

Mounting-, Operating-, Maintenance- and Security Instructions

for the Use of
Concrete Discharging Decelerator



Contents

1. General information
 - 1.1 Laying and producing
 - 1.2 Changed operating conditions and reconstruction
 - 1.3 Scope of delivery, limit of supply
 - 1.4 Conventional use

2. Safety instructions for the concrete discharging decelerator (**in text abbreviated: CDD**)
 - 2.1 Responsibility of supervising and technical personnel (operating and maintenance personnel)
 - 2.2 Symbols
 - 2.3 General statements
 - 2.4 Safety instruction for operating
 - 2.5 Observance of security measures while mounting
 - 2.6 Observance of security measures while operating
 - 2.7 Observance of security measures during maintenance and repair works
 - 2.8 Notice on special dangers caused by the transported medium
 - 2.9 Notice on special dangers caused by changed quality of material
 - 2.10 Predictable abuse
 - 2.11 Remaining risks

3. Data of installation
 - 3.1 Producer's and distributor's data
 - 3.2 Description

4. Installation of device

3

5. Starting and operation
 - 5.1 Preparatory operations before starting work
 - 5.2 Initial operation

6. Attendance and Maintenance
 - 6.1 General statements
 - 6.2 Cleaning

7. Disturbances

8. Setting up

9. Documentation

10. Summary

Each person dealing with mounting, operating, attending and maintenance of DCC has got to read and understand this instruction.
Your safety is concerned!

It is very important that this documentation is known to all appropriate persons.

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This manual has been written in the intention to be read, understood and observed in every particular by all persons responsible for the use of CDD and the ready-mix concrete lorry.

Only by knowing these instructions you can avoid faults at CDD and assure undisturbed action. Therefore you ought to read the following instruction entirely for to make sure durability and function of CDD. You have to obey and observe all the instructions concerning installation, operation and maintenance which are pointed out in this manual.

If there are any problems, please contact BETO DEC.

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Preface to Manual

This manual is to facilitate your getting to know CDD and to use its intended application.

It contains important hints for secure, appropriate and economical mounting and operation of CDD.

Your attention will help

- avoid dangers
- reduce costs of repairing damage and down time
- increase reliability and durability of CDD

The manual amends the instructions as to existent regulations for preventing accidents and for environmental protection. It must be available at any site of operation at any time and has to be read by any person working with or being responsible for CDD.

This concerns installations and operation including

- initial operation
- fault repair during operation
- maintenance

Keeping up including:

- maintenance
- survey
- repair

Along with these manual and mandatory regulations in the user's country and building site the rules for accident prevention and the generally acknowledged rules of operation must be obeyed.

The CDD must be used only within documented service conditions.

Purpose of definition

Qualified person according to these instructions is any person who according to

- training
- knowledge
- experience and
- knowing relevant regulations

is able to assess the tasks conferred to him and to recognize possible dangers.

Trained person is who has been verifiably taught and – if necessary - educated as well as instructed as to protecting equipment and measures by an expert.

The specialists have to insure that the tuition has been understood thoroughly.

Direct responsible persons must know all safety measures which are necessary for the operation.

1. General information

1.1 Dimensioning and producing

was made exclusively based on arranged and documented data materials (see documents).

If media are used other than conventional the producer cannot guarantee for the resistance to corrosion of the materials used.

If there are other strains impacting the device which have not been announced the producers disclaim liability.

1.2 Changed operating conditions and reconstruction

are dependent on the acceptance or inspection by the company, otherwise all requirements as to commitment and warranty will expire.

1.3 Scope and limitation of delivery

is evident from the documentation (drawing, data sheet, specification of purchase).

By this the limitation of delivery, the interface and range of responsibility and transition of risks are defined.

1.4 Conventional use

The CDD has to be used exclusively for coupling to adequate concrete hoses and pipes with proper clamps and is flown through by concrete capable of flowing which e.g. is pumped by piston pump with pressure into the concrete hose.

Other purposes of use e.g. transportation of dust which have not the appearance of flowable concrete are not allowed.

2. Security regulations for CDD

In this chapter essential security prescriptions have been summarised. Therefore this chapter is useful for first and fundamental instruction of new members of staff.

2.1 Responsibility of managing technical personnel

The managing personnel has to make sure that

- the executing technical personnel obey the security rules. All disposable means required by the activity in accordance with the safety rules have to be at hand.
- the executing technical personnel disposes of necessary technical knowledge.

The technical personnel have to observe the security rules during operation, installation, repairing and maintenance.

Protective facilities like e.g. slide-over protection have to be examined regularly at least once a year by an expert as to condition.

2.2 Symbols



Remark:



Attention:

Non-observance of regulations might impact the CDD.



Warning:

Danger for personal safety

2.3 General statements

The following security instructions have to be applied if the user is

- mounting or dismounting the CDD
- busy with maintenance and repairing works.

Before the works mentioned above are executed the leading as well as the working personnel should read the safety rules deliberately. If these prescriptions are not obeyed there will arise danger as to

- security of technical staff
- operability of CDD
- correct operation of the total system which the CDD is part of.

The signs giving orders and warnings in respect of dangers must be obeyed unconditionally.

Marking of danger e. g. sites of danger of crashing, squeezing, rushing, stumbling.





Modifications not executed by the Beto Dec company as well as alternations of the processing concrete products to other materials may affect the secure operation of CDD and are not permitted to be used for this reason.

If there is any danger for man or environment the risk potential must be minimized immediately.

Your safety first!

2.4 Hints for security of working

- Each person concerned with mounting, demounting, starting operation, service and maintenance of CDD has to have read and understood the entire manual, especially the safety rules.
- Mounting and using CDD must be executed only by trained personnel.
- Only authorized trained personnel are allowed to use, maintain and repair CDD. These experts must have got verifiably an instruction as to possible dangers.
- The hints in the manual concerning use, maintenance and repair have to be observed.
- There may be possible dangers if CDD is used by untrained personnel improperly or if it is used for other than intended purposes.
- The adherence to conditions of mounting, using, maintenance prescriptions of the producer are part of intended use.
- Unauthorized changing of CDD is forbidden for safety reasons.
- The prescriptions for starting must be obeyed strictly. No non-authorized persons are allowed to work with CDD.
- The user is obliged to announce changed conditions of CDD which could alloy security.
- All works or changing activities at CDD and at concrete pump have to be executed only in standstill status.
- For cleaning you have to use adequate protective equipment which is to make sure by regular control.

- Worn out implement and damaged parts must be renewed immediately.
- You must never work at open covering or removed encasement.
- Prescriptions concerning maintenance and support must be obeyed strictly.
- Personnel have to be instructed verifiably as to danger caused by CDD. If required especially for new staff members the briefing must be renewed.
- The protection equipment provided by the user's company must be used by the staff. This has to be ensured by instruction and regular control as to the use of personal protection equipment.
- To avoid physical injury you have to wear tight clothing and hairnet for longhaired persons. Necklaces, bracelets etc. must be taken off before starting work. Personnel must be instructed and controlled in this respect.
- Normal shoes must not be worn while working at the concrete pump. You have to wear protective shoes according to DIN EN 345-1.
- At higher up parts of the concrete pump all loose parts must be removed. It is forbidden to store any objects on the concrete pump.
- Passable areas around the site of the concrete pump must be kept free and clean.
- If there are extraordinary works like repair or adjustment the service person has to assure in advance if there is any danger in the area.
- If there is any danger of hitting head or stumbling at the concrete pump these parts must be marked by yellow-black hatched marking.
- For the case of accident proper tools have to be stored near the concrete pump. Personnel must be instructed how to treat a person when hurt by accident.
- The cleaning of the CDD and concrete pump is only allowed to be executed at standstill. For cleaning you must use adequate personal protection equipment. This must be ensured by regular control.

2.5 Observance of safety rules during installation



- Before installation of CDD at the concrete pump the authorized personnel have to be instructed and the energy supply must be switched off.
- The bolted connection of the docking clamp to the concrete pump must be operated with proper turning moment.
- Unauthorized changes influencing security of equipment are forbidden.
- At any rate you have to make sure that no other than the forced fixing material is used.
- Before starting up all protection measurements have to be examined as to their effectiveness. Connection and installation must be executed by authorized experts only.
- Upstream aggregate and mountings as well as coatings, coverings etc. must not allow the function of CDD.
- Pipes have to be dimensioned according to application; in any case the mounting must be free of tension.
- Consoles, bases, centerings, suspensions and devices fixing CDD in defined fixture must be of adequate dimension and have to be examined periodically.
- Fasteners and screwings or flange connections of cutting-site of concrete pump must be completed according to defined application and must be executed according to technical standards. Screwed connections have to be tightened with proper torque (scale of screw distributor).
- After finishing the forerun flow the CDD and its screw connections, aggregates and security devices have to be examined again as to their efficient state.

2.6 Observance of safety rules during operation

The CDD has been provided with protection devices by BETO DEC. It has to be put into operation only if the following parts have been installed:

- Mechanical protection devices like overpush protection
- If defective parts must be replaced or in case of repairing CDD you have to use original spare parts! Third-party products are allowed only if thoroughly fitting for the particular purpose.
- While CDD is operating no maintenance or repair works are allowed.

2.7 Observance of safety rules during maintenance and repair works

Before starting maintenance and/or repair works the following measures must be accomplished:

- The manual must be examinable on site of CDD.
- Maintenance and repair works must be executed only when the concrete pump has come to a standstill.
- Maintenance and repair works have to be executed only by instructed experts.
- When disassembling heavy parts proper underlayment and adequate hoists have to be used. When using chains, ropes or other lifting accessories you have to keep in mind that the maximal bearing of the lifting accessories will not be exceeded and only inspected lifting accessories are in use.
- Welding works must be executed only if approved and only by authorized specialists. Only welding personnel who can show required certificate are allowed to make welding connections.
- When practicing maintenance and repair works the use of personal protective equipment is compulsory (mutual regulation of personal protective equipment by internal security department as to protective goggles, safety gloves etc.). The use of personal protective equipment must be secured by regular control.

- Caused by abrasion the CDD may collapse while in action. Therefore it must be controlled from time to time as to abrasion or defectiveness. If necessary a new CDD is to be kept ready as substitute.
- If maintenance and repair works have been finished all protective devices which have been removed during work have to be mounted again. The function of protective devices must be controlled.
- Before restarting the CDD the security devices of the concrete pump must be controlled as to correct function.
- Exchanging of components of CDD may be executed only after having contacted BETO DEC.

2.8 Information as to special dangers caused by transported material

- If any material is dangerous with poisonous contents the workers have to be examined in regular intervals.
- If employees are confronted with dangerous material the following items must be observed:
 - Employees must be stated in a list
 - Health service: examination of suitability
 - Examination of workplace noise
 - Specific routine health check
 - Obligations of employer
 - No food or drink allowed at working site!
 - Wash hands before eating or drinking!
- When working with materials like these you must be cautious. The grade of poison must not be exceeded. Aspiration devices must be installed. Their output must not be taken into areas of work or halls of production.
- Security prescriptions must be obeyed.

2.9 Information about dangers caused by changed material quality

If changed material quality is used at CDD or concrete pump this might be endangering by extraordinary strain. If changed qualities material are used you have to run an examination of statics of CDD and concrete pump.

2.10 Predictable misuse

Predictable misuse may be

- possibility of entering into the endangered area for unauthorized persons during action
- any adjustment of fixed parameters by unauthorized persons e. g. changing of pump pressure, products, amounts etc.
- starting of concrete pump by unauthorized persons if there is somebody in the endangered area

2.11 Remaining risks

The following remaining risks were found out in the risk analysis:
Endangering by squeezing

- Docking and discharging of CDD have to be carried out only at secured standstill of concrete pump by experts.

Endangering by inattentive use of personal protective equipment

- Manual information as to use of protective equipment as well as knowledge of personnel must be controlled regularly.

Endangering by drop and fall

- The area of entering and the surroundings of operational area of CDD and concrete pump must be kept clean to avoid endangering by drop and fall.
- To avoid dangers the personnel must be ordered to clean the area from leaked media of the CDD and to remove parts of the device which are not in use.

Endangering by human deviance

- The user has to ensure that only authorized person will work at CDD. He is responsible to third persons in his working area.
- Organising secure working during normal operation and maintenance and repair work must be observed. Verifiable information and control must be executed by responsible persons.
- At the start of production the functional efficiency of CDD must be examined every day.
- Unauthorized changes influencing the CDD are not permitted.
- In principle the given regulations of maintenance and security are valid.

Noise of engine

- The sound level of the concrete pump to which CDD is docked may be at 80 db.
- Endangering by noise may cause irreparable hearing damage if the permanent sound level is more than 80 db. For protection of hearing the personnel have to wear adequate protection equipment.



Cleaning

- The CDD must be cleaned only at secure standstill by trained personnel.
- The cleaning personnel have to wear adequate shoes.



3. Data of CDD

3.1 Data of producer and distributor

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E-mail: office@betodec.at

Type of construction: component for installation in superior machine

3.2 Description

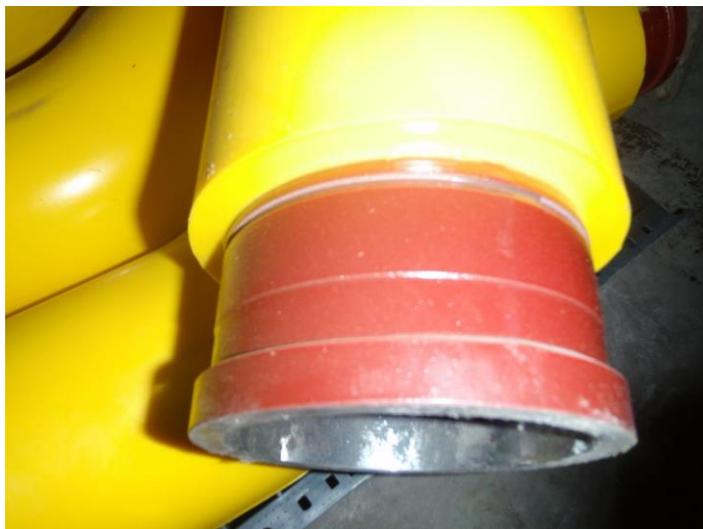
3.2.1 General

The CDD connected with superior machine (concrete pump) is docked to the end of a higher pressure concrete pipe. It is an s-shaped pipe made of plastic material. To be able to influence the flow of concrete from the concrete pump you have to install an s-shaped adapter at the end of the concrete pipe according to the standard of technology (DE 196 18 316 C2).

This adapter is made of polyurethane. A metal fitting is sealed to the hose as connection.

The metal fitting has got grooves round its periphery for to manage getting conclusiveness power and form with the polyurethane casting. In the graphic these castings are covered by polyurethane plastic sprue.

The connecting flange for docking on the pump hose can also be seen.



In principle a change of direction like the docking flange effects the danger of back pressure in the hose. The hose may be set in uncontrollable movement. Danger of being hurt for the acting personnel cannot be excluded. Therefore until now connecting pieces in spite of their evident advantages have rarely been used because risk of injury of the operating personnel could not be accepted.

The CDD distributor has developed a device for pumping out concrete by which the danger of injury can be avoided. The CDD minimizes the danger of injury because it has a predetermined breaking point at the s-shaped intersection.

As the device for discharging concrete has got a predetermined breaking point before the s-shaped intersection a CDD can be connected at the end of the concrete line without danger of injury.

In case of uncontrolled blocking the CDD will break down. So uncontrolled movements can be excluded.

Concrete under pressure can escape unhindered before the s-pipe as no concrete flows through the device any more. By this possible powers cannot cause movement of the concrete pump any more.

This is favourable in particular with pressure operated concrete pipes with comparatively high pressure pulsation.

Graphic of a CDD stripped at the predetermined breaking point:



To connect the CDD to the concrete pipe in a simple procedure it is jointed to the concrete pipe with a clamp that can be opened. If the CDD will break it is easy to replace it in this way.



3.2.2 Safety measures

To protect persons possible hazard areas can be secured. Therefore the dangerous spots of the component have been planned in a way that access to these components will not endanger workers. Along the concrete pipe there is a movable covering which is moved over the point between concrete pipe and connector. So the clamp will be covered. The danger of hurting anybody can be minimized.



3.2.3 Technical information/patent claim

The following text was formulated in the patent script (*cursive*):

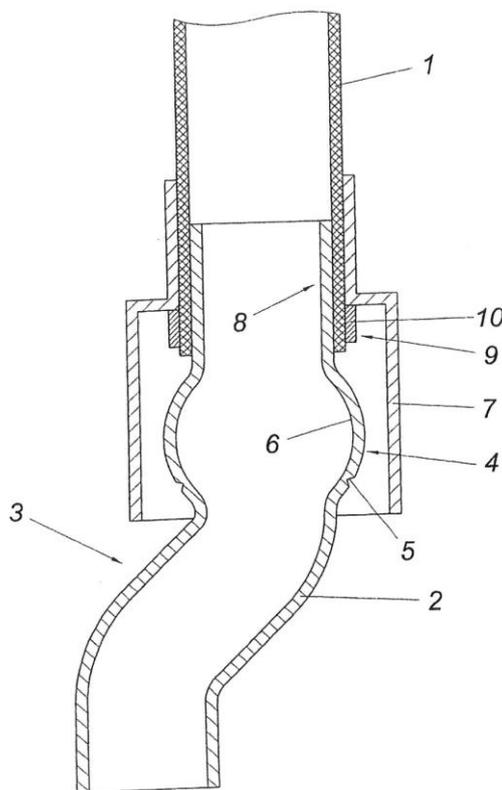
1. Device for unloading concrete using a pressure-operated concrete pump (1) and an adapter connected with the concrete pipe (2). For influencing the flow of concrete it has a pipe of plastic material (3) which is s-shaped and has a predetermined breaking point above the adapter.

2. Adapter according to point 1. The predetermined breaking point (4) has a notch (5) and/or a bulge (6) in the coating of the adapter (2).

3. Adapter according to point 1 or 2. Along the concrete pipe the movably mounted covering (7) rising out in inoperative position into the connecting area (8) between concrete pipe (1) and adapter (2) so that the fixture provided (9) will be covered.

4. Adapter according to point 3. The fixed adapter is partly inserted in the elastic concrete pipe (1) and is connected firmly to the concrete pipe by the use of a clamp that can be opened without possibility of moving.

Graphic of the CDD:



4 Installation of device

First remove packing material and possible preservatives.



Check possible damage caused by transportation. Check if there are any tools left in the CDD.



- Fixing at the concrete pump must avoid tensions at the CDD.
- Use proper tools to avoid damage, scratches or flashes.
- Before putting the concrete pump into operation you must control torsion and completeness of screwing of bolt connection. Before switching on the concrete pump you have to make sure that all protective devices have been attached and are in function according to prescriptions and standards.
- Direction of rotation of possible aggregates of the concrete pump must be checked!
- Before starting the concrete pump you have to make sure that possible upstream or downstream aggregates, conveyors or fittings will not constrain work.
- Mind tensions in the body and interface.
- Check possible leakage.

5 Starting up and handling

5.1 Preparations before starting

Make it a habit to make a round of control at the concrete pump before it is switched on to check its tightness and to control the tightness of the CDD and power equipment to remove obstacles and stumbling traps from the paths and to make sure that all safety devices are ok.

5.2 Starting up

As starting of CDD is possible only along with starting the concrete pump and as the CDD cannot be used without a superior

component you have to follow the documentation manual of the concrete pump.



Attention!

The use of CDD is allowed only if all safety facilities are in full function. Only trained experts are allowed to carry out maintenance and repair works as well as they may

- erect and decompose casing
- coverage
- and safety devices

6 Servicing and Maintenance

6.1 General

The CDD has to be kept clean all times to assure best function. Extraordinary observations must be announced to the responsible supervisor.

Only trained experts are allowed to service the CDD as well as the concrete pump if ordered by the supervisor.

Knowledge of safety rules and manual is absolute condition for maintaining and service works.

Maintenance means particularly

- cleaning
- conserving
- adjusting
- completing
- repairing small parts

Service and maintenance may be executed only by trained and authorized personnel.

The intervals of servicing depend on the pumped product. In most cases the intervals result from practical experience.

Instructions in documentation of concrete pump as to tuition of workers in respect of regular maintenance must be observed.

- Plastic parts must be checked every 50 – 100 hours of operation. If there is any brittleness you have to you have to change the device soon.
- The function of fixing parts must be controlled regularly.

6.2 Cleaning

- When cleaning the CDD you have to switch off the main switch of the concrete pump.
- You must not use detergents containing solvents. If their use is inevitable you have to make sure that the solvent does not affect plastic parts. After cleaning you have to make sure that the solvent can evaporate.

7. Malfunctions

are quoted below. If you cannot solve the problems please contact the service department.

Problem	Reason	Solution
Only little output	Caking of material	Control of supply and passage
Component is loose; outflow at side	Failure of installation, screws loose	Check mounting, pull on screws at proper torsion
Outflow of concrete	Components are worn out	Adjust new CDD
Component beats when starting	Not enough mobility, tension in body	Check correct mounting

Further failures which are intended by arranging the predetermined breaking point are cause of change of CDD. They are shown in the following pictures:



Distortions like the one shown in the following photo indicate that the CDD will be worn out soon. This is normal and shows no situation of danger. In this case the CDD is to be replaced soon. Therefore a new CDD is to be kept ready in order to keep interruptions as short as possible.



The enclosed manual of the producer of concrete pipe must be observed unconditionally.

8. Setting up



Notice:

Mind the sequence of setting up operation. Executing one work step requires another one being accomplished.



Attention!

The CDD must be connected only after pumping the concrete through. Setting up must be accomplished by experts and verifiably trained persons.

Attention!

The concrete pump must be switched off strictly during setting up, changing- and adjustment works. Certain works, however, can be done only at switched-on machine. In this case the user must be standing off the area of danger.

9. Documentation

In this chapter you are informed about which documentations should be kept ready at which places

- to avoid endangering
- to reduce costs of repair and downtime
- to enhance reliability and durability of CDD.

In the “mechanical maintenance”-department plans and documentation as well as a copy of the patent specification are to be kept ready for risk analysis. At the CDD and at the concrete pump a sample of the manual for the servicing personnel must be available.

10. Summary

Each person being concerned with mounting, operating or maintenance of the CDD must have read and understood this manual.

Your safety first!

A copy of manufacturer’s documentation is enclosed.