PALMIERI GROUP

Enduring Quality and Performance

ROLLER CUTTERS & CUTTING TOOLS

With over 40 years of experience in the manufacture of parts and consumables related to the Tunneling and Drilling activities Palmieri is nowadays one of the leading and most specialized companies worldwide.

Design and production of either rotating and fixed tools for any type of excavation, from horizontal boring (Tunnels for road, railways and water) to vertical boring and drilling has been Palmieri focus since the very beginning.

From the initial start with tools as core business, the Company has extended its range of interest to Engineering development, manufacturing, refurbishment and rental of underground equipment such as TBMs, Raise Boring Machines, Microtunnelling / Pipe jacking equipment, Cutterheads, Back-Up systems, Rolling Stock, as well as innovative and non-conventional solutions for all the above mentioned business sectors.

Recycling and forestry have also become an important area where to work offering a wide range of tools and tool holders, that are fully compatible with almost all machineries and equipment on the market.

FORGING · TUNNELLING · MICROTUNNELLING · RAISE BORING · DRILLING · RECYCLING · FORESTRY · SPECIAL EQUIPMENT

PALMIERI SPA CUTTING TOOLS

PALMIERI PTF TOOLS FORGING

Nowadays Palmieri Group consists of 2 companies whose respective business and know-how are strategically integrated in order to deliver the most accurate and efficient service on the market.

Palmieri's determination to achieve the diverse requirements of clients world-wide is parallel with its advancing technological resources. The use of CAD/CAM and CNC for design and precision machining are evidence of Palmieri's commitment of extremely high quality and efficient work practices. Palmieri uses only the finest European steel, robotic material handling systems and ultra modern CNC (computer numerical controlled) machines.
Thanks to its productive independence, all the Group's products are designed and produced internally, ensuring full control over the entire supply chain.
Nowadays the Group Companies are world leaders in production capabilities and can provide all products with delivery times that are amongst the shortest in the industry, followed by first class services all over the world.

ROLLER CUTTERS

The so called roller cutters are revolving tools that are mainly used in the full face mechanized tunnelling/boring fields for shafts, tunnels, with TBM, RCM, RCD and RBM equipment, either in rock or mixed grounds. They are mounted on the cutter heads and, by revolving with it, they crush the materials in front of the cutterhead.

Roller cutters can be subdivided in two main product lines:

REPLACEABLE RING CUTTERS

Roller cutters with one or two replaceable rings. The worn out ring can be replaced without the need of disassembling the whole roller cutter hub onto which the replaceable ring is mounted. The same roller cutter body can be equipped with a wide range of different ring types so to properly handle the given geologies that can be encountered during the drive.

MONOBLOCK BODY ROLLER CUTTERS

Roller cutters with one or more cutting edges that are part of the cutter body itself. These roller cutters are available in a very wide range of shapes, sizes and materials in such a way to cover any possible need in terms of geology, expected roller cutter life and performances. As an example, the tapered roller cutters that are normally used as “copy cutters” on the outer positions of TBM cutter heads and those mounted on reaming cutter heads for Raise Boring applications, all belong to the monoblock family.

In addition to the above subdivision between replaceable ring and monoblock types, roller cutters can also be subdivided in other many sub-categories, based on the following additional parameters:

· Diameter (multiple diameters in the case of tapered roller cutter).
· The amount of so-called “cutting tips”, i.e. the quantity of cutting edges (Singles, Twins, Doubles, Quad and so on).
· Geometry (the cutting tips spacing, for multiple tip cutters).
·The cutting profile, both in terms of tip shape, angles and size, and in terms of material or finishing (ST, HD, Tungsten carbide tips, hard faced tips and so on).
· The specific roller cutter position on the cutter head face area (Center cutters, Face, Gauge and copy cutters).
· The roller cutter fastening system onto its housing and the cutter installation method (from inside or outside the cutter head, a.k.a. Back or Front load mount).

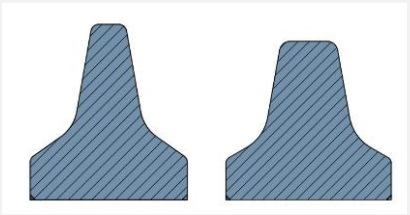
CUTTER TYPE

S -Single

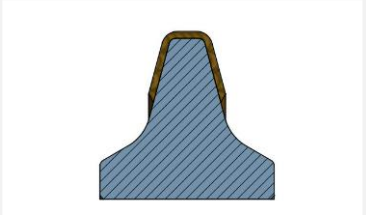
D -Double

T-Triple

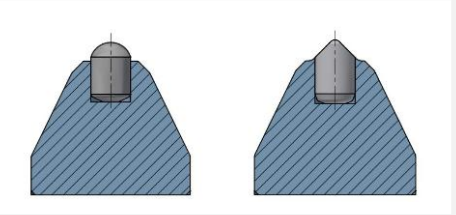
DISC DESIGN



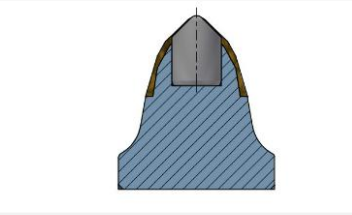
MHD - Monoblock HD



MHF - Monoblock Hard Facing



MTCI - Monoblock Carbide Insert



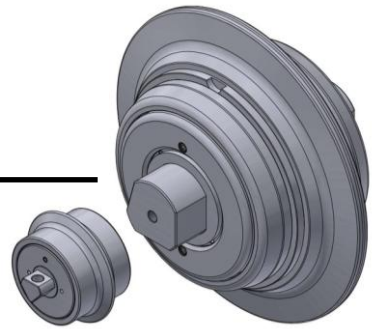
MTCI+HF - Monoblock Hard Facing & Carbide Insert

ROLLER CUTTERS – STANDARD RANGE

Palmieri design and manufacture a vast range of roller cutters for all types of applications by carefully studying the most appropriate solution for virtually every possible need, based on job geology and equipment specifications and peculiarities.

FROM Ø 6 " UP TO Ø 21"

	DISC CUTTER DIAMETER Ø	BEARINGS CAPACITY	MOUNTING TYPE	POSITION	DISC DESIGN	RIPPER TOOL COMPATIBILITY
	(inch - mm)	(tons)		(Center - Face - Gage)		(Center - Face - Gage)
MICROTUNNELLING	6" - 150	4	Front	F/G	MHD/MHF/MTCI	F
	7" - 180	8	Front	F/G	MHD/MHF/MTCI/MTCI+HF	F
	8" - 200/205	8	Front	F/G	MHD/MHF/MTCI+HF	F
	9" - 220	8	Front/Back	F/G	MHD/MHF/MTCI+HF	F
	10" - 250	7 - 10 -12	Front/Back	F/G	MHD/MHF/MTCI/MTCI+HF	C/F/G
	11" - 280	13 - 14	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF	C/F/G
	12" -305	13,5 - 16 - 20	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	13" - 330	16 - 20	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	14" - 356	20 - 25	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
TUNNELLING	15"- 381	20 - 25	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	15"1/2 - 394	20 - 25	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	16"1/4 - 413	25	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	17"- 432	25	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	18"- 457,2	25 - 28	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	19"- 482,6	35	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	20"- 508	35	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G
	21"- 533,4	35	Front/Back	C/F/G	MHD/MHF/MTCI/MTCI+HF/RR	C/F/G

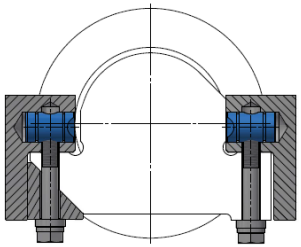
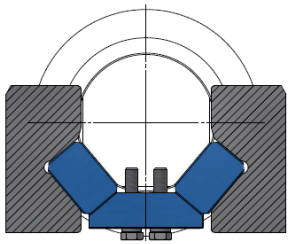
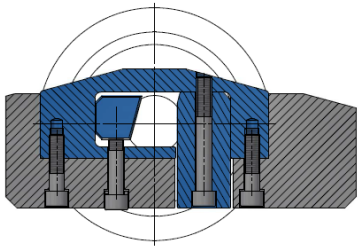
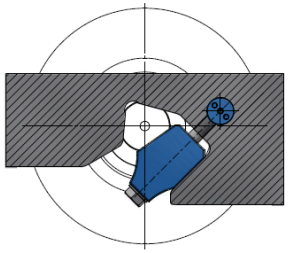
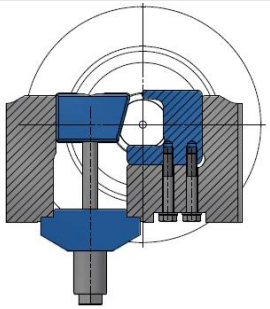


Palmieri also design and manufacture special non- standard sized roller cutters for special applications, starting from Ø 115 mm onwards.

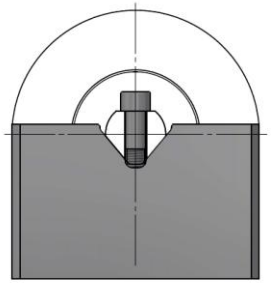
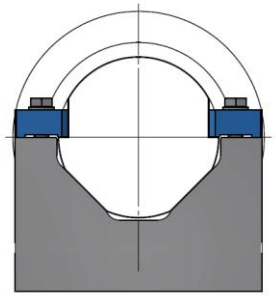
HOUSING SYSTEM

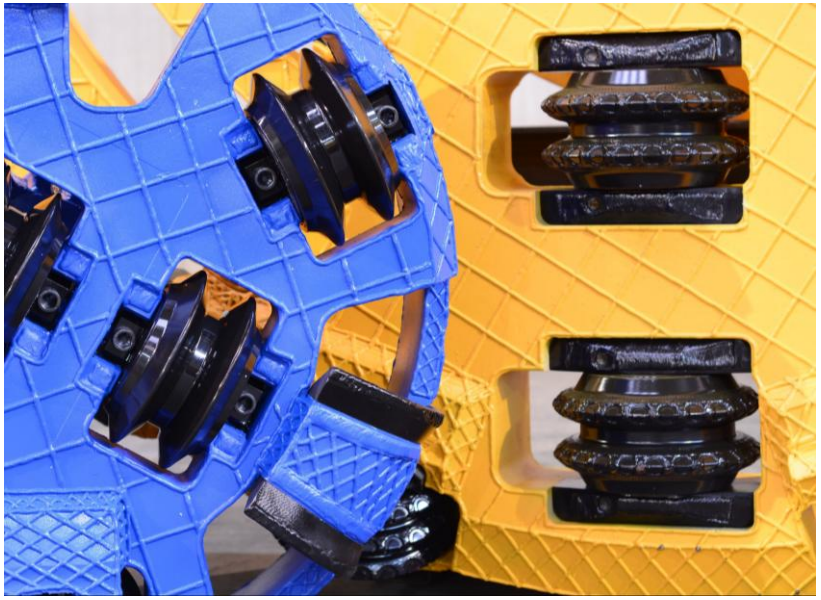
In addition to the production of roller cutters, Palmieri design and manufacture several types of housings and fastening systems for roller cutters. The roller cutter housings are made of special high strength steel, very often from a single machined steel plate and are used both in the refurbishment or alteration of existing heads and in the manufacture of brand new cutterheads by some of the most respected TBM and boring equipment makers worldwide.
Roller cutters can be mounted onto cutterheads either from behind (Back load mount) or from the front (Front load mount). For both the systems, a very wide range of designs are available; here are few examples:
In the case of some back load designs, (see the first two figures), it is possible to modify roller cutter position (roller cutter protrusion for over cut purposes) by simply using differently sized fastening kit parts.

BACK LOAD MOUNT

FRONT LOAD MOUNT

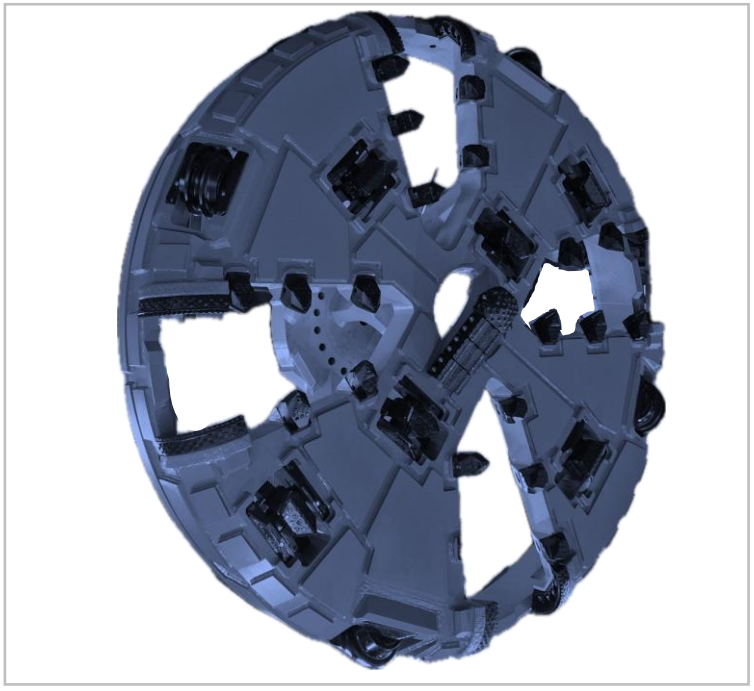



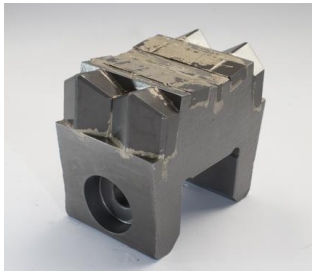


CUTTING TOOLS

Palmieri Group manufacture a vast range of fixed tools of all type and purposes, suitable for excavation in virtually any type of ground conditions.
The tools ranges from the most simples designs, without inserted bit and hardfacing for soft grounds to the most sophisticated, high performance types with brazed tungsten carbide inserted plates bits and wear proof hardfacing layers for medium to hard rocks.

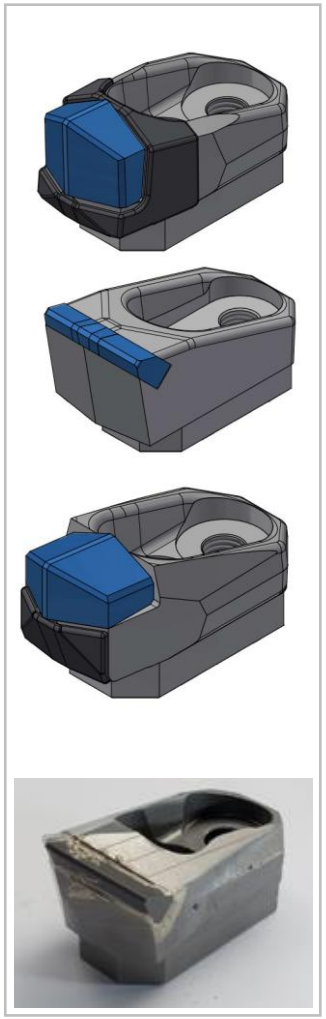
As a world leader in the manufacturing of boring an cutting tools, Palmieri Group also design and manufacture a wide range of special, non-standard items, with special attention and dedication to all our clients' special needs, resulting in the most suitable products for both geology and equipment specifications.
Here below are some types of tools manufactured by Palmieri:





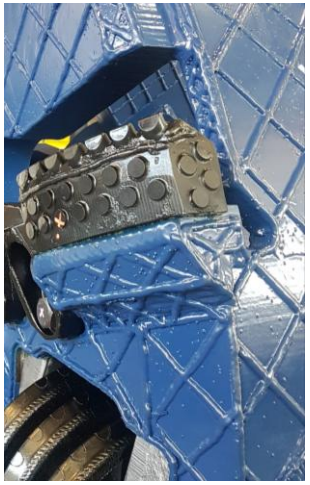
This category includes all tools that are meant to "scratch" the ground face in front of the machine.
These tools can work either alone (in softer grounds) or in combination with roller cutters (in harder geologies).
Several shapes and sizes of scrapers are available, depending on their geometry, their position on the cutterhead (from the center fishplate to the most external cutterhead positions); depending on their specific purpose, they can come equipped with either inserted tungsten carbide tips and/or hardfacing layers to minimize wear and tear so to ensure long operating life in all ground conditions.

Most of Palmieri's bits and scrapers are bolted to their support in order to allow an easy replacement during service while some other models are welded directly onto the cutterhead structure, especially in the case their main purpose is to provide extra protection from wear to roller cutter housings or other tools.

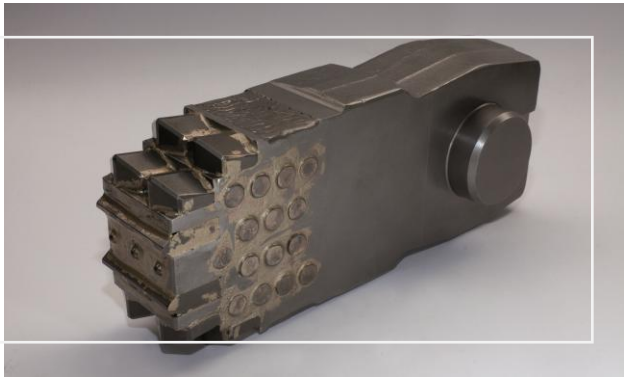


CUTTING TOOLS

These are fixed tools helping to remove cut materials from the cutterhead front by moving them onto the loading buckets thus keeping the cutterhead front clean and free from clogging.
The so called buckets are especially shaped tools that are used even in harder formations, on fully roller cutters dressed heads. All buckets are carefully dimensioned and designed in accordance to the specific cutterhead type, shape and size and are normally equipped with a variable amount of protective tungsten carbide inserts and /or hardfacing layers depending on ground abrasivity and hardness.



Ripper tools are quite commonly used in place of roller cutters in the case geology to excavate it too soft and sticky, preventing the roller cutters from properly rotating, thus losing their effectiveness. Ripper are fastened to a special adapter box that replaces the cutter assembly into the same existing roller cutter housing by using the existing cutter fastening parts.
Ripper designs are quite diversified in such a way to virtually cope with a very wide range of soil to be excavated; as with scraper and bits, they can be equipped with a variable amount of protective tungsten carbide inserts and/or hardfacing layers depending on ground abrasivity and hardness.



SPARE PARTS AND CUTTERS REBUILDING

In addition to manufacturing a wide range of brand new roller cutters shipping worldwide, Palmieri also specializes in the supply of spare parts and in the rebuilding of 2nd. hand roller cutters, both original Palmieri or manufactured by our competitors.
Palmieri Spa has a special branch with its own factory especially conceived to manage cutter assembling, rebuilding and shipping. In order to guarantee proper responses in due course, this building is also the seat of a huge inventory of the most standard roller cutter and tool parts.

For those clients who prefer to be fully independent in the roller cutter rebuilding process, especially on site, Palmieri can provide special "Workshop Containers" which are real cutter workshops on a smaller scale, fitted with all what is needed for disc cutter rebuilding, equipment and special dedicated rebuilding tools for the cutter types actually used in the local jobsite.

In addition to the Italian main factory for cutter rebuilding, the Palmieri Group is adequately represented worldwide by a large amount of authorized cutter rebuilding workshops; to name a few, they are in Switzerland, France, Spain, China, India, Mexico and Peru.

The specialized personnel operating these rebuilding units abroad has been especially trained in our factories in Italy so to provide the best possible support both in cutter rebuilding and on jobsites.

TECHNOLOGY AND INNOVATION

Thanks to its special attitude towards innovation, both in the search of new solutions and in investing in the latest technologies and in the most advanced equipment, in order to supply its clients with the best possible products, Palmieri companies use the most advanced software packages for 3D modelling and structural analysis (constantly updated), as well as latest generation CNC machining centers and equipment for its production.

IN-HOUSE FULL MANUFACTURING, FROM STEEL BARS TO THE FINISHED ITEM

The strong cooperation and synergy between the different companies of Palmieri Group, such as the integration with our forging division with its hot-forging and heat treatment departments, allow the Palmieri companies to manufacture the majority of its items in house with a flexibility and delivery times that are second to none in the industry.

EXPERIENCE AND RELIABILITY

On the market since 1972, the Palmieri brand has been conveying all of its experiences and knowledge in the design and manufacture of the best performing tools for all excavating and boring techniques and in virtually any kind of ground conditions, from the softest soil to the hardest of rocks.

MADE IN ITALY, TOP QUALITY

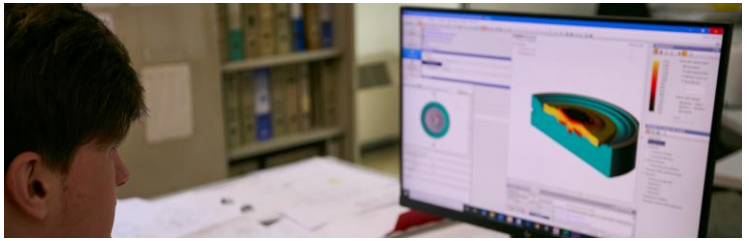
Palmieri is a UNI EN 9001:2000 certified company since 2001. Our products quality controls start with the controls on the incoming steel bars (exclusively supplied by well-known and most respected European steel suppliers) and follows each phase of the items production, in most of the cases until the final assembling on the cutterheads or on our end users equipment for which the tools has been designed. We use the latest equipment for quality controls, such as 3D dimensional test, lasers and ultrasonic technologies to ensure the highest possible consistent quality.

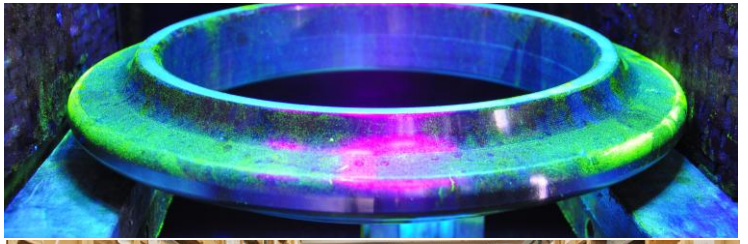
CLIENTS SUPPORT AND LARGE INVENTORY

Palmieri manages and handle an incredibly vast inventory of tools and products. Amongst Palmieri's services to clients, are also special maintenance and refurbishment of 2nd. hand roller cutters to increase clients savings and lower final costs. Our service is second to none, with a round the clock, dedicated service hotline for tools and spare parts.

FLEXIBILITY

The main reason why Palmieri has become an undisputable leader in the industry is its capability to constantly adapt to its client's needs by guaranteeing at all times the best solution on the market even in the design of special tailor made products for special or unconventional applications.





FORGING | TUNNELLING | MICROTUNNELLING | RAISE BORING | DRILLING | RECYCLING | FORESTRY | SPECIAL EQUIPMENT

Enduring Quality and Performance

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