



**AMERICAN WATCHMAKERS & CLOCKMAKERS INSTITUTE
HARRISON, OHIO**

Servicing & Adjusting the Swiss Lever Escapement

(Also a preparatory course for the AWCI CW21 exam)

- **The purpose** of this course is:

To gain a good theoretical understanding in order to evaluate the condition of the lever escapement and thus proceed with the verification and analysis of the escapement functions

- To teach the student all the fundamentals of the proper functioning of the lever escapement.
- To be able to make all the adjustments with ease and confidence.
- To understand the effects of adjustments on timing.
- Proper lubrication methods and its effect on timing and overall performance.

- **Prerequisites:**

- Minimum 3 years full-time experience in watch-repair
 - (and/or) Having attended the following AWCI Courses: Basic Watch Repair and/or Automatic Watch Repair
- Ownership of the book *The Theory of Horology* is essential.
 - Must read pages 99-101 of *The Theory of Horology*, prior to attending the course
 - Knowledge of watch & escapement terminology
- Membership with AWCI
- Ownership of hand tools as per tool list.

- Length of course: 5 days Monday -Thursday (9:00 a.m. – 5:00 p.m.) Friday (9:00 a.m. – 3:00 p.m)

More specifically, the student will learn about:

1. Overview of the nomenclature of the lever escapement and its various components
2. General repair procedure
3. Checking the various components
4. Adjustment & correction of the division of the escape wheel, the lever & balance wheel
5. Adjustment & correction of the clearance of the fork horns & guard pin.
6. Adjustment & correction of the pallet jewels
7. Logical steps of repairing the lever escapement
8. Proper technique of applying shellac
9. Oiling the escapement
10. Use of escapement meter
11. Beat noise & amplitude
12. Timing adjustments and analysis

Essential materials for the student to bring

For **all** AWCI courses, AWCI will provide cleaning machines and solutions. Hand tools should be provided by the student. Lathes, staking tools, poising tools and truing calipers, etc. will be available, but students should provide their own wherever possible. Ownership of quality hand tools is an expectation of a **Professional Watchmaker**. The brand name Bergeon mentioned below is used to help you identify the tools from the most popular tool catalogs; you are welcome to choose a brand of your choice, as long as it is of equal or better quality.

Check with your supplier for the recommended hand tools or their equivalents.

Servicing & Adjusting the Lever Escapement TOOL LIST	
Description	Bergeon
1.	
2. Barrel Arbor Holder size 2.50 mm	30610 Diam. 2.50
3. Barrel closing tool	
4. Baskets - 5 thimble type (with screw-top cover preferred) (for cap jewels, etc.) Bergeon #4735 or #4734 or Vibrograf #17131 (or similar of quality)	2703 I
5. Benzene glass jar (small) Ø 80 mm (or smaller)	30514-080
6. Brush (small) or soft small dial brush	1300-6
7.	
8. Casing cushion	5394
9. Cloth (lint-free) Selvyt or Micro-fiber	
10. Dial plastic protection	6938
11. Dust-blower (rubber)	5733
12. ETACHRON regulator adjusting tool & removing tool #015595 & #015600	6918 6919
13. Escapement meter This item does not have to be purchased at this time - we will have loaners	
14. Escapement heater This item does not have to be purchased at this time - we will have loaners	
15.	
16.	
17. Finger cots	
18. Hands fitting tool (hand press or manual pushers)	7404
19. Knife with case opener	6403
20. Lever for hands (2.5 – 5.0 mm in width or similar)	30018
21. Loupe 3X or 4X	
22. Loupe 10X	
23.	
24.	
25.	
26.	
27. Movement holder (Slick/Bergeon/Horotec) (large)	4040

28. Movement holder – dial side	5914 / 1612
29.	
30. Oilers (plastic handle, spade tipped) small sizes Bergeon only (7013 preferred)	30102 or 7013
31. Oil cups, die-cast alloy, 4 separate cups (or more)	30180-A
32. Oiler (automatic No. 1A) optional	2718-1A
33. Parts tray (5 small & 1 large compartments with lid) Swiss 9 5/8" x 4 1/2" x 3/4"	
34. Pallet fork holder	30433
35. Pegwood, Ø 3 mm or Ø 4 mm	
36. Pithwood (circular wheels)	
37.	
38. Plexi-stick (clear style only)	6436
39. Presto for removing hands, tool No. 1 (polish the outer jaw surfaces to a mirror sheen)	30636-1
40. Rodico or Rub-off	Rodico # 7033
41. Screwdrivers, with stand (Bergeon, Horotec, Vaucher, etc.)	
42.	
43.	
44.	
45. Tweezers, antimagnetic, No. 00 (for cap jewels)	
46. Tweezers, brass AM (x 1)	1064AM
47.	
48.	
49. Tweezers for hands, type F (Fontax or Horotec) polished steel tips Horotec 12.301-F1 or 12.302-F1	
50. Watch paper	
51.	