

Drum mower BDR-595 E *EuroAdela*



Instructions for use



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Text and illustrations 2003 VARI,a.s. Publication No. **VL-079-2003**



1 Basic information

\triangle Ask your dealer to provide unpackaging of the machine and briefing.

Fill in the following table with data on your machine. The data are important for ordering spare parts.

It is advisable to have a copy of this page with all data on the machine purchase for the case of loss or theft of the original record.

Туре	BDR-595 E
Trade name	EuroAdela
Engine type	HONDA GCV160
Machine Serial No./Year of	/
Manufacture	
Engine Serial No.	
Date of delivery (sale)	
Supplier	
Address	
Telephone/Fax/E-mail/Internet	

Your notes:

Manufacturer **reserves the right** of technical modifications and machine innovations not impacting function and safety of the machine. The alterations may not reflect in these instructions for use.



2	EC-Conformity Statement
	EC-CONFORMITY STATEMENT
	according to Act No. 22/1997 Gaz. DIC: 055-00660574 (as amended)
Â	Manufacturer:
	VARI,a.s., Opolanská 350, 289 07 Libice nad Cidlinou, Czech Republic Identification No.: 00660574
	issues the following Statement at its own responsibility
/	
1	a) Name:
	Drum mower
	b) Model:
	BDR-595 E
	c) Brand:
	d) Serial No:
	00001-99999
\triangle	Regulations to which the conformity was assessed:
	Government Decree No.170/1997 Gaz., Government Decree No.169/1997 Gaz., Government Decree No.9/2002 Gaz. (all Government Decrees as amended), Directive 98/37/ES – Attachment No.1
Â	 Person authorized for testing: a) Name: Státní zkušebna zemědělských, potravinářských a lesnických strojů b) Seat: Třanovského 622/II, Praha 6 - Řepy c) AO: 206, accredited testing laboratory no.: 1054 d) Final report No.: 22 508 of 5 March 2003
Â	Harmonized technical norms, national technical standards and specifications: ČSN EN 292-2+A1, ČSN EN 12733, ČSN CISPR 12
Â	Technical documentation set containing the assessment of product compliance with the regulations:
	No. STD/043/2003
Â	Manufacturer confirms that: The above machine based on his concept and design, as well as the model introduced by us into circulation, comply with relevant basic safety requirements of the government decrees. Should there be machine alterations not approved by us, this Statement becomes void. The product is safe under conditions of its common use specified by manufacturer. Manufacturer has adopted measures to ensure conformity of all products introduced onto the market with technical documentation and basic requirements.
Â	In Libice nad Cidlinou Date: 28 March 2003
	signed by person authorized to act on our behalf: Name: Jiří Belinger - CEO
	Signature. Stallip.



3 Introduction

Dear customer and user,

Thank you for the trust you have shown by purchasing our product. You have become owner of machine from a wide range of machines and attachments made by **VARE**, a.s. as a system of gardening, farming, small agricultural and communal technology.

Drum mower BDR-595 E *EuroAdela* meets with its design the latest European safety standards and directives for this category of mowing machines. Construction of the protective frame with screen around the entire mowing disk circumference does not prevent perfect cutting of the grass and its continuous swathing on the right side of the machine. Thanks to this frame with the screen which provides protection from possible fly-away stand fragments, the drum mower can also be used inside towns and villages (while adhering to instructions listed under **4.1 Safety regulations**). The drum mower can also be favourably used at places where cutting of the high-grown grass must not result in damage to young trees, shrubs, etc. such as in forest nurseries, orchards, ...

Please read the Instructions for use carefully. Following them properly, you will get our product performing reliable work for years.

3.1 Warning

User **is obliged** to get acquainted with the Instructions for use and to follow all instructions for machine operation so that the user's and other persons' health and property do not suffer any harm.

Safety instructions contained in this manual do not describe all situations or conditions possibly occurring in practical use. Safety factors such as common sense, diligence and scrupulousness are not included; it is assumed, however, that all persons authorized for machine operation or maintenance do possess the intelligence.

The machine can be operated only by persons in good mental and physical condition. For the professional use of the machine the machine owner is obliged to ensure a work safety training and provide instructions on machine control for operators and to keep records on these trainings and briefings. In addition, the machine owner is obliged to make a so called categorization of operations according to the relevant national legislation.

Should some instructions in the manual be unintelligible, you are encouraged to **contact your dealer** or directly the manufacturer of the machine. The contact address and telephone/fax connection are to be found at the end of the manual.

Instructions for use supplied with the machine are an integral part of the machine. They have to be available at any time, placed at a well accessible place with no risk of their damage. In the case that the machine is sold to another person, the Instructions for use must be given to the new machine owner. If the above conditions are not met, the manufacturer bears no responsibility for incurred risks, accidents and injuries resulting from the machine operation.

The manufacturer bears no responsibility for damages caused by unauthorized and incorrect use of the machine and for damages caused by any machine modifications not authorized by the manufacturer.

To prevent injuries of operators and other people occurring in the vicinity of the machine, it is absolutely crucial to follow safety regulations marked in the Instructions for use with the following warning safety symbol:



As soon as you meet with this symbol in the manual, read the attached instructions carefully !



4 Operation safety

4.1 Safety regulations

- \triangle This international symbol indicates important messages concerning safety. When you see the symbol, be aware of a possible injury to yourself or to other persons and read attached instructions carefully.
- \triangle The machine operator must be over **18 years of age**. **He (she) is obliged** to get familiar with the instructions for use of the machine and is supposed to be informed of the general principles of work safety.
- \triangle Prior to carrying out any activities in the near vicinity of the machine, switch the engine off and wait until the mowing disk stops moving! Before leaving the machine alone, switch off the engine!
- \triangle Never let the engine running at maximum speed or idling for a long time with the mowing disk drive clutch and travel wheels drive clutch being switched off! Components of the machine drive (V-belt, belt pulley, clutch pulley, etc.) might get damaged!
- △ Prior to each employment of the machine, check its parts (working mechanism or its casing in particular) for possible damage or loosening. Possible defects must be rectified without any delay. Repairs are to be made only with original spare parts.
- \triangle Before using the machine, the stand must be cleared of solid bodies such as stones, wires, loose construction debris, etc., which could be flinging up or which might damage the machine. If these cannot be removed, don't work the places.
- \triangle The machine is equipped with the rotating working tool. Maximum circumferential speed is **60.3 m.sec**⁻¹. Therefore, see to it that other persons move at a safe distance from the machine when it is in operation with regard to a possibility of mown stand or solid objects flying away
- \triangle With respect to exceeded recommended values of noise and vibrations, you are warned to observe the following instructions when working with the machine:
 - a) Protect your hearing by using suitable protective aids specified in CSN EN 352-1 (shell ear protectors) or CSN EN 352-2 (plug ear protectors). Require the aids from your dealer.
 - b) Work with the machine should be interrupted after max. 20 minutes for min.10 minutes. During these breaks, the machine operator must not be exposed to the effect of another source of noise or vibrations.
- △ Machine operators should use working aids authorized to CSN EN 166 or CSN EN 1731 (tight-fitting garments, sturdy shoes, working gloves and protection glasses). Keep a safe distance given by the handle.



- \triangle Don't start the engine in enclosed spaces! Pay an increased attention when handling the machine since the exhaust silencer remains hot after the engine has been switched off; make sure there are no leakages and spills on engine parts when refuelling. If they happen to occur, dry out the stained parts or wait until the petrol evaporates.
- \triangle When the machine is in operation, all other persons (children in particular) and animals have to be outside the machine's working space. The machine operator can continue working only after they have been shown out to a **safe** distance of min. 50 meters (see Pictograph 6).
- \triangle Removal of any protective equipment and machine casings is forbidden.
- \triangle Safe slope accessibility of the machine is 10°. Maximum inclination of engine at work is 20° for a longer time and 30° for a shorter time (up to 1 minute).
- \triangle All kinds of machine repair, adjustment, lubrication and cleaning are to be made with the machine switched off and spark plug cable disconnected.

4.2 Declared and guaranteed noise and vibration values

Declared emission level of acoustic pressure A at the operator's site $L_{pAeq,T} = 84 \ dB$ (according to ČSN EN 836+A1/A2, Attachment H and ČSN EN ISO 11 201)

Guaranteed level of machine's acoustic performance $L_{WA} = 100 \ dB$ (according to Government Decree No..9/2002 Gaz.)

Declared aggregative value of accelerated vibrations transmitted onto the operator's hand-arm $a_{hv} = 8,1 + 3,2 \text{ [m.s^{-2}]}$ (according to ČSN EN 836+A1/A2, Attachment G and ČSN EN 1033).

4.3 Safety pictographs

Pictograph no.	Safety information description
1	Label with manufacturing data
2	Guaranteed level of machine's acoustic performance
3	Instructions for use to be thoroughly studied prior to machine use
4	During machine maintenance, conductor should be disconnected from the spark plug
5	Putting one's hands or feet into the mowing disk working space is prohibited – Danger of injury
6	Entry prohibited for other persons and animals. Keep minimum safe distance from the machine.
7	Danger of injury by fly-away material fragments, chips, objects, etc.
8	Arrow for the tool direction of rotation - right
9	Putting one's hands into the V-belt space is prohibited – Danger of squeezed limbs.
10	At work, keep the maximum permitted-safe slope accessibility of the machine
11	Switching on the mowing disk drive: "0" = Mowing disk standing still; , "1" = Mowing disk turning
12	Switching on the machine travel: "0" = Machine standing still; , "1" = Machine moving

User is obliged to maintain pictographs on the machine legible and to provide for their replacement in case of their damage.



BDR-595 E EuroAdela





5 Machine: Its use, technical specification and description

5.1 Use of the machine

Drum mower Model **BDR-595** *EuroAdela* has been designed and manufactured to the latest knowledge in the field of small gardening and farming machinery, its design meeting the most recent European safety standards binding for this machine category. It also excels in easy maneouvrability and problem-free maintenance.

The mower is meant for cutting thin-walled stalky grass stands of medium height up to max. 80 cm on well-kept (i.e. annually mown) surfaces. The mown surfaces must be without any solid articles in the stand and greater terrain roughness. The mower is not meant for park treatment of grass stands neither for cutting stands with even a minimum representation of woody plants arisen from self-seeding.

⚠ Engagement width has to be at all times accommodated to the density of mown stands

BDR-595 E EuroAdela	Unit	Value
Length (incl. protective screen)	mm	1745
Width (incl. protective screen)	mm	978
Height (incl. protective screen)	mm	1120
Weight	kg	61
Max. engagement width	cm	56
Mowing disk speed (at max. engine rotations)	\min^{-1}	2068
Circumferential speed of knives (at max. engine rotations)	m.s ⁻¹	60.3
Travel speed (at max. engine rotations)	km.hr ⁻¹	2.7
Area performance (according to stand type)	m²/hr	800-1400
Gear box oil filling	litres	0.15
Oil grade	API	GL - 4, GL – 5
	SAE	90, 80W - 90
Engine type	Unit	Value
HONDA GCV 160		
Cylinder volume	cm ³	160
Drilling x Lift	mm	64x50
Max. output at RPM	kW/rpm	4.1/3600 (5.5HP)
Max. torque at RPM	N.m/rpm	11.4/2500
Maximum engine speed adjustment	rpm	3200 (+/-100)
Tank volume	litres	1.1
Petrol (leadless)	oct.no.	91-95
Oil filling	litres	0.55
Oil	SAE	15W-40
Spark plug		NIC DDDCEC
		NKG BPROES

5.2 Technical specification



Figure 1: Drum mower BDR-595 E EuroAdela



6 Instructions for use

6.1 Machine assembly

Ask your dealer to provide machine unpackaging and briefing.

Grip points for unpackaging the machine from the box: Front – Mowing disk; Rear – the "U" tube of the machine frame.

Should you do the machine assembly yourself, please follow the below instructions: Note: Washer size (e.g. Ø6.4mm) is always presented as the diameter of washer hole.

- 1. Take the machine out from the box and all parts from the packages.
- 2. Slip the front part of screen frame (1a) into the rear part of screen frame (1b) and connect them by means of M6x16 bolts (2) with small flat washers Ø6.4mm (3).
- 3. Put the assembled screen frame on a flat surface (table, floot, etc.) and slip the screen (4) onto the longitudinal beam on the front part of screen frame with its back side out. Bolt the screen (4) to the assembled apron frame by means of two bolts M6x16 (2) with washers Ø6.6mm (5) and self-locking nuts M6 (6) with small **flat washers** Ø6.4mm (3). Provide the bolt heads with plastic caps (7). Then sling the screen sides over the screen frame so that they are in the position illustrated in Fig. 2a.
- 4. Turn the handlebars (8)so that the handrails point to the rear of the machine. Attach the handlebars (8) onto the frame tubes at a required height by means of bolts with squares (9), small flat washers Ø8.4mm (10) and plastic rosebits with internal tread (11). Fix the Bowdens to the tubes of handlebars by means of two plastic tightening tapes.



- 5. Put the apron with frame into the cut-out in the upper casing (13). Then put the casing with the apron frame on the machine and bolt it with two nuts M8 (14) with large flat washers Ø9mm (10). Provide the nuts with plastic caps (19). The apron frame will be screwed to the machine under engine front with M6x20 bolts (20) with small flat washers Ø6.4mm (3). Provide the heads of M6x20 bolts with plastic caps (7).
- 6. Then bolt the apron to the upper casing by means of bolts M6x16 (2) with large flat washers Ø6.6mm (5) and self-locking nuts M6 (6). Provide the M6x16 bolt heads with plastic caps (7).
- 7. Bolt the mud guards (17) to the upper casing (13) by means of bolts M6x16 (2), self-locking nuts M6 (6) and large flat washers Ø6.6mm (5).

Figure 2a : Apron assembly







6.2 Putting into operation

- \triangle The machine can be delivered without working fillings of the engine (as depending on varied national regulations)!
- \triangle First read the instruction for engine use thoroughly! You can prevent a possible damage to the engine.
- 1. Check oil in the engine and/or fill the engine with the prescribed oil type and volume. Fill the tank with the prescribed amount and type of petrol.



- 2. Move the accelerator lever into the front position (**CHOKE**). Start the engine by pulling on the manual starter (instructions for starting see the guidelines for engine use).
- 3. Let the new or cold engine running for about 30 seconds on the choke (accelerator lever in the **CHOKE** position); then move the accelerator lever into the position **MAX** and let the engine running in this position for about 30 seconds.
- \triangle Don't leave the machine alone when doing this.

6.3 Starting the mowing disk

- \triangle When starting the engine, the two levers on the handlebars must be in the off position.
- 1. Start the engine. When doing this, follow the instructions presented in the operating manual for engine use.
- 2. Set-up maximum engine rotations by accelerator lever on the right handrail. (Should the engine be cold, let it warm up at maximum speed for about 1 minute.)
- 3. Grasp the left handlebar grip. Then slowly press the mowing disk drive gear lever on the right handlebar grip with your right hand.

\triangle Press the lever slowly up to two thirds of the stroke so that the mowing disk can start rotating and the engine does not stall.

The start of the mowing disk is accompanied with a partial slippage of the V-belt and with the related phenomena such as whistling, rattling, etc. which usually disappear after the belt has started properly moving.

4. After the mowing disk has started turning, press the lever completely to the handrail and hold firm.

Note: In a new or cold engine, engine stalling may occur at several first mowing disk drive starts. The phenomenon will disappear after the engine has got warmer. If the disk drive cannot be started even after the engine has got warm, follow the table presented <u>in</u> chapter 7.6 for diagnostics.

6.4 Machine travel

The travel gear is to be switched on by a lever on the left handrail. Press the lever down to the handrail and the machine starts immediately moving forward. You have to start slowly walking as soon as you have pressed the lever down and the machine has started its travel.

\triangle The machine may start moving with a slight jerk; be prepared for that.





Figure 3: Handlebars and accelerator lever

Note: all four main positions of accelerator lever are locked by means of a simple hollow-lug system in the lever body.





6.5 Machine stop

- \triangle Prior to performing any activities in the near vicinity of the machine, switch off the engine and wait until the mowing disk stops! Always switch the engine off before leaving the machine.

If you wish to stop the machine travel, release the lever on the left handlebar grip. The machine travel will stop but the mowing disk is still rotating. The mowing disk drive will switch off immediately after you have released the lever on the right handlebar grip. The mowing disk will be stopped by safety brake.

Engine is to be switched off by pushing the lever into the **STOP** position.

 \triangle In the case of any critical situation, release your hold on the handlebars immediately. The levers will return to their zero position, the machine and the mowing disk will come to a stop (while engine is still running at adjusted rotations; this is why it is to be switched off by pushing the lever into the STOP position as soon as possible!)

6.6 Working with the machine

- 6.6.1 Working engagement of the machine
- \triangle Prior to the machine use, the stand must be cleared of solid bodies such as stones, wires, loose construction debris, etc., which could be flung or might otherwise damage the machine. Should these be impossible to remove, avoid working the places.
- Δ Mowing engagement width has to be at all times accommodated to stand density!





On the upper surface of the apron, there is a yellow strip placed on the right side to indicate the maximum working engagement of the mowing disk on the right. Edge of the to-bemown stand should not exceed the boundary given by the strip (see Figure).

Warning: When mowing, make sure that the lower disk is permanently pushed against the



ground and does not rebound. Disk rebounding results in uneven stand mowing

6.6.2 Mowing grass stands

Set the engine to maximum speed, let the mowing disk rotate at maximum speed (starting the mowing disk see chapter 6.3) and get the machine into motion (see chapter 6.4) facing the stand to be cut. The mown grass is thrown away by the mowing disk to the right side onto the screen which forms a swath. Grass leaves the space under the screen from in front of the right wheel.

The only correct way how to proceed at cutting the grass stand is to have the tobe-mown grass at all times on the left side of the machine (see Figure).

It is adviseable to drive the machine along the slope contour lines for cutting. Keep in mind, however, that the maximum machine tilt permitted is 20° (long-term) and 30° (short-term)!

If the stand is very dense, grown through, rotten or lodged, the machine working engagement width must be reduced accordingly so that the mowing disk rotations are not being excessively reduced and the cutting quality impaired.

6.6.3 Problems at cutting

Choking of the space under the upper casing and apron with grass can show as follows:

a) **Engine markedly loosing speed but not stalling**: machine travel to be switched off immediately (lever on the left handrail); drive in reverse gear just a bit with a simultaneous slight lifting of the machine front (by pushing down on the handlebar handrails). The casing space will do itself a partial clearance of excessive grass matter. Then drive the machine against the stand again (see chapter 6.4).

\triangle Be very careful while lifting the machine and at reverse driving!

- b) **Engine loosing speed and stalling**: release the both levers on the handlebars, lift the machine front part by pushing down on the handlebars and drive a bit in reverse. Clear the space under the upper casing and spread the cut grass across the ground. Start the engine, switch on the mowing disk drive (see chapter 6.3) and once again drive the machine against the stand (see chapter 6.4).
- \triangle The engine must always be switched off when clearing the space under the upper casing and screen!
- \triangle Tilt the machine always only backwards onto the handlebars. Be very careful while moving in the space beneath the lifted machine! Secure the machine against spontaneous motion!
- \triangle Be very careful while cleaning the space under the upper casing and screen. Cutting edges of knives are sharp. You should wear protective gloves or you can also use a piece of branch etc.



7 Maintenance, care and storage

To ensure a long-term satisfaction with our product, it must be given proper care and maintenance. Regular maintenance of the machine will prevent its early wear ensuring at the same time a correct functioning of all its parts.

Follow all instructions for intervals of machine maintenance and adjustment. It is adviced that you keep records on the number of machine working hours and on the conditions in which the machine was working (for service purposes). Similarly as the current maintenance, the post-season maintenance should be entrusted to one of our authorized service workshops if you are not certain of your own technical skill.

 \triangle Regarding the machine weight, its maintenance and adjustment are to be made by a team of two persons.

7.1 Machine lubrication

7.1.1 Gear oil replacement and refilling

\triangle When replacing oils, follow the basic hygienic principles, regulations and laws on environment protection.

The gearing works in an oil bath. Oil condition should be checked once a month (oil plugs see Fig. 4).

Minimum grade of gear oil according to API should be GL-4, GL-5; according to SAE: 90 or 80W-90.

Oil replacement in a new machine is to be made after the first **5 hours** of operation and then after **100 working hours** or after the season. This will ensure that the gears will not suffer excessive wear. The exchange interval can be extended **up to 130 hours** (the running-in time of 5 hours must be adhered to) in higher oil grades (API GL-5, SAE 80W-90).

Czech oils fully meeting the requirements are MOGUL TRANS 90 or MOGUL TRANS 80W-90.

Oil replacement should be made when the gearbox is warm, oil can be drained easily.

- 1. Clean around the oil plugs. Underlay the machine and secure it so that a space is created under the machine for a vessel to collect oil.
- 2. Loosen the pour-in plug on the rear wall of the box and the drain plug in the bottom of the gearbox (spanner No. 19).
- 3. After the oil has been drained, screw back the drain plug in the bottom of the box. Fill the gearbox with the new oil (it is adviced to use a funnel with flexible tubing). Oil level should reach to the lower edge of the hole. Then screw the pour-in plug back. If the seals under the plugs are damaged, replace them with new ones.



Figure 4: Oil plugs



7.1.2 Engine oil replacement

See the guidelines for engine operation. To drain the oil, the machine should be either inclined onto the side with the pour-in neck with oil gauge, or the engine should be dismounted from the machine (see chapter 7.4 a,b,d).

7.1.3 Table of machine lubrication

Machine lubrication	During the season	After the season	Lubricant	Figure
All cables - input points to Bowdens - output points from adjustment bolts	min 2x min 2x	yes yes	silicon oil in atomizer	-
Both swivel seatings of rotary lever in the gearbox	min 1x a month	yes	silicon oil in atomizer	5.1
Tightening pulley arm pin (after disassembling upper casing)	min 2x	yes	grease, engine oil	5.2
Brake lever seating near the front belt pulley (accessible after upper casing disassembly)	min 2x	yes	grease, engine oil	5.3



Figure 5.1: Rotary clutch lever







Figure 5.3: Brake lever seating

Figure 5.2: Tightening pulley arm pin



7.2 Tightening of bolted connections

Check the bolted connections for proper tightening. Check tightening of bolts fastening the knives in the upper disk and bolts fastening the lower disk onto the flange prior to any machine use.

7.3 Replacement and sharpening of working knives

If the cutting edges of working knives show wear or a damage to knives results in machine vibrations, the cutting edges must be renewed or the knives replaced.

- \triangle The machine must be standing on a firm support plate and must be secured so that the knife can be easily accessible and an unexpected spontaneous machine motion cannot occur.
- $\triangle\,$ Be very careful when dismounting the knives. Their cutting edges are sharp. Protect your hands with working gloves.
- \triangle The engine must be switched off and the cable end connector to the spark plug disconnected!
- 1. Turn the screen sides over to back or disassembly the screen with the frame



- 2. Hold the upper disk so that it does not turn and dismount the knife bolted connection by using the barrel spanner No. 16 and flat wrench No. 17.
- 3. Take the knife and parts of knife seating out of the mowing disk. Level the blade and sharpen the knife cutting edges. Inclination of the sharpened blade should be 30° with respect to the lower plane of the knife.

\triangle Should some of knives be bent or showing a considerable wear, you must always replace all knives in the mowing disk!

- 4. Screw back the bolt with the filler, knife and flat washer. Than screw on the nut.
- 5. Hold the bolt head with the barrel spanner No. 16 and tighten the nut. All knives must freely rotate on the bolts. The knives have blades on both sides; when one side is worn out, the knife can be reversed and the blade of the other side can be used. When replacing the knife, replace also all damaged parts of the knife clamping (see Fig. 6).

Note: Manufacturer does not answer for damages caused by the machine if the knives were repaired by unskilled persons without the use of the original spare parts. There is a "VARI" stamp on the knife, which identifies the manufacturer and is at the same time a control mark indicating that the knife is an original spare part.



Figure 6: Knife clamping on the mowing disk

7.4 V-belt replacement and adjustment of tightening pulley

The V-belt should be replaced according to its wear (cracked sides, torn belt, sides worn out down to belt carrier fibres, belt pulled out of shape) or after about 100 hours of operation at the maximum. In this machine, the belt stretched to maximum is considered a belt in which the distance between the internal belt surfaces is lesser than 7 mm (with the pressed lever of mowing disk drive clutch) – see Fig. 7.

The replacement procedure is as follows:



- a) Drain petrol from the engine tank. Dismount the accelerator lever (2x spanner No. 8) from the handlebars. Bowden cable should never be dismounted from the control on the engine!
- b) Unscrew three safety nuts (spanner No. 13) on the engine flange and pull the engine out from the machine frame upwards. Never use force to pull the engine out from the frame!
- \triangle Warning: It is not advised to dismount the engine together with the underlying support plate if not necessary. Should the disassembly of the engine support plate or gearbox from the machine frame occur, axial alignment of gearbox shafts and engine must be ensured at reverse assembly. It is therefore adviceable to entrust the operation to an authorized service shop with the original and manufacturer-approved centring fixture.
- \triangle Never put the engine on the side. Oil might get into the exhaust or into the air cleaner. The best engine seating is with the lower flange dwelling on two lintels which are at least 7 cm high.
- c) Dismount the apron with the frame and upper casing (flat side spanners No. 8, 10, 13). Dismount the pillar in front of the driven belt pulley (see Fig. 5.3) (spanner No. 10). Take the old V-belt off the both belt pulleys and replace it with a new one. Original V-belt marking is **OPTIBELT X13x1300Ld 6T6K** (Ld = calculated length). It is also possible to use an equivalent V-belt made by other manufacturers at a size of **A13x1270 Li** (Li=internal length) or ¹/₂" x 52"La (La=external length). However, the belt must be made without rubber on sides! Only this belt model will guarantee that the knife drive start is continuous at engaging the clutch.

\triangle Should a different belt model be used, the machine manufacturer does not bear any liability for correct and full functioning of the gear!

- d) Put the engine back in its place. Pins in the driven part of the clutch slid on the gearbox must fall into holes in the driven pulley. Bolt the engine with three safety nuts with flat washers and screw the accelerator lever back onto the handlebars.
- e) Install the V-belt into the groove in the belt pulley on the engine.
- f) Check the operation of the tightening pulley and adjustment of guide lamination. With the lever on the right handlebar grip being completely pressed down, the pulley must ensure a sufficient belt tension (spring on the cable being extended by about 10 mm as compared with the normal condition). Possible corrections are to be made by means of the adjustment bolt No. 2 (see Fig. 8). With the lever switched off, the pulley must be inclined away from the longitudinal machine axis by $0 5^{\circ}$ (at maximum) = with the belt convex side being approx. 1.5 2.0 cm from the bottom of the tightening pulley (see Fig. 7) and the cable in the Bowden of the tension pulley must exhibit no slackness. In the case that the adjustment bolt is completely screwed out and it is necessary to tighten the V-belt, the spring on the cable can be hooked into the front hole on the arm of the tightening pulley (see Fig. 7 bottom, note: this connection can be used already from the manufacturer) and the belt tension can be adjusted once again. Guide lamination on the right side of the machine must be parallel to the belt and at a maximum distance of 1 2 mm from the belt convex side.
- g) Mount back the post in front of the driven belt pulley, the upper plastic casing and the apron with the frame.





Figure 7: Adjustment of tension pulley and maximum extension of V-belt

7.5 Setting-up litz wires of pulley, brake and machine travel gear clutch

In order to guarantee low operating forces on levers which control drive switching, it is advisable to lubricate cables in Bowdens at least 2x during the season with some oil available in atomiser (e.g. SILKAL, MD Spray, WD40). Correct functioning of the machine also requires the correct adjustment of drive controls.

The cable in the brake Bowden must always exhibit a slight slackness (with the mowing disk drive clutch lever and brake released) so that the brake performance is sufficient. In order to achieve the brake cable slackness in the Bowden, the adjustment bolts must be screwed into the chassis or handlebars cross-beam during the adjustment.

The cables in the pulley Bowden and in the Bowden of machine travel gear clutch must be without slackness, slightly tense. In order to tense the cables, the adjustment bolts must be screwed out of the chassis or handlebars cross-beam.



Safety nuts in all adjustment bolts should be tightened by using two flat side spanners No. 10 or No. 9. If there is no more step to be used in the adjustment bolt, it is possible to displace the hook on the cable into another hole in the metal sheet lever on the handlebars (or on the travel gear clutch lever on the gearbox and on the arm of the tightening pulley – see Figures 7 and 8) so that the pre-stress of cables can be again regulated by the adjustment bolt.



Figure 8: Bowdens and adjustment bolts



7.6 Driving problems: Diagnostics

Problem	Reason	Remedial action
Mowing disk	Tightening pulley does not	Set-up tightening pulley by
does not turn	stress the belt sufficiently	means of adjustment bolt
		No. 2 (see Fig. 8)
	Cable fallen out from the	Put the cable back
	tightening pulley lever	
	V-belt fallen behind the	Put the belt back
	tightening pulley or down	
	from the belt pulley	
	V-belt is torn	Replace the belt with a new
		one
	Excessive belt extension	Replace the belt with a new
	(see Fig. 7)	one
Brake	Brake cable is stressed	Adjust the cable so that it is
performance is		slightly slack with the lever
insufficient		on the right handrail
		released; screw on the
		adjustment bolt No. 1 (see
		Fig. 8)
	Brake cam lever is	To be oiled
	insufficiently greased	
	Worn lining	Contact the service shop
Wheel travel	Incorrectly adjusted control	No rumbling must be heard
gear clutch does	cable	from the gearbox when
not switch off		manually turning the travel
		wheel in counter-travel
		direction (wheel gear
		switched off). Keep
		screwing on the adjustment
		bolt No. 3 until the
		rumbling sound disappears.
Wheel travel	Another gear defect	Contact the service shop
gear clutch does		
not engage		



7.7 Table of service operations

Operation	During season	After season
Gearbox oil check	1x/month	yes*
Engine oil check	before each use	**
Engine air filter check	before each use	check
Check of knives for fastening and	before each use ^{***}	check
intactness		
Upper and lower disk intactness check	before each use ^{***}	check
V-belt stress check	after 2 hours;	check
	further on after	
	each 20 hours or	
	as required	
V-belt condition check	as required	check****
Cleaning of wheel hubs and exchange	-	yes
of lubricating grease		
Cleaning of machine from impurities	after each use	yes
and debris		

* The first exchange after 5 hours, then after 100 - 130 hours (according to oil grade);

** Oil exchange intervals see Operating manual for engine;

- *** In the case of damage (even at cutting) cracks, bending, breakage etc. repair required immediately!
- **** or exchange after about 100 hours.

7.8 Washing and cleaning of the machine

- \triangle At cleaning and washing the machine, proceed to observe valid regulations and legislation on the protection of water courses and other water resources against pollution or contamination with chemical substances.
- \triangle Never wash the engine with a stream of water! Electric equipment might fail when starting the engine.

All dirt, debris and plant residues should be removed from the machine after the end of the season. Check the intactness of working knives, grind the cutting edges (or replace the knives if necessary) and conserve the knives with conservation oil. Travel wheels should be dismounted from the axle once in a season, cleaned and the hubs inside filled with a new filling of plastic lubricant.

\triangle The engine must be switched off and the cable termination to the spark plug disconnected!

Wheel disassembly, lubrication and assembly procedure:

- a) Underlay the machine so that the wheels can freely turn. The machine must be secured against spontaneous motion.
- b) Take out the split pin and screw off the slotted nut by using spanner No. 24. Remove the wheel from the axis.
- c) Clean the wheel hub inside, wheel hub flange with balls and the free wheel from impurities and old grease.



- d) Fill the hub inside with new grease (e.g. for water pumps) lubricating at the same time also the flange with balls and free wheel surfaces.
- e) Slide the free wheel on the wheel axis. The pin driven into the wheel axis must lean against the inclined surface on the free wheel (see Fig. 9). Put the wheel onto the axis, screw the nut to the stop; then release it by one split pin groove and secure the connection with a new split pin. The wheel must freely turn with no great axial clearance.
- f) Check of correct free wheel assembly: Press the machine travel gear clutch lever, turn the driving wheel by hand in the direction of forward travel. The free wheel must be clicking.



Figure 9: Free wheel (on left wheel, mirrored on the right wheel)

7.9 Machine storage

Prior to any longer storage, clean the machine from all dirt, debris and plant residues. Repair damages on painted machine parts.

When putting the machine out of operation for a longer time, it is advisable:

- a) to conserve knives on the mowing disk;
- b) to drain petrol from the engine fuel tank and from the carburetter (more instructions see guidelines for engine operation).

Prevent access of unauthorized persons to the machine. Protect the machine from weather impacts but don't use air-tight protection due to a possibly increased corrosion under it.

7.10 Disposal of packaging and machine after service life expiration

After unpacking the machine, you are obliged to provide for the disposal of packaging with the use of secondary raw-materials according to Waste Law No. 185/2001 Gaz. (as amended) and with respect to the decrees of local town or municipal authorities.



The following procedure is recommended for machine disposal after the end of its service life:

- 1. Dismount all parts from the machine that can still be used.
- 2. Dismount plastic machine parts and parts of non-ferrous metals. The stripped machine remainder and the dismounted parts are to be liquidated according to Waste Law No. 185/2001 Gaz. (and its possible further amendments) and with respect to the decrees of local town or municipal authorities.

Instructions for ordering spare parts

The following data are to be used for easier identification when ordering the spare parts:

- 1. Machine type, engine type, machine serial number and year of manufacture;
- 2. Ordering number given by manufacturer and its name in the component list;
- 3. Number of ordered pieces separately for each item;
- 4. Precise address, telephone number, fax number or e-mail address;
- 5. If you are not certain about the correct identification of the component, send the damaged component either to the nearest service shop or to the manufacturer;
- 6. All components should be ordered in the nearest service shop or at your dealer's.

In the case of any confusions concerning the spare parts or technical issues, the VARI a.s. commercial, customer-service or technical departments are prepared to answer all your inquiries.

Contact to manufacturer

VARI, a.s.	Telephone:	(+420) 325 607 111
Opolanská 350	Fax:	(+420) 325 607 264
Libice nad Cidlinou		(+420) 325 673 550
CZECH REPUBLIC	e-mail:	<u>vari@vari.cz</u>
289 07	internet:	http://www.vari.cz/
		http://techweb.vari.cz



8 List of components



8.1 Machine casing





		Machine	casing		
Pos.	Name	Size	Drawing-Standard	Order. No.	Pcs
1	Frame assembly		22 9 1536 050	196 001	1
2	Apron frame-front		22 9 1856 008	196 018	1
3	Apron frame-rear		22 9 1856 009	196 019	1
4	<u>^</u>				
5	Upper housing		22 9 8545 029	196 020	1
6	Mud-guard flap holder		32 0 1530 129	196 012	1
7					
8	Mud-guard flap		32 0 8530 036	189 115	1
9					
10	Mud-guard flap support		32 0 9230 010	182 010	1
11					
12	Pillar		632 0 1520 049	196 525	1
13	Rear pillar		632 0 1520 050	196 526	1
14	Apron		632 0 1840 073	196 514	1
15	Left mud guard		632 0 8545 045	196 506	1
16	Right mud guard		632 0 8545 046	196 505	1
17	Lower housing		632 0 8545 047	196 513	1
18	-				
19	Bolt	M6x16	ČSN 02 1103.25	189 552	10
20	Bolt	M6x20	ČSN 02 1103.25	189 551	9
21	Bolt	M8x16	ČSN 02 1103.25	106 547	2
22	Bolt	M8x30	ČSN 02 1174.25	196 537	2
23	Nut	M6	ČSN 02 1492.25	168 516	15
24	Nut	M8	ČSN 02 1492.25	104 622	3
25	Washer	6,4	ČSN 02 1702.15	189 571	15
26	Washer	8,4	ČSN 02 1702.15	131 517	1
27	Washer	6,6	ČSN 02 1727.15	169 508	16
28					
29					
30	Washer	9	ČSN 02 1729.05	150 536	2
31	Washer	8,2	ČSN 02 1740.05	104 574	2
32					
33	Nut cap	034-03-M6	SUNAP Neratovice	169 505	6
34	Nut cap	034-03-M8 (13)	SUNAP Neratovice	169 504	2
35					
36					



BDR-595 E EuroAdela

8.2 Handlebars





	HANDLEBARS				
Pos.	Name	Size	Drawing-Standard	Order. No.	Pcs
1	Handlebars		22 9 8078 059	196 002	1
2	Control lever		32 0 8058 009	196 013	2
3					
4	Clutch bowden cable		622 9 8074 044	196 515	1
5	Pulley bowden cable		622 9 8074 045	196 516	1
6	Brake Bowden cable		622 9 8074 046	196 517	1
7	Lever stop		632 0 8065 002	196 519	2
8	Lever pin		632 0 9311 157	196 520	2
9	•				
10	Bolt	M5x10	ÈSN 02 1103.25	195 525	2
11	Bolt	M8x50	ÈSN 02 1319.25	189 593	2
12	Nut	M6	ÈSN 02 1401.25	1800141	3
13	Nut	M5	ÈSN 02 1492.25	105 518	2
14	Washer	8,4	ÈSN 02 1702.15	131 517	2
15	Yoke ring	4	ÈSN 02 2929.05	189 576	4
16	Washer	5,3	ÈSN 021702.15	189 581	2
17	Plastic rosebit	M8-pr.50 "JJW"	EUROPLAST	189 521	2
18	Washer	6,4	ÈSN 02 1702.15	189 571	4
19	Rubber grip	ART 773 èerná		195 518	2
20	Gas lever	AE 653 H	START	182 532	1



8.3 Mowing disk drive





	MOWING DISK	DRIVE			
Pos.	Name	Size	Drawing-Standard	Order. No.	Pcs
1	Brake shoe		22 9 1664 024	189 014	2
2	Driven belt pulley		22 9 3325 012	189 004	1
3	Upper disk		22 9 5025 007	189 056	1
4	Brake cam		22 9 8032 048	196 003	1
5	Pulley arm		32 0 3330 034	196 010	1
6	Drive		32 0 3821 017	189 058	1
7	Drive Shaft		32 0 3822 022	196 005	1
8	Lower disk		32 0 5020 011	189 057	1
9	Knife		32 0 6030 009	189 060	3
10	Shim block	42/36/0,1	32 0 9220 024	110 012	3
12	Distance ring		32 0 9220 199	189 011	1
13	Housing		32 1 9220 126	127 014	1
14	Pulley		632 0 3325 040	189 586	1
15	Flange		632 0 3821 015	189 059	1
16	Washer	14	632 0 9220 205	189 061	3
17	Brake shoe pin		632 0 9311 152	196 524	1
18	Pulley bearing		632 0 9320 071	196 528	1
19	Brake shoe spring		632 0 9746 044	189 511	1
20	Spring	TZ1,8x16,2x63x20	FEVOZ Slavièín	169 514	1
21	Spring	TZ0,8x8,8x95,2x100	FEVOZ Slavièín	189 516	1
22	Bolt	M6x14	ÈSN 02 1151.25	189 557	6
23	Bolt	M6x45	ÈSN 02 1103.25	195 523	1
24	Bolt	M6x55	ÈSN 02 1101.25	196 523	1
25	Bolt	M10x30	ÈSN EN 24017	189 545	3
26	Nut	M6	ÈSN 02 1401.25	1800141	6
27	Nut	M6	ÈSN 02 1492.25	168 516	2
28	Nut	M10	ÈSN 02 1401.55	189 561	3
29	Washer	6,4	ÈSN 02 1702.15	189 571	4
30	Washer	8,4	ÈSN 02 1702.15	131 517	1
31	Washer	10,5	ÈSN 02 1702.15	131 518	3
32	Washer	21	ÈSN 02 1702.15	124 530	1
33	Washer	6,1	ÈSN 02 1740.05	6510920	6
34	Pin	5x40	ÈSN 02 2156	196 502	1
35	Feather	5x5x25	ÈSN 02 2562	189 574	1
36	Feather	6x6x25	ÈSN 02 2562	169 503	1
37	Retaining ring	8	ÈSN 02 2930	195 534	2
38	Retaining ring	10	ÈSN 02 2930	6021519	1
39	Retaining ring	20	ÈSN 02 2930	110 515	2
40	Retaining ring	35	ÉSN 02 2931	126 503	1
41	Retaining ring	42	ÉSN 02 2930	136 506	2
42	Bearing	6300 2RS	ÈSN 02 4630	189 585	1
43	Bearing	6004 2RS	ESN 02 4630	9943158	4

Set of spare knives

129 8565 144





8.4 Wheel driving gear





		Wheel drivi	ng gear		
Pos.	Name	Size	Drawing-Standard	Order. No.	Pcs
1	Gearbox BDR-595		22 9 3282 052	196 014	1
2	Driven belt pulley		22 9 3325 030	196 026	1
3	Driven clutch element		32 0 3625 029	196 025	1
4	Engine plate		22 9 8032 050	196 008	1
5	Feather	3/16"	32 0 3330 021	189 036	1
6	Screw	W 3/8"	32 0 9016 057	105 011	1
7	Cuff		632 0 1642 008	189 507	2
8	Free wheel		632 0 8021 026	196 509	2
9	Spring		632 0 9746 046	189 512	2
10	Wheel clutch spring		632 0 9746 056	196 518	1
11	Bolt	M5x12	ČSN 02 1143.50	189 580	6
12	Bolt	M8x16	ČSN 02 1103.25	106 574	4
13	Bolt	M8x40	ČSN 02 1103.25	196 503	4
14	Nut	M8	ČSN 02 1492.25	104 622	3
15	Nut	M16x1,5	ČSN 02 1412.25	189 560	2
16	Washer	5,1	ČSN 02 1740.05	127 512	6
17	Washer	5,3	ČSN 02 1702.15	189 581	6
18	Washer	8,2	ČSN 02 1740.05	104 574	8
19	Washer	8,4	ČSN 02 1702.15	131 517	7
20	Washer	10,2	ČSN 02 1740.05	106 530	1
21	Washer	17	ČSN 02 1702.25	189 566	2
22	Split pin	4x32	ČSN 02 1781.05	189 577	2
23	Feather	4x4x18	ČSN 02 2562	196 508	1
24	Left wheel	3.00-8 EP-007	ET-91590	189 505	1
25	Right wheel	3.00-8 EP-007	ET-91590	189 506	1
26	V-belt	X13x1300 Ld 6T6K	OPTIBELT	196 504	1
27	HONDA engine	GCV 160		171 535	1
28	Ball	pr. 7,144		189 575	4

NOTE: For easier replacement of wheels, the manufacturer supplies wheels with pressed-on balls (pos. 28) under designation :

Left wheel	22 1 1770 024	189 042	1
Right wheel	22 1 1770 025	189043	1



8.5 Gearbox





	GEARBOX				
Pos.	Name	Size	Drawing-Standard	Order. No.	Pcs
1	Fork weldment		22 1 3330 013A	189 078	1
2	Complete lever		22 9 3330 017	196 022	1
3	Complete carrier plate		22 9 3616 006	189 029	1
4	Worm	2:54	32 0 3214 028	196 023	1
5	Worm wheel		32 0 3221 016	196 027	1
6	Shaft-Wheel axis		32 0 3814 008	189 028	1
7	Shim block	20/14,2/0,2	32 0 9220 115	127 027	1
8	Shim block	20/14,2/0,3	32 0 9220 114	127 026	1
9	Distance ring		32 0 9220 195	189 032	1
10	Dish		32 0 9220 197	196 032	1
11	Plug		32 1 9016 036	106 050	2
12	Pinion 19 teeth		632 0 3014 010	196 530	1
13	Gear 51 teeth		632 0 3021 028	196 529	1
14	Cover		632 0 3253 044	196 511	1
15	Box		632 0 3253 045	196 510	1
16	Felt		632 0 9520 045	189 528	1
17	Spring		632 0 9746 047	189 527	1
18	Pin	M4x10	ÈSN 02 1143.50	196 521	4
19	Pin	5x12	ÈSN 02 2150	196 522	2
20	Pin	5x20	ÈSN 02 2150	189 566	2
21	Pin	10x45	ÈSN 02 2150	2010260	2
22	Retaining ring	12	ÈSN 02 2930	6021502	2
23	Retaining ring	14	ÈSN 02 2930	110 513	1
24	Retaining ring	17	ÈSN 02 2930	110 514	1
25	Retaining ring	28	ÈSN 02 2930	189 553	1
26	Retaining ring	47	ÈSN 02 2931	126 504	2
27	Baering	3203	ÈSN 02 4630	196 533	1
28	Bearing	6005	ÈSN 02 4630	129 535	2
29	Baering	6202	ÈSN 02 4630	9943131	1
30	Baering	6203	ÈSN 02 4630	106 507	1
31	Ring	18x14	ÈSN 02 9280.2	189 591	1
32	Ring	14x18 AL	ÈSN 02 9310.3	106 539	2
33	Gufero	17x30x7	ÈSN 02 9401.0	9943223	1
34	Gufero	25x47x7	ÈSN 02 9401.0	124 505	2
35	Feather	6x6x20	ÈSN 022562	196 536	1