# USER MANUAL FOR SUBSEA DIAMOND WIRE SAW 0-320mm

| | | |
|---|---|---|
| **Document title** | : | *UMA-7644-001/005 Subsea Diamond Wire Saw* |
| **IKM TECHNOLOGY AS ref.** | : | *P7644* |
| **Customer ref.** | : | *Subsea Tool* |

IKM Technology AS

| Rev. | Date | Reason For Issue | Prepared | Checked | Approved |
|---|---|---|---|---|---|
| 01 | 13.05.2014 | Issued for use | JHR | KOS | EN |
| 02 | 16.06.2016 | Update | KF | EN | KG |
| 03 | 03.09.2020 | Re-issued for Use | OG | TSH | OG |
| | | | | | |

# 1 GENERAL INFORMATION

This manual is a user manual for the IKM Technology 190mm and 320mm Diamond Wire Saw (DWS).

The DWS system consists of a hydraulic motor, drive system, chassis and a Diamond wire.

The DWS is designed to be handled by an ROV, with typical a Schilling 7 function manipulator.

## 1.1 Abbreviations

| | |
|---|---|
| BSP | British standard pipe |
| CCM | Cubic centimetre |
| CCW | Counter clockwise |
| DWS | Diamond Wire Saw |
| HPU | Hydraulic Power Unit |
| JIC | Joint Industry Council |
| kg | Kilo gram |
| LPM | Litre per minute |
| mm | Milli meter |
| Nm | Newton meter |
| ROV | Remotely Operated Vehicle |

## 1.2 References

| Doc no. | Description | Rev. | Issued | Can be found |
|---|---|---|---|---|
| 7644-001 | Drawing Subsea Diamond Wire Saw 190mm | 04 | 06.11.15 | Appendix A |
| 7644-005 | Drawing Subsea Diamond Wire Saw 320mm | 05 | 06.11.15 | Appendix B |
| IKM-1044812 | Feed Clamp for 7644-001 | 01 | 04.11.17 | Appendix C |
| IKM-1044551 | Feed Clamp for 7644-005 | 01 | 11.07.17 | Appendix D |

## 2 TECHNICAL SPECIFICATION

The DWS is designed for use by ROV and for various cutting where a diamond wire surpasses the use of conventional rotating blades.

Hydraulic supply is by means of and controlled by ROV.

When hydraulic system pressure is directed into the motor, this will make the motor rotate and the system will make the diamond wire following the direction of the hydraulic flow.

The direction of the diamond wire must be the same as the marking on the tool.

The system is delivered in transport boxes and ROV handles to be attached at site. Attached drawings in **Appendix A, B, C and D** to be used for guidance for assembly.

Main components for DWS are frame/chassis, motor, wire wheels and diamond wire.

**Weight:**

| DWS: | In air: | In water: |
|---|---|---|
| 7644-001 | 33 kg | 23 kg |
| 7644-005 | 42 kg | 27 kg |

**Maximum dimensions:**

| DWS: | Length: | Width: | Height: |
|---|---|---|---|
| 7644-001 | 716 mm | 532 mm | 293 mm |
| 7644-005 | 954 mm | 716 mm | 293 mm |

**Hydraulic/Motor:**
Motor: 46cc
Working pressure 97 bar (103 max).
Flow: 45 LPM.
RPM: 969 RPM
Hydr. Connections: JIC ¾ -16” Male. Connections are directly on the motor.

The feed is controlled by the manipulator.

As an option, the tool can be fitted with clamp to secure the DWS against the cut object and the clamp will have a feed-function in form of a cylinder.
The feed is controlled in small steps by the operator to apply a firm push/engagement of the running wire against the cut object.

IKM-1044812 is the clamp for DWS 7644-001 (Ø185)

IKM-1044551 is the clamp for DWS 7644-005 (Ø320)

# 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

Ensure that all the relevant guards are in place before applying power to the system. The power must be turned off and any potential movement prevented before removal of any guard.

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.

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.

### 3.4 Special note to the DWS

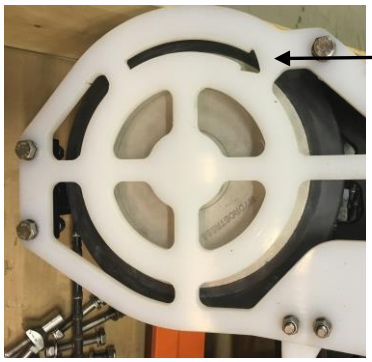
The DWS can cut through all possible items if started in vain. It is utterly important to keep the tool disconnected until it is intended to be used and also keep safe distance during testing.
Rotating Machinery - Caution when operating and testing the tool as the DWS may damage personnel and equipment if it is not secured properly. Note! that it might cut through a human leg in seconds.
Keep Clear from the diamond wire as it may grab onto clothes etc. and thereby carry bodies until the jam.
High pressure - Use safety glasses and protect skin from hydraulic oil if any leakage should occur.

# 4 OPERATIONAL DESCRIPTION

The following description is a generic description of preparation and use of the DWS. 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

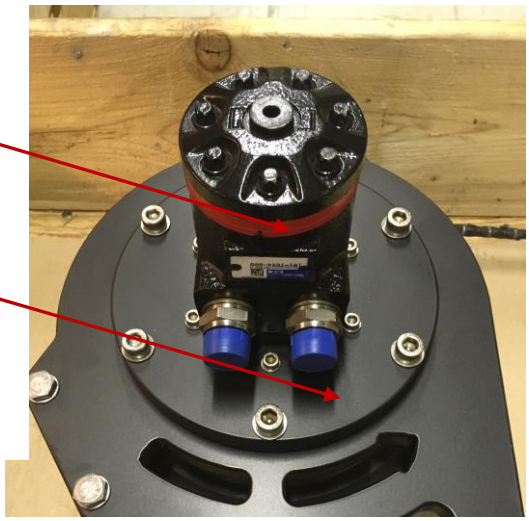
- Unpack all parts and check for transport damages
- Verify all parts on equipment list is present
- Adjust the tension of the wire to suit the requirements
- Install ROV handle in the required position
- Connect DWS hydraulic hoses as appropriate. The direction of the wire must follows the rotation marking on the tool.



7644-001 – Rotation marking

Hydraulic connections directly on the motor

7644-005 – Rotation marking



- Verify that the ROV hydraulic supply is max 103bar and optimum flow 45 liter/minute
- Connect motor hydraulic hoses to the selected ROV valve.
- Perform function test by open valve. Note direction of rotation
- Secure DWS in manipulator claw or store in ROV Tool tray
- Commence operation as per operators' procedures

- If Clamp assembly is used with the DWS tool; connect clamp and feed function cylinders to the ROV. Recommended pressure is 180-200 Bar, only low flow is required.
- Function test and note direction of functions. (Close/open – feed/retract).

## 4.2 Step by Step Procedure

**General**
Perform SJA/Toolbox talk for the operation as required by client/ROV contractor's 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 DWS is free to rotate
- Place the DWS over/on the object to be cut and start operation. Use low feed in the beginning of the cut to see how the tool reacts to current material being cut. With close inspection by the ROV camera, operators should verify that grains/"dust" from the cut object is present when wire is running and sufficient pressure, (feed force), is applied against the object.
- **Operating with grab/feed clamp**:
- Retract Feed function fully before engaging tool against object.
- Place clamp in position to grab and lock around the cut object. Keep clamp close function activated during the cutting process.
- Activate feed function to get diamond wire near the cut object. Start rotation of wire.
- With diamond wire spinning; activate feed function in small increments to engage and apply enough force against cut object to see cut debris escape from the cut object. A good indicator of sufficient feed force is to see the wire rotation slow down some from free spinning – but not stalling rotation.
- Maintain feed/pressure against cut object throughout the cut by small increments on the feed function. (Look for cut debris escaping + watch speed of diamond wire).
- When cut is performed, the DWS should preferable be rotating until feed function is completely retracted.

## 5 MAINTENANCE

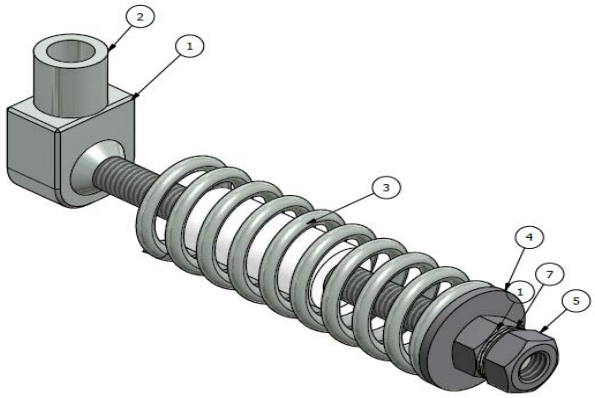
Maintenance of the DWS is limited to flushing with fresh water and oil after use for corrosion protection.
However, if multiple cuts are performed and wires are to be replaced;
pump grease in drive- and lead wheels bearings for every second wire change.
For the drive-wheel bearing: remove bleed-plug before filling gear-house with grease.

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

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

Replacement of diamond wire:
Remove plastic covers, release tension on spring (picture). When wire is loose, remove and replace with new wire. **Make sure the orientation of new wire is correct. The diamond wire itself is marked with direction arrows, and these must match the direction marked on DWS tool.** Re-tension spring, ref note 1 on drawings, (appendix A), and attach plastic covers.

| ITEM | QTY | PART NUMBER | MATERIAL | DESCRIPTION | MASS | REV. |
|---|---|---|---|---|---|---|
| 1 | 1 | 7644-009 | Stainless Steel, AISI 316L | TENSION FIXTURE | 0.3 kg | 01 |
| 2 | 1 | 7644-126 | Stainless Steel, AISI 316L | TENSION INSERT SPACER | 0.03 kg | 01 |
| 3 | 1 | 7644-214 | POM-C ( natural / white ) | POM SPRING STOPPER | 0.02 kg | 01 |
| 4 | 1 | DIN 9021 - 13 | Steel, Mild | Washer | 0.02 kg | |
| 5 | 2 | DIN 934 - M12 | Steel, Mild | Hex Nut | 0.02 kg | |
| 6 | 1 | Lesjøfors Tryckfjäder DIN-2098-SS2331-06 - Cat.no 6797 | Stainless Steel, AISI 316L | Tryckfjäder DIN-2098-SS2331-06 - Cat.no: 6797 | 0.16 kg | 01 |
| 7 | 1 | NL12ss | Stainless Steel, AISI 316L | Nord-Lock Washer | 0 kg | 01 |



# 6 SPARE PART LIST

- Diamond wire
- Hydraulic hoses and connections
- Nuts and bolts
- Motor

## 7 REVISION CHANGES

| Revision | Procedure change | Author |
|---|---|---|
| 01 | *Original version* | JHR |
| 02 | *Update* | KF |
| 03 | *Update including Feed Clamp* | OG |
| | | |
| | | |

## 8 CONTACT INFORMATION

All enquiries relating to the tooling should be addressed to: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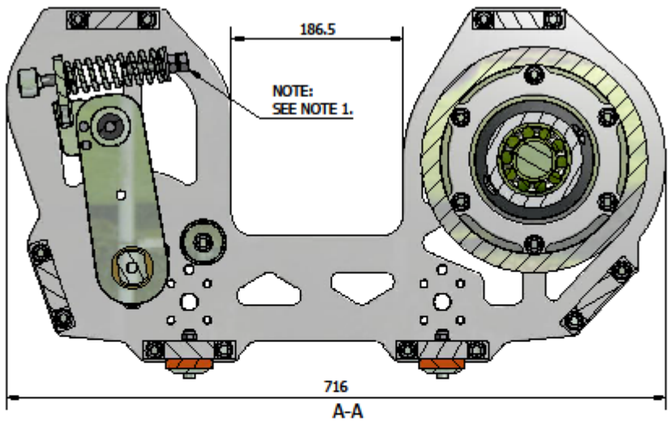
N-4340 Bryne
Norway

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

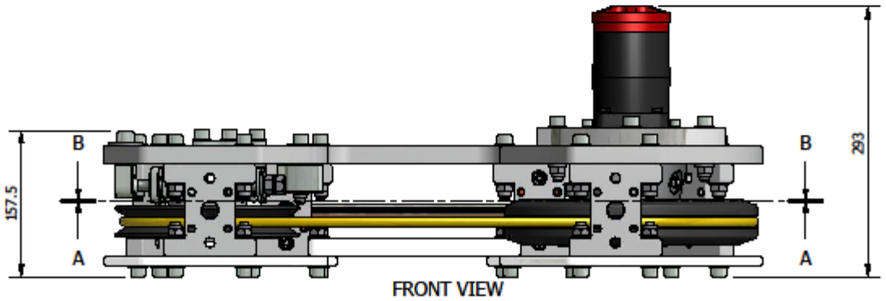
# 9 APPENDIX

| | Doc number | Description | Rev |
|---|---|---|---|
| *Appendix A* | *7644-001* | *Drawings of DWS 185mm* | *04* |
| *Appendix B* | *7644-005* | *Drawings of DWS 320mm* | *05* |
| *Appendix C* | *IKM-1044812* | *Clamp assembly with DWS 185mm* | *01* |
| *Appendix D* | *IKM-1044551* | *Clamp assembly with DWS 320mm* | *01* |
| | | | |
| | | | |
| | | | |

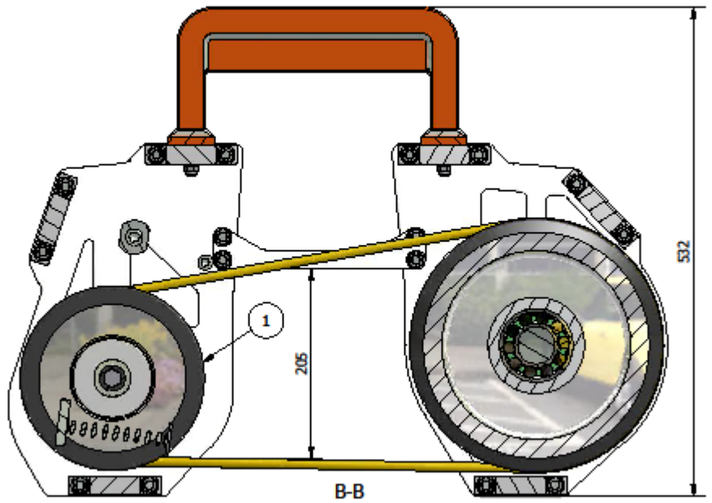
Appendix A



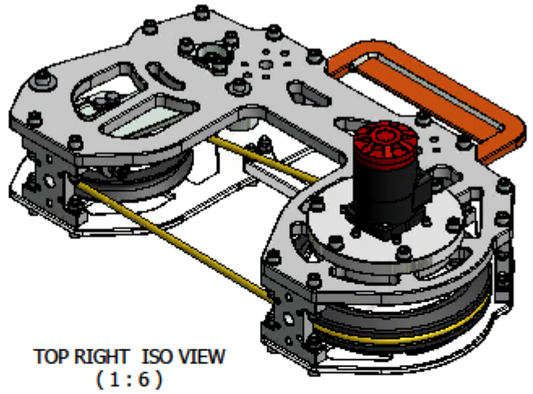

A-A



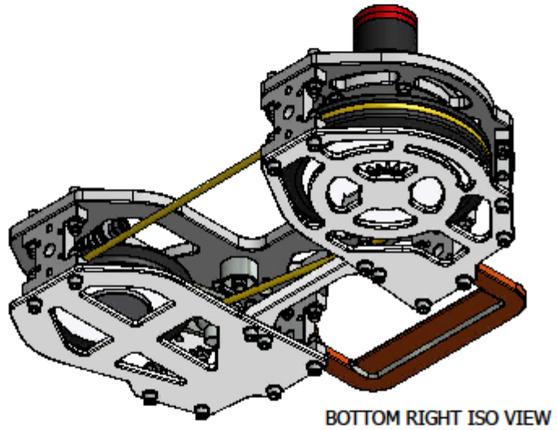

FRONT VIEW




B-B



TOP RIGHT ISO VIEW
( 1 : 6 )



BOTTOM RIGHT ISO VIEW
( 1 : 6 )

NOTE:
1. TIGHTEN SPRING UNTIL WHEEL ( ITEM 1 ) CAN'T INTERFERE WITH CUTTING OBJECT

SPECIFICATION:
1. CUTTING WIDTH: 185 MM
2. CUTTING DEPTH: 205 MM
3. WIRE LENGTH: 1630 MM

4. HYDRAULIC MOTOR WORKING PRESSURE: 97 BAR / 1400 PSI
5. HYDRAULIC MOTOR MAX PRESSURE: 103 BAR / 1500 PSI
6. HYDRAULIC MOTOR FLOW: 45 LPM / 12 GPM
7. HYDRAULIC MOTOR SPEED: 931 RPM
8. HYDRAULIC MOTOR CONNECTION'S: 1/2" BSP

| REV | DATE | DESCRIPTION | BY | CHKD | APPD |
|---|---|---|---|---|---|
| 04 | 06.011.2015 | RE-ISSUED FOR CONSTRUCTION | RH | EN | RH |
| 03 | 10.09.2014 | REVISED | POD | EN | POD |
| 02 | 01.09.2014 | DRAWING REMADE, UPDATE INCLUDE PART CHANGES & ADDITION OF PARTS | JKK | | |
| 01 | 24.02.2014 | For Construction | POD | KJG | POD |

WEIGHT: IN AIR: 33 kg; IN WATER: 22,8 kg
SURFACE AREA: 2026 cm²
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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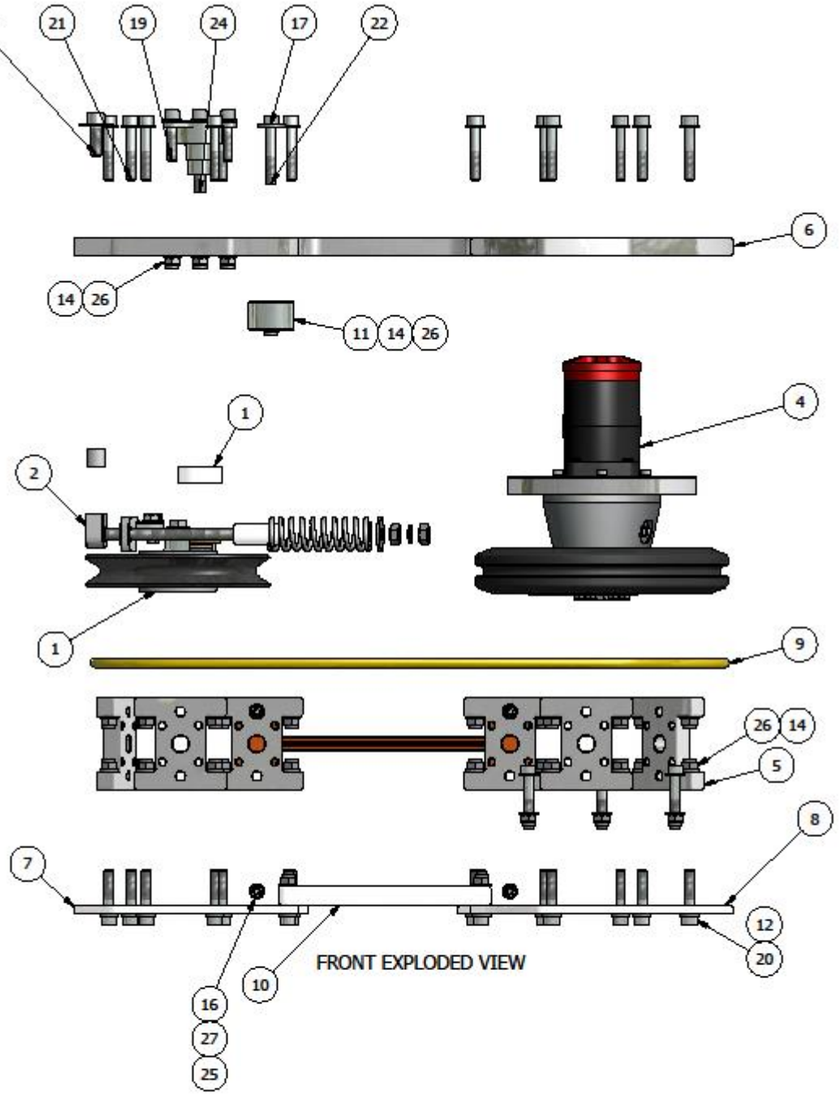
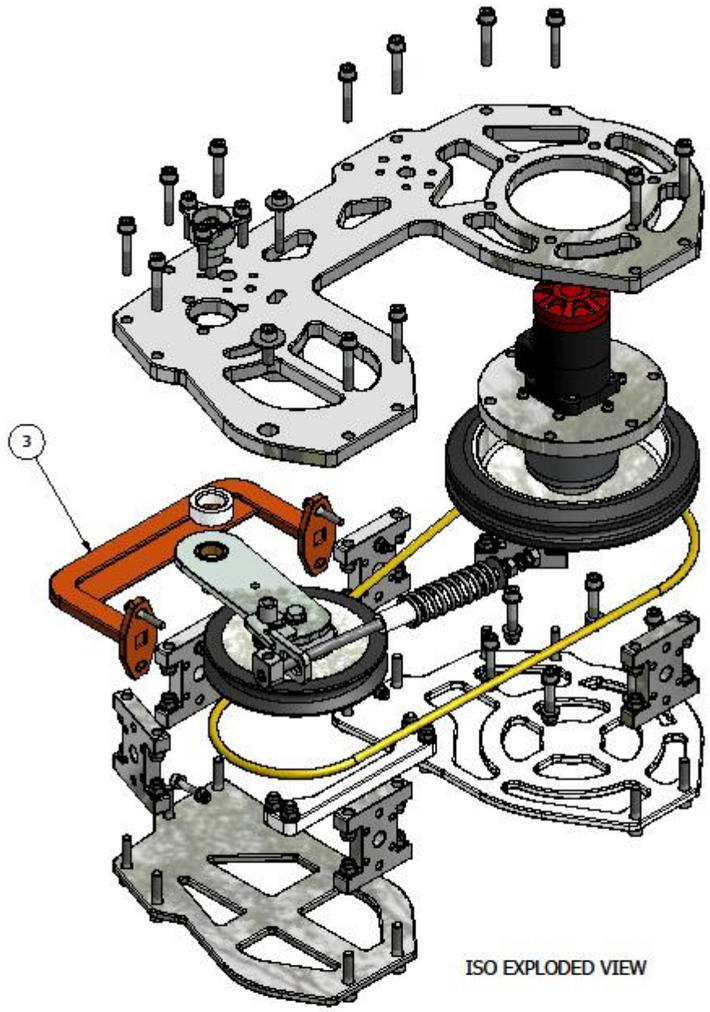
PROJECT TITLE: P7644
DRAWING TITLE: DIAMOND WIRE SAW 0-185MM
SHEET SIZE: A3 | SHEET NO: 1 OF 3 | SCALE: 1 : 5
DRAWING NO: 7644-001 | LATEST REV.: 04

Appendix A




FRONT EXPLODED VIEW




ISO EXPLODED VIEW

| | |
|---|---|
| WEIGHT: IN AIR: | 33 kg |
| IN WATER: | 22,8 kg |
| SURFACE AREA: | 2026 cm² |
| 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 | |

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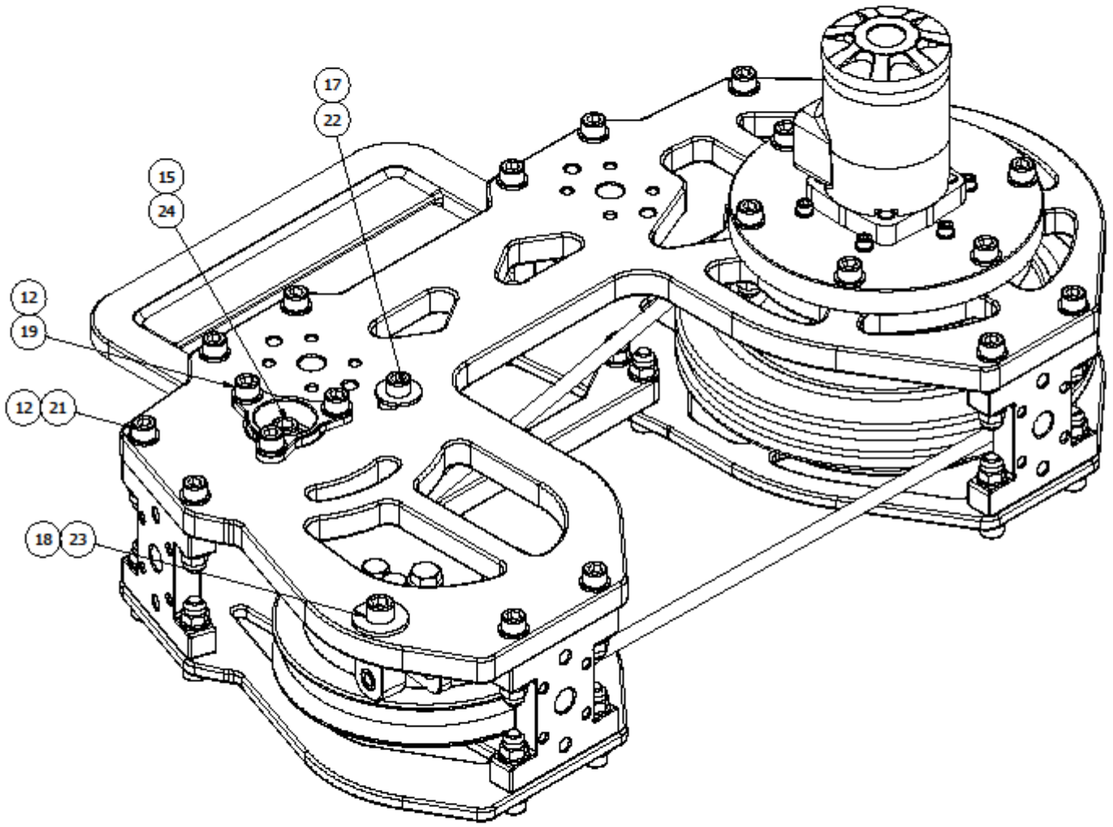
| | | | |
|---|---|---|---|
| PROJECT TITLE: | P7644 | | |
| DRAWING TITLE: | DIAMOND WIRE SAW 0-185MM | | |
| SHEET SIZE: A3 | SHEET NO: 2 OF 3 | SCALE: | 1 : 5 |
| DRAWING NO: 7644-001 | | LATEST REV.: | 04 |

Appendix A




TOP LEFT ISO VIEW
( 1 : 3 )

PARTS LIST

| ITEM | QTY | PART NUMBER | MATERIAL | DESCRIPTION | MASS | REV. |
|---|---|---|---|---|---|---|
| 1 | 1 | 7644-006 | | WHEEL TENSION ARM | 3.08 kg | 01 |
| 2 | 1 | 7644-007 | | | 0.57 kg | 01 |
| 3 | 1 | 7644-008 | Stainless Steel, AISI 316L | ROV HANDLE | 2.89 kg | 02 |
| 4 | 1 | 7644-011 | SEE DRAWING | MOTOR DRIVING UNIT | 13.05 kg | 03 |
| 5 | 6 | 7644-103 | Aluminium, 6082-T6 | SPACER | 0.34 kg | 05 |
| 6 | 1 | 7644-108 | Aluminium, 6082-T6 | MAIN SIDE | 7 kg | 05 |
| 7 | 1 | 7644-109 | PEHD 1000 ( natural / white ) | MOTOR PROTECTION PLATE | 0.57 kg | 04 |
| 8 | 1 | 7644-114 | PEHD 1000 ( natural / white ) | MOTOR PROTECTION PLATE | 0.54 kg | 04 |
| 9 | 1 | 7644-116 | Generic | Diamond Thread | 0.13 kg | |
| 10 | 1 | 7644-118 | PEHD 1000 ( natural / white ) | SAW PLASTIC BACKING | 0.11 kg | 01 |
| 11 | 1 | 7644-366 | Stainless Steel, AISI 316L | ARM STOPPER BLOCK | 0.36 kg | 01 |
| 12 | 37 | DIN 125 - A 10,5 | Stainless Steel | Washer | 0 kg | |
| 13 | 4 | DIN 125 - A 8,4 | Stainless Steel | Washer | 0 kg | |
| 14 | 38 | DIN 125-2 - B 10,5 | Stainless Steel | Washer | 0 kg | |
| 15 | 1 | DIN 125-2 - B 13 | Stainless Steel | Washer | 0.01 kg | |
| 16 | 4 | DIN 125-2 - B 8,4 | Stainless Steel | Washer | 0 kg | |
| 17 | 1 | DIN 9021 - 10,5 | Stainless Steel | Washer | 0.01 kg | |
| 18 | 1 | DIN 9021 - 13 | Stainless Steel | Washer | 0.02 kg | |
| 19 | 3 | ISO 4762 - M10 x 45 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.04 kg | |
| 20 | 16 | ISO 4762 - M10 x 50 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.04 kg | |
| 21 | 18 | ISO 4762 - M10 x 60 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.05 kg | |
| 22 | 1 | ISO 4762 - M10 x 65 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.05 kg | |
| 23 | 1 | ISO 4762 - M12 x 35 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.05 kg | |
| 24 | 1 | ISO 4762 - M12 x 60 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.07 kg | |
| 25 | 4 | ISO 4762 - M8 x 45 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.02 kg | |
| 26 | 38 | ISO 7040 - M10 | Stainless Steel | Hex Nut with Torque Part | 0.01 kg | |
| 27 | 4 | ISO 7040 - M8 | Stainless Steel | Hex Nut with Torque Part | 0.01 kg | |

WEIGHT:
IN AIR: 33 kg
IN WATER: 22,8 kg
SURFACE AREA: 2026 cm²
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

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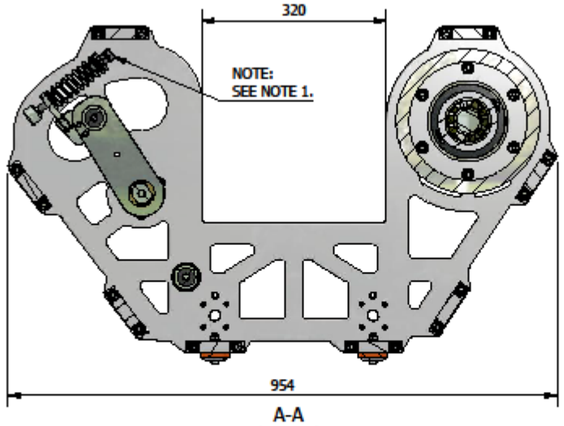
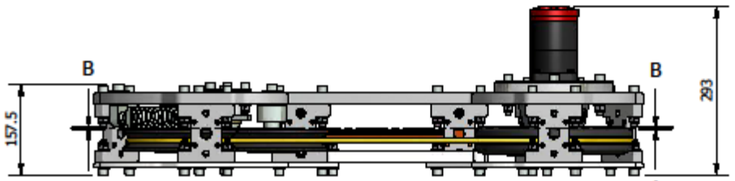
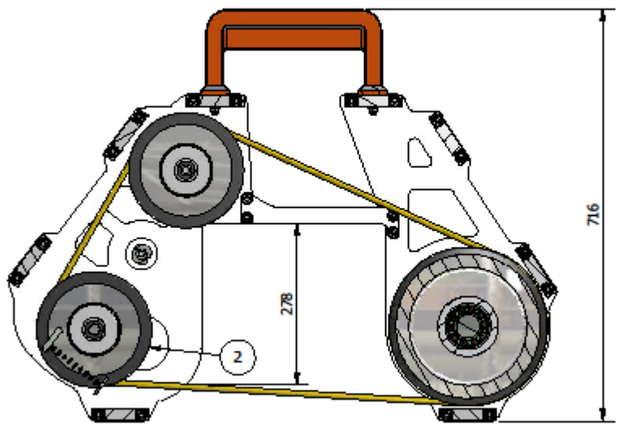
PROJECT TITLE: P7644
DRAWING TITLE: DIAMOND WIRE SAW 0-185MM
SHEET SIZE: A3 | SHEET NO: 3 OF 3 | SCALE: 1 : 5
DRAWING NO: 7644-001 | LATEST REV.: 04



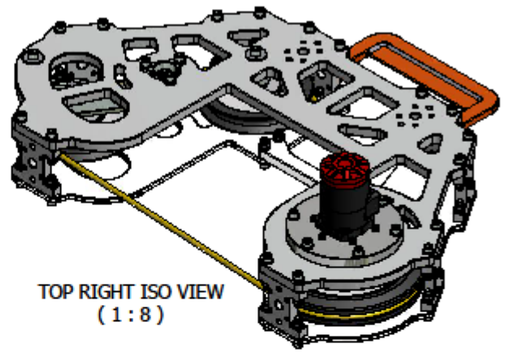

A-A
( 1 : 8 )



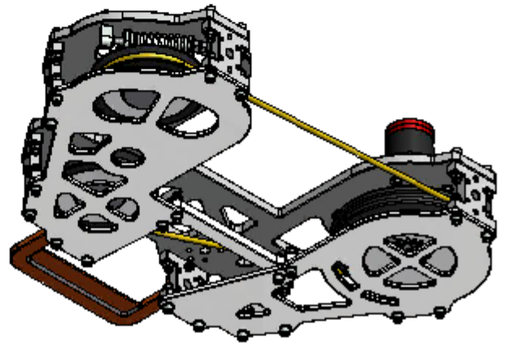

FRONT VIEW
( 1 : 8 )




B-B
( 1 : 8 )



TOP RIGHT ISO VIEW
( 1 : 8 )



BOTTOM LEFT ISO VIEW
( 1 : 8 )

**SPECIFICATION:**
1. CUTTING WITH: 320 MM
2. CUTTING DEPTH: 278 MM
3. WIRE LENGTH: 2212,5 MM

4. HYDRAULIC MOTOR WORKING PRESSURE: 97 BAR / 1400 PSI
5. HYDRAULIC MOTOR MAX PRESSURE: 103 BAR / 1500 PSI
6. HYDRAULIC MOTOR FLOW: 45 LPM / 12 GPM
7. HYDRAULIC MOTOR SPEED: 931 RPM
8. HYDRAULIC MOTOR CONNECTION'S: 1/2" BSP

NOTE:
1. TIGHTEN SPRING UNTIL WHEEL (ITEM 2) CAN'T INTERFERE WITH CUTTING OBJECT

| REV | DATE | DESCRIPTION | BY | CHKD | APPD |
|---|---|---|---|---|---|
| 05 | 06.11.2015 | RE-ISSUED FOR CONSTRUCTION | RH | EN | RH |
| 04 | 15.12.2014 | Revised | POD | | |
| 03 | 14.10.2014 | Revised | POD | KJG | POD |
| 02 | 05.08.2014 | Revision | POD | KJG | POD |
| 01 | 24.02.2014 | For Construction | POD | KJG | POD |

WEIGHT IN AIR: 42 kg
IN WATER: 26,9 kg
SURFACE AREA: 2672 cm²
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**
Torneroseveien 12, 4315 SANDNES
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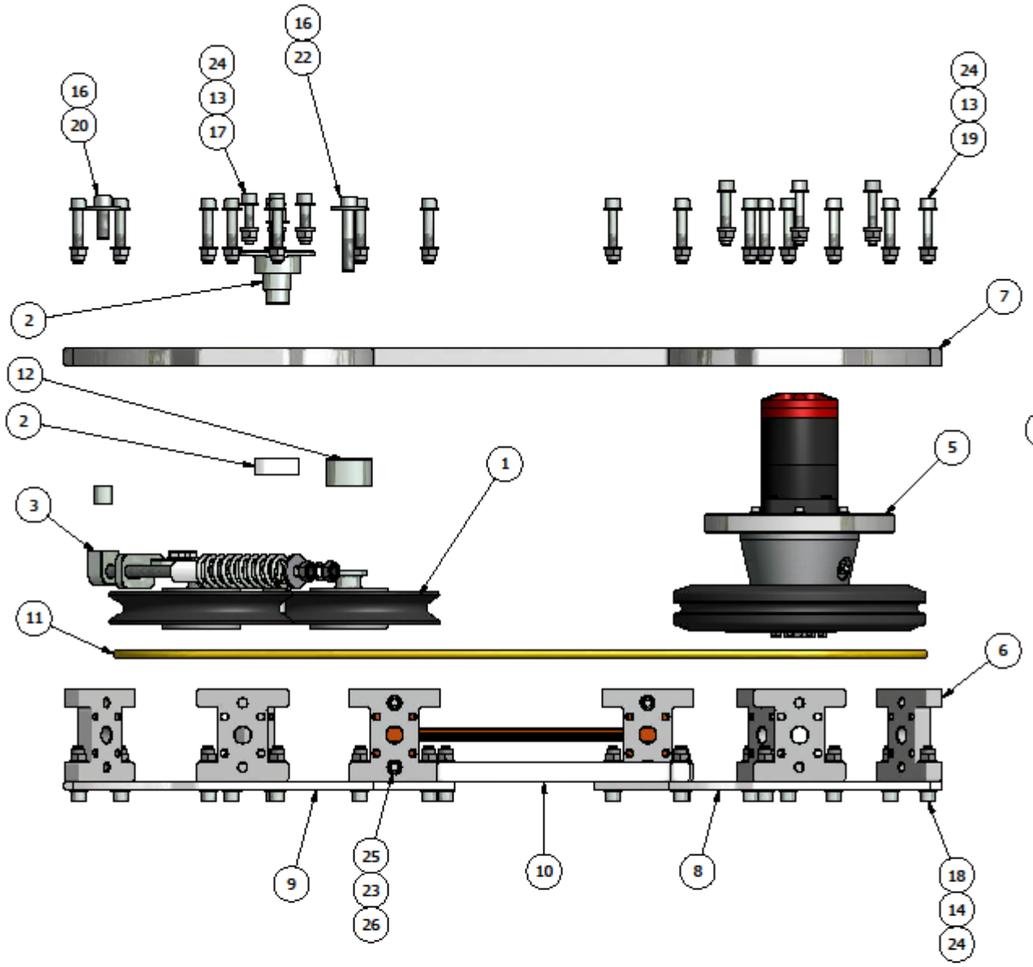
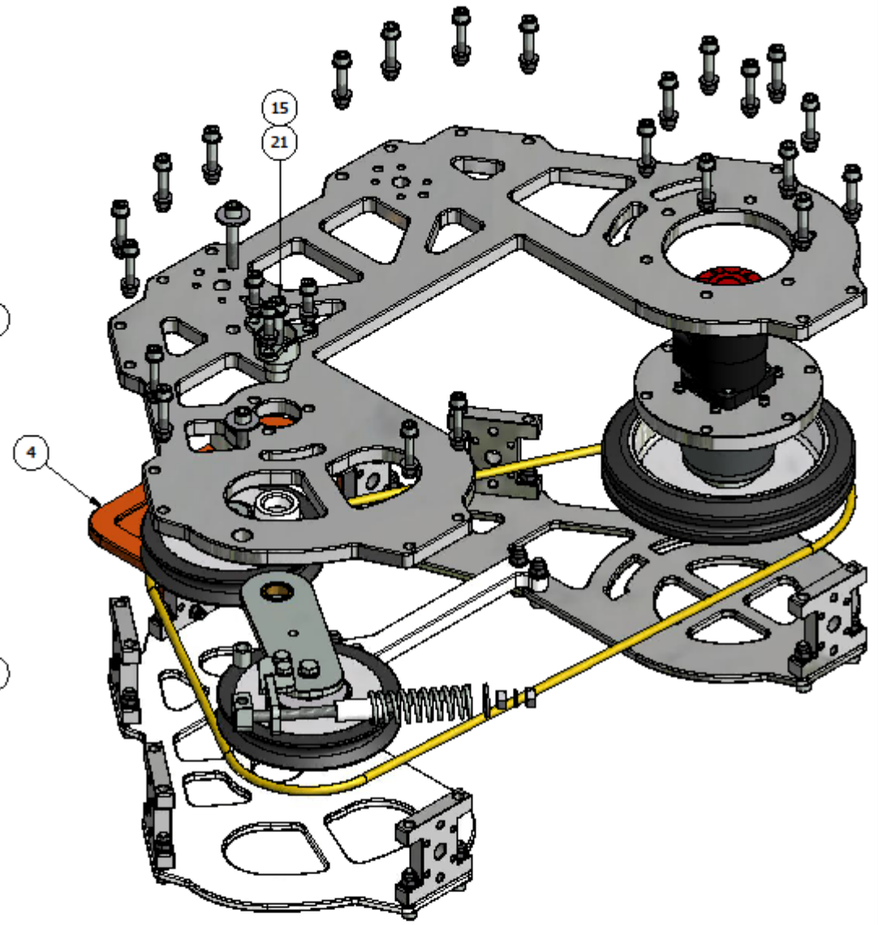
PROJECT TITLE: P7644
DRAWING TITLE: DIAMOND WIRE SAW 0-320MM
SHEET SIZE: A3 | SHEET NO.: 1 OF 3 | SCALE: 1 : 8
DRAWING NO.: 7644-005 | LATEST REV.: 05

Appendix A




EXPLODED FRONT VIEW
( 1 : 5 )




EXPLODED ISO VIEW
( 1 : 5 )

| | |
|---|---|
| WEIGHT: IN AIR | 42 kg |
| IN WATER | 26,9 kg |
| SURFACE AREA | 2672 cm² |
| 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 | |

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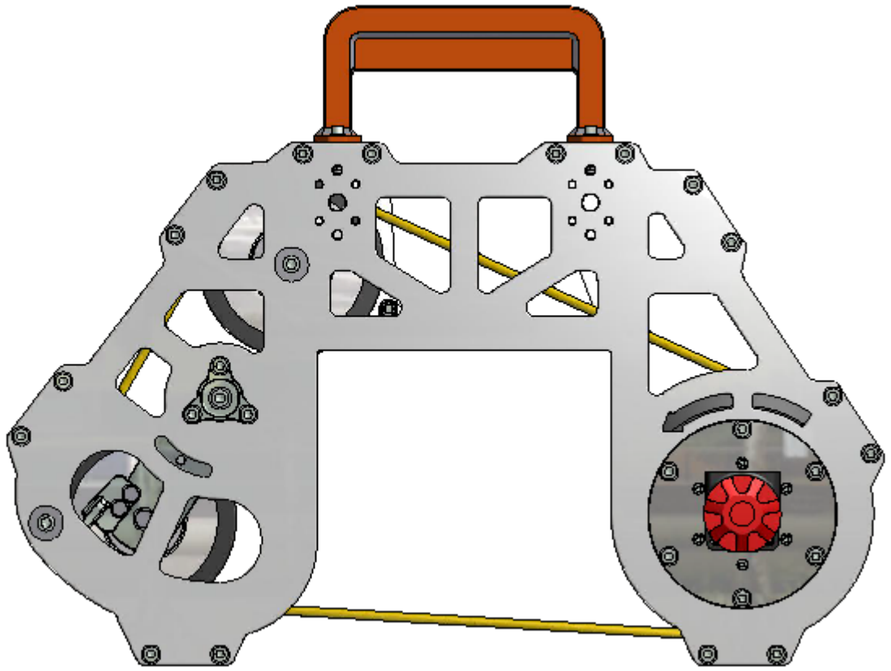
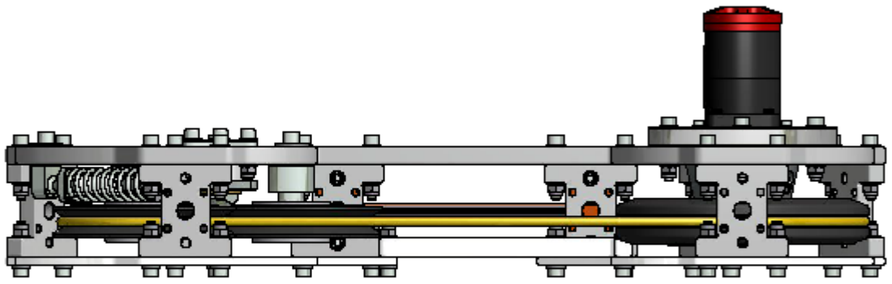
| | | | |
|---|---|---|---|
| PROJECT TITLE: | P7644 | | |
| DRAWING TITLE: | DIAMOND WIRE SAW 0-320MM | | |
| SHEET SIZE: A3 | SHEET NO.: 2 OF 3 | SCALE: | 1 : 8 |
| DRAWING NO.: 7644-005 | | LATEST REV.: | 05 |

Appendix A



TOP VIEW
( 1 : 5 )



FRONT VIEW
( 1 : 5 )

PARTS LIST

| ITEM | QTY | PART NUMBER | MATERIAL | DESCRIPTION | MASS | REV. |
|---|---|---|---|---|---|---|
| 1 | 1 | 6945-101 | Rubber | WHEEL SUPPORTIVE | 0.92 kg | 01 |
| 2 | 1 | 7644-006 | | WHEEL TENSION ARM | 3.08 kg | 01 |
| 3 | 1 | 7644-007 | | | 0.57 kg | 01 |
| 4 | 1 | 7644-008 | Stainless Steel, AISI 316L | ROV HANDLE | 2.89 kg | 02 |
| 5 | 1 | 7644-011 | | MOTOR DRIVING UNIT | 13.05 kg | 03 |
| 6 | 8 | 7644-103 | Aluminium, 6082-T6 | SPACER | 0.34 kg | 05 |
| 7 | 1 | 7644-110 | Aluminium, 6082-T6 | MAIN SIDE | 12.29 kg | 04 |
| 8 | 1 | 7644-112 | PEHD 1000 ( natural / white ) | MOTOR PROTECTION PLATE | 0.88 kg | 03 |
| 9 | 1 | 7644-115 | PEHD 1000 ( natural / white ) | MOTOR PROTECTION PLATE | 1.05 kg | 01 |
| 10 | 1 | 7644-127 | PEHD 1000 ( natural / white ) | SAW PLASTIC BACKING | 0.17 kg | 01 |
| 11 | 1 | 7644-350 | Generic | Diamond Wire | 0.17 kg | |
| 12 | 1 | 7644-366 | Stainless Steel, AISI 316L | ARM STOPPER BLOCK | 0.36 kg | 01 |
| 13 | 45 | DIN 125 - A 10,5 | Stainless Steel | Washer | 0 kg | |
| 14 | 45 | DIN 125-2 - B 10,5 | Stainless Steel | Washer | 0 kg | |
| 15 | 1 | DIN 125-2 - B 13 | Stainless Steel | Washer | 0.01 kg | |
| 16 | 2 | DIN 9021 - 13 | Stainless Steel | Washer | 0.02 kg | |
| 17 | 3 | ISO 4762 - M10 x 45 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.04 kg | |
| 18 | 20 | ISO 4762 - M10 x 50 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.04 kg | |
| 19 | 22 | ISO 4762 - M10 x 60 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.05 kg | |
| 20 | 1 | ISO 4762 - M12 x 35 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.05 kg | |
| 21 | 1 | ISO 4762 - M12 x 60 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.07 kg | |
| 22 | 1 | ISO 4762 - M12 x 70 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.08 kg | |
| 23 | 4 | ISO 4762 - M8 x 45 | Stainless Steel | Hexagon Socket Head Cap Screw | 0.02 kg | |
| 24 | 45 | ISO 7040 - M10 | Stainless Steel | Hex Nut with Torque Part | 0.01 kg | |
| 25 | 4 | ISO 7040 - M8 | Stainless Steel | Hex Nut with Torque Part | 0.01 kg | |
| 26 | 8 | ISO 7089 - 8 - 140 HV | Stainless Steel | Plain washers - Normal series - Product grade A | 0 kg | |

WEIGHT:
IN AIR: 42 kg
IN WATER: 26,9 kg
SURFACE AREA: 2672 cm²
UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN MILLIMETRES
TOLERANCES:
LINEAR: ISO 2768-1 M
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PROJECT TITLE: P7644
DRAWING TITLE: DIAMOND WIRE SAW 0-320MM
SHEET SIZE: A3 | SHEET NO.: 3 OF 3 | SCALE: 1 : 8
DRAWING NO.: 7644-005 | LATEST REV.: 05