

A high-contrast, black and white graphic illustration of a manual magnetic scanner. The image shows the internal mechanical components, including a large cylindrical roller, a smaller gear, and a complex assembly of metal parts and belts. The style is minimalist and technical, using solid black shapes against a white background.

MICROBE

BT0179 Rev 04.7
Manual Magnetic Scanner

SAFETY WARNINGS / PRECAUTIONS

KEEP THIS MANUAL – DO NOT LOSE

THIS MANUAL IS PART OF THE **MICROBE** 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 **MICROBE** is designed for a specific use. Using the **MICROBE** outside of its intended use could cause damage to the product. Read and understand this manual before using.



WARNING! Can be harmful to pacemaker and ICD wearers. Stay at least 25 cm (10 in) away.



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 *WEEE Directive on page 42*)

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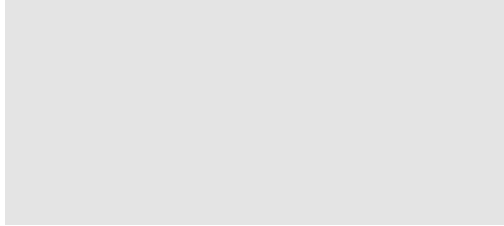
IDENTIFICATION

1.1. Product brand

This user manual describes the proper safety precautions, setup and use of the **MICROBE** manual magnetic scanner.

1.2. Manufacturer

Distributor:



Manufacturer:

Jireh Industries Ltd.
53158 Range Road 224
Ardrossan, Alberta, Canada
T8E 2K4
Phone: 780.922.4534
jireh.com

PRODUCT SPECIFICATIONS

2.1. Intended Use

The **MICROBE** is a handheld scanner with a built-in encoder and magnetic wheels. It is designed to translate phased array and/or TOFD probes around ferrous piping and vessels.

2.1.1. Operating Limits

	Minimum	Maximum
Pipe/tube range, outer diameter (2 probe)	3.8 cm (1.5 in)	Flat
Pipe/tube range, outer diameter (4 probe)	8.8 cm (3.5 in)	Flat
Pipe/tube range, longitudinal	7.6 cm (3.0 in)	Flat
Pipe/tube range, inner diameter	152.4 cm (60 in)	Flat

2.1.2. Operating Environment

The **MICROBE** is designed for use in industrial environments that are between -20°C (-4°F) and 50°C (122°F).

2.2. Dimensions and Weight

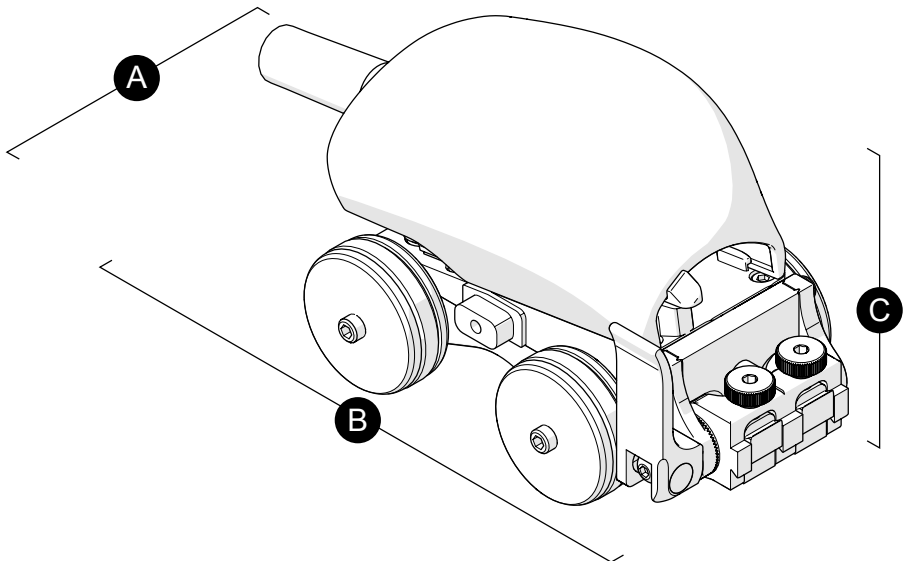


Fig. 1 - Single wheel dimensions

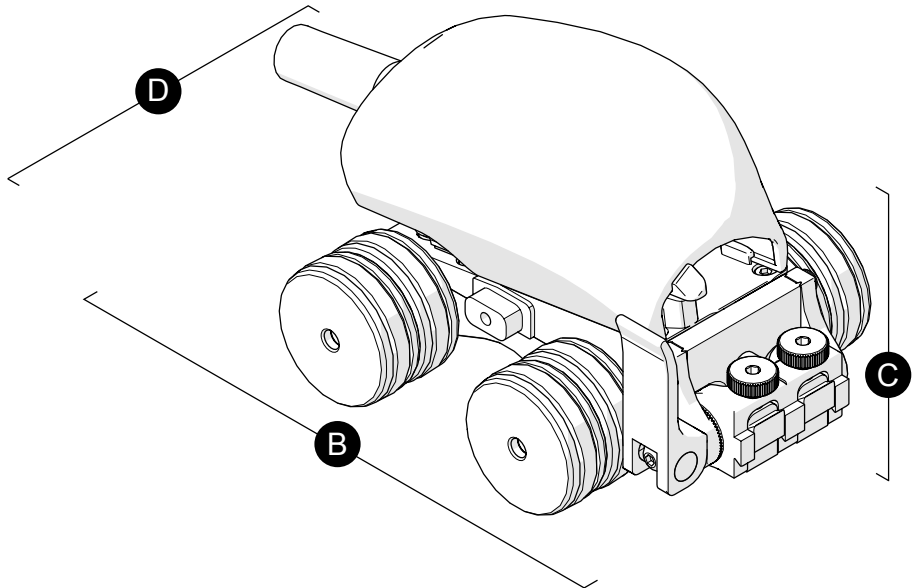


Fig. 2 - Double wheel dimensions

A: (Fig. 1-A)	8 cm	3.15 in
B: (Fig. 1-B)	17.2 cm	6.8 in
C: (Fig. 1-C)	8.1 cm	3.2 in
D: (Fig. 2-D)	11 cm	4.3 in
Umbilical length (standard kit):	5 m (16.4 in)	
Cart weight:	0.77 kg (1.7 lb)*	

*Cart weight with umbilical housing but not including cabling.

2.4. Environmental Sealing

Dust-tight, watertight (*not submersible*).

2.5. Performance Specifications

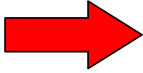
X-Axis encoder resolution	19.1 counts/mm (485.1 counts/inch)
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DEFINITIONS

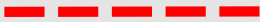
3.1. Definition of Symbols



Instructions to 'look here' or to 'see this part.'



Denotes movement. Instructing users to carry out an action in a specified direction.



Indicates alignment axis and can also display the insertion or movement of parts.

SYSTEM COMPONENTS

4.1. Component Identification

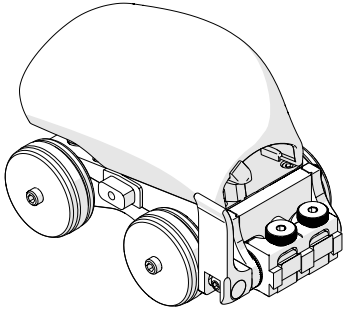


Fig. 3 - MICROBE Cart
BTA010

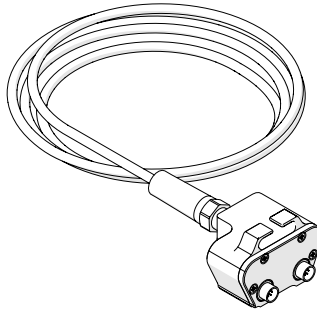


Fig. 4 - MICROBE/ROTIX Umbilical Housing
UMA012-

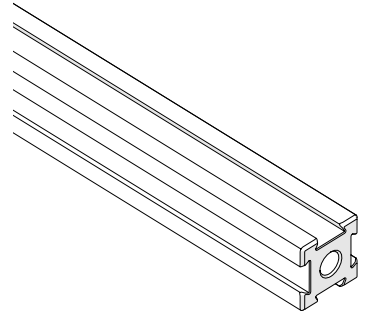


Fig. 5 - Frame Bar
BG0038-

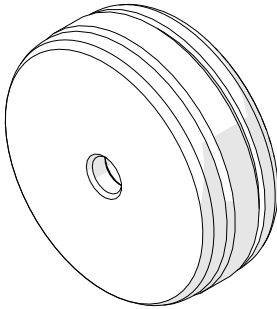


Fig. 6 - Magnetic Wheel
BTS031

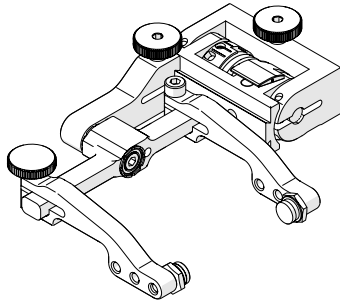


Fig. 7 - Slip Joint Probe Holder
PHA012-

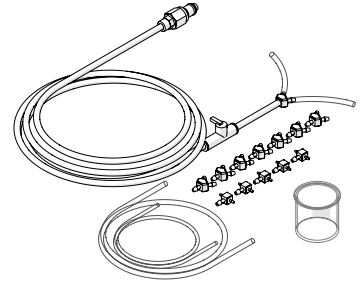


Fig. 8 - Irrigation Kit
CMG007

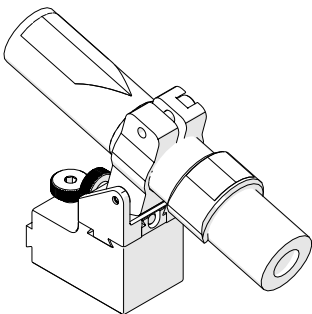


Fig. 9 - Battery Powered Optical Guide
CXS080

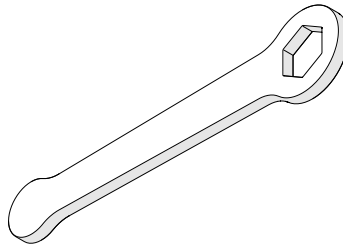


Fig. 10 - 3/8 in Wrench
EA470

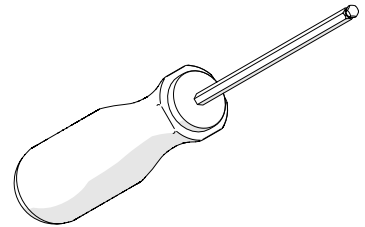


Fig. 11 - 3 mm Hex Wrench
EA414

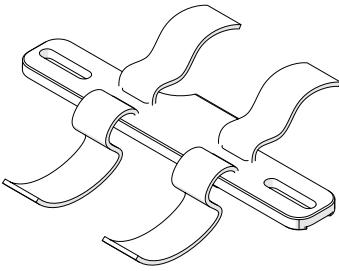


Fig. 12 - Preamp Bracket
CES029-

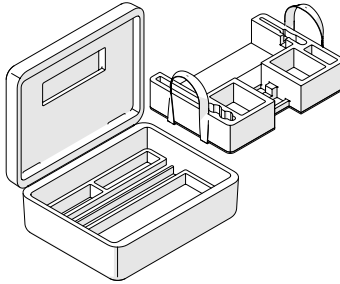


Fig. 13 - MICROBE Case
BTA002

4.2. Tools

4.2.1. Included tools

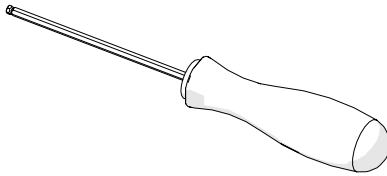


Fig. 14 - 3 mm hex driver

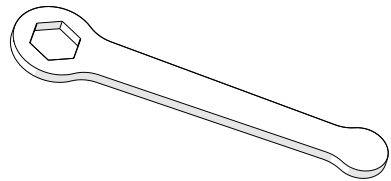


Fig. 15 - 3/8 in wrench

The 3 mm hex driver (*Fig. 14*) is sufficient for all typical operations and adjustments of the **MICROBE**.

The 3/8 in wrench (*Fig. 15*) removes and installs buttons on the probe holders.

4.2.2. Optional tools

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

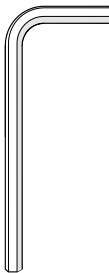


Fig. 16 - 1.5 mm hex
wrench

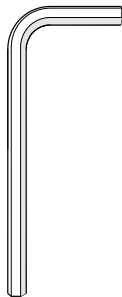


Fig. 17 - 2 mm
hex wrench

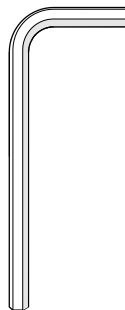


Fig. 18 - 2.5 mm
hex wrench

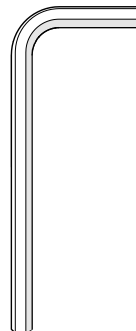


Fig. 19 - 3 mm
hex wrench

4.3. Cart

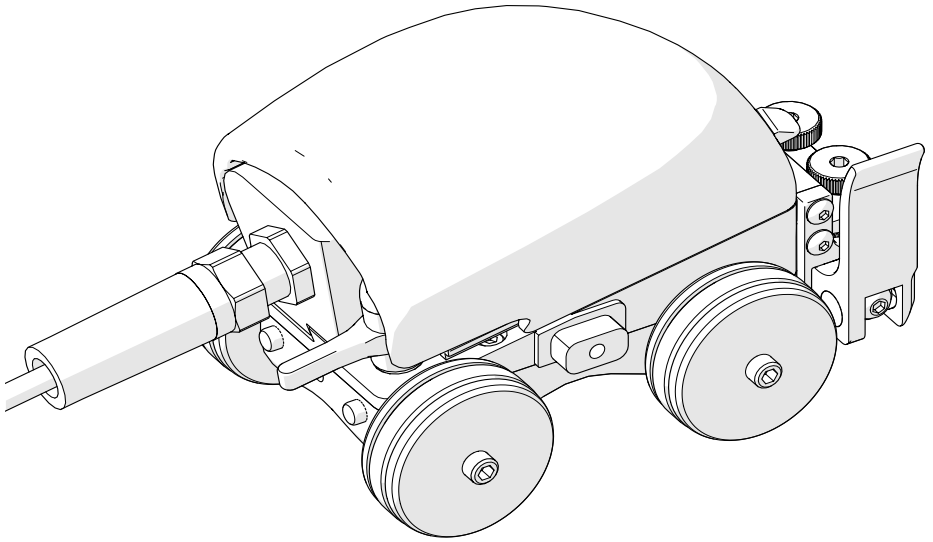


Fig. 20 - Cart

4.3.1. Cart Body

The housing for the primary encoder provides a mounting base for probe holders and the umbilical housing (Fig. 20).

4.3.2. Cart Handle

The handle is used to manage cabling and offers an ergonomic grip.

To remove the cart handle, simultaneously depress the handle, release the catch and slide forward (Fig. 21).

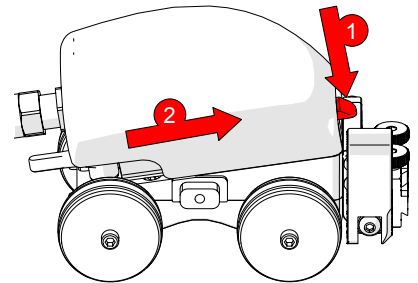


Fig. 21 - Cart handle removal

4.3.3. Brake Handle

Pivot the brake handle left or right to engage or disengage the brake.

To remove the brake handle, pull straight up on the central knob of the black lever. (Fig. 22). To reinsert, align the spline on the handle with the socket and press down until it snaps into place.

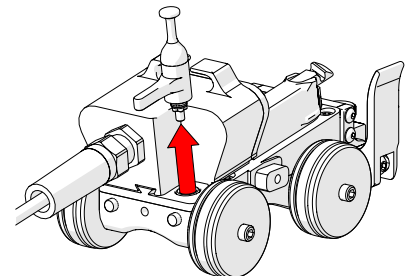


Fig. 22 - Brake handle removal

NOTE: Pulling the brake handle sideways causes binding and makes removing the handle challenging.

4.3.4. Wheels

The wheels of the cart are interchangeable.

To remove/install the cart wheels, insert the provided 3 mm hex driver (Fig. 14) in the end of the shaft opposite the wheel you wish to remove. Thread or unthread the desired wheel by

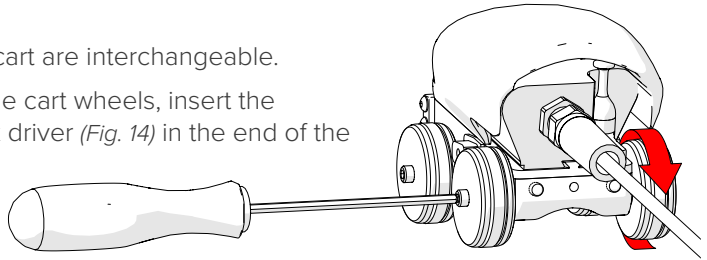


Fig. 23 - Umbilical housing removal

hand (Fig. 23). Additional magnetic wheels may be installed when additional magnetic attraction is required (see *Magnetic Wheel Kit* on page 24).



WARNING! MAGNETIC MATERIAL. The magnetic wheels 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.

TIP: Ensure all wheels are tight, as this can affect the brake and encoder performance.

4.3.5. Umbilical Housing

The umbilical transmits encoder signals to the user instrument.

To remove the umbilical, first, remove the cart handle (Fig. 21) and brake handle (Fig. 22). Locate the black wing knob at the bottom of the cart and loosen one turn (Fig. 24).

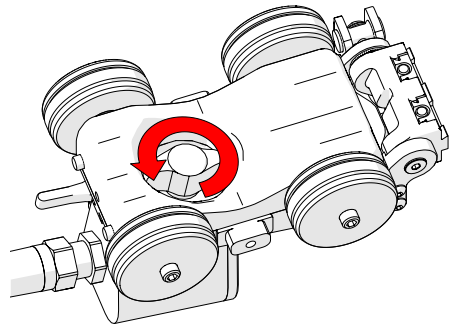


Fig. 24 - Umbilical housing lock knob

With the knob loose, slide the umbilical housing toward the rear of the cart (Fig. 25).

TIP: The umbilical lock knob is only required to be loose. One turn should be enough to remove the umbilical.

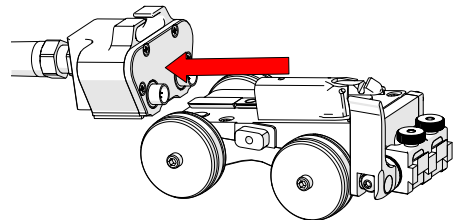


Fig. 25 - Umbilical housing removal

TIP: If the umbilical does not slide freely from the body, you may need to push on the wing knob to loosen the dovetail nut.

4.3.6. Front Pivot

The front pivot offers an attachment point for various frame bars.

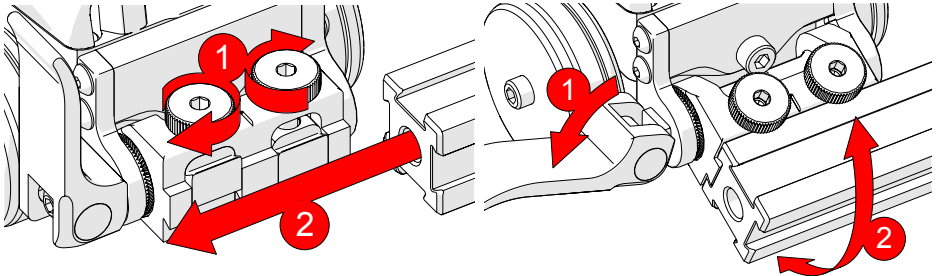


Fig. 26 - Frame bar attachment

Fig. 27 - Pivot

To attach a frame bar, loosen both dovetail jaws enough to allow the frame bar to be inserted and tighten the knobs (Fig. 26).

The angle of the bar may be adjusted by loosening the side-mounted lever, pivoting to the desired angle, and closing the lever again (Fig. 27).

4.3.7. Rear Pivot

The rear pivot is positioned at the rear of the cart body and provides an attachment point for various frame bars. To mount a rear pivot, follow these steps:

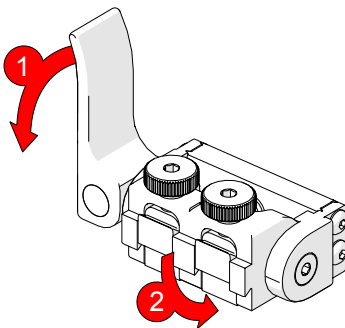


Fig. 28 - Rotate pivot 90° down

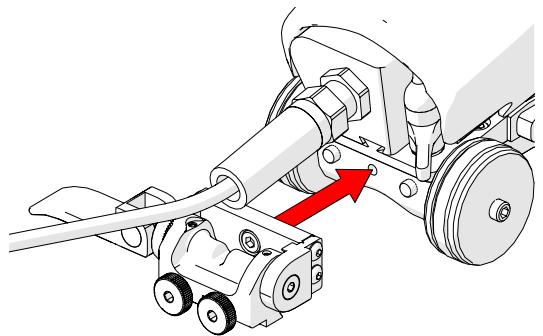


Fig. 29 - Position on cart body

1. Release the side-mounted lever and rotate the pivot down 90° (Fig. 28).
2. Align the rear pivot with the pins at the rear of the cart (Fig. 29).

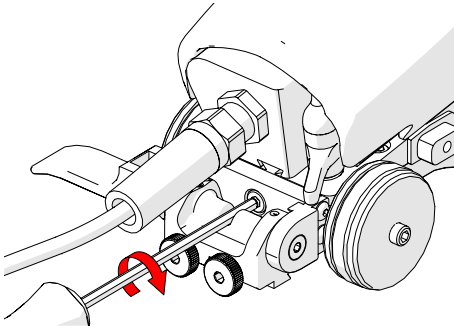


Fig. 30 - Screw to scanner body

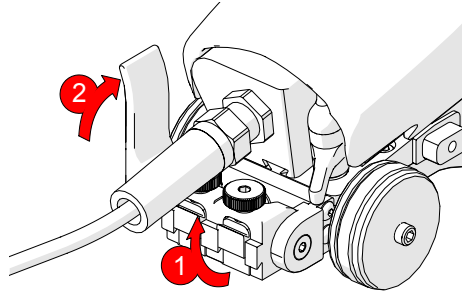


Fig. 31 - Return pivot position

3. Using the supplied 3 mm hex driver, screw the rear pivot to the cart (Fig. 30).
4. Rotate the pivot to the original position and lock the side-mounted lever (Fig. 31).

4.4. Pivot Buttons

Available in a variety of shapes and sizes, fitting various wedge dimensions.

Use the supplied 3/8 wrench (Fig. 15) to remove and install pivot buttons in the desired hole location (Fig. 32).

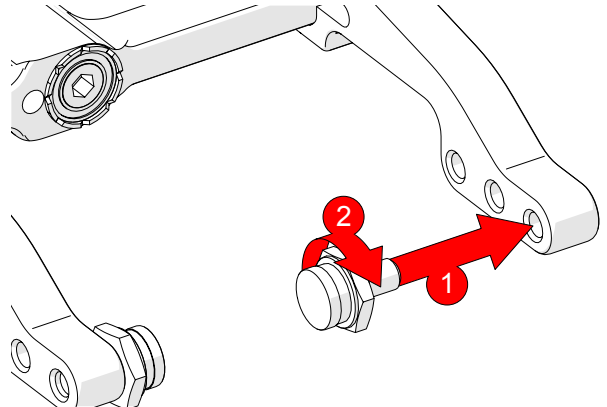


Fig. 32 - Pivot buttons

4.5. Frame Bar

Frame bars (Fig. 33) are used to mount probe holders, probe positioning systems and other accessories.

Frame bars are available in various lengths (see - Frame bar on page 10).

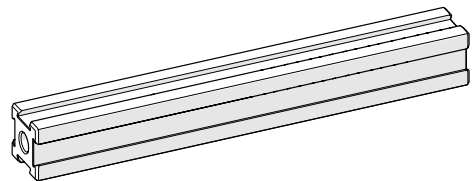


Fig. 33 - Frame bar

4.6. Slip Joint Probe Holder

- A Frame Bar
- B Probe Holder Adjustment Knob
- C Latch
- D Swing Arm Knob
- E Yoke
- F Probe Holder Arm Adjustment Knob
- G Probe Holder Arm
- H Arm Clamp Screw
- I Pivot Buttons

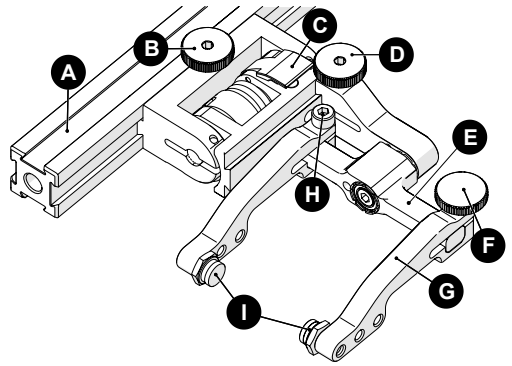


Fig. 34 - Slip joint probe holder

4.6.1. Probe Holder Setup

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

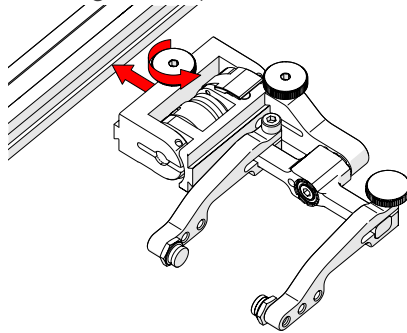


Fig. 35 - Attach to frame bar

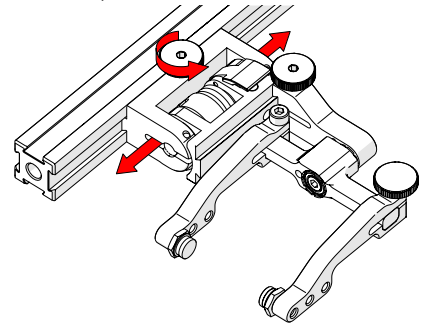


Fig. 36 - Adjust on frame bar

1. Rotate the probe holder adjustment knob and attach the probe holder to a frame bar (Fig. 35).
2. Use the probe holder adjustment knob to position the probe holder along the frame bar (Fig. 36).

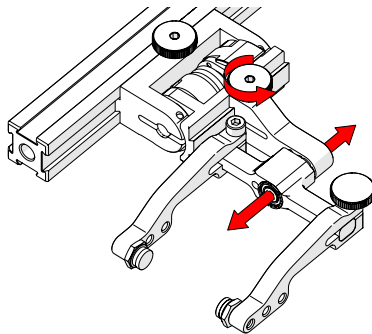


Fig. 37 - Adjust swing arm

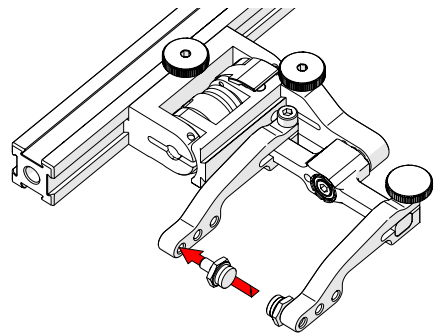


Fig. 38 - Place pivot buttons

3. Use the swing arm knob to position the swing arm (Fig. 37).

TIP: The swing arm typically adjusts the TOFD centre-to-centre distance relative to the phased array probes on a four probe configuration (Fig. 33).

4. Using the supplied 3/8 in wrench (Fig. 15), place the pivot buttons as required (Fig. 38).

TIP: If a narrow scanning footprint is required, use pivot button holes closest to the yoke. Wedge pivoting may be impeded when closer to the yoke.

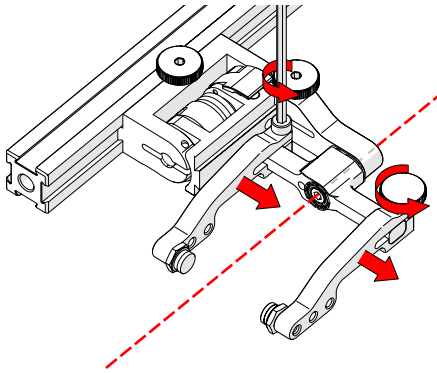


Fig. 39 - Adjust probe holder arms

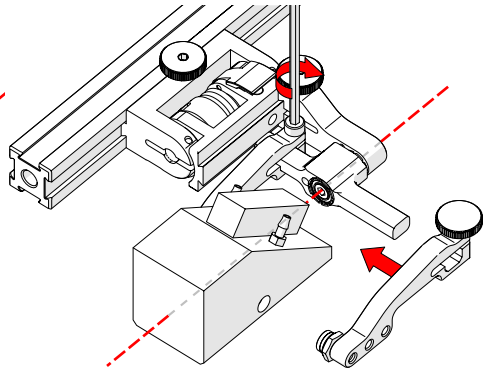


Fig. 40 - Place wedge

5. Loosen the arm clamp screw and the probe holder arm adjustment knob (Fig. 39) and remove the outer probe holder arm from the yoke.
6. Adjust the inner probe holder arm to best centre the probe on the yoke's pivot axis (Fig. 39).

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 to reduce wedge tipping when scanning. Position the inner probe holder arm with the yoke's centre (Fig. 40).

7. Position the wedge on the inner probe holder arm (Fig. 40).
8. Tighten the arm clamp screw (Fig. 40).
9. Slide the outer probe holder arm along the yoke pinching the wedge in place.
10. Tighten the probe holder arm adjustment knob (Fig. 41).

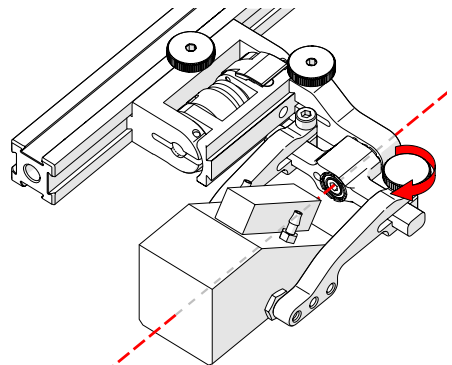


Fig. 41 - Pinch wedge with arm

4.6.2. Probe Holder Adjustment

To adjust the probe holder, follow these steps:

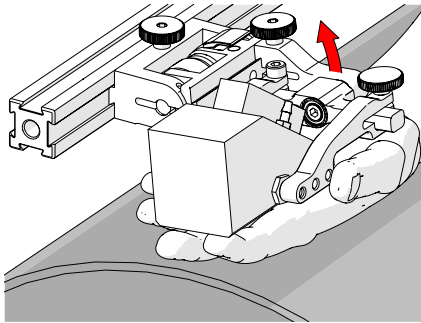


Fig. 42 - Lift to latched position

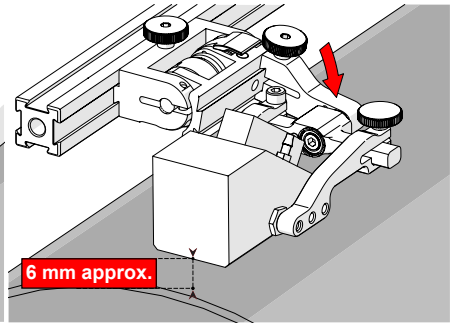


Fig. 43 - Lower to scanning surface

1. Ensure the probe holder is in latched, upper position (Fig. 42). If the probe holder is already latched, it will only move within the slip joint adjustment range and have no spring tension.
2. Push the probe holder yoke down toward the inspection surface until the wedge is approximately 6 mm ($\frac{1}{4}$ in) above the inspection surface (Fig. 43).

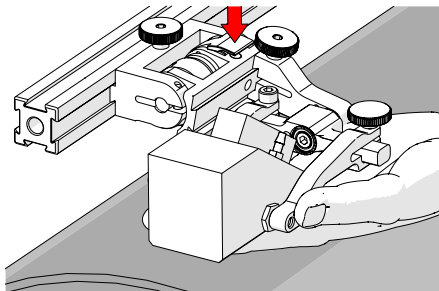


Fig. 44 - Lift and press latch button

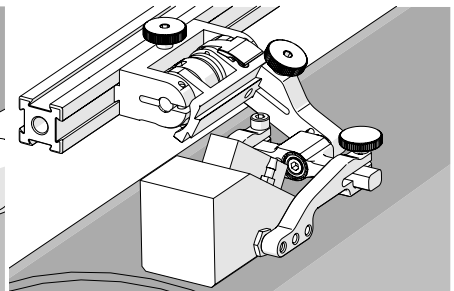


Fig. 45 - Spring loaded scan position

3. Lift the probe slightly and press the latch button (Fig. 44) to apply spring pressure to the wedge.
4. Gently lower the probe holder and wedge to the scanning surface (Fig. 45).

4.6.3. Probe Holder Force Adjustment

It is possible to adjust the tension of the probe holder spring.

NOTE: The 2 mm hex wrench (Fig. 17) and 3 mm hex wrench (Fig. 19) are required to perform this operation.

Light	1 kg	2 lb
Medium	2 kg	4 lb
Heavy	3 kg	6 lb

When configured correctly, these settings exert the indicated spring force on the Probe.

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

NOTE: Do not perform this operation on the scanning surface.

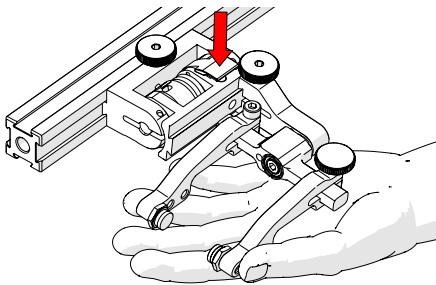


Fig. 46 - Lift slightly and press Latch

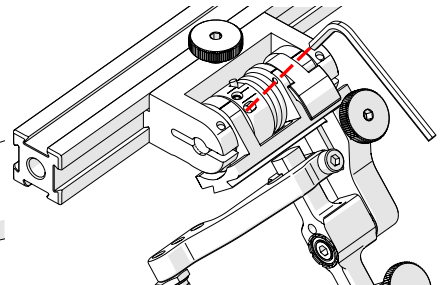


Fig. 47 - Unlatched position

1. Ensure the probe holder is in the upright latched position (Fig. 42).
2. Lift the probe holder slightly and press the latch button (Fig. 46) to release the probe holder to the full 45° degrees.
3. Insert the short arm of a 3 mm hex wrench into the 3 mm slot (Fig. 48).

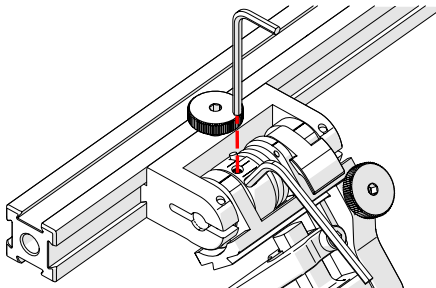


Fig. 48 - Insert hex wrenches

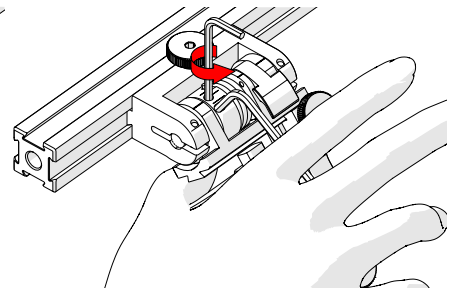


Fig. 49 - Press 3 mm hex wrench down

4. Place the 2 mm hex wrench into the force adjustment screw (Fig. 48).
5. Lightly press the long arm of the 3 mm hex wrench down. Using the 2 mm hex wrench, loosen the force adjustment screw but do not remove it (Fig. 49).
6. Gently apply pressure on the long leg of the 3 mm hex wrench until the force adjustment marker lines up with the desired spring tension. While keeping the markers in line, tighten the force adjustment screw (Fig. 50).

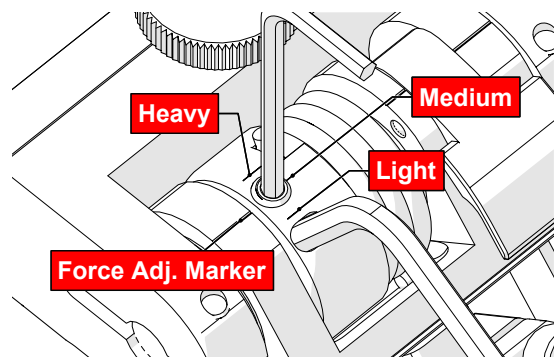


Fig. 50 - Choose desired tension

4.6.4. Slip Joint Probe Holder Left/Right Conversion

To reverse the probe holder, follow these steps:

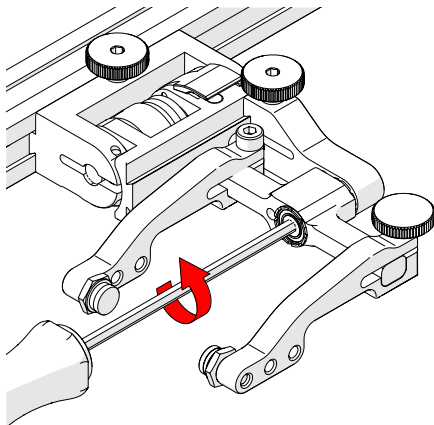


Fig. 51 - Unscrew yoke pivot screw

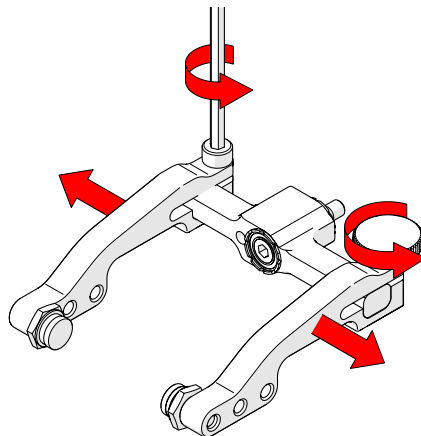


Fig. 52 - Remove arms

1. Unscrew the yoke from the swing arm (Fig. 51).
2. Loosen the probe holder arm adjustment knob and arm clamp screw. Slide the arms from the yoke (Fig. 52).

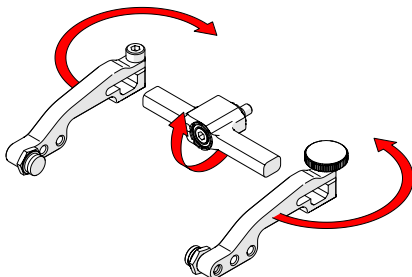


Fig. 53 - Flip yoke and reverse arms

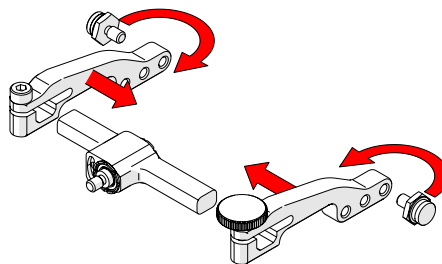


Fig. 54 - Attach arms and move buttons

3. Flip the yoke 180° and reverse the probe holder arms (Fig. 53).
4. Place the pivot buttons on the inside of the probe holder arms (Fig. 54) using a 3/8 in wrench (Fig. 15). Slide the arms onto the yoke and tighten the probe holder arm adjustment knob and the arm clamp screw.

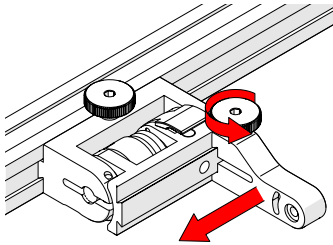


Fig. 55 - Position swing arm

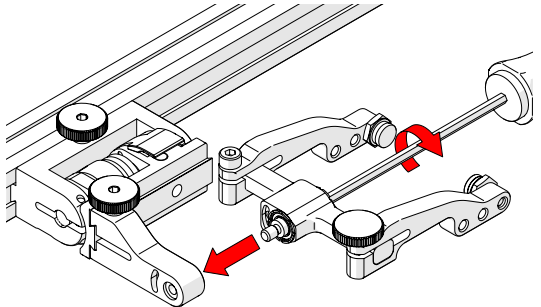


Fig. 56 - Install yoke to swing arm

5. Loosen the swing arm knob and slide the swing arm to the opposite end of the probe holder bracket (Fig. 55) or the preferred position. Tighten the swing arm knob.
6. Using the 3 mm hex driver, screw the yoke pivot screw into the opposite side of the probe holder swing arm (Fig. 56). Ensure the yoke is level to avoid issues with the plunger/set screw.

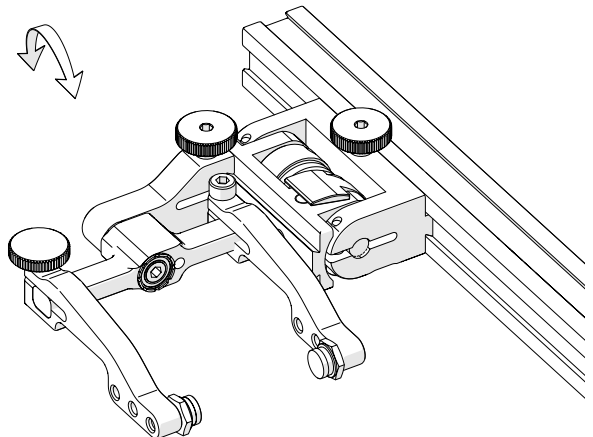


Fig. 57 - Reversed probe holder

4.7. 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

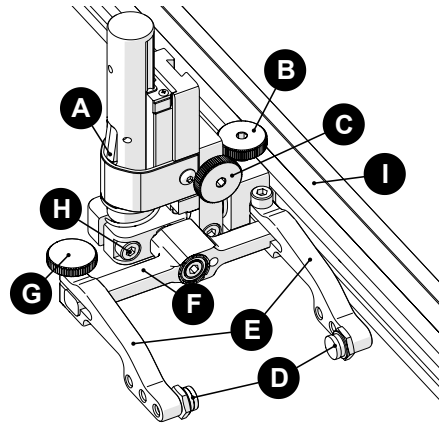


Fig. 58 - Vertical probe holder

4.7.1. Probe Holder Setup

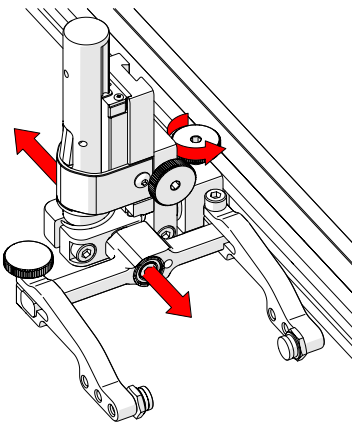


Fig. 59 - Adjust on frame bar

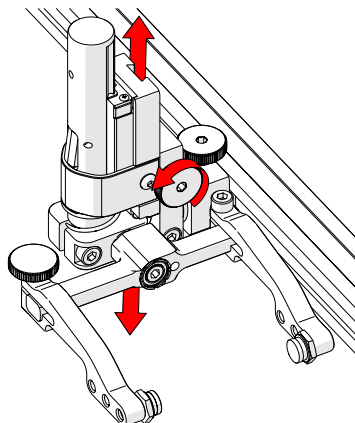


Fig. 60 - Vertical adjustment

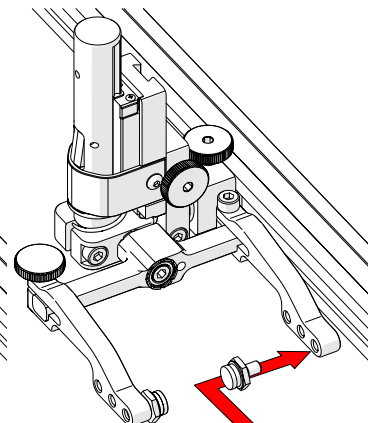


Fig. 61 - Place buttons

1. The probe holder adjustment knob allows the probe holder to be attached to a frame bar and horizontal positioning on a frame bar (Fig. 59).
2. The vertical adjustment knob allows the vertical probe holder height adjustment (Fig. 60).
3. Position the pivot buttons where necessary (Fig. 61). When a narrow scanning footprint is required, use the pivot button holes closest to the yoke.

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

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

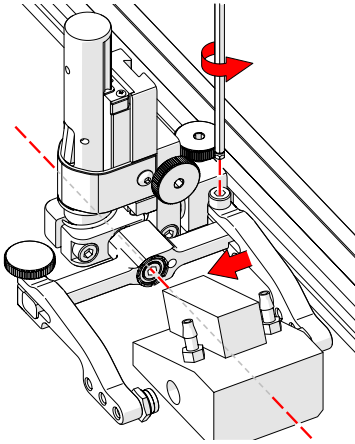


Fig. 62 - Adjust inner arm

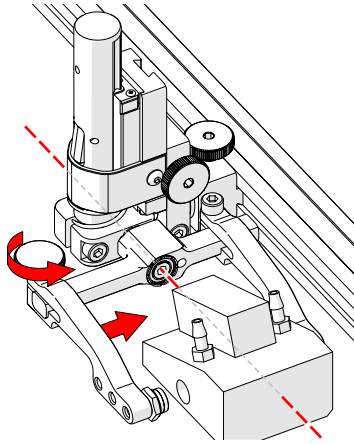


Fig. 63 - Adjust outer arm

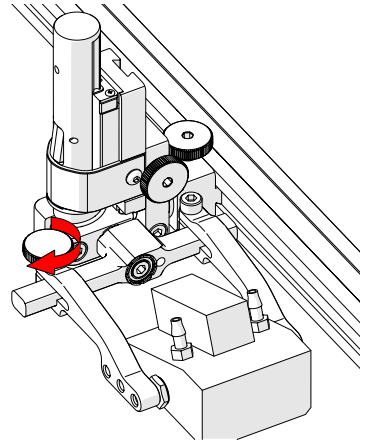


Fig. 64 - Tighten arm knob

4. Position the wedge on the inner probe holder arm (Fig. 62).

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. 62) using the supplied 3 mm hex driver (Fig. 14).

5. Loosen the probe holder arm adjustment knob (Fig. 63) and slide the probe holder arm along the yoke pinching the wedge in place.
6. Tighten the probe holder arm adjustment knob (Fig. 64).

4.7.2. Probe Holder Vertical Adjustment

To adjust the probe holder vertically, follow these steps:

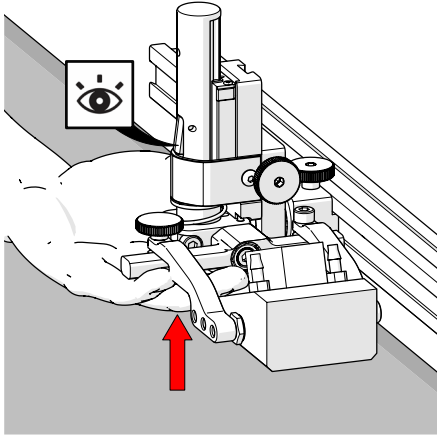


Fig. 65 - Latch probe holder

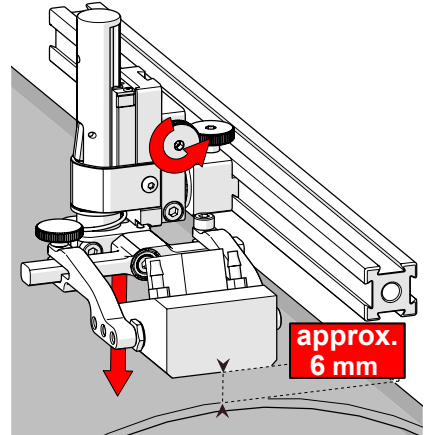


Fig. 66 - Lower toward scan surface

1. Ensure the probe holder is in the latched upper position. Do this by lifting the probe holder till the latch is fully exposed and snaps out to lock (Fig. 65).
2. Loosen the vertical adjustment knob and slide the probe holder down until the wedge is approximately 6 mm ($\frac{1}{4}$ in) above inspection surface (Fig. 66).
3. Tighten the vertical adjustment knob.

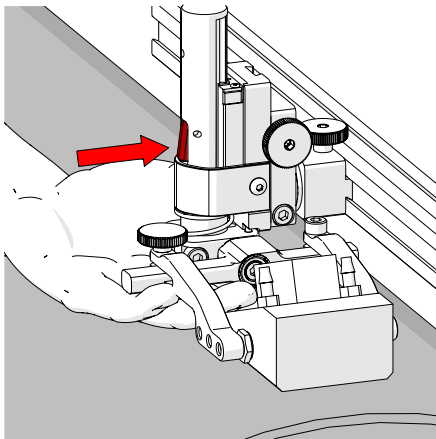


Fig. 67 - Press latch button

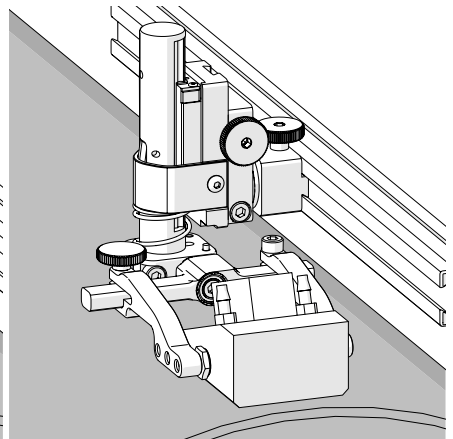


Fig. 68 - Lower toward scan surface

4. Lift the yoke slightly and press the latch button (Fig. 67), then slowly lower towards scanning surface to apply spring pressure to the wedge (Fig. 68).

TIP: If less spring force is desired, refer to step 2 and place the wedge approximately 20 mm ($\frac{3}{4}$ in) above the inspection surface.

4.7.3. Probe Holder Transverse Adjustment

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

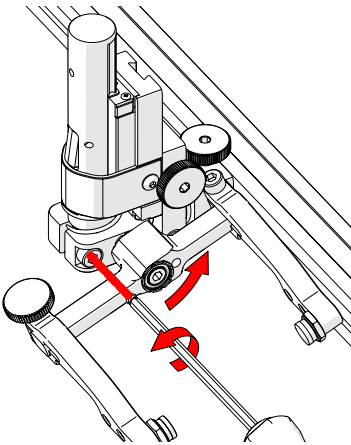


Fig. 69 - Loosen 3 mm screw

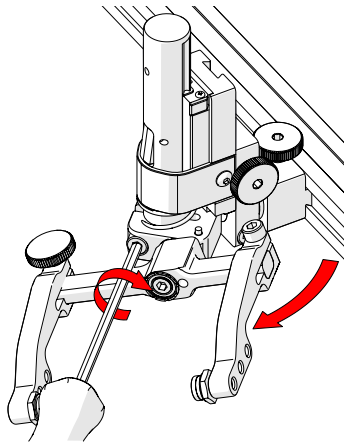


Fig. 70 - Rotate and tighten

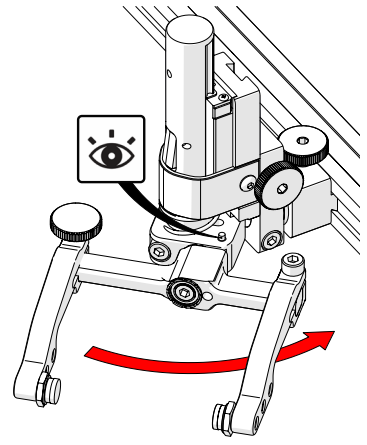


Fig. 71 - Stop post locates 90°

1. Ensure the probe holder is in the latched upper position (*Fig. 65*).
2. Using the supplied 3 mm hex driver loosen the transverse adjustment screw (*Fig. 69*) and rotate the yoke about the vertical shaft achieving the desired angle.
3. Tighten the transverse adjustment screw (*Fig. 70*).

To return the transverse adjustment to neutral (90°). The probe holder must be in the latched, upper position (*Fig. 65*). Rotate the yoke until the stop post contacts the base of the probe holder (*Fig. 71*). Then tighten the transverse adjustment screw.

4.7.4. Probe Holder Longitudinal Adjustment

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

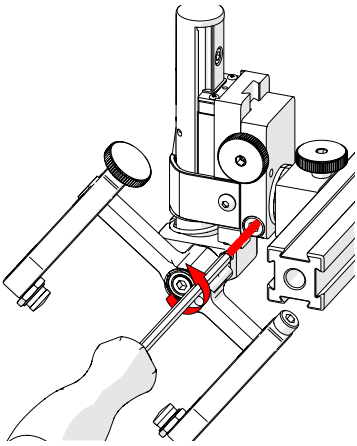


Fig. 72 - Loosen 3 mm screw

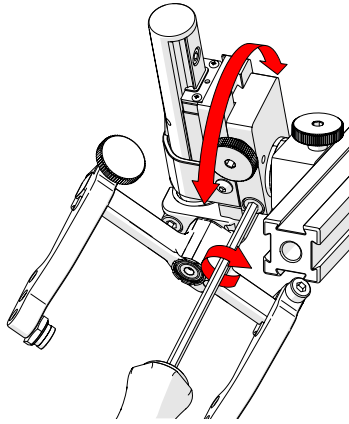


Fig. 73 - Rotate to position

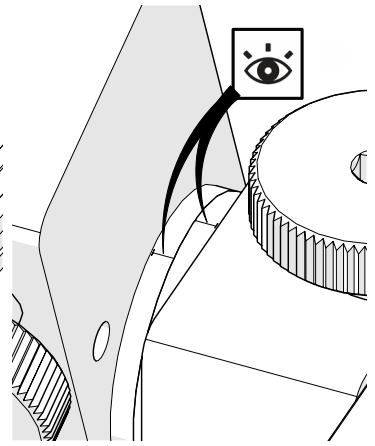


Fig. 74 - Line up markers

1. Ensure the probe holder is in the latched upper position (*Fig. 65*).
2. Using the supplied 3 mm hex driver (*Fig. 14*), loosen the longitudinal adjustment screw (*Fig. 72*).
3. Rotate the main body of the probe holder until it is at the desired angle.
4. Tighten the longitudinal adjustment screw (*Fig. 73*).

To return the longitudinal adjustment to neutral (90°). Line up the longitudinal adjustment indicator markers (*Fig. 74*).

4.7.5. Probe Holder Left/Right Conversion

To reverse the probe holder, follow these steps:

NOTE: The 1.5 mm hex wrench (Fig. 16) is required to perform this operation.

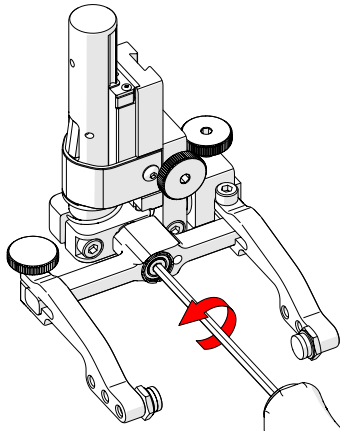


Fig. 75 - Unscrew yoke pivot screw

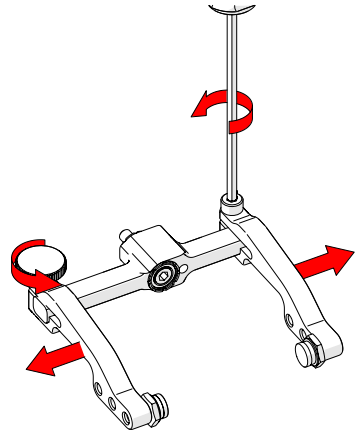


Fig. 76 - Remove probe holder arms

1. Ensure the probe holder is in the latched upper position (Fig. 65).
2. Using the supplied 3 mm hex driver (Fig. 14), unscrew the yoke pivot screw and remove the yoke (Fig. 75).
3. Loosen the probe holder arm adjustment knob and the arm clamp screw. Slide the probe holder arms off the yoke (Fig. 76).

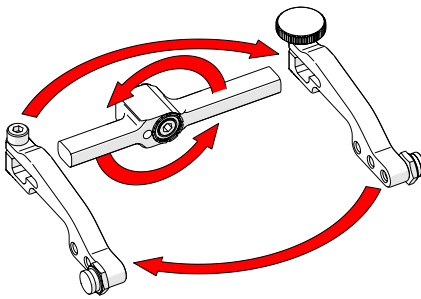


Fig. 77 - Flip yoke and reverse arms

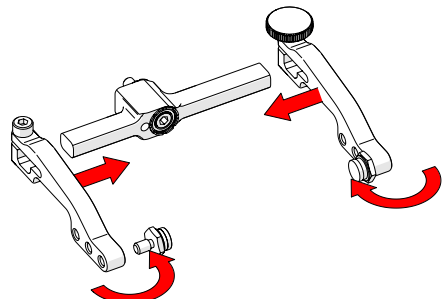


Fig. 78 - Attach arms & move buttons

4. Flip the yoke 180° and swap the probe holder arms (Fig. 77).
5. Place the pivot buttons on the inside of the probe holder arms (Fig. 78) using a 3/8 in wrench (Fig. 15).

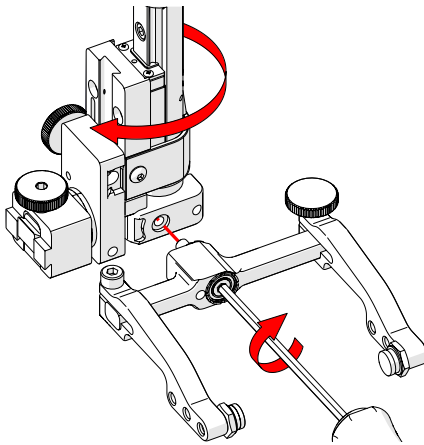


Fig. 79 - Screw yoke to opposite side

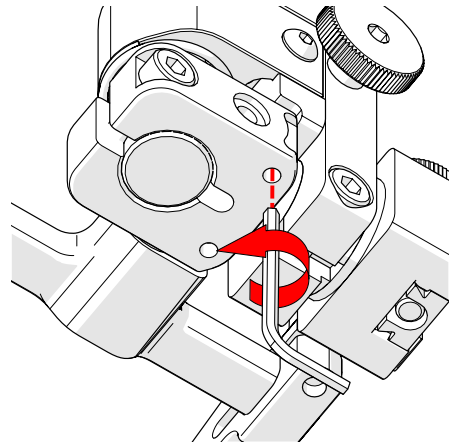


Fig. 80 - Lower 90° stop post

6. Mount the yoke to the opposite side of the base using the supplied 3 mm hex driver (Fig. 79).

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. 80).

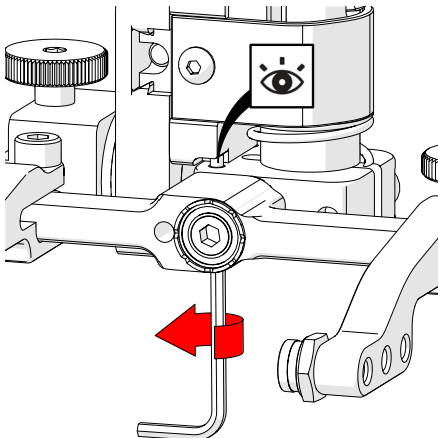


Fig. 81 - Raise opposite 90° stop post

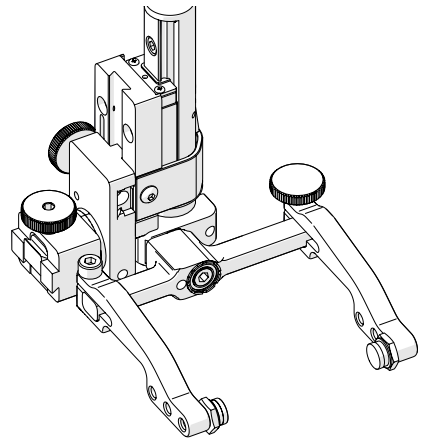


Fig. 82 - Reversed probe holder

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. 81).

4.8. 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.

An additional magnetic wheel kit can also be used on the cart body, thus doubling the magnetic force (Fig. 83).

To install or remove single wheels (see *Wheels on page 8*).

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

1. Ensure the four existing wheels are tight (see *Wheels on page 8*)

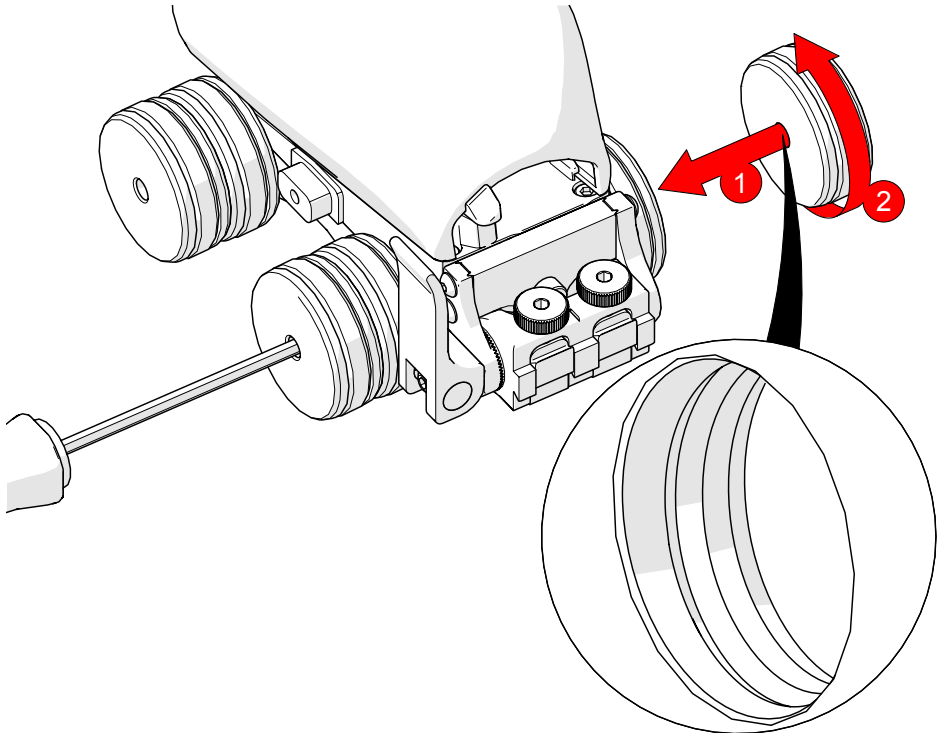


Fig. 83 - Magnetic wheel kit

2. On the magnetic wheel to be attached, locate the threaded side of the magnetic wheel, and orient the threaded side towards the cart (Fig. 83).

3. Overcome the magnetic resistance to screw the additional wheel to the axle of the wheel block (Fig. 83-1)
4. Insert the 3 mm hex driver into the opposite axle and tighten the additional wheel (Fig. 83-2).

TIP: To remove added wheels, reverse these steps.

4.9. Preamp Bracket

Compatible with most standard preamps, use screws or the optional velcro straps to attach a preamp to the preamp bracket.

Intended Use:

- ▶ The preamp bracket is intended to mount objects (e.g. preamps, splitters, etc.) that:
- ▶ have a maximum weight of 1.36 kg (3 lb)
- ▶ are attached to the with a lanyard or probe cables strong enough to prevent the object from falling
- ▶ have smooth edges so as not to cut the preamp velcro strap

4.9.1. Mounting Preamp Bracket

The preamp bracket mounts to any dovetail groove.

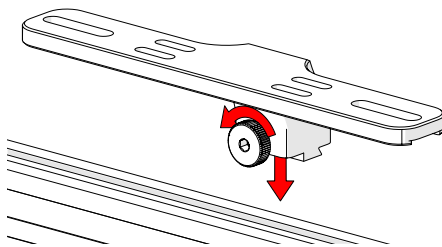


Fig. 84 - Loosen knob and mount to dovetail groove

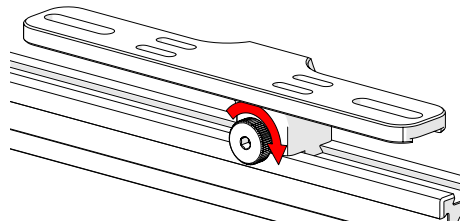


Fig. 85 - Tighten knob

1. Loosen the knob and align with the dovetail groove (Fig. 84).
2. Tighten the knob to lock the preamp bracket in place (Fig. 85).

4.9.2. Attaching Preamp with Screws

Use the adjustable screw mounting channel on the bottom of the bracket to attach a preamp (screws not included).

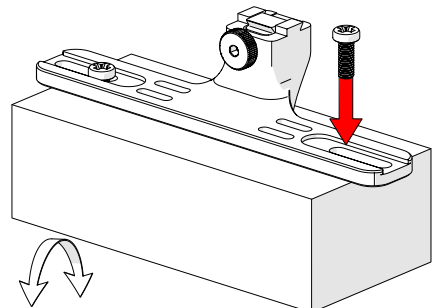


Fig. 86 - Attach preamp with screws

4.9.3. Attaching Preamp with Velcro Strap

To attach the preamp to the bracket using velcro straps (*sold separately*), follow these steps:

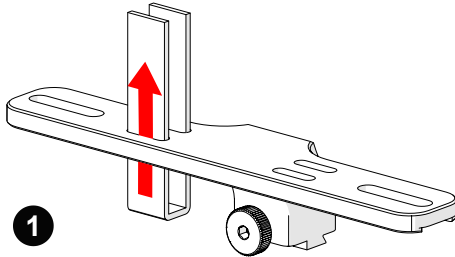


Fig. 87 - Insert velcro straps

1. Slide the velcro strap through the bracket's holes (Fig. 87).
2. Centre and place the preamp on the bracket wrapping the velcro around the preamp (Fig. 88).
3. Secure the preamp to the bracket attaching each side of the velcro (Fig. 89).

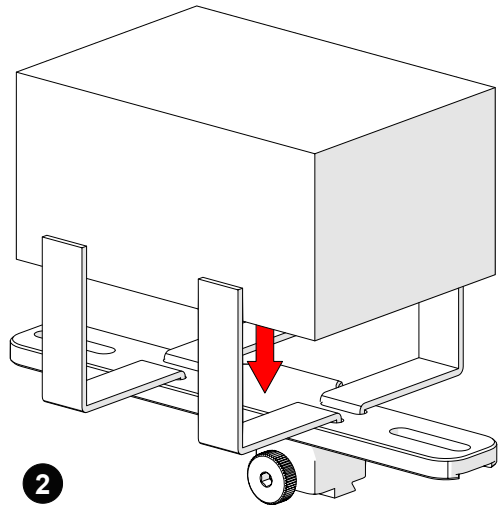


Fig. 88 - Place preamp and wrap velcro

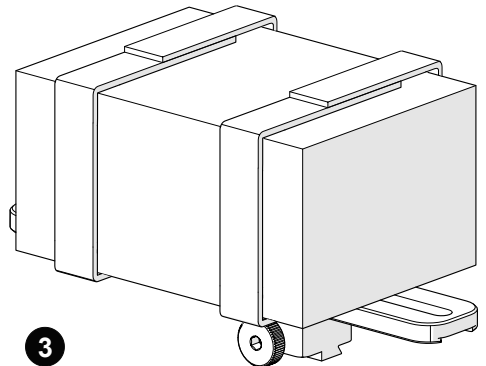


Fig. 89 - Mount bracket on a frame bar

PREPARATION FOR USE

5.1. Configurations

5.1.1. One Probe Cantilever

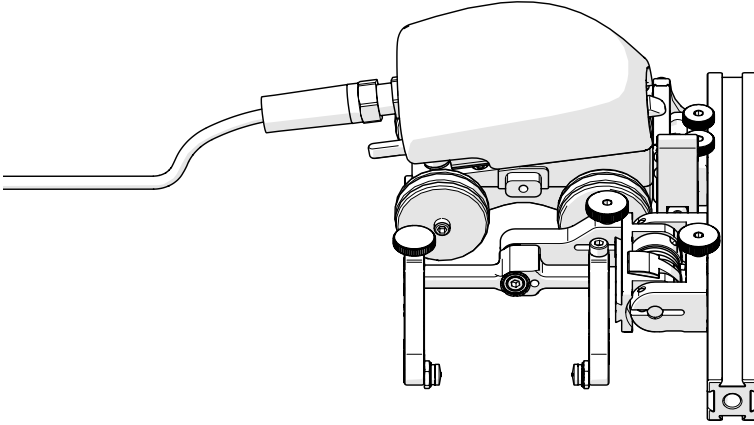


Fig. 90 - One probe cantilever configuration

5.1.2. Two Probe

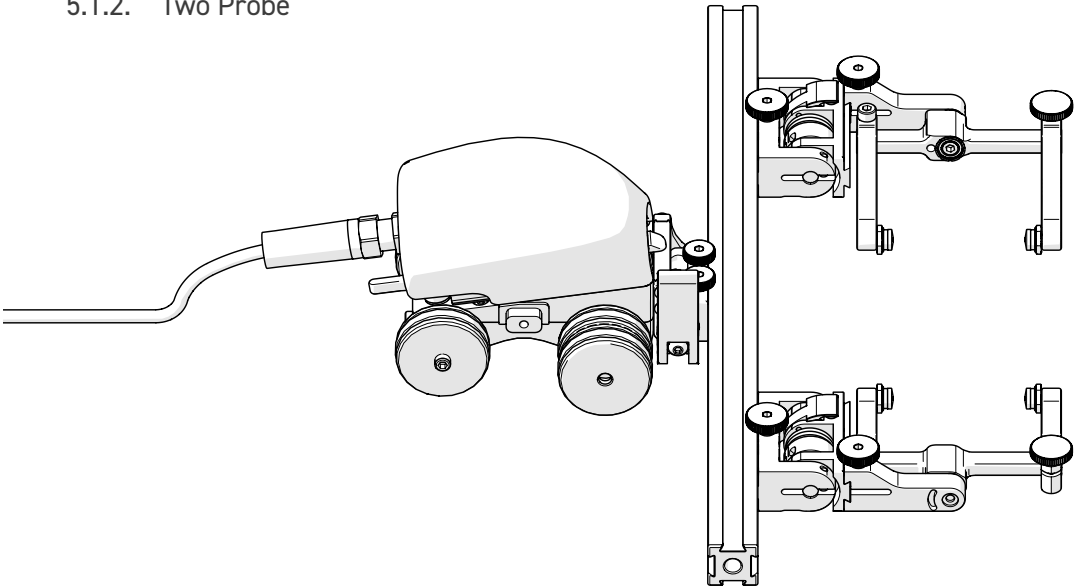


Fig. 91 - Two probe configuration

5.1.3. Two Probe Cantilever

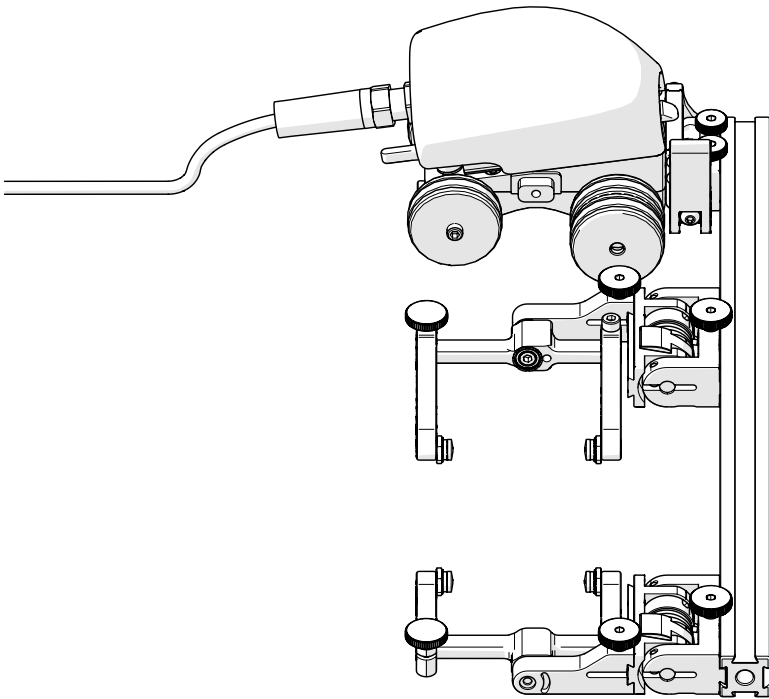


Fig. 92 - Two probe cantilever configuration

5.1.4. Four Probe

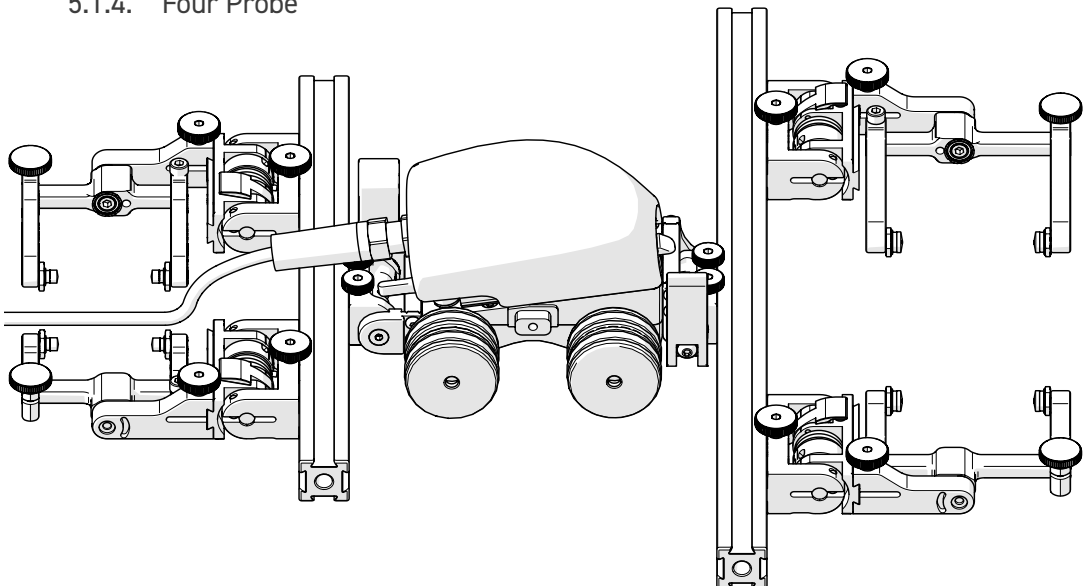


Fig. 93 - Four probe configuration

OPERATION

6.1. MICROBE Setup on a Scanning Surface

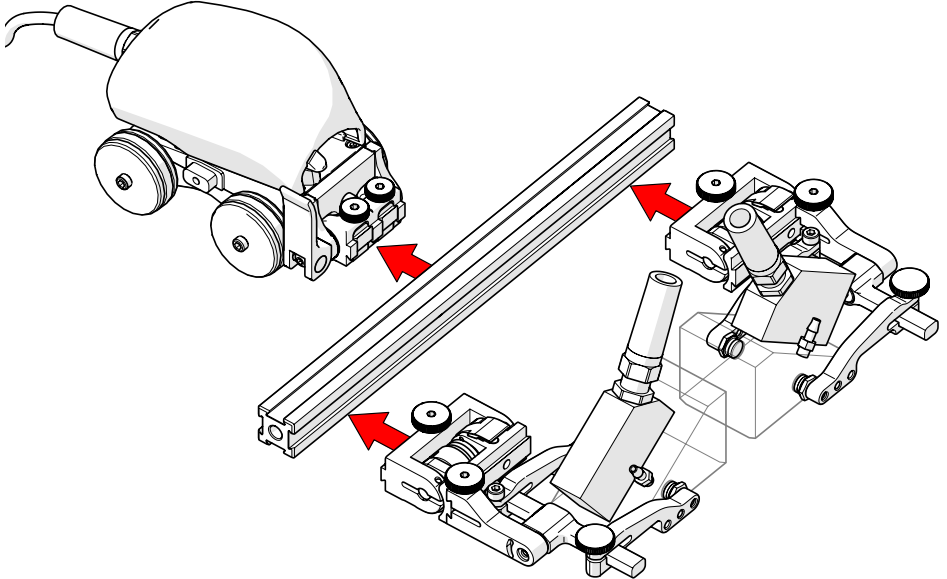


Fig. 94 - Assemble configuration

1. Assemble the appropriate configuration to the cart (Fig. 94). Install the wedge and probes that will be used (see *Slip Joint Probe Holder* on page 11).
2. Route cables and hoses through the cart handle as a means of cable management (Fig. 95)
3. Ensure the cart's brake is locked (see *Brake Handle* on page 7).
4. Place the configured **MICROBE** on the scan surface (Fig. 96).

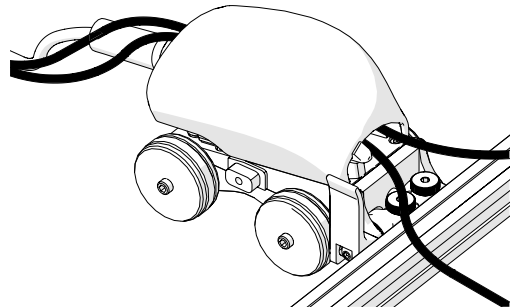


Fig. 95 - Cable management

TIP: Use caution when placing equipment on the scan surface. The magnetized wheels can cause the assembly to jump toward the inspection surface.

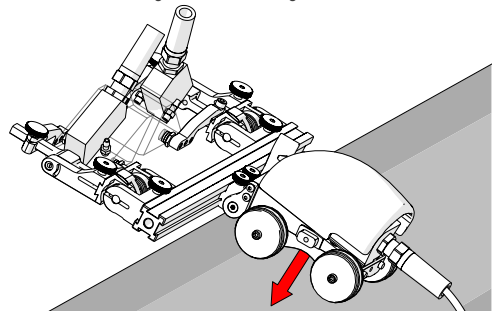


Fig. 96 - Place on scan surface

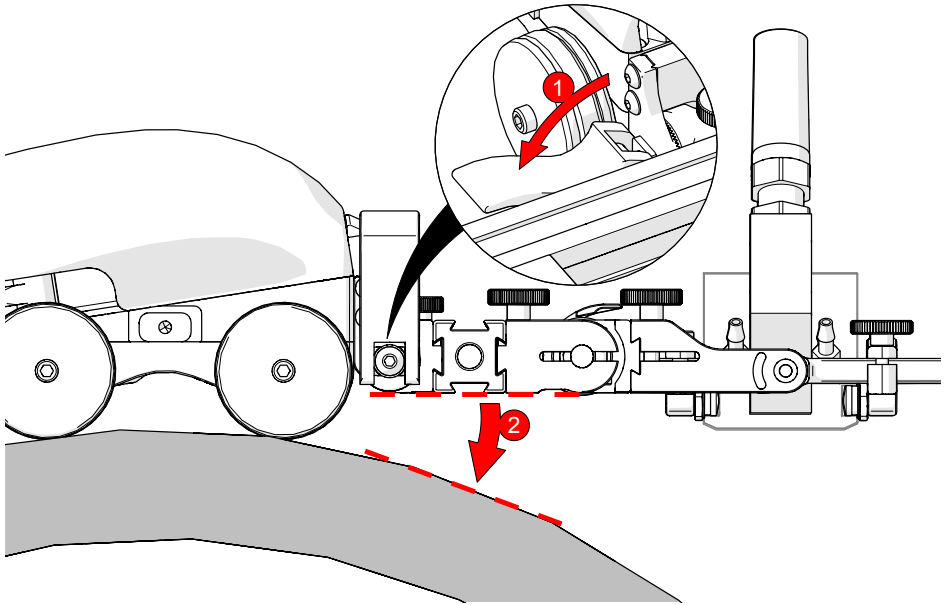


Fig. 97 - Lower pivot nose

5. Adjust the pivot nose (Fig. 97) angle to align the frame bar parallel with the tangent of the scan surface (Fig. 98).

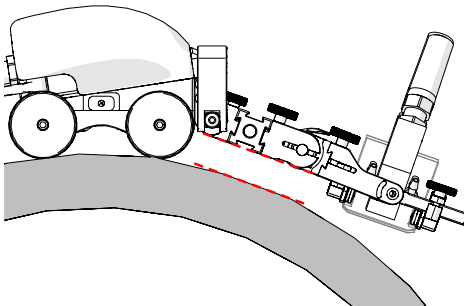


Fig. 98 - Parallel with scan surface tangent

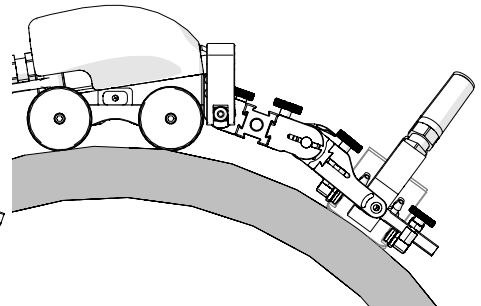


Fig. 99 - Parallel with scan surface tangent

6. Lower the probes to the scan surface (see *Probe Holder Adjustment* on page 13) to begin the scan process (Fig. 99).

MAINTENANCE

General cleaning of components is essential 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.

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.*

TROUBLESHOOTING

Problem	Possible Cause	Solution
Can not close the side-mounted lever on the pivot nose/tail.	The rosettes of the lever and the pivot are not lined up.	Slightly wiggle the pivot nose/tail while locking the side-mounted lever allowing the rosettes to seat appropriately.
Insufficient probe contact.	The scanner is not set correctly.	Reconfigure the scanner as per instructions (<i>see Probe Holder Adjustment on page 13</i>)
The encoder is not working.	The wing knob on the bottom of the cart is not tight enough, and the umbilical is loose.	Remove the cart handle and ensure the umbilical is correctly plugged into the cart body. Tighten the black wing knob and ensure no movement of the umbilical housing is possible.
Magnetic wheels become loose.	Brakes are engaged.	Ensure the brake is unlocked when using the scanner (<i>see Brake Handle on page 7</i>)

8.1. 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 **MICROBE** system.
(contact Jireh Industries Ltd. on page 1)

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

10.1. MICROBE Cart

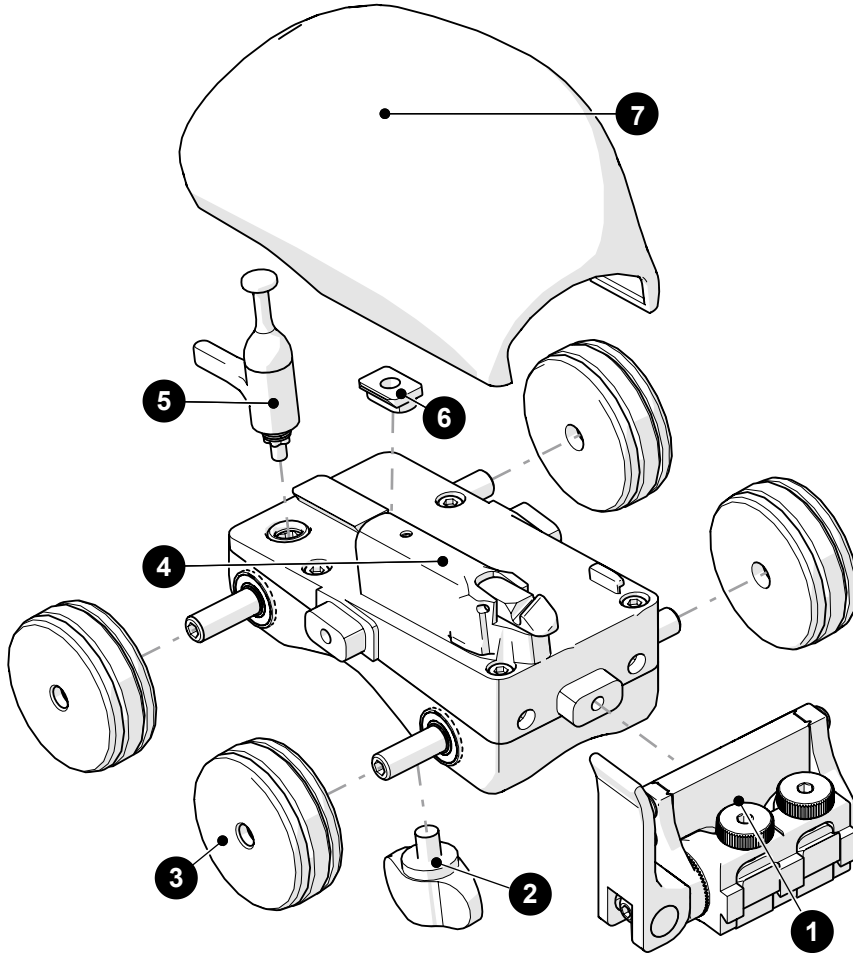
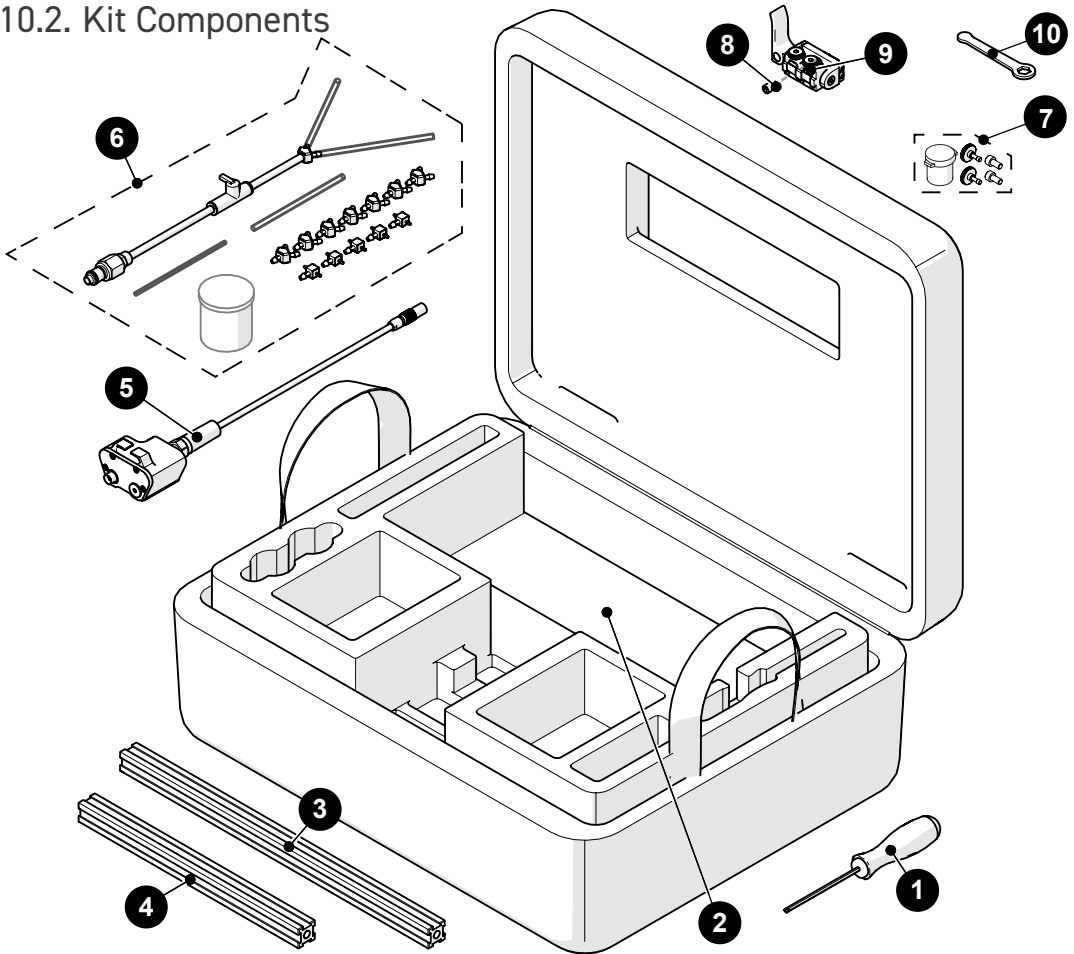


Fig. 100 - MICROBE cart parts

BOM ID	Part #	Description
1	BTS040	MICROBE/ROTIX Front Pivot
2	BT0069	Mini Wing Knob, M5 x 0.8 x 6 mm, SST
3	BTS031	Magnetic Wheel
4	BTS045	Base Cart
5	BTS046	Brake Handle
6	BT0014	Dovetail Nut
7	BT0150	Handle

Fig. 101 - MICROBE cart

10.2. Kit Components



BOM ID	Part #	Description
1	EA414	3 mm Hex Driver
2	BTA002	MICROBE Case
3	BG0038-35	Frame Bar, 35 cm (see Frame Bars)
4	BG0038-25	Frame Bar, 25 cm (see Frame Bars)
5	UMA012-X-05	Umbilical Housing (see Encoder Connector)
6	CMG007	Irrigation Kit
7	PHG014	Probe Holder Spare Parts Kit, 2 Probe
8	MD050-008	SHCS, M4x0.7 x 8 mm, SST
9	BTS042	MICROBE/ROTIX Pivot Tail
10	EA470	3/8 in Wrench

Fig. 102 - Kit components

10.2.1. Encoder Connector Type

Connector Type	Company/Instrument	Connector Type	Company/Instrument
B	Olympus - OmniScan MX / Zetec - ZIRCON, TOPAZ	G	Sonotron - Isonic
C	Olympus - Focus LT / Zetec Z-Scan / Eddyfi Ectane 2	M	GE - USM Vision
D	Olympus - OmniScan MX2, OmniScan SX	U	Sonatest - VEO, PRISMA
F	TD - Focus Scan, Handy Scan, Pocket Scan	V	Pragma PAUT 16/128, PragmaLite / Pragma UT400

Fig. 103 - Encoder connector type

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

10.3. Accessories

10.3.1. Magnetic Wheel Kit

Part #	Description
BTG014	Magnetic Wheel Kit

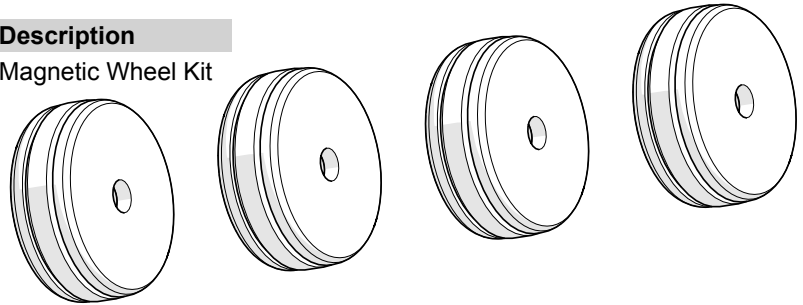


Fig. 104 - Magnetic wheel kit

10.3.2. Preamp Bracket

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

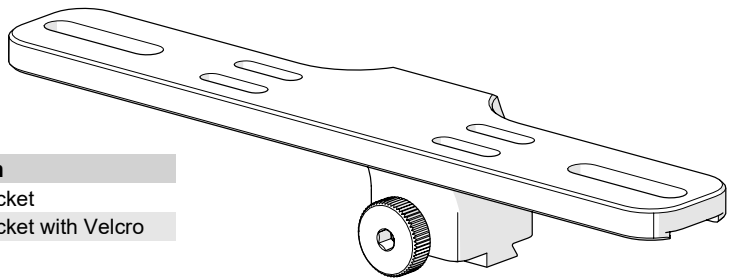
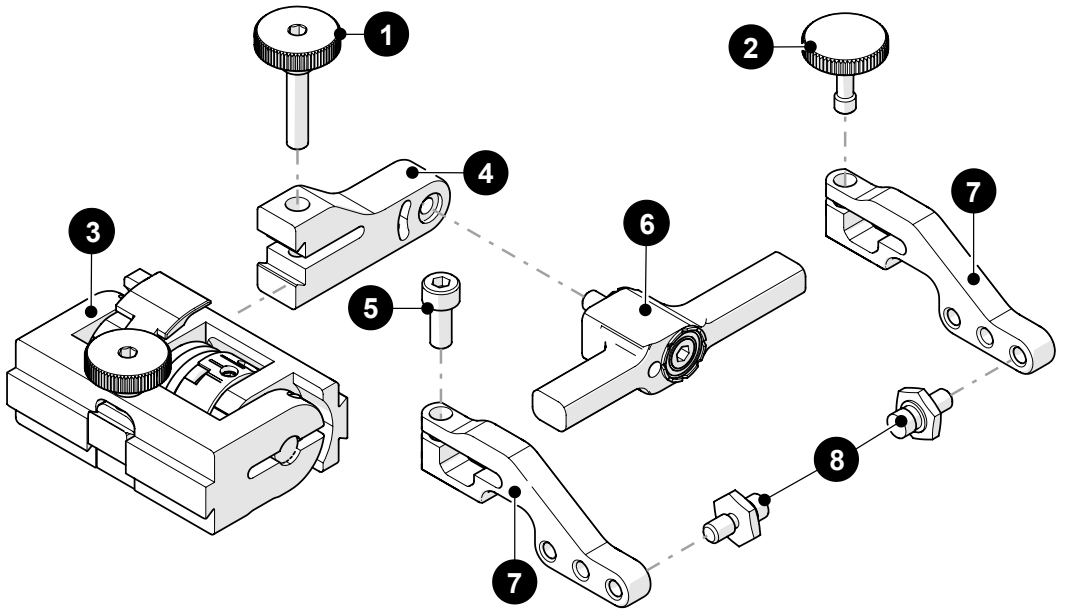


Fig. 105 - Preamp bracket

10.4. Probe Holders

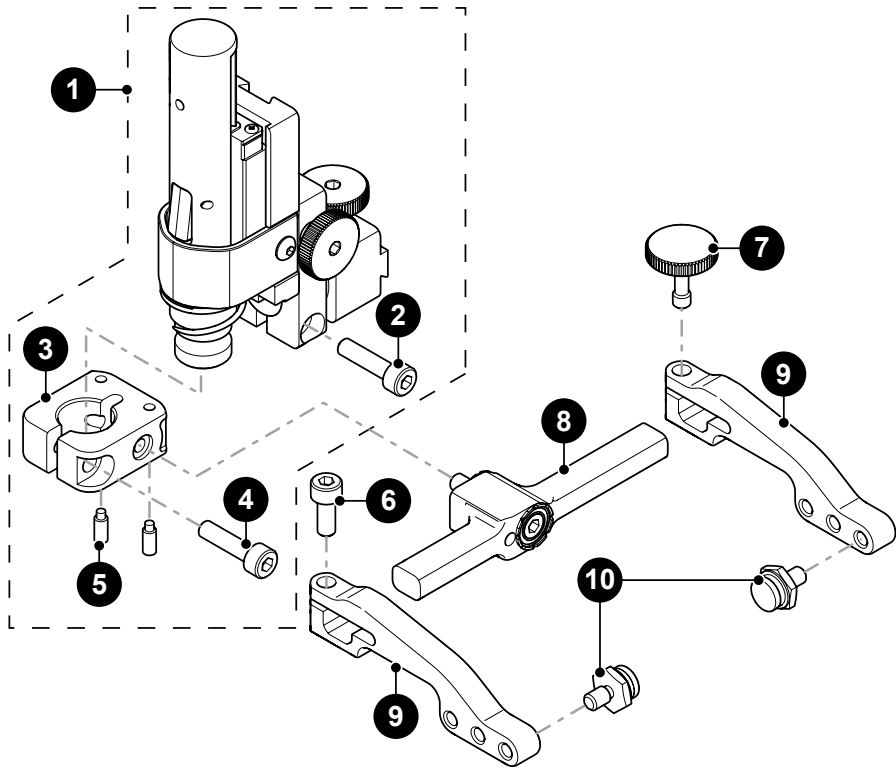
10.4.1. Slip Joint Probe Holder Parts



BOM ID	Part #	Description
1	PH0104	Knurled Knob, M4 x 0.7 x 18 mm, 4 mm stand off, SST
2	PH0082	Knurled Knob, M4 x 0.7 x 10 mm, 3 mm stand off, SST
3	PHS022	Slip Joint Probe Holder Subassembly
4		<i>see Swing Arm Style</i>
5	MD050-010	SHCS, M4 x 0.7 x 10 mm, SST
6		<i>see Yoke Style</i>
7		<i>see Arm Style</i>
8	PH0011-X	Pivot Button Style (<i>see Pivot Button Style</i>)

Fig. 106 - Slip joint probe holder parts

10.4.2. 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	<i>see Yoke Style</i>	
9	<i>see Arm Style</i>	
10	MD050-016	SHCS, M4 x 0.7 x 16 mm, SST

Fig. 107 - Vertical probe holder

10.5. Probe Holder Components

10.5.1. Arm Style



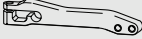







Arm Style	Part #		Arm Style	Part #	
A Standard, Flat	PH0090		B Short, Flat	PH0089	
C Long, Flat	PH0099		D Standard, Drop	PH0093	
E Short, Drop	PH0092		F Long, Drop	PH0094	
G Standard, Extra-Drop	PH0096		H Short, Extra-Drop	PH0095	
I Extra-Short, Flat	PH0159		J Extra-Short, Drop	PH0161	

Fig. 108 - Probe holder arm selection

10.5.2. 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. 109 - Probe holder yoke selection

10.5.3. Swing Arm Style

Swing Arm Style	Part #	Length		Swing Arm Style	Part #	Length	
Short	PH0069	4.1 cm (1.61 in)		Long	PH0100	4.6 cm (1.81 in)	

Fig. 110 - Swing arm selection

NOTE: Short swing arm only compatible with standard yoke style.

10.5.4. 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	
11 3 mm (0.118 in) Internal	-		14 4 mm (0.157 in)	-	

Fig. 111 - Pivot button selection

NOTE: Additional probe holder pivot buttons are available. (contact Jireh Industries Ltd. on page 1)

10.6. Variable Components

10.6.1. Frame Bars












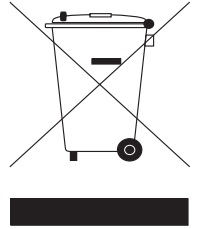
Part #	Length		Part #	Length	
BG0038-05	5 cm (1.97 in)		BG0038-10	10 cm (3.94 in)	
BG0038-15	15 cm (5.91 in)		BG0038-20	20 cm (7.87 in)	
BG0038-25	25 cm (9.84 in)		BG0038-30	30 cm (11.81 in)	
BG0038-35	35 cm (13.78 in)		BG0038-40	40 cm (15.75 in)	
BG0038-45	45 cm (17.72 in)		BG0038-50	50 cm (19.69 in)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

Fig. 112 - Frame bar selection

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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