

3094

# NATIONAL BUREAU OF STANDARDS REPORT

NBS PROJECT

NBS REPORT

0201-20-2301

February 1, 1954

3094

Addenda  
to  
Instruction Book  
for  
Transmissometer Set  
AN/GMQ-10

Prepared by  
Photometry and Colorimetry Section  
Optics and Metrology Division

For  
Airborne Equipment Division  
Bureau of Aeronautics  
Department of the Navy  
Washington 25, D. C.



U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS

The publication, re-  
unless permission is  
25, D. C. Such per-  
cally prepared if t

Approved for public release by the  
Director of the National Institute of  
Standards and Technology (NIST)  
on October 9, 2015

In part, is prohibited  
standards, Washington  
report has been specifi-  
report for its own use.



## TABLE OF CONTENTS

|             |                                                                                                                                            |       |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Foreword    |                                                                                                                                            | A0-1  |
| Addendum 1  | Transmissometers for Use With Commercial (60-cycle) Power Only.                                                                            | A1-1  |
| Addendum 2a | Recorder With Synchronous-Motor Drive and Induction-Motor Rewind (Esterline-Angus Drive Series No. 90) and With Series 400 Meter Movement. | A2a-1 |
| Addendum 2b | Recorders With Synchronous-Motor Drive and With Series 321 Meter Movement.                                                                 | A2b-1 |
| Addendum 3  | Transmissometers With Special Projectors.                                                                                                  | A3-1  |
| Addendum 4  | For Transmissometers With Baselines Other Than 500 Feet.                                                                                   | A4-1  |
| Addendum 5  | Five-Milliampere Indicators.                                                                                                               | A5-1  |
| Addendum 6  | Modification of Indicator to Permit Direct Operation of Pulse Amplifier.                                                                   | A6-1  |



Addendum 1  
To Instruction Book for Transmissometer Set AN/GMQ-10

Transmissometers For Use With Commercial (60-cycle) Power Only

When transmissometers are to be operated only with power supplied from commercial lines or other stable 60-cycle sources, the use of frequency-compensated voltage-regulating transformers and the CALIBRATION SETTING meters is unnecessary. In such cases a standard voltage-regulating transformer may be used; the CALIBRATION SETTING meters may be omitted and a fixed calibration setting of 90 used. When this is the case, make the following changes in the manual. Sheets 2 to 7 may be discarded after the appropriate changes have been made.



Addendum 1 (cont.)

Paragraph 1-3.2., line 3: Delete "frequency-compensated".

Figures 1-9 and 1-10: Mark vibrating reed meter on right "omitted".

Paragraph 1-3.5., line 4: Delete "frequency-compensated".

Paragraph 1-3.5.3., line 1: Delete "frequency-compensated".

Paragraphs 1-4.2.f (1), 1-4.2.1.e, 1-4.2.2.d, 1-4.2.3.c: Change to read "60 cycles" instead of "60  $\pm$  3 cycles".

Figure 1-12: Mark "Not applicable."

Paragraph 3-3.2.1., line 3: Delete " $\pm 3$ ".

Paragraph 3-3.2.2., line 3: Delete " $\pm 3$ ".

Figure 3-5, Note A: Substitute "60" for "57-63".

Figure 3-6, Note A: Substitute "60" for "57-63".

Figure 3-11: Mark CALIBRATION SETTING meter "omitted" and delete reference thereto.

Paragraph 3-8.2.b, line 9: Substitute "a reading of 90" for "the correct calibration setting". Delete sentences beginning "The correct --." and "If two --."

Paragraph 3-8.3.c, line 6: Insert "90" after "meter reads" and delete the remainder of the sentence.

Paragraph 3-8.3.e, line 6: Delete "agree with the reading of the CALIBRATION SETTING meter" and read 90  
line 10: Delete "readings agree" and insert "reading is 90".





Addendum 1 (cont.)

Paragraph 4-2.2.2.: Delete entire paragraph.

Paragraph 4-2.2.6., line 5: Delete "and the CALIBRATION SETTING meter (5202)".

Paragraph 4-3.4., line 19: Substitute "are 90" following "recorder readings" for remainder of sentence.

Paragraph 4-3.4.1.: Delete entire paragraph.

Figure 4-1.: Delete.

Paragraph 5-4.1., line 3: Delete "frequency-compensated".

Paragraph 5-4.2.: Delete remainder of paragraph beginning with "To compensate --."

Figure 5-2: Change "57-63 cps" to read "60 cps".

Figure ~~5-3a~~: Change "57-63 cps" to read "60 cps".

Figure 5-4: Mark "Not applicable in all details."

Figure 5-5: Change "57-63 cps" to "60 cps".

Table 5-1: Change entries in columns to read as follows:\*

|     |     |     |     |
|-----|-----|-----|-----|
| 4.3 | 116 | 4.3 | 45  |
| 5.4 | 115 | 5.3 | 65  |
| 6.0 | 115 | 5.8 | 90  |
| 6.6 | 114 | 6.4 | 120 |
| 7.2 | 113 | 6.8 | 150 |

\*This change is not applicable to transmissometers with special projectors. See entries in Addendum 3.



Addendum 1 (cont.)

Figure 5-10: Delete M102 and reference thereto.

Figure 5-11: Change "57-63 cps" to "60 cps".

Paragraph 5-6.6., line 24 in 2nd column: Delete remainder of paragraph beginning with "When the line frequency ---."

Figure 5-12: Change "57-63 cps" to "60 cps". Change "57-63 pulses per second" and "11-13 pulses per second" to "60 pps" and "12 pps".

Figure 5-17: Delete M202 and reference thereto.

Figure 5-18: Change "57-63 cps" to "60 cps".

Figure 5-19: Change "57-63 cps" to "60 cps" ( all entries). Change "57-63 pulses per second" and "11-13 pulses per second" to "60 pps" and "12 pps".

Paragraph 6-1.3.3., line 20: Delete "of vibration of the reeds in the CALIBRATION SETTING meter and".

Paragraph 6-1.3.4., line 1 in 2nd column: Delete "vibration of the reeds of the CALIBRATION SETTING meter" and substitute "a glow of tube V207".

Paragraph 6-2.3.5., line 5: Delete "and the CALIBRATION SETTING meter (M102)".

Paragraph 6-2.3.6.: Delete entire paragraph.

Paragraph 6-3.4.4., line 12: Insert "reads 90" after "meter (M101)" and delete remainder of paragraph.

Paragraph 6-3.5.1., line 15: Delete "agree with the CALIBRATION SETTING meter" and substitute "read 90".

line 17: Delete reference to paragraph 4-3.4.1.



Addendum 1 (cont.)

Paragraph 6-3.5.3.d, line 4: Substitute "of approximately 18" for "one-fifth the calibration setting".

Note, line 3: Substitute "18" for "one-fifth of the calibration setting".

Paragraph 6-5.3., Calibration, line 4: Substitute "90" for "the CALIBRATION SETTING reading".

Paragraph 6-5.4., Calibration, line 5: Substitute "90" for "the indication of the CALIBRATION SETTING meter".

Paragraph 6-7.2.1.c, line 4: Delete "the calibration setting reading obtained from the CALIBRATION SETTING meter" and substitute "90".

line 10: Substitute "90" for "agree with the calibration setting".

Paragraph 6-7.3.2.p, line 4: Substitute "90" for "the calibration reading obtained from the CALIBRATION SETTING meter".

line 10: Substitute "90" for "agree with the calibration setting".

Paragraph 7-1.4., page 7-4: Delete reference to N202 (CALIBRATION SETTING meter).

Paragraph 7-2.2., Step 2: Substitute "tube V107 glows" for "one or more reeds of CALIBRATION SETTING meter vibrate".

Delete "line frequency". Add "V106" to Probable Failures.

Step 7: Delete "57-63 cps".

Step 21: Substitute "tube V207 glows" for "one or more reeds of CALIBRATION SETTING meter vibrate". Add "V206" to Probable Failures.

Step 30: Delete "one or more reeds of CALIBRATION SETTING meter vibrate" and associated Probable Failures. Add "S104" to Failures opposite "V107 glows".



Addendum 1 (cont.)

Step 48: Substitute "90" for "to agree with CALIBRATION SETTING meter reading".

Step 49: Substitute "12 pps" for "one-fifth line frequency".

Step 50: Substitute "90" for "to agree with CALIBRATION SETTING meter reading".

Paragraph 7-3.5.10.: Delete "or frequency" under Probable Cause. Delete second and third sentences under Remedial or Corrective Procedure.

Paragraph 7-3.5.11.: Delete all of second Probable Cause except "S203".

Paragraph 7-3.5.15.: Delete first Probable Cause and Remedial or Corrective Procedure.

Figures 7-12 and 7-13: Mark meter M102 "not used" and delete references thereto.

Figures 7-14 and 7-15: Mark meter M202 "not used" and delete references thereto.

Figure 8-1: Delete "57-63 cps" following "SUPPLY VOLTAGE" and enter "60 cps".

Change entries in TEST VOLTAGES table to read as follows:\*

| Position of<br>LAMP VOLTS<br>Switch | Volts Between<br>Terminals 7 & 8 | Volts Between<br>Terminals 11 & 12 |
|-------------------------------------|----------------------------------|------------------------------------|
| 4.8                                 | 4.8                              | 116                                |
| 5.4                                 | 5.3                              | 115                                |
| 6.0                                 | 5.8                              | 115                                |
| 6.6                                 | 6.4                              | 114                                |
| 7.2                                 | 6.8                              | 113                                |





Addendum 1 (cont.)

Figure 8-1 cont.: In T301 block delete "57-63 cps" and insert "60 cps". Delete "infinite ohms" and insert "2.6 ohms"; delete "1.2 ohms" and insert "2.0 ohms".\*

\*These values are not applicable to transmissometers with special projectors. See entries in Addendum 3.

Figure 8-2: Delete "57-63 cps" following "SUPPLY VOLTAGE" and enter "60 cps".

Mark meter M102 "Not used".

Figure 8-3: Delete "57-63 cps" following "SUPPLY VOLTAGE" and enter "60 cps".

Mark meter M202 "Not used".

In T202 block delete "57-63 cps" and enter "60 cps". Delete "infinite ohms" and enter "2.6 ohms"; delete "1.2 ohms" and insert "2.0 ohms".

Figure 8-5: Mark meter M102 "Not used".

Figure 8-6: Mark meter M202 "Not used".



Addendum 2a  
To Instruction Book for Transmissometer Set AN/GMQ-10

Recorder With Synchronous-Motor Drive and Induction-Motor Rewind  
(Esterline-Angus Drive Series No. 90) and With Series 400 Meter Movement.

The chart drives of these recorders require no winding for either the chart drive or the rewind drive. For detailed instructions see Esterline-Angus Instructions Nos. 253-cc and 648-M, supplied with the transmissometer.

Make the following changes in the manual. Note: When a paragraph is marked "See Addendum 2a", reference is made to a paragraph in this addendum bearing the same paragraph number as the original paragraph. Sheets 3 to 5 may be discarded after the appropriate changes have been made.

Paragraph 3-8.4.1.b: Remove the chart rewind roller by pressing down on the clips at each end and pulling the roller forward. Remove the arbor which is used to hold the new chart by lifting up and pulling forward. Insert arbor through core of new roll and replace the arbor so that the time figures are at the left.

Paragraph 3-8.4.1.d: Replace the chart rewind roller. Keeping the gear end to the left, push in until the roller snaps into place. Insert the end of the chart into the slot in the roller. Release the rewind catch by operating the roller like a window shade and allow the chart to wind on the roller.

Paragraph 3-8.4.1.e: If a chart is already in place on the roller, remove it by first removing the end wheel on the right side of the roller and slipping the chart off with a twisting motion.

Paragraph 4-2.3.5.: These change gears will be found on a holder located to the left of the scale plate. This holder may be removed by pulling it out of its friction-fitted mount.

Paragraph 6-6.3.1.b: Remove the flat plate carrying the charting instructions to gain access to the bearings behind it. Place one or two drops of oil on these bearings. Do not oil the synchronous motor. Replace the cover.



Addendum 2a (cont.)

Paragraph 6-6.3.1.c: Unwind the rewind take-up spring by letting the roller revolve slowly. Remove the four screws holding the cover of the rewind mechanism. Place one or two drops of oil on the shaft bearings and on the gears. Replace the cover.

Paragraph 6-6.3.1.d: Place a drop of oil on the bearings of the chart arbor and the rewind roller.



Addendum 2a (cont.)

Paragraph 1-4.2.3.d, line 10: Delete "clock driven" and insert "motor driven with motor-driven chart rewind".

Paragraph 3-8.4.1.b: Mark "Not applicable., see Addendum 2a."

Paragraph 3-8.4.1.c, last line: Change "stick" to "roller".

Paragraph 3-8.4.1.d: Mark "Not applicable, see Addendum 2a ."  
Note, line 2: Change "stick" to "roller".

Paragraph 3-8.4.1.e: Mark "Not applicable. see Addendum 2a."

Figure 3-16: Mark "Not applicable in all details."

Figure 3-18: Mark "Not applicable in all details."

Paragraph 3-8.4.3., line 3: Delete remainder of paragraph following "by means of" and insert "a synchronous motor driving the chart and an induction motor driving the rewind mechanism. No winding is required."

Paragraph 3-8.4.3.a: Delete entire paragraph including the Note.

Paragraph 3-8.4.3.d: Delete "control" and insert "switch".  
Delete "START" and insert "ON".  
Delete second sentence.

Paragraph 4-2.3.4.: Delete "control lever" and insert "switch".  
Delete second sentence.

Paragraph 4-2.3.5., line 7: Delete remainder of sentence beginning with "and will" and insert "See Addendum 2a."

Figure 4-3: Mark "Not applicable."





Addendum 2a (cont.)

Paragraph 4-4.4.a: Delete "control lever" and insert "switch".  
Delete "STOP" and insert "OFF".

Paragraph 5-8.2., line 12: Change to read "35,000 ohms."

Paragraph 5-8.4., line 2: Delete "spring-powered clock" and insert "synchronous".

Delete entire second sentence.  
line 12: Delete "spring-driven" and insert "motor-driven".

Paragraphs 6-6.3.1.b, c, d: Mark "Not applicable, see Addendum 2a."

Paragraph 6-6.3.1.e: Delete entire paragraph.

Paragraph 6-6.3.2.: Delete entire paragraph.

Paragraph 6-7.3.2.f: Delete entire paragraph.

Paragraph 7-3.6.1.: Delete second Probable Cause and corresponding Remedial or Corrective Procedure.

Paragraph 7-3.6.2.: Under Probable Cause, change to "Power-line frequency not properly regulated." Under Remedial or Corrective Procedure, delete entire paragraph. Under Probable Cause add "Defective or 'dragging' motor." Under Remedial or Corrective Procedure add "Replace."

Paragraph 7-3.6.3.: Delete second sentence of second Probable Cause (beginning "See that ---").

Delete third Probable Cause "Reroll spring unwound" and the corresponding Corrective Procedure. Insert under Probable Cause "Placement of right-hand wheel of rewind roller." and under Remedial or Corrective Procedure "Push wheel into roller as far as it will go."

Paragraph 7-3.6.6., line 9: Delete "to the left" and substitute "upward".  
line 10: Delete "to the right" and substitute "downward".



Addendum 2a (cont.)

Paragraph 7-5.10.c, line 1: Substitute "loosen" for "remove".  
line 5: Substitute "loosening" for "removing".

Paragraph 7-5.10.d: Add "The connections to the chart-drive motors are automatically broken when the chart-drive mechanism is pulled forward."

Paragraph 7-5.11.: Delete entire paragraph.

Paragraph 7-5.12.: Delete entire paragraph.

Paragraph 7-5.13.: Delete entire paragraph.

Figures 8-3 and 8-6: Add CHART DRIVE terminals to the recorder (M203) and connect these terminals to those of the recorder lamp (E204).



Addendum 2b  
To Instruction Book for Transmissometer Set AN/GMQ-10

Recorders With Synchronous-Motor Drive and Spring-Driven Rewind  
(Esterline-Angus Series 79F) and With Series 321 Meter Movement.

The chart drive of these recorders requires no winding. The rewind mechanism is spring driven. One winding of the rewind spring is sufficient to reroll a complete roll of chart. For detailed instructions see Esterline-Angus Instructions Nos. 644-C and 942-M supplied with the transmissometer.

Make the following changes in the manual. Note: When a paragraph is marked "See Addendum 2b", reference is made to a paragraph in this addendum bearing the same paragraph number as the original paragraph. Sheets 2 and 3 may be discarded after the appropriate changes have been made.

Paragraph 6-6.3.1.b: Unwind the reroll mechanism by turning the winding crank in the counterclockwise direction until the spring is completely unwound as indicated by the reroll disk being driven in the reverse direction. Remove the cover of the reroll gear train and place a drop of oil on each bearing and gear. Replace the cover and rewind the spring.



Addendum 2b (cont.)

Paragraph 1-4.2.3.d, line 10: Delete "clock driven" and insert "motor driven with spring-driven rewind".

Paragraph 3-8.4.3., line 3: Delete remainder of paragraph following "by means of" and insert "a synchronous motor driving the chart and a spring-driven rewind mechanism."

Paragraph 3-8.4.3.a: Delete all material following the first sentence and substitute "Wind until the clutch on the rewind spring starts to slip."

Paragraph 3-8.4.3.d: Change to read "On chart drives having per-minute in addition to per-hour feeds, turn the CHART DRIVE control lever to SLOW FEED."

Figure 3-16: Mark "Not applicable in all details."

Figure 3-18: Mark "Not applicable in all details."

Paragraph 4-2.3.4., line 2: Delete remainder of paragraph following "clock" and insert "from per-minute to per-hour feeds."

Figure 4-3: Mark "Not applicable."

Paragraph 4-4.4.a: Delete and substitute "Disconnect recorder from power."

Paragraph 5-8.4., line 2: Delete "spring-powered clock" and insert "synchronous". Delete entire second sentence, add "One winding of the rewind spring is sufficient to rewind one roll of record chart." at end of the paragraph.

Paragraphs 6-6.3.1.b: Mark "Not applicable, see Addendum 2b."

Paragraph 6-6.3.1.d: Delete "escapement" and substitute "chart-drive gear train". Add "Do not oil the synchronous motor."





Addendum 2b (cont.)

Paragraph 6-6.3.2.: Delete entire paragraph.

Paragraph 6-7.3.2.f: Delete "mainspring" and insert "rewind".

Paragraph 7-3.6.1.: Delete second Probable Cause and corresponding Remedial or Corrective Procedure.

Paragraph 7-3.6.2.: Under Probable Cause, change to "Power line frequency not properly regulated." Under Remedial or Corrective Procedures, delete entire paragraph.

Paragraph 7-3.6.3.: Delete first and third sentences opposite "Beroll spring unwound."

Paragraph 7-5.11.: Delete entire paragraph.

Paragraph 7-5.12.: Delete entire paragraph.

Paragraph 7-5.13.: Delete entire paragraph.

Figures 8-3 and 8-6: Add CHART DRIVE terminals to the recorder (M203) and connect these terminals to those of the recorder lamp (E204).



Addendum 3  
To Instruction Book for Transmissometer Set AN/GMQ-10

Transmissometers With Special Projectors

Transmissometer Set AN/GMQ-10 is designed for use where the separation between the projector and the receiver does not exceed 750 feet. When longer separations are necessary, special projectors and modified projector power supplies are necessary. When these special items are supplied, make the following changes in the manual for Transmissometer Set AN/GMQ-10. When a paragraph is marked "See Addendum 3", reference is made to a paragraph in this addendum bearing the same paragraph number as the original paragraph. Sheets 4 to 10 may be discarded after the changes have been made.

Paragraph 1-3.1.: SPECIAL PROJECTORS. Special projectors consist of a precision-grade parabolic reflector and a low-voltage lamp in a suitable housing. The beam is directed horizontally and has a peak candlepower of 1,000,000 candles for 12-inch diameter reflectors, 2,000,000 candles for 18-inch reflectors, and 5,000,000 candles for 24-inch reflectors. The reflector and lamp are housed in a cast-aluminum case with a plate glass cover. The cover is protected by a sheet metal hood. The housing may be rotated about a vertical and a horizontal axis so that the beam of the projector may be directed at the receiver.

Paragraph 3-1.2.7.: The length of the baseline should not exceed 1500 feet for a 12-inch projector, 2500 feet for an 18-inch projector and 4000 feet for a 24-inch projector.

Paragraph 3-2.5.2.: Baffles must be designed to meet the requirements of a particular installation. The central hole in the baffle should be no larger than necessary to clear the projector. The over-all dimensions of the baffle should be not less than 0.004 times the length of the baseline. The opening for the projector should be in the center of the baffle. This requires that the baffle extend below the top of the stand. The baffles should be painted a flat black.

Paragraph 3-8.1.e: Make a preliminary adjustment of the focus of the projector. This can be accomplished most easily at night. Adjust the fore and aft position of the lamp by means of the nuts on the mount supporting the lamp socket so that, when viewed from directly behind and above the projector, the bright outer edges of the beam appear to intersect at infinity. An alternate method is to direct the light



### Addendum 3- (cont.)

beam at a wall or screen at least 100 feet away and adjust the focus for the sharpest image of the lamp filament.

Paragraph 3-8.1.g: If, with the lowest voltage setting of the LAMP VOLTS switch, step 1, the lamp intensity is well above the intensity required to produce an off-scale reading of the TRANSMISSION meter, connect a 7.5-ohm, 50-watt resistor in series with the primary of T303 (between terminal 12 of E303 and the LAMP VOLTS switch). This will increase lamp life by a factor of three or four.

Paragraph 5-3.1.: PROJECTOR LAMP AND REFLECTOR. The projector lamp is a 12.5-volt, 250-watt lamp with a C-8 filament in a T-10 bulb with a medium prefocus base. The lamp has a rated life of 50 hours when operated at 12.5 volts, but is usually operated sufficiently below rated voltage so that a life of 200 hours is obtained. The reflector is a ground and polished precision-grade parabolic reflector. Generally a 24-inch diameter reflector with a 10-inch focal length is used. This lamp-reflector combination produces an essentially parallel beam with an intensity in the peak of approximately 5,000,000 candles. The beam spread at 95% of peak intensity is  $0.3^{\circ}$  horizontal by  $0.9^{\circ}$  vertical and at 10% of peak intensity it is  $1^{\circ}$  horizontal by  $2^{\circ}$  vertical. A blackened shield in front of the lamp prevents direct (uncollimated) light from leaving the lamp. A low-voltage, high-current filament is used to obtain the maximum peak intensity consistent with the desired lamp life.

Paragraph 6-2.2.4.: Focusing Adjustment Nuts. Six hex-head nuts on threaded rods supporting the lamp socket permit adjusting position of the lamp filament so that it is on the axis of the reflector and at the proper distance from the reflector.





Addendum 3 (cont.)

Figure 1-1: Mark "Not applicable in all details."

Paragraph 1-2.3.: Delete "ML-461/GMQ-10" and "PP-908/GMQ-10".

Paragraph 1-3.1.: Delete and mark "See Addendum 3."

Paragraph 1-3.2., lines 1 and 2: Delete "PP-908/GMQ-10".

line 8: Delete "ML-461/GMQ-10".

Paragraph 1-3.2.1., last line: Delete "PP-908/GMQ-10".

Paragraph 1-3.6.: Add "These cable terminal chambers are not supplied as part of the instrument and are to be obtained locally."

Figure 1-4: Mark "Not applicable."

Figure 1-12: Mark "Not applicable."

Paragraphs 1-4.2.b, c, d, and e: Delete entries and insert applicable data.

Paragraph 1-4.2.f(2): Delete "3.75" and insert "5.5".

Paragraph 1-4.2.1., Title: Delete type numbers.

Paragraph 1-4.2.1.a: Delete "140,000" and insert "5,000,000\*".

Paragraph 1-4.2.1.b: Delete "0.5° by 1°" and insert "0.3° by 0.9°"; delete "5° by 10°" and insert "1° by 2°\*".

Paragraph 1-4.2.1.c: Delete entire paragraph and substitute "Lamp: 12.5-volt, 250-watt, T-10 bulb, C-8 filament, medium prefocus base."





### Addendum 3 (cont.)

Paragraph 1-4.2.1.d: Delete "3000" and insert "200".

Paragraph 1-4.2.1.e: Change "1.6 amperes" to "4 amperes".

Page 1-9 at bottom: Add the following footnote: "\*Applicable to 24-inch reflectors only."

Table 1-1, Item 1: Delete all material following "PROJECTOR" and insert applicable data.

Table 1-1, Item 2: Delete "PP-908/GMQ-10". Delete "111.2".

Table 1-3, Item 1: Delete all material following "PROJECTOR" and insert applicable data.

Table 1-3, Item 2: Delete "PP-908/GMQ-10" and "147".

Table 1-5, Column 3 heading: Change "2 amp" to "5 amp".

Paragraph 3-1.2.7.: At end of paragraph add "See Addendum 3."

Paragraph 3-2.3.1.: Add "See manufacturer's data for outline and basing dimensions of the projector."

Paragraph 3-2.5.2.: Delete all material following the second sentence (beginning with "A baffle---") and add "See Addendum 3."

Figure 3-3: Add "Note F. See manufacturer's data for outline and basing dimensions of the projector and mark the three drawings showing outline and basing dimensions of projector (at bottom of the page) 'Not applicable'."

Paragraph 3-3.2.1., line 5: Delete "0.20" and insert "0.60".



Addendum 3 (cont.)

Paragraph 3-3.4.2., column 2, line 6: Delete "because" and insert "if".

Figure 3-5: Add "Note F: When W301 is a 2-conductor cable, run ground wire to projector."

In Note A change "0.5 kva" to "0.75 kva".

Change description of W301 to "2-conductor #12". Run ground wire to projector from power supply.

Figure 3-6: In Note A change "0.5 kva" to "0.75 kva". In center of figure change "0.35 kva" to "0.60 kva". Delete type numbers of projector and power supply.

Figure 3-9: Mark "Not applicable."

Paragraph 3-8.1.b, line 2: Delete reference to figure 3-9.

line 6: Delete "eight" and insert "one".

line 7: Delete "22.5" and insert "20". Delete remainder of paragraph beginning with "or 48 hours at 20 amperes".

Paragraph 3-8.1.d, line 2: Delete "6.0" and insert "Position 3".

Paragraph 3-8.1.e: Insert "See Addendum 3" at beginning of the paragraph.

Paragraph 3-8.1.f, line 5: Insert "and the focus" after "vertical alignment screws".

Paragraph 3-8.1.g, line 5: Delete remainder of sentence following "aperture". Add "See Addendum 3."

Paragraph 3-8.2.g, line 3: Insert "focusing" between "final" and "alignment".

Paragraph 4-2.4.: Opposite LAMP VOLTS delete "5.4 unless otherwise" and insert "minimum". Add "See Addendum 3 , paragraph 3-8.1.g."



Addendum 3 (cont.)

Figure 5-1: Delete "R-547/GMQ-10" and "AM-809/GMQ-10".

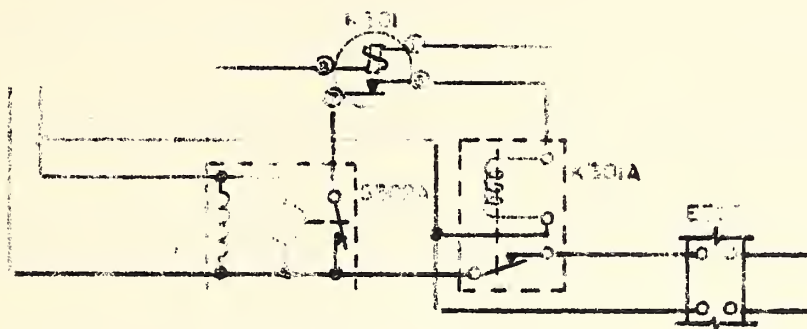
Paragraph 5-2.2., line 2: Delete "sealed-reflector".

line 4: Insert "a reflector" after "constant intensity".

Figure 5-2: Modify as follows: Change number of background relay from "K301" to "K301A". Add block marked "Auxiliary Relay, K301" between rectifier and background relay blocks. On line to projector change "4.8 - 7.2" to "10.4 - 12.4".

Figure 5-3a: Add the letter "A" to "K301". Under F301 change "2A" to "5A".

Figure 5-3b: Modify circuit as follows in lower right hand corner.





Addendum 3 (cont.)

Paragraph 5-3.1.: Mark "Not applicable, see Addendum 3."

Paragraph 5-3.4.: Delete entire paragraph.

Table 5-1: Change table to read as follows:

Table 5-1 (Not applicable to Frequency-Compensated "C-V" Transformers):

| Position of<br>LAMP VOLTS<br>Switch | Output Voltage<br>of Stepdown<br>Transformer* | Relative Intensity<br>of<br>Projector Lamp |
|-------------------------------------|-----------------------------------------------|--------------------------------------------|
| 1                                   | 10.4                                          | 53                                         |
| 2                                   | 10.9                                          | 64                                         |
| 3                                   | 11.4                                          | 75                                         |
| 4                                   | 11.9                                          | 87                                         |
| 5                                   | 12.4                                          | 100                                        |

\*Measured at terminals of lamp E301 using 15 feet  
of 2-conductor #12 for W301.

Data for frequency-compensated c-v transformers is not presently  
available.

Paragraph 5-4.3., line 5: Change "6 volts" to "12 volts".

Paragraph 5-4.4.: Delete all material following first sentence. Insert  
"Table 5-1 gives the voltages corresponding to the positions of S303."

Paragraph 5-4.4.1., page 5-6, line 7: Delete remainder of sentence  
following "completely opened". Add "See paragraph 3-8.1.g in  
Addendum 3."

Paragraph 5-4.5.1.: Add at end of paragraph "Opening of relay K301  
in turn allows power relay K301A to open."

Paragraph 5-4.5.3., line 2: Change "K301" to "K301A".





### Addendum 3 (cont.)

Paragraph 5-4.8., line 11: Change third sentence to read "Seasoning for one hour at 20 amperes will stabilize the lamp."

Figure 5-19: Make the same changes as made in figure 5-2.

Paragraph 6-1.3.2., line 4: Change "2-ampere" to "5-ampere".

Paragraph 6-2.2.4.: Add "See Addendum 3."

Paragraph 6-3.3.1.: Add "AND FOCUSING" to title. Add "of manual and of Addendum 3" at end of reference.

Paragraph 6-3.3.2.: Add "of manual and of Addendum 3" at end of reference.

Paragraph 6-7.3.4.e, line 2: Insert "and focus" between "alignment" and "of".

Paragraph 7-1.4.: Under first Defective Component add "or K301A". Delete Defective Components headed "T301" and "E301" and corresponding Procedures.

Paragraph 7-2.2., step 6: Change "5 to 7 volts" to "10 to 13 volts".

step 8: Add "K301A" to Probable Failures.

step 9: Delete "LAMP VOLTS switch to 6.0 position".

step 10: Delete "LAMP VOLTS switch to 6.0-volt position". Change "6 vac" to "12 vac". Change "7 volts" to "13 volts".

step 17: Add "K301A". to Probable Failures.

Paragraph 7-3.2.1.: Change "K301" to "K301A".

Paragraph 7-3.2.4.: Add "or focus" to first Probable Cause and "or refocus" to corresponding Remedial or Corrective Procedure.



Addendum 3 (cont.)

Paragraph 7-3.3.1.: Add "or focus" to first Probable Cause and "and focus" to corresponding Remedial or Corrective Procedure.

Delete second and third sentences of second Remedial or Corrective Procedure and corresponding footnote.

Figure 7-7: Mark "Not applicable in all details."

Figure 8-1: Add relay K301A to diagram. See the changes indicated for Figure 5-3b above for details.

Mark winding resistances listed for T303 in notes "not applicable."

Change output voltage of T303 from "4.8-7.2v" to "10.4-12.4v".

Delete voltage designations of terminals of S303 and label them 1, 2, 3, 4, and 5 (from left to right).

In T301 block delete "infinite ohms" and insert "1.5 ohms". Delete "1.2 ohms" and insert "0.9 ohms". Add "These values are not applicable to frequency-compensated "c-v" transformers."

Change TEST VOLTAGES table as follows:

| Position of<br>S303 | Voltages Between<br>Terminals 7 & 8** | Voltage Between<br>Terminals 11 & 12** |
|---------------------|---------------------------------------|----------------------------------------|
| 1                   | 10.4                                  | 115                                    |
| 2                   | 10.9                                  | 115                                    |
| 3                   | 11.4                                  | 115                                    |
| 4                   | 11.9                                  | 115                                    |
| 5                   | 12.4                                  | 113                                    |

\*\*Not applicable to frequency-compensated "c-v" transformer.

Figure 8-4: Mark "Not applicable in all details."

Figure 8-9: Mark "Not applicable."



Addendum 4 (cont.)

(in feet) divided by 500. If the table does not extend to sufficiently low values of visibility, use the following relation to obtain additional values:

$$(T/100)^{V/R} = 0.055$$

where T is the transmission in percent, V is the visibility and R is the length of the baseline. V and R must be in the same units.



Addendum 4 (cont.)

Figure 1-2: Delete "500 feet".

Paragraph 1-2.2.: Change first sentence to read "The set is designed to provide measurements of visibilities in the range of one-half to twenty times the baseline by day and from the length of the baseline to twenty times this distance by night."

Paragraph 3-1.2.6., line 4: Delete "ten" and insert "15". Add "when the length of the baseline exceeds 750 feet" to the sentence.

Figure 3-5: Delete "500 ft" at top of figure and insert the appropriate distance.

Tables 4-1, 4-2, 4-3, 4-4, 4-5, 4-6: Mark "Not applicable, see Addendum 4."

Paragraph 4-5.2., Example 1, Example 2: Delete.

Paragraph 4-5.3.1., Example 3. Delete.

Paragraph 4-5.3.2., Example 4. Delete.

Paragraph 4-5.4.: Delete entire paragraph.

Paragraph 4-6.4.2.: Following "99%" add "(For a 500-ft. baseline)".

Paragraph 5-8.6.: Delete entire paragraph.

Table 6-1: Mark "Not applicable, see Addendum 4."





Addendum 5  
To Instruction Book for Transmissometer Set AN/GMQ-10

Five-Milliampere Indicators

For indicators having a maximum output current of five milliamperes instead of one milliampere, make the following changes in the manual.

Paragraph 1-4.2.3.b: Change "1 ma" to "5 ma".

Table 1-4: Opposite 6J5 change number of this tube in indicator to "1".  
Add "Tube type 5692" and under number in indicator add "1".

Figure 5-12: On lines between bridge and meter M201 block and between meter M201 block and recorder block, change "0-1 ma" to "0-5 ma".  
Change type of tube V202 to type 5692.

Figure 5-16: In captions for M201 and M203, change "0-1 ma" to "0-5 ma".  
Change the values of the following resistors to read as follows: R213, 40K; R212, 390; R210, 47; R209, 100. Change V202 to a type 5692 with the two sections in parallel.

Paragraph 5-8.2., line 12: Change "15,000" to "500".

Figure 5-19: Make same changes as in figure 12.

Figure 6-1: Change type of tube V202 to type 5692.

Paragraph 7-1.4.: Under "Defective Component, Indicator", add "V202 (5692)" and opposite it enter "Use type 6SN7 tube."

Figure 8-3: Make same changes as in figure 5-16.



Addendum 6  
To Instruction Book for Transmissometer Set AN/GMQ-10

Modification of Indicator to Permit Direct Operation of Pulse Amplifier

It is possible to modify the indicator so that the pulse amplifier may be operated directly from it. This Addendum describes the necessary changes in circuitry.

If the indicator is modified, insert page 5-23a (A6-2) and make the following changes in the manual. When these changes have been made, sheets A6-3, A6-4 and A6-5 may be thrown away.



### 5-10. INDICATOR MODIFIED TO PERMIT DIRECT OPERATION OF PULSE AMPLIFIER.

5-10.1. GENERAL. When the receiver and the indicator are at the same site, it may be desirable to operate the pulse amplifier of the transmissometer directly from the indicator unit, thereby eliminating the Amplifier-Power Supply AM-809/GMQ-10 from the system. When the pulse amplifier is to be operated directly from the indicator, it is necessary either to have the indicator meter visible from the receiver or to use an auxiliary meter connected in series with this meter in order to align the receiver properly. The meter at the projector site should be connected in series with the indicator meter and recorder to facilitate the aligning of the projector.

5-10.2. CIRCUIT CHANGES. The changes in the circuitry of the indicator consist of changing the

regulated voltage from 300 volts to 255 volts and adding a plate load resistor, a coupling capacitor, and a chassis connector for the pulse amplifier. Resistor R233 (figure 5-20) is the plate load for V202 when the pulse amplifier is connected to J205. Capacitor C215 couples to the input of the indicator the signal generated by the voltage drop developed across R233 when V202 discharges.

#### NOTE

Line loading resistor R232 must be disconnected before the pulse amplifier can be operated directly from the indicator. It is desirable to open one of the connections to C213 to eliminate the possibility of noise from the signal line to the projector being fed into the indicator.

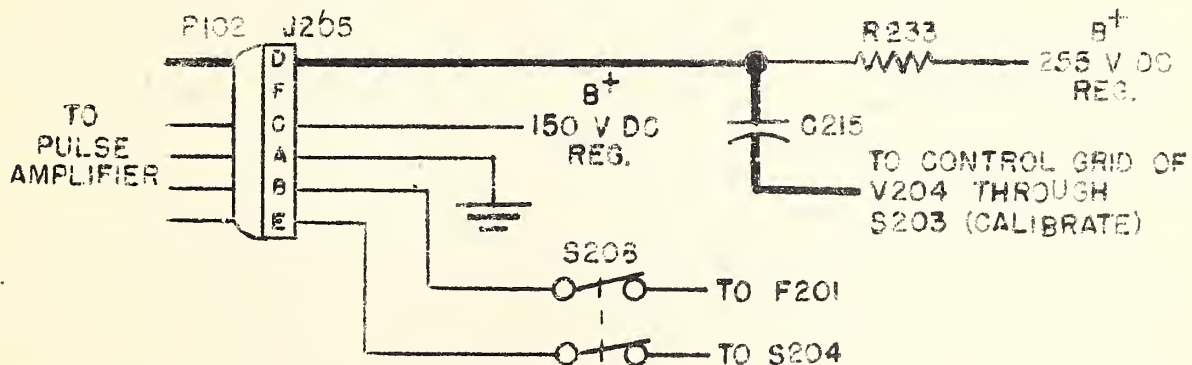


FIG. 5-20 PULSE AMPLIFIER CONNECTIONS



Addendum 6 (cont.)

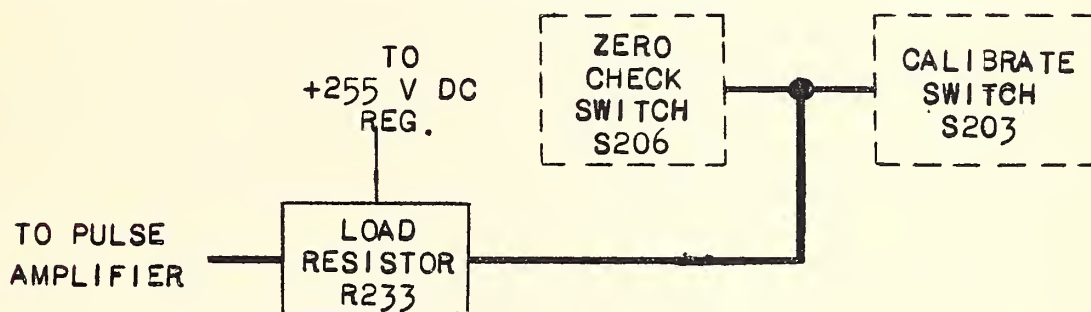
To modify the indicator, make the following changes in the circuits:

Add J205, R233, C215, and S208, connected as shown on page 5-28a.

Change: R213 from 200K to 150K  
R214 from 10K, 10-watt, to 7K, 20 watt  
R216 from 50K to 40K  
R231 from 3500 ohms, 10-watt, to 5000 ohms, 20 watt  
V209 from OD3/VR150 to OC3/VR105

Make the following changes in the manual:

Figure 5-12: Add block as follows:

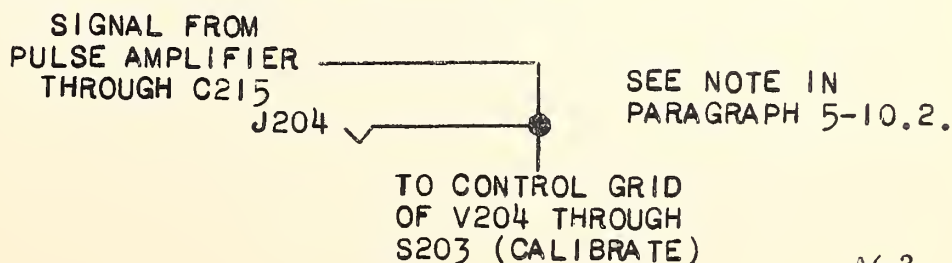


In VOLTAGE REGULATOR stage of POWER SUPPLY circuit, change "V209" from "OD3" to "OC3".

Change output of POWER SUPPLY circuit from "+300 V DC" to "+255 V DC".

Add "+150 V DC REGULATED" output from POWER SUPPLY circuit.

Figure 5-13: Add information as shown below:







Addenda 6 (cont.)

Figure 5-14: Add "or C215" to label "INPUT PULSE SIGNAL FROM C213".

Figure 5-15: Change value of R216 to 40K.

Change value of regulated B+ to 255v.

Figure 5-16: Change value of R213 to 150K.

Change value of R214 to 7K.

Change value of regulated B+ to 255v.

Figure 5-18: Change value of R231 to 5,000.

Change V209 to OC3/VR105.

Change value of regulated B+ to 255v.

Add takeoff "B+ 150 V DC REG." between pin 2, V209,  
and pin 5, V210.

Figure 5-19: Make the same changes as in figure 5-12.

Figure 8-3: Make the changes indicated for figures 5-15, 5-16, and 5-18.

In addition, in Voltage Measurements Table change voltage of V209, pin 5, to 255v and in Resistance Measurements Table change resistance of V202, pin 3, to 150K; of V203, pin 5, to 7K; of V209, pin 5, to 5K; of J201, pin 1, to 7K, and pin 2 to 150K.

Figure 8-6: Add J205, R233, C215, S208, and connections.

Table of Contents, page ii: Add

"5-10. Indicator Modified to Permit  
Direct Operation of Pulse Amplifier

5-28a"



Addenda 6 (cont.)

List of Figures, page iv: Add

"5-20            Pulse Amplifier Connections            5-28a'

Index, page vii, column 2: Add under Indicator

"operation with pulse amplifier            5-10"

page viii, column 2: Add under Pulse amplifier

"operation from indicator            5-10"

