

NAWCC Field Suitcase Workshop F105 Course Overview Servicing and Repair of 400-Day Clocks

This four-day course is designed for the clock repairperson or collector who is already proficient in basic clock service and repair techniques. The course is specific to 400-Day type torsion pendulum clocks; however mechanical torsion pendulum clocks of the types made between about 1875 through the 1980's. Extensive reference will be made to the Horolovar 400-Day Clock Repair Guide, 10th Edition

Prerequisite: Basic Clock Repair F101.

If the perspective F105 student has not completed F101 or is not proficient in the procedures stated here they should not apply for this course. Procedures required from F101: Movement/spring cleaning, bushing, pinion and wheel/teeth repair, pivot/arbor straightening, pivot polishing/replacement, and time/strike train trouble shooting techniques.

The following specific topics are covered, with students performing each task on their own clock.

Day #1: Basic disassembly, inspection, cleaning, repair, assembly and regulation.

- Disassembly
- Mainspring removal and inspection
- Inspection and cleaning of all other parts, repairs as needed (we will NOT cover re-pivoting, tooth replacement, bushing, or wheel and pinion machining)
- Plate and parts polishing
- Initial movement assembly and test of train operation through escape wheel
- Final movement assembly and test of pallet arbor lock and drop
- Clock assembly including suspension unit and suspension fork adjustment, setting beat.

Day #2: Review of First Day, typical problem diagnosis and advanced adjustments

- Review with questions and answers from First Day Class
- Clock runs too fast or too slow
- Clock runs for period of time and stops
- Pendulum wobbles and clock running seems weak
- Pendulum over swing too small, clock stops
- Escapement "flutters" regardless of suspension fork position
- Special considerations for the Kaiser Universe
- Occasional second wheel slippage
- Missing anchor counterweights
- Elgin by S. Haller, the "un-repairable" one
- Schatz "49" models with 3rd wheel maintaining power spring barrels

MATERIALS AND TOOLS REQUIRED (To be brought by Student)

MATERIALS:

1. At least one 400-Day clock. Does not have to be working but must be complete with all parts including the suspension spring assembly and pendulum. Try to be sure there are no broken or bent pivots or teeth, bulged barrel, or other obvious damage. Instructor will have a limited supply of suspension springs and mainsprings.
2. Horolovar 400-Day Clock Repair Guide, 10th Edition
3. Any paste brass polish such as Dursol, Simichrome, or Peek
4. Cleaning and polishing rags (terry cloth, old tee-shirts, well used 3M Scrubbee pads)
5. 400 or 600 wet and dry emery paper and 4/0 or 6/0 steel wool
6. Peg wood (hard round toothpicks) and pithwood
7. Rodico

National Association of Watch and Clock Collectors, Inc.

Educational Committee Field Suitcase Workshop Programs

TOOLS:

1. Basic clock service and repair tools: Miniature pliers (gripping, flat, needlenose, sidecutter), Screwdriver assortment (blades from 1mm to 6mm), Large screwdriver or angle driver with 8mm blade, Miniature file set, Small brass head hammer, Clamps (small C-clamps or parallel clamps), Pointed and flat punches, Hollow stakes or punches Tweezers (one large one small), Small scissors.
2. Five sided cutting broaches and round smoothing broaches
3. Dial caliper (micrometer) that reads or easily interpolates to 0.0001 inches or 0.0001 mm
4. Let down keys
5. Portable bench vise
6. "Old Timer" movement clamps or other movement holding and support device
7. Surgeon type or cotton gloves
8. Magnifying headset or loupe
9. Any Anniversary-specific parts or tools you may have

THE FOLLOWING ARE OPTIONAL BUT RECOMMENDED IF YOU HAVE THEM

10. Mainspring winder
11. Pickup amplifier (a timer such as Timetrax or Microset is optional but desirable if you have one)
12. Bench lamp with extension cord having 4 plug strip
13. Portable Dremel Tool with cutoff wheels, steel and brass wheel brushes
14. Crow's foot with Bench Block
15. High heat source such as butane or propane torch
16. Other bench hand tools you may find useful in normal clock servicing and repair