ROMULUS

Universal Mechanical Strength Tester

- Stud Pull Adherence
- Die Bond Pull
- Die Bond Shear
- Flexure Stress/Strain
- Torque Test
- Tensile Stress/Strain
- Peel Test
- Diamond Scratch
- And Many More...

Quad Group Inc.

ROMULUS

UNIVERSAL MECHANICAL STRENGTH TESTER

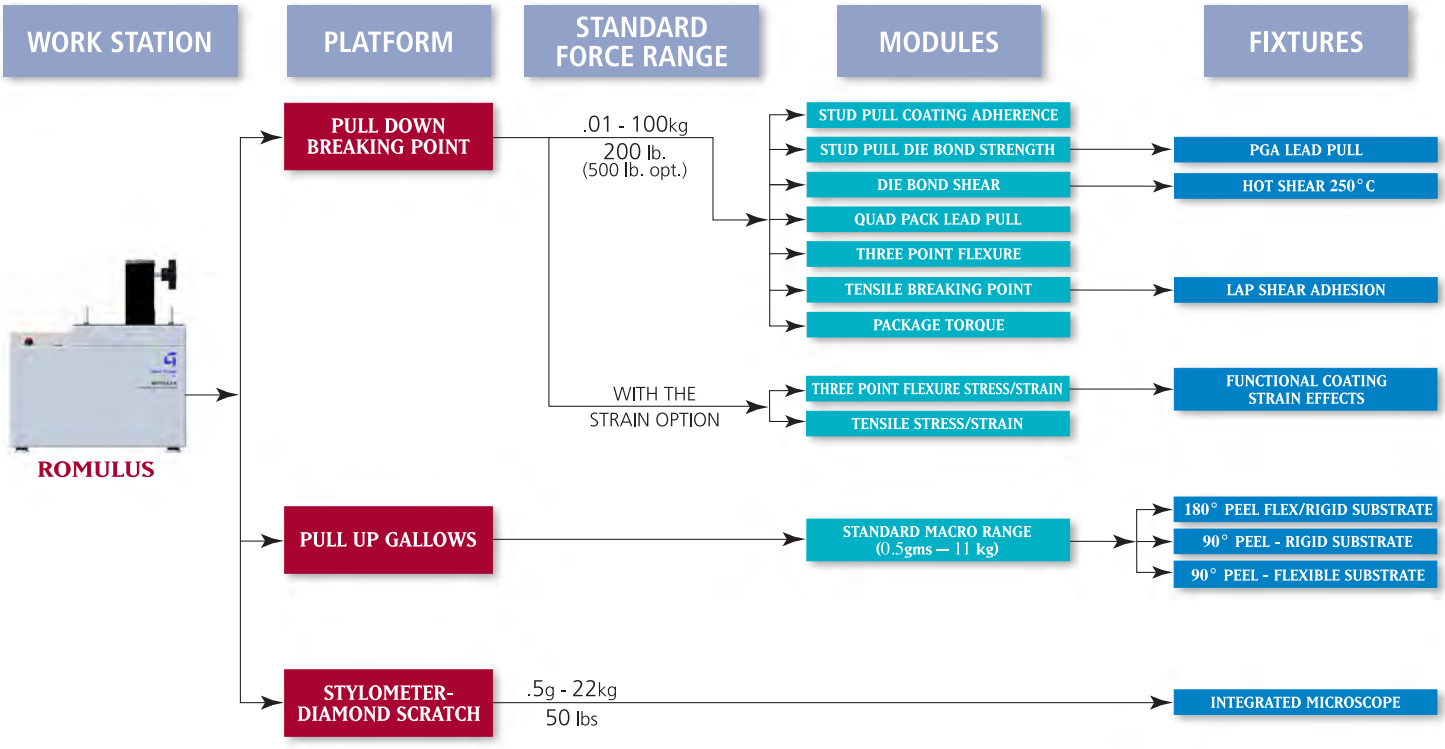
THE ROMULUS UNIVERSAL TESTER IS A COMPUTER OPERATED TEST INSTRUMENT FOR EVALUATING: ALL FORMS OF ADHESION, MICROELECTRONIC WAFER FAB, INTERCONNECT TECHNOLOGY, MATERIALS CHARACTERIZATION, AND MANY FORMS OF COATING AND MANUFACTURING Q.C. TESTS.

Quad Group has developed a testing system that can perform a broad range of mechanical strength tests. You only need to purchase the unit currently required. As needs arise, the capabilities can be quickly enhanced with a myriad of low cost standard test options. The design of the Romulus System allows for customized modules and fixtures to fit your special needs. Thus, an entirely new instrument can be configured by Quad Group in a short amount of time and at a fraction of the usual custom cost.

The basic instrument is portable, compact (approximately the size of a personal computer), contains no messy hydraulic systems, and is simple to operate. Some tests, such as stud pull, require rate of loading control. The internal computer selects the appropriate method. While the standard range is .1 to 200 lbs. (.05 to 100 kg.) Force, the instrument can be configured to apply test forces of up to 500 lbs. (225 kg) Force. All calibration is traceable to NIST (U.S. National Bureau of Standards).

Three interchangeable platforms allow the user to configure many different tests at a fraction of the cost of individual machines for each test.

Once any instrument is purchased, other platforms, modules and fixtures may be added individually as your testing needs change. Please contact Quad Group for any special requirements or tests that are not included in the chart below.



EXECUTING ANY TEST

THE METHOD USED TO EXECUTE ANY TEST IS IDENTICAL. COMPUTER LITERACY IS NOT REQUIRED!

1. Select and install the test module desired.
2. Access the appropriate software.
3. Install the sample and respond to the software prompts.

The test is executed automatically, the data is recorded on a real time basis, primary finding and numeric constants are calculated automatically. A broad range of statistical analysis tools are included in the software.

STUD PULL TESTS

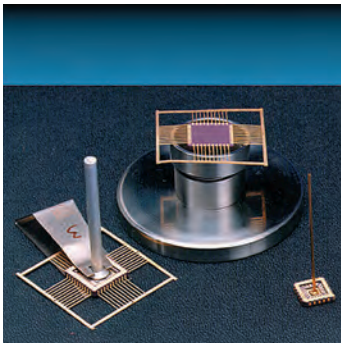
All stud pull tests are performed by bonding the pre-epoxy coated face of a nail shaped stud to the sample surface, and then applying an exact perpendicular controlled rate of force until sample failure. Cure temperature for Quad Group epoxy is 150° C (300° F). Our 70 MPa (10,000 psi) epoxy bonds to virtually any solid, is low stressing if a small stud is used, and goes from enamel-like to water consistency just prior to polymerizing. This optimizes exact perpendicular stud mount. A weaker, more elastic version is used for large area bonding to die bond tests. Call Quad Group if your sample testing must be done under lower temperatures. (1-800-342-2430)

STUD PULL ADHERENCE

This test is applicable to the evaluation of any coating. Simply select the units of measure desired and insert a prepared sample in the apparatus for automatic detachment. The same fixture is used in axial lead pull and bonding media strength tests.

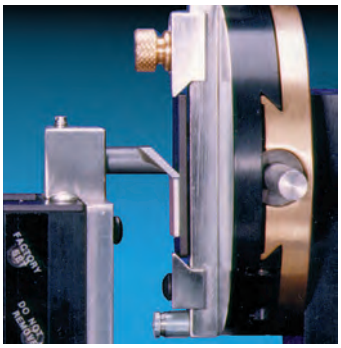
TENSILE DIE BOND TEST

To test the bond strength of die or surface mounted components (Mil. Std. 883), a stud is attached to a face of the component. It is similar to the Stud Pull Adherence test except much larger studs are used. A swivel is present to accommodate any non-parallelism between the component and its substrate.



SHEAR TEST

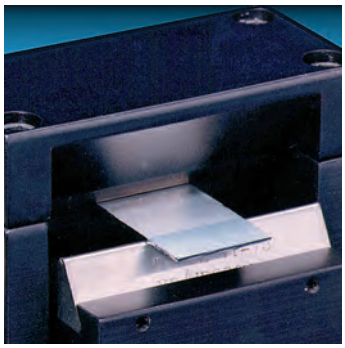
A quick die-bond test which requires no sample prep and is executed in seconds. The sample is brought in contact with the shear tool by X,Y,Z and rotational adjustments. A shear wedge is forced against the component edge until failure. Excellent for SMD components. An optional video scope can be supplied to comply with Mil. Std. 883.



BREAKING POINT PLATFORM

FLEXURE BREAKING POINT*

Measures Flexural Modulus of Rupture or stress induced changes in functional coating, such as magneto-striction, by maximum outer fiber stress analysis. Quick incontrovertible Q.C. analysis for rejection of improper chemistry or firing schedule of ceramics. Advanced stress/strain facilities are available.



TENSILE BREAKING POINT*

Tensile test sample is gripped between the Breaking Point Chuck and the Module Chuck. The sample is pulled at a constant range of travel. Fully automated ASTM stress/strain analysis for scientific level materials analysis is optional.

*Many breaking point tests can not be included here. Call Quad Group with your special needs. The Romulus System is versatile and custom tests can be designed upon request.

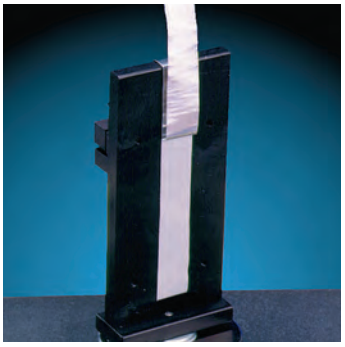
PULL-UP PLATFORM

PEEL TESTS

All pull up/peel tests are executed using a gallows structure mounted on a platform deck. At the top of the gallows a take up wheel can pull up on the sample at a precise rate specified by the user between 0.02 – 0.35 in/ (0.5 – 8.8 mm/s). A sample holder appropriate to each test is mounted in the force transducer, located below the deck. The peel force is continually measured. Tape assisted peel of non-self-supporting coating can be executed by the tests described below.

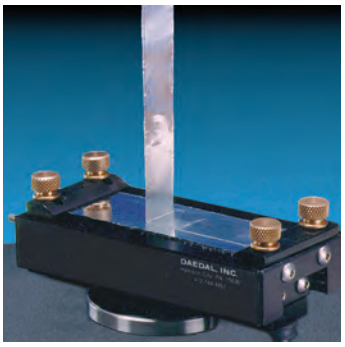
THE 180° PEEL TEST

Both flexible and rigid substrate tests are executed using the unit shown to the right. Rigid substrates are clamped onto the unit face; flexible substrate material is clamped and tensioned on the rear of the plate. The unit can execute peel-back tests for coatings, tapes, labels and laminates.



THE 90° RIGID SUBSTRATE PEEL TEST

A pulley-driven stage moves laterally at the same rate as the vertical pull rate. This maintains the 90° angle established at the test start. Aggressive tape can be used to test thin or fragile coatings. Tests include a hybrid bond pad peel.



THE 90° FLEXIBLE SUBSTRATE PEEL TEST

By mounting the sample on the periphery of a free running German Wheel, the coating is peeled from the substrate. The 90° angle is maintained by the free rotating of the wheel. Additional tests include evaluation of the adhesion uniformity of tapes and labels.

INTERCHANGEABILITY

Any and all Romulus platforms can be interchanged in seconds. Pull-up handles facilitate easy removal of any platform. Simply pull up on the platform, then replace with a new platform in seconds. All modules and accessories from earlier Quad Instruments can be used directly in appropriate Romulus platforms.

PHOTO TECHNICA
www.phototechnica.co.jp
フォトテクニカ株式会社
〒336-0017 埼玉県さいたま市南区南浦和 1-2-17
TEL:048-871-0067 FAX:048-871-0068
e-mail:voc@phototechnica.co.jp