



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

**Modern Mechanical Chronographs, Servicing & Adjusting**  
(Also a preparatory course for the CW21 exam)

- The purpose of this course is to teach the student all the basics of the modern mechanical chronographs that are most prevalent on today's market as well as to give the student a profound understanding of how chronograph watches operate.
- **Prerequisites:**
  1. It would be of extreme benefit for the student to have a minimum of three (3) years experience in manual and/or automatic watch repair.
  2. Ownership of the book *The Theory of Horology* is essential.  
Must read chapter 11 of *The Theory of Horology*, prior to attending the course (and/or) attended the following AWCI Courses: Basic Watch Repair and/or Automatic Watch Repair
- **Calibers covered:**
  - ETA 7750 (cam operated chronograph)
  - Other calibers if time permits
- Duration of course: 40 hours in 5 days (9:00 a.m. – 5:00 p.m.)

**I. Course objectives**

The student will learn:

- The definitions and a brief history of the mechanical chronograph and its various components
- About the basic features
- About its basic functions
- The basic differences between column wheel & cam chronographs
- Systematic approach of disassembly & problem diagnosis.
- Modern assembly procedures
- Preparing the barrel & winding the mainspring
- All chronograph adjustments
- Modern oiling procedures
- Etachron adjusting procedures
- Timing & Adjustments
- Fitting hands on chronograph watches
- Dialing & Casing

## II. 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.

<b>Modern Mechanical Chronographs, Servicing &amp; Adjusting</b>	
TOOL LIST	
Description	Bergeon
1. Barrel Arbor Holder size 1.00 mm	30610 Diam. 1.00
2. Barrel closing tool	
3. Baskets <u>5</u> thimble type (with screw-top cover preferred) (for cap jewels etc) Bergeon #4735 or # 4734 or Vibrograf #17131 ( or similar of quality )	2703 I
4. Basket, special plastic snap together Vibrograf #17134	
5. Benzene glass jar (small) Ø 80 mm (or smaller)	30514-080
6. Brush (small) or soft small dial brush	1300-6
7. Buff stick leather 6.0 mm wide with plexi-cover # 4056-6	1282-D 4056-6
8. Brush, 3 rows, No. 4	1103-4
9. Casing cushion	5394
10. Cloth (lint-free) Selvyt or Micro-fiber	
11. Dial plastic protection	6938
12. Dust-blower (rubber)	5733
13. ETACHRON regulator adjusting tool & removing tool #015595 & # 015600	6918 6919
14. File, Hand style 6" long #2 cut or #4 cut	
15. File Handle	
16. Finger cots	
17. Hands fitting tool (hand press or manual pushers)	7404
18. Knife with case opener	6403
19. Lever for hands (2.5 – 5.0 mm in width or similar)	30018
20. Loupe 3X or 4X	
21. Loupe 10X	
22. Lubricant, Moebius Synt-A-Lube #9010	
23. Lubricant, Moebius HP1300	
24. Lubricant, Moebius Pallet fork grease #9415	
25. Lubricant, Moebius grease #9501	
26. Lubricant, Molykote DX, grease	
27. Lubricant, Fomblin gasket sealing grease	
28. Lubricant, Klüber P125 Chronogrease (Braking Grease)	
29. Movement holder (Slick/Bergeon/Horotec) ( <b>large</b> )	4040

30. Oilers (plastic handle, spade tipped) <u>small sizes</u> <b>Bergeon only</b> (7013 preferred)	7013 or 30102
31. Oil cups, die-cast alloy, 4 <b>separate</b> cups (or more)	30180-A
32. Oiler (automatic No. 1A)	2718-1A
33. Parts tray (5 small & 1 large compartments with lid) Swiss 9 5/8" x 4 1/2" x 3/4"	
34. Pegwood, Ø 3 mm or Ø 4 mm	
35. Pithwood (circular wheels)	
36. Pithwood sticks (assorted sizes)	
37. Plexi-stick ( <b>clear style only</b> )	6436
38. Presto tool <b>No. 1</b> (for removing hands) (polish the outer jaw surfaces to a mirror sheen)	30636-1
39. Presto tool <b>No. 3</b> (for CP driver wheel) (polish the outer jaw surfaces to a mirror sheen)	30636-3
40. Rodico or Rub-off	Rodico # 7033
41. Screwdrivers, with stand (Bergeon, Horotec, Vaucher, etc.)	
42. Screwdriver sharpener	2461
43. Stone, India combination course and standard 6" x 2" x 1"	
44. Tray (with Plexiglass bell)	30097BC
45. Tweezers, antimagnetic, No. 00 (for cap jewels)	
46. Tweezers, brass AM ( x 1)	1064AM
47. Tweezers, antimagnetic, No. 5	6671-5
48. Tweezers, antimagnetic, No. 3	6671-3
49. Tweezers for hands, type F (Fontax or Horotec) polished steel tips Horotec 12.301-F1 or 12.302-F1	
50. Watch paper	
51. Ziploc bags 2" x 2" (clear) approx 10	