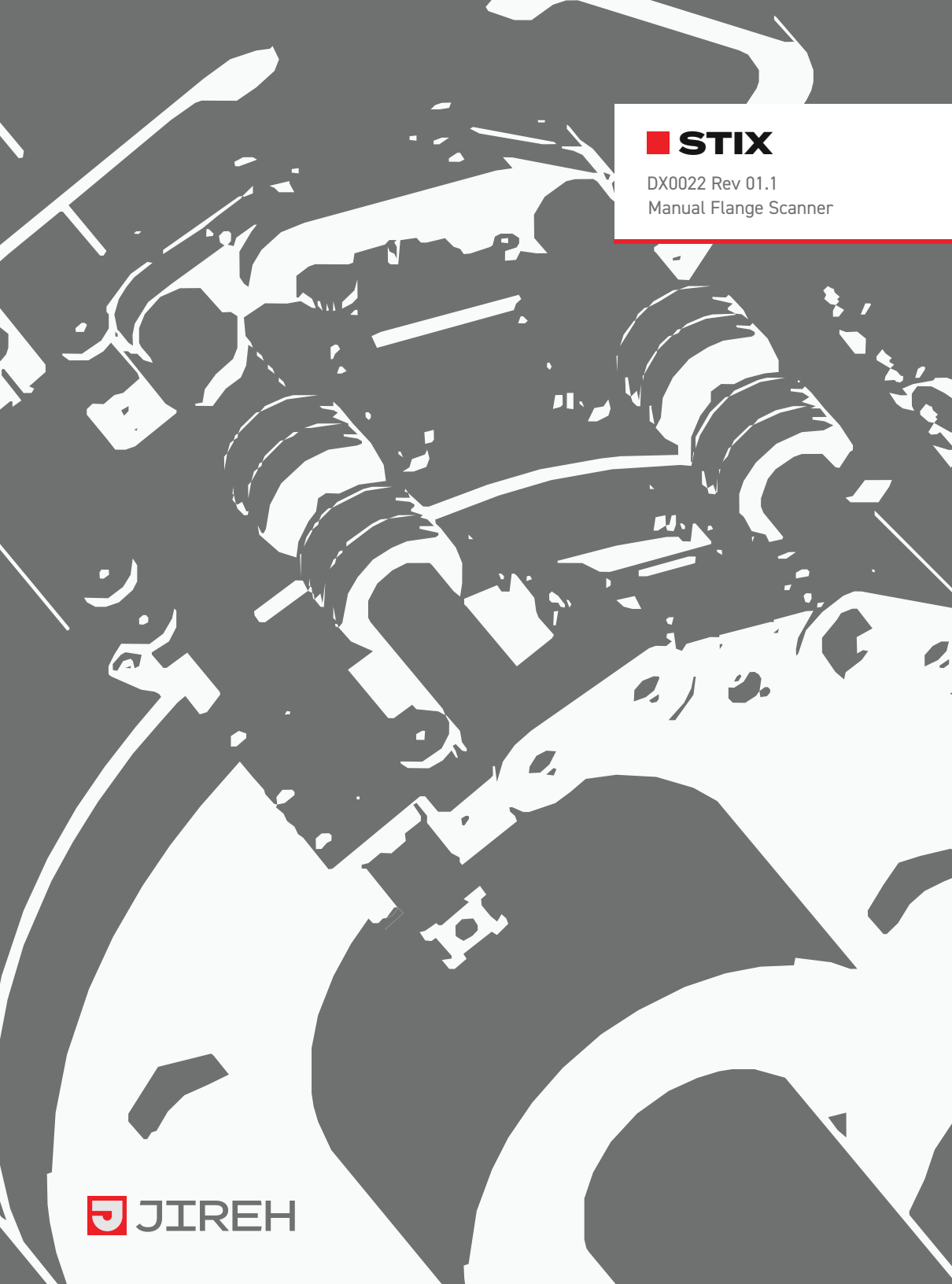


STIX

DX0022 Rev 01.1

Manual Flange Scanner

JIREH

SAFETY WARNINGS / PRECAUTIONS

KEEP THIS MANUAL – DO NOT LOSE

THIS MANUAL IS PART OF THE **STIX** AND MUST BE RETAINED FOR THE LIFE OF THE PRODUCT. PASS ON TO SUBSEQUENT OWNERS.

Ensure any amendments are incorporated with this document.

WARNING! The **STIX** is designed for a specific use. Using the **STIX** 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 Disposal on page 31 for additional details).

TABLE OF CONTENTS

IDENTIFICATION

1.1. Product Brand

This user manual applies to the STIX - Flange Scanner for various flange coupling inspection applications, such as flange face corrosion.

1.2. Manufacturer

Distributor:

Manufacture:

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 scanner primarily aims to move an inspection tool over a cylindrical surface to inspect flanges.

The intended surface is to:

- be free of excess rust, scale, ferrous debris, ice, frost
- have a minimum OD of 102 mm *(3 in)* for two probe arrangement

2.1.1. Operating Limits

	Minimum	Maximum
Flange Range, Outer Diameter:	7.6 cm *(3 in)*	Flat
Radial Scanner Clearance *(with handles)*:	9.7 cm *(3.8 in)*	
Radial Scanner Clearance *(without handles)*:	4.1 cm *(1.6 in)*	

2.1.2. Operating environment

- the scanner is intended for industrial use only
- operating ambient temperature between -20° C *(-4°F)* and 50° C *(122°F)*.

2.1.3. User

- the scanner is intended to be used by persons who have read and understand the user manual.
- the scanner is intended to be used by persons without limitations in the physical abilities of the upper and lower limbs, sight, hearing, or anyone with a pacemaker

2.2. Unintended Use

The scanner is not intended for:

- operating in ambient temperatures below -20°C *(-4°F)* or above 50°C *(122°F)*
- operation on a surface with a temperature greater than 350°C *(662°F)*
- use at locations having an explosion or fire hazard

2.3. Dimensions and Weight

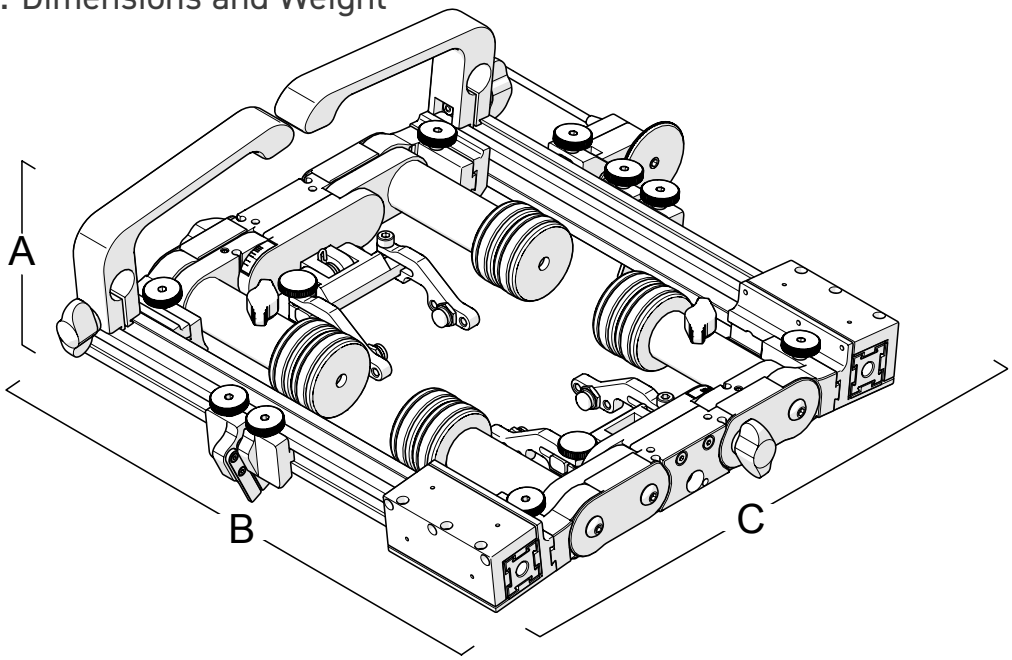


Fig. 1 - Flange scanner frame dimensions

A:	10 cm	3.9 in
B:	28 cm	11 in
C:	29.8 cm	11.7 in

Frame Weight:	2.4 kg	5.3 lb
Encoder Cable Length *(Standard Kit)*:	5 m	16.4 ft

2.4. Environmental Sealing

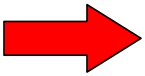
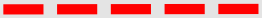
Watertight *(not submersible) (contact Jireh Industries Ltd. on page 1 for details).*

2.5. Performance Specifications

X-Axis Encoder Resolution:	9.05 counts/mm	230.0 counts/inch

DEFINITIONS

3.1. Definition of Symbols

	Instructions to ‘look here’ or ‘see this part’.
	Denotes movement. Instructing users to act in a specified direction.
	Indicates alignment axis and can also indicate insertion or movement of parts.
	Alerts user that the view has changed to a reverse angle.

SYSTEM COMPONENTS

4.1. Component Identification

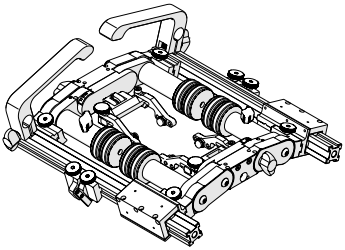


Fig. 2 - Flange Scanner Frame
DXA001-

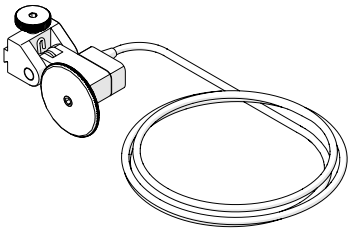


Fig. 3 - Spring-Loaded Encoder
BGS053-

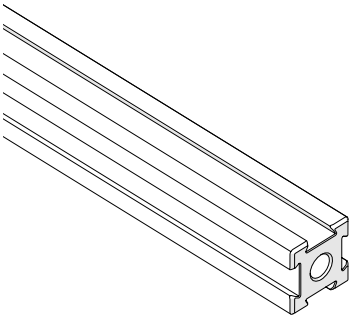


Fig. 4 - Frame Bar with Ruler
BG0090-

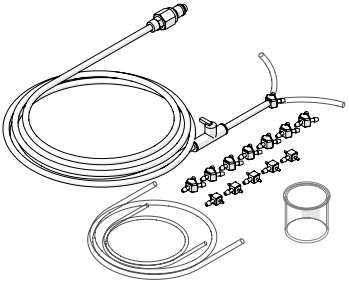


Fig. 5 - Irrigation Kit
CMG007

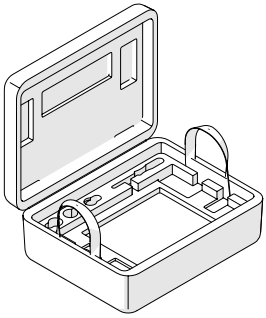


Fig. 6 - STIX Flange Scanner Case
DXA002

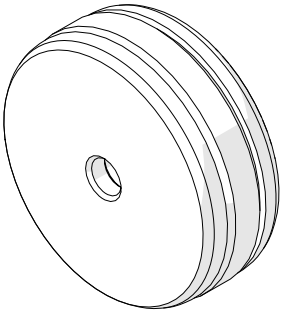


Fig. 7 - Magnetic Wheel
BTS031

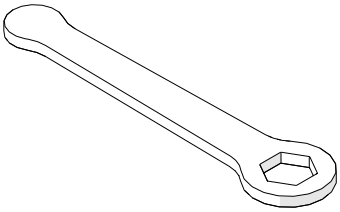


Fig. 8 - 3/8 in Wrench
EA470

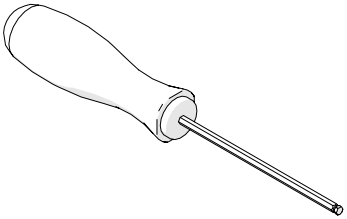


Fig. 9 - 3 mm Hex Driver
EA414

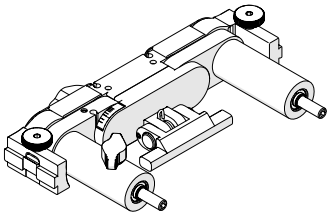


Fig. 10 - Articulated Side Frame Subassembly
DXS001

4.2. Tools

4.2.1. Included Tools

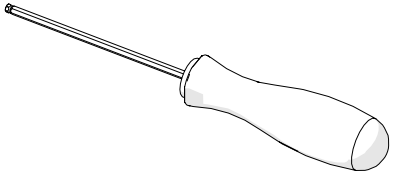


Fig. 11 - 3 mm hex driver

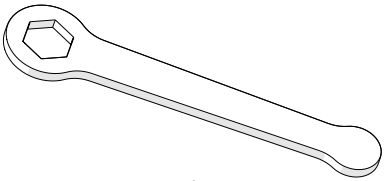


Fig. 12 - 3/8 in wrench

The 3 mm hex driver *(Fig. 11)* is sufficient for all typical operations and adjustments of the **STIX**.

The 3/8 in wrench *(Fig. 12)* removes and installs buttons on the probe holders.

4.3. Flange Scanner Frame

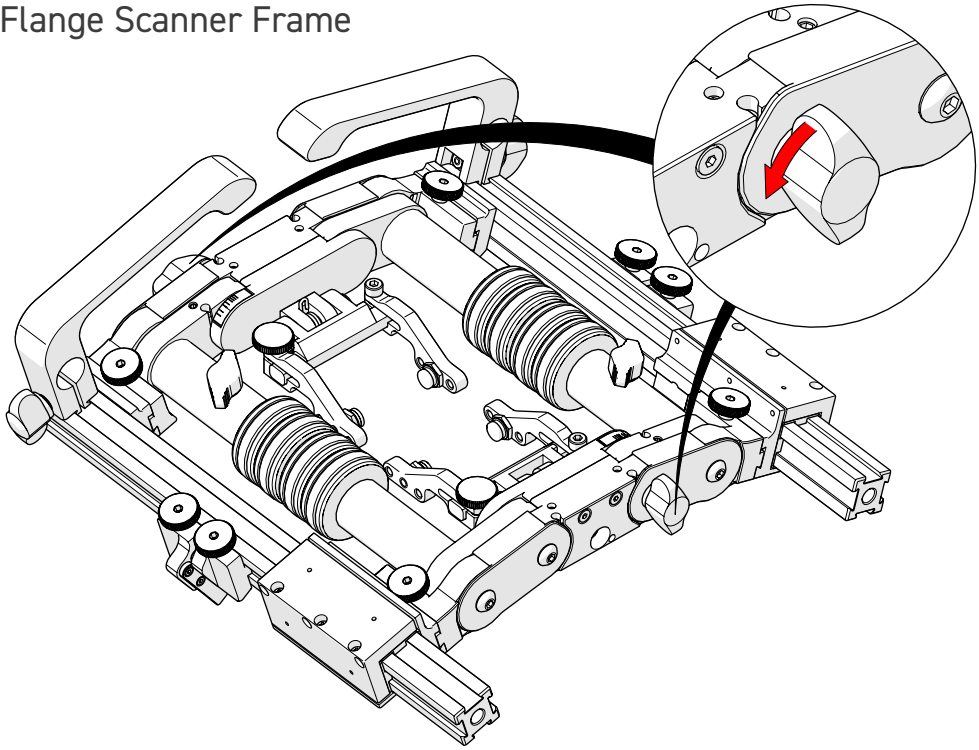


Fig. 13 - Loosen black wing knobs to loosen the flange scanner's pivot

4.3.1. Articulated Side Frames

To pivot the articulated side frames to accommodate various diameter sizes, follow these steps:

1. Loosen the two black wing knobs on the sides of the articulated side frame *(Fig. 13)*.
2. Pivot the frame bars or use the handles to adjust the frame to the diameter required *(Fig. 14)*.

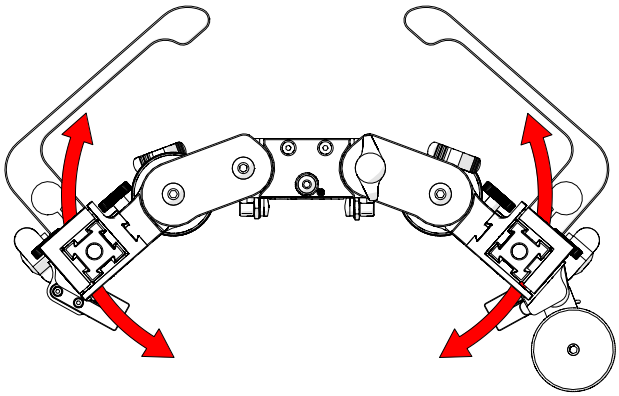


Fig. 14 - Pivot scanner to appropriate diameter

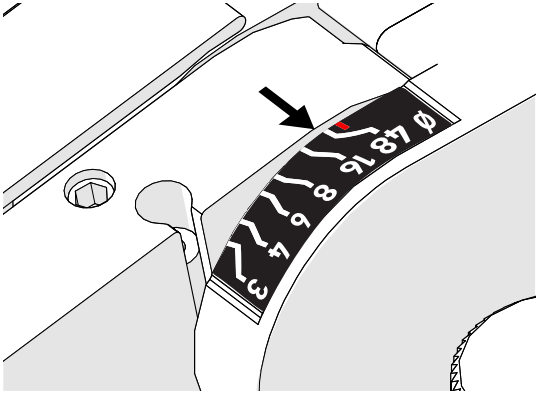


Fig. 17 - Diameter indicator

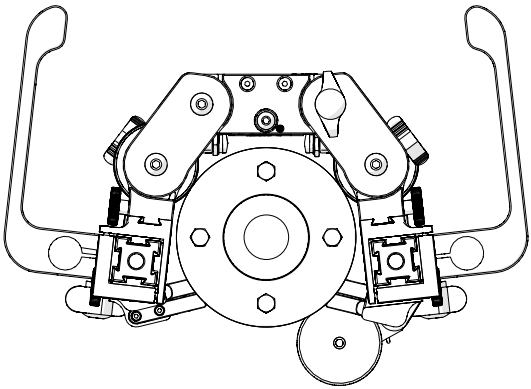


Fig. 15 - Place on inspection surface

3. Observe the diameter indicators to assist with setting the scanner to the correct diameter required *(Fig. 17)*.
4. Tighten the black wing knobs *(Fig. 16)*.
5. Place the scanner on the flange to be inspected *(Fig. 15)*.

> ***TIP:*** *Use caution when placing equipment on the scan surface. The magnetized wheels can suddenly cause the flange scanner frame to lurch toward the metal.*

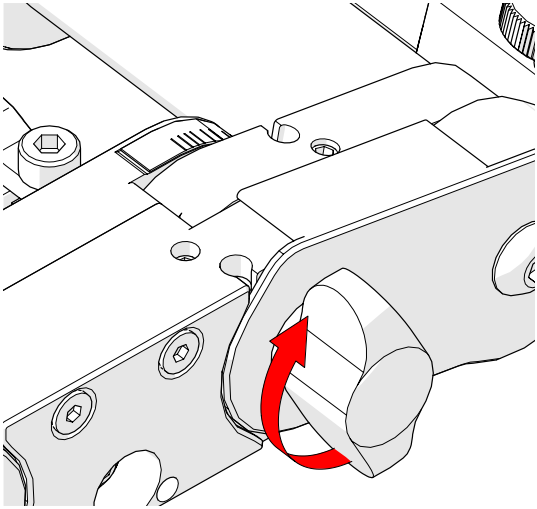


Fig. 16 - Tighten black wing knob

4.3.2. Probe Centre Spacing

Probe centre spacing is adjusted using the following steps:

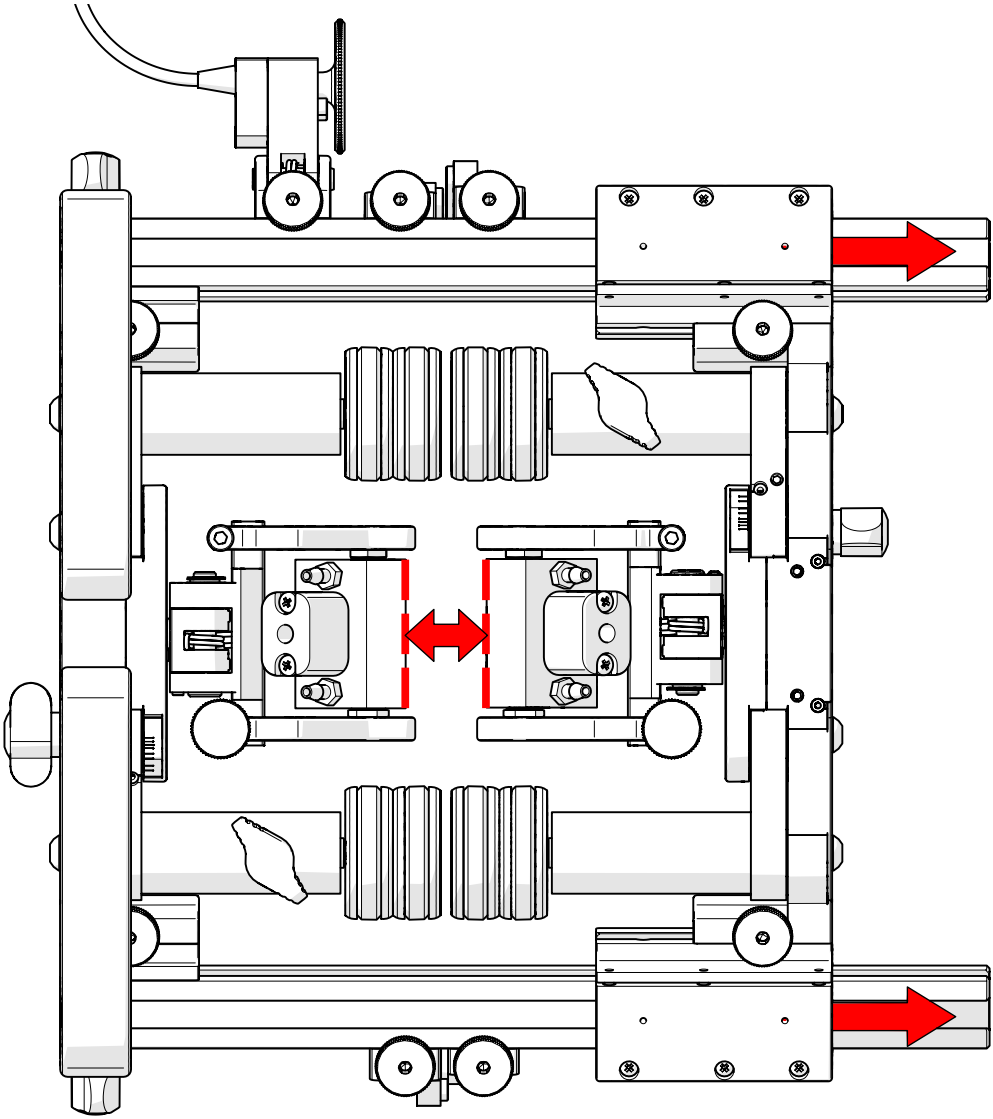


Fig. 18 - Slide the articulated side frame along the frame bar to adjust probe spacing

1. The articulated side frame operates with a firm friction fit.
2. Slide one-half of the articulated side frame along the frame bars to achieve the probe spacing required *(Fig. 18)*.

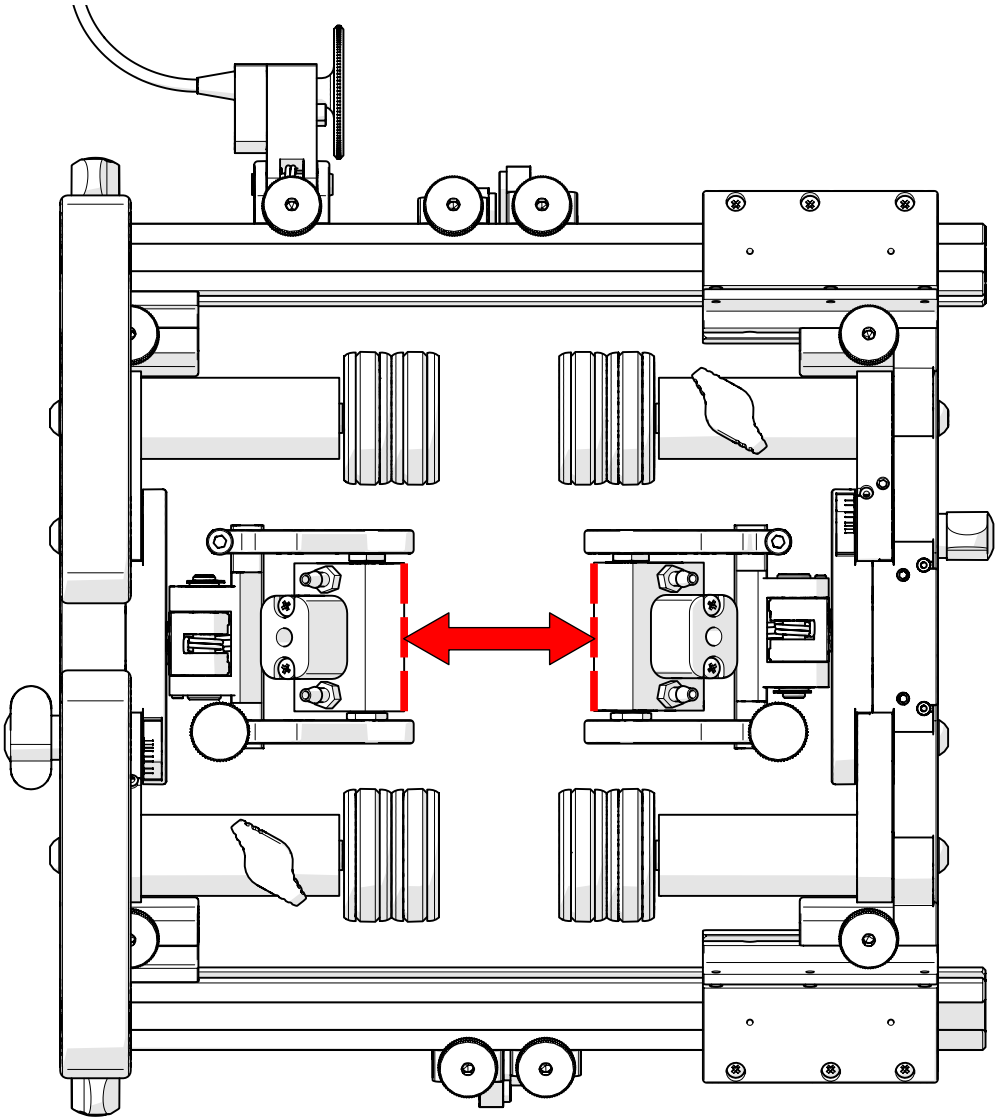


Fig. 19 - Set probe spacing and configure guides

3. When probe spacing as been completed *(Fig. 19)*, position the flange scanner guides as required *(see Flange Scanner Guides on page 12)*.
4. Probe spacing may also be achieved by placing the wedge in alternate pivot button holes of the probe holder *(see Pivot Buttons on page 18)*.

4.4. Dovetail Handle

The dovetail handle offers scanner control. When required, it can be removed to accommodate low-profile scanning.

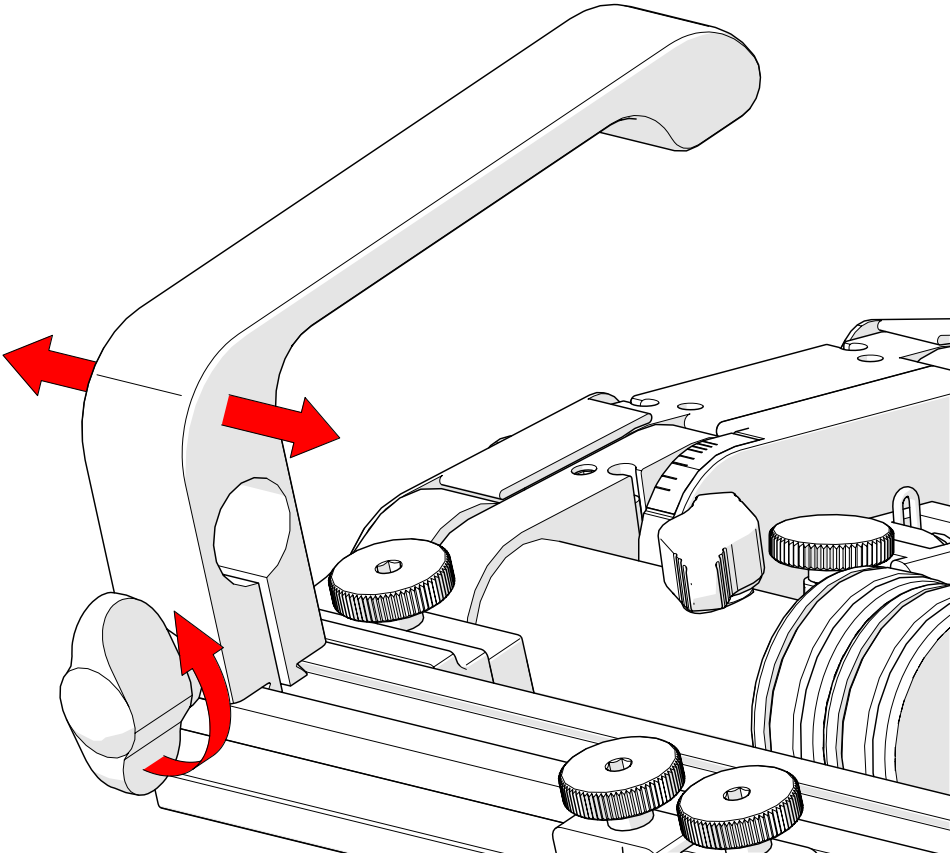


Fig. 20 - Loosen black wing knob to reposition or remove

1. To reposition or remove the dovetail handle from the frame bar, Loosen the dovetail handle's black wing knob *(Fig. 20)*.
2. Tighten the black wing knob when the handle is in place on the frame bar *(Fig. 21)*.

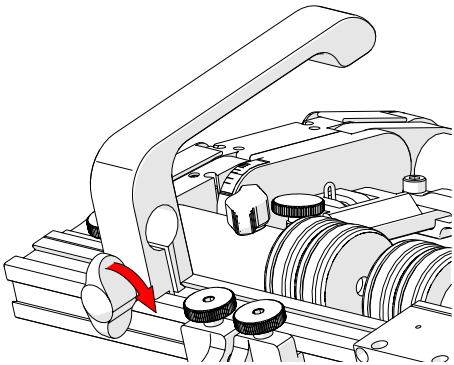


Fig. 21 - Tighten black wing knob

4.5. Brake

Two red knobs activate the system brake and hold the scanner in the required position.

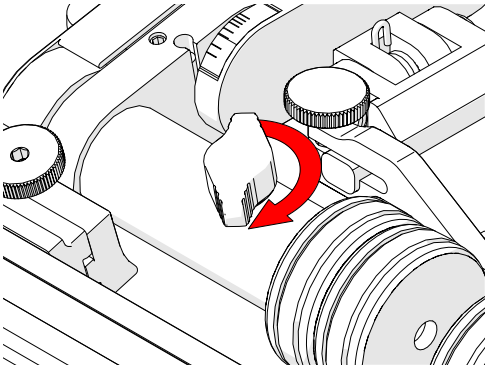


Fig. 22 - Activate brake

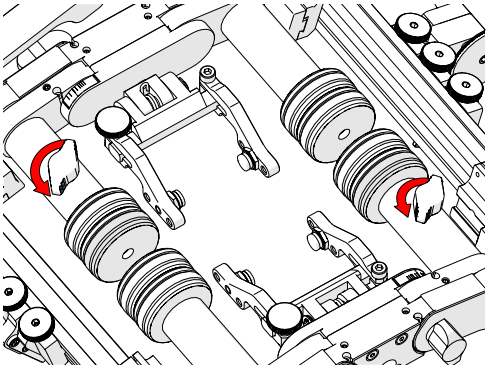


Fig. 23 - Deactivate brake

1. Rotate the two red knobs clockwise to activate system braking *(Fig. 22)*.
2. Rotate the two red knobs anti-clockwise to deactivate system braking *(Fig. 23)*.

> ***TIP:*** *When the brake is engaged, and the scanner is moved, the wheels may loosen from the axle. Grip the magnetic wheel tightly and retighten it to the axle with the 3 mm hex driver (see Magnetic Wheels on page 14).*

4.6. Flange Scanner Guides

The guides may be positioned at the centre of the flange to maintain scanner direction. To utilize the flange scanner guides, follow these steps:

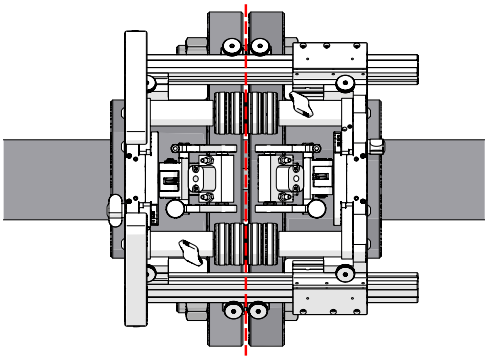


Fig. 24 - Align scanner on the flange

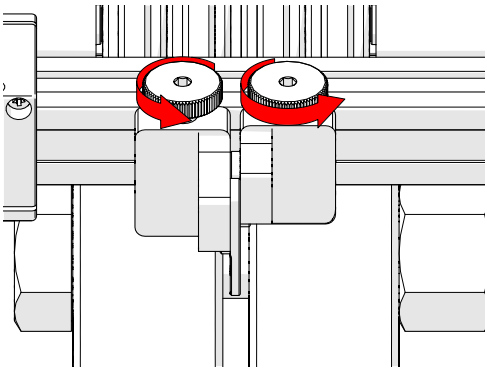


Fig. 25 - Loosen knobs

1. Place the scanner on the inspection surface *(Fig. 24)* and ensure the scanner is correctly aligned with the centre of the flange coupling.
2. Loosen the flange scanner guide knobs *(Fig. 25)*.

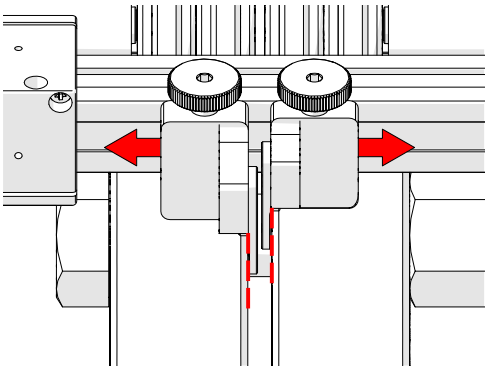


Fig. 26 - Position guides against the flange

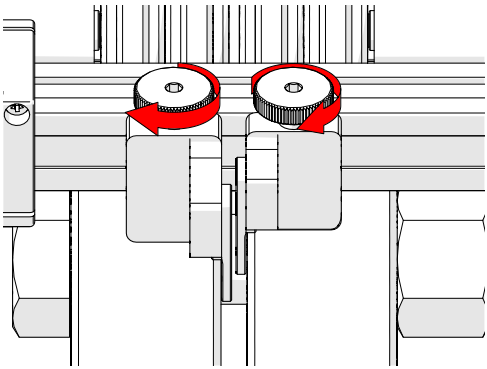


Fig. 27 - Tighten knobs

3. Gently press the guides against the edge of the flange *(Fig. 26)*.

> ***TIP:*** *Ensure the flange scanner guides are not pressed tightly to the edge of the flange. If positioned tightly to the edge, scanner movement may be affected by the guides binding and catching on the flange..*

4. Tighten the knobs of the guides *(Fig. 27)*.

5. Ensure the guides on both sides of the scanner are all positioned correctly.

6. It is also possible to position the guides along the outside of the flange *(Fig. 29)*. This can be useful when the guides can not fit between the two flanges.

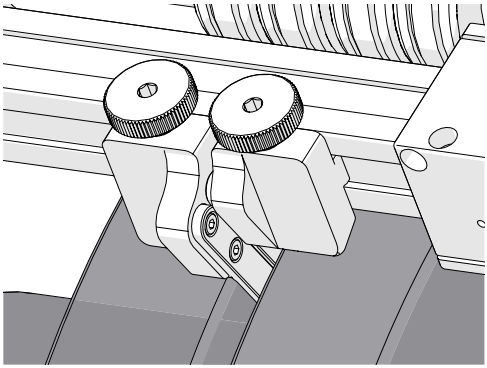


Fig. 28 - Flange scanner guides positioned

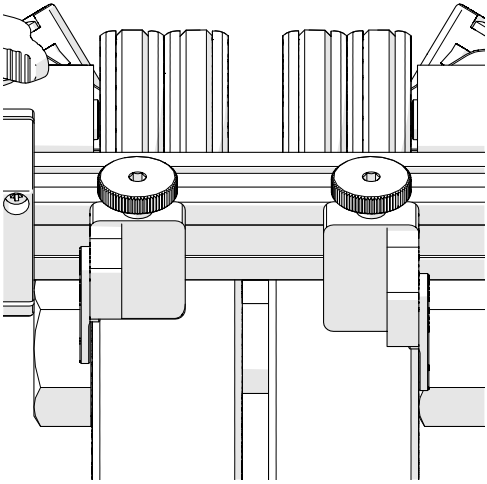


Fig. 29 - Position guides along outside edge of flange

4.7. Magnetic Wheels

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.

Eight magnetic wheels are included with the system.

To install or remove magnetic wheels, the articulated side frame must be removed *(Fig. 30)*.

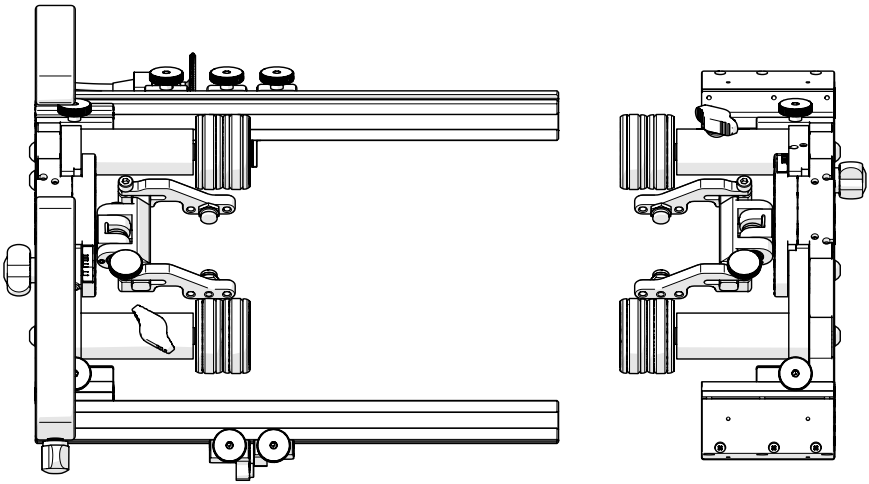


Fig. 30 - Remove probe spacer thingy

4.7.1. Wheel Removal

1. Tightly grip the magnetic wheel to be removed. Using the 3 mm hex driver, loosen the magnetic wheel from the axle *(Fig. 31)*.
2. Repeat step one for the second magnetic wheel mounted to the axle.

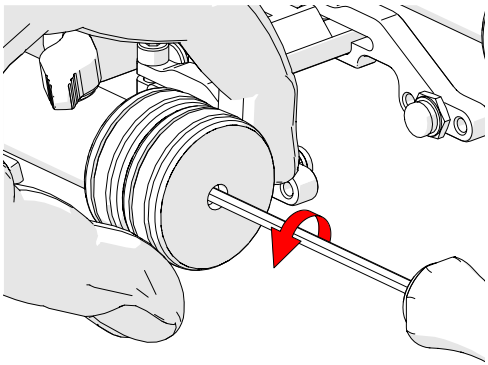


Fig. 31 - Wheel removal

4.7.2. Wheel Installation

1. Locate and position the threaded side of the magnetic wheel way from the scanner axle.
2. By hand, screw the magnetic wheel onto the scanner axle.
3. Grip the magnetic wheel by hand, and using the supplied 3 mm hex driver *(Fig. 11)*, tighten the magnetic wheel to the axle *(Fig. 32)*.
4. To install the second wheel on the scanner axle, locate the threaded side of the magnetic wheel and orient the threaded side of the magnetic wheel towards the scanner axle.
5. By hand, grip the wheel already attached to the axle. Overcome the magnetic resistance to screw the additional wheel to the axle of the scanner *(Fig. 33)*.

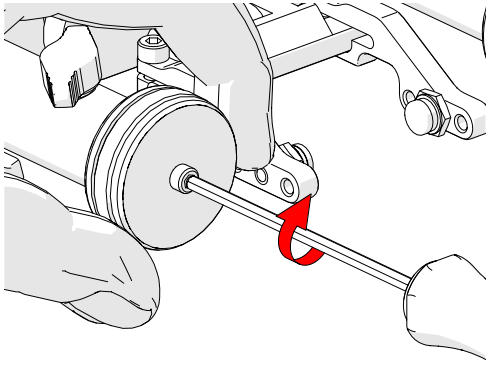


Fig. 32 - Wheel installation

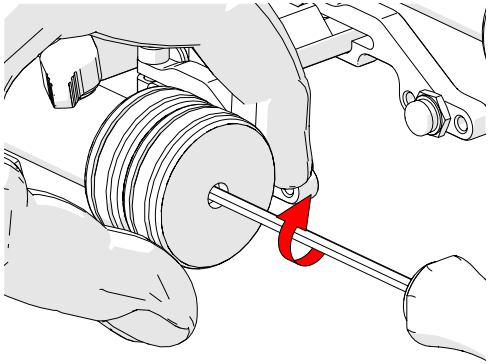


Fig. 33 - Second wheel installation

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

> ***TIP:*** *When the brake is engaged, and the scanner is moved, the wheels from the axle may be loosened. Grip the magnetic wheel tightly and retighten to the axle with the 3 mm hex driver.*

4.8. Frame Bar with Ruler

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

The frame bar includes a ruler with 1 mm measurements.

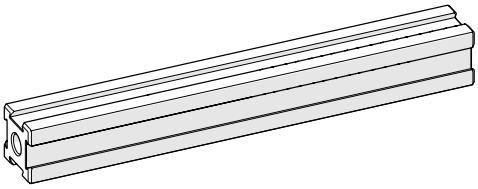


Fig. 34 - Frame bar

4.9. Spring-Loaded Encoder

The spring-loaded encoder wheel utilizes vertical travel to maintain contact pressure with the scan surface. To install the encoder, follow these steps:

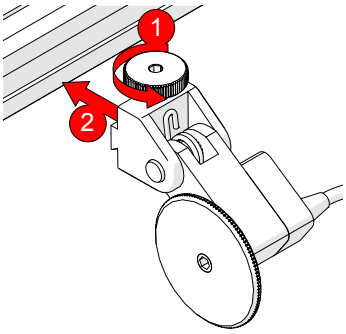


Fig. 35 - Attach to frame bar

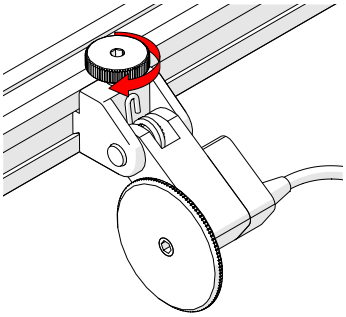


Fig. 36 - Tighten knob

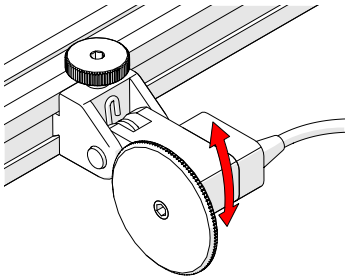


Fig. 37 - Place on scan surface

1. Loosen the encoder's dovetail jaw and mount it to the frame bar *(Fig. 35)*.
2. Tighten the encoder knob *(Fig. 36)*.
3. Spring tension maintains encoder contact with the scan surface *(Fig. 37)*.
4. The provided cable clips may be used to route the encoder cable as required *(see Cable Clips on page 16)*.

4.10. Cable Clips

Clips have been provided to assist with cable management. Simply pinch the clip and press it into the dovetail groove of the frame bar.

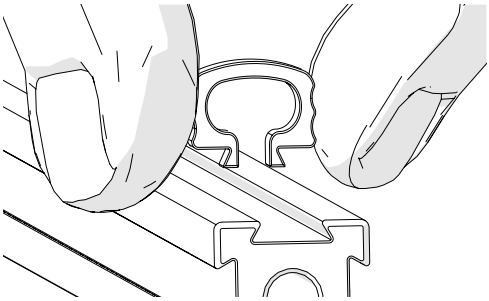


Fig. 38 - Pinch clip

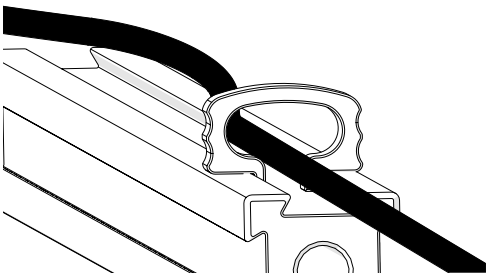


Fig. 39 - Route cables

4.11. Spring-Loaded Probe Holder

A	Probe Holder Arm Adjustment Knob
B	Arm Clamp Screw
C	Yoke
D	Probe Holder Arm
E	Pivot Button

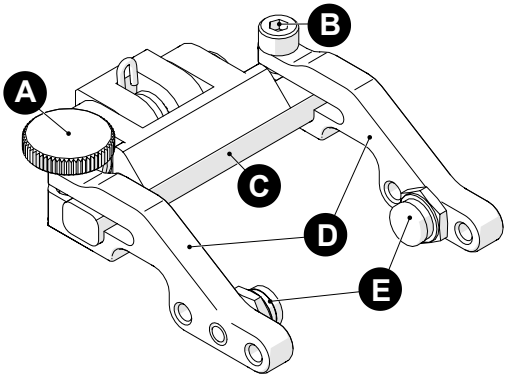


Fig. 40 - Spring-loaded probe holder

4.11.1. Probe Holder Setup

To mount a probe/wedge in the spring-loaded probe holder, follow these steps:

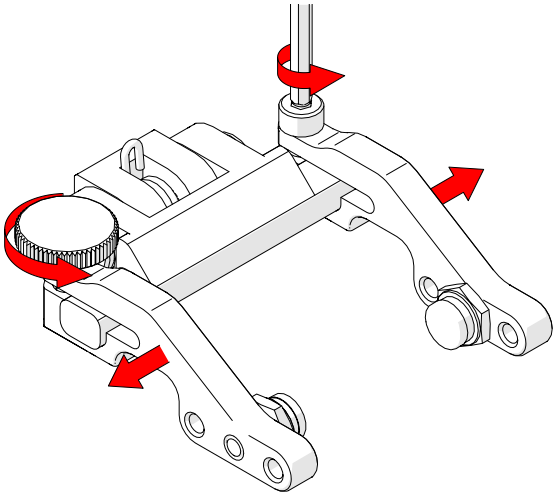


Fig. 41 - Remove probe holder arms

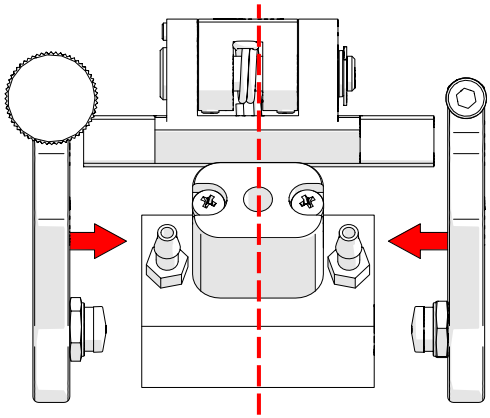


Fig. 42 - Attach probe holder arms

1. Loosen the probe holder arm adjustment knob *(Fig. 41)* and remove the attached probe holder arm from the yoke.
2. Using the 3 mm hex driver, loosen the arm clamp screw and remove the probe holder arm from the yoke *(Fig. 41)*.
3. Align the wedge with the middle of the yoke and slide the probe holder arms around the probe/wedge *(Fig. 42)*.

4. Tighten the probe holder arm adjustment knob and the arm clamp screw *(Fig. 43)*.

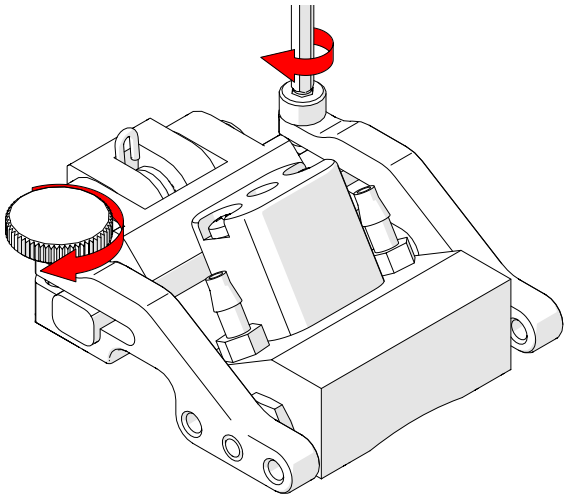


Fig. 43 - Remove probe holder arms

4.12. Pivot Buttons

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

Use the supplied 3/8 in wrench *(Fig. 12)* to remove and install pivot buttons *(Fig. 44)*.

> ***TIP:*** *Wedge pivoting may be impeded when utilizing pivot buttons closer to the yoke.*

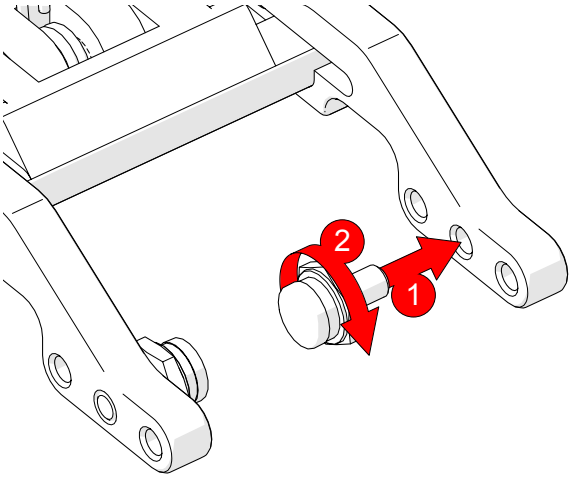


Fig. 44 - Pivot buttons

5.1. Two Probe

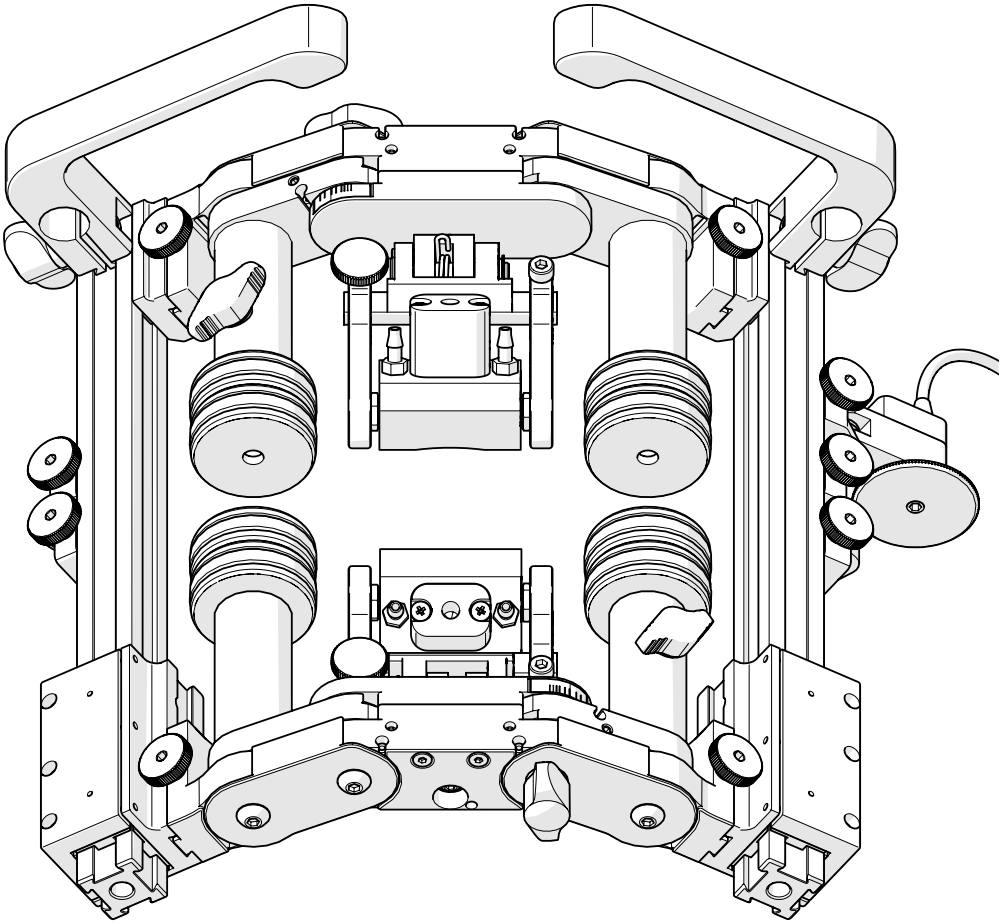


Fig. 45 - Two probe configuration

6.1. Setup on a scan surface

1. Mount the appropriate phased array and wedges to the probe holders *(see Spring-Loaded Probe Holder on page 17).*

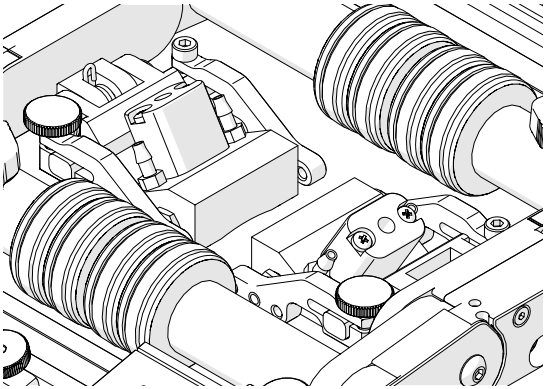


Fig. 46 - Attach wedges to the probe holders

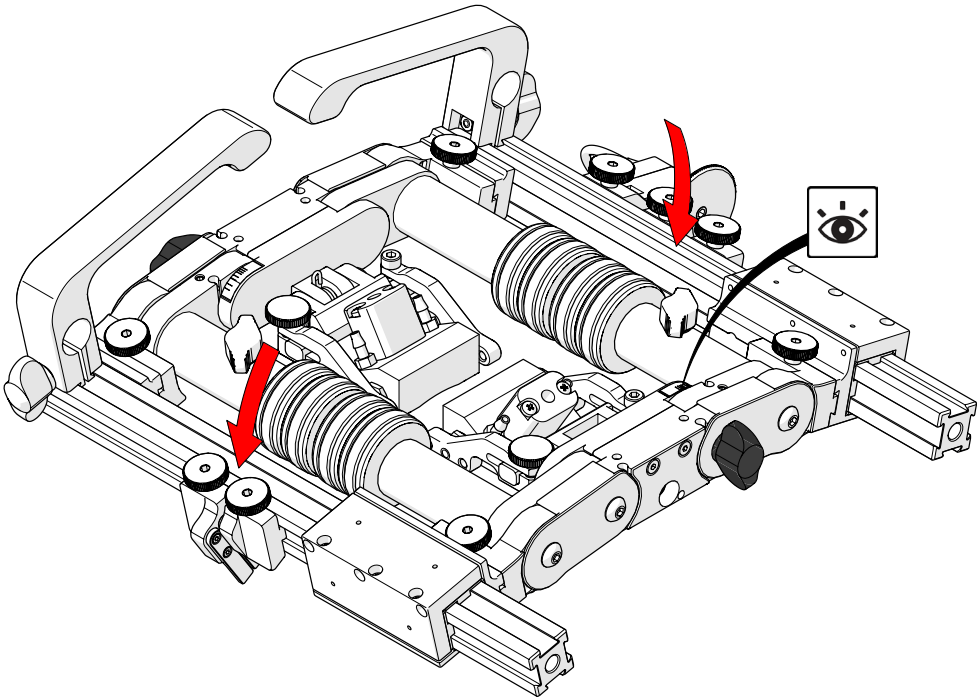


Fig. 47 - Loosen black wing knobs and pivot to desired diameter size

2. Ensure the brakes are activated *(see Brake on page 12).*
3. Loosen the black wing knobs *(Fig. 47)*
4. Pivot the frame to the required diameter using the diameter indicators *(Fig. 47).*

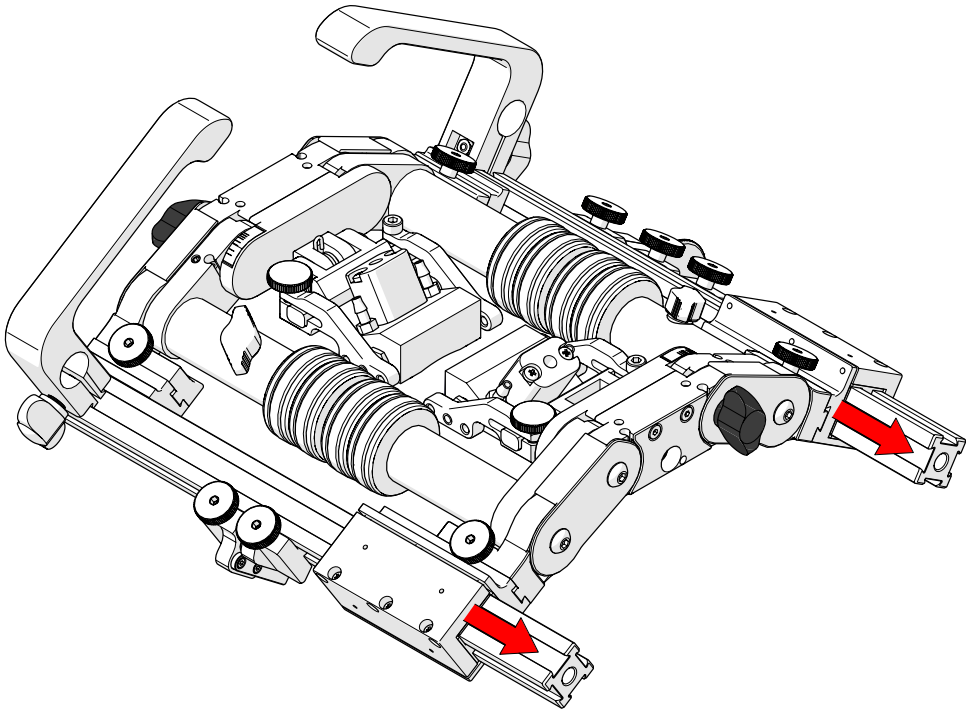


Fig. 48 - Adjust probe centre spacing

5. Tighten the black wing knobs *(Fig. 48)*.
6. Adjust the articulated side frame *(see Probe Centre Spacing on page 9)*
7. Place the scanner upon the flange surface to be inspected *(Fig. 48)*.

> ***TIP:*** *Use caution when placing equipment on the scan surface. The magnetized wheels can suddenly cause the flange scanner to lurch toward the metal.*

8. If required, loosen the black wing knobs and adjust the frame angle to align with the flange diameter.

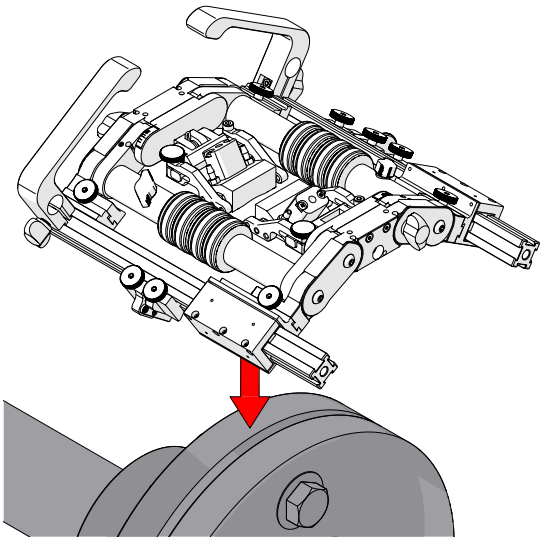


Fig. 49 - Place scanner on inspection surface

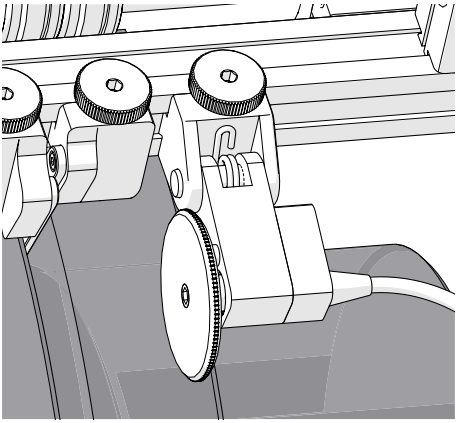


Fig. 50 - Ensure proper spring-loaded encoder placement

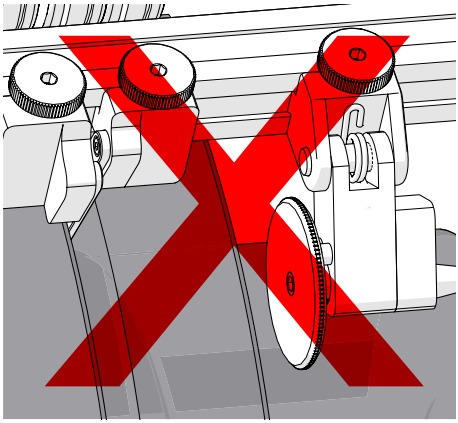


Fig. 51 - Spring-loaded encoder not contacting inspection surface

9. Ensure the spring-loaded encoder is contacting the flange *(Fig. 50)*.

10. If the spring-loaded encoder does not contact with the flange *(Fig. 51)*, position the spring-loaded encoder so that the encoder wheel makes contact with the flange *(see Spring-Loaded Encoder on page 16)*.

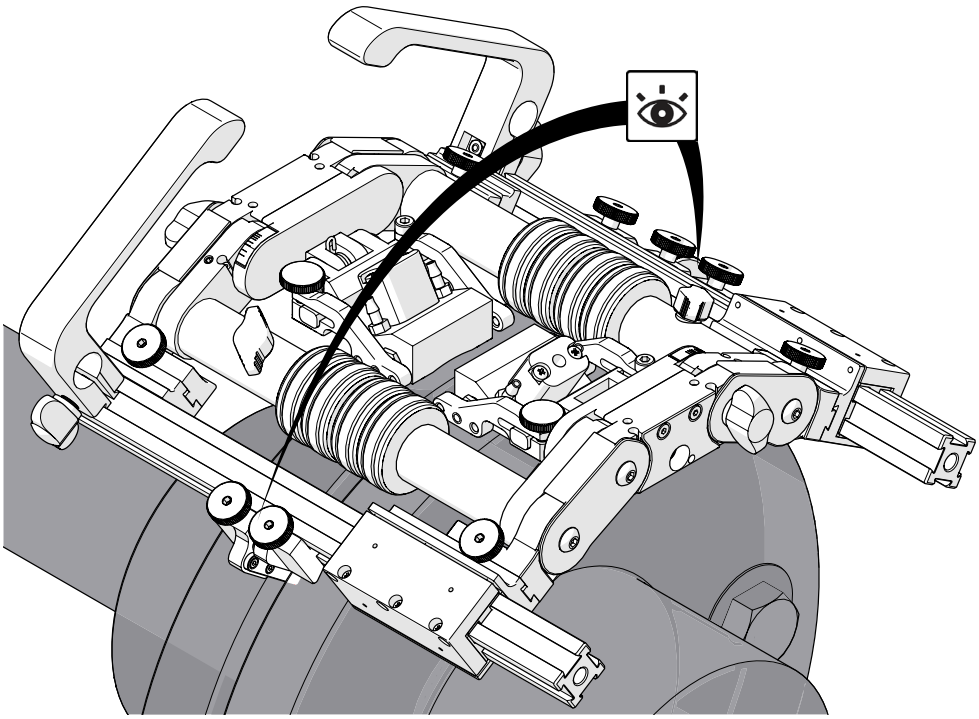


Fig. 52 - Align guides with the flange

11. Align the guides *(Fig. 52)* with the edges of the flange *(see Flange Scanner Guides on page 12)*.

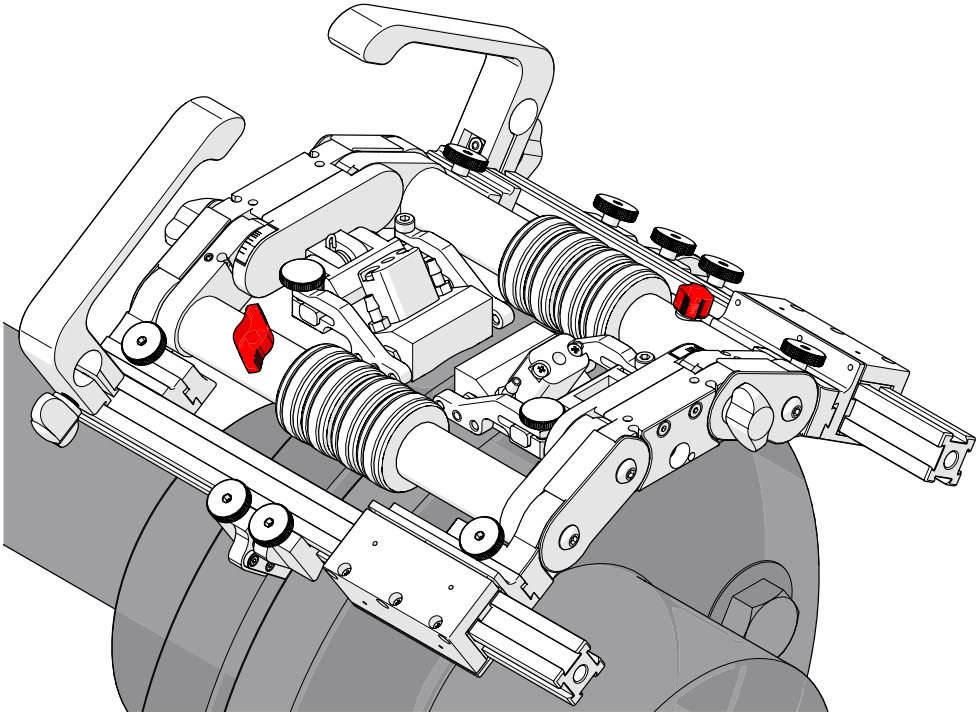


Fig. 53 - Release brakes to begin scanning

12. Release the brakes *(Fig. 53)* and begin the scanning procedure.

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.

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
The encoder not functioning.	The instrument needs to be correctly set up.	Refer to instrument's documentation regarding proper setup.
	Issue with encoder.	Contact Jireh Industries for repair *(contact Jireh Industries Ltd. on page 1)*.
	The encoder is not contacting scan surface.	Reposition the spring-loaded encoder and ensure contact with the scan surface *(see Spring-Loaded Encoder on page 16)*.
Insufficient probe contact.	The scanner not set properly.	Reconfigure the scanner per instructions *(see Spring-Loaded Probe Holder on page 17)*.
Magnetic wheels become loose.	Brakes are engaged.	Ensure the brakes are unlocked when using the scanner *(see Brake on page 12)*.

8.1. Technical Support

For technical support contact Jireh Industries *(contact 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 **STIX** system *(contact Jireh Industries Ltd. on page 1).*

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

10.1. Flange Scanner Components

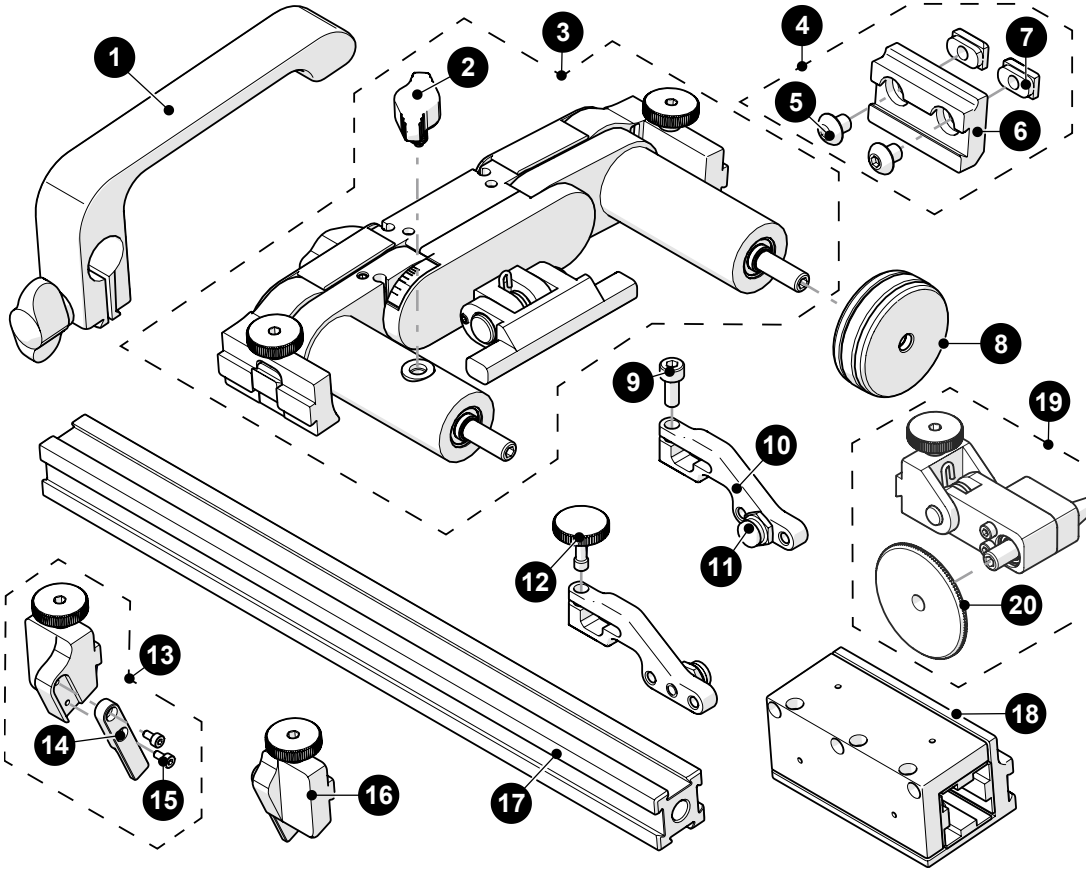


Fig. 54 - Flange scanner frame components

BOM ID	Description	Description
1	CMS004	Dovetail Handle
2	DXS005	Brake Knob
3	DXS001	Articulated Side Frame Subassembly
4	DXS008	Flange Scanner PPS Spacer
5	MD074-006	BHCS, M5 x 0.8 X 6 mm, SST
6	DX0020	Flange Scanner PPS Spacer Black
7	BT0014	Dovetail Nut
8	BTS031	Magnetic Wheel
9	MD050-010	SHCS, M4 x 0.7 x 10 mm, SST
10	*See Arm Styles*	
11	*See Pivot Button Style*	
12	PH0082	Knurled Knob, M4 x 0.7 x 10 mm, 3 mm stand off, SST
13	DXS006-L	Flange Scanner Guide, Left
14	DX0016	Guide Finger
15	MD047-004	SHCS, M2 x 0.4 X 4 mm, SST
16	DXS006-R	Flange Scanner Guide, Right
17	BG0090-25	Frame bar with ruler, 25 cm *(9.8 in)*
18	DXS007	Flange Scanner Slider
19	BGS053-X-05	Spring-Loaded Encoder *(see Encoder Connector Type)*
20	BG0069	Encoder Wheel, for spring-loaded encoder

Fig. 55 - Flange scanner frame components

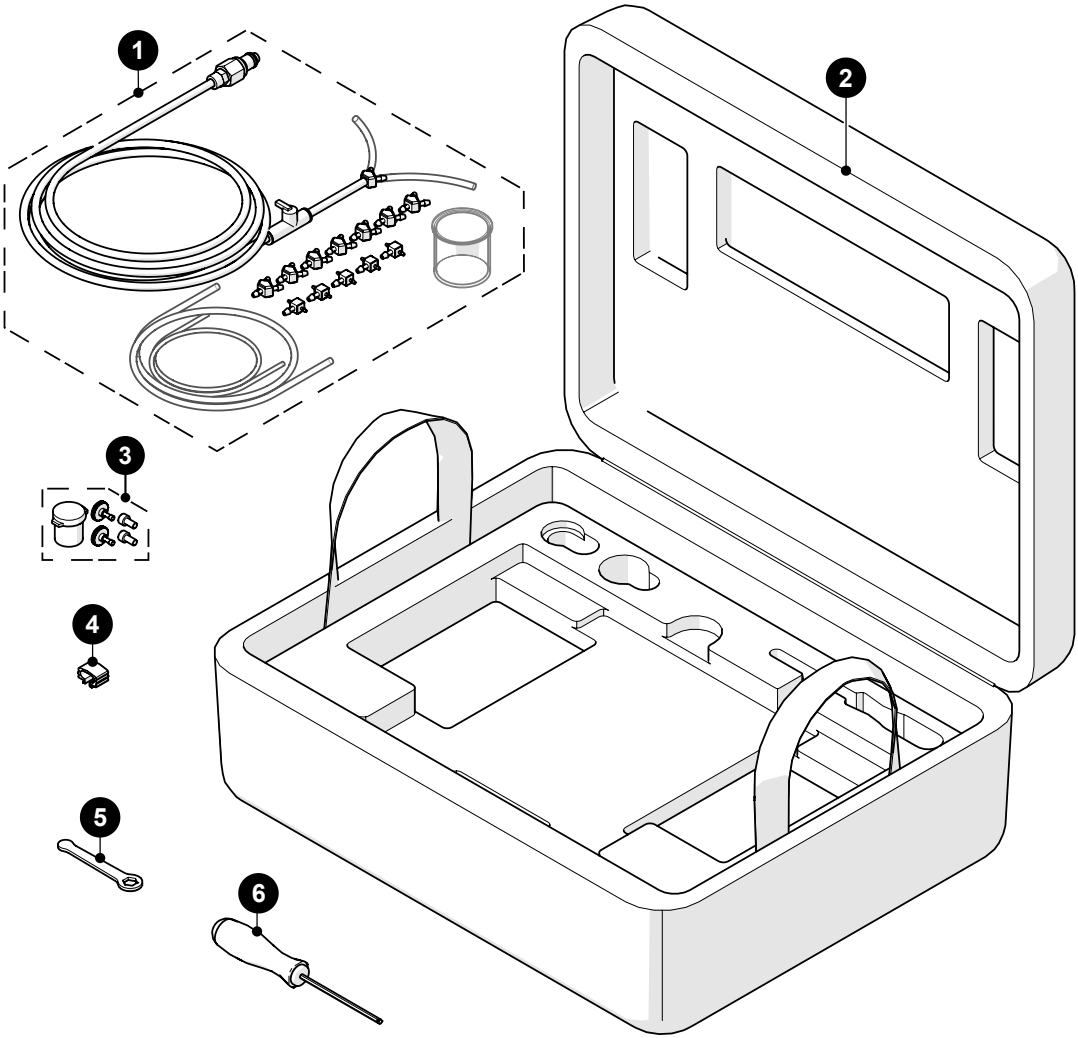
10.1.1. Encoder Connector Type

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	**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. 56 - Encoder connector type

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

10.2. STIX Kit Components



BOM ID	Part #	Description
1	CMG007	Irrigation Kit, 2-4 Probe
2	DXA002	STIX Flange Case
3	PHG014	2 Probe Spare Parts Kit
4	BG0091	Cable Clips
5	EA470	3/8 in Wrench
6	EA414	3 mm Hex Driver

Fig. 57 - STIX - Flange scanner kit components

10.3. Probe Holder Components

10.3.1. 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. 58 - Probe holder arm selection

10.3.2. 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. 59 - Pivot button selection

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

10.4. Variable Components

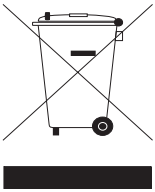
10.4.1. Frame Bars

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. 60 - Frame bar selection

DISPOSAL

WEEE Directive



In accordance with European Directive on Waste Electrical and Electronic Equipment (WEEE), this symbol indicated 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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jireh.com

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Changes or modifications to this unit or accessories not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

All specifications are subject to change without notice.

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