

The Formwork Experts.

# Attachable drive unit DF

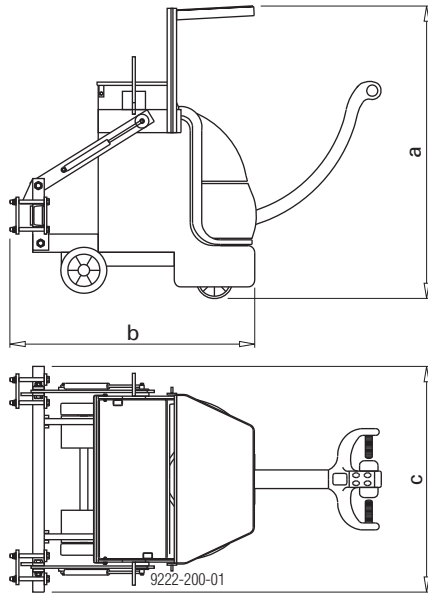
Art. n°: 586062000 | 1999 models onward

## Original Operating Instructions

Please retain for future reference

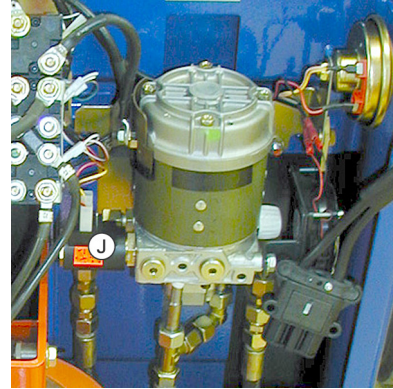
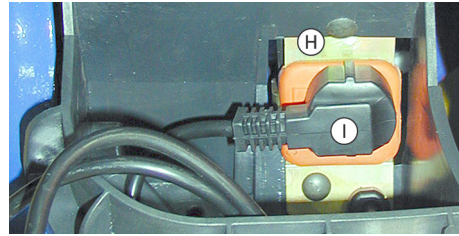
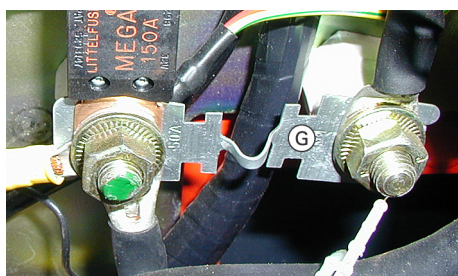


## Product presentation



a ... 1270 mm  
b ... 1065 mm  
c ... 980 mm

## Component overview



- A Battery connector
- B Control switch
- C Safety impact button
- D Battery discharge-level indicator
- E Keylock switch
- F Operating-hours counter
- G Fuse
- H Carrier plate
- I Mains plug
- J Electric on-off valve

## Intended use

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The Attachable drive unit DF is a lifting appliance designed to be used with Shifting trolley DF. It is designed to be used for repositioning Doka tableforms. (Intended use)



### NOTICE

- Other use or use not in conformity with that stated above is non-intended use and requires the prior written approval of the Doka company!
- In order to ensure that the equipment has been properly assembled, it must be inspected by a competent person before being used.
- Doka accepts no liability for products that have been altered!
- Repairs may only be carried out by the manufacturer!
- Store lifting accessories in a dry, well ventilated place, protected from climatic influences and aggressive substances.
- Inspection of lifting accessories must be performed at regular intervals by an **expert** in conformity with **national statutory provisions**.  
Unless otherwise stipulated, such inspection must be carried out **at least once a year**.



### NOTICE

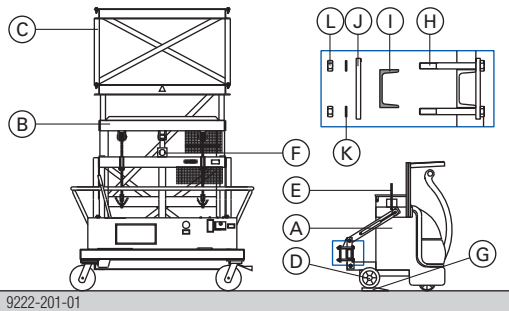
- There must be a flat, firm base capable of supporting the load (e.g. concrete).
- Max. gradient of floor 3%.
- Max. travel speed: 4 km/h (walking pace)
- Either close structure openings with decking of adequate strength secured so that it cannot slip out of place, or cordon off the openings with edge railings of adequate strength!
- Keep the travel route clean and free of any obstacles.
- It is forbidden to use any other mechanical assistance for the travelling operation!

## Attachable drive unit DF combined with the Shifting trolley DF

Max. capacity: 1500 kg

### Docking

- Raise the front castor wheels of the Attachable drive unit DF by approx. 50 mm (e.g. using a plank of wood that is wedge-shaped along one edge).
- Remove the connector components and counter-plate. (Per connection: 1 counter-plate, 4 hexagon nuts and 4 spring washers).



A Attachable drive unit DF

B Shifting trolley DF

C Stacking frame DF

D Castor wheel

E Lifting bracket for Attachable drive unit DF

F Lifting bracket for Shifting trolley DF

G Wooden plank

H Hexagon bolt M16x160

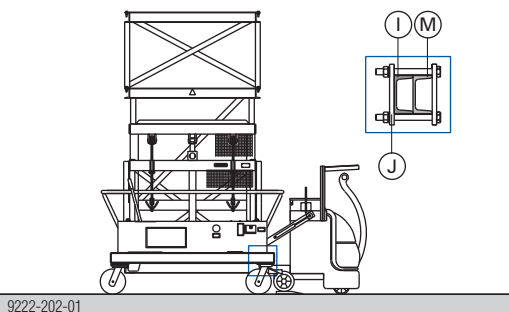
I U-section for Shifting trolley DF

J Counter-plate

K Spring washer A16

L Hexagon nut M16

- Push the Shifting trolley DF in as far as the stop. Make sure these are centrally positioned.
- Attach the counter-plate and fasten it with the connector components.
- Tighten all screws evenly.
- Connect up the hydraulic hoses. Make sure these are in the correct position.

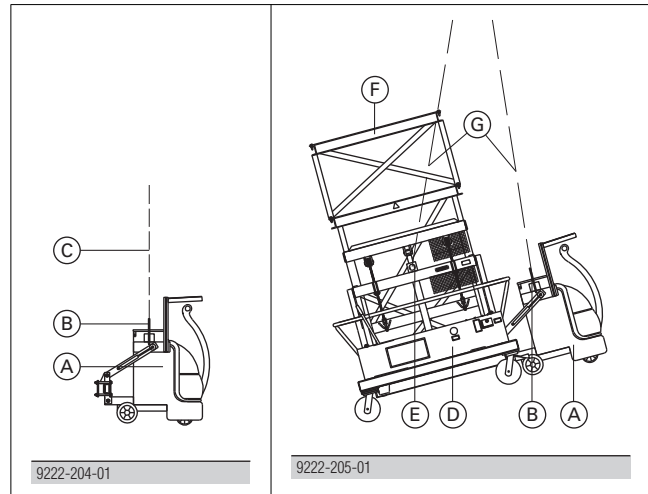


I U-section for Shifting trolley DF

J Counter-plate

M U-section for Attachable drive unit DF

### Crane transport



A Attachable drive unit DF

B Lifting bracket for Attachable drive unit DF

C Lifting chain (2-part)

D Shifting trolley DF

E Lifting bracket for Shifting trolley DF

F Stacking frame DF

G Lifting chain (3-part)



#### NOTICE

- Do not exceed the loading capacity of the lifting chain!
- Avoid jerky movements and knocks when setting the trolley etc. down.



Follow the directions in the 'Shifting trolley DF' Operating Instructions!

## General

### Technical data

The Attachable drive unit DF is based on an adapted standard manually controlled pallet truck. As well as the travel drive, the hydraulic system for the lifting mechanism, including all the controls, is also integrated in the attachable drive unit.

Weight	420 kg
Battery capacity	240 Ah
Travel-drive power output	900 W
Lifting-drive power output	1000 W
Max. travel speed	~ 5 km/h

On-board battery charger

### Rated data of the lead batteries with tubular-plate cells



#### WARNING

- The gases given off during charging are explosive.
- The electrolyte (diluted sulphuric acid) is caustic.
- Exposed metal parts of the battery are classed as "active parts" by DIN VDE 0100 Part 200.

Voltage	24 V
Nominal capacity C <sub>5</sub>	240 Ah
Discharging current I <sub>5</sub>	48 A
Final discharging voltage	1.7 V x number of cells
Nominal density of the electrolyte: ELBAK "RO Original" version	1.26 +/- 0.001 kg/l
Nominal temperature	30° C
Nominal electrolyte level	Up to the top of the separator

### Putting filled and charged batteries into service

- Inspect the battery to ensure that it is in perfect mechanical condition
- On screw-connected batteries, all the screw-type connections in the circuit must be tightened so as to give high contact stability.
- Check the electrolyte level. If this is below the baffle or the top of the separator, top it up with distilled water (DIN 43530/4) to restore it to this height.

## Operation

### Discharging

- To achieve the longest possible battery life: Do not discharge the battery in normal use by more than 80 % of its nominal capacity (i.e. avoid exhaustive discharge).
- This corresponds to a minimum electrolyte density of 1.13 kg/l at the end of the discharge. Recharge discharged batteries immediately and do not leave them in the discharged state. This rule also applies to partially discharged batteries.

### Recharging

- Only charge the batteries with DC current.
- All charging procedures to DIN 41773 and 41774 are permitted. In the gassing range, the limit currents to DIN VDE 0510/3 must not be exceeded.
- If the charging unit was not purchased together with the battery, it is advisable to ask the battery manufacturer's after-sales support to check whether it is suitable for use on this battery.
- Make sure that the charging gases can escape safely.
- Open or take off all battery-tray covers and covers of battery fitting compartments. The plugs must be left in place on the cells, i.e. must remain closed.
- Connect the battery to the switched-off charger with correct polarity (plus to plus, minus to minus).
- Switch on the charger. The temperature rises by approx. 10° C during charging. For this reason, charging should not be started until the electrolyte temperature has dropped below 45° C. However, the battery electrolyte temperature should be at least +10° C before charging begins, as otherwise charging will not take place properly.
- The charging operation is complete once the electrolyte density and battery voltage remain constant for a 2-hour period.

### Special instruction for using batteries in danger zones



#### CAUTION

These are batteries used in firedamp-prone and other potentially explosive atmospheres as defined by VDE 0170 / 0171 Ex I and Ex II.

- During charging and post-charge gassing, raise or open the container covers sufficiently far that any explosive gas mixture that is given off is so dispersed by this ventilation that it can no longer be ignited.

### Equalisation charges

Equalisation charges prolong the life of the battery and maintain its capacity. They are necessary after exhaustive discharge, after a series of incomplete charges and after charging using an IU-characteristic. Equalisation charges should be performed immediately after a normal charge. The charging current may be max. 5 A per 100Ah of nominal capacity (see 'Recharging' for details of end of charging). Stay within temperature limits!



## Temperature

The electrolyte temperature of 30° C is referred to as the nominal temperature. Higher temperatures shorten the life of the battery, while lower temperatures lessen its available capacity. 55° C is the limit temperature and is not permissible as the operating temperature.

## Electrolyte

The nominal density of the electrolyte is for a temperature of 30° C and for the nominal electrolyte level when the battery is fully charged. Higher temperatures reduce the density of the electrolyte, while lower temperatures increase it. The correction factor here is 0.007 kg/l per °C, e.g. an electrolyte density of 1.26 kg/l at 45° C corresponds to a density of 1.27 kg/l at 30° C. The electrolyte must comply with the purity stipulations of DIN 43530/2.

## Maintenance

### Daily

Recharge the battery after every discharge. Check the electrolyte level towards the end of charging. If necessary, top up with DIN-compliant distilled water towards the end of charging, up to the nominal level. The level of the electrolyte must not be lower than the baffle or the top of the separator, or the electrolyte-level mark. Do not top up with acid!

### Weekly

On batteries with screw-type connectors, check that the pole screws are tight, and tighten them if necessary. If the battery is charged regularly with an IU-characteristic, an equalisation charge will be necessary (see 'Equalisation charges').

### Monthly

Towards the end of charging, the voltages of all the cells / block-batteries must be measured and recorded while the charger is still switched on. After charging has finished, the electrolyte density of all cells must be measured and recorded. If significant changes have occurred since previous measurements, or if differences are found between the cells / block-batteries, the manufacturer's after-sales support must be asked to investigate the problem and put it right.

## Care

The battery must be kept clean and dry at all times, to prevent leakage currents. Any liquids in the battery tray must be vacuumed off. Repair any damage to the tray insulation (after cleaning the damaged areas), to prevent corrosion of the tray. If it becomes necessary to remove any of the cells, this job should be performed by After-Sales Support.

## Storage

If batteries are taken out of service for long periods, they must be stored – fully charged – in a dry, frost-proof room. To ensure that the batteries are kept operational, either of the following charging routines may be used: Monthly equalisation charge or compensation charge using a charging voltage of 2.23 V x the number of cells. When calculating the useful service life of the battery, allowance must be made for storage times.

## Malfunctions

If you notice any malfunctions on the battery or the charging unit, call After-Sales Support immediately. Records of measured data (as per "Monthly" above) make troubleshooting very much easier.

## Preventing damage and accidents

Never place foreign bodies or tools on batteries, as this could cause damage, short-circuiting or even explosions. When installing batteries in – and removing them from – vehicles, suitable hoisting tackle must be used. When dealing with batteries, all relevant accident prevention regulations must be observed.

## Please note:

In cases where the Operating Instructions are not followed, where repairs are not carried out using original spare parts, in cases of unauthorised tampering and/or where electrolyte additives are used (these are claimed – spuriously – to improve the electrolyte), all warranty rights are forfeited. It is imperative that the authorised operating personnel are familiar with the contents of the operating instructions for the "Shifting trolley DF", the "Attachable drive unit DF" and the Linde handle-operated elevating platform truck, as well as with other national regulations applying to the utilisation of industrial trucks, before they start using the equipment.

## Operator authorisation

The only persons allowed to operate the equipment are those who have been given sufficient instruction in how to use it, and who are familiar with all applicable operating manuals and regulations.

The client must obtain suitable evidence of the personnel's ability to operate and handle this vehicle.

Please also observe the VDMA guidelines on proper use of industrial trucks for their designated purpose.

## Troubleshooting

### Load not being lifted

#### Possible causes on Shifting trolley DF:

- Load too heavy (> 1500 kg, including Stacking frame)
- Not enough hydraulic oil
- Mechanical guide mechanisms are damaged or are tending to get jammed
- Hydraulic pump is faulty
- Overpressure valve is wrongly adjusted or faulty
- Manual lowering valve is leaking (e.g. due to contaminated oil)

#### Possible causes on Attachable drive unit DF:

- Keylock switch has not been turned on
- Battery connector not plugged in
- Mains plug of charging unit not plugged into socket on carrier plate
- Safety impact button has been actuated
- Battery is flat or too weak (even if "Drive" is still possible)
- Fuses are faulty
- Quick-acting coupling has not been plugged together properly
- Electric on-off valve for Attachable drive unit is faulty
- Control switch on drag-bar or control electronics is/are faulty

### Load not being completely lifted

#### Possible cause:

- Not enough hydraulic oil

### The load is being lowered of its own accord

#### Possible causes on Shifting trolley DF:

- Load too heavy (> 1500 kg, including Stacking frame)
- Hydraulic tubing is leaking
- Overpressure valve is wrongly adjusted or faulty
- Non-return valve on electrical hydraulic pump is leaking
- Manual lowering valve is leaking (e.g. due to contaminated oil)
- Hand-pump valves are leaking

#### Possible causes on Attachable drive unit DF:

- Hydraulic tubing is leaking
- Electric on-off valve is leaking (e.g. due to contaminated oil)

### The load cannot be lowered

#### Possible causes on Shifting trolley DF:

- Low ambient temperatures (hydraulic oil is too viscous)
- Flow control valve is blocked (e.g. due to contaminated oil)
- Manual lowering valve is defective
- Isolation valve is defective

#### Possible causes on Attachable drive unit DF:

- Keylock switch has not been turned on
- Fuses are faulty
- Electric on-off valve for Attachable drive unit is faulty
- Control switch on drag-bar or control electronics is/are faulty

### Attachable drive unit will not move

#### Possible causes:

- Keylock switch has not been turned on
- Battery connector-plug not plugged in
- Mains plug of charging unit not plugged into socket on carrier plate
- Safety impact button has been actuated
- Battery is flat
- Fuses are faulty
- Power switch or electronics is/are faulty
- Drive motor is faulty

### Attachable drive unit only moves very slowly

#### Possible causes:

- Speed control sensor misadjusted / dirty / faulty
- Brake worn
- Power switch/control electronics faulty

### Attachable drive unit cannot be recharged, or only incompletely

#### Possible causes:

- No current in the power socket (e.g. extension cable not plugged in)
- Battery connector not plugged in
- Charging procedure set out in Operating Instructions has not been followed
- Charging time was too short
- Battery has not been maintained properly (condition and density of acid)
- Fuse on the charging unit (20 A) is faulty
- Charging unit is faulty (LED next to charge-level indicator is dark)
- The battery has reached the end of its useful life

**Declaration of conformity**

<div style="text-align: center;"> EC Declaration of Conformity pursuant to EC Directive 2006/42/EC.</div>	
The manufacturer declares that by reason of its conception and design, the following product <b>Attachable drive unit DF, art. n° 586062000</b> conforms – in the version marketed by ourselves – to the pertinent fundamental health and safety stipulations of the relevant EC Directives.	
The following harmonised standards were applied: <ul style="list-style-type: none"><li>▪ EN ISO 12100:2010</li><li>▪ EN 349:1993+A1:2008</li></ul>	
Person authorised to compile technical documentation (pursuant to European Directive on Machinery Annex II): Ing. Johann Peneder Josef Umdasch Platz 1 A-3300 Amstetten	
Amstetten, 07/06/2016	Doka GmbH Josef Umdasch Platz 1 A-3300 Amstetten
 Ludwig Pekarek Executive Manager	 Johann Peneder Authorised Officer, Head of R&D