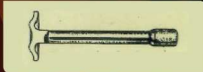


## Technical Information of Metal Gathering Machine

Model		TMG/V-25	TMG/V-50	TMG/H-50	TMG/H-100
Heat Rating of Machine	KVA	25	50		100
Heat & Upsetting rating <sup>3</sup> in steel	kg/h	16 <sup>3</sup> - 32 <sup>3</sup>	39 - 77		79 - 165
Bar range optimum from to	mm	9 - 18	12 - 24		20 - 40
Smallest acceptable bar diameter <sup>4</sup>	mm	6	10		12
Normal Bar length clamped <sup>5</sup>	mm	600	625	1000	1100
Maximum upsetting stroke	mm	150	200	300	300
Maximum upsetting cylinder force	tons	3	8		12
Installed Motor rating (pump motor)	kW	3	5.5	7.5	11
Coolant consumption					
Volume	l/Min.	12	17		25
Pressure	kg./cm <sup>2</sup>	3 - 4	3 - 4		3 - 4
Weight (Approx)	kgs.	1500	1800	2100	2500

Typical Electro-upset Part  
Rear axle shaft



Engine valve



Tie-rod end



Drive shaft or torsion bar



Pinion gear



Selector fork



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# METAL GATHERING MACHINE

RANGE  
25 TO 250 KVA



## METAL GATHERING MACHINE

Range: 25 to 250 KVA

### Principle

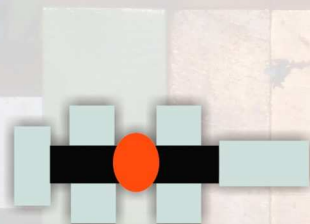
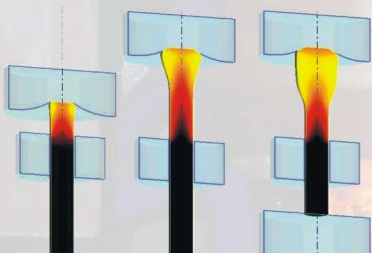
Metal Gathering operation consists of heating the part of the job and pushing the remaining cold material of the job into the hot zone till the required metal gathering takes place.

The fundamentals of Metal gathering are resistance heating to plasticity and material gathering by application of longitudinal force.

Upset forming of the work piece results when intense electric current is passed through the work piece between contacts called the vise and anvil. The Joule effect, resistance to current flow, heats the bar between the contacts to the plastic state. Force is applied to the cold ends of the bar pushing it through the vice at a controlled rate of speed. The heated portion grows into a bulb-shaped section.

As the volume in the bulb-shaped section increases, its resistance, relative to the volume, decreases, thus, slowing the heating in that portion. The smaller portion of the work piece between contacts has more resistance and continues to heat and enlarge.

The anvil retracts slowly when the bulb grows to the desired diameter allowing room for an elongated shape to develop. Large upset ratios can be achieved, exceeding 4 diameters, with superior grain flow characteristics on virtually any metal except copper.



CENTRE GATHERING

### Conditions of the Process

The shape of a free upset can be controlled to a degree but usually at the cost of reduced upsetting rate. Because bars must slide through the gripper electrode and maintain good electrical contact a smooth, clean surface is essential.

Cold drawn, peeled or ground bars are preferred. Hot rolled or sand blasted bars may also be used but cause greater wear on the gripper electrode and a reduction in upset rate. For a fault-free gather the bar end face must be smooth, flat and at right angles to the bar axis. In certain cases chamfering is advisable.



250 KVA MACHINE

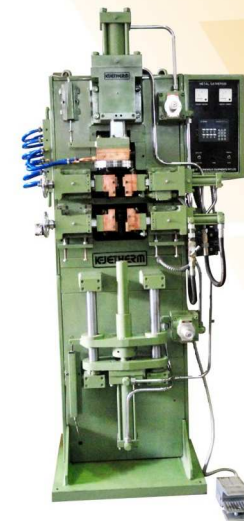


### Advantages

- Simultaneously heating and forming in the same machine.
- Always ready for instant use, no warm up required.
- Energy efficient, about 0.35-0.40 kwh/kg.
- Almost unlimited gather in one operation. The mechanical upsetting limitations of about 3X dia no longer applies. The modern engine valve has an upset length of up to 20X dia and lengths of up to 40X dia are commonly electro-upset.
- Minimal scaling improved die life in subsequent forging operations.
- No environment pollution by emission of heat, fume or exhaust gas.
- Free upsets can be finished forged without re-heating and so save time and energy.
- Consistent heating temperature through the use of thyristor control.
- Optimal grainflow and fault free surface. The unheated bar length remains unchanged.
- Reduced machining time.
- Improved part strength.
- Easily automated.



50 KVA INFINITE LENGTH METAL GATHERING MACHINE



50 KVA MACHINE WITH CENTRE GATHERING ATTACHMENT



100 KVA VERTICAL MACHINE