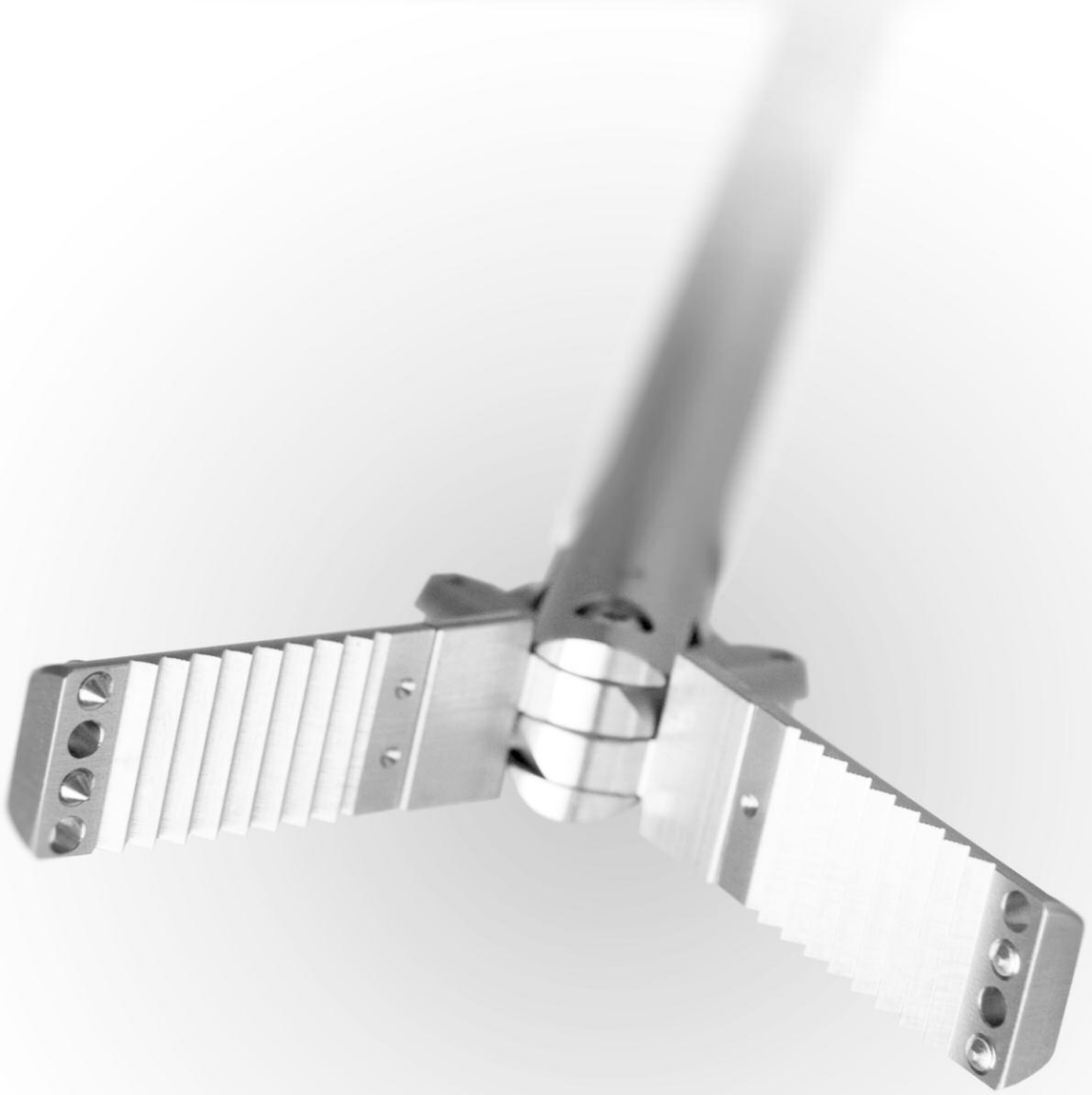




FOR MORE
INFORMATION



CATALOGUE

REVISION 1.0

FOREIGN OBJECT RETRIEVAL TOOLS & GUIDE TUBES

Item No.: DXX-80-000240
Document No.: KA004_1-0

FOREIGN OBJECT & DEBRIS RETRIEVAL TOOLS ■ GUIDE TUBES ■ ACCESSORY





CHOOSE THE RIGHT EQUIPMENT

This catalogue provides you with a choice of retrieval tools and guide tubes for your foreign object search and retrieval (FOSAR).



ACCESS & IDENTIFICATION



GEOMETRY DEFINITION

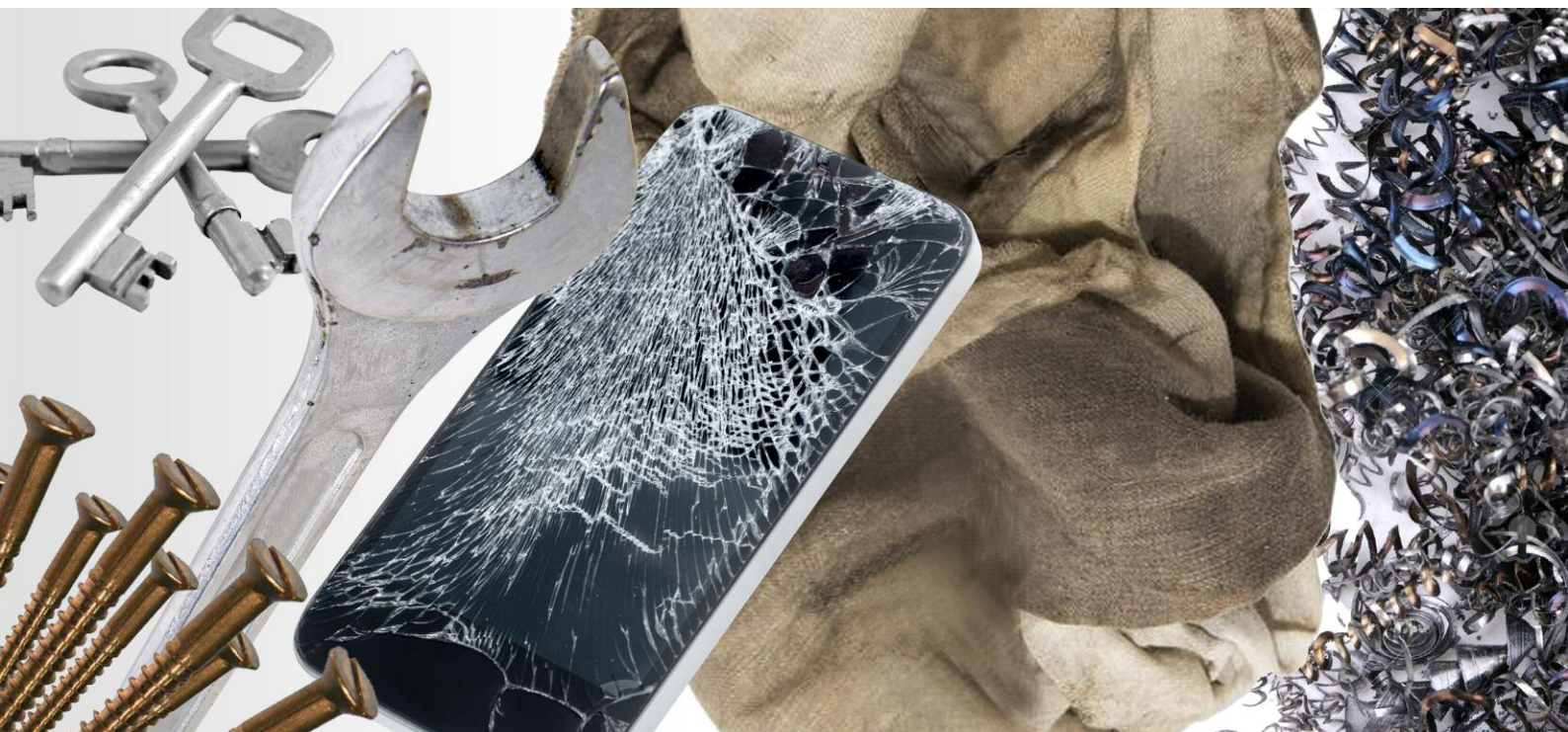


TOOL CHOICE

For certain applications, a simple retrieval magnets in combination with fiber push poles might lead to a fast and easy retrieval job.

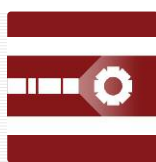
However, more frequent foreign object search and retrieval requires the use of additional endoscopic cameras to locate and identify the foreign object first. The only possible access to the location could require sophisticated guiding of cameras and tools. Object shape and material characteristics demand specific perhaps even motorized retrieval tools.

Being knowledgeable on tools options, having equipment ready and at hands is the key of a good FOSAR prevention plan.



SEARCH & LOCATE

INVIZ® guide tubes



IDENTIFY & SECURE

INVIZ® inspection equipment



RETRIEVE

INVIZ® retrieval tools

This catalogue offers a broad range of field proven solutions for your FOSAR prevention strategy. The tool range proposed evolved over the years as result of our own and customers experiences in many successful foreign object search and retrieval scenarios.

Find basic tools, well filled and ready to go emergency retrieval tools kits, and sophisticated guiding and retrieval solutions. Many tools merge and combine seamless with each other. Our videoscopes and video endoscopes catalogue provides perfect inspection equipment fitting the range of guide tubes and retrieval tools for the search part of the FOSAR tasks.

And in case the offered equipment won't fit your specific situation, find inspirations with some interesting specials and feel free to contact us for a solution with your needs.



+49 7432 98375-0

Call us with your specific requirements.



INFO@VIZAAR.COM

Write us your detailed application description.



FIND YOUR LOCAL DEALER

Find your official sales & service distributor online.



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Remote inspection & supporting tools solutions

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1 RETRIEVAL TOOLS





Good FME (Foreign Material Exclusion) programs minimize FOD (Foreign Object Debris). But problems still occur and often at the worst moment. FOD can be almost anything, from a lost fastener to a dropped mobile phone. When FOD shows up results can be destructive, dangerous and massively expensive. The selected tool kits are the result of long experience and practical use. The tools are practically packed in one tailor made carrying case. Typical standard tools and practical consuming materials are included. Besides good materials debris prevention, a well filled retrieval tool kit being ready at side is the best strategy and preparation to counter the unexpected.



1 RETRIEVAL TOOLS

1.1 INVIZ® Retrieval tools kits

1.1 PRO



INVIZ® Retrieval tools kit PRO

Including:

- Motorized retrieval tool INVIZ® GR 8
- Motorized retrieval tool INVIZ® GR 16
- Stainless steel wire snare
- Retrieval magnets
- Hook tool
- Adjustable elbow
- LED flash light
- Tool set
- Accessory set
- Glass fiber push pole set
- Operating instructions

INVIZ® GR 8	INVIZ® GR 16	NON-MOTORIZED RETRIEVAL TOOLS	ACCESSORY SET	PUSH POLE SET	SYSTEM KIT
✓ 10 m	✓	✓	✓	✓	BMX-50-000231
✓ 15 m	✓	✓	✓	✓	BMX-50-000345

The PRO version is the most complete retrieval tools kit you will find, tailored in one mobile hand case. It is the professional's choice. In addition to a full set of standard equipment, it contains two different sized electrical driven retrieval tools with four different grabber options.

MOTORIZED RETRIEVAL TOOL INVIZ® GR 8

	Motorized retrieval tool INVIZ® GR 8 Motorized and waterproof 8 mm retrieval tool with 10 m / 15 m working length.	VXX-70-000104 VXX-70-000105
	Interchangeable T-Rex mouth for INVIZ® GR 8 8 mm T-Rex mouth, including spare grub screws and Allen key (FXX-70-000112).	BMX-50-000334
	Interchangeable Dolphin mouth for INVIZ® GR 8 Dolphin mouth, including spare grub screws and Allen key (FXX-70-000112).	BMX-50-000335
	Remote control INVIZ® GR 8 Remote control for the retrieval tool INVIZ® GR 8.	BMX-50-000256
	Battery 1x powerful spare battery Ultralite Lithium HI Energy 9-V Block	EXX-91-000106

MOTORIZED RETRIEVAL TOOL INVIZ® GR 16

	Motorized retrieval tool INVIZ® GR 16 Motorized and waterproof 16 mm retrieval tool.	BEM-30-000165
	Remote control INVIZ® GR 16 Remote control for the retrieval tool INVIZ® GR 16.	BMX-50-000249
	Cable for remote control INVIZ® GR 16 15 m cable for remote control retrieval tool INVIZ® GR 16.	BEX-20-000113
	Battery 2x powerful spare battery Ultralite Lithium HI Energy 9-V Block	EXX-91-000106

THREE FINGER JAWS FOR INVIZ® GR 16

	Fork & Tine tools for motorized retrieval pliers INVIZ® GR 16. Including Allen key (FXX-70-000112).	BMX-50-000293
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STAINLESS STEEL WIRE SNARE

	Diameter	2.5 mm
	Length	15 m
	Construction	Multi wire snare construction
	Mounting	10 mm push pole adapter
	Function	Offering big size loops

Other configurations, spare parts and accessories are available in further chapters.
















1 RETRIEVAL TOOLS

1.1 INVIZ® Retrieval tools kits

1.1 PRO

Including

RETRIEVAL HOOK		BMX-50-000117
	Function	Reinforced, sharp hook
	Mounting	10 mm push pole adapter
RETRIEVAL MAGNET, SMALL		BMX-50-000113
	Dimensions	Ø 16 x 40 mm
	Mounting	10 mm push pole adapter
	Function	Small size magnet for limited space applications.
RETRIEVAL MAGNET, MEDIUM		BMX-50-000112
	Dimensions	Ø 20 x 40 mm
	Mounting	10 mm push pole adapter
	Function	Medium size magnet a compromise space and magnetic strength.
RETRIEVAL MAGNET, LARGE		BMX-50-000114
	Dimensions	Ø 24 x 45 mm
	Mounting	10 mm push pole adapter
	Function	Strong magnet for bigger items and larger amount metal chip collection.
ADJUSTABLE ELBOW		BMX-50-000106
	Angle	0° to 90°
	Mounting	10 mm push pole adapter
	Function	Better tool positioning for retrieval snares, magnets, hooks or retrieval tool INVIZ® GR 16.
SHORT ROD PIECE 10 CM / 4"		FXX-71-000124
	Function	Optimized for operation with adjustable elbow (BMX-50-000106)
	Mounting	10 mm push pole adapter
GLASS FIBER PUSH POLE SET		BMX-50-000292
	3x Glass fiber push pole "soft", each 1,5 meter length	FXX-71-000100
	Simply to connect and extend by the tool free 10 mm interconnector.	
	3x Glass fiber push pole "medium", each 1,5 meter length	FXX-71-000101
	Simply to connect and extend by the tool free 10 mm interconnector.	
	3x Glass fiber push pole "stiff", each 1,5 meter length	FXX-71-000102
	Simply to connect and extend by the tool free 10 mm interconnector.	
SOFT BAG FOR GLASS FIBER PUSH POLES		FXX-82-000108
	This soft bag stores up to 15 of your connectable glass fiber push poles. Made from robust easy to clean materials, it will be simple to transport and store your full length push rod system.	
TRANSPORT CASE		BMX-50-000230
	This robust case is home for retrieval tools and accessories. Light-weight, compact and splash water proof HPX® high performance transport case for INVIZ® retrieval tools. Product tailored interior for perfect protection during transport and storage.	
STANDARD TOOLS SET		BSX-90-000101
	Screw driver set, wire cutter, LED power flash lamp, scissors; cutter and all other usefull tools to fit and refill the Retrieval tool case.	
RETRIEVAL TOOL CONSUMABLES		BSX-90-000100
	Duct tape, cable binder and all those useful consumables all ready packed into the practical tailored plastic containers to refill the retrieval tool box.	



1 RETRIEVAL TOOLS



1.1 INVIZ® Retrieval tools kits

1.1 STANDARD



INVIZ® Retrieval tools kit STANDARD






Including:


- Motorized retrieval tool INVIZ® GR 8
- Stainless steel wire snare
- Retrieval magnets
- Hook tool
- Adjustable elbow
- LED flash light
- Tool set
- Accessory set
- Glass fiber push pole set
- Operating instructions


INVIZ® GR 8	INVIZ® GR 16	NON-MOTORIZED RETRIEVAL TOOLS	ACCESSORY SET	PUSH POLE SET	SYSTEM KIT
✓ 10 m	-	✓	✓	✓	BMX-50-000268

The STANDARD version retrieval tools kit offers a very complete set of mechanical foreign object retrieval equipment packed together with the world's smallest electrical driven retrieval tool system INVIZ® GR 8. Two field interchangeable grabbers expand the scope of capabilities.

The recommended optional INVIZ® GR 16 fits perfectly into the same case and upgrades the set to the PRO version.

MOTORIZED RETRIEVAL TOOL INVIZ® GR 8		
	Motorized retrieval tool INVIZ® GR 8 Motorized and waterproof 8 mm retrieval tool with 10 m / 15 m working length.	VXX-70-000104 VXX-70-000105
	Interchangeable T-Rex mouth for INVIZ® GR 8 8 mm T-Rex mouth, including spare grub screws and Allen key (FXX-70-000112).	BMX-50-000334
	Interchangeable Dolphin mouth for INVIZ® GR 8 Dolphin mouth, including spare grub screws and Allen key (FXX-70-000112).	BMX-50-000335
	Remote control INVIZ® GR 8 Remote control for the retrieval tool INVIZ® GR 8.	BMX-50-000256
	Battery 1x powerful spare battery Ultralite Lithium HI Energy 9-V Block	EXX-91-000106

STAINLESS STEEL WIRE SNARE		BMX-50-000115
	Diameter	2.5 mm
	Length	15 m
	Construction	Multi wire snare construction
	Mounting	10 mm push pole adapter
	Function	Offering big size loops

RETRIEVAL HOOK		BMX-50-000117
	Function	Reinforced, sharp hook
	Mounting	10 mm push pole adapter

Other configurations, spare parts and accessories are available in further chapters.















1 RETRIEVAL TOOLS

1.1 INVIZ® Retrieval tools kits

1.1 STANDARD

Including

RETRIEVAL MAGNET, SMALL		BMX-50-000113
	Dimensions	Ø 16 x 40 mm
	Mounting	10 mm push pole adapter
	Function	Small size magnet for limited space applications.
RETRIEVAL MAGNET, MEDIUM		BMX-50-000112
	Dimensions	Ø 20 x 40 mm
	Mounting	10 mm push pole adapter
	Function	Medium size magnet a compromise space and magnetic strength.
RETRIEVAL MAGNET, LARGE		BMX-50-000114
	Dimensions	Ø 24 x 45 mm
	Mounting	10 mm push pole adapter
	Function	Strong magnet for bigger items and larger amount metal chip collection.
ADJUSTABLE ELBOW		BMX-50-000106
	Angle	0° to 90°
	Mounting	10 mm push pole adapter
	Function	Better tool positioning for retrieval snares, magnets, hooks or retrieval tool INVIZ® GR 16.
SHORT ROD PIECE 10 CM / 4"		FXX-71-000124
	Function	Optimized for operation with adjustable elbow (BMX-50-000106)
	Mounting	10 mm push pole adapter
GLASS FIBER PUSH POLE SET		BMX-50-000292
	3x Glass fiber push pole "soft", each 1,5 meter length Simply to connect and extend by the tool free 10 mm interconnector.	FXX-71-000100
	3x Glass fiber push pole "medium", each 1,5 meter length Simply to connect and extend by the tool free 10 mm interconnector.	FXX-71-000101
	3x Glass fiber push pole "stiff", each 1,5 meter length Simply to connect and extend by the tool free 10 mm interconnector.	FXX-71-000102
SOFT BAG FOR GLASS FIBER PUSH POLES		FXX-82-000108
	This soft bag stores up to 15 of your connectable glass fiber push poles. Made from robust easy to clean materials, it will be simple to transport and store your full length push rod system.	
TRANSPORT CASE		BMX-50-000230
	This robust case is home for retrieval tools and accessories. Light-weight, compact and splash water proof HPX® high performance transport case for INVIZ® retrieval tools. Product tailored interior for perfect protection during transport and storage.	
STANDARD TOOLS SET		BSX-90-000101
	Screw driver set, wire cutter, LED power flash lamp, scissors; cutter and all other usefull tools to fit and refill the Retrieval tool case.	
RETRIEVAL TOOL CONSUMABLES		BSX-90-000100
	Duct tape, cable binder and all those useful consumables all ready packed into the practical tailored plastic containers to refill the retrieval tool box.	



1 RETRIEVAL TOOLS



1.1 INVIZ® Retrieval tools kits

1.1 START



INVIZ® Retrieval tools kit START

Including:


- Stainless steel wire snare
- Retrieval magnets
- Hook tool
- Adjustable elbow
- LED flash light
- Tool set
- Accessory set
- Glass fiber push pole set
- Operating instructions

INVIZ® GR 8	INVIZ® GR 16	NON-MOTORIZED RETRIEVAL TOOLS	ACCESSORY SET	PUSH POLE SET	SYSTEM KIT
-	-	✓	✓	✓	BMX-50-000269


The START retrieval tools kit offers the complete range of basic mechanical retrieval tools fitting seamless onto the extendable push rod poles. Practical accessories and hand tools support you and ensure that you are prepared and ready to go when the emergency pops up.

The recommended optional electrical retrieval tools INVIZ® GR 8 and INVIZ® GR 16 fit perfectly into the tailor-made case and upgrade the system to the PRO version.


STAINLESS STEEL WIRE SNARE BMX-50-000115

	Diameter	2.5 mm
	Length	15 m
	Construction	Multi wire snare construction
	Mounting	10 mm push pole adapter
	Function	Offering big size loops


RETRIEVAL HOOK BMX-50-000117

	Function	Reinforced, sharp hook
	Mounting	10 mm push pole adapter


RETRIEVAL MAGNET, SMALL BMX-50-000113

	Dimensions	Ø 16 x 40 mm
	Mounting	10 mm push pole adapter
	Function	Small size magnet for limited space applications.

RETRIEVAL MAGNET, MEDIUM BMX-50-000112

	Dimensions	Ø 20 x 40 mm
	Mounting	10 mm push pole adapter
	Function	Medium size magnet a compromise space and magnetic strength.

RETRIEVAL MAGNET, LARGE BMX-50-000114

	Dimensions	Ø 24 x 45 mm
	Mounting	10 mm push pole adapter
	Function	Strong magnet for bigger items and larger amount metal chip collection.












1 RETRIEVAL TOOLS

1.1 INVIZ® Retrieval tools kits

1.1 START

Including

ADJUSTABLE ELBOW		BMX-50-000106
	Angle	0° to 90°
	Mounting	10 mm push pole adapter
	Function	Better tool positioning for retrieval snares, magnets, hooks or retrieval tool INVIZ® GR 16.
SHORT ROD PIECE 10 CM / 4"		FXX-71-000124
	Function	Optimized for operation with adjustable elbow (BMX-50-000106)
	Mounting	10 mm push pole adapter
GLASS FIBER PUSH POLE SET		BMX-50-000292
	3x Glass fiber push pole "soft", each 1,5 meter length	FXX-71-000100
	Simply to connect and extend by the tool free 10 mm interconnector.	
	3x Glass fiber push pole "medium", each 1,5 meter length	FXX-71-000101
	Simply to connect and extend by the tool free 10 mm interconnector.	
	3x Glass fiber push pole "stiff", each 1,5 meter length	FXX-71-000102
	Simply to connect and extend by the tool free 10 mm interconnector.	
SOFT BAG FOR GLASS FIBER PUSH POLES		FXX-82-000108
	This soft bag stores up to 15 of your connectable glass fiber push poles. Made from robust easy to clean materials, it will be simple to transport and store your full length push rod system.	
TRANSPORT CASE		BMX-50-000230
	This robust case is home for retrieval tools and accessories. Light-weight, compact and splash water proof HPX® high performance transport case for INVIZ® retrieval tools. Product tailored interior for perfect protection during transport and storage.	
STANDARD TOOLS SET		BSX-90-000101
	Screw driver set, wire cutter, LED power flash lamp, scissors; cutter and all other usefull tools to fit and refill the Retrieval tool case.	
RETRIEVAL TOOL CONSUMABLES		BSX-90-000100
	Duct tape, cable binder and all those useful consumables all ready packed into the practical tailored plastic containers to refill the retrieval tool box.	



1 RETRIEVAL TOOLS



1.2 Motorized retrieval tool INVIZ® GR 8

1.2 INVIZ® GR 8



Motorized retrieval tool INVIZ® GR 8

Including:

- 2 m umbilical cable
- Remote control
- Lithium high power battery
- Storage box
- Operating instructions

Recommended accessory

- Transport case
- T-Rex mouth grabber
- Dolphin mouth grabber

Optional useful accessory


- Articulating guide tubes


OUTER Ø	LENGTH	ITEM NO.
8.4 mm	10 m	VXX-70-000104
8.4 mm	15 m	VXX-70-000105
8.4 mm	20 m	VXX-70-000106
8.4 mm	30 m	VXX-70-000107


Transport case (BMX-50-000230), T-Rex mouth grabber (BMX-50-000334) and Dolphin mouth grabber (BMX-50-000335) must be ordered separately.


The INVIZ® GR 8 is included in the INVIZ® Retrieval tools kits PRO and STANDARD.


The INVIZ® GR 8 is a motorized gripper, fixed and powered through a flexible and robust glass fiber push rod. It is designed to retrieve smaller and medium size items. Depending on the need, object shape and position, the jaw can be swapped from a 5 mm mouse tooth gripper to a 8 mm T-Rex mouth gripper. Operated by remote control, the retrieval tool is battery powered. Avoid cable clutter with the smart storage push rod system with integrated power supply cords. It's push rod is stored in a practical box and provided in one working length, thus very useful in narrow surroundings. The INVIZ® GR 8 will perfectly fit into the retrieval tool case.

TRANSPORT CASE	BMX-50-000230
	This robust case is home for retrieval tools and accessories. Light-weight, compact and splash water proof HPX® high performance transport case for INVIZ® retrieval tools. Product tailored interior for perfect protection during transport and storage.

INTERCHANGEABLE T-REX MOUTH GRABBER FOR INVIZ® GR 8	BMX-50-000334								
	<table border="1"> <tr> <td>Outer Ø (jaws closed)</td> <td>8.4 mm</td> </tr> <tr> <td>Distal head length</td> <td>108 mm</td> </tr> <tr> <td>Jaw range</td> <td>70° Space required to open jaws to maximum 16.8 mm</td> </tr> <tr> <td>Max. grab size</td> <td>12.5 mm</td> </tr> </table>	Outer Ø (jaws closed)	8.4 mm	Distal head length	108 mm	Jaw range	70° Space required to open jaws to maximum 16.8 mm	Max. grab size	12.5 mm
Outer Ø (jaws closed)	8.4 mm								
Distal head length	108 mm								
Jaw range	70° Space required to open jaws to maximum 16.8 mm								
Max. grab size	12.5 mm								

INTERCHANGEABLE DOLPHIN MOUTH GRABBER FOR INVIZ® GR 8	BMX-50-000335								
	<table border="1"> <tr> <td>Outer Ø (jaws closed)</td> <td>8.4 mm</td> </tr> <tr> <td>Distal head length</td> <td>125 mm</td> </tr> <tr> <td>Jaw range</td> <td>70° Space required to open jaws to maximum 32 mm</td> </tr> <tr> <td>Max. grab size</td> <td>28 mm</td> </tr> </table>	Outer Ø (jaws closed)	8.4 mm	Distal head length	125 mm	Jaw range	70° Space required to open jaws to maximum 32 mm	Max. grab size	28 mm
Outer Ø (jaws closed)	8.4 mm								
Distal head length	125 mm								
Jaw range	70° Space required to open jaws to maximum 32 mm								
Max. grab size	28 mm								

ARTICULATING GUIDE TUBE, 3 M	HVT-90-000148								
	<table border="1"> <tr> <td>Outer Ø</td> <td>22.0 mm</td> </tr> <tr> <td>Length</td> <td>3 m</td> </tr> <tr> <td>Articulation</td> <td>4 x 110°</td> </tr> <tr> <td>Inner Ø</td> <td>9.0 mm</td> </tr> </table>	Outer Ø	22.0 mm	Length	3 m	Articulation	4 x 110°	Inner Ø	9.0 mm
Outer Ø	22.0 mm								
Length	3 m								
Articulation	4 x 110°								
Inner Ø	9.0 mm								

ARTICULATING GUIDE TUBE, 5 M	HVT-90-000149								
	<table border="1"> <tr> <td>Outer Ø</td> <td>22.0 mm</td> </tr> <tr> <td>Length</td> <td>5 m</td> </tr> <tr> <td>Articulation</td> <td>4 x 110°</td> </tr> <tr> <td>Inner Ø</td> <td>9.0 mm</td> </tr> </table>	Outer Ø	22.0 mm	Length	5 m	Articulation	4 x 110°	Inner Ø	9.0 mm
Outer Ø	22.0 mm								
Length	5 m								
Articulation	4 x 110°								
Inner Ø	9.0 mm								



1 RETRIEVAL TOOLS



1.3 Motorized retrieval tool INVIZ® GR 16

1.3 INVIZ® GR 16



OUTER Ø	CABLE LENGTH*	ITEM NO.
16 mm	15 m	BEM-30-000219

* Custom lengths available up to 30 m.

Transport case (BMX-50-000230) must be ordered separately.

The INVIZ® GR 16 is included in the INVIZ® Retrieval tools kit PRO.

Motorized retrieval tool INVIZ® GR 16

Including:

- 15 m umbilical cable
- Remote control
- Battery
- Storage box
- Operating instructions

The INVIZ® GR 16 is the workhorse of motorized retrieval tools. Medium size and larger objects are secure gripped and retrieved. Grabs are field interchangeable between an alligator style and a three finger grabber. The alligator mouth including four adjustable front fangs securing additional grip on the object. The viZaar® push rod quick connection system integrates seamlessly with the INVIZ® GR 16 to assist accurate positioning. The flexible push rods used in this system are available in a selection of different lengths and three grades of stiffness. Made of robust stainless steel, the INVIZ® GR 16 is robust, watertight and mobile, powered by two lithium ion batteries.

Recommended accessory

- Transport case
- Three finger jaws

TRANSPORT CASE	BMX-50-000230
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This robust case is home for retrieval tools and accessories. Light-weight, compact and splash water proof HPX® high performance transport case for INVIZ® retrieval tools. Product tailored interior for perfect protection during transport and storage.

INTERCHANGEABLE THREE FINGER JAWS FOR INVIZ® GR 16	BMX-50-000293
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Outer Ø (jaws closed)	16 mm
Length	49 mm
Distal head length	219 mm
Jaw range	160° Space required to open jaws to maximum 84 mm
Max. grab size	77 mm



1 RETRIEVAL TOOLS

1.4 Non-motorized retrieval tools

1.4 NON-MOTORIZED



Stainless steel wire snare

STAINLESS STEEL WIRE SNARE		BMX-50-000115
Diameter	2.5 mm	
Length	15 m	
Construction	Multi wire snare construction	
Mounting	10 mm push pole adapter	
Function	Offering big size loops	
Recommended	Glass fiber push pole soft / medium / stiff	



Retrieval hook

RETRIEVAL HOOK		BMX-50-000117
Function	Reinforced, sharp hook	
Mounting	10 mm push pole adapter	
Recommended	Glass fiber push pole soft / medium / stiff	



Retrieval magnet, small

RETRIEVAL MAGNET, SMALL		BMX-50-000113
Dimensions	Ø 16 x 40 mm	
Mounting	10 mm push pole adapter	
Function	Small size magnet for limited space applications.	
Recommended	Flex rod 15 cm / 6" (FXX-71-000105) and glass fiber push pole soft / medium / stiff.	



Retrieval magnet, medium

RETRIEVAL MAGNET, MEDIUM		BMX-50-000112
Dimensions	Ø 20 x 40 mm	
Mounting	10 mm push pole adapter	
Function	Medium size magnet a compromise space and magnetic strength.	
Recommended	Flex rod 15 cm / 6" (FXX-71-000105) and glass fiber push pole soft / medium / stiff.	



Retrieval magnet, large

RETRIEVAL MAGNET, LARGE		BMX-50-000114
Dimensions	Ø 24 x 45 mm	
Mounting	10 mm push pole adapter	
Function	Strong magnet for bigger items and larger amount metal chip collection.	
Recommended	Flex rod 15 cm / 6" (FXX-71-000105) and glass fiber push pole soft / medium / stiff.	

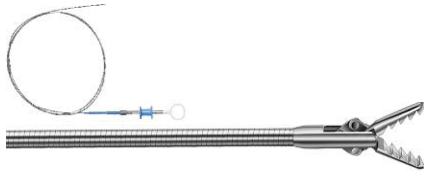


1 RETRIEVAL TOOLS



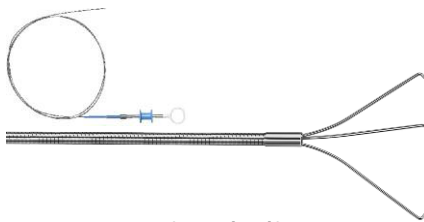
1.5 Retrieval pliers

1.5 Retrieval pliers



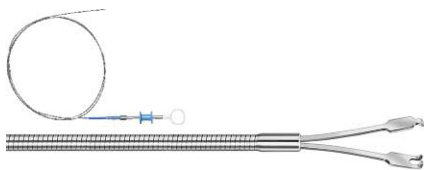
Retrieval pliers

OUTER Ø	LENGTH	PLIERS	JAW RANGE	PLIER LENGTH	FITTING TO	ITEM NO.
1.65 mm	3.3 m	Alligator forceps	100°	10.2 mm	VUCAM® XO (3.3 m)	HSO-50-000100
1.65 mm	7.0 m	Alligator forceps	100°	10.2 mm	INVIZ® DE 2.4 / 4.0 VUCAM® XO (6.6 m)	HSO-50-000101
3.0 mm	2.2 m	Alligator forceps	90°	16.7 mm	VUCAM® XO (2.2 m) VISIO probes	HSO-50-000102
3.0 mm	3.3 m	Alligator forceps	90°	16.7 mm	VUCAM® XO (3.3 m) VISIO probes	HSO-50-000103
3.0 mm	6.6 m	Alligator forceps	90°	16.7 mm	VUCAM® XO (6.6 m) INVIZ® VUMAN® (5 m)	HSO-50-000104
3.0 mm	9.0 m	Alligator forceps	90°	16.7 mm	INVIZ® VUMAN® (8 m)	HSO-50-000105



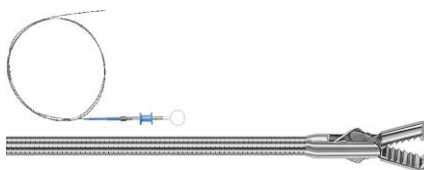
Retrieval pliers

OUTER Ø	LENGTH	PLIERS	JAW RANGE	PLIER LENGTH	FITTING TO	ITEM NO.
1.65 mm	3.3 m	Three prongs jaw	> 15 mm	36 mm	VUCAM® XO (3.3 m) INVIZ® GR 17 (3 m) INVIZ® GR 22 (3 m)	HSO-50-000106
1.65 mm	7.0 m	Three prongs jaw	> 15 mm	36 mm	INVIZ® DE 2.4 / 4.0 VUCAM® XO (6.6 m)	HSO-50-000107



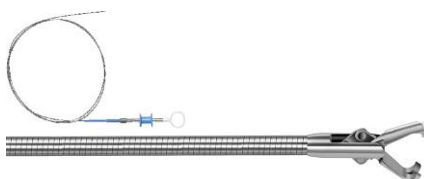
Retrieval pliers

OUTER Ø	LENGTH	PLIERS	JAW RANGE	PLIER LENGTH	FITTING TO	ITEM NO.
6.0 mm	3.3 m	Foreign body retriever	> 30 mm	97.7 mm	VUCAM® XO (3.3 m) INVIZ® GR 17 (3 m) INVIZ® GR 22 (3 m)	HSO-50-000108
6.0 mm	7.0 m	Foreign body retriever	> 30 mm	97.7 mm	VUCAM® XO (6.6 m) VISIO probes INVIZ® GR 17 INVIZ® GR 22	HSO-50-000109



Retrieval pliers

OUTER Ø	LENGTH	PLIERS	JAW RANGE	PLIER LENGTH	FITTING TO	ITEM NO.
6.0 mm	3.3 m	Alligator forceps, cross serrated	Min. 85°	37.0 mm	VUCAM® XO (3.3 m) INVIZ® GR 17 (3 m) INVIZ® GR 22 (3 m)	HSO-50-000110
6.0 mm	7.0 m	Alligator forceps, cross serrated	Min. 85°	37.0 mm	VUCAM® XO (6.6 m) VISIO probes INVIZ® GR 17 INVIZ® GR 22	HSO-50-000111



Retrieval pliers

OUTER Ø	LENGTH	PLIERS	JAW RANGE	PLIER LENGTH	FITTING TO	ITEM NO.
6.0 mm	3.3 m	Rat tooth	Min. 85°	36.9 mm		HSO-50-000112
6.0 mm	7.0 m	Rat tooth	Min. 85°	37.0 mm	VUCAM® XO (6.6 m) VISIO probes INVIZ® GR 17 INVIZ® GR 22	HSO-50-000113

In the medical world, tools like this are frequently used for keyhole operations and foreign object retrieval inside the human body. The following retrieval tools utilize the known advantages and have been adapted and improved for industrial applications.

Small alligator forceps with spring mechanism, snares and three prong retriever offer good grip and high flexibility in industrial applications. The working length is adapted to typical industrial working lengths of industrial videoscopes like the VUCAM® XO.



1 RETRIEVAL TOOLS



1.5 Retrieval pliers

1.5 Retrieval pliers



GR 19

OUTER Ø	LENGTH	ARTICULATION	PLIERS	CONSTRUCTION	ITEM-NO.
19.0 mm	3.3 m	4 x 110°	Alligator	Plastic	HSO-50-000114
19.0 mm	3.3 m	4 x 110°	Three finger grabber	Plastic	HSO-50-000115
19.0 mm	5.3 m	4 x 90°	Alligator	Plastic	HSO-50-000116
19.0 mm	5.3 m	4 x 90°	Three finger grabber	Plastic	HSO-50-000117



GR 22

OUTER Ø	LENGTH	ARTICULATION	PLIERS	CONSTRUCTION	ITEM-NO.
22.0 mm	3.3 m	4 x 110°	Alligator	Stainless steel	HSO-50-000118
22.0 mm	3.3 m	4 x 110°	Three finger grabber	Stainless steel	HSO-50-000119
22.0 mm	5.3 m	4 x 90°	Alligator	Stainless steel	HSO-50-000120
22.0 mm	5.3 m	4 x 90°	Three finger grabber	Stainless steel	HSO-50-000121



1 RETRIEVAL TOOLS



1.6 Accessory

1.6 Accessory



Alligator jaws
INVIZ® GR 16

SPARE ALLIGATOR JAWS FOR INVIZ® GR 16		BMX-50-000386
Diameter (jaws closed)	16 mm	
Length	36 mm	
Distal head length	206 mm	
Jaw range	160°	
Max. grab size	77 mm Space required to open jaws to maximum 84 mm.	
Function	Incl. 2 jaws and 4 adjustable fangs	



Three finger jaws
INVIZ® GR 16

INTERCHANGEABLE THREE FINGER JAWS FOR INVIZ® GR 16		BMX-50-000293
Diameter (jaws closed)	16 mm	
Length	49 mm	
Distal head length	219 mm	
Jaw range	160° Space required to open jaws to maximum 84 mm	
Max. grab size	77 mm	
Function	Incl. Allen key	



T-Rex grabber
INVIZ® GR 8

INTERCHANGEABLE T-REX MOUTH GRABBER FOR INVIZ® GR 8		BMX-50-000334
Diameter (jaws closed)	8.4 mm	
Distal head length	108 mm	
Jaw range	70° Space required to open jaws to maximum 16.8 mm	
Max. grab size	12.5 mm	
Function	Incl. Allen key and spare grub screws	



Dolphin grabber
INVIZ® GR 8

INTERCHANGEABLE DOLPHIN MOUTH GRABBER FOR INVIZ® GR 8		BMX-50-000335
Diameter (jaws closed)	8.4 mm	
Distal head length	125 mm	
Jaw range	70° Space required to open jaws to maximum 32 mm	
Max. grab size	28 mm	
Function	Incl. Allen key and spare grub screws	



Transport case

TRANSPORT CASE		BMX-50-000230
This robust case is home for retrieval tools and accessories. Light-weight, compact and splash water proof HPX® high performance transport case for INVIZ® retrieval tools. Product tailored interior for perfect protection during transport and storage.		



Glass fiber push pole

GLASS FIBER PUSH POLE, SOFT		FXX-71-000100
Diameter	6.0 mm	
Construction	PE coated glass fiber push pole	
Length	1.5 m	
Mounting	10 mm stainless steel quick coupling	



Glass fiber push pole

GLASS FIBER PUSH POLE, MEDIUM		FXX-71-000101
Diameter	7.5 mm	
Construction	PE coated glass fiber push pole	
Length	1.5 m	
Mounting	10 mm stainless steel quick coupling	



Glass fiber push pole

GLASS FIBER PUSH POLE, STIFF		FXX-71-000102
Diameter	9.0 mm	
Construction	PE coated glass fiber push pole	
Length	1.5 m	
Mounting	10 mm stainless steel quick coupling	



Soft bag

SOFT BAG FOR GLASS FIBER PUSH POLES		FXX-82-000108
This soft bag stores up to 15 of your connectable glass fiber push poles. Made from robust easy to clean materials, it will be simple to transport and store your full length push rod system.		



Adjustable elbow

ADJUSTABLE ELBOW		BMX-50-000106
Angle	0° to 90°	
Mounting	10 mm push pole adapter	
Function	Better tool positioning for retrieval snares, magnets, hooks or retrieval tool INVIZ® GR 16.	



Short rod piece

LENGTH	FUNCTION	MOUNTING	ITEM NO.
100 mm	Optimized for operation with adjustable elbow (BMX-50-000106)	10 mm push pole adapter	FXX-71-000124
250 mm	Optimized for operation with adjustable elbow (BMX-50-000106)	10 mm push pole adapter	FXX-71-000125



1 RETRIEVAL TOOLS



1.6 Accessory

1.6 Accessory



Flex rod

FLEX ROD 15 CM / 6"		FXX-71-000105
Length	7.0 mm	
Mounting	10 mm push pole adapter	
Function	Flexible rubber push pole adapter. Recommended for operation of magnets in steel piping.	

T-bar handle

T-BAR HANDLE	FXX-71-000123
Hand-piece terminating push poles for optimal and ergonomic push pole operation.	



Umbilical cable INVIZ® GR 16

LENGTH	ITEM NO.
15 m	BEX-20-000113
20 m	BEX-20-000114
30 m	BEX-20-000115



Remote control INVIZ® GR 8

REMOTE CONTROL INVIZ® GR 8	BMX-50-000256
Remote control for the retrieval tool INVIZ® GR 8.	



Remote control INVIZ® GR 16

REMOTE CONTROL INVIZ® GR 16	BMX-50-000249
Remote control for the retrieval tool INVIZ® GR 16.	



Spare battery

SPARE BATTERY	EXX-91-000106
Powerful spare battery Ultralite Lithium HI Energy 9-V Block. Two batteries required for INVIZ® GR 16, one battery required for INVIZ® GR 8.	



1 RETRIEVAL TOOLS



1.6 Accessory

1.6 Accessory



Tool set

STANDARD TOOLS SET

BSX-90-000101

Screw driver set, wire cutter, LED power flash lamp, scissors; cutter and all other usefull tools to fit and refill the retrieval tool case.



Consumables

RETRIEVAL TOOL CONSUMABLES

BSX-90-000100

Duct tape, cable binder and all those useful consumables all ready packed into the practical tailored plastic containers to refill the retrieval tool box.



2 GUIDE TUBES



Non-articulating and articulating guide tubes





Guide tubes are essential help to introduce, orientate and position inspection equipment and retrieval tools. The offered range includes simple rigid-, semi-flexible- or flexible guide tubes with working channel and remote articulation mechanism.

These multi-functional tools assist the video probe and retrieval tools during foreign objects search and retrieval operations. They too are used to clean debris or shaving. Guide tubes are utilized to suck in or blow out. In some cases they deliver and position flexible shaft drives allowing remote grinding, cutting or torque tool operation.

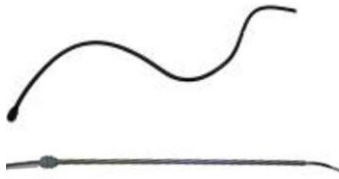


2 GUIDE TUBES



2.1 Non-articulating guide tubes

2.1 Guide tubes



Non-articulating
guide tubes

OUTER Ø	FOR PROBES WITH Ø	LENGTH	CONSTRUCTION	FOR PRODUCTS	ITEM-NO.
5.5 mm	3.7 mm 4.0 mm	300 mm	Rigid	VISIO probes Fiberscopes	HVT-90-000135
6.0 mm	4.5 mm 5.0 mm	300 mm	Rigid	VISIO probes Fiberscopes	HVT-90-000136
8.0 mm	6.0 mm	500 mm	Rigid	VUCAM® VUMAN® VISIO probes Fiberscopes	HVT-90-000137
10.0 mm	8.0 mm 8.4 mm	500 mm	Rigid	VUMAN® VISIO probes Fiberscopes	HVT-90-000138
8.0 mm	3.7 mm 4.0 mm	500 mm	Semi-rigid	VISIO probes Fiberscopes	HVT-90-000139
10.0 mm	4.5 mm 5.0 mm	500 mm	Semi-rigid	VISIO probes Fiberscopes	HVT-90-000140
12.0 mm	6.0 mm	500 mm	Semi-rigid	VUCAM® VUMAN® VISIO probes Fiberscopes	HVT-90-000141
14.0 mm	8.0 mm 8.4 mm	500 mm	Semi-rigid	VUMAN® VISIO probes Fiberscopes	HVT-90-000142

Rigid and semi-flexible guide tubes are often used as stiffener to guide flexible probes, bridge gaps or quickly reach pre-defined positions. Guide tubes protect the equipment from sharp cutting edges and reduce wear & tear.



2 GUIDE TUBES



2.2 Articulating guide tubes

2.2 Guide tubes



Articulating guide tubes

Including:

- Transport case

OUTER Ø	INNER Ø	LENGTH	ARTICULATION	FITTING PROBE Ø	MATERIAL	ITEM NO.
19.0 mm	6.3 mm	3 m	4 x 110°	6.0 mm	Plastic	HVT-90-000150
19.0 mm	6.3 mm	5 m	4 x 90°	6.0 mm	Plastic	HVT-90-000151
22.0 mm	9.0 mm	3 m	4 x 110°	9.0 mm	Stainless steel	HVT-90-000148
22.0 mm	9.0 mm	5 m	4 x 90°	9.0 mm	Stainless steel	HVT-90-000149

This articulating guide tubes provide four way articulation. The integrated working channel passes flexible endoscopes and retrieval tools with a maximum outer diameter of 6 mm and 9.0 mm.

Available in different diameters and working lengths, the outer sheath is made of cut resistant stainless steel or an additional shrink tube. Two solid steering knobs allow the remote articulation of the distal head together with the inserted tool or camera. The user can move the tools axial inside the tube, offering an additional axis to reach out with the grabber or adding an additional lift and rotating axis to your inspection camera. Sometimes, this is the only possibility to reach the point of interest.

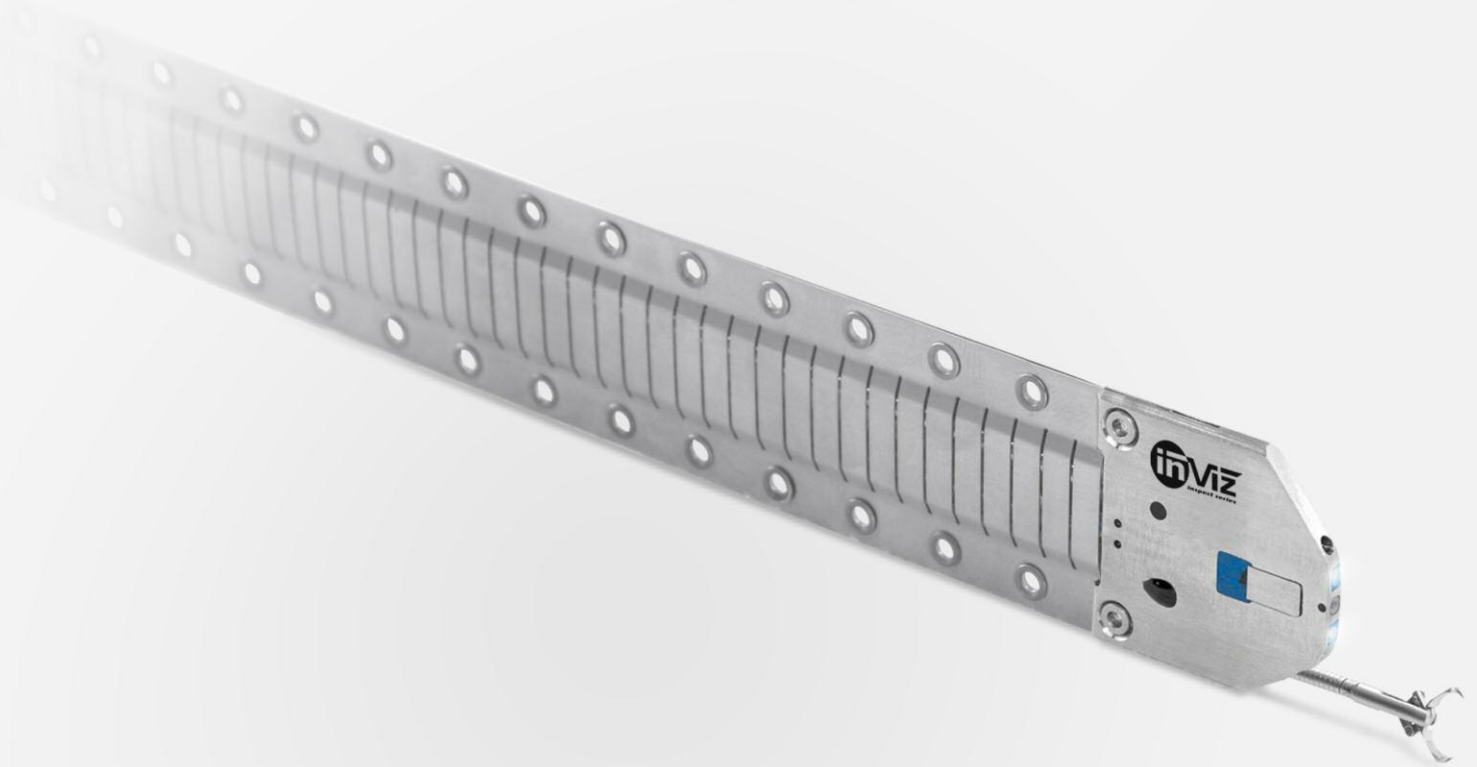
The articulating guide tube with 19 mm diameter supports the videoscope VUCAM® XO, video endoscope INVIZ® VUMAN® and VISIO probes up to 6 mm diameter for search applications.

The articulating guide tube with 22 mm diameter fits the field installable, motorized retrieval tool INVIZ® GR 8 and also supports the videoscope VUCAM® XO, video endoscope INVIZ® VUMAN® and VISIO probes up to 8 mm diameter for search applications.



3 SPECIAL RETRIEVAL TOOLS

Custom made FOSAR solutions



Although we offer a big range of search and retrieval tools, sometimes the standard will not do the job. In the following chapter, we list some examples of our knowledge and expertise for successful custom made FOSAR solutions. Fortunately, some retrieval jobs are simple, fast and inexpensive. In certain cases, a complex task requires all our effort and resources.

In the end, all listed solutions solved problems saved our customers shutdown time and a lot of money. Fortunately, we can draw for your solution from a huge range of products, capabilities and experience. Feel free to contact us.



3 SPECIAL RETRIEVAL TOOLS



3.1 INVIZ® GR 22

3.1 INVIZ® GR 22



INVIZ® GR 22
with integrated camera and
LED illumination

OUTER Ø	LENGTH	ARTICULATION	INNER Ø	FITTING PROBE Ø
22.0 mm	3 m	4 x 110°	9.0 mm	9.0 mm
22.0 mm	5 m	4 x 90°	9.0 mm	9.0 mm

This sophisticated foreign object search and retrieval tool offers the same capabilities as the standard articulating guide tube INVIZ® GR 22. With its small integrated camera system and integrated LED illumination, search and retrieval jobs are performed fast and secure.

Utilizing the 15 mm retrieval pliers or the motorized retrieval tool INVIZ® GR 8, this system enables precise manoeuvring to find, monitor and retrieve the object immediately.

3.2 Retrieval snare

RETRIEVAL SNARE WITH EMERGENCY RELEASE MECHANISM

This remotely operated retrieval snare provides a special release mechanism and is positioned with an articulating guide tube. The chosen snare type ensures maximum pull strength.

If the part to retrieve would get stuck with the snare inside the application, the entire operation would be in danger. Therefore, a safety mechanism was integrated allowing the operator to remotely open up the snare. This solution results in pulling out only one string, thus allowing to reconnect attempt a new foreign object retrieval.

Retrieval snare
with emergency release
mechanism

3.3 INVIZ® GR 6

ARTICULATING GUIDE TUBE INVIZ® GR 6 WITH WORKING CHANNEL AND GAS NOZZLE

This guide tube system with only 6 mm outer diameter contains a working channel allowing a micro tool or fiber bundle for a laser operation to pass. A special air/gas blow system can be connected and a true gas nozzle at the tip the tool can be cooled down, a specific protective gas environment can be created or simply air blown.



INVIZ® GR 6
with gas nozzle

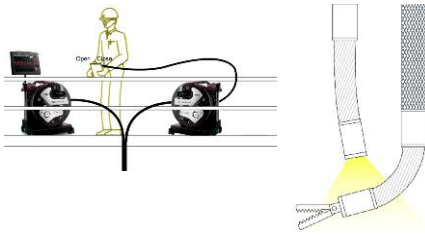


3 SPECIAL RETRIEVAL TOOLS



3.4 INVIZ® GR 10

3.4 INVIZ® GR 10



INVIZ® GR 10

JOYSTICK CONTROLLED, PNEUMATIC ARTICULATING GUIDE TUBE SYSTEM INVIZ® GR 10

Combined with the video endoscope system INVIZ® VUMAN® X-WAY, this remotely pneumatic articulating system is wound up and down from the patented drum reel. This system is mainly operated and utilized for foreign object retrieval, released vertically down from a scaffold or operation bridge. The INVIZ® GR 10 is capable of underwater operation and provides working lengths up to 30 m.

3.5 INVIZ® GR 25

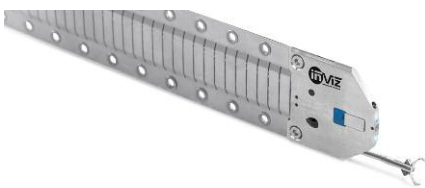


INVIZ® GR 25

ARTICULATING GUIDE TUBE INVIZ® GR 25 WITH EXTRA-LARGE 12 MM WORKING CHANNEL

The INVIZ® GR 25 guide tubes key benefit is the articulation capability and the large 12 mm working channel. This feature allows passing through and remotely positioning strong flexible drive shafts for remote cutting, grinding opening, closing screws and other torque related tooling work. The large 12 mm working channel is also very well suited for sucking in bigger amounts of shavings and waste materials.

3.6 INVIZ® DE 2.4



INVIZ® DE 2.4
with retrieval hook

INVIZ® DE 2.4 WITH RETRIEVAL HOOK, WORKING CHANNEL FOR MICRO RETRIEVAL TOOLS

The INVIZ® DE 2.4 is a special probe, only 2.4 mm flat, integrating a retrieval hook in the distal head construction and a working channel inside the insertion belt. This solution has entered the secondary side of steam generators traveling in between the tube bundles. It helped to inspect and locate foreign objects, cut to big parts and retrieve foreign debris. This operation has restored safe operation conditions of steam generators, thus saving time and costs.



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