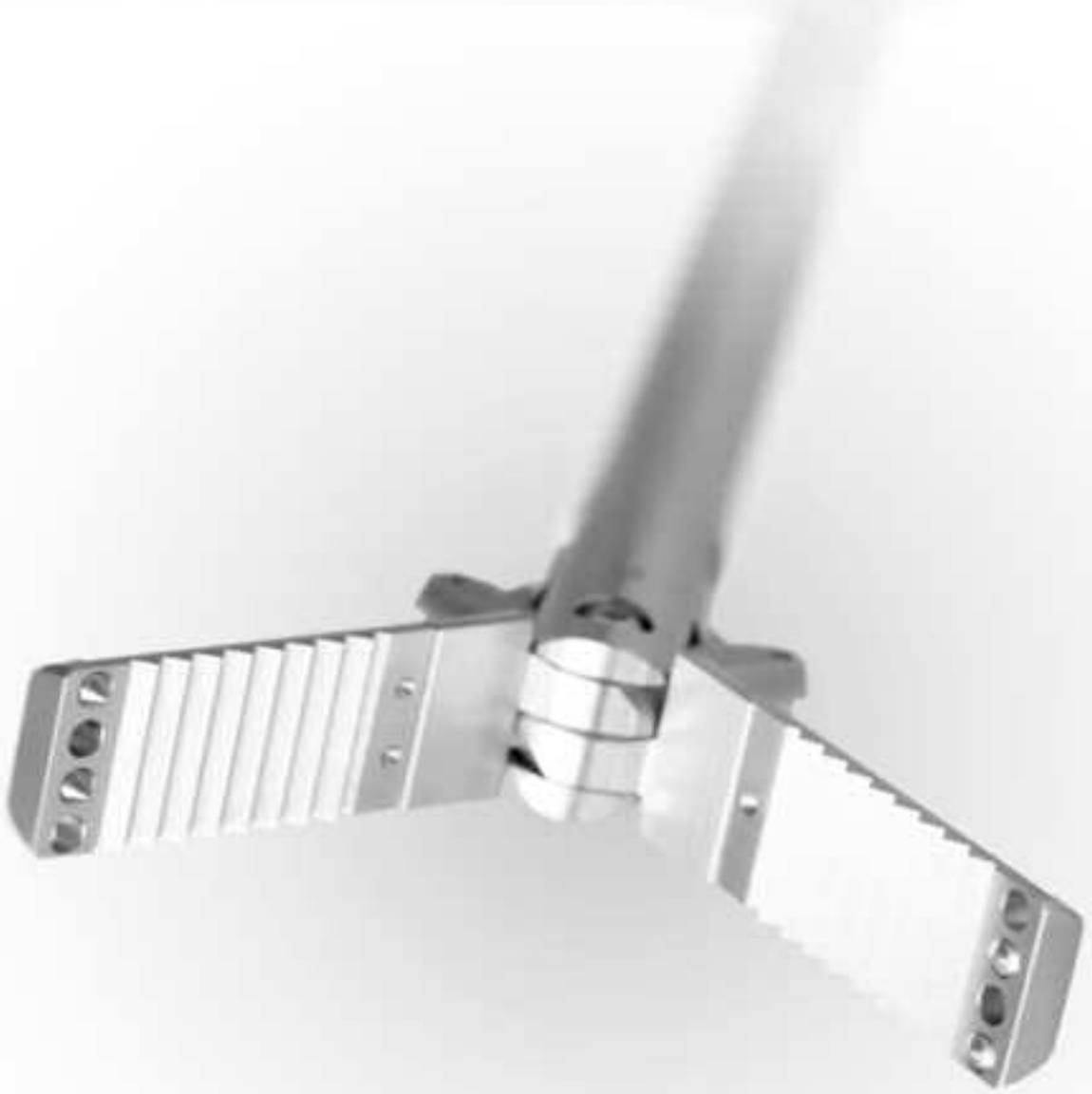




FOR MORE
INFORMATION



CATALOGUE

REVISION 1.6

FOREIGN OBJECT RETRIEVAL TOOLS & GUIDE TUBES

Item No.: DXX-80-000240
Document No.: KA004_1-6

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

guide tubes

IDENTIFY & SECURE

inspection equipment

RETRIEVE

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.



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Call us with your specific requirements.



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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 Retrieval tools kits

1.1 PRO














Retrieval tools kit PRO

Including:

- Motorized retrieval tool GR 8
- Motorized retrieval tool 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

GR 8	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 GR 8		
	Motorized retrieval tool 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 GR 8 8 mm T-Rex mouth, including spare grub screws and Allen key (FXX-70-000112)	BMX-50-000334
	Interchangeable Mouse tooth for GR 8 4.5 mm Mouse tooth, including spare grub screws and Allen key (FXX-70-000112)	BMX-50-000335
	Remote control GR 8 Remote control for the retrieval tool GR 8	BMX-50-000256
	Battery 1x powerful spare battery Ultralite Lithium HI Energy 9-V Block	EXX-91-000106
MOTORIZED RETRIEVAL TOOL GR 16		
	Motorized retrieval tool GR 16 Motorized and waterproof 16 mm retrieval tool	BEM-30-000165
	Remote control GR 16 Remote control for the retrieval tool GR 16	BMX-50-000249
	Cable for remote control GR 16 15 m cable for remote control retrieval tool GR 16	BEX-20-000113
	Battery 2x powerful spare battery Ultralite Lithium HI Energy 9-V Block	EXX-91-000106
THREE FINGER JAWS FOR GR 16		BMX-50-000293
	Fork & Tine tools for motorized retrieval pliers GR 16. Including Allen key (FXX-70-000112)	
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

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
















1 RETRIEVAL TOOLS

1.1 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 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 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 Retrieval tools kits

1.1 STANDARD



Retrieval tools kit STANDARD






Including:


- Motorized retrieval tool 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


GR 8	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 GR 8. Two field interchangeable grabbers expand the scope of capabilities.

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

MOTORIZED RETRIEVAL TOOL GR 8		
	Motorized retrieval tool 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 GR 8 8 mm T-Rex mouth, including spare grub screws and Allen key (FXX-70-000112)	BMX-50-000334
	Interchangeable Mouse tooth for GR 8 4.5 mm Mouse tooth, including spare grub screws and Allen key (FXX-70-000112)	BMX-50-000335
	Remote control GR 8 Remote control for the retrieval tool 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 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 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 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 Retrieval tools kits

1.1 START



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

GR 8	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 GR 8 and GR 16 fit perfectly into the tailormade 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 application.

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 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 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 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 GR 8

1.2 GR 8



Motorized retrieval tool 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
- Mouse tooth 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 Mouse tooth grabber (BMX-50-000335) must be ordered separately.


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


The 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 4.5 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 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 retrieval tools. Product tailored interior for perfect protection during transport and storage.

INTERCHANGEABLE T-REX MOUTH GRABBER FOR GR 8	BMX-50-000334								
	<table><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 MOUSE TOOTH GRABBER FOR GR 8	BMX-50-000335								
	<table><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><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><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 GR 16

1.3 GR 16



Motorized retrieval tool GR 16

Including:

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

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 GR 16 is included in the Retrieval tools kit PRO.

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

INTERCHANGEABLE THREE FINGER JAWS FOR GR 16		BMX-50-000293
	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.	

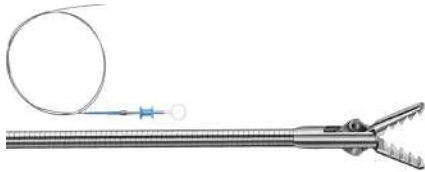


1 RETRIEVAL TOOLS



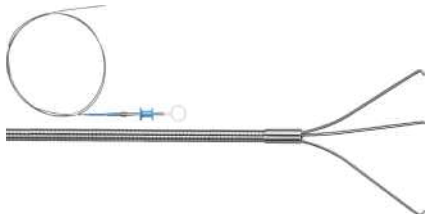
1.5 Retrieval pliers

1.5 Retrieval pliers



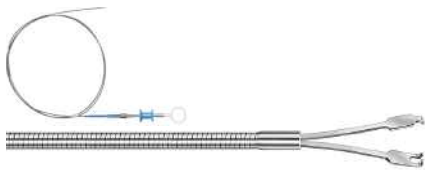
Retrieval pliers

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	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) VUMAN® (5 m)	HSO-50-000104
3.0 mm	9.0 m	Alligator forceps	90°	16.7 mm	VUMAN® (8 m)	HSO-50-000105



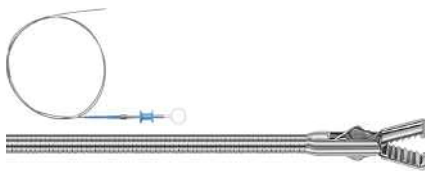
Retrieval pliers

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) GR 17 (3 m) GR 22 (3 m)	HSO-50-000106
1.65 mm	7.0 m	Three prongs jaw	> 15 mm	36 mm	DE 2.4 / 4.0 VUCAM® XO (6.6 m)	HSO-50-000107



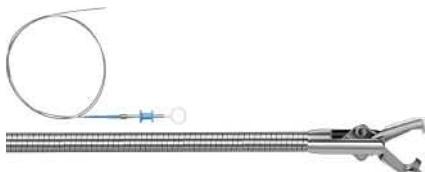
Retrieval pliers

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) GR 17 (3 m) 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 GR 17 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) GR 17 (3 m) 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 GR 17 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 GR 17 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
GR 16

SPARE ALLIGATOR JAWS FOR 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
GR 16

INTERCHANGEABLE THREE FINGER JAWS FOR 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
GR 8

INTERCHANGEABLE T-REX MOUTH GRABBER FOR GR 8		BMX-50-000334
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	



Mouse tooth grabber
GR 8

INTERCHANGEABLE MOUSE TOOTH GRABBER FOR GR 8		BMX-50-000335
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	



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 retrieval tools. Product tailored interior for perfect protection during transport and storage.		



1 RETRIEVAL TOOLS

1.6 Accessory

1.6 Accessory



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 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 GR 16

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



Remote control GR 8

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



Remote control GR 16

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



Spare battery

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



Guide tubes

Guide tubes are designed to assist flexible probes during difficult/complex inspections or to ensure that the probe reaches a defined location. They can be semi rigid or preformed.

OUTER Ø	FOR PROBES WITH Ø	LENGTH	CONSTRUCTION	FOR PRODUCTS	ITEM-NO.
8 mm	4.0 mm	200 mm 400 mm 600 mm 800 mm	Semi Rigid	VISIO probes VUCAM® Fiberscopes	HVT-90-000157 HVT-90-000158 HVT-90-000159 HVT-90-000160
12 mm	6 mm	200 mm 400 mm 600 mm 800 mm	Semi Rigid	VISIO probes VUCAM® Fiberscopes	HVT-90-000161 HVT-90-000162 HVT-90-000163 HVT-90-000164
15 mm	8.4 mm	200 mm 400 mm 600 mm 800 mm	Semi Rigid	VUMAN® Fiberscopes	HVT-90-000165 HVT-90-000166 HVT-90-000167 HVT-90-000168
6 mm	4 mm	200 mm 400 mm 600 mm 800 mm	Rigid	VISIO probes VUCAM® Fiberscopes	HVT-90-000169 HVT-90-000170 HVT-90-000171 HVT-90-000172
8 mm	6 mm	200 mm 400 mm 600 mm 800 mm	Rigid	VISIO probes VUCAM® Fiberscopes	HVT-90-000173 HVT-90-000174 HVT-90-000175 HVT-90-000176
10 mm	8.4 mm	200 mm 400 mm 600 mm 800 mm	Rigid	VISIO probes VUCAM® Fiberscopes	HVT-90-000152 HVT-90-000153 HVT-90-000154 HVT-90-000155



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 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 GR 8 and also supports the videoscope VUCAM® XO, video endoscope 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 GR 22 C

3.1 GR 22 C



GR 22 C
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 GR 22 C. 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 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

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.

3.3 GR 6



GR 6
with gas nozzle

ARTICULATING GUIDE TUBE GR 6 WITH WORKING CHANNEL AND GAS NOZZLE

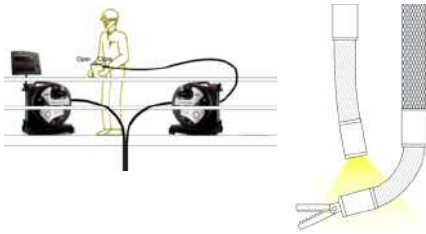
This guide tube system with only 6 mm outer diameter contains a working channel allowing a micro tool or fiber bundle for a laser operation to pass. A special air/gas blow system can be connected and a true gas nozzle at the tip the tool can be cooled down, a specific protective gas environment can be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



3 SPECIAL RETRIEVAL TOOLS

3.4 GR 10

3.4 GR 10



GR 10

JOYSTICK CONTROLLED, PNEUMATIC ARTICULATING GUIDE TUBE SYSTEM GR 10

Combined with the video endoscope system 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 GR 10 is capable of underwater operation and provides working lengths up to 30 m.

3.5 GR 25



GR 25

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

The 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 VUFLEX 2.4



VUFLEX
with retrieval hook

VUFLEX 2.4 WITH RETRIEVAL HOOK, WORKING CHANNEL FOR MICRO RETRIEVAL TOOLS

The VUFLEX 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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