

INDUKTIONSVARMER 3,5 KW



Operating and Maintenance Manual

CONTENTS

1	INTRODUCTION.....	3
2	SAFETY INSTRUCTIONS.....	3
2.1	GENERAL USE WHEN USING DHI-44E LKW	3
2.2	INFORMATION SYMBOLS.....	4
2.3	SYMBOLS INDICATED HEALTH RISKS.....	4
2.4	SYMBOLS WARNING WHILE HANDLING THE DEVICE	5
3	PERIODIC INSPECTION AND MAINTENANCE.....	6
4	STORAGE	7
5	WARRANTY PROVISION	7
6	COMMISIONING.....	8
6.1	UNPACKING AND FIRST START.....	8
6.2	COOLANT REFILLING	8
7	REPLACEABLE HEATING INDUCTOR EXTENDERS	8
7.1	HEATING INDUCTOR EXTENDER REPLACEMENT PROCEDURE	8
8	ABOUT THE DEVICE AND HEATING	9
8.1	SUPPORTED TECHNOLOGIES.....	9
8.2	HEATING MODES AND THEIR APPLICATION	9
8.3	CONTROLLED HEATING	10
9	DEVICE CONTROLS	11
9.1	DESCRIPTION OF DEVICE COMPONENTS.....	11
10	ACTIVATING THE DEVICE.....	12
11	STANDBY	12
12	HEATING TIMER	13
13	LIST OF ERRORS MESSAGES	13
14	TECHNICAL PARAMETERS	14
15	ELECTRIC SCHEME	15
16	USED DEVICE DISPOSAL	15
17	SPARE AND CONSUMPTION PARTS	16
18	QUALITY CERTIFICATE	17
19	WARRANTY SERVICING	17
20	WARRANTY CERTIFICATE	18

1 INTRODUCTION

Dear Customer, thank you for your trust and Purchase of product from DAWELL CZ s.r.o. We believe that you will be fully satisfied with our product and taht you will keep your favor in the future as well. In case of any questions or comments do not hesistate to Contact us either on on our website or Contact your sales representative directly.

The first use of the device is the purpose of this legal step instructions, which the user confirms their free will, that this instruction properly studied, fully understand its meaning and familiar with all the risks.




ATTENTION! Do not attempt to place (or use) the Equipment before you become familiar the entire operating instructions. Keep the instructions for future use.

2 SAFETY INSTRUCTIONS

2.1 GENERAL USE WHEN USING DHI-44E LKW

Symbols shown in this Manual warn and identify potential hazards when handling the device.



- Do not leave DHI-44E LKW unattended while it is turned on. Always deactivate DHI-44E LKW with the master switch when not using it for heating!
- Make sure the power supply unit has sufficient air supply for cooling
- Make sure the ventilation openings are clean and free of dust and dirt, to not preclude flow of cooling air.
- Do not attempt to repair your DHI-44E LKW The device contains no user-reparable components.
- The user is responsible for the system installation and use in accordance with instructions shown in this Manual. The supplier is not liable for any damage due to inexpert use and operation.
- **Only persons older than 15 years, properly trained and with adequate qualification can operate the equipment. Do not use the equipment when under the influence of drugs, alcohol or medication.**
- Keep persons standing around and animals at a safe distance while working with the device, including while the heated material is cooling down.
- Avoid working in rain, water and humid environments. Keep the working area well ventilated and dry, clean and well lit.

SYMBOL	EXPLANATION
	DANGER! Denotes a dangerous situation that will result in a death or serious injury. The potential risks are shown under the following symbols, or explained in the text.
	Before plugging in your DHI-44E LKW, make sure the socket voltage matches that on the product plate. If the socket voltage does not match that shown on the type plate, it can result in a serious hazard and damage to your DHI-44E LKW.
	IMPORTANT! Read this Manual carefully to gain information about the device features. Inappropriate handling may cause injuries to persons and damage to the device.


NOTICE: This equipment is not designed for use in residential environments and may not provide adequate protection of radio reception in such environments.

2.2 INFORMATION SYMBOLS

The symbols shown below will guide you through this Manual and warn you of potential risks. If you see the symbol, be careful! Follow the instructions shown below to avoid the dangers. Read all the safety notifications and follow the instruction shown below. You will find more safety instructions in bellow.

SYMBOL	EXPLANATION
	Risk of death by electrocution.
	CAUTION! Hot surface! Risk of burns!
	CAUTION! Risk of electric shock!
	Risk of fire.
	Electromagnetic field risk.
	Do not use cardiac pacemakers, implanted devices and watches or other metal objects.
	Always use! Protective goggles, protective masks and protective gloves.

2.3 SYMBOLS INDICATED HEALTH RISKS

2.3.1	ELECTRIC SHOCK
	<p>CAUTION! Never remove casing and do any activity with the induction heater unless you have first disconnected the plug from the socket. Then wait at least 1-2 minutes after unplugging it.</p> <p>DO NOT OPERATE THE EQUIPMENT IN RAIN AND IN MOIST ENVIRONMENTS.</p> <p>CAUTION! Any and all interference with the electrical section may only be made by persons with adequate electrical engineering qualification. Any unauthorised servicing work poses the risk of electric shock.</p>

2.3.2 CAUTION! HOT SURFACE



CAUTION! Do not touch any objects located near the induction heater unless you have checked that it has cooled down.

Do not touch the induction coil if it is activated and the strong magnetic field and heating are turned on.



ALWAYS wear protective gloves or other protections when handling the device as there is a risk of burns. Protective equipment is specified in text below.

2.3.3 RISK OF FIRE



DO NOT OPERATE THE EQUIPMENT IN ENVIRONMENTS WITH AN EXPLOSION HAZARD!

Do not overheat parts.

Do not heat materials above their melting point; in such cases, there is a risk of being spilled with hot metal and burns.

Be careful about fire if the device is kept near one. Keep inflammable substances outside the working area.

Do not put the device on, over or near inflammable surfaces.

Do not use the machine if it is near objects that may contain inflammable particles of dust, gas, vapour or liquids. After completion of work with the device, check the area to make sure everything is secure and there is no risk of sparks, flames and fire.

2.4 SYMBOLS WARNING WHILE HANDLING THE DEVICE

2.4.1 SAFETY EQUIPMENT WHEN WORKING WITH THE DEVICE







Always wear protective goggles or face mask when using the DHI-44E LKW.



Use of the device may produce dangerous waste gases from burning of old paints, lubricants, sealants, glues, etc. These exhausts may be toxic. Always use adequate protective masks or respirators.



Always use protective gloves with adequate thermal resistance when working with the device. The high temperatures produced by using the DHI-44E LKW may cause serious burns on contact with the heated part.

2.4.2 ELECTROMAGNETIC EFFECTS	
 	<p>The electromagnetic field (EMF) may affect implanted medical devices. The device is not intended to be used by users of cardiac pacemakers or other implanted medical devices.</p> <p>While working, maintain a safe distance between body parts and the heated inductor, as specified in its instructions for use.</p> <p>Short-term tissue exposure to high-intensity time-variable magnetic field may lead to tissue warming by the induced current.</p> <p>Long-term exposure to high-intensity time-variable magnetic field may lead to</p> <ul style="list-style-type: none"> -undesirable effects on nerve activity -fatigue -headaches -blood cell production disorders
 	<p>Persons with other metallic or electronic surgical implants are not allowed to work with the DHI-44E LKW and have to keep a safe distance of at least 1 m from the device.</p> <p>When working with the DHI-44E LKW, do not wear any metal objects such as jewels, rings, watches, necklaces, identification plates, belt buckles, piercing or clothes with metal components such as metal rivets, buttons, zip fasteners, etc.</p> <p>The device can heat these metal objects very fast and thus cause serious burns or even ignition of clothes!</p>

Users of these devices should immediately consult their medical doctor to avoid potential troubles connected with them while handling the device.

3 PERIODIC INSPECTION AND MAINTENANCE

Scheduling device maintenance has to consider the degree and circumstances of device use. Considerate use and preventive maintenance help prevent needless defects and malfunctions. Perform checks as per standards and law in force. Only workers with adequate electrical engineering qualifications may carry out any jobs on the device.

WARNING! Any handling of the power supply, including maintenance, requires its disconnection from the power line. To prevent injuries, always disconnect the power cable and wait at least 10 minutes before removing the casing. Discharge the capacitor circuits before any further work.

Periodic maintenance includes cleaning the device every half a year:

1. Disconnect the device plug from the socket and wait at least 10 minutes (the capacitors inside the device will discharge). Then remove the upper device casing.
2. Clean all dirty power electric connections and tighten any loose ones.
3. Clean the internal device parts (coolers in particular) to remove dust and dirt – for example using a soft brush and vacuum cleaner.

4. The upper casing has to be earthed – remember to connect the yellow-and-green earthing wire before screwing it on.
5. After maintenance, carry out safety measurements as per standards in force.

Note: Never use solvents or thinners (e.g., acetone), because they may damage insulation, plastic parts and lettering on the front panel!!

4 STORAGE

The device has to be stored in a clean and dry room. Protect the device from rain and direct sunshine and freeze.

After heating completion, leave the device switched on for 10 more minutes - it will be cooled down by fans until it is cold, then it deactivates the fans. After that, turn it off using the master switch and disconnect it from the power line.

If you disconnect the device immediately, leave it and all the working coils to cool down for at least 15 minutes.

5 WARRANTY PROVISION

1. Unless otherwise specified, the warranty period for devices is set by the manufacturer at 12 months from the date of sale to the buyer. The induction burner is subject to a 6 month warranty period. Consumables such as extenders, coils, etc. are subject to a 3 month warranty period.
2. When making a claim for warranty repair, the warranty certificate has to be shown; it is only valid if it bears the date of sale, serial number, stamp of the shop and the seller's signature, confirming proper demonstration and explanation of the device features.
3. The warranty period will be extended by the time for which the device is in warranty repair. If the repair finds no defects falling under the warranty, the device owner shall pay the costs of the servicing technician's work.
4. The warranty servicing covers defects occurring during the warranty period demonstrably due to flawed design, flawed workmanship or inappropriate material. Such defects will be repaired by the manufacturer free of charge. Complaints shall be made by the user with the device manufacturer; the place of performance is the manufacturer's registered office.
5. The warranty does not cover defects caused by inexperienced handling, overloading, use of wrong accessories, or interventions by unauthorised persons, natural wear and tear, or damage during transport. Recognised defects exclude damage occurring due to inadequate care of neglected maintenance, non-adherence to rules specified in the Manual, using the device for purposes for which it is not intended, and overloading the device, albeit temporarily.
6. The warranty expires if the user makes any unpermitted modifications or changes to the device, connects the device wrongly, or has used the device in contravention of technical requirements.
7. The manufacturer is under no circumstances liable for subsequent damage caused by using the device. This warranty does not under any circumstances constitute the manufacturer's liability in excess of the price of the device.
8. Device maintenance and repairs have to use exclusively original parts supplied by the manufacturer in accordance with their respective instructions for use.

6 COMMISSIONING

6.1 UNPACKING AND FIRST START

1. Unpack the device and any accessories supplied and check that they are in good order and the device and the accessories are not damaged. If you find any defects, do not continue!
2. Leave the device to acclimatise for 15 minutes.
3. Remove the sealing ring located under the coolant tank filling hole lid tab. Pull to remove the lid tab and take out the sealing O-ring. Then push the tab, including the foam gasket, back into the tank lid. Keep the O-ring for potential future use if sending the machine via a parcel service.
4. If the focusing head is not attached to the grip by default, screw it on.
5. Fill the device with the coolant supplied with the device via the filling hole.
6. Connect the device to a 230 V socket and turn it on using the switch at the back of the device.
7. The cooling circuit venting is activated automatically, and the letters "FIL" flash on the display during this. The coolant level decreases noticeably during the filling.
8. After completion of the venting, turn the device off and add the coolant so that the coolant level is at the upper edge of the gauge at the back of the device (about 1 cm below the top of the tank).
9. Turn on the device and let the venting proceed. If the level does not sink, the device is filled and vented correctly. Repeat the procedure as needed.

6.2 COOLANT REFILLING

Check and refill the coolant before each device starting. Use the original coolant only! **DO NOT USE WATER!** The device has integrated coolant level inspection. In case the coolant runs out, the device stops heating and displays the error message "E##". In that case, refill the coolant in the tank as described above.

7 REPLACEABLE HEATING INDUCTOR EXTENDERS

The DHI-44E LKW induction heater device comes with a basic focusing heating inductor. The other accessories are listed in Chapter Spare and consumption parts.

Correct and safe functioning of the device requires the use of only original heating inductors, extenders, adaptors and other accessories in accordance with their respective instructions for use.

The lifetime of each type of heating inductor and accessory is shown in its instructions for use along with inspection and maintenance frequencies.

7.1 HEATING INDUCTOR EXTENDER REPLACEMENT PROCEDURE

1. Turn off the device using the switch at the back of the device.
2. Make sure the coolant tank is safely closed.
3. Grasp the grip so that it is in a vertical position with the extender facing upwards, at least 20 cm above the power supply unit. Maintain this position through the entire replacement procedure.
4. Unscrew the heating inductor extender by rotating it counterclockwise until it is released.
5. Make sure the threads and contact surfaces of both the grip and the extender are clean and free of signs of corrosion.

6. Mount the new complete extender by freely rotating it clockwise until the outer contact surface of the extender makes permanent contact.
7. Turn on the device and, after an initial venting of the cooling circuit, check the coolant level and add coolant if necessary.
8. Make a visual check of the tightness of the extender-grip connection and any other connections of the new extender. If there is a coolant leak, safe use of the device is no longer possible.
9. Check the conductivity of the connection by briefly activating the device without any heating inductor load.
 - If the device display shows the output power, everything is alright.
 - If it shows „A.Fr“, the contact between the contact surfaces is incorrect. In that case, safe use of the device is no longer possible.

8 ABOUT THE DEVICE AND HEATING

8.1 SUPPORTED TECHNOLOGIES

DHCS3 - Dawell Heating Control System 2

Technology developed by Dawell enabling controlled heating with multiple-pass real-time control of various parameters, which is the heart of the device features. The heating can thus be controlled in various modes, increasing its applicability and versatility.

DIPA - Dynamic Induction Power Adjust

Automatic optimum setting of required power for achieving max. efficiency, speed and long-term heating in dependence on other heating parameters.

ACMS-Automatic Check And Monitor System

Combines features that check and verify device functionality and condition after activation, and a feature that constantly supervises and monitors the heating running and parameters for maximum device safety and reliability.

DFU-Device Firmware Update

Enables updating the firmware.

8.2 HEATING MODES AND THEIR APPLICATION

The heater has available two different heating modes:

1. Field of burner (CF) power mode

In this mode, the induction heater maintains the same intensity of the magnetic field regardless of the coil surrounding conditions. The heater behaves similarly to a gas burner, where the set field intensity matches the flame power. The amount of introduced heat is then easily controlled by moving the burner nearer or further from the material, similarly to flame heating. The advantage is that it is easier to control the introduced heat as needed and, most importantly, it allows finer and sensitive heating, e.g., in car repairs (warming window edges when removing windows, bodywork plates for easier removal of stickers, rubber parts, etc.).

Advantages:

- Power control by moving nearer or further.
- Fine heating.

2. Control power mode (CP)

In this mode, the device tries to deliver and maintain the set amount of introduced heat or energy to the material. The advantage is thus the controlled amount of heat introduced to the material, which combined with timing enables relatively accurate heating to a set temperature, e.g., for repeated pre-heating in production, etc.

The disadvantage of this mode that when moved further from the material, the device significantly increases the power output to maintain the heat delivery level to the material, thus increasing the loss and resulting in a faster device overheating. The efficiency is reduced as well.

Advantages:

- The device automatically maintains the set amount of heat introduced to the material, thus heating the material accurately.

Drawback:

- The disadvantage is the great increase in the induction output when moved away from the material or with inappropriately chosen coil, resulting in high heating load and quick temperature increase, reducing in turn the load factor and rapidly overheating the device.
- The efficiency is reduced.

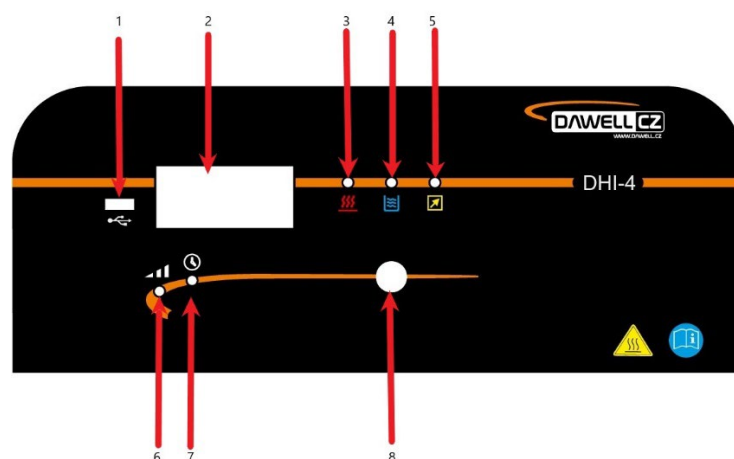
8.3 CONTROLLED HEATING

Using the heating timer

The device has an integrated heating timer for easy setting of desired heating time, which combined with the controlled power mode enables relatively accurate and repeatable heating with controlled heat introduction, i.e., heating to a set temperature.

9 DEVICE CONTROLS

9.1 DESCRIPTION OF DEVICE COMPONENTS



Pos.	Description	Pos.	Description
1	USB connector	5	Indicator REMOTE*
2	Display	6	Control indicator
3	Heating indicator	7	Indicator TIMER
4	Cooling and overheating indicator	8	Encoder*

* The DHI-4E is not connectable. The remote control connector is not used in this model series.



Pos.	Description
1	Coolant reservoir cap
2	Handle
3	Display
4	Induction torch holder
5	Encoder
6	Induction torch cable
7	Handle of induction torch
8	Control cable
9	Button of induction torch
10	Induction focus head







Pos.	Description
14	Main switch
15	Coolant level indicator
16	Power cord
17	Production label

Heating indicator lamp





- Indicates heating status.



	Indicator lamp	Status
	Green	Heating in progress
	Yellow	Warning – limited heating output
	Red	Heating error – overloading
	Red, flashing	Heating error – wrong coil

Cooling and overheating indicator lamp





	Indicator lamp	Status
	Green	Cooling in progress
	Green, flashing	Only water circuit active, venting
	Yellow	Warning – near overheating
	Red	Cooling error – no coolant or hose squeezed

10 ACTIVATING THE DEVICE

- Check the coolant level and refill if necessary.
- Connect the device to a socket and turn it on using the switch at the back of the device.
- The device autodiagnostic test (self-test) is initiated automatically and the cooling circuit is vented; the letters “FIL” flash on the display during this“.
- If the device detects lack of coolant, it displays the error message E12:
In that case, refill the coolant in the tank.
- If everything is in order, the device switches to standby.

11 STANDBY





This is the initial device status, which allows turning the encoder to set the desired heating power or temperature, depending on the mode selected:

- Controlled power mode (CP), indicator lamp glows red  – the user sets the desired heating power in % of maximum heating power and the device automatically adjusts the required parameters to maintain the set power.
- Controlled magnetic field mode (CF), indicator lamp glows green  – the user sets the desired field intensity in % of maximum field intensity and the device automatically maintains the set field intensity.



The indicator lamp starts flashing during the heating and the display shows the current readings of power output in kW.



The desired heating mode can be set in the settings or switched by pressing and holding down the encoder – the display shows the corresponding mode name CP/CF and the indicator lamp changes colour. Press the encoder to move to further device parameter settings, such as the heating timer, etc.

Note: If the power is controlled remotely, the letters “rc” are displayed for 3 sec when turning the encoder.

Indicator lamp	Status
	Red Heating power setting in %, mode CP
	Red, flashing Power reading in kW during the heating
	Green Magnetic field intensity setting in %, mode CF
	Green, flashing Power reading in kW during the heating

12 HEATING TIMER

The timer makes it possible to automatically stop heating after a set amount of time, enabling accurate dosing of energy (heat) introduced to the material, e.g., for spot or repeated heating to a set temperature. Press the encoder repeatedly until the  TIMER indicator lamp glows red . Turn to set the desired heating time in seconds or deactivate the timer by selecting “OFF”.

If the timer is set, then the indicator lamp glows green  when the heating starts, and if the heating is stopped by the timer, the indicator lamp starts flashing green  and the display shows the letters “OFF” once the button is released. Releasing the button stops the heating immediately.

Note: Press the encoder to enter pre-heating/program settings (see following chapter). To exit to power settings immediately, press and hold down the encoder.

13 LIST OF ERRORS MESSAGES

Error	Description
1	Power supply undervoltage
2	Power supply overvoltage
3	Input overcurrent
4, 5	Output overcurrent
6	Power overload
7, 8	Output frequency out of range
9, 10, 11	Regulation error
12	Out of coolant
13	Hose squeezed or clogged
14 – 18	Device overheating
19	Power supply wrong grid frequency
20-256	Device servicing errors

14 TECHNICAL PARAMETERS

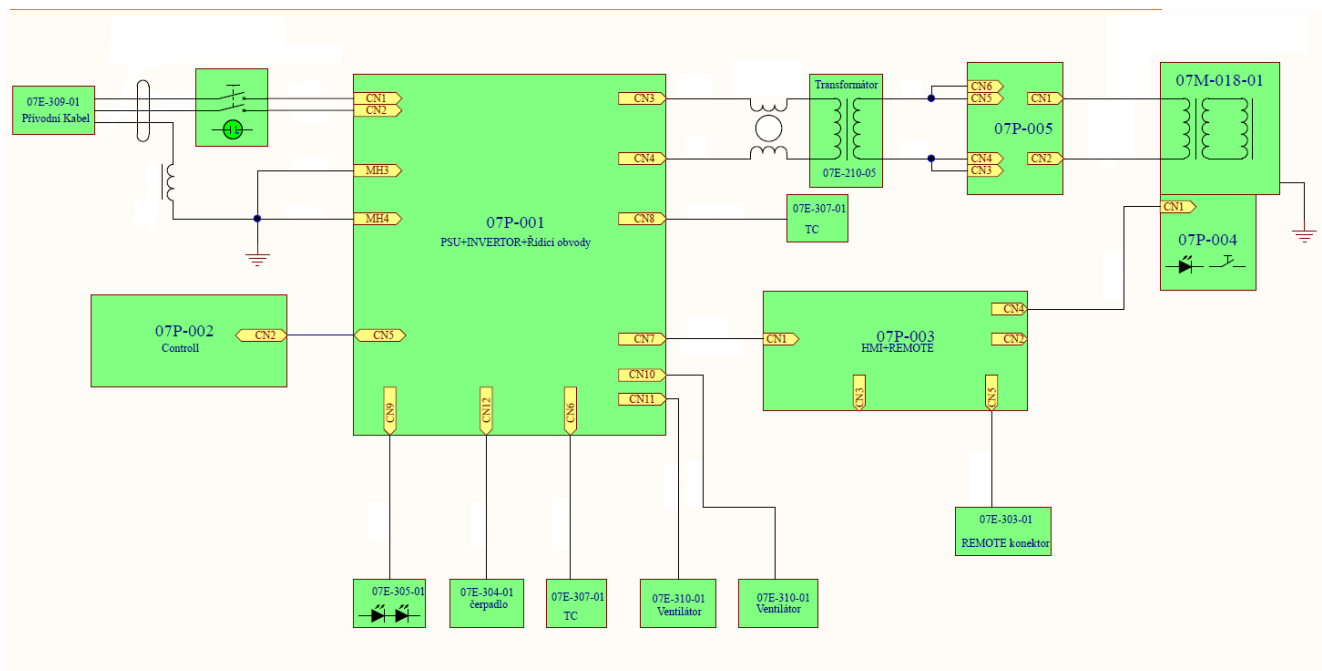
	DHI44E LKW		Unit
Order codes		07-003	
Power requirements	V1	230	V
Frequency	F1	50/60	Hz
Power consumption	I1	16	A
Protection	IP	IP22	-
Working frequency	F2	18-60	kHz
Power control (CP mode)		10-100 %, stepless	%
Field control (CF mode)		30-100 %, stepless	%
Length of induction torch		2	m
Input power	P1 max	3.5	kW
Output induction power	P2 max	4	kVA
Dimensions		240x200x440	mm
Weight		11.5	kg
Coolant content		2.5	l

The device is classified for electromagnetic compatibility under the standard ČSN EN 55011 ed.4 : 2017 as a class A, category 2 device.

“Class A device is a device suitable for use in all places except those that belong to residential environments and those that are directly connected to a low-voltage power supply grid supplying power to buildings used for residential purposes.”

“Category 2 devices are devices in which high-frequency energy within the frequency range from 9 kHz to 400 GHz is intentionally produced and used.”

15 ELECTRIC SCHEME



16 USED DEVICE DISPOSAL



These devices are built using materials that contain no toxic substances or poisonous to the user. Dispose of the discarded device using a collection point intended for collection of used electric equipment. Do not dispose of the used device as ordinary waste.



The company is registered in the ASEKOL collective system (under manufacturer registration no. 04499/16-ECZ) and finances handling of electrical waste itself. This symbol on products and/or in accompanying documentation means that used electrical and electronic products must not be added to ordinary municipal waste.



17 SPARE AND CONSUMPTION PARTS



Pos.	Code	Description
1	07-103	Focus coil, side
2	07-102	Focus coil, inclined
3	07-104	Focus coil, straight
4	07-101	Grip extender
	91-003	Coolant liquid (3 l)

18 QUALITY CERTIFICATE

Producer: DAWELL CZ s.r.o., Budischowského 1073, Třebíč 67401

Type of product: DHI-44E LKW

Seriál number:

Date of final inspection:

Inspected by:

19 WARRANTY SERVICING

1. Warranty service may only be performed by a service technician trained and authorized by the manufacturer.
2. Before performing warranty repairs must check the data on the machine: date of purchase, serial number, machine type. If the information is not in accordance with the conditions for the recognition of warranty repairs, for example. Condition warranty, improper use of the product contrary to instructions for use etc., it is not a warranty repair. In this case, all costs associated with repair are paid by the customer.
3. In the case of repeating the same error in one machine and the same work, it is necessary to consult the manufacturer's service technician.

