

# USER MANUAL FOR SUBSEA AX-VX CLEANING TOOL

**Document title** : *UMA-7144-001 Subsea AX-VX Cleaning Tool*  
**IKM TECHNOLOGY AS ref.** : *P7144*  
**Customer ref.** : *Subsea Tool*



**IKM Technology AS**

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<b>Author:</b>	Gabrielsen Trine (Technique)	<b>Owner:</b>	IKM Administrator	
<b>Approved by:</b>	Reinsnos Jostein (Technique)	<b>Company:</b>	IKM Technique AS	

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## 1 GENERAL INFORMATION

This manual is a user manual for the IKM Technology 18-3/4" Cleaning tool system.

The Cleaning Tool is designed for cleaning 18 3/4" AX / VX Wellhead seal surfaces. Designed for operations with and without tubing hanger installed.

The Cleaning Tool consists of a main frame with a hydraulic driven cleaning disk.

Handling of the Cleaning tool is designed for a ROV equipped with a 7 function manipulator, typical Schilling T4. The frame is not certified for lift by wire from surface.

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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

<b>Doc nr</b>	<b>Description</b>	<b>Rev.</b>	<b>Issued</b>	<b>Can be found</b>
7144-001	Drawing of AX-VX Cleaning Tool	03	17.03.15	Appendix A

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## 2 TECHNICAL SPESIFICATION

The Cleaning tool is designed to be used on an 18-3/4" Wellhead with or without tubing hanger installed.

Hydraulic supply and control of the Cleaning Tool is by means of and through the ROV system. When hydraulic system pressure is sullied to the hydraulic motor, the cleaning disk will start to turn.

The Cleaning tool is also fitted with an option to connect an acid injecting system to the Cleaning Tool.

### **Weight:**

In Air            58 kg  
 In Water        35 kg

### **Maximum dimensions:**

Width            847 mm  
 Height          816 mm (w/ fishtale handle)

### **Hydraulic:**

Working pressure 97 bar (103 max).  
 Flow: 7 LPM.

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### **3 SAFETY**

#### **3.1 General - Operations**

Only authorised people and qualified personnel should work on the system, 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 – Hydraulic**

Do not work on pressurised systems. Hydraulic systems contain a large amount of stored energy when pressurised, therefore the system (including any accumulators) should be de-pressurised, and the power pack switched off, prior to working on the system. Exceptions to this would be system adjustments to components requiring the presence of pressure and/or flow.

Any personnel authorised to work on the system must have a complete understanding of the operation of the hydraulic system, so that they will be aware of any system liable to remain pressurised or hazardous in any other way. Ensure that all personnel are clear of any mechanical/hydraulic system likely to move if pressure to system actuators is released or applied.

Do not attempt to tighten any leaking fittings whilst under pressure. A hose/fitting rupture could result, leading to injury from flying components and/or oil jets.

Regularly inspect fittings and pipe-work for mechanical damage. If any such damage is found, the item must be repaired or replaced as necessary before pressure is applied to the system. Do not allow damaged fittings to remain in service.

Take care when inspecting, commissioning, repairing or maintaining the system to avoid jets of oil issuing from open orifices; pipe ends etc. if pressure is applied. Particular care should be taken to protect the eyes.

Hydraulic components may be heavy and slippery when covered in oil. Ensure that adequate protective clothing and footwear is used.

Any moving component should be treated with caution when the system is pressurised during operation, and especially during on-deck testing and repair. Keep clear of all moving components, and take all necessary precautions to avoid injury when working on these systems by preventing movement of any components likely to cause injury.

#### **3.3 General – Mechanical**

Beware of and keep clear of all moving components. Do not work on the system whilst power is applied, or if there is any potential for components to move.

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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 Cleaning 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 all parts on equipment list is present
- Check hydraulic hoses, bolts, etc.
- Direction of rotation to be clockwise.
- Check that the 3M cleaning cloths are in place and in good shape.
- Connect the hydraulic hoses to the ROV, check for correct direction of rotation.
- Connect the acid hose if this shall be used (not part of Cleaning Tool)

### 4.2 Step by Step Procedure

#### General

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

#### Operation

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

- Maneuver ROV to worksite
- Stabilize ROV at worksite and in good position for commencing work
- Verify visual by means of ROV camera that the Cleaning tool is in position.
- Lower the Cleaning tool over the Wellhead, until the frame is positioned on top of the Wellhead.
- If installed and required to be used, start the acid pump and verify acid flow..
- When positioned, start the hydraulic motor.
- Run the cleaning tool as required
- Inspect after cleaning.
- Restart cleaning if inspection does not give acceptable results.

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## 5 MAINTENANCE

### After use:

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

### General:

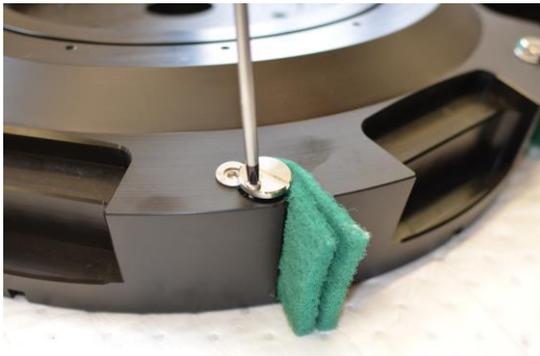
Maintenance of the Cleaning tool is limited to flushing hydraulic circuits with clean oil after use and external corrosion protection.

Hoses and fitting must be carefully inspected prior to use and after operations. Cut or sharp bends indicates that the hoses should be replaced.

Check the cleaning disc and that the 3M cleaning cloths are in place and in good shape.

### 5.1 Step-by-step changing brush.

- Remove screw as shown on picture below.



- Use a flat screwdriver to lift up the brush holder.



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- The brush is now ready to be lifted up.



- Picture shows Cleaning Cloth wrapped around bolt.



**For installation of the brush, reverse the operation.**

- Turn the main screw clockwise until the small screw hits the bore in the cleaning disc.

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## 6 SPARE PART LIST

- 3M cleaning cloths.
- Hydraulic hoses and connections.
- Nuts and bolts.
- Motor.
- Cleaning disc.

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## 7 REVISION CHANGES

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

## 8 CONTACT INFORMATION

All enquiries relating to the tooling should be addressed to:

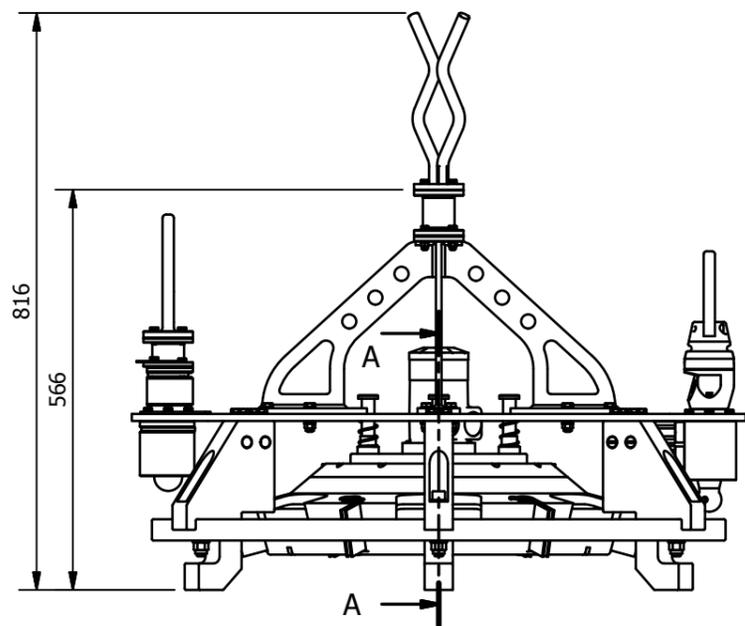
IKM Technology AS  
 Nordlysveien 7,  
 N-4340 Bryne  
 Norway

Phone, 24/7 : +47 51 80 05 20  
 Mail : IKMtechnology@IKM.no

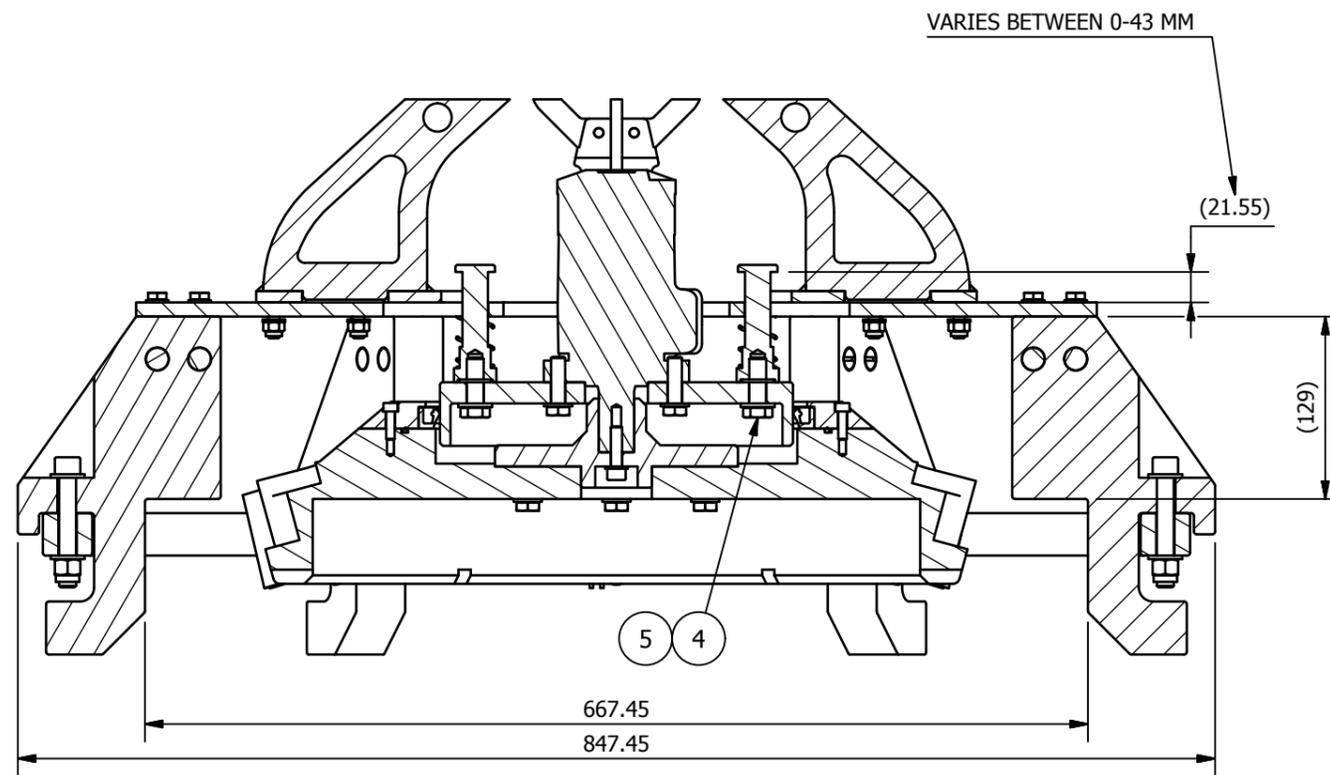
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## 9 APPENDIX

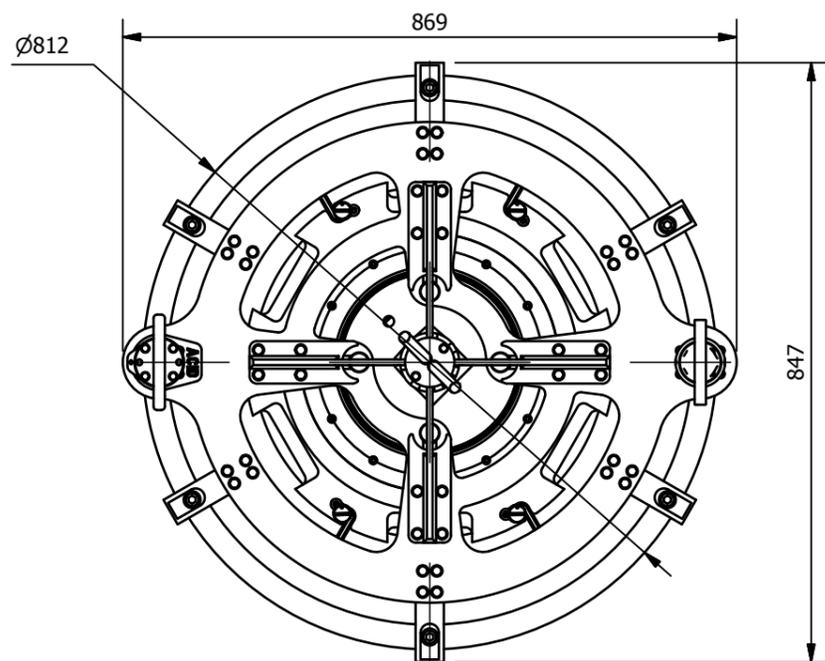
	<b>Doc number</b>	<b>Description</b>	<b>Rev</b>
<i>Appendix A</i>	<i>7144-001</i>	<i>Drawings of AX-VX Cleaning Tool</i>	<i>03</i>
<i>Appendix B</i>			
<i>Appendix C</i>			
<i>Appendix D</i>			
<i>Appendix E</i>			



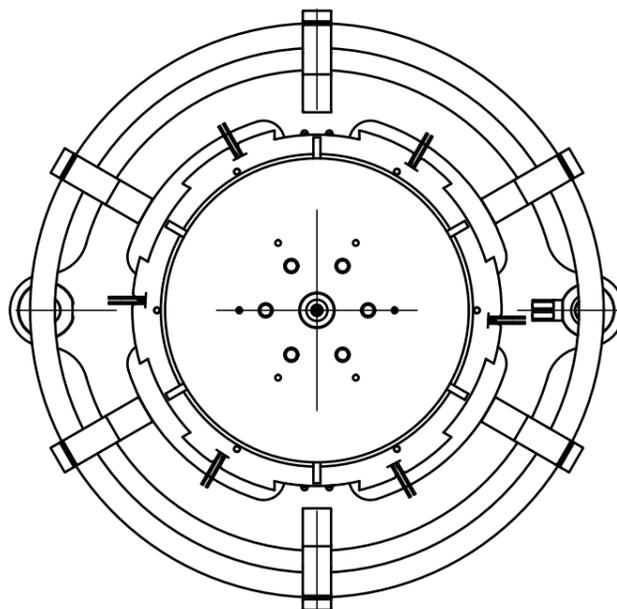
FRONT VIEW



A-A  
(1:5)



TOP VIEW



B

03	17.03.2015	RE-ISSUED FOR CONSTRUCTION	AH	RH	AH
02	16.09.2013	AS BUILT	JKK		
01	12.07.2013	FOR CONSTRUCTION	JKK	EN	JKK
REV	DATE	DESCRIPTION	BY	CHKD	APPD

WEIGHT:  
IN AIR: 58 kg  
IN WATER: 35 kg

UNLESS OTHERWISE SPECIFIED:  
ALL DIMENSIONS ARE  
IN MILLIMETRES

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

REMOVE ALL BURRS  
BREAK ALL SHARP EDGES

FIRST ANGLE  
PROJECTION



**IKM TECHNIQUE AS**

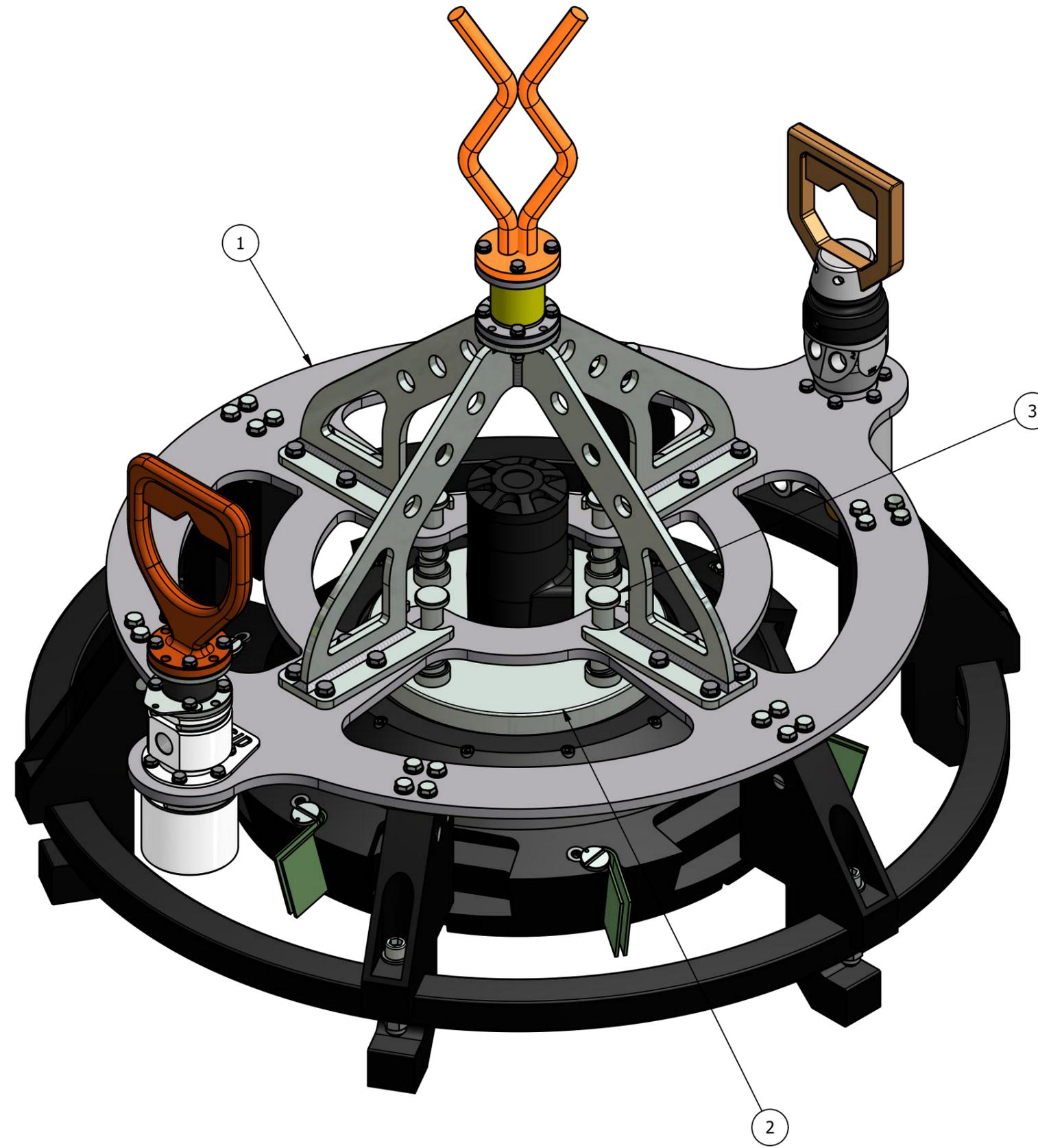
Tomeroseveien 12, 4315 SANDNES  
Tel.: 51 80 05 20  
E-mail: ikmtechnique@ikm.no  
Web: www.ikm.no

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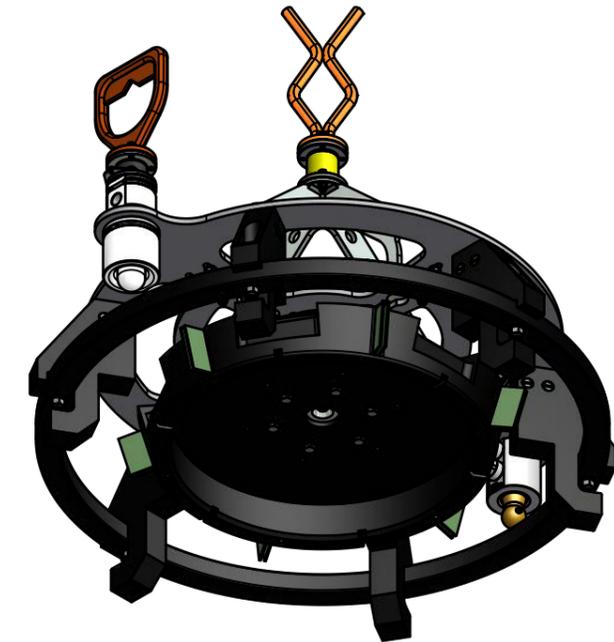
PROJECT TITLE:  
**P7144**  
DRAWING TITLE: **18-3/4" CLEANING TOOL**

SHEET SIZE: **A3** SHEET NO.: **1 OF 2** SCALE: **1:10**  
DRAWING NO.: **7144-001** LATEST REV.: **03**

PARTS LIST					
ITEM	QTY	PART NUMBER	MATERIAL	MASS	DESCRIPTION
1	1	7144-002	SEE DRAWING 7144-002	26.36 kg	
2	1	7144-003	SEE DRAWING 7144-003	30.56 kg	
3	4	7144-007	SEE DRAWING 7144-007	0.22 kg	
4	4	ISO 4017 - M12 x 35	Stainless Steel, 440C	0.05 kg	Hexagon head screws
5	4	ISO 7089 - 12 - 140 HV	Stainless Steel	0.01 kg	Plain washers - Normal series - Product grade A



ISOMETRIC VIEW  
( 1 : 4 )



BOTTOM ISOMETRIC VIEW

WEIGHT: IN AIR: 58 kg IN WATER: 35 kg		<b>IKM TECHNIQUE AS</b> Tomeroseveien 12, 4315 SANDNES Tel.: 51 80 05 20 E-mail: ikmtechnique@ikm.no Web: www.ikm.no
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN MILLIMETRES		
TOLERANCES: LINEAR: ISO 2768-1 m ANGULAR: ISO 2768-1 m EDGES: ISO 2768-1 m	<small>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH IS THE PROPERTY OF IKM TECHNIQUE AS. NONE OF THE INFORMATION CONTAINED HEREIN MAY BE DISCLOSED, REPRODUCED, DISTRIBUTED OR USED WITHOUT WRITTEN CONSENT FROM IKM TECHNIQUE AS.</small>	
REMOVE ALL BURRS BREAK ALL SHARP EDGES	PROJECT TITLE: <b>P7144</b>	
FIRST ANGLE PROJECTION 	DRAWING TITLE: <b>18-3/4" CLEANING TOOL</b>	
	SHEET SIZE: <b>A3</b>	SHEET NO.: <b>2 OF 2</b>
	DRAWING NO.: <b>7144-001</b>	SCALE: <b>1:10</b>
		LATEST REV.: <b>03</b>