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**CMC**

**QUIK CHEK<sup>®</sup> TEST SET**  
**operating manual**

CMC 714-XY

# CMC 714-XY QUIK CHEK<sup>®</sup> TEST SET DESCRIPTION AND OPERATION

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1. GENERAL	

1.01 This Section is issued to provide the description and instructions for the operation and use of the CMC 714-XY QUIK CHEK<sup>®</sup> Test Set (see Figure 1). This Test Set is used for routining local switches and trunks in Stromberg-Carlson XY offices (PBX, CDO or large Central Offices) to determine the need for adjustment and/or repairs for the equipment.



Figure 1 CMC 714-XY Quik Chek<sup>®</sup> Test Set

1.02 This Section is revised to add the CMC number for the Y-Speed cord, to add a procedure for advancing the switch in the Polarity Test, and to incorporate the information from Addendum CMC 714, Issue 1. Arrows are used to indicate significant changes.

1.03 The Test Set will check the operation of the CB (calling bridge) relay on both the operate and non-operate values. It will check the release timing of the RD (release delay) relay on either test or readjust value and will perform the XD release and Y speed test. The Test Set will make complete loop and leak pulsing tests.

1.04 The Set will also check the polarity of the switch and the associated trunks and will verify any digit absorbing features.

1.05 The Test Set operator can monitor wiper and switch noise, observe tones and recorded announcements and talk over circuits when required.

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1.06 The Test Set can be used with a shoulder harness, strapped to a ladder or placed on a cart. It requires no warm-up time prior to use.

## 2. DESCRIPTION

2.01 The Test Set has the following features:

- (a) XY EQUIPMENT TIMING AND PULSING TEST SET
- (b) CB RELAY CURRENT FLOW SET
- (c) POLARITY TESTER
- (d) LOOP AND LEAK TEST
- (e) MONITOR SWITCH NOISE
- (f) AMPLIFIED PUSH-TO-TALK CIRCUIT
- (g) WEIGHS 7 LBS.

### Test Set Arrangement

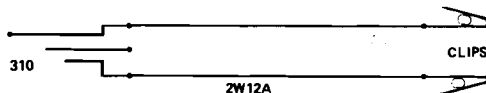
2.02 The following controls, lamps and jacks are located on the face plate of the Test Set:

- (a) DIGIT SWITCH — Numbered 1-10, C and CAL. Pulses supplied correspond to the digit selected. C provides continuous pulsing. CAL is used to calibrate the Set.
- (b) FUNCTION SWITCH — Provides for the following test settings:
  - CB OPR. (CB relay, operate)

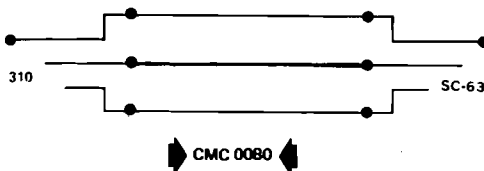
## 3. TEST CORDS

3.01 The following test cords are required when performing tests with the QUIK CHEK Test Set:

- (a) Power Cord: 2W12A is a two-conductor cord, 9-ft. long, one end equipped with alligator clips, the other a 310 plug.



- (b) Test Cord: CMC 0080 — A three-conductor cord, 9-ft. long, one end equipped with a 310 plug and the other end with an SC-63 plug.



- (c) Y-Speed Cord: CMC 114-747 — A single-conductor cord, with SC-63 plug on one end and a banana plug on the other, 3-ft. long.



- (d) Y-Speed Cord (for S-404053 Level Hunting Switch): A single-conductor cord, with SC-63 plug on one end and a banana plug on the other, 3-ft. long. The single conductor connects to the Tip of the SC-63 plug. Make cord locally if required.



CB SOAK (Short)

CB N.O. (CB relay, non-operate)

RD RLS. (RD relay, release)

XD RLS. & Y SPEED (XD relay release & Y speed test)

POLARITY-MON. (Polarity Test and Monitor)

LP 1900 10 or 12 PPS, 68.5%

LK A 10 or 12 PPS, 60.5%

LP 1500 10 or 12 PPS, 68.5%

LK 7500 10 or 12 PPS, 60.5%

LP 1200 10 or 12 PPS, 68.5%

LK 7150 10 or 12 PPS, 60.5%

- (c) TEST and RLS buttons — (Perform tests-release equipment)

(d) RECEIVER — TRANSMITTER

Used to check tones and recorded announcements. A TALK button and VOLUME control give the QUIK CHEK an amplified push-to-talk circuit.

- (e) MILLIAMMETER with two controls for setting the values of current to margin the CB relay.

- (f) N.O. ADJ Control — Used to set the Adjust Non-Operate current flow value for the CB relay.

- (g) OPR. ADJ Control — Used to set the Adjust Operate current flow value for the CB relay.

- (h) 10 PPS — 12 PPS — Either 10 or 12 pulses per second can be supplied to the switch under test. (RD and XD relay tests must be made using 12 PPS).

- (i) POLARITY — LED's indicate STRAIGHT and REVERSE polarity.

- (j) BATT and TEST jacks provide patching arrangements to C.O. battery and the switch under test.

- (k) 375 ms Re-adjust Value  
500 ms Test Value

To make an operation test of the RD relay at the test value, depress the TALK button with the FUNCTION switch set at the RD RLS position.

#### 4. PREPARATION

##### Connections

- 4.01 Make the following connections for all tests: (see Figure 2).

(1) Insert the 310 plug of the power cord into the BATT jack on the face of the QUIK CHEK and connect the other end to 48V C.O. battery.

(2) Insert the 310 plug of the CMC 0080 test cord into the TEST jack of the QUIK CHEK and the SC-63 plug into the XY switch test jack A.

##### Calibration Check

- 4.02 Before performing any routine testing with the Test Set, the following calibration check should be made:

- 4.03 The test equipment required to perform the calibration check is as follows:

- (a) CMC 7350 Current Flow Test Set or equivalent.
- (b) Pulse Speed and Percent Break Meter (J-94723-A or equivalent).
- (c) 2W12A Power Cord.
- (d) 3P7A Test Cord.

##### Milliammeter Check

- 4.04 Prior to connecting the QUIK CHEK Test Set to the current flow test set, adjust a control potentiometer on the current flow test set to a current flow not to exceed 20 mA with a short across the Tip and Ring of the 3P7A Test Cord. The switches on the current flow test set should be positioned as shown in Figure 3.

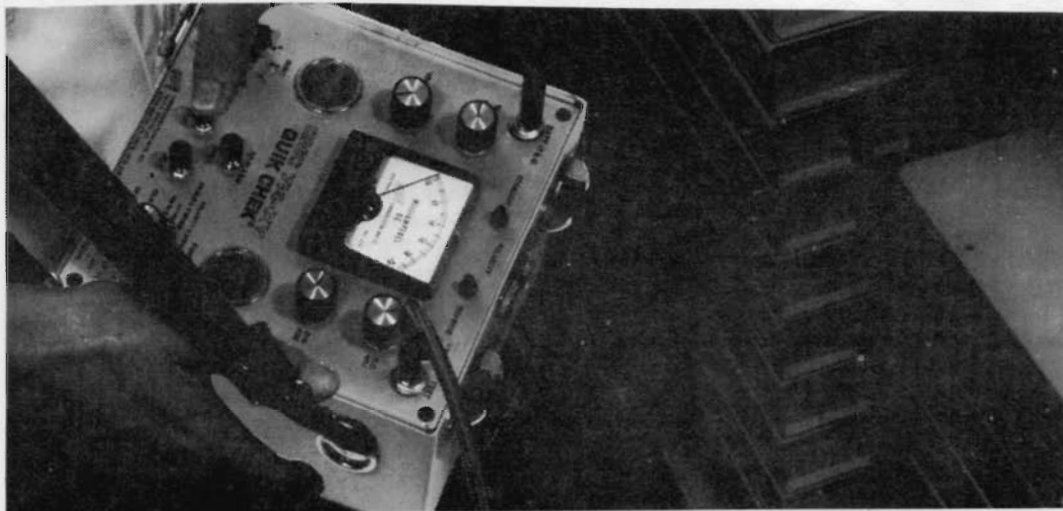


Figure 2 CMC 714-XY Quik Chek® Test Set in Use.

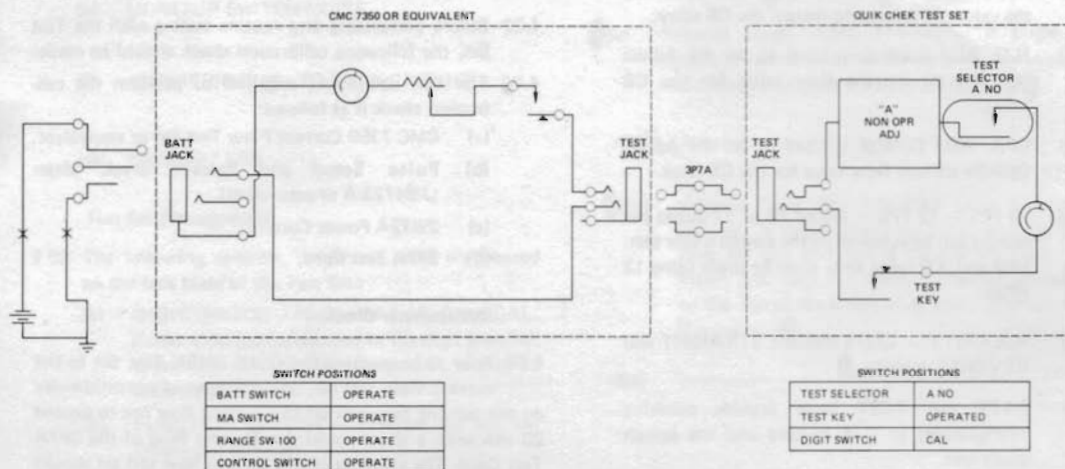


Figure 3 Test Equipment Arrangement for Calibration Check of the Milliammeter

4.05 On the QUIK CHEK Test Set, set the DIGIT SWITCH to the CAL position. Turn the N.O. ADJ potentiometer fully counterclockwise to cut in all resistance.

4.06 Using a 3P7A or equivalent test cord, each end equipped with 310 plugs, patch the TEST jack of the current flow test set to the TEST jack of the QUIK CHEK Test Set. Depress the control switch of the current flow set and the TEST key of the QUIK CHEK set and adjust for a value of 10 mA using the potentiometer on the current flow test set. Compare milliammeter indications at 10 mA, 15 mA, and 20 mA. Using the QUIK CHEK N.O. ADJ potentiometer to adjust to the various values beyond 10 mA.

4.07 If necessary, readjust the meter in the QUIK CHEK test set at 15 mA by means of the adjusting screw on the face of the meter.

#### Pulse Speed Check

4.08 Using the two-conductor power cord, connect battery and ground to the BATT jack of the QUIK CHEK test set. Connect the TEST jack of the QUIK CHEK test set to the P jack of the Pulse Checking Test Set (J-94723-A). All calibrations shall be made with the QUIK CHEK in a flat position, face up.

4.09 Operate the PPS key on the Pulse Checking test set (J-94723-A).

4.10 Set the FUNCTION switch of the QUIK CHEK test set to the LK A position and set the PULSE SPEED selector to either the 10 PPS or 12 PPS position. With the DIGIT selector set for continuous pulsing, depress the TEST key and read the speed of the pulses indicated on the meter of the Pulse Checking Test Set.

4.11 If the pulse speed exceeds  $\pm 0.5$  PPS variation from the requirements, the test set should be recalibrated (see Paragraph 6.02).

4.12 If a pulse speed meter is not available, it is possible to check the pulse speed with a stop watch or a watch with a sweep-second hand using the method described in the following Paragraphs.

4.13 Using the two-conductor cord, connect 48V battery and ground to the BATT jack of the QUIK CHEK Test Set.

4.14 Set the FUNCTION switch to the POLARITY & MON position.

4.15 Set the DIGIT switch to the CAL position.

4.16 Set the PPS key to 10 or 12, whichever is appropriate.

4.17 Depress the TEST key; you should hear ten skip pulses from the pulse generator within the Test Set every 10 seconds for 10 PPS (use a stop watch or a watch with a sweep-second hand). For 12 PPS, there will be 72 skips a minute or 12 each 10 seconds.

4.18 If either speed fails to check within  $\pm 0.5$  PPS, the Test Set should be recalibrated (see Paragraph 6.02).

4.19 If the pulse speed meets the requirements, the percent break should be good and will not require checking in the field.

#### 5. TEST PROCEDURES Preliminary

5.01 Make the test set connections as described in Paragraph 4.01

5.02 Set the FUNCTION switch to the CB SOAK position. Depress the TEST button. Set the FUNCTION switch to the CB OPR position. Depress the TEST button and adjust the MILLIAMMETER indication to the test value, readjust value or other desired value by turning the OPR ADJ knob. Release the TEST button.

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*NOTE: The current flow values on the Stromberg-Carlson AS sheets are computed for adjusting across one winding of the CB relay. The Quik Chek Test Set connects across both windings of the CB relay. Therefore, the Test Set is adjusted for 1/2 of the current flow value as stated on the AS sheets.*

5.03 Set the FUNCTION switch to the CB SOAK position.  
Depress the TEST button to soak the CB relay.  
Release the TEST button.

**METHOD FOR PERFORMING TESTS**

STEP	ACTION	VERIFICATION
<b>CB RELAY TEST</b>		
3	Set the FUNCTION SWITCH to the CB OPR position. Insert the SC-63 plug into the test jack of the switch under test.	None
4	Depress the TEST key and adjust the OPR ADJ potentiometer until the meter indicates the milliamps specified for the operate test requirements (see Paragraph 5.02).	
5	Set the FUNCTION switch to the CB N.O. position, depress the TEST key, adjust the N.O. ADJ potentiometer until the meter indicates the milliamps specified for the non-operate test requirements (see Paragraph 5.04).	None
6	With the OPR and N.O. settings adjusted as in Steps 4 and 5, set the FUNCTION switch to the CB SOAK position. Depress the TEST key momentarily, then set the FUNCTION switch to the CB OPR position, and again depress the TEST key momentarily.	Note that the CB Relay operates when the TEST key is operated.
7	Set the FUNCTION switch to the CB SOAK, depress the TEST key.	CB Relay will operate.
	Set the FUNCTION switch to the CB N.O. and depress the TEST key.	CB Relay does not operate.
8	Remove the SC-63 plug from the test jack of the switch and insert it into the next switch to be tested; or if preferred, make other desired tests on the same switch.	None

5.04 Set the FUNCTION switch to the CB N.O. position.

Depress the TEST button and adjust the meter to the test value, readjust value or other desired value by turning the N.O. ADJ knob (*see Paragraph 5.02, NOTE*). Release the TEST button. The QUIK CHEK SET is ready for routine use.

5.05 If a subscriber is encountered during any test through misdialing or plugging into a busy switch, the QUIK CHEK operator may converse with him by setting the FUNCTION switch to the POLARITY & MON setting and depressing the TALK button.

#### X-Y Switch Tests

5.06 The following Paragraphs cover the tests which may be made with the QUIK CHEK Test Set on Stromberg-Carlson XY type switches in all types of XY offices, including CDO's and PBX's.

5.07 The tests are as follows:

- (a) CB RELAY: This is a QUIK CHEK of the CB Relay using the current flow TEST values specified in the circuit requirement tables (*see Paragraph 5.02, NOTE*).
- (b) RD RELAY RELEASE: This is a QUIK CHEK of the RD Relay releasing time.
- (c) XD RELAY RELEASE AND Y SPEED: This is a QUIK CHEK of the XD Relay releasing time, cut in and Y stepping.

- (d) POLARITY: This is a QUIK CHEK of the continuity and polarity of switches and selector level trunks.
- (e) DIGIT ABSORBING: This is a QUIK CHEK of the digit absorbing features of selectors.
- (f) LOOP PULSING: This is a QUIK CHEK method of making loop pulsing tests on selectors and connectors.
- (g) LEAK PULSING: This is a QUIK CHEK method of making leak pulsing tests on selectors and connectors.

5.08 If it is found necessary to monitor and/or talk on a connection, set the FUNCTION switch to the POLARITY & MON position. Monitor with the TALK key normal. To talk, the TALK key is held depressed. The TALK key is non-locking. The speaker is disconnected while talking.

5.09 Local procedures should apply in busyng out switches, trunks, etc.

5.10 Records of troubles found and other reports should be made as required locally.



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STEP	ACTION	VERIFICATION
9	Repeat Steps 6, 7 and 8 until all switches have been tested.	Same as Steps 6, 7 and 8.
10	Remove the SC-63 plug from last switch tested.	None
<b>RD RELAY RELEASE TEST</b>		
3	Set the FUNCTION switch to the RD RLS position. The RD relay can be checked at either the 375 ms readjust or the 500 ms test value.	None
4	Set the DIGIT switch to the C position for continuous pulsing.	None
5	Set the PPS switch to the 12 PPS position.	None
6	Insert the SC-63 plug into the test jack of the switch under test.	None
7	Depress the TEST button. The CMC 714-XY normally operates at 375 milliseconds (with the TALK button depressed, at 500 milliseconds).  The Set will operate until the RELEASE button is depressed. The talk circuit is operative only when the FUNCTION switch is in the POLARITY & MON position.	The switch will repeatedly step to X position 1, then release, continuing as long as the SC-63 plug remains in the test jack. If the switch fails to release, the timing of the RD Relay is off.
8	Remove the SC-63 plug from the switch under test and insert it into the test jack of the next switch to be tested. Or proceed to the XD RLS & Y SPEED test on the same switch.	The switch will step to the first X level; does not cut in; and will release; repeating as long as the SC-63 plug remains in the test jack.
9	Repeat Step 8 until all switches have been tested; operate the RLS key; and remove the SC-63 plug from the last switch tested.	The switch will return to normal, and the pulsing in the test set will stop.

# **XD RELEASE & Y SPEED\* TEST (SELECTOR)**

STEP	ACTION	VERIFICATION
3	Set the FUNCTION switch to the XD RLS & Y SPEED position.	None
4	Set the DIGIT switch to the C position for continuous pulsing.	None
5	Set the PPS switch to the 12 PPS position.	None
6	Insert the SC-63 plug into the test jack A of the switch under test.	None
7	Connect the Y speed cord between the Y speed jack of the CMC 714-XY and test jack B of the switch under test. Insert bond paper into both the break pair and the make pair of the sleeve transfer springs on the SW relay to isolate the sleeve wiper.	None

STEP	ACTION	VERIFICATION
8	Depress the TEST button momentarily. Manually operate the DA relay if the switch is arranged to abort the digit 2.	The switch will step to X position 2, cut in and sweep to the 8th or 9th step before returning to the home position: The Y step attained on the cog wheel collar can be easily observed by momentarily holding the RD relay so the switch cannot release. If the switch cuts in at X position 1, the XD relay is fast; if the switch does not cut in at X position 2, the XD relay is slow. Failure of the switch to Y speed to the 8th or 9th step indicates a need for a Y speed action tune-up.
9	Remove the cords from test jacks A & B of the switch under test and insert them into the test jacks of the next switch to be tested, or leave in the same switch and make other tests. If through testing on the switch, remove the bond paper from the SW relay springs.	The switch will step to the X position 2; cut in; sweep to the 8th or 9th step and release, repeating as long as the SC-63 plugs remain in the test jacks.
10	After all switches have been tested, depress the Test Set RLS key and remove the cords from the test jacks and the bond paper from the springs of the SW relay.	The switch will return to normal and the pulsing in the Test Set will stop.

\* If the XD RELEASE TEST only is desired, do not connect Y SPEED cord to test jack B.

**POLARITY TEST OF  
TRUNKS FROM SELECTOR  
LEVELS**

STEP	ACTION	VERIFICATION
3	Set the FUNCTION switch to the POLARITY & MON position.	None
4	Set the DIGIT switch to the number which corresponds to the X level to be tested.	None
5	Set the PPS switch to position 10 or 12, whichever is appropriate.	None
6	Insert the SC-63 plug into the test jack of the switch under test.	The switch will be seized.
7	Depress the TEST key momentarily.	The switch will step in the X direction and cut in on the level indicated by the DIGIT switch.
8	<p>Manually operate and release the XD relay to advance the switch across the bank (Y direction). Switch will take at least one step (to the next idle trunk) with each XD relay operation.</p>	<p>The STRAIGHT LED lights to indicate a straight line and the REVERSE LED lights to indicate a reversed line.</p> <p><i>NOTE: If the switch fails to step, this is usually an indication of an open LED. The open LED should be replaced.</i></p>
9	Depress the RLS key momentarily.	The switch will release.
10	Repeat Steps 4, 7 and 8 until all X levels have been tested.	The same as Steps 4, 7 and 8.
11	Remove SC-63 plug and repeat Steps 4 and 6 through 10 until all trunks in all shelves have been tested.	The switch will restore to normal. The same as Steps 4 and 6 through 10.

STEP	ACTION	VERIFICATION
12	Remove the SC-63 plug from last switch.	The switch will restore to normal.
DIGIT ABSORBING TEST		
3	Set the FUNCTION switch to the POLARITY & MON position.	None
4	Set the DIGIT switch to the number which corresponds to the X level to be tested.	None
5	Set the PPS switch to Position 10 or 12, whichever is appropriate.	None
6	Insert the SC-63 plug into the test jack of the switch under test.	The switch will be seized.
7	Depress the TEST key momentarily.	The switch will step to the X level indicated by the DIGIT switch and:  1. If the digit is absorbed — the switch will release.  2. If unlocked — the switch will cut into the first idle trunk.
8	Depress the RLS key and remove the SC-63 plug from the test jack of the switch.	The switch will restore to normal.
9	Repeat Steps 6, 7 and 8 until all switches have been tested.	The same as Steps 6, 7 and 8.

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**LOOP PULSING TEST**

STEP	ACTION	VERIFICATION
3	<p>Set the FUNCTION switch to the required Loop position (LP. 1900, LP. 1500 or LP. 1200).</p> <p><i>NOTE: The Loop call-outs on the Test Set face-plate are office designations. The 1900 office (also used for 1700 ohm offices) has 1900 ohm test values; the 1500 office has 1700 ohm test values; and the 1200 office has 1300 ohm test values.</i></p>	None
4	Set the DIGIT switch to the 9 Position.	None
5	Set the PPS switch to 10 or 12, whichever is appropriate.	None
6	Insert the SC-63 plug into the test jack of the switch under test.	The switch will be seized.
7	Depress the TEST key momentarily.	<p>Observe that the switch steps evenly in the X direction to the ninth level and cuts into the first idle trunk.</p> <p><i>NOTE: Failure to step to the ninth level indicates that the switch does not meet the loop requirement.</i></p>

STEP	ACTION	VERIFICATION
8	Depress the RLS key and remove the SC-63 plug from the test jack of the switch.	The switch will restore to normal.
9	Repeat Steps 6, 7 and 8 until all switches have been tested.	The same as Steps 6, 7 and 8.

#### LEAK PULSING TESTS

3	Set the FUNCTION switch to the required Leak position (L.K.A, 7500, 7150).	None
4	Set the DIGIT switch to the 9 Position.	None
5	Set the PPS switch to 10 or 12 whichever is appropriate.	None
6	Insert the SC-63 plug into the test jack of the switch under test.	The switch will be seized.
7	Depress the TEST key momentarily.	Observe that the switch steps evenly to the ninth X level and cuts into the first idle trunk.
8	Depress the RLS key and remove the SC-63 plug from the test jack of the switch.	The switch will restore to normal.
9	Repeat Steps 6, 7 and 8 until all switches have been tested.	Same as Steps 6, 7, and 8.

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**6. MAINTENANCE**

6.01 The only maintenance to be performed on the QUIK CHEK Test Set by the field forces is the changing of burned out lamps and the calibration check described in Paragraphs 4.02 through 4.19.

6.02 Every six months, or if the Test Set has been exposed to exceptionally rough handling, the Set should be returned through normal channels to the manufacturer or

to a centralized equipment repair center for complete routine maintenance and calibration.

**7. REPAIR**

7.01 It is not recommended that the QUIK CHEK Test Set should be repaired in the field. If, at any time, it requires repairs, the Set should be returned through regular channels to the manufacturer, or to a centralized equipment repair center. A note should accompany the Unit explaining the nature of the trouble.

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