

**User Manual &  
Spare Parts Catalogue**

(EN) 08-05-2024



# Irrigator FM2500



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## EEC Declaration of conformity

**Manufacture (name and address):**

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Hereby is certified that the following product:

Description, ID/mark, type: Irrigator FM 2500

Serial No. if any: \_\_\_\_\_

Notified body if any: \_\_\_\_\_

EEC-type certificate if any: \_\_\_\_\_

Harmonised standards if any: EN 908:1999+A1:2009.  
DS/EN/ISO 12100:2011.  
DS/EN/ISO 14120:2015.

Is made according to the announcement no.693 of 10. Jun 2013 that implements the DIRECTIV 2006/42/EC.

Name, title and signature of manufacture:

\_\_\_\_\_  
Date

  
Signature

## !!! Important!!!

### Read this manual carefully before using your irrigator!

Your new Fasterholt irrigator is a high quality, Danish built machine, but even the best machines only deliver top results when they are properly handled and maintained.

To ensure that the machine complies with the EU Machinery Directive, only original spare parts may be used. Otherwise, compliance will be lost and safety will be entirely at your own risk.

#### FM2500

Fasterholt FM2500 is a self-propelled irrigator that drives across the field and unwinds the hose by itself. A turbine is used to power the machine and hose winding and irrigation stop automatically when the machine gets back to the hydrant and the fixed stop.

The machine is available with an underpressure stop or an overpressure stop. With the overpressure stop function, make sure that the pump is either switched off via a pressostat or can dispose of water by other means when the machine stops irrigation. With the underpressure stop function, the pump must be stopped via a pressostat.

The machine must be supplied with a maximum pump pressure of 12 bar. The recommended pressure 7-9 bar.

The irrigator is only suitable for irrigation with clean water from a drilled well or a watercourse.

We must point out that any damage caused by incorrect operation and/or negligence is not covered by the warranty. Fasterholt Maskinfabrik A/S only guarantees new machines sold through an authorised Fasterholt dealer. Any modifications made to the design of the irrigator shall exclude Fasterholt Maskinfabrik A/S of any liability and shall void the warranty.

#### Safety instructions/warnings

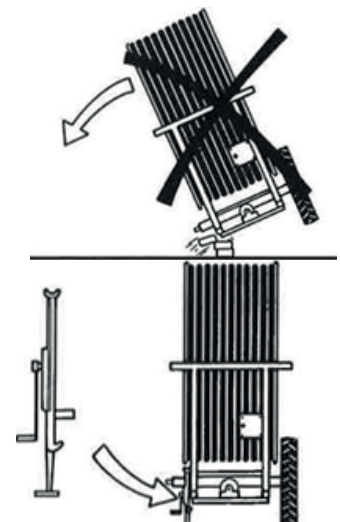
As this machine is used for field irrigation involving high water pressure, there is a risk of injury if the machine is used inappropriately. The warnings and safety instructions given here must therefore be respected and followed precisely.

- It is forbidden to stand on the machine during irrigation, as this may result in fatal injury.
- Only one person (operator) should be in the vicinity of the machine during transport, setup and dismantling.
- When starting the machine on falling ground, you must be VERY careful not to disconnect the tractor from the machine until the irrigator has been put into gear, otherwise the machine may run away.
- All shields are fitted for your protection. Please leave them in place.
- Remember to tighten all wheel bolts.
- If a wheel is removed, the machine must be jacked up and very stable, because it will fall completely on its side if it overturns. This may result in fatal injury.

#### WARNING!

- To perform an EMERGENCY STOP, pull the cable for the miswinding bar, pull the miswinding bar or press STOP on the Program Rain computer.

- V-belts may only be fitted after the machine has been unwound for the first time. (Only the first time the machine is used for irrigation).
- The gun must face out to the side when unwinding the machine.
- Stand aside when the gun is operating.
- Warning against contact with overhead power lines with the machine or water jet. Therefore avoid irrigation on or near power lines.
- During transport on uneven roads/fields, move VERY carefully according to the conditions.
- When parking the machine, use the wheel chocks mounted by the rear wheels.
- DANGER! Avoid welding in the paint layer! Before welding, remove all paint from the welding area – avoid inhalation of grinding dust.
- Hydraulic oil can be harmful to health: - Skin contact may cause allergies - Inhalation of oil mist may cause lung disease - Leakage of oil under high pressure is dangerous, an oil jet can enter the skin, eyes, etc.





- If a hydraulic system leak is found, stop the system immediately and rectify the fault.
- Note that due to operation, the oil may be 70 degrees Celsius or even hotter. This can lead to a risk of scalding during separation of the hydraulic system.
- **IMPORTANT:** Maximum battery charging power is 2 amps. Charging more than 2 amps may cause the battery to crack. The battery must be charged at a temperature between 0 °C and +40 °C. Never place the battery in a sealed container while charging. During winter, the battery must be removed and stored in a dry place indoors in a fully charged state.
- Avoid sparks and flames on and around the battery.
- Do not short circuit the battery.
- Never disassemble the battery.
- If you come into contact with the battery's sulphuric acid, wash immediately with water. If acid comes into contact with eyes, rinse thoroughly with water and seek medical attention immediately.
- Pay attention to the battery compartment. If there are cracks, deformities, electrolyte leakage, etc., replace the battery immediately.
- If the battery is dirty, clean it immediately.
- Disposal of oil spills: - If oil spills are found, they should be cleaned up immediately with rags or oil absorbent powder. - Spilled products, as well as rags and powder used for oil spills, must be stored in sealed metal containers and delivered to the municipal collection site.
- Hoses, tyres and other parts of the irrigation machine must be disposed of at an approved recycling site.

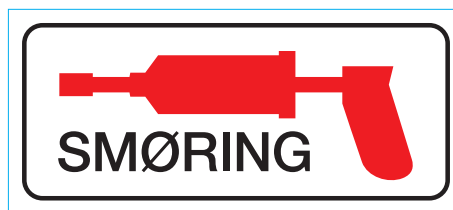
If the machine is to be moved via public roads, it must first be drained of water.

Symbols used in this product

The following symbols are used in this product and the following documentation.



**WARNING** Indicates a potentially dangerous situation which, if not prevented, could result in death or serious injury.



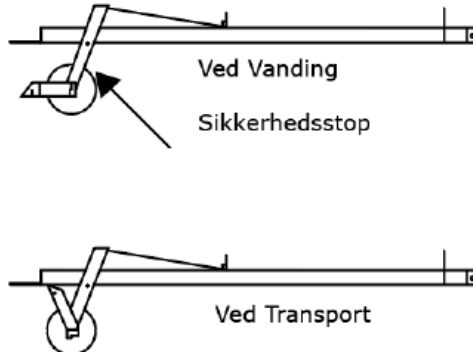
**LUBRICATION** Indicates lubrication is required as per the service description.



**SERVICE WARNING** Indicates a service hazard

## Starting your irrigator

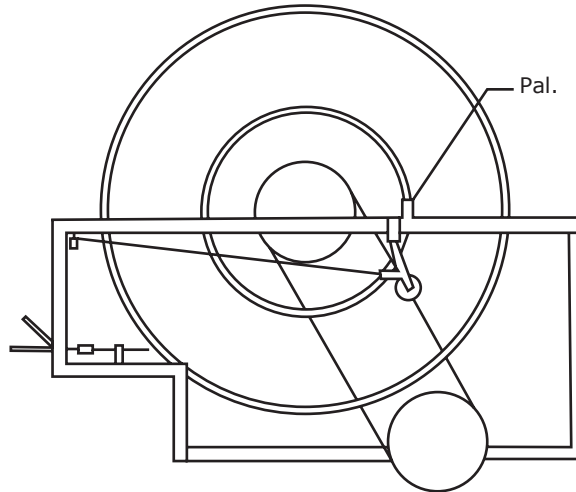
Move the machine to the field in the transport position. When the machine is at the crop to be irrigated, disconnect the tractor and position the front drawbar vertically.



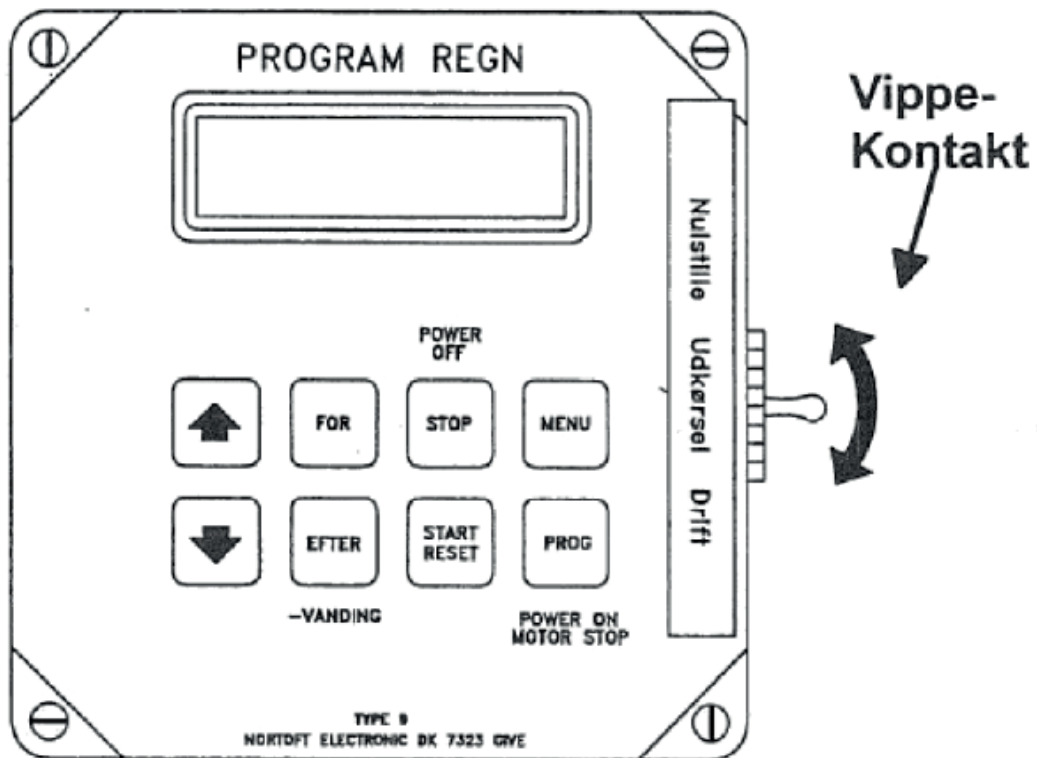
### REMEMBER!

**When starting the machine on falling ground, you must be VERY careful not to disconnect the tractor from the machine until the irrigator has been put into gear, otherwise it may run away.**

Connect the tractor to the rear drawbar. The machine then winds up in the crop and stops. **Disengage the pawl**



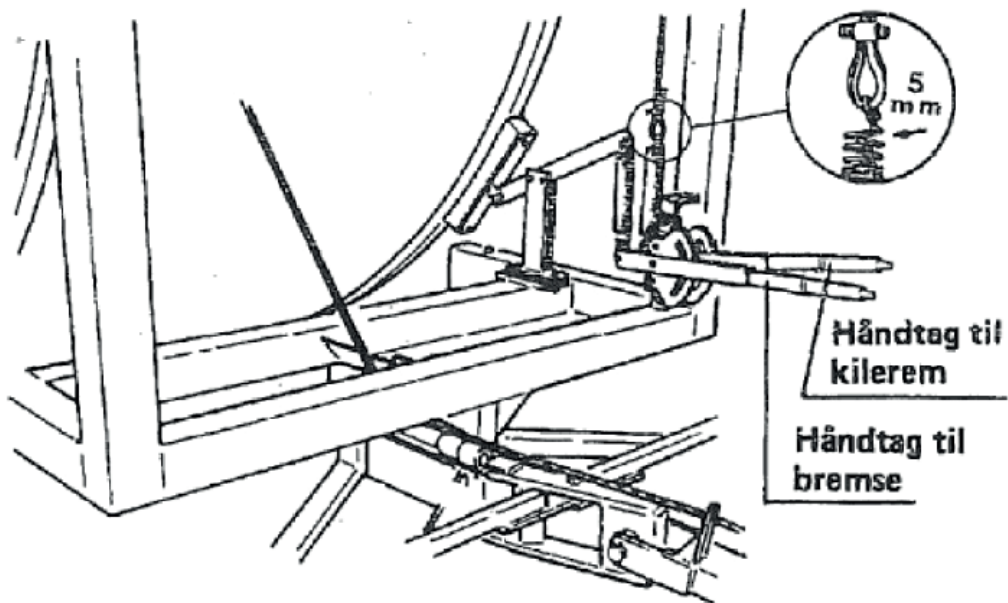
Tap the ground spikes into the fixed stop bar. Lower the drawbar over the hose, and release the safety stop so the hose reel runs on the hose. Unwind the machine with the brake applied sufficiently to keep the hose tight on the drum at ALL times.



When unwinding the machine, the toggle switch must be set to the centre position (unwind) so it cannot reset on the way out.

#### Preparing the machine for irrigation

ALWAYS remember that the toggle switch must be pressed down during operation, otherwise the machine will not move. Engage the pawl. Tighten the V-belt so there is at least 5 mm air in the spring. Release the brake lever completely. Also remember that the electric brake must be released.

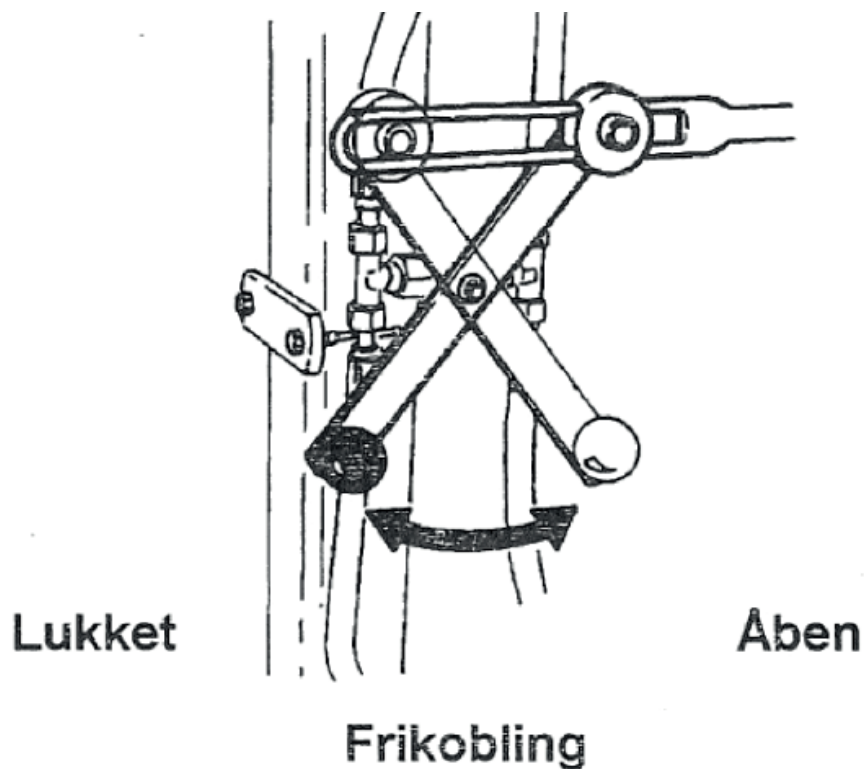


Put the machine in gear. Remember to select the right gear for the speed you want to drive at. Refer to table below or in the machine's electrical cabinet.

**Table of forward speeds for FM2500**

<b>1. Gear</b>	<b>5-12 metres per hour</b>
<b>2. Gear</b>	<b>8-18 metres per hour</b>
<b>3. Gear</b>	<b>15-33 metres per hour</b>
<b>4. Gear</b>	<b>22-48 metres per hour</b>
<b>5. Gear</b>	<b>33-73 metres per hour</b>
<b>6. Gear</b>	<b>70-130 metres per hour</b>

Remember that the decoupling valve must be closed. (Lever must be pulled out).



Attach the charge hose to the hydrant. Then open the hydrant, start the pump and irrigation can begin. Place the chock on the hose where you want to stop irrigation. When starting irrigation, see the section that refers to the operating instructions for Program Rain.

**Preparing the machine after irrigation**

After irrigation, tighten the brake and loosen the V-belt. Then open the bypass valve (lever must be pushed in) to get the gearbox out of gear. If there is tension in the rear axle assembly, use a lever to turn the input shaft to get it into neutral.

**ALWAYS REMEMBER THAT THE GEARBOX MUST BE IN NEUTRAL WHEN THE MACHINE IS NOT MOVING BY ITSELF.**

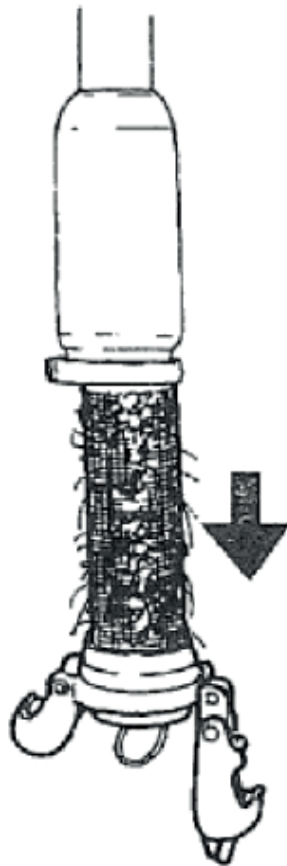
## Maintenance

Once a week in the irrigation season:

Check that no water is entering the oil on the rear axle assembly. Lubricate the steering, roller chain for hose guides, roller chain for forward traction, cross track shaft for hose guide with water-repellent grease.

Check tyre pressure (35 psi)

Clean the filter at the turbine outlet if required



Check that the hose is positioned neatly.

Remember to check the guide pins in the hose guides regularly.

Remember to tighten the wheel bolts regularly.

Note: The battery should be charged once a month during the season to maintain full power and extend its useful life.

## Preparation for winter

Drain water from the machine:

Unwind the hose completely, release the brake and tighten the V-belt, but do NOT put the machine in gear. Then drive the machine into the tractor.

REMEMBER before unwinding the hose:

Open the filter coupling. Open the valve in the base of the turbine. On machines with overpressure stops, press START on the computer to open the main valve and allow the water to flow out freely.



Remove the battery and do not install it until you use the machine again.

#### Lubrication and oil:

Lubricate front wheel hubs, front spindles, hose guides, bearings on hose guides and drums. Check for water in the oil in the rear axle assembly and hydraulic tank. Oil in the rear axle assembly should be changed every two years. Hydraulic oil and filter should also be replaced every two years.

#### Faults on the irrigator

Check the following before calling a technician:

##### 1. If the machine is irrigating, but not moving:

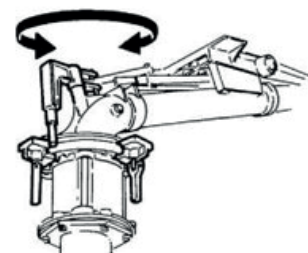
- a. Check that machine is in gear.
- b. Check if it is performing pre-irrigation or post-irrigation.  
(Can be seen on the display when the LED is on).
- c. Check if pressure drop valve is closed.
- d. Check that end stop sensor is in place.  
(Can be seen on the display when the LED is on)
- e. Check that toggle switch is in operation position.
- f. Check that decoupling valve is closed (for hydraulic motor).
- g. Check that filter on turbine is not blocked.
- h. Check that turbine can turn easily.
- i. Check that the brake is released.
- j. Check that the hose is wound up tightly. If it is loose, tighten it. This is done by manually rotating the drum.  
Remember that the pawl must be locked securely.

##### 2. If the machine does not wind up the hose properly, it may be that:

- a. The hose guide needs to be adjusted.  
To adjust the guide, remove the chain from the hose guide to the cross track shaft. Then turn the cross track shaft until the hose guide fits the hose again. Fit the chain again.
- b. The guide pin is worn and needs to be replaced.
- c. The V-belts are too slack or worn. To tighten the belt, move the hole plate at the end of the cable. If it cannot be moved any further, the cable needs to be shortened.

Nelson SR 150 is factory-adjusted to Danish conditions and ready to use after the following three steps:

1. Select and install the nozzle size that best suits your application. Performance data for the different sizes are shown in the table below.
2. Adjust the stop on the part circle to obtain the desired irrigation angle.
3. There is a grease nipples which should be checked once a week for refilling.



## ADJUSTMENT

The only thing you can adjust is the counterweight on the drive arm. By moving the counterweight forward, the gun will slowly irrigate from side to side. If you move the counterweight back, the gun will irrigate quickly. If it does not irrigate quickly enough, you can remove the brake springs (no. 778474) in pairs (contact the service department).

**WARNING: DO NOT ADJUST WHEN THE GUN IS IRRIGATING!!**

**DANGER.....: HIGH WATER PRESSURE – STAY CLEAR!!**

**TABLE FOR NELSON SR 150**

### Dysetabel for Nelson SR150 kanon, 21°- Plastdyser.

Tryk (Bar)	18mm		19mm		20mm		21mm		22mm		23mm		24mm	
	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)
3,5	20,2	32,5	22,7	33,5	25,4	34,5	28,0	36,0	30,9	36,5	34,1	37,5	37,5	38,8
4,0	21,6	33,5	24,3	34,5	27,1	35,7	29,9	36,5	33,0	37,8	36,4	38,8	40,1	40,0
4,5	22,9	34,5	25,7	35,7	28,7	36,5	31,7	37,8	35,0	39,2	38,6	40,5	42,5	41,4
5,0	24,2	35,2	27,1	36,5	30,3	37,8	33,4	39,2	36,9	40,5	40,7	41,4	44,8	42,7
5,5	25,3	36,5	28,5	37,8	31,7	38,7	35,1	40,0	38,7	41,4	42,6	42,7	47,0	44,0
6,0	26,5	37,4	29,8	38,7	33,1	40,0	36,6	41,4	40,4	42,7	44,5	44,0	49,0	45,3

Tryk (Bar)	25mm		26mm		27mm		28mm		29mm		30mm		31mm	
	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)
3,5	41,0	39,6	44,8	40,5	49,0	41,8	53,3	42,7	57,9	44,0	62,8	44,8	67,8	45,8
4,0	43,8	40,9	47,8	42,2	52,3	43,1	57,0	44,5	61,9	45,8	67,1	46,6	72,5	47,5
4,5	46,5	42,7	50,7	43,6	55,5	44,5	60,5	45,8	65,7	47,0	71,2	48,0	76,9	49,3
5,0	49,0	44,0	53,5	44,5	58,5	46,2	63,8	47,5	69,2	48,4	75,1	49,7	81,1	50,6
5,5	51,4	44,5	56,1	46,2	61,4	47,5	66,9	48,8	72,6	50,2	78,7	51,0	85,0	52,4
6,0	53,7	46,2	58,6	47,5	64,1	48,8	69,9	49,7	75,8	51,0	82,2	52,4	88,8	53,7

Tryk (Bar)	32mm		33mm		34mm	
	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)	m <sup>3</sup> /h	Rad.(m)
3,5	73,1	46,6	78,7	47,5	84,5	48,4
4,0	78,1	48,4	84,2	49,3	90,3	50,2
4,5	82,9	50,2	89,3	51,0	95,8	51,9
5,0	87,4	51,9	94,1	52,8	101,0	53,2
5,5	91,6	53,2	97,8	54,1	105,9	55,0
6,0	95,7	54,6	103,0	55,4	110,6	56,3



**Hose PEL 100mm:**

**Capacity up to 55m<sup>3</sup>, hose length from 200 to 500m**

**Hose PEL 110mm:**

**Capacity up to 75m<sup>3</sup>, hose length from 200 to 375m**

**Speed at 30m<sup>3</sup> and above: 15–130 metres per hour**

**Weight:**

**Without water with 500m Ø100mm hose: 3176 kg**

**With water with 500m Ø100mm hose: 5819 kg**

**Gun:**

**Nelson SR150**

**Computer:**

**Nørtoft Electronic, Program Rain 10-12**

**Tyres:**

**Front wheels (air pressure: 35psi) 900" x 16" x 6 ply 3rib**

**Rear wheels (air pressure: 35 psi) 10 x 28" x 8 ply**

**Oil and grease:**

**Oil in rear axle assembly: 33 litres Statoil 80/90 gear oil**

**Hydraulic oil: 10 litres Statoil Hydraway HVXA 46**

**Grease for lubrication: Statoil Moly Way EP2 or equivalent.**

**Track width: 165 cm (standard)**

**Options: 152cm, 172cm, 182cm, 192cm**

**Length: 5500 mm**

**Width: 2150 mm**

**Height: 3650 mm**

**Functions:**

Speed regulator  
 Pre- and Post-irrigation  
 4 different speeds on sections of the lane  
 Clock  
 Setting the start time  
 Stop time is shown on the display  
 Length of hose  
 Current speed  
 Battery volts  
 Charge regulator

Pressure sensor  
 Stop sensor  
 Speed sensor  
 Motor 1, regulating motor  
 Motor 2, stop motor  
 Slow start of turbine  
 Slow closing of inlet  
 Water volume + spreading width

**Accessories:**

GSM, SMS messages for remote control.  
 Analogue pressure sensor.

Short instructions for use



Place machine:

SPEED	30.0m/h
DOSE	22 mm
TIME	7:28 STOP 7:28
STATUS	STOP Sensor

Move machine to a new lane. Display shows start and stop time. Pull hose out to end of the lane. (e.g. 250 m)

Select Speed:

SPEED	30.0m/h
DOSE	22 mm
TIME	7:56 STOP17:16
STATUS	STOP Sensor

Display now shows stop after 9h 20m. Press the "+" or "-" key to set the speed. Speed can be adjusted during irrigation.

SPEED	25.0m/h
DOSE	26 mm
TIME	7:58 STOP17:58
STATUS	STOP Sensor

SPEED has decreased, DOSE has increased and STOP time is later.

Start Irrigate, Select PRE- and POST Irrigation.

SPEED	25.0m/h
DOSE	26 mm
TIME	7:58 STOP17:58
STATUS	STOP Sensor

Press START to start. Press **PRE** and **POST** for pre- and post-irrigation respectively. STOP time will be later when PRE and POST irrigation are selected.

Starting:

SPEED	25.0m/h
DOSE	26 mm
TIME	8:00 STOP18:38
STATUS	Running

The turbine will start when the water pressure increases. After a short period, the regulator finds the correct speed. Irrigation continues until STOP SENSOR is activated at the end of the lane.

-PRE Irrigation

SPEED	25.0m/h
DOSE	26 mm
TIME	8:02 STOP18:38
STATUS	PRE Irrigate

If pre-irrigation is selected, the turbine stops immediately after performing a start and pre-irrigation. When the pre-irrigation time has elapsed, the turbine starts and the machine changes status to Irrigating.

-POST Irrigation

SPEED	25.0m/h
DOSE	26 mm
TIME	18:20 STOP18:38
STATUS	POST Irri.

If post-irrigation is selected, the turbine stops at the end of the lane when the stop sensor is activated. Post-irrigation then starts.

Stop:

SPEED	25.0m/h
DOSE	26 mm
TIME	18:38 STOP18:38
STATUS	STOP Sensor

Stop sensor is activated, turbine and water are shut off. The machine is now ready to be moved to a new lane.

General instructions for use

MENU's

SPEED	30.0m/h
DOSE	22 mm
TIME 14:10 STOP 7:43	
STATUS Running	

ZONE	1	30.0m/h
DOSE		22 mm
TIME 14:10 STOP 7:43		
STATUS Running		

DISTANCE	123m
BATTERY	12.8V
CHARGE ON	0.231A
PRE. 0:45 POST 0:45	

PRESS SENSOR	■
STOP SENSOR	■
SPEED SENSOR	■ ■
MOT1 0.0A MOT2 1.8A	

ACTUAL SPEED	22m/h
START	0:00
STOP	7:45
WORKING HOURS	123h

0m	30.0m/h	0m
0m	30.0m/h	0m
0m	30.0m/h	0m
0m	30.0m/h	0m

SIGNAL	23
NETWORK HOME	
A: +45123456	
B: +45234567	

Standard display

Standard display, ZONE irrigation is selected.

Press the **MENU** key 1 time to display menu 2

Press the **MENU** key 2 times to display menu 3

Press the **MENU** key 3 times to display menu 4

Press the **MENU** key 4 times to display menu 5

Press the **MENU** key 5 times to display menu 6  
(Only if GSM is selected)

When ■ appears in the display, this indicates that the relevant function is ON.



Standard menu:

<b>SPEED</b>	<b>30.0m/h</b>
<b>DOSE</b>	<b>22 mm</b>
<b>TIME 14:10 STOP 7:43</b>	
<b>STATUS Running</b>	

Standard display

- SPEED** Speed. Can be changed at any time during irrigation using the "+" and "-" keys.
  
- ZONE** Current zone 1...4, with corresponding speed. The speed cannot be changed. (Zone active)
  
- DOSE** The dose is calculated from the speed and constants and shows the current number of mm for irrigation. As SPEED increases, DOSE decreases. (Constants 11 and 12)
  
- TIME** To set the time: Set SPEED to 11.1 m/h and press the **PROG** key 3 + 1 times until the display shows <CONST 1 TIME>. The time can then be set with the "+" and "-" keys. When the battery has been disconnected, the clock will show 0:00 until it is set again.
  
- STOP** The time that irrigation is completed, incl. pre- and post-irrigation. If the clock is not set and shows 0:00, the total irrigation time is displayed.
  
- STATUS** Irrigation status, e.g.:
  - < Stop sensor >
  - < Irrigating >
  - < Pre-irrigating >
  - < Post-irrigating >
  - < LOW pressure >
 See explanation in STATUS chapter.

If the display shows: **LOW BATTERY** instead of SPEED, the battery voltage is below 11.8 V and the battery needs to be charged.

MENU 2

<b>DISTANCE</b>	<b>123m</b>
<b>BATTERY</b>	<b>12.8V</b>
<b>CHARGE ON</b>	<b>0.231A</b>
<b>PRE. 0:45 POST 0:45</b>	

- DISTANCE Length of the unwound hose. The length can be changed immediately after pressing the **PROG** key 3 times, using the "+" and "-" keys.
  
- BATTERY Battery voltage.
  
- CHARGER ON Shows when the battery is being charged by a solar cell. The battery is charged when the voltage is below 14.0 volts.
  
- PRE Shows the pre-irrigation time.
  
- POST Shows the post-irrigation time.
  
- The pre- and post-irrigation times can be changed immediately after pressing the **PRE-** or **POST-** keys, using the "+" and "-" keys.

MENU 3

PRESS SENSOR		■
STOP SENSOR		■
SPEED SENSOR	■	■
MOT1 0.0A	MOT2	1.8A

PRESSURE SENSOR

Shows that the pressure is high when block is lit. **The machine can only move when the pressure is high.** If no pressure sensor is fitted (machine data 14 = 0), the machine will operate regardless of pressure status.

The machine can be fitted with analogue pressure sensors. Sensors must be connected according to the diagram. Pressure sensor functions, except for pressure display, are the same as for digital pressure sensors. There are constants for the pressure sensor type. Similarly, set point and hysteresis can be selected for each machine.

PRESSURE	6.2	■
STOP SENSOR		■
SPEED SENSOR	■	■
MOT1 0.0A	MOT2	0.0A

Shows pressure in [BAR] (00.0) or [PSI] (000). Pressure is high when ■ is lit.

**The machine can only move when the pressure is high.**

If no pressure sensor is fitted (machine data 14 = 0), the machine will operate regardless of pressure status.

PRESSURE	--.-	
STOP SENSOR		■
SPEED SENSOR	■	■
MOT1 0.0A	MOT2	0.0A

STOP SENSOR

Shows that the magnet is aligned with the stop sensor when block is lit.

**The machine can only start when the magnet is aligned with the stop sensor.**

The stop sensor has 3 functions:

1. Reset distance.
2. Post-irrigation.
3. Stop pulses to the regulator motor.

SPEED SENSOR

For the speed sensor test, block is only lit when the magnet passes the sensor.

MOT1, MOT2

Displays the current motor current. When the current exceeds 4.5 A, the motor stops.

**If the current exceeds 4.5 A and the valve is not in the outer position, there may be a blockage in the valve.**

MENU 4

<b>ACTUAL SPEED</b>	<b>22m/h</b>
<b>START</b>	<b>0 : 00</b>
<b>STOP</b>	<b>7 : 43</b>
<b>WORKING HOURS</b>	<b>123h</b>

**CURR. SPEED** Shows the current speed. That is, the speed at which the machine is moving now. This can be used to find how fast the machine can move. The current speed may differ slightly from the set speed, especially at the start. This does not matter, as regulation ensures that the average speed within 10 metres is correct.

**START** Start machine delay. The machine start time can be delayed by up to 24 hours. To set the start time, press the **PROG** key 3 times, then set the time using the "+" and "-" keys.

**STOP** The time that irrigation is completed with a delayed start.

**OPERATING HOURS** Shows how many hours the machine has been running since the electronics started for the first time.

MENU 5

<b>0m</b>	<b>30 . 0m/h</b>	<b>0m</b>
<b>0m</b>	<b>30 . 0m/h</b>	<b>0m</b>
<b>0m</b>	<b>30 . 0m/h</b>	<b>0m</b>
<b>0m</b>	<b>30 . 0m/h</b>	<b>0m</b>

This menu is for irrigation at different speeds in zones of the lane. Press the **PROG** key 3 times to program the zones. See later chapter for details.

## MENU 6

```

SIGNAL  23
NETWORK HOME
A: +45123456
B: +45234567

```

SIGNAL GSM signal strength.  
NETWORK GSM network.  
A: First number on "SMS" list.  
B: Second number on "SMS" list.

See GSM chapter for details.

**START:**

The turbine can only start if the magnet is aligned with the end stop sensor (or end stop sensors). See menu 3 for control of the STOP SENSOR. Press the **START** key to turn on the water. The regulator valve for bypass around the turbine then closes. (Turbine starts). If the end stop sensor is not in place, only the main valve can be opened, which then immediately closes again. Used to relieve pressure before removing charge hose from hydrant.

**DEFERRAL OF START TIME**

First press the **STOP** key to shut off the water supply. Then press the **MENU** key 3 times and **PROG** 3 times. The start time can be set using the "+" and "-" keys. Finally, select pre- and post-irrigation. To exit, press **MENU**. Info: The clock can only be set forwards.

**STOP:**

When the magnet is removed from the end stop sensor, the turbine stops and the main valve shuts off the water (turns on the water at negative pressure). If post-irrigation is selected, rewinding stops when the magnet is removed from the sensor. When the post-irrigation time has elapsed, the main valve closes. When the **STOP** key is pressed, the turbine stops immediately and the main valve shuts off the water, regardless of whether post-irrigation is selected.

**SUPERVISION:**

Program Rain has a built-in supervision system. The supervision system will be activated if for any reason the machine has water in the same location for longer than a specified time. This time is factory-set to 20 minutes. If the time is set to 0, there is no supervision. (See constants on page 17 for setting the supervision time.) If speed supervision less than 50 % of pre-selection is required, select speed supervision together with the above time.

**SPEED:**

The speed is set using the "+" and "-" keys. First count up in steps of 0.1 m/h. After 10 steps, count up in steps of 1 m/h. The speed can be changed at any time during irrigation. If the speed changes during irrigation, the dose and time for the remaining irrigation will be calculated immediately based on the new speed.

**PRE-IRRIGATION:**

If pre-irrigation is required, press the **PRE-** key. The pre-irrigation time is calculated as 8 x the time to move 1 m at the current speed. The constant can be changed individually for pre- and post-irrigation. (See constants). If pre-irrigation is selected, the machine will move forward approx. ½ m, after which the machine will stop and stand still for as long as pre-irrigation is performed. Menu 2 shows the number of minutes remaining of the pre-irrigation time. If you want to cancel pre-irrigation, press the **START** key. This will cancel both pre- and post-irrigation and the turbine will start.

**POST-IRRIGATION:**

If post-irrigation is required, press the **POST-** key. The post-irrigation time is calculated as 8 x the time to move 1 m at the current speed. The constant "8" can be changed individually for pre- and post-irrigation. (See constants on page 17). Post-irrigation starts counting down when the magnet is removed from the stop sensor. When the stop sensor is activated, the turbine stops and post-irrigation starts counting down (see menu 2). When the post-irrigation time has elapsed, the main valve closes. (Opens in installations with negative pressure stops). For machines with mechanical end stops: The turbine stops when the stop sensor is activated. When the post-irrigation time has elapsed, the turbine starts and the machine moves to the mechanical end stop. Press **START** to cancel post-irrigation. If constant "8" (early stop) is selected, the machine will stop when it reaches the selected distance.

**PROGRAMMING 4 DIFFERENT SPEEDS:**

The hose must be unwound before programming, so the computer knows the number of metres in the irrigation lane. The following example assumes that the unwound hose is 400 m. Press the **PROG** key 3 times and the display will show:

400m	30 . 0m/h	0m
0m	30 . 0m/h	0m
0m	30 . 0m/h	0m
0m	30 . 0m/h	0m

The desired speed can now be selected, in this case 25.0 m/h. Press the **PROG** key and the display will show:

400m	25 . 0m/h	0m
0m	30 . 0m/h	0m
0m	30 . 0m/h	0m
0m	30 . 0m/h	0m

The desired distance can now be selected, in this case 300 m. Press the **PROG** key and the display will show:

400m	25 . 0m/h	300m
300m	30 . 0m/h	0m
0m	30 . 0m/h	0m
0m	30 . 0m/h	0m

Now that the first zone is programmed, apply the same procedure to all 4 zones. Zone 4 automatically ends at 0. When zone 4 is programmed, press the **PROG** key again and the display will show:

<b>DELETE</b>	<b>PRESS</b>	<b>MENU</b>
<b>SAVE</b>	<b>PRESS</b>	<b>PROG</b>

If **PROG** is pressed, the program is stored and irrigation will be performed according to this program.

If **MENU** is pressed, the program is deleted and the speed is the same for the entire irrigation lane.

<b>STATUS</b>	Status line in display
<b>**IRRIGATING**</b>	The machine has not started, but speed signals are being received and it is attempting to maintain the selected speed.
<b>IRRIGATING:</b>	The machine is irrigating and functions as intended.
<b>LOW PRESSURE:</b>	Water pressure is low. Individual action according to constants and machine data.
<b>STARTING:</b>	User has pressed the <b>START</b> key and start sequence is being performed.
<b>START TELE:</b>	The machine is starting after receiving an <b>SMS</b> .
<b>START TIMER:</b>	The machine is waiting for start delay. (See Menu 4).
<b>START PRESS:</b>	The machine is performing a start after pressure rise. The machine uses the pressure level to start a second machine on the ground line.
<b>START REJECTED:</b>	User is pressing the <b>STOP</b> key to block <b>PRESSURE</b> and <b>SMS</b> start.
<b>STOP USER:</b>	User has pressed <b>STOP</b> and the machine has stopped.
<b>STOP TELE:</b>	The machine has received an <b>SMS</b> with <b>STOP</b> and has stopped.
<b>STOP SENSOR:</b>	The machine has reached the end and is stopped by <b>STOP SENSOR</b> .
<b>STOP DIST:</b>	The machine has reached the stopping distance. (See constant for early stop)
<b>STOP DELAY:</b>	The machine has reached the end, but waiting xx seconds to perform the stop sequence.
<b>STOP REJECTED:</b>	User is pressing the <b>START</b> key to block <b>SMS</b> stop.
<b>STOP MONITOR:</b>	Monitoring has stopped the machine. The machine has not moved for xx minutes. (See constant for monitoring).
<b>CREATE PRESSURE DROP:</b>	The machine is creating a pressure drop to stop the main pump. After 2 minutes, the valve closes to prevent draining the ground line.
<b>PRE-IRRIGATING:</b>	The machine is performing pre-irrigation.
<b>POST-IRRIGATING:</b>	The machine is performing post-irrigation.



**There are a variety of constants that can be modified by the user.**

These constants will be stored for many years, even if the battery is removed.

**Programming procedure:**

Adjust the speed to 11.1 m/h to access the constants.

Press the **PROG** key 3 times in quick succession to access and change the constants.

Press the **PROG** key again to count forward to the constant you wish to change.

Press "+" and "-" to adjust the value of the constant.

Press the **MENU** key to save the change and the display will return to normal.

If the **MENU** key is not pressed, the display will return to normal after 1 minute and the change will not be saved.

**CONSTANTS**

Cons no.	Note	Fact. Adj.	Min. Value	Max. Value	Description
0		100	-	-	Enter 111 to reach machine data
1		00:00	00:00	23:59	Time in line 2 is set
2		8	1	15	Pre irrigation
3		8	1	15	Pre irrigation
4		20	0	99	Supervision time [minutes]
5		1	1	15	1 English, 2 Danish, 3 German, 4 French, 5, Dutch 6 Swedish, 7 Spanish, 8 Italian, 9 Polish, 10 Japanese 11 Hungarian
6		0	0	2	0 = Stop for high pressure slow shutdown 1 = Stop for low pressure. valve opens and close again after 3 minutes 2 = Motor for stop disconnected
7		-	0	1000	Actual distance, can be set by the keyboard [m]
8		0	0	1000	Early stop [m] (* Is only performed when Post Irrigation is selected *)
9		0	0	1000	Post irrigation before stop [m]
10		0	0	1000	Distance for alarm [m] (* Disabled if Machine data 22. Sprinkler, is selected *)
11		40	5	120	Water flow [m3/h]
12		60	5	100	Spacing between irrigation lanes [m]

Set Constant no. 0 to 111 to set the machine data.

Then press **PROG** to display the machine data.

**MACHINE DATA**

Machine data number Flashing digit		Possible setting	Factory setting
0	Hose length	0 - 1,000m	Not used
1	Hose diameter	40 - 200 mm	110
2	Hose drum int. Diameter	500 - 3000 mm	Not used
3	Number of hose turns per layer	5.00 - 30.00	15
4	Large gear on hose drum	50 - 1000	Not used
5	Small gear on gearbox	5 - 40	Not used
6	Number of magnets	1 - 20	Not used
7	Ovality compared to 100 %	0.70 - 1.00	0.85
8	Length of first pulse to stop valve	0 - 45 sec.	3
9	Length of subsequent short pulses to stop valve	0 - 300 m/sec.	160
10	Time between short pulses to stop valve	1 - 5 sec.	2
11	Number of short pulses to stop valve	0 - 250	100
12	Mechanical stop (with only 1 motor) Electrical stop (closed low pressure) even if the pressostat registers low pressure	0 1	1
13	Length of pulse to regulator motor at start-up (Oil pump Motor 1)	26.1 - 0.9 sec.	4.5
14	Pressostat not connected Pressostat connected (to start/stop) or Radio start Pressostat installed: (can be used (for start only) for 2 machines on the same system, Autostart with special pressostat.)	0 1 2	1
15	Length machine moves per pulse: 0 = Moves according to formula FM4300 & FM4300H = 73.5 mm (2 magnets) FM4300 & FM4300H = 38.8 mm (4 magnets)  FM4400 & FM4400H = 46.2 mm (4 magnets) Old Rear axle assembly FM4400 & FM4400H = 46.0 mm (4 magnets) New Rear axle assembly  FM4500 & FM4500H = 85.0 mm (2 magnets) FM4500 & FM4500H = 42.5 mm (4 magnets)  FM4550 & FM4550H = 46.2 mm (4 magnets) Old Rear axle assembly FM4550 & FM4550H = 46.0 mm (4 magnets) New Rear axle assembly  FM4800H = 43.3 mm (4 magnets) Old Rear axle assembly FM4800H = 46.0 mm (4 magnets) New Rear axle assembly  FM4900H = 103.0 mm (2 magnets) FM4900H = 51.5 mm (4 magnets) FM4900H = 46.8 mm (4 magnets) New Rear axle assembly  FM5500H = 47.0 mm (4 magnets) FM5500H = 47.0 mm (4 magnets) New Rear axle assembly 62.5 = When moving with roller Ø80 [mm] 0 = Moves according to formula (with data number 0 to 7)	0 - 160.0 mm	
16	Speed sensor 0 = Round sensor for roller 1 = Double sensor	0 1	1
17	Opening of inlet valve 0 = Quick opening 1 = Slow opening	0 1	0
18	Pressostat 0 = Inlet remains open at low pressure 1 = inlet closes at low pressure	0 1	0
19	Delay from stop sensor to turbine stopping (sec)	0	0

**MACHINE DATA**

40		0	0	2	Analog Pressure gauge 0 = Digital switch 1 = Analog pressure gauge – Display units [BAR] 2 = Analog pressure gauge – Display units [PSI]
41		0.50	0,10	5.00	Voltage Offset [V]
42		0.20	0,05	5.00	Voltage gain [V]
43		3.5	0,0	25.0	Pressure setpoint 0.0 –25.0 [BAR] Pressure level for Off – On
44		0.2	0.2	25.0	Pressure hysteresis 0.2 – 25.0 [BAR] Setpoint - 0,5* hysteresis for Off Setpoint + 0,5* hysteresis for On Default settings 0.2 <ul style="list-style-type: none"> <li>• 3.4 BAR = Off</li> <li>• 3.6 BAR = On</li> </ul>

**Program Rain can be set to 2 different types of sensors.**

See machine data no. 16 Sensor

One is a round sensor with 4 built-in sensors and can only be used for rollers with 1 magnet. When the battery is connected, the display shows the following for 2 seconds: **VERSION n.n0**.

The other is a rectangular sensor with 2 built-in sensors (double sensor). This is used for scanning on rollers with more than 1 magnet and for discs with from 1 to 20 magnets. When the battery is connected, the display shows the following for 2 seconds: **VERSION n.n1**.

**Cable connection**

Double sensor.			Round sensor		
<b>Program Rain 10 18 Pol Connector</b>			<b>Program Rain 10</b>		
<b>Cable connection</b>	<b>Version n.n1</b>	<b>Double sensor</b>	<b>Cable connection</b>	<b>Version n.n0</b>	<b>Round sensor</b>
1 + Battery	Brown	12 V	1 + Battery	Brown	12 V
2 - Battery	Blue		2 - Battery	Blue	
3 + Solar Panel	Brown		3 + Solar Panel	Brown	
4 - Solar Panel	Blue		4 - Solar Panel	Blue	
5 Motor 1	Speed Regulation		5 Motor 1	Speed Regulation	
6 Motor 1	Speed regulation		6 Motor 1	Speed regulation	
7 Speed Sensor 1 *	Blue		7 Speed Sensor	Blue	
8 Speed Sensor 1 *	Black		8 Speed Sensor *	Black	
9 Speed Sensor 2 *	Yellow/green		9 Speed Sensor *	Yellow/green (Red)	
10 Speed Sensor 2 *	Brown		10 Speed Sensor	Brown	
11 Stop Sensor	Blue or Brown		11 Stop Sensor	Blue or Brown	
12 Stop Sensor	Blue or Brown		12 Stop Sensor	Blue or Brown	
13 Motor 2		Stop Motor	13 Motor 2		Stop Motor
14 Motor 2		Stop Motor	14 Motor 2		Stop Motor
15 Pressure	Blue or Brown		15 Pressure	Blue or Brown	
16 Pressure	Blue or Brown		16 Pressure	Blue or Brown	
17 - BIP			17 BIP -		
Motor 3	Brown	Sprinkler	Motor 3	Brown	Sprinkler
18 + BIP			18 BIP +		
Motor 3	Blue	Sprinkler	Motor 3	Blue	Sprinkler
* If the distance counter count the wrong way, the speed sensor should be turned.			* If the distance counter count the wrong way, the cable on terminal 8 and 9 must be interchange.		
<b>Program Rain 10 6 Pol Connector</b>					
19 + GSM	Brown	+12 V			
20 - GSM (-Pressure)	Blue (Green)				
21					
22					
23 + Pressure	Brown	+12 V			
24 Pressure Signal	White	0-5V			

Technical data

Dimension (h*w*d)	170*140*100 [mm]
Voltage	10-15V DC
Current	6 mA (Rest) 30 mA (with GSM) 80 mA (with light)
Fuse	5A motor max. current 5A Fixed

**Troubleshooting:**

?

The turbine does not start when the **START** key is pressed.

Answer:

The magnet at the stop sensor is not in position or the sensor or sensor cable is damaged.

Stop sensor: The mark ■ must be on when the magnet is in position and off when the magnet is removed. See Menu 3.

A damaged cable can be assembled in an epoxy moulded assembly or with shrinkable tubing and glue.

However, since the sensors are more sensitive than telephone cables in the ground, cable assembly must be seen as an emergency solution.

If a pressostat is installed, the water must be pressurized. The mark ■ must be on when there is pressure.

?

No numbers in the display.

Answer:

Battery disconnected. Fuse inside the box may have blown. The fuse will blow if the battery is wrongly connected.

An additional fuse is available from the factory on a single fuse terminal on the circuit board.

Fuse 5A. Battery voltage 12V. See Menu 2.

?

Clock is set to 00:00

Answer:

If the power is interrupted, the clock is reset. The end time is then the number of hours and minutes until irrigation is complete.

See page 15 for setting the clock.

?

The number of metres is not counted correctly and the speed is not correct.

Answer:

If the speed is measured with a roller running on the hose, check whether the roller is running smoothly or if it is not installed properly on the hose. You will also need to check that the roller sensor with cable is functioning properly. See Menu 3 Speed sensor.

The 2 marks ■ ■ must light up in the following order from the right during unwinding: The first one turns on, then the second one turns on, the first one turns off, then the second one turns off. During rewind, this happens in reverse order.

?

Only half or perhaps 2/3 of the actual length has been counted.

Answer:

The stop bracket with magnet for the stop sensor may have jumped, so the magnet has been removed temporarily from the stop sensor. This will reset the counter. Or a hose turn has been so loose that it has impacted the miswinding bracket.

This is usually the same as the impact on the stop bracket and has the same result.

Even if the metres are not saved in the memory, irrigation will still continue at the selected speed and the machine will stop as normal. However, there will be deviations if the speed is measured on a gear disc and the calculation is based on formulas entered in MACHINE DATA. This is because the electronics do not know which hose layer the machine is running on. Finally, the metres can be entered manually.

See page 21. CONSTANT no. 7

**Combining the various constants:**

The machine will always be able to run with the factory-set constants. However, there will be different conditions from farm to farm and from machine to machine. Many requests can be met by changing the constants.

**1. Slow start-up of turbine. Set machine data no. 13 initially to approx. 2-4.**

This causes the speed regulator valve to close only about halfway, after which continued closing is performed in steps until the rewind speed reaches the set speed. The valve can then be fine-tuned to close first to the point where the turbine starts running and then to close in steps until the set speed is achieved.

**2. Slow opening of inlet. Set machine data no. 17 to 1.**

Opening for the water is then performed in steps.

**3. Only one motor for speed regulation, set machine data no. 12 to 0.**

Post-irrigation starts once the turbine stops, when the magnet at the stop sensor is affected. After the post-irrigation time has elapsed, the machine will restart and move to the mechanical stop.

**4. Start up no. 2 machine when no. 1 stops. Set machine data no. 12 to 0.**

With a pressostat installed on both machines, set the pressostats between the machine's operating pressure and the pump pressostat's stop pressure. For example, the operating pressure may be 6 bar and the pump stop 9 bar. Set the pressostats on the machines to 7.5 bar. No. 2 machine will then start up when the slow closing of the first machine reaches the point where the pressure in the ground line reaches 7.5 bar. Be aware that if the height difference of the fields is too great, the required pressure differentials that the pressostat must be set to may be too great.

**5. The machine should stop due to low pressure and with a pressostat installed. Set constant no. 6 to 1 and set machine data no. 12 to 2.**

This means that the stop valve opens instead of closing if the line connection to the stop valve is the same.

After 2 minutes, close it again, otherwise you will not be able to obtain pressure at start-up. When machine data 12 is set to 2, the valve can only be opened with the stop sensor, stop button and monitoring. But not when the pressostat is switched off.



**GSM**

PR10-12 can use BG52T ,GSM Modem from Cinterion.



The machine can be started, stopped or queried about status by sending an SMS.

**Commands**

Start	Starts the machine.
Stop	Stops the machine.
Speed ###	Set the desired speed 3 to 400 m/h.
Status	Returns the current machine status.

SMS can be written in small, large or mixed characters.

If you call the modem from a GSM phone, you will receive an SMS with Status.

**Status**

<b>SPEED</b>	<b>30.0m/h</b>
<b>DOSE</b>	<b>22 mm</b>
<b>TIME 14:10</b>	<b>STOP 18:16</b>
<b>STATUS Irrigating</b>	
<b>DISTANCE</b>	<b>123m</b>
<b>BATTERY</b>	<b>12.8V</b>
<b>CHARGER ON</b>	<b>0.231A</b>

SMS sent from machine contains miscellaneous information.

SMS is sent at:

LOW PRESSURE:	The machine is stopped due to a lack of water pressure.
STOP SENSOR:	The machine has reached the end and is ready for a new lane.
STOP TELE:	The machine is stopped via an SMS.
STOP DIST:	The machine has reached the stopping distance. (Constant 8)
STOP MONITOR:	Monitoring has stopped the machine. The machine has not moved for xx minutes. (See constant for monitoring).

**How to start the system:**

Disconnect the battery from the electronics.

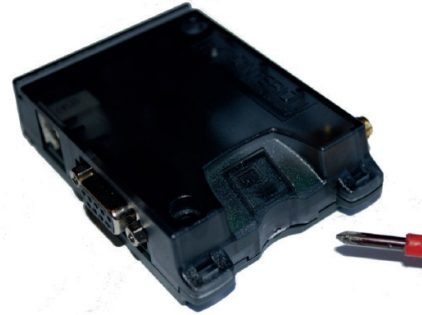
Insert the SIM card in a regular mobile phone and change the pin code to 1111.  
Try sending and receiving an SMS to see whether the SIM and account work as intended.

**Note that SIM card *MUST* support 2G.** Some operators do not support 2G.

Insert the SIM card in the modem device.

Press the card with a pen or similar to remove the card.

Insert the SIM card in the holder and press it back into the casing.



Connect the antenna, power and communication cables



Modem, antenna, communication cables. Power cables and installation kits can be purchased from Nortoft Electronics.

Connect the battery and set machine data #30

- = 0 No GSM
- = 1 Use GSM, all tele numbers can be used, no speed setting
- = 2 Use GSM, only the numbers created in the SMS list can be used.

<b>SPEED</b>	11 mm/h
<b>DOSE</b>	22 mm
<b>TIME 14:10</b>	<b>STOP 7:43</b>
<b>M.DATA 30</b>	1

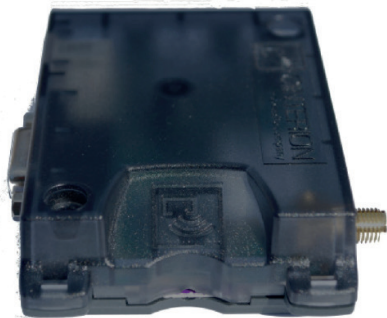
See chapter 11 for setting up data.

After approx. 30-45 seconds, the modem should be connected to the GSM network.

<b>SIGNAL 23</b>
<b>NETWORK HOME</b>
<b>A: +45123456</b>
<b>B: +45234567</b>

Signal strength, 0–31 and the network is then displayed in menu #6.  
 Signal strength of 10 or above is a stable connection.  
 Signal strength of 99 indicates no signal.  
 - Missing antenna  
 - Very poor signal

Modem has two LED to indicate status.



Green	LED
Ready	ON
YELLOW	LED
Sleeping	OFF
Searching the network	
- No SIM card in modem	Flashes quickly
- Incorrect PIN code	
- No GSM network available	
STANDBY	
(Registered on network)	Flashes slowly
Connection (TALKING)	On

When an SMS is received, the display shows:

<b>Receiver SMS</b>
<b>#: +45123456</b>
<b>Status</b>

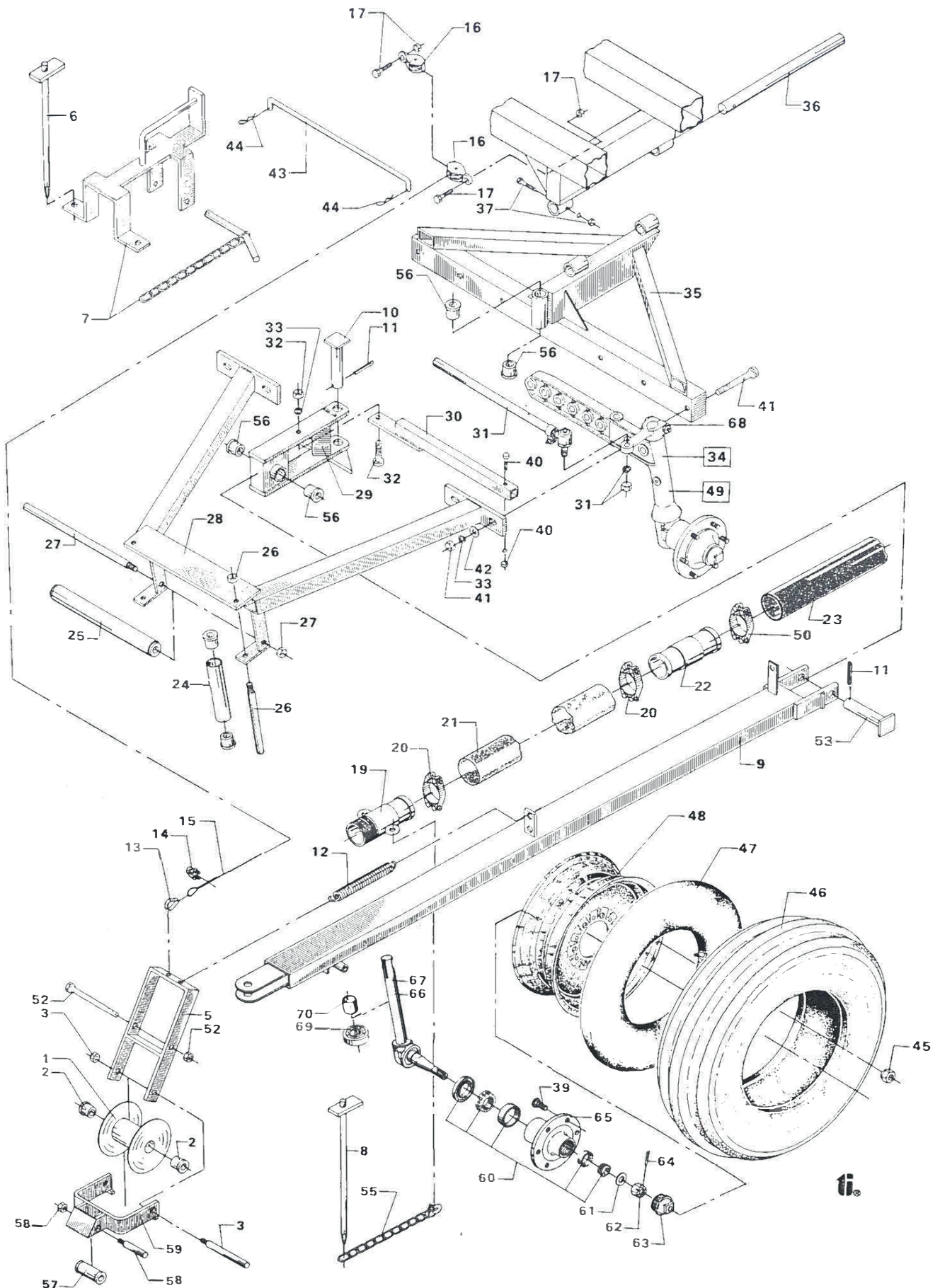
Receiving an SMS, sender's phone number and 40 characters of message. All SMS can be received, but only known commands are accepted.

When an SMS is sent, the display shows:

<b>Sender SMS</b>
<b>#: +45123456</b>
<b>Status Running</b>

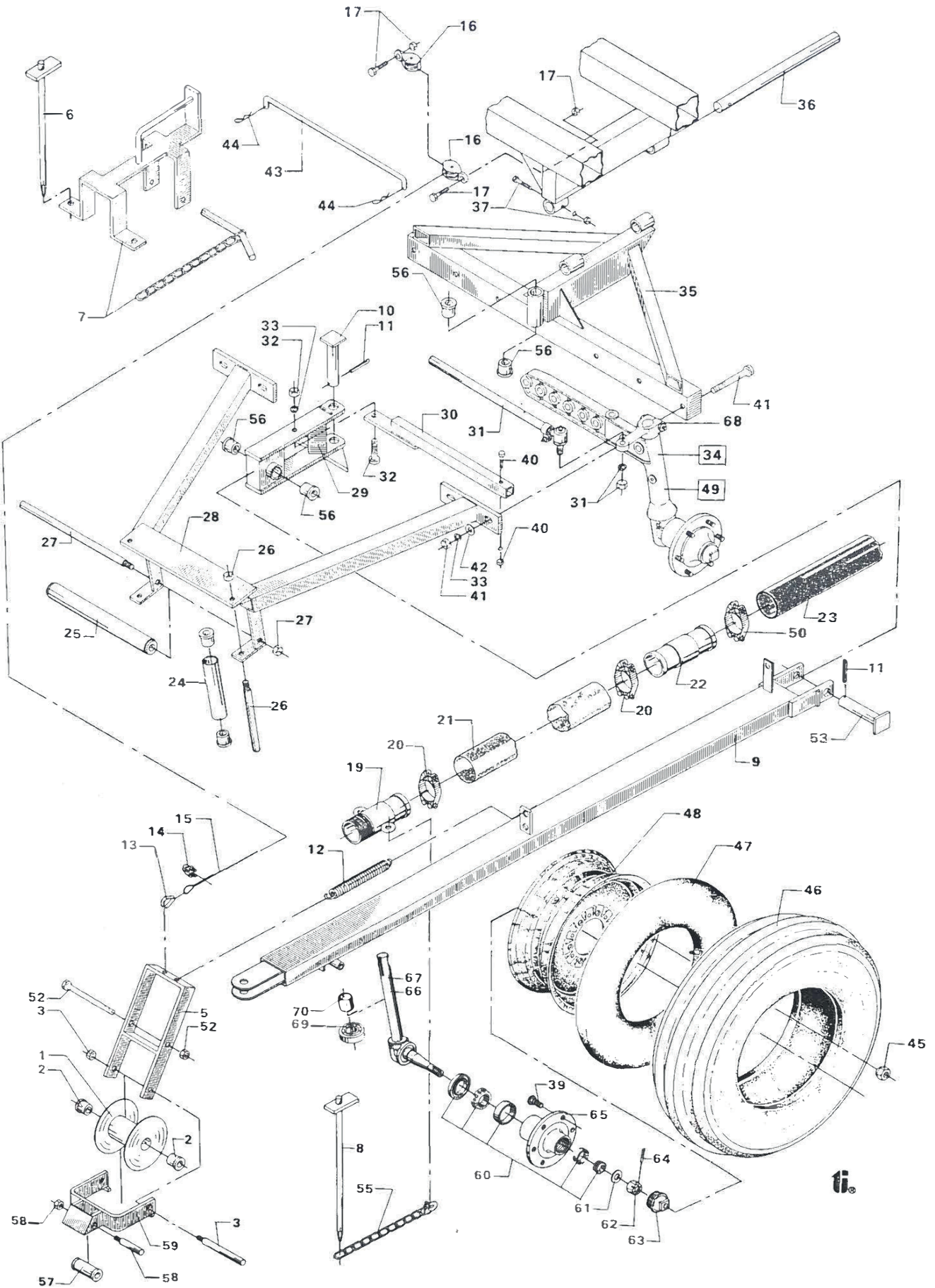
Sending an SMS, receiver's phone number and machine status.

For further information about GSM modems, please refer to the manufacturer's manuals.



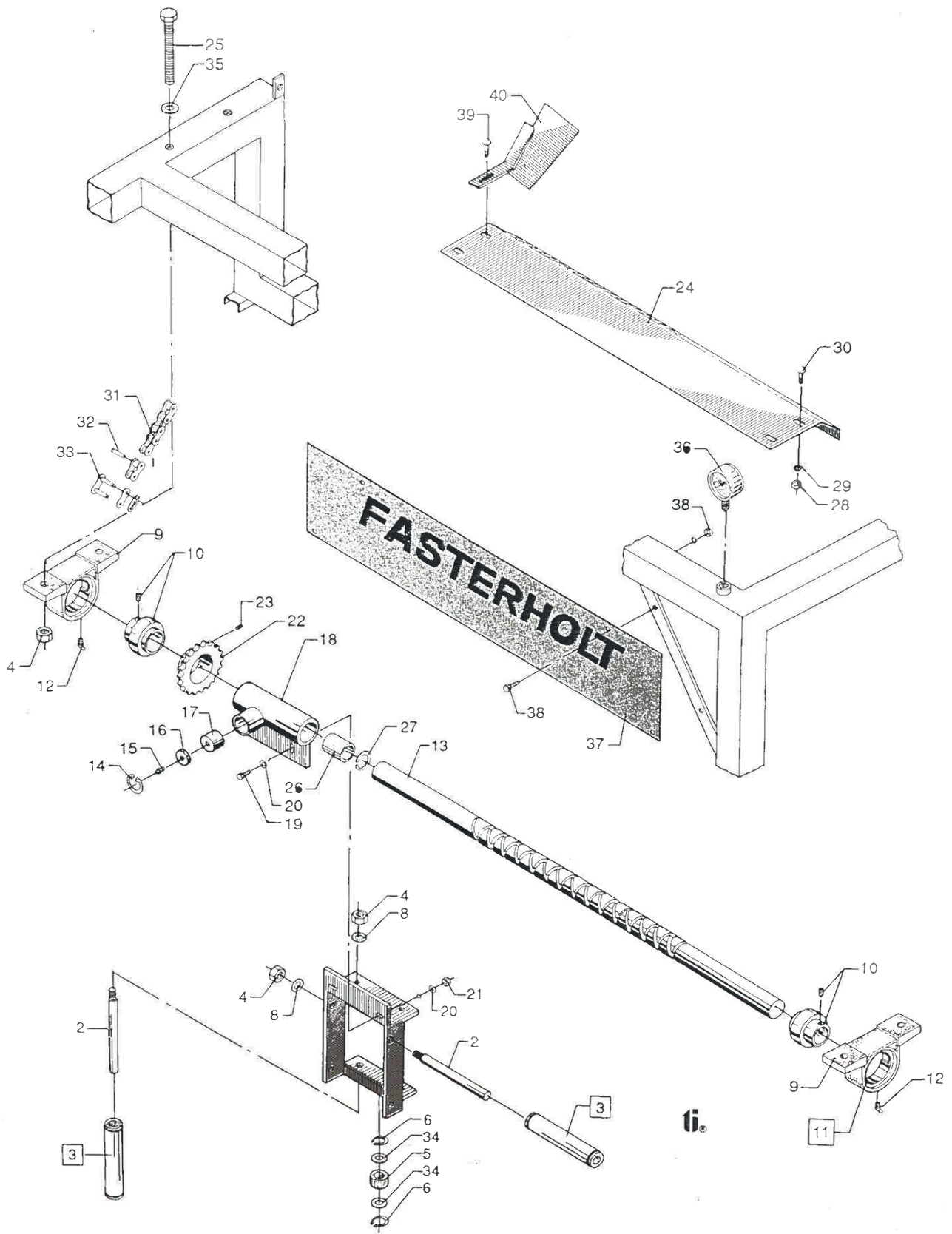
Pos. nr. Pos. No Pos. Nr.	Best.. nr. Part No Teil Nr.	Benævneise	Description	Bezeichnung	Bemærkninger Bemerkungen
1	1761000	Slangehjul	Hose Reel	Schlauchrolle	ø 110 Slange
1	761000	Slangehjul	Hose Reel	Schlauchrolle	ø 100 Slange
1	1761001	Afstandsør	Pipe	Rohr	ø 30/17 x 9,5 mm. Ø110
2	761001	Nylonleje	Coller Linings	Nylonbuchse	ø 21 mm.
3	1761269	Aksel	Axle	Achsel	Ø20 x 235 mm.
3	761269	Aksel	Axle	Achsel	Ø20 x 215 mm.
5	1761004	Bøjle	Clamp	Bügel	ø 110 Slange
5	761004	Bøjle	Clamp	Bügel	ø 100 Slange
6	761255	Jordspyd	Earth Rod	Erdbefestigung	
7	1761006	Stopklods	Stop Block	Anschlag	ø 110 Slange
7	761006	Stopklods	Stop Block	Anschlag	ø 100 Slange
8	1001255	Jordspyd	Earth Rod	Erdbefestigung	
9	761003	Trækstang	Drawbar	Zugstange	
10	761330	Splitbolt	Cotter Bolt	Splitbolzen	ø 22 x 165 mm.
11	761010	Split	Split	Split	ø5 x 30 mm.
12	761011	Fjeder	Spring	Feder	ø3,5 x 330 mm.
13	761012	Kouse	Thimbles	Fingerhut	1/4" galv.
14	761013	Wirelås	Wire Locks	Dratsperren	1/4" galv
15	1761014	Wire	Steel Wire	Stahldraht	1/4" x 6450 mm.
16	761015	Wirerulle	Wire Roller	Drahtrolle	
17		Bolt	Bolt	Schraube	M10 x 25 mm.
19	1001018	Rør	Tube	Rohrstück	3"
20	1001019	Spændebånd	Hose Clip	Schlauchspange	2A - 100 mm.
21	1001020	Slange	Hose	Schlauch	90 mm. x 1250 mm.
22	1001021	Rør	Tube	Rohrstück	ø 100 slange
22	1761021	Rør	Tube	Rohrstück	ø 110 slange
23		Slange	Hose	Schlauch	ø 100 slange
23		Slange	Hose	Schlauch	ø 100 slange
24	761023	Bærerulle	Supporting Roller	Trägerrolle	5/4" x 185 mm.
25	1761024	Bærerulle	Supporting Roller	Trägerrolle	ø 110 sl. 5/4" x 500 mm.
25	761024	Bærerulle	Supporting Roller	Trägerrolle	ø 100 sl. 5/4" x 400 mm.
26	761025	Aksel	Axle	Achsel	ø 20 x 240 mm.
27	1761026	Aksel	Axle	Achsel	ø 110 sl. ø 20 x 550 mm.
27	761026	Aksel	Axle	Achsel	ø 100 sl. ø 20 x 450 mm.
28	1761027	Slangestyrt	Hose Guide	Schlauchführung	ø 110 slange
28	761027	Slangestyrt	Hose Guide	Schlauchführung	ø 100 slange
29	761296	Beslag	Fittings	Beschlag	
30	761029	Styrearm	Track Rod	Spurstange	
31	761000	Styrekugle	Ball Joint	Kugelgelenk	
32		Bolt	Bolt	Schraube	M16 x 50 mm.
33		Fjederskive	Spring Collar	Federscheibe	ø16,0 mm
34	761036	Nav. Komplet	Hub. Complet	Nabe. Komplet	Venstre/Left/Links
35	761035	Forbro	Axle Centre	Mittelachsenbrücke	FM1500
35	2351065	Forbro	Axle Centre	Mittelachsenbrücke	FM2500
35	761165	Forbro Bred	Axle Centre	Mittelachsenbrücke	FM1500 (172/182/192 cm)
35	2351165	Forbro Bred	Axle Centre	Mittelachsenbrücke	FM2500 (172/182/192 cm)
36	761066	Aksel	Axle	Achse	ø 25 x 430 mm.
37		Bolt	Bolt	Schraube	M8 x 50 mm.
39	311120	Navbolt	Hub Bolt	Nabenbolzen	1/2" UNF
40		Bolt	Bolt	Schraube	M6 x 40 mm.
41		Bolt	Bolt	Schraube	M16 x 120 mm.
42		Spændskive	Tension Disk	Beilagsscheibe	Ø16,0 mm. Svær
43	761043	Holder	Holder	Halter	
44	761044	R-split	R-split	R-split	ø3,5 mm.
45	761045	Møtrik	Nut	Mutter	1/2" UNF
46	1001046	Dæk	Tyre	Reifen	650x16" x 6 lag FM1500
46	2351046	Dæk	Tyre	Reifen	900x16" x 6 lag FM2500
47	761047	Slange	Tube	Schlauch	650 x 16" FM1500





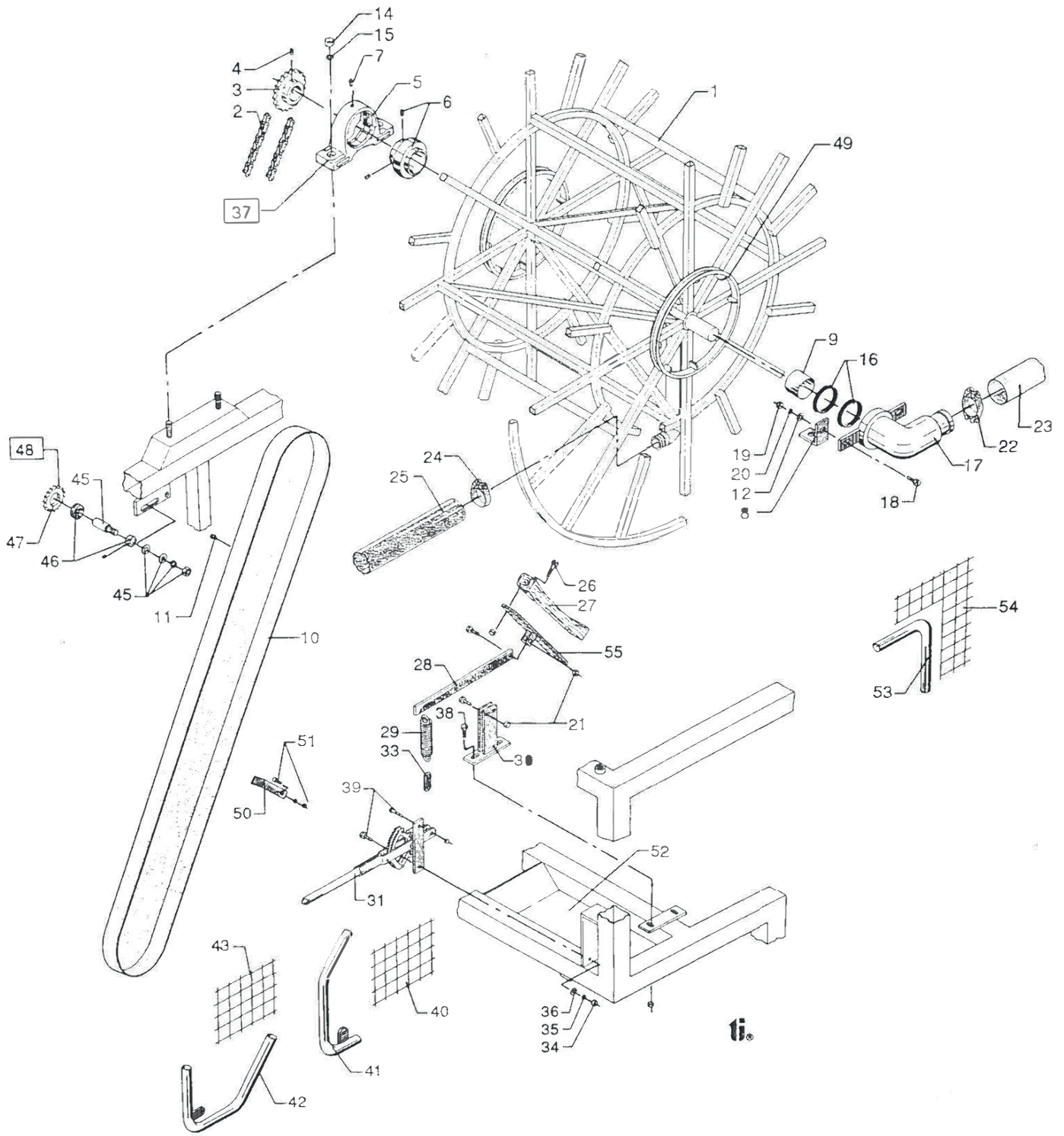
FM 1500 / 2500 fra maskin nr. 3600 / FM 1500 / 2500 from machine no. 3600 / FM 1500 / 2500  
von Maschine Nr. 3600

Pos. nr. Pos. No Pos. Nr.	Best.. nr. Part No Teil Nr.	Benævnelser Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
47	2351047	Slange	Tube	Schlauch	900 x 16" FM2500
48	761048	Fælg	Rim	Felge	550 x 16" FM1500
48	2351048	Fælg	Rim	Felge	800 x 16" FM2500
49	761034	Nav. Komplet	Hub. Complete	Nabe. Komplet	Højre/Right/Rechts
50	1001019	Svændeband	Hose Clip	Schlauchspange	
52		Bolt	Bolt	Schraube	M16x200 mm. Ø110mm
52		Bolt	Bolt	Schraube	M16x180 mm. Ø100mm
53	761268	Splitbolt	Cotter Bolt	Splintbolzen	Ø 22 x 135 mm.
55	761256	Kæde	Chain	Kette	Ø6,0 x 700 mm.
56	761271	Nylonleje	Coller Linings	Nylonbuchse	Ø 22 mm.
57	761272	Bærerulle	Supporting Roller	Trägerrolle	5/4" x 60 mm.
58	761273	Aksel	Axle	Achse	Ø20 x 115 mm.
59	1761305	Sikkerhedsstop	Safety Stop	Sicherheitanschlag	Ø 110 mm.
59	761305	Sikkerhedsstop	Safety Stop	Sicherheitanschlag	Ø 100 mm.
60	310020	Lejesæt	Bearing. Complet	Lager. komplett	
61	311126	Skive	Tension Disk	Beilagsscheibe	
62	311165	Møtrik	Nut	Mutter	
63	311121	Navkapsel	Hub Cap	Nabenkappe	
64	311166	Split	Split	Splint	
65	317188	Nav	Hub	Nabe	
66	318644	Spindel	Spindle	Spindel	Højre/Right/Rechts
67	318645	Spindel	Spindle	Spindel	Venstre/Left/Links
68	314090	Spindelarm Højre	Arm Spindle, Right	Spurstangenhebel, Rechts	FM 1500
68	314091	Spindelarm Venstre	Arm Spindle, Left	Spurstangenhebel, Links	FM 1500
68	354090	Spindelarm Højre	Arm Spindle, Right	Spurstangenhebel, Rechts	Svær model FM 2500
68	354091	Spindelarm Venstre	Arm Spindle, Left	Spurstangenhebel, Links	Svær model FM 2500
69	311110	Trykleje	Beaing Spindle	Drucklager	
70	311126	Bøsning	Bushing	Buchse	

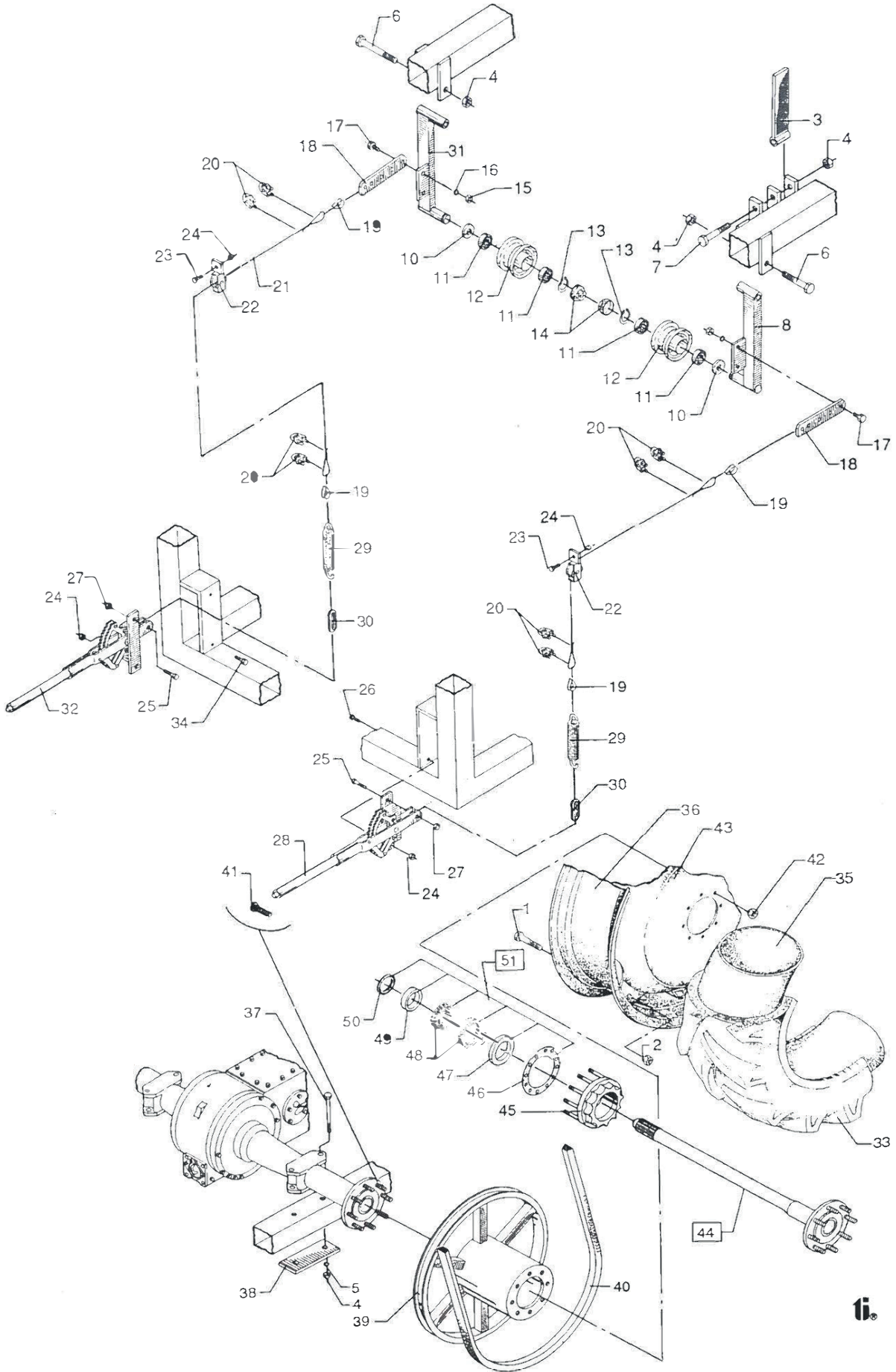




Pos. nr. Pos. No Pos. Nr.	Best.. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
2	761025	Aksel	Axle	Achsel	Ø20 x 240 mm.
3	761023	Bærerulle	Supporting Roller	Trägerrolle	5/4" x 185 mm.
4		Møtrik	Nut	Mutter	M16
5	761063	Nylonleje	Coller Linings	Nylonbuchse	
6	761065	Låsering	Snap Ring	Ring	Ø20 mm. Udv.
7	761322	Slangestyr	Hose Guide	Schlauchführung	
8		Fjederskive	Spring Coller	Federscheibe	Ø16 mm.
9	761287	Lejehus	Bearing Cap	Lagerdeckel	P 210 Ø 50 mm.
10	761288	Leje	Bearing	Lager	UC 210 Ø50 mm.
11	761289	Leje, komplet	Ball Braring, Complet	Kugellager, Komplet	UCP 210 Ø 50 mm.
12		Smørenippel	Grease Nippel	Schmiernippel	1/8" x 45°
13	1001323	Aksel	Axle	Achsel	Ø 50 x 1410 - FM 1500
	2351323	Aksel	Axle	Achsel	Ø 50 x 1440 - FM 2500
14	761285	Låsering	Snap Ring	Ring	Ø 40 imm. Indv.
15		Smørenippel	Grease Nippel	Schmiernippel	M6
16	761284	Skive	Tension Disk	Beilagsscheibe	
17	761283	Føringsaksel	Axel	Achsel	
18	761282	Føringsmuffe	Guide Sieeve	Führungsmuffe	
19		Bolt	Bolt	Schraube	M12 x 40 mm.
20		Skive	Tension Disk	Beilagsscheibe	Ø 12 mm.
21		Møtrik	Nut	Mutter	M12
22	1001290-1	Kædehjul	Sprocket Wheel	Treibkell	3/4" x 19 T. Ø 90 mm.
22	761290	Kædehjul	Sprocket Wheel	Treibkell	3/4" x 17 T. Ø 100 mm.
22	2351290	Kædehjul	Sprocket Wheel	Treibkell	3/4" x 15 T. Ø 110 mm.
23		Pinolskrue	Allen Screw	Innensechskantschraube	M10 x 12 mm.
24	1001078	Skærm	Shield	Schirm	FM 1500
24	2351078	Skærm	Shield	Schirm	FM 2500
25		Bolt	Bolt	Schraube	M16 x 130 mm.
26	761293	Nylonleje	Coller Linings	Nylonbuchse	
27	761329	Låsering	Snap Ring	Ring	
28		Møtrik	Nut	Mutter	M10
29		Skive	Tension Disk	Beilagsscheibe	Ø10 mm.
30		Bræddebolt	Carriage Bolt	Schwellenschraube	M10 x 25 mm.
31	1001325	Kæde	Roller Chain	Rollenkette	3/4" x 185 Led FM 1500
31	1761325	Kæde	Roller Chain	Rollenkette	3/4" x 203 Led FM 2500
32	761058	Samleled, fork.	Assembly Link	Sammelglied	3/4" x 7/16"
33	761056	Kædesamler	Assembly Link	Sammelglied Gerade	3/4" x 7/16"
34	761328	Skive	Tension Disk	Beilagsscheibe	
35		Skive	Tension Disk	Beilagsscheibe	Ø16 mm.
36	1001163	Manometer	Manometer	Manometer	
37	1007610	Navneplade	Lettering	Firmenzeichen	FM 1500
37	1007615	Navneplade	Lettering	Firmenzeichen	FM 2500
38		Bolt	Bolt	Schraube	M6 x 20 mm.
39		Bræddebolt	Carriage Bolt	Schwellenschraube	M10 x 25 mm. FM 1500
40	761324	Skærm	Shield	Schirm	FM 1500

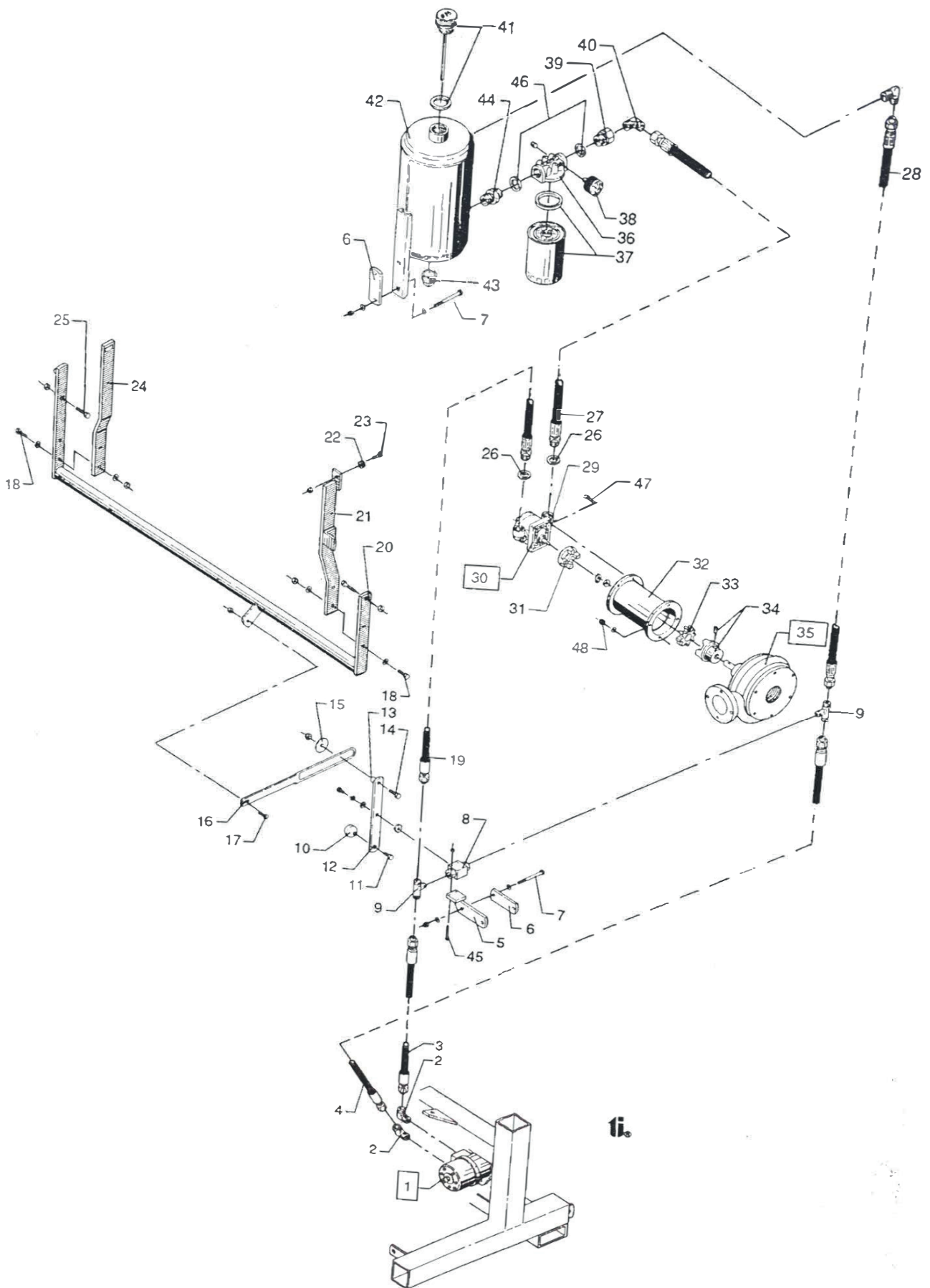


Pos. nr. Pos. No Pos. Nr.	Best., nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
1	1001081	Pariserhjul	Reel	Schauchtrommel	FM 1500
1	2351081	Pariserhjul	Reel	Schauchtrommel	FM 2500
2	1001325	Kæde	Roller Chain	Rollenkette	3/4" 185 ruller FM1500
2	1761325	Kæde	Roller Chain	Rollenkette	3/4" 203 ruller FM2500
3	1001291	Kædehjul	Sprocket Wheel	Kettenrad	3/4" x 33 T.
4		Pinolskrue	Allen Screw	Innensechskantschraube	M10 x 12
5	1001084	Lejehus	Bearing Housnig	Lagerhaus	■ 218
6	1001085	Kugleleje	Bearing	Lager	UC 218
7		Smørenippel	Grease Nipple	Schmiernippel	1/8" R
8	1001087	Beslag	Fittings	Beschlag	
9	1001270	Rustfri Rør bøsning	Tube	Rohrstück	Ø90 mm.
10	1001089	Skærm	Schield	Schrim	FM 1500
10	2351089	Skærm	Schield	Schrim	FM 2500
11		Bolt	Bolt	Schraube	M8 x 16 mm.
12		Fladskive	Tension Disk	Spannscheibe	Ø 12 mm.
14		Møtrik	Nut	Mutter	M 20 Stål
15		Fjederskive	Spring Coller	Federscheibe	Ø 20 mm.
16	1001095	Tætningsring	Nut Ring	Nutring	Ø90/110 x 10 mm. Blød
16	1102138	Tætningsring	Nut Ring	Nutring	Ø90/110 x 10 mm. Hård
17	1007097	Bøjning	Bend	Winkel	M/ 2 neddrejninger
18		Bolt	Bolt	Schraube	M12 x 35 mm
19		Møtrik	Nut	Mutter	M 12
20		Fjederskive	Spring Coller	Federscheibe	Ø 12 mm.
21		Låsemøtrik	Nut	Mutter	M 12
22	16200726	Spændebånd	Hous Clip	Schlauchspange	Ø 86/91
23	1005151	Slange	Hose	Schlauch	Ø 90 x 990 mm.
24	16200730	Spændebånd	Hous Clip	Schlauchspange	Ø 98 - 103 mm. Ø100 sl.
24	16200732	Spændebånd	Hous Clip	Schlauchspange	Ø 104 - 112 mm. Ø110 sl.
25		Slange	Hose	Schlauch	Ø 100 mm.
25		Slange	Hose	Schlauch	Ø 110 mm.
26		Bræddebolte	Carriage Bolt	Schwellenschraube	M6 x 35
27	1001304	Bremseklo	Brake Lining	Bremsbelag	
28	1001120	Bremsearm	Brake Shaft	Bremswelle	
29	761110	Fjeder	Spring	Feder	Ø6 x 175 mm.
30	1001297	Beslag	Fittings	Beschlag	
31	761112	Bremsehåndtag	Ratcet	Bremshebel	
33	761338	Kædeled	Chain Link	Kettenglied	Ø 6 mm.
34		Møtrik	Nut	Mutter	M 10
35		Fjederskive	Spring Coller	Federscheibe	Ø 10 mm.
36		Fladskive	Tension Disk	Spannscheibe	Ø 10 mm.
37	1001098	Leje, Komplet	Ball Bearing, Complete	Kugeliager, Komplett	UCP 218
38		Bolt	Bolt	Schraube	M12 x 40 mm
39		Bolt	Bolt	Schraube	M10 x 40 mm
40	2351316	Skærm	Shield	Schirm	FM 2500
41	2351317	Ramme	Frame	Rahmen	FM 2500
42	2351318	Ramme	Frame	Rahmen	FM 2500
43	2351378	Skærm	Shield	Schirm	FM 2500
45	761275	Aksel	Axle	Achse	Ø 20 x 85 mm.
46	761276	Kugleleje	Bearing	Lager	
47	2351277	Kædehjul	Sprocket Wheel	Kettenrad	
48	2351278	Kædehjul, Komplet	Sprocket Wheel, Complete	Kettenrad , komplett	
49	1001342	Remskive	V-Belt Pulley	Keilriemenscheibe	Ø710 mm. FM 1500
49	2351342	Remskive	V-Belt Pulley	Keilriemenscheibe	Ø620 mm. FM 2500
50	761331	Beslag	Fittings	Beschlag	FM 2500
51		Bolt	Bolt	Schraube	M10 x 25 mm. FM 2500
52	761306	Værktøjsplade	Sheet	Platte	
53	1001317	Ramme	Frame	Rahmen	FM 1500
53	1761317	Ramme	Frame	Rahmen	FM 2500
54	1001316	Skærm	Shield	Schirm	FM 1500
54	1761316	Skærm	Shield	Schirm	FM 2500
55	1001302	Bremsesko	Fittings	Beschlag	FM 2500

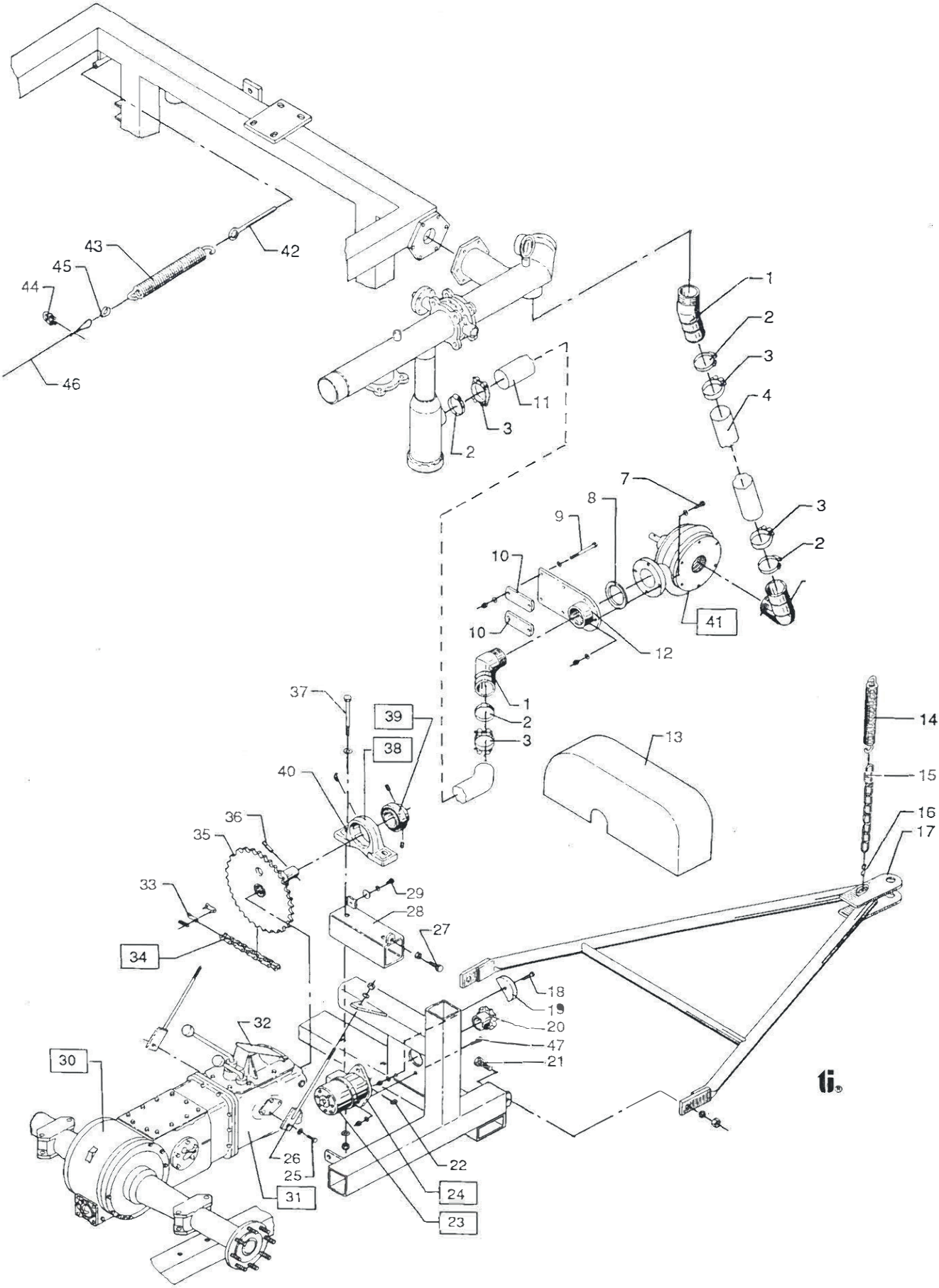


Pos. nr. Pos. No Pos. Nr.	Best. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
1	761383	Bolt	Bolt	Schraube	5/8" x 80 mm UNF
2	761384	Låsemøtrik	Look Nut	Mutter	5/8" UNF
3	761102	Beslag	Fittings	Beschlag	
4	761003	Møtrik	Nut	Mutter	M16
5		Fjederskive	Spring Coller	Federscheibe	Ø16 mm.
6		Bolt	Bolt	Schraube	M16 x 120 mm.
7		Bolt	Bolt	Schraube	M16 x 90 mm.
8	1001104	Strammerullearm	Fittings	Beschlag	
10	761249	Simmerring	Oil Seale	Abdichtring	
11	761105	Leje	Ball Bearing	Lager	6004
12	761106	Strammerulle	Tension Roller	Spannrolle	
13	761065	Låsering	Snap Ring	Ring	Ø 20 mm. Udv.
14	761107	Dæksel	Capsule	Kapsel	
15		Møtrik	Nut	Mutter	M12
16		Fjederskive	Spring Coller	Federscheibe	Ø12 mm.
17		Bolt	Bolt	Schraube	M12 x 25 mm.
18	761117	Beslag	Fittings	Beschlag	
19	761012	Kause	Thimbles	Fingerhut	1/4" Galv.
20	761013	Wirelås	Wire Lock	Drahtsperrn	1/4"
21	1001118	Wire	Steel Wire	Stahldrsht	1/4" x 250 cm. FM 1500
21	1761118	Wire	Steel Wire	Stahldrsht	1/4" x 290 cm. FM 2500
22	761015	Wirerulle	Wire Roller	Drahtrolle	
23		Bolt	Bolt	Schraube	M10 x 25 mm.
24		Møtrik	Nut	Mutter	M10
25		Bolt	Bolt	Schraube	M12 x 35 mm.
26		Bolt	Bolt	Schraube	M10 x 40 mm.
27		Låsemøtrik	Look Nut	Mutter	M 12 nyloc
28	761113	Koblingshåndtag	Coupling Lever	Kupplungsgriff	
29	761194	Fjeder	Spring	Feder	ø6,0 x 250 mm. FM150
29	761119	Fjeder	Spring	Feder	ø5,0 x 180 mm. FM250
30	761338	Kædeled	Chain Link	Kettenglied	6,0 mm.
31	2351104	Strammerullearm	Fittings	Beschlag	FM 2500
32	761112	Koblingshåndtag	Coupling Lever	Kupplungsgriff	FM 2500
33	761131	Dæk	Tyre	Reifen	11,2-10x28"-6 lag FM1500
33	2351131	Dæk	Tyre	Reifen	11,2-10x28"-8 lag FM2500
34		Bolt	Bolt	Schraube	M12 x 35 mm.
35	761130	Slange	Tube	Schlauch	10 x 28"
36	761129	Fælg	Rim	Felge	10 x 28"
37		Bolt	Bolt	Schraube	M16 x 220 mm.
38	761124	Plade	Sheet	Platte	
39	1001122	Remskive	V-Belt Pulley	Keilriemenscheibe	Ø 620 mm. FM1500
39	2351122	Remskive	V-Belt Pulley	Keilriemenscheibe	Ø 510 mm. FM2500
40	1001123	Kjorem	V-Belt	Keilriemen	E 210
41	311187	Navbolt	Hub Bolt	Nabenbolzen	9/16" UNF
42	761128	Møtrik	Nut	Mutter	9/16" UNF
43	761336	Fælgplade	Bowl	Felge	FM 1500
43	2351336	Fælgplade	Bowl	Felge	FM 2500 10,0 mm.
44	312623	Bagaksel	Axel	Achse	FM 1500
44	350507	Bagaksel	Axel	Achse	FM 2500
45	314115	Navhus	Housing	Nabenhaus	FM 1500
45	350518	Navhus	Housing	Nabenhaus	FM 2500
46	311076	Pakning	Gasket	Dichtuns	FM 1500
46	350508	Pakning	Gasket	Dichtuns	FM 2500
47	312171	Pakdåse	Oil Seal	Abdichtring	FM 1500
47	350514	Pakdåse	Oil Seal	Abdichtring	FM 2500
48	314023	Rulleleje	Bearing	Lager	FM 1500
48	350515	Rulleleje	Bearing	Lager	FM 2500
49	312172	Pakdåse	Oil Seal	Abdichtring	FM 1500
49	350513	Pakdåse	Oil Seal	Abdichtring	FM 2500
50	311174	Stopring	Stopring	Stopring	FM 2500
50	350516	Stopring	Stopring	Stopring	FM 1500
51	310018	Lejesæt kpl.	Bearing, Complete	Lager, Komplett	FM 2500
51	350060	Lejesæt kpl.	Bearing, Complete	Lager, Komplett	FM 1500
					FM 2500



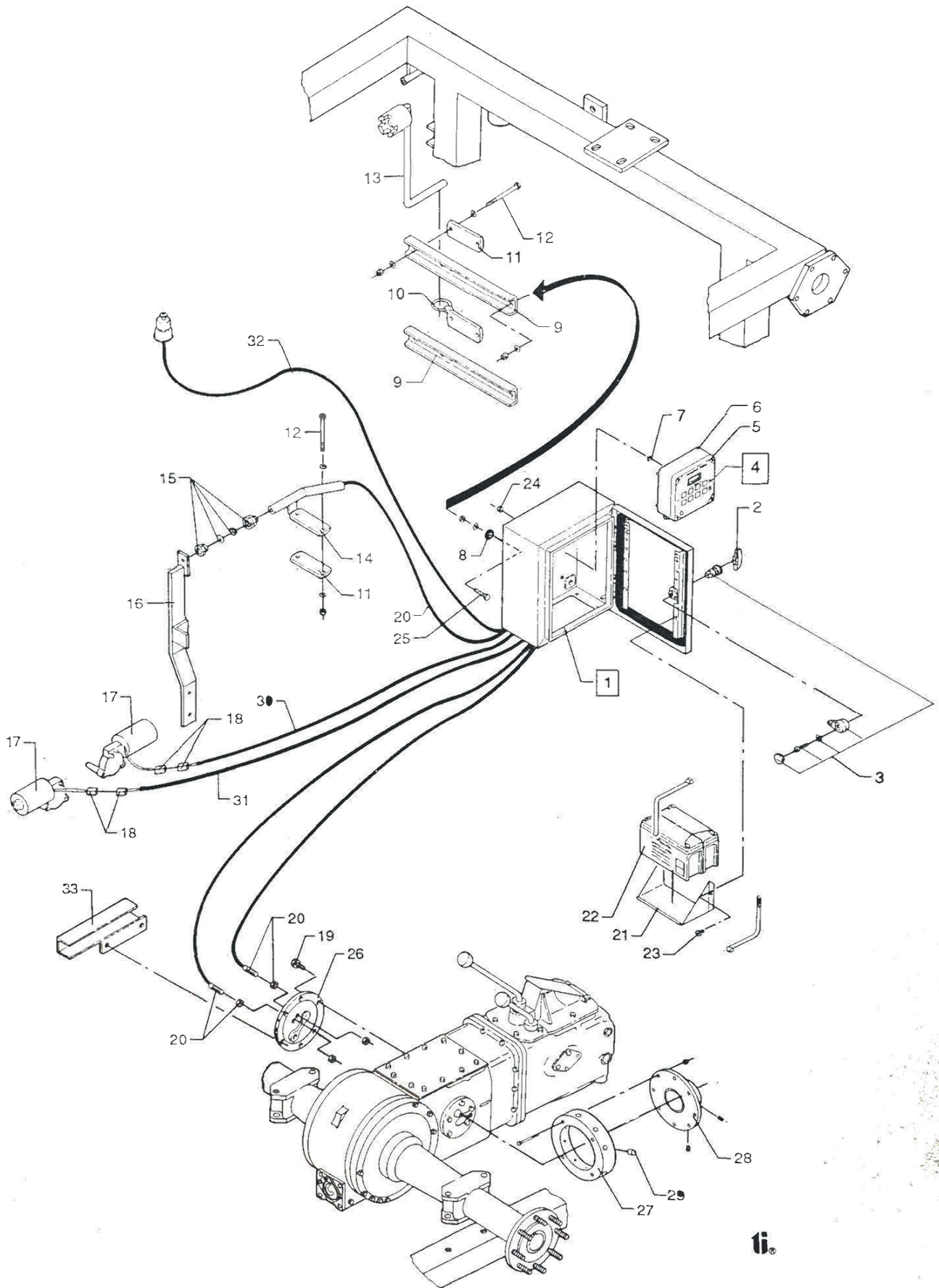


Pos. nr. Pos. No Pos. Nr.	Best. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
1	1007440	●liemotor	Oil-engine	Ölmotor	188 cm <sup>3</sup>
2	1007536	Vinkel	Angel	Winkelstück	1/2" x ø12 mm.
3	1007515	Slange	Hose	Schiauch	3/8" x 740 mm.
4	1007520	Slange	Hose	Schiauch	3/8" x 740 mm.
5	1007513	Beslag	Fittings	Beschlag	
6	1007495	Spændplade	Sheet	Platte	
7		Bolt	Bolt	Schraube	M10 x 110 mm.
8	1007510	Kuglehane	Valve	Ventil	3/8"
9	1007537	Tee	Tees	T-Stück	ø12 x 3/8" x ø12
10	1108104012	Kuglehåndtag	Lever	Handgriff	M12 x 40 mm.
11		Bolt	Bolt	Schraube	M12 x 30 mm.
12	1007512	Håndtag	Laver	Handgriff	
13	109101	Afstandsør	Pipe	Rohr	3/8" x 17 mm.
14		Bolt	Bolt	Schraube	M12 x 40 mm.
15		Skive	Washer	Scheibe	ø50/13 mm.
16	1007118	Stopstang	Stoplever	Stopnebel	FM 1500
	1007118-1	Stopstang	Stoplever	Stopnebel	FM 2500
17		Bolt	Bolt	Schraube	M10 x 25 mm.
18		Bolt	Bolt	Schraube	M8 x 30 mm.
19	1007530	Slange	Hose	Schiauch	3/8" x 660 mm.
20	1007115	Bøjle	Clamp	Bügel	
21	1005076	Arm	Shaft	Umlenknebel	
22	1005530	Magnet	Magnet	Magnet	ø20 x 10 mm.
23		Bolt	Bolt	Schraube	M4 x 30 mm.
24	1005078	Arm	Shaft	Umlenknebel	
25		Bolt	Bolt	Schraube	M8 x 30 mm.
26	801709	Skive	Washer	Skeibe	BS20 1/2"
27	1007525	Slange	Hose	Schiauch	1/2" x 650 mm.
28	1007535	Slange	Hose	Schiauch	3/8" x 1100 mm.
29	1007420	Vinkelflange	Angel	Winkelstück	1/2"
30	1007410	Pumpe, komplet	Oil-pump, Complete	Ölpumpe, Komplett	2,9 cm <sup>3</sup> FM 1500
	1007400	Pumpe, komplet	Oil-pump, Complete	Ölpumpe, Komplett	3,7 cm <sup>3</sup> FM 2500
31	1007450	Kobling	Coupling	Kupplung	
32	1007110	Pumpeflange	Pump-flange	Pumpeflange	
33	1007470	Gummiring	Rubberring	Gummiring	
34	1007460	Kobling	Coupling	Kupplung	
35	195000V	Turbine, komplet	Turbine, complete	Turbine, komplett	Venstre/Left/links 20/50
36	1007484	Filterhus	Filter	Filter	
37	1007482	Filter, løs	Filter	Filter	
38	1007486	Manometer	Manometer	Manometer	
39	1007539	Nippel	Nippel	Nippel	3/4" x 1/2"
40		Vinkel	Angel	Winkelstück	1/2" x ø15 mm.
41	1007500	Dæksel	Cap	Deckel	5/4"
42	1007490	Tank	●iltank	Öltank	
43	1007491	Bundprop	Plug	Kappe	3/4" UNF
44		Nippel	Nipple	Nippel	3/4" x 3/4"
45		Bolt	Bolt	Schraube	M5 x 45 mm.
46	1007541	Skive	Washer	Scheibe	3/4"
47		Bolt	Bolt	Schraube	M6 x 25 mm. indv. 6-ka
48		Låsemøtrik	Nut	Mutter	M6



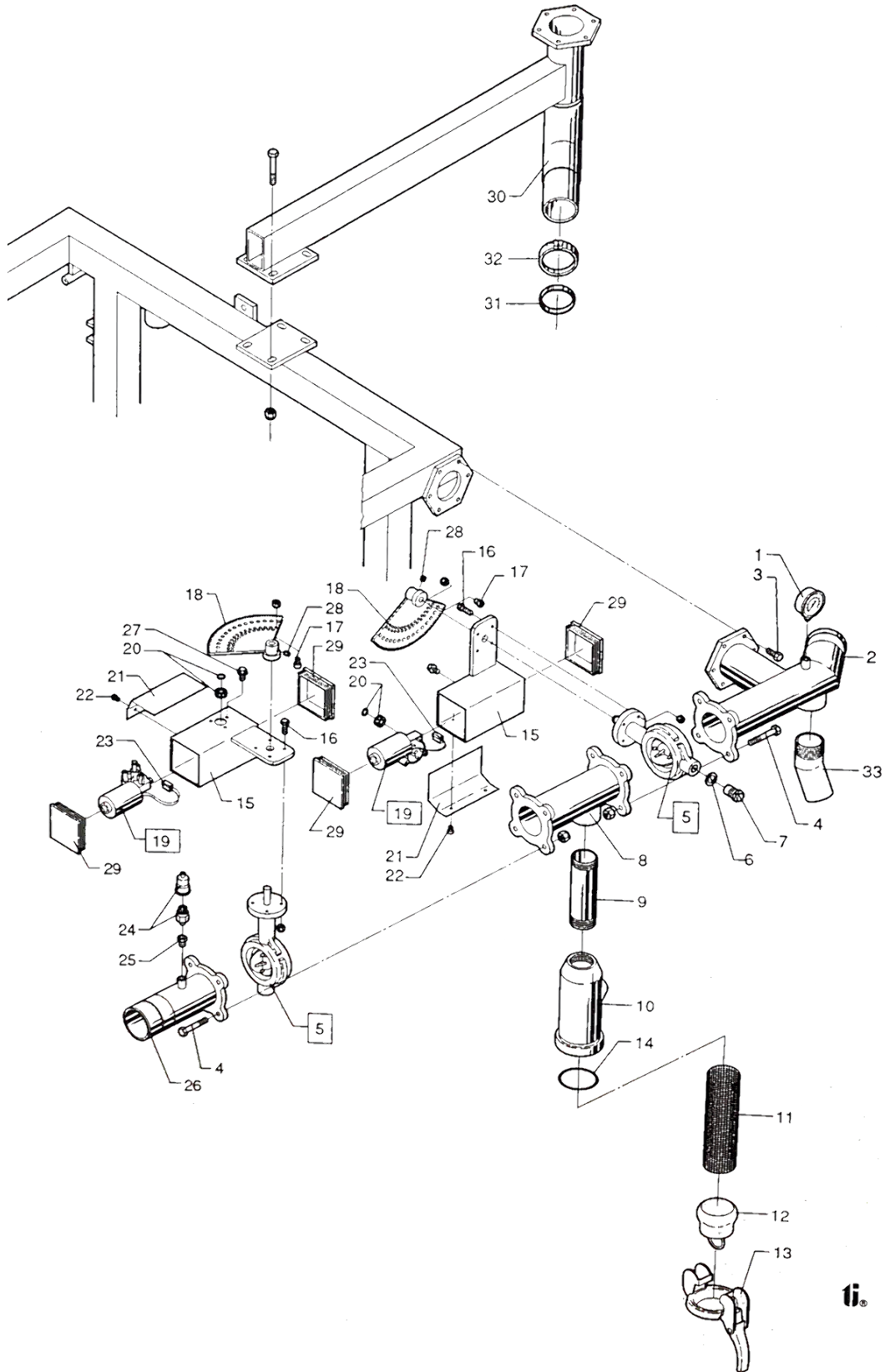


Pos. nr. Pos. No Pos. Nr.	Best. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
1	1007028	Vinkel	Angle	Winkelstück	2 x 45 °
2		Spændebånd	Clip	Schlauchschnalle	ø50 - 65 mm.
3	45011065	Spændebånd	Clip	Schlauchschnalle	ø64 - 67 mm.
4	1007919	Slange	Hose	Schlauch	2 1/2" x 320 mm.
7		Bolt	Bolt	Schraube	M8 x 35 mm.
8	522085	Pakning	Gasket	Dichtung	ø120/60 x 3,0 mm.
9		Bolt	Bolt	Schraube	M8 x 110 mm.
10	1007495	Spændplade	Sheet	Platte	
11	1007922	Slange	Hose	Schlauch	2 1/2" x 420 mm.
12	1007035	Beslag	Fittings	Beschlag	
13	1007600	Kædeskærm	Shield	Schirm	
14	761274	Fjeder	Spring	Feder	ø3,5 x 250 mm.
15		Kæde	Chain	Kette	ø4,0 x 42 led.
16	761389	S-hage	S-Chain	S-kette	ø6,0 mm.
17	761193	Træk	Drawbar	Zugstange	
18		Bolt	Boit	Schraube	M10 x 75 mm. Bræddebol
19	750955	Kædestrammer	Chain Tension	Kettentension	
20	1007120	Kædehjul	Sprocket Wheel	Kettenrad	12 T. udb. ø25,0 mm.
21		Bolt	Bolt	Schraube	M16 x 35 mm.
22	1007441	Pasfeder	Tongue	Passfeder	8 x 7 x 32 mm.
23	1007440	Oliemotor	Oilmotor	Ölmotor	188 cm <sup>3</sup>
24	1007442	Pakningssæt	Gasket Set	Packung, Komplet	
25		Bolt	Bolt	Schraube	7/16" x 1 1/4" UNC
26	761166	Beslag	Fittings	Beschlag	FM 1500
	2351166	Beslag	Fittings	Beschlag	FM 2500
27		Bolt	Bolt	Schraube	M12 x 30 mm.
28	1007017	Beslag	Fittings	Beschlag	FM 1500
	1007015	Beslag	Fittings	Beschlag	FM 2500
29		Beslag	Fittings	Beschlag	M6 x 12 mm.
30	310002	Bagtøj, Ombytning	Replacement, Rear Axle Assembly	Umtausch, Hinter Achse	FM 1500
	350002	Bagtøj, Ombytning	Replacement, Rear Axle Assembly	Umtausch, Hinter Achse	FM 2500
31	310001	Gear, Ombytning	Gear	Getriebe	FM 1500
	350503	Gear, Ombytning	Gear	Getriebe	FM 2500
32	2351380	Skærm	Shield	Schirm	FM 2500
33	761056	Kædesamler	Assembly Link	Sammelglied, Gerade	3/4" x 7/16"
34	1007125	Kæde	Roller Chain	Rollenkette	3/4" x 66 led.
35	1007105	Kædehjul	Sprocket Wheel	Kettenrad	45 T - 3/4" - FM 1500
	1007100	Kædehjul	Sprocket Wheel	Kettenrad	45 T - 3/4" - FM 2500
36		Split	Split	Splint	ø10 x 60 mm.
37		Bolt	Bolt	Schraube	M12 x 200 mm.FM 150
		Bolt	Bolt	Schraube	M12 x 180 mm.FM 250
38	1005650	Leje, komplet	Ball Bearing, complete	Kugellager, Komplet	1 1/4" m/sp.ring-FM150
	761289	Leje, komplet	Ball Bearing, complete	Kugellager, Komplet	ø50 mm. - FM2500
39	1005655	Leje	Bearing	Lager	1 1/4" m/sp.ring-FM150
	761288	Leje	Bearing	Lager	ø50 mm. - FM2500
40	1005653	Lejehus	Bearing Cap	Lagerdeckel	P 207 - FM 1500
	761287	Lejehus	Bearing Cap	Lagerdeckel	P 210 - FM 2500
41	195000V	Turbine	Turbine	Turbine	20/50
42	1007160	Øjebolt	Ringpin	Ringsplit	
43	761011	Fjeder	Spring	Feder	ø3,5 x 330 mm.
44	761013	Wirelås	Wire Locks	Drahtsperrern	1/4" Galv.
45	761012	Kause	Trimbles	Kausche	1/4" Galv.
46	1001014	Wire	Wire	Draht	1/4"xø300 mm. FM150
	1761014	Wire	Wire	Draht	1/4"xø450 mm. FM250
47		Bolt	Bolt	Schraube	M12 x 50 mm.



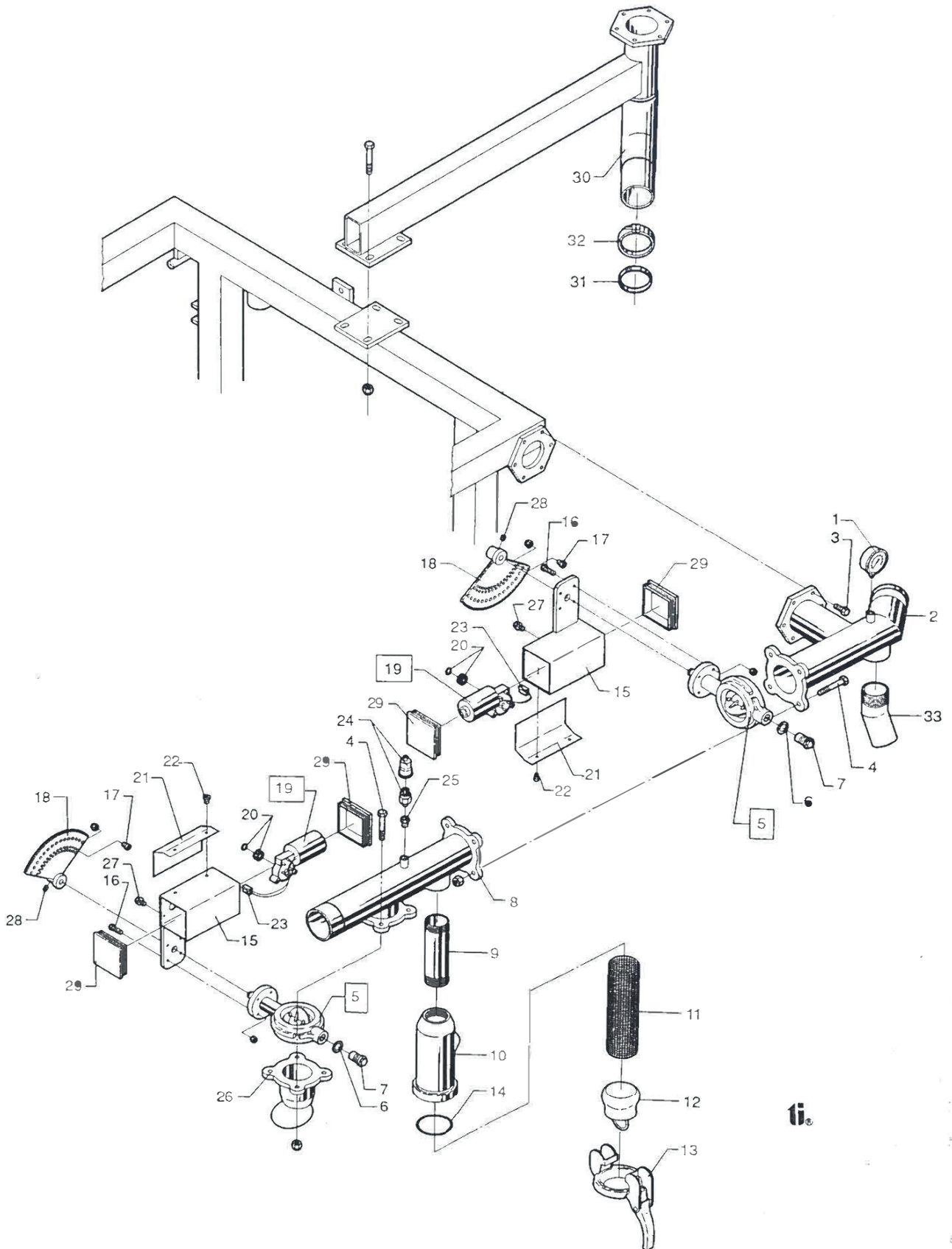
Pos. nr.	Best.. nr.	Benævnelse	Description	Bezeichnung	Bemærkninger
Pos. No	Part No				Remark
Pos. Nr.	Teil Nr.				Bemerkungen
1	1007580	Kasse	Box	Kasten	
2	1007582	Nøgle	Key	Schlüssel	
3	1007584	Lås	Handel	Hebel	
4	1007550	Konstantregn	Konstant Rain	Konstant Regen	
5	1007552	Konstantregn. omb.	Konstant Rain	Konstant Regen	
6	1007554	Sikring	Fuse	Sicherung	
7	1007558	O-Ring	O-Ring	Abdichtungsring	ø3,5 x 2,0 mm.
8	1007556	Gummiring	Rubberring	Gummiring	ø19 / 8,2 x 4,0 mm.
9	1007040	Beslag	Fittings	Beschlag	
10	1007045	Spændplade	Sheet	Platte	
11	1007495	Spændplade	Sheet	Platte	
12		Bolt	Bolt	Schraube	M8 x 110 mm.
13	1007055	Håndtag	Lever	Handgriff	
14	1007075	Spændplade	Sheet	Platte	
15	1005535	Kabelforskrning	Cabelscrew	Kabelschraube	P.G.9
16	1005076	Arm	Shaft	Umlenkhebel	
17	1007180	Moter	Engine	Motor	12 v
18	1007183	Skik	Pulg	Steck	
19		Bolt	Bolt	Schraube	7/16" x 3/4" FM1500
		Bolt	Bolt	Schraube	7/16" x 1" FM2500
20	1007560	Føler (Endestop)	Feeler	Fühler	3,6 m - M8 x 40
	1007561	Føler (Dobbel)	Feeler	Fühler	3,0 m fra maksin.nr.357
	1007572	Holder for føler	Fittings	Beschlag	fra maskin nr. 3570
21	1007590	Beslag	Fittings	Beschlag	
22	1005521	Batteri	Batterie	Batterie	12 volt/ 12 amp.
23		Nitte	Rivet	Niete	ø5,0 mm.
24		Bolt	Bolt	Schraube	M4 x 12 mm.
25		Bolt	Bolt	Schraube	M8 x 30 mm.
26	1007070	Dæksel	Cap	Deckel	
27	1007130	Magnetskive	Tension Disk	Beilagsscheibe	FM1500
	1007135	Magnetskive	Tension Disk	Beilagsscheibe	FM2500
28	1007140	Nav	Hub	Nabe	FM1500
	1007150	Nav	Hub	Nabe	FM2500
29	1007570	Magnet	Magnet	Magnet	Ø 10 x 10 mm.
30	1007562	Ledning	Cabel	Kabel	Rød / red / rot 3,5 m.
31	1007566	Ledning	Cabel	Kabel	Brun / brown / braun 3,5 m
32	1007564	Ledning	Cabel	Kabel	Hvid / white / weiss 3,6 m.
33	1007065	Skærm	Shield	Schirm	

Stop for overtryk  
Excess - pressure - stop  
Überdruckabschaltung



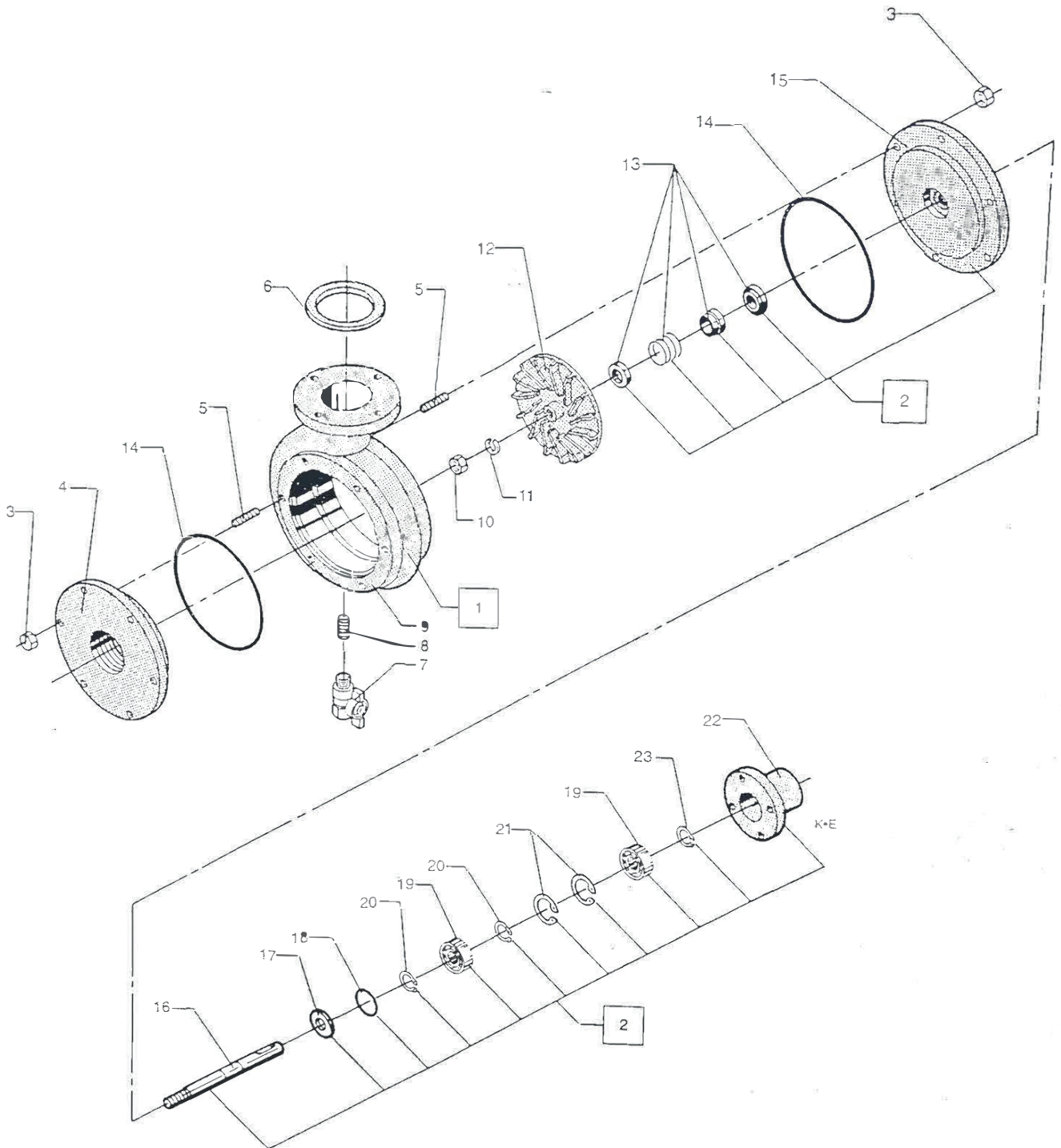
Pos. nr. Pos. No. Pos. Nr.	Best. nr. Part No. Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remarks Bemerkungen
1	1001163	Manometer	Manometer	Manometer	1/4" - 0-10 bar
2	1007020	Tilbageløbsrør	Pipe	Rohr	
3		Bolt	Bolt	Bolzen	M8 x 30
4		Bolt	Bolt	Bolzen	M10 x 80
5	1007250	Ventil	Valve	Ventil	3"
6	1007255	O-ring	O-ring	Abdichtungsring	
7	1007260	Dæksel	Cap	Deckel	
8	1007060	Teeudtag	Tees	T-Stück	
9	1007080	Rør	Pipe	Rohr	2" x 200
10	1007085	Filterhus	Filterhouse	Filterhaus	
11	1005750	Filter	Filter	Filter	
12	1007090	Lukkeprop	Plug	Kappe	HK-76
13	46013076	Greb	Lever	Kupplung	HK-76
14	46014076	O-ring	O-ring	Abdichtungsring	HK-76
15	1007170	Motorhus	Enginehousing	Motorhaus	
16		Bolt	Bolt	Bolzen	M8 x 30
17		Bolt	Bolt	Bolzen	M8 x 16
18	1007195	Tandhjul	Cogwheel - Big	Zahnrad - Groß	
19	1007180	Motor	Engine	Motor	
20	1007190	Tandhjul	Cogwheel - Small	Zahnrad - Klein	10 T.
21	1007185	Skærm	Shield	Schirm	
22		Bolt	Bolt	Bolzen	ø4,8 x 7,0
23	1007182	Stik	Plug	Steck	
24	1007545	Pressostat	Pressostat	Pressostat	
25		Nippel	Nipple	Nippel	1/4" x 1/8"
26	1007096	Rør	Pipe	Rohr	
27		Bolt	Bolt	Bolzen	M6 x 16
28		Unbracoskrue	Allen Screw	Innensechskantschraube	M6 x 6
29	1007175	Lukkeprop	Plug	Kappe	
30	1001307	Kanonbeslag	Fittings	Beschlag	
31	11507795	Spændebånd	Hose Clip	Schlauchschelle	ø77 - 95
32	45011090	Spændebånd	Hose Clip	Schlauchschelle	ø86 - 91
33	1007028	Vinkel	Angle	Winkelstück	2" x 45 G.

Stop for lavtryk  
Low - pressure - stop  
Unterdruckstop



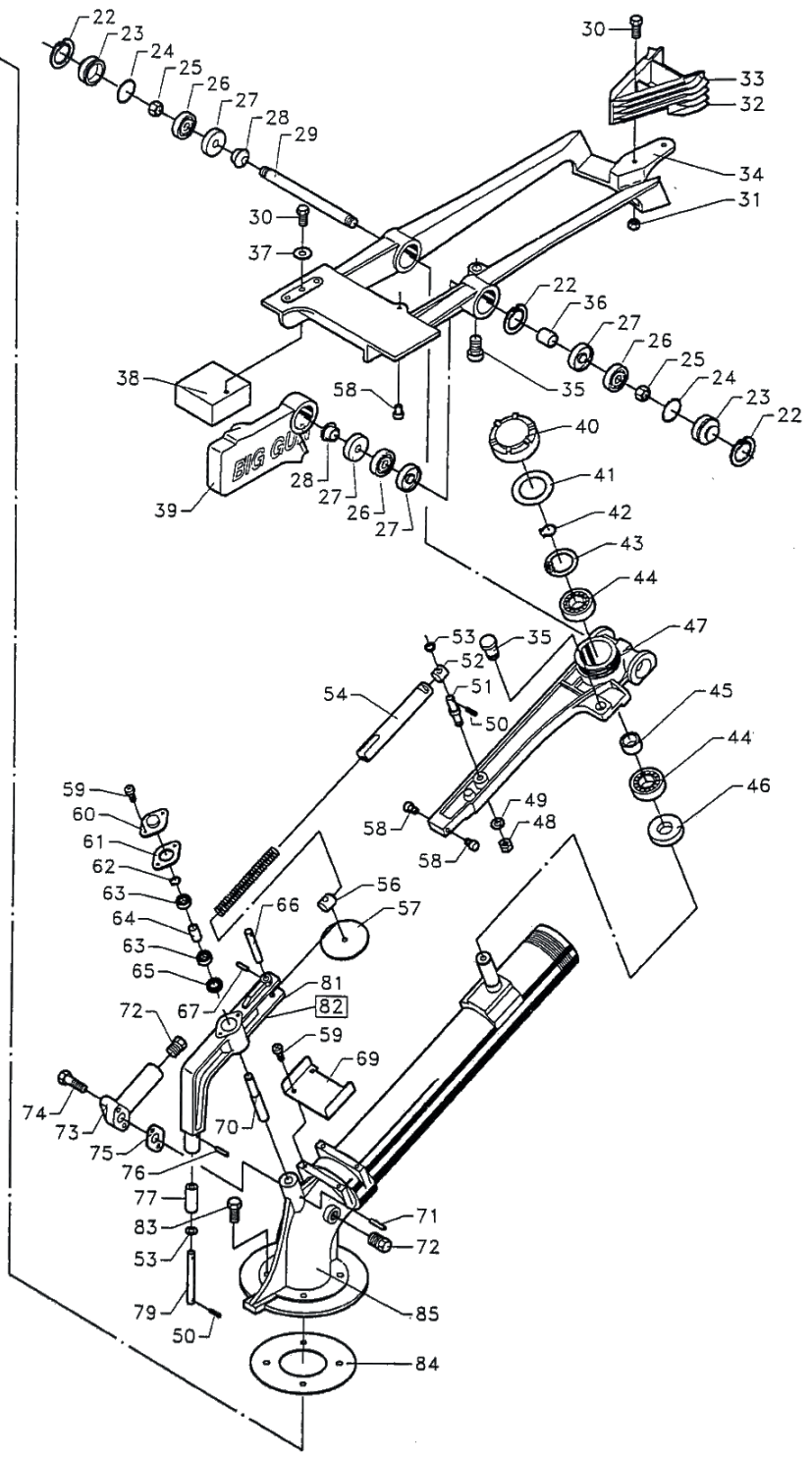
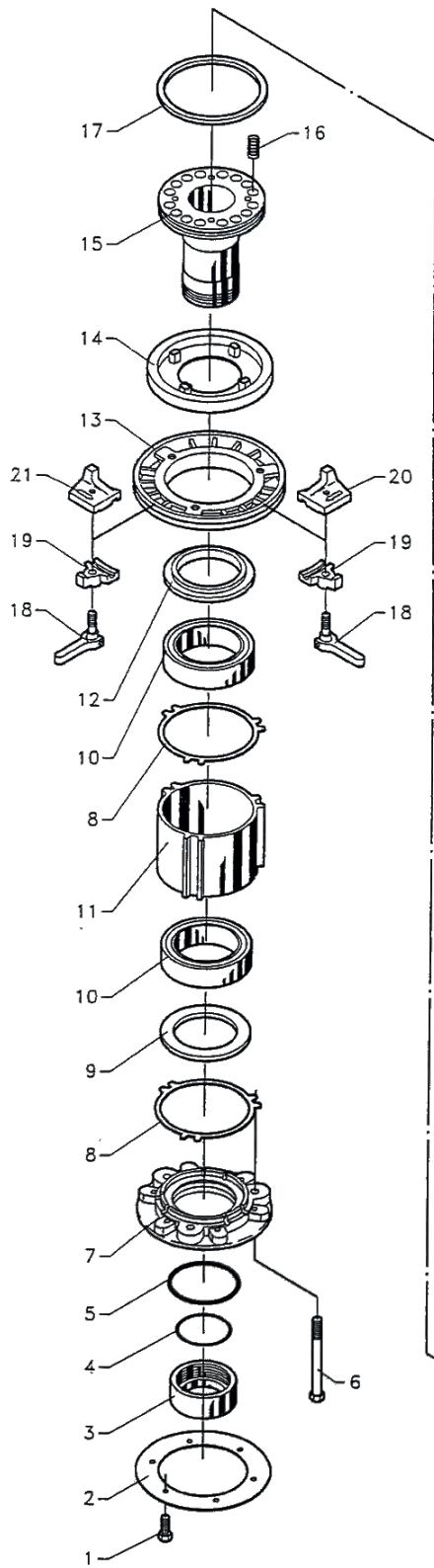


Pos. nr. Pos. No. Pos. Nr.	Best. nr. Part No. Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remarks Bemerkungen
1	1001163	Manometer	Manometer	Manometer	1/4" - 0-10 bar
2	1007020	Tilbageløbsrør	Pipe	Rohr	
3		Bolt	Bolt	Bolzen	M8 x 30
4		Bolt	Bolt	Bolzen	M10 x 80
5	1007250	Ventil	Valve	Ventil	3"
6	1007255	O-ring	O-ring	Abdichtungsring	
7	1007260	Dæksel	Cap	Deckel	
8	1007025	Teeudtag	Tees	T-Stück	
9	1007080	Rør	Pipe	Rohr	2" x 200
10	1007085	Filterhus	Filterhouse	Filterhaus	
11	1005750	Filter	Filter	Filter	
12	1007090	Lukkeprop	Plug	Kappe	HK-76
13	46013076	Greb	Lever	Kupplung	HK-76
14	46014076	O-ring	O-ring	Abdichtungsring	HK-76
15	1007170	Motorhus	Enginehousing	Motorhaus	
16		Bolt	Bolt	Bolzen	M8 x 30
17		Bolt	Bolt	Bolzen	M8 x 16
18	1007195	Tandhjul	Cogwheel - Big	Zahnrad - Groß	
19	1007180	Motor	Engine	Motor	
20	1007190	Tandhjul	Cogwheel - Small	Zahnrad - Klein	10 T.
21	1007185	Skærm	Shield	Schirm	
22		Bolt	Bolt	Bolzen	
23	1007182	Stik	Plug	Steck	ø4,8 x 7,0
24	1007545	Pressostat	Pressostat	Pressostat	
25		Nippel	Nipple	Nippel	1/2" x 1/8"
26	1007030	Flange	Flange	Flange	
27		Bolt	Bolt	Bolzen	M6 x 16
28		Unbracoskrue	Allen Screw	Innensechskantschraube	M6 x 6
29	1007175	Lukkeprop	Plug	Kappe	
30	1001307	Kanonbeslag	Gun-Fittings	Beschlag für Regen	
31	11507795	Spændebånd	Hose Clip	Schlauchselle	ø77 - 95
32	45011090	Spændebånd	Hose Clip	Schlauchselle	ø86 - 91
33	1007028	Vinkel	Angle	Winkelstück	2" x 45 G.

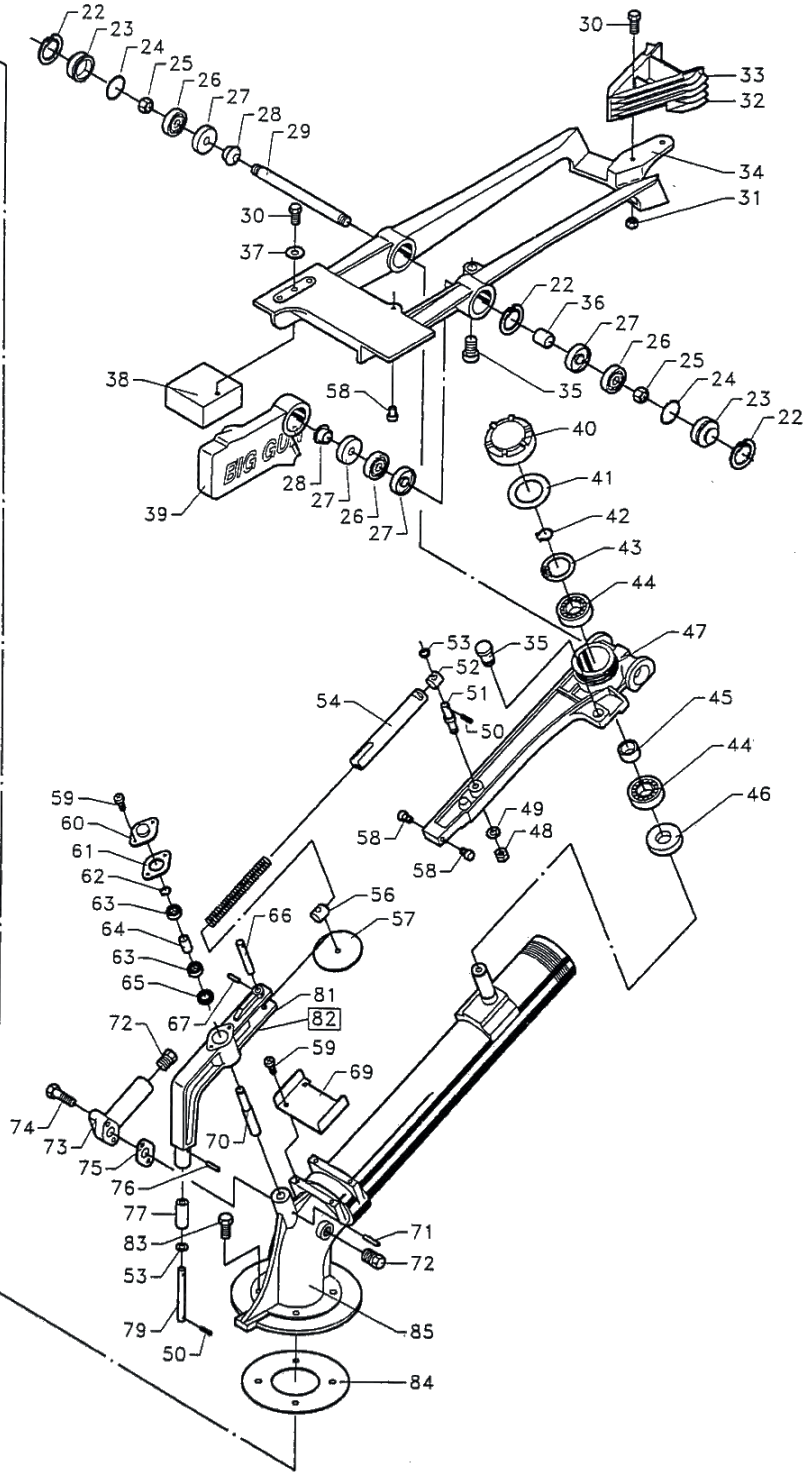
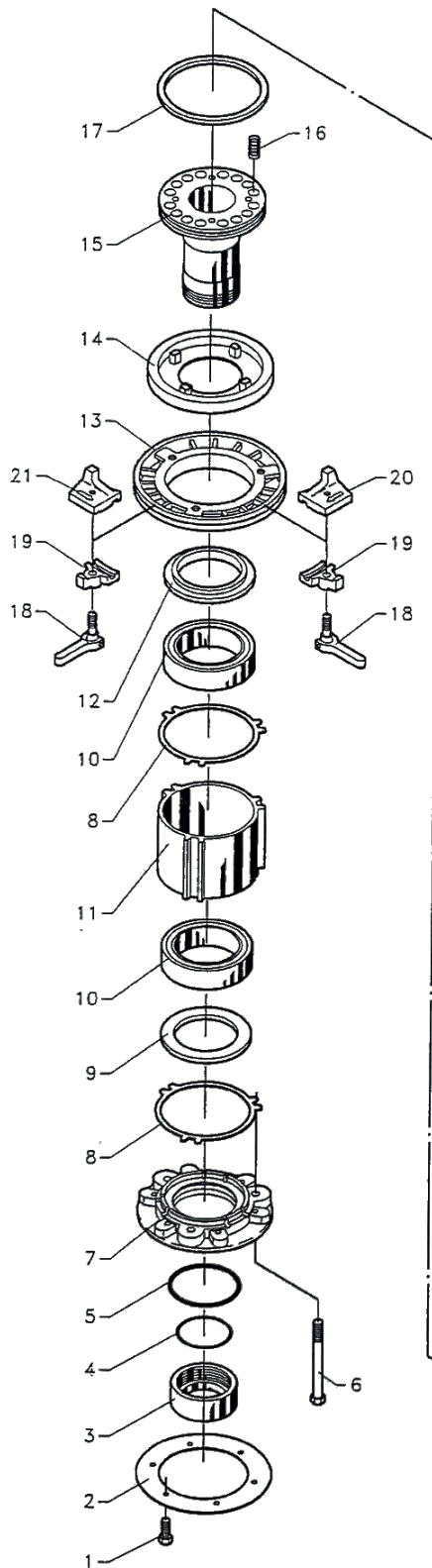




Pos. nr.	Best. nr.	Benævnelse	Description	Bezeichnung	Bemærkninger
Pos. No	Part No				Remark
Pos. Nr.	Teil Nr.				Bemerkungen
1	195000V	Turbine, komplet	Turbine, Complete	Turbine, Komplett	20/50 V
2	195500	Omb. turbinedæksel	Rechangebel turbine bearing cap	Austauschbares Turbuinerlager	
3		Møtrik	Nut	Mutter	M6 låse.
4	195023	Afgangsdæksel	Cap	Deckel	
5	096506029	Støttebolt	Bolt	Bolzen	M6 x 29 mm.
6	522085	Pakning	Gasket	Dichtungsring	
7		Kuglehane	Valve	Ventil	1/4"
8		Nippel	Nippel	Nippel	1/4"
9	195001	Turbinehus	Turbine House	Turbinenhaus	20/50
10		Møtrik	Nut	Mutter	M12 Rustfri
11		Fjerskerskive	Spring Coller	Federscheibe	Ø12 Rustfri
12	195031	Skovlhjul	Turbine Wheel	Turbinenrad	Venstre
13	P195201	Akseltætning	Shaftschild	Dichtung	Ø14 mm.
14	195211	O-ring	O-ring	Dichtungsring	Ø129,9 x 3,53 mm.
15	195018	Pakdåsedæksel	Turbinecap	Turbinendeckel	
16	195036	Aksel	Axle	Achse	
17	195050	Tætningsring	Packning Ring	Dichtungering	Ø15/35 x 6,0 mm.
18		Skive	Washer	Seheibe	Ø34/28,0 x 1,5 mm
19	195220	Leje	Bearing	Lager	3202-2RS
20		Låsering	Snap Ring	Ring	Udv. Ø15 mm.
21		Låsering	Snap Ring	Ring	Indv. Ø35 mm.
22	195013	Lejehus	Bearing Housing	Lagerhaus	
23	517715	Klemring	Snap Ring	Ring	Udv. Ø15 mm.



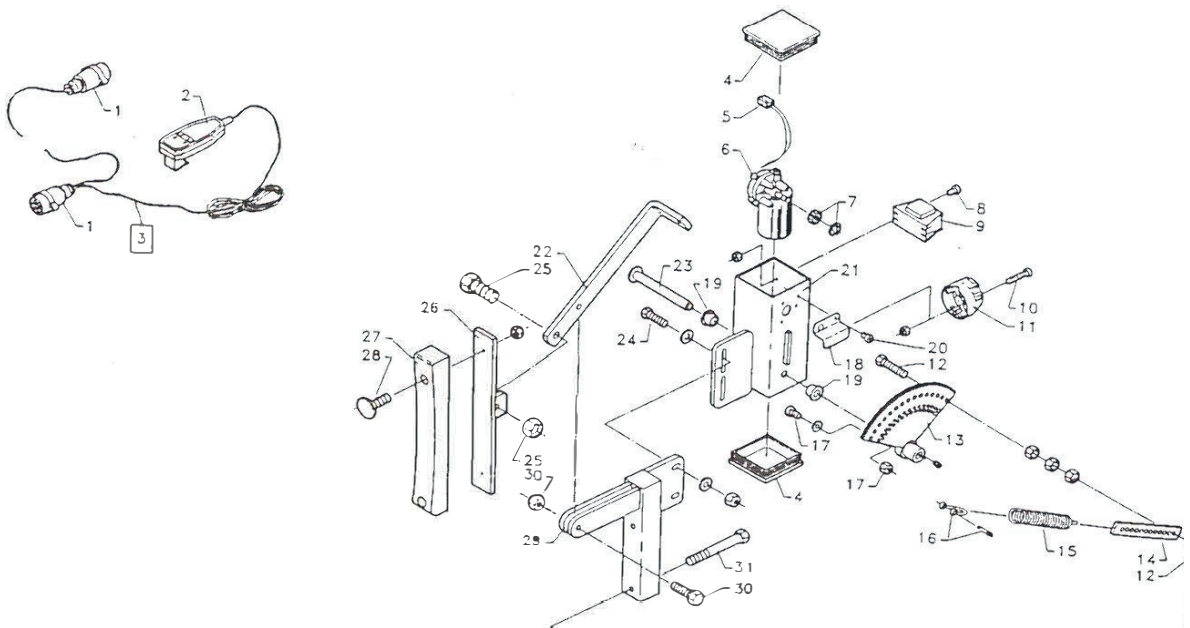
Pos. nr. Pos. No Pos. Nr.	Best. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
1	776000	Bolt	Bolt	Schraube	M8 x 25 mm.
2	761614	Pakning	Gasket	Packung	
3	778402	Låsemøtrik	Nut	Mutter	
4	776548	O-ring	O-ring Seal	O-Ring	
5	778475	O-ring	O-ring Seal	O-Ring	
6	778462	Bolt	Bolt	Schraube	3/8" x 115 UNC
7	778401	Bundstykke	Flange	Flansch	
8	778461	Pakning	Gasket	Packung	
9	778373	Tætningsring	Nut Ring	Nutring	
10	776253	Kugleleje	Bearing	Lager	
11	778405	Lejehus	Bearing Housnig	Lagerhaus	
12	778372	Tætningsring	Nut Ring	Nutring	
13	778400	Bremeskive	Disk Brake	Bremsscheibe	
14	778371	Bremsebelægning	Brake Lining	Bremselag	
15	778459	Lejerør	Bearing pipe	Lager rohr	
16	778474	Fjeder	Spring	Feder	
17	778473	Tætningsring	Nut Ring	Nutring	
18	776849	Tee-bolt	Bolt	Schraube	
19	776371	Beslag	Fittings	Beschlag	
20	778432	Stopklods	Stop Counterclockwise	Anschlag	
21	778431	Stopklods	Stop Clockwise	Anschlag	
22	776565	Låsering	Snap Ring	Seegerring	Indv. Ø32 mm.
23	776602	Endedæksel	Cap	Deckel	
24	776563	O-ring	O-ring Seal	O-Ring	Ø2,0 x 28,0 mm.
25	776603	Møtrik	Nut	Mutter	7/16" UNF
26	776598	Kugleleje	Bearing	Lager	
27	776600	Tætningsring	Nut Ring	Nutring	Ø15 x 32 x 7,0 mm.
28	776607	Afstandsrør	Pipe	Rohr	
29	778465	Aksel	Axle	Achsel	
30	776818	Bolt	Bolt	Schraube	1/4" x 20 UNC
31	776060	Bolt	Bolt	Schraube	1/4" UNC
32	778354	Drivkniv	Vane/Spoon Bracket	Antriebslöffelteäger	
33	779229	Tospeed drivkniv	Vane/Spoon Bracket	Antriebslöffelteäger	
34	778364	Drivkniv	Vane/Spoon Bracket	Antriebslöffelteäger	
35	778139	Gummistop dæmper	Bumber	Stossdämpfer	
37	776070	Fladskive	Tension Disk	Spannscheibe	1/4"
38	778433	Vægtklods	Counter Weight	GegenWicht	
39	778125	Kontravægt	Counter Weight	GegenWicht	
40	778233	Dæksel	Cap	Deckel	
41	778272	Pakning	Gasket	Packung	
42	778323-017	Låsering	Snap Ring	Seegerring	
43	776045	Låsering	Snap Ring	Seegerring	Indv. Ø40 mm.
44	776054	Kugleleje	Bearing	Lager	
45	778326	Afstandsrør	Pipe	Rohr	
46	776048	Tætningsring	Nut Ring	Nutring	Ø21 x 40 x 7 mm.
47	778394	Omskifter arm	Return Lever	Rückholhebel	
48	776064	Møtrik	Nut	Mutter	5/16" UNC
49	777029	Fladskive	Tension Disk	Spannscheibe	5/16"
50	776714	Split	Split Pin	Splint	Ø2,0 x 15 mm.
51	778197	Bolt	Bolt	Schraube	
52	778282	Aksel	Axle	Achsel	
53	778409	Fladskive, kobberskive	Tension Disk	Spannscheibe	Ø6,0 mm.
54	778446	Rør	Pipe	Rohr	
55	778470	Fjeder	Spring	Feder	
56	778417	Aksel	Axle	Achsel	



Pos. nr. Pos. No Pos. Nr.	Best. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
57	778336	Skive	Tension Disk	Spannscheibe	
58	776580	Anslagsstift	Restpadinsert	Splint	
59	778311	Bolt	Bolt	Schraube	
60	778263	Dæksel	Cap	Deckel	
61	778265	Pakning	Gasket	Packung	
62	778323-004	Låsering	Snap Ring	Seegerring	
63	778321	Leje	Bearing	Lager	
64	778281	Afstandsør	Pipe	Rohr	
65	778317	Pakning	Gasket	Packung	Ø9,0 x 22 x 5,0 mm.
66	778193	Stift	Split Pin	Splint	
67	778320	Split	Split Pin	Splint	
69	778448	Plade	Sheet	Platte	
70	778274	Aksel	Axle	Achsel	
71	776931	Låsestift	Split Pin	Splint	Ø3,2 x 20 mm.
72	776089	Prop	Plug	Kappe	
73	778497	Dyserør	Elbowsecn	Strahlrohr	
74	776059	Bolt	Bolt	Schraube	1/4" x 32 mm. UNC
75	778511	Pakning	Gasket	Packung	
76	778322	Split	Split Pin	Splint	
77	778277	Rulle	Roller	Trå	
79	778276	Aksel	Axle	Achsel	
81	778410	Arm	Reverse Rod	Schaltgestänge	
82	778451	Kpl. Ømskifter	Trip Lever Assy.	Schaltgelenk, Komplet	
83	778408	Bolt	Bolt	Schraube	5/16" x 25 UNC
84	778460	Pakning	Gasket	Packung	
85	778537	Strålerør	Elbow/Range Tube	Strahlrohr	

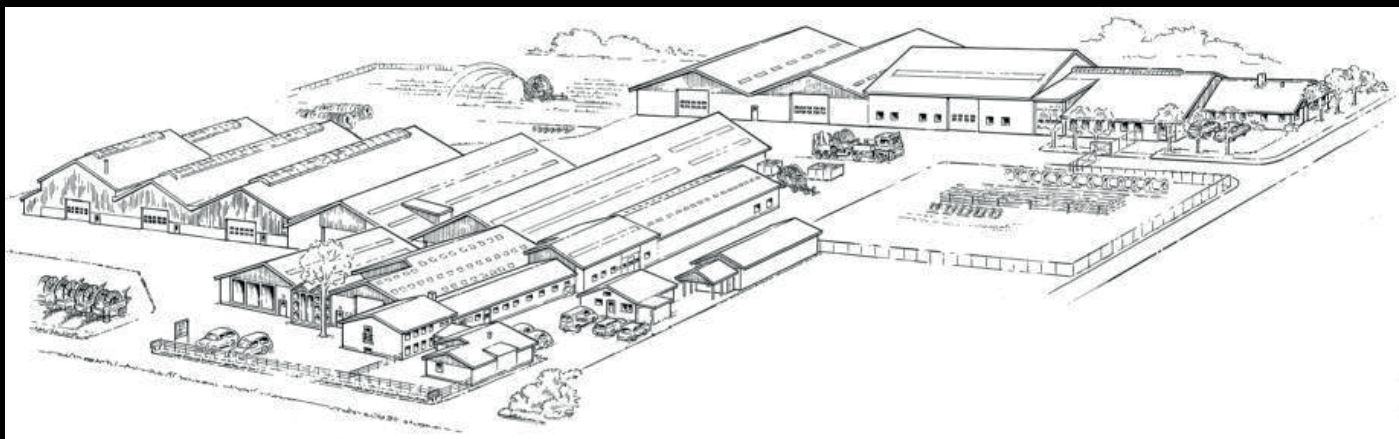
Ekstraudstyr

Pos. nr. Pos. No Pos. Nr.	Best. nr. Part No Teil Nr.	Benævnelse	Description	Bezeichnung	Bemærkninger Remark Bemerkungen
1	1008965	Stik (han)	Plug	Steck	
2	1008970	Håndtag med kabel	Lever	Hebel	
3	1008971	Håndtag kpl.	Lever	Hebel	
4	1007155	Endeprop	Plug	Kappe	
5	1007182	Stik	Plug	Steck	
6	1007180	Motor	Engine	Motor	12 v.
7	1007190	Tandhjul	Cogwheel - Small	Zahnrad - Klein	10 T.
8		Bolt	Bolt	Bolzen	M5 x 10
9	1008955	Relæ	Relay	Relay	
	1008957	Ledning	Cabel	Kabel	M/skik
10		Bolt	Bolt	Bolzen	M5 x 30
11	1008960	Skik (hun)	Plug	Steck	
12		Bolt	Bolt	Bolzen	M8 x 16
13	1007195	Tandhjul	Cogwheel - Small	Zahnrad - Klein	1/3 del udb. ø16
14	1008925	Hulplade	Fittings	Beschlag	
15	761119	Fjeder	Spring	Feder	ø5 x 32 x 175 mm.
16	761187	Sjækel	Shackle	Schäkel	ø6 mm.
17		Bolt	Bolt	Bolzen	M8 x 16 indiv. 6-kant
18	1008945	Skærm	Shield	Schirm	
19	R15062	Bøsning	Bushing	Buchse	ø16/24 x 15 mm.
20	872138	Bolt	Bolt	Bolzen	ø4,2 x 9,5 mm
21	1008905	Motorhus	Enginehousing	Motorhaus	
22	1008915	Arm	Shaft	Umlenkhebel	
23	1008920	Aksei	Axle	Achse	
24		Bolt	Bolt	Bolzen	M10 x 35
25		Bolt	Bolt	Bolzen	M16 x 40
26	902119	Bremseko	Fittings	Beschlag	
27	902120	Bremseklods	Brake Lining	Bremsbelag	
28		Bræddebolt	Carriage Bolt	Schwellenschraube	M8 x 40
29	1008910	Beslag	Fittings	Beschlag	FM 2500
29	1008912	Beslag	Fittings	Beschlag	FM 1500
	1008930	Beslag	Fittings	Beschlag	
	1008935	Spændplade	Sheet	Platte	
30		Bolt	Bolt	Bolzen	M12 x 45
31		Bolt	Bolt	Bolzen	M12 x 110









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