



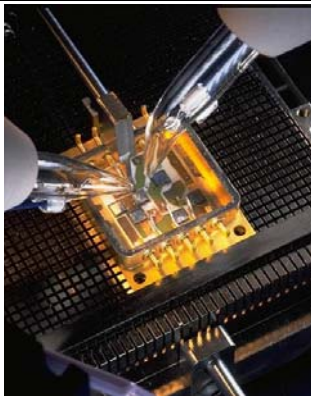
IS THIS FOR YOU?

The HGRS-V reworks today's highest performance epoxies, solders and eutectic bonds so safely it's required in advanced US military processes. If you can't remove 80/20-attached die, are damaging devices with your present rework processes - or are still tackling stubborn die with 15-minute bakes, hammer, screwdrivers, and chisels - **the HGRS-V IS your answer**. Call us for a detailed review of your application.

INTRODUCING HGRS – the **HOT** Gas Rework System

The HGRS system began in the mid-1980's as a laboratory tool to dismantle thermally-sensitive assemblies. During the 18 years and five design generations that followed, the HGRS has spread from advanced packaging labs into common cleanroom use. It's designed to remove strongly-attached die without damage to microcircuits, succeeding where SMT and solder-reflow units fail. The key to HGRS is its ability to bring targeted die to release temperature in a matter of seconds, rather than minutes, while protecting the circuit from thermal shock and physical damage. Its unmatched thermal capacity, precision heat footprint and sophisticated shear/ workholder system minimize cycle time so you can avoid the excess heat transfer that is inevitable in slower processes. For the most difficult applications, adjacent devices can be protected with built-in cooling jets and a max temperature limit may be set anywhere on your circuit.

SYSTEM DESCRIPTION



Our standard configuration provides two heater jets. These proprietary shaped-chamber "kilns" of shielded ceramic are flash-heated by pure tungsten windings on extreme-duty cores. Their **HOT** gas is our primary source of process heat, bringing the target die up to release temperature in a few seconds. As soon as the die is hot enough, it is sheared free by special tooling. The heat jets are individually controllable for gas flow and for temperature, as measured by a fast-response thermocouple built into each nozzle.

The workholder is a convenient "universal" fixture for substrates and modules, consisting of a spring-loaded 4"x4" pingrid with moveable wedges and height-adjustable backstop. The grid is preheated to prevent thermal shock, and to reduce heat losses in thermally-conductive assemblies. It moves on an air-bearing, 6"x6" travel XY stage with vacuum "lock on release" - the amount of vacuum is adjustable to avoid cold-shear damage. The stage also incorporates a fine-pitch lateral adjustment for working among wirebonds.

Each heater jet is swivel-mounted on a swing-out arm with horizontal (leadscrew) and vertical (rack & pinion) adjustment. Operators can easily align the jets with the target die, and bring them as close as necessary to limit overflow. Heated nitrogen is delivered through shaped quartz-glass nozzles with orifices as small as .020", and in straight and angled forms allowing operators to create "thermal footprints" tailored to the specific application. Custom-shaped and baffled nozzles are also available for to meet special requirements – just talk to us about your particular application!



To minimize process times the HGRS system can apply shear, torque, and peel forces to bonds as they are being heated. Setup is convenient, too – the jets and shear tool remain aligned to the optic's center of focus, and the operator simply moves the target die into place using the air-bearing workholder. Shear force is applied to the back of the target die simply by turning a knob comfortably located by the operator's right hand. A variety of shear tools is available to suit most die removal tasks, and they can be switched in seconds.

| SPECIFICATIONS | Description | Feature/Advantage |
|-------------------------------|---|---|
| Workholder & Stage | Vacuum-locked, air-bearing carriage with X-positioning leadscrew; plus preheated, spring-loaded pin-grid with built-in clamping. XY grid slots on .100" spacing provide clearance for package pins and also flexible positioning of fixturing wedges. To prevent cold shear, stage lock vacuum is adjustable. | <i>Multiple fine adjustments allow flexibility while positioning target die, nozzles and tools. A new triple-height backstop simplifies setup for thin substrates and side-lead packages.</i> |
| Preheater | PID Control displays set & actual (100--300°C) | <i>Temp. offset is programmable to deliver set temperature at product surface</i> |
| Nozzles | Quick-change quartz glass nozzles with built-in thermocouples, available in straight, angled & shaped styles, orifices .020" - .240"+ | <i>Apply heat from top and/or sides to suit application. Custom shapes too !</i> |
| Jet Aiming | Each individual jet can swivel on its mount, which moves up and down its support arm on a rack & pinion carrier. Support arms move sideways on leadscrews for ease in positioning thermal footprint. | <i>Arms swing out for easy access, then lock quickly back into desired position. Adjustable downstops help you quickly reset jets into desired position</i> |
| Heat Control | PID controllers, fast-ramping ceramic-chambered elements (200-800C); independently set Probe Control allows max temperature limitation at any circuit feature, simply by plugging in a thermocouple. | <i>When probe control is engaged, reaching your preset limit at the thermocouple triggers an audible alarm and auto-stepdown to a programmed safe level.</i> |
| Flow Control | Separate regulators for each heated jet plus dual cooling floods allow control of thermal footprint | <i>SET FLOW allows "cold" gas adjustment while set up, and expedites cooldown.</i> |
| Shear System | Moving shear arm with lifting lever holds interchangeable tools. Knob now ergonomically angled and relocated to right front for comfort. | <i>NEW for 2007 full set of combination sheartools, .02", .05", .10", .20" width, straight and wedge profiles included!</i> |
| Optics | Leica stereo zoom, 10X eyepieces, boom mount | <i>Boom mount swings out for access</i> |
| Physical | Services 45-60PSI N2, 220VAC 10A | <i>Dimensions 24"W 26"D 24"H</i> |

FREQUENTLY ORDERED PART NUMBERS *subject to constant improvements – call us for a detailed quote!*

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| H5E | HGRS-V Workstation, CE Marked, with Stereo Zoom Optics, Vacuum System, Setup Tools, 2 Nozzles, Combo Shear tool |
| H5JANSnnP | Straight Quartz Nozzle & Thermocouple, Orifices .20"-14", plus .24", specify <i>nn</i> in 1/100", requires 7 to complete full set. |
| H5JANAnnP | Nozzle, as above but angled, to direct heat vertically onto die. Specify orifice <i>nn</i> in 1/100", requires 7 to complete full set. |
| H4JANR99P | Rectangular custom nozzle with thermocouple, with or without baffle, to suit application |
| H4WHSSnn | Straight shearfoot with rod and adjustable collar, specify width <i>nn</i> as 02, 05, 10, 20 (in 1/100") |
| H4WHSWnn | Wedge shearfoot with rod and adjustable collar, specify width <i>nn</i> as 02, 05, 10, 20 (in 1/100") |
| H5WHSCS (L,S) | Combo sheartool with straight feet, .10"-.20" wide (L) or .02"-.05"(S) with rod and adjustable collar. Standard Eqpt for 2007 |
| H5WHSCW(L,S) | Combo sheartool with wedge feet, .10"-.20" wide (L) or .02"-.05"(S) with rod and adjustable collar. Standard Eqpt for 2007 |
| H5JAJT05 | Generation-5 Heater Element, Tungsten on Extreme Duty Core (2 included with machine, order as required for spares) |
| H5INSTALL | Installation and training are part of standard support package provided through our local representative or distributor. |