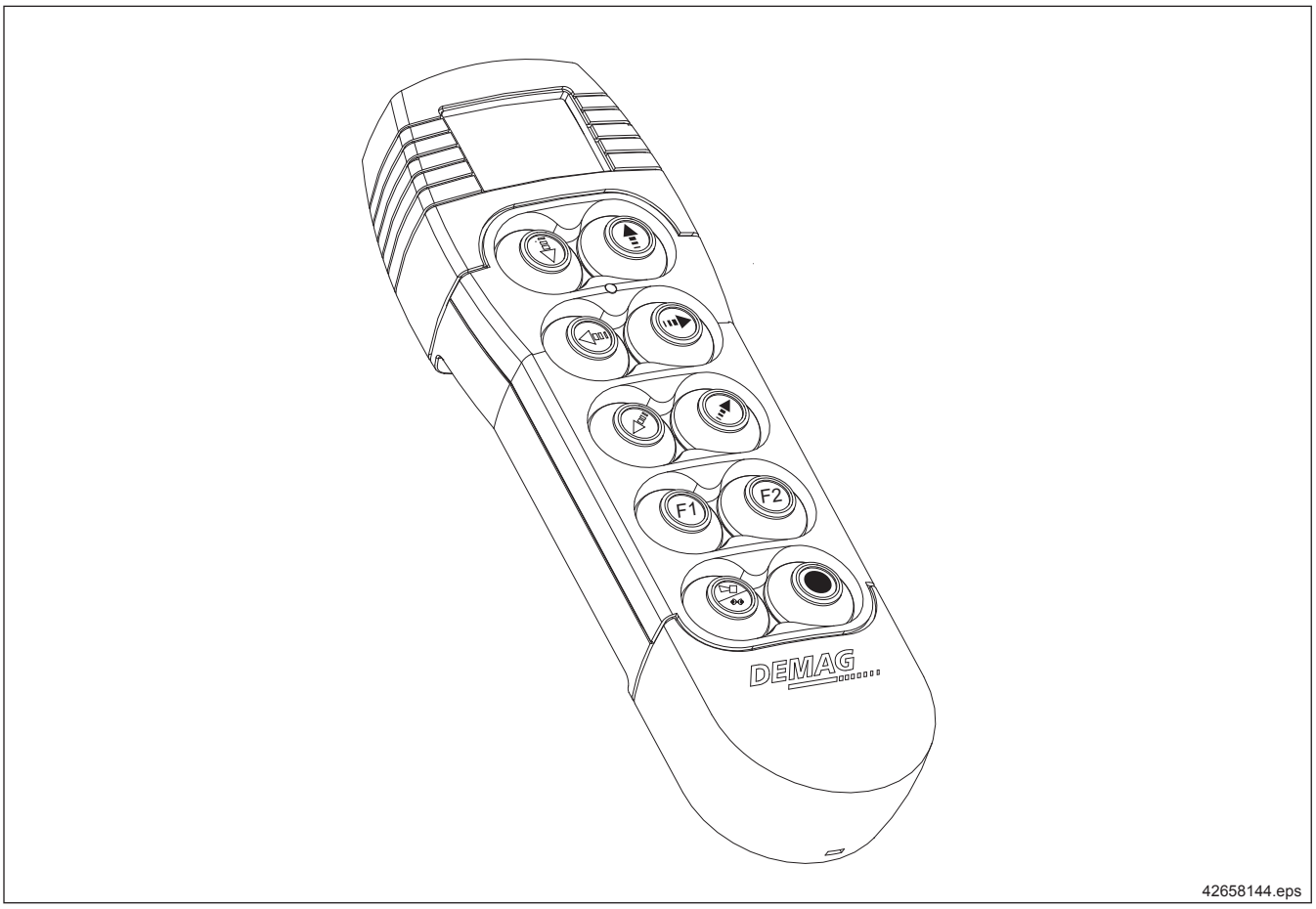
Operating/assembly instructions

DRC-10 D3 hand-held transmitters



Original operating/assembly instructions

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Further documents:

DRC-MP operating instructions	211 270 44	719 **IS** 975
DRC-DR operating instructions	211 267 44	719 **IS** 975

1 General

1.1 Information on DRC-10 hand-held transmitters

You have purchased a Demag product.

These operating/assembly instructions are designed to provide the owner and operators with appropriate instructions for safe and correct operation and for commissioning.

Every individual given the task of transporting, installing, commissioning, operating, maintaining and repairing our products and additional equipment must have read and understood

- the operating/assembly instructions
- the safety regulations and
- the safety instructions in the individual chapters and sections.

The operating/assembly instructions must be available to operating personnel at all times in order to prevent operating errors and to ensure smooth and trouble-free operation of our products.

1.2 Information on the operating/assembly instructions

These operating/assembly instructions are an integral part of the DRC-10 hand-held transmitter.

They must be kept available in the immediate vicinity at all times.

DRC-10 hand-held transmitters may only be operated by personnel who are fully familiar with the operating/assembly instructions.

If special designs or additional options are ordered or the latest technical modifications are incorporated, the actual scope of supply may differ from the data and information as well as from the illustrations described here.

If you have any questions, please contact the manufacturer.

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1.3 Symbols/signal words

Important safety information and instructions are marked by corresponding symbols and signal words in these operating/assembly instructions.

Safety instructions and information must be followed. Follow these instructions with care to avoid any accidents, injuries or damage.

Any locally applicable accident prevention regulations and general safety regulations must also be followed.

The following symbols and instructions warn against possible injuries or damage and are intended to assist you in your work.

DANGER.

This symbol indicates an immediate hazard which can result in serious injury or death.

WARNING.

This symbol indicates a possibly hazardous situation which might result in serious injury or death.

CAUTION.

This symbol indicates a possibly hazardous situation which might result in medium to light injury.

NOTE

Operating hazard for the DRC-10 hand-held transmitter.

- This symbol indicates information on the appropriate use of DRC-10 hand-held transmitters.
- Failure to follow these instructions may result in malfunctions, damage or pollution of the environment.

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1.4 Liability and warranty

All information included in these operating/assembly instructions has been compiled on the basis of the relevant regulations, state-of-the-art engineering principles and our many years of experience.

NOTE

These operating/assembly instructions must be read carefully before starting any work on and with the DRC-10 hand-held transmitter, especially before the unit is put into operation for the first time. The manufacturer assumes no liability for any damage which results from the following:

- Non-compliance with the operating/assembly instructions
- Inappropriate use of the DRC-10 hand-held transmitter
- Operation by insufficiently trained personnel
- Unauthorised conversions
- Any technical modifications

Wearing parts are not subject to liability for defects.

We reserve the right to incorporate technical modifications within the scope of improving the operating characteristics and further development of the DRC-10 hand-held transmitters.

1.5 Copyright

These operating/assembly instructions must be treated confidentially. They are only intended to be used by people who work with or on DRC-10 hand-held transmitters.

Any and all content, texts, drawings, images and any other information are protected within the sense of copyright law and are subject to further industrial rights. Any misuse is an offence.

No part of this documentation, in whole or in part, may be reproduced, distributed, shown in public or used in any other way without specific prior consent. Infringements are an offence resulting in obligatory compensatory damages. Further rights reserved.

All industrial rights reserved.

1.6 Spare parts

Only genuine Terex MH spare parts may be used.

CAUTION. Defective spare parts

Incorrect or defective spare parts may cause damage, malfunctions or complete failure of DRC-10 hand-held transmitters.

Only use genuine spare parts or parts approved by Terex MH.

For safety-relevant wear parts, genuine Demag spare parts must always be used.

Safety-relevant wear parts are, for example, brake linings, ropes, etc.

The use of unauthorised spare parts renders null and void any claims for warranty, service, damages or liability against the manufacturer or his appointed personnel, dealers and representatives.

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1.7 Definitions

Owner

Owners (employer, company) are defined as persons who own a radio control system and who use it as intended or allow it to be operated by suitable and instructed persons.

Operating personnel/operator

Operating personnel are defined as persons entrusted by the owner of a radio control system with operation of the radio control system.

Specialist personnel

Specialist personnel are defined as persons assigned by the owner of the radio control system to carry out special tasks such as installation, setting-up, maintenance and fault elimination.

Qualified electrician

Qualified electricians are defined as persons who, owing to their technical training, knowledge and experience of electric equipment as well as knowledge of the relevant standards, codes of practice and regulations, are able to assess the tasks given to them and to identify and eliminate potential hazards.

Trained person

Trained persons are defined as persons who have been instructed and trained for the tasks assigned to them and on the possible hazards resulting from incorrect handling and who have been informed about the required protective devices, protective measures, relevant regulations, codes of practice, accident prevention regulations and operating conditions and who have proven their qualifications.

Experienced technician

Experienced technicians are defined as persons, who, owing to their technical training and experience, have sufficient knowledge of radio control systems and are familiar with the relevant national industrial safety regulations, codes of practice, accident prevention regulations, directives and generally accepted engineering standards enabling them to judge the safe operating condition of radio control systems.

Radio control system

Radio control systems are systems used for controlling the lifting, lowering and travel motions of loads on cranes, crabs, machinery and installations.

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1.8 After-sales service

Our after-sales service will provide you with all technical information on Terex MH products and their systematic application.

Should you have any questions regarding our products, please refer to one of our after-sales service centres, the relevant representative or the head office in Wetter.

Please quote the serial or order no. in any correspondence or for spare part orders.

Specifying this data ensures that you receive the correct information or the required spare parts.

Manufacturer's address:

Terex MHPS GmbH

Forststrasse 16

40597 Düsseldorf, Germany

www.demagcranes.com

mhps-info@terex.com

Addresses and contacts

The current addresses of the sales offices in Germany and the subsidiaries and agencies worldwide can be found on the Terex MHPS GmbH homepage at

www.demagcranes.com/Contact

1.9 Disposal of machine parts

Unless a return or disposal agreement has been concluded, recycle separated components after proper removal:

- Scrap any remaining metallic material
- Dispose of plastic elements for recycling
- Separate and dispose of any other components by material type

NOTE

Electric scrap, electronic components, lubricants and other auxiliary materials are subject to special disposal regulations and may only be disposed of by certified companies.

National disposal regulations must be considered regarding environmentally friendly disposal of the electrical components and machine parts.

Further information can be obtained from corresponding local authorities.

Observe local legal regulations for the correct disposal of old batteries and rechargeable batteries.

Old batteries and rechargeable batteries must be given to regional recycling systems or can be returned to Terex MH at no cost.

They must never be disposed of with domestic refuse.

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2 Safety

2.1 General

The “Safety” chapter provides an overview of all important safety aspects for optimum protection of personnel as well as safe and trouble-free operation of DRC-10 hand-held transmitters.

At the time of its development and manufacture, the DRC-10 hand-held transmitter was built according to generally accepted engineering standards and is considered to be safe to operate. The DRC-10 hand-held transmitter may still be a cause of danger if it is not used correctly or as intended by suitably trained personnel.

Knowledge of the contents of the operating/assembly instructions is one of the requirements necessary to protect personnel from hazards and to avoid malfunctions and, therefore, to operate the DRC-10 hand-held transmitter safely and reliably.

Any conversions, modifications or additions to the DRC-10 hand-held transmitter are prohibited unless approved in writing by Terex MH.

2.2 Intended use

The DRC-10 hand-held transmitter is intended to be used as a control unit and transmitter station for DRC-DR and DRC-MP radio receivers. The scope of functions is designed preferably for wireless control of crane installations, travelling hoist units, chain and rope hoists, transfer carriages and similar applications.

The operator can position himself as required. He can control loads and movements from a safe distance. He must always select a location to ensure that all movements of the load and the crane can be monitored and any hazardous movement can be switched off in good time. Before starting any crane movement by actuating the operating element, the operator must determine which crane is being controlled. The display of the DRC-10 hand-held transmitter shows the identification/crane number of the crane under control. The radio-controlled crane must be identified by means of the identification/crane number in a way clearly visible to the operator.

If required, a signal must be actuated prior to a crane movement for acoustic control.

DRC transmitters and receivers meet the requirements of the standards and regulations listed in the EC conformity declaration. The specified EC conformity declaration is an integral part of the relevant operating/assembly instructions.

DRC transmitters and receivers do not require any registration or operating fees, see section 4.2 “International postal approval”. The benefits that this provides for the user are also utilised by some other manufacturers of devices for communications and telemetry applications. The consequence of this is that the relevant approved frequency ranges may be used by many transmitters at the same time, depending on the time and location.

The transmission method used by Terex MH is designed for the most robust and interference-resistant radio transmission between the transmitters and receivers of the DRC range.

The state-of-the-art transmission method is provided with technical features (frequency hopping) which are designed to ensure a minimum of conflicts for radio operation together with other transmitter and receiver devices which use the same frequency range.

Despite all of the technical precautions taken by Terex MH, it cannot be entirely excluded that the transmission characteristics of other radio systems are impaired, in particular devices supplied by other manufacturers that use the same frequency range, or that the transmission characteristics of the system supplied by Terex MH are negatively affected.

In such cases, interference or radio connection interruptions may occur, which disrupt the communication and function of a system supplied by Terex MH or other manufacturers. Such impairment or interference does not constitute a defect on the part of DRC transmitters and receivers. Terex MH accepts no liability for wilful or grossly negligent behaviour.

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The number of transmitters that operate without any interference in a given area depends on the relevant radio solution design of all systems and the selectivity of each individual system.

If this limit is exceeded continuously or for certain periods, additional technical measures may be necessary in order to ensure simultaneous and interference-free operation of the radio systems. Whether and to which extent such measures are required can only be determined by means of suitable measurements on site or when the system is put into operation. Terex MH is not responsible for such additional technical measures.

DRC D3 transmitters and receivers can be used for multiple transmitter operation as well as multiple receiver operation. Refer to the corresponding operating and assembly instructions for details.

DRC-10 hand-held transmitters may only be operated when in perfect working order by trained personnel in accordance with the relevant safety and accident prevention regulations. This also includes compliance with the operating and maintenance conditions specified in the operating/assembly instructions.

National occupational safety and health regulations must be observed and followed.

DRC-10 hand-held transmitters that are ready for operation must not be left unattended. They must be protected against unauthorised use.

For intended use, the information in the operating/assembly instructions for the radio receiver used (DRC-DR/DRC-MP) and the machine/crane installation to be controlled must be complied with in addition to the information contained in these operating/assembly instructions (see accompanying documents, page 3).

Serious personal injury or damage to property may occur in the event of:

- unauthorised removal of covers,
- inappropriate use of the product/system,
- incorrect operation,
- insufficient maintenance,
- working on live parts.

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2.3 Responsibility of the owner

Information on safety at work refers to the regulations of the European Union that apply when the DRC-10 hand-held transmitter is manufactured. The owner is obliged to ensure that the specified industrial safety measures comply with the latest rules and regulations and to observe new regulations during the entire service life of the DRC-10 hand-held transmitter. Local industrial safety legislation and regional regulations and codes of practice applicable at the site of operation of the DRC-10 hand-held transmitter must be observed outside the European Union.

General safety, accident prevention and environmental protection regulations that apply where DRC-10 hand-held transmitters are in operation must be observed and complied with in addition to the safety instructions contained in these operating/assembly instructions.

The owner and any personnel authorised by him are responsible for correct operation of the DRC-10 hand-held transmitter and for clearly defining responsibilities for installation, operation, maintenance and cleaning.

The operating/assembly instructions must be followed in full and without any limitations.

The operating/assembly instructions must, if required, be supplemented by the owner with instructions relating to organisation of work, working procedures, authorised personnel, supervising and reporting obligations, etc.

Furthermore, the owner must ensure that

- any further working and safety instructions resulting from the risk assessment of DRC-10 hand-held transmitter workplaces are specified in operating procedures.
- the operating/assembly instructions are always kept available in the immediate vicinity of DRC-10 hand-held transmitters for installation, operating, maintenance and cleaning personnel.
- personnel are trained in accordance with the work to be performed.
- the DRC-10 hand-held transmitter is only operated when in safe and proper working order.
- the safety devices are always kept freely accessible and are checked regularly.
- national regulations for the use of DRC-10 hand-held transmitters are observed.

The owner is urged to develop procedures and guidelines for any malfunctions, to instruct users and to affix these instructions at a suitable place where they can be easily seen.

2.4 Operating personnel requirements

Only authorised and trained personnel may work on the DRC-10 hand-held transmitter. The personnel must have received instruction on the DRC-10 hand-held transmitter functions and any hazards that may occur.

Every individual given the task of working on or with the DRC-10 hand-held transmitters must have read and understood the operating/assembly instructions before any work starts.

Persons under the influence of drugs, alcohol or medicines which affect their reactions must not work on or with DRC-10 hand-held transmitters.

Age and job-specific regulations relevant at the place where DRC-10 hand-held transmitters are operated must be observed for the selection of any personnel.

Personnel are obliged to report to the owner without delay any changes to DRC-10 hand-held transmitters that impair safety.

For maintenance work on DRC-10 hand-held transmitters, the owner may only employ persons (specialist personnel)

- who are at least 18 years of age,
- who are mentally and physically suitable,
- who have been instructed in maintenance of DRC-10 hand-held transmitters and who have proven their qualification to the owner in this respect.

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2.5 Personal protection equipment

When work is carried out on or with DRC-10 hand-held transmitters, the following must always be worn:

- Protective clothing, closely fitting working clothes (low tear strength, no loose sleeves, no rings or any other jewellery, etc.).
- Safety shoes to protect against falling parts and against slipping.
- Safety helmet to be worn by everybody in the danger zone.

2.6 Regular inspections

The owner of DRC-10 hand-held transmitters may be obliged to carry out regular inspections by national industrial safety legislation and regional regulations. This is regulated by the rules and regulations of the German Social Accident Insurance (DGUV) in the Federal Republic of Germany, for example. These specify that

- the DRC-10 hand-held transmitter must be inspected before it is put into operation and
- the DRC-10 hand-held transmitter must be inspected regularly.

The owner is obliged to ensure that the DRC-10 hand-held transmitter complies with the latest rules and regulations and to observe new regulations at all times.

If no comparable inspection regulations or requirements apply at the place where the DRC-10 hand-held transmitter is operated, we recommend compliance with the above-mentioned regulations.

2.7 Safety instructions for installation and disassembly

- Installation and disassembly work may only be performed by experienced technicians.
- Installation and disassembly work must be co-ordinated by the person carrying out the work and the owner within the scope of their responsibility.
- The working and danger zone must be made safe.
- The installation must be isolated in accordance with the relevant electric regulations.
- Customer-specific regulations must be observed.
- Only appropriate, tested and calibrated tools may be used.
- If equipment is disassembled, any waste material must be disposed of by the owner in an environmentally compatible way in compliance with relevant regulations.

2.8 Safety instructions when first putting the unit into service after completing installation

- The working area must be made safe.
- First check that the voltage and frequency specified on the type plates match the owner’s mains power supply.
- In the course of putting the equipment into service, it may be necessary to render safety devices or features inoperative while adjustment work or function checks are carried out.
- Work may need to be carried out in the danger zone when the product is put into service. Therefore, it must be ensured that only appropriately trained personnel are employed for this work.

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3 Device selection

3.1 DRC-10 scope of delivery

	Order no.
Stepless DRC-10 D3 hand-held transmitter	**773 791 44**
2-stage DRC-10 D3 hand-held transmitter	**773 792 44**
Contents of the complete delivery:	
• 1 DRC-10 D3 hand-held transmitter	
• 1 rechargeable battery pack 2,4 V / ReCyKo / 2050 mAh	773 499 44
• 1 plug-in charger (rechargeable battery) 110 – 230 V 50/60 Hz	773 438 44
• 1 silicone protective sleeve	773 580 44
• 1 DRC-10 hand-held transmitter operating/assembly instructions	211 266 44
• 1 set of key symbols for DRC-10 hand-held transmitter	773 465 44

3.2 Available radio receivers

DRC-DR D3 radio receiver		711 333 45
Aerial for DRC-DR D3 receiver for (DR 3, 5, 10, 20)		711 445 45
DRC-MP D3 radio receiver	85 – 240 V AC	773 794 44
DRC-MP D3 radio receiver	24 – 48 V AC/DC	773 796 44
Optional aerial for DRC-MP receiver		773 586 44

3.3 Accessories for DRC-10 hand-held transmitters

Silicone protective sleeve 773 580 44
Improved protection against chemicals and abrasive materials

Spare carrying strap, length approx. 22 cm 773 425 33

External charger unit 773 501 44
To charge a battery pack (773 499 44)
Connection to 230 V supply by multi-norm connector
4 hours for full charge, automatic trickle charging

Spare parts set for DRC-10 hand-held transmitter 773 415 33
Contents:
1 x upper housing cap,
1 x lower housing cap
5 x bridge contacts

Wall bracket 773 688 44
Fixed storage position for DRC hand-held transmitters. Rugged metal design. A hand-held transmitter can be placed in it with a plug-in charger connected to it.

3.4 Accessories for crane identification

Coding labels	Black background foil	895 639 44
Coding labels	7 segments (yellow)	895 640 44
Large cross-travel direction foil (dimensions: 500 x 200 mm)		895 635 44
Large long-travel direction foil (dimensions: 500 x 200 mm)		895 637 44
Small cross-travel direction foil (dimensions: 100 x 250 mm)		851 525 44
Small long-travel direction foil (dimensions: 100 x 250 mm)		851 526 44

3.5 Casing seal/seal breakage

The DRC-10 hand-held transmitter is sealed in the factory.
The DRC-10 hand-held transmitter may only be opened for repair purposes by authorised parties.

NOTE

Breaking a casing seal such as this will result in the loss of all warranty rights.

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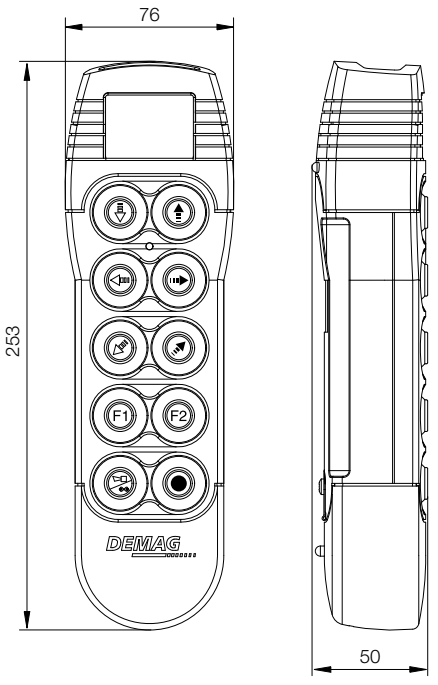
4 Technical data

Operating elements	• Keys	6x stepless or 6x 2-stage
	• STOP key	1 (2-stage)
	• Signal/check key	1 (2-stage)
	• Key for special functions	2 (1-stage)
Displays	• LCD, 2-colour, illuminated	graphical, 35 x 25 mm
	• LCD, function temperature	0 °C to 55 °C
Radio transmission	Transmitter power (ERP)	max. 20 dBm (100 mW)
	Typical range	approx. 100 m
	Frequency range	2,4 GHz ISM band (2405 - 2480 MHz)
Housing	Type of enclosure	IP 55
	Weight of DRC-10 transmitter with battery	520 g
	Weight of DRC-10 transmitter without battery	465 g
Battery charger	Supply voltage	110 - 230 V, 50/60 Hz
NiMH rechargeable battery	Type	AA (LR6), IEC 60086
	Capacity	2050 mAh
	Service life of battery	approx. 1000 charging cycles
	Temperature range	
	– Quick charging	10 °C to +45 °C
	– Charging	0 °C to +45 °C
	– Discharging	-20 °C to +50 °C
	Charging time	approx. 2 hours
	Weight	55 g
	Operation with one battery charge	~ 5 days

4.1 Dimensions

DRC-10 hand-held transmitter



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4.2 International postal approval

DRC D3 transmitters and receivers **in the standard delivery form** can be operated without any registration or operating fee in the following countries:

Countries	Frequency range
Austria	2,4-GHz ISM band
Belgium	
Bulgaria	
Croatia	
Cyprus	
Czech Republic	
Denmark	
Estonia	
Finland	
France	
Germany	
Greece	
Hungary	
Iceland	
Ireland	
Italy	
Latvia	
Liechtenstein	
Lithuania	
Luxembourg	
Malta	
Netherlands	
Norway	
Poland	
Portugal	
Romania	
Slovakia	
Slovenia	
Spain	
Sweden	
Switzerland	
United Kingdom	

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5 Transport, packing, storage

5.1 Transport inspection

- Check the delivery immediately on receipt to ensure that it is complete and examine it for any damage caused in transit.
- If any transport damage is visible from the outside, only accept the delivery on condition. Note the scope of damage in the shipping documents/delivery note of the forwarding company and lodge a claim.
- Lodge a claim for any defects that are not immediately detected as soon as they are discovered, since claims for damages may only be asserted within the relevant claim notification periods.

5.2 Packing

If no agreement has been made on the return of the packing material, separate the materials according to type and size and make them available for further use or recycling.

Environmental protection:

- Always dispose of packing materials in an environmentally compatible way and according to locally applicable disposal regulations.
- If required, utilise the services of a recycling company.

5.3 Storage

Until they are installed, DRC radio controls and their accessories must be kept closed and may only be stored under the following conditions:

- Do not store outdoors.
- Store in dry and dust-free places, relative air humidity: max. 80%.
- Do not expose to aggressive media.
- Protect against direct sunlight.
- Avoid mechanical vibrations.
- Storage temperature: -25 to +55 °C.
- Avoid strong temperature fluctuations (condensation).
- Check the general condition of all parts of the packing at regular intervals. If required, refresh or renew rust protection.
- If stored in a damp location, the DRC radio control system must be packed tight and protected against corrosion (use desiccant).

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6 Design and function

6.1 Transmitter/receiver interface

Demag DRC radio control systems are designed for wireless control of hoist units and cranes. They are the man/machine interface for manually controlled crane installations. The relevant EU directives and standards are complied with for this application.

A DRC D3 radio control system consists of one or more transmitters as well as at least one or more receivers.

These operating/assembly instructions refer to DRC-10 hand-held transmitters in combination with the matching DRC-DR D3 or DRC-MP D3 radio receivers.

- The Demag DRC-DR radio receiver is a PCB that is designed to be installed in the electric equipment cover of a DR hoist unit. The interface of this transmitter component to the crane control system is the CAN safety bus and the power supply via the DR electric equipment. The DRC-DR radio receiver is only suitable for operation with a DR hoist unit.
- The Demag DRC-MP radio receiver is a complete unit with its own enclosure and power supply from the control voltage network of the crane installation. Relay contacts for the individual control commands and the emergency stop circuit form the interface of this unit to the crane control system. An additional semiconductor output with pulse width modulation is provided for variable-speed crane drives. The DRC-MP radio receiver can be used for a wide range of applications.

Demag DRC-DR and DRC-MP radio receivers are equipped for bi-directional radio transmission and transmit information to the DRC-10 hand-held transmitter. This increases the safety and reliability of the radio system. Status information for the crane control system and the receiver is shown on the display of the DRC-10 hand-held transmitter.

6.2 Transmission method

Frequencies in the so-called 2,4 Ghz ISM band are used for transmission of radio signals between transmitters and receivers.

The new proprietary radio transmission method used for DRC D3 meets the most demanding requirements in terms of transmitter density and co-existence with other equipment that operates in the 2,4 GHz ISM band. The radio transmission method combines various transmission mechanisms: A frequency-hopping system ensures that radio transmission is robust and highly resistant to interference – an adaptive characteristic (LBT) combined with this enables interference with neighbouring radio applications to be effectively eliminated.

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6.3 Power supply for DRC-10 hand-held transmitters

DRC-10 hand-held transmitters are supplied with power by the rechargeable battery pack included in the scope of delivery or by two AA (LR6) NiMh rechargeable batteries. The batteries must be charged in good time by means of the appropriate plug-in charger. The ambient temperature must be between +10° C and +45° C for the charging process.

6.3.1 Display of available battery capacity

The battery capacity is shown on the display of the DRC-10 hand-held transmitter. The charging status of the battery corresponds to the dark surface of the battery icon.

For a new battery, the full battery icon represents a useful operating period for the DRC-10 hand-held transmitter of approx. 5 days when it is switched on.

If only a residual charge is displayed, connect the DRC-10 hand-held transmitter to the charger at the next opportunity. If the battery icon is empty, the DRC-10 hand-held transmitter must be connected to the charger immediately.

The operating time that can be achieved by a DRC-10 hand-held transmitter with one battery charge depends on the operating mode of the DRC-10 hand-held transmitter, the ambient temperature and the age of the batteries.

Approx. 5 days of operation can be achieved with one battery charge if the DRC-10 hand-held transmitter is continuously switched on.

The following measures reduce power consumption:

- Change to Standby during breaks in operation (see section 8.3 on page 47).
- Switch the transmitter off (see section 8.3 on page 47).

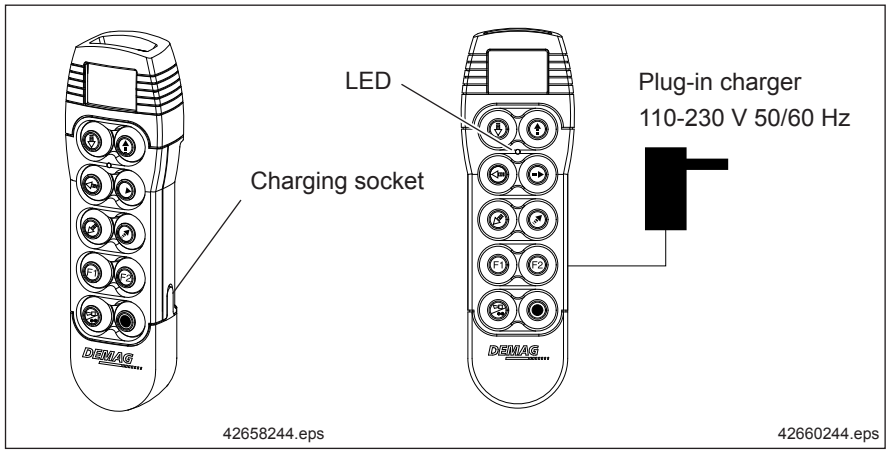
Further measures to reduce power consumption include switching off the background illumination and the vibration alarm (see page 58).

6.3.2 Charging the batteries

When this battery icon is displayed, immediately charge the integrated batteries using the plug-in charger included in the supply.

If the batteries are not charged immediately, the battery icon will start to flash and the DRC-10 hand-held transmitter will switch off after a few seconds 1).

Quick charging of the batteries with the DRC-10 hand-held transmitter is only possible at ambient temperatures from +10 °C to +45 °C. If the temperature is higher or lower than this range, the charging process is aborted and the system automatically switches over to trickle charging.



Important:

The rechargeable batteries integrated in the DRC-10 hand-held transmitter may only be charged with the original plug-in charger unit. The use of other charger units may result in permanent damage to the DRC-10 hand-held transmitter.

1) A low battery capacity may also be indicated by the vibration alarm.

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The charging process is monitored and controlled by the electronic charging system in the DRC-10 hand-held transmitter. Partly discharged batteries can also be charged.

To charge the batteries, proceed as follows:

– Plug the charger unit into a power socket.
– Plug the connecting cable into the charger socket of the DRC-10 hand-held transmitter.

  The hand-held transmitter will be charged.

  The icon will appear on the display.

  The green LED flashes at 2 Hz.

  The DRC-10 hand-held transmitter generates an acoustic signal.

  The DRC-10 hand-held transmitter changes to standby mode. The crane cannot be operated.

The charging process comprises quick charging and trickle charging modes.

Quick charging: This process takes approx. 2 hours if the battery is empty, it charges the battery to approx. 100%.

Trickle charging: At the end of the quick-charging phase, the system switches over to trickle charging mode with a lower charging current. The DRC-10 hand-held transmitter can remain connected to the charger for any period of time. This also indicated by an acoustic signal.

Icon when the charging process has been completed. The green LED is continuously on.

Icon for battery errors.

Icon to show there is no battery fitted.

This icon appears if a battery problem occurs, e.g.:

- batteries are defective,
- batteries are too old,
- attempt to charge non-rechargeable batteries.

Defective batteries must be replaced by new ones (see section 6.3.3)

Important: To ensure sufficient charging of empty batteries, the DRC-10 hand-held transmitter must be connected to the charger for at least 2 hours. The full battery icon is not sufficient after the charger plug is disconnected, as this icon already appears after a only brief period of charging.

6.3.3 Replacing the batteries

The rechargeable batteries in the DRC-10 hand-held transmitter age as a result of charging/discharging cycles and continuously lose their charge capacity. We recommend that the rechargeable batteries be replaced after a year, at the latest. Rechargeable batteries must be immediately replaced if the relevant icon for a battery failure is displayed.

The NiMh rechargeable batteries supplied with the DRC-10 hand-held transmitter have been specifically selected for the requirements of this radio control system. The electric and mechanical features of the DRC-10 hand-held transmitter and rechargeable batteries have been matched to fulfil all requirements for smooth, safe and reliable operation.

For replacement, use rechargeable battery pack, part no. 773 499 44.

The use of non-approved rechargeable batteries may result in DRC-10 hand-held transmitter operating malfunctions or lasting damage to the charger and the DRC-10 hand-held transmitter.

When replacing the rechargeable batteries, check the contacts in the battery compartment for sufficient contact pressure. New rechargeable batteries must fit tightly between the contact surfaces.

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NOTE

If primary cells are used in the DRC-10 hand-held transmitter, it must not be connected to the charger to avoid any damage caused by overheating during the attempt to charge them.

In exceptional situations, if no charged batteries are available, the DRC-10 hand-held transmitter may be operated with two size AA (LR6) 1,5 V primary cells to EN/IEC 60086. We recommend the use of Duracell and Varta brand alkaline batteries. Primary cells cannot be recharged.

Observe local legal regulations for the correct disposal of old batteries and rechargeable batteries.

Old batteries and rechargeable batteries must be given to regional recycling systems or can be returned to Terex MH at no cost. They must never be disposed of with domestic refuse.

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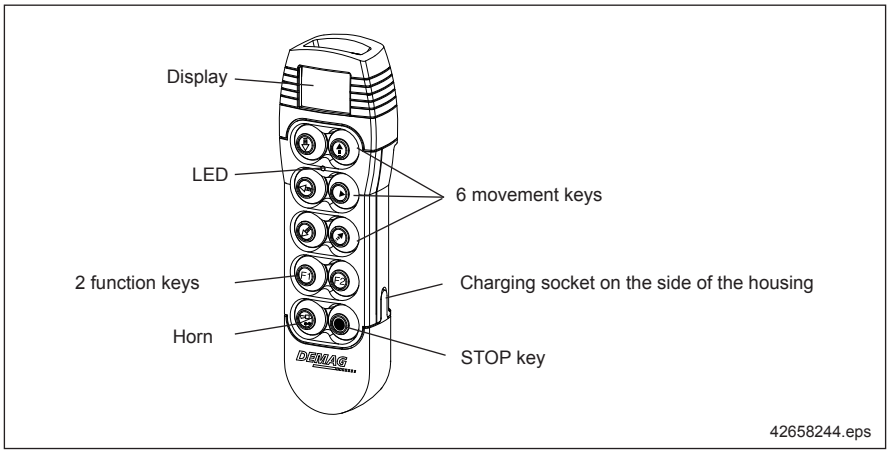
211 266 44.indd/151014

6.4 Identification and display functions

6.4.1 DRC-10 hand-held transmitter



The LED in the DRC-10 hand-held transmitter indicates the operating status of the hand-held transmitter:

LED	Operating status
Off	The transmitter is switched off or in Standby mode
Red continuously on	The transmitter is in Stop mode
Flashing green	The transmitter is in Run mode
Flashing yellow	The transmitter is in quick charging mode
Yellow continuously on	The transmitter is in trickle charging mode

Key designation

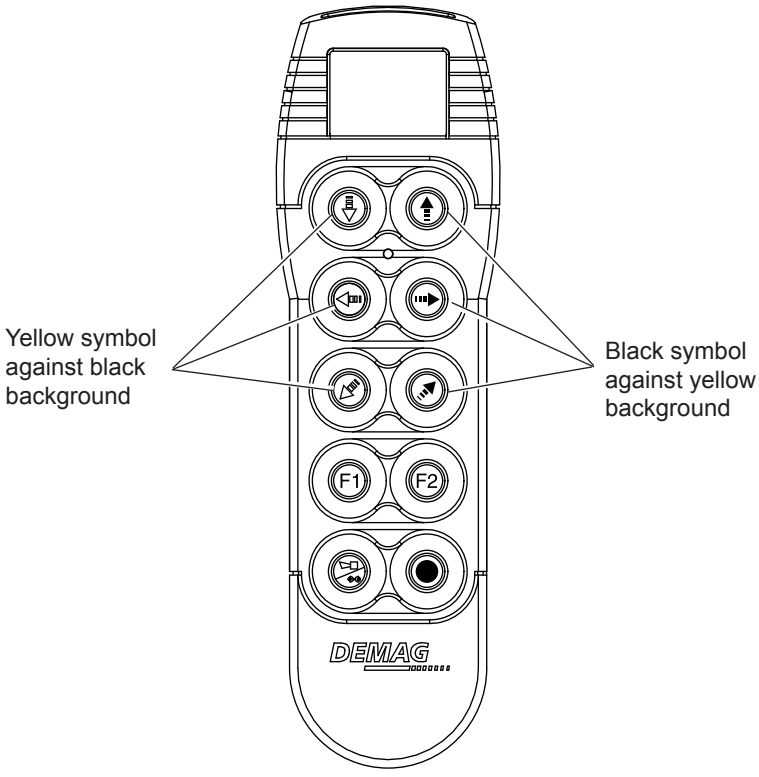


Fig. 1

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P FCC and Industry Canada Information

FCC information

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment
is operated in a commercial environment. This equipment generates,uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Industry Canada Information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference
that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (A)/NMB-3(A)

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

When the device is stored on the operators belt it must be shut off. Pressing the buttons and operating the machine while the device is hanging from the belt or any other place it not allowed. It must be held in the hand.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Heath Canada's website www.hc-sc.gc.ca/rpb.

L'antenne (s) utiliseé pour cet émetteur doit être installé pour fournir une distance de séparation d'au moins 20 cm de toute personne et ne doit pas être co-localisées ou opérant en conjonction avec une autre antenne ou émetteur.

Lorsque l'appareil est stocké sur la bande des opérateurs, il doit être arrêté. Appuyant sur les boutons et faire fonctionner la machine alors que l'appareil est accroché à la ceinture ou tout autre lieu il pas permis. Il doit être tenu à la main.

L'installateur de cet équipement radio doit veiller à ce que l'antenne est située ou orientée de façon qu'il ne dégage pas de champ RF dépassant les limites de Santé Canada pour la population générale; Consultez le Code de sécurité 6, disponible sur le site web de www.hc-sc.gc.ca/rpb de Santé Canada

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