PUKYUNG PRECISION INDUSTRY CO., LTD
leads a constant innovation, a non-stop growth.

HULL APERTURE BLANKS | SEA CHEST GRID | OUTFITTINGS
BOTTOM PLUG | WATER JET
Greeting of CEO

The aim and passion of PUKYUNG PRECISION CO., LTD to become the best in the world have not changed at all since the company established in 2004. With our know-how that has gained through the continuous development in technology, we have been applying it for developing and manufacturing HULL APERTURE BLANKS, SEA CHEST GRID, BOTTOM PLUG, Coronet Products and WATER JET processing.

This effort results in our company’s being the best leader in the field of shipbuilding equipment and appliance. Continuously, our company accomplishes the future-value management as well as we get praised for a good value as a global company and ability as a good partner. As part of this kind of all efforts, we have a good reputation to make a long-run business directly with out domestic major shipbuilders including Hyundai, Hyundai Samho, Daewoo, Samsung, Hanjin, STX and Sung Dong and oversea major shipbuilders such as China, Japan and Singapore.

PUKYUNG PRECISION CO., LTD is very proud of the fact that we are successful for the world leader, based on the advanced technology, strong will and passion of members, and endless challenge and innovation, in this era of globalization.

We will continue to manage quality approved by ISO9001 as a part of through and precise quality system. Besides, we do our best to have an effective production management through more than 3 foreign quality approvals, including Stainless Welding certified factory(GL) LR and DNV.

These control systems enable us to guarantee the trust of quality and responsibility as partnership. We are very willing to carry out our customer’s impression, not their satisfaction, through making our company goal and value for ‘Customer-oriented management’

CEO KIM JEONG SU
Stability
It can save lots of time and high cost during relocation and repair to Dry dock in order to solve problems of sea water inlet and outboard drain valve detected during operating ships, it can solve the problems immediately installing above products by divers anytime anchored. Also it can be utilized usefully to offshore structure including FPSO and Semi-submersible Sea oil prospecting ship.

Convenient installation
Designed to satisfy a neutral buoyancy, drivers can move, install the products of PICO easily and safely without any loading even underwater, fittings which are required for fixing of blank are designed for convenient underwater installation.

Purpose
This facility is designed/developed by our company so that a diver can safely and rapidly lock underwater sea water inlet and outboard drain during failure of valve which is connected to outer wall of hull, it is also essential to marine inspection which is required to internal inspection of valves of all ships.

Effectiveness
The products of PICO have been supplied hundreds of ships in newly built ship and repair company, even a single defect has not occurred so far. We have produced the best quality products matching the blank of extreme draft of the point which will be used for ship hull and measurement information of opening to ship curve by specialized computer program, and designing so that it can secure sufficient durability which is more than 2 times higher value than the safety factor which can resist against external water pressure when fixing to hull plating.
**HULL APERTURE BLANKS**

**SEA CHEST COVER TYPE**

As a Hull Aperture Blanks installed to the Sea Chest Grid part of ship, it is the type in which gasket is perfectly sealed by the difference of air pressure if fixing 2 Tee-bolts to grid, placing gasket to outboard hull and emitting sea water to sea chest. HULL APERTURE BLANK required to the GRID part of ship will be designed, manufactured considering that its size and curvature should be more than 2 times higher value than safety factor by using extreme draft data based on the floor plan of ship.

**OVERBOARD PIPE TYPE**

This type fixes by using an inside jack and HOOK-BOLT in order to block the sea water of outboard drain and the sea water inlet for hull PIPE. From 150A of PIPE internal diameter, the diameters of applied pipes are applicable to all PIPEs, it is designed, manufactured considering the value which is more than 2 times higher than safety factor by using extreme draft and curvature of hull.

**OVERBOARD PLUG TYPE**

As an extrusion mold products applied to air vent, drain hole and sea water inlet for PIPE of which hull is under 150A, its internal ranges Ø10~Ø143.2 and it is designed, manufactured for easy installation.
**MAGNETIC OVERBOARD PIPE TYPE**

Similar with OVERBOARD PIPE TYPE, it can install cover after fixing to hull using manual ON/OFF TYPE magnetic when inside jack installation is not available inside outboard drain pipe and sea water inlet for hull PIPE. From 150A of PIPE internal diameter, the diameters of applied pipes are applicable to all PIPEs, it is designed, manufactured considering the value which is higher than safety factor by using extreme draft and curvature of hull.

**MAGNETIC OVERBOARD PLUG TYPE**

Similar with OVERBOARD PLUG TYPE, it is used for outboard drain and sea water inlet for PIPE of which hull curvature is steep. Even if PLUG TYPE is favorable for blocking when the inlet and drain of PLUG TYPE is installed vertically with hull, the part of cone type PLUG TYPE where hull curvature is steep can’t play a proper role due to the position deviation of contact part caused from the extension of PLUG, it can be replaced to MAGNET PLUG TYPE if required after reviewing the hull curvature of design. From 80A to 200A can be applied for pipe diameter.

**R.O.V TYPE**

Divers tend to avoid underwater work with this product because the valves of sea water inlet and outboard drain are often out of order under many unfavorable conditions such as polar region or shark infested area. To solve these problems, our company introduces ROV (Remotely Operated underwater Vehicle) which can fix HULL APERTURE BLANK to sea water inlet by using new concept HULL APERTURE BLANK and robot equipment for diving which can adsorb, fix to the opening of sea water inlet by installing switch self tool to HULL APERTURE BLANK.

- **Cleaning process**
  Remove various seaweeds sticked around the sea water inlet after installing brush to the arm of ROV (Remotely Operate underwater Vehicle) for diving.

- **Towing process**
  Move Hull APERTURE BLANK to hull where sea water inlet is formed after cleaning process.

- **Attachment process**
  As a process to adsorb and fix Hull APERTURE BLANK to sea water inlet under its own power, it adsorbs to hull by rotating the lever of magnetic switch which is installed around to ON after attaching Hull APERTURE BLANK using ROV, it is attached tightly due to the difference air pressure when emitting sea water inside of hull.

- **Dismantlement process**
  To inflow sea water to tank where HULL APERTURE BLANKS are installed after rotating magnetic switch to original OFF direction, the inside and outside water pressure get equal so Hull APERTURE BLANK gets naturally detached.
**BOW THRUSTER/STERN THRUSTER**

**BOW THRUSTER/STERN THRUSTER HULL APERTURE BLANK**

When ships come, depart alongside to quay to use towing ship for assistance of operation, especially it is essential for the big sized ship. But the high cost of towing ship often delays the docking, recently BOW THRUSTER and STERN THRUSTER instead of towing ship are more often installed. For the repair by regular inspection and periodic inspection of ship, the use of BOW THRUSTER and STERN THRUSTER is essential accordingly. PICO designs and manufactures considering hull curvature and extreme draft which have more than 2 times higher value than safety factor based on the floor plan of ship.

**STORAGE BOX FOR HULL APERTURE BLANKS**

PICO provides a steel STORAGE BOX which can store HULL APERTURE BLANKS. It used SUS Hinge and SUS Revet for sea storage, it enhances the durability one step further by coating overlapped part with the method in which we assemble after coating whole products. Also to prevent slip of products inside of STORAGE BOX, it solve damage prevention of STORAGE BOX and products when ship shakes by attaching non-slip pad to the hand grip part of HULL APERTURE BLANK.

**BOTTOM PLUG**

In this type, in order to emit water or surplus oil of various tanks of ship body, we pierce a hole in proper position behind tank floor, mainly enter a dock with screw type plug, open PLUG during tank inspection, emit residue water completely to seal completely before shipment and cover cement over in semi circle shape. Our company produces "O"type hexagonal shape for the oil tank part of BOTTOM PLUG SOCKET and BOTTOM PLUG, "W"type rectangular shape for Water Tank part.

**SEA CHEST GRID**

As a professional manufacturer of Sea Chest Grid, PICO manufactures Grating using the materials of SS400, SUS316, UNS331254 as per the request of ship holder and ship specifications, the accurate specification ans the best quality of our self-produced HULL APERTURE BLANK and its integrated type have been recognized.
PICO has produced the best quality products as we adopted non-contact cutting system which has no thermal metal deformation and no restriction of cutting material by cold cutting process which is a nature of water jet as a primary model machining operations in water jet processing. Also, we repay to customer with the best quality, high technology and the lowest unit price in the processing sectors such as metal materials (SUS, AL, TIG copper alloy, and highly elastic steel etc.), ceramic materials (marble, tile and concrete etc.) and Polymeric materials (flooring, sponges, synthetic leather, Beck Light, Acrylic, etc...).

Outfitting 3D

PICO has manufactured, delivered ship outfitting materials and facilities, tooling production after design and review as per the request of many shipyards including Daewoo shipbuilding, Samsung heavy industry, ship repair companies based rich experience and technological power.

Water Jet Processing