

Kentrospine ACP Plate system

Device description:

The Kentrospine Plate system is indicated for use in temporary stabilization of the anterior spine during the development of cervical spinal fusion in patients with degenerative Disc Diseases (DDD). Here fusion is achieved by inserting bone screws through the openings in the plate into the vertebral bodies of the cervical spine. The Kentrospine Plate system consists of variety of bone plates and screws.

The Kentrospine Plate system will allow surgeons to build a spinal implant construct to stabilize and promote cervical spinal fusion. Kentrospine plate system implant components are supplied non-sterile and to be sterilized by end user, single use and are made from medical grade, biocompatible Titanium alloy (Ti6Al4V ELI) conforming to ASTM F136-13(2021) - Standard Specification for Wrought Titanium-6Aluminum-4Vanadium ELI (Extra Low Interstitial) Alloy for Surgical Implant Applications.

Specialized instruments are available for the application and removal of the Kentrospine plate system. The instruments are made from SAE 316L stainless steel which is complies to ASTM F899 – 20 Standard Specification for Wrought Stainless Steels for Surgical Instruments.

Indications, contraindications and possible adverse events:

Indications for use:

The Kentrospine Plate System (ACP Anterior cervical Plate with ACS screw) is intended for anterior fixation of the cervical spine C2-C7. The system is indicated for use in temporary stabilization of the anterior spine during the

development of cervical spinal fusion in patients with the following indications:

- Degenerative disc disease (as defined by neck pain of discogenic origin with degeneration of the disc confirmed by patient history and radiographic studies),
- trauma (including fractures),
- tumors,
- deformity (defined as kyphosis, lordosis, or scoliosis),
- pseudarthrosis,
- failed previous fusion,
- spondylolisthesis, and spinal stenosis.

Contraindications:

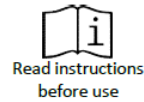
Use of this system is contraindicated in patients with the following conditions:

- Active systemic infection, infection localized to the site of the proposed implantation, or when the patient has demonstrated allergy or foreign body sensitivity to any of the implant materials.
- Severe osteoporosis, which may prevent adequate fixation.
- Conditions that may place excessive stresses on bone and implants, such as severe obesity or degenerative diseases, are relative contraindications. The decision whether to use these devices in such conditions must be made by the physician taking into account the risks versus the benefits to the patient.
- Patients whose activity, mental capacity, mental illness, alcoholism, drug abuse, occupation, or lifestyle may interfere with their ability to follow postoperative restrictions and who may place undue stresses on the implant during bony healing and may be at a higher risk of implant failure.
- Any condition not described in the indications for use

WARNINGS:

- One of the potential risks identified with this system is death. Other potential risks, which may require additional surgery, include device component fracture, loss of fixation, non-union, fracture of the vertebrae, neurological injury.
- This device is not approved for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic, or lumbar spine.
- Certain degenerative diseases or underlying physiological conditions such as diabetes, rheumatoid arthritis, or osteoporosis may alter the healing process, thereby increasing the risk of implant breakage or spinal fracture.
- Possible adverse effects that may occur include: failed fusion or pseudarthrosis leading to implant breakage; allergic reaction to implant materials; device fracture or failure; device migration or loosening; decrease in bone density; pain, discomfort, or abnormal sensations due to the presence of the device; injury to nerves, vessels, and organs; venous thrombosis, lung embolism and cardiac arrest; and death.
- The components of this system are manufactured from titanium alloy. Dissimilar metals in contact with each other can accelerate the corrosion process due to galvanic corrosion effects. Mixing of implant components with different materials is not recommended, for metallurgical, mechanical, and functional reasons.
- Plate contouring is not recommended due to the plate's translational components. These warnings do not include all adverse effects which could occur with surgery in general, but are important considerations particular to orthopedic implants.
- General surgical risks should be explained to the patient prior to surgery.

PRECAUTIONS



- The implantation of screw and plate systems should be performed only by experienced spinal surgeons with specific training in the use of this system because this is a technically demanding procedure presenting a risk of serious injury to the patient. Preoperative planning and patient anatomy should be considered when selecting implant size, screw diameter and length.
- Surgical implants must never be reused. An explanted implant must never be reimplanted. Even though the device appears undamaged, it may have small defects and internal stress patterns, which could lead to breakage.
- Metallic implants can loosen, fracture, corrode, migrate, cause pain, or stress shield bone even after a fracture has healed particularly in young, active patients. While the surgeon must have the final decision on implant removal, we recommend that
- Whenever possible and practical for the individual patient, fixation devices should be removed once their service as an aid to healing is accomplished. Implant removal should be followed by adequate postoperative management.
- Adequately instruct the patient. Mental or physical impairment that compromises or prevents a patient's ability to comply with necessary limitations or precautions may place that patient at a particular risk during postoperative rehabilitation.
- Factors such as the patient's weight, activity level, and adherence to weight bearing or load bearing instructions have an effect on the stresses to which the implant is subjected.

"The implantation of Kentrospine Plate System should be performed only by experienced spinal surgeons with specific training in the use of this plate system because this is a technically demanding procedure presenting a risk of serious injury to the patient".

"Based on the fatigue testing results, the physician/surgeon should consider the levels of implantation, patient weight,

patient activity level, other patient conditions, etc. which may impact on the performance of the system".

A successful result is not always achieved in every surgical case. This fact is especially true in spinal surgery where many extenuating circumstances may compromise the results. This device system is not intended to be the sole means of spinal support. Use of this product without a bone graft or in cases that develop into a non-union will not be successful. No spinal implant can withstand body loads without the support of bone. In this event, bending, loosening, disassembly and/or breakage of the device(s) will eventually occur. Preoperative and operating procedures, including knowledge of surgical techniques, good reduction, and proper selection and placement of the implants are important considerations in the successful utilization of the system by the surgeon. Further, the proper selection and compliance of the patient will greatly affect the results. Patients who smoke have been shown to have an increased incidence of non-unions.

These patients should be advised of this fact and warned of this consequence. Obese, malnourished, and/or alcohol abuse patients are also poor candidates for spine fusion. Patients with poor muscle and bone quality and/or nerve paralysis are also poor candidates for spine fusion. PHYSICIAN NOTE: Although the physician is the learned intermediary between the company and the patient, the important medical information given in this document should be conveyed to the patient.

MRI Safety Information:

The Kentrospine ACP Plate System is manufactured from Titanium alloy (Ti6Al4V ELI), hence it do not pose any safety risk.

"The Kentrospine ACP Plate System has not been evaluated for safety in the MR environment. It has not been tested for heating or unwanted movement in the MR environment. The safety of Kentrospine DGEN Pedicle Screw System in the MR environment is unknown.

Performing an MR exam on a person who has this medical device may result in injury or device malfunction".

On the basis of literature study, The minimum recommended time after the implantation that allows patients to safely undergo MRI examination or allowing the patient or an individual to enter the MRI environment is 6 (six) weeks.

All Rivarp's system is manufactured in metallic material and does not emit any ionizing radioactive radiation.

Packaging:

Packages for each of the components should be intact upon receipt. If a loaner or consignment system is used, all sets should be carefully checked for completeness and all components including instruments should be carefully checked to ensure that there is no damage prior to use. Damaged packages or products should not be used, and should be returned to Rivarp Medical Private Limited.

Disposal:

Please note that using a single use device (SUD) which comes into contact with human blood or tissue constitutes, it is a biohazard. Dispose it in a safe manner by hospital or disposed by authorize disposer having Pollution control board clearance.

Clinical Evaluation of Spinal Implants

The Rivarp Medical Pvt. Ltd. Spinal Implant is clinically safe, and effective in use as discussed and proved up to the mark in the clinical evaluation of the device.

REPROCESSING INSTRUCTIONS

Warnings and Precautions:

- Universal Precautions should be observed by all hospital personnel that work with contaminated or potentially contaminated medical devices.

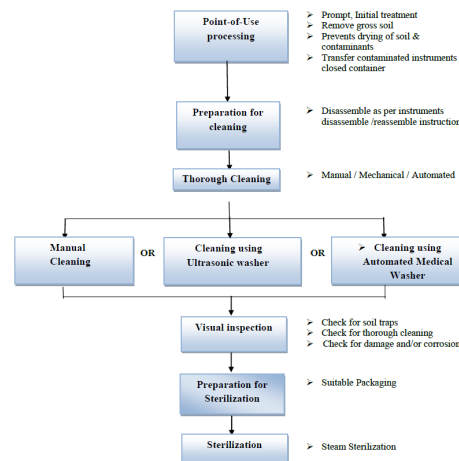


- Caution should be exercised when handling devices with sharp points or cutting edges.
- Personal Protective Equipment (PPE) should be worn when handling or working with contaminated or potentially contaminated materials, devices and equipment. PPE includes gown, mask, goggles or face shield, gloves and shoe covers.
- Metal brushes or scouring pads must not be used during manual cleaning procedures. These materials will damage the surface and finish of instruments. Soft-bristled, nylon brushes and pipe cleaners should be used.
- Cleaning agents with low foaming surfactants should be used during manual cleaning procedures to ensure that instruments are visible in the cleaning solution. Manual scrubbing with brushes should always be performed with the instrument below the surface of the cleaning solution to prevent generation of aerosols and splashing which may spread contaminants. Cleaning agents must be completely rinsed from device surfaces to prevent accumulation of detergent residue.
- Do not stack instruments or place heavy instruments on top of delicate devices.
- Dry, soiled surgical instruments are more difficult to clean. Do not allow contaminated devices to dry prior to reprocessing. All subsequent cleaning and sterilization steps are facilitated by not allowing blood, body fluids, bone and tissue debris, saline, or disinfectants to dry on used instruments.
- The cleaning and sterilization instructions provided below have been validated by Rivarp Medical as being capable of preparing a medical device for reuse. The processor remains responsible for ensuring that the processing, as actually performed using equipment, materials and personnel at the processing facility, achieves

the desired result. This requires verification and/or validation and routine process monitoring.

Reprocessing Overview:

The sequence of steps required to prepare non-sterile instruments for use are summarized in the chart below. More detailed instructions for each step are given on the following pages.



Cleaning Instructions:

- The Kentrospine Plate System instruments must be cleaned thoroughly prior to sterilization.
- The cleaning process is the first step in effectively reprocessing devices. Adequate sterilization depends on thoroughness of cleaning.

- Any unused, single-use device that has been exposed to blood, bone, tissue, or body fluids must not be reprocessed and must be discarded.
- Multi-component instruments should be disassembled for cleaning. Disassembly, where necessary, is generally self-evident. More specific instructions can be found in below section. (Instruments disassemble & reassemble instructions for cleaning) care must be taken to avoid losing small parts. If a part is lost, notify your Rivarp Medical representative when the instrument set is returned.
- Complex instruments, such as those with, cannulas, hinges, retractable features, mated surfaces, and textured surface finishes, require special attention during cleaning. Brush tight tolerance areas with an appropriately sized brush and flush using a water jet or syringe where debris could become trapped.
- Ensure all moving parts of instruments are cleaned at both extents of travel.
- Handle all products with care. Mishandling may lead to damage and possible improper functioning.
- Use of caustic solutions (caustic soda) will damage the devices.
- Visually inspect each instrument for deterioration such as corrosion and worn components; ensure that the laser markings are legible and verify that all actuating parts move freely.
- Visual inspection must be performed at each cleaning to determine if an instrument is acceptable for use. If an instrument is not acceptable for use, return to the manufacturer.
- Visually inspect the instrument after each cleaning step to ensure the instrument is clean. If not clean, repeat the steps until clean.

Note:



- The information on cleaning agent concentration, temperature, exposure time and cycles used in the equipments, follow the instructions for use and labels according to products manufacturer.
- The cleaning agents should be prepared at the use-dilution and temperature recommended by the manufacturer. Use of recommended temperatures is important for optimal performance of cleaning agents.
- The cleaning and sterilization processes mentioned in this IFU have been validated and demonstrate that soil and contaminants have been removed leaving the devices effectively free of viable microorganisms.
- As not all cleaning agents may be available around the globe, Rivarp Medical does not recommend any specific cleaning agent. The end user should verify the selected cleaning agent is appropriate for use on surgical instruments designed for reprocessing.
- Cleaning Agent used during the validation of these reprocessing instructions is Neodisher® MediClean forte (CE certified).
- Reusable cleaning tools, as the bristles wear from constant use, the efficacy of these tools can greatly diminish, so the tools will need to be inspected and replaced on a regular basis. If possible use the single-use disposable cleaning tools.

Cleaning steps:

1. Point-of-Use Processing:

- At point of use, soiled instruments must be removed from trays and moistened to prevent debris from drying before transportation to the reprocessing area for cleaning procedures. Do not clean soiled instruments while in trays.

- Remove excess body fluids and tissue from instruments with a disposable, non-shedding wipe. Place devices in a basin of distilled water or in a tray covered with damp towels. Do not allow saline, blood, body fluids, tissue, bone fragments or other organic debris to dry on devices prior to cleaning.
- For optimal results, instruments should be cleaned within 20 minutes of use or after removal from solution to minimize the potential for drying prior to cleaning.
- Used instruments must be transported to the designated cleaning area in closed or covered containers to prevent unnecessary contamination risk.

2. Thorough Cleaning:

- The device should be thoroughly cleaned after the point-of-use processing. Generally, thorough cleaning is done in a designated cleaning area.

3. Preparation for cleaning:

- Multi-component instruments should be disassembled for cleaning. Disassembly, where necessary, is generally self-evident. More specific instructions can be found in below section, 'Instruments Disassemble & Reassemble instructions for Cleaning'.

4. Method of cleaning:

Manual cleaning:

- Rinse soiled instruments under running cold tap water for a minimum of one minute. Remove gross soil and debris using a soft bristled, nylon brush.
- Completely submerge the instruments in enzymatic cleaning solution (1% neodisher® MediClean forte for example) at temperature

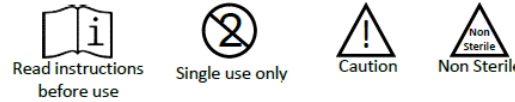
range of 30°C to 40°C and allow to soak for 15 minutes. (**Note:** The cleaning agents should be prepared at the use-dilution and temperature recommended by the manufacturer, hence refer to the cleaning agent labeling for preparation and use instructions).

- Use a soft nylon-bristled brush to gently scrub the devices for a minimum of two minutes and until all visible soil has been removed. Particular attention must be given to crevices, lumens, mated surfaces, connectors and other hard-to-clean areas. Lumens should be cleaned with a long, narrow, soft nylon-bristled brush (i.e. Pipe cleaner).
 - Rinse in deionized water until all traces of cleaning solution are removed.
 - Visually inspect for any remaining soil and repeat the steps above if necessary.
 - Allow to drain on absorbent paper and dry with a clean soft lint free cloth or with filtered-compressed air.
- Note:**
- Instruments must be removed from the trays or cases and place them in a suitable basket during the cleaning.
 - Use of a syringe or water jet will improve flushing of difficult to reach areas and closely mated surfaces.

Caution: Never use metal brushes or steel wool for cleaning.

Cleaning using Ultrasonic washer:

- Rinse soiled instruments under running cold tap water for a minimum of one minute to remove excess soil.
- Completely submerge the instruments in enzymatic cleaning solution (1% neodisher® MediClean forte for example) in ultrasonic washer and sonicate for 15 minutes at 40+/-5 kHz using



- ultrasonic bath large enough to allow complete immersion of the device. Instruments must be removed from the trays or cases during the cleaning.
- Remove instruments from the cleaning solution and rinse in deionized water for a minimum of 5 minute.
- Thoroughly and aggressively flush lumens, blind holes and other difficult-to-reach areas with deionized water and dry with a clean soft lint free cloth or with filtered-compressed air.

Note: Visually inspect for any remaining soil. If, after completion of the cleaning step in the ultrasonic bath, encrusted soil remains on the device, the cleaning step must be repeated as described above.

Automated cleaning using Medical Washer:

- Rinse soiled instruments under running cold tap water for a minimum of one minute to remove excess soil.
- Load the instruments into the medical washer as per required loading configuration and maximum load size as specified by machine manufacturer.
- (Note:** Operate the Medical Washer cycle as per machine manufacturer instructions and refer to the cleaning agent labeling for preparation and use instructions).

Steps	Time	Temperature	Cleaning agent
Pre Wash	2 minutes	45°C	Tap water
Cleaning	10 minutes	55°C	Enzymatic cleaner (0.5% neodisher® MediClean forte for example)
Neutralization	2 minutes	45°C	Tap water
Rinsing	5 minutes	45°C	Deionized water
Drying	25 minutes	80°C	N/A

- Upon completion, unload the medical washer.

- Visually inspect each device for remaining soil and dryness. If soil remains, repeat the cleaning process.
- Remaining wetness may be removed with filtered, compressed air or clean, lint-free wipes.

Note: The Medical washer manufacturer's instructions should be strictly adhered to.

Visual Inspection:

- Before preparing for sterilization, all devices should be inspected carefully. Generally unmagnified visual inspection under good light conditions is sufficient to ensure that all visible contamination has been removed. If contamination is noted repeat the cleaning process.
- Visually inspect for completeness, damage and/or excessive wear and tear of components. **Note:** If damage or wear and tear (unacceptable deterioration such as corrosion, discoloration, and pitting, cracked seals) is noted that may compromise the function of the instrument, contact your Rivarp Medical Representative for a replacement.
- Mating devices should be checked for proper assembly. Instruments with moving parts (e.g. hinges, box-locks, connectors, sliding parts, etc.) should be operated to ensure smooth operation throughout the intended range of motion.
- If necessary, hinged, rotating, or articulating instruments can be lubricated with a water soluble, biocompatible, medical grade, steam sterilizable lubricant intended for surgical instruments (neodisher IP Spray for example). The implants should not be lubricated.

Note: Refer to the lubricating agent labelling for preparation and use instructions. Lubricants not specifically designed

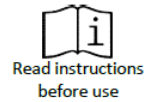
for compatibility with steam sterilization should not be used because they may: 1) coat microorganisms; 2) prevent direct contact of the surface with steam; and 3) are difficult to remove.

Sterilization:

- The Kentrospine ACP Plate System implants & instruments are provided non-sterile and must be sterilized before use.
- Rivarp medical recommends that, Kentrospine ACP Plate System implants & instruments must be sterilized by the moist heat/steam sterilization, using below mentioned validated parameters.
- The hospital is responsible for sterilization before surgery. The sterilization procedures as well as the quality and the training of staff involved in this process is sole responsibility of the health service

Packaging for sterilization:

- Before sterilization, the devices (Instruments/Implants) should be placed in the Kentrospine ACP Plate System instruments trays/ implant trays respectively. The tray must be packaged in a standard medical grade, steam sterilization wrap using the AAMI double wrap method or equivalent and sterilize as per given validated steam sterilization parameters.
- Note: Instruments can be packed individually and can sterilize using above mentioned packaging & sterilization method.
- Ensure that the wrap is large enough to contain the implant / instrument tray without stressing or tearing the wrap.



- The sterilization wrap used should be FDA cleared and compliant to ISO 11607-1.

Steam Sterilization Cycle:

- See below table for recommended validated sterilization parameters.

Method	Cycle	Temperature	Exposure time	Minimum drying time ¹
Steam	Gravity displacement	250°F (121°C)	30 minutes	15-30 minutes

The product must be wrapped with a Medical grade steam sterilization compatible wrap that is FDA cleared and compliant to ISO 11607-1.

- Because of the many variables involved in sterilization, each medical facility should calibrate and verify the sterilization process (e.g. temperatures, times) used for their equipment.
- Sterilizer manufacturer recommendations should always be followed. When sterilizing multiple instrument sets in one sterilization cycle, ensure that the manufacturer's maximum load is not exceeded. Instrument cases should not be stacked during steam sterilization.
- Additional information regarding sterilization are described in ISO 17665-1-"Sterilization of health care products -- Moist heat -- Part 1: Requirements for the development, validation and routine control of a sterilization process for medical devices".
- Instruments / implants should be properly prepared and packaged in trays that will allow steam to penetrate and make direct contact with all surfaces.
- 1Drying times vary according to load size and should be increased for larger loads.

Note:

- Kentrospine ACP Plate System generally have a long service life; however, mishandling or inadequate protection can quickly diminish their life expectancy. Great care must be taken of the instruments to ensure that they remain in good working order.
- Devices which no longer perform properly because of long use, mishandling, or improper care should be returned to Rivarp Medical to be discarded. Notify your Rivarp Medical representative of any instrument problems.
- Kentrospine ACP Plate System instruments should be examined for wear or damage by physicians and staff in operating centres prior to surgery.
- The examination shall include a visual and functional inspection of the working surfaces, articulation points, rotating features, hinges, springs, connection mechanisms, mating parts, cutting features, threads, and working tip of all instruments.

Instruments disassemble & reassemble instructions for cleaning:

- Multi-component instruments should be disassembled for cleaning. Disassembly, where necessary, is generally self-evident. More specific instructions are given below.
- Disassemble the instruments at point of use area.
- After thorough cleaning, reassemble the small components / parts of the instruments before sterilization and instruments which needs to assemble with other instruments for its desired functions, needs to be reassembled after sterilization by physicians and staff in operating centres prior to surgery.
- During disassembly and reassembly, visually inspect the device and components for wear and

tear of components that cannot be assessed in the fully assembled configuration.

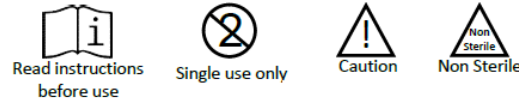
- Note:** If damage or wear and tear (unacceptable deterioration such as corrosion, discoloration, and pitting, cracked seals) is noted that may compromise the function of the instrument, contact your Rivarp Medical Representative for a replacement.
- Mating devices should be checked for proper assembly. Instruments with moving parts (e.g. hinges, box-locks, connectors, sliding parts, etc.) should be operated to ensure smooth operation throughout the intended range of motion.

Product complaints:

Any Health Care Professional (e.g., customer or user of this system of products), who has any complaints or who has experienced any dissatisfaction in the product quality, identity, durability, reliability, safety, effectiveness and/or performance, should notify the distributor and Rivarp Medical Private Limited. Further, if any of the implanted spinal system component(s) ever "malfunctions," (i.e., does not meet any of its performance specifications or otherwise does not perform as intended), or is suspected of doing so, the manufacturer / distributor should be notified immediately. **If any Rivarp Medical's product ever "malfunctions" and may have caused or contributed to the death or serious injury of a patient, same should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established by telephone, or written correspondence.** When filing a complaint, please provide the component(s) name and number, lot number(s), your name and address, the nature of the complaint and notification of whether a written report from the distributor is requested.

Summary of Safety and Clinical Performance:

The link to Summary of Safety and Clinical Performance (S



SCP) will be updated in this Instructionsfor Use when the S SCP will be made available to the EUDAMED Database.

For Further Information:

Please contact Rivarp Medical Pvt.Ltd., in case of any Query, Complain or Adverse Effect Email: info@rivarpmedical.pvt.ltd , Tel (+91) 9739735550

	<p>Manufacturer: Rivarp Medical Pvt.Ltd No:34, Azeez Sait Industrial town, 6th mile, Mysore Road, Nayandahalli, Bangalore - 560039 Karnataka.Tel: +91 973 973 5550 Email: info@rivarpmedical.com Website: www.rivarpmedical.com</p>
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	<p>Non-Sterile Indicating that the device has not been sterilized.</p>
	<p>Consult Instructions For Use Note: This symbol advises the reader to consult the operating instructions for information needed for the proper use of the device.</p>
	<p>Do not re-use Single use or use only once</p>
REF	<p>Catalogue Number Note: This symbol be accompanied by the catalogue number relevant to the device bearing the symbol.</p>
LOT	<p>Batch Code Note: This symbol should be accompanied by the batch code relevant to the device bearing the symbol.</p>
	<p>Caution This symbol is to denote that there some warning or precautions associated with device, which are not otherwise found on labels</p>
Material	<p>Raw Material used for manufacturing</p>
	<p>CE marking with Notified Body Number (This symbol shall be used only after completion of conformity assessment & availability of valid CE certificate) XXXX</p>
MD	<p>Medical device Indicates the item is a medical device</p>
R_x	<p>R_x is the symbol for a medical prescription.</p>
EC REP	<p>Advena Ltd. Tower Business Centre, 2nd Flr., Tower Street, Swatar, BKR 4013 Malta</p>