


USER MANUAL FOR SUBSEA AX/VX GASKET TOOL

Document title : *UMA-7166-002 AX/VX Mechanical Ring Tool*
IKM TECHNOLOGY AS ref. : *P7166*
Customer ref. : *Subsea Tool*




IKM Technology AS

Rev.	Date	Reason For Issue	Prepared	Checked	Approved
01	30.08.2013	Issued for use	BJY	KG	EN
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Author:	Gabrielsen Trine (Technique)	Owner:	IKM Administrator	
Approved by:	Reinsnos Jostein (Technique)	Company:	IKM Technique AS	

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1 GENERAL INFORMATION

This document is a user manual for the IKM Technique AX/VX Gasket Tool.

The AX/VX Gasket Tool is a mechanical tool for subsea handling of AX and VX gaskets as well as transportation of gaskets to and from topside.


The gasket dimension is 18 ¾”.

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1.1 Abbreviations

HPU	Hydraulic Power Unit
ROV	Remotely Operated Vehicle
kg	Kilo gram
mm	Milli meter
BSP	British standard pipe
JIC	Joint industry council
CCM	Cubic centimeter
LPM	Liter per minute
Nm	Newton meter
CCW	Counter clockwise


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1.2 References

Doc nr	Description	Rev.	Issued	Can be found
7166-002	Drawing of Subsea AX/VX Gasket Tool	02	30.08.13	Appendix A
	Illustration of lifting dogs			
	Illustrations of tool positions			

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2 TECHNICAL SPESIFICATION

The AX/VX Gasket Tool system consists of the following main components:

VX/AX Gasket Tool: IKM Technique VX/AX Gasket Tool
 Lifting Dogs : 2 sets of lifting dogs. One set for VX gaskets and one set for AX gaskets.
 ROV handle : IKM Technique Fishtail, P/N FT250-100
 Flex-Joint : IKM Technique Flex-Joint, P/N FJ4975

The AX/VX Gasket Tool can be used for removal and placement of AX and VX gaskets from/to the wellhead as well as a form of handling the gasket to and from topside. The tools functionality has been designed to be controlled by a ROV's manipulator, yet whilst on deck it can be easily operated by hand.

The tool has the following features:

Self-centering on the gaskets.

Auto snap on function when the tool is used in the neutral position.

Can be used even with the tubing hanger installed in the wellhead.

Simple to convert between AX and VX configurations.

Weight:

In Air 34 kg


In Water 16,8 kg

Maximum dimensions:

Width Ø780 mm

Height 716 mm (w/ fishtale handle)

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3 SAFETY

3.1 General - Operations

Only authorised people and qualified personnel should work on the VX/AX Gasket Tool, and take suitable precautions to prevent any potential injuries. Always adhere to authorised working practices, and use the correct tools for the job. To facilitate this, make sure that these are available before commencing the test.

Ensure that the working area is kept clear and uncluttered.

3.2 General – Mechanical

Beware of and keep clear of all moving components.


Ensure that all load bearing components are adequately and regularly inspected. If damage is found the component must be repaired/replaced as necessary. Do not allow damaged components to remain in service.

Always ensure that items are correctly and adequately supported before removal, and that authorised lifting equipment and procedures are used.

Note: trying to lift heavy components in an awkward position by hand without the assistance of correct lifting equipment, or lifting any component without adopting the correct stance, can lead to serious injury.

Ensure that when working within or underneath the machine that your presence is known to your supervisor. If working underneath the machine, always ensure that there are no loose or unsupported assemblies, components or tools above.

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4 OPERATIONAL DESCRIPTION

The following description is a generic description of preparation and use of the AX/VX Gasket Tool. Customers are advised to adapt the following information to their own specific operations and specific work area.

4.1 Preparation on the vessel prior to operations

- Unpack all parts and check for transport damages
- Verify that all parts on equipment list are present
- Verify which type of gasket is going to be handled and configure the tool as required. The VX/AX Gasket Tool can be used on both VX and AX gaskets. The different gaskets each require their own specially designed parts which need to be swapped out depending on which type of gasket is going to be handled.
- Check the operation of the tool by rotating the locking ring between the Open (marked “O”) and Locked (marked “L”) positions. This should be possible with relatively little force. Though, more force will be required to move the ring to the Open position as this position requires you overcome the forces of the installed springs.
- Commence operation as per operators procedures

See **Appendixes A through C** for assembly drawings and illustrations of the parts and operating positions of the tool.

4.2 Instructions for configuring the tool

The following instructions and photos depict the step by step the process of converting the tool from the VX configuration to the AX configuration.

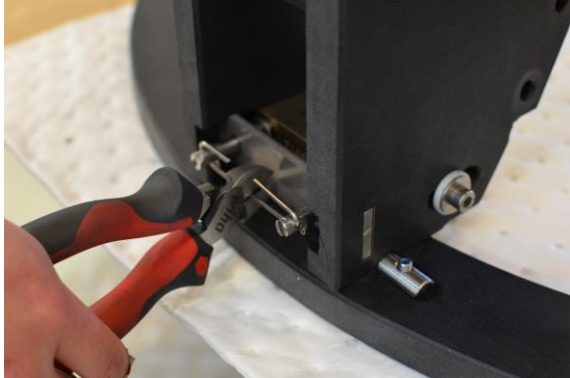
The process of converting from AX configuration to VX configuration is the same, minus the AX Guide Block. This is used ONLY as part of the AX configuration.

Also refer to assembly drawings in Appendix A.

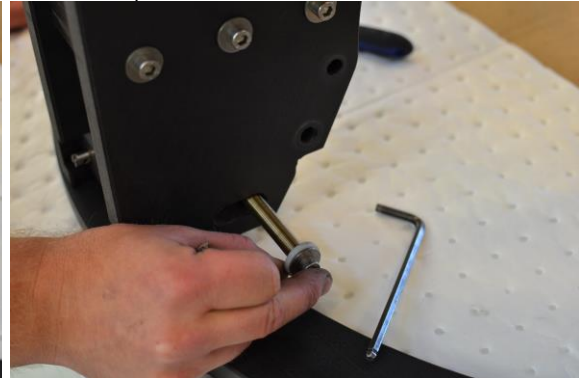
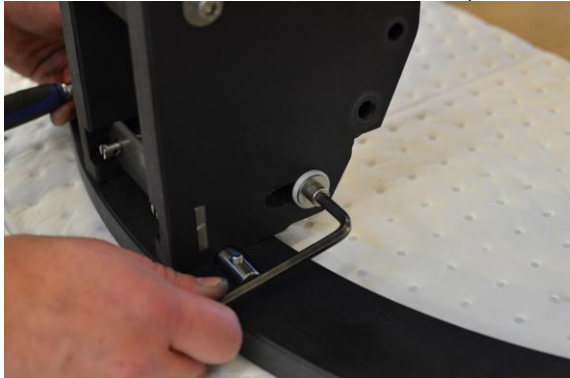
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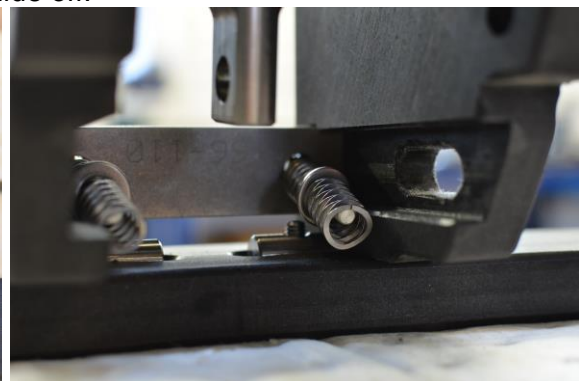
1. Set the tool to the Open, "O", Position. See Appendix C for the tools positions.
2. Cut the locking wire and remove.



3. Set the tool to the Neutral position.
4. Remove screws from the Hitch Pin (Part no. 7166-122) and remove the Hitch Pin.



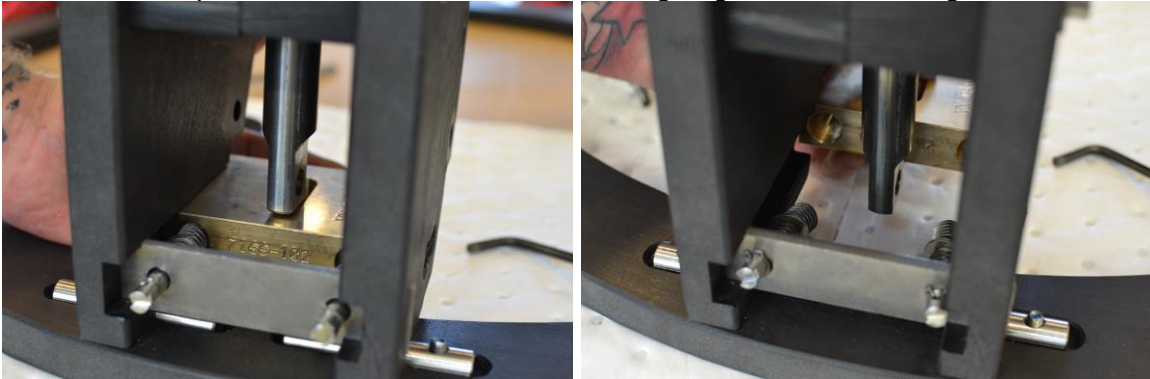
5. Screw loose both Guide Pins (Part no. 7166-109) from the Lifting Dog (Part no. 7166-102). Don't pull the Guide Pins through the Guide Pin Plate (Part no. 7166-110). Let them rest there so as the springs and washers don't slide off.



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6. Lift the Lever upwards so as it is free from the lifting dog and slide the dog out.



7. With the lever still lifted, slide in the other type of dog. Once the dog is in place lower the lever so as the end of the lever slides into the opening of the dog.



8. Locate the Guide Pins in the holes of the dog and screw tight.



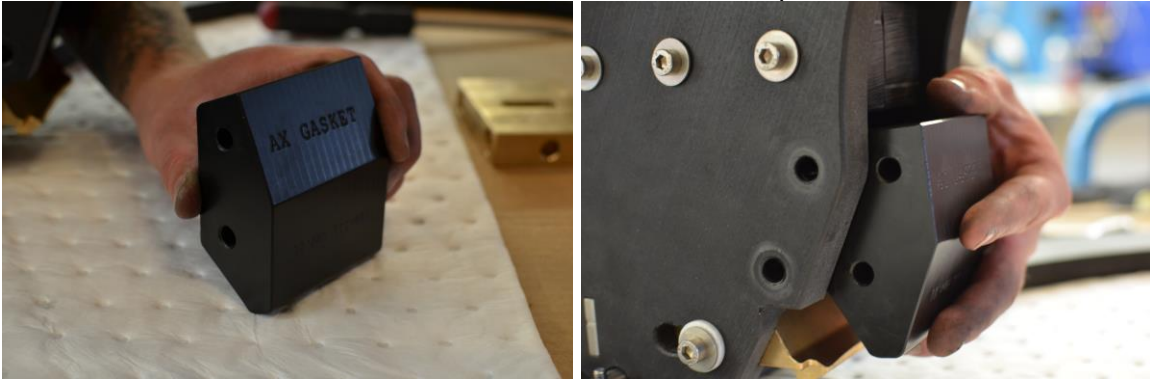
9. Slide the Hitch Pin into place and secure with the same screws that were removed earlier.



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10. Locate the AX Gasket Guide Block and slide it between the plates.

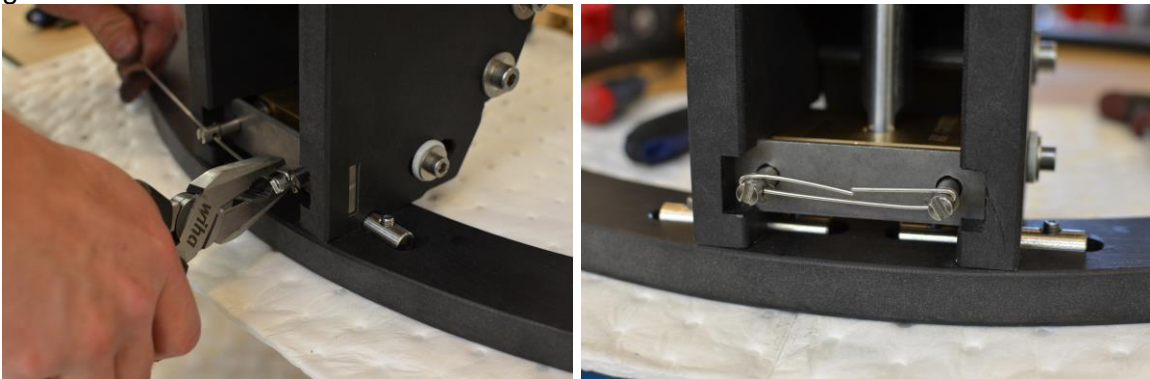



11. Locate the M8 x 130 bolts, nuts and washers required and secure the Guide Block in place.



12. Set the tool to the Open, "O" position.

13. Secure the Guide Pins with a new length of stainless steel locking wire. TIG filler wire is a good alternative.



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4.3 Step by Step Procedure

The following steps are to be regarded as guidelines for operation. The operator of the tool must adapt the steps into their own operations procedure.

4.4 General

Perform SJA/Toolbox talk for the operation as required by client/ROV contractors own procedures.

4.5 Operation – Picking up a Gasket


- Check that the tool is in either the Neutral or Open position
- Maneuver the tool to the gasket
- Centre the tool above the gasket
- Lower the tool down on to the gasket

- Once the tool has made contact with the gasket a small amount of force will be required to push the tool onto the gasket and into it's resting position which will allow the dogs to clamp on to the gaskets groove. This is the snap on function.
 - Though, if it has been chosen to use the tool in the Open position then no force will be required and the tool will simply drop into it's resting position.
- Before locking the tool on to the gasket verify that it is indeed sitting correctly on top of the gasket.
- Rotate the locking ring to the Locked position, marked "L"
- The gasket can now be lifted

4.6 Operation – Placing a Gasket on the Wellhead

- With the gasket already secured in the tool maneuver ROV to worksite
- Stabilize ROV at worksite and in good position for commencing work
- Locate the tool and gasket centrally over the wellhead and gently lower into place
- Once the gasket is sitting correctly on top of the wellhead rotate the locking ring the Open position, marked "O". This will disengage the dogs thus releasing tools grip on the gasket.
- The tool can now be removed from the wellhead by lifting vertically

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4.7 Operation – Removal of Gasket from the Wellhead

- Maneuver ROV to worksite
- Stabilize ROV at worksite and in good position for commencing work
- Verify that the tool is in either the Neutral or Open position.
- Locate the tool centrally over the wellhead and carefully lower into place
- Once the tool has made contact with the gasket a small amount of force will be required to push the tool onto the gasket and into it's resting position which will allow the dogs to clamp on to the gaskets groove. This is the snap on function.

Though, if it has been chosen to use the tool in the Open position then no force will be required and the tool will simply drop into it's resting position.

- Before locking the tool on to the gasket verify that it is indeed sitting correctly on top of the gasket.
- Rotate the locking ring to the Locked position, marked "L"
- The gasket is now ready to be lifted from the wellhead.

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5 MAINTENANCE

After use:

Clean tool with fresh water followed with a protective coat with WD40 or equivalent to maintain the equipment in good condition.


In case of field repairs, please consult the attached manufacturer's information.

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6 SPARE PART LIST

- Nuts and bolts.
- Guide blocks.
- Pins.
- ROV handle.

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7 REVISION CHANGES

Revision	Procedure change	Author
01	<i>Original version</i>	BJY
02	<i>Update</i>	KF


8 CONTACT INFORMATION

All enquiries relating to the tooling should be addressed to:

IKM Technology AS
 Nordlysveien 7,
 N-4340 Bryne
 Norway

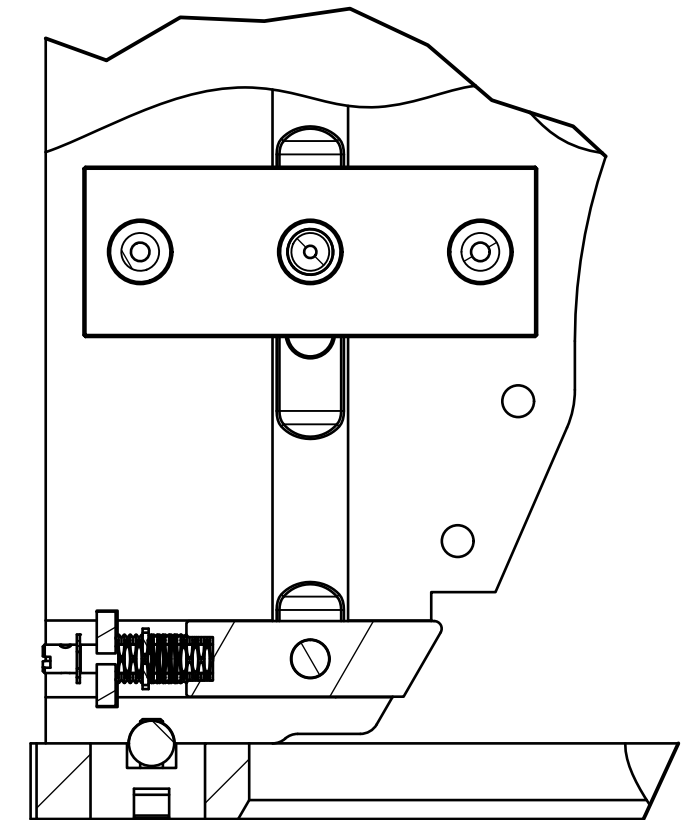
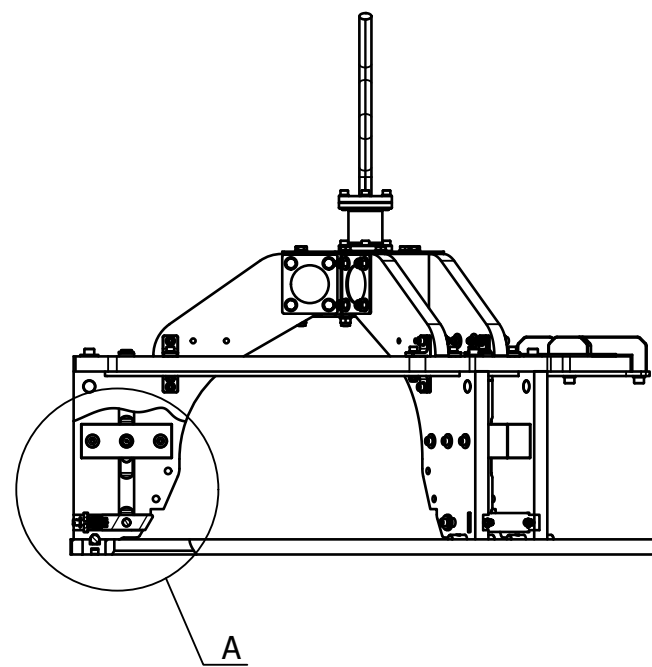
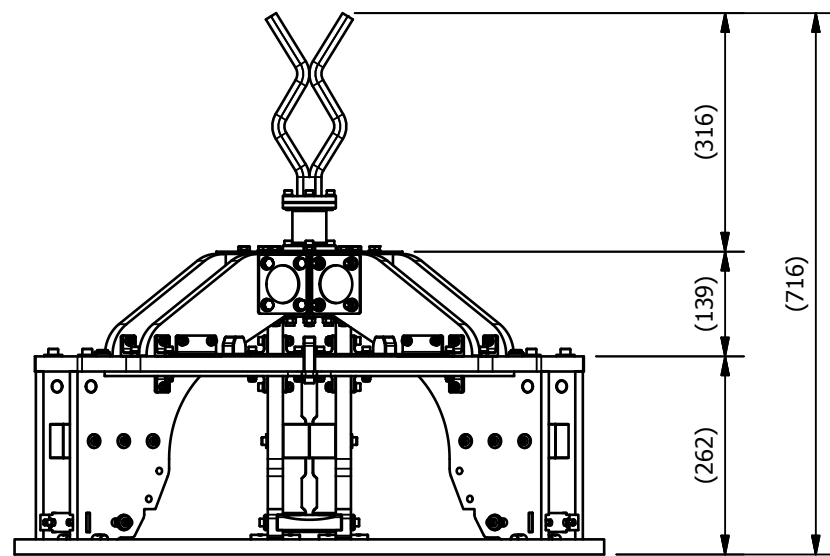
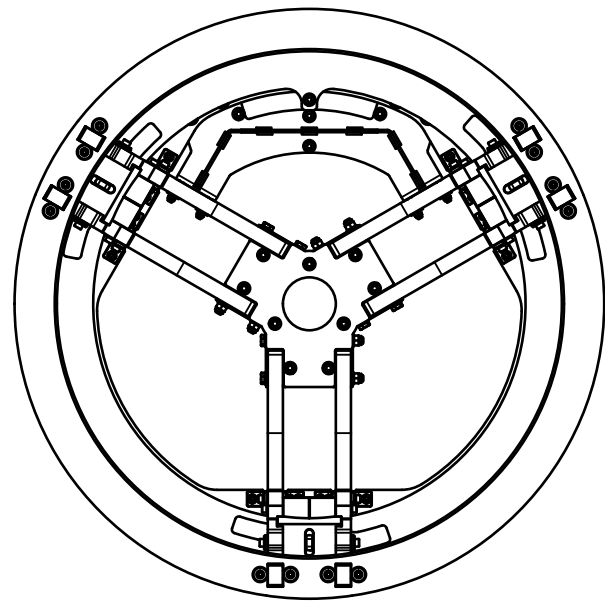
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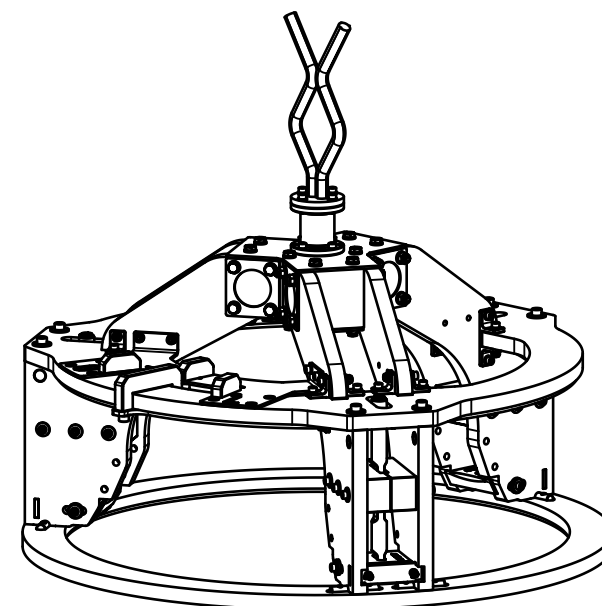
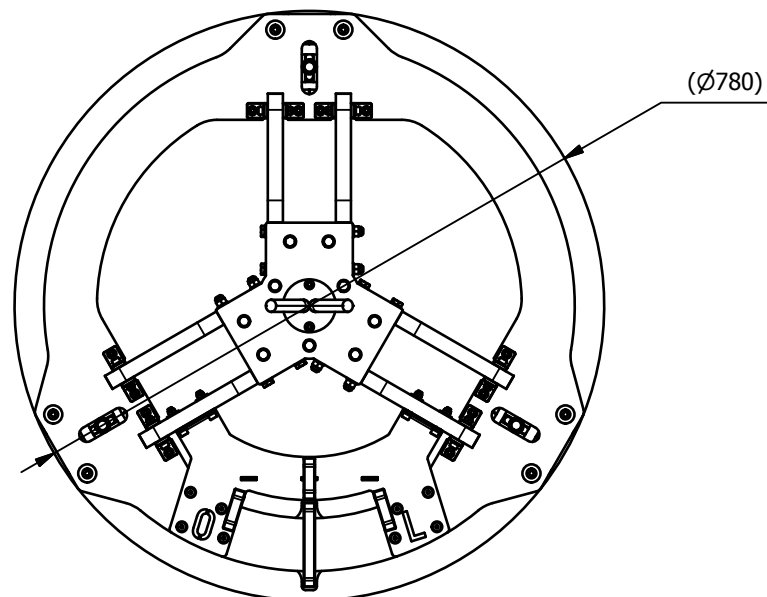


9 APPENDIX

	Doc number	Description	Rev
<i>Appendix A</i>	<i>7166-002 rev2</i>	<i>Drawings of AX/VX Gasket Tool</i>	<i>02</i>
<i>Appendix B</i>		<i>Illustration of lifting dogs</i>	
<i>Appendix C</i>		<i>Illustrations of tool positions</i>	



A - VX CONFIGURATION
(1 : 2)



ISOMETRIC VIEW - VX CONFIGURATION
(1 : 10)

02	30.08.2013	UPDATED TO INCLUDE DESIGN CHANGES	BJY	EN	BJY
01	20.08.2013	FOR CONSTRUCTION	BJY	EN	BJY
REV	DATE	DESCRIPTION	BY	CHKD	APPD
WEIGHT:					
IN AIR:		34 kg			
IN WATER:		16.8 kg			
UNLESS OTHERWISE SPECIFIED:					
ALL DIMENSIONS ARE IN MILLIMETRES					
TOLERANCES:					
LINEAR: ISO 2768-1					
ANGULAR: ISO 2768-1					
EDGES: ISO 2768-1					
REMOVE ALL BURRS BREAK ALL SHARP EDGES					
FIRST ANGLE PROJECTION					
SHEET SIZE: A3		SHEET NO.: 1 OF 4		SCALE: 1 : 10	
DRAWING NO.: 7166-002				LATEST REV.: 02	



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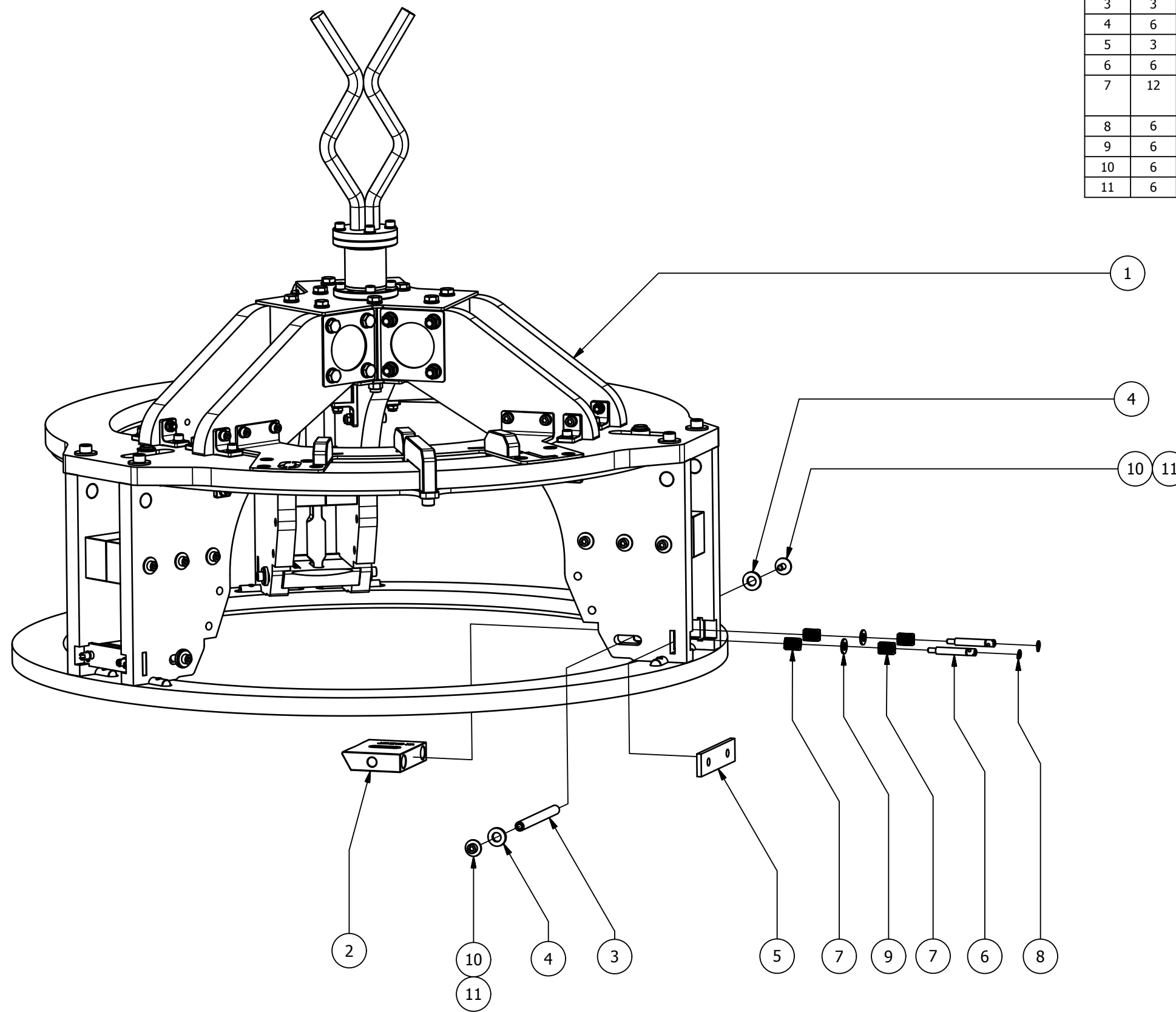
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PROJECT TITLE:
P7166

DRAWING TITLE:

PARTS LIST - VX CONFIGURATION

ITEM	QTY	PART NUMBER	MATERIAL	MASS	DESCRIPTION
1	1	7166-004		30.59 kg	
2	3	7166-102	Bronze, AM1	0.81 kg	
3	3	7166-122	Bronze, AM7	0.06 kg	
4	6	7166-119	PTFE	0 kg	
5	3	7166-110	Stainless Steel, AISI 316L	0.11 kg	
6	6	7166-109	Stainless Steel, AISI 316L	0.02 kg	
7	12	6989	Stainless Spring Steel, EN 10270-3-1.4310	0 kg	Wave Spring, Ø12.7 x 17
8	6	DIN 471 - 7 x 0.8	Stainless Steel	0 kg	Spring Retaining Ring
9	6	ISO 7089 - 8	A4-80	0 kg	Plain washers - Normal series
10	6	ISO 7093 A - ST 6	A4-80	0 kg	Plain washers - Large series
11	6	ISO 4762 - M6 x 12	A4-80	0.01 kg	Hexagon Socket Head Cap Screw



EXPLODED VIEW - VX CONFIGURATION
(1 : 5)

WEIGHT: IN AIR:	34 kg
IN WATER:	16.8 kg
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN MILLIMETRES	
TOLERANCES: LINEAR: ISO 2768-1 ANGULAR: ISO 2768-1 EDGES: ISO 2768-1	
REMOVE ALL BURRS BREAK ALL SHARP EDGES	
FIRST ANGLE PROJECTION	



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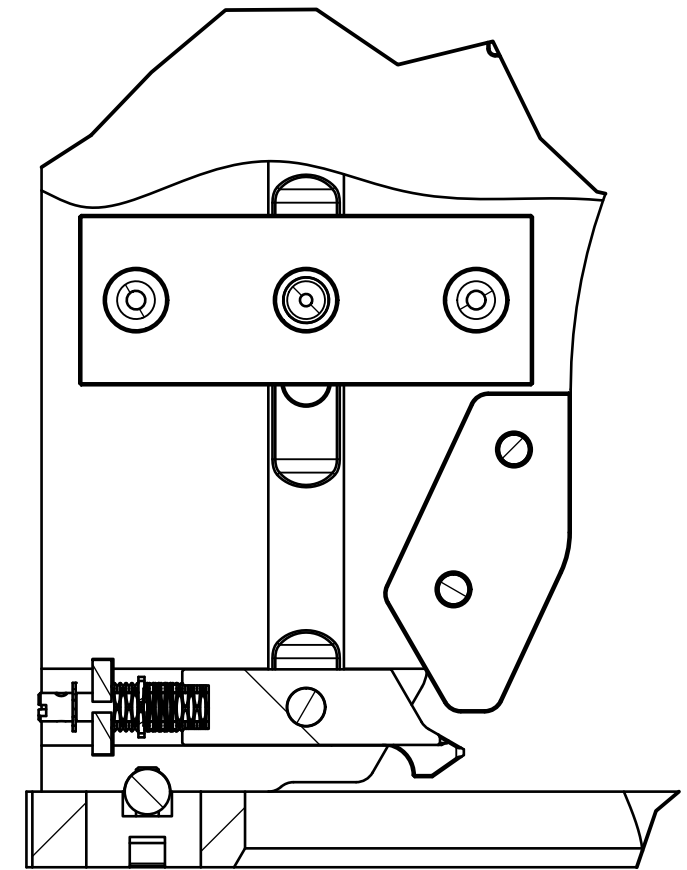
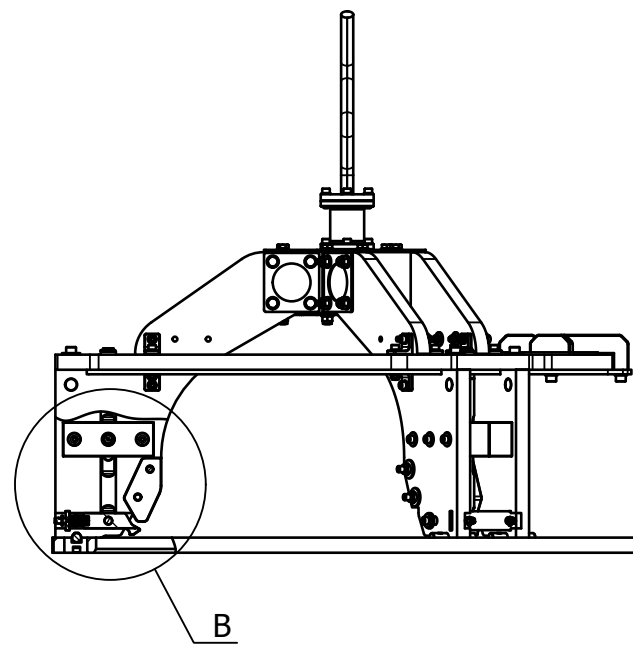
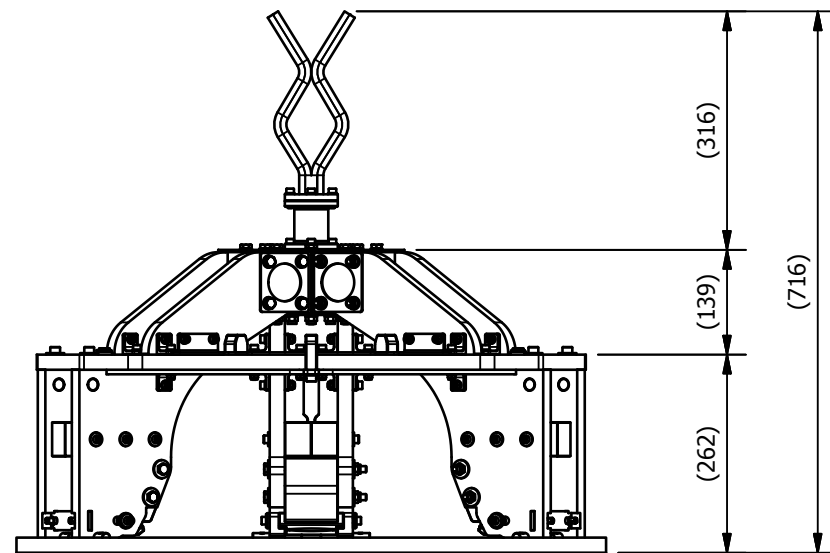
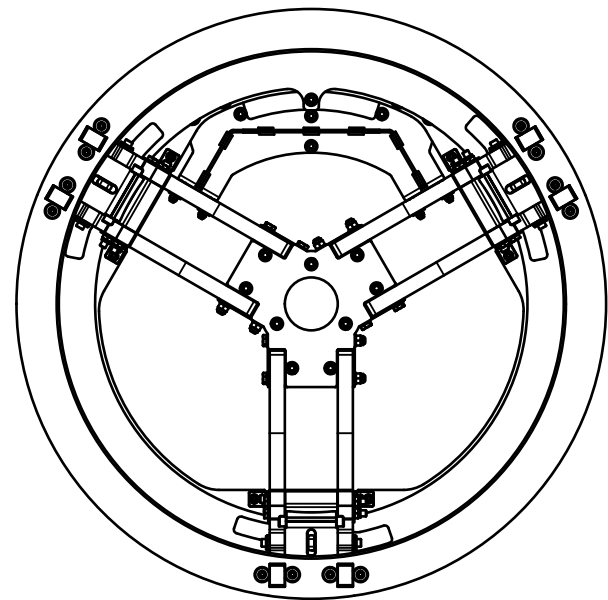
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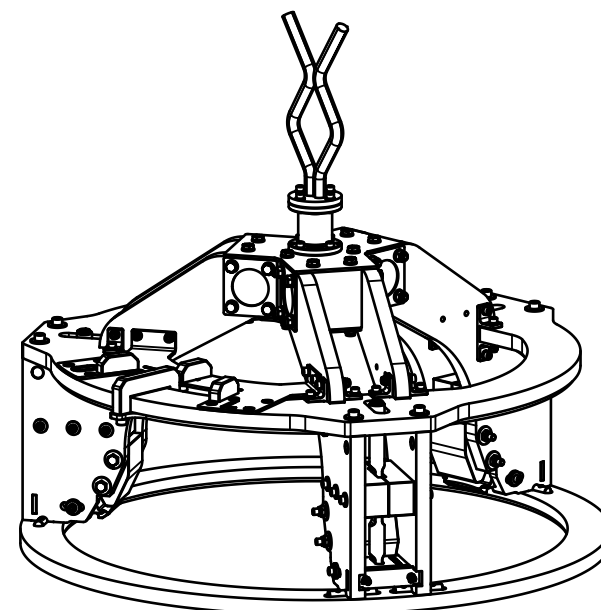
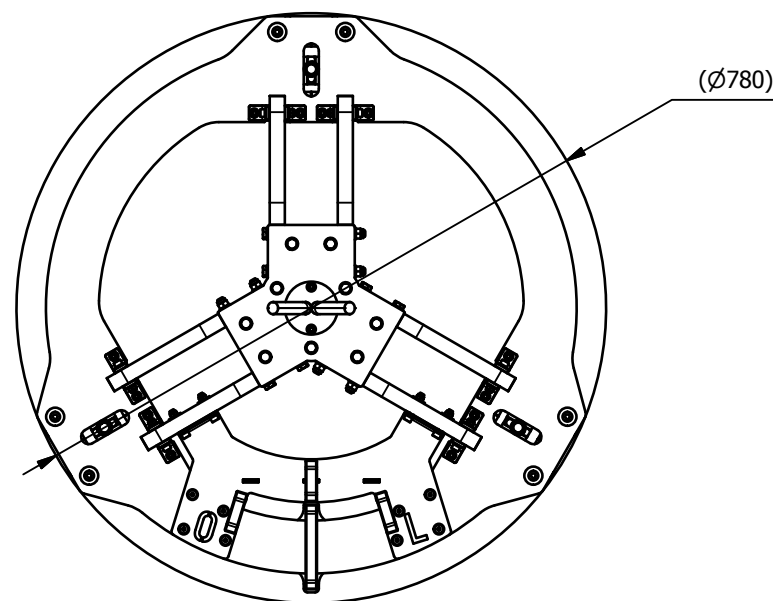
SHEET SIZE: A3
DRAWING NO.: 7166-002

SHEET NO.: 2 OF 4
LATEST REV.: 02

SCALE: 1 : 10



B - AX CONFIGURATION
(1 : 2)



ISOMETRIC VIEW - AX CONFIGURATION
(1 : 10)

WEIGHT:	
IN AIR:	34 kg
IN WATER:	16.8 kg
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN MILLIMETRES	
TOLERANCES: LINEAR: ISO 2768-1 ANGULAR: ISO 2768-1 EDGES: ISO 2768-1	
REMOVE ALL BURRS BREAK ALL SHARP EDGES	
FIRST ANGLE PROJECTION	



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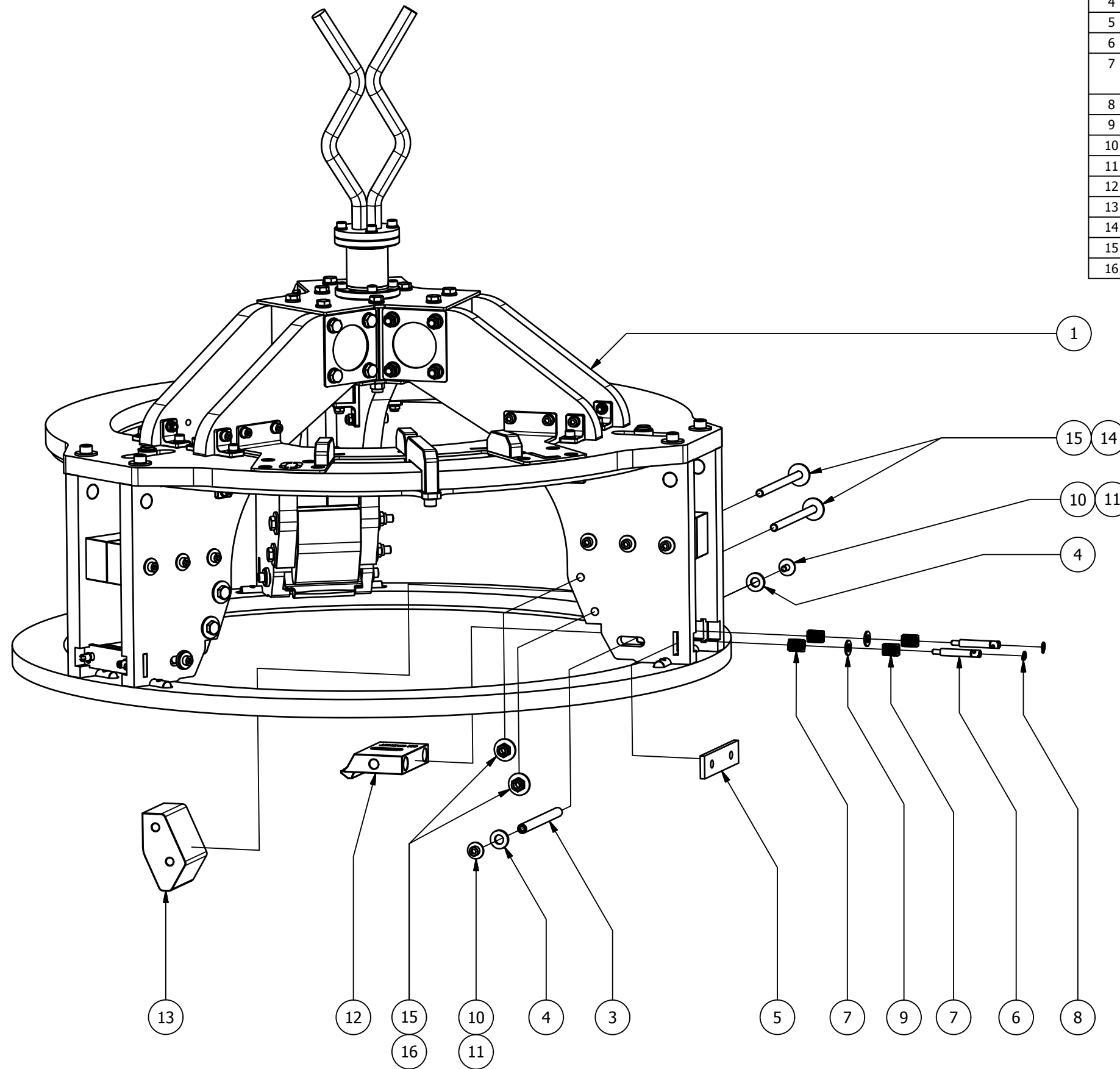
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DRAWING NO.:	7166-002	SCALE:	1 : 10
		LATEST REV.:	02

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3	3	7166-122	Bronze, AM7	0.06 kg	
4	6	7166-119	PTFE	0 kg	
5	3	7166-110	Stainless Steel, AISI 316L	0.11 kg	
6	6	7166-109	Stainless Steel, AISI 316L	0.02 kg	
7	12	6989	Stainless Spring Steel, EN 10270-3-1.4310	0 kg	Wave Spring, Ø12.7 x 17
8	6	DIN 471 - 7 x 0.8	Stainless Steel	0 kg	Spring Retaining Ring
9	6	ISO 7089 - 8	A4-80	0 kg	Plain washers - Normal series
10	6	ISO 7093 A - ST 6	A4-80	0 kg	Plain washers - Large series
11	6	ISO 4762 - M6 x 12	A4-80	0.01 kg	Hexagon Socket Head Cap Screw
12	3	7166-130	Bronze, AM1	0.85 kg	
13	3	7166-111	PEHD 1000 (black)	0.18 kg	
14	6	ISO 4014 - M8 x 80	A4-80	0.06 kg	Hexagon head bolt
15	12	ISO 7093 A - ST 8	A4-80	0.01 kg	Plain washers - Large series
16	6	ISO 7042 - M8	A4-80	0.01 kg	Hex nut with nylon insert



EXPLODED VIEW - AX CONFIGURATION
(1 : 5)

WEIGHT:
IN AIR: 34 kg
IN WATER: 16.8 kg

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE
IN MILLIMETRES

TOLERANCES:
LINEAR: ISO 2768-1
ANGULAR: ISO 2768-1
EDGES: ISO 2768-1

REMOVE ALL BURRS
BREAK ALL SHARP EDGES

FIRST ANGLE
PROJECTION



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PROJECT TITLE:

P7166

DRAWING TITLE:

SHEET SIZE: A3

SHEET NO.: 4 OF 4

SCALE: 1 : 10

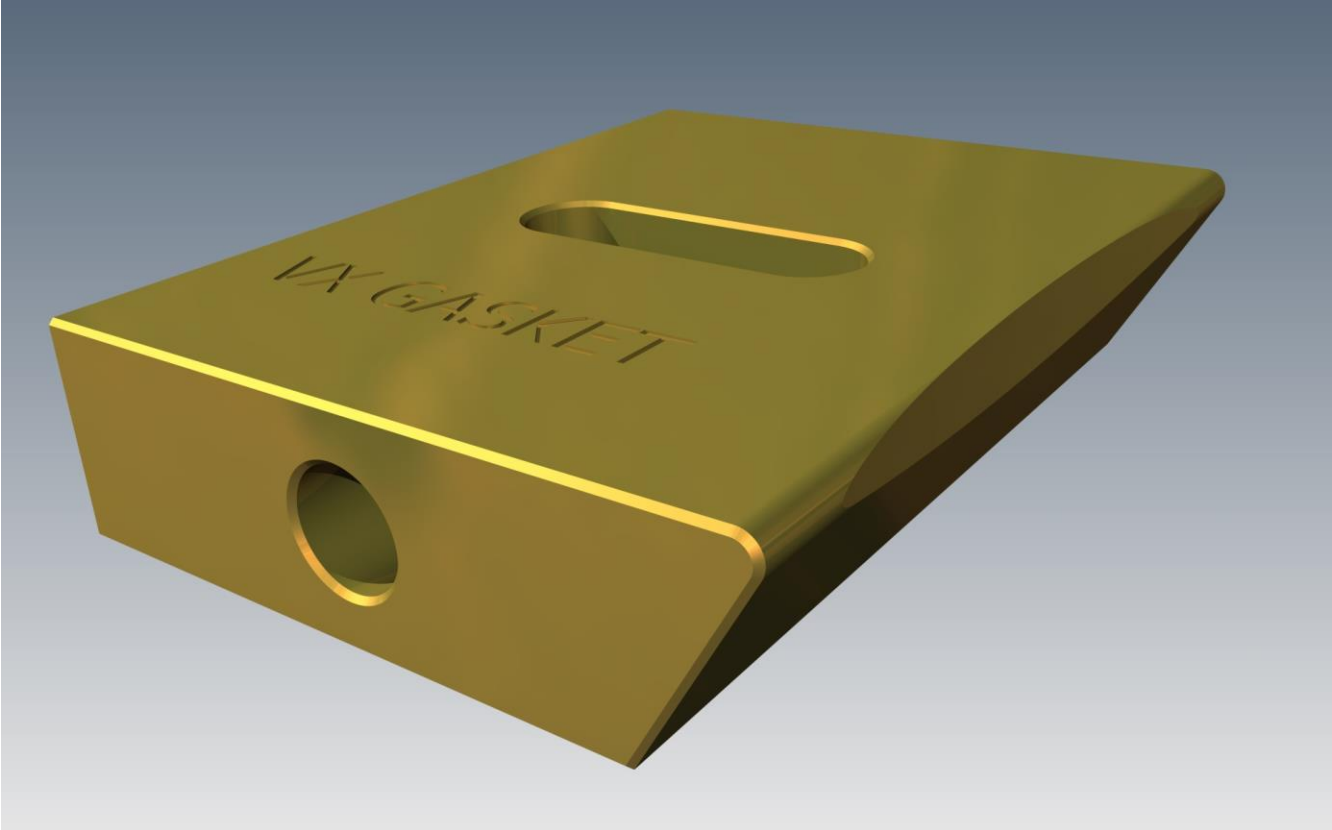
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LATEST REV.: 02

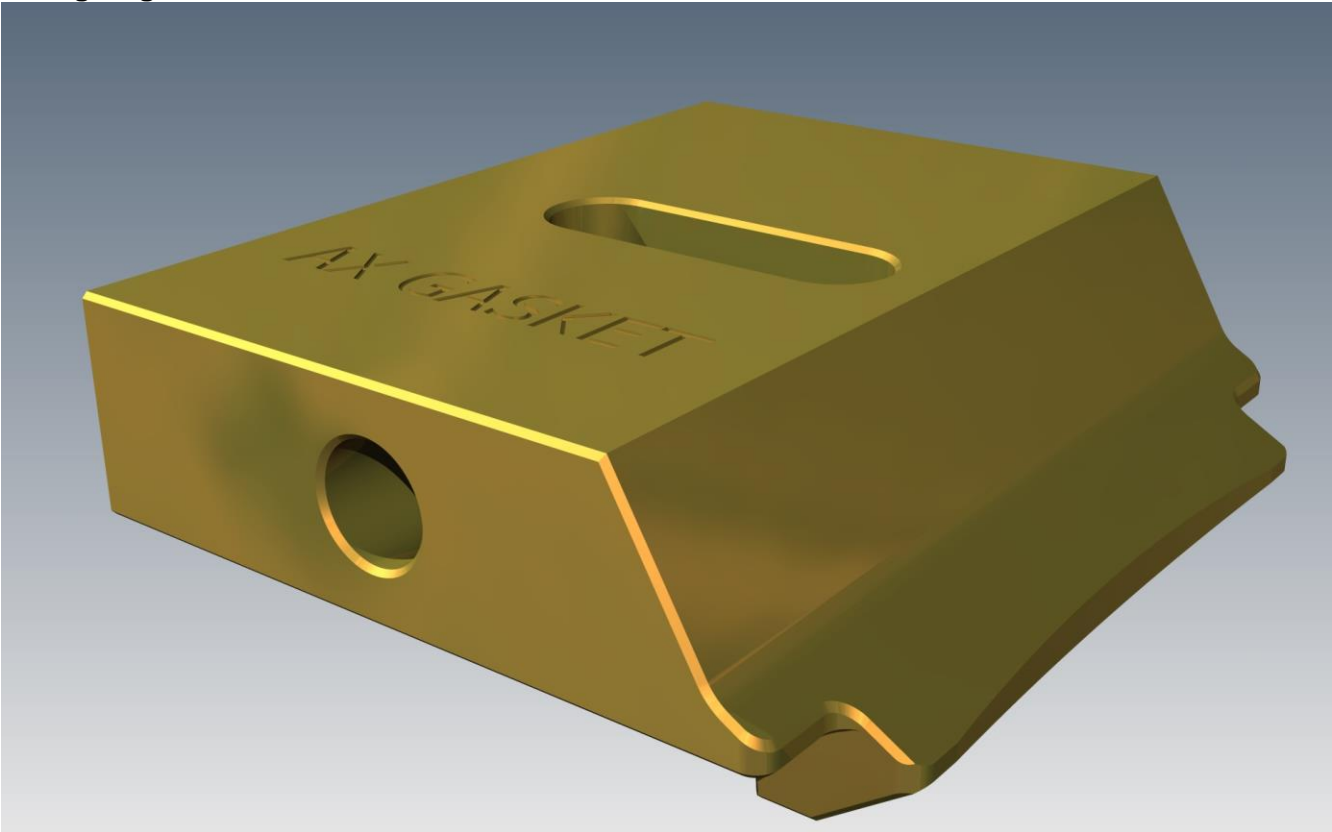
Appendix B

Illustrations of the two different types of lifting dogs

Lifting Dog for VX Gasket:



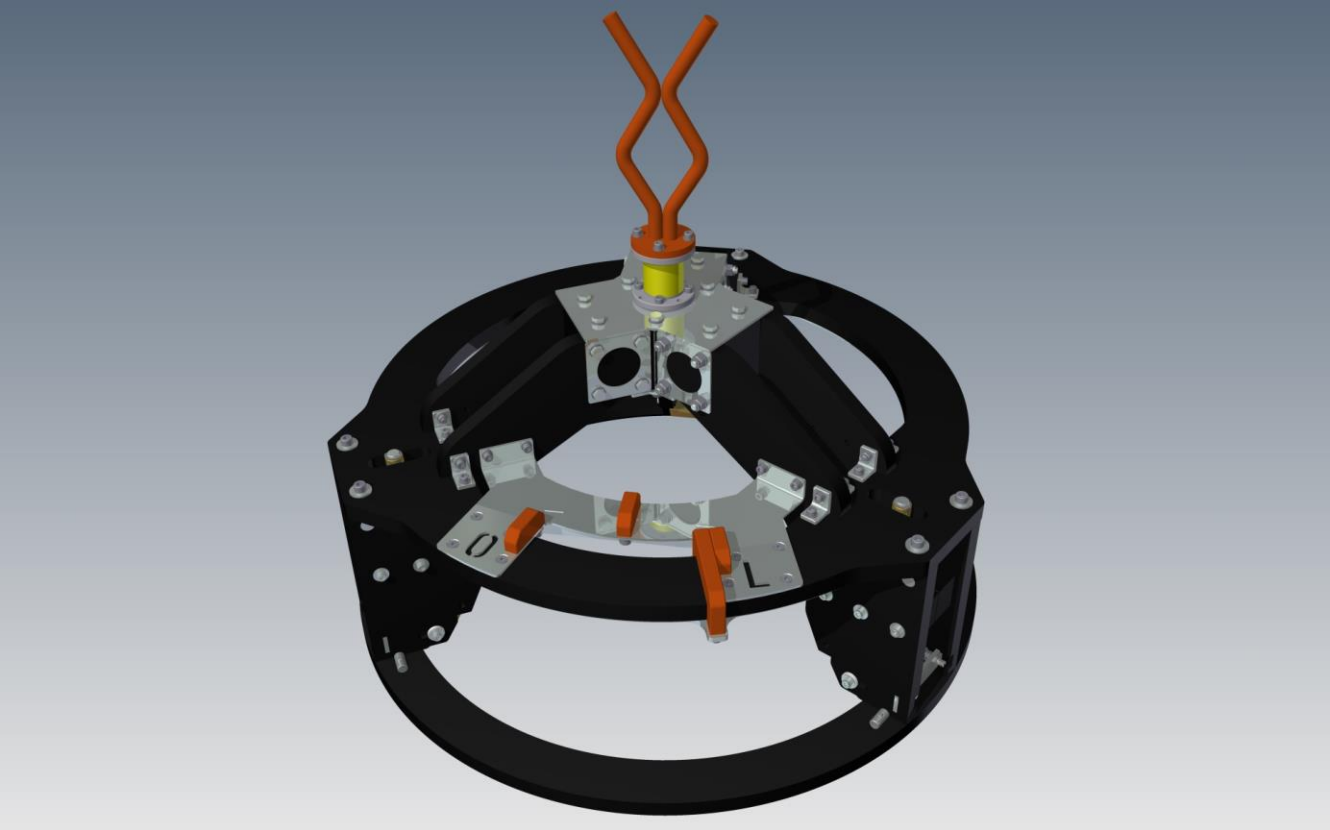
Appendix B
Lifting Dog for AX Gasket:



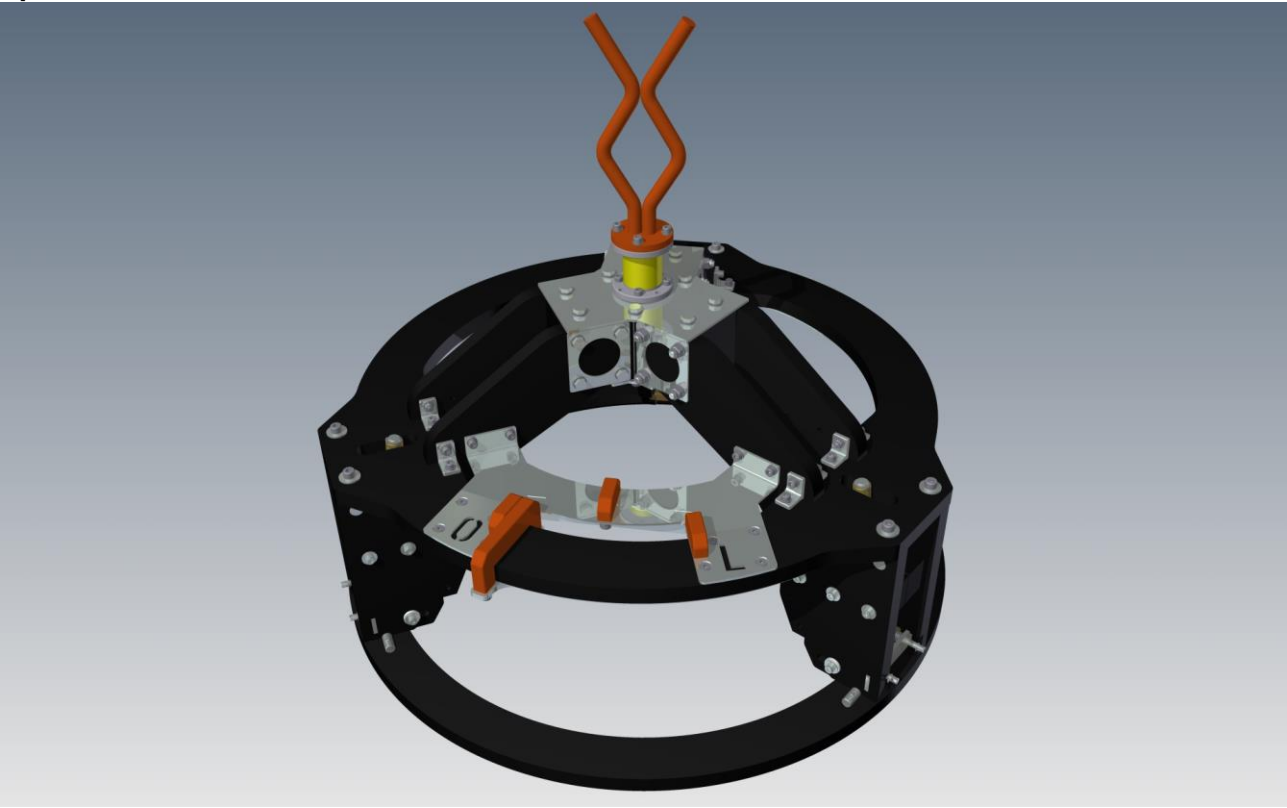
Appendix C

Illustrations showing the Locked, Open and Neutral positions of the VX/AX Gasket Tool

Locked Position:



Appendix C
Open Position:



Neutral Position:

