



## Chapter 7



# Pipe-renewal





# Capstan Winches for Pipe Renewal 30-50 kN

## RW 3000 RW 4000 RW 5000

Cable Laying Machinery

Pipe Renewal Winches

Asphalt Recycler

Accessories



The approved and compact Bagela cable pulling winches are manufactured in the shock-resistant, recovering Terpolymer (ABS) housing on a hot-dip galvanized base frame.

The longevity of the winch aggregate in combination with this housing makes the winch a worth-stable construction machine. The plastic is solid-coloured and available in red, blue, orange and white. Of course it can be painted although. For operation the soundproofed housing remains closed, only the cover of the control panel has to be opened.

The winch is powered by a diesel engine and is equipped with a steplessly controlled hydrostatic gear. Every Bagela Pipe Renewal Winch is outfitted with automatic hold-on system. The required line pull can be pre-selected by control of the hydraulic oil pump (pressure/flow control) which keeps the winching rope in permanent tension even at varying pull resistance. This system ensures full self-control of the winch and is more effective than manual control of line speed. The line pull may be increased until the hydraulic overflow valves are activated.

The winch itself is consisting of a twin capstan drive and rope storage drum with automatic rope stacking device. A rope protecting, grooved double capstan system generates the whole pulling force. The chassis is spring mounted and can be approved with **100 km/h** (depending on national road traffic regulations).

The winch is to be retained by two telescopic and pretensionable rear props and a deflection boom against an end trestle.



## Bagela

Certified according to DIN EN ISO 9001

# Capstan Winches for Pipe Renewal Systems

## 30-50 kN RW 3000 - RW 4000 - RW 5000



Cable Laying Machines

Pipe Renewal Winches

Asphalt Recycler

Accessories

### Winch control

#### Serial outfit:

- Hydr. Pulling force indicator
- Gear speed shifter
- Pulling force pre-selection
- Rope speed
- Rope: In/Stop/Out
- Emergency stop
- Elapsed hour counter
- Backwards extendable and lowerable rear props
- Central loading rail on top

#### Optional:

- Remote Control
- Printer
- PC 310, with Touchscreen:
  - Preselected pulling force
  - Actual pulling force
  - Length (progress bar)
  - Speed
  - USB Port
 (no add. Software necessary)



Easy maintenance: If needed the cover can be lifted totally.

The plastic housing is solid-coloured and available in red, blue, orange and white. It may be painted in any RAL colour if desired.



Winch control with PC 310

#### Additional outfit:

Other type of engines, chassis, paintings and more rope if needed .

**Dimensions and weights may differ if extras are fitted.**

#### Telescopic deflection boom:

All Bagela winches can be fitted out with a telescopic deflection boom. An appropriate holder at the winch assures the safe transport of the boom in which the end of the rope can remain.

#### Accessory capstan

For pulling in the UV radiator.



### Technical Data

| Type           | max. pulling force kN | max. pulling speed m/min | Engine Diesel kW | Rope length m | Rope diam. mm | Length mm | Width mm | Height mm | Weight kg | Order-No.         |
|----------------|-----------------------|--------------------------|------------------|---------------|---------------|-----------|----------|-----------|-----------|-------------------|
| <b>RW 3000</b> | 30                    | 40                       | 16.5             | 300           | 10            | 3800      | 1650     | 1380      | 1300      | <b>001.002.16</b> |
| <b>RW 4000</b> | 40                    | 35                       | 18               | 300           | 11            | 4450      | 1650     | 1380      | 1450      | <b>001.003.13</b> |
| <b>RW 5000</b> | 50                    | 30                       | 18               | 300           | 12            | 4450      | 1650     | 1380      | 1450      | <b>001.004.28</b> |

Specifications are subject to change without notice. Output details are depending on use conditions.



# Capstan Winches for Pipe Renewal Systems 100-1000 kN RW 10

Cable Laying Machinery

Pipe Renewal Winches

Asphalt Recycler

Accessories



- Lockable, sound proved ABS plastic housing
- Interior freely accessible by upwards tiltable side parts
- Higher rope output speed up to 100 m/min possible
- Longer rope length possible
- Fully tinted ABS housing in red, blue, white and orange
- Deflection boom optional, stored in the housing with pivot mounting
- Front supports countersunk in the housing
- Minimal noise immission, operation of the winch with closed housing, only operation panel remains open

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# Capstan Winches for Pipe Renewal Systems

## 100-1000 kN RW 10 RW 20 RW 40 RW 100



Cable Laying Machines

Pipe Renewal Winches

Asphalt Recycler

Accessories

### **Bagela RW 20** Renewal of sewer pipe



### **Bagela RW 40** for swage lining of Scottish offshore pipelines



### **Bagela RW 100** Crossing below the river Rhine



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# Capstan Winches for Pipe Renewal

## 100-1000 kN RW 10 RW 20 RW 40 RW 100

Cable Laying Machinery

Pipe Renewal Winches

Asphalt Recycler

Accessories



Winch control with PC 310

### Winch control

#### Serial outfit:

- Hydr. Pulling force indicator
- Gear speed shifter
- Pulling force reselection
- Rope speed
- Rope: In/Stop/Out
- Emergency stop
- Elapsed hour counter

#### Optional:

- Remote Control
  - Printer
  - PC 310, indicating:
    - Preselected pulling force
    - Actual pulling force
    - Length (progress bar)
    - Speed
    - USB-port
- (no add. software necessary)

The winch is powered by a Diesel engine and is equipped with a steplessly controlled hydrostatic gear. Every Bagela Pipe Renewal Winch is equipped with the automatic hold-on system. The required line pull can be pre-selected by control of the hydraulic oil pump (pressure/flow control) which will keep the winching rope in permanent tension even at varying pull resistance. This system ensures full self-control of the winch and is more effective than manual control of the line speed. The line pull may be increased until the hydraulic overflow valves are activated. The winch itself is consisting of a twin capstan drive and rope storage drum with automatic rope stacking device. The whole pulling force is generated by a grooved double capstan system.

For operation the plastic or respectively the steel made and soundproofed housing remains closed, only the cover of the control panel has to be opened.

The winch is to be retained by two telescopic and pretension- able rear props and a deflection boom against an end trestle.



#### Additional outfit:

Other type of engines, chassis, paintings and more rope if needed.

**Dimensions and weights may differ if extras are fitted.**

### Technical Data

| Type          | Max. Pulling |             | Engine Diesel kW | Rope-    |          | Chassis Twin axle | Brake   | Length mm | Width mm | Height mm | Weight kg | Order-No.         |
|---------------|--------------|-------------|------------------|----------|----------|-------------------|---------|-----------|----------|-----------|-----------|-------------------|
|               | Force kN     | Speed m/min |                  | Length m | Diam. mm |                   |         |           |          |           |           |                   |
| <b>RW 10</b>  | 100          | 60          | 18               | 300      | 16       | Height adj.       | overrun | 5200      | 1850     | 1650      | 2650      | <b>002.003.01</b> |
| <b>RW 20</b>  | 200          | 30          | 36               | 300      | 22       | Height adj.       | overrun | 5000      | 2000     | 2000      | 5200      | <b>002.301.01</b> |
| <b>RW 40</b>  | 400          | 25          | 74               | 1100     | 32       | On tracks         |         | 4750      | 2550     | 2500      | 20000     | <b>002.603.03</b> |
| <b>RW 100</b> | 1000         | 25          | 140              | 1500     | 52       | On tracks         |         | 6000      | 2730     | 3450      | 20000     | <b>032.505.00</b> |
|               | Rope storage |             |                  |          |          | On tracks         |         | 4750      | 2700     | 3250      | 25000     | <b>032.560.00</b> |

Specifications are subject to change without notice. Output details are depending on use conditions.



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# Capstan Winches for Pipe Renewal Systems

## 100-1000 kN RW 100



Cable Laying Machines

Pipe Renewal Winches

Asphalt Recycler

Accessories



### RW 100

at the reconstruction of the main water supply via pipe reducing system from a pipe diameter of 1030 mm down to 919 mm in Great Britain.

The distances between the excavating pit were extended up to 800 m. The Pulling speed was at an average of 3 m/min.

Specifications are subject to change without notice. Output details are depending on use conditions.



# Accessories For Pipe Renewal Systems

Cable Laying Machinery

Pipe Renewal Winches

Asphalt Recycler

Accessories

## Telescopic deflection booms for Bagela capstan winches



### Telescopic deflection boom with revolute joint

| Type of winch | Max. boom length | Order-No.  |
|---------------|------------------|------------|
| RW 3000-5000  | 2500 mm          | 004.014.01 |
| RW 10         | 5000 mm          | 004.001.02 |
| RW 20         | 5000 mm          | 004.034.04 |



### Adjustable spindles with revolute joint

| Type of winch | Max. boom length | Order-No.  |
|---------------|------------------|------------|
| RW 3000-5000  | 2500 mm          | 004.074.00 |
| RW 10         | 5000 mm          | 004.075.00 |
| RW 20         | 5000 mm          | 004.065.00 |



### Telescopic deflection boom with two adjustable spindles and revolute joint

| Type of winch | Max. boom length | Order-No.  |
|---------------|------------------|------------|
| RW 10         | 5000 mm          | 004.001.05 |



### Rope deflection roller with spindles

Adjustable from 920-1200 mm, Max. rope dia. 16 mm  
Max. working load: 100 kN, Weight: 55 kg  
Order No.: 004.219.00

Specifications are subject to change without notice. Output details are depending on use conditions.



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## Manhole tensioning pulley

There is hardly ever space enough between the tube exit and the deflection pulley when cleaning appliances or cameras are pulled through. Using the Bagela tensioning pulley the whole cross section of the manhole is used. The deflection pulley is set against the manhole wall and tightened with two threaded spindles. Due to the inclined position of the spindles the pulley gets increasingly pressed against the manhole wall with rising pulling force. The groove and size of the pulley allow it to be used also for camera cable. The rope or cable is held on the pulley by means of three pins.



| Max. Working load | Weight  | Order-No.         |
|-------------------|---------|-------------------|
| 20 kN             | 29.2 kg | <b>004.224.00</b> |
| 50 kN             | 52 kg   | <b>004.224.50</b> |



## Rope protection roller for pipe cleaning

During pipe cleaning, winches cannot always be placed in a straight line with the excavation, so that the rope may rub against the wall. The rope protection roller will prevent such rubbing and will ensure that the cleaning gear is pulled out unhindered.

| Diameter range | Weight | Order-No.         |
|----------------|--------|-------------------|
| 100 - 350 mm   | 18 kg  | <b>004.223.10</b> |
| 200 - 550 mm   | 20 kg  | <b>004.223.15</b> |



Different sizes on request.

Specifications are subject to change without notice. Output details are depending on use conditions.



# Accessories For Pipe Renewal Systems

Cable Laying Machinery

Pipe Renewal Winches

Asphalt Recycler

Accessories



## Spongeball for final cleaning

| Ball-Ø | Weight   | Order-No.  |
|--------|----------|------------|
| 40 mm  | 0.005 kg | 009.834.03 |
| 60 mm  | 0.021 kg | 009.834.05 |
| 70 mm  | 0.031 kg | 009.834.07 |
| 80 mm  | 0.057 kg | 009.834.08 |
| 110 mm | 0.150 kg | 009.834.10 |
| 120 mm | 0.192 kg | 009.834.20 |
| 135 mm | 0.267 kg | 009.834.25 |
| 150 mm | 0.339 kg | 009.834.30 |
| 160 mm | 0.377 kg | 009.834.40 |
| 170 mm | 0.491 kg | 009.834.45 |
| 190 mm | 0.782 kg | 009.834.46 |
| 210 mm | 0.935 kg | 009.834.48 |
| 270 mm | 1.717 kg | 009.834.50 |
| 325 mm | 4.000 kg | 009.834.60 |



## Tube cleaning brush for secondary cleaning with stable plastic bristles

| DN mm | Weight  | Order-No.: |
|-------|---------|------------|
| 80    | 0.4 kg  | 009.850.00 |
| 100   | 0.5 kg  | 009.851.00 |
| 150   | 1.5 kg  | 009.852.00 |
| 200   | 2.7 kg  | 009.853.00 |
| 250   | 5.0 kg  | 009.854.00 |
| 300   | 7.1 kg  | 009.855.00 |
| 350   | 9.5 kg  | 009.856.00 |
| 400   | 1.0 kg  | 009.857.00 |
| 450   | 13.0 kg | 009.858.00 |
| 500   | 15.5 kg | 009.859.00 |



## Plunger for final cleaning

| DN mm | Weight | Order-No.: |
|-------|--------|------------|
| 100   | 5 kg   | 009.860.00 |
| 125   | 6 kg   | 009.861.00 |
| 150   | 8 kg   | 009.862.00 |
| 200   | 12 kg  | 009.863.00 |
| 250   | 19 kg  | 009.864.00 |
| 300   | 25 kg  | 009.865.00 |

Other sizes upon request.

Specifications are subject to change without notice. Output details are depending on use conditions.



## Bagela

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## Plunger for final cleaning

rigid version

| DN (mm) | Weight  | Order-No.:        |
|---------|---------|-------------------|
| 100     | 2.5 kg  | <b>009.870.00</b> |
| 125     | 3.5 kg  | <b>009.871.00</b> |
| 150     | 4.0 kg  | <b>009.872.00</b> |
| 200     | 7.0 kg  | <b>009.873.00</b> |
| 250     | 12.0 kg | <b>009.874.00</b> |
| 300     | 22.0 kg | <b>009.875.00</b> |
| 350     | 25.0 kg | <b>009.876.00</b> |
| 400     | 33.0 kg | <b>009.877.00</b> |
| 500     | 68.0 kg | <b>009.878.00</b> |
| 600     | 94.0 kg | <b>009.879.00</b> |



## Plunger for final cleaning

linked version

| DN (mm) | Weight  | Order-No.:        |
|---------|---------|-------------------|
| 100     | 2.5 kg  | <b>009.890.00</b> |
| 125     | 3.5 kg  | <b>009.891.00</b> |
| 150     | 5.5 kg  | <b>009.892.00</b> |
| 200     | 6.2 kg  | <b>009.893.00</b> |
| 250     | 13.0 kg | <b>009.894.00</b> |
| 300     | 23.5 kg | <b>009.895.00</b> |
| 350     | 26.5 kg | <b>009.896.00</b> |
| 400     | 35.0 kg | <b>009.897.00</b> |
| 500     | 70.0 kg | <b>009.898.00</b> |
| 600     | 96.5 kg | <b>009.899.00</b> |



## Scraper

made of spring steel for removal of hard incrustations

| DN (mm) | Weight  | Order-No.:        |
|---------|---------|-------------------|
| 100     | 2.5 kg  | <b>009.800.00</b> |
| 125     | 4.2 kg  | <b>009.801.00</b> |
| 150     | 5.1 kg  | <b>009.802.00</b> |
| 200     | 6.5 kg  | <b>009.803.00</b> |
| 250     | 11.0 kg | <b>009.804.00</b> |
| 300     | 16.0 kg | <b>009.805.00</b> |
| 350     | 21.2 kg | <b>009.806.00</b> |
| 400     | 26.0 kg | <b>009.807.00</b> |
| 500     | 31.5 kg | <b>009.808.00</b> |
| 600     | 54.0 kg | <b>009.809.00</b> |



Specifications are subject to change without notice. Output details are depending on use conditions.



# Accessories For Pipe Renewal Systems

Cable Laying Machinery

Pipe Renewal Winches

Asphalt Recycler

Accessories



## Tube roller with base plate

galvanized

for welding of single lengths and inserting inliners of 300 mm diameter.

Carrying load: 300 kg, Weight: 4.0 kg

**Order No.: 009.100.00**



## Tube roller jack

galvanized

| Max. Tube-Ø | Max. Load | Weight  | Order-No.         |
|-------------|-----------|---------|-------------------|
| 500 mm      | 500 kg    | 11.5 kg | <b>009.409.20</b> |
| 750 mm      | 1000 kg   | 29 kg   | <b>009.409.30</b> |



## Tube suspension tackle

for excavator boom, Max. tube dia. 300 mm

Gewicht / Weight: 15 kg

**Order No.: 004.101.00**



## Tube roller device for welding

Max. tube dia. 400 mm

Weight: 9 kg

Load: 500kg

**Order No.: 009.911.00**

Specifications are subject to change without notice. Output details are depending on use conditions.



## Bagela

Certified according to DIN EN ISO 9001



## Pulling head for PEHD-Tube

-without seal-

| Tube-Ø outside | Clamping range | Order-No.         |
|----------------|----------------|-------------------|
| 32 mm          | 24-28 mm       | <b>009.563.04</b> |
| 40 mm          | 32-36 mm       | <b>009.563.06</b> |
| 50 mm          | 39-47 mm       | <b>009.563.08</b> |
| 63 mm          | 49-60 mm       | <b>009.563.12</b> |
| 75 mm          | 59-70 mm       | <b>009.563.14</b> |
| 90 mm          | 71-85 mm       | <b>009.563.16</b> |
| 110 mm         | 87-103 mm      | <b>009.563.18</b> |
| 125 mm         | 99-116 mm      | <b>009.563.20</b> |
| 140 mm         | 111-130 mm     | <b>009.563.22</b> |
| 160 mm         | 127-148 mm     | <b>009.563.24</b> |
| 180 mm         | 144-166 mm     | <b>009.563.26</b> |
| 200 mm         | 158-184 mm     | <b>009.563.28</b> |
| 225 mm         | 178-206 mm     | <b>009.563.30</b> |
| 250 mm         | 198-230 mm     | <b>009.563.36</b> |



## Pulling head for PEHD-Tube

-with seal-

| Tube-Ø outside | Clamping range | Order-No.         |
|----------------|----------------|-------------------|
| 32 mm          | 24-28 mm       | <b>009.563.60</b> |
| 40 mm          | 32-36 mm       | <b>009.563.61</b> |
| 50 mm          | 39-47 mm       | <b>009.563.62</b> |
| 63 mm          | 49-60 mm       | <b>009.563.63</b> |
| 75 mm          | 59-70 mm       | <b>009.563.64</b> |
| 90 mm          | 71-85 mm       | <b>009.563.65</b> |
| 110 mm         | 87-103 mm      | <b>009.563.66</b> |
| 125 mm         | 99-116 mm      | <b>009.563.67</b> |
| 140 mm         | 111-130 mm     | <b>009.563.68</b> |
| 160 mm         | 127-148 mm     | <b>009.563.69</b> |
| 180 mm         | 144-166 mm     | <b>009.563.70</b> |
| 200 mm         | 158-184 mm     | <b>009.563.71</b> |
| 225 mm         | 178-206 mm     | <b>009.563.72</b> |
| 250 mm         | 198-230 mm     | <b>009.563.73</b> |



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