

CALL THROUGH TESTS  
USING MODEL 13 CALL THROUGH TEST SET  
Per DWG SWT-S-701-400-G  
Operation and Reporting of Results

1. GENERAL

1.01 This Section describes the operation of the Model 13 Call Through Test Set per Dwg. SWT-S-701-400-G. This set is designed for use in step-by-step Dial Central Offices. This Section also covers the method of recording test data and the reporting of results.

2. DESCRIPTION

2.01 The Model 13 Test Set is available in two types, a frame-mounted unit for installation in step-by-step offices of over 7500 stations and a portable unit for smaller offices.

2.02 This set automatically directs calls, one at a time, from a line terminal (110) through the step-by-step train to a connector terminal (99). Finder switches are seized in progression through a line group and through other groups as load will permit, and the connector test line (99) is dialed progressively to all working connector boards.

2.03 The set is designed so that automatic progression can be stopped, either originating or terminating individually or both. Tests may be directed from the same line group to all connector boards or a single connector board, or they may be directed from one or all line groups to a single connector board.

2.04 The following marginal tests are provided:

Loop - 1000 or 1400 ohms  
Leak - Leak A, Leak B, or No Leak

Dial Speed - Slow (10 PPS) or Fast (12 PPS)

Pre-Trip - 2050, 2250, 2500, 2900 or 3300 ohms

Trip - 1150, 1350, 1550, 1750 or 2100 ohms

Per Cent Break - Adjustable to 58% - 60% or as desired.

Interdigital Timing - Adjustable to .7 seconds or as desired.

Reverse Battery Loop Current - Adjustable to 55-60 milliamperes.

2.05 The set is not designed to operate from coin line terminals or into toll trains.

3. SCOPE

3.01 The tests and operating methods herein provided shall apply to all step-by-step central offices having the frame-mounted set and to all offices having the portable set installed on a temporary or permanent basis.

4. RESPONSIBILITY

4.01 It shall be the responsibility of the Chief Switchman, Wire Chief or the immediate supervisor of offices having these sets installed on a permanent or temporary basis to establish the operating methods herein. All records and reports shall be maintained at each test set location.

4.02 The supervisor is responsible for selection of personnel trained in operation and maintenance of the Model 13 set and maintenance of step-by-step equipment. Results will be directly proportional

to the operator's ability to analyze the trouble indications.

## 5. OBJECTIVES

5.01 The objective in operation of this set is to look at a step-by-step switch train from a customer's viewpoint. The results should be:

- (a) The locating of service affecting troubles, thereby reducing customer reports.
- (b) The locating of marginal troubles before they become service affecting.
- (c) The locating of abnormal load conditions at any point in the switch train.
- (d) The development of patterns indicating the need for preventive maintenance programs.
- (e) The obtaining of load results on intraoffice trunk groups to be used as a basis for Traffic Engineering.

## 6. OPERATION

6.01 Prior to placing the set in service, check all calibrations called for in the installation and operation section of of Dwg. SWT-S-701-400-G. Any troubles encountered at this time should be cleared by the use of the CD and the Wiring Test Instructions of the above drawing.

CAUTION - DO NOT USE TEST RECEIVER ON TRANSISTOR CIRCUITS.

6.02 Dial speed and per cent break must be checked weekly and calibrated if required.

6.03 Set trip and pre-trip values to correspond to office values or to values desired for special tests. (Dwg. SWT-S-701-400-G, Fig. 10).

6.04 The set must be operated any time the office is covered by maintenance people. First choice troubles will be detected only during light load periods and late choice troubles during peak load periods.

6.05 Initial office testing should start with minimum loop (1000 ohms), minimum leak (LK OFF), and slow dial speed (10 PPS). Trouble stops under these conditions are service affecting. Close supervision of the ratio of trouble stops to total tests should determine the length of testing under the above conditions.

6.06 As soon as trouble stops decrease under the above minimum test values, these values should be increased toward the maximum, which would be LK A, 1400 LP, and fast dial (12 PPS).

6.07 Supervision must currently analyze stops to prevent a waste of operating time of the test set. Any abnormal increase of stops with no trouble found or a sudden decrease in the number of stops is an indication of test set trouble.

CAUTION: Do not connect a hand dial test set or low impedance speaker to the MONITOR JACK when the set is dialing a test call, as this will seriously affect the pulsing.

6.08 When trouble reports indicate trouble in a specific line finder group or in a connector board, the automatic progression of the set may be de-activated and all test calls directed from the line group or to the connector board involved.

## 7. HANDLING TEST SET STOPS

7.01 All stops shall be traced with the exception of some due to load during the busy hour.

7.02 Stops should be held up from the line finder **or first** selector and the test

set released for further testing during tracing and trouble clearing operations.

7.03 Some load stops are to be expected at peak load periods. When these stops appear to be excessive, they should be investigated. Reading of the test set peg count meter at 30-minute intervals during busy hour periods will give the per cent load stops to tests.

NOTE: Figures in excess of 1% no dial tone or 2% all paths busy shall be called to the supervisor's attention for referral to the Traffic Department. Recurring load stops into particular 100 groups or 1000 groups should also be referred to Traffic regardless of the percentage of such stops. Such results are often due to Time and Temperature services, Radio and Television "Give Away" programs, etc., and require prompt corrective action.

7.04 All load stops at other than during the busy hour must be traced to determine the exact location in the switch train.

7.05 Full cooperation shall be given to the Traffic Department when they desire the use of the set to check busy hour load conditions or to secure data for engineering equipment additions.

7.06 Traffic will request Busy Hour load studies as required, separately for each week using Form SW-7256. A sample Form SW-7256 is attached to this practice as Exhibit C.

7.07 During the busy three months of each year for all offices equipped with frame-mounted Model 13 Test sets, the Busy Hour of each weekday should be so studied. In offices with portable units, less frequent Busy Hour studies will be requested.

7.08 When the test set is operated for a Traffic load study, it shall be set a minimum loop (1000 ohms), minimum leak (LK OFF), slow dial speed (10 PPS), with maximum pre-trip (3300 ohms), and minimum trip (1150 ohms) so as to complete as many tests as possible during the period.

## 8. RECORDS AND REPORTS

8.01 All step-by-step Dial Central Offices having a Model 13 Call Through Test Set installed on a permanent or a temporary basis must record and report the following:

- (a) Total test calls by reporting period.
- (b) Total stops by reporting period.
- (c) Total stops on which trouble was found and the nature of trouble.
- (d) Total stops on which no trouble found.
- (e) Total stops due to load.

8.02 A step-by-step trouble ticket, Form E-4004, shall be made for each stop, showing complete disposition of the stop. This would be trouble found and cause, no trouble found and stops due to load.

8.03 Ticket E-4004 shall be stroked to a special copy of Form E-4279, Summary of Trouble Data - SXS Offices. Each special Form E-4279 shall cover a report period ending on the 22nd of the month; total stops and total tests for the report period shall be posted to the form as shown in Exhibit A.

NOTE: Peg Count meter shall be read daily and readings posted as directed locally.

8.04 The number of special tests for Traffic load studies are made with the progression feature or features of the set de-activated to limit tests to certain paths because of suspected trouble or to routine certain equipment and stops during such special tests shall be deducted from the total peg count of the period for calculating the per cent stops. The number of these special tests shall be shown in the remarks space of Summary Form E-4279 as illustrated in Exhibit A.

8.05 The supervisor in charge of the office must review trouble strokes currently during the report period to determine that tests are productive.

8.06 Trouble Ticket, E-4004, after stroking to the special summary form, shall then be handled as directed locally for stroking to Central Office Trouble Summary per B.S.P. Section 226-001-000, and filing in the qualitative maintenance file.

8.07 A copy of the special Form E-4279 covering data for the report period or totals from this form shall be transmitted through the lines of organization to reach the division office not later than the 29th of the report month.

8.08 The division shall transcribe totals for each location and post division totals to Summary Form SW-6375 (see Exhibit B) and forward Form SW-6375 to reach the area office not later than the 5th of the month following the report period.

8.09 The area shall forward one copy of Form SW-6375 to the Plant Operations Engineer by the 10th of the month, showing results for each location and division and area totals.

## 9. MAINTENANCE

9.01 In general all tests, adjustments and calibrations of the test set are covered in Dwg. SWT-S-701-400-G. In addition to the above, the Automatic Electric Company 44 and 45 type rotary switches must be lubricated and adjusted in accordance with B.S.P. Section 026-720-701.

9.02 The PLS relay (AJ66) of Fig. 9 is equipped with a special dampening tube on Spring 2M. This tube must be in place at all times.

The ordering and placing information will be found on Dwg. SWT-S-701-400-G, Sheet 20, Detail "A-A".

Attached: Exhibit A  
Exhibit B  
Exhibit C

EXHIBIT A

PRINTED IN U.S.A.

SUMMARY OF TROUBLE DATA

FORM E-4279  
(10-61)  
BSP A355.311

STEP-BY-STEP OFFICES

CALL THRU

TESTS, 10/28/63

CITY Dallas, Texas

OFFICE Riverside

PERIOD COVERED To 11/22/63

EQUIPMENT		OFF. EXP.	UNITS IN SERVICE						TOTAL																	
PERIOD/ITEM			L.F.	1 <sup>ST</sup> SEL	2 <sup>ND</sup> SEL	3 <sup>RD</sup> SEL	4 <sup>TH</sup> SEL	5 <sup>TH</sup> SEL	UNAV.																	
FOUND TROUBLES	CONTACTS	RELAY																								
		DIRT		I		II			I	III												7				
		LOCK																								
		OTHER																								
		BANK & WIPER																								
		OTHER SP. ASSY																								
	ADJUSTMENT	RELAY		IX	III	I	II			II																
		BANK & WIPER																								
		OTHER SP. ASSY				I																				
		SWITCH MECH.																								
OTHER																										
DEFECT	RELAY																									
	BANK & WIPER								II																	
	OTHER SP. ASSY																									
	SWITCH MECH.																									
	OTHER																									
WIRING	OTHER																									
	CROSS CONN.																									
TOTAL FOUND				5	4	2	4	-	3	5																
NTF	LOAD		IX		I				III																	
	FOK		I	I		II	I			III																
TOTAL NOT FOUND				6	1	1	2	1	3	3																

MISCELLANEOUS TRBL. DATA

TOTAL <del>OTHER</del> TESTS		14555																							
LINE CODES	CODE - 5																								
	CODE - 8																								

REMARKS: SPECIAL TESTS; TRAFFIC 2068  
OTHER 1562  
TOTAL 3630

*D. Jones*  
cl. Sw.



EXHIBIT C

FORM SW 7256  
(1-64)

TRAFFIC LOAD DATA REQUEST  
MODEL 13 TEST SET LOCATIONS

~~Wire Chief~~  
~~Chief Switchman~~

Switchman, Belltown, Texas  
City - State

Busy Hour results from the Model 13 Call Through Test Set are required as follows:

Wire Center Belltown - Adams 4

Dates January 20-24, 1964  
Month Inclusive Dates

Hours 9:30 AM to 10:30 AM Only

Please read the registers and stroke the number of Trouble Stops and Load Stops, Separately, as follows:

	MON	TUES	WED	THURS	FRI
Register Readings					
1- At End of Hour	3737	4303	4904	5329	6059
2- At Start of Hour	3647	4217	4813	5254	5979
3- Difference					
4- Trouble Stops	//	/	/		//
5- Load Stops	/	/	//	///	///
6- Register Totals (5 day total of line 3)					
7- Overflows (5 day total of line 5)					
8- Busy Hour % Overflow					

Please return form with lines 1, 2, 4 and 5 completed to R.D. BROWN ROOM 1650  
DALLAS, TEXAS

R. D. Brown  
~~Asst. Chief Operator~~  
~~Chief Operator~~  
Dial Service Supervisor

Note: Plant complete lines 1,2,4 and 5.  
Traffic complete lines 3,6,7 and 8.