Power hoe Farmstar 1600

compact – with Petrol Engine
comfort – with Diesel Engine

Before commissioning the machine, read operating instructions and observe warnings and safety instructions.
Symbols, Name Plate

Please complete:

<table>
<thead>
<tr>
<th>Machine Type No.: ......................</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID/Machine No.: ..........................</td>
</tr>
<tr>
<td>Engine Type: ............................</td>
</tr>
<tr>
<td>Engine No.: ..............................</td>
</tr>
<tr>
<td>Date of Purchase: ......................</td>
</tr>
</tbody>
</table>

For name plate, refer to p3/fig.A/8.
For engine type and number, refer to p3/fig. B/6 or p54/fig. D/6.
Please state these ‘data when ordering spare parts to avoid wrong deliveries.

**Only use original agria spare parts!**

Specifications, figures, and dimensions stated in these instructions are not binding. No claims can be derived from them. We reserve the right for improvements without changing these instructions.

**Amount of delivery:**
- Operating instructions
- Power hoe
- Base hoeing tools 95 cm
- Extension guard 60 cm
- Depth bar
- Tool kit
- Handlebar with tool box and tommy nut
Designation of Parts
Petrol Engine Version

Figure A

Figure B
### Designation of Parts

#### Petrol Engine Version

**Figure A**

<table>
<thead>
<tr>
<th>1</th>
<th>Engine</th>
<th>15</th>
<th>Locking pin of depth bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Handlebar joint</td>
<td>16</td>
<td>Depth bar</td>
</tr>
<tr>
<td>3</td>
<td>Tommy nut for handlebar</td>
<td>17</td>
<td>Extension guard</td>
</tr>
<tr>
<td></td>
<td>adjustment</td>
<td>18</td>
<td>Guard discs</td>
</tr>
<tr>
<td>4</td>
<td>Handlebar</td>
<td>19</td>
<td>Add-on hoeing tools</td>
</tr>
<tr>
<td>5</td>
<td>Tool box</td>
<td>20</td>
<td>Base hoeing tools</td>
</tr>
<tr>
<td>6</td>
<td>Speed control lever</td>
<td>21</td>
<td>Hoeing guard</td>
</tr>
<tr>
<td>7</td>
<td>Engine shut-off switch</td>
<td>22</td>
<td>Front hitch</td>
</tr>
<tr>
<td>8</td>
<td>Safety circuit lever</td>
<td>23</td>
<td>Support/engine guard</td>
</tr>
<tr>
<td>9</td>
<td>Clutch lever</td>
<td>24</td>
<td>Transmission oil filling opening</td>
</tr>
<tr>
<td>10</td>
<td>Pawl of clutch lever</td>
<td>25</td>
<td>Transmission oil control plug</td>
</tr>
<tr>
<td>11</td>
<td>Gear shift lever</td>
<td>26</td>
<td>Transmission oil drain plug</td>
</tr>
<tr>
<td>12</td>
<td>Gear shift gate</td>
<td>27</td>
<td>Name plate (ID/Machine No.)</td>
</tr>
<tr>
<td>13</td>
<td>Cover</td>
<td>28</td>
<td>Rear hitch</td>
</tr>
<tr>
<td>14</td>
<td>Leg of depth bar</td>
<td></td>
<td></td>
</tr>
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</table>

**Figure B**

<table>
<thead>
<tr>
<th>1</th>
<th>Air filter</th>
<th>15</th>
<th>Engine</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Carburetor</td>
<td>16</td>
<td>Handlebar joint</td>
</tr>
<tr>
<td>3</td>
<td>Fuel tank cap</td>
<td>17</td>
<td>Tommy nut for handlebar</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>adjustment</td>
</tr>
<tr>
<td>4</td>
<td>Fuel tank</td>
<td>18</td>
<td>Extension guard</td>
</tr>
<tr>
<td>5</td>
<td>Choke lever</td>
<td>19</td>
<td>Guard discs</td>
</tr>
<tr>
<td>6</td>
<td>Engine type number</td>
<td>20</td>
<td>Add-on hoeing tools</td>
</tr>
<tr>
<td>7</td>
<td>Starter handle</td>
<td>21</td>
<td>Base hoeing tools</td>
</tr>
<tr>
<td>8</td>
<td>Cooling-air screen</td>
<td>22</td>
<td>Hoeing guard</td>
</tr>
<tr>
<td>9</td>
<td>Exhaust with guard</td>
<td>23</td>
<td>Front hitch</td>
</tr>
<tr>
<td>10</td>
<td>Spark plug, spark plug connector</td>
<td>24</td>
<td>Support/engine guard</td>
</tr>
<tr>
<td>11</td>
<td>Engine oil filling plug and dip stick</td>
<td>25</td>
<td>Transmission oil filling opening</td>
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<td>12</td>
<td>Engine oil drain plug</td>
<td>26</td>
<td>Transmission oil control plug</td>
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<tr>
<td>13</td>
<td>Fuel tap</td>
<td>27</td>
<td>Name plate (ID/Machine No.)</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>28</td>
<td>Rear hitch</td>
</tr>
</tbody>
</table>
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<th>Page</th>
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<td>3, 54</td>
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<tr>
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<td>22</td>
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<tr>
<td>Steering Handle</td>
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<tr>
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</tr>
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<td>Depth Bar</td>
<td>24</td>
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<td>Shutting off the Petrol Engine</td>
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Recommendations

Lubricants and Anti-Corrosive Agents

Use the specified lubricants for engine and gearbox (see “Specifications”).

We recommend using **bio-lubricating oil** or **bio-lubricating grease** for “open” lubricating points or nipples (as specified in the operating instructions).

We recommend using bio-slushing oil for preservation of machines and implements (do not apply on painted external covers). Oil can be brushed or sprayed on.

Anti-corrosive agents are environmentally friendly and degrade fast.

Using ecologically safe bio-lubricants and bio-anti-corrosives, you contribute to environmental protection and to the wellbeing of humans, animals and plants.

Maintenance and Repair

The trained mechanics of your agria workshop carry out expert maintenance and repair.

You should only carry out major maintenance work and repairs on your own, if you have the proper tools and knowledge of machines and internal combustion engines.

Do not hammer against the flywheel with a hard object or metal tools as it might crack and shatter in operation causing injuries and damage. Only use suitable tools for pulling the flywheel.
Fuel Recommendations

Petrol Engine

This petrol engine runs smoothly on commercial **unleaded regular and supergrade petrol** as well as on **leaded supergrade petrol**.

**Do not add oil to petrol.**

If, for environmental reasons, you use unleaded petrol, make sure the fuel is drained completely when shutting down the engine for more than 30 days. This is to prevent resin residue from depositing in the carburetor, fuel filter, and tank. Or add a fuel stabilizer.

For further instructions refer to “Engine Preservation”.

Diesel Engine

This Diesel engine runs on conventional Diesel fuel of a min. cetane rating of 45.

**Do not use Diesel fuel oil substitutes, they may be harmful to the fuel system. Fuel should be free of water or dust.**

**Winter operation:**

To ensure reliable winter operation use “winter diesel fuel”, to be purchased at filling stations.

**At outside temperatures of below -15°C**, take the following additional precautions:

- **add commercial flow conditioners**
- or
- **add paraffine oil to depress diesel pour-point:**

<table>
<thead>
<tr>
<th>Paraffine oil:</th>
<th>Winter diesel fuel</th>
<th>Summer diesel fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>pour-point</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td>app. -31°C</td>
<td>app. -25°C</td>
</tr>
<tr>
<td>30%</td>
<td>app. -26°C</td>
<td>app. -15°C</td>
</tr>
<tr>
<td>10%</td>
<td>app. -20°C</td>
<td>app. -9°C</td>
</tr>
</tbody>
</table>

**As a last resort**, you can add up to 30% of regular petrol to avoid paraffine deposits. However, this has negative effects on consumption rate and performance.
Unpacking and Assembly

1. Open the top of the cardboard box.
2. Remove screw (2) together with washer (3).
   - Place the toothed ring on the handle (4) onto the toothed ring of the steering bar joint (2). Fit tommy nut (3) together with washer and tighten it. Make sure that Bowden cables and electric cables are routed in such a way that they are not get crushed or damaged.
   - Attach all cables and electric lines to the handlebars using the retaining clips.
   - Take the machine out of the box or cut the box open on all 4 corners and fold down the sides to remove the machine.
   - Fit the hoeing tools and hoeing guards (description p23–24).
   - Carry out all steps for starting-up described on page 25 or 28.

3. Attach all cables and electric lines to the handlebars using the retaining clips.

4. Take the machine out of the box or cut the box open on all 4 corners and fold down the sides to remove the machine.

5. Fit the hoeing tools and hoeing guards (description p23–24).

6. Carry out all steps for starting-up described on page 25 or 28.
1. Safety Instructions

Before starting the machine, read the operating instructions and note:

Warning

This symbol marks all paragraphs in these operating instructions which affect your safety. Pass all safety instructions on to other users and operators.

Due Use

The power hoe is a hand-controlled automatic single-axle machine. Propulsion is achieved using the hoe tools approved by the manufacturer. The power hoe is intended for use in turning over the ground in landscape gardening (including the leisure sector). The area to be covered must be in line with the usual size of such areas in landscape gardening. (Due use)

Any other type of operation is considered undue. The manufacturer is not liable for any damages resulting from undue use, for which the risk lies with the user alone.

The power hoe is not intended for use on such areas as vary stony or rocky ground or as a tree-stump milling machine.

Due use includes compliance with manufacturer’s instructions on operation, maintenance and repair.

Any unauthorized changes to the power hoe render manufacturer liability null and void.

General Instructions on Safety and Accident Prevention

Basic Rule:

The respective national accident prevention regulations have to be adhered to, as well as all other generally accepted rules governing operational safety, occupational health and road traffic regulations.

When driving on public roads, you have to observe the current traffic code.

Accordingly, check the power hoe for road and operational safety each time you take up operation.

Only persons familiar with the machine and instructed on the hazards of operation are allowed to use, maintain and repair the machine.

Teenagers younger than 16 years are not allowed to operate the machine!

Only work in good light and visibility.

Operator’s clothes should fit tight. Avoid wearing loose fitting clothes. Wear solid shoes.

Note the warning and instruction signs on the machine for safe operation. Compliance is for your own safety.

When transporting the machine on vehicles or trailers outside the area to be cultivated, ensure that the engine is turned off.

Careful with rotating tools – keep at a safe distance!

Beware of coasting tools. Before you start any maintenance or repair on them, wait until tools have come to a complete stop.
1. Safety Instructions

Foreign powered parts shear and crush!
Riding on the attachment during operation is not permitted.
Mounted or trailed attachments and loads/weights affect the machine’s driving, steering, braking, and tipping characteristics. Therefore, ensure that steering and braking functions are sufficient. Match operating speed to conditions.
Do not alter the governor settings. High engine speed increases risk of accidents.

Working Area and Dangerous Area
The user is liable for third parties staying within the machine’s working range.
Staying in the hazardous area is not permitted.
Check the immediate surroundings of the machine before you start it. Watch out for children and animals.
Before you start work, clear the area from any foreign object. During operation, always watch out for further objects and remove them in time.
For operation in enclosed areas, ensure that a safety distance is kept to enclosures to prevent damage to tools.

Operation and Safety Devices

Before You Start the Engine
Become familiar with the devices and operating elements and their functions. Above all, learn how to turn the engine off quickly and safely in an emergency.
Ensure that all guards are mounted and positioned to provide protection.

With no attachment mounted, make sure PTO-shaft is covered with the cap.

Starting the Engine
Do not start engine in closed rooms. The carbon monoxide contained in the exhaust fume is extremely toxic when inhaled.
Before you start the engine, move all controls to neutral or idling speed.
When starting the engine, do not step in front of the machine and the attachment.
Do not use assist-starting liquids when using electrical assist-starting devices (jumper cable). Danger of explosion!

Operation
Never leave the operator’s position at the steering handle while the machine is at work.
Never adjust the handles during work – danger!
During operation keep a distance to the machine as defined by the length of the steering handle, especially not when you turn the machine.
Riding on the attachment during operation or in transport is not permitted.
In case of blockages in the attachment, turn off the engine and clean the attachment with an appropriate tool.
In case of damage to the machine or the attachment, immediately turn off the engine and have it repaired.
If steering causes problems, immediately bring the machine to a halt and turn it off. Have the malfunction repaired without delay.
1. Safety Instructions

To prevent the machine from slipping on slopes make sure it is secured by another person using a bar or a rope. This person must be located at a higher position than the vehicle at a safe distance from the attachment at work. If possible, always work across the slope.

**End of Operation**

Never leave the machine unattended with the engine running.

Before you leave the machine, turn off the engine. Then close fuel taps.

Secure machine against unauthorized use. If the machine is equipped with an ignition key, remove the key. On other versions, remove the spark plug connector.

**Attachments**

Only mount attachments with the engine and PTO switched off.

Always use appropriate tools and wear gloves when changing attachments and parts thereof.

For mounting and dismounting attachments bring the stands into proper position and ensure stability.

Secure the base machine and attachments against rolling off (parking brake, wheel chocks).

Beware of injuries while coupling attachments.

Linkage attachments as specified and only couple at specified points.

Secure base machine and attachment against unauthorized use and rolling off when you leave the machine. If necessary, install transport or protective devices and secure.

**Hoeing**

Adjust the hoeing guards in such a way that only the tools that penetrate the soil are not covered.

When hoeing, make sure the depth bar is adjusted properly.

**Weights**

Always fit weights properly and at the locations specified.

**Maintenance**

Do not maintain or clean the machine while the engine is running.

Before you work on the engine, always remove the spark plug connector.

Check regularly and, if necessary, replace all guards and tools subject to wear and tear.

Replace damaged cutting tools.

Always wear safety gloves and use proper tools when exchanging cutting tools.

Do not carry out repairs like welding, grinding, drilling, etc. on structural and safety parts (e.g. coupling devices)!

Keep the base machine and the attachment clean to avoid risk of fire.

Check nuts and bolts regularly for tight fit and re-tighten, if necessary.

Ensure that you re-install all guards and adjust them properly after maintenance and cleaning.
1. Safety Instructions

Only use original agria spare parts. All other commercial spare parts must correspond to quality and technical requirements specified by agria.

Storage
It is not allowed to store the machine in rooms with an open heating system.
Never park the machine in closed rooms with fuel left in tank. Fuel vapours are hazardous.

Engine, Fuel, and Oil
Never let the engine run in closed rooms. Extreme danger of intoxication! For the same reason, also replace damaged exhaust pipes immediately.
Be careful when dealing with fuel. Great danger of fire! Never refill fuel close to open fire, inflammable sparks or hot engine parts. Do not refill fuel in closed rooms. Do not smoke when refilling!
Refill only with the engine switched off and cooled down.
Do not spill any fuel, use a proper filling device.
In case of fuel-spillage, pull the multi-purpose machine away from the spillage before you start the engine.
Make sure fuel is of specified quality.
Store fuel in approved cans only.
Read and observe enclosed instructions.
Before you dispose of opened and seemingly empty pressurised tins (e.g. of assist-starting liquids) make sure they are completely empty. Empty them in ventilated places safe from spark formation or flames. If necessary, dispose of tins in hazardous waste deposits.
Be careful when draining hot oil, danger of burns.
Make sure oil used is of specified quality.
Storage is in approved cans only.
Dispose of oil, greases, and filters seperately and properly.

Tyres and Tyre Air Pressure
When working on the tyres, make sure the multi-purpose machine is parked properly and secured against rolling off.
Any repairs are to be carried out by trained mechanics only and with the appropriate tools.
Regularly check air pressure in the tyres. Excessive pressure may cause bursts.
When adding weight, make sure the air pressure in the tyres is correct.
Re-tighten attachment bolts or nuts of drive-wheels or check torques when doing maintenance work.

Be careful when draining hot oil, danger of burns.
Make sure oil used is of specified quality.
Store fuel in approved cans only.
Read and observe enclosed instructions.
Before you dispose of opened and seemingly empty pressurised tins (e.g. of assist-starting liquids) make sure they are completely empty. Empty them in ventilated places safe from spark formation or flames. If necessary, dispose of tins in hazardous waste deposits.
Be careful when draining hot oil, danger of burns.
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Dispose of oil, greases, and filters seperately and properly.

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When working on the tyres, make sure the multi-purpose machine is parked properly and secured against rolling off.
Any repairs are to be carried out by trained mechanics only and with the appropriate tools.
Regularly check air pressure in the tyres. Excessive pressure may cause bursts.
When adding weight, make sure the air pressure in the tyres is correct.
Re-tighten attachment bolts or nuts of drive-wheels or check torques when doing maintenance work.
1. Safety Instructions

Electrical System and Battery
When working on the electrical system, make sure the battery is disconnected (negative terminal) (if equipped).

Make sure to connect the battery properly – first connect the positive terminal and then negative terminal. Disconnect in reverse order.

Be careful with battery gases – explosive!

Avoid spark discharge and open flames near batteries.

Remove plastic cover (if equipped) to recharge battery and to prevent highly explosive gases from building up.

Careful when handling battery fluid!

Only use specified circuit breakers. If the circuit breakers are too strong, they will destroy the electrical system – danger of fire.

Always cover the positive terminal with the specified cover or terminal cap.

Persons having a pacemaker may not touch live parts of the ignition system when the engine is running.

Explanation of Warning Signs

Before any cleaning, maintenance, and repair work switch off the engine and pull spark plug connector.

With the engine running, keep at a safe distance from cutting or hoeing tools.

Do not work without guards mounted. Before starting the engine, bring guards in proper position.

With the engine running, keep at a safe distance from knife.

Do not touch any moving machinery parts. Wait until they have come to a complete stop.

With the engine running, keep at a safe distance.

Signs

When working with the machine, wear individual protective ear plugs.

Wear protective gloves.

Wear solid shoes.
2. Specifications

**Power Hoe**

**Dimensions:**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø Hoeing tools</td>
<td>310</td>
</tr>
<tr>
<td>a</td>
<td>460</td>
</tr>
<tr>
<td>b</td>
<td>590</td>
</tr>
<tr>
<td>c</td>
<td>265</td>
</tr>
<tr>
<td>d</td>
<td>300</td>
</tr>
<tr>
<td>e</td>
<td>300</td>
</tr>
<tr>
<td>f</td>
<td>250</td>
</tr>
<tr>
<td>g</td>
<td>630</td>
</tr>
<tr>
<td>h</td>
<td>860–1090</td>
</tr>
<tr>
<td>k</td>
<td>810</td>
</tr>
<tr>
<td>l</td>
<td>1420</td>
</tr>
<tr>
<td>A</td>
<td>590–950</td>
</tr>
</tbody>
</table>

**Clutch:** bevel clutch

**Gearbox:**

3-speed mechanical gearbox
2 forward speeds and 1 reverse speed

Hoeing shaft is driven by the bevel gearbox.

For ground speeds see table below

Transmission oil .......... SAE 90-API GL5
Filling quantity ............ approx. 0.9l

**Steering handle:** height and side adjustable without tools

<table>
<thead>
<tr>
<th>Gear</th>
<th>Speed of hoeing tools [rpm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>87</td>
</tr>
<tr>
<td>II</td>
<td>157</td>
</tr>
<tr>
<td>R</td>
<td>41</td>
</tr>
</tbody>
</table>

**Weight:**

compact
(petrol engine version) .......... 63 kg
comfort
(diesel engine version) .......... 73 kg
2. Specifications  Compact Version

Petrol Engine

Manufacturer: ....................... Honda

Engine type: ....................... GX 160 K1

Version: ....................... Fan-air cooled 1-cylinder, 4-stroke petrol ohv engine

Bore: ....................... 68 mm
Stroke: ....................... 45 mm
Cubic capacity: .................... 163 ccm

Compression ratio: ................ 8.5 : 1

Output: ....................... 4.0 kW at 3600 rpm
Max. torque: ....................... 10.8 Nm at 2500 rpm

Spark plug: .................... NGK BPR 6ES
BOSCH WR 7 DC
Spark plug gap: .................... 0.7…0.8 mm

Ignition system:
Contactless solenoid ignition, ignition point is pre-set, radio remote screened according to VDE 0879

Valve lash (engine cold):
Intake: ..................... 0.15mm ± 0.02mm
Outlet: ..................... 0.20mm ± 0.02mm

Starter:
Soft-pull recoil starter with mechanical decompression facility

Fuel tank capacity: .................... 3.6 l

Fuel: ..... Commercially available petrol octane number min. 85 RON
(refer to fuel recommendations)

Air filter: .................... Oil bath air filter, same type of oil used for engine lubrication

Carburetor: ............ Throttle valve type
Mixture control screw:
opened approx. 2 1/8 turns in base setting

Rated speed: .................... 3600 rpm
Top no-load speed: ............ 3850 rpm
Idling speed: ............ 1250…1600 rpm

Engine oil:
Filling quantity .................. approx. 0.6 l
Multi-grade oil SAE 10 W-40
SG, SF or higher quality grade

Operability on slopes:
max ....................... < 20° (37 %)
(with oil level at “max” = upper level mark)

Noise level:
Noise level at operator’s ear  83.5 dBA
(In accordance with EN 709 and EN 1553)

Vibration acceleration value:
on handlebar: ............ $a_{hw} = < 2.5 \text{ m/s}^2$
(in accordance with EN 709 and EN 1033 at 85% of rated engine speed with tool at work.)
2. Specifications Comfort Version

**Diesel Engine**

**Manufacturer:** ......................... Yanmar

**Type:** ................................... L48AE-DI

**Version:** .................. Fan-air-cooled 1-cylinder-4-stroke diesel engine

**Bore:** ............................. 70 mm

**Stroke:** ............................. 55 mm

**Cubic capacity:** .................. 211 ccm

**Output:** .................. 3.5 kW at 3600 rpm

**Max torque:** ...... 12.5 Nm at 2500 rpm

**Injection pressure:** .................. 200 bar

**Valve lash** (engine cold)
Intake: .................. 0.15 - 0.02 mm
Outlet: .................. 0.15 - 0.02 mm

**Starter:** .................. Recoil starter with mechanical decompression facility

**Fuel:** .................. Diesel fuel, Min. cetane rating: .................. 45 (refer to fuel recommendations)

**Fuel filter:** ........ Paper filter cartridge in fuel tank

**Fuel tank capacity:** ........ approx. 2.5 l

**Air filter:** .................. Oil bath air filter
Filling quantity .. approx. 0.2 l engine oil

**Rated speed:** .................. 3600 rpm

**Top no-load speed:** ............ 3800 rpm

**Lubrication:** .... Pressure lubrication via gear pump
Full flow oil filter

**Engine oil:**
Filling quantity ............. approx. 0.8 l
Multi-grade oil
at ambient temperature -15° to +45°C: SAE 10W-40 API-SC (or higher)
at ambient temperature -25° to +15°C: SAE 5W-20 API-SC (or higher)

**Operability on slopes:**
max .................. < 20° (37 %)
(with oil level at “max” = upper level mark)

**Noise level:**
Noise level at operator’s ear .................. 90 dB(A)
Sound level: .................. 103.5 dB(A)
(in accordance with EN 709 and EN1553)

**Vibration acceleration value:**
on handlebar: .............. \( a_{hw} < 7.1 \text{ m/s}^2 \)
in accordance with EN 709 and EN 1033 at 85% of rated engine speed with tool at work.
3. Devices and Operating Elements

The power hoe agria-Farmstar is a motorised unit for turning over the ground. Therefore it is most suitable for normal use in landscape gardening.

Engine

- The **four-stroke petrol engine** runs on commercial petrol (refer to fuel recommendations p7).

Ignition System

The engine is equipped with a contactless ignition system. We recommend to have necessary check-ups done by an expert only.

- The **four-stroke diesel engine** runs on commercial diesel fuel (refer to fuel recommendations p7). See to using proper fuel in winter.

During the first 20 operating hours (break-in period) do not use engine to maximum power.

**Even after break-in period** never use engine at higher speed than necessary for the work in hand.

- **High engine speed is harmful to any engine and considerably affects its durability. This applies especially for no load operation. Any overspeed (have the engine roar) can result in immediate damage.**

Cooling System

Cooling system is fan-cooled. Therefore keep screen at recoil starter and cooling fins of cylinders clean and free from sucked-in plant trash.

Idling-speed

Always ensure that idling-speed is adjusted correctly. At low speeds and with the speed control lever set to idle, the engine is supposed to run smoothly and without run-out.

Air Filter

The air filter purifies the air intake. A clogged filter reduces engine output.

Ignition System

The **petrol engine** is equipped with a contactless ignition system. We recommend to have necessary check-ups done by an expert only.
3. Devices and Operating Elements
Petrol Engine Version

**Speed Control Lever**
The speed control lever (A/6) on the steering handle is for stepless setting of engine speed from min. = idle to max. = full throttle.

**Engine Shut-off Switch**
The machine is equipped with an electric shut-off switch (A/7). On pressing the switch, the ignition is turned off (engine is shut off).

Position “I” = Operation
Position “0” = Engine off

The engine shut-off switch also serves as an emergency shut-off. Set the switch to “0” for fast shut-off.

**Safety circuit**
The machine is equipped with a safety circuit lever.

1. **Stop position:** When releasing the lever (A/8), the ignition system is shut off (engine is off).

Beware – engine keeps running due to centrifugal mass.

2. **Start position:** For starting the engine and for short breaks, pull the clutch lever (A/9) and fasten with pawl (A/10).

3. **Operating position:** To operate the machine press safety circuit lever (A/8) down.

⚠️ Do not tie down safety circuit lever.

The safety circuit lever also serves as an emergency shut-off. In an emergency, move the lever to position “STOP”, the lever automatically goes to STOP position.
3. Devices and Operating Elements
Petrol Engine Version

**Choke**

The choke lever (B/5) is on the carburetor.

- Close the choke for **cold** starts. To do this, move the lever to the **left**.

- Open the choke for **warm** starts and operation. To do this, move the lever to the **right**.

**Fuel tap**

The fuel tap (B/13) is on the carburetor.

- Move the tap to the **right** to **open** it.

- Move the tap to the **left** to **close** it.
3. Devices and Operating Elements
Diesel Engine Version

**Safety circuit**

The machine is equipped with a safety circuit lever (lever C/8).

1. **Stop position**: When releasing the lever, the fuel injection pump is set to “0” (engine is shut off). Beware – engine keeps running due to centrifugal mass!

2. **Start position**: For starting the engine and for short breaks, press the safety circuit lever (C/8), pull the clutch lever (C/9) and lock with pawl (C/10).

3. **Operating position**: For machine operation, press safety circuit lever (C/8).

⚠️ **Do not fasten safety circuit lever.**

The safety circuit lever also serves to shut off the engine in an emergency. Release the safety circuit lever for fast engine shut-off. The lever automatically goes to STOP position.

**Decompression**

Activate decompression to start the engine via the recoil starter. To do this, fold down the decompression lever (C/14).

As you pull the recoil starter, the decompression lever will automatically move back into its original position.
3. Devices and Operating Elements
3. Devices and Operating Elements

Clutch

The machine is equipped with a bevel clutch which is actuated via the clutch lever (A/9 or C/9).

With the clutch levers pulled the driveline is cut and the engine stops driving the power hoe.

When the machine is decoupled you can lock the clutch lever with pawl (A/10 or C/10).

To prevent the clutch from slipping during operation the lever is set to a free play (see service and maintenance).

After the first operating hour the clutch free play needs to be checked and if necessary readjusted (see service and maintenance).

Do not park the machine with the clutch pulled and the engine running. This may damage the clutch release bearing.

Ensure the lever is pulled and locked (pawl is locked in place) when you park the machine with the engine stopped, otherwise clutch problems might arise due to corrosion.

Gear Shifting

The gears 1, 2, and reverse are shifted with the gear shift lever (A/11 or C/11).

There is a neutral position “0” between the individual gears.

To engage the reverse gear, pull the gearshift lever to the rear against the resistance of a pressure spring and hold it in this position.

The position of the shift lever in the shift gate (A/12 or C/12) indicates the selected gear.

Steering Handle

Steering Handle Height and Side Adjustment

- Undo the tommy nut (5) until the teeth are exposed.
- Move the handlebars (4) to the proper position.
- Re-tighten the tommy nut (5).
3. Devices and Operating Elements

Hoeing Tools

| 1 | Hex bolt       |
| 2 | Washer        |
| 3 | Hex nut       |
| 4 | Extension guard |
| 5 | R-clip       |
| 6 | Guard discs  |
| 7 | Add-on hoeing tool right |
| 8 | Add-on hoeing tool left  |
| 9 | Base hoeing tool right  |
|10 | Base hoeing tool left   |

view from the front

**Working Width:**

Base hoeing tools
approx. ...................................... 65 cm
Base and add-on hoeing tools
approx. ...................................... 95 cm

**Fitting the Hoeing Tools**

⚠️ Only fit/remove the hoeing tools while the engine is shut off and the spark-plug connector is removed! Wear safety gloves!

**65 cm Hoeing Width** including guard discs
- Fit the base hoeing tools (9 and 10) onto both ends of the hoeing shaft. Ensure that the cutting edges point into travel direction. When fitting the second hoeing tool (left or right), ensure the blades facing towards the housing are fitted in a staggered way to the blades on the opposite end of the shaft. Do not align the blades on respective shaft ends parallel to each other.
- Attach the hoeing tools with R-clips (5), pushing the R-clips through the holes on hub and shaft.

**95 cm Hoeing Width** including guard discs
- Fit the base hoeing tools in the same way as described in 65 cm working width.
- Fit add-on hoeing tools (7 and 8) into the hubs of the base hoeing tools.
- Attach the tools with R-clips (5) through hub and shaft holes.

**Extension Guards**
- Attach the extension guards (4) using the attachment bolts (1, 2, 3).

**Guard Discs**
The discs are to prevent shrubs and bushes from being damaged by the hoe and to protect young plants from being covered with soil.

In addition, they offer protection for the operator when hoeing along headlands or fences.
- Fit the guard discs (6) in the outer hubs of the hoeing tools.
- Insert R-clips (5) in hub/shaft holes to secure the discs.
3. Devices and Operating Elements

**Depth-Bar**

**Attachment**
- Attach the depth-bar together with the leg (3) to the implement coupling point (28), using the pin (1) and R-clip (2).

**Pivoting Position**
- The depth-bar pivots freely when the stop latch (6) is folded backward.
- The depth-bar’s pivoting action is restricted or prevented altogether when the stop latch (6) is folded forward.
- Restricted pivoting action is adjusted on the set screw (7) and lock nut (8).

Restricted pivoting action provides sufficient guidance to the power hoe and ensures steering.

**Working Depth**

The depth bar slows down the machine’s ground speed. To set the working depth, move the bar to a higher or lower position on the leg. The lower the depth-bar position, the deeper will the hoeing tools dig into the ground.
- Fold up the locking pin (5).
- Remove the locking pin (5).
- Move the bar (4) either up or down until its holes are aligned with the holes in the leg (3).
- Replace the locking pin and fold it down.
3. Devices and Operating Elements

Front Support Wheel

(Accessory no. 0189 421)
For easier transport, use the front support wheel.

Installing the Front Support Wheel

Push the square pin on the support wheel (1) all the way in the rectangular tube and connect both parts with a linch pin (2).

To keep the front support wheel mounted on the power hoe fold it up for hoeing.

Hoeing Position

- Loosen knurled screw (3) until the notches on the beam are out of mesh.
- Fold the beam up into a mesh with notches and tighten the knurled screw.

Transport Position

- Fold the support wheel down and tighten the knob screw.

1. Front support wheel
2. Linch pin
3. Knurled screw (clamping screw)
4. Commissioning and Operation
Petrol Engine Version

Commissioning

Please note that durability and operational safety of the engine depend to a large extent on its breaking-in. Always allow a cold engine to warm up for some minutes and never run it at full throttle at the beginning.

Please note: for the first 20 hours of operation (break-in period) do not use the engine at full power.

Make sure you check and maintain air filters regularly and use clean fuel. Only use branded petrol.

Only use fresh, clean fuel (not older than 3 months) and approved fuel cans to be purchased in special shops. Rusty sheet metal cans or fuel cans not suited for petrol are not permitted.

For the first commissioning or after longer periods of no operation, fill fuel tank to maximum to avoid starting problems.

Be careful when dealing with fuel.

Fuel is easily inflammable and explosive in certain conditions!

• Do not refill in closed rooms.
• Before each fuel fill, shut off the engine and wait until it has cooled off.
• Never refill close to open fire, inflammable sparks or hot engine parts.
• Do not smoke during filling!
• Do not spill any fuel, use a proper filling device.

Do not cause fuel tank to overflow, but leave a 5 mm margin for the fuel to expand.

Note: For reasons of transport, the engine and the oil bath air filter are not filled with engine oil!

Before you operate the engine the first time, fill engine and oil bath air filter with oil (see page 34 or 35)!
4. Commissioning and Operation
Petrol Engine Version

Never start engine in closed rooms. Exhaust fumes contain carbon monoxide, which acts toxic when inhaled.

Protective covers mounted?

Attachments attached correctly?

1. Check engine oil level.

2. Mount spark plug connector.

3. Air filter clean?

4. Fuel quantity in fuel tank sufficient?

5. Open the fuel tap.

6. Cold engine:
   Move the choke lever to position “CHOKE”

Warm engine:
Do not use the CHOKE (operating position)

7. Pull the clutch lever and safety circuit shift lever in start position.

8. Flick the engine shut-off switch to “I”.

9. Move the speed control lever to a central position (between idling speed and full throttle).

10. Start engine from a position outside the hazardous area.

11. CHOKE to operation position.
4. Commissioning and Operation
Petrol Engine Version

Shutting off Petrol Engine

1. Move the gear shift lever to “0” (Neutral).

2. Move the speed control lever to idling position and let the engine run idle for about half a minute.

3. Flick the engine shut-off switch to position “0”.

4. Close the fuel tap

5. Withdraw spark plug connector - protection against unauthorised use!

⚠️ Have the engine cooled down before parking the power hoe in closed rooms.

⚠️ Do not move the choke lever to CHOKE position to shut off the engine – danger of fire!

ℹ️ To down the machine for a long period of time, do not press the engine shut-off switch to stop the engine. Instead, close the fuel tap and operate the engine until it comes to a stop by lack of fuel. This is to ensure the carburetor is empty and to avoid resin deposits.
4. Commissioning and Operation
Diesel Engine Version

Commissioning

Please note that durability and operational safety of the engine depend to a large extent on its breaking-in. Always allow a cold engine to warm up for some minutes and never run it at full throttle at the beginning.

Please note: for the first 20 hours of operation (break-in period) do not use the engine at full power.

Make sure you check and maintain air filters regularly and use clean fuel.
Only use branded Diesel, ensure timely provision of “winter Diesel fuel” (see page 7).

Only use approved fuel cans to be purchased in special shops. Rusty sheet metal cans or fuel cans not suited for petrol are not permitted.
For the first commissioning or after longer periods of no operation, fill fuel tank to maximum to avoid starting problems.

Be careful when dealing with fuel.

- Do not refill in closed rooms.
- Before each fuel fill, shut off the engine and wait until it has cooled off.
- Never refill close to open fire, inflammable sparks or hot engine parts.
- Do not smoke during filling!
- Do not spill any fuel, use a proper filling device.

Do not fill the fuel tank beyond the red mark on the filler strainer.

Note: For reasons of transport, the engine and the oil bath air filter are not filled with engine oil!

Before you operate the engine the first time, fill engine and oil bath air filter with oil (see page 39 or 40)!
4. Commissioning and Operation
Diesel Engine Version

Starting Diesel Engine

Never start engine in closed rooms. Exhaust fumes contain carbon monoxide, which acts toxic when inhaled.

Protective covers mounted?
Attachments attached correctly?

1. Check engine oil level.
2. Air filter clean?
3. Sufficient fuel is filled into the tank?
4. Set speed control lever to “max.”
5. Set safety circuit lever and clutch lever to start position and lock.

6. Pull starting-rope on handle (D/7) until you feel resistance (piston in compressing position).
7. Push decompression lever (D/14) downwards.

8. Start engine from a position outside the danger zone.
Decompression automatically goes back into former position.

9. Set speed control lever to centre position (half throttle) and let engine warm up for some time.
4. Commissioning and Operation

Diesel Engine Version

Shutting off Diesel Engine

1. Set gear shift lever to “0” (neutral).

2. Let it run at increased idling speed for 1 minute to cool down and to avoid carbon to deposit on the injection valve. This ensures continued and reliable operation.

3. Set safety circuit lever (C/8) to “STOP”.

For shutting off the engine never activate decompression, as this might damage the valves.

Secure the machine against unauthorized use.
4. Commissioning and Operation

Hoeing

⚠️ Before moving off, check the immediate surroundings, e.g. for children.

Before you start working, remove all foreign objects from the area to be cultivated. While working, watch out for foreign objects.

- Start the engine as explained in chapter “Starting the engine”

⚠️ Check safety circuit function - Only operate the machine if safety circuit works!

- Wear individual protective ear plugs and solid shoes.

- Move the gear shift lever to the appropriate position:

  1st gear: coarse hoeing (weed control)
  2nd gear: fine hoeing (seedbed preparation)

- Slightly pull the clutch lever (A/9 or C/9), unlock pawl (A/10 or C/10), and slowly release the clutch lever while increasing the engine speed via the speed control lever (A/6 or C/6). The hoeing tools start rotating.

- Set the desired working depth by adjusting the depth bar’s position. The depth bar can be set to one of four working depths (see chapter “Depth bar”) as desired.

- Do not transport or move the power hoe with the hoeing tools still rotating or on concrete and asphalted ground. Instead, use the front support wheel and turn off the engine in transport

⚠️ Warning: Do not clean the hoeing tools while the engine is running. Turn off the engine and remove the spark plug connector. Only remove jammed objects with a tool, e.g. a wooden stick.
4. Commissioning and Operation

**Going in Reverse**
- Move speed control lever to “min”.
- Pull clutch lever (A/9 or C/9) and wait until machine stops moving forward.
- Move gear shift lever (A/11 or C/11) to position “R” and hold it there. Then slowly move clutch lever while you are pulling the speed control lever. The power hoe will reverse.

⚠️ **To clean the machine during operation, turn off the engine and remove the spark plug connector for reasons of safety.**

**End of Operation**
- Move gear shift lever to neutral (“0”).
- Pull clutch lever (A/9 or C/9) and lock pawl.
- Shut off the engine – move speed control lever (A/6 or C/6) to “STOP”

⚠️ **If the attachment comes with guards, immediately attach these.**

**Starting the Engine on the Slope**

If for any reasons the engine should come to a stop and need restarting, proceed as follows:
- Leave the gearbox engaged (this keeps the machine from rolling off because the gearbox acts like a brake).
- Pull clutch lever and lock with pawl (A/10 or C/10) (safety circuit switch in “start position”).
- Restart the engine.
5. Maintenance, Petrol Engine Version

Apart from adhering to operating instructions for power hoes/multi-purpose machines, it is also important to observe the following maintenance instructions.

⚠️ Warning: Only do maintenance work with the engine shut off.

Always remove spark plug connector from spark plug, to avoid accidentally starting the engine while working on the machine or on the engine.

Always wear safety gloves, when working near hoeing tools.

The machine will operate reliably at all times, if it receives proper servicing. After each operation clean the machine and, especially, the cutter bar.

Engine

Checking Oil Level

- Each time you take up operation and after every 5 operating hours.
- Check only with engine switched off and machine in horizontal position.
- Clean oil filler plug (B/11) and surrounding parts.
- Unscrew oil filler plug.
- Remove oil filler plug, clean dip-stick with a clean cloth and dip back into oil tank (do not screw in), remove the dip-stick and read the oil level (fig. R).
- Refill oil, if oil level is lower than described (see “Specifications”).
  - Do not overfill!
- Screw oil filler plug back in and tighten it.

Changing Engine Oil

The first oil change is after 5 operating hours. Subsequent oil changes are after every 50 operating hours or once a year, depending on which period is completed first. At extreme load and at high temperatures, change oil after every 25 operating hours.

- Open the drain plug (1) and the filling plug (2) and drain the oil into a suitable container or use a suction pump to remove the oil through the filler neck.
- Ensure the waste oil is disposed of properly!
- Before you retighten the drain plug (1) inspect the condition of the sealing ring (3). Replace it if necessary.
- Fill fresh engine oil into the oil filling opening. Refer to Specifications for oil quantity and quality. Use a funnel or a similar device to fill the oil reservoir.
- Replace the oil filler plug (2) and tighten it.

Only change oil while the engine is still warm, but not hot – danger of burns!
5. Maintenance, Petrol Engine Version

Air Filter

Clean the oil bath air filter at 3-month intervals but not later than 25 operating hours (earlier in very dusty conditions). To do this, proceed as follows:

- Remove the wing nut and the filter cover.
- Remove the foamed filter element.
- Wash the foamed pre-filter in non-foaming and warm lye. Do not use detergents containing Naphtha (petrol, etc.). Rinse the filter in running water inside out until the water is clear.
- Allow the foamed pre-filter to dry completely in the open air before replacing it.
- Slightly soak the foamed pre-filter in engine oil, then squeeze out the oil (wrap it in a rag and press it).
- Drain the remaining oil from the air filter housing. Then wash the housing with hardly flammable solvent to remove any dirt. Allow the housing to air-dry.
- Re-attach the air-filter housing (do not forget the o-ring) and top up engine oil to level mark (refer to technical specifications for engine oil)
- Re-fit the filter cover and attach it with the wing nut (9Nm).
5. Maintenance, Petrol Engine Version

Fuel System

Petrol is an extremely inflammable and sometimes even explosive fuel. Do not smoke within the machine's operating range and keep away fire and sparks.

- Each time you maintain the machine, check the fuel hose, fuel tank, and carburetor for leakages. Remove any leakage and immediately replace a leaking or porous fuel hose.
- Replace the fuel hoses at 2-year intervals.

Cleaning the Sediment Bowl

After every 50 operating hours or min. yearly, clean the sediment bowl.

- Close the fuel tap. Remove the sediment bowl together with the o-ring and wash it with a non-flammable or hardly inflammable solvent. Allow it to dry thoroughly, then replace it and tighten it well. Open the fuel tap and inspect it for leakages before you start the engine.

Excessive Petrol Supply

- If fuel supply to the engine is too much, move the speed control lever to FULL THROTTLE (VOLLGAS) and crank the engine using the recoil starter until it starts again. If it does not start, remove the spark plug and crank the engine with the spark plug removed. Clean the spark plug, replace it and start again.

Inspecting the Fuel Supply

- Remove the drain plug and open the fuel tap. Fuel supply will be OK, if fuel runs through the tap. Retighten the drain plug.

Fuel Hoses

- Replace fuel hoses after every 2 years.
5. Maintenance, Petrol Engine Version

Spark Plug
- After every **50** operating hours, clean the spark plug and re-adjust the electrode gap to 0.7…0.8 mm. Only clean the spark plug using a wire brush and wash it out with a commercial cleaning agent.

![Wire brush](image1)

- Replace the spark plug at **100-hour intervals**.

Spark Plug Assembly:
Screw the spark plug into the cylinder head by hand. Then continue with a spark plug wrench. Turn wrench at 90° or at a torque of 20…30 Nm.

![Spark Plug Assembly](image2)

Checking the Ignition Sparks:
Remove the spark-plug, clean it and place it back into the plug connector. Use the lateral electrode to make contact with the engine, pull the starter rope and wait for sparking. If there are no sparks, replace the spark plug.

![Checking the Ignition Sparks](image3)

Never use a spark plug of an incorrect heat range.

**Careful, do not touch the muffler! This is very hot after engine operation.**

Cleaning the Cooling Screen
After long operation, dirt can clogg the cooling system. To avoid overheating and damage to the engine, regularly clean cooling screen (B/8). Check each time before you take up operation!

![Cleaning the Cooling Screen](image4)

Air-Cooling System
Clean internal cooling fins and surfaces at least every **100 operating hours** (earlier in very dusty conditions).

For this purpose, contact your professional agria workshop.

Governor
For smooth engine performance keep governor linkages, springs and actuating devices clean from dust and dirt. Do not bend or misadjust parts. (Governor linkages on carburetor B/2).
5. Maintenance, Petrol Engine Version

**Exhaust**

Regularly clean surrounding parts of muffler (B/9). Free from grass, dirt and inflammable deposits.

⚠️ – Danger of fire!

Check each time before you take up operation.

**Speed Actuating Devices**

Engine speed actuating devices must be adjusted correctly to start, operate and switch off the engine at correct speed rates.

*For adjustment, contact your agria workshop.*

**Carburetor Settings**

Small differences in fuel, temperature, altitude or load may require slight carburetor adjustment. Only let engine run with air filter and air filter cap fitted.

**Operation at High Altitudes**

To improve engine performance at high altitudes, fit a small-holed main jet to the machine and readjust the mix control screw. This measure is necessary, if the engine is permanently operated at altitudes of 1,830 m above sea level and more.

ℹ️ If the engine is operated at a lower altitude than carburetor calibration allows for and if too little fuel is mixed in, power may drop, the engine may overheat or even suffer serious damage.

**Adjusting the Carburetor Idle Speed**

- Start the engine and wait until it has reached operating temperature.
- Adjust the throttle stop screw while the engine is running and set to standard idle speed (1,250 rpm–1,600 rpm).

*For carburetor adjustment, contact your agria workshop.*

![Throttle stop screw](image)
5. **Maintenance**, Diesel Engine Version

Apart from adhering to operating instructions for power hoes/multi-purpose machines, it is also important to observe the following maintenance instructions.

⚠️ **Warning:** Only do maintenance work with the engine shut off.

**Always wear safety gloves, when working near hoeing tools.**

The machine will operate reliably at all times, if it receives proper servicing. After each operation clean the machine and, especially, the cutter bar.

## Engine

### Checking Oil Level

- **Each time you take up operation and after every 5 operating hours.**
- **Check only with engine switched off and machine in horizontal position.**
- **Clean oil filler plug (D/11) and surrounding parts.**
- **Unscrew oil filler plug.**
- **Remove oil filler plug, clean dip-stick with a clean cloth and dip back into oil tank (do not screw in), take out dip-stick and read oil level (fig. R).**
- **Refill oil, if oil level is lower than described (see “Specifications”).**
  - Do not overfill!
- **Screw oil filler plug back in and tighten it.**

### Changing Engine Oil

The first oil change is **after 5 operating hours.** Subsequent oil changes are after **50 operating hours or once a year,** depending on which period is completed first. At extreme load and high temperatures, change oil after 25 operating hours.

During each engine oil change also clean the engine oil filter.

- **Open the drain plug (1) and the filling plug (2) and drain the oil into a suitable container.**
- **Remove engine oil filter attachment bolt (5).**
- **Remove engine oil filter (4) and wash it in Diesel oil**
- **Re-insert engine oil filter and attach and tighten attachment bolt (5).**

- **Ensure the waste oil is disposed of properly!**
- **Before you retighten the drain plug (1) inspect the condition of the sealing ring (3). Replace it if necessary.**
- **Fill fresh engine oil into the oil filling opening. Refer to Specifications for oil quantity and quality. Use a funnel or a similar device to fill the oil reservoir.**
- **Replace the oil filler plug (2) and tighten it.**

**Only change oil while the engine is still warm, but not hot – danger of burns!**
5. **Maintenance**, Diesel Engine Version

---

**Oil Bath Air Filter**

Clean air filter (D/1) after a maximum of every 25 operating hours or at least after 3 months (in case of heavy dust occurrence even earlier).

- Clean the air-filter and its surrounding parts.
- Open the latch (4), remove the oil sump (3), drain the oil and clean the oil sump.
- Wash the filter insert (2) inside the oil sump (3) by dipping it in diesel fuel (do not use petrol) and spin it dry.
- Fill engine oil into the oil sump (3) (approx. 0.2 l) until it is level with the full marks on the ring inside the oil sump.
- Ensure the assembly is closed tight.
5. Maintenance, Diesel Engine Version

Draining Fuel

- Provide a proper container with funnel or similar.
- Remove the drain plug (16) and drain the fuel into a proper container.
- Re-attach the drain plug (16) with o-ring and tighten it (check the o-ring and replace it if necessary)

Fuel Filter

Clean the fuel filter insert at approx. 100 operating hour intervals, earlier, if engine output drops.

Filter Disassembly/Assembly:

- Drain the fuel.
- Remove hex head nuts (X/7)
- Remove the filter insert (X/4) from the fuel tank through the filling hole.
- Clean the fuel filter with diesel oil and replace the insert if it is damaged.
- Reverse the above order to reassemble the fuel filter after checking and replacing (if necessary) the seal (X/5) and o-ring (X/6).
- Tighten the hex nuts.
- Fill fuel and check the fuel system for leakages.
- Re-attach the fuel hoses.

Fuel Hoses

Exchange after every 2 years; exchange leaking fuel hoses immediately.

Bleeding the Fuel System

Never open the fuel supply system and injection pump – not even for bleeding. The fuel pump bleeds automatically.

Bleeding the fuel system becomes necessary after the fuel tank was emptied completely or after exchanging or cleaning the fuel filter/fuel hoses.

Although the engine is equipped with an automatic bleeding system, proceed as follows:

- Fill diesel fuel into the fuel tank.
- Crank engine several times with recoil starter or electric starter and start the engine.
- Let engine run for approx. 1 minute.
5. Maintenance, Diesel Engine Version

Cleaning the Cooling System

After a long period of operation the cooling system may become clogged by dirt and plant trash. Uninterrupted operation with a clogged cooling system causes the engine to heat up and become damaged.

1. Always check cooling-air screen (D/8) and free from dirt and plant trash taken in.

2. After every 100 operating hours or at least once a year before season start, remove fan case to clean cooling fins on cylinder and cylinder head as well as guiding plates and cooling-air screen, both serving for smooth air circulation. For this purpose, contact your professional agria workshop.

Exhaust System

Constantly check exhaust system (D/9) for plant trash and clean, if necessary. Otherwise

⚠️ - danger of fire!

Check each time before you take up operation.

Re-adjusting Valve Lash

After every 50 operating hours re-adjust valve lash. Re-adjust outlet and intake valve lash to 0.15±0.02mm when the engine is cold. For this purpose, contact your professional agria workshop.

Injection Jet

After every 400 operating hours, clean and check injection jet. For this purpose, contact your professional agria workshop.

Idling Speed

Always ensure that idling engine speed is adjusted correctly. At low speeds, the engine is supposed to run smoothly, with speed control lever at stop in neutral. For this purpose, contact your professional agria workshop.
5. Maintenance

Machine

Transmission Oil Level
Check the transmission oil level before operating the machine for the first time and at intervals of 25 operating hours.

- Park the machine on level ground (see fig.) and remove the oil control plug (25).
- Oil must be level with the filling hole; refill transmission oil, if necessary.
- Screw down oil control plug (25) and tighten it.

Changing the Transmission Oil
Exchange transmission oil once per year while the engine is still warm from operation.

- Remove the drain plug (26)
- Tilt the machine slightly to the rear for the old oil to drain thoroughly – collect the oil in a proper container and dispose of it properly.
  - Replace the drain plug (26) with seal (30) and tighten it; inspect the seal and replace it if necessary.
- Remove the panel (1) after removing the bolts (2+4)
- Open the filler plug (24) and fill in fresh transmission oil (refer to specifications for quality and quantity) until the oil is level with the inspection hole (see “Transmission oil level“)
  - Replace the plug and tighten it.
  - Attach the panel (1).
5. Maintenance

Adjustments on Levers

Check clutch play or clutch adjustment each time you operate the machine. If necessary, re-adjust (especially during the break-in period after starting up and after replacing the clutch cable.)

Petrol Engine Version

Clutch:

\[ X = 3 - 5 \text{ mm (Clutch play)} \]

! = The Bowden cable must be placed in the hand lever support on top position!

Adjustment:

1. Remove retaining spring (2) and remove cable end (3) and set pin (4) out of bracket in hand lever.

2. Adjust the set pin (4) to a play of \( X \). Screw set pin in to reduce play, screw out to increase play.

3. Place cable end and set pin back into bracket and fit retaining spring (2).

Diesel Engine Version

- Set the adjustment screw (1) to a play of “A”. Turn screw in to reduce play, turn screw out to increase the play.

- Then secure the adjustment screw with a lock nut (2).

Free play of clutch:

\[ A = 5\ldots6 \text{ mm} \]
5. Maintenance

Safety circuit

Check safety circuit function each time you take up operation and each time you maintain the machine.

- Upon release of lever (A/8 or C/8) and with clutch engaged the engine must automatically come to a stop.
- **Petrol engine:** Check electric lines and connections and replace them, if necessary.
  For this purpose, contact your professional *agria workshop*.
- **Diesel engine:** If necessary, correct STOP-Bowden cable with Bowden cable set screw.
  For this purpose, contact your professional *agria workshop*.

General

1. Every time you take up operation watch out for fuel and oil leakage, repair if necessary.

2. Regularly check nuts and bolts for tight fit and re-tighten, if necessary.

3. Once a year and after cleaning:
   Slightly grease all gliding and moving parts (e.g. speed control lever, lever bearing, etc.) with Bio-lubricating grease and Bio-slushing oil.

Cleaning

Machine

After cleaning the machine with a pressure washer, immediately lubricate all lubrication points and shortly operate the machine to press the water out.

Apply grease generously to leave a grease ring around bearings to prevent water, plant sap, and dirt from penetrating.

Engine

Clean the engine only with a cloth. Avoid cleaning it with a pressure washer, as water might leak into ignition and fuel system, causing malfunctions.
5. Maintenance

Storage

For longer periods of no operation proceed as follows:

a) Clean Thoroughly

Repair paint coat. Then spray all shining parts and hoeing tools with Bio-slushing oil.

b) Engine Preservation

Petrol Engine Version:

- Drain the fuel completely from the system:
  Petrol is extremely inflammable and sometimes even explosive. Do not smoke within the machine’s operating range and keep away fire and sparks.

- Close the fuel tap, remove the sediment bowl (2) and empty it.

- Open the tap and drain the fuel into a suitable container.

- Reinstall the bowl after inspecting the sealing ring (2) (replace it if necessary). Tighten the bowl until it is snug.

- Remove the carburetor drain plug (3) to drain the petrol into a suitable container or add fuel stabiliser (agria No. 799 09).

- Fill the fuel tank, then add stabiliser - observe instructions!
  Operate the engine for approx. 1 minute.

- Change the engine oil

- Fill a tea-spoon of engine oil (approx. 0.03l) into the spark plug opening. Slowly crank the engine.

- Pull the starter rope until you feel resistance. Pull a bit further until the cut in the starter pulley is aligned with the hole on the recoil starter (see illustration). This closes the intake and outlet valves to improve the engine’s protection from internal corrosion.

- Crank the engine slowly at 2–3 week intervals (spark plug connector is removed).
5. Maintenance

Diesel Engine Version:

- Change engine oil.
- For longer storage, close exhaust pipe and air filter opening with crape or similar tape.
- Pull the recoil starter until you feel resistance. This puts the piston to compression and closes the valves.

c) Drive-Wheels
Support drive-wheels in such a way that tyres have no ground contact. Pneumatic tyres are quickly destroyed, if left standing under load and unsupported.

d) Pull Clutch
Always park the machine with clutch lever pulled ("0" = pawl locked). Otherwise clutch problems may result due to corrosion.

e) Parking
Because of severe corrosion
- preserve the machine from atmospheric influences
  - do not park the tractor
  - in humid rooms
  - in rooms where fertilizer is stored
  - in stables or adjacent rooms.

f) Covering the Machine
Protect the machine with cloth or a similar cover.
6. Troubleshooting

**Observe safety instructions!** Have all serious malfunctions on the machine or engine repaired by your agria workshop. They have the proper tools. Improper repairs can only add to the damage.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol Engine:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine does not start</td>
<td>- Spark plug connector not connected</td>
<td>Connect spark plug connector</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>- Choke is not pulled</td>
<td>Set choke lever to position CHOKE</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>- Engine shut-off switch is set to “0”</td>
<td>Set engine shut-off switch to “I”</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>- Safety circuit is not set to start position</td>
<td>Set safety circuit to start position</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>- Fuel tap closed</td>
<td>Open fuel tap</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>- Fuel tank empty or poor fuel</td>
<td>Fill fresh fuel</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>- Fuel filter clogged</td>
<td>Clean fuel filter, check fuel supply</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>- Defective spark plug</td>
<td>Clean, adjust or exchange spark plug</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>- Too much fuel (“flooded engine”)</td>
<td>Dry and clean spark plug and start at full throttle</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>- Engine-off-line defective</td>
<td>Check line and connections</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>- Inleak air due to loose caburetor and suction line</td>
<td>Tighten attachment bolts</td>
<td></td>
</tr>
<tr>
<td>Misfirings in engine</td>
<td>- Engine running in CHOKE range</td>
<td>Set CHOKE lever to operating position</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>- Loose ignition cable</td>
<td>Fix ignition cable retaining device</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Clogged fuel filter or poor fuel</td>
<td>Clean fuel filter, fill fresh fuel</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>- Water or dirt in fuel system</td>
<td>Drain fuel and fill fresh fuel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Air filter clogged</td>
<td>Clean air filter</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>- Carburetor misadjusted</td>
<td>Re-adjust carburetor</td>
<td>38</td>
</tr>
<tr>
<td>Excessive temperature in engine</td>
<td>- Low engine oil level</td>
<td>Refill oil immediately</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>- Impaired cooling</td>
<td>Clean cooling fan grid, clean internal cooling fins</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>- Air filter clogged</td>
<td>Clean air filter</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>- Carburetor misadjusted</td>
<td>Re-adjust carburetor</td>
<td>38</td>
</tr>
<tr>
<td>Misfirings in engine at high speeds</td>
<td>- Short firing intervals</td>
<td>Adjust spark plug</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>- Incorrect idle mixture</td>
<td>Adjust carburetor</td>
<td>38</td>
</tr>
<tr>
<td>Engine frequently stalls in idle</td>
<td>- Firing interval too long, defective spark plug</td>
<td>Adjust or replace spark plug</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>- Carburetor misadjusted</td>
<td>Re-adjust carburetor</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>- Air filter clogged</td>
<td>Clean air filter</td>
<td>35</td>
</tr>
<tr>
<td>Engine does not run smoothly</td>
<td>- Speed control linkages clogged or jammed</td>
<td>Clean speed control linkages</td>
<td>37</td>
</tr>
</tbody>
</table>
6. Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine does not stop when set to stop</td>
<td>- Defective engine-stop-line, ground missing</td>
<td>Check line and connection, check ground contact</td>
<td>*</td>
</tr>
<tr>
<td>Engine output too low</td>
<td>- Air filter clogged</td>
<td>Clean air filter</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>- Loose cylinder head or damaged gasket</td>
<td>Tighten cylinder head, exchange gasket</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>- Poor compression</td>
<td>Have engine checked</td>
<td>*</td>
</tr>
</tbody>
</table>

**Diesel Engine:**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine does not start</td>
<td>- Speed control lever set to “STOP”</td>
<td>Set speed control lever to “Max”</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>- Fuel tank empty or poor fuel</td>
<td>Fill fresh fuel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Fuel line or fuel filter clogged</td>
<td>Clean fuel line or filter</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>- Injector nozzle or injection line clogged</td>
<td>Clean injector nozzle or injection line</td>
<td>* 42</td>
</tr>
<tr>
<td></td>
<td>- Wrong injection pressure</td>
<td>Check pressure</td>
<td>*</td>
</tr>
<tr>
<td>Misfirings in engine</td>
<td>- Clogged fuel line or poor fuel</td>
<td>Clean fuel line, fill fresh fuel</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>- Water or dirt in fuel system</td>
<td>Drain fuel and fill fresh fuel</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>- Air filter clogged</td>
<td>Clean air filter</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>- Injector nozzle or injection line clogged</td>
<td>Clean injector nozzle or injection line</td>
<td>* 42</td>
</tr>
<tr>
<td>Excessive temperature in engine</td>
<td>- Lack of engine oil</td>
<td>Refill engine oil immediately</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>- Impaired cooling</td>
<td>Clean fan grid, clean internal cooling fins</td>
<td>42</td>
</tr>
<tr>
<td>Misfirings at high speeds</td>
<td>- Injector nozzle clogged</td>
<td>Clean injector nozzle</td>
<td>* 42</td>
</tr>
<tr>
<td></td>
<td>- Wrong injection pressure</td>
<td>Re-adjust injection pressure</td>
<td></td>
</tr>
<tr>
<td>Engine frequently stalls in idle</td>
<td>- Air filter clogged</td>
<td>Clean air-filter</td>
<td>40</td>
</tr>
<tr>
<td>Engine does not stop when set to “STOP”</td>
<td>- Improper adjustment of engine-off-cable</td>
<td>Re-adjust engine-off-cable</td>
<td>45</td>
</tr>
<tr>
<td>Engine output too low</td>
<td>- Loose cylinder head or damaged gasket</td>
<td>Tighten cylinder head, exchange gasket</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>- Poor compression</td>
<td>Have engine checked</td>
<td>*</td>
</tr>
</tbody>
</table>

* = For this purpose contact your agria workshop.
6. Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine in general:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clutch does not decouple</td>
<td>- Clutch lever misadjusted</td>
<td>Adjust clutch free play</td>
<td>58</td>
</tr>
<tr>
<td>Clutch slips</td>
<td>- Clutch lever misadjusted</td>
<td>Adjust clutch free play</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>- Worn out clutch</td>
<td>Exchange clutch disc</td>
<td></td>
</tr>
<tr>
<td>Excessive vibration</td>
<td>- Loosened attachment bolts</td>
<td>Tighten attachment bolts</td>
<td>58</td>
</tr>
</tbody>
</table>

* = For this purpose contact your agria workshop.

Lubrication Chart

(5) 50 h

(5) 50 h
Varnishes, Wear Parts

agria Order No.

**Fuel Stabilizer and Tyre Sealing Gel**
- 799 09 Fuel stabilizer: pouch 5 g
- 713 13 Tyre sealing gel Terra-S: bottle 1 l

**Varnishes**
- 181 03 Spray varnish birch-green: spray tin 400 ml
- 712 98 Spray varnish red, RAL 2002: spray tin 400 ml
- 509 68 Spray varnish black: spray tin 400 ml

**Wear Parts**
- 761 99 Air filter element set
- 759 99 Spark plug NGK BPR 6 ES; BOSCH WR 7 DC

**List of Spare Parts**
- 997 151 Power hoe Farmstar 1600

---

**Electrical Wiring – Petrol Engine Version**

![Electrical Wiring Diagram](image)

**Safety circuit Circuit**
- 1 Engine
- 2 Solenoid ignition system
- 3 Engine shut-off switch (on speed control lever on engine)
- 5 Switch in safety circuit lever
- 6 Switch in clutch lever

*bl blue, br brown*
## Inspection and Maintenance Chart

<table>
<thead>
<tr>
<th>Task</th>
<th>Operating hour intervals</th>
<th>min. every 3 months</th>
<th>min. yearly</th>
<th>B</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check safety circuit function</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Check free play of levers</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>44</td>
</tr>
<tr>
<td>Check air filter</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>35/40</td>
</tr>
<tr>
<td>Clean cooling-screen</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>37/42</td>
</tr>
<tr>
<td>Clean governor linkages</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>Check engine oil level, refill, if necessary</td>
<td>K K</td>
<td></td>
<td></td>
<td></td>
<td>34/39</td>
</tr>
<tr>
<td>Clean surrounding parts of exhaust</td>
<td>K K</td>
<td></td>
<td></td>
<td></td>
<td>38/42</td>
</tr>
<tr>
<td>First engine oil change</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td>34/39</td>
</tr>
<tr>
<td>subsequent oil changes</td>
<td>W</td>
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<td>34/39</td>
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<tr>
<td>Cleaning</td>
<td>K</td>
<td></td>
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<td></td>
<td>45</td>
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<tr>
<td>Check bolts and nuts</td>
<td>K</td>
<td></td>
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<td>45</td>
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<tr>
<td>Check transmission oil level</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Clean air filter, earlier if required</td>
<td>W W</td>
<td></td>
<td></td>
<td></td>
<td>35/40</td>
</tr>
<tr>
<td>Clean fuel filter Petrol engine</td>
<td>K K</td>
<td></td>
<td></td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Clean fuel filter Diesel engine</td>
<td>K K</td>
<td></td>
<td></td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>Clean spark plug, adjust gap</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>Replace spark plug</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>Clean guide plates, cooling fins – earlier, if required</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td>37/42</td>
</tr>
<tr>
<td>Lubricate all gliding parts</td>
<td>K K</td>
<td></td>
<td></td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Change transmission oil</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Replace fuel hoses</td>
<td>W*</td>
<td></td>
<td></td>
<td></td>
<td>36/41</td>
</tr>
</tbody>
</table>

**A** = Each time before you take up operation  
**B** = After each cleaning  
**K** = Checks and service to be executed by operator  
**W** = Maintenance to be executed by professional workshop  
* = after 2 years
Designation of Parts
Diesel Engine Version

Figure C

1. Engine
2. Handlebar joint
3. Tommy nut for handlebar adjustment
4. Handlebar
5. Tool box
6. Speed control lever
7. Engine shut-off switch
8. Safety circuit lever
9. Clutch lever
10. Pawl of clutch lever
11. Gear shift lever
12. Gear shift gate
13. Covering
14. Leg of depth bar
15. Locking pin of depth bar
16. Depth bar
17. Extension guard
18. Guard discs
19. Add-on hoeing tools
20. Base hoeing tools
21. Hoeing guard
22. Front hitch
23. Support/engine guard
24. Transmission oil filling opening
25. Transmission oil control plug
26. Transmission oil drain plug
27. Name plate (machine ID number)
28. Rear hitch

Figure D

3. Fuel tank cap
4. Fuel tank
5. Engine type number
6. Starter handle
7. Cooling-air screen
8. Exhaust with guard
9. Engine oil filling plug and dip stick
10. Engine oil drain plug
11. Decompression lever
12. Engine oil filter
Figure C

Figure D
## EC Conformity Declaration

<table>
<thead>
<tr>
<th>D</th>
<th>F</th>
<th>GB</th>
<th>NL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wir erklären, dass das Produkt Motorhacke verklaren dat het produkt Motorfreezes</td>
<td>déclarons que le produit Motobineuse</td>
<td>herewith declare that the product Motor hoe</td>
<td>agria-Werke GmbH Bittelbronner Str. 42 D-74219 Möckmühl/Württ.</td>
</tr>
</tbody>
</table>

**Farmstar 1600 011,-012, -511**

mit allen einschlägigen Bestimmungen der EG-Maschinenrichtlinie 2006/42/EG in Übereinstimmung ist. Die Maschine ist auch in Übereinstimmung mit allen einschlägigen Bestimmungen der folgenden EG-Richtlinien:

- 2004/108/CE, 2000/14/EG
- 2004/108/CE, 2000/14/CE
- Les normes harmonisées ou extrait de celles qui les spécifications techniques suivantes ont été appliquées:
- Following harmonized standards (or parts of it) or technical specifications have been applied:

Möckmühl, den 03.02.2010

Siegfried Arndt  
Geschäftsführer

Rudolf Tiggas  
Leiter Entwicklung & Konstruktion

Director  
Managing Director

Managing Director  
Bedrijfsleider

Herr Tiggas ist bevollmächtigt die technischen Unterlagen zusammenzustellen.
Monsieur Tiggas est habilité à agencer la documentation technique.
Mr. Tiggas is authorized to assist the technical documents.
De heer Tiggas is gemachtig om de technische documentatie op te stellen.
Anschrift/adresse/address/adresse:
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