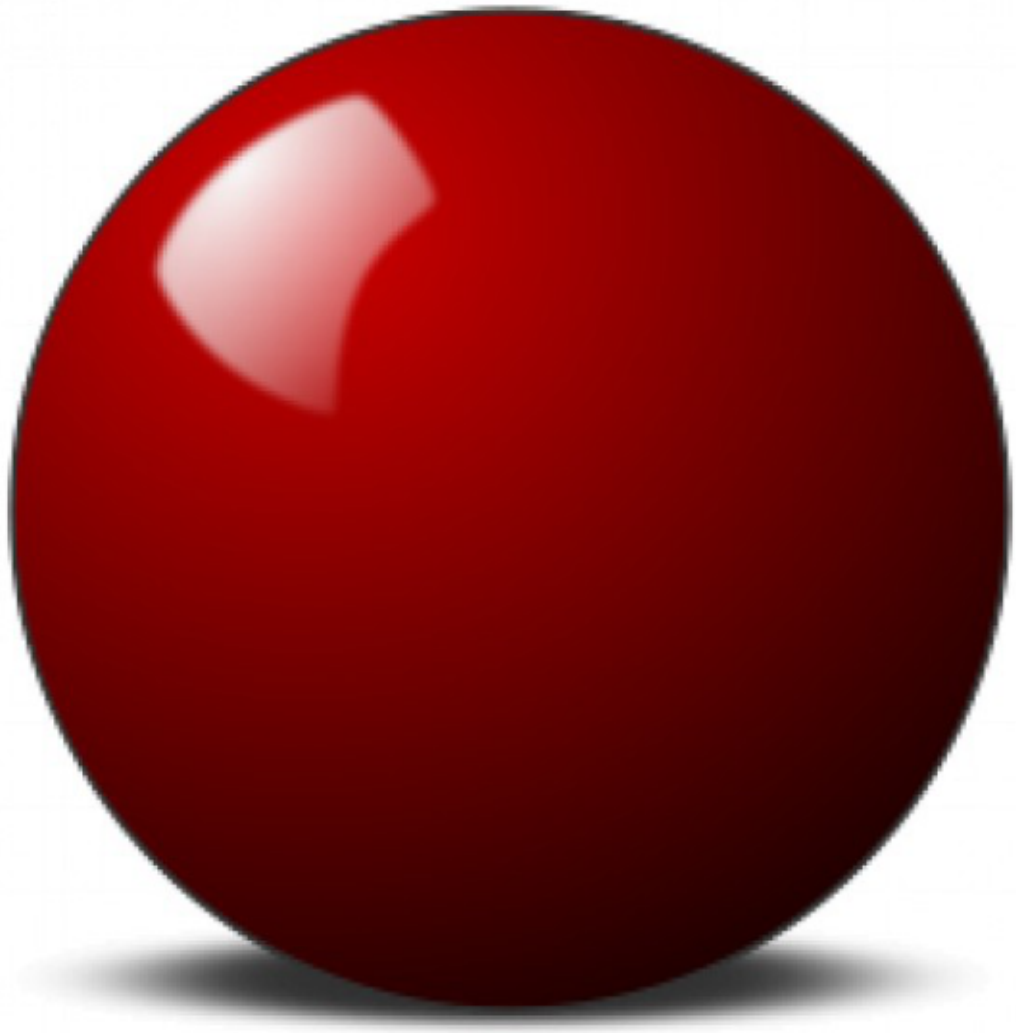
PERFECTION IN PRESS FIT OPERATIONS



MAXIMIZE YELD, ENHANCE YOUR QUALITY, OPTIMIZE TRACEABILITY

AULOMA - HOW SOLVE YOUR QUALITY ISSUES

World manunfacturer industries are always seeking ways to enhance quality. Quality improvements means also increase profits by reducing costs. Often just-in-time supply chains and lean manufacturing trends are helping them to meet the challenges of glabal's market but this novadays isn't enough. Auloma's customers know that developing and maintaining a competitive edge needs more. With scraps by defects and quality-related issues reducing industries profits every year, but the worse issues about defects depends by malfunctioning in warranties, recalls, and damage to reputation brand. Novadays is possible reducing this issues and managing. Auloma is committed to help its customers and optimize their manufacturing processes by system capable of monitoring the press fit quality in run. Our Auloma Process Monitoring (APM) technology provides confidence in the process operations executed through our device. Unparalled defects detection on the press fit process through APM monitoring catches immediatelly variations that impact both yield and quality, Auloma has built its proven signature analysis technology to provide in-depth visibility into the issues that affect the manufacturer's ability to deliver on time and on budget. APM enables a cycle of continuous improvement that engages your processes at every point, and allows you to apply knowledge gained to avoid repeating problems in the future, ensuring consistent quality, driving increased yield and transforming continuous improvement into improved profitability.

The six sigma theory assert that the goal of a productive process is a value of 6 standard deviations within the upper limit and the lower limit around the centre. The centre consist in which values that represent the perfection of the quality process. In other words the maximum deviation of productive process shall be included in a gap of one twelfth in the entire specification wide. Often this rules isn't applied in strict manner. The six sigma is used as a methodology to reduce the production defects. This approach however result wrong today. A serious approach to six sigma methodology can help the industries to improve the quality standards and reducing the cost of waste products. Nowadays the technology offer a wide range of solutions to monitoring the productive process and have measurement of process capability. This capacity is usual to create the quality benchmark to reach the 6 deviations. Auloma servo press thanks the built-in process monitoring can provide many informations about the quality of the parts obtained by the press application. The data analysed by our process monitoring can be saved in remote by Ethernet connection in CSV format and processed in six sigma software applications.

THE AULOMA VALUE PROMISE

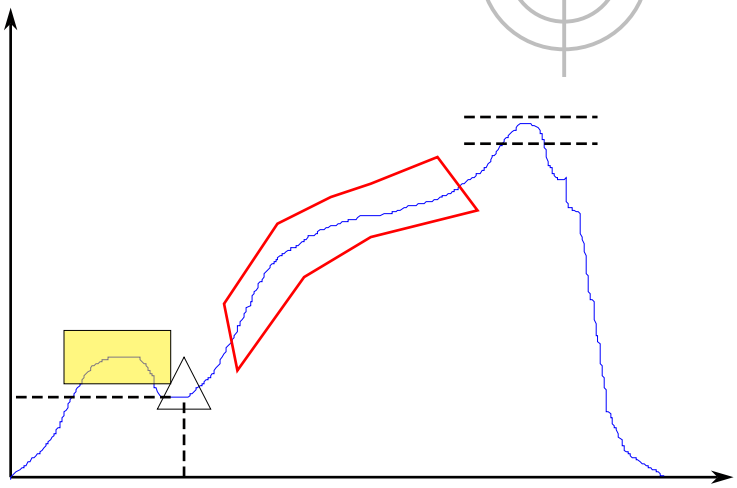
CONTINUOUS CHEEK AND CONFIRMATION OF SPECIFICATION QUALITY
DEFECTS AND ABNORMALITIES SEEKING IN RUN
POST PRODUCTION QUALITY TEST ELIMINATED OR REDUCED

Every press fit operation has one or more unique signatures that can be used to determine its success or failure. In a controlled process, the same things occur in the same order and at the same times. The features within the signature tell you whether the process is consistent. An audiometry (BERA) is a common example of a process signature. In the case of a BERA, the process is the noise, and the output is your hearing capability. The BERA does not measure the hearing directly; instead, it measure the reaction of the patient at the noise stimulations. Most BERA signatures look very similar to an untrained eye but the otoryngologist extracts certain key features from this complex signature to understand behaviour. These features indicate the condition of the hearing and can pinpoint precisely what, if anything, is wrong.

Auloma Process Monitoring (APM) technology allows the application of the same conceptual analysis to virtually any press fit process. APM evaluates the response of all critical parameters during a process, allowing you to determine with great confidence whether that process conforms to your quality requirements and whether the component produced is good or bad. Because signature can be applied to any press process, APM technology is applicable to any metal forming manufacturing, testing machine or assembly process, regardless of industry, and can be used to confirm quality wherever materials are removed, formed or joined, and wherever parts are assembled or tested.

A process signature consist in a X-Y waveform obtained by the constant sampling of the sensors embedded in the servo presses. Thanks to the force sensor and the encoder outputs interpolated in real time, APM provide a Displacement VS Force signature. The analysis of the waveform is bearing through the Hi and Low force off set values set on the waveform.

The APM is available in different packages with differents levels of waveform analysis and different press cycles set-up



APM REDUCED A PRODUCT RECALL FROM 5,000 UNITS TO ZERO

A serious defect found postshipment left a manufacturer facing a potential recall of 5,000 units. Using Auloma's servo presses with APM embedded the manufacturer reviewed the test signatures of the defective part, which had been captured in run by APM process monitoring on the production line. They identified the anomaly in the process signature that indicated the presence of veal of rust in the fitted part. Now all parts fitted in the engines have a preliminary inspection to discard the rusted parts. In case some parts are attaching by corrosion from the hard tropical environment, during the gap between preliminary test and fitting, our servo press seeking immediatelly the defects in run. Today no engine are affected by any problems of wet corrosion.

THREE DIFFERENTS WAYS FOR MONITORING YOUR PROCESS

APM - MONO

APM-MONO is our entry level press program. The software is installed in the servo drive SIEMENS® and own a pre-configured drive profile to control the servo press movements. The drive pofile is programmed in advance according the customers specifications. The program has set 12 differents traverse speed and 12 differents working speed and through the I/O inferace is possible select the wished speed from the main PLC. The press force is measured in a portion of the working press stroke and is defined by our developers before the commitment. During this step, if is required, is also possible set an HI and LOW force off-set for a force control. The force analysis response is communicated to the master PLC through digital I/O network.

APM - MONO is available for all Auloma's tailor made servo presses equipped by SIEMENS® hardware.

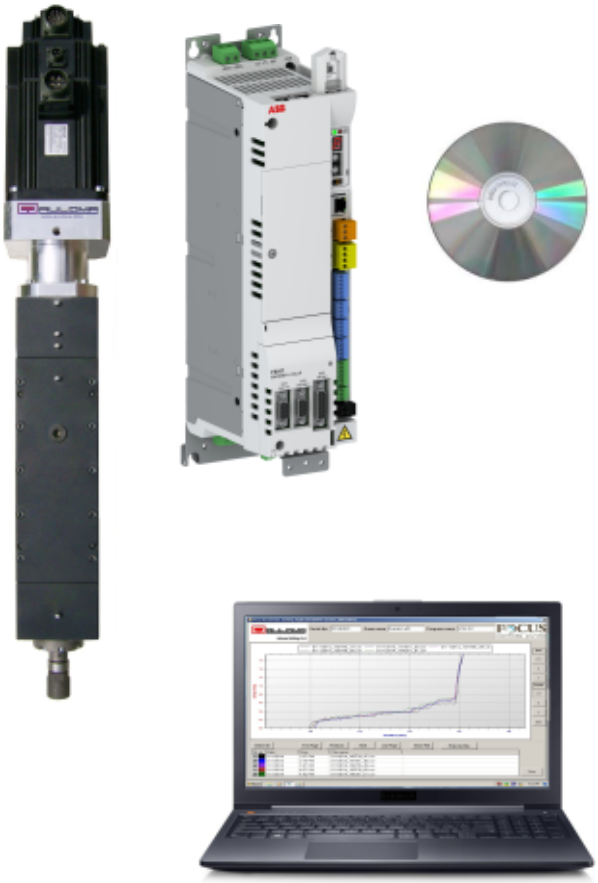
APM - BA

APM-BA is our best program for press fit operations. The software is installed in the servo drive ABB® and own 3 different preconfigured press drive profile. The drive profiles available are capable to solve the most press fit applications and the press can be operate to:

- Press to froce
- Press to position
- Press to relative position

The set up of the 3 drive profile is possible through APM-BA PC Tool-Kit, a smart PC software tool where is possible follow the wizard to program the press in few minutes. By the PC Tool-Kit is possible also set up the HI and LOW force off set for monitoring the process and is possible display the analysis waveform and curve trends. The APM-BA PC Toll-Kit run on wichever PC machine, laptop, desktop, server with MS Windows Vista ® or later versions. The system doesn't need any knowledge in PLC program. The communication among the servo drive and the master PLC is effectuated through the digital I/O network.

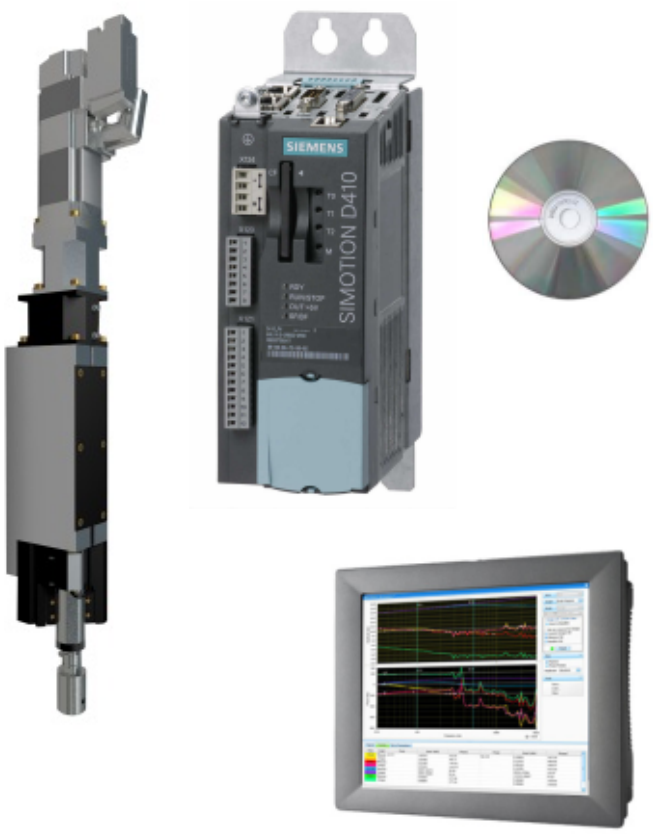
APM - BA is available for all Auloma's standard servo presses equipped by ABB® hardaware.



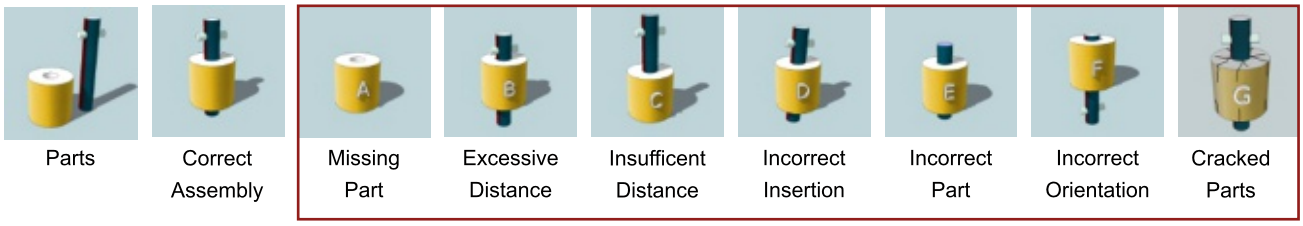
APM - SI

APM-SI is our universal press toll for program complex and multiple press fit operations. The software is a tool kit available for wichever PC machine, laptop, desktop, server with MS Windows Vista ® or later versions. The tool help the programmers to develop the press fit program and to set the HI and LOW force off set included the waveform direction. Through APM-SI will be possible organize infinite press operation sequences and the relative process control. The tool is developed to program all our M presses and further tailor made servo presses equipped with hardware SIEMENS®.
All communications among the master PLC and our servo drive are executed through the Profinet or Ethernet TCP/IP network. To APM-SI use is required a good knowledge in PLC program

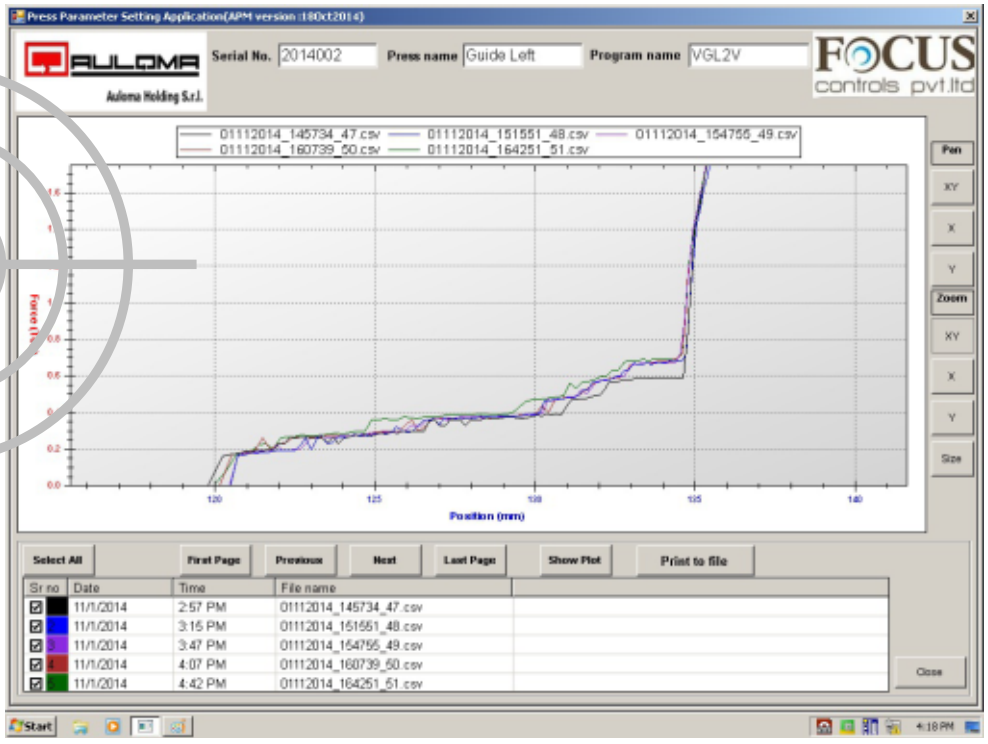
APM - SI is available for all Auloma's M servo press and for all tailor made servo presses equipped by SIEMENS® hardware.



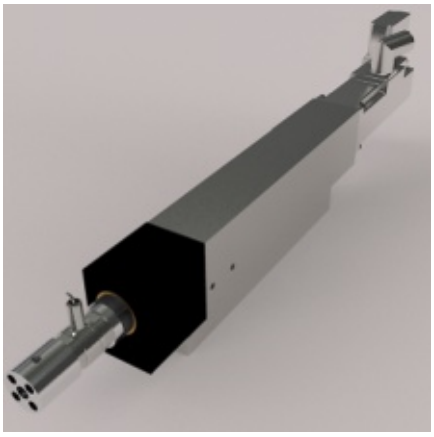
DEFECTS DETECTED



Parts | Correct Assembly | Missing Part | Excessive Distance | Insufficent Distance | Incorrect Insertion | Incorrect Part | Incorrect Orientation | Cracked Parts



OUR SERVO PRESSES RANGE

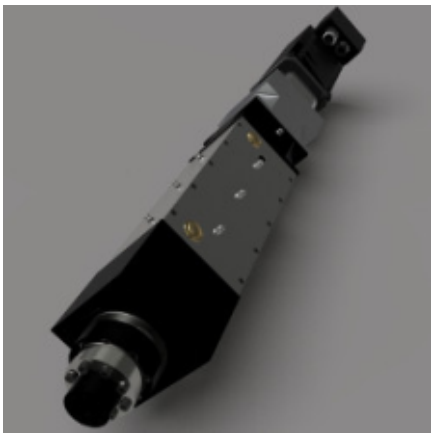


M2211
Thrust range from 1 to 3 kN
Stroke range from 100 to 200 mm
Speed range from 200 to 250 mm/s
Repeatability ±3 µm
Force Accuracy ±1% on F.S.

Piezoelectric force sensor embedded on the tool holder
Powered by SIEMENS ®

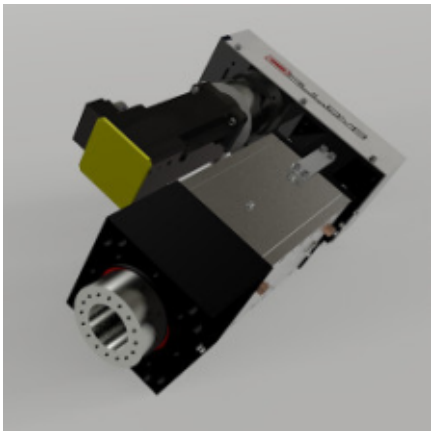
DK1211
Thrust range from 0.6 to 10 kN
Stroke range from 150 to 450 mm
Speed range from 125 to 1000 mm/s
Repeatability ±10 µm
Force Accuracy ±1% on F.S.

Piezoelectric force sensor embedded on the tool holder
Powered by ABB ® or SIEMENS ® servo drive



P2113
Thrust range from 5 to 100 kN
Stroke range from 150 to 325 mm
Speed range from 150 to 250 mm/s
Repeatability ±10 µm
Force Accuracy ±0.35% on F.S.

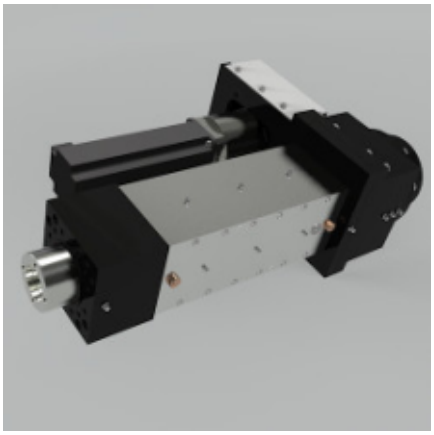
Strain gauge force sensor embedded on the tool holder
Powered by ABB ®



P2124 and P5124
Thrust range from 10 to 300 kN
Stroke range from 150 to 400 mm
Speed range from 50 to 250 mm/s
Repeatability ±5 or ±10 µm
Force Accuracy ±0.5% on F.S.

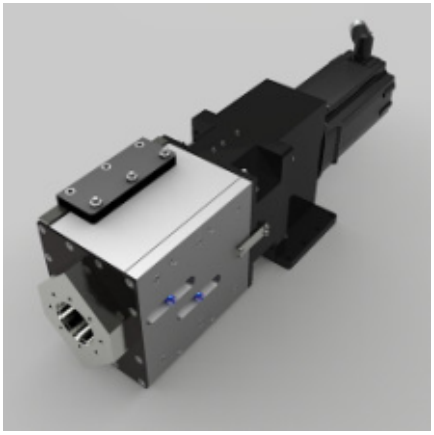
Strain gauge force sensor embedded in the press body
Powered by ABB ®

OUR SERVO PRESSES RANGE



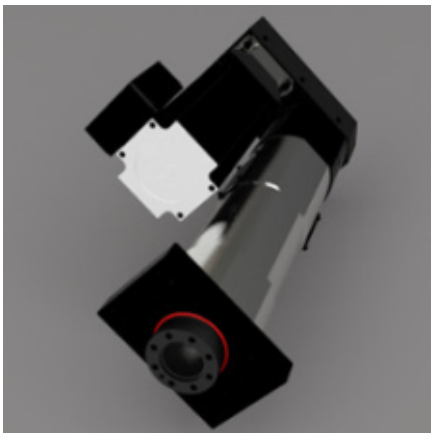
W2121
Thrust range from 10 to 250 kN
Stroke range from 150 to 325 mm
Speed range from 100 to 250 mm/s
Repeatability ±10 µm
Force Accuracy ±1% on F.S.

Piezoelectric force sensor embedded rear the thrust bearing
Powered by ABB ®



Z2124
Thrust range from 5 to 500 kN
Stroke range from 150 to 250 mm
Speed range from 250 to 1000 mm/s
Repeatability ±10 µm
Force Accuracy ±0.5% on F.S.

Strain gauge force sensor embedded in the press body
Powered by ABB ®



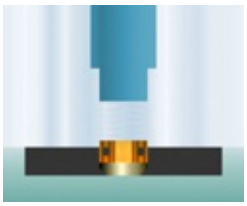
E2224
Thrust range from 5 to 100 kN
Stroke 200 mm for all models
Speed range from 130 to 250 mm/s
Repeatability ±10 µm
Force Accuracy ±1% on F.S.

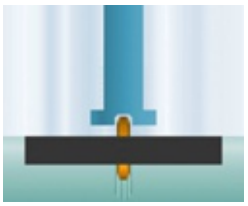
Strain gauge force sensor embedded in the press body
Powered by ABB ®

Auloma is specialised in bespoke servo presses. Thanks to our modular structure we can supply in short time the servo press tailored on your scope. Our approach is completelly different than our competitors. Usually we ask to our customers all criticals features of the project and verifying the feasability or provide an alternative. In each project our challange is solving the customer exigences inside the budjet limits.

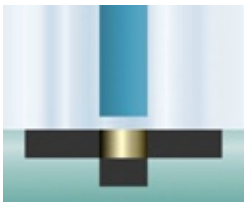
OUR APPROACH:
- Exame of customer's specifications
- Feasability verification
- Ball screw dimensioning according life expectation and ram accuracy
- Motor size dimensioning according the duty cycle
- Force sensor selection according the application

APPLICATIONS


Assembly / Press fit


Inserting / Fasteners


Rivetting / Flaring

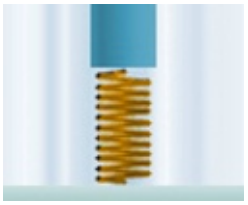

Punching / Piercing


Coining / Marking

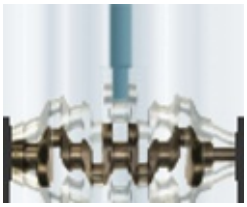

Clamping / Tensioning


Pressing / Compressing


Bending


Spring Testing


Crimping


Straightening

Nowadays in many industries it is very important improve the quality. Standard quality as ISO 9000 influence all process level in the productive plant and forcing the industries in a continue improvement. Industries as Automotive has developed a certification such as ISO/TS 16949 with standards more restrictive than the ISO 9000 and this to obtain a supply chain, Tier 1 and Tier 2, capable of provide goods with a low percentage of defects. The goal is one in which 99.99966% of the products manufactured are statistically expected to be free of defects (3.4 defects per million). The benchmark to obtain these performances needs of a system capable to provide all data necessary to produce an assessment of the process. Auloma Process Monitoring APM for servo press is an instrument of measure and control developed to monitoring the production in run and seeking defects and abnormalities of produced parts. The mathematical model (Force vs Displacement) obtained thanks to APM can monitoring continuously the production and can register each variation. This capability further to seeking the defected parts can provide the variation of efficiency in the productive line and also in the servo press.

For Industries gather informations in short time about productive processes is a fundamental resources in cost saving. As SIX-Sigma tools teach that the best way to enhance the quality process is a reduction of defects and of waste. The use of our device APM is a valid instrument to obtain the SIX-Sigma target in all applications that need of a continuos feedback values of Force and Position.

FEATURES

- Grund ball screw execute according stantard ISO P3
- Ball screw nut pleloaded without axial backlash
- Ball screw nut with dynamic load at list 3 fold the press thrust value
- Ball screw nut with static load at list 6 fold the press thrust value
- Ram repeatability <0.01 mm (A) or less
- Force measure accuracy from ±0.35% to 1% the Full Scale
- Oversized Axial Thrust Roller Bearings or Angular Contact Ball Bearings
- High stiffness spindle to reduce the compressive deformations
- Process monitoring integrated in the servo drive
- PC- Software tool for friendly press set-up
- Data analysis available in CSV format for SPC

(A) At the same working load and at the same thermal steady state

BENEFITS

- Very precise mesuring system
- Real time process monitoring
- Products defect and process abnormalities detected in run
- Scrap cost reduction
- Communication with all kind of PLC through discrete I/O or Profinet
- Communication with all kind of PC through Ethernet TCP/IP Network
- Servo press and process monitoring set-up don't need any experince in PLC programming
- Maintenance cost lesser than an hydraulic unit
- Energy cost per year lesser than an hydraulic unit

INDUSTRIES

CALIBRATION SET

Test Equipment

Before and After Purchase

Our portfolio of services is at your disposal from the day you make the first contact. Long before you even think about buying a servo press we provide essential support in the form of advice, engineering and test measurements. A wealth of services, from simple hotline inquiries to comprehensive maintenance agreements, is also opened up after purchase if you decide to choose one of our proposal for calibration and maintenance

In Our Place or Yours

We provide our services at the point of need. On your premises or your customer's site, in one of our Training Centers, or in one of our production facilities – whatever makes sense as the most efficient option for you.

Test Equipment

Auloma provides a calibration set to verify the efficency of the servo press. The kit is composed by:

•Reference sensor
•Analysis unit for reference sensor with display and other functions for reference sensor maintenance
•Interface cable
•Factory calibration report or Qrics ISO 17025 certifications (extra charge)

Calibration Good Practices

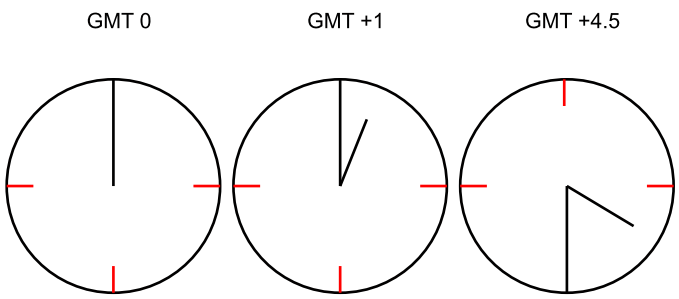
Established quality guidelines necessitate regular calibration of your sensors and measuring instruments. Calibration determines the relation between the measured value and a reference value. The measuring equipment used for calibration is traceable to national measurement standards and subject to internationally harmonized quality assurance.

Cheek in calibration certificates document the values measured during calibration and the conditions under which it is carried out. Use this value to verify the efficency of your servo press.

The calibration is a fundamental maintenance operation to due in intervals basically at the responsibility of the user and depends on how often the produced workpieces are used and the extent to which they affect safety.

Calibration Service in customer's plant provided by Auloma ensures force calibration can be performed on the spot with minimum downtime – whether this is in production, development or the test facility.

SOFTWARE ASSISTANCE



Before Commissioning

Auloma provides complete user manual according CE standards. The user before and during the installation can't read the user manuals. The documemtation is complete of all instructions to:

- Handling the goods
- Installation of the devices
- Routing cables
- Software set up
- Troubleshooting

In Our Place or Yours During Commisioning

We provides our services of training (extra charge) for diffent peoples engaged in use and maintenance of the servo presses:

- Programmers Engineer Training
- Analyst Data Training
- Operator Training
- Manutentor Training

Online Assistance

In case your local dealer can't solve your inconvenient, Auloma provides within 24 hours online assistance after the 1st request by email. The online assistance is provided from different locations.

Servo presses powered by Siemens ®.
Direct assistance by skype or telephone from our technical centre in Switzerland.
Support provided from:
8.30 - 12.30 AM and 13.30 - 17.30 PM local time (GMT+1) from Monday to Friday excluded the period of Switzerland holidays.
Language supported: French, Italian, English

Servo presses powered by ABB ®.
Direct assistance by skype or telephone from Focus Control centre in India.
Support provided from :
8.30 - 12.30 AM and 13.30 - 17.30 PM local time (GMT+4.5) from Monday to Friday excluded the period of India holidays.
Language supported: English

Remote Assistance

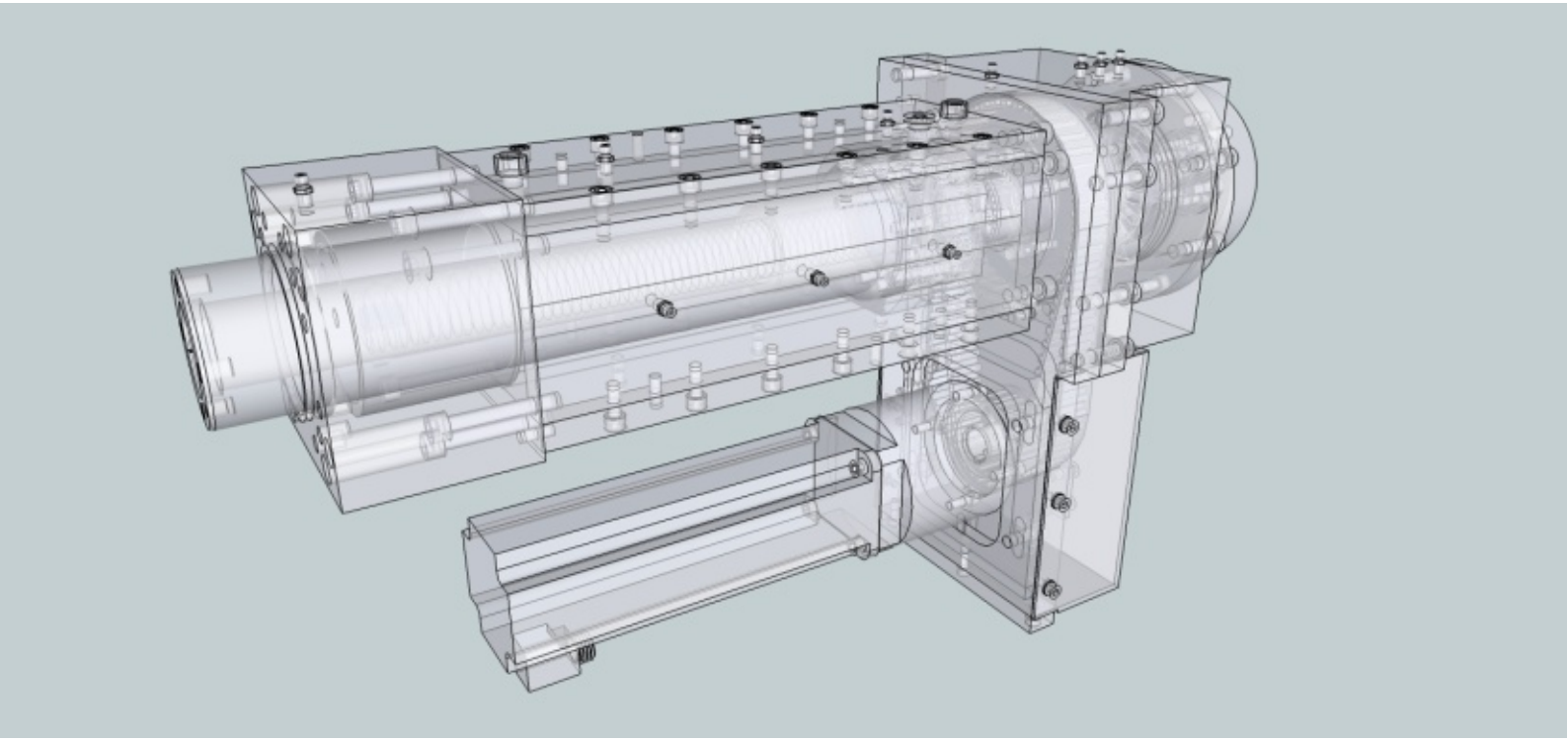
Auloma servo presses can be configured with remote control to have a faster and secure assistance. The device own a properly network through satellite connection. The system by-pass the plant ethernet and inthernet network.

In case is possible interfacing the plant network we provide remote assistance with all operators in your site with a PC in network and with a license of TeamViwer ®.The remote assistance is provided from different locations.

Servo presses powered by Siemens ®.
Remote assistance from our technical centre in Switzerland.
Support provided from 8.30 - 12.30 AM and 13.30 - 17.30 PM local time (GMT+1) from Monday to Friday excluded the period of Switzerland holidays.

Servo presses powered by ABB ®.
Remote assistance from Focus Control centre in India.
Support provided from 8.30 - 12.30 AM and 13.30 - 17.30 PM local time (GMT+4.5) from Monday to Friday excluded the period of India holidays.

SPARE PARTS



Before Commissioning

Cheek in the spare parts manual the critical parts exposed at the normal consumption by wear and contact your local Auloma's dealer to order the spare parts to store in your warehouse.

Spare parts availability

Auloma warranty for life the availability of the mechanical parts manufatured to itself. For commercial parts and electronic components the Auloma can't warranty any availability for long time.

Parts in store

In case after several cycles your press needs a substitution of weared parts, contact your local dealer to order the spare parts. The delivery time of the spare parts in store can be effectuated within 2 days after the payment.

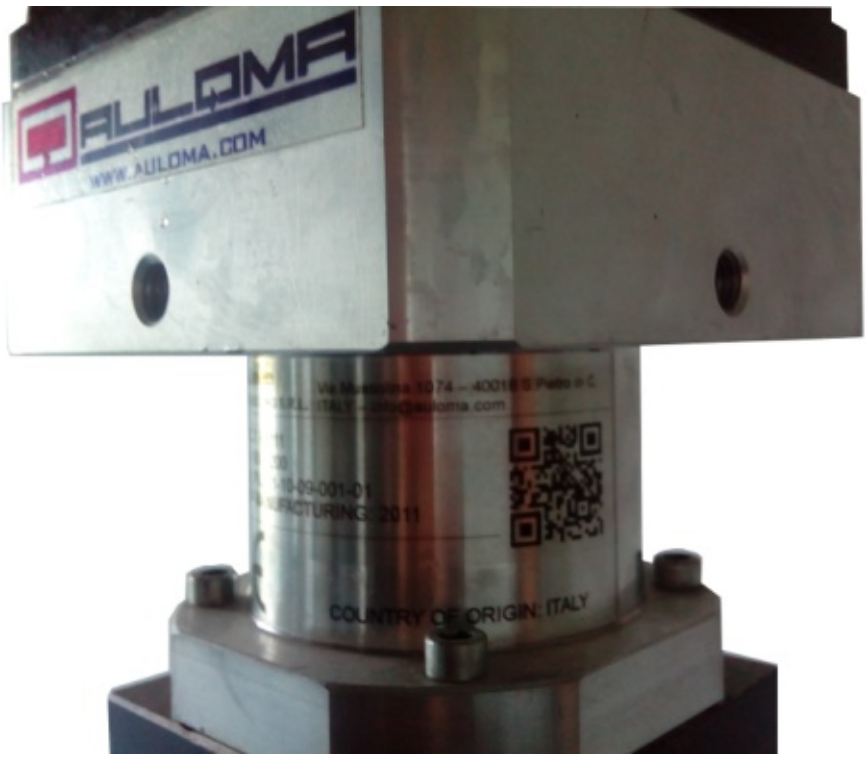
Parts on demand

In our user manual are indicated the operations of maitenance and parts substitutions. Contact your local dealer to have all suggestions about your maitenance plan and to know costs and delivery time for spare parts on demand.

Auloma Original Spare Parts

Benefits for you:
- "Auloma Original" parts and consumables
- "Auloma Certified" parts and consumables
- Reduced risk of wear and tear
- Longer lifespan for your equipment
- Assured compatibility
- Increased operator and equipment safety
- Distribution centres throughout the world
- Flexible and ultra-fast delivery methods

OUR QUALITY TRACEABILITY



Traceability of our Servo Presses

Traceability has become a very important issue over the years. Whether it's come about because of product misrepresentation in the industry or because customers are more intrigued; the topic of traceability is here and isn't going anywhere.

We understand that our customer want information at their fingertips. We understand that they want to make sure they are 'paying for what they get', who doesn't? If you order an Auloma device, it better be Auloma and not Auloni, Auroma or other fake brands. How can you be sure? The first step is making sure you're buying servo presses from official dealer available in our web site. Auloma has built their reputation on being a company with open doors that makes information readily available and accessible to our customers. We want them to feel confident and comfortable with the purchases they make. This is why we go to great lengths to provide detailed product information, to align ourselves with trusted vendors (A fine example would be Focus Control) and partner with programs across the world that connect the dots from our headquarter to end users plant.

Auloma employs high traceability standards for each of its products to know what is happening in their supply chain. Auloma working in free pass with its top supplier and upon receipt of product from them we assign a code and entered into a database. As product is pulled from inventory for an order the database can be used to see which part is being sent to each customer. Using this system, product can be traced from vendor to customer easily. Other data that is entered into the system upon receipt is transferred to a documents that include all quality cheek during the servo press manufactures. All informations are summarize in an individual code printed in a QR-label visible on the CE label. Through the QR code on them is possible have an easy access to product informations and if you sent the code at our email address info@auloma.com, Auloma sent to you the certificate of original products.

Our free pass supplier:

ABB ®, HBM ®, SIEMENS ®, DYTRAN ®, OFFICINE MECCANICHE BB ®, PHENIX CONTAC ®, HONEYWELL ®, ASTONSEAL ®, SKF ®, INA FAG ®, NSK ®, ADI ARTECH ®, AVIOILESS ®, SIT ®, R+W ®, SCHNEEBERGER ®, HEIDENHAIN ®, APEX DYNAMIC ®, NIDEC SHIMPO ®, CONTITECH ®, MAV ®, KSS ®,

ABOUT AULOMA

In 1969, Bonfiglioli and Ragazzi start to establish numerous companies. The main brand known in the industrial automation world was CO.MA.S, Tonsfer and Drill Matic, brands synonymous of high quality. In 1999 Lazzaro Marsilla know Bonfiglioli and Ragazzi and start a collaboration to develop special assembly transfer machine. In 2010 Lazzaro Marsilla establish Auloma Holding S.r.l to acquire the two companies CO.MA.S and Tonsfer. During the period of the due diligence, Bonfiglioli and Marsilla decide to develop a new business. The new idea was to use the knoweledge acquired in 40 years of experince to produce OEM devices. Here starts the challenge of Auloma Servo Presses. In October of 2010 Lazzaro Marsilla decide to lead alone the project together his brother Francesco and with the external support of Tonsfer. Now Auloma produce its products also in India and Switzerland to suport the sales network now expanded in countries as Denmark, Finland, Sweden, France, Switzerland, Mexico, Turkey, China, India, Malaysia and South Korea.

For over 11 years, Auloma & Tonsfer has been providing some of the Italian's most respected manufacturers with innovative, science-driven solutions designed to identify and address quality issues. We perfected the application of servo presses and tapping unit with electronic signature analysis technology for manufacturing. Our device implementing it originally with ZARRI SPA in 1999. We have won numerous quality and excellence awards from our past customers as: ATALA MOTORI ®, GARELLI ®, MALAGURI ®, MOTRON ®, PERIPOLI ®, VOR ® and more.

Now Auloma Holding Srl is an international player and its main market is the Indian market. Our experinece in motorbike parts assembly is now available for all system integrators in Far East. Our growth in India was be exponential and we are official supplier of:
BAJAJ AUTO ®, BAJAJ MACHINE ®, KIRLOSKAR ENGINE ®, APICOM ® and more.

OVERSEAS PRESENCE

Our presence in the world is gurantee by our sales network composed by professional Official System Partner or by skilled dealers

Pre Sale

Our official system partner own a team of engeneers skilled to suggest at the customers all informations about the right servo press useful for their applications.

During the commisioning

Our official system partner can provide you the 1st informations during the commisioning and to support your engineer to exchange informations from you and Auloma technicians. Our system partner can provide also the support in your language in case your staff is not able in Italian or English language.

After Sale

Auloma Official System Partners can provide you all suport to have Auloma Original Spare Parts and to supply on site maitenance and servo press calibration. Visit our web site to cheek the system partner available in your country

www.auloma.com
info@auloma.com

Auloma Holding S.r.l.

Address:
Via Mussolina 1074 - 40018 San Pietro in Casale (BO)
ITALY

T. +39 051 81 82 85
info@auloma.com
www.auloma.com

2015-05-15- Rev. 01 - corporate-brochure-IN-MMXV