

## Application Information

### Retractable Syringe Compression Test

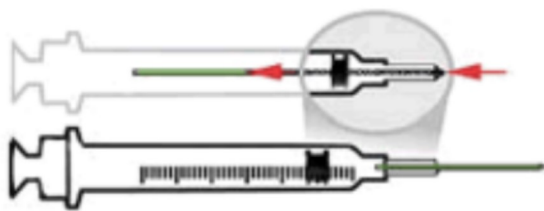
Due to the safety of patients as well as high liability costs, the medical device industry is relentless in its continued pursuit of improved quality and design of its products. One major design innovation has been in the development of syringes with retractable hypodermic needles. This advancement serves many purposes from protecting a recipient from excessively supplied force from the health provider to accidental impact from unintended motion by the patient.

One manufacturer of this specialized device conducted quality assurance analysis on production units to determine if the required 7 lb (3 kg) needle retraction force threshold was achieved. Meeting this limit ensured the needle-syringe operation would work in usage, providing the care-giver and patient the intended protections.

Producing the data for this quality test was a Nidec-Shimpo digital force gauge model FG-3006 with 22 lb (10 kg) capacity. The manufacturer's technician completed this test in the most basic of manners by simply holding the Shimpo gauge and simulating a force by physically pushing down on a fixture that held the syringe. Due to this manually operated testing scenario, the technician was having difficulty obtaining consistent results. It was clear that this precision device required a much higher level of testing performance. The ideal solution to produce meticulous and consistent readings unaffected by the operator was to utilize a Shimpo motorized force test stand with the digital force gauge. They choose a model FGS-100PXL horizontal motorized test stand. The digital gauge combined with the FGS-100PXL horizontal motorized force test stand eliminated the inconsistencies immediately. The quality team could readily determine that the new testing procedure provided the level of consistency and accuracy they were hoping to obtain. Shimpo's equipment provided proof off the production line that the intended safety features of the syringe's retractable needle was met and ready for shipment.

### Equipment Used

- *FG-3006 digital force gauge with 22 lb (10 kg) capacity*
- *FGS-100PXL horizontal motorized force test stand*
- *Custom adapter grip developed by Medical Device Manufacturer.*



Syringe with Retractable Needle



Shimpo Equipment Testing Compression Force on Syringe's Needle