BIAS

MAKİNA

MULTI SERVO PRESS


BIAS
MAKİNA

NEW GENERATION **HYBRID PRESS**

BİAS Machinery Co.

As we are BIAS ENGINEERING CO., we have approx. 30 year experience about the basic facilities of engineering, for last 10 years, under the name of BIAS MACHINERY CO, we have focused on manufacturing of PRESS PRODUCTION. From day to day, we have been growing thanks to using the most distinctive & genuine technologies to be one of the well-known and successful company in this sector.

With production of MULTI SERVO PRESS®, BIAS MACHINERY is to make a name for oneself as unique technology, it has been bringing the newest approach to many different sectors with respect of the other competitor's technology. It always presents technological & innovative opportunities to the clients with higher productivity & capacity, speed & practical operation, lower energy consumption which provides to reduce the cost of products.

From the different regions of TURKEY to the different continents of the world; from EUROPE to RUSSIA, BIAS MULTI SERVO PRESS. possess wide client's reference network.

Mission & **Vision**

By specializing in multi servo presses, expanding this new generation press technology in production areas, providing added value to the producers and making it easier for them.

Hybrid technology multi servo presses are expanding in the world, especially in deep drawing sector (filters, fire extinguishers, kitchen utensils, water purification equipment, cooling-heating systems, such as technology.) Came to a leading position in Turkey is one of the leading exporters in the world in five years to be a prominent servo press manufacturer.

Our **Certificates**

- CE
- BIAS Multi Servo Patent

Inspecco

EC TYPE EXAMINATION CERTIFICATE

Certificate Number	:	20125301
Manufacturer	:	BİAS MAKİNA A.Ş.
		Haluk Türksoy Sokak No:12/3 Üsküdar / İstanbul / Türkiye
Product Description	:	Multi Servo Press / Servo Press
Model/Type	:	HE, HMS, HS, HSA, HSS, HMK, HK, HL Series
		(Capacity 10 - 3.000 Tons)
Other Specifications	:	Voltage: 380 VAC, 50 Hz.
Annex IV machinery group No.	:	9
References	:	Machinery Directive 2006/42/EC, TS EN ISO16092-1
Examination Report	:	20125301.1, 20125301.2

Result

The product specified above has been examined and found to comply with the Annex I Essential Health and Safety Requirements of the EC Machinery Directive 2006/42/EC.

INSPECCO BELGELENDİRME VE GÖZETİM HİZMETLERİ A.Ş.
Notified Body for the Certification of Machinery Directive
Notified Body ID Number: 2459
ISTANBUL, 07.07.2020
Certificate expiry date: 06.07.2025

The validity of this certificate can be verified on our website, www.inspecco.com

Notice: Any significant changes in design and/or production of the product or amendments to the relevant EU directives or standards referred above may render this certificate invalid. The responsibility of product rests with the applicant in accordance with applicable EU directives.

General Manager

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WE BUILD TRUST

Wide Range Of **Multi Servo Press**

- **BİAS Multi Servo Deep Drawing Presses**
  - Water & Oil Filters
  - Fire Extinguisher Cylinders
  - Water Expansion Tanks
  - Household&Industrial Gas Cylinders
  - Kitchenware
- **BİAS Multi Servo Forming & Cutting Presses**
  - Automotive Components
  - White Goods Parts
  - Radiator Panels
  - Agricultural Tools
- **BİAS Multi Servo Cold & Hot Forging Presses**
- **Transfer Systems for Presses**

Bias Multi Servo **Deep Drawing Press**

Press Type	H Type	Multi Servo Press
Model		HS2
Capacity	Ton	80*
Connecting Rod		2
Tonnage Rated Point	mm	8
Side Opening	mm	950
Full Automatic Stroke Adjustment *	mm	240-450
Speed Adjustment*	Spm	20-80
Working Energy	kJ /spm	70-40
Max. Table Ram Distance*	mm	350
Min. Table Coach Height *	mm	130
Slide Adjustment	mm	220
Table & Ram Dimensions	mm	800x550
Electric Supply		380 V, 50 Hertz
Approx. Press weight	Ton	7
Ram & Table Deflection	mm/m	0.07/1

*Press capacity and its spects. can be changeable acc. to the project of the last product. (Dimensions-thickness.)

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Bias Multi Servo **Filter Press**

Press Type	H Type	Multi Servo Press
Model		HS2
Capacity	Ton	150*
Connecting Rod		2
Side Opening	mm	700
Tonnage Rated Point	mm	10
Full Automatic Stroke Adjustment*	mm	300-700
Speed Adjustment*	ad/dk-spm	8-15
Working Energy	kJ /spm	70/15
Max. Table Ram Distance*	mm	550
Slide Adjustment	mm	100
Table Dimensions	mm	2000x800
Ram Dimensions	mm	2000x800
Bottom Cushion	Ton	15+12+7+5
Bottom Cushion Stroke	mm	120+150+200+270
Servo Motor	kw	2x28
Ac Motor	kw	22
Approx. Press Weight	Ton	
Ram &Table Deflection	mm/m	0,07/1
Electric Supply		380 Volt, 3 Phase, 50 Hertz

Bias Multi Servo **Fire Extinguisher Press**

Press Type	H Type	Multi Servo Press
Model		HS2
Capacity	Ton	250*
Connecting Rod		2
Rated Tonnage Head	mm	30
Working Energy	kJ/spm	290/10
Full Automatic Stroke Adjustment*	mm	600-1200
Speed Adjustment*	ad/dk-spm	7-11
Side Window Opening	mm	1200
Max. Table Ram Distance*	mm	1200
Min. Table Ram Height*	mm	300
Regulation		Adjustable
Plate And Ram Size	mm/m	2100x1000
Ram & Table Stretch Max.	Ton	0,07/1
Lower Pad Tonnage	Ton	35+8+1.5
Approximate Press Weight	Ton	35
Electrical Information	kw	380Volt, 3 Phase, 50Hertz

*Press capacity and its spects. can be changeable acc. to the project of the last product. (Dimensions-thickness.)

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Bias Multi Servo **Water Expansion Vessel Press**

Press Type	H Type	Multi Servo Press
Model		HS2
Capacity	Ton	80*
Connecting Rod		2
Tonnage Rated Point	mm	8
Side Opening	mm	950
Full Automatic Stroke Adjustment *	mm	423
Speed Adjustment*	spm	9-15
Working Energy	kJ /spm	18/25
Max. Table Ram Distance*	mm	760
Min. Table Coach Height *	mm	730
Slide Adjustment	mm	0-30
Table & Ram Dimensions	mm	750x650
Electric Supply		380 V, 50 Hertz
Approx. Press weight	Ton	23
Ram & Table Deflection	mm/m	0.07/1
Main Motor	kW	37
Servo Motor	kW	10.5x2

Bias Multi Servo
Automotive Component Press

Press Type	H Type	Multi Servo Press
Capacity	Ton	500
Speed	spm	20-50
Table Dimensions	mm	3000x1500
Stroke Adjustment	mm	120-360
Working Energy	kj/spm	55/25

- Load monitoring
- Moving bolster
- Industry 4.0 compatible

*Press capacity and its spects. can be changeable acc. to the project of the lastproduct. (Dimensions-thickness.)

Bias Multi Servo **Radiator Panel Press**

Press Type	H Type	Multi Servo Press	Multi Servo Press
Model		HS2	HS2
Capacity	Ton	630*	400*
Connecting Rod		2	2
Tonnage Rated Point	mm	10	10
Full Automatic Stroke Adjustment*	mm	40-80	80
Speed Adjustment*	mm	50-100	50-100
Working Energy	kJ/spm	63(@60)	41(@60)
Max. Table Ram Distance*	mm	510	510
Min. Table Ram Distance*	mm	410	410
Slide Adjustment	mm	100	100
Table Dimensions	mm	1600x1200	1200x800
Ram Dimensions	mm	1600x1200	1200x800
Approx. Press Weight	Ton	45	34
Ram&table Deflection	mm/m	0,07/1	0,07/1
Electric Supply	ton	380 Voltage, 3 Phase, 50 Hertz	380 Voltage, 3 Phase, 50 Hertz

Bias Multi Servo **Forging Press**

Bias Multi Servo **Cold & Hot Forging Press**

BİAS Multi Servo Presses also successfully operate in the forging industry. Thanks to its superior mechanism with low eccentricity, adjustable low pressing speed, rigid structure and plunger guide system, the parts are formed with high precision.

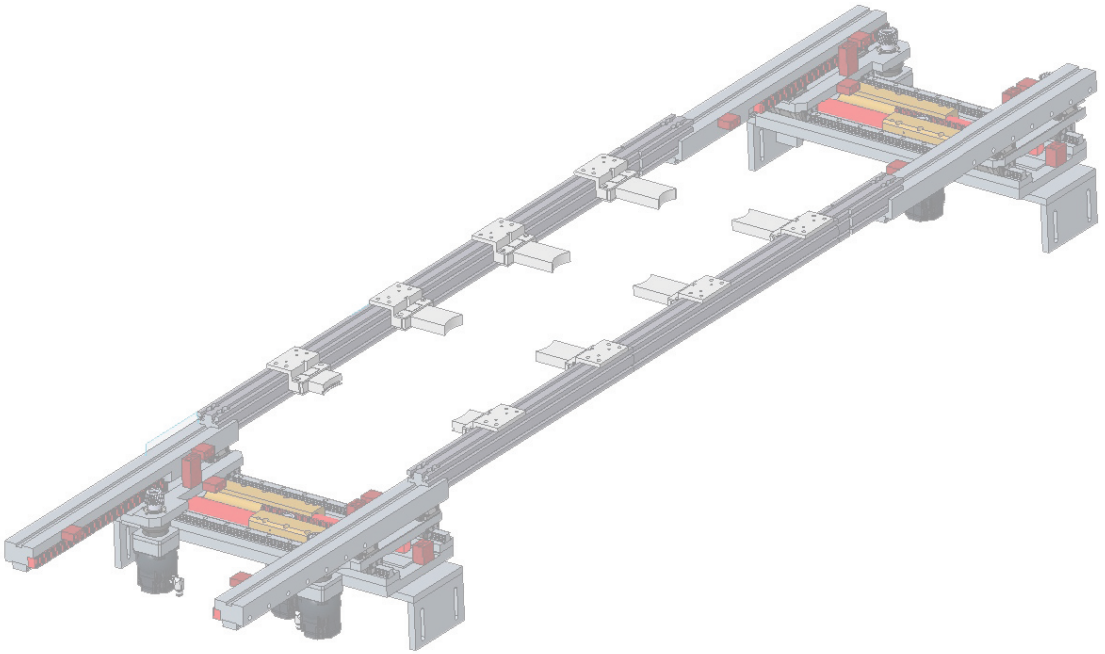
Multi servo presses create differences with their load distribution according to the symmetry axis and their equally divided body structure.
It stands out with its small motor, gears & low energy consumption.

The Standard Specifications Of **Bias Multi Servo Press**

Body Structure	**H Type**
Crank & Connecting Rod	2+2 and 1+1
Brake/clutch	Spring / Pneumatic (Ompi brand)
Critical components	Crank will be hardened and ground, GGG cast iron gears Special alloy bronze bearings
Safety Module	Siemens
Stress Relived Welding Construction	Stress relieved body
Double Hand Control Unit	Mobile
Speed Adjustment	Adjustable
Full Automatic Stroke Adjustment	Adjustable
Control Panel	9” Colorful touchscreen Siemens brand
Slide Adjustment	Electrical motor controlled ram adjusment with digital display
Lubrication System	Automatic central recirculating oil lubrication ILC & Vogel brand
Overload Safety System For Press	Hydraulic overload safety (Teknofluid brand)
Press Safety Valve	Double solenoid valve (GPA & Vema brand)

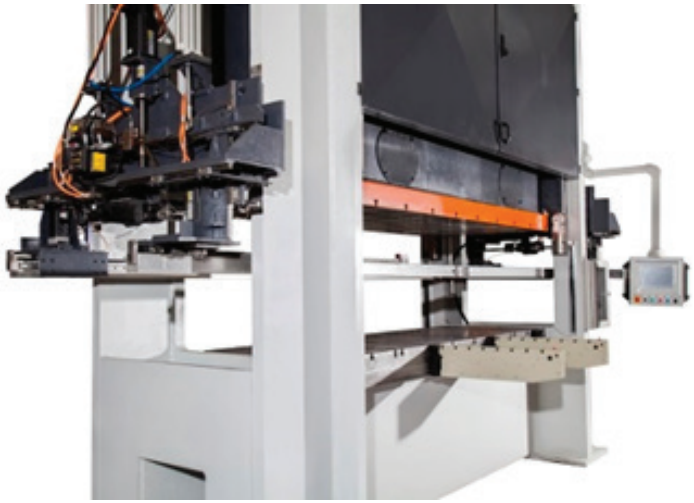
Balancing Cylinder	Pneumatic
Servo Motors And Drivers	Siemens or Bosch & Rexroth brand
Ac Motor	IE3 energy efficient
Light Barrier	Pilz & Sick brand
Ram & Connecting Rod Guiding	Plunger guide
Pre-programmed Ram Motion	Link, knuckle, soft blanking, upper dwell, stepping press and eccentric mode
Main Motor Reverse Movement	Standard
Hydraulic Equipment	Rexroth brand
Ladder - Upper Platform	Standard
Die Memory	>100 pc standard

Bias **Transfer Systems**



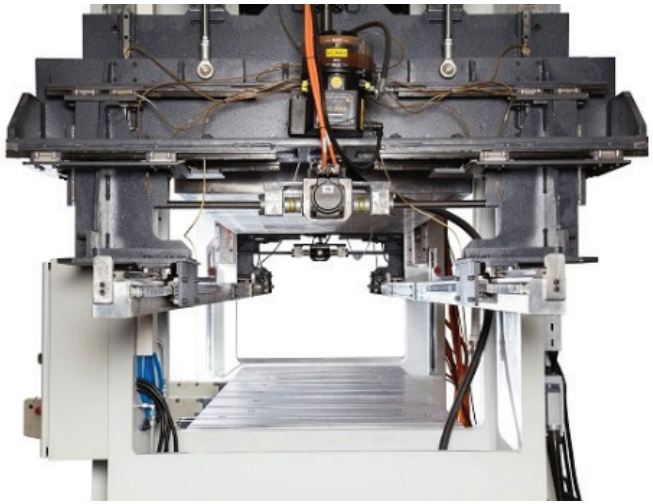
General Specification of
Bias Multi Servo Transfer System

- 2&3 Axis Transfer Systems
- Dynamic servo motors
- Linear slides, Rack and ball screw will be automatic lubrication system
- Thanks to the modular design easy to access press table
- Transfer arms can be easily mounted / de-mounted manually
- Easy and simple programming - flexible
- Parallel servo motor operation – high accelerations

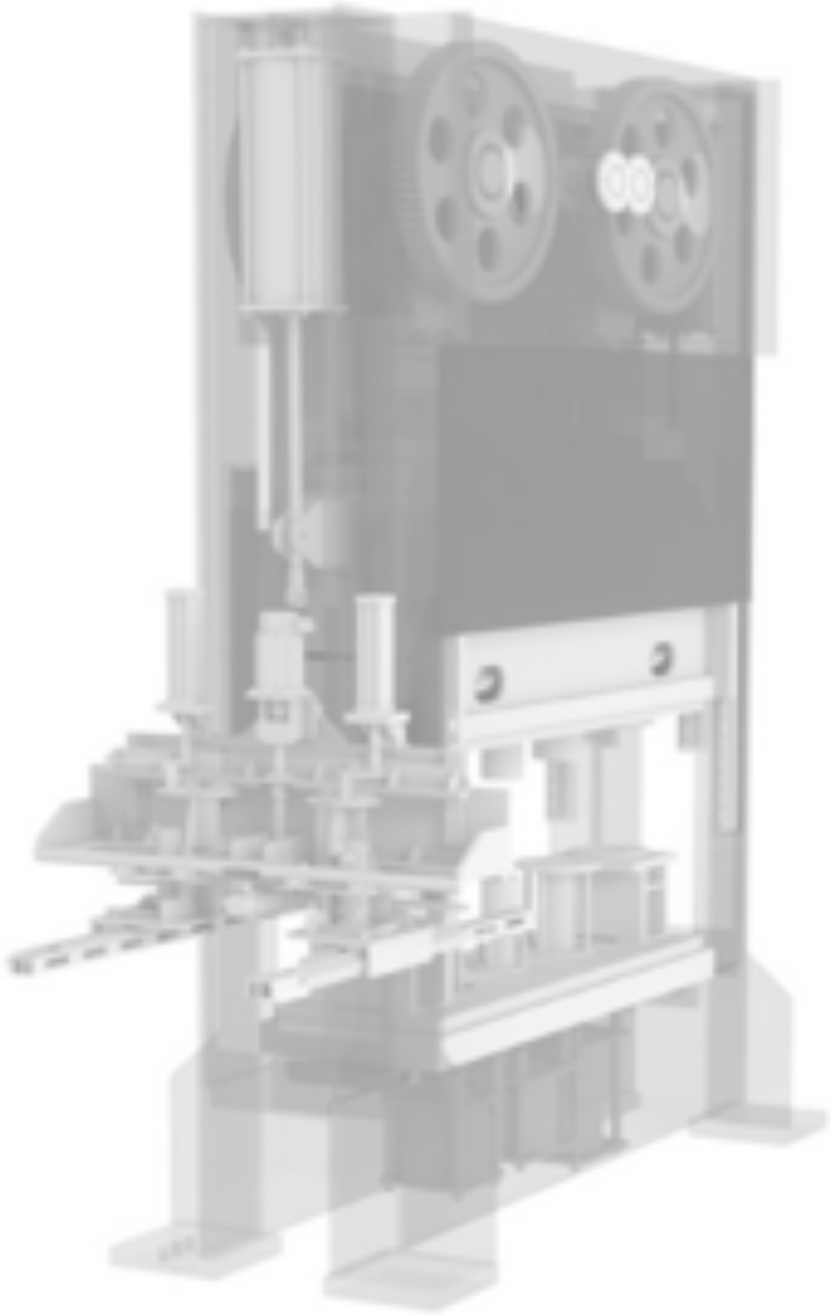


Technical **Specifications**

X Axis	Servo controlled
Y Axis	Servo controlled
Z Axis	Servo controlled
Arm Length	Equal to Table length
X Axis Movement System	2 pc. Servo motor+2 pc. Planet type gearbox
Y Axis Movement System	2 pc. Servo motor+2 pc. 90 degree double output reduction gear+2 pc. Ball screw
Z Axis Movement System	2 pc. Servo motor+ 2 pc. ballscrew
X Axis Guide	Ball-recirculating linear slide
Y Axis Guide	Ball-recirculating linear slide
Z Axis Guide	Ball-recirculating linear slide
Arms	With T slot Aluminum profile



Advantages Of **Multi Servo Press**



01

Max Performance

Higher tonnage rating point curve & high working energy than the classic presses. Because of high working energy & active double action features will help to combine several stations on the progressive and transfer die system can be reduce die size & cost.

02

Stroke Rate Optimization

With this feature it is possible to achieve higher speeds at lower stroke. Adjustable stroke makes easy to set die bearing length by desired stroke which will help to reduced die cost.

03

Increase Productivity

Production at high speeds thanks to superior designed mechanism. Being capable of change of the press stroke curve can increase production rate at progressive die and transfer system.

04

Setup Time Optimization

Thanks to improved die memory system, stroke adjustment, press speed, motion type, adjustment slowdown height and slide adjustment value can be stored and minimized mold changeover times.

05

Increase Product Quality

With bottom dwell, double strike and stepped pressing operating modes, it is possible to overcome the difficulty of getting the form for pressing parts.

06

Reducing Wear in Die

With link motion and soft blanking operation modes it is possible to minimize the die wear. It also extends the life of the springs used into the die.

07

Increase in Energy Efficiency

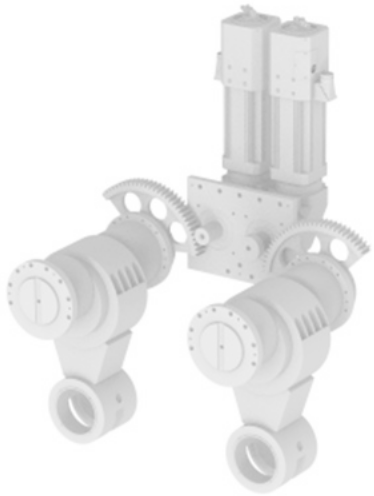
Comparing with other servo presses, Bias Servo press system doesn't require high-cost capacitor boards etc. Due to the flywheel & servo motor combination with a special patented mechanism provides high level of energy efficiency.

08

Flexible and Fully Customizable

Special solutions according to the demands of the customers by our experienced engineering team.

Unique Multi Servo **Press Mechanism**

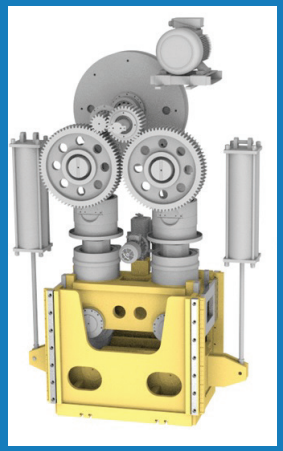


Ram Motion Type

Ram motion types asshown in the following graphs will be pre-pro-grammed. According to your request, addition to these motion types will be programmed by us with considering un-effecting performance of the press.

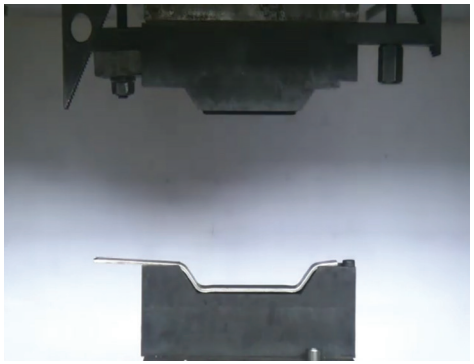
Tonnage Rating Point

Higher tonnage rating point (ha) can be obtained with Bias servo press compared to conventional mechanical presses and servo presses. So press can be used efficiently in deep drawing, forming, forging operations where parts are high.



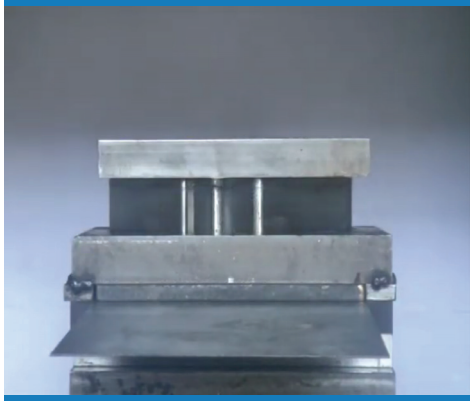
High Working Energy

Energy which is required for forming, cutting etc. is called working energy. Higher working energy means, pressing complex, deep, difficult parts can be achieved without press stopping. Bias servo press, thanks to its special press mechanism, has higher working energy than the other servo presses and classical mechanical presses.



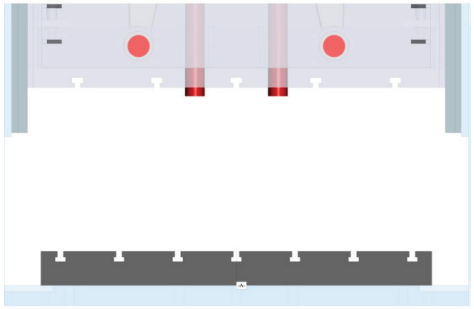
Stepped Pressing Standard

Bias servo press can work in similar way with forging press. In every cycle, BDC can be changed dynamically and ram can reach to BDC step by step. Step heights and step number can be changed by programming for different operations.



Soft Blanking

Cutting/Blanking operations can be done with minimum noise and die wear with Bias servo press. At the same time, die life and precision can be increased by avoiding the vibrations and back forces occurred on die and press



Active Double Action

Bias servo press has active double action option. The cushions which the other presses have, are passive and uncontrollable. In active double action, cushion position is adjustable and can be controlled according to operation requirement. Together with bottom cushion option, operations required three action like fine blanking, can be done.

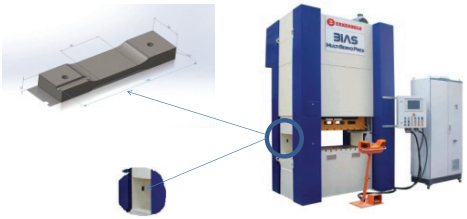
Plunger Guide

Plunger guide system will help arising from the crank-connecting rod mechanism of side load to be transferred onto the press body before reach-ing the ram.

- Not deteriorated ram parallelism during the press.

- Suitable bearing system for off center loads.

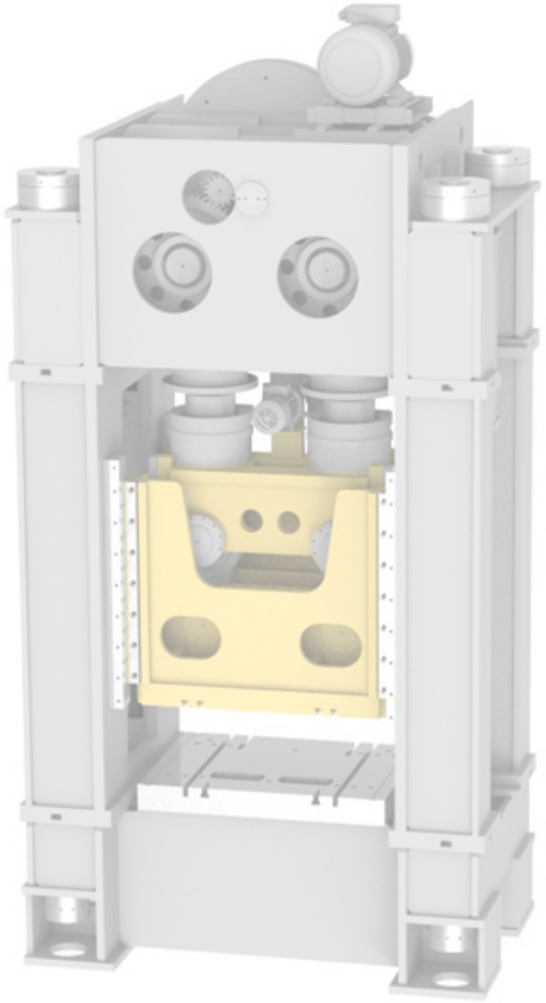
- Increased slides life and reduce wearing.



Load Monitoring

Hydraulic overload safety is not a system that protects your die, protects only your press. Electronic overload safety system measuring stretches on the press column (in micron level) when it is reached on desired tonnage (such as adjustable overload safety system) press stops and ram pulls back from the die. This will prevent damage that occurs.

Multi Servo Press **Structural Specifications**



Body and Rams

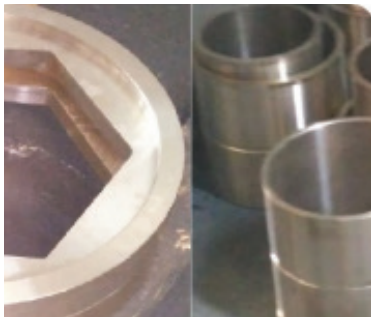
Press body and rams are made steel construction. All plates are cutting by CNC lazer/plasma/oxygen machines and MIG/MAG welded. Afterwards, thermal / vibration stress relieving applying, thermal stresses generated during the welding process has been fixed. Precision bohrwerk are processed by the body and rams, cleaning and painting operations were made ready for installation.

Table

Press plates are made of ST52 material, and machining without causing the formation from the heat treatment differences.

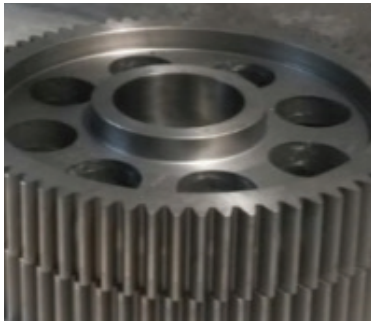
Crank and Shaft

Crankshaft is made of alloy steel material, all neccessary parts are ground and hardened.



Bearings and Guides

Crankshaft bearings are manufactured with a special bronze alloy centrifugal casting method. All bearings consist roller and ball bearings. Flywheel is not being occurented with shaft, it has a direct bearing on the body. “Plunger guide” as expressed, connecting rod - bearing the body of the ram connection is made with bronze beds.



Gears and Flywheel

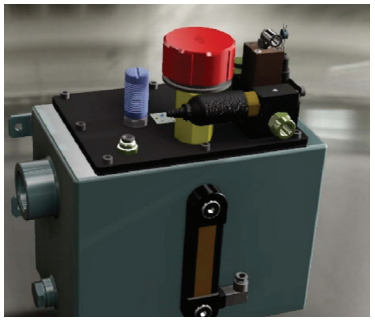
Gears are manufactured ductile iron castings, flywheel are made of cast iron. Gear configurations is configured to minimize the loads on gear.

Balancing Cylinder

BIAS manufactures special pneumatic cylinder, this cylinders balancing the weight of the ram during operation of the press. The upper mold can be adjusted by the compressed air flow for each cylinder weight.

Automatic Lubrication System

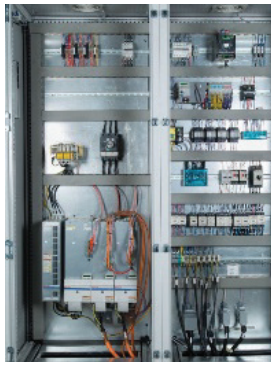
Our gear system is lubricated by pressure controlled progressive lubrication system which helps to increase lifetime and reduce wear of gears. On the HMI all beds temperature can be seen and if over heating situation press will automatically stop.



Hydraulic Overload Protection System

In case of overload due to rise above the specified press tonnage, hydraulic overload is provided by opening the valve to restore the pre-charge pressure oil in to the tank and stops the movement of the ram. Easy to active or reliase hydraulic overload on HMI screen.

Electrical Board & **Automation System**



Electrical Panel

Electrical Panel containing IP 54 protecting class and below mentioned piece,

- 3 color lamb with buzzer,
- Emergency stop button,
- Drivers: Siemens or Rexroth brand,
- Contactors: Siemens, Moller or Telemecanique brand,
- Power supply: Murr or Siemens brand,
- Sensor sockets: Harting
- Clemens: Weidmuller brand,
- Panel: Tekpan or EAE brand

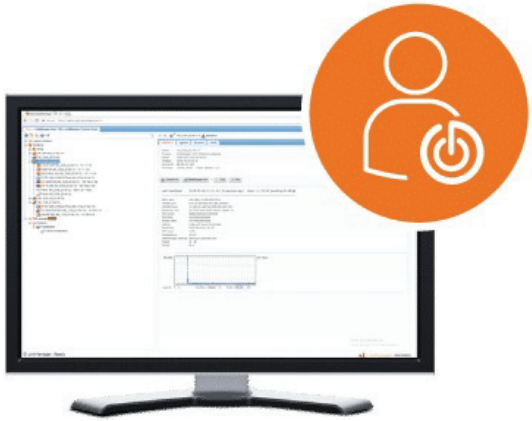
Control Panel

- Touch panel 9 inch screen Siemens or Rexroth brand,
- Ethernet input,
- Emergency stop,
- Reset button,
- Start & Stop buttons,
- 3 interface for operator, maintenance and master entrance,
- Pages: Setting, Alarm, Graphics, Valve and sensor and die memory,
- Adjustment: Stroke length, Lighting, Lubrication, Die memory, Speed, Sensor and valve, Single & Continuous working mode, production rate, slide adjustment and transfer data.

CE

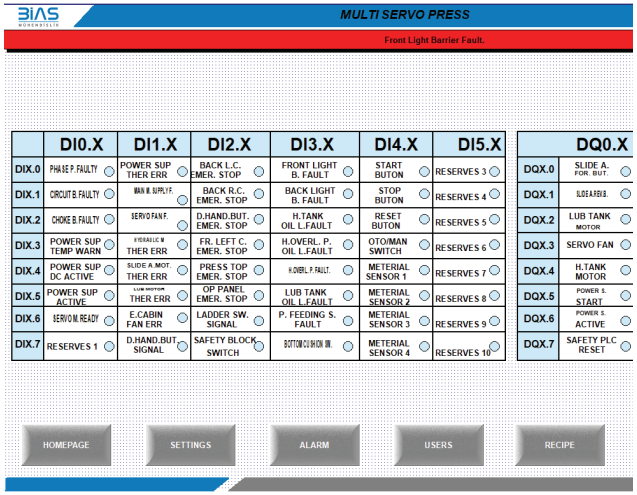
Safety Equipments And Standard

- Isolation power cables,
- Motor protection,
- Emergency stop buttons,
- Light barriers front and back side of the table area,
- Safety wedge by switch,
- Double hand control unit,
- 2006/42/CE machinery standard,
- Clutch is control by double coil safety valve,
- All components are selected by CE standard.



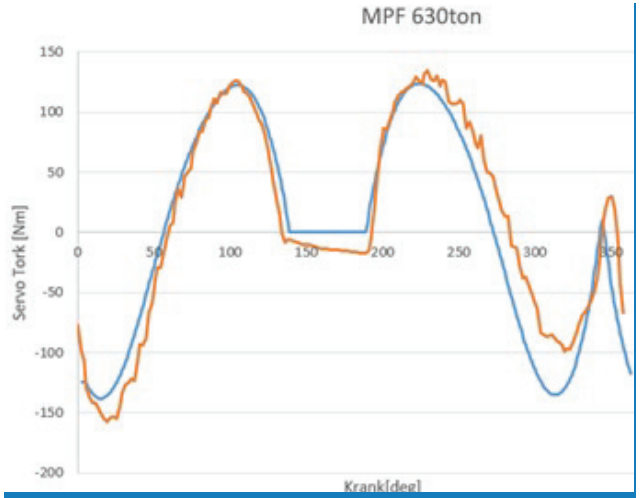
Remote Connection

Our presses are equipped with a remote connection device. We can correct failures without time-consuming on-site visits.



PLC Input / Output

Our machines are equipped with PLC inputs and outputs to work in coordination with other equipment such as feeder, feeding, reset and piloting. The system also can be designed to communicate with the customer's different equipment.



Electronic Cam System

All servo motors in Multi Servo Press system operates in accordance with a cam profile and master synchronous encoder index. In this section, used depending on the action of the 360-degree master axis of servo press creating a new CAM curve can be installed.

Comparision Between

Bias Multi Servo Press & Conventional Presses

Bias Multi Servo Press	Conventional Servo Press
Working Energy: Servo Motors + flywheel makes possible to obtain high working energy.	In conventional servo presses, the duration of the force is related to how long the motors can apply the maximum torque. So working energy of conventional servo presses is low.
Tonnage Rated Point: Due to the mechanism's structure of Multi Servo press has 1.7 / 2.2 times more nominal tonnage rated point againts to conventional presses.	Because of high eccentricity tonnage rated point is limited. Tonnage rated point of classical servo presses, even less than normal eccentric presses.
Plunger Guide System: Plunger guide system will help arising from the crank-connection rod mechanism of side load to be transferred onto the press body before reaching the ram.	Because of the high eccentricity plunger guide system can not be applicable.
Variable Ram Motion: More dynamic servo motors are used because of the mechanism structure. Therefore, it is possible to make ram more dynamic movements.	Acceleration of the ram is lower because of using high inertial and bulky servo torque motor.
Energy Saver: With hybrid mechanism energy consumption is lower.	High-power, water-cooled torque servo motors are inefficient due to the need for extra cooling. Moreover, large capacitors on board are needed.

Bias Multi Servo Press	Hydraulic Press
Speed: With Link motion profile drawing and forming operations (2-4 times) faster than hydraulic press	The viscosity of the fluid; due to the complex hydraulic systems and pumps used hydraulic press speed is limited.
Energy Saver: Thanks to the hybrid mechanism and servo motors are much less energy consumption.	The complex hydraulic systems, pumps and due to losses system request high kW electric motors.
Performance: According to various programmable ram movements its suitable cutting, forming and deep drawing operation.	Ram movements cannot be customized due to nature of hydraulic presses.
Quality: The same quality and form is achieved with the parts manufac-tured in mechanical presses.	The variations in temperature of hydraulic oil; due to the uniform distribution of the material hardness can not always be obtained in the same in each part.
Maintenance: It requires mechanical and electronical maintenance.	Hydraulic oil consumption due to leaks, complex installation and maintenance costs are high.

Why Are The Best, Most Productive & Effective **Bias Multi Servo Press**

-The structure of the mechanism, press speed range is wide. Drawing at low speeds, it is possible to run your progressive mold as efficient at high speeds.

-Reduced electrical main input requirements comparing with normal servo press (%20-%25);

- Due to compact mechanism, it is possible to reach higher press speeds,
- SPM can be increased,
- Slower pressing speed as link drive/knuckle joint presses

-Greater mechanism advantage, less torque at the main input. Therefore, it is possible to do job with small presses or it is possible to do more difficult jobs with same tonnage presses.

-Working energy is greater. Because, the cycle movement shared by two input. Additionally, lower pressing speed makes positive contribution.

-Due to lower torque it is easier to use eccentric crank, means more rigid bpdy comparing to eccentric gear presses.

-Programmable ram movements, wide speed range, high stroke setting capability of Multi Servo Press makes easy to adapt transfer/robot systems.

-Multi Servo Press has double ram. Some work done in two operations with this feature you can make a single operation. Round cutting + punching or ejecter parts so on.

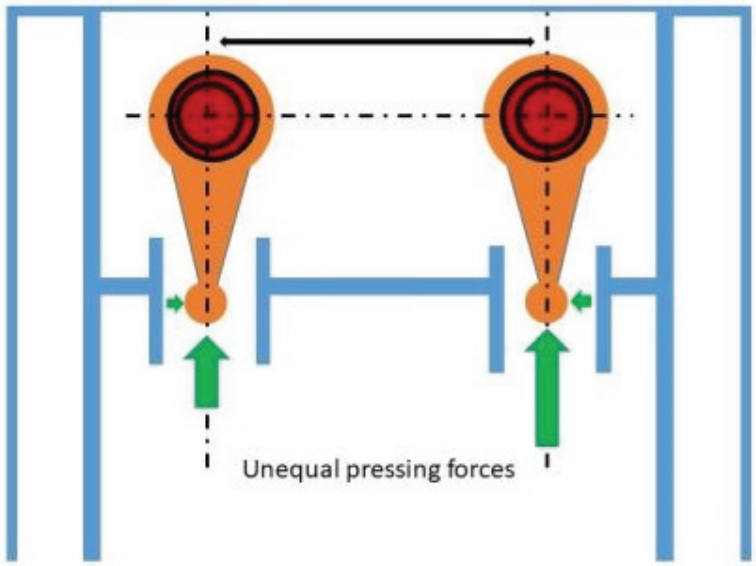
-The nature of the top ram have a strong structure of the mechanism is low stroke, servo control is easy to reach with the help of high stroke by second ram.

-We reduce noise and increase the cut-off level with a soft cutting action which is extends the life of the cutting punch.

-Plunger Guide

-The optional loadcell is limiting our presses through the press tonnage ram stoppped and pulled up its prevent mold jams.

Bias Multi **Servo© Press**

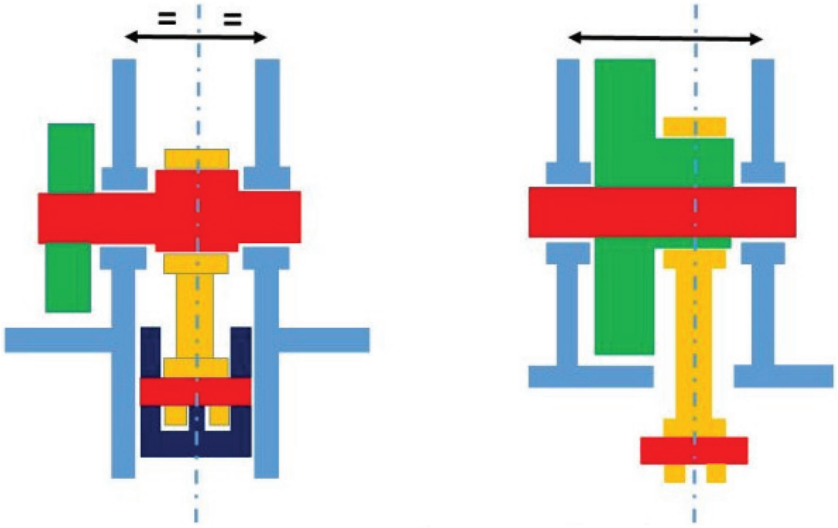


Large crank center distance (small main gears),
Prevention of ram tilting cause of off center loading.

Minimized bending moment on press body, increased rigitidy

Minimized side forces on press body due to small eccentricity

Eliminated side forces due to plunger guides



Same Tonnage/Same Total Stroke

Bias Multi Servo© Press	**Classical Mechanical Press**
Axisymmetric loading	Non axisymmetric loading
Unitized body	Non unitized body
Smaller Gears	Bigger Gears
Standart Plunger Guide application	

Left one (Bias Multi Servo Press) is a crank Press. Crank has a small eccentricity. Low torque requirement. Therefore no need for using large eccentric gear with large eccentricity. Forging Press users know the importance of crank Press. Crank press has a more rigid body. Equally force distribution, homogenous displacement, consequently precise part quality.

Energy Storage in Presses

There are two working regimes in a press duty cycle. First one is pressing zone, second one is the free zone. During the free zone press system must store energy, in order to use this energy while pressing

Increasing Efficiency / Cost

Classical Hydraulic Press (normally no energy storage)	Classical Servo Press (Energy storage is done with Large capacitor series or extra flywheel generator combination)	Classical Mechanical Press (Energy storage is done with flywheel)	**Bias Multi Servo© Press Patented** (Energy storage is done with flywheel + regenerative standart servo motor system, fully optimized)

References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