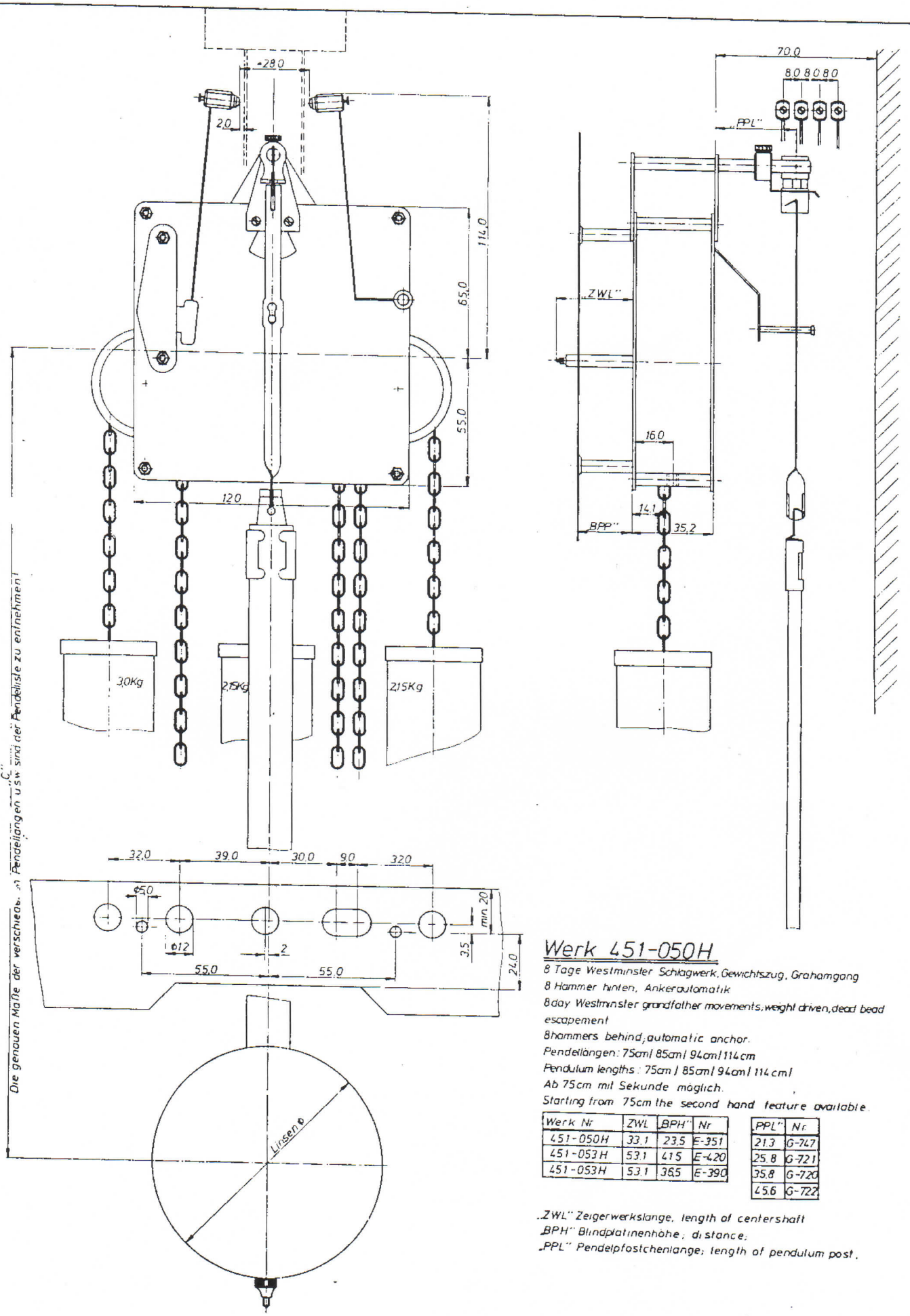


Die genauen Maße der verschiedenen „C" Pendellängen usw sind der Pendelliste zu entnehmen

Werk 451-050H

8 Tage Westminster Schlagwerk, Gewichtszug, Grahamgang
8 Hammer hinten, Ankerautomatik
8day Westminster grandfather movements, weight driven, dead bead escapement
8hammers behind, automatic anchor.
Pendellängen: 75cm/ 85cm/ 94cm/ 114cm
Pendulum lengths: 75cm / 85cm/ 94cm/ 114cm/
Ab 75cm mit Sekunde möglich.
Starting from 75cm the second hand feature available.

Werk Nr	ZWL	BPH"	Nr
451-050H	33.1	23.5	E-351
451-053H	53.1	41.5	E-420
451-053H	53.1	36.5	E-390

PPL"	Nr
21.3	G-747
25.8	G-721
35.8	G-720
45.6	G-722

„ZWL" Zeigerwerkslänge, length of centershaft
„BPH" Blindplatinenhöhe; distance.
„PPL" Pendelpfostchenlänge; length of pendulum post.

Model 451-050
Installation & Operating Instructions
(Revised 2008)

SPECIFICATIONS AND FEATURES

WEIGHT DRIVEN/CHAIN DRIVEN/WESTMINSTER CHIME MOVEMENT

*Equipped With Self Adjusting Escapement
*Chimes Each Quarter
*Hourly Strike

*Weight Requirement (including shell)

Strike Train (Left)	4.7 lbs.
Time Train (Center)	4.7 lbs.
Chime Train (Right)	6.6 lbs.

PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. ALTERING FACTORY SETTINGS WILL VOID THE FACTORY WARRANTY. NO RESPONSIBILITY IS ASSUMED FOR UNAUTHORIZED REPAIR BILLS.

LIMITED MOVEMENT WARRANTY

Movement Model #_____Date of Purchase_____Invoice_____

HERMLE BLACK FOREST CLOCKS, MANUFACTURER OF THE MOVEMENT, WILL REPAIR ANY MOVEMENT, WHICH HAS PROBLEMS DUE TO DEFECTIVE WORKMANSHIP OF MATERIALS WITHIN TWO YEARS OF SHIPMENT TO THE ORIGINAL PURCHASER. PROVIDED THE MOVEMENT IS RETURNED PREPAID AND INSURED IN AN APPROVED CARTON.

This limited warranty does not apply to movements which: a)have been damaged, abused or operated not in accordance with instructions; b) have been subjected to unauthorized repairs; c) have been permitted to get dirty, damp, rust, etc; d) are more than one year from the invoice date to original purchaser; or e) have altered adjustments causing malfunction.

THE LIMITED WARRANTY DOES NOT COVER NORMAL ADJUSTMENTS THAT ARE COVERED IN THE MOVEMENT INSTRUCTION BOOKS, SUCH AS SETTING THE BEAT, INSTALLING THE MOVEMENT INTO THE CASE; ADJUSTING CHIMES, ETC, WHICH ARE THE CUSTOMER'S RESPONSIBILITY.

HERMLE BLACK FOREST CLOCKS PO BOX 670 340 INDUSTRIAL DRIVE, AMHERST VA 24521 866-437-6531

HERMLE@HERMLECLOCK.COM

Study the details and photographs before proceeding with installation.

Step I: Movement (see figure 1)

A. Remove the movement carefully from its packing box. DO NOT DESTROY THE MOVEMENT BOX. You may need it in the future.

B. Place the movement before you and remove the hand set nut and minute hand from the center shaft. Set them aside with the hour hand. All hands will be installed on the movement in a later step.

C. Pillar posts, which hold the movement plates together, are located in each corner. The lower pillar post is tapped for the movement mounting screws. The holes located on the front plate near each pillar post are for the dial posts.

D. Chime and strike assemblies with hammers are attached on the rear of the movement.

STEP II: Assembly of the Dial to Movement (Refer to figure 1, 2 and 3)

A. The moon dial gear is placed on the movement, before the dial is attached. The gear fits onto the hour tube. The collar portion with the set screws should be approximately 5/8" from the end of the center shaft. It may be necessary to loosen one or both set screws so the gear will slide in place. Do not over tighten the set screws. The moon dial gear must mesh with the lowest gear on the back of the dial. If the correct size hex driver is not available, a small jewelers screwdriver can be used to loosen and tighten these screws. (See figure 3)

B. Attach the angle lever to the chime/silent lever. Do not tighten the set screw until the dial is attached and the correct position of the angle lever is confirmed. The position of the angle lever will be very near the end of the chime/silent lever.

C. The dial should be handled with care. Dial posts should be turned so holes are horizontal. NOTE: Posts can be turned with slip joint pliers. Place the dial over the movement so the four dial posts fit into the four holes at each corner of the movement. The center shaft must drop through the center hole in the dial. The angle lever must pass through chimes/silent slot. (Up position is silent-down is chime.) (See figure 1 and 2)

D. Secure the movement to the dial by tapping four taper pins through the dial post holes.

E. After attaching the dial, check to ensure the movement moon dial gear is meshing with the lowest gear on the back of the dial. Push the hour tube in as far as it will go toward the front of the movement to check the gear placement.

STEP III: Installation of Movement into Case

A. Lay the movement and dial face down on a piece of foam rubber or other protective surface. Carefully remove the wire used to secure the three chains onto the chain wheels. If a chain comes off the sprocket of the chain wheel, use your finger to lift the chain so it lies evenly over the sprocket teeth of the wheel.

B. Attach the seat board assembly to the movement. (see figure 4) <u>The wider side of the seat board is toward the dial.</u> Drop the chains through the slot in the seat board. Secure the movement to the seat

board by placing the mounting screws through the mounting brackets and to the bottom side of the seat board turn the screw up into the lower tapped movement pillar post. Tighten the screws only finger tight. Your kit is equipped with a five piece wooden set; you may decide to use your original wooden parts.

C. Place movement with seat board assembly into the case. Push the unit up flush with the back of the dial frame, resting the seat board blocks on the waist collar.

D. Center the dial in the dial frame. Loosen the movement mounting screws and slide the movement and dial to the left or right if necessary. After the dial is centered, tighten the mounting screws and check to be sure the mounting brackets do not interfere with the drop of the chains.

E. Drill and attach at an angle the seat board blocks to the side of the case, using 1 ½" wood screws.

F. The two dial braces may be installed along the left and right side of the back of the dial. The bottom of the braces will rest on the seat board. Drill and install using ¾" wood screws.
NOTE: Use caution not to drill the dial.

Step IV: Installation of Chime Rods

You will use one of the chime rod mounting instructions listed below, depending on the wood kit used.

Installation for Kits Using Sound Board (See Figure 5)

A. Use the chime rods metal block for your template to center the rods from left to right on the sound board. The metal chime rod block should be flush with the top of the sound board. Mark, drill and countersink the four chime rod bolt holes. Attach the chime rods to the sound board using the four chime rod bolts.

B. Position the sound board so the chime rods are centered between the two sets of hammers. The hammers should strike the rods approximately ½" to 1" below where the rods enter the chime rod block.

C. When the correct position is determined, attach the sound board to the sound board mounting blocks using the T-nut and screws supplied in the wood kit.

Installation for Kits Using Sound Box (See Figure 6)

A. Position the metal chime rod block on the sound box, centered and flush with the top edge. Mark the location of the screw holes and bore through the box with a 3/16" diameter drill bit. Countersink these holes from the back side of the box. Mount the chime rods to the sound box using the four chime bolts.

B. Temporarily install the hood back using 1" brads. Install the brads so they can be easily removed. Trial fit the sound box with chime rods attached to the case back. The box should be positioned so the rods are centered between the two sets of hammers. The hammers should strike the rods approximately ½" to 1" below where the rods enter the chime rod metal block. When the correct position has been determined, mark the placement for the four 1" wood screws, pilot the holes and install the sound box to the hood back.

NOTE: You must place the chime rods with the box inside the hood before you attach the hood back because they are too large to bring up from the front. You may need assistance with this step.

Step V: Adjustment of Chime and Strike Hammer to Chime Rods.

Kits with solid hood sides: It is best to use a low stool that will allow you to look down and work over the sound board because of its position.

Kits with hood panels or doors:
Failure to follow these instructions could cause malfunctions, which are not covered under our warranty.

A. For proper tone from the chime and strike hammers, they should be aligned to rest 1/8" away from the rods. The hammers should not rub against each other. The center of the hammer should strike the rod squarely.

B. Alignment adjustments should be made by working through the hood side panels or doors. The chime and strike hammers can be adjusted with finger pressure or needle nose pliers. Make all adjustments without applying pressure to the base of the wires. Draw back the hammer to be adjusted approximately one inch and make any bend needed in the upper 1/3 of the lever. After the adjustment has been made, allow the hammer to rest forward to check the position.

C. The screw and collar that secure the strike assembly should not be loosened to position the strike hammers. Adjust each hammer the same way as the chime hammers.

Step IV: Assembly of Weight Shells

A. Assemble the weights and weight shells being careful not to scratch the shells. Your kit consists of 3 weight fillings and 3 weight shells. The heaviest weight filling will be used on the chime train which is on the right while facing the clock.

B. Hang the filled weight shells on the open chain ends.

Left-Strike	Center-Time	Right-Chime
4.7 lbs.	4.7 lbs.	6.6 lbs.

Step VII: Installation of Hands

A. Move the angle lever down to the chime position.

B. Place the hour hand on the hour tube. The collar sleeve of the hand should be toward the movement. When the hour hand is on correctly, the edge of the hour hand sleeve will be up against the ridge on the hour tube and some of the brass hour tube can be seen in front of the hour hand.

C. Place the minute hand on the center shaft; slowly turn it clockwise until you hear a "click" and the movement begins to chime. After the chime period is finished, continue turning the minute hand clockwise, stopping for each chiming period. When the movement plays the 16 note hour melody and strikes out an hour, count the hours struck and gently push the hour hand to point to that hour. If the minute hand is at any quarter other than the hour, remove the hand from the center shaft and replace it pointing to twelve. Secure the minute hand with the hand set nut.

Hermle

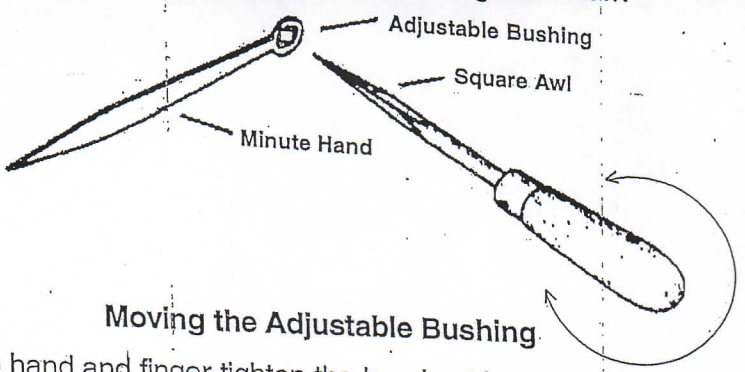
Synchronizing the Hands and Chiming Mechanism

After a movement has been reassembled, it is not unusual to find that the chiming or striking mechanism does not start precisely when the minute hand registers 12 o'clock on the dial. This can also occur if another clockmaker or the owner of the timepiece has removed the minute hand and has not replaced it in its original position. It is also quite common to encounter instances when the position of the hour hand on the dial does not agree with the count provided by the striking mechanism. These are minor problems and synchronizing the hands with the chiming or striking mechanism in clocks having two or three train movements can be accomplished in a very short period of time using the following sequence:

1. Stop the pendulum or block the time train to stop the balance wheel. Remove the hand nut and both hands. Once the minute hand has been removed from the square arbor, the hour hand can be slipped off its tube by pulling straight forward in a gentle manner.

2. On a movement with three trains, reinstall the minute hand and slowly turn it clockwise several full turns, permitting the clock to chime at each quarter. Several revolutions may be required to completely resynchronize a clock with both a chiming and striking mechanism. Clocks having two trains will usually only require one revolution of the minute hand to return each of the striking train components to their correct starting position. Once it is apparent that the clock is striking the hour in a reliable manner, remove the minute hand and install the hour hand so it is pointing on the dial directly to the hour that has just been struck.

3. Once the hour hand has been positioned correctly, the minute hand can be synchronized with the chiming or striking mechanism. Precise adjustments can be made by rotating the adjustable bushing installed in the minute hand using a square awl. Adjust the bushing so the hand points directly to 1200 o'clock when it is placed back on its arbor. Care must be taken to insure that the square in the bushing is not damaged, distorted or dislodged from the minute hand during this process. This procedure is shown in the diagram below:



Moving the Adjustable Bushing

4. Install the minute hand and finger tighten the hand nut in place. Turn the minute hand clockwise in a slow manner and activate the chiming mechanism. A click and the starting of the chiming or striking mechanism should occur when the minute hand points to 12 o'clock on both two and three train movements. Having been set correctly at 1200 o'clock, a three train movement should start precisely as the minute hand reaches each quarter hour mark on the dial. A two train movement should start correctly on the half hour without any further adjustments being required.

5. A final check should be made to insure that the hour struck by the clock movement corresponds to the time indicated on the dial by the hour hand. Once this has been confirmed, insure that the hands have sufficient clearance between each other and tighten the hand nut in place with a tool that will not damage the knurled surface around the outer edge. Unblock the time train to start the balance wheel or place the pendulum in motion and set the clock to the correct time.

D. Now that the weights and hands are installed, activate the chime and again check the chime and strike hammer placement. If the hammer is too close to the rod, you will have a flat sound. If the hammer is too far from the rod, or hitting off the side of the rod, you will have a weak sound. Adjust for the best tone.

Step VIII: Installation of Pendulum

A. For both types of pendulums: Hang the hook at the top of the pendulum into the two openings at the end of the upper pendulum. It is important that as the pendulum swings, the upper pendulum and the pendulum move as one unit. The suspension spring should hang straight down from the bridge post where it is attached. (See Figure 7)

Step IX: Adjusting the Timing of the Clock, Starting and Regulating Your Clock

After the clock has been running for a few days, you may find it necessary to make timing adjustments to the pendulum. These adjustments are made by moving the bob up or down the pendulum rod. (See Figure 8)

A. To make an adjustment, it is best to remove the pendulum from the clock and lay it on a flat surface.

B. If the clock runs fast, LOWER the bob by turning the adjustment nut at the base of the bob DOWN the rod.

C. If the clock runs slow, RAISE the bob by turning the adjustment nut at the base of the bob UP the rod.

D. 1 ½ turns of the adjustment nut is equal to approximately 1 minute per day.

E. Adjust for gain or loss once every 24 hours until the clock is timed. It could take several attempts to complete the adjustment.

F. Adjust the floor levelers so the case does not rest on the case base molding. The case should not lean or rock.

G. Movements that have a self regulating beat need a wide over swing to start. Gently hold the pendulum bob against one side of the clock case. Release it for a free swing. If the movement runs for a short time and then stops, repeat the wide swing but in the opposite direction.

H. Starting the pendulum of movements with dead beat Escapement. Move pendulum slightly to one or the other side of the case and release pendulum gently. You should hear an even "tic-toc" sound. If this is not the case, gently push the pendulum leader to the left or to the right (pas the point were you can feel a definite resistance). Listen carefully to the "tic-toc". If it sounds more uneven, repeat the procedure to the opposite direction until you are more satisfied with the "tic-toc" sound.

I. Turn the minute hand counterclockwise (backwards) to set the correct time. The movement is designed in such a way that the chimes are self correcting and will automatically synchronize the following hour. If the minute hand is moved forward you must wait until each sequence is finished before moving the hand again.

J. The downward movement of the weight provides the energy to run the clock. When they reach the bottom of the case, the weights must be raised to the starting point. This is winding the clock. **NOTE:** Never wind your clock without weights attached.

Step X: Setting the Moon Dial

A. At the top of the dial face is the moon dial disc (see Figure 2). The disc is turned once every twenty-four hours. While the disc is in the process of turning, it is important that you do not attempt to set the disc. To learn when your disc turns, bring the angle lever up to the silent position and advance the hand rapidly clockwise. Watch for the disc to move one notch.

B. To place the disc in lunar sequence, check a calendar or the weather section of the newspaper to determine the lunar phase. Very gently, using fingertip pressure only, rotate the moon dial until the desired phase is indicated. (Each click of the dial represents one day of the lunar month.) EXAMPLE: Assuming the date is January 17, and you wish to set the moon dial and consulting the calendar reveals a full moon occurred on January 9. With finger pressure on the moon disc, turn the disc to the right until the moon is centered on the number 15 of the arch. This indicated where the moon was on January 9th. You will now move the disc eight clicks (because January 17 is 8 days past January 9). The center of the moon should now be on number 23 of the arch. This tells you the moon is in the 23rd day of its 29 ½ day cycle if properly set. If the moon disc does not move easily, **DO NOT FORCE**. Try this step in 3 hours. Forcing will break the moon dial gear drive pin and the moon dial disc will no longer turn.

C. You can wait until the day of the full moon and then simply center either of the two moons on the disc under the number 15 on the moon dial arch.

TROUBLESHOOTING

Clock movement does not operate.

A. The hour hand is not pushed on far enough. You should see some of the brass hour tube in front of the hour hand when it is positioned correctly.

B. Hands are touching the dial numerals or each other. Bend the hand out, slightly away from the dial.

C. Suspension spring is either bent or broken.

D. Chains are twisted on the sprocket of the chain wheel. Remove the weight and re-hang the chain on the chain wheel.

E. If the movement runs for a while and stops.

1. Check for proper fit of anchor arm and upper pendulum assembly with pendulum and center weight attached. Anchor arm post must ride in the lower portion of the upper pendulum keyhole opening.
2. Check to see if pendulum is rubbing against chime rods. Adjust the rod to clear the pendulum path.
3. Check that the clock case is steady and does not move from side to side.

Chimes do not Operate Properly

A. If clock chimes the incorrect quarter, remove minute hand and assemble to correct position.

B. The minute hand does not point exactly at a quarter hour when the clock chimes. Stop pendulum and remove the minute hand. Turn bushing on back of minute hand to right or left as need and replace.

C. Chain is twisted on the chime chain wheel. Remove the weights and re-hang the chain.

D. Check to make sure you have proper amount of weight. Chime weight must be six pounds.

E. Make sure movement mounting screws are finger tight only.

Clock Strikes the Wrong Hour

If the clock has an incorrect strike (such as strikes one at three, two at four), advance the minute hand to the hour, stopping at each quarter hour for chimes until the clock strikes an hour. Count out the hour struck. Move the hour hand to point to that hour. Now to set the correct time, turn the minute hand counterclockwise.

HELPFUL HINTS TO UNDERSTANDING YOUR CLOCK

Remember these are general rules. As with any fine mechanism, it will require service occasionally. Look for a reputable clock shop in your area to perform services.

A. Avoid handling brass parts with your hands. Use a soft cloth, etc., to avoid tarnish.

B. Should silent operation be desired without chimes or hour strike, move the chime selector to the highest position on the dial. No chimes should be switched during the chiming cycle.

C. Volume of chimes can be adjusted slightly in most clocks. If hammer is resting on or too close to the rod, a flat thud sound will be created. If hammers are too far back, a faint or no sound will result. Volume will vary to some extent with each clock movement. Treat the notes as cords rather than single notes of the scale.

D. Your clock will have sounds other than the normal ticking of the movement. These sounds are constituted by levers dropping, gears turning, etc., which are normal and characteristic of your clock. Although the sounds may change with age, this should not affect the function of the movement.

E. Should you move the clock, remove weights and pendulum first. Tie the chains securely. This can be done by taping the chains to the side of the cabinet.

F. Time your clock and regulate it over a period of several days. Adjustment of pendulum bob should be made in 24-hour periods. After an adjustment has been made, movement needs an over swing of the pendulum as described in step IX, G.

G. Do not position clock near vents or outside walls as excessive humidity can affect running of movement and can also cause expansion and contraction of cabinet.

H. Minute hand may be turned counterclockwise to set.

Figure 1: Movement Front

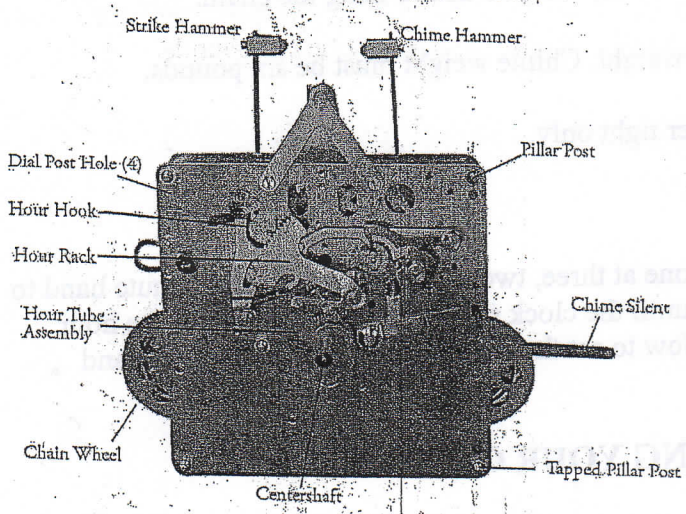


Figure 2: Moon Dial

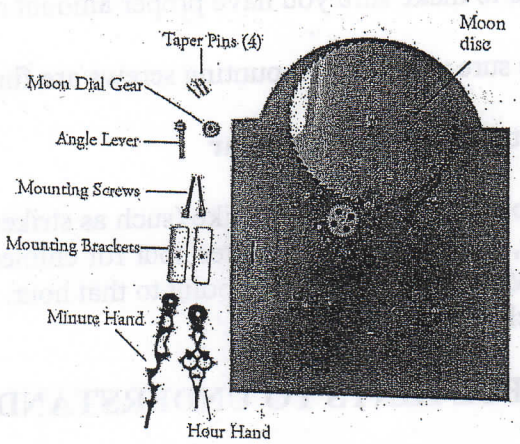


Figure 3: Moon Dial Gear

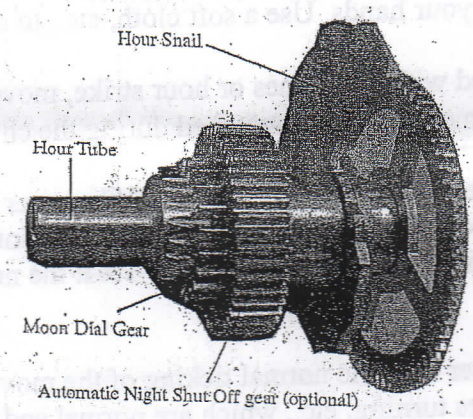


Figure 4: Seat Board

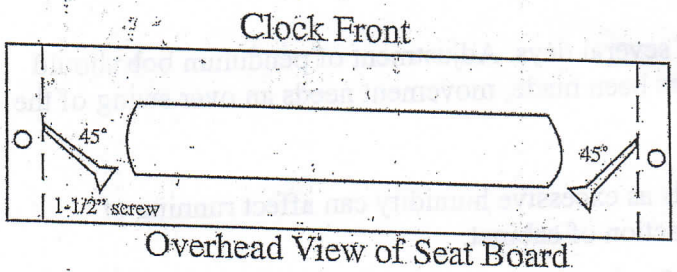


Figure 5

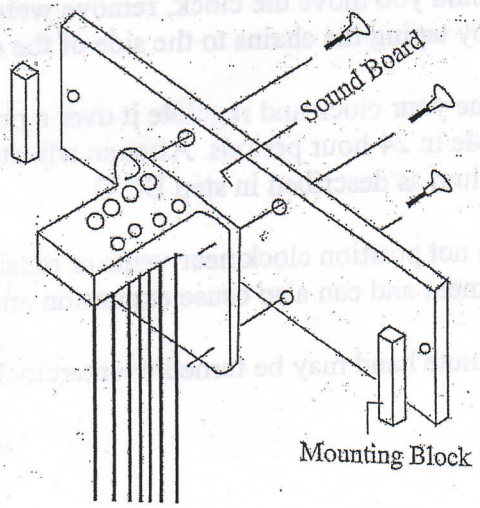
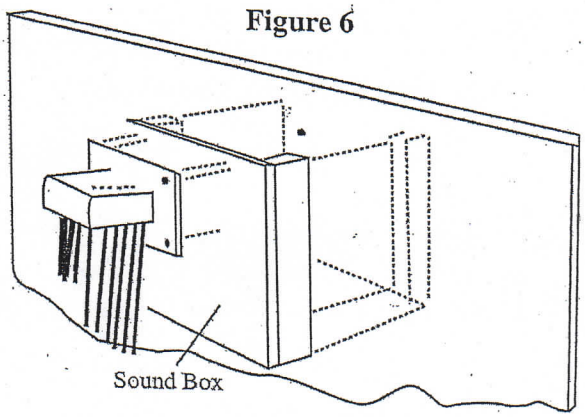


Figure 6



Chime Mount Detail

Figure 7: Movement Back View

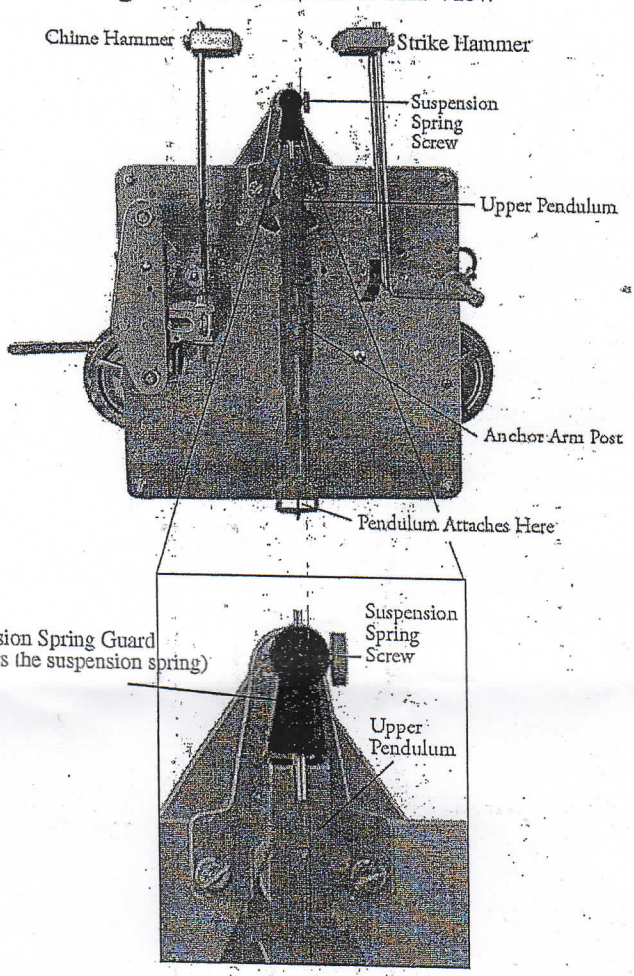


Figure 8