



**Baretti**®   
EQUIPMENT FOR OIL AND CHEMICAL INDUSTRIES

## Marine Loading Arm

Innovation | Reliability | Dynamism



[www.baretti.it](http://www.baretti.it)



# 125 Years of History



**Fabio Baretta Paleari**

CEO

Baretta was founded in 1890 by my grandfather Giovanni Baretta. Since then, Baretta has seen several transformations and gone through evolutions to meet the required market needs and the socio-economic changes. Among all, I would like to mention the most vital and successful ones.

During the fifties, inspired by Mr. Enrico Mattei, the President of ENI, we entered into the business of the equipment for the newly world-wide and growing hydrocarbon industry. Then, we added the construction and installation of Marine Loading Arms and special facilities for the berthing of oil super tankers.

In eighties, we started to design and to construct special high-precision mechanical manufacturing machines. Even, we manufactured components for nuclear plants, as per that period, the most advanced certified quality management system.

Today, our business is focused upon technologies for the hydrocarbon processing industry and separation components. But what we have learned and experienced in the course of the past 125 years still permeates the company. We learned the importance of our Customers and earned their respect. We value the importance of passionate Employees.

We still have the same enthusiastic entrepreneurial spirit, which took me to USA, almost 50 years back, to acquire license for tray' technologies creating new opportunities. We still strive for innovative technologies, products and applications. Nowadays, our products are present in almost every country having hydrocarbon processing industries but we still follow few basic but very important principles:

- Be humble and be curious: every day we can learn something new
- Act in good faith: leave up to our conscience with honest words and actions
- Struggle for Quality: Neither mistakes nor delays are allowed
- Meet Customer Satisfaction: Give the best product at the best price
- Practice Safety: life is the most important gift that God has given us

In the course of all these years, I am very proud of the results we have achieved and I personally present my gratitude to all our Customers and Employees.

However, every day we are working for a better future where we see Baretta growing into a more profitable company and expand its reach in every corner of the world with the wish of adding value to Customers and Civil-Society while keeping in harmony with the global environment.

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# HISTORY

Baretti's Marine Loading Arms activity begins in the 60's with the first important realization for ENI group in Italy and further supplies to the most important Italian and International oil companies. Nowadays Baretti designs Marine Loading Arms, innovative and different from other products on the market, presenting important operative advantages as well as important technical and reliability innovations, guaranteeing better safety to the operators and improving sealing systems while eliminating environmental pollution.

Baretti's Marine Loading Arms represent the state of the art technology, using a consolidated know-how, design and operating systems. Baretti's Marine Loading Arms

installation is done with only one lift, saving installation time, with great speed and low costs, which is important especially for offshore installations.

By request, Marine Loading Arms can be balanced empty and / or full of liquid also with automatic execution eliminating all the loads on vessel's manifolds. These systems result extremely valid when in an emergency the loading arms have to be withdrawn full of liquid.

All Baretti's Marine Loading Arms, can accept all ancillary equipment required by the Client such as: alarms, quick coupling, automatic emergency system, centralized lubricating plant, stripping system.

## First to use Hydraulic Motors on MLA

The application of hydraulic motors to the movement of Marine Loading Arms allows, for the first time, to override the movement limitations obtained by the oleo dynamic cylinders until today. Hydraulic motors, allow the rotation of loading arms structures nearly 360°, reduce the usual operating limitations and permit easy maintenance. First application in early 1964: AGIP refinery (Ravenna) and Saras refinery (Sardinia).

Furthermore, hydraulic motors enable smooth movements by avoiding the accelerations while starting or stopping and the resulting oscillations of the structures, resulting by the use of oleo dynamic cylinders. Thanks to the hydraulic motors we obtained smooth movements and great benefits also from the speed control point of view, so that the terminal part of the loading arms can hook-up to the vessel manifold with extreme speed and precision.



# DESIGN, STANDARD AND ENGINEERING

## Design & Standard

The Baretti MLA design is developed according some basic principles:

- Operating Safety
- Environment Protection > Zero emission
- Lean Technology > Perfect equilibrium between simplicity and precision
- Easy to operate
- Low maintenance
- Easy to ship and erect on site

Our design fully comply with international codes and standards:

- OCIMF ( Oil Companies International Marine Forum)
- PED 97/23/CE (Pressure Equipment Directive)
- ATEX Directive 94/9/EC
- ASME Codes
- EN/ISO Codes

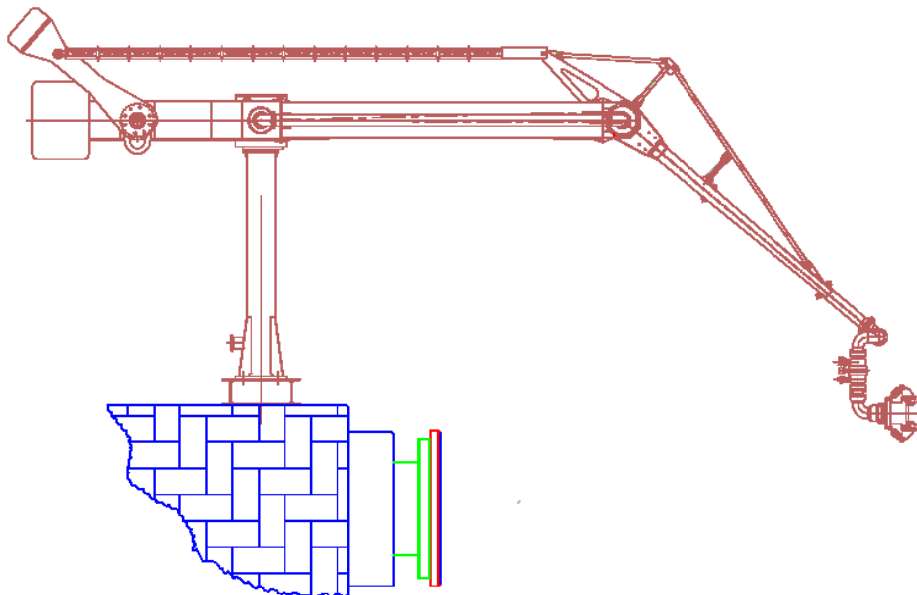
## Engineering

Baretti is directly involved in all phases of supply of MLA for the transfer ship-to-shore and shore-to-ship of hydrocarbons, LNG and Chemicals:

- Design of the structure, joints, kinematic mechanism, safety devices etc;
- Structural Pier and connected piping verification and design;
- Mooring point, dolphin, hook up design and verification;
- Firefighting prevention and protection system design and verification;
- Construction in the workshop of the loading arms components and relative assembly;
- Hydraulic test and FAT (Factory Acceptance Test);
- Installation of the pier;
- Site Acceptance Test and start up assistance;

Baretti also provides specialised engineering services that identify an industrial Project. Particularly:

- Feasibility Study Estimated Costs
- Process Study
- Operating manual execution
- Basic engineering Design
- FEED - Front end Engineering Desing



# MAIN STRUCTURE

## Riser

The Riser is fixed to the jetty and is connected to the terminal piping system.

At the upper end of the riser is secured a cubic structure supporting the inboard arm. Inside this cubic structure are installed two bearings, two swivel joints concentric to the bearings and one 90° elbow flanged to the joints.

Disassembling only the 90° elbow there is the possibility to replace immediately joints and gaskets.

During maintenance operation even without the 90° elbow and joints, the marine loading arm can operate in each position without limitations.



## Outboard Arm

The Outboard arm has a tubular section equal to the nominal diameter of the Marine Loading Arm.

At the end section of the outboard arm is connected an auto-levelling system composed by triple swivel and flanged elbow, this system allow the perfect coupling of the manifold to the vessel.



## Inboard Arm

It is built by a self-supported structure anchored to the cubic structure by a thrust bearing.

At the front end of the inboard loading arm is placed a connection bearing for the main part of outboard arm and its joint, complete with a 90° flanged elbow.

Excluding the 90° elbow there is the possibility to replace quickly the joint and gaskets of the outboard arm.

During maintenance operation even without the 90° elbow and joints, the marine loading arm can operate in each position without limitations.

The thrust bearing and the joint give to the outboard loading arm a vertical rotation controlled and counterbalanced by a pantograph system with double counterweights.

The back end of inboard loading arm is composed by a fixed counter weight support system, all part of the main structure.

By request it is possible to equip the loading arm with a hydraulic motor and by means of an endless screws the hydraulic motor can be regulated to assure balancing of the loading arm in full and empty conditions.

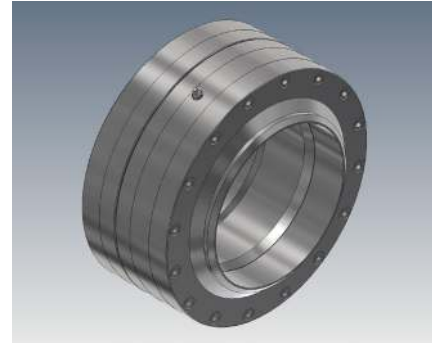


# MAIN STRUCTURE

## Swivel Joints

The swivel joints, thanks to the thrust bearings application, are released from all the static and dynamic actions; they are merely subject to those stresses due to the pressure of the liquid loaded into the Marine Loading Arm.

The swivel joints are manufactured in high resistant alloy (steel), provided with sealing devices suitable to stand mechanical actions and pressure together with chemical products attacks. Baretti produce swivel joint with single race ball bearings or with dual race ball bearings.



single race ball bearings

Each joint is designed to be disassembled without disassembling the main element to the loading arm, for maintenance purpose.

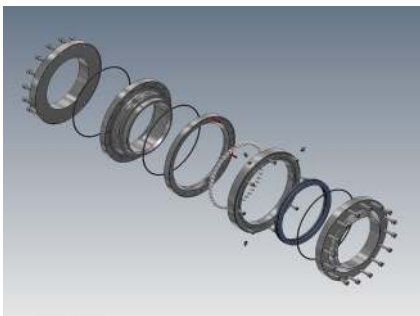
The lubrication of the joints is made by normal lubricating plant. The lubrication plant is equipped of a special gasket that stops any water and dust infiltration.



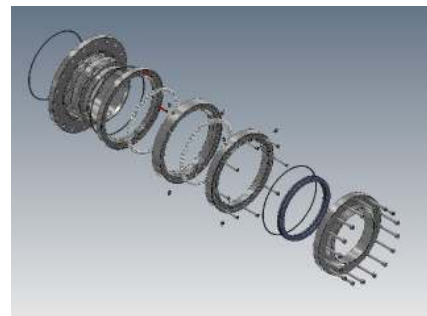
double race ball bearings

The swivels are pre-lubricated at the factory.

All Baretti Swivel Joint are high precision engineered and manufactured to realize a product with minimal possibility of leakage, reduced maintenance.



single race ball bearings



double race ball bearings

# FEATURES

## ERC ( by MIB)

ERC (Emergency Release Coupler) is a security device that allows arm release if condition is dangerous (e.g. strong wind, sea storm, or other causes). Before the arm release the two ball valve must be closed by an actuator, so that the leakage of product will be minimum. ERC is always expected in liquefied natural gas (LNG) service.



## Hydraulic and Manual QCDC ( by MIB)

MIB QCDC (Quick Connect Disconnect Coupling) is the quick and easy method to connect and disconnect a rigid marine arm or jetty hose to and from the vessel manifold.

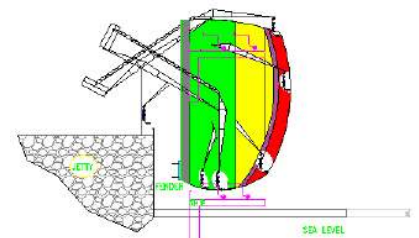
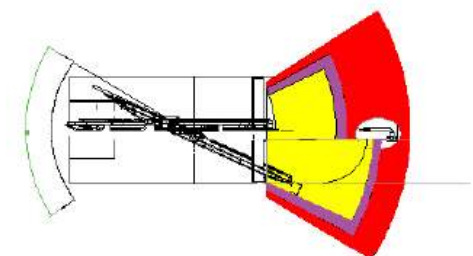
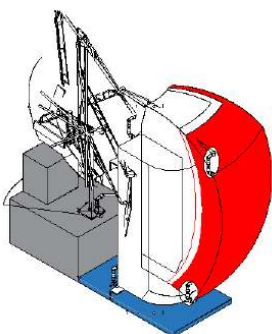
Available for ambient, low temperature, cryogenic and CNG service conditions. QCDC coupling is hydraulically operated and can be adaptable to various sizes of manifold flange. Customised designs available on request from 2" to 24" diameter.

Sometimes is used the manual QCDC, a simple but effective method of achieving quick connection and disconnection to and from flanges. A series of cam locking units on the periphery of the coupler flange are clamped or unclamped by a hand held wrench.



## Monitoring System

A MONITORING SYSTEM is available for monitoring the actual position of the Loading Arm at a remote location, for Central control of Power Pack & Jetty head console.



# NEW INNOVATION

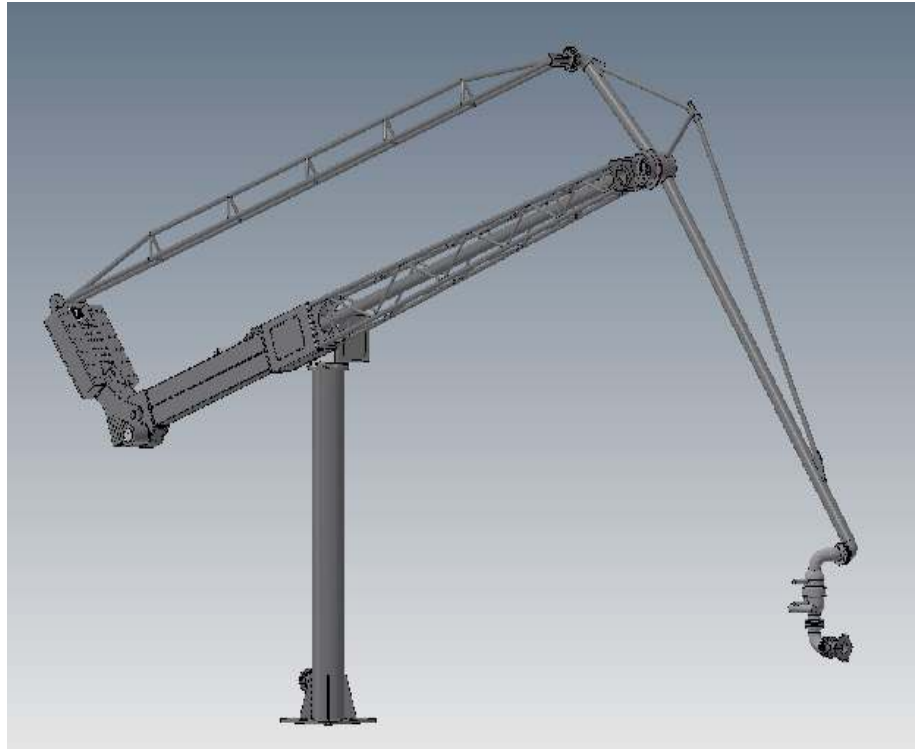
Baretti, in addition to manufacture Marine loading arms ( with cylinder and motors hydraulic) has recently patented an MLA fully operated with electrical motors.

The electrical motors combined with slew ring bearing allow a 360 degree rotation and an optimal speed control resulting in smooth movements avoiding the accelerations while starting or stopping and the resulting oscillations of the structures, resulting by the use of oleodynamic cylinders.

Moreover, the continuous reading of the angular position of each moving part of the arm are the bases for a remote electronic control allowing an automatic coupling to the manifold without the need of jetty staff.

Another immediate advantage of this design is to avoid any crane, scaffolding and pontoons for the maintenance drastically reducing shut-down period and costs.

Compared to standard's design of marine loading arms, Baretti's electric loading arms achieve a remarkable (extraordinary) improvement in functional performance, reduce the possibility of pollution and guarantee greater safety for jetty's staff manoeuvring operations.



# SITE SERVICE AND SPARE PARTS

Baretti offers supervision services covering the installation, commissioning or decommissioning / refurbishment and handover.

Baretti supplies all types of arms, refurbished or overhauled and follows all processes during the installation, respecting all safety and environmental standards thanks to the fact that all activities are always followed and managed by one specialized referent.

Our Service Engineers carry out the following activities:

- Survey
- Supervision
- Periodical inspection (half yearly, annual and biennial)
- Maintenance, Modification & Repair
- Training for operators and maintenance staff



**“All Our products are designed by Our In-House Engineering Department”**

**Our technical team is available 24 hours a day to assist our client.**  
**For any enquiry and clarification please contact us at [info@baretti.it](mailto:info@baretti.it)**

# MAJOR WORKS

CLIENT	No.	SIZE	LOCATION		TYPE	SERVICE
ENI	5	12"	Livorno	Italy	Hydraulic	Gasoline, Gasoil, FO, Crude
ENI	2	8"	Livorno	Italy	Hydraulic	Gasoline, Gasoil, FO, Crude
Saras	1	6"	Sarroch	Italy	Hydraulic	Black & White Oils
Agip Petroli	2	8"/8"	Gela	Italy	Hydraulic	LPG, -15 °C
Solvay	1	8"	Rosignano	Italy	Hydraulic	Ethylene, -120°C
Saras	1	6"/8"	Sarroch	Italy	Hydraulic	Methanol
Saras	1	6"/8"	Sarroch	Italy	Hydraulic	Methanol
Abibes	2	8"	Rosolina	Italy	Manual	LPG, -15 °C
Decal	2	6"	Porto Marghera	Italy	Hydraulic	Acrylonitrile
Solvay	1	8"	Rosignano	Italy	Hydraulic	Ethylene, -120°C
Tupras	4	6"	Izmit	Turkey	Manual	Fuel Oil
Agip Petroli	2	12"	Vado Ligure	Italy	Hydraulic	Fuel Oil
Terminales Portuarias	2	10"	Valencia	Spain	Manual	Gasoline
Terminales Portuarias	1	10"	Valencia	Spain	Manual	Gasoil / Methanol
Decal	2	6"	Porto Marghera	Italy	Manual	Black Products
Capesa	2	10"	Huelva	Spain	Manual	Gasoline / Gasoil
Enichem	1	6"	Porto Marghera	Italy	Hydraulic	Toluene Di Isocyanate
Proquimica	3	8"	Barcelona	Spain	Manual	Gasoline / Gasoil
Terminales Portuarias	2	8"	Vizcaya	Spain	Manual	Gasoline / Gasoil
Saras	1	8"	Sarroch	Italy	Hydraulic	Gasoline / Bunker Oil
Arcola Petrolifera	2	4"	La Spezia	Italy	Hydraulic	Gasoline
Decal	1	6"	Porto Marghera	Italy	Manual	Petrochemicals
Decal	2	10"	Porto Marghera	Italy	Manual	Petrochemicals
Terminales Portuarias	3	10"	Valencia	Spain	Manual	Gasoil / Methanol
San Marco Petroli	1	10"	Porto Marghera	Italy	Manual	White Oil
Decal	2	6"	Porto Marghera	Italy	Manual	Petrochemicals
CAPESA	2	10"	Barcelona	Spain	Manual	Hydrocarbons
Saras	4	12"	Sarroch	Italy	Hydraulic	Gasoline / V. Naphtha / Gasoil
Montedipe	2	6"	Porto Marghera	Italy	Hydraulic	Dicyclopentadiene
Arcola Petrolifera	2	4"/6"	La Spezia	Italy	Manual	Gasoil / Fuel Oil / Bunker
ENEL	3	10"	Monfalcone	Italy	Hydraulic	Fuel Oil (ATZ/BTZ)
Saras	4	12"	Sarroch	Italy	Hydraulic	Gasoline / Virgin Naphtha
Saras	1	12"	Sarroch	Italy	Hydraulic	Naphtha
Snam progetti	2	12"	Ravenna	Italy	Hydraulic	Virgin Nahtha
Saras	2	16"	Sarroch	Italy	Hydraulic	Crude Ballast
Snamprogetti	2	16"	Sarroch	Italy	Hydraulic	Crude Ballast
Mediterranea	2	12"	Milazzo	Italy	Hydraulic	V. Naphtha / Gasoil / Fuel Oil
Saras	1	16"	Sarroch	Italy	Hydraulic	Crude Ballast
Saras	1	8"/6"	Sarroch	Italy	Hydraulic	LPG, -15 °C
Saras	2	8"	Sarroch	Italy	Hydraulic	Gasoline
Saras	4	8"/6"	Sarroch	Italy	Hydraulic	Gasoil / Fuel Oil
Mediterranea	2	6"	Milazzo	Italy	Manual	Gasoil
Woodfield	2	12"	Das Island	UAE	Hydraulic	Crude Ballast
Woodfield	4	16"	Das Island	UAE	Hydraulic	Crude Ballast
Arsenale	2	4"	La Spezia	Italy	Hydraulic	Gasoil
ANIC	1	10"	Sarroch	Italy	Hydraulic	Aromatics
Saras	6	10"	Sarroch	Italy	Hydraulic	Aromatics
Saras	8	8"	Sarroch	Italy	Hydraulic	Aromatics
Woodfield	3	12"		England	Hydraulic	Hydrocarbons
Woodfield	4	8"		England	Hydraulic	Aromatics
Saras	3	16"	Sarroch	Italy	Hydraulic	Crude Ballast
Mediterranea	8	16"	Milazzo	Italy	Hydraulic	Crude Ballast
IROM	8	12"	S.Leonardo	Italy	Hydraulic	Black & White Oils
Mediterranea	6	8"	Milazzo	Italy	Hydraulic	Black & White Oils
IROS	3	10"	Bandar Mashur	Iran	Hydraulic	Black & White Oils
Mediterranea	8	12"	Milazzo	Italy	Hydraulic	Black & White Oils
Saras	2	16"	Sarroch	Italy	Manual	Crude Ballast
Sarom	4	8"	Ravenna	Italy	Manual	Black & White Oils
Saras	2	12"	Sarroch	Italy	Hydraulic	Crude Ballast
Saras	3	8"	Sarroch	Italy	Hydraulic	Black & White Oils
Montecatini	2	8"	Ferrara	Italy	Manual	Fuel Oil
Montecatini	2	6"	Ferrara	Italy	Manual	Fuel Oil

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