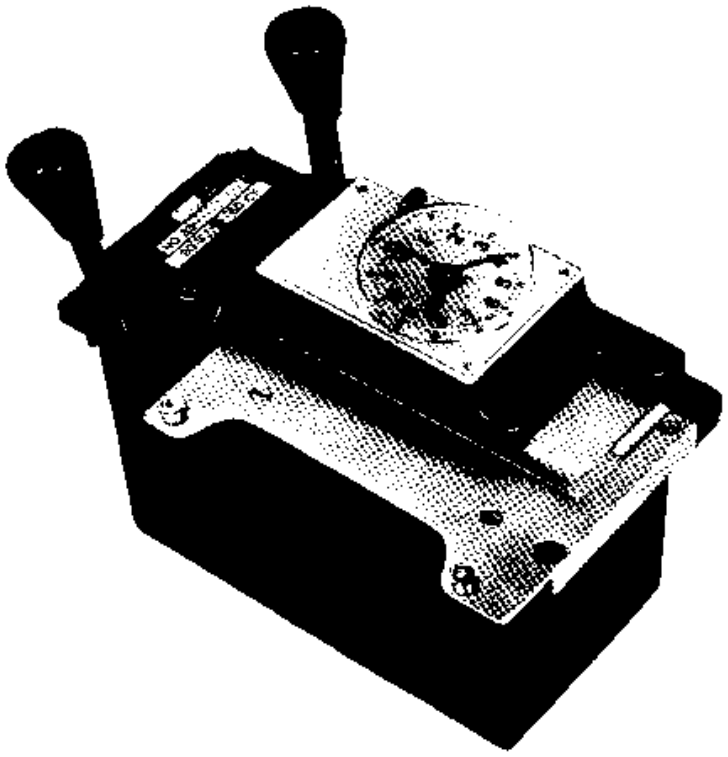
MODEL 33 CALCULAGRAPH

CALCULAGRAPH
MODEL 33



Instructions for

INSTALLATION • OPERATION • MAINTENANCE

CALCULAGRAPH COMPANY
EAST HANOVER, N.J. 07936 USA
ESTABLISHED 1871 (201) 887-5000

F O R E W O R D

On all Calculagraphs shipped from our plant each individual part has been inspected; the assembled units have been inspected; and the finished Calculagraph has had thorough running tests and checks against a master clock. After all adjustments are made the completed Calculagraph is inspected and is not passed for shipment until it meets the requirements of our rigid final inspection.

DO NOT TAKE THE CALCULAGRAPH APART OR MAKE ANY ADJUSTMENTS. IT IS READY TO PUT INTO SERVICE. CHECK VOLTAGE.

Section 1. GENERAL INFORMATION

1.01 TO MOUNT IN SWITCHBOARD

The two machine screws to mount the case and four machine screws to mount the Calculagraph are shipped with each new Calculagraph, not with the mounting brackets or adapter plates.

Remove instrument from its case, (instruction 1.02). Bring the power wires up through the hole in bottom rear of case, then up on the left side of the contact block and fasten one wire to each screw on top of the contact block as shown in figure #7. Now secure the case to the switchboard.

If assembled to mounting irons, use two brackets #33-226 shown in figure #8.

If mounted in a rectangular opening in a wooden section, the opening should be cut 3 25/64" wide by 7 1/2" from front to back and two brackets #33-194 used, shown in figure #12.

If mounted in a round opening which was made for the larger round model Calculagraph, use an adapter plate #A-33-26 shown in figure #9.

In any of these three methods, the case itself is secured to the switchboard by the center screw at each end.

The instrument may now be placed in its case, but do not fasten it with the four corner screws until after setting the hands (see 1.04) and checking them with the printed record.

1.02 TO REMOVE THE CALCULAGRAPH FROM ITS CASE

Take out the four corner screws and lift the instrument straight up and out. The ribbon reverse throwout latch, on the left side of the instrument, see figure #5, now prevents the rear ribbon reverse from operating while the Calculagraph is out of its case.

1.03 PLATEN HOLDER - TO REMOVE AND PUT BACK

The platen holder is held in place by three screws, figure #2. The front screw is shorter than the two rear ones. Remove these three screws and lift the platen holder straight up. If it is to be worked on upside down, be sure to place a book, piece of wood or other object under each end of the platen holder, so the crystal is up clear of the bench or tools and will not get scratched.

When putting back the platen holder, use the short screw in front again. The two long arbors, figure #3, should now be up in place in order that their gears at the top, up inside the platen holder, drive the second hand and minute and hour hand gears.

Check printed record with hands.

1.04 SETTING THE TIME

The elapsed time dials can never be set so the elapsed time record shown on the middle and right hand dials, figure #11, cannot be falsified.

The Time of Day record shown on the left hand dial, figure #11, registers 24 hours and thus eliminates any AM - PM jump. The hours on the left side of this dial are AM and those on the right side are PM. Make certain that the hour indicator is on the correct side of the dial as well as at the correct hour when setting time.

The two elapsed time dials are governed by a separate gear train from the one driving the Time of Day pointers, so when you set the Time of Day it does not change the elapsed time dials.

The keyhole for setting the time is just behind the number 2 on the visible dial, see figure #2. It is protected by a keyhole cover which may be swung away to uncover the keyhole and swung back when the time has been set.

First insert the long end of the setting key into the keyhole and turn in either direction to set the second hand.

After first setting the second hand, next insert the short end of the setting key and turn the hour and minute hand in either direction to about 5 minutes ahead of the correct time and then turn slowly back to the correct time. Allow the Calculagraph to run under its own power for at least 2 minutes to take up any slack in the gear train before checking the hands with the printed record, figure #11.

1.05 TO SYNCHRONIZE THE HANDS ON FACE WITH THE PRINTED TIME OF DAY RECORD

If there is a difference between the printed record of the time of day and the time shown by the hands on the clock face, proceed as follows. Remove the instrument from its case and then make a printed record of the time of day by pushing the right hand lever backward. Read the time printed on the ticket then depress and hold down the long front arbor and pinion about 1/8" to 3/16", figure #3. This is accessible on the right side of the movement mechanism thru the opening in the side of frame. When the arbor is depressed the pinion at its upper end is disengaged from the gears which drive the hour and minute hands up inside the platen holder.

While holding this arbor down, as just described, set the hands with the short end of key to about five minutes ahead of the time indicated by printed record, then rotate hands in a counterclockwise direction to the time of the printed record. Release the long front arbor and pinion, making sure that it springs up into place and meshes with its mating gear up inside the platen holder. Let the Calculagraph run under power for two minutes and if after making an impression it is found that there is still a difference in time, repeat the above operation.

1.06 RIBBON - TO INSTALL A NEW ONE

Caution! Never apply ink or liquid to the ribbon, it will fill up the printing characters, gum up the bearings and finally cause the movement to run slow or stop.

Take the instrument from its case, remove platen holder and ticket plate, figure #2.

Remove front ribbon spool by pulling forward the front ribbon spool release pin, figure #3, which permits the spool to drop out. Unwind ribbon till front spool is empty and use fingers or a small screw driver to pry off the clamp or hook holding ribbon to spool. Take the loose end of ribbon and pull it off of the rear spool, then remove hook or clamp which holds ribbon to rear spool. Push front spool back into place again. Attach end of new ribbon to rear spool with a ribbon hook or clamp, be sure the ribbon is about in the center of the spool and then wind it onto rear spool either by pushing the ratchet wheel with your fingers, or by using a ribbon winding crank in the hole under the circular arrow at right rear of frame. Wind in direction of arrow till about 10 inches of ribbon remain unwound. Bring the free end of the ribbon up over the rollers and attach other end of ribbon to front spool.

Replace platen holder, using short screw in front, then put ticket plate in place.

Put instrument back into its case and let it run by power for at least two minutes, then print the time of day and check the printed record with the visible hands. If they don't agree, adjust them as described in 1.05.

1.07 RUBBER PLATEN - TO INSTALL A NEW ONE

Remove the Calculagraph from its case, instruction 1.02. Remove the platen holder, instruction 1.03, turn it upside down and put a book, piece of wood or other object under each end so the crystal is up clear of the bench, tools, etc., and will not be scratched. Take out the two screws holding the rubber platen and remove it. Do not disturb the paper banking which is glued to the metal platen holder under the rubber. Insert a new platen, being sure to fit the beveled edge of the platen first into the beveled side of the recess. Push the rubber platen down firmly all along both sides and replace the two screws. Reassemble platen holder, instruction 1.03. Be sure to check hands with the printed time of day record before leaving the job.

1.08 HANDS MECHANISM - TO DISASSEMBLE AND ASSEMBLE

Remove the four corner screws holding the crystal and sash plate and remove the plate. Pull off the second, minute and hour hands and lift off the clock face or dial. The gear wheels and hubs, on the center tube are now visible, also the top bearing of the seconds hand shaft which is just inside the top of the center tube or hollow post. When necessary to expose the bottom bearing of the seconds hand shaft for oiling, lift out the wheels, remove the three screws holding the steel bridge in place and remove the bridge on which the hollow post is mounted. Now, by lifting out the wheel under the bridge, the bottom bearing is exposed for cleaning and oiling.

CAUTION! When reassembling this mechanism, make certain that the outside of the hollow post and the wheel hubs which carry the hour and minute hands, are wiped clean and dry. This also applies to the minute wheel on the solid steel post behind the hands assembly. Do not oil these bearings. Oil only the two bearings of the second hand.

CARE - The hour and minute hands must be forced down tightly all around onto the shoulder of their respective hubs. Push second hand down tightly and then pull or wring it up about .020" or a little more than the thickness of a piece of paper, so its hub won't rub on the top end of the hollow post, but do not pull it up high enough to rub on the crystal.

1.09 TICKET - SIZE

A ticket may be of any convenient length, but if over 2-17/32" wide, the left handle will strike it.

It should be sufficiently heavy and stiff to prevent bending or crumpling when slid quickly into the slot against the stop. Tickets made of sulphite ledger paper, 28 pounds weight for 500 sheets 17"x22", which are .005" thick, have proved satisfactory. The common size of ticket is 2-15/32" wide by 5" long.

Section 2. LUBRICATION

2.01 MOVEMENT

Once a year or as use and local conditions warrant, lubricate all bearings in the clock movement, except as noted in the next paragraph. Use Calculagraph clock oil #152 and use only enough to half fill each little oil sink. Never use a heavier oil.

CAUTION - Do not lubricate the hub of the time of day dial cup, nor the steel tube in the clock plate into which this hub fits, nor the hour spool which revolves outside this tube.

2.02 HANDS MECHANISM ON TOP OF PLATEN HOLDER

About every 18 months, it is desirable to oil the top and bottom bearings of the seconds hand shaft with Calculagraph Clock Oil, #152, instruction 1.08.

2.03 PRINTING AND RIBBON MECHANISM

Twice a year or as use and local conditions warrant, lubricate all bearings of the printing and ribbon mechanism outside of the movement and platen holder with Calculagraph lever mechanism oil #153 or a good quality of light machine oil. Include the flat ends of the three adjusting screws which, in the act of printing, push up against the lower ends of the time of day lifter arbor, the T piece arbor and the post on the pointer lifter, figure #4. Include the lower ends of the two pointer arbors, where they bear against the pointer lifter.

2.04 MOTOR

The motor may be oiled about every three years in normal service. To oil, unscrew the knurled cap from the hexigon nut on the bottom of the motor and saturate the felt disc with special Calculagraph Electric Motor Oil, #30-134. Don't put too much oil into the cap. It must not overflow when the cap is screwed back into place and the rotor shaft is placed in its bearing hole. When reassembling, be sure motor pinion does not mesh too deeply with its mating gear but has a slight backlash.

CAUTION - Never use ordinary lubricating oil on the motor.

Section 3. CLEANING

3.01 EXTERNAL PARTS

Use only a clean dry cloth to dust off or clean the external parts. DO NOT USE OIL OR CLEANING FLUIDS ON THE CRYSTAL, they will make it opaque.

3.02 RUBBER PLATEN

Remove the platen holder as described in instruction 1.03. If the platen is smeared with ink, clean it with a cloth slightly moistened, not wet, with carbon tetrachloride or benzine. Then wipe with a dry cloth.

3.03 PRINTING CHARACTERS

Remove the platen holder, instruction 1.03. Grasp the portion of the ribbon at the top of the Calculagraph and pull it far enough out to expose the printing characters. DO NOT USE A LIQUID HERE. IT WILL GUM THE BEARINGS.

First tuck a cloth around the printing characters to catch any dirt which would otherwise fall into the mechanism. If dirt or foreign matter is packed in tightly, remove it with a wooden tooth pick. Do not use metal or lead pencil. Then use a plastic type cleaner.

If the characters are only slightly filled up or are cleaned each time the ribbon is changed, press a half cake of type Cleaner into the characters and roll it up. It will pull the loose dirt out from the characters and leave them clean. Repeat if necessary. Place type Cleaner back into its case for future use.

Section 4. OPERATION

4.01 TICKET - TO INSERT

The ticket should be placed on the ticket plate and slid lightly into its slot to the right and back. When it hits the platen holder squarely at the far right hand side

of the slot, it should be only necessary to slide it straight back, about a half inch or an inch to the rear stop.

4.02 HANDLES

The handles should be pushed or pulled smartly and with sufficient force to give a good print. They may be permitted to return to their normal positions quickly, while under the control of the hand. Don't let them snap back.

Section 5. ADJUSTMENTS

5.01 HANDLES - POSITION

The left handle when idle, should rest against the rear rubber bumper. The right handle when idle should rest at a position opposite the left handle. The adjustment for this position can be made by turning the two adjusting screws for the front and rear stop latches, figure #4. Loosen the lock screws before turning the adjusting screws and tighten the lock screws afterward. When finally adjusted, the right handle may have about 1/16" free play from front to back, or in other words, there may be a very small degree of play between the adjusting screws and their stops.

Make adjustments in the order that they are given here. When any one of these adjustments is made, you may throw other adjustments out so be sure to check the ones which follow it. For example, if adjustment 5.03 is made, then check adjustments 5.04, 5.05 etc. etc.

5.02 RIBBON REVERSE MECHANISM

When testing the ribbon reverse mechanism, it will be necessary to hold in the throwout latch flush with the side of the frame, figure #8.

Its function is to prevent the rear reverse from operating when the instrument is out of the case so both front and rear ribbon reverses will not operate at the same time in case the ribbon has been unwound entirely from both spools.

The ribbon reverse mechanism should trip in either direction when either the right or left handle is at the forward end of its stroke. In this position the rubber bumpers, figures #3 and #5, which project about 3/32" from the frame will be slightly compressed by the handle lever. During this operation the front pawl latch, figures #3 and #4, should not go beyond the front end of the frame. Neither should the rear pawl, go beyond the rear end of the frame.

5.03 RIBBON FEED

Operate the ribbon reverse by pushing in or pulling out the front shift arm, figure #4, so that the front spool is feeding. When either the left or the right handle is at

the end of its stroke, the front ratchet wheel pawl, figure #3, should have passed its next engaging tooth by at least 1/32" and the rear pawl, should be held out of engagement with and completely clear its ratchet wheel by 1/32".

The screw #20-21-10, figure #3, in the feed bracket, may be adjusted to get proper bite and clearance when the right handle is operated. The corresponding screw at the other end of the feed bracket may be adjusted when operating the left handle, figure #4. Loosen the lock screws before and tighten them after turning the adjusting screws.

Now change the ribbon reverse by reversing the front shift arm, figure #4, and this time the rear pawl will operate the ratchet wheel and wind the ribbon onto the rear spool when the handles are operated and the front pawl will clear its ratchet wheel by 1/32".

5.04 TIME OF DAY PRINT

Adjust the screw under the time of day lifter arbor, figure #4, after first unscrewing its locking screw slightly. A good print should be obtained when the right handle is pushed back smartly until it compresses its rubber bumper slightly. Tighten the locking screw when adjustment is completed.

5.05 ELAPSED TIME DIALS PRINT

Adjust the screw under the T piece arbor, figure #4, after first unscrewing its locking screw slightly. A good print should be obtained when the right handle is pulled forward smartly till it compresses its rubber bumper slightly. Tighten the locking screw when adjustment is complete.

5.06 ELAPSED TIME POINTERS PRINT

Adjust the screw under the thick short post attached to the underside of the pointer lifter, figure #4, after first unscrewing its locking screw slightly.

A good print should be obtained when the left handle is pulled smartly forward till it compresses its rubber bumper slightly. Tighten the locking screw when adjustment is completed.

USEABLE SUPPLIES AND ACCESSORIES - NOT PARTS

RIBBONS - Sold singly or in boxes of one dozen - Specify Calculagraph Ribbon #50.

OIL, CLOCK OIL - Sold in 1, 2, 4, 8 ounce and one pint containers. Specify Calculagraph Clock Oil #152.

OIL, CLOCK ELECTRIC MOTOR OIL - Sold in 2, 4, 8 ounce and pint bottles - Specify Calculagraph electric motor oil #30-134.

OIL FOR THE PRINTING MECHANISM & RIBBON MECHANISM - Sold in 2, 4, 8 ounce and pint containers. Specify lever mechanism oil #153.

RUBBER PLATEN - Sold singly - Specify Platen #35

CLEANER, PLASTIC CLEANER - Sold in single cans or in cartons of a dozen cans. Specify type Cleaner #155.

SETTING KEY - #A-33-39. One is not shipped with each Calculagraph. They are ordered as needed, used to set the time of day. See figure #6.

RIBBON WINDING CRANK - #A-33-37. See figure #1. Order as needed.

MOUNTING BRACKETS - #33-228 (with Shield #33-227) - Used to mount Calculagraph onto irons in keyshelf. If this type is used be sure to order two for each Calculagraph. See figure #8.

MOUNTING BRACKETS - #33-194 - Used to mount Calculagraph to wooden shelf. Use two for each Calculagraph. See figure #10.

TRANSFORMER - #WH15 - is rated at 15 watts 60 cycles reduces from 115 volts to 20 volts. Fastened to wall by screws and permanently wired to power line and the Calculagraph cases. Will operate from one to seven Calculagraphs.

TRANSFORMER - #UT2½ - is very small and light with a cord attached ready to attach to case. Transformer has two prongs to plug directly into an outlet. Capacity 2½ Watts 60 Cycles. Reduces from 115 volts to 20 volts and will operate one Calculagraph only.

ADAPTER PLATE - #A-33-26 - Used to mount the Model 33 Calculagraph in the large round opening made for the Model 6 or Model 30 Calculagraphs. See figure #9.

Figure 1 - RIBBON WINDING KEY

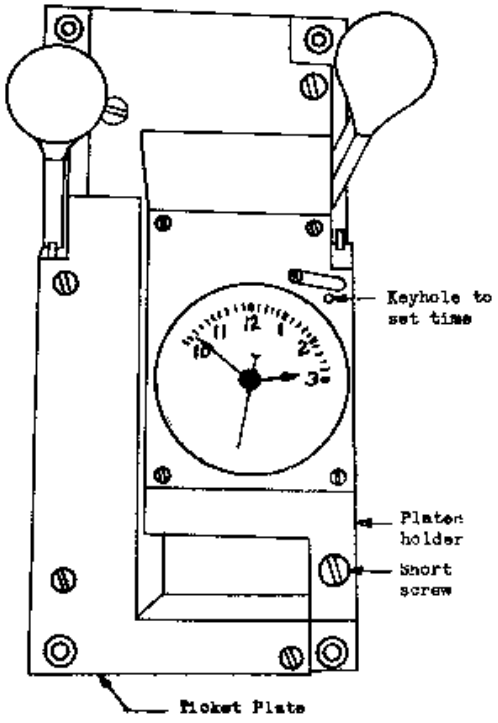


Figure 2 - CALCULAGRAPH, TOP VIEW

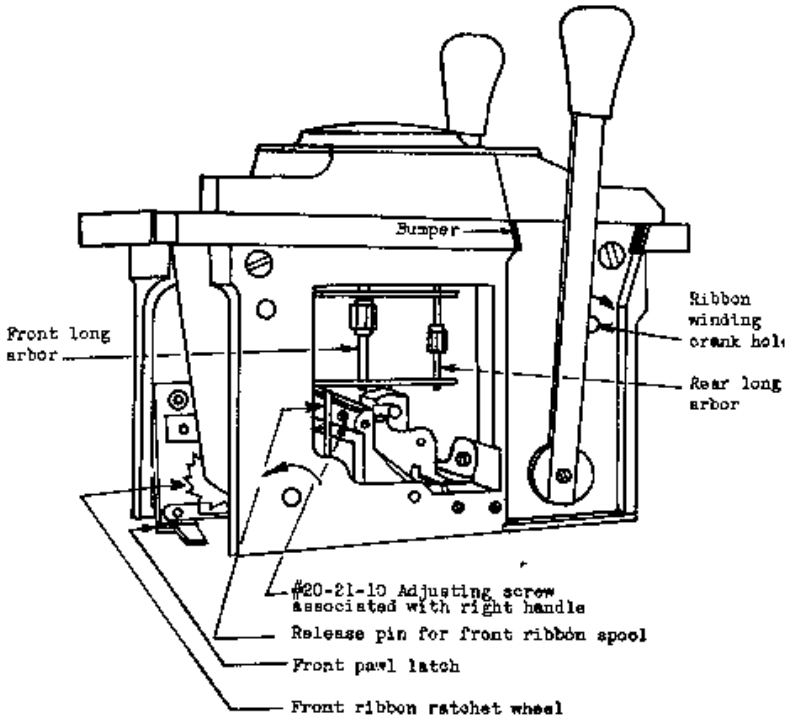


Figure 3 - CALCULAGRAPH, RIGHT HAND VIEW

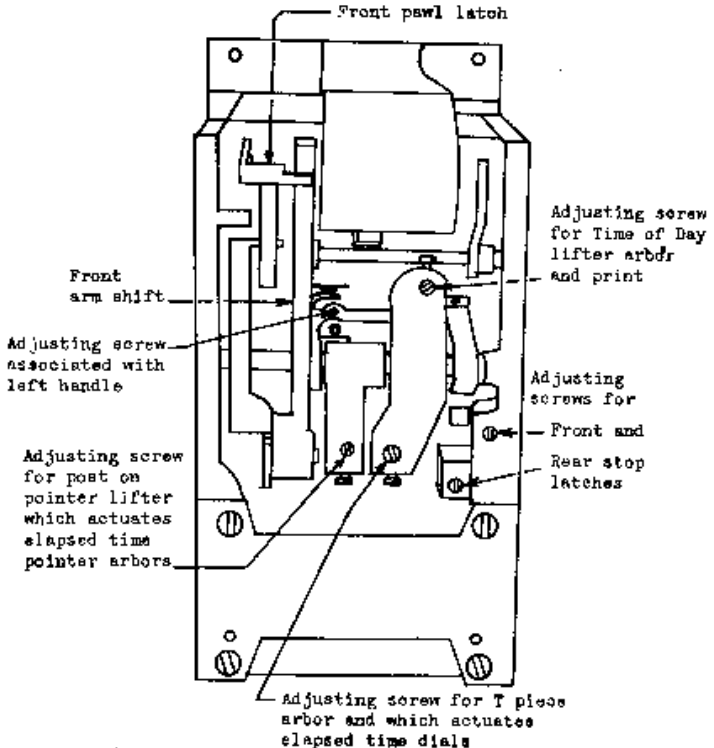


Figure 4 - CALCULAGRAPH, BOTTOM VIEW

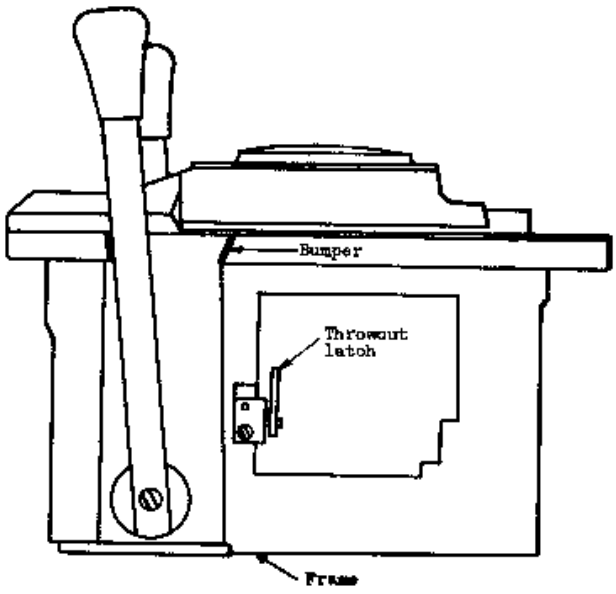


Figure 5 - CALCULAGRAPH, LEFT HAND VIEW

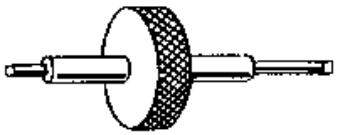


Figure 6 - KEY TO SET THE TIME

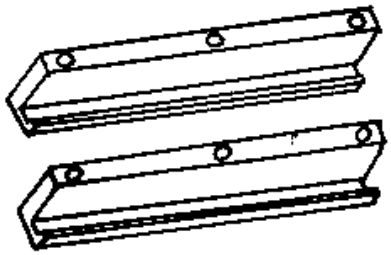


Figure 8 - BRACKETS #33-226

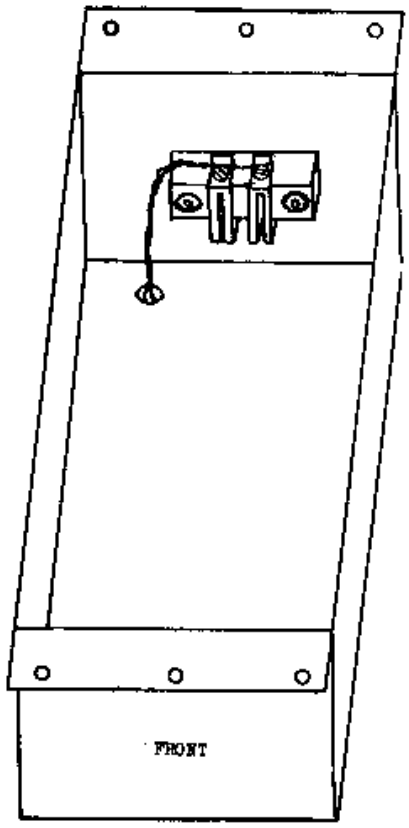


Figure 7 - CASE AND LEAD-IN WIRES

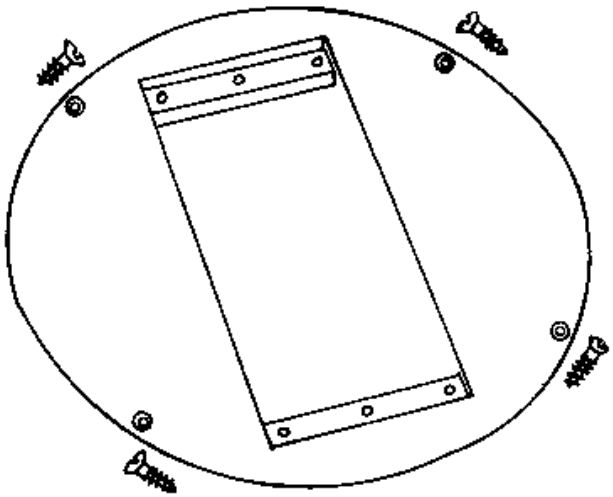


Figure 9 - ADAPTER PLATE #A-33-26

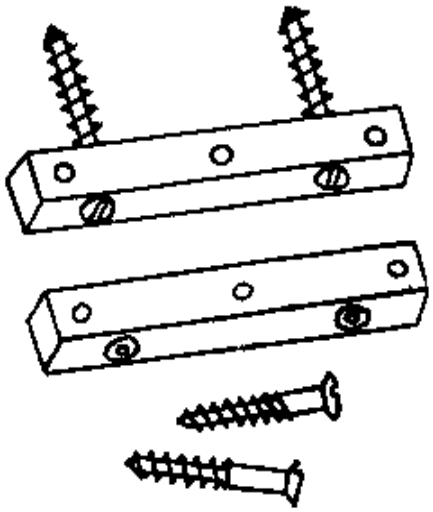


Figure 10 - BRACKETS #33-194

New style 60 minute elapsed time dial **Model 33.**
Elapsed time 56 minutes 8 seconds.

FIGURE 11 - CALCULAGRAPH IMPRINT

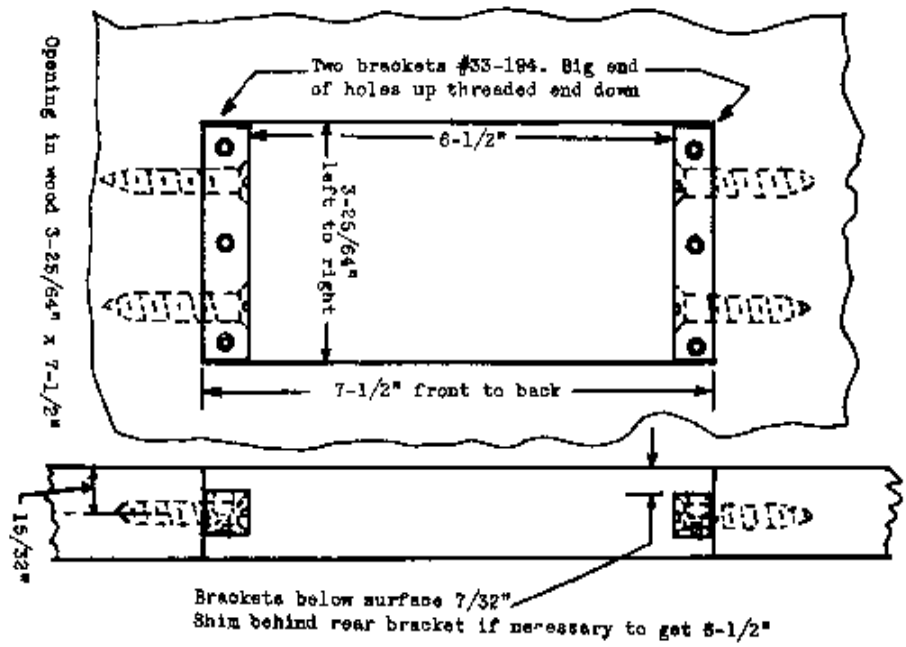


Figure 12 - OPENING IN SWITCHBOARD WITH BRACKETS 33-194 ASSEMBLED IN PLACE

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