



Ravira Technology Services Pvt. Ltd.

Since 2000 in special and standard Plastic Welding Technology

Business co-operation In Plastic welding

- ❖Horn Well Group H.K.
- ❖Dong A Sonotec S.Korea
- ❖Dong Yang/Ji San Tech S. Korea
- ❖XT Laser China

A.

- **H.O. & Operation center – Pune**

Speciality Business center, B 409, above SBI, Balewadi, Pune

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- **Service Centers- Delhi (98210559745) ,
delhibranch@raviragroup.com**
- **Bangalore , Ahmedabad**

Products Offered – Special welding and testing machines for automotive parts

- 1. Vibration Plastic Welders**
- 2. Ultrasonic welder with Dynamic pressure & weld depth**
- 3 Multi Head Ultrasonic welders , Multi stage Ultrasonic Sytems.**
- 4 Multi points LTR heat staking m/cs**
- 5 Hot Plate Plastic Welders – Multi station and multi stage.**
- 6. Laser Welding machines**
- 7. PFT assembly weld, cut, trim and finish line.**

National and International customers Uses Our Welding Systems

- Faurocia, IAC, MATE, Anu Industry, Varroc
- Lumax, Minda, AVL, Fiem,
- Mahale, Korea;
- Honda China, Nissan China; KIA, Korea; SM
- Renault Samsung, Korea, Nissan, China/India
- LG, Samsung, Videocon (other products)

Forewords –

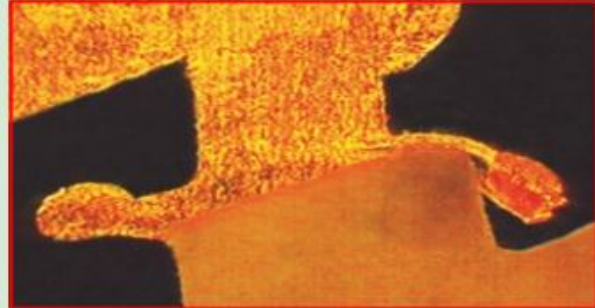
Ravira Technology Services Pvt. Ltd. is professional company with experience of more than 20 years in Plastic welding and automation machines supply and service in India. Ravira has its network in major cities in India to promptly support their customers.

Ravira Offers Vibration Welders , Multi-Head Ultrasonic welders, LTR Heat staking , Leak testers, PFT tank welders and other customized machines from Horn Well, Guangzhou and Plawel Korea.

The machines offered by Ravira are high quality and trouble free performing machines and all of them are manufactured by principal company with CE mark products. Brands like Mitsubishi, Omran, Siemense, Schindler etc. used in control system, Pneumatic of Japanese brand is used which assures trouble free and excellent performance of machines.

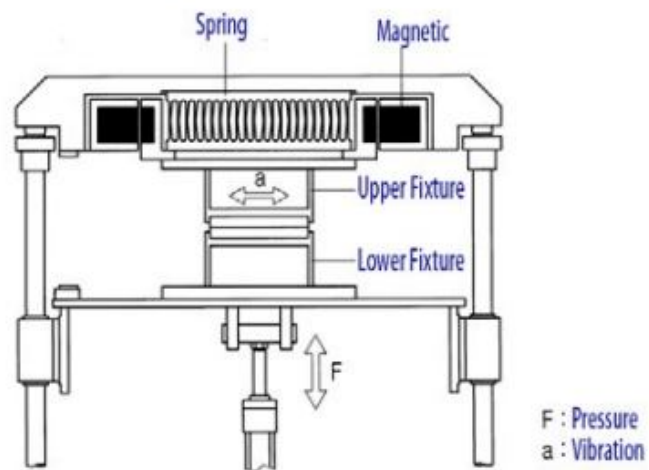
Vibration Welding

Vibration plastic welding is a kind of thermoplastic jointing technology with vibration friction in frequency of 150~250Hz to melt plastic at joining surface and form welding under pressure. During linear vibration welding, one plastic half A is hold in the lower fixture (stationary fixture), while the other one B is hold in the upper fixture and frictionally vibrates against the plastic half A at frequency of 150~250Hz in preset amplitude at linear plane driven by upper fixture to generate heating to melt plastic material at the welding. The vibration of upper fixtures resulted from the magnetic which is controlled by vibration generator. When the melting is enough, vibration stop and the upper fixture stops at the original position, then machine keeps pressing two plastic part halves under pre-set pressure until the jointing surface re-solidified.



3.1. Critical Parameter for Linear Vibration Welding

- 1) Frequency
- 2) Amplitude
- 3) Welding Force
- 4) Weld Collapse/Absolute Distance
- 5) Weld Time
- 6) Hold/Cool Time
- 7) Hold/Cool Force



3.2. Advantage of Linear Vibration Welding

Good ability for plastic parts in large size and complex shapes;

Short cycle time & high capacity;

Compatible with most plastic material;

Twice or multiple products welding per cycle is available in limit of machine specification;

Results in high welding strength and air-tightness;

An ideal choice for PA plastic parts welding;

Good ability for the welding material damped or with additive;

No fumes, emissions or consumables generated during vibration welding;

Requests lower welding tooling cost;

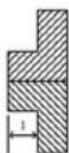
Easy for automation;

Lower cost for maintenance & power consumption;

3.3. Jointing Design for Vibration Welding

It is very important to consider the material characters of thermoplastic material besides plastic part geometry and welding quality requirement during vibration joint design. Vibration welding requests enough hardness of plastic part wall, or it must design locking groove compacting with jigs in precision to avoid poor or fail welding due to part deformation. You are suggested to contact us for discuss your joint design with our experts to conclude the final part molding design. The below pictures show you 5 kinks of typical joint design for vibration plastic welding.

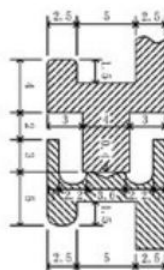
Normal Joint (Thick Wall)



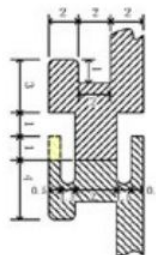
Normal Joint (Thin Wall)



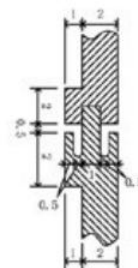
Joint With Flash Trap & High Joint Strength



Joint With Flash Trap



Joint With Flash Trap for Limit Tongue



Consideration More for Vibration Welding:

- Plastic part must be rigid enough, flexibility or deformation caused by softness of part results in fail or poor welding;
- Sufficient collapse distance should be designed for enough melting & Fusing, or weak welding will be resulted in;
- Joint line should be parallel to the force direction from the elevating table cylinder;
- At least 0.8mm space at each side of jointing line designed for upper plastic half's reciprocating linear movement between parts halves;
- Allow at least 50% area be supported by jig at bottom, or poor welding will be resulted in;
- Looking groove at linear vibration movement direction to prevent flexibility during vibrating;
- Angle between jointing surfaces of two plastic parts can't be more than 10 degrees, or poor or fail welding will be resulted in.

Vibration Welder

Application Industry :- Automotive parts like Dash board, Head lamp, Tail Lamp, Glove box, Console, HMSL, Washer tank, Fuel tank, Air Intek assy etc. House hold like Televison, transmitter-receiver panel, Electrical panels, Switches etc.



Features- High Quality and precision absolutely trouble free machine.

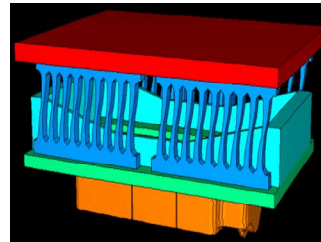
- 1. Mitsubishi PLC MMI interface**
- 2. Frequency adjustable 150 – 250 Hz**
- 3. Auto sense of part presence/location and safety door**
- 4. Auto parts clamp and release**
- 5. Graphic representation of weld**
- 6. Bad weld and good weld display for each part**
- 7. Multiple tool memory, 3 shifts x 7 days x 3 months or more**
- 8. Data transmission port and print port (optional)**
- 9. Infra red safety curtain**
- 10. Low db noise**
- 11. Precise and accurate alignment of parts to weld**
- 12. Faster sealing**
- 13. Six stage welding time, pressure, weld depth, frequency, amplitude**
- 14. Compatible to almost all Plastic material and many composite design material.**
- 15. Stable quality and negligible maintenance**
- 16. On line support**
- 17. Multi parts welding cycle**



Welding Head Of Vibration

Functional principle of vibration welding machines

- Tool, vibrating table, counterplates and springs constitute a spring-mass system
- Depending on the tool mass, a certain resonant frequency results
- Alternating attraction of the solenoids at the exact resonant frequency induces vibrations in the spring-mass system



Samples—

Parts made on machine for BMW, Hyundai, Daewoo, Fiat, Videocon, Samsung etc.



Vibration Welder

VIBRATION WELDER

"The vibration welder is the super-precision welder which applies to the low frequency vibration"

If we vibrate the products in a pressurized condition, the friction heat is generated. So the surface is melting and putting together. The vibration welder can be applied to all kinds of thermoplastic from PP that has a low melting point to Nylon66+GF35% that has a high melting point. Also we can get a high tensile strength. The vibration welder can apply to the products which need a airtight.

Feature

Production Tooling

- 1) Easy to raise and bring down the parts by using an ergonomical design
- 2) Easy to bring down the parts and change the tool
- 3) Adjusting the X-Y axis of Fixture
- 4) Automatic discharging
- 5) Clamp circuit
- 6) The tool which is made of steel for the surface
- 7) Stainless steel clamp
- 8) Down-pin fixture position

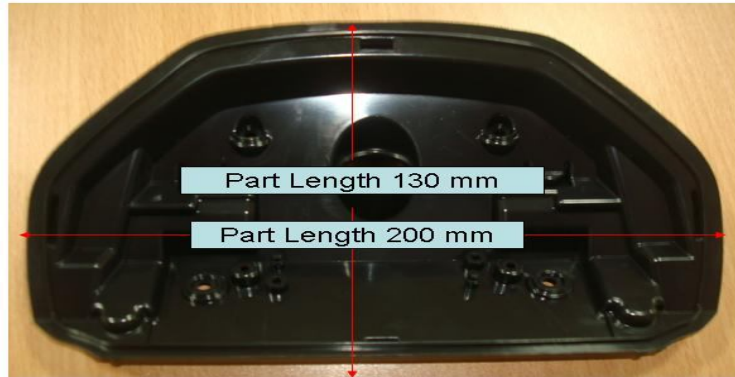
Characteristics of design and operation.

Memorizing other operation up to 20 units and calling the welding condition which is stored during a JIG exchange

- Frequency 180 - 260Hz
- Adjusting the amplitude
- Hold Time(3 Setting), Hot Force(3 Setting)
- Weld Time(4 Setting), Weld Force(4 Setting)
- Program for the Integrated Fixture Clamping Operation
- Welding depth control (0.1mm limit of error)
- Melt Down Control
- On-Line Maintenance
- On-Line Debug
- SPC



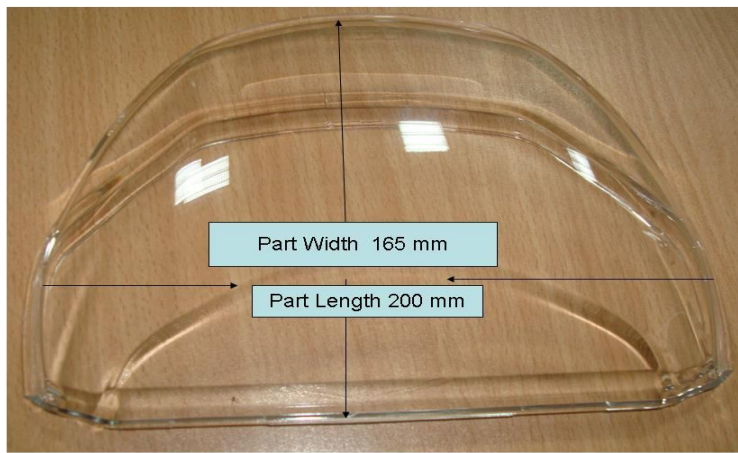




Part Length 130 mm

Part Length 200 mm

T/L HSG



Part Width 165 mm

Part Length 200 mm

LENS



Finel welded component form back side



Specification

Model	M55LS	15LS	15HLS	30LS	30HLS
Vibration head part					
Upper fixture weight	12Kg	30Kg	40Kg	60Kg	70Kg
Welding area(approx. / for PP)	50 cm ²	160 cm ²	200 cm ²	280 cm ²	450 cm ²
Amplitude(peak to peak)	1.8 mm	1.8 mm	1.8 mm	1.8 mm	1.8 mm
Resonance frequency (with upper fixture)	210 - 260 Hz	200 - 240 Hz	200 - 240 Hz	200 - 240 Hz	200 - 240 Hz
Mechanical part (mm)					
Machine size : Width	1174	2600	2600	2780	2780
Length	965	1280	1280	1284	1284
Height	2163	2107	2277	2390	2390
Open door size : Width	934	1510	1510	1690	1690
Height	446	650	765	723	723
Upper fixture panel size : Width	300	860	870	1080	1080
Height	295	410	440	560	560
Working table size : Width	792	1450	1450	1580	1580
Height	350	520	600	720	720
Table operating Stroke/ Max.	300	350	500	500	500
Distance between lift table and vibration head	380	490	685	715	715
Maximum welding force	600 N	12000 N	12000 N	12000 N	25000 N
Table transfer method	Pneumatic	Hydraulic Servo	Hydraulic Servo	Hydraulic Servo	Hydraulic Servo
Machine weight	1.2 ton	2.5 ton	3 ton	3.5 ton	4 ton
Noise limit (dB)	85	85	85	85	85
Electric controller part					
Input-power resource (3 phase) Option	220 V Ø3	220 V Ø3	220 V Ø3	220 V Ø3	220 V Ø3
Electric power consumption	6 KVA	18KVA	18KVA	35KVA	35 KVA
Out-put	5.5 Kw	15 Kw	15 Kw	30 Kw	30 Kw
Resonance frequency method	Auto	Auto	Auto	Auto	Auto
Welding method	Time / Depth	Time / Depth	Time / Depth	Time / Depth	Time / Depth
Welding stage	6 stages	6 stages	6 stages	6 stages	6 stages
Welding data storage	80 storage	80 storage	80 storage	80 storage	80 storage
Indication method of Welding result	Good/ Bad	Good/ Bad	Good/ Bad	Good/ Bad	Good/ Bad
Operating language	Korea/ English Chinese	Korea/ English Chinese	Korea/ English Chinese	Korea/ English Chinese	Korea/ English Chinese
Internet(ETOS-50)	NO	NO	NO	NO	Option
Communication method	Profibus - DP	Profibus - DP	Profibus - DP	Profibus - DP	Profibus - DP
Printer	NO	NO	NO	Option	Option

Thank You...