INSTRUCTION MANUAL

Cable drums
KTM-7X
KTA-250

Imprint

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Content

1. ICON EXPLANATION

Warning notices in this document are depicted as symbols. The references are initiated with signal words that show the extent of the threat.

The hints must be observed to prevent accidents, personal- and material-damage.

Hazard label

… points at immediately dangerous situations that can lead to death or severe injuries, if not avoided.

Warning label

… points at possibly dangerous situations that can lead to death or severe injuries, if not avoided.

Caution label

… points at possibly dangerous situations that can lead to small or minor injuries or property damage of the inspection system, if not avoided.

Hint label

… denotes hints that are important for the economical use of the system and should facilitate its handling.

Servicing label

… denotes hints which explain how to clean and service the system accordingly, to prevent defects and bigger repairs. Proper servicing can increase the durability of the system considerably.

2. RANGE OF APPLICATION

The inspection system is comparable to an optical gauge. Please treat it appropriate carefully! It is solely designed for optical inspections of channels and pipes.

As a channel- or pipe cleaning device the inspection system is certainly not suited and is not designed for that. The removal of obstacles with the camera head can lead to heavy defects and make it unserviceable.

2.1. Permitted range of application

Consider that only cleaned channels / pipes are suitable for a proper, decent optical inspection:

- Rainwater sewage pipe systems
- Slop- and mixed water sewage pipe systems
- Industrial effluent sewage pipe systems (only when purged according to §54 WHG)

2.2. Prohibited range of application

	Danger to life if used in dangerous environments
HAZARD	▪ The inspection system must not be used in gas conduits without particular arrangements! ▪ The control unit must not be operated in water or conductive materials! ▪ Environments with explosive gases must not be inspected with the inspection system under any circumstances!

	Danger through inappropriate use
WARNING	▪ The inspection system must not be deployed into drinking water pipelines without particular precautions! ▪ The inspection system must not be operated in environments where groceries are manufactured or processed! ▪ Has the system been used in an environment with slop, it has to be cleaned thoroughly, before it is allowed to use it in fresh water areas again. Without cleaning this is strictly prohibited, as it can come to infections and fresh water contamination!

3. SAFETY INSTRUCTIONS

Read the safety instructions thoroughly and follow them! They serve your own security, the security of your staff and also the prevention of damages to the inspection system and its components.

HAZARD

Deadly hazard through electric current

- Ensure that no liquid ingresses into the control unit, the control desk or the casings of the camera drums!
  If it happens disconnect the current supply immediately and secure the connector against further connections. Inform the suitably qualified professionals or your RIEZLER service!
- Ensure that the electrical connection cables are undamaged and can't get creased or squashed! If you detect damages disconnect the current supply immediately and secure the connector against further connections. Inform the suitably qualified professionals or your RIEZLER service!
- Works on the electric – which exceed the normal cleaning and maintenance of regular operators – may only be done by skilled professionals. Further maintenance- and repair works must only be realized by the RIEZLER customer service or from RIEZLER Inspektionssysteme authorized persons.
- Switch the system and all peripheral devices dead while doing maintenance.

WARNING

Do not carry heavy loads

Reels must never be used to lift or lower heavy loads – this includes the camera system and crawler – or persons. Suspended loads hold a considerable risk for property and personal damage (injuries and even death).

WARNING

Tripping and crushing hazard

Take care that the unrolled cable is flat on the ground and that no loops form. Secure the area of operation to prevent tripping hazards.

Never put your hands in the reel basket! Otherwise severe crushing hazard exists.

4. WARNING NOTICES

Our products are built very robust so you can work with them for a long period of time. Nevertheless there are a few issues we would like you to obey, because they could otherwise decrease the durability of our products.

	Careful use
CAUTION	▪ Always switch off the inspection system first via the Power-button before disconnecting the power cable! ▪ Before changing pluggable camera heads the system has to be switched off! ▪ Don't put heavy objects on the device! ▪ Don't let products fall! ▪ Never open the product, as long as you are not particularly asked to do it from the operating instruction or from one of our technicians! In the system inside are no parts that can be maintained by a user.

	Camera cable
VORSICHT	The camera cable must not be pushed or pulled over sharp edges! Pulleys should be used instead, especially at manhole entrances and exits. Is no camera or crawler connected to the camera cable, the protection cap must be attached to the cable to prevent it from getting wet or dirty.

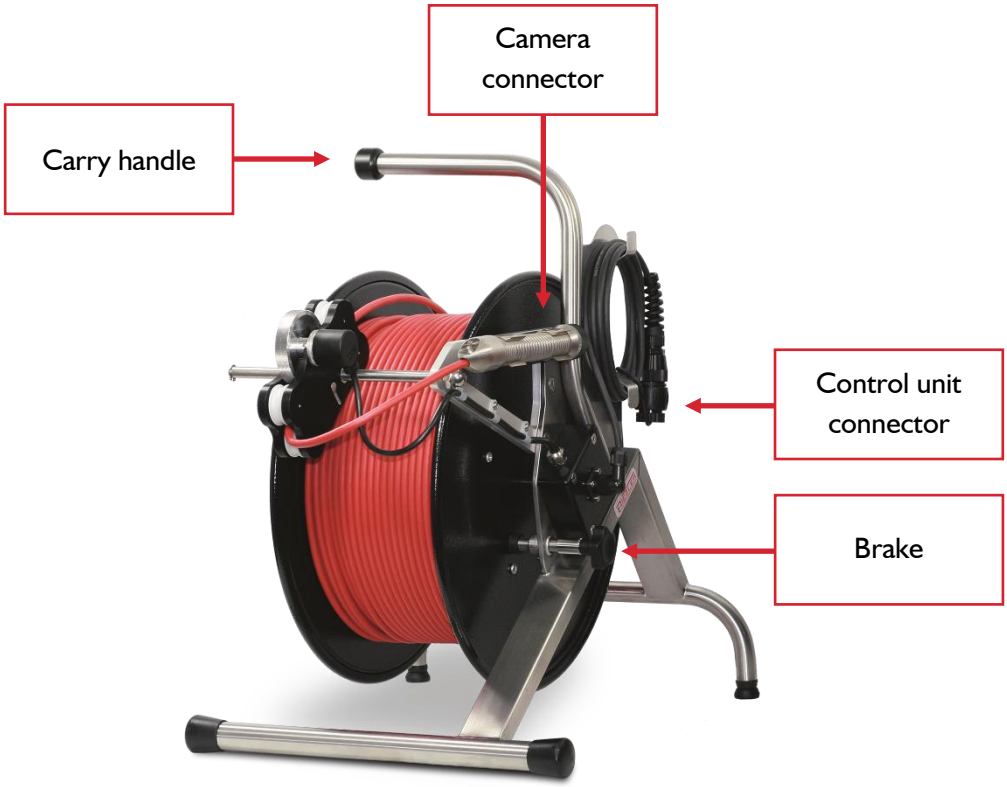
5. NOTES OF DISPOSAL

Drained batteries don't belong in the domestic waste. Bring them to a suitable collecting point or return them to your retailer.

		Disposal of legacy devices
HINT		Legacy devices that are marked by the shown symbol must not be disposed in the domestic waste but have to be properly disposed – according to the electrical and electronics equipment law from March 24th 2005. Please bring these devices at the end of their lifetime to the designated public collecting points.

6. KTM-7X

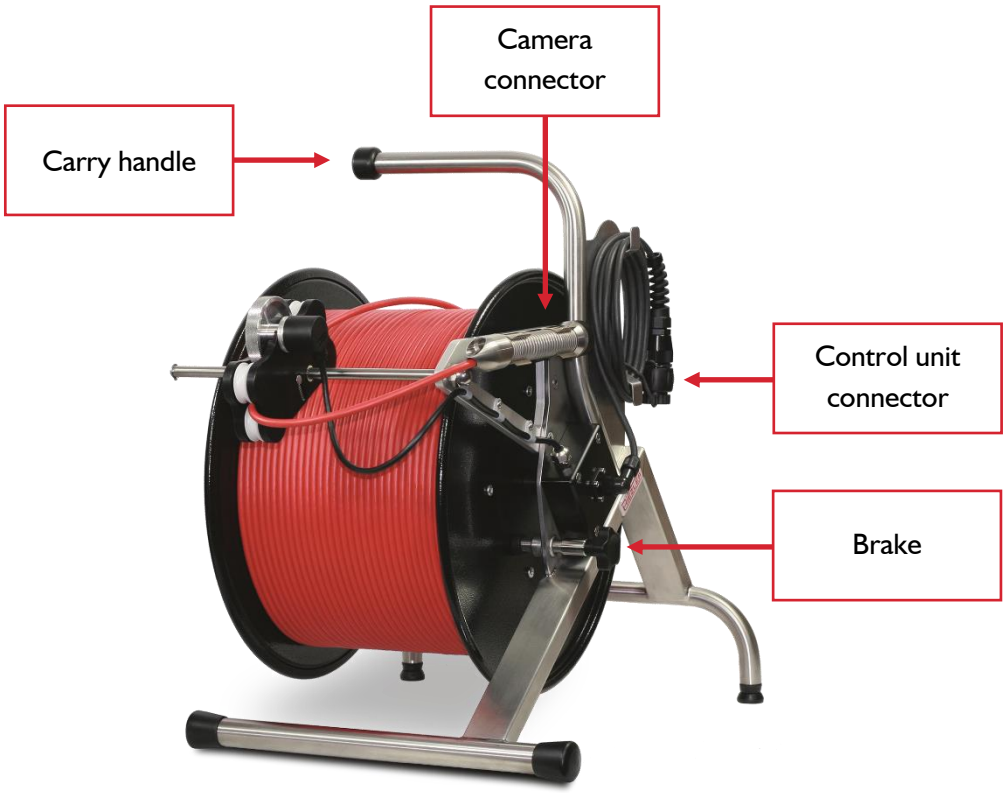
6.1. KTM-7X (150m)



6.1.1. Startup operations

1. Assure that the cable drum is set securely on a flat surface.
2. Connect the camera connector with your camera head and the control unit connector with your control unit (see also chapter 7. Connecting the control unit and camera head on page 14).
3. Release the brake on the backside of the cable drum, so you can unroll the camera cable without any resistance.
4. Fasten the brake hand-tight after you finished your work and rolled up the camera cable.

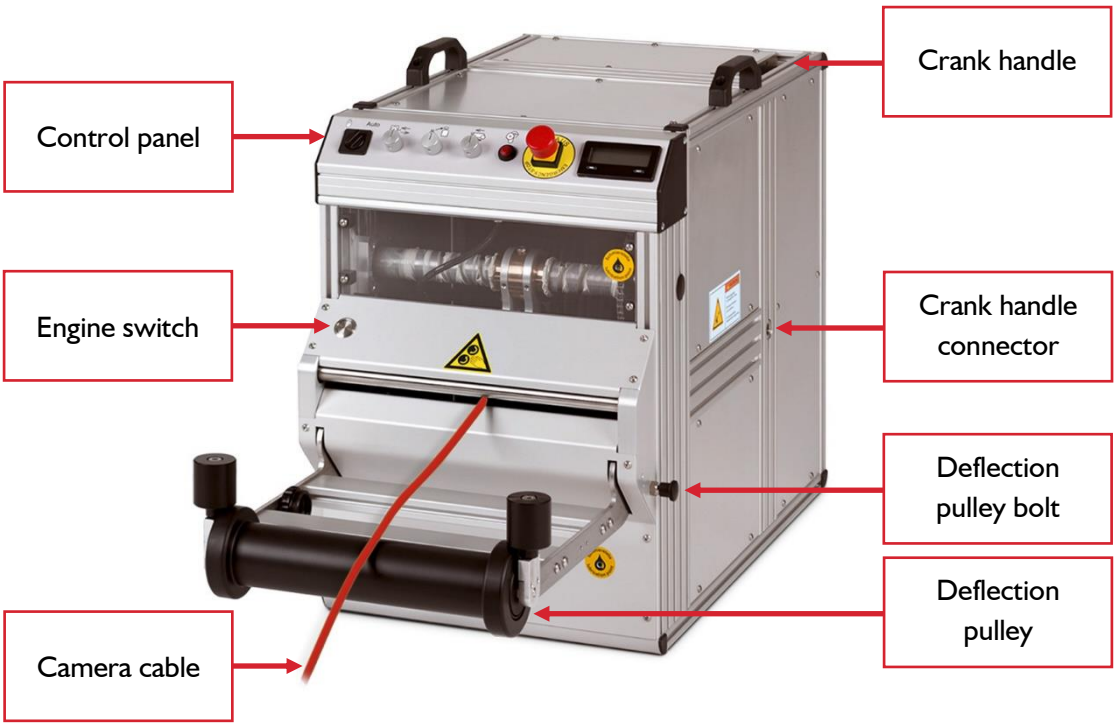
6.2. KTM-7X (250m)



6.2.1. Startup operations

1. Assure that the cable drum is set securely on a flat surface.
2. Connect the camera connector with your camera head and the control unit connector with your control unit (see also chapter 7. Connecting the control unit and camera head on page 14).
3. Release the brake on the backside of the cable drum, so you can unroll the camera cable without any resistance.
4. Fasten the brake hand-tight after you finished your work and rolled up the camera cable.

6.3. KTA-250



6.3.1. Startup operations

1. Assure that the cable drum is set securely on a flat surface.
2. Pull the deflection pulley bolt and flip the deflection pulley down. Assure that the camera cable sits on the big coil (as shown above).
3. Connect the crawler to the camera cable and the control unit connector (located on the back of the cable drum) with your control unit (see also chapter 7. Connecting the control unit and camera head on page 14).

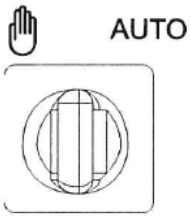
6.3.2. Operation

The following paragraphs explain the individual control elements in detail. Read carefully to be able to control the cable drum correctly.

HINT

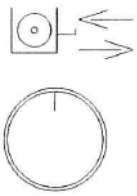
Before turning on the cable drum

Get sure that all potentiometers are in their zero position and that the emergency- stop button is not pressed.



The **mode switch** allows you to change between manual and automatic mode. When in manual mode (lever position: left), the drum direction (wind / unwind the cable), the retraction force and the crawler can be controlled manually. This mode makes sense in the following situations: Positioning the crawler in the manhole, Operating the crawler without remote control, troubleshooting.

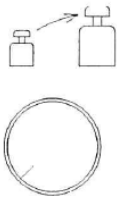
During automatic mode (lever position: right) the drum direction is automatically synchronized with the crawler controls. Thus, it is guaranteed that the crawler does not drive over its cable and becomes entangled while driving backwards. In this mode the potentiometer for the drum direction speed (next control element) is deactivated. The retraction force (second next control element) still has to be controlled manually but only during the winding process.



The **direction of drum** potentiometer allows you to control the direction and speed of the cable drum coiling – but only when the manual mode is active. The zero position of the potentiometer is at 12 o'clock. To unwind the camera cable, turn the potentiometer clockwise. The further you turn it to the right, the faster the cable gets unwound.

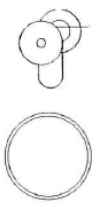
To wind up the camera cable turn the potentiometer from its zero position counterclockwise. The further you turn it to the left, the faster the cable gets wound up.

When you operate the cable drum in automatic mode the potentiometer has to be set in its zero position.



The **force control** potentiometer controls the retraction force of the cable drum. Its zero position is approximately at 7 o'clock and its setting is effective for both operating modes (manual and automatic mode). The retraction force should always be set as low as possible. When the crawler gets pulled back solely by the force of the cable drum, the retraction force is too high. This may happen when the crawler is steered forwards, backwards or even when it's not steered at all. In this case the force control potentiometer needs to be turned counterclockwise, until the crawler is able to be steered without retraction again.
When the crawler does not drive backwards, even though you steer it backwards, the retraction force is set too low. In this case, turn the potentiometer clockwise, until the crawler reacts to your steering commands again.

The **crawler control** potentiometer can theoretically be used to steer the crawler forwards or backwards directly at the cable drum. However, we strictly advice against it, as a precise control of the crawler is only possible via the control unit.
The zero position of the potentiometer is at 12 o'clock. Assure its correct zero position, because otherwise it can interfere with the control commands originating from the control unit. In this case the crawler might not react as you want it to.

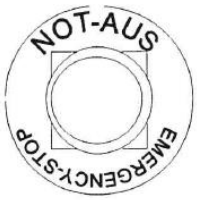


The **light barrier** button is normally not required.

In the unlikely event of the cable drum creating a cable loop (loose cable) on the coil, the light barrier will automatically detect this fault and switch off the system to prevent damages.

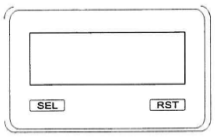
To remove the cable loop, press and hold the light barrier button and manually

pull the camera cable until it sits tightly on the coil again.



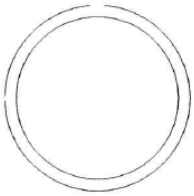
In case of an emergency, the **emergency-stop** button can cut the power supply of the cable drum. All movement is stopped immediately.

Pull on the emergency-stop button until it snaps back in its zero position, to release it.



The **distance counter** of the cable drum shows a distance value that is independent from the OSD distance counter value shown on the control unit. The RST button resets the value on the cable drum.

The SEL button has no functionality for customer but is only used by the service personnel.



The **engine switch** is located centrally, left-aligned on the front of the case, below the viewing window. It allows you to decouple the engine from the electronic. However, this is only useful in very specific cases. In its zero position, the button is almost flush with the front panel and active (engine end electronic is coupled). If you want to deactivate the engine switch (to decouple the engine and electronic), press it once. The button now sticks out a little bit. Now you can…:

- … manually unwind the cable without electronic assistance.
- … tighten the cable easier.
- … manually wind up the camera cable in case of a power failure.

In case of a power failure you need to get the crank handle, which is located on the top right corner of the cable drum. Attach it to the crank handle connector on the right side. To do so, screw it clockwise until it snaps in its final position and starts winding up the cable drum.
When the camera cable is wound up, activate the engine switch again and detach the crank handle by turning it counterclockwise.

HINT

Do not unwind the camera cable completely

The camera cable must only be unwound until the marker (ca. 5m / 16.4 ft before the cable ends) becomes visible! Otherwise, it might happen that the coil starts winding up the cable again and consequently leads to the situation that the direction of the drum is no longer correct.

6.3.3. Retrieving the crawler and camera cable

When you are finished with your inspection and want to retrieve the crawler, we recommend to use the automatic mode of the cable drum. In this mode the direction and speed of drum is synchronized with the crawler. Thus, it is guaranteed that the crawler won't drive over the camera cable (damaging it or getting entangled in it).

The more cable is unwound from the cable drum, the more the **force control** potentiometer must be turned up in order for the cable drum force control to function correctly. It is recommended to set the **force control** potentiometer to 12 o'clock and to turn it up or down depending on the length of the unwound cable. Use the control unit (or the **crawler control** potentiometer on the cable drum) to reverse the crawler and adjust the **force control** potentiometer accordingly, if necessary. Reduce the speed at the end of the manhole until the crawler has come to a complete stop.

6.3.4. Retrieving the camera cable – without crawler

In some cases it makes sense to retrieve the crawler at the end of a pipe, while the camera cable is still located in the pipe. In this scenario, the camera cable protection cap must be attached to the camera cable before it gets wound up. Without the protection cap the cable or system might suffer damage.

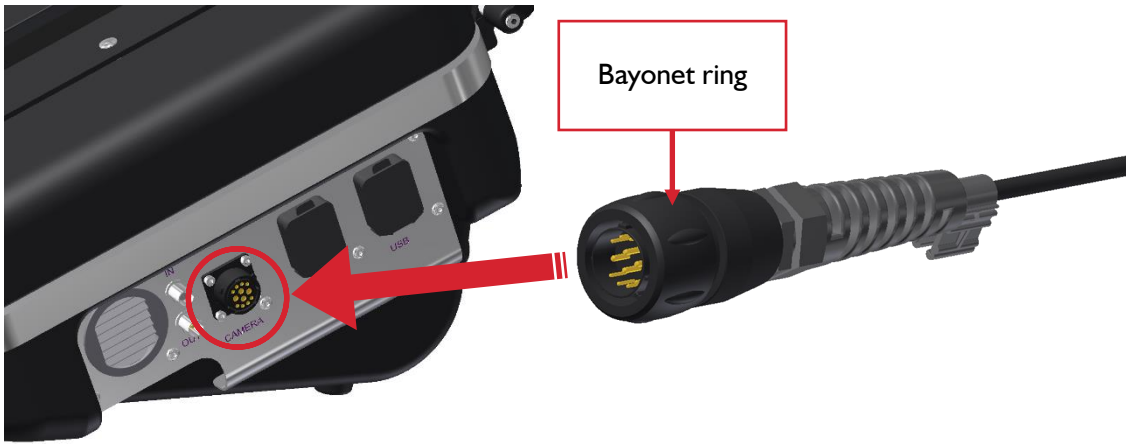
After you have attached the protection cap hand-tight to the camera cable, turn the **direction of drum** potentiometer slowly counterclockwise. Afterwards, increase the speed continuously. However, when the cable gets close to the end of the pipe, you need to reduce the speed to prevent possible injuries.

6.3.5. Turning off the system

1. Move the crawler as close as possible to the cable drum.
2. Press the CAM button on your control unit to deactivate the camera that is attached to the crawler.
3. Detach the camera cable of the crawler.
4. Turn the **direction of drum** potentiometer counterclockwise, until the camera cable is fully wound up. Get sure that the camera cable is completely and with no cable loops wound up.
5. Return all potentiometers on the cable drum back to their zero position.
6. Flip up the deflection pulley. To do so, the deflection pulley bolt needs to be pulled and snaps back in automatically afterwards.
7. Turn off the control unit properly (see control unit instruction manual) and disconnect the connection between control unit and cable drum.

7. CONNECTING THE CONTROL UNIT AND CAMERA HEAD

1. Connect the camera connector with your camera head.
2. Connect the reel with the QM-connector to the control unit. Take care to turn the connector until its groove fit the camera port on the control unit. Tighten the connector by turning the bayonet ring counterclockwise.



For information about the use of the control unit, please consult the appropriate control unit instruction manual.

8. SERVICING

8.1. General

Before beginning the cleaning

CAUTION

Before beginning the cleaning you have to switch off the inspection system and disconnect it from any power source! Cover the connectors with the dedicated protection caps.

While winding up the cable use a moist cloth to prevent a buildup of debris. The camera head and the cable must only be cleaned with water and soap. Please do not use solvents. The lighting- and lens glass panel should only be brushed off with a soft cloth or cotton sticks. Never try to scrape soiling off with tools!

The camera cable is specifically engineered and built for our inspection systems. The outer jacket is firm and abrasion-proof and mostly resistant to outside influences. But inappropriate handling or adverse conditions can damage or destroy this jacket. Is the cable damaged it has to be checked and possibly be exchanged with a new one.

Damaged cable

WARNING

A damaged jacket facilitates the penetration of moisture into the cable and can lead to a failure of the inspection system. If inner cable cores are damaged electrical shorts can occur!
In this case decommission the inspection system immediately!

Prevent damages

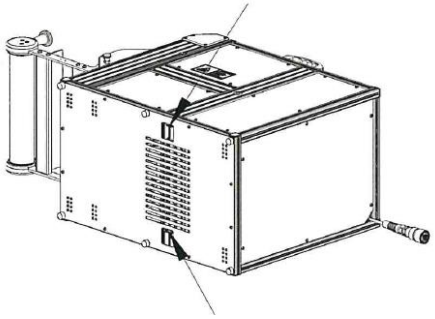
HINT

- Never use a high pressure cleaner to clean the inspection system. This can lead to considerable damages on the product.
- Especially clean screens and camera lenses extremely cautious and refrain from using caustic detergents.

8.2. KTA-250

Interval	Components	Maintenance work	Material
After each use	Complete system Camera cable	Clean complete system and cable.	Tap water, disinfectant
Regularly or when soiled	Cross lead spindle	Lubricate spindle. 1. Unwind cable until it appears on the right side out of the cable drum near the lubricating nipple. 2. Position grease gun on lubrication nipple. 3. Push grease gun handle once. 4. Remove grease gun again and wipe off surplus grease from lubricant nipple.	WEICON AL-F
	Deflection pulley	Clean coils and check for wear. If notches larger than 3 mm / 0.12 inch have formed, the coils have to be replaced.	Water
Monthly	Drive chain	Check chain tension. 1. Dismantle guard. 2. Replace chain if it can be lifted off the chain tensioner. 3. Install guards again.	
		Lubricate chain. 1. Deactivate engine switch. 2. Pull a few meters of carriage cable off the drum. 3. Attach crank handle to crank handle connector. 4. Insert spray tube of chain spray through hole in guard. 5. Move chain using crank handle and spray the chain at the same time.	WEICON chain and cable spray
Six-monthly	Complete system	Check secure seat of all bolts.	

9. KTA-250 TROUBLESHOOTING

Error	Possible cause	Remedy
Cable drum without function	The connection cable is not connected to the control unit.	Connect the connection cable to the control unit (see chapter 7. Connecting the control unit and camera head on page 14).
	Not all potentiometers are in their zero position.	Turn all potentiometers to their zero position and switch on the control unit again. See also chapter 6.3.2. Operation from page 10.
	Emergency- stop button is pressed.	Pull the **emergency-stop** button until it snaps back in its position.
Loose cable on cable drum	Too much camera cable was unwound during manual operation.	Press the **light barrier** button and manually tighten the camera cable. See also chapter 6.3.2. Operation from page 10.
Crawler wheels spin, as cable drum does not release any more cable	The force control potentiometer is set too high.	Turn the **force control** potentiometer counterclockwise until the crawler wheels stop spinning. See also chapter 6.3.2. Operation from page 10.
	Cable loop in light barrier.	Press the **light barrier** button and manually tighten the camera cable.
	Light barrier soiled.	Clean light barrier. Place cable drum on its side and insert a wet cotton stick through the drill holes on the bottom of the cable drum (see sketch).  Clean the light barrier and its reflector carefully by gently circling the cotton stick on them.
	Smooth running of the cable drum is no longer functioning correctly.	Have smooth running function adjusted by service workshop. Alternative: 1. Switch off the complete system. 2. Press and hold the **light barrier** button while switching on the system. 3. Keep light tension on camera cable. 4. Keep the **light barrier** button pressed until the cable drum releases some of the camera cable. 5. Release the **light barrier** button. 6. Test the synchronization between cable drum and crawler. If the result is still unsatisfactory, the process has to be repeated and the **light barrier** button has to be held pressed longer.

10. GUARANTEE DECLARATION

Congratulations on the purchase of your new RIEZLER inspection system. Our devices are the result of years of experience and ongoing development.

Conscientious workmanship and control are important goals in our company. Nonetheless if defects should occur, the possibility of which can never be excluded, you have a high level of security through our generous guarantee.

Please note, however, that even the best product can properly and continuously fulfill its function only if it is properly maintained and operated.

10.1. Scope of the guarantee

For the product from RIEZLER Inspektionssysteme GmbH & Co. KG that you have purchased, that has been manufactured and tested in accordance with our production and quality guidelines we grant you a guarantee of twelve months.

We will correct defects that occur verifiably due to material and/or manufacturing faults at no charge. In this regard we reserve the right, at our sole discretion, to repair the device, or to replace it completely, replace its defective parts, or refund the remaining value to the customer, if repair or replacement is not possible.

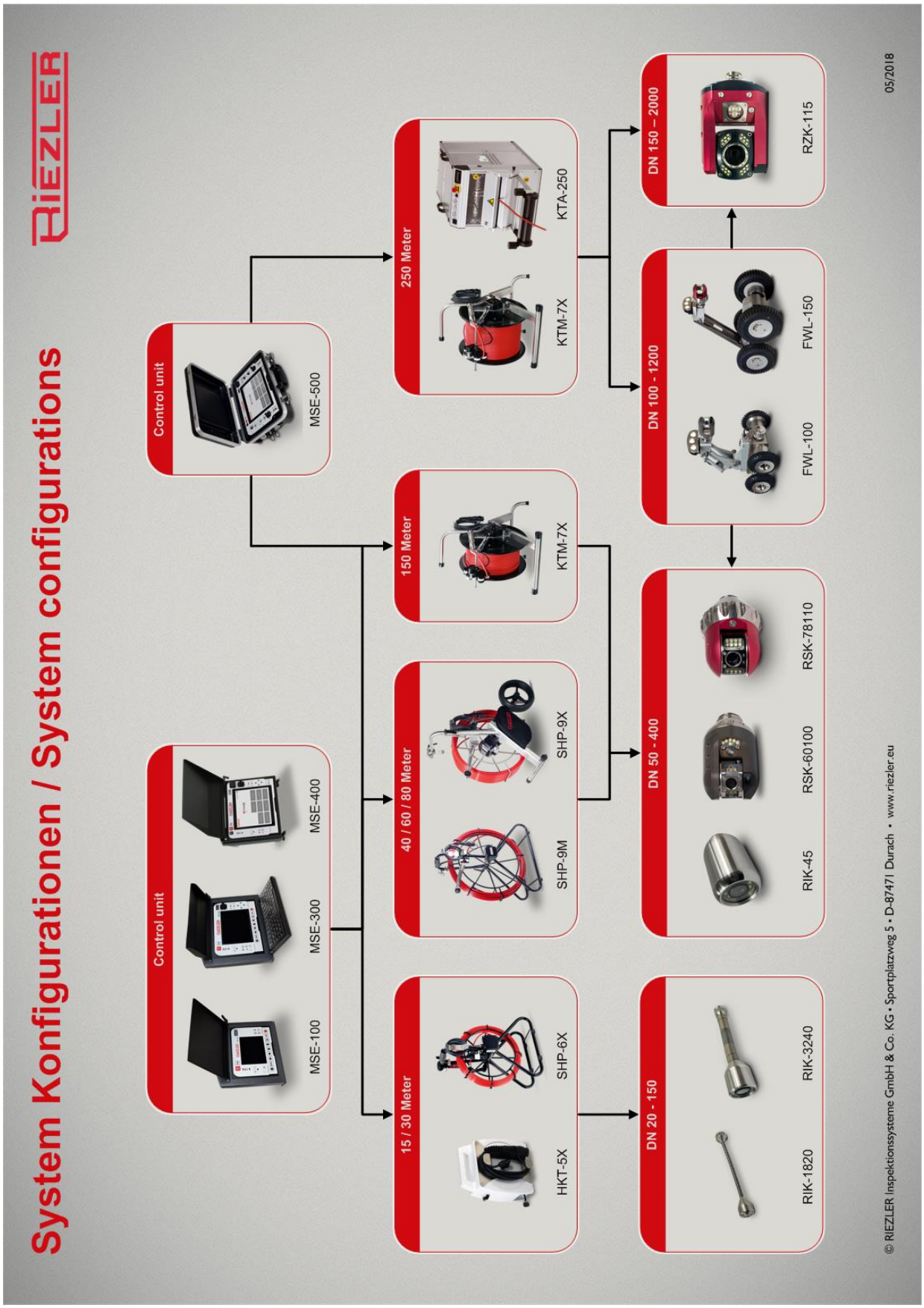
10.2. Guarantee conditions

Excepted from the guarantee are damages that occur due to improper use of the system, inadequate maintenance, normal wear, and force majeure (e.g. lightning, fire, and freezing…).

Moreover the guarantee does not cover parts that are subject to wear, such as front glass, shaft end seals, lights, cables, etc., as well as damage that does not impair the serviceability of the system.

If you have a guarantee claim please contact us, your dealer, or the service organization closest to you, and submit the original invoice.

11. CONFIGURATION CAPABILITIES



12. TECHNICAL DATA

KTM-7X (150m)	KTM-7X (250m)	KTA-250
		

Cable

Length	150 m / 492 ft	250 m / 820 ft	150 to 250 m 492 to 820 ft
Diameter	7 mm / 0.28 inch	7 mm / 0.28 inch	7 mm / 0.28 inch

Compatibility

Cameras:			
RIK-1820	✗	✗	✗
RIK-3240 / -RO	✗	✗	✗
RIK-45	✓	✓	✓
RIK-5570	✓	✓	✓
RSK-60	✓	✓	✓
RSK-78	✓	✓	✓
RZK-115	✓	✓	✓
Crawlers:			
FWL-100	✓	✓	✓
FWL-150	✓	✓	✓

Specifications

Power supply via	Control unit	Control unit	Control unit
Meter counter	Digital	Digital	Digital
Operation	Manually	Manually	Manually

Dimensions (L x W x H)	450 x 350 x 540 mm 17.7 x 13.8 x 21.3 inch	450 x 370 x 540 mm 17.7 x 14.6 x 21.3 inch	698 x 364 x 525 mm 27.5 x 14.3 x 20.7 inch (deflection pulley folded) 890 x 364 x 525 mm 35.0 x 14.3 x 20.7 inch (deflection pulley unfolded)
Weight max.	ca. 19.5 kg / 43 lbs	ca. 26 kg / 57 lbs	ca. 50 kg / 110 lbs

