Complete Set of Equipment Design & Manufacturing

Flow Chart For Engine Valves

[Material] [Heating Upsettingl] [Forgingl] [Turning]
[Grindingl] [Grinding For 45 Degrees Angle]
[Hardeningl] [Packaging]

Flow Chart For Automobile Parts

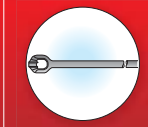
[Materia] [Heating Upsetting] [Forging] [Chamfering]
[Turning] [Rolling] [Hardening] [Packaging]

Flow Chart For Lug Wrench

[Material] [Heating Upsetting] [Hydraulic Clamping] [Forging]
[Turning] [Hydraulic Welding] [Polishing]
[Electroplating] [Packaging]

Flow Chart For Crank Shaft Ass'y

[Material] [Heating Upsetting] [Forging] [Turning]
[Grinding] [Assembly] [Finished Products]



Flow Chart For Electric Fitting

[Material] [Heating Upsetting] [Forging] [Chamfering]
[Rolling] [Zinc Plating] [Finished Products]

Flow Chart For Chassis Equalizing Bar

[Heating Upsetting] [Press Forging] [Other Side Heating Upsetting] [Press Forging]
[Heating the middle of the work piece] [Completion of the entire heating]
[The double-headed high frequency at the same time]

▶ Automation system integration can be custom-required Full line equipment plan and manufacture.

DA JIE ELECTRICITY MACHINERY INDUSTRIAL CO., LTD.

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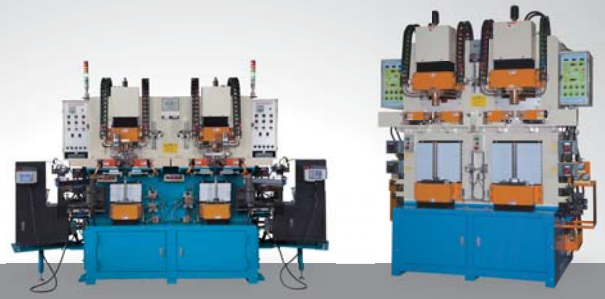
dajie@dajieco.com http://www.djeupsetter.com
dajieco@yahoo.com.tw

CE ISO 9001



Electrical
Heating Upsetter Machines

DA JIE ELECTRICITY MACHINERY
INDUSTRIAL CO., LTD.

SINCE 1973

Innovation | Technology | Quality | Service

Index

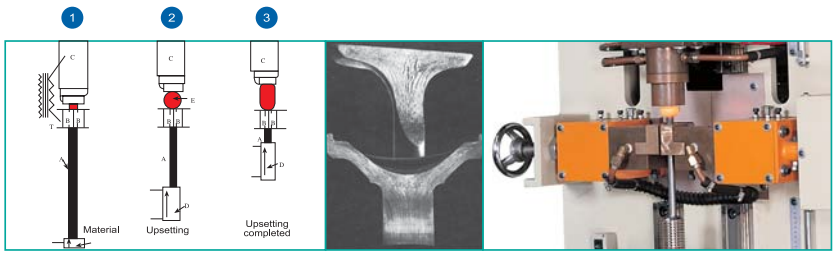
Introduction

- Founded at 1973
- Factory Address：22, 12th Road, Dali Ind. Park, Dali Dist., Taichung City, 41280 Taiwan
- Main Products：Specialized in Electrical Heating Upsetter Machines
- Machines Sales Area：EUROPE, AMERICA, SOUTH AMERICA, AFRICA and ASIA...etc.

Management Concept

"Unique craftsmanship depends on use of the right tools."

Being well aware of demand of the customers, DA JIE has been devoting ourselves for thirty years to offer most perfect facilities, technology and service based on highly-professional quality, gaining good reputation from the international market. Gradually, DA JIE has actually become a world-wild brand. Our name is well-known in more than 50 countries all over the world including EUROPE, AMERICA, SOUTH AMERICA, AFRICA and ASIA.



Heating Upsetting Process

Grain structure in electrically upset workpieces

DJE SINCE 1973

DA JIE ELECTRICITY MACHINERY INDUSTRIAL CO., LTD.

INNOVATION TECHNOLOGY QUALITY SERVICE

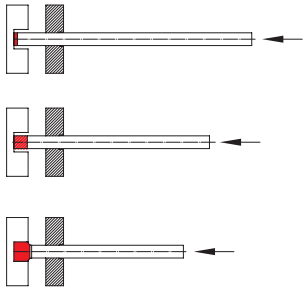
ELECTRICAL HEATING UPSETTER MACHINES

Electrical-upsetter

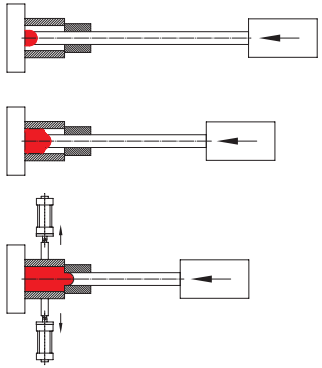
In electrical-upsetting a high electric current at low frequency is passed through a bar section which is limited by contact electrodes of different potential and heated due to high current density and ohmic resistance. Axial force applied by a hydraulic piston simultaneously causes the gathering of volume which results in an increasing distance between the electrodes. At the same time the anvil electrode must retreat to allow space for the increasing volume. Apart from free and form upsetting at the bar end material can be gathered at any position along the bar length.

There are two basic methods of electrical-upsetting:

▶ Free upsetting



▶Form upsetting



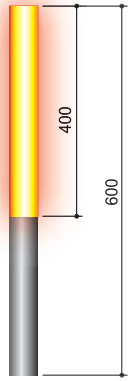
Working Samples

A combination of free and form upsetting is the semi-open die upsetting.

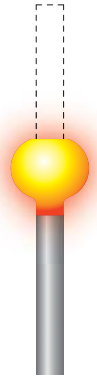
▶ Die upsetting

▶This Machine Has Won Many Patents From National Quality Inspection Bureau.

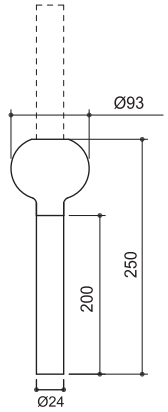
Process



Cut billet



Upset by electric gathering



Drawing for gathering

Steel fiber structure won't break

▶Further shape varieties are possible.

- The process is not limited to certain cross-sections, though mainly round material is used.
- On certain conditions free and form upsetting of tubes are also possible.
- All standard steels and non-ferrous metals as well as high-temperature nickel alloys can be electro-upset.
- Special conditions apply when using copper and highly conductive materials.

▶Process limits

- The shape of a free upset can be controlled to a certain degree, but usually at the cost of reduced upsetting velocity.
- Form and die upsets are usually too cold for subsequent forging.

Vertical Type
Double Head Electrical Heating Upsetter

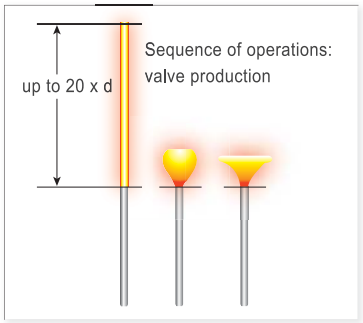
Preconditions And Advantages Of Electrical-upsetting

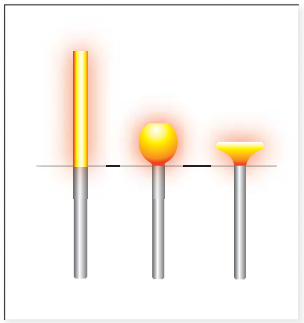
A conductive surface is necessary for an optimum upsetting and heating rate. Appropriate surface quality can be reached by drawing, centerless grinding and peeling.
Milled, sand-blasted or reeled surfaces have a negative effect on the lifetime of the contact tools and the working speed. A preferable rectangular and face is a precondition for faultless material gathering. In certain cases chamfering is advisable. Depending on the bar diameter suitable end faces can be reached by shearing or sawing.

Advantages

By using electrical-upsetting some of the well-known technical limitations and disadvantages of mechanical upsetters can be eliminated and the operation efficiency can be increased.

- Simultaneous heating and upsetting in one machine.
- Almost no restrictions of length in one operation.
- The mechanical upsetting limit of approximately 3 x diameter in one operation can be exceeded considerably.
  Automotive engine valves e.g. often have an upset length of up to 20 x diameter electrically.





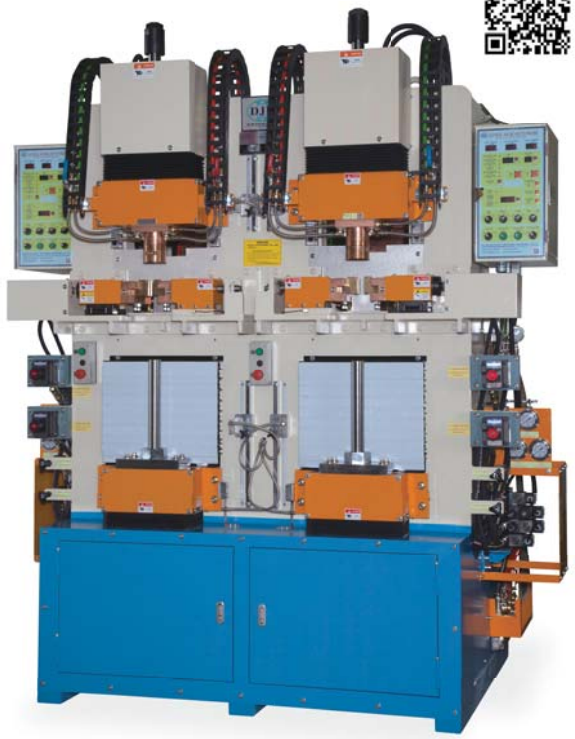
- The flash formed at the split line on e.g. horizontal forging machines is eliminated.
- Further processing at forging temperature. Free upsets can be finish-forged without reheating.
- Drastically reduced scale formation. The dies for subsequesnt finish-forging reach a long operation life.
- The volume of the upset may be controlled precisely to permit subsequent flashless forging in closed dies.
- Suitable grain flow and faultless surface. The grain flow is optimaly adapted to the shape of the work-piece.
  A good electrical-upset is free from overlapping and wrinkling; the cold shaft remains intact.
- Always ready for operation, no pre-heating necessary.
- Very efficient energy consumption, demanding.
- Constant heating temperature due to steplessly adjustable and thyristor-controlled heating current.
- No waste of energy and material. Only the section to be upset is heated. The undeformed shaft stays colds.
- No environmental pollution by radiant heat, smoke or other emissions.
- Electrical-upsetters need no foundation.

DJE Electrical-upsetter

DJE builds electrical-upsetters in horizontal and vertical arrangement as well as special designs.
DJ-VHC = horizontal electrical-upsetter
DJ-VHA / VHB=vertical electrical-upsetter

Another feature of this machine type is the nominal capacity of the transformer.

DJE designs electrical-upsetters to suit special applications and customer requirements rather than fixed standard ranges.



Specification Of DJ-VHB

Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ/min	%	V	Hz
DJ-VHB260	26	8~19	60	90	220 480	50/60
DJ-VHB510	51	12~24	80	90	380 530	50/60
DJ-VHB910	91	15~30	100	90	400 600	50/60
DJ-VHB1500	150	21~36	120	90	415	50/60

▶ Suitable for different voltage, design & making according to requirement of customers.
▶ We can change the specification according to the demand of customers.

Vertical Type Double Head Electrical Heating Upsetter

Usages

DJ-VHB260, DJ-VHB510, DJ-VHB910, DJ-VHB1500, AND DJ-VHB2500 are suitable for across socket spanner, autos parts, electrical anchor, valves and screws, machines parts, and hardware tools, big size bolt & various hot forging parts manufacturing.

Features

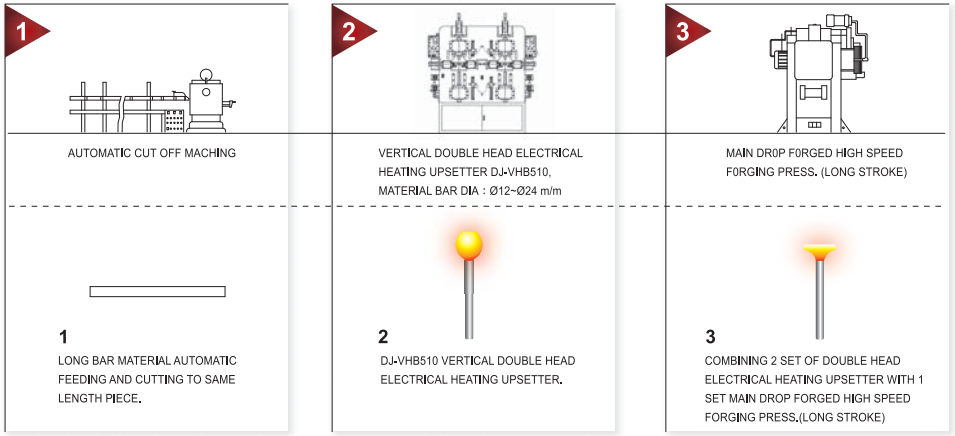
With Vertical or Horizontal type of Electrical Heating Upsetter, it can save materials & energy up to 50%. It is easy to operate. The heating procedure is from inside to outside to assure the material structure well mixed and deep the crystal in perfect condition.

With high efficiency and clean working environment, the surface of forging parts are smooth & without bur. The constitute is average spread & with best tensile strength.

Reduce working process and without radiating heat. Accuracy controlling of upsetting speed & dimension. Any length & diameter are available to manufacture by demand.

* The heating system of this machine is controlled by 2-step auto exchange.

Flow Chart Of Large-size Engine Valve Forging Process

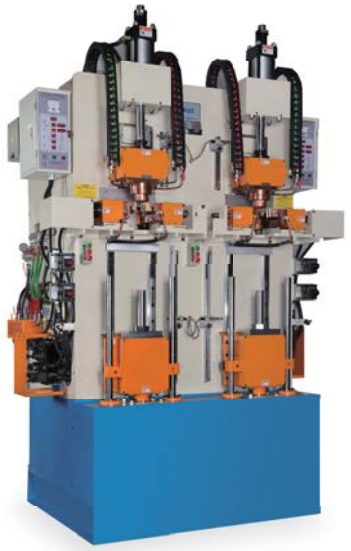


Suitable Materials

1. Low Carbon Steel
2. High Carbon Steel
3. Medium Carbon Steel
4. Stainless Steel
5. Alloy Steel
6. Special Alloy Steel
7. Carbon Steel
8. Other Alloy Carbon Steel

Suitable Specification

1. Round, Square and hexagon shapes of bar, our UpSetter can be processed.
2. Length:100mm-3000mm
3. Special length order available



Vertical Type Double Head Electrical Heating Upsetter

Round Bar Material Double Head Electrical Middle Section Heating and Upsetting Machine

Model No.DJ-VHB260~DJ-VHB910

Specification Of DJ-VHB

Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ /min	%	V	Hz
DJ-VHB1500	150	21~36	120	90	200 400 220 480 380 530 400 600 415	50/60
DJ-VHB2500	250	30~45	180	90		50/60
DJ-VHB4500	450	35~55	200	90		50/60
DJ-VHB6500	650	45~60	300	90		50/60

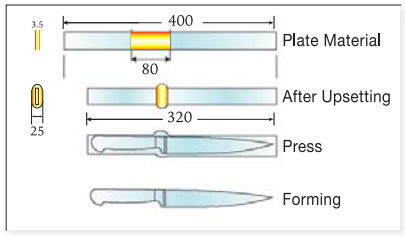
▶ Suitable for different voltage, design & making according to requirement of customers.

▶ We can change the specification according to the demand of customers.

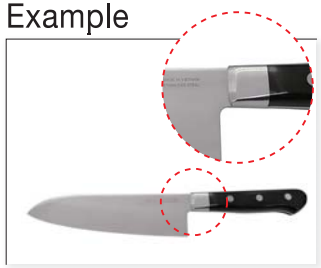
Horizontal Type Electrical Heating Upsetter (For Flat Plate)

Horizontal Type Electrical Heating Upsetter

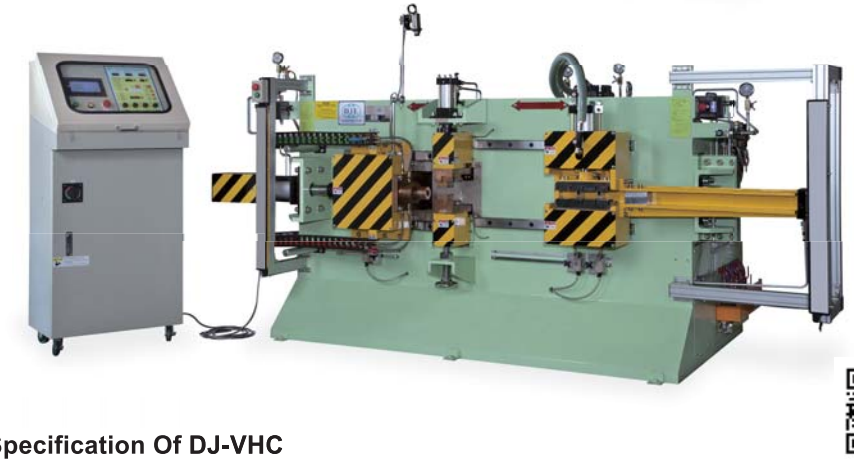
Plate material processing flow



Example



This machine has won many patents from government



Function:

Used for Flattening-type and round bar material stainless high-class dinner set shank heating and projecting and projecting to save 30% material (It is a fashionable new-type bacteria-free tools)

DIRECTION :

Stainless steel,alloy steel material thickness 2.5-3.5mm,width:15~35mm,length within 300mm,suitably used for DJ-VHD 100; material thickness 3.0-4.5mm,width 30-55mm,length within 400mm, suitably used for DJ-VHD150, for alloy stainless steel, special stainless steel high-class shank upsetting forming. In the production process, electric heating is adopted, and sliding mould is made of alloy material against high-temperature and wear-resistant to make with aqccessories of the USA and Europe.

DJ-VHD1000 / DJ-VHD1500

Specification / Model	Rated Capacity	Heating & upsetting capability	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ/min	%	V	Hz
DJ-VHD1000	100	Thickness 2.3~3.0 Width 15~35 Length 300	60	80	200~600	50/60
DJ-VHD1500	150	Thickness 2.6~4.0 Width 30~55 Length 450	60	80		50/60

▶ We keep the right to change the design without notice.

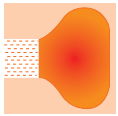
Specification Of DJ-VHC

Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ/min	%	V	Hz
DJ-VHC910	91	15~30	50	90	200 400 220 480 380 530 400 600 415	50/60
DJ-VHC1500	150	21~36	60	90		50/60
DJ-VHC2500	250	30~45	90	90		50/60
DJ-VHC4500	450	35~55	100	90		50/60
DJ-VHC6500	650	45~60	150	90		50/60

▶ Suitable for different voltage, design & making according to requirement of customers.

▶ We can change the specification according to the demand of customers.

Horizontal Type Electrical Middle Section Heating Upsetter

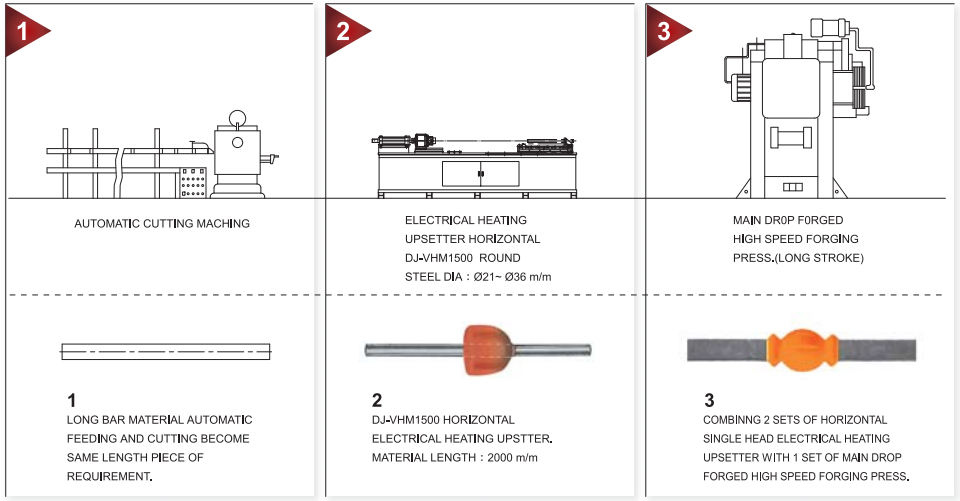


Horizontal type Heating Upsetting Machine is suitable for length over 800m/m or limitless length, and it's designed to meet a special working.

Example

▶ This Machine Has Won Many Patents From National Quality Inspection Bureau.

Forging Process Flow Forged Solid Boss For The Wrought Iron



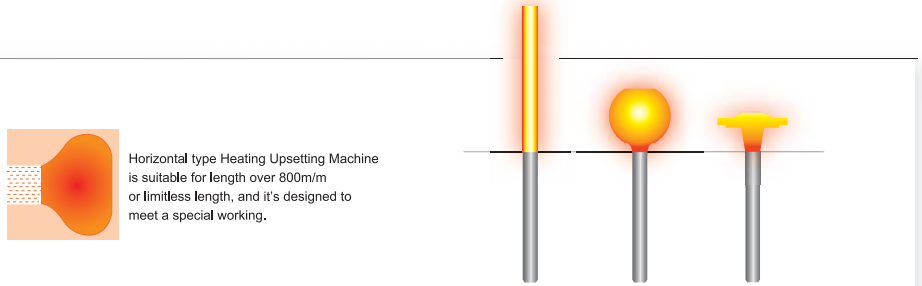
Specification Of DJ-VHM

Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ /min	%	V	Hz
DJ-VHM910	91	15~30	50	90	200 400 220 480 380 530 400 600 415	50/60
DJ-VHM1500	150	21~36	60	90		50/60
DJ-VHM2500	250	30~45	90	90		50/60
DJ-VHM4500	450	35~55	100	90		50/60
DJ-VHM6500	650	40~60	150	90		50/60

▶ Suitable for different voltage, design & making according to requirement of customers.

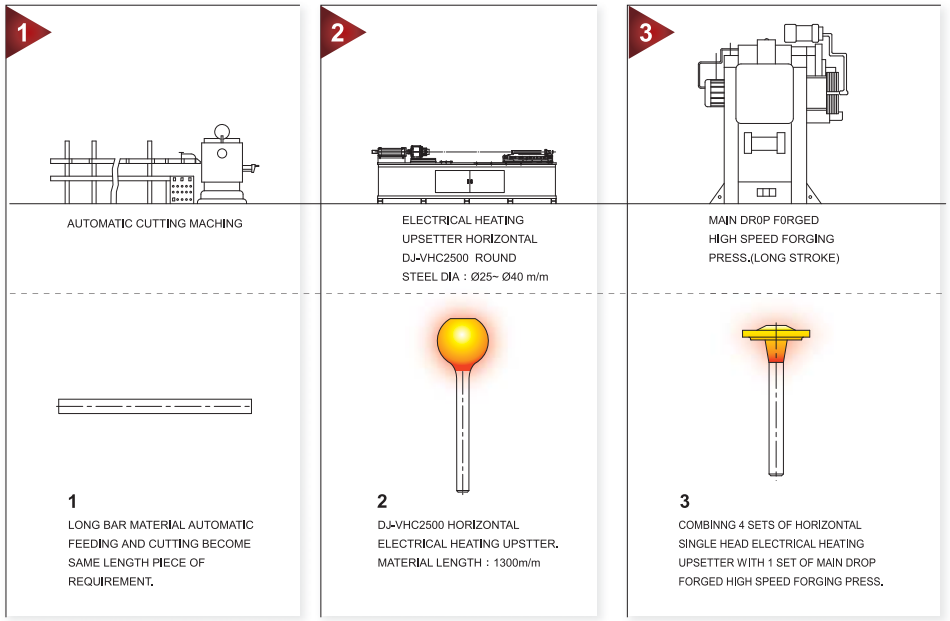
▶ We can change the specification according to the demand of customers.

Horizontal Long Type Electrical Heating Upsetter



▶ This Machine Has Won Many Patents From National Quality Inspection Bureau.

Forging Process Flow Chart Of Main Driving Axle Transverse Bar For Fixing Vehical Wheels.



Specification Of DJ-VHC

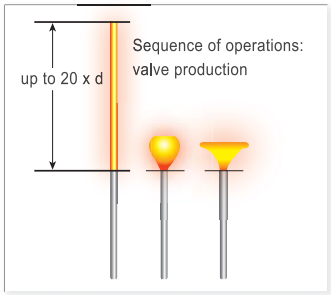
Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ /min	%	V	Hz
DJ-VHC910	91	15~30	50	90	200 400 220 480 380 530 400 600 415	50/60
DJ-VHC1500	150	21~36	60	90		50/60
DJ-VHC2500	250	30~45	90	90		50/60
DJ-VHC4500	450	35~55	100	90		50/60
DJ-VHC6500	650	40~60	150	90		50/60

▶ Suitable for different voltage, design & making according to requirement of customers.

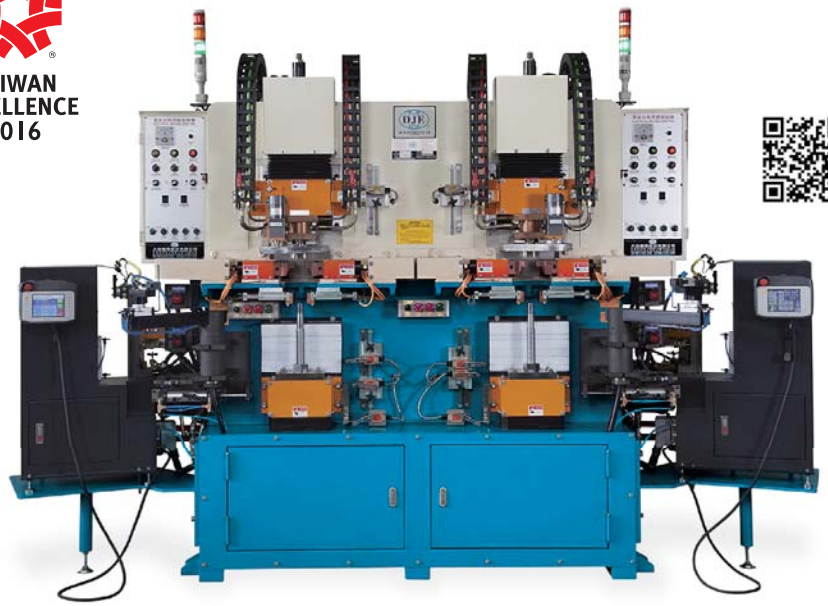
▶ We can change the specification according to the demand of customers.

Automation Loading & Unloading Upsetter With NC Controller

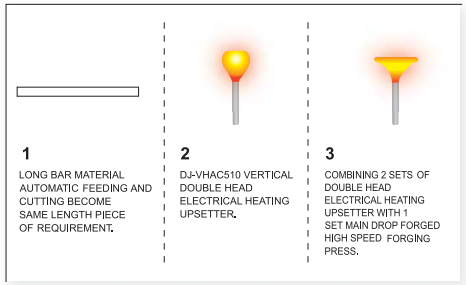
- Combination of electric & engineering and adoption of imported elements from JAPAN & GERMANY. (Toshiba, Omron, Fuji, Mitsubishi, and Siemens)
- Under special design & treatment, major transformer has high output efficiency through interior cycling and saves power.
- To adjust the voltage with button for application range (The diameter of material can be selected freely in the application range.)
- Stability & accuracy.
- The contacting electrode mold, made from the best Japanese (EK2 Alloy Copper).Heat-proof & wear-resistant and easy replacement.
- Under special material treatment, the moving slide is stable & durable.
- Easy replacement the parts and easy operation and easy maintenance.
- We have cooperative with some famous companies, like:
  USA : eaton Engine, GM, Ford
  Europe : Fisch Tools, Mahle Tri-Ring Valve
  Japan : Nittan, tatung, Toyota, Kyoto Tools, Isuzu, Mitsubishi, Nissan
  Asia : Mahajak AutoParts, Bangkok Spring.
  APM, MTM : Italy, Austria, France, England, Germany and Japan……



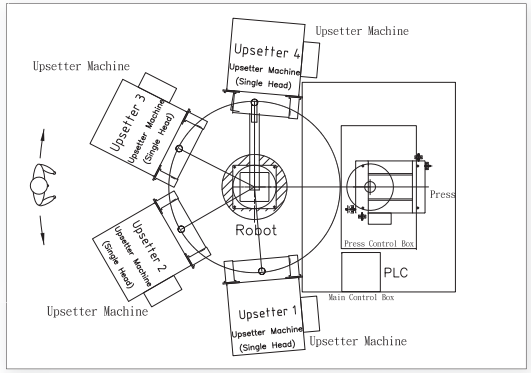
TAIWAN EXCELLENCE 2016



DJE Electrical-upsetter



Automatic Production 4 Sets single Head
Electrical Heating Upsetter Machine+ 1 Set Robot+1 Set Press



Application

DJ-VHAC160, DJ-VHAC260, DJ-VHAC510, DJ-VHAC910 are suitable for across socket spanner, autos parts, electrical anchor, valves and screws, machines parts, and hardware tools, big size bolt & various hot forging parts manufacturing.

DJ-VHAC160 Automation Loading & Unloading Upsetter With NC Controller

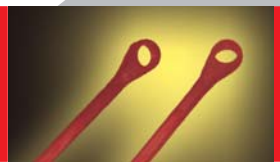
- These machines apply the hydraulic system supplied by (Japan) and (Germany), plus the cutting-edge logic-type hydraulic solenoid valves; under the stable operating efficiency and spec-complied operating status, machine parts will hold a long operating lifetime. Over the concentrically logic controller provided by (Japan) and (Germany), The parameters which are meaningful to the product quality, such as the forging upset speed and heating current, could be controlled independently.
- **Single Phase AC** is the most fundamental type of output solution. Current returns to zero every half cycle. This type of current solution creates a “no current flow” period and induces intermittent heating phenomenon. AC welding machines with Constant Current Controllers possess the functions of primary voltage compensation and primary/secondary constant current feedback control which automatically adjust power fluctuations.
- The forging machine applies the independent feed-supplement system, which allows it to associate with robots of brands in a wide variety to take materials instead of manual operation. After system is integrated, the fully automatic production can be achieved by the combination many forging machines to one robot and one screw-type press. The benefit is to elevate the production efficiency and reduce the labor and management requirement.
- The operating interface is simple and brief, allow for customer design. The user-required production data/info in the interface is rich, which could display the fault point locations and is simple for maintenance. The interface could monitor the production process and record the related production data.

Specification Of DJ-VHAC

Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ/min	%	V	Hz
DJ-VHAC160	16	6~12	60	90	200 400 220 480	50/60
DJ-VHAC260	26	8~19	80	90	380 530 400 600 415	50/60
DJ-VHAC510	51	12~24	100	90		50/60

- Suitable for different voltage, design & making according to requirement of customers.
- We can change the specification according to the demand of customers.

Electrical Middle Section Heating Machine For Hot Metal Forming

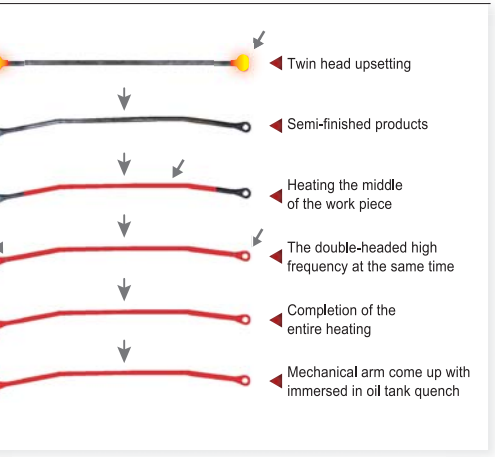


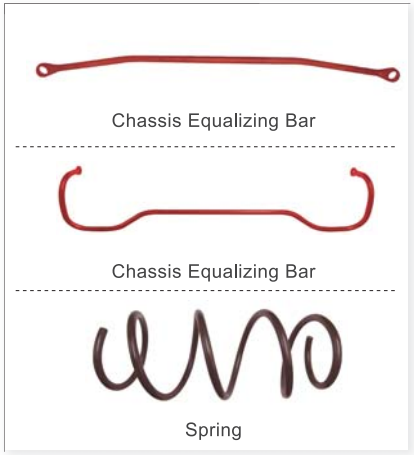
DJ-WVI3600 & DJ-WVI4800-Super series

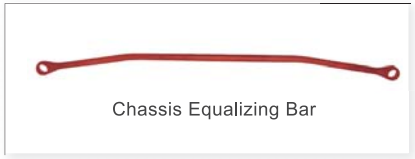
- These machines apply the hydraulic system supplied by (Japan) and (Germany. Under the stable operating efficiency and spec-complied operating status, machine parts will hold a long operating lifetime. The concentric logic controller is provided by (Japan) and (Germany). The thermal sensors are supplied by (Japan) and (Germany), which provide high-accuracy temperature change data. The HF induction heating machines are under the MIT (Made in Taiwan) performance and quality guarantee. The parameters which are meaningful to the product quality, such as the heating current and others, could be controlled independently.
- **Single Phase AC** is the most fundamental type of output solution. Current returns to zero every half cycle. This type of current solution creates a “no current flow” period and induces intermittent heating phenomenon. AC welding machines with Constant Current Controllers possess the functions of primary voltage compensation and primary/secondary constant current feedback control which automatically adjust power fluctuations.
- **Three Phase Rectified DC** is with three-phase balanced input operating at 50 or 60Hz. It’s widely adapted before the emergence of Three Phase Inverter DC. The diodes on the transformers convert AC to DC.
- **Three Phase Inverter DC** utilizes three-phase balanced input. Current wave is fully rectified to DC and switch to 1000Hz to produce AC supply to primary transformer. The current is rectified into DC for welding afterwards. Three Phase Inverter DC solution has the following advantages:

1. It doesn't have blank period in the current wave form. Heat produced is continuous and efficient. The fast feedback control (roughly 0.1 millisecond) ensures stable welding quality and controls welding splash.
2. It doesn't have blank period in the current wave form. Heat produced is continuous and efficient. The fast feedback control (roughly 0.1 millisecond) ensures stable welding quality and controls welding splash.
3. High-frequency transformer makes wide-range welding possible. Traditional AC transformer may induce insufficient current disperse with poor welding quality.

- The operating interface is simple and brief, allow for customer design. The user-required production data/info in the interface is rich, which could display the fault point locations and is simple for maintenance. The interface could monitor the production process and record the related production data.
- The machining process is:
  Feeding by robot→heat the work piece→heat both ends by HF→output and transported to the next station by robot.







Induction Heating Machine

Smith Forge Furnace

Distinguishing Feature

- Furnace tube of bin card, automatically will drop the electric system, during emergency , there is no worry for melting the furnace tube and the material.
- The host is a complete system of protection, with the Failure rate; Maintenance is simple.
- Feeding mechanism can use the wheel for moving the workpiece, also possible to make the Pneumatic to push-in the work-piece.

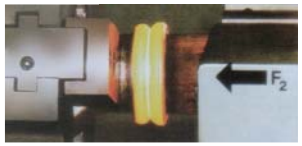
Product Content

Specification / Model	Power	Frequency	Diameter	Length	Rated	Supply Voltage
	KVA	KHz	mm	mm	Kw-hrs/Kg	V
DJ-MEF50	60	10~100	ø8~ø12	25~120	2.1~2.3	200 400 220 480 380 530 400 600 415 50/60HZ
DJ-MEF80	95	5~60	ø8~ø12	25~150	2.1~2.3	
DJ-MEF120	140	3~45	ø8~ø16	25~200	2.1~2.3	
DJ-MEF200	228	2.5~6.0	ø20~ø45	25~250	2.3~2.6	
DJ-MEF400	455	2.0~4.0	ø25~ø70	25~300	2.6~3.0	
DJ-MEF500	565	2.0~3.0	ø35~ø100	50~400	2.8~3.2	

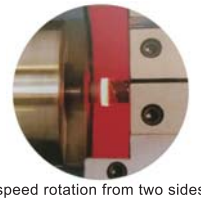
▶ Suitable for different voltage, design & making according to requirement of customers.

▶ We can change the specification according to the demand of customers.

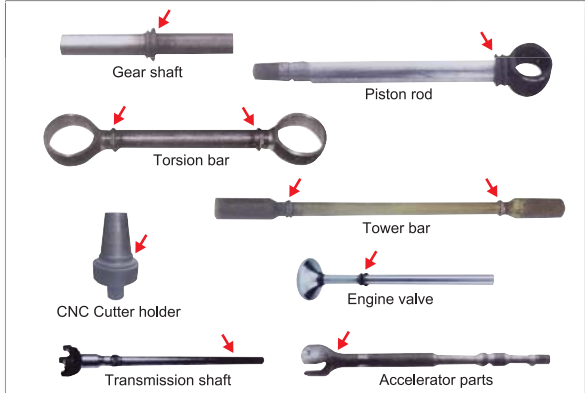
Friction Welding Machine



Heating and forging with a higher axial force applied.



High-speed rotation from two sides to pressure and to make two workpieces tightly jointed.

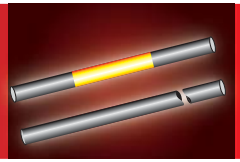


For connecting different materials

Specification of DJ-AGF

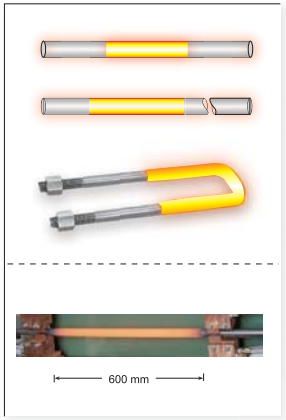
Specification / Model	Welding Capacity				Max. Thrust		Motor		
	Round bar diameter (Max.)	Pipe fittings (mm/inch)	Rotate length of the side material(Max.)	Length of the regular side material	While friction and generating heat	While forging and pressurizing	Spindle	Hydraulic	Supply Voltage
	mm	mm/inch	mm	mm	TON	TON	kw	kw	V
DJ-AGF15	Ø15	16	Ø15x230	250	0.95	1.9	5.6	2.25	200 440 220 480 380 530 400 600 415
DJ-AGF35	Ø35	48.3(1-1/2")	Ø35x260	restricted	7	14	19	5.5	
DJ-AGF70	Ø70	88.9(3")	Ø75x300	restricted	13	26	30	7.5	
DJ-AGF100	Ø100	140.3(5")	Ø100x380	restricted	25	50	56	11.3	

Electrical Middle Section Heater For Hot Metal Forming



DJ-W1500

(DJ-W500 ~ DJ-W1500)



Specification Of DJ-W

Specification / Model	Rated Capacity	Heating Ability Round Steel Dia	Cooling Water	Usage Rating	Supply Voltage	Rated Frequency
	KVA	m / m ø	ℓ/min	%	V	Hz
DJ-W750	75	12~24	50	90	200 400 220 480 380 530 400 600 415	50/60
DJ-W1000	100	14~28	60	90		50/60
DJ-W1500	150	18~30	80	90		50/60

▶ Suitable for different voltage, design & making according to requirement of customers.

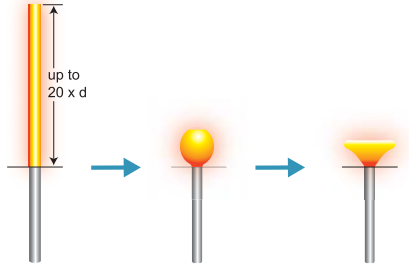
▶ We can change the specification according to the demand of customers.

▶ This Machine Has Won Many Patents From National Quality Inspection Bureau.

Working Samples

Upsetter Could Be Designed According To Workpiece

(Round, Square
and hexagon shapes of bar,
our UpSetter can be processed.)



Example

▶ Welcome to contact us with any inquiries for special frames.