supports with the engine or with the tractor's hydraulic system

With this design it is possible to actuate the hydraulic supports with the engine of the hydraulic drive and with the tractor's hydraulic system as well. In addition to the extent of supply under Item 1.1, this machine includes following components:

- Control valve block for separately actuating the hydraulic supports.
- Hydraulic lines between the engine – hydraulic system and the control valve block of the supports.
- Ball cocks for switch-over from motor-powered to tractor-powered actuation of the supports.
- Time relay for bridging the automatic motor shut-off. Serves for actuating the hydraulic supports with the engine when the sprinkler cart is standing in its end position (shut-off position).

## 1.3. RAINSTAR HE – E/TM

### Combined machine for engine or turbine drive

This design combination of the HE Rainstar can be driven with both the turbine and the hydraulic drive unit.

This combined design is mostly used when the same machine is needed for slurry or waste water distribution and clear water irrigation requirements as well.

The drive system consists of the following components:

- Complete turbine drive including turbine, turbine regulation, turbine feeding pipe.
- Separate feeding pipe for engine drive. The liquid is fed into the bypass of the turbine.
- 100 litres tank for hydraulic oil mounted on the Rainstar's turntable.
- Honda engine 8 kW, vertical construction, fuel tank 2.3 litres.  
(optional 50 fuel tank for longer operating time, mounted on the Rainstar frame)
- Hydraulic pump flanged directly on the engine
- Hydraulic motor with belt pulley and V-belt for gearbox drive.
- Large-sized hydraulic lines, oil filter in the return line.
- Flow divider with servomotor for speed control of the hydraulic motor.
- Electronic control (ECOSTAR) for regulating the retraction speed.
- Shut-off sensor for automatic engine shut-down at the end of the irrigated strip.
- Selector switch for operating the servomotor on the turbine control or the servomotor on the flow divider for the hydraulic drive.

### 1.3.1. TURBINE DRIVE

When the machine operated with the turbine (for clear water distribution) follow the instructions in the *Rainstar E / E Plus Manual*.

Put on the V-belt between turbine and gearbox.

Change the selector switch of the ECOSTAR to the servomotor of the turbine.

Connect the feeding line to the turbine infeed pipe. Close the second infeed pipe with an end cap.

### 1.3.2. HYDRAULIC DRIVE

When operating with the hydraulic drive system, remove the V-belt between turbine and gearbox and put it on between the hydraulic motor and the gearbox.

Change the selector switch of the ECOSTAR to the servomotor of the flow divider.

Connect the Rainstar feeding line to the infeed pipe of the turbine by-pass. The turbine infeed pipe is closed with an end cap

For operating the machine with hydraulic drive, see the instructions under "Putting into operation" below.

## 2. SAFETY PRECAUTIONS

Always observe the following points in addition to the safety precautions specified in the *Rainstar E / E-Plus* manual.

- 2.1. The hydraulic system is under high pressure!
- 2.2. When connecting hydraulic cylinders and motors make sure that the hydraulic hoses are connected as specified.
- 2.3. When connecting the hydraulic hoses to the tractor's hydraulic system ensure that hydraulic hoses are depressurised on both the Rainstar and on the tractor side.
- 2.4. Check the hydraulic hoses at regular intervals and replace them immediately if they are damaged or aged! The replacement hoses must conform to the technical specifications of the machine manufacture!
- 2.5. When looking for leaks, beware of the injury hazard and always use suitable aids!
- 2.6. Liquids under high pressure (hydraulic oil) may penetrate the skin and cause severe injury! In case of injury see a doctor immediately! Danger of infection!
- 2.7. Before handling the hydraulic unit always set down the devices, depressurise the system and shut off the engine!

## 3. INITIAL START-UP

The HE drive system is ready mounted on the Rainstar. Hydraulic system and engine, however, are filled with neither oil nor fuel.

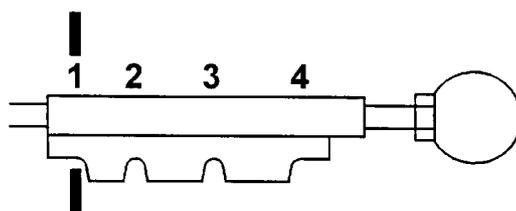
- 3.1. Before the first start-up, the hydraulic tank must therefore be filled with 100 litres hydraulic oil (Shell Tellus S46).
- 3.2. Fill up the Honda engine with engine oil up to the marking according to the Honda manual.
- 3.3. Fill up the fuel tank.

## 4. PUTTING INTO OPERATION

Carry out all steps for setting up the Rainstar, pulling off the PE-pipe, and anchoring the supports according to the Rainstar E / E Plus Manual.

- 4.1. Select the required retraction speed by means of the performance/precipitation chart on the Rainstar.
- 4.2. Set the required transmission according to the table below:

Retraction speed	20–90 m/h	30–150 m/h	45–250 m/h	65–350 m/h
Speed to be set	1	2	3	4



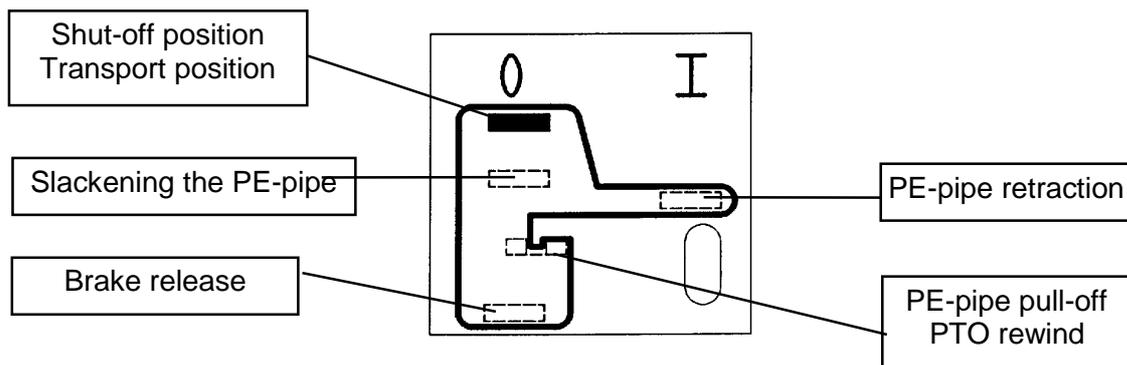
**NOTE !** You should select the speed at which the desired retraction speed is in the upper range. If you require 120 m/h retraction speed for instance, select the 2<sup>nd</sup> gear instead of 3<sup>rd</sup> or 4<sup>th</sup>, with this setting less oil is returned through the flow divider

The speeds mentioned are approximate values for models E1 through E4. For E5 models the maximum speed is about 15 % lower.

Engine speed at minimum retraction speed 2500 r.p.m.  
 Engine speed at maximum retraction speed 3200 r.p.m.  
 Other speed range is controlled with the flow divider.

- 4.3. Starting the engine, the engine runs at low speed.
- 4.4. Opening the hydrant or starting the feeding pump.
- 4.5. Shift the shut-off lever to the operating position - PE-pipe retraction (see drawing below)

### SHUT-OFF LEVER SWITCHING POSITIONS



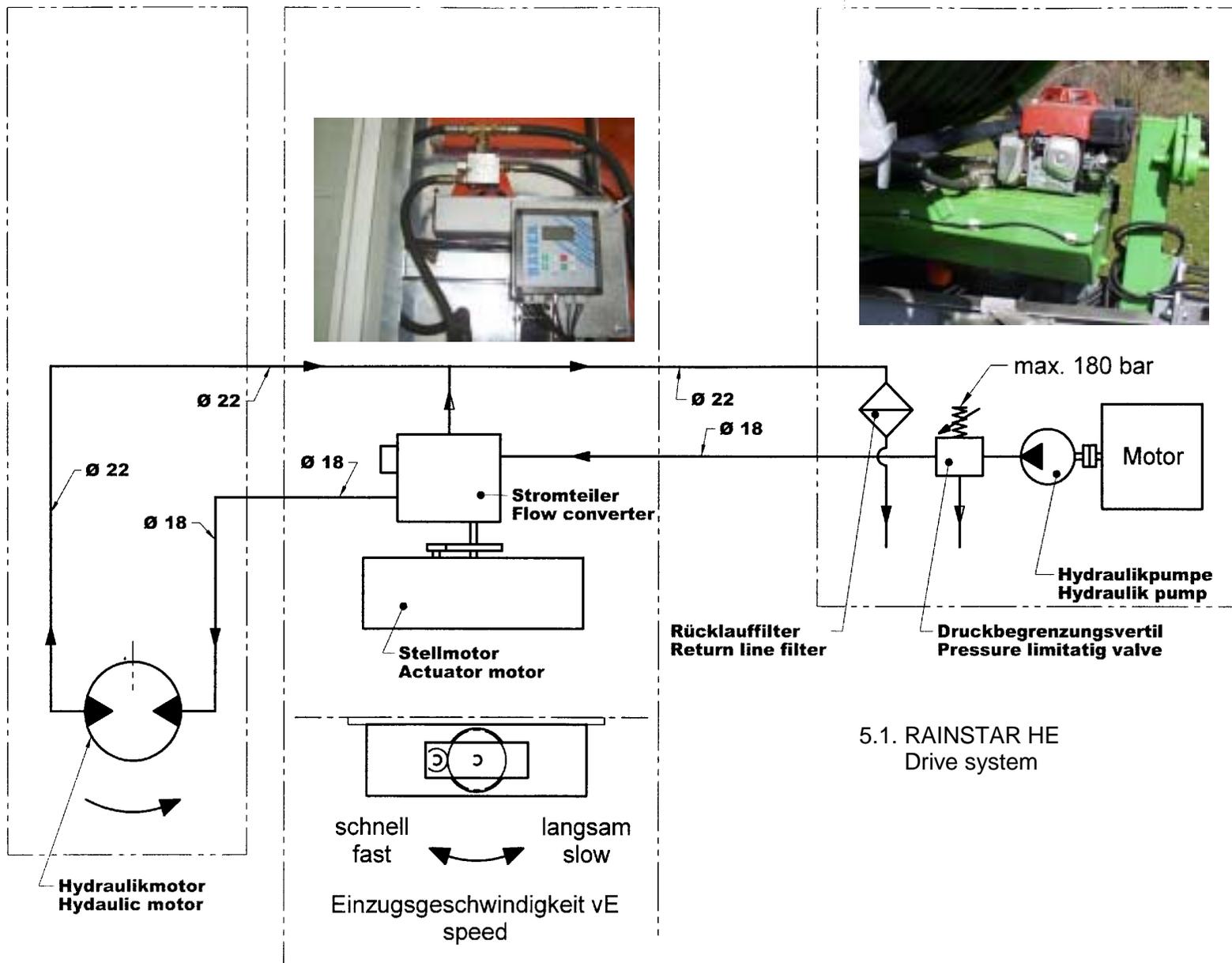
- 4.6. Rev up the engine.
- 4.7. Push ECOSTAR START.
- 4.8. Set retraction speed on the ECOSTAR.
- 4.9. Set pre and post irrigation (if required).
- 4.10. The machine runs automatically up to the end of the strip.  
 In the end position the shut-off lever is moved to the shut-off position mechanically. Retraction is stopped and the engine stops automatically. If a shut-off valve is mounted it is closed automatically (overpressure shut-off system).

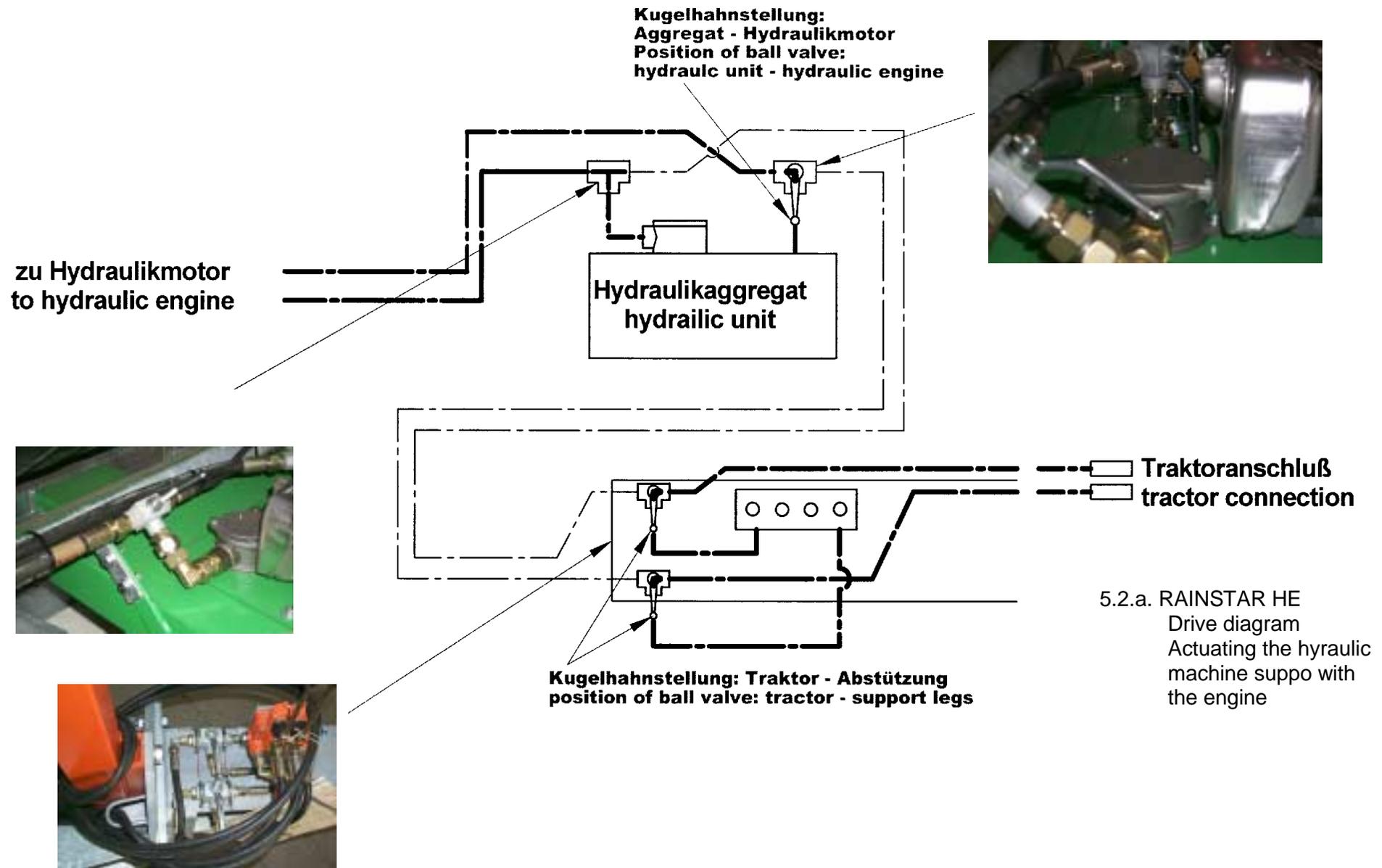
## 5. DRIVE SYSTEM

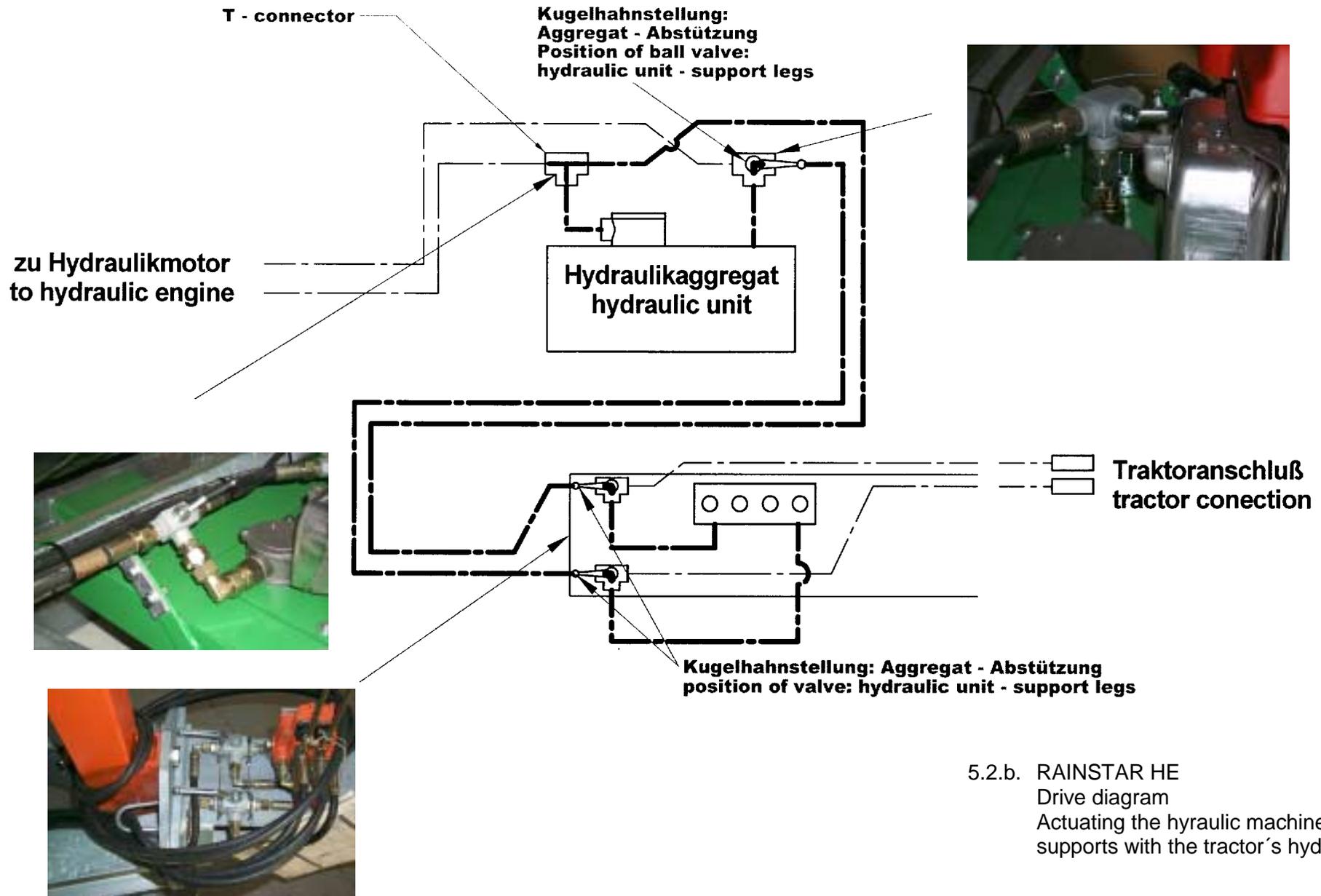
See drawings

### 5.1. Rainstar HE

- 5.2. **Rainstar HE**, Actuating the hydraulic machine supports with the engine  
 Actuating the hydraulic machine supports with the tractor's hydraulics.







## 6. SPARE PARTS

List of main components of the HE drive system. .

<b>Rainstar HE spare parts</b>		
<b>Item</b>	<b>Denomination</b>	<b>Part no.</b>
1	Hydraulic drive, complete consisting of: drive bracket, oil tank, HONDA engine with coupling dome, coupling and hydraulic pump, hydraulic motor with coupling on gearbox input shaft, ECOSTAR 4000S with flow divider, hydraulic lines (without oil filling)	800 8912
2	HONDA engine GXV 340	063 0162
3	oil tank 120 litres	827 8912
4	oil level indicator	062 0347
5	oil pump with flanges	062 0340
6	pressure limiting valve	062 0342
7	return line filter	062 0348
8	flow controller	800 4771
9	hydraulic motor	062 0328
10	flexible coupling	062 0329
11	final shut-off, complete	827 8270
12	momentary-contact limit switch	087 7727
13	6 m line for limit switch	087 0154
16	fuel tank 50 litres, complete with accessories	800 4819
	Only for HE Rainstar with engine-actuated supports:	
17	3-way ball cock, 1/2", (1 piece. on the hydraulic unit)	062 0437
18	3-way ball cock, 3/8", (2 pieces on the support control)	062 0438

