Weems & Plath®

INNOVATION ROOTED IN TRADITION

DAMPENED DELUXE QUARTZ BAROGRAPH

Two Year Warranty

Model #287MQ
Made in Germany

Barograph User Manual
#287MQ

RETAIN THE ORIGINAL PACKAGING IN CASE YOU NEED TO RETURN YOUR BAROGRAPH FOR SERVICE.

Technical Data

Accuracy of Measurement ±0.7 hPa (mb)

Chart Graduation 1 hPa (mb)

Measuring Range	Corresponding Altitude
955 to 1055 hPa	0 up to 150 m above sea level (0 to 490 ft)
930 to 1030 hPa	150 up to 350 m above sea level (490 to 1,150 ft)
905 to 1005 hPa	350 up to 600 m above sea level (1,150 to 1,970 ft)
880 to 980 hPa	600 up to 850 m above sea level (1,970 to 2,790 ft)
855 to 955 hPa	850 up to 955 m above sea level (2,790 to 3,140 ft)

Clockwork

Revolution Cycle: day = 25.8 h
week = 176 h
month = 783 h

Running Period: 12 months (uses one AA 1.5 V battery; lithium battery recommended)

Recording Drum & Chart

Drum Dimensions: 3.6" diameter x 3.6" high (93.3 x 93 mm)

Chart Operating Range: 960 - 1050 hPa

Included Chart Paper: 60 weekly charts in millibars (can be found in the Chart Paper Storage Tray)
(Inch charts sold separately)

Materials

Quartz Clockwork Movement: Polished brass

Housing Cover: Hardwood case with mahogany finish and brass hardware

Replacement Parts

#451 Felt Tip Cartridge Pen
#287IN Barograph Replacement Chart, Inch (1 Year supply)
#287MB Barograph Replacement Chart, Millibar (1 Year supply)

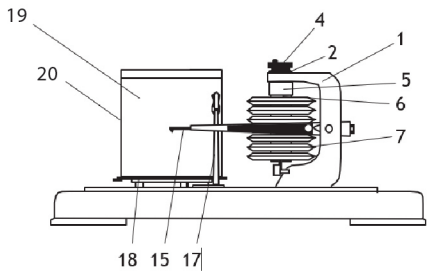
Dimensions

13.6" x 6.7" x 7.1" (345 x 170 x 180 mm)
Weight: 7.5 lbs (3.4 kg)

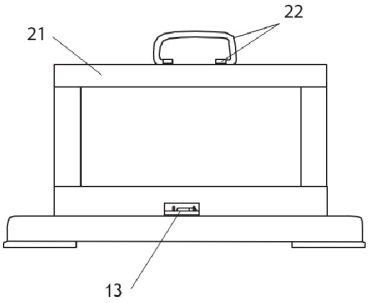
Mechanical Diagram

1. Precision Movement
2. Socket
3. Grub Screw Set
4. Pressure Adjustment Screw
5. Upper Telescope Case
6. Lower Telescope Case
7. Capsule Set
8. Pin
9. Bimetal Arm
10. Axle
11. Transport Mode Screw
12. Null-Setting Lever
13. Housing Lock
14. Disengaging Rod Release
15. Pen-Arm
16. Fiber Pen
17. Disengaging Rod
18. Clockwork Mechanism
19. Recording Drum
20. Diagram Retaining Strips
21. Housing
22. Handle
23. Pen-Arm Adjustment Screw
24. Chart Paper Storage Tray

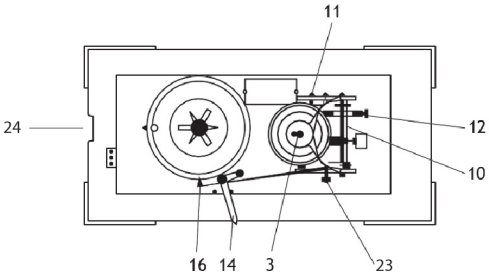
Side View *(without lid)*

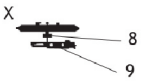


Side View *(with lid)*



Top View





About the Barograph

This barograph is mechanically dampened to prevent the recording arm from erratic movement while the barograph is in use at sea. No dampening fluid is required.

To Open

Slide the brass Housing Lock (13) to the left and lift the lid.

Unpacking

Be sure to remove all accessories (fiber pens, chart paper, and battery) from the packaging.

The included chart paper can be found within the Chart Paper Storage Tray (24), which is located on the end of the barograph's base near the Recording Drum (19).

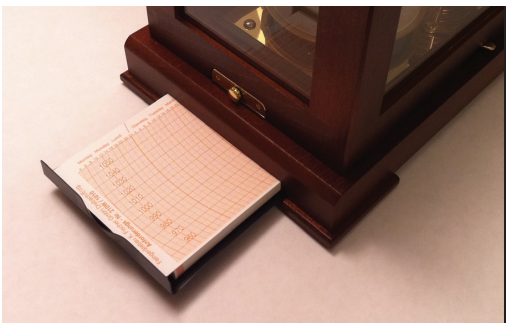


Chart Tray

Inserting the Battery

The Clockwork Mechanism (18) and the battery compartment are located inside of the recording drum.

Using both hands, place your fingers underneath of the drum and lift it off of the clockwork mechanism. You will feel a tug as the drum reaches the end of the rod.

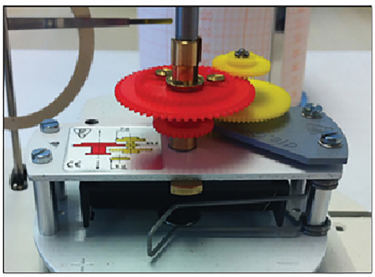
Before inserting the battery, set the revolution cycle by moving the red gear wheel to the desired position (daily, weekly, or monthly). The highest position is 7 days (weekly), the middle position is 31 days (monthly), and the lowest position is 1 day (daily).

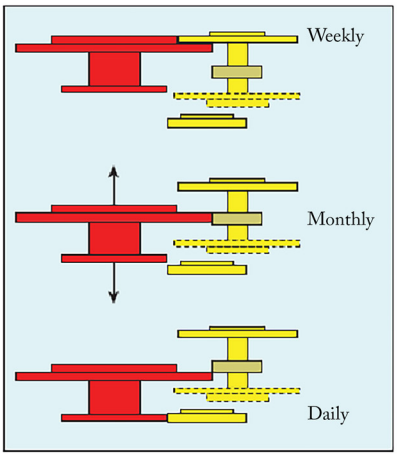
> **NOTE:** The barograph is initially set to a weekly cycle.

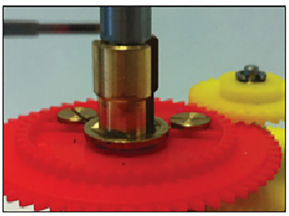
> **NOTE:** After changing the drum revolution cycle, you will need to insert the corresponding chart paper (see "Replacing the Chart Paper" on p.5).

Insert the provided AA battery into the battery compartment. Be sure that the positive and negative ends are in their correct positions.

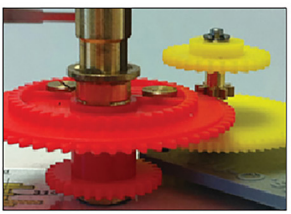
After the battery is in place, put the recording drum back over the clockwork.



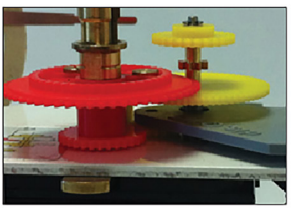




Weekly Position



Monthly Position



Daily Position

Replacing the Chart Paper

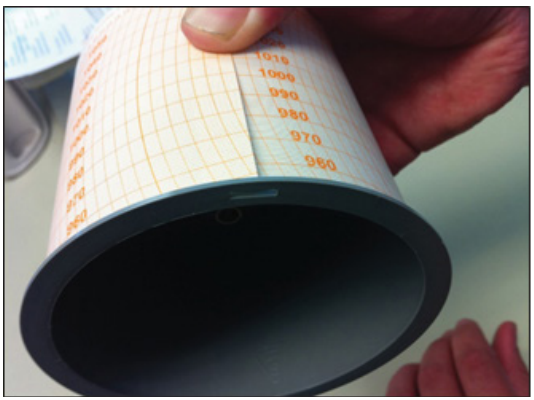
Move the pen-arm away from the drum using the lever (Disengaging Rod Release) (14) that is attached to the Disengaging Rod (17).

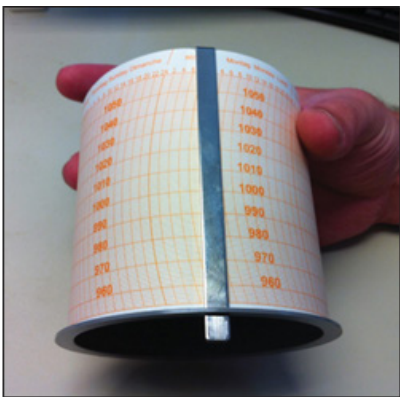
Then remove the recording drum from the clockwork. Remove the clamp that is holding the chart paper to the recording drum and remove the used chart paper. Wrap the new chart paper around the drum so that the slightly overlapping edges line up with the location of the clamp (see images below).

> **NOTE:** Be sure that the bottom side of the chart paper (meaning, the low pressure side) is lined up directly with the lip on the lower edge of the recording drum.

Insert the clamp into the slot at the base of the drum and clip it at the top.

After the paper has been loaded, put the drum back over the clockwork mechanism with the time and date approximately aligned with the pen position. Once the chart is in place and the pen is returned to the chart, make a final manual rotation of the drum to the correct time as needed. This may take a further adjustment after some time has passed to remove any slack in the gear.





Replacing The Fiber Pen & Starting the Barograph

These barographs are supplied with two fiber pens. Each pen should last 6 to 8 months under normal usage.

To insert a new pen, remove the protective tip and attach the Fiber Pen (16) to the pen-arm as shown. Adjust the pen-arm's position using the Pen-Arm Adjustment Screw (23) until the fiber pen touches the chart paper on the recording drum.

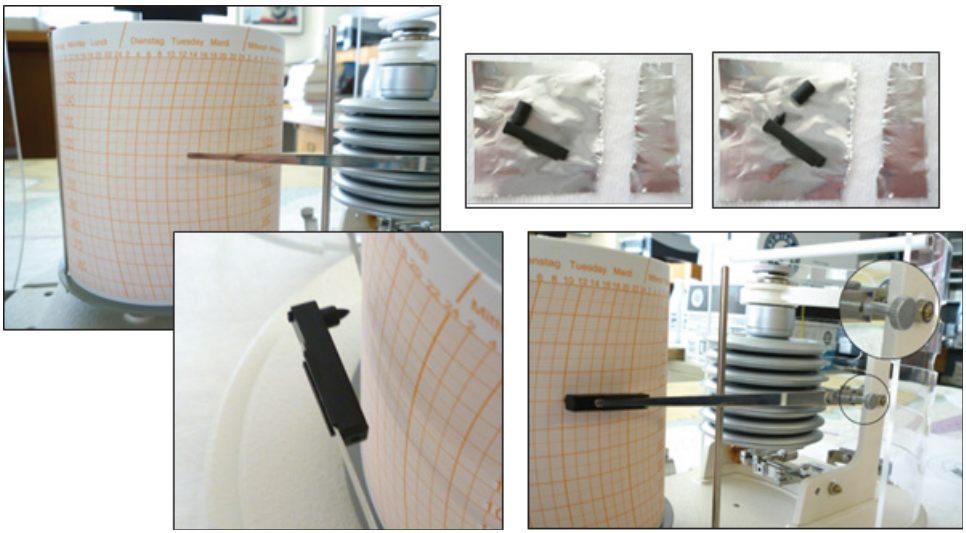
> **NOTE:** This should be set so the pen puts minimum force on the chart while still leaving a trace. You can rotate the drum manually to check this. Too much pressure could mask small changes in pressure.

> **NOTE:** Be sure the pen-arm is not touching the disengagement rod while the barograph is recording pressures.

Before recording, be sure that the proper chart paper is being used in accordance with the drum revolution cycle (ie. a weekly chart for the weekly cycle).

Then close and lock the housing. The barograph will be ready to begin recording.

If desired, the safety lock on the housing can be engaged to prevent unauthorized access to the barograph.



Pen-Arm Adjustment Screw (inset)

Setting the Local Pressure

Your barograph will provide accurate pressure readings to within ± 0.7 hPa, but before starting your barograph, it is best to check the local pressure and adjust the pen position accordingly. Consult a local weather source for the present atmospheric pressure in your area.

Remember, most public sources of accurate pressure are corrected to sea level pressure which will be higher than the actual pressure at your instrument's location (unless, you too are at sea level).

To set your barograph to the correct local pressure (also known as Station Pressure), you must reduce the reported sea level pressure for your location by an amount that is determined by the elevation of your location, plus the height of the instrument above ground level (see p. 8 for Pressure Correction Charts).

The pressure adjustment screw is located above the measuring elements, as shown on p. 2. Release the small lock screw on top of the pressure adjustment screw before making the adjustment, then gently tighten it.

> **Warning:** ***The pressure range of the barograph, from top to bottom of the chart, cannot be changed without irreparably damaging the instrument. Therefore, the pressure range adjustment screws have been secured with lacquer and should NOT be adjusted.***

Pressure Corrections for Elevation

Elevation		Correction
Feet	Meters	hPa = mb
0	0	0.0
5	2	0.2
10	3	0.4
20	6	0.7
30	9	1.1
40	12	1.5
50	15	1.8
75	23	2.7
100	30	3.7
150	46	5.5
200	61	7.3
250	76	9.1
300	91	10.9
350	107	12.8
400	122	14.6
450	137	16.4
500	152	18.2
550	168	20.0
600	183	21.8
650	198	23.6
700	213	25.4
750	229	27.2
800	244	29.0
850	259	30.7
900	274	32.5
950	290	34.3
1000	305	36.1
1050	320	37.9
1100	335	39.6
1150	351	41.4

Elevation		Correction
Feet	Meters	hPa = mb
1200	366	43.2
1250	381	44.9
1300	396	46.7
1350	411	48.5
1400	427	50.2
1450	442	52.0
1500	457	53.7
1600	488	57.2
1700	518	60.7
1800	549	64.2
1900	579	67.7
2000	610	71.1
3000	914	105.1
4000	1219	138.1
5000	1524	170.2
6000	1829	201.3
7000	2134	231.4
8000	2438	260.6
9000	2743	289.0
10000	3048	316.4
11000	3353	343.1
12000	3658	368.8
13000	3962	393.8
14000	4267	418.0
15000	4572	441.4
16000	4877	464.1
17000	5182	486.0
18000	5486	507.3
19000	5791	527.8
20000	6096	547.6

The standard surface pressure is 1013.25 mb and the pressure drops at a rate that can be computed from:

*Pa = Po [1 - (6.87535*H/1,000,000)]^5.2561*

This means Pa is the pressure at altitude H (given in feet) and Po is the base or surface pressure of 1013.25 mb. The notation x^y means x raised to the power of y.

Examples: If you live at an elevation of 1100 feet, your barograph would be correctly calibrated if it reads 39.6 mb lower than what is reported at sea level. If the barograph in your boat is 10 feet above sea level, your barograph would read 0.4 mb lower than it should if it was not corrected to sea level.

See "The Barometer Handbook" by David Burch for more information on atmospheric pressure, barometers, and barographs. This book is available at ***www.Weems-Plath.com****.*

Troubleshooting

Error	Possible Cause	Solution
The barograph is not recording.	The fiber pen is not touching the recording drum.	Move lever to the right.
	The protective case has not been removed from the fiber pen.	Remove the protective case.
	The fiber pen has dried up.	Dampen the pen with a drop of vinegar.
	The fiber pen is used up.	Change the pen.
The recording drum does not rotate.	The recording drum is not set on the clockwork axle properly.	Gently rotate the drum until you feel the gears engage.
	Gears are not engaged properly.	Reset the drum revolution cycle, paying close attention to the gears.
	Battery is dead.	Change the battery.
The barograph records a constant pressure.	The pen-arm is touching the disengaging rod.	Press the lever completely to the right.
Time measurements on the chart paper do not correspond with the rotation of the recording drum.	The wrong chart paper is being used.	Make sure the chart paper corresponds with the drum revolution cycle.
	The battery is dying.	Change the battery.
The barograph is recording the wrong values.	The chart paper used does not correspond with the range of the barograph.	Make sure you are using the correct chart paper.
	The chart paper is not correctly aligned.	Reset the chart paper by making sure the bottom edge is properly aligned with the base of the recording drum.
	Pressure correction not set.	Correct the pressure adjustment.
	Pressure correction drifted.	Correct the pressure adjustment.
The barograph pen-arm hangs down.	The precision movement is not connected to the pen-arm.	Reconnect the arm with the movement (see Start Up notes on p. 6).

Service & Repair

NOTE: When returning the barograph for service, package it carefully using the original packaging to ensure it is protected as best as possible. Weems & Plath® is not responsible for damage occurred while in transit.

To send in your barograph for service or repair, please follow the instructions found at:
www.Weems-Plath.com/Service-and-Repair

Send To:

WEEMS & PLATH®
214 Eastern Ave. • Annapolis, MD 21403 • USA

Warranty:
Your barograph is warranted against defects in material and workmanship for two (2) years from the date of original purchase. Retain a copy of receipt for proof of purchase. Any defect caused by misuse, accident, tampering or negligence of the user is not covered by this warranty.

CAUTION: Movement damage caused by battery leakage is not covered under warranty.

For more details on the 2-Year Warranty, please visit:
www.Weems-Plath.com/Support/2-Year-Warranty

Product Registration:
In order to provide the best service possible, please register your product online at www.Weems-Plath.com. Your registration also serves as proof of purchase and will activate your warranty.

For questions, please contact our Customer Service Department:
sales@weems-plath.com • 410-263-6700

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