

Lennartsfors

The IronHorse

Models

IH 2055 , IH 2090 , IH 2013

Classic & Flex



Operator's Manual



Read this Operator's Manual carefully and make sure you understand it before attempting to use the Iron Horse.

TABLE OF CONTENTS

Introduction	3
Symbols	4
Warning signs	4
Safety instructions	5
Description.....	7
Fuel handling.....	18
Starting and stopping	19
Checks before use	20
Use.....	21
Maintenance.....	28
Trouble shooting	35
Technical data.....	36

INTRODUCTION

Introduction

This Operator's Manual describes in detail how the Iron Horse is used, maintained and how servicing is to be carried out. It also describes the measures to be taken for maximum safety, how the safety features are designed and work, as well as their inspection and any repairs that may result.

NOTE! The section dealing with safety must be read and understood by all those who install, use or repair the Iron Horse.

The Operator's Manual describes getting started, use and the different maintenance procedures that can be carried out by the user. More comprehensive servicing or trouble shooting should be performed by the dealer's service personnel.

The Operator's Manual describes all essential safety details and must be read and understood by the user before the Iron Horse is used.

Symbols and warning signs shown on the next page can be found in this Operator's Manual and on the Iron Horse. A new decal must be applied as soon as possible if a warning decal on the Iron Horse has been damaged or is worn so that the greatest possible safety can be obtained when using the Iron Horse.

The Iron Horse must only be used for cross-country transport of, for example, timber, pulpwood, plants and to transport felled elk. It can also be used to transport other equipment cross-country that does not exceed the recommended weights.

SYMBOLS

Symbols

The symbols below are used on the Iron Horse and in this Operator's Manual.



Engine Stop



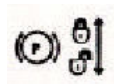
Stop control on the engine



Brake locked



Brake open



Parking brake



Fast



Slow



Clutch



Choke



Fuel tap



Differential



Forward



Reverse



Engaged



Disengaged

Warning Signs

The following decals with symbols can be found on the Iron Horse.



Helmet, hearing protection and eye protection should be used.



Gloves must be worn.



Boots or work shoes with steel toe-caps and non-slip soles should be worn.



Read this Operator's Manual carefully and make sure you understand it before attempting to use the Iron Horse.



Exercise caution.



Keep your hands and feet away.



Slope max 35 °



Hot surface.

Check regularly that decals are complete and legible. Replace if damaged.

SAFETY INSTRUCTION

Safety Regulations



Warning!

An IronHorse can be a dangerous machine that can cause serious or fatal injury if used incorrectly or carelessly. It is very important that the person using the IronHorse reads and understands the content of this manual.

Safety during use

The safety regulations that apply while using the Iron Horse are documented in respective areas under the section "Use" on page 24 - 27.

Personal protective equipment

The person or persons using the Iron Horse or remaining in its close proximity must be equipped with the personal equipment as set out below:

1. Helmet with hearing protection.



2. Eye protection.

3. Gloves.



4. Boots or work shoes with steel toe-caps and non-slip soles.



5. First aid kit.



SAFETY INSTRUCTION

Iron Horse safety equipment



WARNING!

The IronHorse must never be used if any of the safety devices or guards are missing, damage or do not work

There are a number of safety devices and guards to prevent accidents with the Iron Horse. These are described in the general description of Iron Horse. See page 16.

The safety devices and guards also require regular inspection and maintenance. These measures and intervals are set out in the "Maintenance" section. See pages 28-34.

Fuel safety



WARNING!

The fuel used in the IronHorse has the following hazardous properties:

- 1. The fluid, its vapour, and its exhaust fumes are poisonous.**
- 2. Can cause skin irritation.**
- 3. Is highly inflammable**

Special safety regulations apply to the fuel used for the Iron Horse. These are documented in the section "Fuel Handling" on page 18.

Personnel

The following applies to the personnel using the Iron Horse:

1. Must have read and understood the content of this Operator's Manual
2. Must not be under the influence of alcohol, medicines or suffer from tiredness.
3. Good lighting is required when driving outside daylight hours.
4. Should not be a minor.

Risk Zone

The risk zone is evident from the picture to the right.

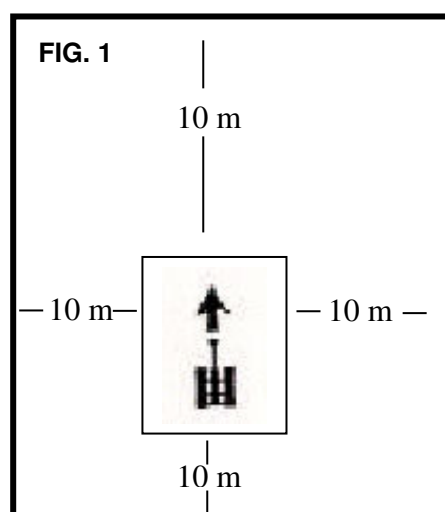
No unauthorised persons may be present in the risk zone.

Safety during use

The safety regulations that apply while using the Iron Horse are documented in respective areas under the section "Use" on page 24-27.

The operator should observe the following safety measures before and during use:

1. Check that all safety devices and guards are fitted and undamaged.
2. Check that no fuel has been spilt on the outside of the tank or on the ground.
3. Ensure that there are no people or animals within the Iron Horse's risk zone.
4. Check all controls needed to drive the Iron Horse.
5. Ensure that all devices needed to secure logs and accessories on the Iron Horse are used in the intended manner. See pages 24-26.
6. Check the route, so that no unnecessary obstacles are in the way, and that you can operate the Iron Horse in a safe manner.



DESCRIPTION

Iron Horse IH 2055 – IH 2013

Classic

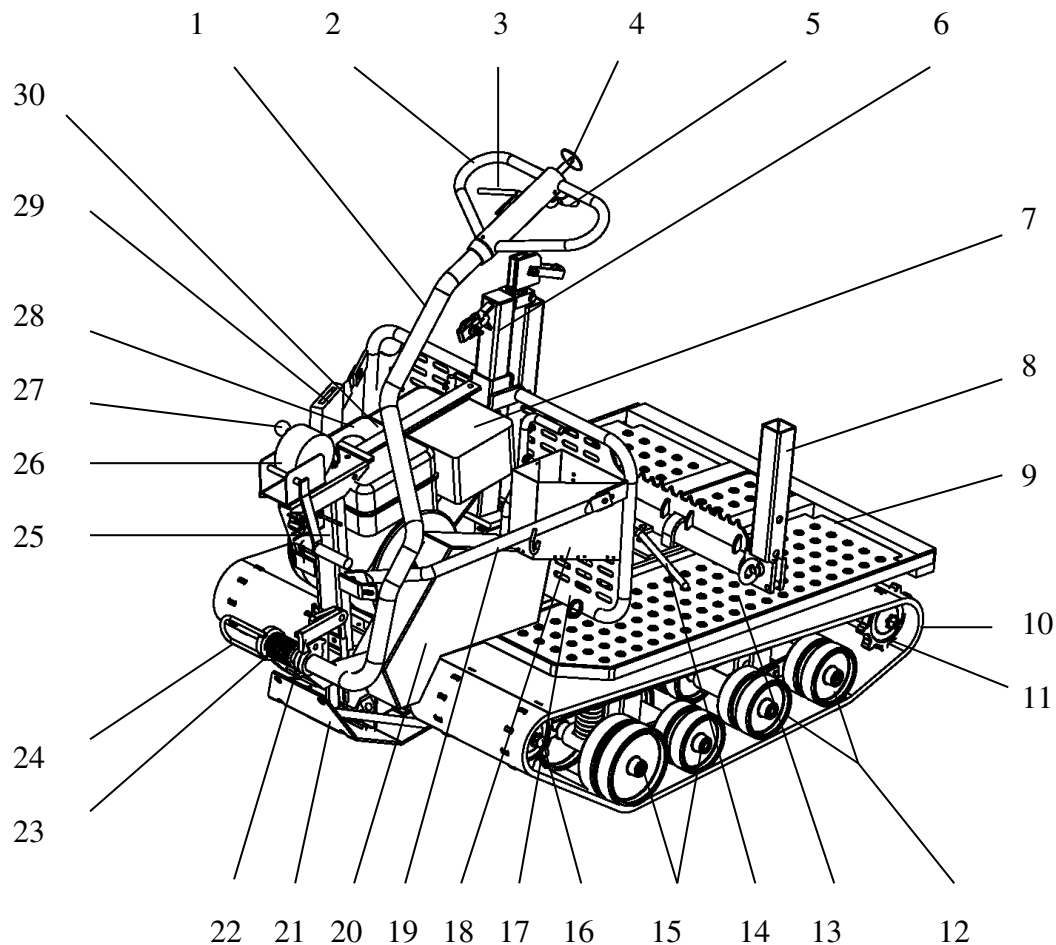
The Iron Horse consists of the following main parts:

- Engine, gearbox and transmission
- Chassis
- Caterpillar track
- Steering arm

Description:

1. Steering arm
2. Handlebars
3. Brake lever
4. Stop control
5. Throttle
6. Power winch
7. Muffler
8. Log bunk
9. Chassis
10. Caterpillar track
11. Tension wheel bearing
12. Rear bogie wheel
13. Cover over track

14. Lever for log bunk
15. Front bogie wheel
16. Drive wheel
17. Storage box
18. Roll-over bar
19. Screw for height setting
20. Belt guard
21. Protective plate
22. Adjusting bolt for steering arm
23. Balance spring for steering arm
24. Cable cover
25. Differential lock
26. Manual winch
27. Gear lever
28. Fuel tank
29. Chain saw attachment
30. Petrol engine



DESCRIPTION

Iron Horse IH 2090 – 2013 Flex

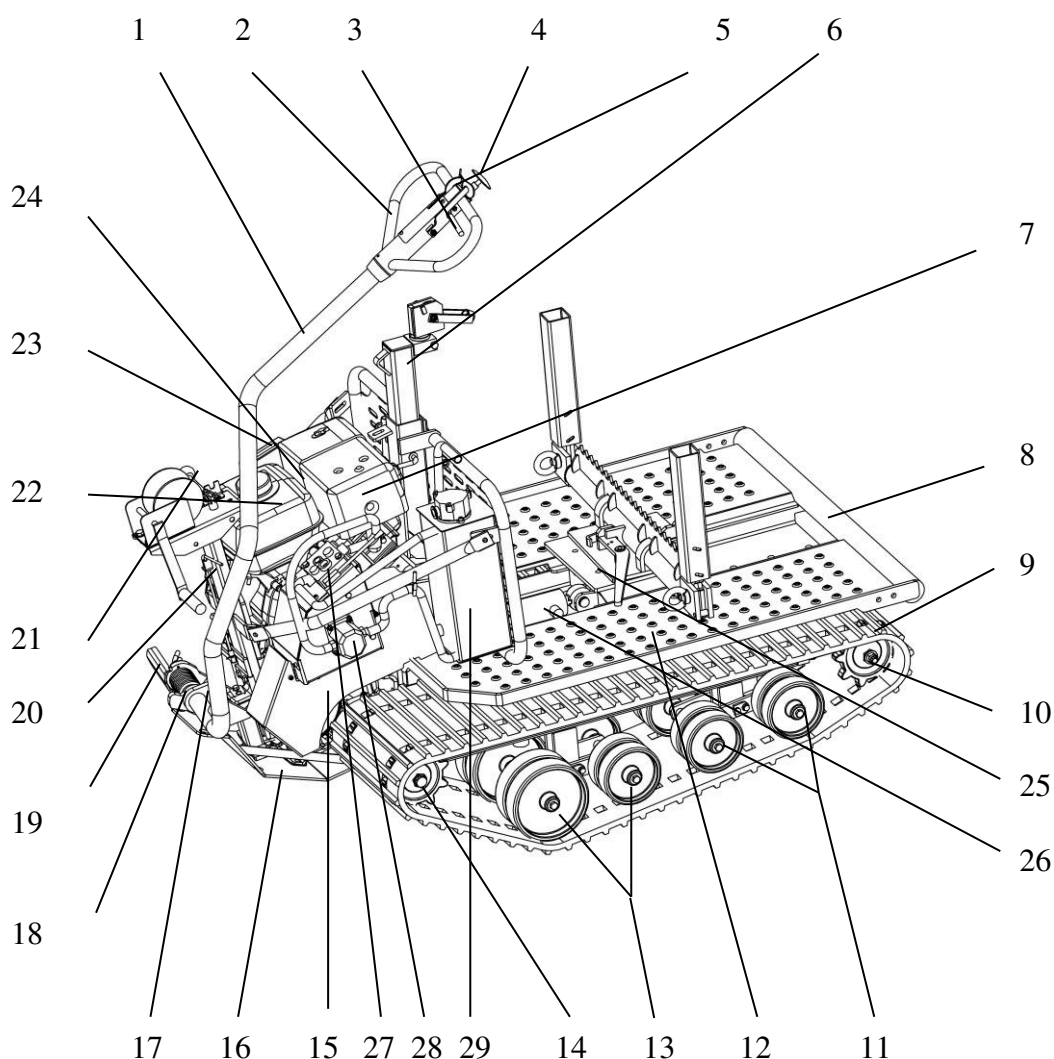
The Iron Horse consists of the following main parts:

- Engine, gearbox and transmission
- Chassis
- Caterpillar track
- Steering arm

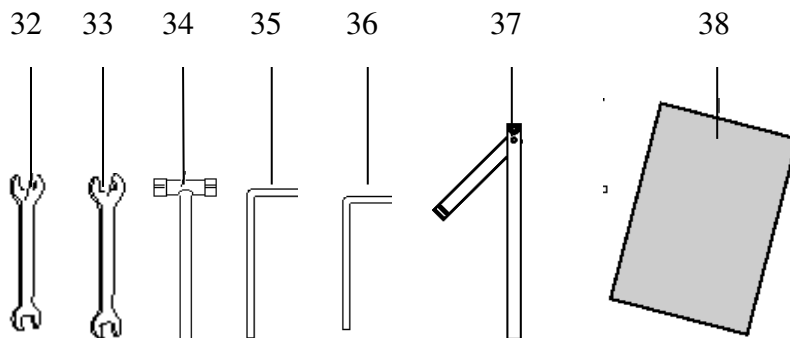
Beskrivning:

1. Steering arm
2. Handlebars
3. Brake lever
4. Stop control
5. Throttle
6. Power winch
7. Muffler
8. Chassis
9. Caterpillar track
10. Tension wheel bearing
11. Bogie wheel rear

12. Cover over track
13. Front bogie wheel
14. Drive wheel
15. Belt guard
16. Protective plate
17. Adjusting bolt for steering arm
18. Balance spring for steering lever
19. Cable cover
20. Differential lock
21. Gear lever
22. Fuel tank
23. Chain saw attachment
24. Petrol engine
25. Adjustable accessory mount
26. Hydraulic piston
27. Steering arm hydraulic piston
28. Hydraulic pump
29. Hydraulic tank



	DESCRIPTION
1	100% Cotton T-shirt
2	100% Cotton T-shirt
3	100% Cotton T-shirt
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98	100% Cotton T-shirt
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100	100% Cotton T-shirt



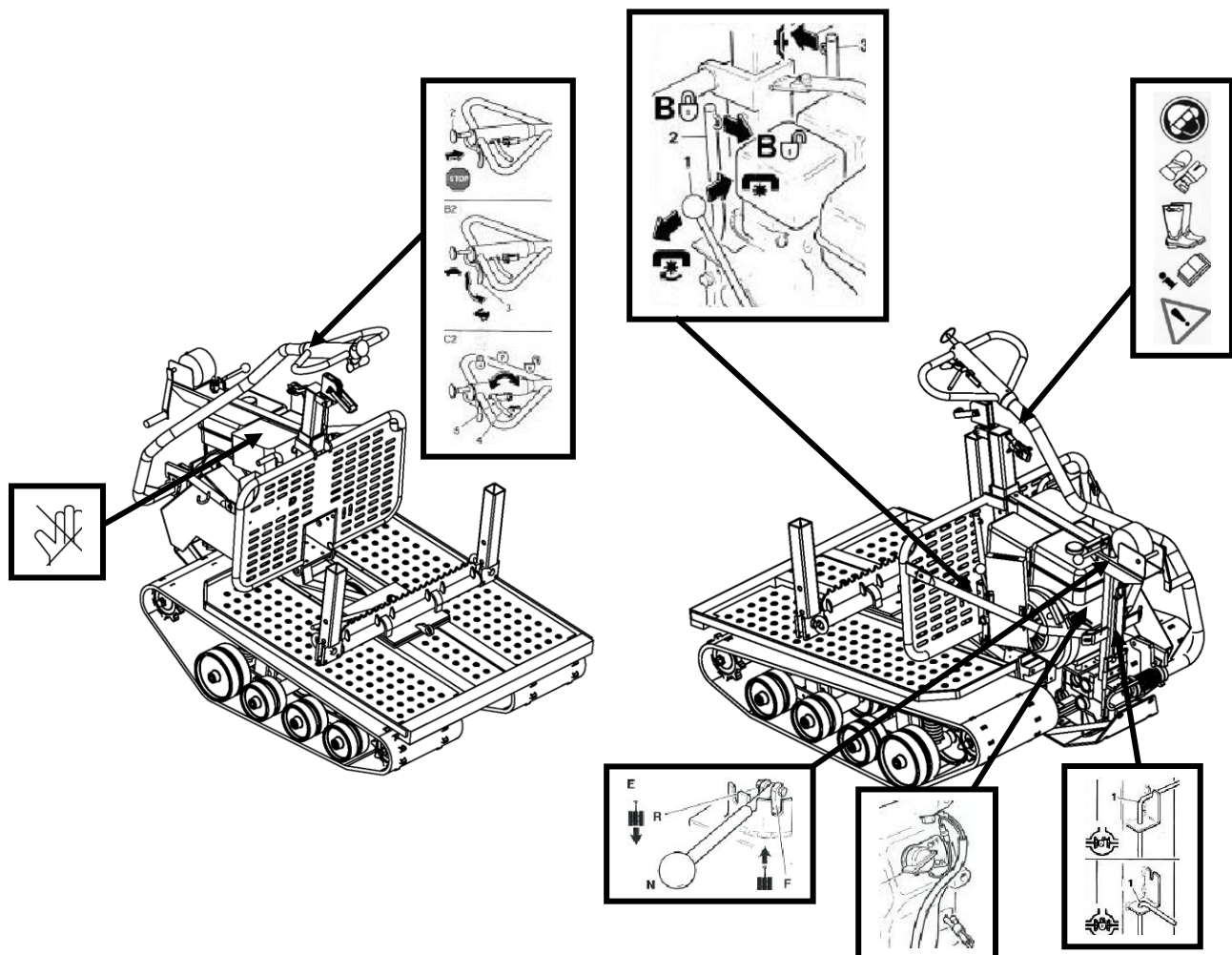
Description:

32. Open ended spanner 10 - 13
33. Open ended spanner 17 - 19
34. Spark plug spanner
35. Allen key 4 mm.

36. Allen key 6 mm.
37. Track adjustment tool
38. This Operator's Manual

Decal placement

The following warning and information decals can be found on the machine. Missing or illegible decals must be replaced.



DESCRIPTION

Iron Horse (FIG. 2)

The Iron Horse consists of the following parts:

Note! Some parts are optional and are not included as standard.

- Chassis with mounts for the drive unit, log bunk, bogie and caterpillar track.
- Load anti-slip guard.
- Load anti-slip guard with integrated power winch.
- Manual winch.

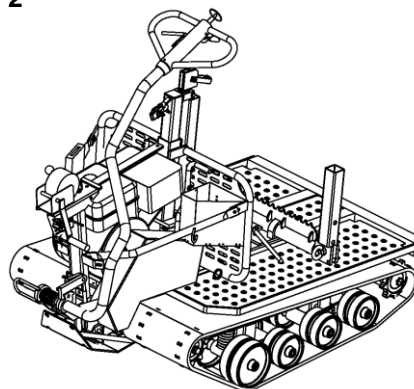
The drive unit consists of the following parts:

- Engine with muffler and fuel tank
- Variator.
- Gearbox with mounts for the steering arm and drive axles.
- Dog clutch
- Steering brake.

The steering arm consists of the following parts:

- Handlebars with controls
- Adjustable spring for weight balance
- Steering yoke

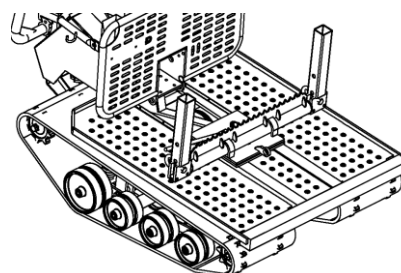
FIG 2



Chassis (FIG. 3) and (FIG. 4)

The chassis is made up of welded square tube with mounts for the gearbox, load anti-slip guard, drive axles and bogies. The chassis is also fitted with perforated sheet metal plates that protect the tracks. The plates can also serve as a basic platform to transport loads. The chassis is equipped with a swing plate to attach the log bunk and other accessories. The chassis also houses strong mounts for the machine's bogie and bogie wheels. The Flex model also has an accessory mount that is adjustable lengthwise for increased application possibilities.

FIG 3



Wheel bogie and caterpillar track (FIG. 3) and (FIG. 4)

The wheel bogie consists of the bogie cradles, which is supported by bearings on the chassis.

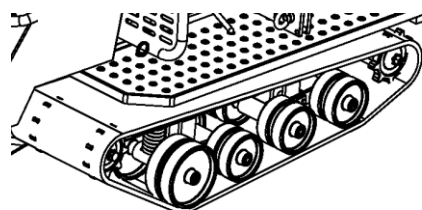
The bogie is available with two types of wheels.

1. Nylon wheels with double wheels on all axles.
2. Nylon wheels with double wheels on all axles, supported on bearings and sealed.

The caterpillar track is manufactured of natural rubber, which is extremely hardwearing and reinforced with Kevlar and nylon cord. The tracks are available in two versions.

1. With tooth gaps, which are reinforced by metal clips and cast epoxy rods.
2. For particularly demanding conditions, there is a version with internal drive with interior rubber heels.

FIG 4



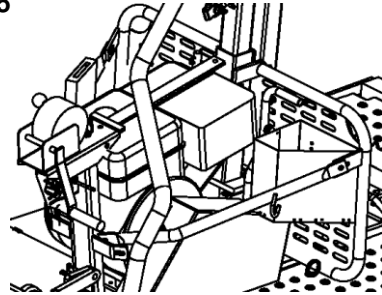
DESCRIPTION

Load anti-slip guard (FIG. 5)

The Iron Horse is equipped with a load anti-slip guard (with exception of the standard model). The load anti-slip guard prevents the load from shifting and damaging the engine. Tubes are fitted to the guard that act as overrides to prevent brush and branches damaging the engine. There is also a chain saw attachment fitted to the override tubes and a bracket to hang the combi-container for the chain saw.

A toolbox is also fitted on the guard.

FIG 5



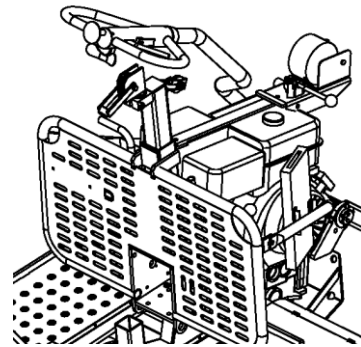
Load anti-slip guard with integrated power winch (FIG. 6)

The power winch is fitted on the load anti-slip guard. The power winch is driven via a belt transmission by the petrol engine.

The winch drum is fitted on the load guard and the winch wire is connected to the winch tower, which is vertically adjustable and is equipped with a pulley and swivel, making it possible to winch from all directions around the machine.

All controls for the power winch are integrated in the load guard. The power winch is also available as an accessory and can be retrofitted on the Iron Horse.

FIG 6



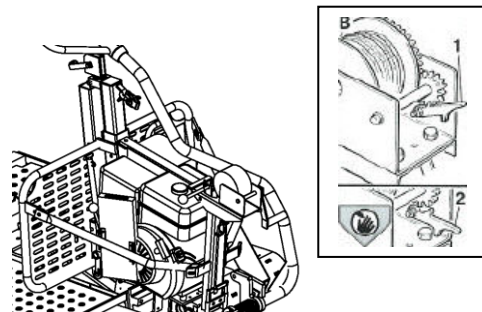
Manual winch (FIG. 7)

There is also a manual winch on all models, with the exception of the standard model. On machines with a power winch, the manual winch is mainly used to anchor the machine when winching with the power winch.

The manual winch is then attached to an anchor block located on the power winch tower.

Iron Horse machines without a power winch use the manual winch to load from the rear. There is a work roller fitted on the top of the load guard for the wire to run over to facilitate loading.

FIG 7



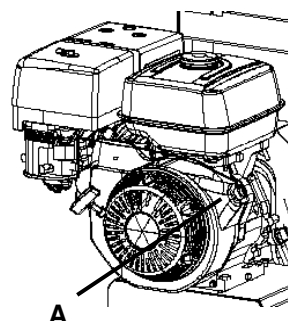
DESCRIPTION

Engine (FIG. 8)

The Iron Horse is driven by a powerful petrol engine. There are three engine options to choose from.

The engine is mounted above the gearbox and is connected to the gearbox via a belt transmission. The fuel tank and muffler with an integrated heat shield are also fitted to the engine. The engine's throttle is operated from the handlebars. The stop switch is easily accessible on the front of the engine (FIG. 8 A). The engine is also equipped with a fuel tap and choke.

FIG 8

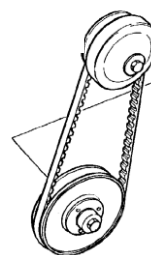


Variator (Torque converter) (FIG. 9)

The Iron Horse is equipped with a variable gear device, variator (torque converter) (FIG. 9). The speed and torque output from the gearbox is governed depending on the load and revs. With heavy loads, the speed is geared down and in doing so the torque increases. With lighter loads the gear ratio is increased and the Iron Horse then runs faster.

The variator requires maintenance to give optimal performance, see the service and maintenance section on page 32.

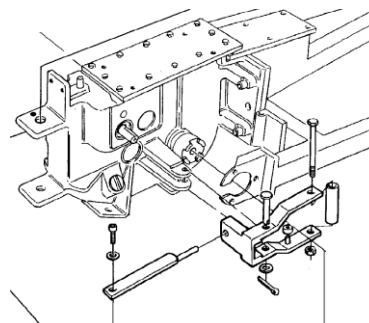
FIG 9



Gearbox (FIG 10)

The Iron Horse has a cast gearbox made of spheroidal graphite iron. The gearbox has well-sized mounting holes for bolting to the chassis. A protective plate is secured under the gearbox using large bolts. Downshifting takes place through straight-cut, hardened cog wheels. The gearbox has a gear ratio of 1:20. Gear shift for forward, reverse and neutral. Output axle, where the dog clutch is fitted and the axle for the brake. The mount for the steering yoke is located on the front of the gearbox.

FIG 10

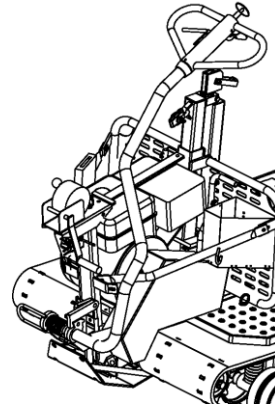


DESCRIPTION

Steering arm (FIG. 11)

The steering arm is attached to the gearbox by a steering yoke, which is interconnected with the clutches that release the track. Move the steering arm to the right or left, releases the clutch on respective sides. Moving the steering arm further to either the right or left, slows respective tracks and the Iron Horse turns. When the steering arm is placed in the neutral position the machine drives both tracks and it then runs straight forwards. The throttle and brake lever as well as a stop control for the engine are located on the handlebars. The throttle is positioned in the centre of the steering arm. The brake lever is placed on one side of the handlebars. The stop control is placed in the middle. The weight of the steering arm is offloaded by means of a spring which is adjustable. A diff-lock is also fitted to the steering yoke to lock and reduce steering arm movement and to lock the steering for different purposes.

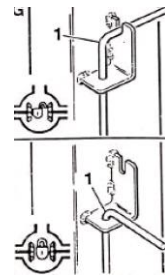
FIG 11



Differential lock (FIG. 12)

The differential lock is used to lock the steering, so that the machine is driven by both tracks, irrespective of whether the steering arm is moved to the right or left. The control is easily accessible on the bracket.

FIG 12



Gear shift (FIG. 13)

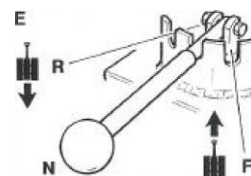
Gear shift has three positions. In position (F) the Iron Horse moves forwards, position (N) is neutral while in position (R) the Iron Horse reverses.

F: Forwards

N: Neutral

R: Reverse

FIG 13

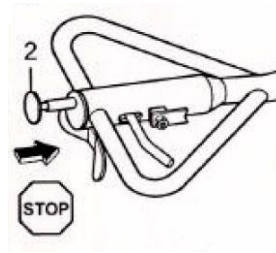


DESCRIPTION

Stop control on the handlebars (FIG. 14)

The Iron Horse is equipped with two stop controls. One control is easily accessible on the handlebars (FIG 14.2). When the control is pressed in the engine stops.

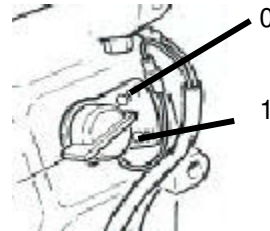
FIG 14



Stop control on the engine (FIG. 15)

The other control is positioned on the engine and is a switch with two positions 1 and 0 (FIG. 15).

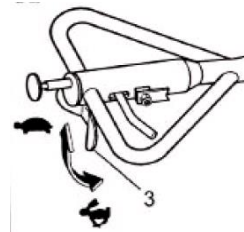
FIG 15



Throttle (FIG. 16)

The throttle (FIG. 16.3) for the engine is fitted on the handlebars. When the lever is pressed down the speed of the engine increases. The throttle is variably controlled. When the lever is pressed in fully the engine runs at max. revs.

FIG 16

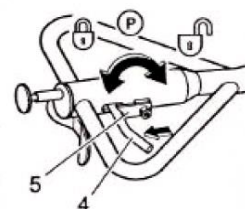


Brake control (FIG. 17)

Brake lever (FIG. 17.4) is fitted on the handlebars and is easily accessible when you drive the machine. Pulling the lever stops the Iron Horse, which is equipped with a disc brake on the gearbox.

Locking the brake lever with a catch (FIG. 17, 5) locks the brake which then serves as a parking brake.

FIG 17



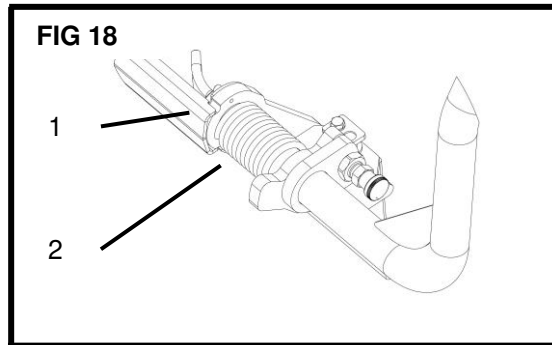
DESCRIPTION

Wire control guard (FIG. 18).

A loop (1) is fitted to the steering yoke to prevent branches from coming into contact with the wire control by its mounting on the steering arm.

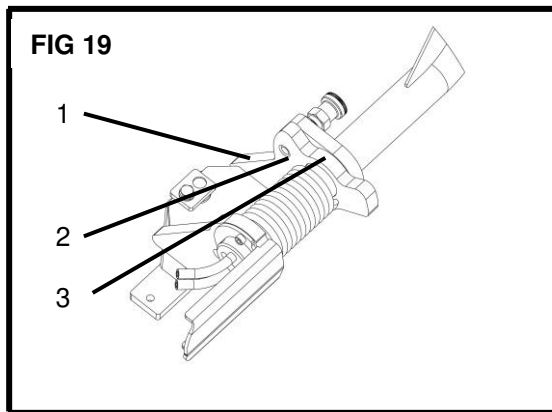
Balance spring (FIG. 18)

There is a spring (2) fitted around the steering arm, this can be adjusted. The task of the spring is to balance the weight of the steering arm making it weight-neutral.



Adjusting bolt steering arm (FIG 19)

The adjusting bolt is located on the steering arm bracket. The lever can be set in one of three different positions by pulling out the spring-loaded bolt and moving the lever in the desired direction. Position (1) is transport mode. The lever is moved backward so that it reaches minimum height. Position (2) is when the bolt goes through the hole and locks the steering arm in the up position. In Position (3), the lever is moved forward. This is the usual position when operating the IronHorse.



DESCRIPTION

Safety Devices

The Iron Horse is equipped with a number of safety devices, which are described under the coming headings.



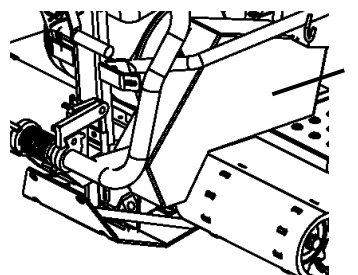
WARNING!

The IronHorse must not be started if any of the safety devices have been removed, are defective, or are not working.

Belt transmission guard (FIG. 23)

Belt transmission is protected from contact by a belt guard (1), that covers the transmission between the engine and the gearbox. On machines equipped with a power winch the transmission to the winch is also covered.

FIG 23

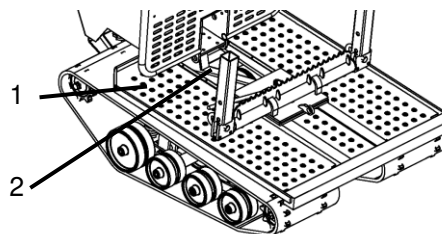


Protection for caterpillar track and hydraulic piston (FIG 24)

The caterpillar track is protected from contact from the top through the integrated protection (1) on the chassis. The guard also protects against logs or other loads damaging the caterpillar track. On the Flex model with hydraulic piston, there are two protective plates (2) over the piston to prevent crushing injuries and damage to the piston and its hydraulic couplings during loading.

The protective plates may not be removed.

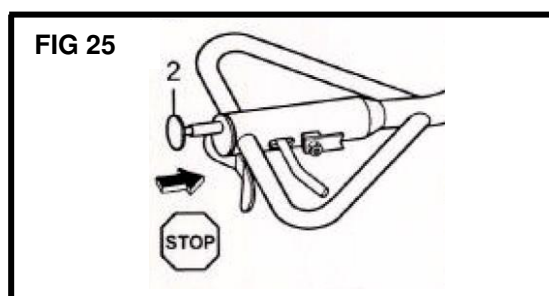
FIG 24



DESCRIPTION

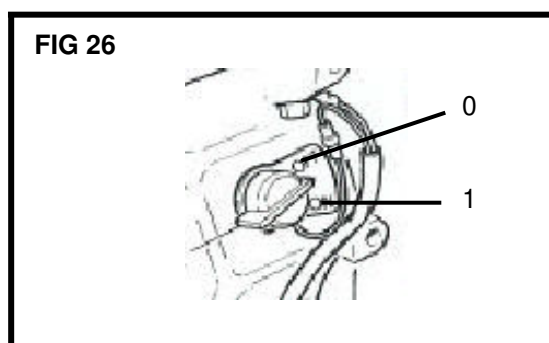
Stop device on the handlebars (FIG. 25)

There is a stop control fitted on the steering arm's handlebars (FIG 25, 2). When the control is pressed in the engine stops. The control must be pulled out to start the engine. The control must always be pressed in when transporting the machine.



Stop device engine (FIG. 26)

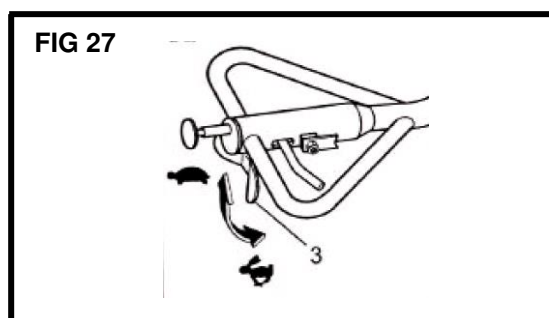
There is a stop switch located on the engine with the markings 1 and 0 (FIG. 26). When the switch is in position 0 the current is shorted. Position 1 is the operating mode.



Throttle (FIG. 27)

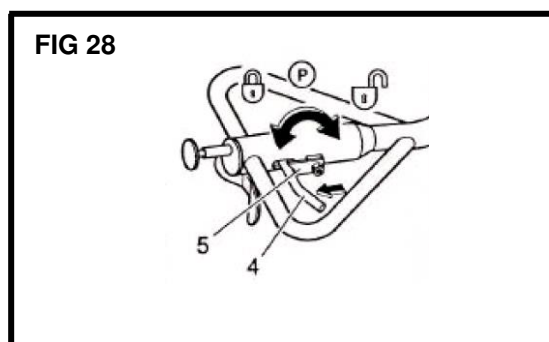
The throttle (FIG. 27, 3) is located on the handlebars. The lever is spring loaded and when the lever is released the engine idles and the Iron Horse stops.

Always check the function before starting.



Brakes (FIG. 28).


The brake lever (FIG. 28, 4) stops the Iron Horse. Move the catch (FIG. 28, 5) into position and lock the brake lever to engage the parking brake.



FUEL HANDLING

Fuel

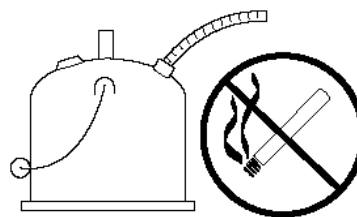
Fuel safety



WARNING!
The fuel used in the IronHorse has the following hazardous properties:

1. The fluid, its vapour, and its exhaust fumes are poisonous.
2. Can cause skin irritation.
3. Is highly inflammable

FIG 31



The following are absolutely forbidden when fuelling:

- To smoke.
- To have flames or hot objects in close proximity.
- To have the engine running.

Petrol

Use leaded or unleaded petrol.

The lowest recommended octane grade is 90. If you run the engine on a lower octane grade than 90 so-called knocking can occur. This leads to an increased engine temperature, which can result in serious engine damage.

Refuelling

1. Clean around the fuel cap.
2. Open the fuel cap slowly so that any excess pressure is released.
3. Tighten the fuel cap carefully after fuelling.
Clean the fuel tank regularly.

The fuel filter should be changed at least once a year. Contamination in the tanks causes malfunction.

STARTING AND STOPPING



WARNING!

Observe the following before starting the engine:

The engine must not be started without first checking the throttle and putting the gear shift in neutral position.

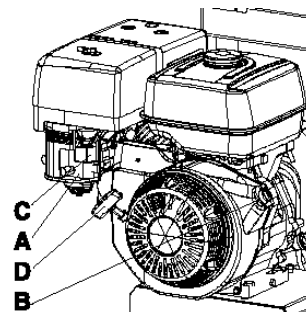
Otherwise the IronHorse can start to move and cause personally injury.

Starting a cold engine (FIG. 32)

A cold engine is started as follows:

1. Put the gear shift (1) in neutral (FIG. 33).
2. Open the fuel tap (A).
3. Move the stop switch (B) to the start position (FIG 32, 33)
4. Activate the choke (C).
5. Slowly pull out the starter handle (D) until you feel some resistance (the starter pawls grip). Now pull quickly and powerfully.
6. When the engine starts, return the choke.

FIG 32



Stopping the engine

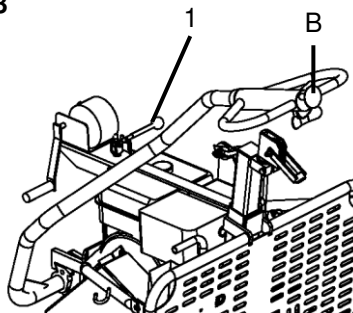
Stop the engine by moving one of the stop controls (B) to the stop position. The engine stops by moving one of the stop controls to the stop position. Close the fuel tap (A).

Starting a warm engine

A warm engine is started in the same way as a cold engine, except for the following:
The choke is not used on a warm engine.

Starting instructions can also be found in the Manual for the engine.

FIG 33



CHECK BEFORE USE



WARNING!

Check the controls according to the following procedures.
If one of the controls is faulty the IronHorse must never be used until the fault has been rectified.

Start the engine as instructed.

- Check the function of the throttle (FIG. 35), by pressing down throttle lever (5) and so the engine revs increase. When the lever is released the engine revs should drop to idling speed.

Checking the steering.

1. Move the gear shift (FIG. 36) to the forward position. Open the throttle slightly and check that the Iron Horse moves slowly forwards. Close the throttle and check that the Iron Horse stops.
2. Move the steering arm to the right, open the throttle slightly and check that the Iron Horse swings to the right. Close the throttle and the Iron Horse stops.
3. Move the steering arm to the left, open the throttle slightly and check that the Iron Horse swings to the left. Release the throttle and the Iron Horse stops.
4. Repeat the checks with the gear shift (FIG. 36) in reverse.

Checking the brakes (FIG. 37).

1. Move the gear shift to the forward position and open the throttle slightly. Check that the Iron Horse moves slowly forwards.
2. Check that the lock (FIG. 37 A) is released. Close the throttle and apply the brake (3). Check that the Iron Horse stops immediately.

Checking the stop control (FIG. 38)

1. Press down the stop control (4) and check that the engine stops.

FIG 35

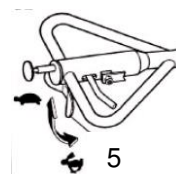


FIG 36

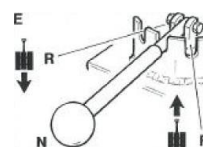


FIG 37

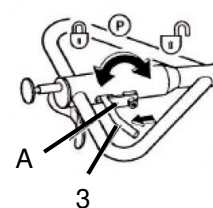
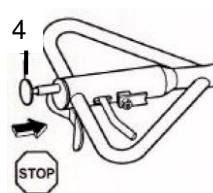


FIG 38



USE

Application area

The Iron Horse can be used for different cross-country transport purposes. Its unique accessibility and the low ground pressure make it ideal for the transport of timber and forest plants, when hunting, to transport the kill, and for the transport of materials in rugged terrain. There is a full range of accessories available to increase flexibility yet further.



WARNING!

Use the following protective equipment when driving:

- **Boots or shoes fitted with steel toe-caps**
- **Helmet with hearing protection.**
- **Gloves**
- **Always have a first aid kit nearby.**

Before starting the engine check that:

- **The gear shift is in neutral and the stop controls is pulled out.**
- **No unauthorised persons are within the risk zone**

Driving instructions

The machine's variator with integrated centrifugal clutch, automatically adapts the gear ratio according to the load and engine revs.

As soon as you open the throttle more, the clutch engages and the Iron Horse starts to move.

Moving the steering arm in the direction you wish to travel releases the inner track and the tractive force is transferred to the outer track and the Iron Horse changes direction. When the steering arm is moved yet further to the side, the brake is applied to the inner track. This improves the cornering ability yet further.

DRIVING IN THE TERRAIN



WARNING!

When driving cross-country observe the following:

- Do not overload the machine.
- Plane the cross-country route.
- Avoid stumps and stones.
- Do not use brute force on the machine.

In heavily undulating terrain:

- Always reverse the unloaded IronHorse down steep slopes.
- Never stand and drive the IronHorse in difficult terrain.

Cross-country driving

To drive the Iron Horse cross-country requires training and practice. Driving with the open-sided combi-cart or timber cart (FIG. 39), makes the Iron Horse longer and more stable lengthways. The machine swings when loaded and prevents the machine from tipping forwards or lifting on steep slopes.

- Do not overestimate its accessibility and load capacity.
- Stumps and stones frequently obstruct driving as the tracks fail to climb over these.
- Plan the route and cut down high stumps, move stones and fill ditches, and pits with clearing wood.
- If possible, straddle the stump between the tracks (FIG. 40)
- When driving over ditches, pass the ditch diagonally, to prevent the protective plate from getting caught on the edge of the ditch (FIG.41).
- The Iron Horse loses tractive force when one of the tracks is released and brake applied. Consequently, do not attempt to turn when there is a large need of tractive force, for example, on steep slopes or when passing obstacles.
- Should you be in a situation where turning is unavoidable, use the diff-lock to prevent the track from being disengaged. Use the steering arm to align the machine.
- Driving across slopes when there is a risk of the tracks jumping off of the drive wheel.
- The Iron Horse has limited accessibility in loose snow, when the machine is heavily loaded. However, while unloaded the machine negotiates difficult conditions. Therefore compact the route with the machine unloaded the day before driving with the machine loaded.

It is difficult to turn the Iron Horse with the diff-lock activated.

FIG 39

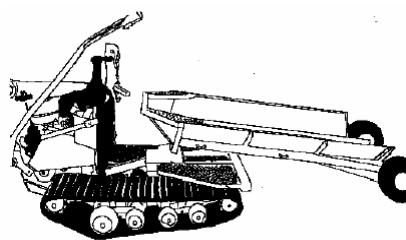


FIG 40

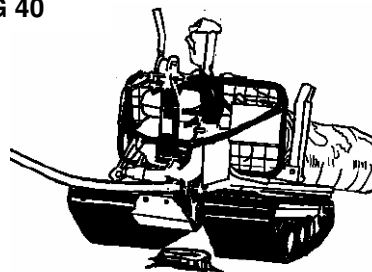
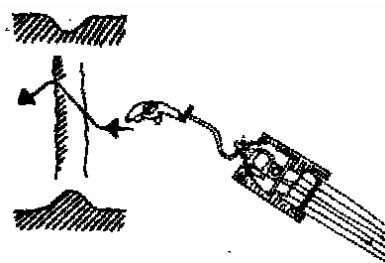


FIG 41



DRIVING IN THE TERRAIN

Driving downhill

1. Without a cart (FIG. 42)

When driving downhill on steep slopes the machine can tip forwards.

With a load on just the Iron Horse or with a cart, with or without a load the Iron Horse (FIG. 42) must always be reversed down hills. Always use the diff-lock (FIG. 43), to ensure braking on both tracks.

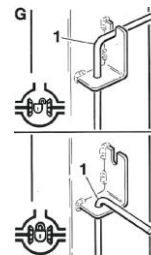
When you reverse downhill and at the same time open the throttle slightly, the clutch is engaged, you can also use the engine as an engine brake. The disc brake can be used as normal with the separate lever.

On extremely steep downward slopes the power winch can also be used. How to use the power winch is described on page 25 in this manual.

FIG 42



FIG 43

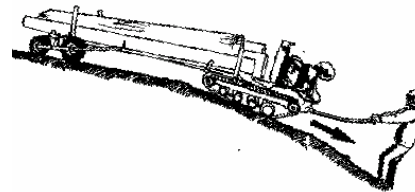


2. With a cart (FIG. 44)

However, with a loaded cart it is possible to drive downwards. Use the diff- lock to ensure that the brakes are applied to both tracks. Set the direction, as it is very difficult to turn with the Iron Horse when the diff-lock is actuated.

On steep downward slopes, timber is dragged on the machine's timber bunk. Dragging timber creates more friction.

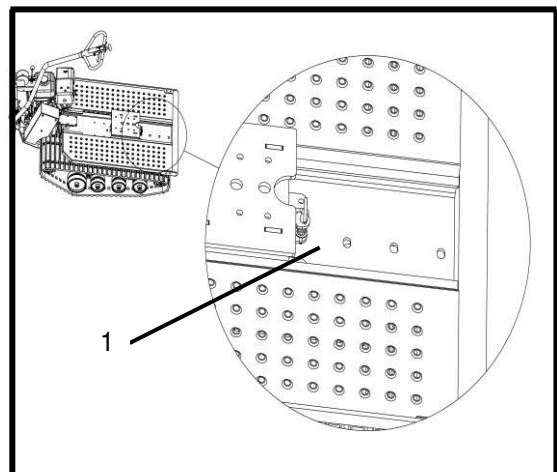
FIG 44



3. Flex model

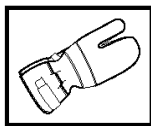
The Flex model has an adjustable accessory mount that provides increased application possibilities when driving in difficult terrain. The centre of gravity can be shifted forward or backward as needed. Always start at the starting position. For hydraulic-powered Flex, this is when the piston is unaffected, i.e. the piston rod is in the compressed position. For manual Flex, this is the fourth position hole (1) from the rear end of the Iron Horse.

Note! When the accessory mount is in its forward position, the load may catch in the load anti-slip guard or the engine during heavy oscillations or hilly terrain.



USE

Power winch



WARNING!

The power winch has great tractive force. If the IronHorse is not anchored it can overturn when winching! Look the steering arm when winching so the steering arm does not start to move and cause personal injury. The tractive force of the winch is greater than the weight of the IronHorse!

NOTE!

Always lock the steering arm with pawl in the locked position to prevent the steering arm from coming loose and cause personal injury

Power winch

Some Iron Horse models are equipped with a power winch. The power winch can be used in many different ways, these are described on the following pages.



WARNING!

When the IronHorse is used when winching with the pawl in the released position the steering arm can come loose and cause personal injury.



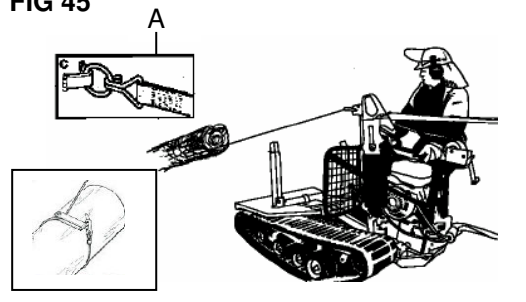
WARNING!

Never use a damaged winch wire.

Winching from behind (FIG. 45)

When performing heavy winching work, it is important that the machine is anchored in the winching direction. The machine is anchored using the manual winch together with an anchoring strap (FIG. 45 A).

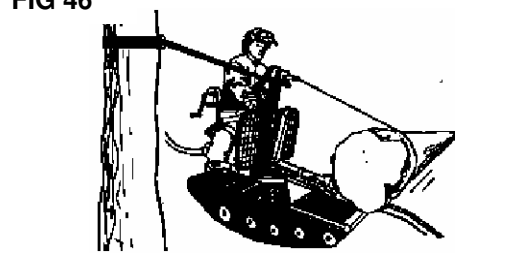
FIG 45



Loading large logs

The power winch can be used to load large logs. The easiest way is roll the log with the help of the power winch (FIG. 46). The timber bunk is turned and the stake is lowered while the extension stake is angled downwards towards the ground. The machine's is placed at 90° to the log, the winch wire is routed over and then under the log and the winch hook is anchored on the Iron Horse. The power winch is then started and the log is rolled up onto the bunk.

FIG 46



USE

Power winch (FIG. 47)

Winching the Iron Horse

The power winch can ideally be used to winch the Iron Horse forwards, where the terrain is very demanding.

The winch wire is run forwards, by moving the winch control forwards (A) over the corner block (B) on the gear selector.

The supplied corner block, which is located on the winch wire, is fitted in the appropriate hole on the protective plate.

This attachment moves the draw point downwards.

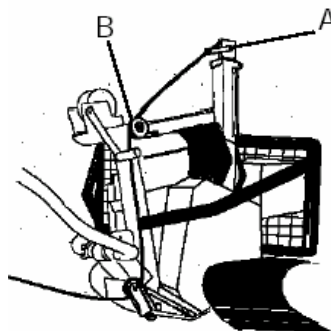
The winch wire is then attached to a suitable tree with the help of the anchor strap.

The winch control is activated, the gear shift is moved to forward drive. Both the winch and tracks drive simultaneously and the machine moves forward.

When greater tractive force is required, use the corner block and move the wire back and secure the hook on the machine. This gives a double wire and double winching power.

For a detailed instructional video, please see www.lennartsfors.com

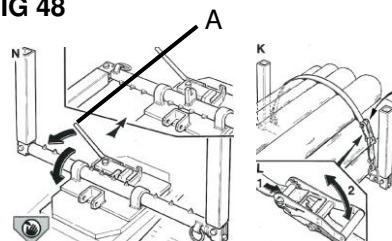
FIG 47



Timber bunk (FIG. 48)

The timber bunk can be lowered to facilitate unloading drawn logs. Release the catch (A), so that the bunk lowers backwards (FIG. 48). When the Iron Horse is then driven forwards the logs slide off.

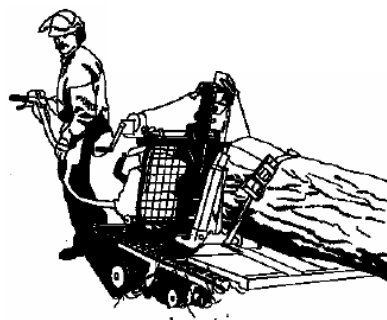
FIG 48



Anchoring logs (FIG. 49)

The logs are anchored on the bunk using the supplied straps between eyes on the timber bunk. The logs should not extend more than 20 cm in front of the timber bunk, otherwise the logs can lock against the load guard when driving cross-country. Retighten the logs after driving a few metres.

FIG 49



USE

Accessories

Timber cart (FIG. 50)

The advantage of driving with a timber cart is that you do not need to secure the load to transport over short distances when loading. At the same time the size of the load can be increased, as the timber does not cause friction against the ground. Dragging damage is reduced. When loading on the cart, the cart should be extended so that the wheels are as far back as possible under load, to increase the weight on the machine, which gives improved drawing ability. In undemanding terrain priority can be given to accessibility by moving the cart wheels further forward.

The timber cart can also be equipped with a bed (FIG 56).

FIG 50

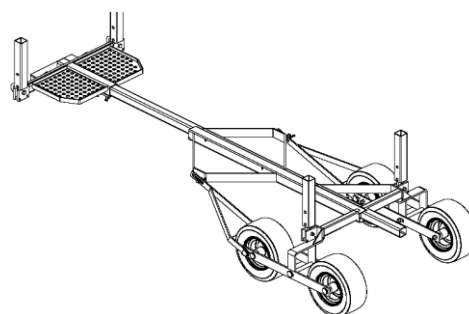
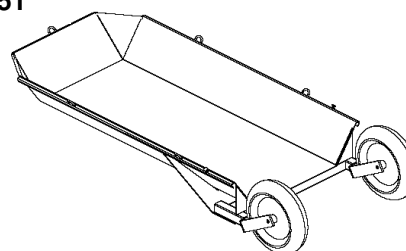


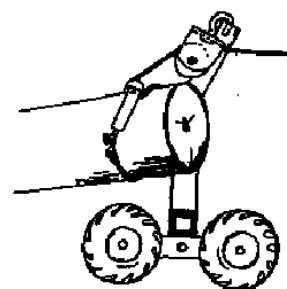
FIG 51



Combi-cart (FIG. 51)

The combi-cart is an open-sided cart, which is an excellent option when transporting elk. The wheels on the cart are vertically adjustable. The cart is suitable for the transport of elk and for farm work.

FIG 53



Snatch block (FIG. 53)

The snatch block can be used change the direction of logs and to winch logs to the machine when winching trees up on to the Iron Horse, and winching cross-country.

USE

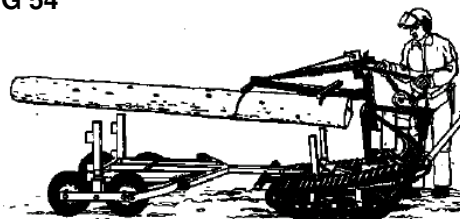
Accessories

Loading crane (FIG. 54)

The loading crane makes it much easier to load large logs.

Secure the wire on the end of the log. When the log comes up to the machine, move the wire and attachment approximately 1 metre along the log. This makes it possible to lift the log, which then hits the trapping arm and the log is lifted up. As the crane arm is anchored to the chains, which attempt to centre the arm, the log is transported in over the cart and the brake is released on the winch and the log is then loaded in the cart.

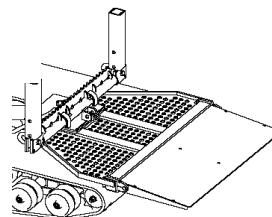
FIG 54



Loading plate (FIG 55)

When the machine is used without a timber cart the loading plate can be a good option when loading a drawn load. The loading plate makes it easy to winch up logs from behind. The loading plate is easy to retrofit. It is available in two versions. On the Flex model, it automatically follows the adjustable accessory mount when it is moved forward and backward. The other loading plate is handled manually.

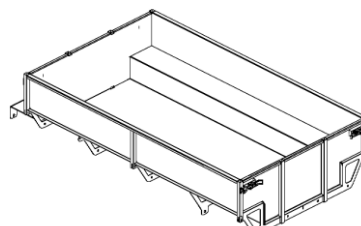
FIG 55



Combi-bed (FIG. 56)

The combi-bed is a fixed bed without a tip function and with a high tailboard that can be opened. The combi-bed fits on the timber cart (FIG 50). With the tailboard lowered it is easy to load and winch in elk and other loads from behind.

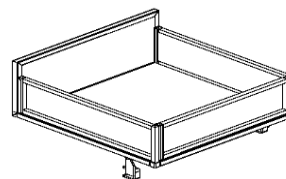
FIG 56



Tipping bed (FIG. 57)

The bed is tippable in combination with the winch. The side panels are removable.

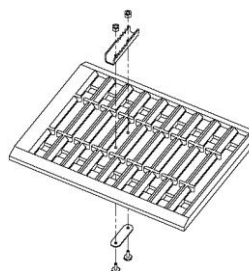
FIG 57



Spikes for the caterpillar track (FIG 58)

The caterpillar track can be equipped with spikes that can be retrofitted. The spikes are also fitted as standard on some models.

FIG 58



MAINTENANCE



WARNING!

Only carry out maintenance as described in the Operator's Manual. Other maintenances may only be carried out by an accredited workshop.

Engine

Also refer to the Operator's Manual for the engine.

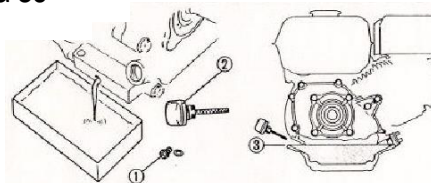
Changing the engine oil (FIG. 59)

Changing the engine oil should be done while the engine is warm. Loosen the dipstick and drain plug and drain off the old oil. Fill with oil.

Recommended oil:

SAE 10W – 30 (10W – 40)

FIG 59



Changing the gearbox oil FIG. 60)

The oil in the gearbox should be changed once a year.

The level is checked using the dipstick in the tank fill hole.

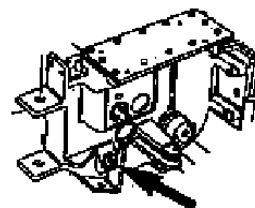
Recommended oil:

SAE 10W 30

Oil volume:

0.55 l.

FIG 60



Brake cable

The brake cable should be lubricated regularly, even when the return spring draws the brake calliper back. A slow return movement on the cable can result in the brake remaining against the brake disc and cause overheating.

Throttle cable

The throttle cable should be lubricated regularly.

Loosen the cable by the carburettor and loosen the casing by the steering yoke.

Fill the casing with a light oil and refit the cable.

Check the function and cable adjustment.

Winch wires

In order to reduce wear to the winch wires they should be oiled regularly. Steep a sponge in oil and lubricate the wire. **IMPORTANT!** Wear gloves, as the wire's strands may be damaged.

Controls

Lubricate all moving parts on all controls, to ensure good functionality.

MAINTENANCE

Air filter (FIG. 61)

Cleaning the filter:

- 1) Unscrew the wing nut, remove the cover and filter element.
 - 2) Wash the filter in detergent, rinse thoroughly.
 - 3) Allow the filter to dry and then steep in engine oil and squeeze out any excess.
 - 4) Replace the filter element and cover.
- Paper filter on engines of 9 hp. This is a disposable filter and must be replaced.

FIG 61

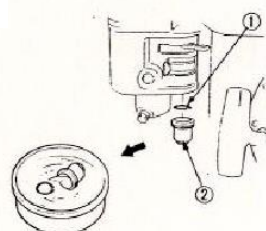


Carburettor (FIG. 62)

The trap cup (2) on the carburettor should be cleaned regularly. Wash the cup and O-ring (1) and wipe clean.

Refit the parts and turn on the fuel tap (ON position). Check for possible leakage.

FIG 62



Spark plug (FIG. 63)

Replacing the spark plug.

NOTE! The muffler can be very hot. You should therefore wait a few minutes after the engine has stopped, before unscrewing the spark plug.

Check for any soot, cracks or wear. If the spark plug is damaged it must be replaced with a new plug.

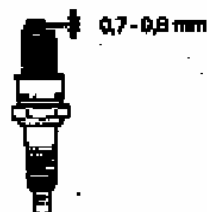
Recommended plugs:

N9YC, CHAMPION

BP6ES, NGK

W8DC, BOSCH

FIG 63



MAINTENANCE

Variator

The variator on the Iron Horse with 5.5 horse power must be lubricated regularly, about every 20 hours using heat-resistant grease. Large loads create great heat and may make it necessary to lubricate more frequently.

The grease provides improved functionality and prevents wear.

1. Primary variator (FIG. 64)

Dismantle the belt guard and unscrew the bolt (A). The engine axle must be prevented from rotating in order to loosen the bolt. The easiest way is to knock up the bolt using an open ended 13 mm spanner and a hammer and to hit the spanner and in doing so loosen the bolt. Take off the cover (B) and the floating disc (D). Clean and grease the splines on the floating disc (D). Clean and grease the drive (E). NOTE!

Ensure that the drive is refitted facing the same way, to align with the bevels on the cover (B) hole. Pull out the weights (C) and grease using a light bearing grease on the rear and front of the weights. Also apply a thin layer of grease on the inside of the cover (B). Check that the joint on the spring (I) is positioned in the centre of the weight. Refit and ensure that the cover (B) is positioned correctly on the drive's (E) bevel.

The bronze bushing (H) should rotate easily around the axle. The bronze bushing rotates when the engine idles.

2. Secondary variator (FIG. 65)

Apply a thin layer of bearing grease on the cam disc (J) that the plastic lugs (K) slide against. Check that the circlip (M) is not damaged.

3. Variator function (FIG. 66)

- 1) When the engine idles, the springs are held together in the primary variator weights, so that the floating disc releases the belt.
- 2) The speed increases and the floating disc is pressed against the belt and the machine starts to pull in a low gear. When the belt is worn, so this becomes narrower, the belt grips higher up on pulley and the greatest torque has been lost and the Iron Horse becomes weaker.
- 3) When speeds increases yet further, the weights press the floating disc against the belt which then climbs on the pulley and gear ratio increases. NOTE! The machine is at its strongest if you start at low throttle, low gear
- 4) If the resistance is small, the speed increases, the disc presses together yet further and the Iron Horse reaches its highest gear. Should the resistance increase, the floating disc slides on the secondary variator's cam disc. The groove on the secondary variator's pulley becomes wider and the belt diameter decreases and changes down and increases the torque and in doing so becomes stronger.

FIG 64

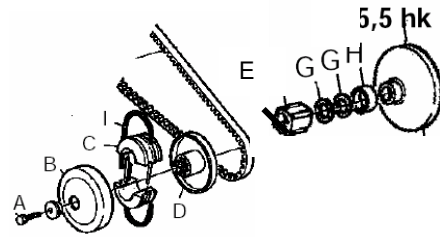


FIG 65

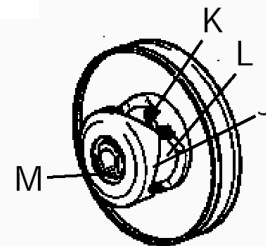
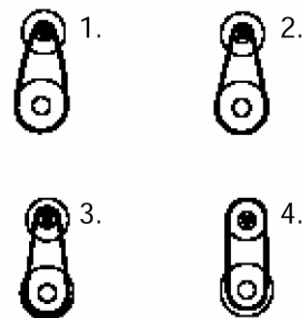


FIG 66



MAINTENANCE

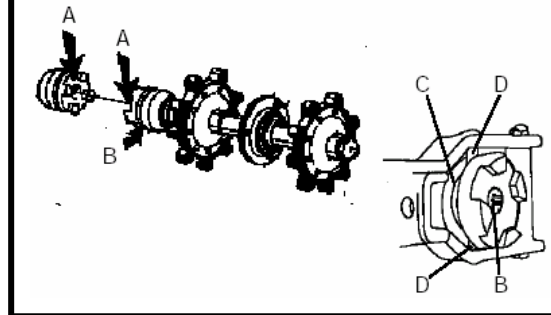
Lubrication and adjustment

Dog clutch (FIG. 67)

The dog clutch should be lubricated with grease every 50 hours, or more frequently if it is difficult to disengage the clutch while loaded.

Grease the claws (A) and the splined axle and the slot (C) on the dog clutch, as well as the two bearings (D).

FIG 67

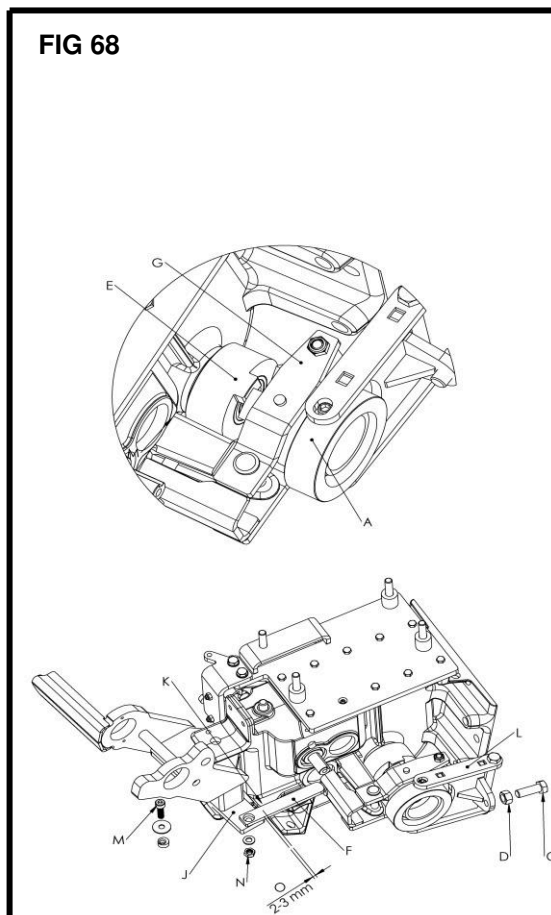


Steering brakes (FIG. 68)

It is important that the steering brakes are adjusted correctly to utilise the steering characteristics of the Iron Horse. Correct adjustment gives maximum braking effect, without the mechanisms being overloaded. The brakes are adjusted according to the following:

1. Move the steering arm to the side to be adjusted
2. Turn the machine using the steering arm, so that the moving dog clutch hangs on the clutch fitted to the gearbox (E)
3. The steering arm is pushed completely to one side, until it bottoms in the fixed brake shoe (A).
4. If the movement is stopped by the steering yoke (J) hitting the stop lug (K) on the gearbox, the steering brake handle (L) must be adjusted with the help of adjuster nut (C). The lock nut (D) must first be loosened.
5. When the steering arm is moved lightly to one side, the moving dog clutch has bottomed in the brake shoe (A), adjust the brake handle with nut (C), the gap between the steering yoke (J) and the stop lug (K) on the gearbox should be 2 –3 mm (O). When this adjustment is not enough, you can adjust the push rod (F) using the eccentric bolt (M).
6. The distance (E), between dog clutches must not be less than 1 mm to guarantee neutral. Should this distance not be achieved, fit a washer on the push rod, or adjust the eccentric screw (M).

FIG 68



MAINTENANCE

Caterpillar track (FIG. 69)

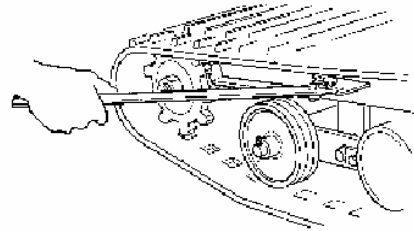
Caterpillar track tension standard track

It is important for the tracks to be adjusted correctly to prevent damaging them. When the underside of the caterpillar track lies against the frame tube by its own weight the track needs to be adjusted. Correctly adjusted the caterpillar track can, using slight pressure, be pressed down to the tube by hand.

Dismantling/assembling

1. Position the track adjustment tool as shown in FIG. 69
2. Loosen the needle pin and remove the washer
3. Adjust the track using the track adjustment tool and remove the pin.
4. Remove the track adjustment tool and press on the wheel bearing to loosen the track.
5. If the track is to be tensioned, move the pin to the next hole.

FIG 69

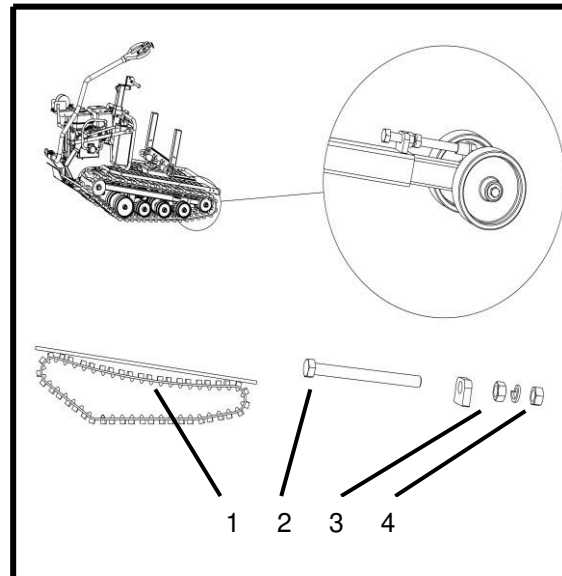


Track tension internal drive track

To prevent damage to the tracks, it is important to ensure that they are correctly adjusted. Check this by placing a ruler or straight board over the tracks as shown in figure (1). Apply 10 kg of pressure on the centre of the track. It should not bend more than 20 mm.

Track tension

1. Loosen the lock nut (4).
2. Tension the track by screwing on the bolt (2) while holding the nut (3).
3. Test the track tension and tighten the nuts.



Drive axles (FIG. 71)

Check, to ensure the drive axle has not slid out of position.

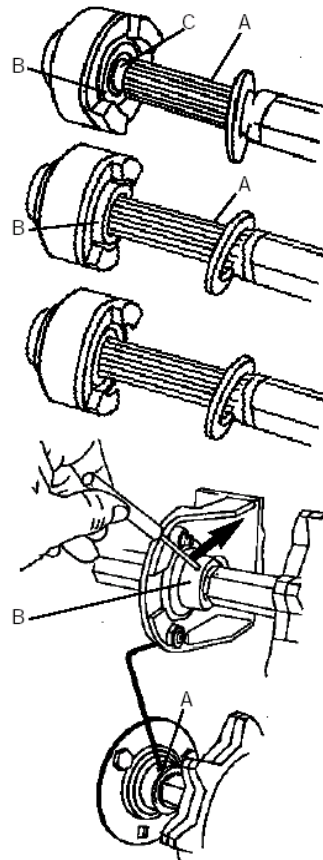
- a) Drive axle (A) has slid out of position. The bearing is seated correctly, but the machined axle (C) has become visible.
- b) The bearing has slid out, so that the dog clutch is prevented from engaging fully.
- c) Drive axle in position. The moving dog clutch has been removed to simplify the illustration.

Assembling the drive axle.

If the drive axle has slid out as in a) or b), the flange bearing must be locked and the axle pushed into position and secured according to the following:

- 1) Lock screw A – 4 mm Allen key loosened.
 - 2) The drive axle is pushed or knocked into position.
 - 3) The eccentric lock is knocked back with a hammer and punch
 - 4) The lock screw is screwed in.
- IMPORTANT! Ensure that the screw hits the lowest part of the hexagonal axle. This prevents the lock from releasing.

FIG 71



Brake (FIG. 72)

Adjusting / replacing the brake pads.

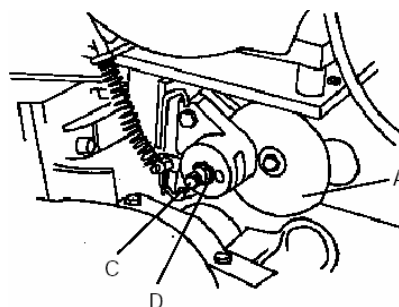
The brake pads are adjusted, by loosening the locking nut (D) and adjusting with the bolt (C).

The brake pads are changed by loosening the cable and brake disc (A). When you pull off the disc, the entire brake calliper is also released and the brake pads can be released.

After assembling it may be necessary to make a readjustment. The brake pads are to be adjusted, so the brake disc runs freely. A too hard adjustment can result in overheating, damaging the pads and brake disc.

If you have replaced the brake pads, it may be necessary to readjust them after a period of use.

FIG 72



MAINTENANCE

Maintenance

	Daily maintenance	20 hours	50 hours	100 hours	Annual service
Check the engine oil	X				
Check the gearbox oil				X	
Change the engine oil			X		
Change the gearbox oil					X
Check the controls	X				
Replace the air filter (9, 13 hp)			X		
Clean the air filter (5.5 hp)			X		
Clean the particle cup on the carburettor.			X		
Check the spark plug.			X		
Lubricate the variator (5.5 hp.)		X			
Lubricate the dog clutch				X	
Check the bolts and screws				X	
Lubricate the cable control				If necessary	
Adjustment of the steering brakes	If necessary				
Check the caterpillar track	X				
Check the variator belt				X	
Check the brake lining			X		

TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
Cannot steer Iron Horse	Diff-lock engaged Dog clutch does not release	Release lock and secure it A. Fit washers on the push rods B. Change the bearings on the clutch fork
Iron Horse swings poorly	Poor steering brake functionality	A. Adjust the steering brakes B. Remove grease or oil from the lining.
Iron Horse shows poor tractive force	A. The variator belt is worn, the belt width is worn and becomes too narrow and Iron Horse loses tractive force. B. Variator changes up, but not down. C. Secondary variator springs badly. Plastic lugs are worn. D. Disc brake is on.	Replace the belt 1. Replace the drive in the variator. The drive is a wear part. (Only Iron Horse with 5.5 hp engine) 2. Gives less throttle, so the variator changes down. Check springs and plastic lugs. Adjust the brake calliper.
The variator runs slow, has difficulty to change up and down.	Drive and spline on the variator are dry. Grease has dried	Grease the primary variator
The variator does not release while idling.	A. The springs around the weights in the primary variator have broken B. The bronze bushing around the axle in the primary variator is damaged, or missing. NOTE! only on Iron Horse with 5.5 hp engine.	Replace the springs. Fit new bronze bushing.
Caterpillar track comes off.	A. Drive axle front has slid out of position. B. Rear wheel axle bearings are worn. C. Caterpillar track worn	Push in the drive axle in position and lock the bearing. Replace the bearing Replace the caterpillar track
The engine will not start.	A. Stop control has slid in. B. Faulty stop control C. Gets too little choke D. Faulty spark plug	Pull out stop control Check or replace the microswitch. Give more choke Replace the spark plug.

TECHNICAL DATA

Petrol engine:

IH 2055, 2090, 2013

Cylinder displacement, cm ³	163, 270, 389
Power, kW/rpm:	4.0, 6.6, 8.7 / 3 600
Max torque:	10.8, 19.1, 26.5 Nm / 2500 revs
Oil volume	0.6, 1.1, 1.1 litres

Fuel:

Volume fuel tank, 5.5 hp:	3.6 litres
Volume fuel tank, 9 hp:	6.0 litres
Volume fuel tank, 13 hp:	6.1 litres
Fuel consumption, 5.5 hp:	313 g/kW hour
Fuel consumption, 9 hp:	313 g/kW hour
Fuel consumption, 13 hp:	350 g/kW hour
Cooling system	Air-cooled
Axle rotation:	Clockwise

Transmission:

Caterpillar track:	Variator with centrifugal clutch
Cord in caterpillar track:	Rubber strip 380 x 2900 mm.
Brake:	Kevlar and nylon
Power outlet, only 5.5 Hk.	Disc brake with parking brake
	12 volt 48 watt

Speeds

Max speed IH 2055 / IH 2090 / IH 2013:	6 km/hour / 9 km/hour 9 km/hour
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Weight IH 2055 / IH 2090 / IH 2013:	350 kg. / 404 kg. / 412 kg.
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Width:	108 cm.
Length:	170 cm.
Transport height:	160 cm.

Power winch

Transmission:	V-belt drive from variator
Wires, diameter / length:	6 mm with steel core / 20 metres.
Length:	20 metres
Tractive force:	10,000 N. Full drum 7,000 N.

Sound levels:

Equ. Sound pressure according to ISO 7917, dB (A)	87.5
Equ. Sound power according to ISO 7917, dB (A)	104.3

Vibration levels

Vibration level m/s ² idling/full throttle	1.6 / 9.5
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EU Declaration of Conformity

Manufacturer Lennartsfors AB

Lennartsfors 1
SE-672 92 Årjäng, Sweden

Telephone + 46 573 39 200

Declares under sole responsibility that:

The Iron Horse with the model designations
IH 2055, IH 2090, IH 2013.
with serial numbers 05 01 0001 – and onwards.

are manufactured in conformity with the following EU directives:

2006/42/EC, Machinery directive
2004/108/EC with annex, EMC directive

The following standards have been used for the basis of this declaration
EN ISO 12100:2010

2015-03-24

Reino Savolainen
Chief Technical Officer

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