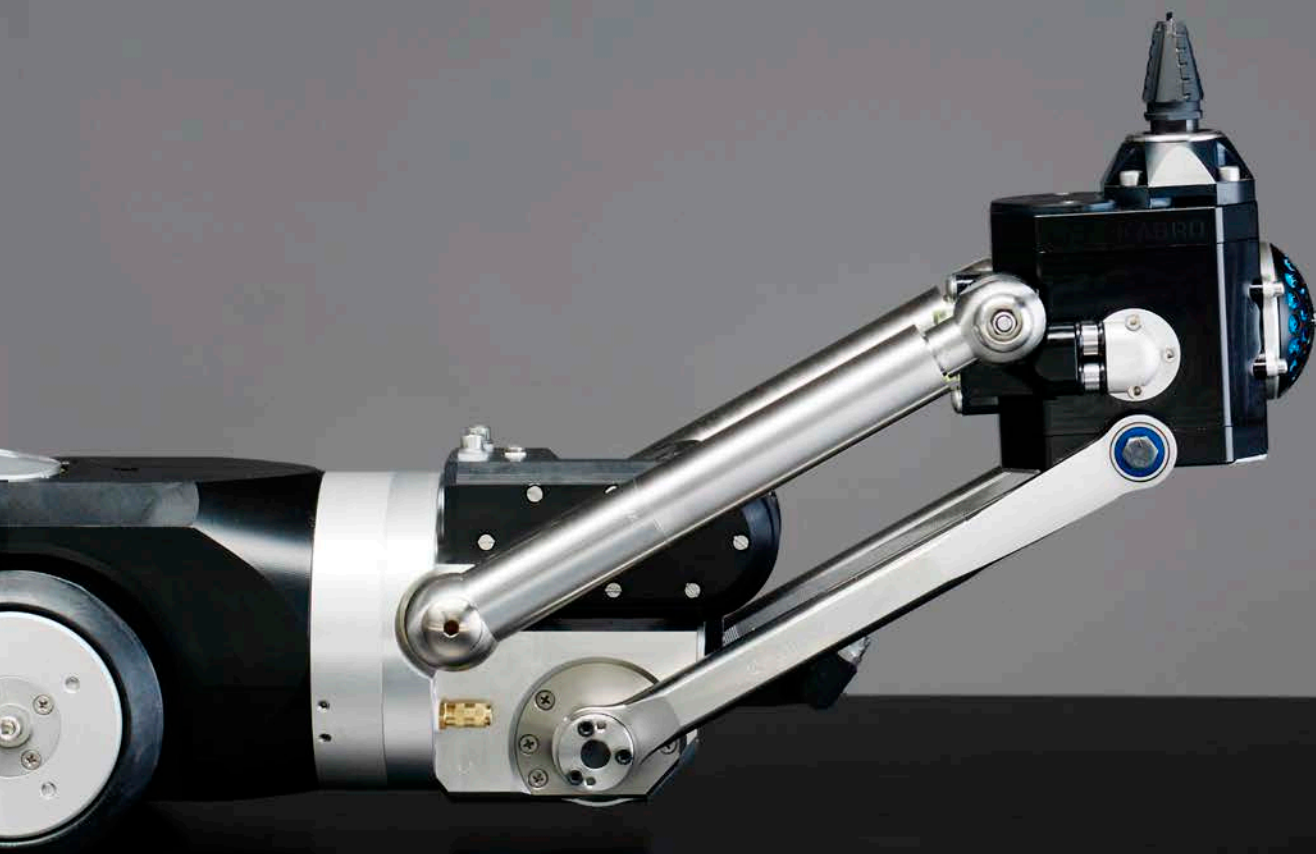


PROKASRO

Product Catalogue



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ProKASRO Working Robots pneumatic

The KASRO Working Robots are developed for rehabilitation work inside sewer pipes. Damage diagnoses and repairs underground can be carried out for different pipe diameters from DN100 up to DN1000 or even different profiles. Excavation work, traffic obstructions and noise are avoided.

Various tool attachments permit the sewer robots to perform milling, grinding, filling, moulding and injection operations. Mainly obstacles such as misplaced pipe connectors, roots, encrustation and deposits, as well as opening connections after short pipe or inliner installation.

The single components are controlled by a suitable supply cable, depending on the model. The robots are driven in different ways - pneumatic, hydraulic, electric. The video signal of the camera is transmitted from the robot to the monitor in the workstation. Through that all action done by the robot can be observed and controlled on the monitor.

Some of the robots are driven by a multi-functional self-propelled unit.

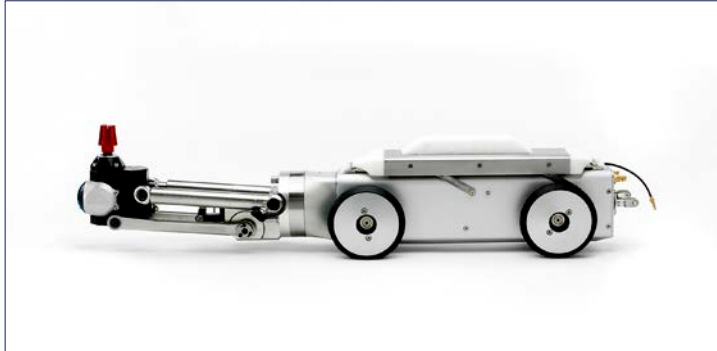
Branch pipe joints of various sizes are rehabilitated through the KASRO injection sealing system, the KASRO cap placement system and the KASRO 2-component injection sealing system.





ProKASRO Working Robots pneumatic

KASRO working robot 3.6 DN200-600



Article number: 1020002

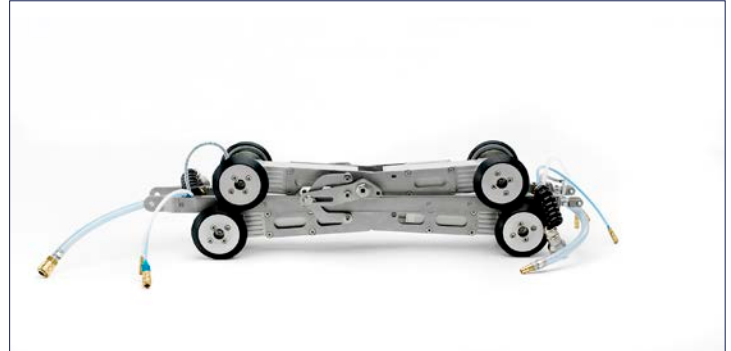
- driven by a self-propelled unit
- basic frame can be mounted to the pipe wall by using air pads
- precision work is possible, in the same way like a milling machine
- tool head: see KASRO working robot 4.0
- 340° swivel colour camera with remote and close-up focus

Optional:

- expansion to DN800 is possible
- oval profile attachment module to work in oval profiles

Technical Data	
Dimensions	Length 960mm, Width (without wheels) 92mm, Height 145mm
Movements	Endless rotation, 0-2/min; Feed 200mm, 0-10mm/s; Lift 250mm, 0-10mm/s; tilting tool head 90°
Weight	32kg, with carriage and camera 52kg
Operating media	Compressed-air 12bar, 2,5 m³/min (Compressor power), voltage 42V = 150W
Motor	3600W/2500W compressed-air motor
Milling tools	Milling and grinding tools according to tool list, custom made products on request

KASRO self-propelled unit DN200-600



Article number: 1025100

- drive module for positioning purposes
- driven by four electric motors, one for each axis
- every axis is connected to the respective ends of a scissor-like chassis, that is spread by means of a compressed-air tension buffer
- this drive concept allows two axes to create tractive force in the sewer bed and two axes to create tractive force in the sewer peak
- simultaneously, this prevents that the driving axis is pressed into the box section when driving over disruptions or lateral branch connections
- the resilient retraction of the compressed-air tension buffer compensates for the sewer cross-section alterations

Also applicable as:

- independent drive module for the KASRO injection sealing system, for the priming attachment, carriage for TV inspection
- drive and positioning module for packers or for general transportation tasks

Optional:

- expansion to DN800 is possible
- oval profile attachment module to work in oval profiles

Technical Data	
Dimensions	Length 766mm, Width 130mm, Height 130mm with wheels
Movements	All wheels are driven, driving speed 0-14m/min
Weight	Drive unit 30kg base unit
Operating media	Compressed-air 8bar, voltage 42V = 300W
Traction and thrust force	1000N (Drive unit)



KASRO working robot 4.0 DN200-600



Article number: 1020003

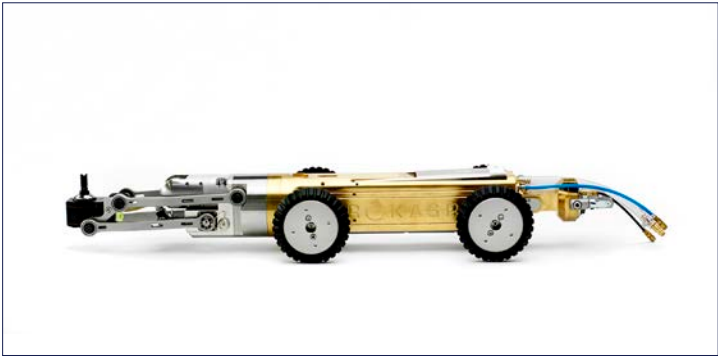
- self-propelled working robot
- milling by compressed-air motor 2500W, 3600W
- all movements can be performed simultaneously due to unlimited rotation
- milling in difficult geometries gets possible, e.g. a saddle of a pipe union
- the tool head can be tilted 90° by means of the 4th axis
- through that the milling motor can be equipped with longer extension shafts to work in smaller diameters

Optional:

- expansion to DN800 is possible
- oval profile attachment module to work in oval profiles

Technical Data	
Dimensions	Length without grinding motor 740mm, Width 134mm, Height 154mm
Movements	Endless rotation 0-2/min; Lift 250mm, 0 –10mm/s; Swivel of tool head by 90°, Drive (forward/backward) 0 –14m/min
Weight	36kg base unit
Operating media	Compressed-air 12bar; 2,5m³/min compressor power, voltage 42V = 350W
Motor	3600W compressed-air motor
Milling tools	Milling and grinding tools according to tool list, custom made products on request

KASRO working robot 1.7 DN130-400



Article number: 3010017

- self-propelled working robot
- both driving axles are powered by independent electric motors
- rotation 540°, so all movements can be performed simultaneously
- various special wheelsets are available for difficult traction conditions

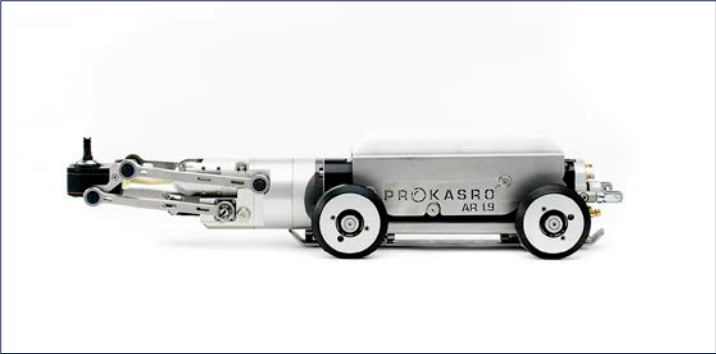
Optional:

- 4. axis
- high-traction wheelset

Technical Data	
Dimensions	Length without grinding motor 620mm + 140mm swivelling connection, diameter 108mm
Movements	Rotation 720° (0-3U/min), up/down (0-10mm/s), drive (0-10m/min)
Weight	20kg base unit
Operating media	Compressed-air 12bar, 2,0m³/min (Compressor power); Voltage 42V = 350W
Motor	900W (DN150); 2500W (DN200–DN400) milling motor
Milling tools	Milling and grinding tools according to tool list, custom made products on request

ProKASRO Working Robots pneumatic

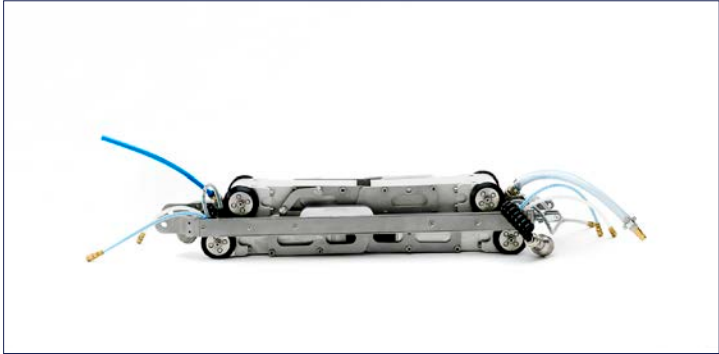
KASRO working robot 1.9
DN130-400



Article number 3010019

- driven by a self-propelled unit
- basic frame can be mounted to the pipe wall by using air pads
- precision work is possible, in the same way like a milling machine
- tool head: see KASRO working robot 4.0
- 340° swivel colour camera with remote and close-up focus

KASRO self-propelled unit
DN150-200



Article number 1025150

- drive module to position the KASRO working robot 1.9
- drive and positioning module for the KASRO cap placement system DN150, for packers or general transportation tasks
- independent carriage for TV inspection
- drive concept: see KASRO self-propelled unit DN200-600

Optional attachment possibilities:

- Working robot 1.7, rotation module DN150 with laminated cap placement system DN150 and camera
- Extensions to DN400

Technical Data	
Dimensions	Length 850mm, Width 120mm with basic wheels, Height 120mm basic unit
Movements	Rotation 720° (0-3U/min), up/down (0-10mm/s), drive (0-10m/min); lift 150mm
Weight	20kg basic unit
Motor	900W, 1200W, 2500W Milling motor
Milling tools	Milling and grinding tools according to tool list, custom made products on request

Technical Data	
Dimensions	Length 670mm, diameter (interference contour) 130mm
Movements	All wheels are driven, driving speed 0-14m/min
Weight	Drive unit 14,9kg base unit
Operating media	Compressed-air 8bar, Voltage 42V = 300W
Traction and thrust force	1000N (Drive unit)



KASRO mini swivel-head colour camera



Article number 1024300 (1. Version halogen)



Article number: 1024301 (2. Version LED)

1. Version:

- halogen lighting
- larger chassis, positioned on the side
- focus drive

2. Version:

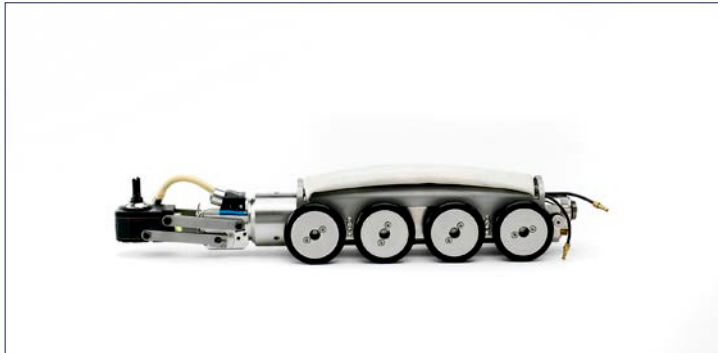
- LED lightning
- smaller chassis, therefore more suitable for smaller pipe diameters

Both cameras are equipped with a rotary drive, hence every desired picture can be observed

Technical Data	
	Halogen camera
	LED camera
Dimensions	Length 136mm Chassis cross-section 87mm Swivel-head diameter 70mm
	Length 120mm Chassis cross-section 66mm Swivel-head diameter 45mm
Movements	Swivel 340°, focus up to 10mm
CCD camera	625 lines
Objective	53,4°

ProKASRO Working Robots pneumatic

KASRO light working robot
DN100-200

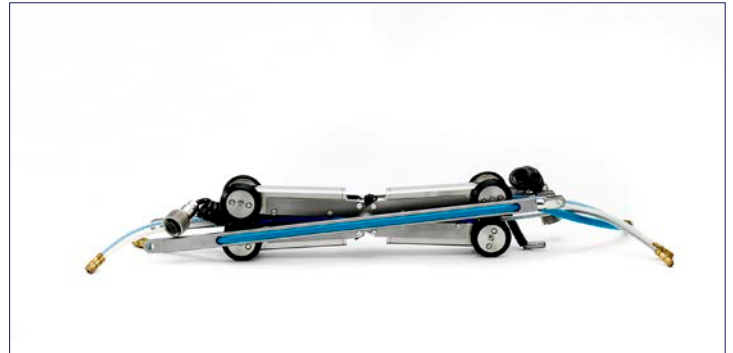


Article number: 2020000

- driven by a self-propelled unit
- basic frame can be mounted to the pipe wall by using air pads
- precision work is possible, in the same way like a milling machine
- All movements can be performed simultaneously due to unlimited rotation and via the self-propelled unit

Technical Data	
Dimensions	Length 602mm, chassis diameter (without wheels) 75mm
Movements	Endless rotation, 0-2/min; Lift 100 mm, 0-7 mm/s; feed 100 mm, 0-4 mm/s
Weight	12kg
Operating media	Compressed-air 12bar, 2m ³ /min (Compressor power) Voltage 42V = 150W
Motor	900W Compressed-air motor

KASRO light self-propelled unit
DN100-200



Article number: 2020025

- drive module to position the KASRO light working robot DN100-200
- drive concept: see KASRO self-propelled unit DN200-600

Technical Data	
Dimensions	Length 580mm, Width 65mm, Height 75mm with wheels
Movements	All wheels are driven, driving speed 0-14m/min
Weight	9kg base unit
Operating media	Compressed-air 8bar, Voltage 42V = 300W
Traction and thrust force	650N
Attachment possibilities	Working robot, rotation module with injection sealing system or cap placement system and camera Special tools upon request



KASRO light mini swivel-head colour camera



Article number: 2020030

- to be mounted on the tool head of the KASRO light working robot DN100-200
- halogen lightning
- swivel forward to observe the run-in movement
- swivel backward to observe the milling
- equipped with a focus and rotary drive, hence every desired picture can be observed

Technical Data	
Dimensions	Length 118mm, Chassis cross-section 80mm, swivel-head diameter 70mm
Movements	Swivel 340°, focus up to 10mm
CCD camera	625 lines
Objective	53,4°

KASRO pole colour camera



Article number: 2020036

- to be mounted on the tool head of the KASRO light working robot DN100-200
- to be used instead of the KASRO light mini swivel-head colour camera, to work forward
- wide-angle lens with set focus
- equipped with LEDs around the camera lens to ensure sufficient illumination

Technical Data	
Dimensions	Length 55mm, Width 26mm, Height 30mm
Operating media	12V
Camera	CCD 625 lines
Objective	105°

ProKASRO Working Robots pneumatic

KASRO compressed-air motor 3600W



Article number: 1021431

- standard installed in KASRO working robots 3.6, 4.0
- functionality: two gears that are blown with compressed-air at the friction point
- thereby the available compressed air-will be transformed with a very high effectiveness
- even during pressure loss or current loss the motor can develop power

Technical Data	
Dimensions	Length 130mm, Width 69mm, Height 155mm
Weight	2,8kg
Speed	12.000 1/min
Tool intake	M14
Operating media	Compressed-air 10bar, 2,0m ³ /min Compressor power
Separately supported extension 125mm	
Extension 25mm - 50mm in 5mm grades	
Muffler for sound reduction	
Tools according to tool catalogue	

KASRO compressed-air motor 2500W



Article number: 1021437

- used in exchange for the KASRO working robots 3.6, 4.0 for the smaller diameters
- functionality: see compressed-air motor 3600W

Technical Data	
Dimensions	Length 79mm, Width 69mm, Height 150mm
Weight	2,3kg
Speed	9.000 1/min
Tool intake	M14
Operating media	Compressed-air 10bar, 2,0m ³ /min Compressor power
Separately supported extension 125mm	
Extension 25mm - 50mm in 5mm grades	
Muffler for sound reduction	
Tools according to tool catalogue	



KASRO compressed-air motor 1200W



Article number: 3021425

- standard installed in KASRO working robots 1.7, 1.9
- functionality: see KASRO compressed-air motor 3600W

Technical Data	
Dimensions	Length 90mm, Width 60mm, diameter (interference contour with tools) 84mm
Weight	0,8kg
Speed	12.000 1/min
Tool intake	M10 x 0,75; Admission for col-lets 6mm and 8mm
Operating media	Compressed-air 10bar, 2,0m ³ /min Compressor power
Extension	20mm and 25mm
Tools according to tool catalogue	

KASRO diagnostic box



Article number: 1022070

- for local or remote diagnostics
- helpful support for finding leaks and avoiding errors that may occur in the operating devices
- display of the voltage and the power connected to the individual drive components

Based on the measuring values it can be observed, if e.g. the electric motor of the drive has the optimal electric value or not

Technical Data	
Dimensions	Length 100mm, Width 160mm, Height 100mm
Weight	1,6kg
Operating media	9V battery
Test functions	Camera supply, light, drive unit, up/down, left/right, forward/backward

ProKASRO Lateral Intake Rehabilitation

KASRO injection sealing system DN200-600



Article number: 1023100

- for rehabilitation of branch pipe joints
- with epoxy resin (other material possible)
- injection material is carried within membrane cartridges underneath the form plates
- flow path of the material very short - hence the pressure of the injection is directly transferred to the damage spot
- the intersection angles and axes are not predetermined due to a side balloon and a collapsible seal on the form plate, which are fully expandable and inflatable with compressed air
- the side balloon can be sucked back behind the form plate
- the electric heating of the balloon and the form plate support the curing of the applied sealing materials
- three cameras in total: one in front (only from DN250!) and one behind the system; one camera in the balloon pot, which shows the user how the branch pipe looks like and how far the material is pressed in

Technical Data	
Dimensions DN200	Length 716mm (without holding arm), chassis diameter 150mm, Weight 25kg
Dimensions DN250-600	Length 550mm (without holding arm), Weight 15kg
Flat compressing shield	400mm x 360mm
Dimensions balloon	Base diameter 100mm, Height 203mm (short conical balloon), 233mm (long conical balloon), 350mm (cylinder balloon)
Heating	Shield 250W, balloon 200W or 300W
Cartridge size	DN200/DN250: 2x 1,5 liters from DN300: 2x 2,1 liters

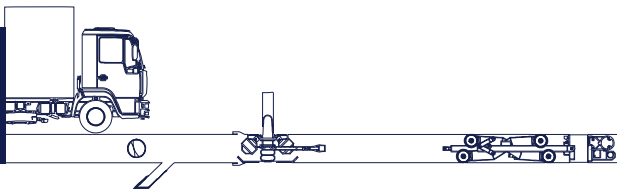
KASRO cap placement system DN150-600



Article number: 1023130

- main body to be equipped with silicon packers, which contains lamps
- UV light performance: 3x 200 watt: 1 lamp in the balloon, 2 lamps under the form plate
- fast reaction time of 5min
- silicon packers in the following sizes: DN200, DN250, DN300-350, DN400-450, DN500-600
- also available for oval profiles: DN200/300-500/750
- adaptable to every KASRO-system, with an additional electronic module

Technical Data	
Dimensions	Length 1500mm, Width 200mm, Height 520mm
Weight	15 kg
Lamp performance	3x 200W
Silicon packers	DN200, DN250, DN300-350, DN400-450, DN500-600



KASRO cap placement system DN150-600



Article number: 1023120



Article number: 1023122



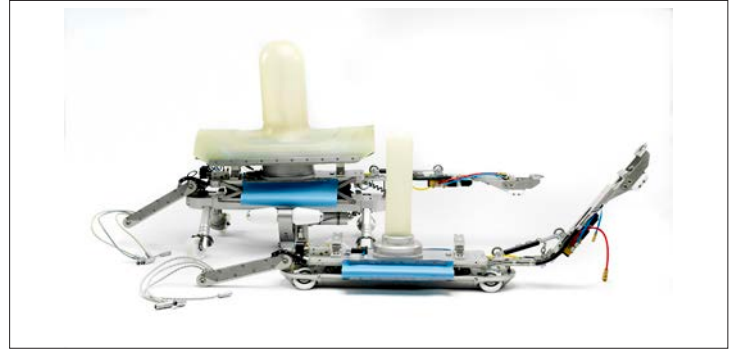
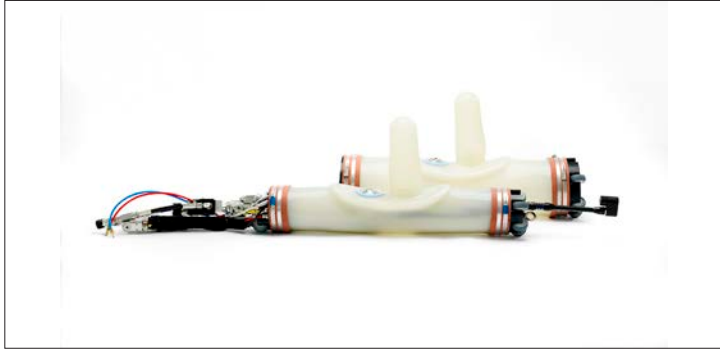
Article number: 1023121

- the intersection angles and axes are not predetermined due to a side balloon and a collapsible seal on the form plate, which are fully expandable and inflatable with compressed air.
- to ensure an easy and non-destructive procedure of the cap placement system in the main sewer, the form plate is inclined to the back and the diameter of the entire device is reduced by means of a compressed air cylinder
- the electric heating of the balloon and the form plate reduce the reaction time of the used resins and adhesives
- the heating energy also reaches the upper areas of the balloon further in the lateral intake
- the various flexible form plates ensure that they optimally adjust to every pipe diameter

Technical Data	
Cap placement system DN150	
Dimensions	Length (with holding arm) 840mm, diameter 120mm
Length cap	150mm
Weight	5kg
Heating	300W, shield and balloon
Special feature	available with front camera
Cap placement system DN200–600	
Dimensions DN200	Length 580mm (without holding arm), 725mm (with holding arm)
Dimensions DN250-600	Length 675mm (without holding arm), 917mm (with holding arm)
Weight	15kg
Surface shield	400mm x 360mm
Dimensions balloon	Base diameter 100mm, Length 350mm
Heating	Shield 250W, balloon 300W
Height cap	300mm
Material for cap	Epoxy resin (standard)

ProKASRO Lateral Intake Rehabilitation

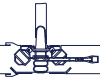
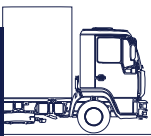
KASRO 2-component injection sealing system DN250-DN600



Article number: 1023144

With the KASRO 2-component injection sealing system, leaking branch pipe joints, as well as cracks, leaky collars and shards can be injected. The injection sealing system consists of a unit for the branch pipe joint sealing and one for the crack and collar injection. The systems are positioned using the KASRO self-propelled unit in connection with the KASRO rotation unit.

- two material tanks, each with 200l material
filling/extraction: by an electronically controlled 2K pump
supply in the sewer: 80m long 2K hose
mix: shortly before the material is injected into the leak
PU material begins to react within 2minutes
- material tanks and hose drum are integrated into an air-conditioning box
even with varied outside temperatures a constant material temperature will be provided
- the electronic system shows the user all data such as pressure and flow amount visually and acoustically
- how much material was used at which leak can be therefore controlled exactly; if a dysfunction or a mixing error occurs, the system will be stopped automatically
- three cameras in total:
 - one in front and one behind the system
 - one camera in the balloon pot, which shows the user how far the material in the branch pipe is pressed in the operator can control exactly and avoids pressing behind the balloon
 - for the crack, shard and collar injection there is one camera each in front and behind the system and a third one in the packer
 - change between the cameras is possible
- the balloon size is adjusted to the pipe branch diameter
three available balloon sizes at the moment: (80, 120 and 160mm diameter) for the branch pipe joints from DN100 to DN200
after the injection the branch pipe is not constricted



Technical Data
2K-Pump
80m 2K hose on hose drum with material rotary feedthrough
Placement unit with shield balloons for DN250–350 for balloons 80, 120 and 160mm
Placement unit with shield balloons for DN400–600 for balloons 80, 120 and 160mm
Packer sets DN200-350 (1.2m and 1.8m) for crack, shard and collar injection
Packer sets DN400-600 (1.2m and 1.8m) for crack, shard and collar injection

ProKASRO Lateral Intake Rehabilitation

KASRO rotational module



Article number 1025110



Article number: 1025111

The KASRO rotation module is mounted to the front of the drive unit to use the equipment for the lateral intake equipment

Available for:

- DN200-600 to be mounted on the KASRO self-propelled unit DN200-600
- DN150-400 to be mounted on the KASRO self-propelled unit DN150
- install the KASRO mini swivel-head colour camera

Technical Data	
KASRO rotational module DN200-500	
Dimensions	Length 265mm, diameter 145mm
Weight	5,7kg
KASRO rotational module DN150-400	
Dimensions	Length 264,5mm, diameter 130mm
Weight	4,6kg

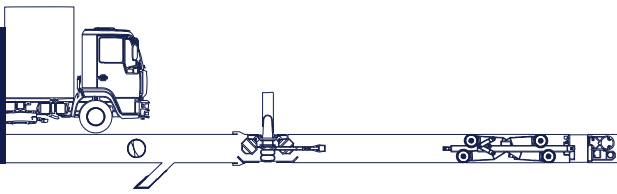
Cartridge attachment for KASRO injection sealing system



Article number: 1023102

- DN250-600
- for use with the 2K form plates without the vehicle technique (cable hose, control unit etc.)
- PUR-material is pressed out, which cures immediately
- two pre-fabricated cartridges with components A and B are pushed into the intake and fastened with the static mixer
- the cylinder applied with compressed air injects the material directly into the leak, where it immediately cures.

Technical Data	
Dimensions	Length 600mm diameter 170mm
Cartridge size	1,4l (2x)
Weight	PUR
Adaptation to the KASRO system	



KASRO balloon placement attachment

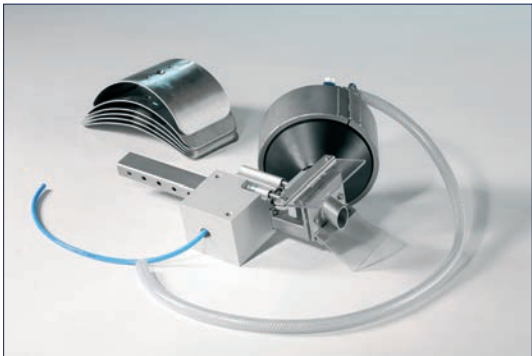


Article number: 1023100

- placement of pipe sealing plugs
- with compressed-air it can be extracted up to two levels to position the pipe sealing plug into the pipe connections
- due to the assembly of the holding rings the 1st and the 2nd level can be blocked, esp. important for small diameters
- mounted on the KASRO working robot instead of the KASRO compressed-air motor

Technical Data	
Dimensions	Length 100mm, Width 69mm, Height 160mm
Weight	2,2kg
Extension length level 1	69mm
Extension length level 2	134mm
suitable for football balloons other adapters upon request	

KASRO priming attachment



Article number: 1022200

- sealing of cracks in the sewer wall and collars
- scraper applies the priming material to the leak, a second trailing scraper spreads the material smoothly
- mounted on the KASRO working robot instead of the KASRO compressed-air motor, cartridge with the priming material is simply screwed on
- form plates from DN200-600

Technical Data	
Dimensions	Length 180mm, Width 137mm, Height 176mm (without cartridge)
Weight	4,3kg
Cartridge volume	1l (2l possible for larger diameters)
Form plates for DN200, DN250, DN300, DN350, DN400, DN500/600	

ProKASRO Control Units and Cable Drums

KASRO-Cable-Control-Unit CCU



Article number: 3010120 (Version BASIC)
Article number: 3010130 (Version PROFESSIONAL)

- mobile, compact, equipped with wheels to be installed in areas difficult to access
- control of all KASRO air-milling robots and lateral intake systems
- whole control system is installed above the hand-operated drum
- consists of a control board, pneumatic control, monitor/control panel and data display and recording

Available in 2 versions:

- BASIC: cable package consists of single combined cables
- PROFESSIONAL: cable package consists of a combination cable with twin conductor

Technical Data	
Dimensions	Length 750mm, Width 470mm, Height 920mm
Weight	88kg
Cable length	60m cable combination
Cable configuration	Combination cable-Twin conductor with air hose 13x16; air hoses 4pcs. 2,5x 4; 6x 1,5mm ² ; 16x 0,5mm ² ; 4x 2x 0,25mm ²
Operating media	230 V/50 Hz/10 A; compressed-air 2 m ³ /min, 10 bar
Water tank	12l

KASRO control unit BASIC



Article number: 3010110

- Exclusively to control the KASRO milling robots
- can be integrated in the vehicle or build as mobile unit
- consists of a control board, pneumatic controls, monitor and control panel
- integrates a simple data display and a videorecorder
- speed control for all movements is achieved using a potentiometer
- joysticks serve as switches

Technical Data	
Dimensions control unit	Length 500mm, Width 580mm, Height 780mm
Dimensions control panel	Length 290mm, Width 550mm, Height 170mm
Weight	105kg
Operating media	230V/50 Hz/10A

KASRO control unit PROFESSIONAL



Article number: 1024350

- all KASRO working robots and KASRO branch pipe rehabilitation systems can be controlled
- can be integrated in the vehicle or build as mobile unit
- consists of the electronic control module with all boards, a monitor module, a pneumatic control and the actual control panel
- can be complemented with a data display, video recording devices and a PC
- two joysticks serve as switches

Technical Data	
Dimensions control unit	Length 500mm, Width 1100mm, Height 950mm
Dimensions control panel	Length 250mm, Width 550mm, Height 260mm
Weight	185kg
Operating voltage	230V/50Hz/10A and Heater module 230V/50Hz/6A

ProKASRO Control Units and Cable Drums

KASRO mobile cable drum with 80m twin cable



Article number: 3010210

- 80 m twin cable
- control and supply of all KASRO air working robots for milling purposes and the lateral connection systems
- two connected lines with a small cross-section
- one line is the milling air line \varnothing 16mm
- second line has three air lines, one water line and electric lines all integrated
- small compact alternative to the KASRO combination cable drum
- suitable for all spatula works (see „ProKASRO Working Robots hydraulic“, p.26)

Technical Data	
Dimensions	Length 800mm, Width 540mm, Height 790mm
Weight	190kg
Cable	80m twin cable, air hose 13x16; air hoses 4psc. 2,5x4; 6x 1,5mm ² , 16x 0,5mm ² , 4x 2x 0,25mm ²
Operating media	230V/50Hz/10A, compressed-air 2,0m ³ /min 10bar
Water tank	12l

KASRO combination cable drum with 80m comb. cable or 120m twin cable



Article number: 6021133 / 6021134

- control and supply of all KASRO air working robots and the lateral connection systems
- combination cable contains all lines: power lines, control air lines, water line
- robots can also be retracted from the sewer

Available with:

- 80m combination cable (\varnothing 40mm)
control air lines within the combination line are bigger as in the twin cable which enables a faster inflation/extraction
- 120m twin cable milling air line (\varnothing 16mm)

Technical Data	
Dimensions	Length 1300mm, Width 550mm, Height 1030mm
Weight	230kg
Operating media	230V/50 Hz/10A
Combination cable	4x PUR-hose 4x6mm, 1x PUR-fabric tube 16x20mm, 12x1,5 mm ² , 18x0,5mm ² , 4x2x0,25mm ²
Outer sheath PUR Kevlar reinforced	

KASRO combination cable drum with 100m or 140m combination cable



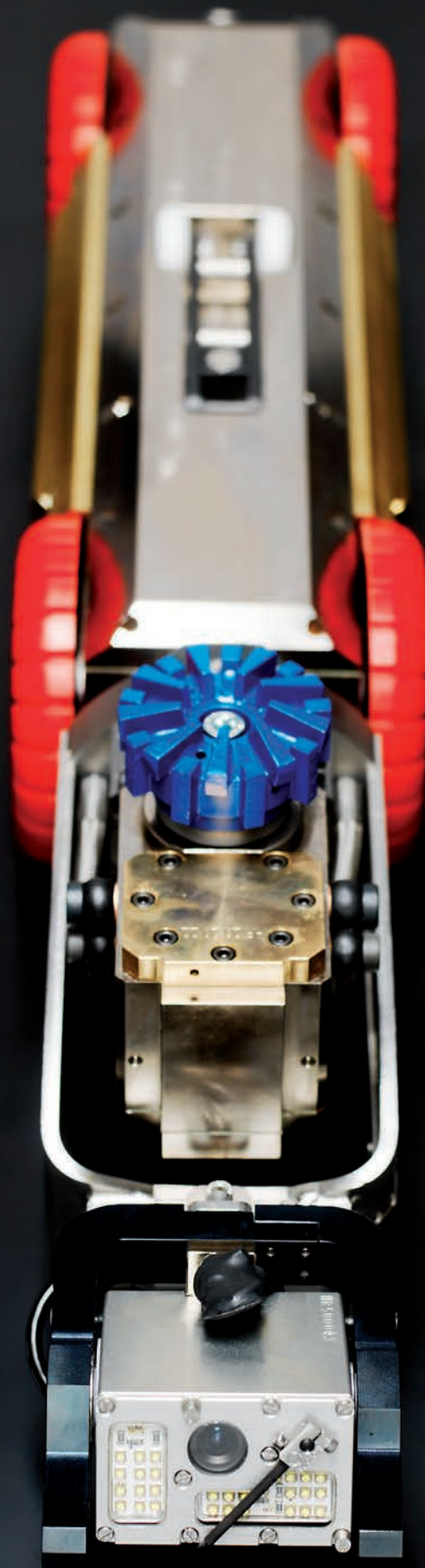
Article number: 6021110 / 6021111

- control and supply of all KASRO air working robots and the lateral connection systems
- combination cable contains all lines: power lines, control air lines, water line
- robots can also be retracted from the sewer

Available with:

- 100m (140m) combination cable (ø 40mm)
- bigger version with 140m combination cable

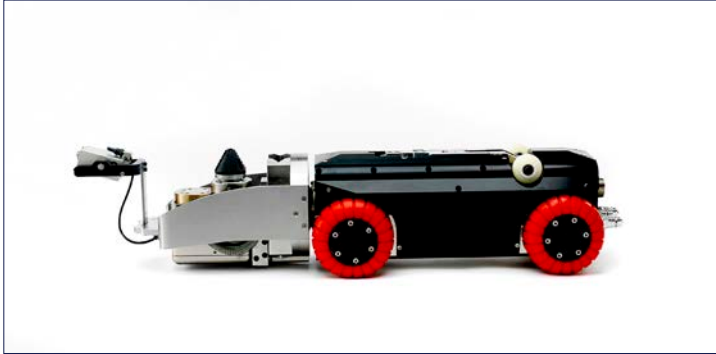
Technical Data	
Dimensions	Length 1800mm, Width 680mm, Height 1220mm
Weight	500kg
Operating media	230V/50 Hz/10A
Combination cable	4x PUR-hose 4x6mm, 1x PUR-fabric tube 16x20mm, 12x1,5 mm ² , 18x0,5mm ² , 4x2x0,25mm ²
Outer sheath PUR Kevlar reinforced	



ProKASRO Working Robots hydraulic

ProKASRO Working Robots hydraulic

KASRO hydraulic milling robot
DN250-600



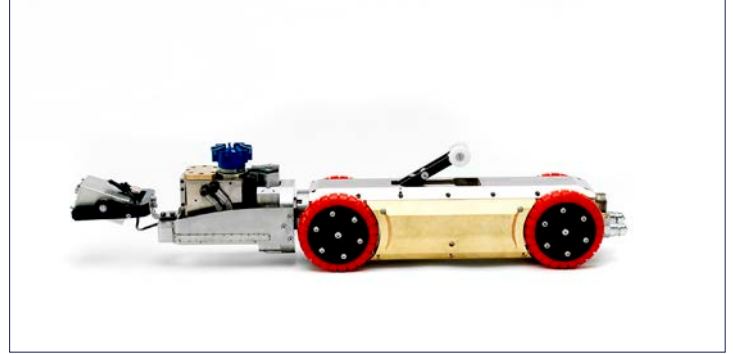
Article number: 5010000

- self-propelled working robot
- energy supply results from electrical and hydraulic energy
- axial movement is performed by the drive unit

Optional

- Expansion to DN900 is possible
- Oval profile attachment module to work in oval profiles

KASRO hydraulic milling robot
DN150-250



Article number: 5010010

- self-propelled working robot
- energy supply results from electrical and hydraulic energy
- axial movement is performed by the drive unit

Technical Data	
Dimensions	Length 830mm, Width 210mm, Height 190mm
Driving speed	0 – 12m/min
Movements	Rotation 900°, Lift 110mm
Weight	80kg
Operating Media	Oil pressure 150bar
Motor	5kW at 3500 – 4500 1/min milling motor

Technical Data	
Dimensions	Length 740 mm, Width 130 mm, Height 112 mm
Driving speed	0 – 12 m/min
Movements	Rotation ca. 900°, Lift 65mm
Weight	45kg
Operating media	Oil pressure 150 bar
Motor	3 kW bei 5000 – 6000 1/min milling motor

KASRO swivel-head colour camera
with wiper



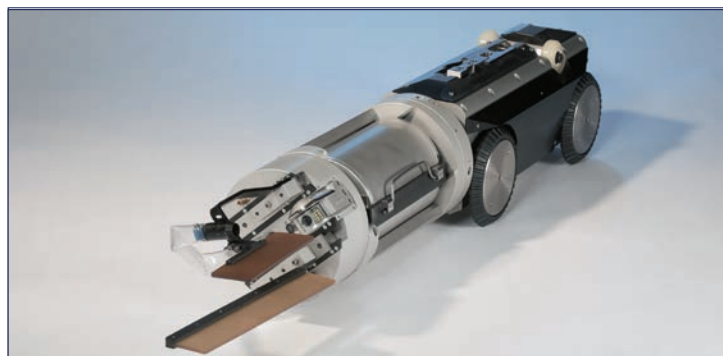
Article number: 5014300

- to be mounted on hydraulic driven milling robots
- swivel forward to observe the run-in movement
- swivel backward to observe the milling
- focus is permanently adjusted
- numerous LEDs around the camera lens ensure sufficient illumination
- wiper in front of the camera lens guarantees continuously an optimal camera image

Technical Data	
Dimensions	Length 122 mm, Width 96 mm, Height 42 mm
Movements	Swivel 300°
Operating media	12 V
Camera	625 TV lines
Objective	78°

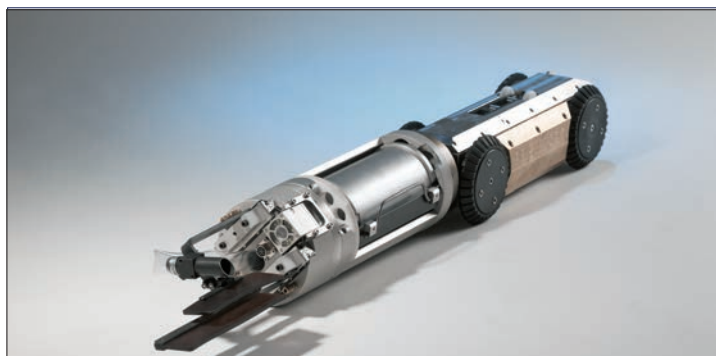
ProKASRO Working Robots hydraulic

KASRO spatula robot DN250–600



Article number: 5010050 (DN250-600)

KASRO spatula robot DN150–200

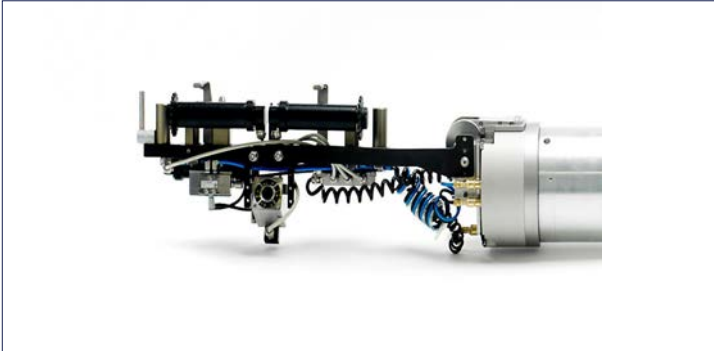


Article number: 5010060 (DN150-250)

- self-propelled working robot
- premixed resin is pressed out a canister by compressed-air to be processed
- seal cracks, fractures, joints or holes
- move the scraper device towards and away from the pipe wall via two separately controllable arms
- controlled by a 100m combination cable, consisting of air and electric lines
- the tool head can rotate and the lateral movement is controlled via the drive unit

Technical Data		
	DN250-600	DN150-200
Dimensions	Length 1000mm Width 230mm Height 190mm	Length 800mm Width 95mm Height 103mm
Driving speed	0–10m/min	
Movements	Rotation 900° Lift: 80mm	Rotation 900° Lift: 65mm
Weight	75kg	50kg
Operating media	42V DC, compressed-air 8bar, 1000l/min	
Tools	for axial, radial and hole filling, balloon placement	
Material	Epoxy resin (standard)	

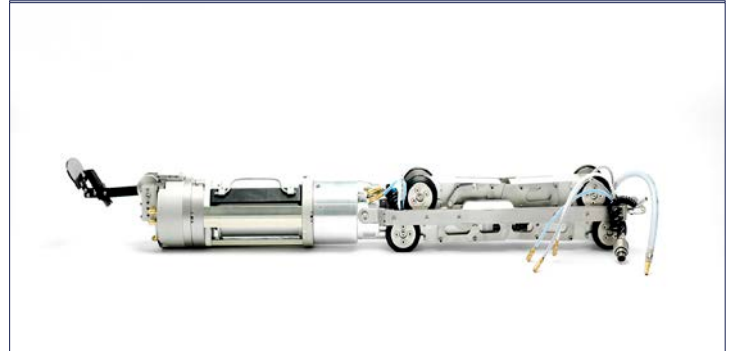
KASRO shield injection system and spatula device



Article number: 5010055 shield injection system
(with the self-propelled unit)



Article number: 5010085
KASRO cube camera
integrated in the shield injection system



Article number: 5010075 spatula device
(with the self-propelled unit)



Article number: 5010080
KASRO swivel-head colour camera
to control the spatula process

The shield injection system and the spatula device can be mounted on:

- the KASRO spatula robot DN150-250
the KASRO spatula robot DN250-600
also possible: DN800 and oval profile
- self-propelled unit DN200-600
with the respective rotational module
- the devices carry a material cartridge (disposable or refillable) with the premixed material
- it is pressed out by a compressed-air cylinder
- with the spatula device seal cracks, fractures, joints or holes can be filled
- move the scraper device towards and away from the pipe wall via two separately controllable arms
- the tool head can rotate and the lateral movement is controlled via the drive unit
- with the shield injection system the material can be pressed into the transition region between the lateral intake and the main sewer

Technical Data	
Dimensions	Length 480mm
Movements	Rotation 540° Lift: 65mm
Weight	3,6kg

Technical Data	
Dimensions	spatula head 130mm, spatula device 280mm, rotational module 180mm
Movements	Rotation 540° Lift: 65mm
Weight	in total 12,6 kg

ProKASRO Working Robots hydraulic

KASRO base control unit



Article number 1024370

- KASRO base control unit for hydraulic milling robots
- to be installed in hydraulic rehabilitation vehicles with control panel and 15"-TFT-monitors

Expandable with:

- KASRO spatula control unit
- KASRO injection-air control unit

Technical Data	
Dimensions control unit	Length 500mm, Width 580mm, Height 780mm
Dimensions control panel	Length 290mm, Width 550mm, Height 170mm
Weight	105kg
Operating media	230V/50Hz/10A

KASRO hydraulic cable drum



Article number 6031110

- control and supply of the hydraulic milling robots
- installed in the vehicle
- 100m combination cable
- hose packet consists of three hydraulic lines, one water line and an electric cable
- robots can be retracted out of the sewer pipe

KASRO spatula cable drum

- Expansion to the hydraulic cable drum
- 100m spatula cable or
- 80m twin cable



Article number 6031111

Technical Data	
Dimensions	Length 2000mm, Width 800mm, Height 1450mm
Weight	630kg
Operating media	230V/50Hz/10A
Combination cable	2x HD-hose 12mm, 1x HD-hose 8mm, 1x PUR-hose 8x 12mm 22x 0,75mm ² , 2x 2x 0,5mm ²
Outer sheath PUR Kevlar reinforced	

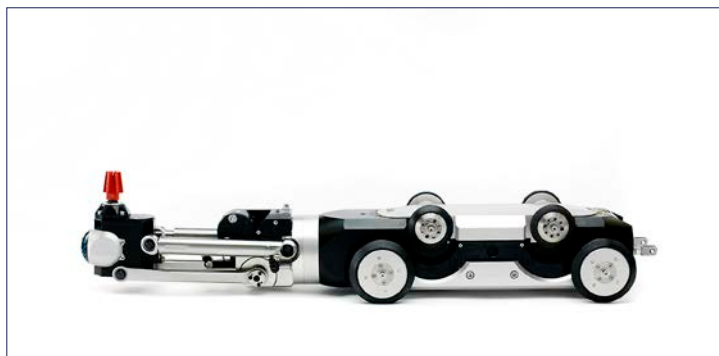


ProKASRO Working Robots electric





KASRO working robot 4.0 DN200-600



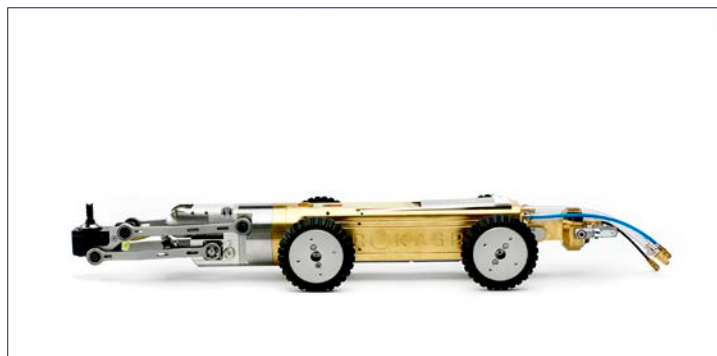
Article number: 1020003

- self-propelled working robot
- milling motor: electric 2,5kW
- all movements can be performed simultaneously due to unlimited rotation
- milling in difficult geometries gets possible, e.g. a saddle of a pipe union
- the tool head can be tilted 90° by means of the 4th axis
- through that the milling motor can be equipped with longer extension shafts to work in smaller diameters

Optional:

- expansion to DN800 is possible
- oval profile attachment module to work in oval profiles

KASRO working robot 1.7 DN130-400



Article number: 3010017

- self-propelled working robot
- milling motor: electric 1,5kW
- both driving axes are powered by independent electric motors
- all movements can be performed simultaneously due to unlimited rotation
- various special wheelsets are available for difficult traction conditions

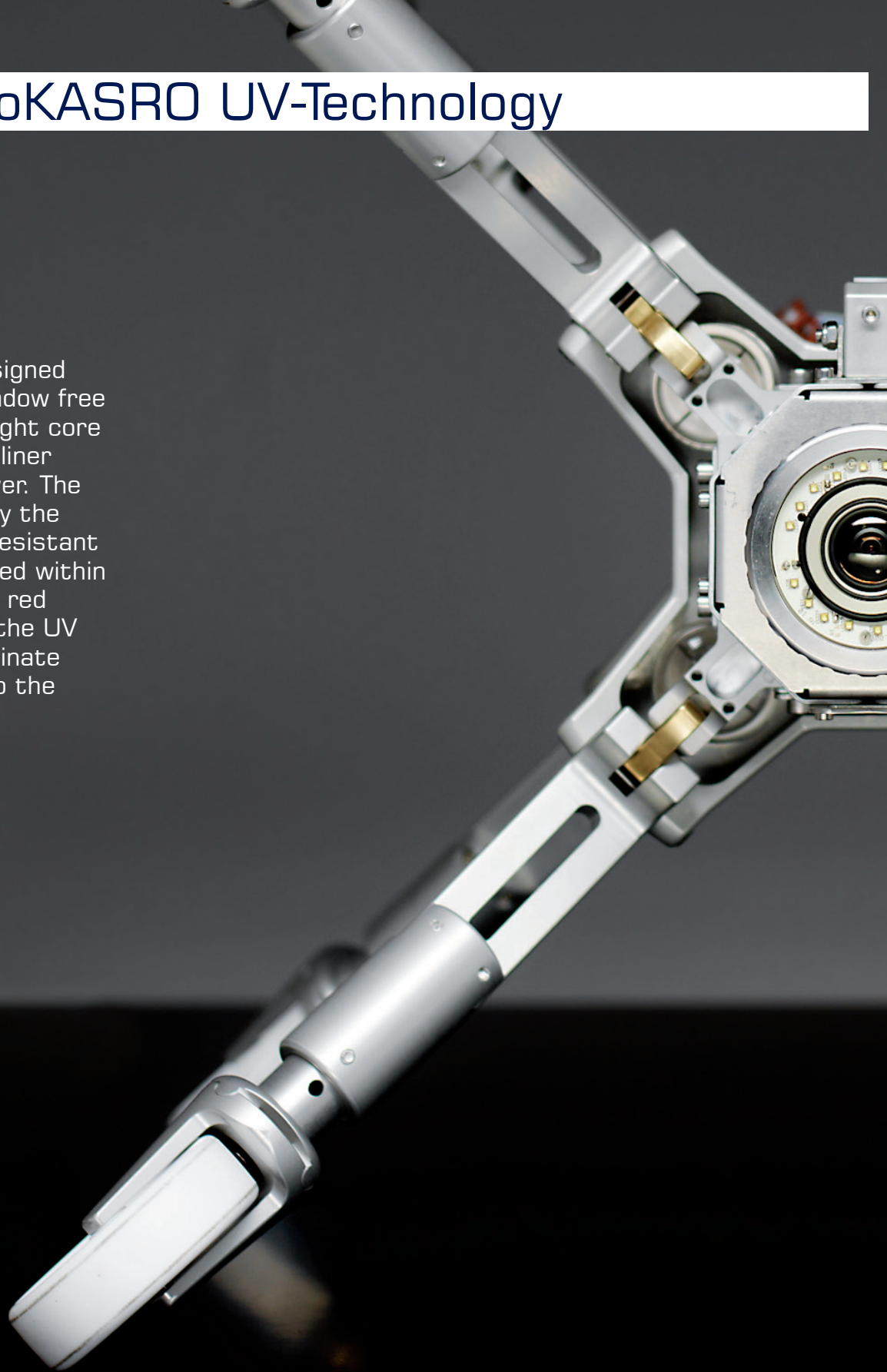
KASRO control unit and KASRO cable drum for the electric working robots: the same as with pneumatic working robots - see from page 20 to 23

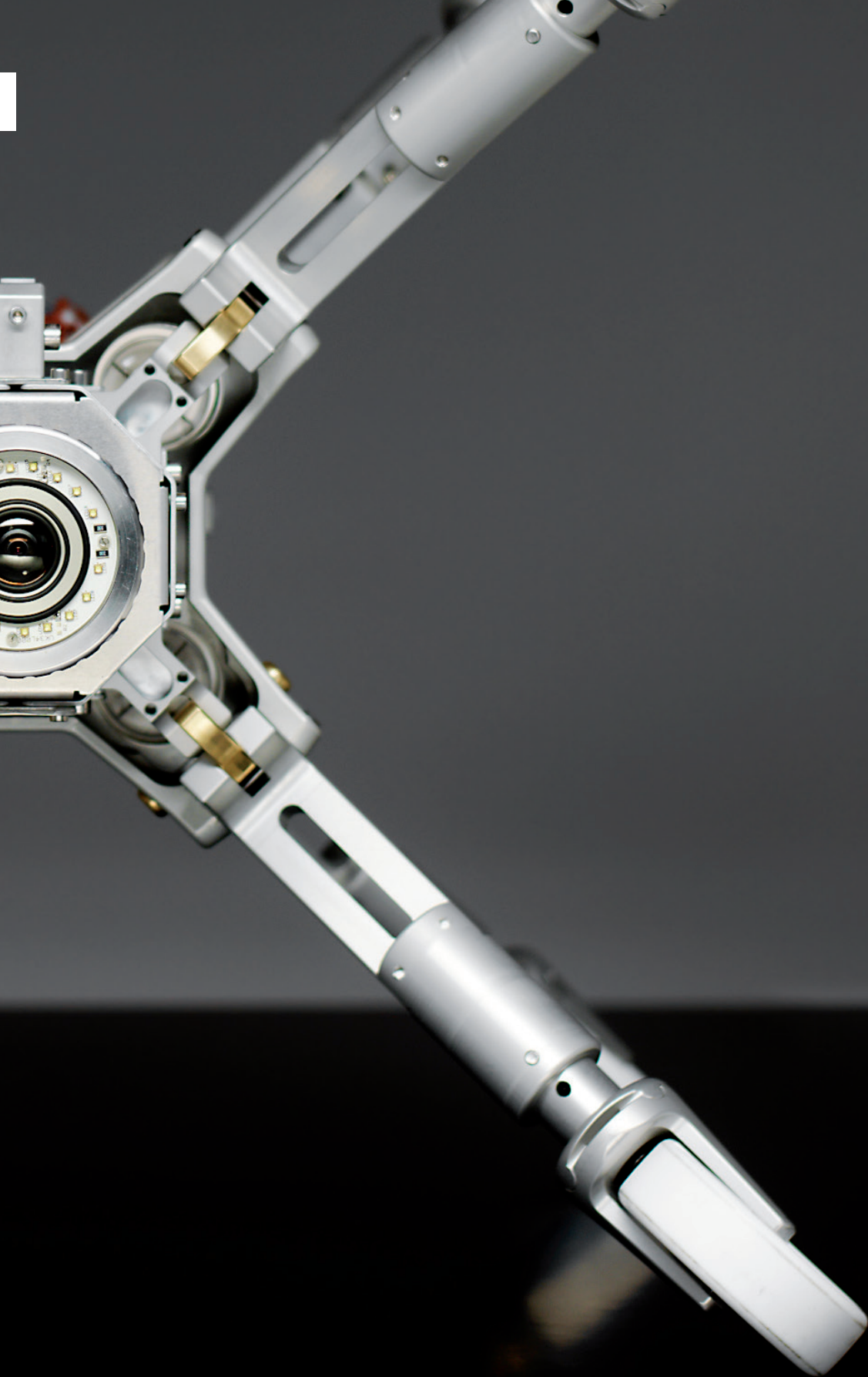
Technical Data	
Dimensions	Length without milling motor 740mm, Width 134mm, Height 154mm
Movements	Endless rotation 0-2/min; Lift 250mm, 0 –10mm/s; Swivel of tool head by 90°, drive (back/forward) 0 –14m/min
Weight	36kg
Operating media	Voltage 230V
Motor	elektric milling motor 2,5kW
Tools	Milling and grinding tools according to tool list, custom made products on request

Technical Data	
Dimensions	Length without milling motor 620mm + 140mm swivelling connection, diameter 108mm
Movements	Rotation 720° (0-3U/min), up/down 0-10mm/s, drive 0-10m/min
Weight	20kg
Operating media	Voltage 230V
Motor	elektric motor 1,5kW
Tools	Milling and grinding tools according to tool list, custom made products on request

ProKASRO UV-Technology

The use of specially designed UV lamps and their shadow free positioning on the UV light core facilitates trouble free liner installations in the sewer. The process is monitored by the operator via the heat resistant pluggable camera located within the UV light core. Infra red sensors positioned on the UV light core transmit laminate curing temperatures to the operator.





ProKASRO UV-Technology

KASRO UV control unit BASIC PLUS



Article number: 4020012

- control of the light sources 8x 400W, 8x 600W and 8x 1000W

Also available as: KASRO UV control unit BASIC
(Article number: 4020011)

control of the light sources 8x 400W

- visualising and recording of the camera image
- control and entire datalogging of the curing process
- only a limited number of datalogged curings can be saved, which need to be transferred via USB-device to a PC
- the operation will be performed via a small display with function keys to set and display the necessary parameters

Technical Data	
Dimensions control unit	Length: 520mm, Width: 760mm, Height 1300mm
Weight	170kg
Dimensions additional module	Width: 600mm, Length: 200mm, Height: 600mm
Weight	75kg
Operating voltage	400V/50Hz/32A

KASRO UV control unit PROFESSIONAL



Article number: 4020010

- control the light sources 8x 400W, 8x 600W and 8x 1000W
(automatic switch between the respective UV light sources possible)
- visualising and recording of the camera image
- entire datalogging of the curing process
- operation is performed using a touch-screen monitor on which all important data is displayed graphically, all measuring data can easily be monitored
- all data and misfunctions can be saved on a PC
- the resulting datalogging of the curing process can be printed after the rehabilitation
- expandable up to 18x 1000W

Technical Data	
Dimensions control unit	Length 500mm, Width 1650mm, Height 1535mm
Weight	250kg
Operation voltage	400V/50Hz/32A

KASRO UV curing drum



Article number: 4020000 / 4020003

- 200m (300m) curing cable
- installed version in the truck
- due to the mechanical freewheel the cable can easily be removed
- equipped with a screen and control display, to be able to control and monitor the light chain from the drum
- the light chain in the sewer pipe is retracted with the preset speed using the UV curing cable drum
- the speed adjustment ensures that the prescribed curing time is exactly met and logged

Technical Data	
Dimensions	Length 1580mm, without swivel arm 1160mm, Width 700mm, Height 1300mm
Weight	570kg
Operating media	400V/50Hz
Curing cable	UV and head resistant self netting PUR outer sheath, Kevlar reinforced 5x 2x 0.25mm ² Teflon isolated, 10x 0.6mm ² , 24x 1.5mm ² , 1x Teflon coax

KASRO UV curing drum mobile



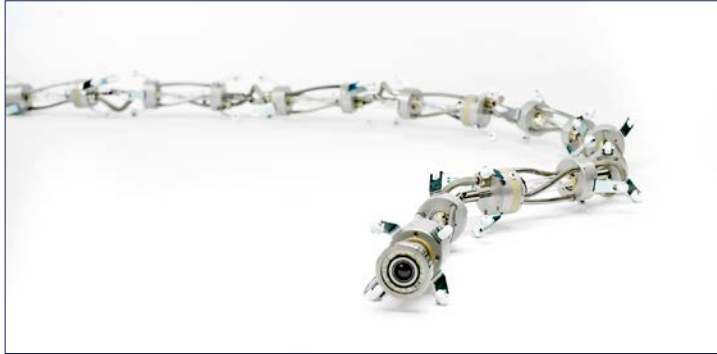
Article number: 4020001 / 4020002

- 130m (200m) curing cable
- mobile: can be extracted from the vehicle to be installed in areas difficult to access
- due to the mechanical freewheel the cable can easily be removed
- equipped with a screen and control display, to be able to control and monitor the light chain from the drum
- the light chain in the sewer pipe is retracted with the preset speed using the UV curing cable drum
- the speed adjustment ensures that the prescribed curing time is exactly met and logged

Technical Data	
Dimensions	Length 2035mm, without swivel arm 1125mm, Width 720mm, Height 1050mm
Weight	310kg
Operating media	400V/50Hz
Curing cable	UV and head resistant self netting PUR outer sheath, Kevlar reinforced 5x 2x 0.25mm ² Teflon isolated, 10x 0.6mm ² , 24x 1.5mm ² , 1x Teflon coax

ProKASRO UV-Technology

UV light source chain DN150-500



Article number: 4020050

- 8x 400W, 8x 600W
- with the respective wheel extension the light chain can be adjusted to the rehabilitating diameter
- can also be enlarged to oval profile for DN300/450 to DN400/600
- 16 "crosses" are mounted on the circular enclosure of the individual elements of the light train
- with the help of UV packers (DN150-500) the inliners are integrated and inflated
- packers are separately available in 5x2 different sizes for DN150-500

UV light core DN550-1000



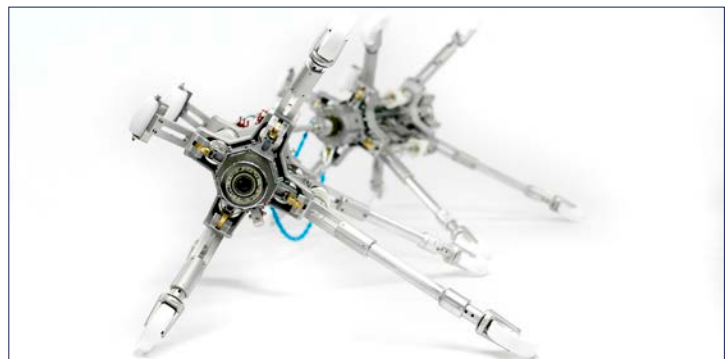
Article number: 4020065

- 2x4x 1000W
- centralisation of the light core within the sewer is achieved by electric motors altering the expansion which is observed by a camera within the packer
- the centralisation process is monitored by the operator via the UV and heat resistant pluggable camera located within the UV light core
- automatic shutdown prevents over expansion of the UV light core once the preset diameter is reached
- to reduce curing times, two UV light cores can be connected together by using of specially designed wheelsets
- with the help of UV packers (DN600-800) the inliners are integrated and inflated
- packers are separately available in 2x2 different sizes for DN600-800

Technical Data	
Dimensions	Length approx.. 3000mm, D = from DN150-500, pluggable wheel extensions
Performance	8 UV-lamps à 400W pluggable in ceramic frame
Sensors	3 piece variable IR sensors for recording the laminate temperature

Technical Data	
Dimensions	Retracted diameter 360mm, Length 970mm
Diameters	DN550-1000
Oval profile	DN500/750-800/1200
Weight	20kg each core
Centralisation	electric
Power	4 UV lamps, 1000Watt each, pluggable in ceramic frame

UV light core oval profile DN500/750 to DN800/1000



Article number: 4020054

- 2x4x 1000W
- for oval profiles
- the two bottom feet of the core are changed by longer feet, to create the oval profile
- therefore sufficient UV light is emitted to the bottom part of the liner
- with the help of UV packers (DN400/600 to DN600/900) the inliners are integrated and inflated
- packers are seperately available in 3x2 different sizes for DN400/600 to DN600/900

Technical Data	
Dimensions	minimal Height: 320mm, maximum Height: 925mm
Minimal Width	300mm, maximum Width: 610mm
Weight	20kg each core no change!
Number of parts	4 pieces

KASRO UV camera



Article number: 4020080

- heat-resistant
- can be mounted to every light source
- the lighting is performed with a LED lighting ring

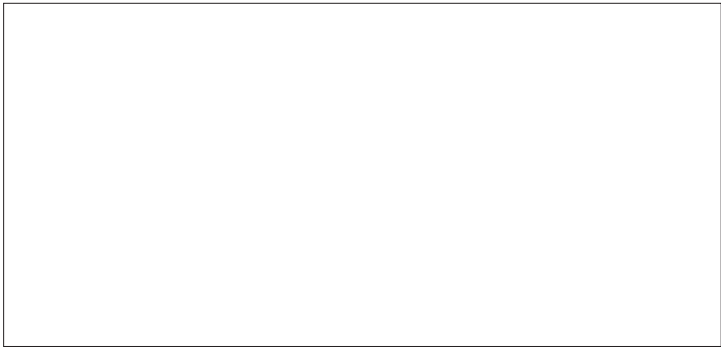
Technical Data	
Dimensions	Length 105mm, chassis diameter front 80mm, chassis diameter plug side 50mm
Operating media	30V/12V

ProKASRO bend capable

KASRO sewer lateral working robot DN100–200 with KASRO control unit



Article number: 2025000



- extremely bend capable
- can be launched from the drain access point in restricted areas
- mobile and portable
- silent, high-torque hydraulic cutting motor
- 360° perspective by three cameras
- completely driven hydraulic without DC motor and gearing mechanism

for the KASRO sewer lateral working robot

- 20m push hose
- hydraulic pump with control valve
- water tank with pump to clean the camera
- display of the camera images in 3 windows for all 3 cameras

Optional

- data display and recording
- automatic cable feed unit

Technical Data	
Dimensions	Milling module: 175mm x 78mm Spinning module: 140mm x 82mm In total: 810mm x diameter 82mm
Driving speed	Lateral movement drive: 0-4 m/min
Movements	axial, rotation, up/down, lateral movement drive inside the sewer
Weight	3,4kg
Voltage	220V
Motor	Hydraulic milling motor 500W
Axial feed	25mm

Technical Data	
Dimensions	Length: 525mm Width: 400mm Height: 540mm
Weight	43kg
Changes without prior notice	

KASRO UV light train bend capable DN 100–200 with KASRO control unit



Article number: 4020071

- bend capable
- 3x 200W
- expandable to 6x 200W
- design for residential drains
- light train is drawn into the pipe and pulled back with a computer controlled feed unit
- the feed unit as well as the compact control panel can be positioned directly above the drain access point
- the liner curing process is monitored via the built-in camera at the front of the light train, the reaction temperature of the resin is measured and monitored and the curing speed is amended accordingly

for the KASRO UV light train bend capable

- 20m push hose
- speed control for cable feed
- ignition device for 3 UV lamps
- with monitor

Optional

- data display and recording
- automatic cable feed unit

Technical Data	
Dimensions	Total length 930mm, Length Segment 160mm, diameter (interference contour) 65mm
Weight	3kg
Performance	3x 200W UV-lamps
Bend capabilities	DN100 – bend 45°, DN150 – bend 2x 45°
Equipment	Feed unit, control unit

Technical Data	
Dimensions	Length: 525mm Width: 400mm Height: 540mm
Weight	43kg

ProKASRO Rehabilitation Vehicles

3.5t rehabilitation vehicle for electric working robots

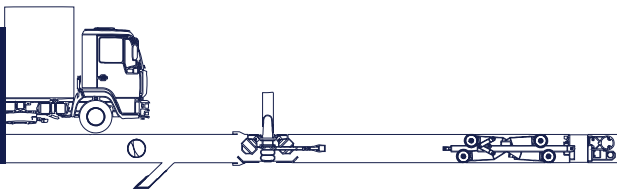


Article number: 8001000

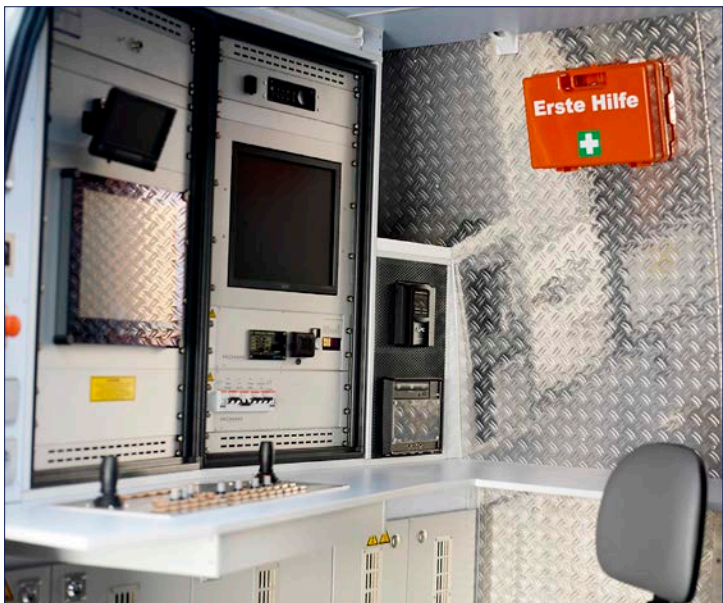
- cost-efficient version of a robot rehabilitation vehicle
- DN150-600
- power supply via battery packs with inverter

Advantage: permitted total weight of 3.5t - can therefore be driven with a simple driver's license

Technical Data	
Vehicle	Self-propelled work machine
Dimensions vehicle	Length 5787mm, Width 1933mm, Height 2750mm (for example: Sprinter)
Dimensions box	Length 3311mm, Width 1780mm, Height 1840mm (for example: Sprinter)
Total weight	3490kg
Power generator	via battery and inverter 3kW
Water tank	50l
Vehicle not supplied	



3.5t rehabilitation vehicle for hydraulic working robots



Article number: 8001020

- cost-efficient version of a robot rehabilitation vehicle
- DN150-600, carriage up to DN800
- hydraulic pump via secondary drive
- power supply via battery packs with inverter

NOW NEW: Extension of a rehabilitation vehicle for hydraulic milling robots in a 3.5t vehicle!

Technical Data	
Vehicle	Self-propelled work machine
Dimensions vehicle	Length 5787mm, Width 1933mm, Height 2750mm (for example: Sprinter)
Dimensions box	Length 3311mm, Width 1780mm, Height 1840mm (for example: Sprinter)
Total weight	3490kg
Power generator	via battery and inverter, hydraulic pump 150bar, 17l/min
Water tank	50l
Vehicle not supplied	

ProKASRO Rehabilitation Vehicles

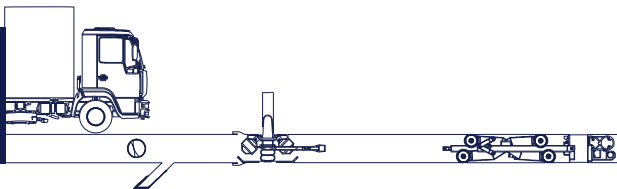
12t rehabilitation vehicle for UV Technology PROFESSIONAL



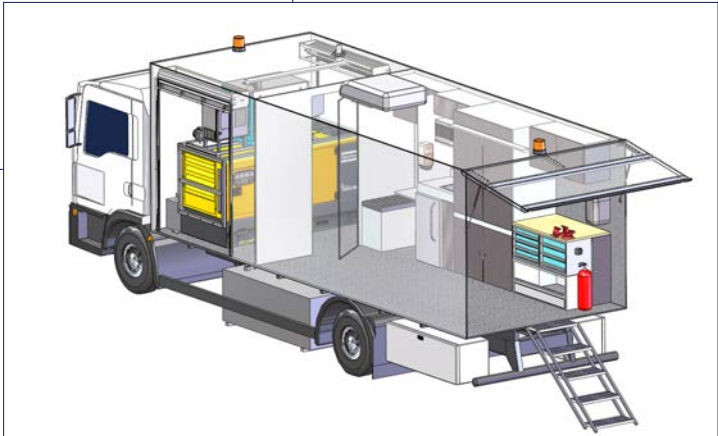
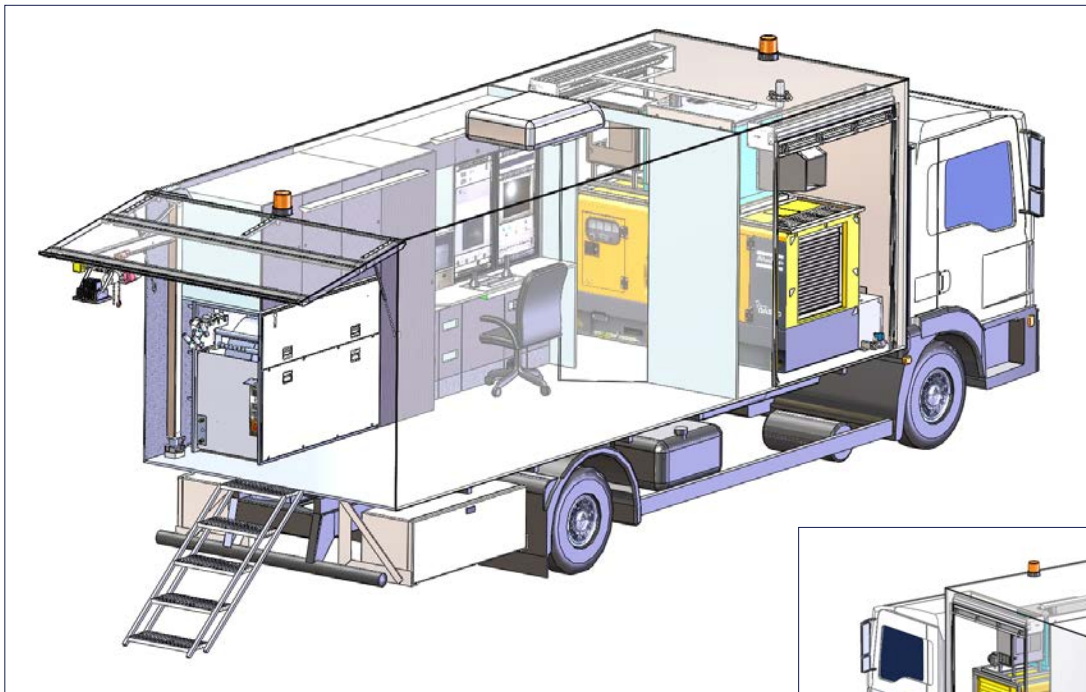
Article number 8004020

- Installed equipment: customised built-in cupboards, kitchen with refrigerator, microwave, wash basin, seats with desk, work bench incl. tools, control panel, water tank with pump, lamps, sockets, air conditioner and battery buffered auxiliary heater
- Power generator is installed in a separate machine room (directly behind the cab), accessible through 2 roller doors left and right
- The air blower is installed in the machine room (depends on the rehabilitation equipment)

Technical Data	
Vehicle	Self-propelled work machine
Dimensions Container	Length 6500mm, Width 2400mm, Height 2100mm
Power generator	40kVA
Total weight	11.990kg
Water tank	200l, additional 50l installed in the vehicle
Air blower	700mbar/6m³/min
Vehicle not supplied	



12t rehabilitation vehicle for pneumatic working robots PROFESSIONAL



Article number 8004010

- Installed equipment: control panel, shelves, water tank with pump, lamps, sockets, fan and battery buffered auxiliary heater
- Power generator is installed in a separate machine room (directly behind the cab), accessible through 2 roller doors left and right
- The air compressor is installed in the machine room (depends on the rehabilitation equipment)

Technical Data	
Vehicle	Self-propelled work machine
Dimensions Container	Length 6500mm, Width 2400mm, Height 2100mm
Power generator	30kVA
Total weight	11.990kg
Water tank	200l, additional 50l installed in the vehicle
Air compressor	10bar, 2,5m³/min
Vehicle not supplied	

ProKASRO Rehabilitation Vehicles

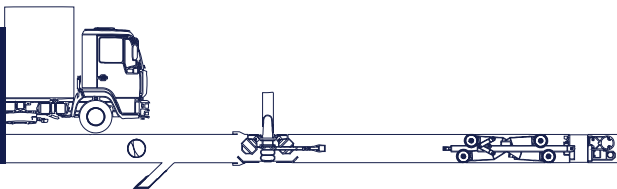
Building a Container



Article number: 8004000

- Installed equipment: control panel, shelves, water tank with pump, lamps, sockets, fan and battery buffered auxiliary heater
- Power generator is installed in a separate machine room (directly behind the cab), accessible through 2 roller doors left and right

Technical Data	
Vehicle	Self-propelled work machine
Dimensions Container	Length 6500mm, Width 2400mm, Height 2100mm
Power generator	30kVA
Water tank	200l, additional 50l installed inside the container
This Container (exemplary) was built after individual customer requests.	



KASRO Flightcase



- Ready-to-connect system of the UV rehabilitation equipment for a fast and easy transport
- All components of this system are packed in separate Flightcases
- UV light trains, robots, wheel sets and further equipment can be packed and transported easily
- control unit and cable drum within the Flightcase can be installed into a vehicle

Technical Data	
Dimensions	Length: 232cm
	Width: 70cm
	Height: 160cm
Weight	550kg



ProKASRO Mechatronik GmbH
Im Schleht 6
D-76187 Karlsruhe
Telefon +49-(0)721-95082-0
Telefax +49-(0)721-95082-28
info@prokasro.de
www.prokasro.de

