Edition:1701

MULTIFOREST

Instructions for Use and Maintenance

Forest trailer
MF60, MF80E, MF80, MF90
MF90BS, MF105, MF120, MF140

Note!
Read instructions before use

TREJON FÖRSÄLJNINGS AB
Företagsvägen 9
SE-911 35 VÄNNÄSBY
SWEDEN
Tel: + 46 (0)935 39 900
Webb: trejon.se

CE

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SAFETY SYMBOLS

Note! This warning symbol is used in this instruction manual to call attention to safety instructions that you, your employees or any other persons that may come in contact with the machine must read and understand. Neglecting these instructions can cause severe damage and even cause of death.

This symbol means:

WARNING!
CAUTION!
YOUR SAFETY IS ENDANGERED!

Words of warning

Pay attention to the words **WARNING! And NOTE!** (NOTICE!) in safety texts. The words have been chosen according to the following principles:

Warning!:
Indicate dangerous situations which, if they are not avoided, could cause severe damage and even death. This includes situations that may occur when safety equipment and/or safety shields are removed. The words of warning can also be used to warn about dangerous usage.

Caution!
Failure to observe this warning could result in light personal injuries. This warning is also used as a warning that machine damage can occur if the instructions are neglected.

Dear customer,

We congratulate you to your choice of a MULTIFOREST -product that offers quality and performance with reliable service.

By reading the manual and following its recommendations you will ensure a long and effective use of the equipment.
We have produced this manual for you to obtain a good understanding of all machine functions and knowledge about which safety and maintenance instructions to follow while working with the machine.
If any question should arise when using the machine or when reading this manual, you are welcome to contact us for further information.

TREJON AB
Företagsvägen 9
SE-911 35 Vännäsby
Sweden

Tel: + 46 (0)935 399 00
e-mail: info@trejon.se
Website: www.trejon.se

Dear retailer,

In order for the warranty to be valid and comply with all legal requirements, we ask you to complete the warranty form together with the customer and register at trejon.se
The warranty is valid from the day the equipment is handed over to the customer.

Delivery checklist:

Check for transport damages. Inform the transporting company.	
Check the equipment thoroughly and make sure that all packing material has been removed. Dispose packing material in an environment friendly way.	
Check that the delivery is complete according to the order/delivery note.	
Check that the PTO-shaft is included and has the right length (if applicable).	
Check that the machine is lubricated, see section “Service and maintenance”.	
Check air pressure in the tires.	
Check that all wheel nuts are tightened. The user must retighten these after the first working hours.	
Check that bolts between trailer and crane are tightened (M20 – 420Nm) (If crane is mounted)	
Check the wheel bearing adjustment.	
Give instructions about correct PTO-rpm (with the option trailer with internal hydraulic).	
Go through and, with the help of the manual, explain start up, use and maintenance of the equipment and its accessories to the customer.	
Perform a test run.	
Manual handed over to the costumer.	
Fill out the warranty form with the customer and register at trejon.se	

Fill out the serial number of the machine to the right.	S/N:

1 Introduction

1.1 Foreword

Thank you for choosing this MULTIFOREST forestry trailer. We have concentrated our efforts in order to develop a powerful machine that will operate for many years. However, the working life of the machine does not only depend on us but also on you. We have compiled this instruction manual in order to facilitate the use of the machine and describe proper maintenance procedures. Read these instructions carefully. Always contact the authorised dealer where you purchased the machine when you wish to order spare parts or need other assistance. Your retailer is your service partner. When you are ordering spare parts, make sure you know the model, type and serial number of the machine. See the plate on the chassis.

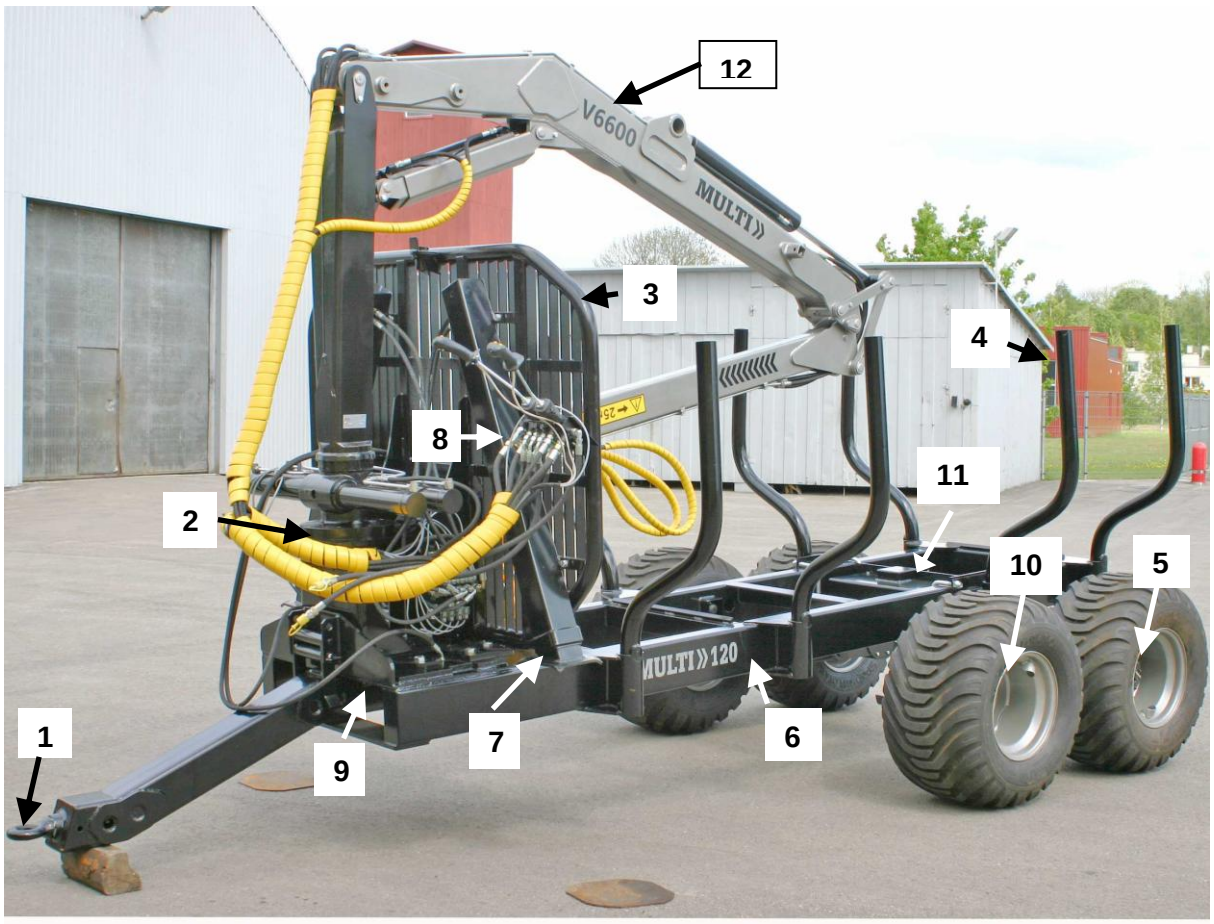
1.2 Description

MULTITRAILER is a series of well constructed forestry trailers of the MULTIFOREST-family. Together with MULTIFOREST-cranes and your tractor it forms an easy to drive combination. The trailers are available with loading capacities from 7 tons up to 14 tons. The wide product range offers models suitable for small and older tractors as well as for new and larger traction vehicles. The extensive standard equipment include for example protection grid, frame steering, (MF90 is available with bogie steering), and hydraulic support legs (standard on MF80E, MF 80 and MF90, available as option for the other models). The options include among other things a radio controlled winch, hydraulic auxiliary drive (hub wheel drive), brakes (standard on MF 140), hydraulic self supply, dividing stakes and lights for traffic usage.

The machine is designed to be coupled to a trailer hitch on agricultural tractor. The hydraulic functions of the trailer are driven by the hydraulic system of the tractor. The speed for each hydraulic function is dependent on the hydraulic flow produced by the tractor. The hydraulic system is designed for a hydraulic pressure of 175/180 bars. Each function need a double acting hydraulic connection on the tractor (at hub wheel drive with automatic free wheel, one pressure connection and 2x connections with free returns + free leakage connection). The brakes are connected to a single acting connection or a separate brake output on the tractor.

1.3 Detailed description

Trailer MF120 with crane V6600 at an angle from the front



1. Towing eyelet	8. Valve package
2. Radio controlled winch (option)	9. Frame steering
3. Protection grid	10. Service brake (standard on MF140)
4. Stake	11. Bogie steering (option for MF90)
5. Hub wheel drive (option)	12. Crane (option described in a separate manual)
6. Double frame (standard on MF120, MF140)	
7. Hydraulic support legs (standard on MF60, MF80E, MF80 and MF90)	

1.4 Technical data

MULTIFOREST	60	80E	80	90
Item nr.	MF60	MF80E	MF80	MF90
Type, frame	Central	Central	Central	Central
Loading capacity, tons	5	7	8	9
Loading area, m2	1,43	1,9	1,9	1,9
Bogie deflection, degrees	+-25	+-28	+-28	+-28
Steering angle frame-steering, degrees	-	+-45	+-45	+-45
Total length, mm	4780	5290	5290	5290
Length cargo space	3050	3420	3420	3420
Total width standard, mm	1825	1970	1970	1970
Centre beam	120x120x8	160x160x8	160x160x8	160x160x8
Steel quality	SS2134	SS2134	SS2134	SS2134
Bunks (2 stakes each)	2	2	2	2
Dividing stakes, 2 pieces.	Option	Option	Option	Option
Hydraulic support legs	Yes	Yes	Yes	Yes
Hub wheel drive	-	-	-	Option
Winch + radio control, trailer mounted	Option	Option	Option	Option
Tires,	300/80-15,3	300/80-15,3	400/60-15,5	400/60-15,5
Brakes	Option	Option	Option	Option
Axel bar dimension, mm	60x60	70x70	70x70	70x70
Trailer steering	-	Frame	Frame	Frame
Steering, number of hydraulic cylinders	-	1	1	1
Protection grid	Yes	Yes	Yes	Yes
Lights for traffic usage (7-poles, 12V)	Option	Option	Option	Option
Transport speed standard wheels (km/h)	25	40	40	40
Weight (excl. crane)	860	1020	1325	1360

MULTIFOREST	90BS	105	120	140
Item nr.	MF90BS	MF105	MF120	MF140
Type, frame	Central	Central	Double	Double
Loading capacity, tons	9	10,5	12	14
Loading area, m2	1,9	2,2	2,5	2,7
Bogie deflection, degrees	+-28	+-28	+-28	+-28
Steering angle frame-steering, degrees	+-22	+-45	+-22	+-22
Total length, mm	5050	5345	5510	5745
Length cargo space	3510	3420	3550	3670
Total width standard, mm	2230	2335	2370	2225
Centre beam	160x160x8	160x160x8	2x200x100x8 (double frame)	2x200x100x8 (double frame)
Steel quality	SS2134	SS2134	SS2134	SS2134
Bunks (2 stakes each)	2	3	3	4
Dividing stakes, 2 pieces.	Option	Option	Option	Option
Hydraulic support legs	Yes	Option	Option	Option
Hub wheel drive	Option	Option	Option	Option
Winch + radio control, trailer mounted	Option	Option	Option	Option
Tires,	400/60-15,5	520/50-17	520/50-17	500/60R22,5
Brakes	Option	Option	Option	1 axle, drum
Axel bar dimension, mm	70x70	80x80	80x80	90x90
Trailer steering	Bogie	Bogie	Frame	Frame
Steering, number of hydraulic cylinders	1	2	2	2
Protection grid	Yes	Yes	Yes	Yes
Lights for traffic usage (7-poles, 12V)	Option	Option	Option	Option
Transport speed standard wheels (km/h)	40	40	40	40
Weight (excl. crane)	1420	1720	2130	2320

Due to continuous product development any technical data is subject to change without prior notice. Data stated in the table above can also show non standard equipment. Level of equipment can vary depending on user country.

1.5 Right and left hand

In this manual the terms right and left hand side refer to the view from the back in the direction of travel.

2 Safety instructions

2.1 Safety regulations

Read operator's manual. All drivers of the machine must read and understand the complete content in this operator's manual to guarantee there is no doubt concerning operation before using the machine for the first time. If you have any doubts, contact your Trejon dealer for advice.
It is forbidden to use the machine if the user do not know the risk factors during operation and do not know how to act in an emergency situation.

Read, comply and understand the meaning of all safety, use, warning and position signs on the machine and in the operator's manual.

Situations can occur using this equipment, which can not be prevented by its construction or mechanical protection devices.
Unfortunately, our efforts to provide a safe machine can be ineffective due to human carelessness. Accident prevention are therefore dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of the equipment.
Only allow properly trained personnel to operate the machine.

The machine is intended only for outdoor use.

Operation Learn how the machine operates and how to use the controls properly before operating the machine.

Connecting the machine Connect the machine correctly; do not stand behind the tractor during coupling.
Make sure that the machine is properly mounted, adjusted and in good operating condition.

Secure the working area Unauthorized persons, particularly children, are not allowed near the machine while it is running or is being repaired.

Protective equipment Do not operate the machine if not all safety guards and shields for moving parts are in place and in good condition.
Make sure that all safety and operating signs are in good condition. If not, replace them immediately. Please specify model and serial number on the order.

Moving parts Keep arms, legs and other parts of the body and clothing away from the machine's moving parts. Wear tight clothes when operating the machine.
Let the machine work by it self, do not try to help with hands and fingers.

PTO-shaft When changing tractor, always check the length of the PTO-shaft, a too long shaft can cause damage to both tractor and machine.
It is forbidden to use PTO-shafts that do not comply with the specifications of the manufacturer.
Make sure that PTO-shields are in good condition and fastened securely to the tractor.
It is forbidden to use a PTO-shaft with damaged or missing shield.
Purchase a new shield if the old shield is damaged or missing.

Lifting and lowering machine.
Be careful when lifting or lowering the machine.

Stability The machine must not be mounted on a tractor with insufficient front shaft/back shaft weight, causing the tractor to be unstable and difficult to operate. In order to guarantee the steering and brake ability of the traction vehicle, a minimum of 20% of tractor and equipment weight must be on the front axle of the tractor. Without this weight, the tractor could tip over causing personal injury or death.
Use ballast weights if needed. Read the tractor's instructions manual for more information.
During work with grapples, load smaller logs located close to the machine at first to make sure the machine is stabile before working with heavier logs.

Driving the machine Be careful and reduce the speed when working on uneven surfaces close to ditches and fences, watch out for holes, roots, rocks or other hidden objects. When moving over uneven terrain, observe the type of terrain and develop a safe moving pattern.
Be extra careful when driving in slopes:
Operate the machine up and down steep slopes, not across slopes, to prevent the tractor from tipping.
Avoid sudden stops and starts; slow down before changing directions on a slope.
If you have to drive across steep slopes, reduce speed, watch out for uneven surfaces, avoid sharp turns and be aware of the change in centre of gravity when the mounted equipment is lifted.
If tractor overturns, hold tight to the steering wheel.

Operating in darkness When working during the dark hours, make sure there is sufficient lighting in the working area.

Driver Tired or intoxicated persons or persons influenced in other ways (e.g. by medication) making them unable to control their movements are not allowed to operate the machine.
Do not allow passengers on the machine or on the tractor at any time. There is no safe place for passengers.
Only properly trained people with a valid driver's license is allowed to operate this machine.

Personal protective equipment Personal protection equipment including hard hat, safety glasses, safety shoes and gloves are recommended during assembly, installation, adjustment, maintaining and/or repairing the machine. Keep doors and windows of the tractor cabin closed at dusty conditions.

Safety cabin Operate the machine only with a tractor equipped with an approved Roll-Over-Protective-System (ROPS). Keep the doors on the tractor cabin closed during operating, serious injury or even death could result from falling off the tractor.
All moving parts, including the engine, must stand still and the parking brake must be tightened before the driver leave the tractor cabin. During work with grapples, the back window and the rear side windows of the tractor cabin must consist of safety glass or be equipped with protective grating.
Keep the roof hatch open when driving on ice-covered water (to be able to get out of the tractor if the ice brakes).

Daily maintenance Check, adjust and maintain the machine according to the manual.

Regular servicing Inspect the entire machine periodically. Look for loose, worn or broken parts, as well as leaks or loose fittings.

Safety during maintenance and repairing Apply hand brake and place the machine on a hard and level surface when maintaining or adjusting it.
Always stop the tractor, set brake, shut off the tractor engine, remove the ignition key, and allow all moving parts on the machine to come to a complete stop before dismounting the tractor.
Clean the machine thoroughly before repairs or storage.
Be sure to thoroughly wash the machine without using high-pressure cleaning, especially on the moving parts, bearings and electric components.
The paint can be damaged if general cleaning is performed with too high pressure.
After cleaning, carefully dry the machine, lubricate it and perform a short test drive.

Vibrations The machine must be stopped immediately if vibrations occur in the machine. Determine the cause of the vibrations. Change any damaged parts.

Emergency stop. After hitting an obstacle shut down the machine. Shut the engine off, remove the ignition key, check and repair any damages before resuming the work.
Make sure you know how to stop the tractor and machine quickly in case of an emergency.

Hydraulic hoses The machine's hydraulic hoses contain oil under high pressure. Never touch the hoses or other hydraulic components while there is still pressure in the system. In case of leakage, oil under high pressure can penetrate the skin and cause serious injuries. In case of an accident, contact a doctor.
Check the condition of the hydraulic hoses every day. Worn or leaking hoses must immediately be replaced with new hoses that comply with the technical requirements of the manufacturer.
When changing tractor, always check the length of the hydraulic hoses, too long or too short hoses can be damaged. It is forbidden to use hydraulic hoses that do not comply with the specifications of the manufacturer.
Hydraulic engines and hoses can become hot during operation, risk of burn injury. Do not disconnect hoses when the oil is hot, wait for it to cool down.

Welding Protect bearings, electronic and hydraulic components before you start any welding work.
Before conducting any welding work, all electronic components must be disconnected and the ground connection of the weld must be placed close to the welding place.

Risk of fire If any component gets over heated, stop machine and check the cause. Crop waste is inflammable. Remove crop waste and dirt containing oil.
It is recommended to keep a fire extinguisher near to the working area.
Smoking is forbidden near the machine.

Electric cables Pay extra attention when working close to electric cables. Keep a safety distance with good margin.
In case of an accident where the crane comes to close to a live wire:

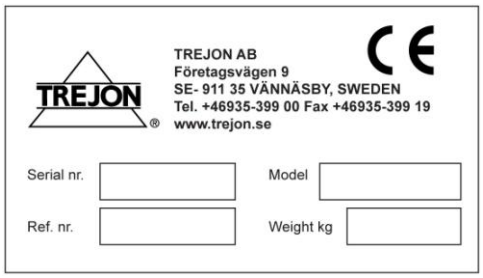
- Stay calm, act rationally in order to keep the situation from becoming aggravated, and do not touch metal parts.
- Warn people close to the machine and make sure they stay outside the dangerous area.

Spare parts Only use original spare parts
If you have any questions about the machine or its function, please contact your retailer or Trejon AB.

2.2 Safety symbols

All safety stickers must be kept clean and readable.
Lost or damaged stickers must be replaced. You can order new stickers from your retailer.

The symbol to the right shows:

	Warning! Read the operator's manual carefully before use to make sure you are familiar with the machine.	
	The CE symbol mounted by the manufacturer confirms that the complete equipment meets all requirements concerning machinery directives and other corresponding EG directives. Among other things, serial number, weight and model is stamped on the identifying plate.	

3 Operating the machine

3.1 Assembly

Note!
No persons is allowed to be in danger area during lifting

Be careful when cutting bands and wires since they can be very tight. They can also be very sharp.

3.2 Attaching the machine to the tractor

Warning!
Crushing hazard. When coupling, never stand between the tractor and the equipment as long as the tractor is moving. Always immobilize the tractor when leaving the cabin for any coupling/decoupling work.

The machine should not be mounted on a tractor with insufficient weight on the front axis, since this causes the tractor to be instable and difficult to operate. If necessary, use ballast weights, read the tractor's manual for more information.

Only use original PTO-shaft delivered together with the machine. Carefully read the instructions for the PTO-shaft. Information in this manual does not replace information from the PTO-shaft manufacturer.

Note!
Check that rpm-speed and direction of the tractors PTO-shaft. It must correspond to the signs and symbols on the machine.

If NOT hydraulic connections are connected in dictated order (return connection is CONNECTED first, and DISCONNECTED last) there is risk for damages at sealings in valve block.

Max. 150bar. Using a higher brake hydraulic pressure can cause damages to the brake system.

- Attach the machine at a hard and level surface.
- Turn off the tractor's engine and apply the hand brake.
- The trailer must be attached to a tractor with a lockable trailer hitch.
- Connect the hydraulic hoses to a single/double acting connection on the tractor (clean the connection plugs thoroughly before connecting them). Always connect the **return hose** of the hydraulic unit first then the pressure hose to the driving hydraulic system

(which must be pressure less at the engagement). When decoupling the hoses, do this in the opposite order i.e. disconnect **the pressure hose** first and then the return hose.

- Connect the hydraulic hose for the brakes to a single acting connection on the tractor or directly to a separate brake output on the tractor.

  The forestry trailer can be equipped with an hydraulic controlled service brake (standard on MF140). The brakes must be checked and maintained according to the instructions in the section about maintenance.

- Adjust the length of the PTO shaft. Pull the shaft apart, and fit its parts to the machine and to the tractor respectively. Check that the shaft does not bottom out in any position, (min. play 30mm) and that the sliding part is sufficiently seated in the cuff part (min. 300 mm). If not, shorten the shaft. See the instructions delivered with the shaft. Try to attain longest possible shaft overlap.
  Be extra careful with maximum and minimum dimensions when using hydraulic top link, since this dimensions can vary significantly.
  (alternative for PTO-shafts shorter than 1000mm, use at least half of maximum overlap).

- Lubricate and mount the PTO-shaft. Make sure that the locking pins on the shaft are properly locked. Use the chains to fasten the PTO-shaft guards to keep them from rotating.

- Connect the power supply for the tail-lights to the 7 pole connection at the rear end of the tractor. The operating voltage is 12V.

- Check that the machine can work freely from the tractor in all predictable situations.

3.3 Before starting up

Before starting up, the following parts on the machine must be checked:

- All screws and nuts are tightened properly (check and retighten screws and nuts after 4 working hours and the every 40th working hour). Including wheel nuts. See table in section “Service and maintenance” for the right torque settings.

- Check that all protective devices are undamaged and correctly attached to the equipment.

- Lubricate the machine (see section “Service and maintenance”).

- Wear of tires

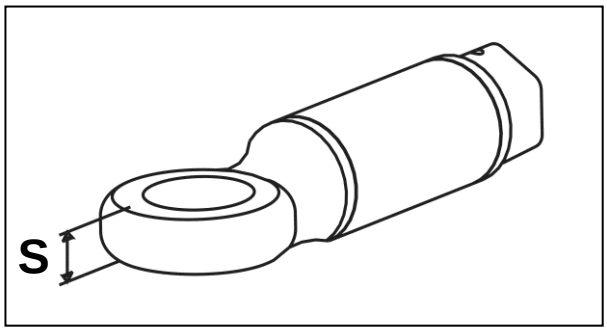
- Air pressure in the tires (see technical data in section 4.5).

- Check lights and signals (brakes and indicators)

- Check the function of the brake system.

- Check the connection to the tractor and the wear of the towing eyelet (see picture below).

The towing eyelet must be replaced when S=<80% of the original dimension.
(see table below for original dimensions)



Trailer	Type	**S** = original dimension (mm)	**S** = minimum dimension (mm)
MF60 (Option)	Fix	30	24
MF60, MF80E, MF80, MF90	Rotatable	33	26
MF105, MF120, MF140	Rotatable	37	29

The wear limit for the towing eyelet on this product is 20%. If the towing eyelet is damaged, the towing frame must be replaced immediately. The towing eyelet must always be checked for damage before the trailer is used. The user is responsible for performing this check.

3.4 Adjustments

Warning!
No work is allowed unless the equipment is safely secured (do not only rely on tractors 3-point connection).

Caution!
It is imperative that the hydraulic system is pressure less before starting any kind of work on the hydraulic system!
! If the hydraulic system of the machine is connected to the tractor
the tractor motor must be stopped and the hydraulic system of the tractor must be made pressure less.

3.5 Operating the machine

Warning!
No persons or animals must be closer than 25 m to the machine when it is operating.

The machine must not be cleaned while running.

Caution!
A doubled operating speed makes the stress at the equipment four times higher. Do not drive faster than needed.

Retighten all bolted joints after the first 4 operating hours, including wheel nuts.

The product warranty is no longer valid if the trailer is overloaded (see maximum loading capacity for each model).

Use the tractor's service brake when loading.

Standing stability test
Information on your tractor performance indicators compatibility with trailer and crane is available from your dealer. The following table taken from the sales data shows the cranes and trailers that are recommended for each other:

Recommended crane for trailer	MF60	MF80E	MF80	MF90	MF105	MF120	MF140
P5100		x	x	x			
P5600		x	x	x	x		
P6200		x	x	x	x	x	x
V3900	X						
V4300	X						
V5300		x	x	x			
V6300		x	x	x	x		
V6100		x	x	x	x	x	
V6600			x	x	x	x	

Standing stability test is necessary to ensure that the trailer, crane and the base vehicle are compatible as well as that it is safe to work with the crane, taken into account its performance indicators. Standing stability test should be conducted by qualified and experienced professionals.
The base vehicle, crane and trailer complex is stable when lifting the maximum plus 10% of the maximum allowed lifting capacity, it does not result in more that one support point of the trailer rising above the ground. Lateral stability is improved by increasing ledge width and/ or adding rear axle weight, for example, wheel weight.

Example: The base vehicle's normal condition during the test is without load, with the incline of 5°in the fall direction. The substrate must be capable of bearing the weight of wheels or other bigger loads coming from different support section.

The test is performed with the maximum operating range, with 10% overload. The test is performed under normal conditions, however, paying special attention. The 5°incline of the base vehicle can be reached by adding a lifting component to one of the rear wheels, which height is calculated as follows:

h = lifting component required height
z = width of the base vehicle from the tire centre to the middle.
h = 0,087 x z

Example:
z = 120 cm
h = 0,087 x 120 cm = 15 cm

The given formulas and calculation examples in the given user manual are based on the SFS 4677 standard.

Warning!
If the stability test shows that the carriage can not be classified as stable, so must special care be taken especially during crane work with an empty wagon.

- When driving on public roads the local traffic rules of the respective countries must be observed. The traffic regulations and traffic laws of the country concerned must be observed. The owner of the vehicle is responsible for keeping the vehicle in a condition applying to the applicable regulations.

- Make sure that the vehicle is in a traffic safe condition, especially concerning the operative functionality of the brake system, completely working lights and required signs (including slow moving vehicle sign) and tire air pressure.

- Working lights must be turned out when driving on roads. The working lights must be used in a way that it can not glare other road-users.

- The observation of allowed values for maximum load and maximum weight is imperative!

- The driving, steering and brake features of the tractor differs depending on of the trailer is loaded or empty. The driver must act according to altering road manners.

- The trailer's centre of gravity is moved upwards due to the weight of the load causing a larger risk for tipping compared to an empty trailer.

- A loaded trailer is considerably more difficult to drive on roads and in the terrain than an empty trailer.
  The braking distance for a loaded trailer is due to the larger mass considerable longer than for an unloaded trailer.

- Before transport driving the support legs must be completely retracted and stay retracted during the complete transportation (hydraulic support legs are standard on MF70, MF80 and MF90, option for other models). It is recommended that the support legs are used when loading to give the trailer a better stability.

- If the driver can not see the area behind the tractor, he/she must ask for instructions from another person when driving backwards. The instructing person must stay within the driver's field of view and must stay between the tractor and the machine.

- During transport driving the driver must consider the total height of the trailer. The clear height of the trailer must be observed, for example when driving under viaducts, bridges, trees or power lines.

We recommend that the trailer only is used within the temperature range from -30 to +40. Consider that working at low or high temperatures increases wear and stress on sealing and hoses.
Also the durability of the steel construction is deteriorated and cracks can occur. When working at low temperatures remember to let the oil circulate freely in the system during a few minutes. Then perform each function separately a few times to soften sealing and hoses before working with maximum pressure. Be careful concerning the oil temperature during extremely warm periods. Temperatures over 80 degrees Celsius destroys the features of the oil and causes damage to sealing and hoses.

Moving the machine from soft ground
If the machine is stuck in soft ground it is only possible to pull the trailer out in the driving direction. Use the towing eyelet on the towing equipment.
Do not pull the machine out from soft ground in reverse direction since there are no suitable fixing point on the side or on the rear of the machine.

3.6 Frame steering

To give the forestry trailers an increased flexibility all models can be equipped with frame steering, meaning that the towing frame is hinged below the base of the crane and is hydraulically controlled via a hydraulic cylinder (2 cylinders on model 105 and larger). The frame steering is controlled via one of the double acting hydraulic connections on the tractor.

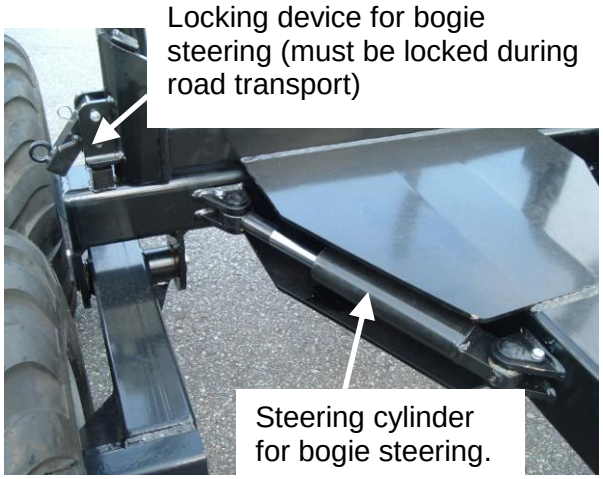
Trailer with frame steering

Hydraulic connections for frame steering

Warning!
The frame steering must be blocked with the mechanical locking device during road transport.

3.7 Bogie steering

As an alternative, the forestry trailer Multiforest 90 can be delivered with bogie steering. In this case the entire bogie is controlled via a double acting hydraulic connection. A steering aid is placed at the front of the crane base to show the position of the bogie if it is blocked by for example timber (see picture).



Bogie steering

Steering aid for bogie steering.

Warning!
The bogie steering must be blocked with the mechanical locking device during road transport.

3.8 Transport and disconnection

Caution!
Do not disconnect the hydraulic hoses from the tractor before the hydraulic system is pressure less by for example putting the hydraulic lever in "yield position". Otherwise it could be difficult to attach the hoses the next time since there is pressure in them.

The machine should preferably be kept under a roof. If the machine will be standing outside for a longer period, the piston rods should be cleaned and lubricated with grease for protection.

4 Service and maintenance

Warning!
When performing any form of cleaning, repairs or service, the machine must be lowered to the ground and the motor of the tractor must be switched off. Remove the ignition key from the switch.

It is imperative that the hydraulic system is pressure less before starting any kind of work on the hydraulic system! If the hydraulic system of the machine is connected to the tractor the tractor engine must be stopped and the hydraulic system of the tractor must me made pressure less.

Never rely entirely on the tractor's lifting equipment. Secure the machine properly to make sure it does not fall down. Always use protective equipment such as goggles and gloves when carrying out maintenance.

Do not use your fingers when examining small openings. This is to avoid accidents.

It is important to replace worn and damaged protection items in good time (e.g. protective shields).

To avoid injury to other persons, make sure that nobody is in the proximity.

4.1 General

Carefully maintain the equipment in order to achieve cost effectiveness and a long working life, prevent early repairs and keeping the value of the equipment. Only use quality lubricants and suitable tools. All kind of work that has to be done under an elevated machine may only be performed if the machine has been carefully secured. Only use suitable tools. Keep the machine clean under the chassis to obtain good function and prevent corrosion. Do not use high pressure cleaning for the bearings and the hydraulic components. After cleaning the equipment, lubricate it according to the lubrication chart, and give it a brief test run.

Use the table below for the correct torque settings for the screws and bolts of the equipment.

Table 1 - Torque settings

Diameter	Class 8.8		Class 10.9	
	Nm	lb.ft.	Nm	lb.ft.
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	215	155	305	225
M18	295	217	420	309
M20	420	302	590	438
M22	520	380	730	535
M24	670	490	940	690
M30	1350	990	1850	1350
When a locking nut is used, increase torque by 5%.				

4.2 Maintenance schedule

After the first 4 operating hours:

- Check and retighten screws and bolts on the machine.

After the first 8 operating hours:

- Perform 8 hrs service and maintenance according to the plan showed below.

Position	Interval	Lubrication	*Action	Lubricant	Note
PTO-shaft ”Cardan joints”	8 h	Yes	C	Grease NLGI 2	See instruction for PTO-shaft
PTO-shaft ”Profile tube”	8 h	Yes	C	Grease NLGI 2 /Oil 10w30	See instruction for PTO-shaft
PTO-shaft ”Locking pin”	8 h	Yes	C	Oil	See instruction for PTO-shaft
Screw joints	40: h	-	C/A		Bolts between crane and trailer M20 – 420Nm
Bogie bearing	40 h	Yes	C	Grease NLGI 2	Lift one side of the trailer at the time.
Brake levers	100 h	Yes	C	Grease NLGI 2	-
Wheels/tires	40 h	-	C		Air pressure, see table in section 4.5.
Towing eyelet	40 h	Yes	C	Grease NLGI 2	Check wear, replace if needed.
Wheel bolts	The first 4 h, than every 40 h	-	C		Check wheel bolts, see torque settings in table in section 4.1
Wheel bearings	100 h	-	C/A		See section 4,7
Wheel bearings, Repacking	500 h	Yes	C/A/Cl.	Long life wheel bearing grease	See section 4,7
Cylinders bogie steering	40 h	Yes	C	Grease NLGI 2	
Cylinders frame steering	40 h	Yes	C	Grease NLGI 2	
Locking device frame/bogie steering.	40 h		C		
Winch with wire	40 h		C		Damages, battery (portable unit)

*** Action codes: A= Adjustment, C= Control, Cl. = Cleaning, R=Replace**

When lubricating, use low temperature grease. Do not use so called “graphite grease” for ball bearings. Compressed air grease gun must not be used for lubricating sealing bearings since the sealing can loosen or be damaged. Clean lubricant nipples before adapting the grease gun. These intervals are to be used for normal usage, when operating continuously, lubricate more often. Always lubricate after cleaning with water.

Lubrication instruction
Pump grease into the bearing until it comes out on the side, dry off the spillage and excess. Turn the joint *(if possible) 180 degrees, repeat step 1 to secure a good distribution of the grease.

When lubricating the bogie bearing it must be lifted up from the ground and secured to make sure that the grease reaches both sides of the tap.

Some well known grease brands that can be used:

Shell	SRS 4000
Esso	Thermo 30150
Statoil	Grease Way CAH92
Hydro Texaco	Hydex EP2

4.3 Before season begins

All the above points must be performed. Servicing the machine well increases its useful life and gives an untroubled operation.

4.4 After end of season

After the season, the equipment must be thoroughly cleaned, and then lubricated and serviced Replace worn or damaged parts. When the machine is dry, we suggest that you cover the parts were the paint has worn away with a thin coating of oil.
Store the machine in a dry place.

4.5 Wheel rims and tires

- In order to guarantee an optimal operation safety the rims and tires of the machine must be checked regularly.
- Make sure that all tires have the right air pressure. The table below indicates correct air pressures for certain types of tires/sizes.
- Wheel rims must be checked for damages regularly. If the condition of tires or wheels no longer permits complete operational safety, the tires or wheels must be replaced.
- After the first operation all wheel nuts must be checked and retightened if necessary.
- The machine warranty is no longer valid if other tires or wheels than the ones mounted by the factory are used.

Standard mounted wheels

Version	Tires	Max. load/tires free running (kg)	Max. load/tires propellant (kg)	Max. speed (km/h)	Air pressure at max. load (bar)	Torque at wheel nuts (Nm)
MF60	300/80-15,3	1950	1360	25	3,4	320
MF80E	300/80-15,3	1950	1360	40	3,4	320
MF80	400/60-15,5	2900	2000	40	3,6	320
MF90	400/60-15,5	2900	2000	40	3,6	320
MF105	520/50-17	4375	3075	40	4,0	320
MF120	520/50-17	4375	3075	40	4,0	320
MF140	500/60R22,5	4125	3750	40	2,4	320

Changing wheels

Caution!
If the lifting equipment is sinking into the ground not capable of carrying the weight of the machine this can cause danger or damage to people!

To change wheels the trailer must be lifted up with a hydraulic jack to a height where it is possible to remove the broken wheel from the hub. The hydraulic jack must be placed under the axis directly behind the broken wheel.
Please notice that the machine must stand on a ground with sufficient carrying capacity to hold the real weight of the axis outside the lifting device.

4.6 Brakes

Note!
The brake blocks must be replaced when they are worn out, otherwise the brake drum and the hub will be destroyed.

Max. pressure brake hydraulic 150bar

If the brake cylinders reach their end position when brake and the brake action of the forestry trailer are bad, the brakes must be adjusted.
Block up the wheels to make them rotate freely above the ground. Loosen and dismount the brake lever. Turn the brake axis towards a tooth in the brake lever. The brake axis must be rotated in the same direction as the brake cylinder is pushed out (extended), this reduces the distance between the brake blocks. Remount. After the adjustment, check that the wheel can rotate freely and that the brake does not bear on when the wheel is blocked up.

4.7 Axis

Adjusting wheel bearings:
Block up the wheel to make it rotate freely above the ground. Dismount the cap and the split cotter from the turret nut. Tighten the nut hard to make it more difficult to rotate the brake drum. Loosen the nut approx. ¼ turn making it easier to rotate the brake drum and reducing the play of the bearings. Mount a **new split cotter** and remount the cap.

Repacking wheel bearings:
Block up the wheel to make it rotate freely above the ground. Dismount the wheel. Dismount the cap and the split cotter from the turret nut.
Dismount the turret nut and the brake drum. Use a suitable puller and knock lightly with a hammer on the drum if it is difficult to dismount. Remove the bearings and clean them with a degreasing agent.
Clean and check all parts in the brake, hub, and axis etc. concerning wear, play, cracks etc. Replace damaged and worn parts.
Press grease into the bearings using fingers and turn the bearings while doing this. Fill up grease behind the bearings in the hub.
Remount all parts and adjust the bearings according to the description above. Use a **new split cotter** to lock the turret nut.

Caution!
When performing any form of cleaning, repairs or service, the machine must be lowered to the ground and the motor of the tractor must be switched off. Remove the ignition key from the switch.

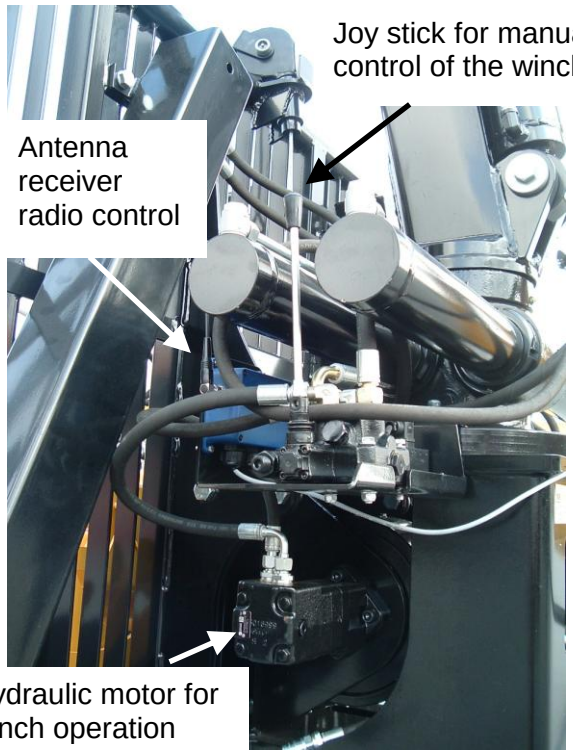
Never tow the tractor together with the trailer in case of damage or faults.
The service brake does not longer work if there is a fault on the tractor.
If the tractor is damaged or defect it must be replaced by a working vehicle before operation may continue.

5 Accessories

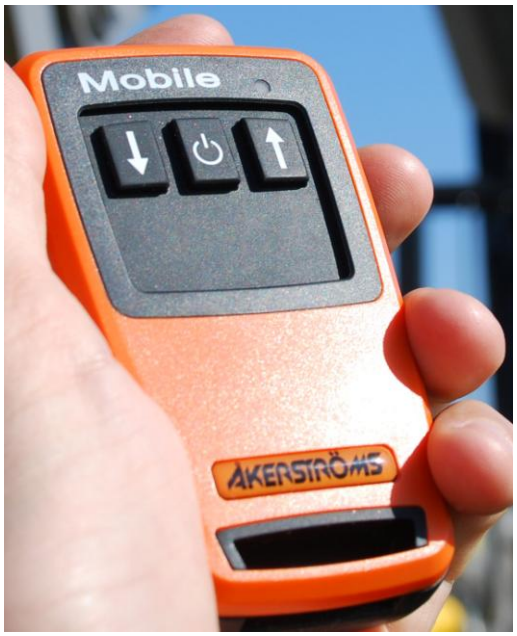
5.1 Winch

Radio controlled winch is an option for all Multiforest trailers. The winch is well protected mounted in the base of the crane. The oil flow to its hydraulic motor and the power supply is supplied by the crane's connections.

It is also possible to get the winch mounted on the crane boom



Winch mounted in the trailer



Portable unit radio control (for winch with buttons: on/off, in and out)

Power supply via 2pcs 1,5V– batteries of type: AA
(change of battery once a year at normal operation)

Deflection pulley 19-234 for mounting at crane arm

Note!
The winch cable must not be connected by deflection pulley 19-234 during crane work. Risk for damage of equipment.

Warning!
The winch can pull down the gripper loader trailer at high draw through the crane.

Inspect wire rope and winch before use. Every day before work with the winch, it should be checked and in working condition. Resolve visible damage. Wire and choker-chain should be checked carefully. A ruptured line that comes flying can severely injure a person.

Before winching begins, user shall verify that the tractor and the trailer are on a firm, level surface.

In all winching remember risk for overturn. For better stability put down the support legs and place the crane appropriately. Be especially careful when working on slopes and when winching from the side. Use a corner pulley to avoid winching sideways. Check that winching track is free and that the tractor parking brake is applied.

Do not use the winch line for towing or lifting, cargo or any other vehicle. Always use a chain around the log and timber loading up the trailer with the crane.

Keep people, especially children away from the winch work. Danger zone for winching is 50m. Connect near the log's end so it can not be thrown out if it gets stuck. When the corner pulley is used, think on risk triangle representing the danger zone in which it is forbidden to reside when using the winch

5.2 Auxiliary drive

To increase accessibility at difficult conditions, the forestry trailers can be equipped with auxiliary drives.

Hub wheel drive (option for Multitrailer 90 up to Multitrailer 140)

Caution!
When hub drive is connected, it is NOT allowed to go faster with the tractor then trailers wheels are driven by the wheel motors.

For any form of movement of the carriage with hub wheel drive so must the free return line and drain line be connected to the tractor.

Operation with hub wheel drive

When using this type of hub drive, there is no need of manual connection- /disconnection at the hubs. Operation requires a single-acting hydraulic and separate free return from the engines, and a separate drain line (see hydraulic diagram on the next page).

Driving is performed as follows.

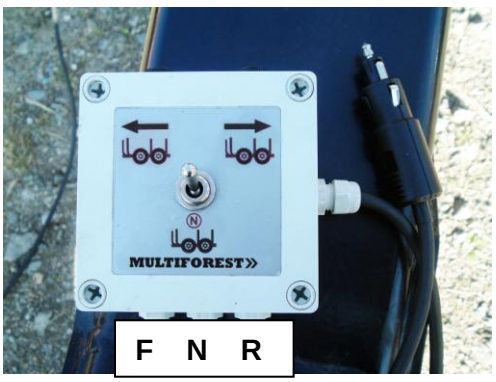
Activation:

- Connect/add hydraulic flow from tractor (200bar, 100lit/min for full force).
- Choose driving direction with switch at the hand unit (see picture).

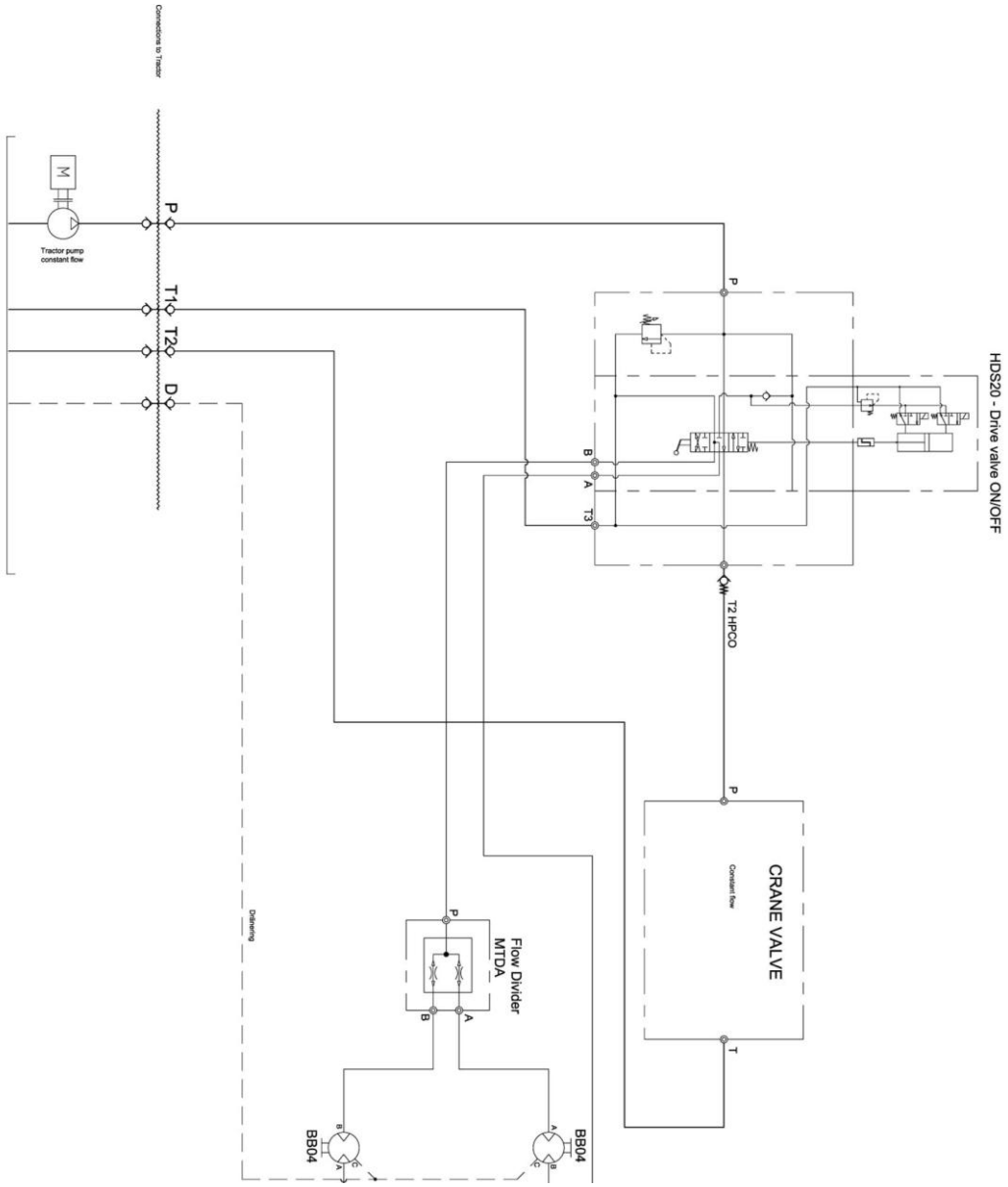
Disconnection:

- Switch the toggle switch to the center position N
- Disconnect the hydraulic flow

Hub motor with automatic free wheel.



Hand unit (with automatic free wheel)



Example of hydraulic diagram for hub drive (with automatic free wheel)

5.3 Hydraulic support legs

The smallest models MF80 and MF90 are as a standard equipped with hydraulic support legs to increase their stability. The larger models are heavier and thus have a better stability. For these models the supporting legs are available as an option.

Hydraulic support leg

Hydraulic and electrical connections for crane and support legs (on a trailer with lightweight package).

The supply for the support legs is supplied and controlled via the hydraulic and controls for the crane. The pictures below show the operating controls using a crane with standard and lightweight package respectively.

Standard package with joy sticks for crane and support legs.

Lightweight package with joy sticks for crane and support legs

5.4 Brakes

Brakes are standard equipment on the largest model MF140 and are available as option or the other models.

5.5 Internal hydraulic

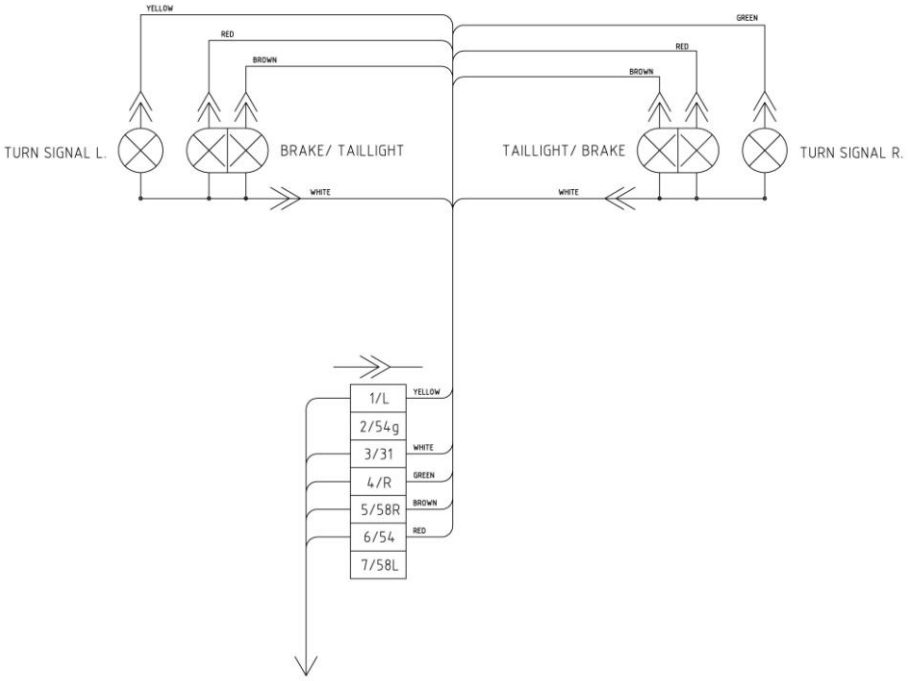
In case the towing vehicle (the tractor) does not have a hydraulic system strong enough to supply the functions of the trailer, the trailer can be equipped with and internal hydraulic system. The internal hydraulic system is driven by a pump mounted on the PTO-shaft on the tractor, alternatively via PTO-shaft to the pump at the trailer.

Oil type: Hydraulic oil 46

Oil change: After first 50h, then after 500h or at least 1time/year.

Hydraulic filter: Hydraulic filter is replaced when changing oil (Item No. 103393)

5.6 Electric scheme



Electric diagram, lighting

6 Spare Parts

6.1 Use original spare parts

Your choice is “original” or “copies”!
Price is often the deciding factor. A “cheap” choice may well turn out to be an expensive one in the end.

Some reasons to choose TREJON spare parts:

- Quality and fitting
- Reliability
- Longer service life and therefore better economics
- Guaranteed availability through the TREJON sales partners

The TREJON original spare parts are specifically made for this equipment. The fitting and/or use of non-original parts and accessories may change the technical qualities of your equipment in a negative way. The manufacturer does not give any warranty for damages caused by using non-original parts or accessories.

The warranty does not cover arbitrary changes made on the equipment.

Contact the authorised dealer where you purchased the machine when you want to order repair parts or need other assistance.
When you are ordering spare parts, make sure you know the model, type and serial number of the machine. See the plate on the chassis.

Notes

EC-Certificate of Conformity

Conforming to EEC Directive 2006/42/EG

We TREJON FÖRSÄLJNING AB
(Name of supplier).....

SE – 911 35 Vännäsby, Företagsvägen 9
.....
(Full address of company – where this concerns authorized agents within the Common Market, also state the company name and manufacturer)

declare in sole responsibility, that the product

MULTITRAILER Forestry Trailer

MF60, MF80E, MF80, MF90, MF105, MF120, MF140
.....
(make, model)

to which this certificate applies, conforms to the basic safety and health requirements of EEC Directive 2006/42/EG,
(if applicable)
and to the other relevant EEC Directives.

— — —
.....
(Title and/or number and date of issue of the other EEC Directives)

(if applicable)

To effect correct application of the safety and health requirements stated in the EEC Directive, the following standards and/or technical specifications were consulted:

EN ISO 12100-1 : 2003 EN ISO 12100-2: 2003
.....
(Title and/or number and date of issue of standards and/or specifications)

Håkan Johansson
Managing Director

Vännäsby, 2016-01-01
.....
(Place and date of issue)

.....
(Name and job function of authorized person)

TREJON AB
Företagsvägen 9
SE – 911 35 Vännäsby

Guarantee- /assignment certificate

Guarantee terms	-	Valid between retailer (Trejon AB dealer) and machine purchaser.
General about guarantee	-	In order to obtain valid guarantee terms set forth below, and the specific guarantee terms set by each provider. These are attached to the user manual for each machine, as appropriate.
Validity of guarantee	-	The guarantee is 12 months from date of purchase. In some cases, the guarantee can be limited by running time.
The guarantee covers	-	Damaged parts, which have broken down because of defective production operations of materials in course of normal use of the machine.
	-	Only the labor cost for replacement of defective warranted part.
The guarantee does not cover	-	Transport costs applicable to the machine or the parts.
	-	Travel costs.
	-	Any resulting costs incurred as a result of damage to the machine.
	-	If the machine has been modified by the owner.
	-	Damage due to normal wear and tear of the machine – Not related to manufacturing defects, poor service, user inexperience or use of spare parts that are not original.
	-	Excessive or inappropriate use of the machine.
	-	The guarantee is not applicable to parts which are subject to wear, for example hoses, sealing, oil, belts, batteries, chains, knifes etc.
	-	The guarantee period for replaced parts during the guarantee period expires with the machine's guarantee.
	-	Normal adjustments, maintenance or supervision
Guarantee procedures	-	Contact place of purchase as soon as any damage or malfunction is detected. Do not use the machine if the damage can be worse.
	-	Guarantee repairs must be performed by Trejon AB approved workshop.
ATTENTION!		**The guarantee shall enter into force provided that the machine GUARANTEE/ ASSIGNMENT CERTIFICATE has been fully completed and signed by both parties (archived by the seller), and recorded on the Trejon web portal no later than 14 days from date of sale (the seller is responsible for this happening).**

Assignment certificate:

Machine Buyer shall confirm with his signature that he had received manual containing operating instructions, and received information about the operating, security and maintenance requirements described in this and made the final inspection of the machine.

PLEASE FILL IN! 

Product: _____ Serialno. _____

Salesman: _____ Company: _____

Signature of salesman: _____ Date of purchase: _____

Name of buyer: _____ Telephone: _____

E-mail: _____

Address: _____ Zipcode: _____

City: _____ Country: _____

Date: _____ Signature of buyer: _____

TREJON AB reserves the right to change or to improve shown models using technical or commercial reasons, without demands to carry out the same improvements on equipment already delivered. Pictures in the manual do not necessarily show the equipment as delivered.

Technical data, weights and measures are without obligation. With reservation for mistakes and errors.

TREJON FÖRSÄLJNINGS AB
Företagsvägen 9
SE-911 35 VÄNNÄSBY
SWEDEN
Tel: + 46 (0)935 39 900
Webb: trejon.se