# Know your Hi-Rel locking mechanism:

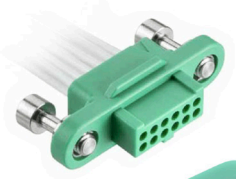
## Which is the best fit for your interconnect needs?

**Having confidence that secure electrical connections are in place is certain to be a critical aspect of an engineer's system design. So that male-female mating pairs remain intact when subjected to external forces, inclusion of some form of locking mechanism is recommended. There are several different options currently available from Harwin – with latches, jackscrews and proprietary 101Lok based fixings all on offer. Each of these has its own particular merits, so deciding which is the most appropriate will depend on the application, as well as logistical factors.**

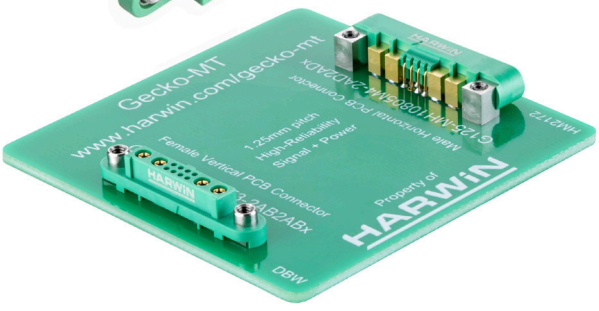
## Jackscrews & Screw-Based Locking

Screw-based locking mechanisms are particularly popular in situations where interconnect integrity needs to be assured, as they provide considerable retention capacity. They offer long term robustness both mated and unmated. The only downside here is likely to be the space that connectors with this functionality tend to take up.


Screw threaded fixings are offered for Harwin's high-reliability (Hi-Rel) 2mm-pitch Datamate series. The J-Tek components use M2 thread jackscrews. Board-mount, panel-mount and guide pin options can be specified, along with vertical, horizontal and reverse-fix configurations. The jackscrew style of fixing has greater robustness and presents the best choice for dealing with the most challenging conditions. However, 'jacking' together on the Datamate J-Tek range can take a little time – with one jackscrew rotated a full turn, then the second, then back to the first, and so on until full engagement is reached. This may not be the best tactic if fast mating is a priority, but is useful on the very large pin counts to help overcome the higher mating forces.



To address smaller format interconnects, J-Tek is complemented by the award-winning Gecko Screw-Lok (SL) technology. The Gecko-SL design uses a fully floating screw – this allows 'mate-before-lock', where both connectors can be fully mated before any screwing together is required. The fixing on one end can be fully screwed in before screwing together the other end.




For both styles of screw-based locking, a screwdriver or a hex/Allen key will be required. A third variation on jackscrew head style which could be considered is the thumbscrew head. This is large enough to be manually screwed together with fingers, and usually features diamond knurling for increased grip. Usually a slot or hex socket is still present on these screws, so that the thread can be tightened to a specific torque when required. To help with manual fixing, further additions to the Harwin portfolio will result in connectors with thumbscrews being made available.



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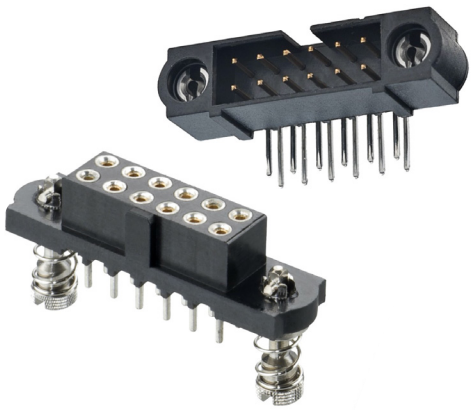
# 101Lok

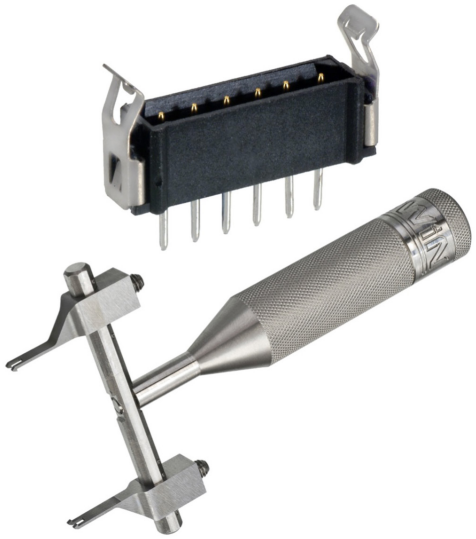
101Lok is completely unique to Harwin. Introduced several years ago, this is a variant of our J-Tek technology. It employs a bayonet-style construction that is tensioned by a coil spring in order to combine the respective advantages of both latch and screw based fixing mechanisms. It only requires a simple quarter turn to be fully secured. 101Lok delivers faster mating and un-mating operations, while eliminating the need for special tools.



In addition, the built-in spring tensioning still withstands the full specification of vibrational forces – making it highly advantageous when deployed in uncompromising industrial, avionics and motorsport settings. It should be noted that this fixing is currently only available on the Datamate J-Tek series (specifically double ro.. contact components). There are a broad range of mounting options available though, with cable-mount and PCB-mount covered. Both vertical and horizontal orientations can be supplied.

# Latching

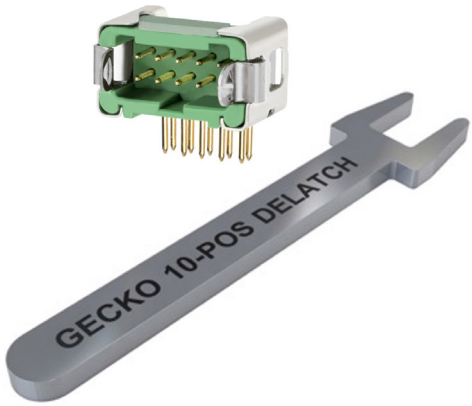
This provides ongoing connector retention once the male and female elements have been mated, but is quicker to execute than the locking mechanisms previously discussed. This method also takes up minimal space on the PCB (giving it greater appeal when dealing with space-constrained layouts).



Plastic latching is quite commonplace. Here a snap-over approach is often employed or a hinged arrangement with built-in ejectors may be preferred. Neither of these types of latching mechanism are particularly robust though. Metal latching mechanisms prove far more dependable, and are consequently what Harwin connectors feature.

Available with Datamate series connectors, Harwin's L-Tek latching technology means that mated connectors need unlocking before they can be separated. As well as being compact they are quick and simple to operate. These latches do, however, require use of a specific tool for un-mating the male and female connector elements, since unlatching by hand can cause overstressing and potential latch breakage. Board hold-down options are not available for L-Tek latches. As a result, these may not be the best choice in more extreme application environments, or where end users are unlatching. Care should also be taken when specifying latches situated on the outside of a module, as they will be vulnerable to damage when not mated.

For the 1.25mm pitch Gecko series, latches were redesigned to unlatch inwards rather than outwards. This has eliminated the overstressing possibility, while still keeping real estate requirements to a minimum. These latches can be operated by hand, but tooling is also available to assist in restricted spaces. Board hold-down options are also available in both through-board and surface-mount formats.




## Making your Choice

So, depending on board real estate, mating speed and overall convenience, there are an array of different locking mechanisms to choose from. Before specifying connectors for your project, it is good to be fully aware of what the various possibilities are. The application environment, the regularity of mating/un-mating and whether the mating is being done by a qualified engineer or the end user should all be taken into account. You can get more information to find the best approach by contacting the Harwin team, who are waiting to help you.

**If you need help choosing the right hi-rel fixing for your design, our Experts can help you now.**