



Precision Mechanical Components

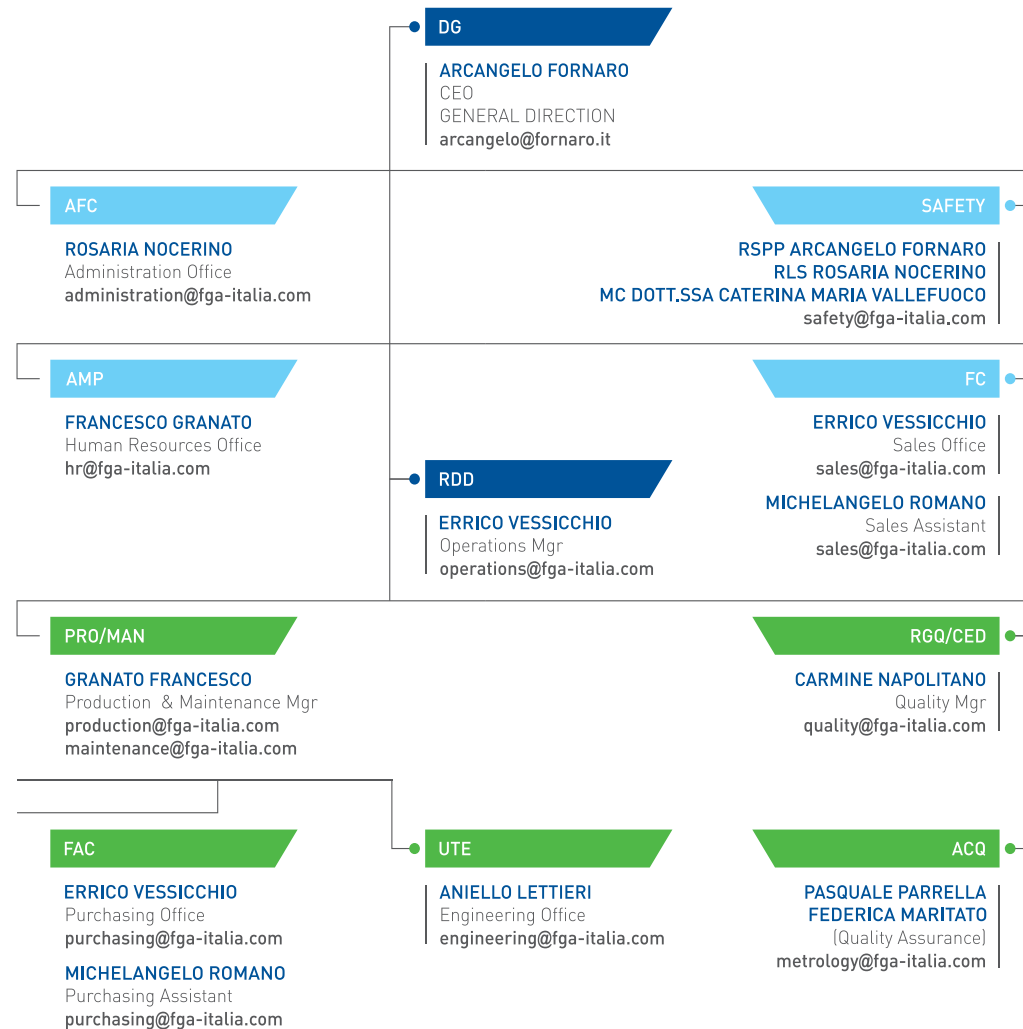


www.fga-italia.com



Manufacturing
of **precision**
mechanical
components
for the **railway**,
industry,
automotive and
aeronautic sector

ORGANIZATION CHART



THE COMPANY

FGA is a company of Brusciano (Naples) and It has a long tradition in the mechanical sector, thanks to a “**know how**” acquired in over **40 years of experience**.

The manufacturing plant, covers an area of **6000 square meters**, of which **3000 square meters** are intended to production departments and technical and administrative offices.

FGA is a company specialized in the manufacturing of precision mechanical components for the **railway, industry, automotive and aeronautic sector**.

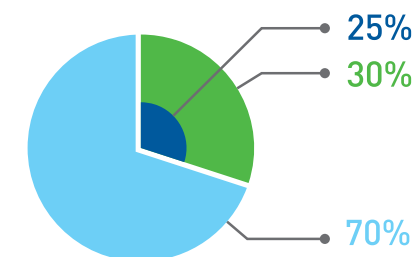


THE TEAM

Organization and human resources

The company is made up of **40 employees**, among which the indirect labor represents 30% of the employees. All functional areas (direction, administration, engineering, production, quality and logistics), are covered by specialized personnel.

Direct personnel: 70%
Indirect personnel: 30%
Graduated personnel: 25%



THE COMPANY

The strong points of the company are the **flexibility** offered in order to satisfy the customers' needs, together with the **ability to adapt** to the variable market conditions.

The management is strongly oriented on continuous improvement of company processes and it is constantly investing in its human resources, considering them the main source for the company asset.

The management policy is based on the full involvement of all workers in order to share the results, objects and strategies.

40 YEARS
OF EXPERIENCE



THE TEAM

Knowledge as intellectual capital



The talent of **FGA's** employees and the efficiency of its management system as well as the relationship with the customers represent the **intellectual capital of the company.**

The intellectual capital is considered the strategic element to achieve goals and It is supported by appropriate actions to develop and improve its value.

SEAL RINGS

The seal elements in a bearing are many and they are chosen according to their application (Retain lubricant, exclude contaminants, operating conditions).

FGA produces a wide range of contact seals:

- Radial shaft seals
- Axial clamp seals
- Mechanical seals



These high specialized products are realized on cnc machines.



TECHNICAL DATA SHEET



Materials: E355 EN10025-2 (1.0060) / C45 EN 10083 (1.1191)

Informazioni tecniche: according to a specific customer request

Turning limits: up to Ø 800 mm

Grinding limits: up to Ø 150mm

Surface treatment: zinc - phosphating



BUSHINGS AND TURNED RINGS

The production of bushings and turned rings, considered as realization of products from small to large lots, is divided into more departments that are organized by type of manufacture. The productive layout offers great flexibility in realizing every ring or bushing with high precision, for the application in any industrial sector. FGA is particularly specialized in the production of rings for bearings, its long tradition in the turning of steel and metals is constantly used for the realization of turned rings, according to specific customers' requests.



TECHNICAL DATA SHEET



Materials:	100 Cr6 (1.3505) / 100 CrMo7 (1.3537)
Technical information:	according to a specific customer request
Turning limits in multispindle department:	up to Ø 102 mm
Turning limits in CNC department:	Ø 150 mm for tubes; Ø 800 for blanks

The production of bushings and turned rings is realized in the multi-spindle department, with 20 automatic machines, mainly Gildemeister. The daily production capacity, considering an optimal mix of production is about 90.000 pieces. The production of bushing and turned rings is realized also in the CNC department with 25 machine tools with logic control siemens. For the production of rings with external $\varnothing \leq 150\text{mm}$, FGA uses lathes with integrated bar feeder, this solution allows to reduce the production costs. Moreover the availability of High-performing CNC machine tools offers the possibility to realize the turning step on an already hardened piece with hardness \geq of 62 HRC.



BUSHINGS AND GRINDED RINGS

The bushings and the grinded rings are components in hardened steel. They have high dimensional precision and surface finish, their function is to reduce the rolling friction between the ring and the rolling element. FGA realizes, according to a specific customer request, every type of bushing and inner or outer ring grinded. The production of rings is mainly intended for the assembly of ball bearings, cylindrical roller bearings and tapered roller bearings. These type of bearings are classified, according to the type of movements they allow, their operating principle and the direction of the applied load that they can handle.



TECHNICAL DATA SHEET



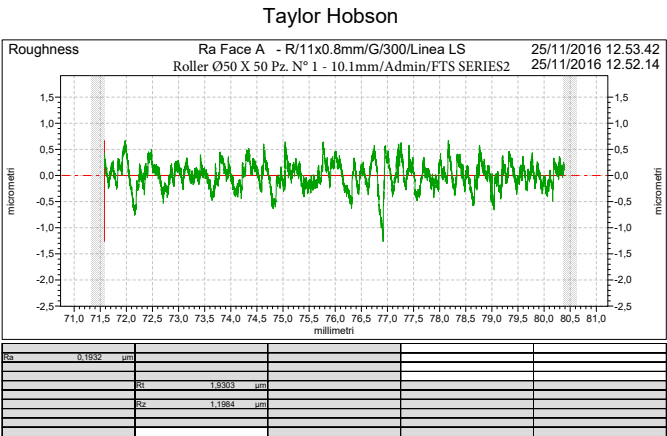
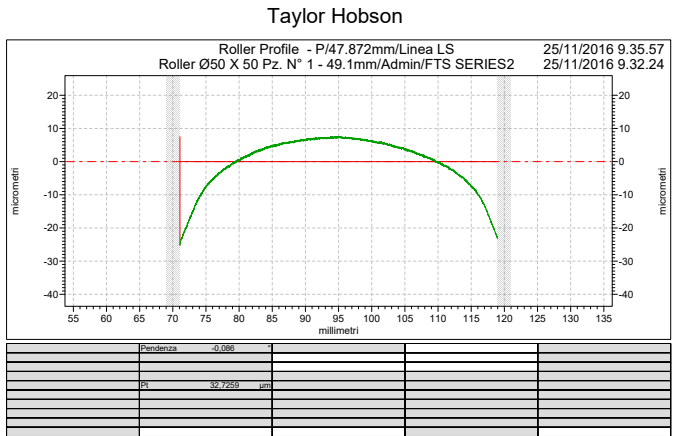
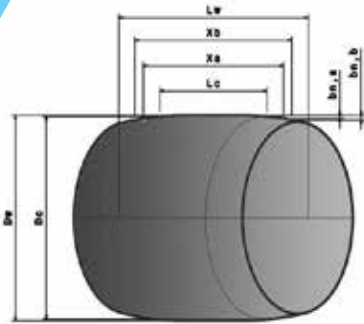
Materials:	100Cr6 (1.3535) / according to a specific customer request
Technical information:	according to a specific customer request
Grinding limits:	15 mm - 150 mm
Parameters of roughness:	Ra max 0,25 µm
Parameters of roundness:	ΔR max 0,2 µm

The choice of abrasives and the type of lubrication during the manufacturing process, are key elements for the productive efficiency and the final quality of the grinded ring.



ROLLERS WITH LOGARITHMIC PROFILE

Cylindrical rollers with “Log Profile” are the basic elements of rolling bearings. The ZB profile prevents overloads on the corners in interaction with the profile of the rings’ raceways of the bearing. The constructive technology called “logarithmic profile” is therefore perfect for a homogeneous load distribution. The special finish is made to obtain an optimal lubrication during the work, guaranteeing a longer life.



TECHNICAL DATA SHEET



Materials:	according to DIN EN ISO 683-17
Technical information:	DIN 5402 / DIN EN ISO 1101 - 2012
Diameter range:	25 mm - 150 mm
Length range:	25 mm - 110 mm
Parameters of hardness:	HRC 58 - 65
Parameters of face roughness:	Ra max 0,5 μm
Parameters of diameter roughness:	Ra max 0,3 μm (precision class GN); Ra max 0,16 μm (precision class G1)
Parameters of roundness:	ΔR max 0,2 μm (precision class GN); ΔR max 0,16 μm (precision class G1)

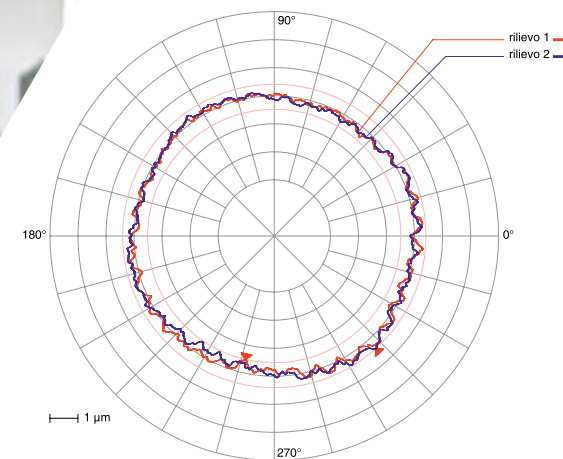
FGA produces rollers according to UNI/DIN standards and to the drawings provided by the customers. They are realized in a large variety of dimensions, precision grades and they are selected according to the standard tolerance classes. Rollers are applied in several sectors, such as, the automotive sector, industrial sector, linear guides, aviation sector and wind power.



SPHERICAL ROLLERS

The rollers are elements placed between the inner ring and the outer ring of a bearing. The use of high quality rollers allows to reduce the rolling friction and to ensure an optimal load distribution, with low stress level. Their use guarantees an extension of the bearing's life. FGA is specialised in the production of spherical rollers called "barrel" that can be realized with:

- chamfer faces
- flat ends



TECHNICAL DATA SHEET



Materials: 100Cr6 (1.3505) / 100CrMnSi6-4 (1.3520) / 100CrMo7-3 (1.3536)

Technical information: DIN 5402

Diameter range: 25 mm - 150 mm

Length range: 25 mm - 110 mm

Hardness: HRC 58 - 62

Face roughness: Ra max 0,35 µm

Diameter roughness: Ra max 0,25 µm

Roundness: ΔR max 0,2 µm

FGA produces spherical rollers (called “barrel rollers”) the productive process starts with the turning step, where the raw material is processed on CNC machines until the grinding step, that occurs on semi - automatic machines. The dimensional characteristics and the roller profile are the main parameters under control. International customers, leaders in this field, certify the productive process. The manufacturing process provides excellent results for the quality of the product. It is carefully studied in order to have the correct definition of the machining cycles, the choice of abrasive materials and related machine’s equipment, in order to result stable as highlighted by the repeatability of the results obtained during the process control and final testing.



MECHANICAL BEARINGS

FGA is highly specialized in the manufacturing of special bearings. They are realized according to the customers’ specific requests and the drawings they provide. Every single part of the bearing is realized internally. The dimensional range limits are 150 x 90mm and they are divided in thrust bearings and radial bearings according to the direction of the main body. The shape of the rolling element divides the bearings into ball bearings and roller bearings.



MECHANICAL BEARINGS

FGA is highly competitive in the realization of bearings, that are dimensionally out of standard and that are intended for several applications, for every industrial sector.



FLANGES PRODUCTION

FGA has a consolidated experience in the production of flanges for the industrial and energetic sector. The flange is a precision mechanical part intended for a non-permanent coupling of other pieces through screws and bolts. They are classified according to their surface finish, or rating, that depends on the dimensions and the maximum pressure allowable.

Among the consolidated production, there are flat face flanges and raised face flanges, classified according to their sealing surface, the threaded flanges and the blind flanges are classified according to their fastening system.



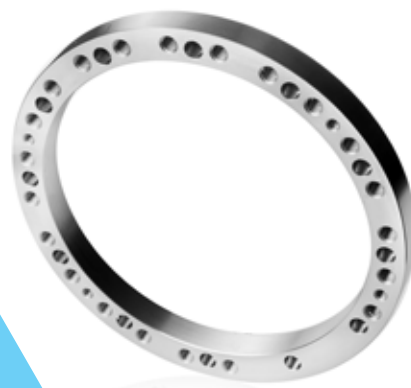
FGA develops and manufactures high precision mechanical components headed to the energy sector. In the last years there has been a close cooperation between FGA and the research centers, for the production of flanges series for electromechanical actuators.

TECHNICAL DATA SHEET



Materials:	39NiCrMo3; 38NCD4; 42NCD4; 100Cr6
Technical information:	according to a specific customer request
Dimensional range:	External Ø up to 700 mm
Hardness parameters:	34 – 38 HRC

Among the consolidated mass production we highlight the production of series of flanges for electromechanical actuators.

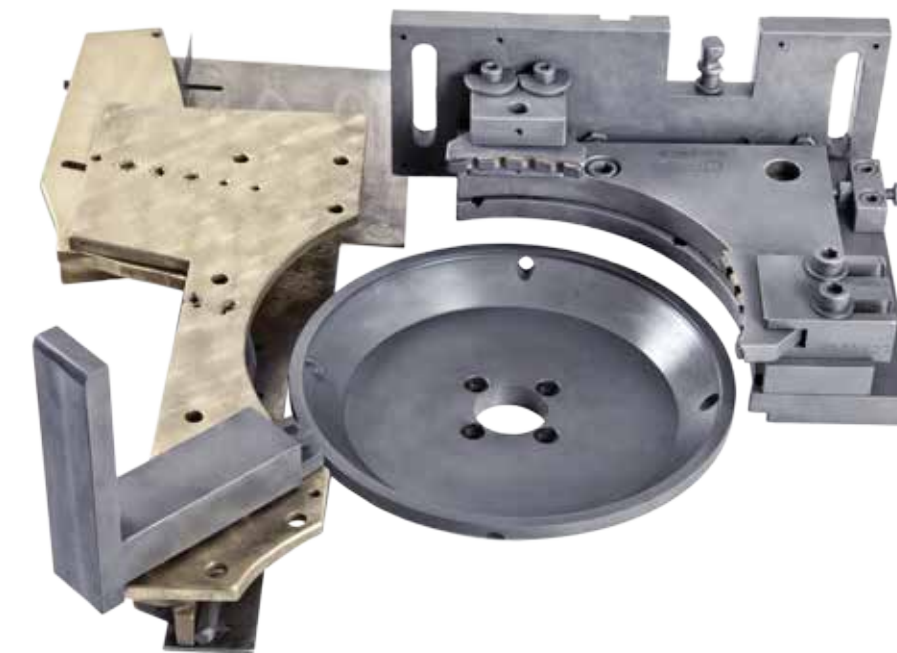


MECHANICAL EQUIPMENTS



The units are all designed, assembled, constructed and mechanically tested in **FGA**. The mechanical equipments can be provided for a **single application** and/or for **large batches** according to the various needs.

FGA implements its activities, according to the 5S method, in order to propose to its customers, products with predefined standards.



MECHANICAL EQUIPMENTS



The **equipment kits**, are realised according to the **SMED** analysis to reduce the set up time.

ENGINEERING

The company has included the designing and the co-designing of mechanic components in its activity, according to specific customers' requests.

FGA uses the **FMEA** technique to predict potential production problems during the designing and developing process.



ENGINEERING

Development and realization

FGA's technical office is equipped with **qualified personnel**, powerful computers and modern calculation softwares. The equipment allows FGA to follow the costumer during the entire process of development and realisation of the product:

- Overall coordination of the project.
- Preliminary analysis and feasibility studies.
- Instrumental calculation and FEM simulation.
- Mechanical design and the detail design of the parts.
- Automation in machine and plant supervision.
- Manufacture and assembly.
- Check and final testing.



CERTIFICATIONS



Quality management system

The quality management system of FGA is certified by **DNV**. FGA has the following certificates:

IRIS, (n°129814-2013-AQ-ITA-UNIFE)
UNI EN ISO 9001, (n° 131835-2013-AQ-ITA-ACCREDIA).

The detailed technologic knowledge of the machine and the manufacturing process guarantees the **conformity of the product**. The management system is structured in order to make every manufacturing step traceable.





CERTIFICATIONS

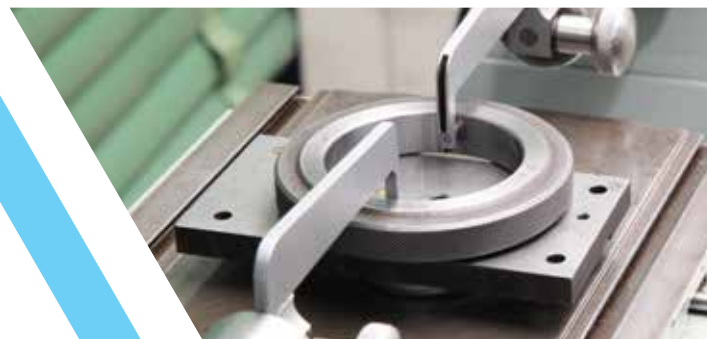


Metrology room

FGA is equipped with a metrology room with a constant and controlled temperature. In the metrology area, the tests are made on the materials and components using the best measure tools and softwares to release the final test certification.

The certifications involve the following controls:

- Dimensional tests;
- Shape tests;
- Surface tests;
- Non-destructive tests:
 - metallographic analysis with Nital attack method;
 - magnetoscopic analysis with magnetic particle examination.
 - eddy current.



MACHINERIES

Turning machines

Graziano SAG22
Padovani S/200
Misal
Momac

CNC machine tools

Emco Padovani 700
Emco Padovani 500
Emco Padovani 400
Angelini
Vega (n.2)
Galaxy (n.2)
Padovani Labor 185
Padovani Labor 165
Emco 365 MC
Famar
Hyundai SKT-V5
Padovani
Ursus CMT

Multi-spindle machines

Gildemeister AS100 (n.3)
Gildemeister AS82 (n.3)
Gildemeister AS67 (n.8)
Gildemeister AS48 (n.2)
Conomatic 4" (n.3)
Conomatic 3" 1/2

Turning diameter

560
400
400
400

Turning diameter

700
500
400
350
300
250
450
250
250
250
800
510
500

Maximum diameter of tube

100
82
67
48
102
89

max distance between ends

2500
1700
1700
1700

Maximum diameter of tube

125
102
65
150

Dimensions in mm



PORTFOLIO

Milling machines

Heckert CSK 400P
Mikron WF 35A
Zeus
Deckel
Mikron
Gualdoni

Grinding machine tools

Alpa RVA
Rastrelli RT3
Stefor RTB
Giustina R
Giustina RA1 (n.2)

Grinding machine tools

Tacchella 1000
Tacchella 700
Ribon
Ribon

Automatic Grinding machine tools

Cincinnati Centerless
Cincinnati Microcentric (n.3)
Famir rettifica foro (n.3)
Famir rettifica piste (n.2)
Heald AR
Jung (n.3)
Fag rettifica piste

Other machine tools for special processes

Dimensional limits

650x450
500x300
500x400
500x500
500x400
600x300

1000x300
800x300
800x400
Ø 800
Ø 150

Ø 350
Ø 250
Ø 300
Ø 280

Ø 150
Ø 140
Ø 80-120
Ø 80-120
Ø 120
Ø 120
Ø 200

H

500
400
500
400
400
600

H

300
300
400

Max distance between ends

1000
700
1500
1000

Dimensions in mm



FGA's customers

FGA with its **40 years of experience** is proud to mention among its customers the most important companies in the **railway, automotive and aeronautic sector**. Those companies choose **FGA** as a strategic partner. **FGA's** goal is to offer its customers a service up to their expectations, guaranteeing a **perfect performance of the work** and respecting the required specifications and delivery terms.



Our best partners:



UMBRA GROUP

LIEBHERR

IMO

NTN



LAULAGUN
bearings





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