ROTIX

CE0142 Rev 03.3
Reduced Width Chain Scanner

JIREH

SAFETY WARNINGS / PRECAUTIONS

KEEP THIS MANUAL – DO NOT LOSE

THIS MANUAL IS PART OF THE **ROTIX** AND MUST BE RETAINED FOR THE LIFE OF THE PRODUCT. PASS ON TO SUBSEQUENT OWNERS.
Ensure any amendments are incorporated with this document.

DANGER! The **ROTIX** is designed for a specific use. Using the **ROTIX** outside of its intended use could cause damage to the product. Read and understand this manual before using.

WARNING! Do **NOT** operate scanner in an explosive environment. Do **NOT** operate scanner in the presence of volatile substances.

WARNING! DO NOT DISASSEMBLE. No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.

The **WEEE** symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.

(see Disposal on page 36 for additional details).

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IDENTIFICATION

1.1. Product Information

The manually operated **ROTIX** reduced width chain scanner provides encoded probe positions of one or two probes while requiring a minimal footprint.

1.2. Manufacturer

Distributor:

Manufacturer:

Jireh Industries Ltd.

53158 Range Road 224
Ardrossan, Alberta, Canada
T8E 2K4

780.922.4534

jireh.com

PRODUCT SPECIFICATIONS

2.1. Intended use

The scanner's primary purpose is to move an inspection tool over a cylindrical surface for the inspection of pipes and vessels.

2.1.1. Operating Limits

	Minimum	Maximum
Pipe/Tube Range	10.2 cm *(4 in)*	96.5 cm *(38 in)*
Radial Scanner Clearance:	9 cm *(3.5 in)*	

2.1.2. Operating environment

The **ROTIX** chain scanner is designed for use in an industrial environment that is between -20° C *(-4°F)* and 50° C *(122°F)*.

2.2. Dimensions and Weight

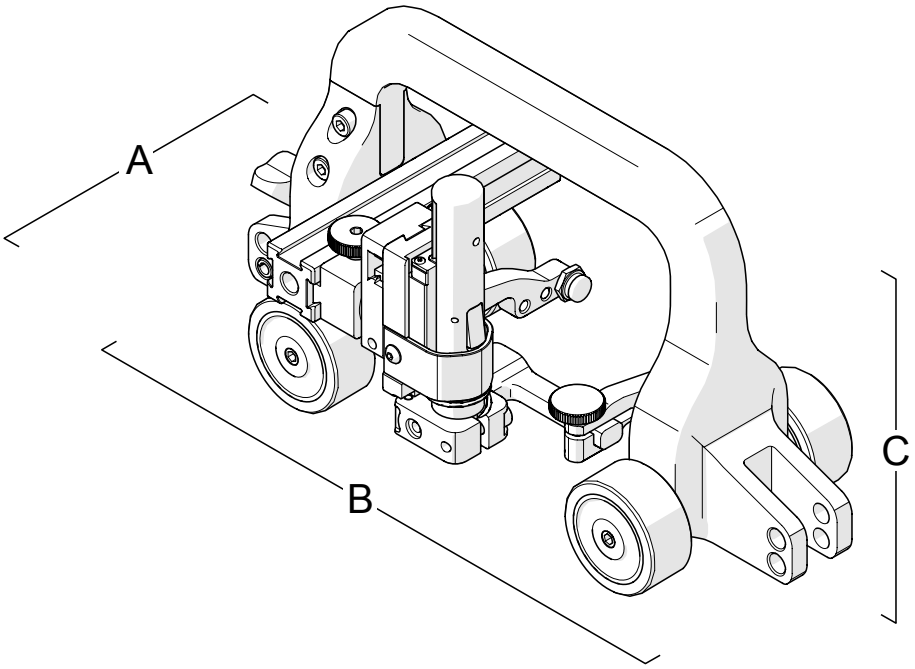


Fig. 1 - Single probe dimensions

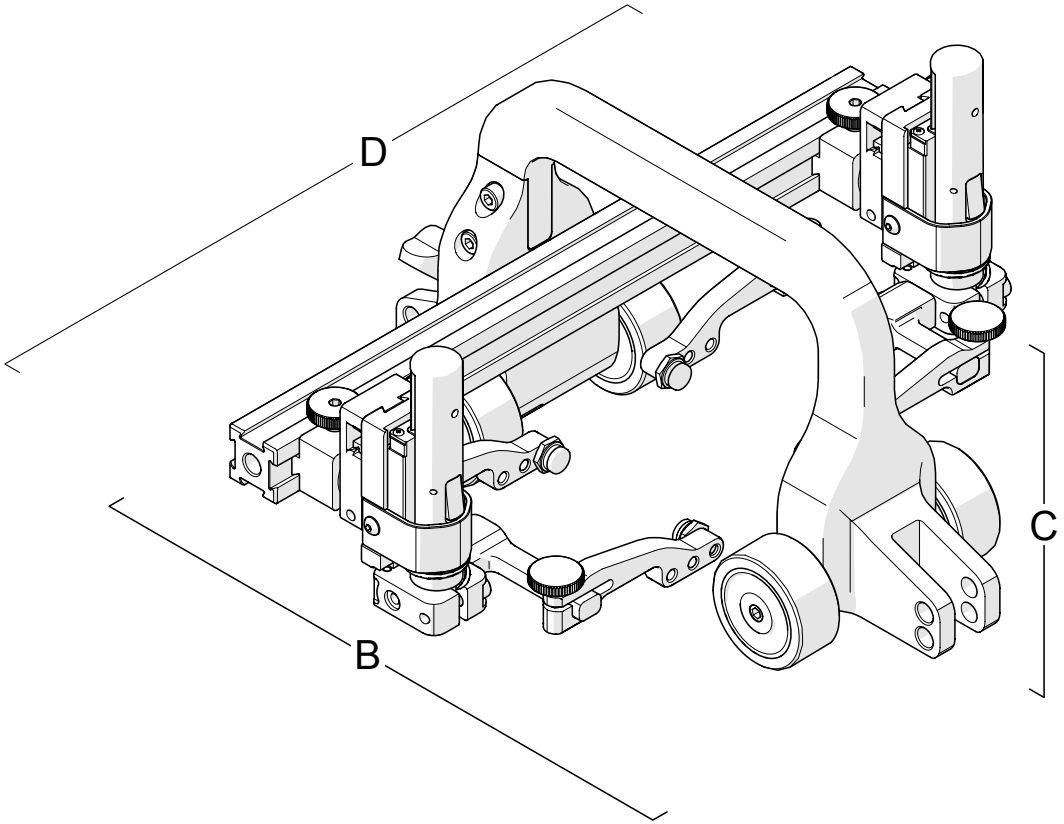


Fig. 2 - Two probe dimensions

A:	10 cm	3.9 in
B:	21.8 cm	8.6 in
C:	12 cm	4.7 in
D:	25 cm	9.8 in

Link Weight:*	0.64 kg	1.4 lb
Encoder Cable Length:**	5 m	16.4 ft

** Link weight does not include cabling, frame bar or probe holder(s).*

*** Custom encoder lengths available.*

2.3. Environmental Sealing

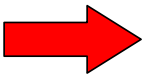
Watertight *(submersible) (contact Jireh Industries Ltd. on page 1 for additional details).*

2.4. Performance Specifications

X-Axis encoder Resolution	16.3 counts/mm	*(414.5 counts/inch)*

DEFINITIONS

3.1. Definition of symbols

	Instructions to ‘look here’ or to ‘see this part’.
	Denotes movement. Instructing user to carry out an action in a specified direction.
	Indicates alignment axis.
	Alerts user that the view has changed to a reverse angle.

4.1. Component Identification

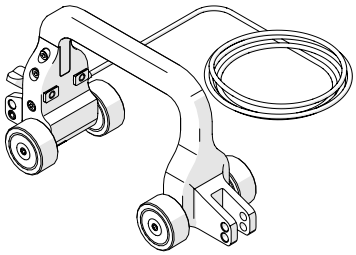


Fig. 3 - Reduced width ROTIX link
CES046-

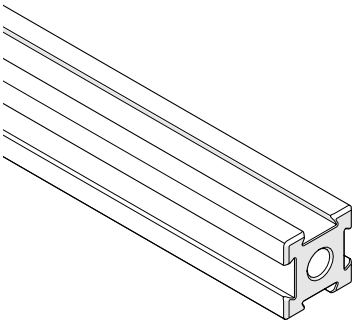


Fig. 4 - Frame bar
BG0038-

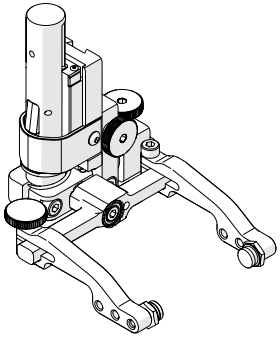


Fig. 5 - Vertical probe holder
PHA015-

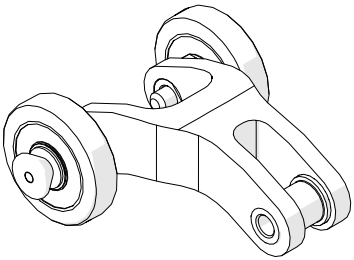


Fig. 6 - Short link
CES033

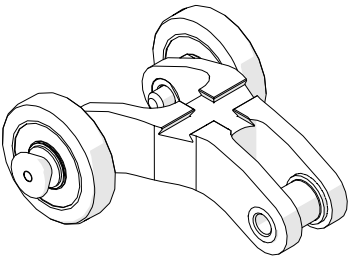


Fig. 7 - Short link with dovetail
CES040

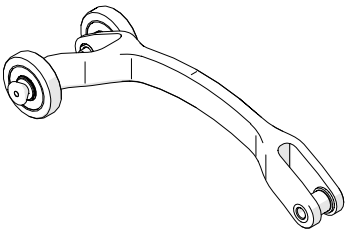


Fig. 8 - Long link
CES034

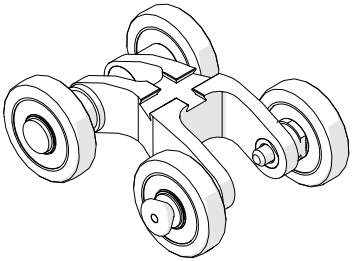


Fig. 9 - Catch link
CES035

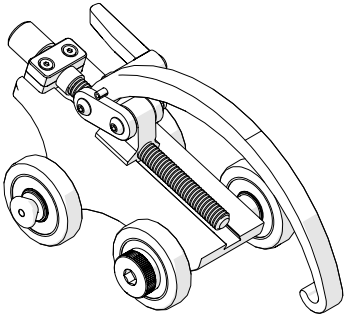


Fig. 10 - Buckle
CES036

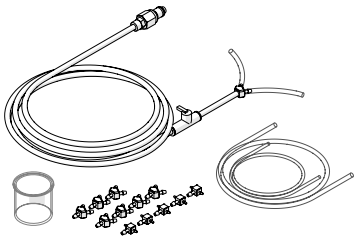


Fig. 11 - Irrigation kit
CMG007

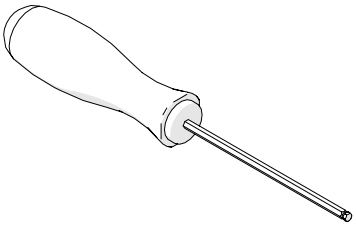


Fig. 12 - 3 mm hex driver
EA414

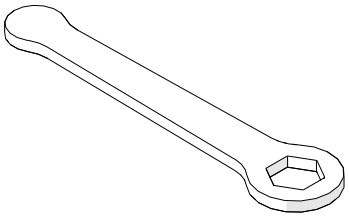


Fig. 13 - 3/8 in wrench
EA470

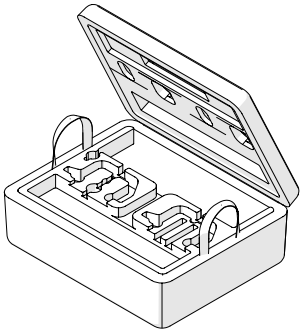


Fig. 14 - ROTIX reduced width case
CEA013

4.2. Tools

4.2.1. Included tools

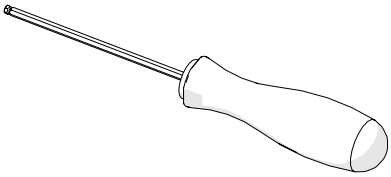


Fig. 15 - 3 mm hex driver

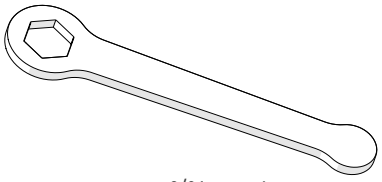


Fig. 16 - 3/8 in wrench

The 3 mm hex driver *(Fig. 15)* is sufficient for all typical operations and adjustments of the **ROTIX**. The 3/8 in wrench *(Fig. 16)* removes and installs pivot buttons on the probe holders.

4.2.2. Optional tools

Some specialized adjustments require tools that are not included in this kit.

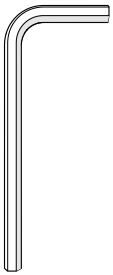


Fig. 17 - 1.5 mm hex wrench

4.3. Reduced Width Link

The reduced width link offers a means of non-ferrous scanning requiring a minimal footprint.

The encoder is built-in to the reduced width link.

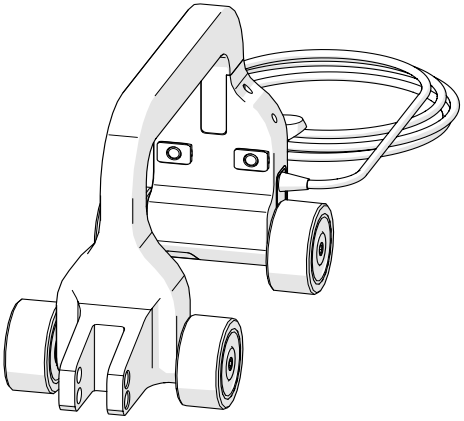


Fig. 18 - Reduced width link

4.3.1. Attach a Frame Bar

To attach a frame bar to the reduced width link, follow these steps:

1. Loosen the black wing knobs counterclockwise *(Fig. 19)*.

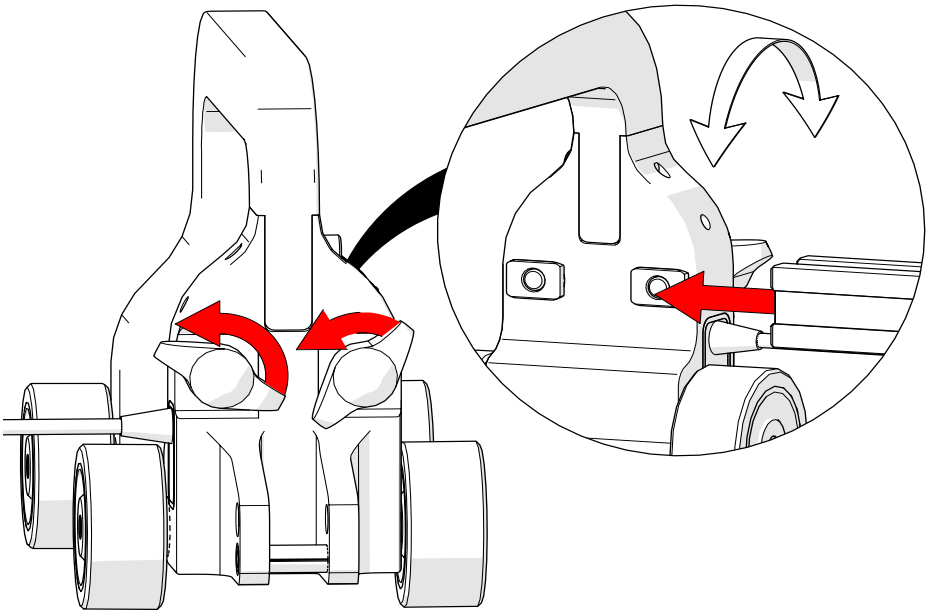


Fig. 19 - Loosen wing knobs and attach a frame bar

2. Align the dovetail groove of the frame bar with the dovetail nuts of the link. Slide the frame bar onto the link *(Fig. 19)*.

3. Position the frame bar where required and tighten the black wing knobs.

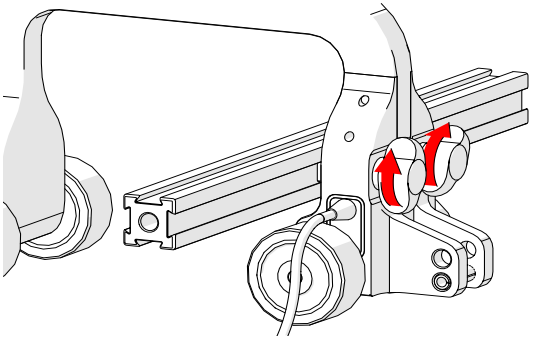


Fig. 20 - Tighten wing knobs

4.3.2. Wheel Removal/Installation

By hand, tightly grip the wheel to be removed. Using the supplied 3 mm hex driver *(Fig. 15)*, loosen the wheel from the axle *(Fig. 21)*.

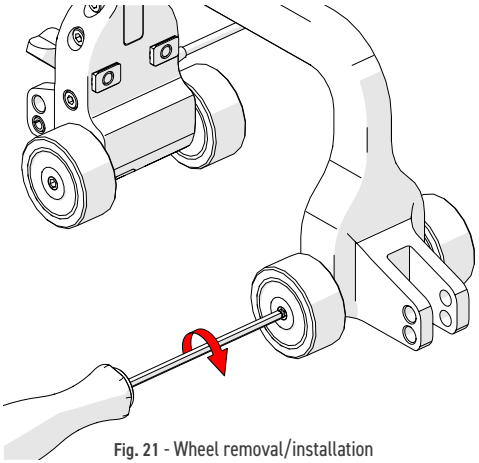


Fig. 21 - Wheel removal/installation

4.4. Frame Bar

Frame bars *(Fig. 22)* are used to mount probe holders, probe positioning systems and other accessories *(see Frame Bars on page 34)*.

Frame bars are available in a variety of lengths.

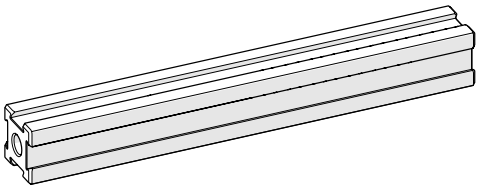


Fig. 22 - Frame bar

4.5. Pivot Buttons

Available in various shapes and sizes, fitting different wedge dimensions *(see Pivot Button Style on page 34)*.

Use the supplied 3/8 in wrench *(Fig. 16)* to remove and install pivot buttons *(Fig. 23)*.

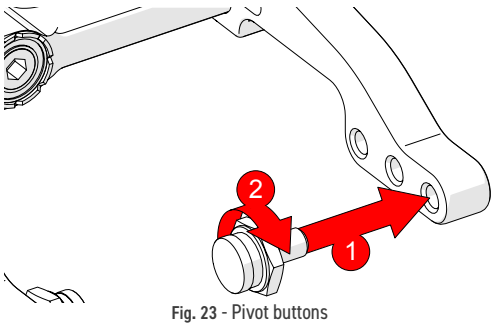


Fig. 23 - Pivot buttons

4.6. Chain Connection

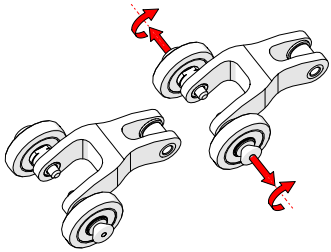


Fig. 24 - Pull out and twist pins

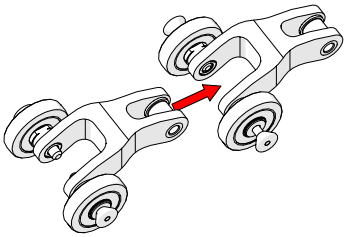


Fig. 25 - Align mounting holes

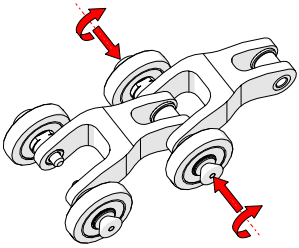


Fig. 26 - Release pins

To connect chain components, see the following steps:

1. Pull the pins out from the wheels, and twist a quarter turn latching the pins in a retracted state *(Fig. 24)*.
2. Align the pins with the mounting holes of the component to be connected *(Fig. 25)*.
3. Twist the pins until they unlatch and extend into the hole of the connected component *(Fig. 26)*.

4.7. Ratchet Lever

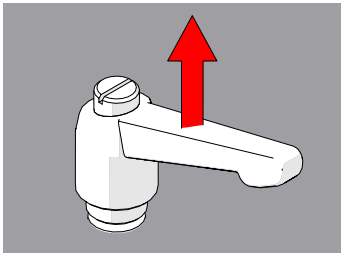


Fig. 27 - Pull ratchet handle

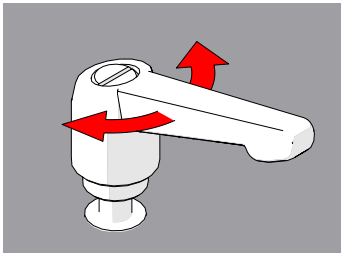


Fig. 28 - Rotate handle

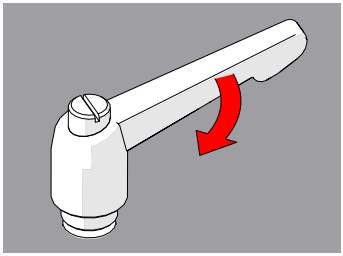


Fig. 29 - Tighten handle

The rachet lever is used for various locking and functions on the **ROTIX** system. Occasionally, movement of the lever locking position is required. The lever placement can be adjusted by following these steps:

1. Pull the ratchet lever away from the base to which it is connected *(Fig. 27)*.
2. Continue to pull while rotating the lever in the appropriate direction *(Fig. 28)*.
3. Release the lever and utilize the new tightening position *(Fig. 29)*.

4.7.1. Cable Management System

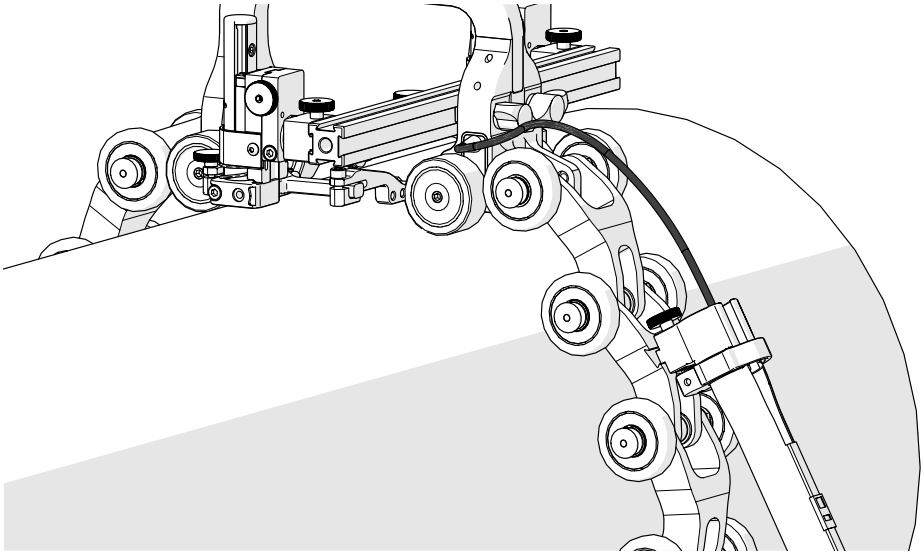


Fig. 30 - Cable management

> ***TIP:*** *When using cable management, ensure the dovetail link is placed 2nd in the chain behind the overhead adjustable link.*

4.7.2. Cable Management Dovetail Mount

To attach the cable management, follow these steps:

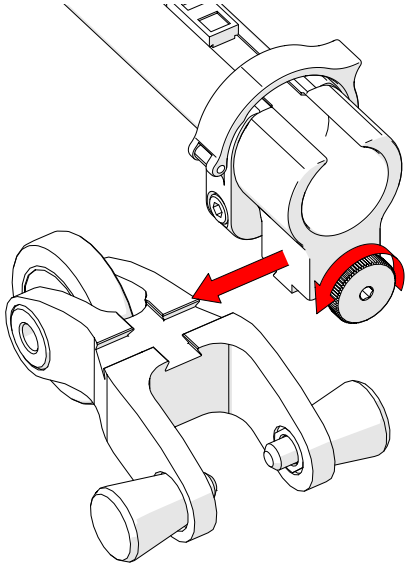


Fig. 31 - Loosen and slide on

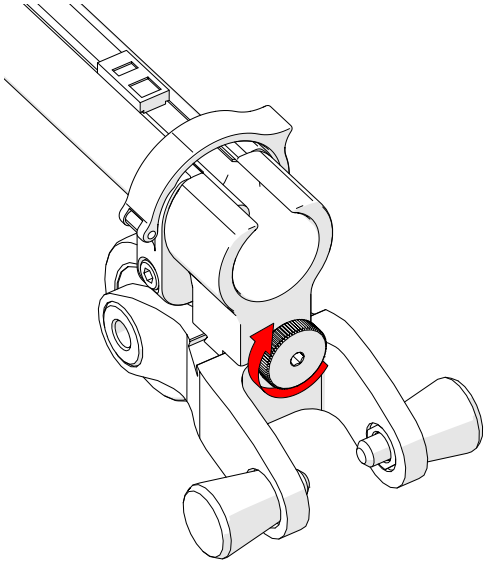


Fig. 32 - Tighten knob

1. Loosen the knob on the cable management dovetail mount. Slide the mount onto the dovetail link *(Fig. 31)*.
2. Once centred on the dovetail link, tighten the cable management's dovetail mount knob *(Fig. 32)*.

4.7.3. Cable Management Setup

The cable management is offered in a variety of lengths and provides a means of bundling and protecting cables and hoses that run to the scanner.

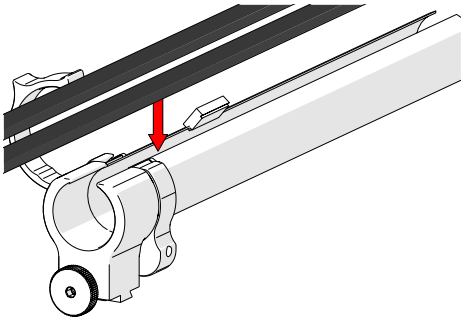


Fig. 33 - Insert cables and hoses

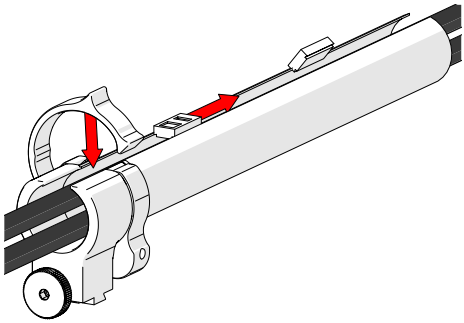


Fig. 34 - Zip up to close

1. Open the cable management sleeving. Begin at the tube's dovetail mount and place the cabling in the sleeve *(Fig. 33)*.
2. Follow the cable placement, zipping the sleeving closed *(Fig. 34)*.

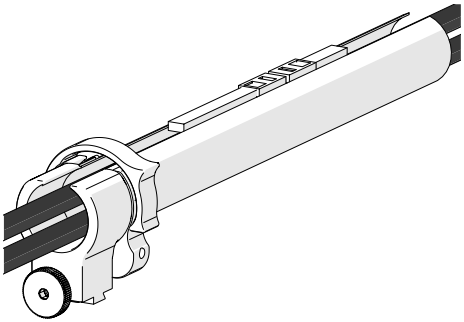


Fig. 35 - Zip opposite end

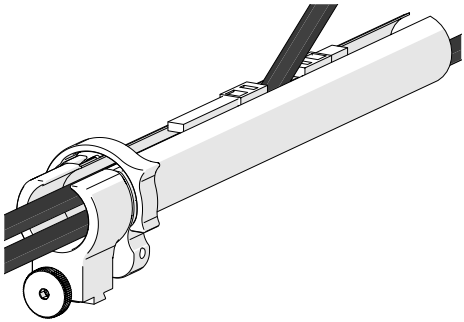


Fig. 36 - Flexibility

3. Once the cable is placed the entire length of sleeving, bring the zipper from the sleeving's opposite end, meeting at any point in the middle *(Fig. 35)*.
4. When necessary, the two zippers may be opened to allow cables to exit the sleeving anywhere between the ends *(Fig. 36)*.

4.7.4. Clamp Setup

If the sleeving becomes disconnected from the cable management dovetail mount, follow these instructions to re-attach the sleeving and dovetail mount.

1. Loosen the clamp screw using the supplied 3 mm hex driver.
2. Slide the clamp around the sleeving first and then slide the sleeving around the outside of the cable management dovetail mount *(Fig. 37)*. Align the zipper opening and the cable management dovetail mount opening.
3. Slide the clamp over the sleeving and cable management dovetail mount, pinching the sleeving in between *(Fig. 38)*.
4. Tighten the clamp screw *(Fig. 39)*.

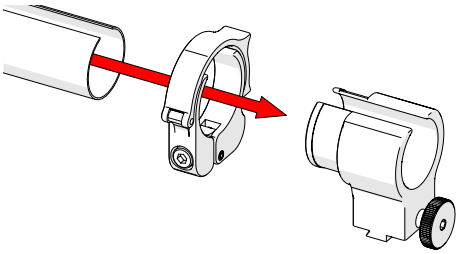


Fig. 37 - Slide tube around mount

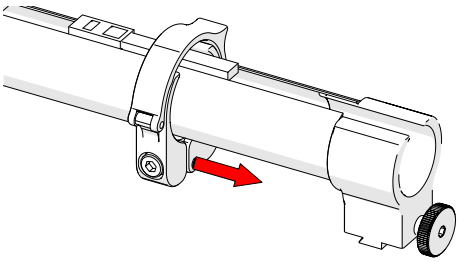


Fig. 38 - Slide clamp onto mount

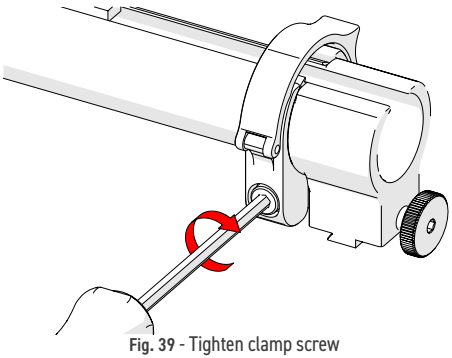


Fig. 39 - Tighten clamp screw

4.8. Vertical Probe Holder

A	Latch
B	Probe Holder Adjustment Knob
C	Vertical Adjustment Knob
D	Pivot Buttons
E	Probe Holder Arms
F	Yoke
G	Probe Holder Arm Adjustment Knob
H	Transverse Adjustment Screw
I	Frame Bar

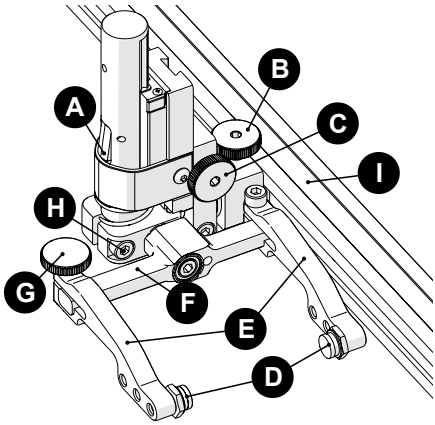


Fig. 40 - Vertical probe holder

4.8.1. Probe Holder Setup

To mount a UT wedge in the probe holder, follow these steps:

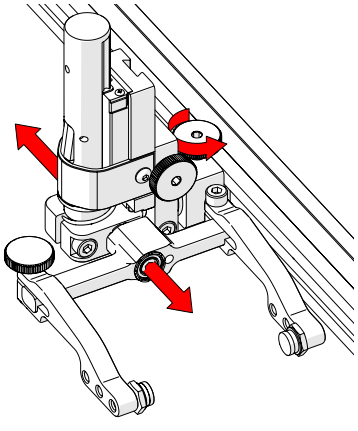


Fig. 41 - Adjust on frame bar

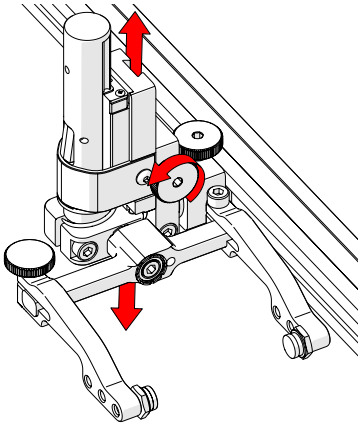


Fig. 42 - Vertical adjustment

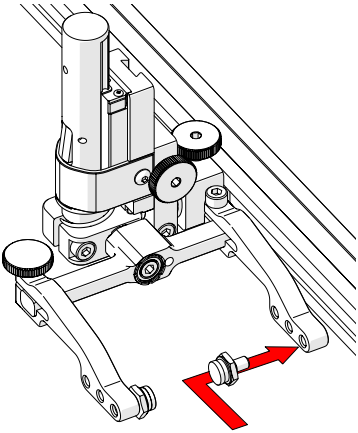


Fig. 43 - Place buttons

1. The probe holder adjustment knob allows the probe holder to be attached to a frame bar, as well as horizontal positioning on a frame bar *(Fig. 41)*.
2. The vertical adjustment knob allows the vertical probe holder height adjustment *(Fig. 42)*.
3. Position the pivot buttons where necessary. When narrow scanning footprint is required, use the pivot button holes closest to the yoke *(Fig. 43)*.

> ***TIP:*** *Probe pivoting may be impeded when closer to the yoke.*

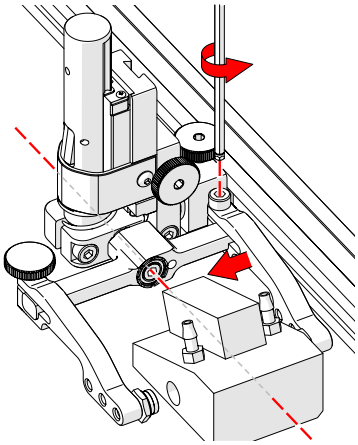


Fig. 44 - Adjust inner arm

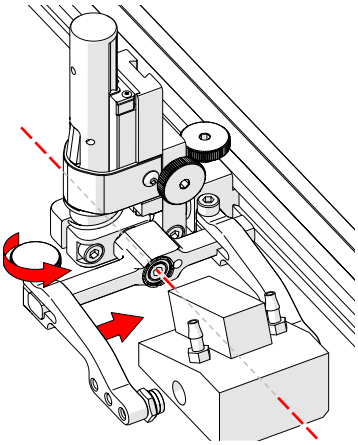


Fig. 45 - Adjust outer arm

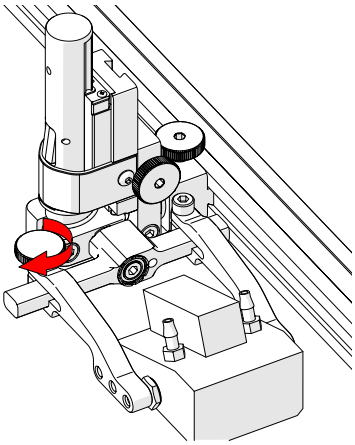


Fig. 46 - Tighten arm knob

4. Position the wedge on the inner probe holder arm.

> ***TIP:*** *The probe holder yoke can accommodate many different probe and wedge sizes of varying widths. It is best to centre the wedge with the yoke's pivot axis. This can reduce wedge tipping when scanning. Position the inner probe holder arm accordingly (Fig. 44) using the supplied 3 mm hex driver (Fig. 15).*

5. Loosen the probe holder arm adjustment knob *(Fig. 45)* and slide the probe holder arm along the yoke pinching the wedge in place.
6. Tighten the probe holder arm adjustment knob *(Fig. 46)*.

4.8.2. Probe Holder Vertical Adjustment

To adjust the probe holder vertically, follow these steps:

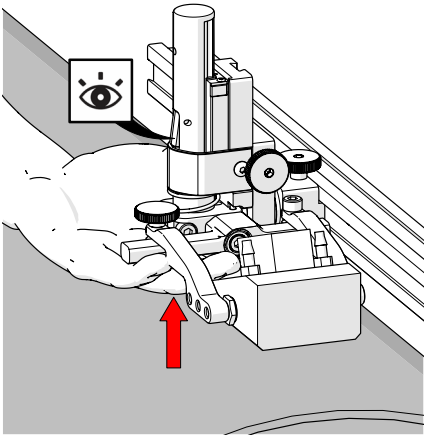


Fig. 47 - Latch probe holder

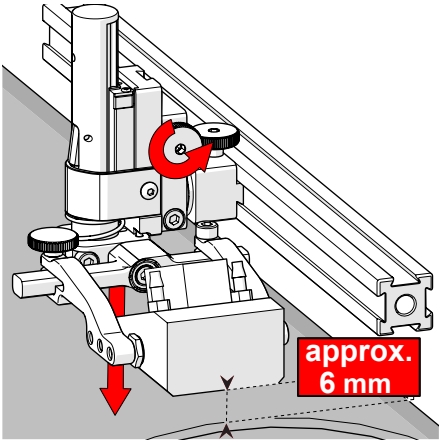


Fig. 48 - Lower toward scan surface

1. Ensure the probe holder is in the latched upper position. Lift the probe holder until the latch is fully exposed and snaps out to lock *(Fig. 47)*.
2. Loosen the vertical adjustment knob and slide the probe holder down until the wedge is approximately 6 mm (¼ in) above inspection surface *(Fig. 48)*.
3. Tighten the vertical adjustment knob *(Fig. 48)*.

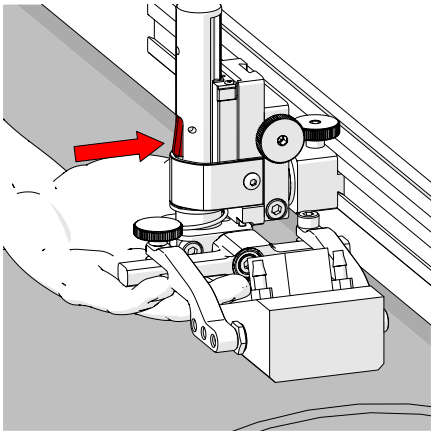


Fig. 49 - Press latch button

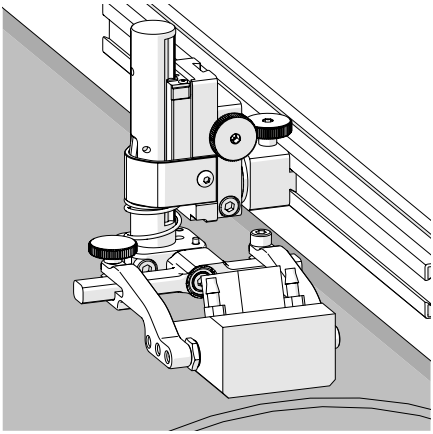


Fig. 50 - Lower toward scan surface

4. Lift the yoke slightly and press the latch button *(Fig. 49)*, then slowly lower towards scanning surface to apply spring pressure to the wedge *(Fig. 50)*.

> ***TIP:*** *If less spring force is desired, refer to step 2 and place the wedge approximately 20 mm (¾ in) above the inspection surface.*

4.8.3. Probe Holder Transverse Adjustment

To adjust the probe holder's transverse angle, follow these steps:

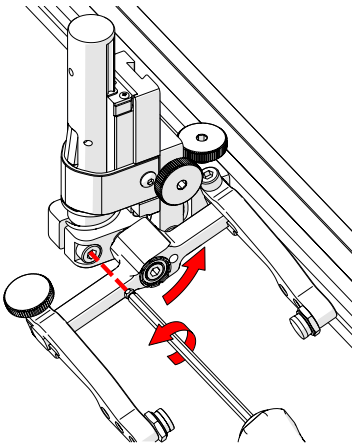


Fig. 51 - Loosen 3 mm screw

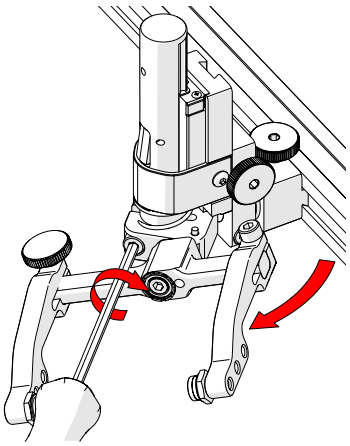


Fig. 52 - Rotate and tighten

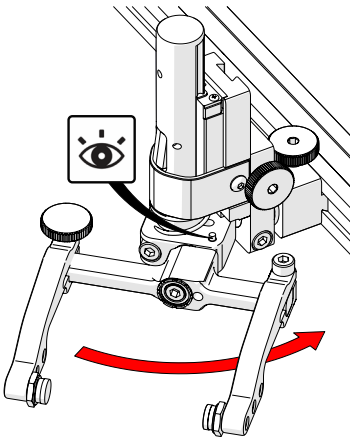


Fig. 53 - Stop post locates 90°

1. Ensure the probe holder is in latched, upper position *(Fig. 47)*.
2. Using the supplied 3 mm hex driver loosen the transverse adjustment screw *(Fig. 51)* and rotate the yoke about the vertical shaft achieving the desired angle.
3. Tighten the transverse adjustment screw *(Fig. 52)*.

To return the transverse adjustment to neutral *(90°)*. The probe holder must be in the latched, upper position *(Fig. 47)*. Rotate the yoke until the stop post contacts the base of the probe holder *(Fig. 53)*. Then tighten the transverse adjustment screw.

4.8.4. Probe Holder Longitudinal Adjustment

To adjust the probe holder's vertical angle for longitudinal scanning, follow these steps:

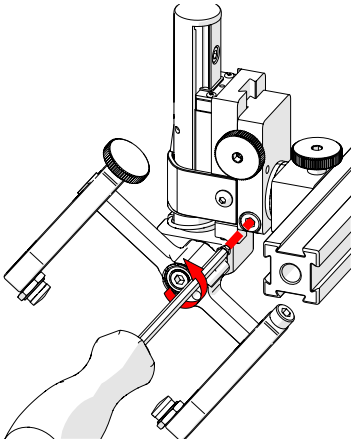


Fig. 54 - Loosen 3 mm screw

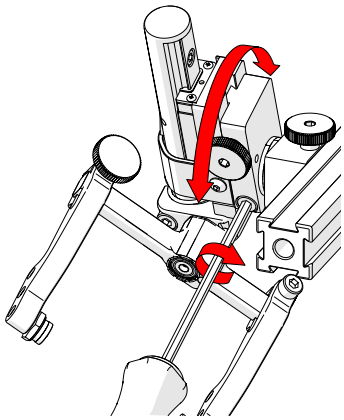


Fig. 55 - Rotate to position

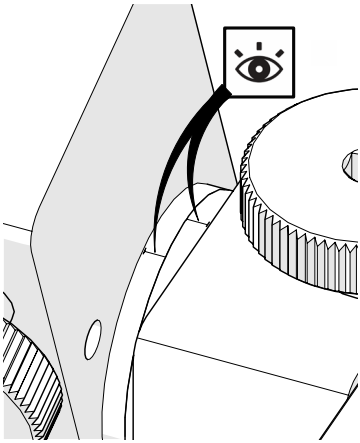


Fig. 56 - Line up markers

1. Ensure the probe holder is in latched, upper position *(Fig. 47)*.
2. Using the supplied 3 mm hex driver *(Fig. 15)*, loosen the longitudinal adjustment screw *(Fig. 54)*.
3. Rotate the main body of the probe holder until it is at the desired angle.
4. Tighten the longitudinal adjustment screw *(Fig. 55)*.

To return the longitudinal adjustment to neutral *(90°)*. Line up the longitudinal adjustment indicator markers *(Fig. 56)*.

4.8.5. Probe Holder Left/Right Conversion

To reverse the probe holder, follow these steps:

> ***NOTE:*** *To perform this operation, the 1.5 mm hex wrench (Fig. 17) is required.*

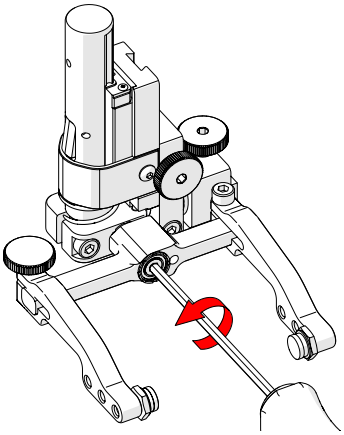


Fig. 57 - Unscrew yoke pivot screw

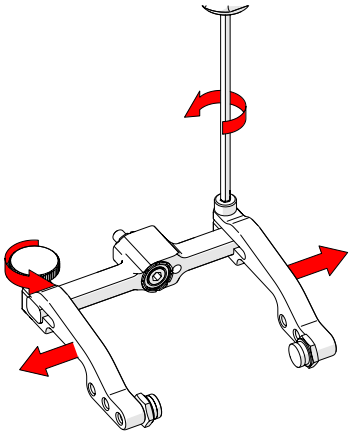


Fig. 58 - Remove probe holder arms

1. Ensure the probe holder is in latched, upper position *(Fig. 47)*.
2. Using the supplied 3 mm hex driver *(Fig. 15)*, unscrew the yoke pivot screw and remove the yoke *(Fig. 57)*.
3. Loosen the probe holder arm adjustment knob and the arm clamp screw. Slide the probe holder arms off the yoke *(Fig. 58)*.

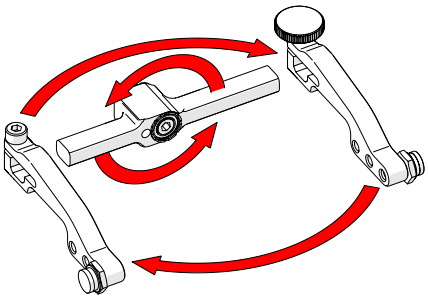


Fig. 59 - Flip yoke and reverse arms

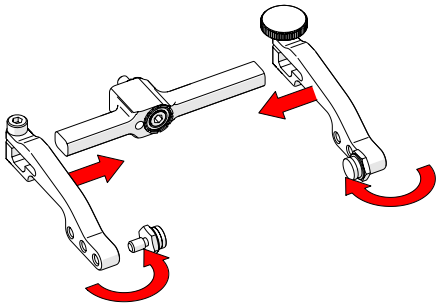


Fig. 60 - Attach arms & move buttons

4. Flip the yoke 180° and swap the probe holder arms *(Fig. 59)*.
5. Place the pivot buttons on the inside of the probe holder arms *(Fig. 60)* using a 3/8 in wrench *(Fig. 16)*.

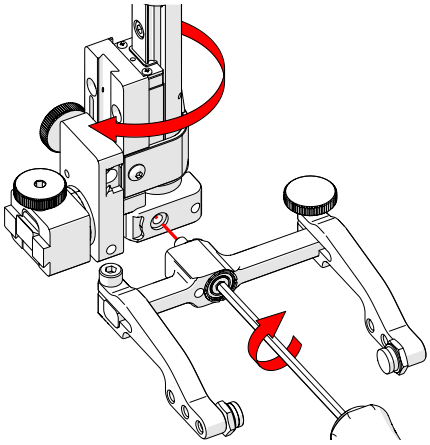


Fig. 61 - Screw yoke to opposite side

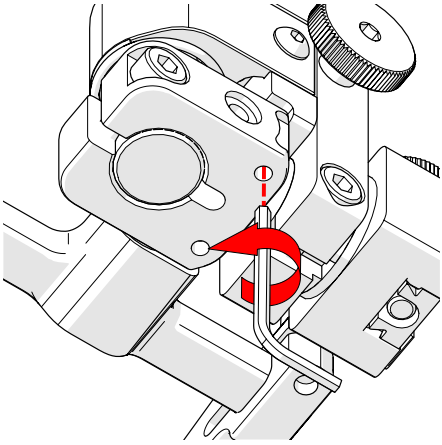


Fig. 62 - Lower 90° stop post

6. Mount the yoke to the opposite side of the base using the supplied 3 mm hex driver *(Fig. 61)*.

> ***TIP:*** *Keep the yoke level with the base to ensure no conflicts with the plunger/set screw attached to the yoke.*

7. Locate the recessed M3 screw *(stop post)* on the bottom of the probe holder. Unscrew the stop post using a 1.5 mm hex wrench until it has cleared all obstructions. Do not remove the stop post *(Fig. 62)*.

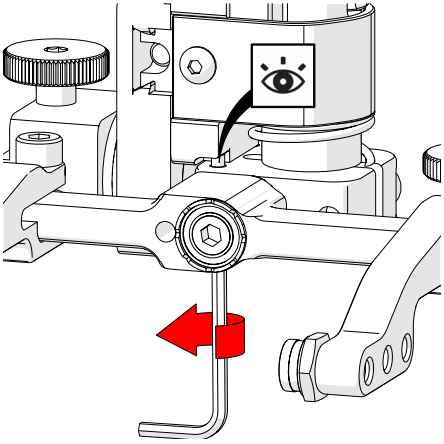


Fig. 63 - Raise opposite 90° stop post

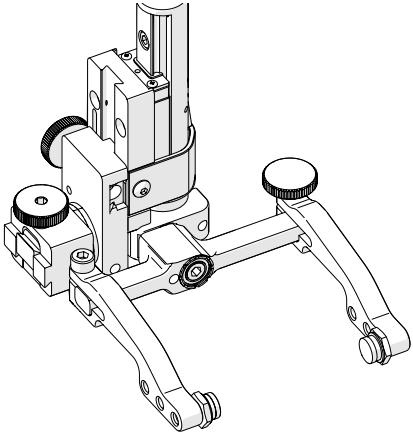


Fig. 64 - Reversed probe holder

8. Raise the stop post on the opposite side until the side of the post contacts the 90° stop point on the probe holder's base *(Fig. 63)*.

4.9. Magnetic Wheel Kit

WARNING! MAGNETIC MATERIAL. The magnetic wheel kit produce a magnetic field which may cause failure or permanent damage to items such as watches, memory devices, CRT monitors, medical devices or other electronics. People with pacemakers or ICD's must stay at least 25 cm *(10 in)* away.

When using a chain scanner is not appropriate, the magnetic wheel kit *(Fig. 65)* can replace the non-magnetic wheels on a **ROTIX** scanner body. Two sets of the magnetic wheel kits can also be used on the scanner body to double the magnetic force.

To install or remove wheels *(see Wheel Removal/ Installation on page 10)*.

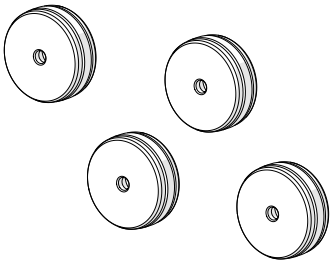


Fig. 65 - Magnetic wheel kit

NOTE: *Do not use magnetic wheels with a chain assembly.*

NOTE: *Magnetic wheels may lose their magnetic properties if heated above 175°F (80° C).*

CONFIGURATIONS

5.1. Single Probe Scanning

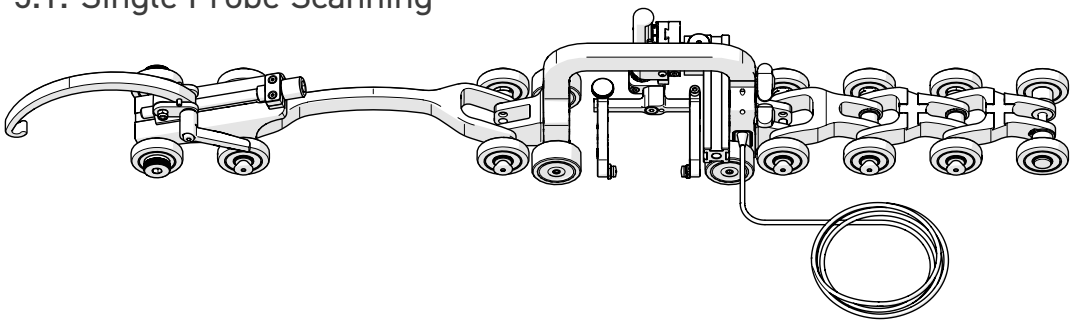


Fig. 66 - Single probe scanning

5.2. Two Probe Scanning

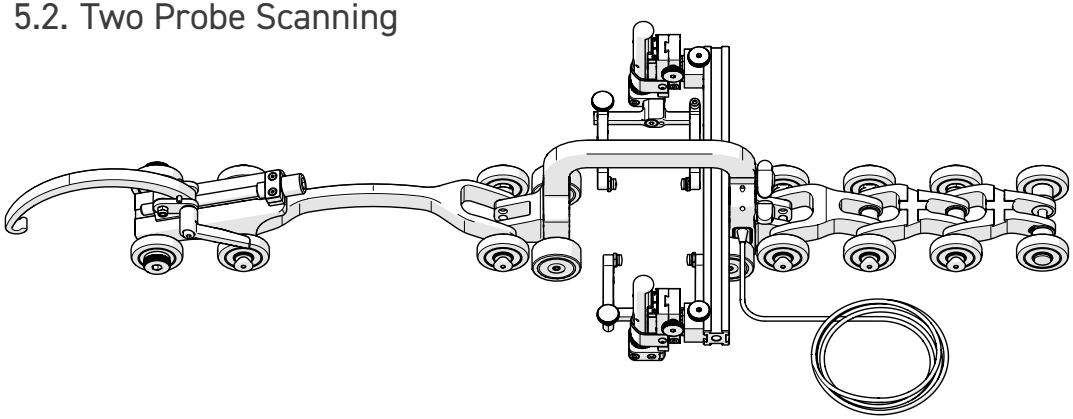


Fig. 67 - Two probe scanning

6.1. Setup of ROTIX on a Scanning Surface

1. Determine the diameter of the pipe or tube to be scanned. Included in the **ROTIX** kit and this manual is a setup chart indicating the number of links required based on the diameter of the pipe or tubing *(Fig. 68)*.
2. Attach the appropriately sized frame bar *(Fig. 69)* to the reduced width link *(see Reduced Width Link on page 9)*.
3. Assemble the appropriate configuration to the frame bar *(Fig. 70)*. Install the wedge and probes that will be used *(see Vertical Probe Holder on page 15)*.

> ***TIP:*** *The following example is a two probe configuration for a 30.4 cm (12 in) pipe diameter.*

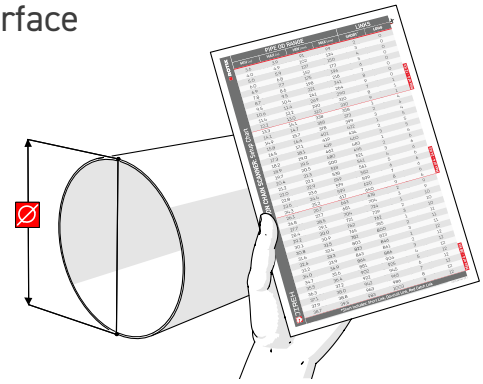


Fig. 68 - Refer to setup chart

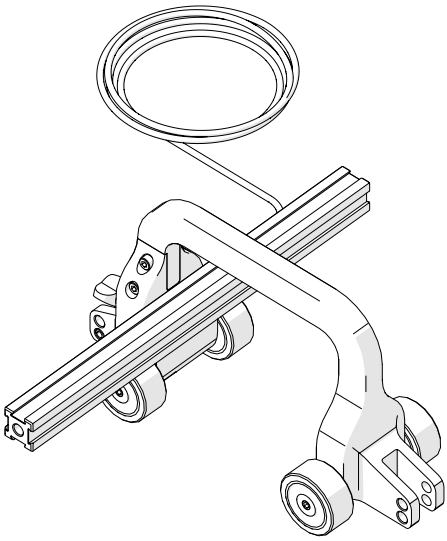


Fig. 69 - Attach frame bar

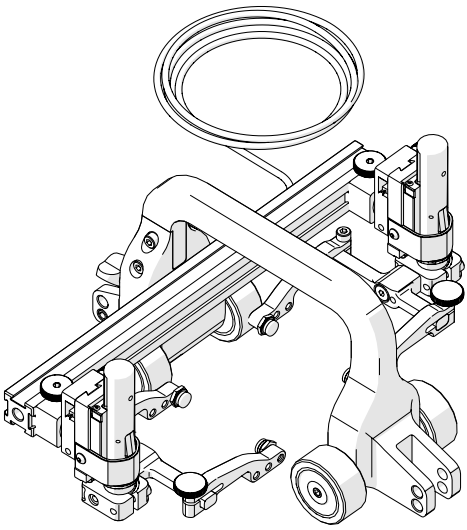


Fig. 70 - Mount probe holders

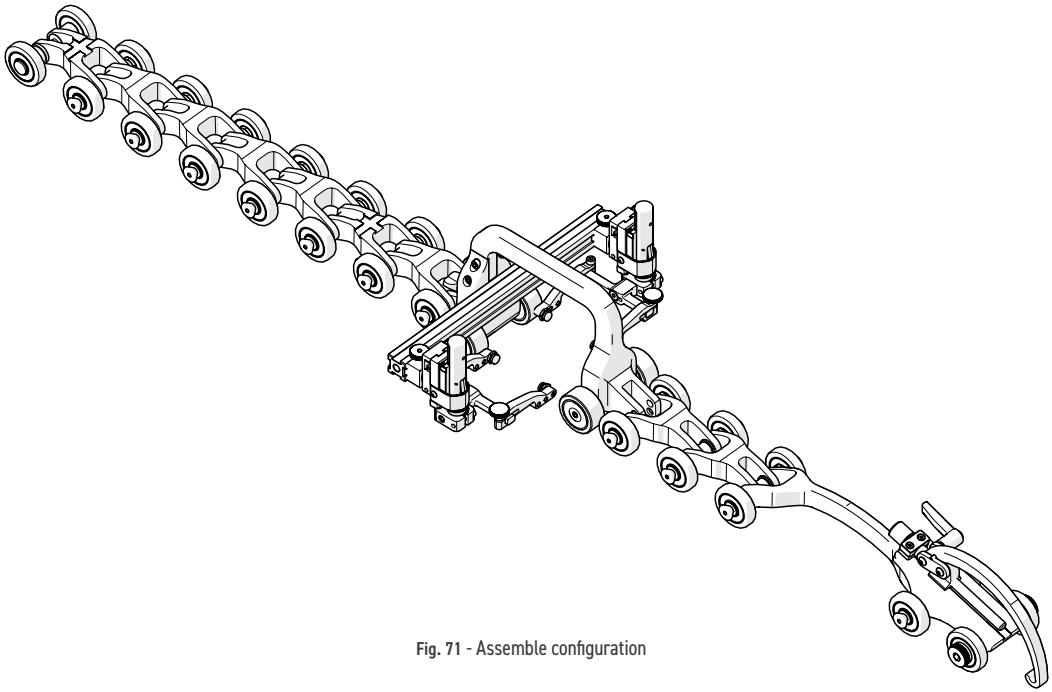


Fig. 71 - Assemble configuration

4. On a flat surface, connect the appropriate number of links *(see Chain Connection on page 11)* as indicated on the **ROTIX** setup chart. Arrange the link setup so the buckle and catch link will be 180° opposite the scanner body *(Fig. 71)*.

> ***TIP:*** *Place the dovetail link 2nd in the chain from the reduced width link.*

5. Drape the configured assembly around the pipe/tube to be inspected *(Fig. 72)*. Ensure the double wheel chain links straddle the weld *(during two probe scanning)*.

> ***NOTE:*** *Ensure the scanner does not roll off the scan surface before securing the chain.*

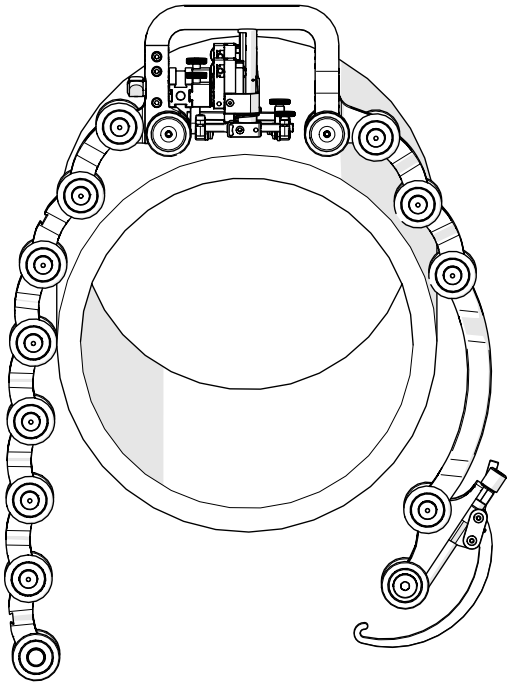


Fig. 72 - Place on pipe

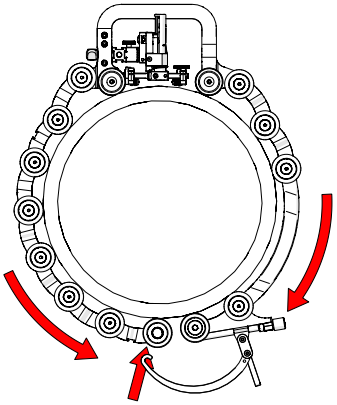


Fig. 73 - Hook buckle to catch link

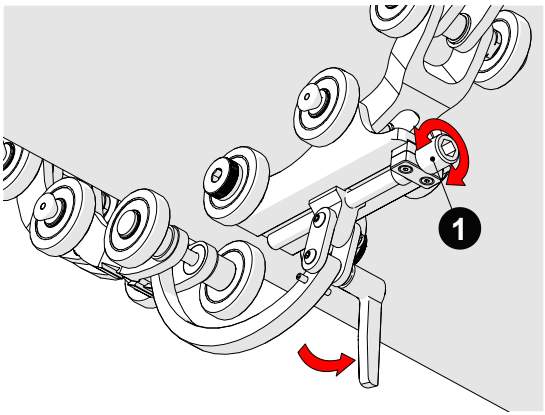


Fig. 74 - Adjust pressure of buckle

6. Bring the buckle arm towards the catch link. Hook the buckle's arm to the middle axle of the catch link *(Fig. 73)*. The buckle adjustment knob *(Fig. 74-1)* may have to be loosened to allow the arm to reach the catch link *(Fig. 74)*.

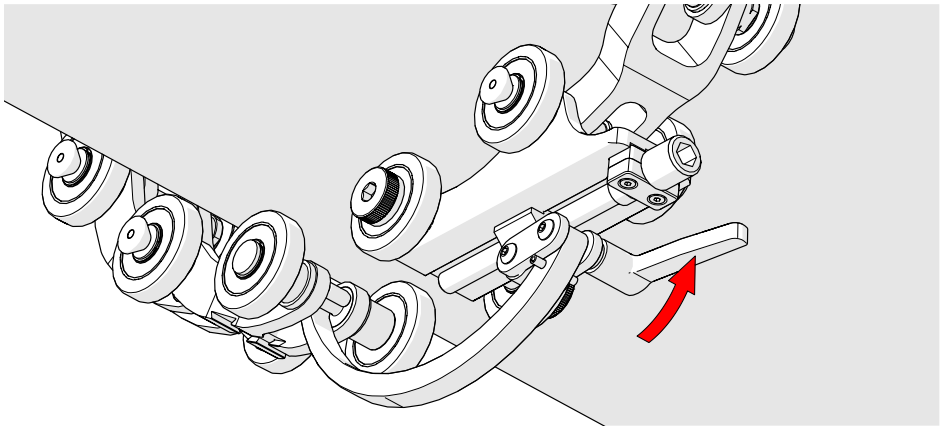


Fig. 75 - Press down to lock

7. Rotate the buckle adjustment knob *(Fig. 74-1)* until the buckle's lever can be pushed down, locking the buckle in place *(Fig. 75)*. The tightness of the **ROTIX** on the pipe can be adjusted using the buckle adjustment knob *(Fig. 74-1)*.

> ***TIP:*** *If additional clearance is required, the buckle's ratchet lever can be pulled out and rotated to various positions (see Ratchet Lever on page 11).*

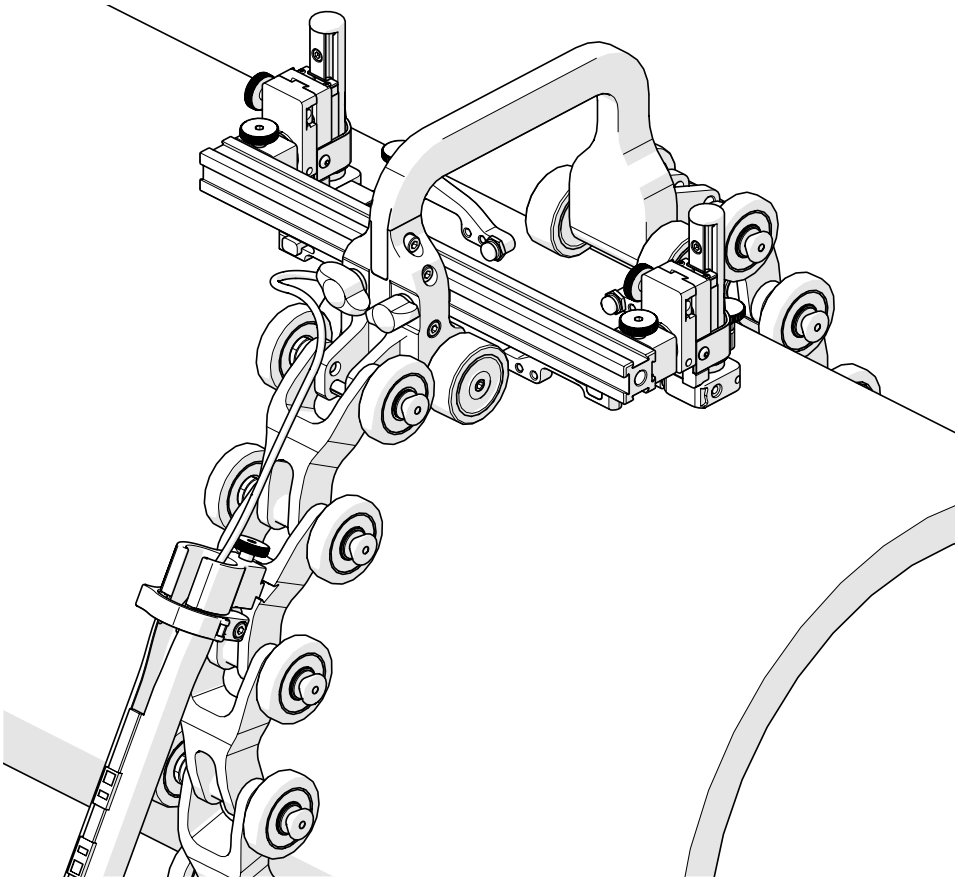


Fig. 76 - Configured four probe configuration

8. Route all cabling and hoses *(Only encoder cable shown)* to the cable management *(see Cable Management System on page 12)*.
9. Lower probe holders to the scan surface *(see Vertical Probe Holder on page 15)*.

MAINTENANCE

General cleaning of components is important to keep your system working well. All components that have no wiring or cables are completely waterproof. Components can be washed with warm water, dish soap and a medium bristle brush.

After washing your system, use a light oil to lubricate the slide and the adjustment screw on the buckle component *(Fig. 10)*. Before using the scanner, ensure all connectors are free of water and moisture.

> ***NOTE:*** *All components with wiring, cables or electrical connections are splashproof. However, these components are* ***NOT*** *submersible.*

> ***NOTE:*** *Never use strong solvents or abrasive materials to clean your scanner components.*

8.1. Troubleshooting

Problem	Possible Cause	Solution
The chain is too loose/tight	Incorrect number or combination of links for proper scanner configuration.	Refer to the **ROTIX** setup chart *(see Reduced Width Chain Configuration Setup Chart on page 39)* or for the required number of links for the diameter of the pipe/tube to be scanned. Ensure the correct outer diameter measurement of the pipe/tube. Reset the scanner with the correct number of links.
	The buckle is incorrectly set up.	Adjust the tightness of the buckle *(see Setup of ROTIX on a Scanning Surface on page 23)*.
Insufficient probe contact.	The scanner is not set correctly.	Reconfigure the scanner as per instructions *(see Setup of ROTIX on a Scanning Surface on page 23)*.
	The probe holder is not set up correctly.	Reconfigure the probe holder(s) as per instructions *(see Probe Holder Vertical Adjustment on page 16)*.

8.2. Technical Support

For technical support, contact Jireh Industries *(see "Jireh Industries Ltd." on page 1)*.

SERVICE AND REPAIR

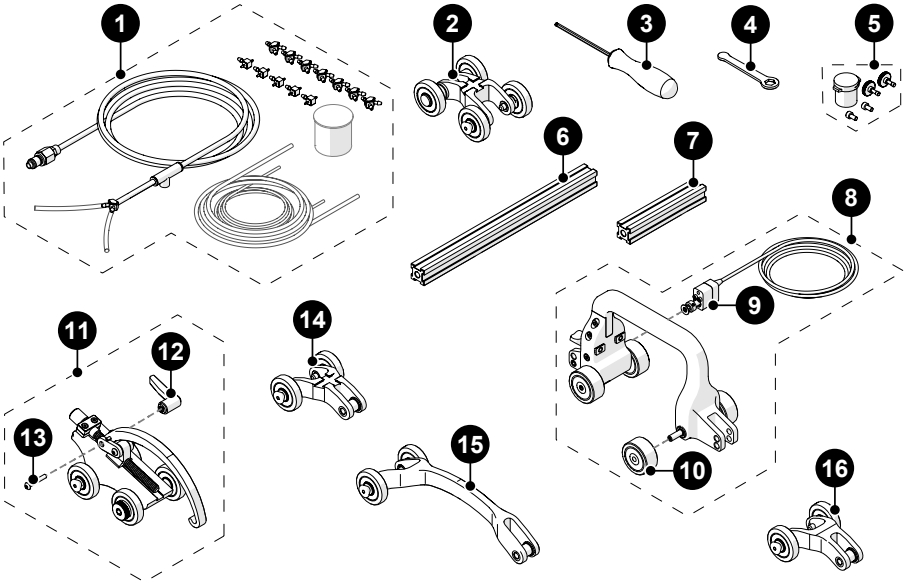
WARNING! DO NOT DISASSEMBLE. No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.

SPARE PARTS

To order accessories or replacement parts for your **ROTIX** system.
(contact Jireh Industries Ltd. on page 1)

> ***NOTE:*** *These drawings are for parts order. This is not a list of kit contents.*

10.1. Kit Components



BOM ID	Part #	Description
1	CMG007	Irrigation Kit, 2-4 Probe
2	CES035	Double Wheel Catch Link
3	EA414	3 mm Hex Driver
4	EA470	3/8 in Wrench
5	PHG014	Probe Holder Spare Parts Kit
6	BG0038-25	Frame Bar, 25 cm
7	BG0038-10	Frame Bar, 10 cm
8	CES046-X-05	Reduced Width ROTIX Link *(see Encoder Connector Type)*

BOM ID	Part #	Description
9	CES047-X	Reduced Width Encoder Assembly *(see Enc. Con. Type)*
10	CES012	Non-Magnetic Wheel
11	CES036	Buckle
12	CE0015	Ratchet Lever
13	MD073-024	BHCS, M4x0.7 X 25 mm, SST
14	CES040	Double Wheel Dovetail Link
15	CES034	Double Wheel Long Link
16	CES033	Double Wheel Short Link

Fig. 77 - ROTIX parts

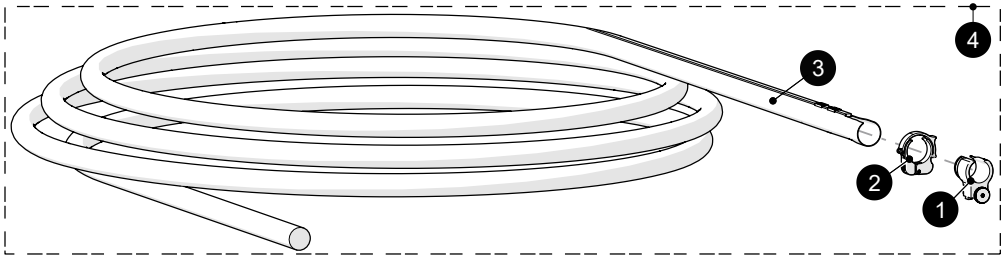
10.1.1. Encoder Connector Type

Connector Type	Company/Instrument	Connector Type	Company/Instrument
B	Olympus OmniScan MX Zetec Topaz	G	Sonotron Isonic 25xx
C	Olympus Focus LT Zetec Z-Scan Eddyfi Ectane 2	U	Sonatest Veo / Prisma
E	Olympus OmniScan SX/MX2/X3 M2M MANTIS/GEKKO LEMO	V	Pragma PAUT
F	TD *(Technology Design)*	AD	Sonatest Veo / Prisma - Single Axis

> ***NOTE:*** *Additional encoder connector styles are available. (contact Jireh Industries Ltd. on page 1)*

10.2. Accessories

10.2.1. Cable Management



BOM ID	Part #	Description
1	CES067	Cable Management Mount, Dovetail Mount
2	CES066	Cable Management Clamp, Dovetail Mount
3	*See Cable Management Sleeving*	
4	CES044-	Cable Management: Dovetail *(see cable management sleeving)*

Fig. 78 - Cable management

10.2.1.1 Cable Management Sleeving

Part #	Length
CX0141	4.5 m *(14.8 ft)*
CX0145	9.5 m *(31.2 ft)*

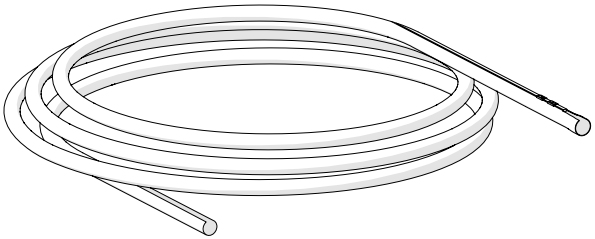


Fig. 79 - Cable management sleeving

10.2.2. Preamp Bracket

Part #	Description
CES029	Preamp Bracket
CES029-V	Preamp Bracket with Velcro

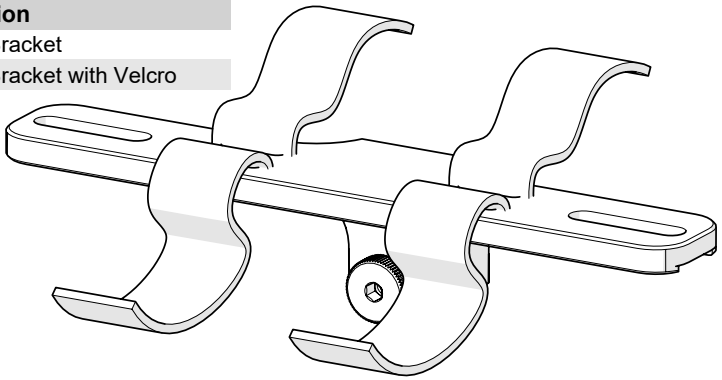


Fig. 80 - Preamp bracket

10.2.3. Magnetic Wheel Kit

Part #	Description
BTG014	Magnetic Wheel Kit

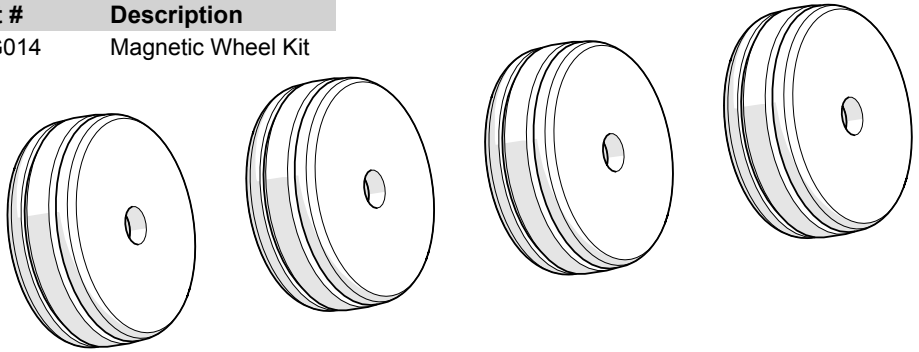
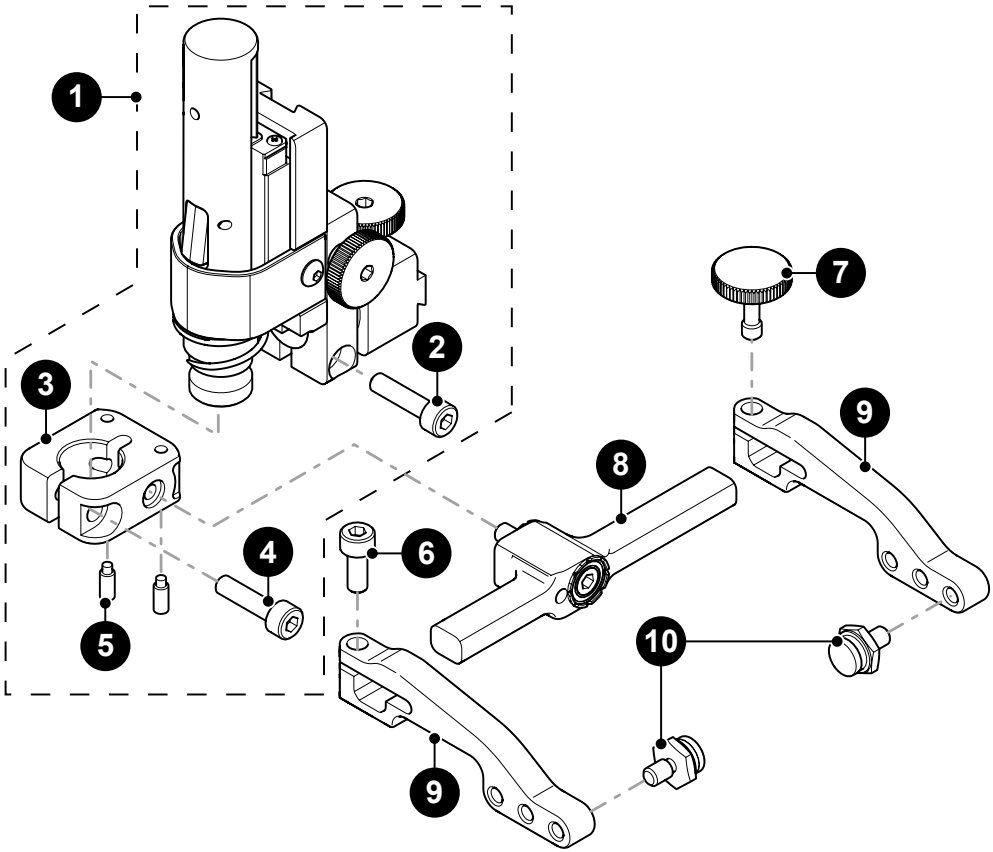


Fig. 81 - Magnetic wheel kit

10.3. Vertical Probe Holder Parts



BOM ID	Part #	Description
1	PHS028	Vertical Probe Holder Subassembly
2	MA307	Screw, M4x16 mm High Strength SST SHCS
3	PH0087	Vertical Probe Holder Base
4	MD050-016	SHCS, M4 x 0.7 x 16 mm, SST
5	MA096	Screw, M3x8 mm Dog Point Set, SST
6	MD050-010	SHCS, M4 x 0.7 x 10 mm, SST
7	PH0082	Knurled Knob, M4 x 0.7 x 10 mm, 3 mm stand off, SST
8	*see Yoke Style*	
9	*see Arm Style*	
10	PH0011-X	Pivot Button Style *(see Pivot Button Style)*

Fig. 82 - Vertical probe holder

10.4. Probe Holder Components

10.4.1. Arm Style

	Arm Style	Part #			Arm Style	Part #	
A	Standard, Flat	PH0090		**B**	Short, Flat	PH0089	
C	Long, Flat	PH0099		**D**	Standard, Drop	PH0093	
E	Short, Drop	PH0092		**F**	Long, Drop	PH0094	
G	Standard, Extra-Drop	PH0096		**H**	Short, Extra-Drop	PH0095	
I	Extra-Short, Flat	PH0159		**J**	Extra-Short, Drop	PH0161	

Fig. 83 - Probe holder arm selection

10.4.2. Yoke Style

	Yoke Style	Part #	Length			Yoke Style	Part #	Length	
S	Standard	PHS052	6.3 cm *(2.47 in)*		**W**	Wide	PHS063	7.9 cm *(3.06 in)*	

Fig. 84 - Probe holder yoke selection

10.4.3. Pivot Button Style

	Pivot Hole Size	Wedge Type			Pivot Hole Size	Wedge Type	
01	8.0 mm *(0.315 in)*	Olympus PA		**02**	5.0 mm *(0.197 in)*	Olympus TOFD	
03	2.7 mm *(0.106 in)*	Sonatest DAAH PA		**04**	9.5 mm *(0.375 in)*	-	
06	3.0 mm *(0.118 in)*	-		**07**	2.3 mm *(0.09 in)*	-	
08	Conical Head	-		**09**	5 mm *(0.197 in)* Internal	Zetec PA/TOFD	

Fig. 85 - Pivot button selection

> ***NOTE:*** *Additional probe holder pivot button types are available. (contact Jireh Industries Ltd. on page 1)*

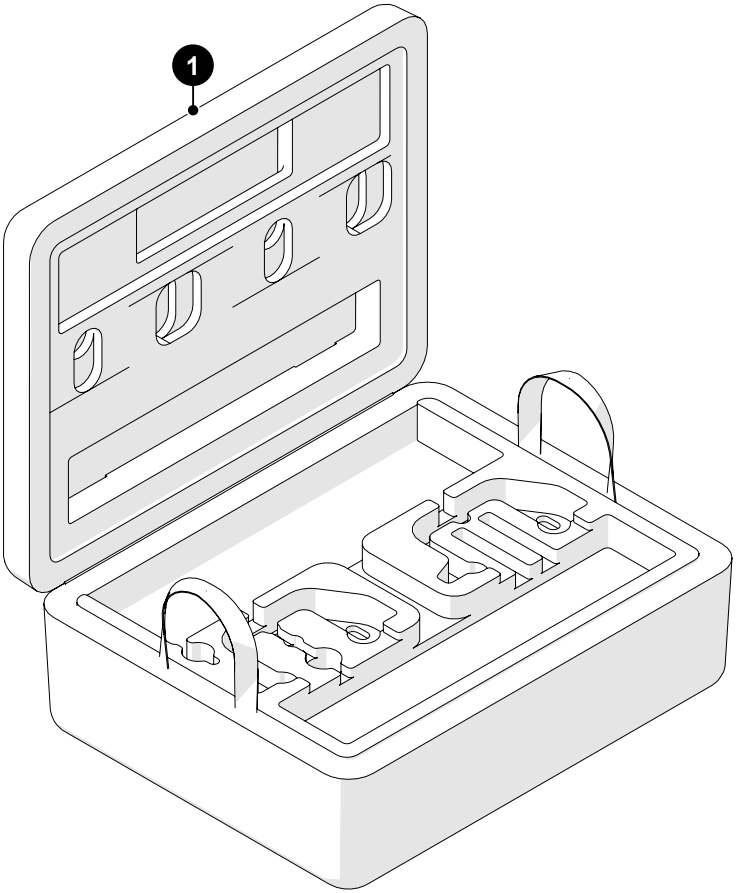
10.5. Variable Components

10.5.1. Frame Bars

Part #	Length		Part #	Length	
BG0038-05	5 cm *(1.97 in)*		BG0038-10	10 cm *(3.94 in)*	
BG0038-15	15 cm *(5.91 in)*		BG0038-20	20 cm *(7.87 in)*	
BG0038-25	25 cm *(9.84 in)*		BG0038-30	30 cm *(11.81 in)*	
BG0038-35	35 cm *(13.78 in)*		BG0038-40	40 cm *(15.75 in)*	
BG0038-45	45 cm *(17.72 in)*		BG0038-50	50 cm *(19.69 in)*	
BG0038-55	55 cm *(21.65 in)*				

Fig. 86 - Frame bar selection

10.6. Case



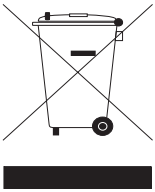
BOM ID	Part #	Description
1	CEA013	ROTIX Reduced Width Case

Fig. 87 - Case

DISPOSAL

WEEE Directive

In accordance with European Directive on Waste Electrical and Electronic Equipment *(WEEE)*, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to Jireh Industries for return and/or collection systems available in your country.



LIMITED WARRANTY

WARRANTY COVERAGE

Jireh Industries warranty obligations are limited to the terms set forth below: Jireh Industries Ltd. (“Jireh”) warrants this hardware product against defects in materials and workmanship for a period of THREE (3) YEARS from the original date of purchase. If a defect exists, at its option Jireh will (1) repair the product at no charge, using new or refurbished replacement parts, (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. A replacement product/part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Jireh’s property. When a refund is given, your product becomes Jireh’s property.

OBTAINING WARRANTY SERVICE

To utilize Jireh’s warranty service you must ship the product, at your expense, to and from Jireh Industries. Before you deliver your product for warranty service you must phone Jireh and obtain an RMA number. This number will be used to process and track your product. Jireh is not responsible for any damage incurred during transit.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for Jireh Industries. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication, or non-Jireh products; (b) to damage caused by service (including upgrades and expansions) performed by anyone who is not a Jireh Authorized Service Provider; (c) to a product or a part that has been modified without the written permission of Jireh.

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APPENDIX

13.1. Reduced Width Chain Configuration Setup Chart

PIPE OD RANGE				LINKS		
MIN (in)	MAX (in)	MIN (mm)	MAX (mm)	SHORT*	LONG	
3.6	3.9	91	99	2	0	
4.0	4.9	102	124	3	0	
5.0	5.9	127	150	4	0	
6.0	6.8	152	173	5	0	
6.9	7.7	175	196	6	0	
7.8	8.6	198	218	7	0	
8.7	9.5	221	241	8	0	
9.5	10.4	241	264	9	0	Max of 4 - 12 Kit
10.6	11.4	269	290	7	1	
11.4	12.2	290	310	8	1	
12.2	13.0	310	330	9	1	
13.3	14.1	338	358	1	4	
14.1	14.7	358	373	2	4	
14.9	15.7	378	399	3	4	
15.8	16.6	401	422	1	5	
16.5	17.1	419	434	2	5	
17.3	18.1	439	460	3	5	
18.2	19.0	462	483	1	6	
18.9	19.5	480	495	2	6	
19.7	20.5	500	521	3	6	
20.4	21.3	518	541	4	6	
21.2	22.1	538	561	5	6	
22.0	22.9	559	582	6	6	Max of 4 - 24 Kit
22.8	23.6	579	599	7	6	
23.6	24.4	599	620	8	6	
24.3	25.2	617	640	9	6	
26.1	26.7	663	678	2	9	
26.8	27.7	681	704	3	9	
27.7	28.5	704	724	1	10	
28.4	29.1	721	739	2	10	
29.2	30.0	742	762	3	10	
30.1	30.9	765	785	1	11	
30.8	31.5	782	800	2	11	
31.6	32.4	803	823	3	11	
32.4	33.3	823	846	1	12	
33.2	33.9	843	861	2	12	
34.0	34.9	864	886	3	12	
34.7	35.6	881	904	4	12	
35.5	36.4	902	925	5	12	
36.3	37.2	922	945	6	12	Max of 4 - 38 Kit
37.1	38.0	942	965	7	12	
37.9	38.8	963	986	8	12	
38.7	39.5	983	1003	9	12	

*Short includes: Short Link, Dovetail Link, Red Catch Link

CE0184 Rev 00

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