

**IMPACT REGISTER INC.**

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Precision Built Recorders Since 1914

**OPERATING INSTRUCTIONS  
FOR  
MODEL RM-3WE**

SERIAL NO.

	Vertical	Lateral	Longitudinal
G-Range	5	5	5
Stylus Travel:			
a. Inches/G	.100	.100	.100
b. G/Space of chart	1.0	1.0	1.0
Stylus Maximum Travel	1"	1"	1"

CHART TYPE: RM-90 3/4" - 1 1/2"

CHART DRIVE SPEED: 1 1/2" HOUR

The instrument will operate for approximately 30 days without replacing the chart.

**PROVISIONS FOR ANCHORING**

The base of the instrument has four 1-1/2" projections, each having a hole for a 1/4" bolt or double-headed nail for anchoring the instrument to the object on which acceleration measurements are to be made.

**OPERATION OF ACCELEROMETER**

The RM-3WE Accelerometer was shipped with a new chart installed and is in a ready-to-use condition.

1. Securely fasten the RM-3WE to the vehicle whose accelerations are to be measured. The arrows on the outside of the case indicate a longitudinal direction, or the direction of travel of the vehicle. Secure all four anchoring positions provided. **Any movement of the RM-3WE, in relation to the surface to be tested, will give erroneous results, so contact must be tight and secure.**
2. Remove foam insert during operation. **To protect the stylus arms and stylus points we recommend replacing the foam insert when recorder is not in use.**
3. The hook-shaped lever just inside the right side of the open case (between the supply and receiving rolls) is the control lever to start and stop the chart drive. Note the "OFF" and "ON" markings. Pull this lever out to the "OFF" position and roll the chart to the desired time marking on the chart and then push the lever back to the "ON" position to engage the drive gear. Then move the toggle switch to the "ON" position to start the electric motor. **The person that is activating the RM-3WE should write the date and time on the wax coated chart.**

4. Notice in detail how the chart is threaded through the instrument. Although new chart installation is described below, it will be helpful to observe the chart path while it is still in the instrument.

**Do not remove receiving roll. Slowly unwind the chart off of the receiving roller.**

5. The damping system for the RM-3WE is a precision-made, double-acting piston with variable bypass orifices. Two orifices are installed for each damping piston. Both orifice settings must be changed whenever the degree of damping is changed. Orifice settings must be made in conjunction with an accurate shake table. The "plus and minus" records of each component are centered by changing the degree of opening of the orifices on either side of the damping system.

ORIFICES ARE SET FOR .7 OF CRITICAL DAMPING AT THE FACTORY. DO NOT ATTEMPT TO CHANGE THE ORIFICE SETTINGS UNLESS YOU HAVE AN ACCURATE SHAKE TABLE.

**WARNING: HANDLE THE RM-3WE WITH CARE - IT IS A VALUABLE PRECISION INSTRUMENT.**

1. **NEVER** move the stylus arm by hand for more than a short distance, as damage to the stylus and multiplication system may result.
2. When the RM-3WE is not in use, turn off the power switch to conserve the battery.
3. Check the stylus pressure before each use. The stylus pressure on the chart was accurately adjusted at the factory. For maximum record accuracy, the trace should be as light as possible, while still giving legible records.
4. **DO NOT** use an air hose to blow out the dust and wax accumulated in the sensing system.
5. **DO NOT** lubricate the sensing mechanism.

**PROCEDURE FOR INSTALLATION OF A NEW CHART**

1. Place recorder on its base with case latch facing operator. Open access door by releasing latch.
2. Take chart drive out of gear by moving "On/Off" lever to "Off" position. This makes the timing roll (with pins) free to move.
3. The supply roll is the top roller. The supply roll release knob is on the left outside end. Pull the release knob out and place the new chart in the recorder.
4. Tear both corners of the leading edge of the chart to approximately 45 degrees (V shaped). Feed the end of the chart under styli, under chart guide and over timing pins. Reach under the receiving roll and pull the chart out to the front of the recorder. Insert "V" end of chart in slot in the receiving roller and turn the roller so that the "numbers" side of the chart is on the outside of roll. Wrap four or five turns of chart around roller to make it secure. **The person that is activating the RM-3WE should write the date and time on the wax coated chart.**

## PROCEDURE FOR REMOVAL OF USED CHART

1. The date and time when the RM-3WE was shut off should be written on the wax coated chart.
2. Cut or tear the chart after last desired acceleration record.
3. **The receiving roller cannot be removed from the recorder.** Remove the used chart from receiving roller by hand, or by chart viewer and roller, Model CV-RM-3WE, which is manufactured by, and available from Impact Register, Inc.

The chart used in the RM-3WE Accelerometer is the RM-90 Chart. It is 90 feet long, wax-coated and will give a permanent legible record when handled properly. The temperature range of the wax coated chart is -10° Fahrenheit to +140° Fahrenheit.

## ELECTRIC CHART DRIVE ASSEMBLY

The RM-3WE chart is driven by a (Quartz) Electric DC Stepping Motor. The On/Off switch is located on the upper right center, facing the recorder. The chart will not move until the power switch is in the ON position. The power switch was installed on the inside to prevent an UNAUTHORIZED PERSON from turning the unit off. When the RM-3WE is not in use, turn the power switch OFF to conserve the battery. Power is supplied to the RM-3WE by one C-cell, heavy duty battery. (Part No. 1235, 1.5 volt, size C Eveready) located on the top front under the battery cover.

## TO REMOVE AND REPLACE BATTERY

After removing the top cover, you will notice that the battery is inside a battery tube. Remove either screw from the brass ground bar which holds the battery in place. Loosen the other screw, turn the bar 180 degrees and the battery will raise 1/4" so that it can be removed easily. When installing a new battery, PUT POSITIVE END OF BATTERY DOWN INTO THE BATTERY TUBE. We recommend the battery be replaced every four months, although the estimated life is one year.

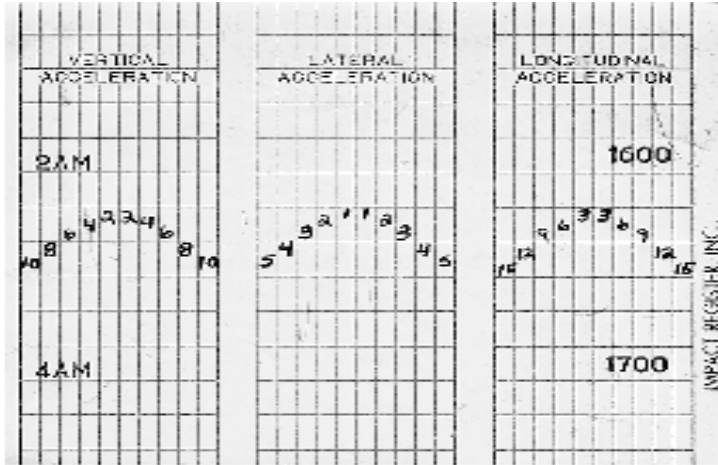
## MAINTENANCE

The "G" sensing components and the electric chart drive are vulnerable to dirt and moisture. Take precautions to keep the recorder door closed and to cover the recorder if test conditions are dirty or wet. The recorder should be covered with a polyurethane bag or placed in a waterproof box when it is being used in an open area.

**THE RM-3WE IS NOT WEATHERPROOF; WEATHERPROOF BOXES ARE AVAILABLE  
UPON REQUEST**

**RETURN THE RM-3WE ACCELEROMETER TO THE FACTORY ANNUALLY  
FOR CLEANING AND INSPECTION**

## CHART INTERPRETATION



The sample piece of chart above assumes a chart speed of  $\frac{3}{4}$ " inches per hour and a G range of plus or minus 10G vertical, plus or minus 5G lateral, plus or minus 15G longitudinal.

The above graph indicates how to read the G levels which occurred. Assuming the vertical axis is set for maximum of plus or minus 10G, each space on the vertical axis equals 2G. If the lateral axis is set at plus or minus 5G, each space equals 1G. If the longitudinal axis is set at plus or minus 15G, each space equals 3G.

Note that each axis is then divided into ten equal sections. Each axis is then divided into half, leaving five,  $\frac{1}{10}$ " spaces for each half of each axis. These five spaces are very important. Do not read the full swing of the stylus for each shock incurred. Only read the maximum deflection from the CENTER LINE on the shocks that are recorded.

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