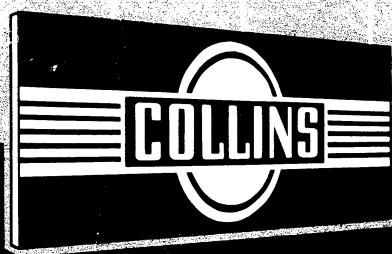


Collins

I N S T R U C T I O N B O O K

SC-101 STATION CONTROL



COLLINS RADIO COMPANY
CEDAR RAPIDS, IOWA

Instruction Book

SC-101

STATION CONTROL

COLLINS RADIO COMPANY

Cedar Rapids, Iowa

NEW YORK

BURBANK

DALLAS

520 5507 00

1 MAY 1957

Printed in the United States of America

GUARANTEE

The equipment described herein is sold under the following guarantee:

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to design, workmanship or material, and which are returned to Collins at its factory, transportation prepaid, provided

- (a) Notice of the claimed defect is given Collins within one (1) year from date of delivery and goods are returned in accordance with Collins' instructions.
- (b) Equipment, accessories, tubes, and batteries not manufactured by Collins or from Collins' designs are subject to only such adjustments as Collins may obtain from the supplier thereof.
- (c) No equipment or accessory shall be deemed to be defective if, due to exposure or excessive moisture in the atmosphere or otherwise after delivery, it shall fail to operate in a normal or proper manner.

Collins further guarantees that any radio transmitter described herein will deliver full radio frequency power output at the antenna lead when connected to a suitable load, but such guarantee shall not be construed as a guarantee of any definite coverage or range of said apparatus.

The guarantee of these paragraphs is void if equipment is altered or repaired by others than Collins or its authorized service center.

No other warranties, expressed or implied, shall be applicable to any equipment sold hereunder, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements in this paragraph contained. In no event shall Collins have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

HOW TO RETURN MATERIAL OR EQUIPMENT. If, for any reason, you should wish to return material or equipment, whether under the guarantee or otherwise, you should notify us, giving full particulars including the details listed below, insofar as applicable. If the item is thought to be defective, such notice must give full information as to nature of defect and identification (including part number if possible) of part considered defective. (With respect to tubes we suggest that your adjustments can be speeded up if you give notice of defect directly to the tube manufacturer.) Upon receipt of such notice, Collins will promptly advise you respecting the return. Failure to secure our advice prior to the forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

ADDRESS:

INFORMATION NEEDED:

Collins Radio of Canada Ltd.
Sales Service Dept.
11 Bermondsey Rd.
Toronto, Ontario

- (A) Type number, name, and serial number of equipment
- (B) Date of delivery of equipment
- (C) Date placed in service
- (D) Number of hours of service
- (E) Nature of trouble
- (F) Cause of trouble if known
- (G) Part number (9 or 10 digit number) and name of part thought to be causing trouble
- (H) Item or symbol number of same obtained from parts list or schematic
- (I) Collins' number (and name) of unit sub-assemblies involved in trouble
- (J) Remarks

HOW TO ORDER REPLACEMENT PARTS. When ordering replacement parts, you should direct your order as indicated below and furnish the following information insofar as applicable. To enable us to give you better replacement service, please be sure to give us complete information.

ADDRESS:

INFORMATION NEEDED:

Collins Radio of Canada Ltd.
Sales Service Dept.
11 Bermondsey Rd.
Toronto, Ontario

- (A) Quantity required
- (B) Collins' part number (9 or 10 digit number) and description
- (C) Item or symbol number obtained from parts list or schematic
- (D) Collins' type number, name, and serial number of principal equipment
- (E) Unit sub-assembly number (where applicable)

TABLE OF CONTENTS

Section		Page
I	GENERAL DESCRIPTION.	1-1
	1.1 General	1-1
	1.2 Major Units.	1-1
	1.3 System Components	1-1
	1.4 System Application	1-1
	1.5 Description of Units	1-2
	1.5.1 312A-2 Control/Speaker Unit	1-2
	1.5.2 68Y-1 Antenna Selector Unit	1-2
	1.5.3 534A-1 Cable Harness and Wiring Duct	1-3
	1.6 302C-2 Directional Wattmeter Specifications	1-4
	1.7 Items Required But Not Supplied	1-4
	1.7.1 General	1-4
	1.7.2 Additional Items Required, General	1-5
	1.7.3 Additional Items Required When More Than Three Antennas are Used.	1-6
II	INSTALLATION	2-1
	2.1 General	2-1
	2.1.1 Unpacking	2-1
	2.1.2 Layout	2-1
	2.2 Installation and Wiring.	2-1
	2.2.1 General	2-1
	2.2.2 Installation and Wiring Procedure, General.	2-1
	2.2.3 Installation and Wiring Procedure, Four, Five, or Six Antenna Systems	2-2
	2.2.4 312A-2 Modification	2-2
	2.2.5 75A-4 Modification	2-2
III	OPERATION, INITIAL TEST, AND ADJUSTMENT.	3-1
	3.1 Controls	3-1
	3.2 Operation of KWS-1 Transmitter and 75A-4 Receiver	3-1
	3.3 Initial Tests and Adjustments.	3-1
	3.3.1 Initial Tests	3-1
	3.3.2 Initial Adjustments	3-2
	3.3.2.1 Phone Patch	3-2
	3.3.2.2 Synchro System	3-3
	3.3.4 SWR and Transmitter Power Output	3-3
	3.3.5 Monitoring R-F Output.	3-3
IV	PRINCIPLES OF OPERATION	4-1
	4.1 Controls and Functions.	4-1
	4.2 Block Diagram	4-2
	4.2.1 Primary Power Distribution	4-2
	4.2.2 Antenna Switching	4-2
	4.2.3 Phone Patch	4-2
	4.2.4 302C-2 Directional Wattmeter	4-2
	4.2.5 Rotator/Synchro.	4-4
	4.3 Circuit Theory	4-4
	4.3.1 Antenna Selector Relay Circuit	4-4
	4.3.2 Phone-Patch Circuit.	4-5
	4.3.3 302C-2 Directional Wattmeter Circuit	4-6
	4.3.4 Rotator/Synchro Circuits.	4-7

TABLE OF CONTENTS (Cont)

Section		Page
V	MAINTENANCE	5-1
	5.1 General	5-1
	5.2 Trouble Shooting and Repair	5-1
	5.2.1 General	5-1
	5.2.2 Trouble Shooting and Repair of the Primary Power Distribution Circuit	5-1
	5.2.3 Trouble Shooting and Repair of the Antenna Switching Circuit.	5-1
	5.2.4 Trouble Shooting and Repair of the 302C-2 Directional Wattmeter.	5-1
	5.2.5 Trouble Shooting and Repair of the Phone Patch.	5-2
	5.2.6 Trouble Shooting and Repair of the Rotator Control and Synchro Circuit	5-2
	5.3 Preventive Maintenance	5-2
VI	PARTS LIST	
	6.1 534A-1 Cable Harness and Wiring Duct	6-1
	6.2 312A-2 Control/Speaker	6-2
	6.3 68Y-1 Antenna Selector Unit	6-5
VII	ILLUSTRATIONS	
VIII	INSTALLATION AND WIRING FOR 4, 5, and 6 ANTENNA SYSTEMS	
	8.1 Installation and Wiring Instructions	8-1

LIST OF ILLUSTRATIONS

Figure		Page
1-1	SC-101 Station Control Installed with KWS-1 Transmitter and 75A-4 Receiver	1-0
1-2	312A-2 Control/Speaker Unit	1-2
1-3	68Y-1 Antenna Selector Unit.	1-3
1-4	534A-1 Cable Harness and Wiring Duct.	1-4
2-1	SC-101 Station Control, Installation Diagram	2-3/2-4
2-2	SC-101 Station Control, Wiring Diagram	2-5/2-6
2-3	68Y-1 Antenna Selector Unit, Front Cover Closed, Showing Method of Connecting Transmission Lines to Patch Panel.	2-7
2-4	68Y-1 Antenna Selector Unit, Front Cover Open, Showing Method of Dressing Cables and Transmission Lines Inside Unit.	2-8
2-5	Installation of Type N Male Connector on RG-8/U Transmission Line	2-9
2-6	Installation of Type BNC Male Connector on RG-58/U Transmission Line	2-10
2-7	SC-101 Station Control, Typical Rotary Beam Antenna Tower Components, Schematic Diagram	2-11
2-8	312A-2 Control/Speaker Unit, Rotator/Synchro Circuits, Simplified Schematic Diagram . .	2-12
3-1	312A-2 Control/Speaker Unit, Location of Controls	3-1
3-2	Graph: SWR Corresponding to Various Values of Forward and Reflected Power.	3-4
4-1	SC-101 Station Control, Block Diagram	4-3
4-2	SC-101 Station Control, Antenna Selector Relay Circuit, Simplified Schematic Diagram .	4-4
4-3	SC-101 Station Control, Phone-Patch Circuit, Simplified Schematic Diagram	4-5
4-4	302C-2 Directional Wattmeter, Simplified Schematic Diagram.	4-6
4-5	SC-101 Station Control, Synchro Circuit, Simplified Schematic Diagram	4-7
7-1	312A-2 Control/Speaker Unit, Front View, Front Panel Opened	7-1
7-2	312A-2 Control/Speaker Unit, Front Panel, Rear View	7-1
7-3	312A-2 Control/Speaker Unit, Rear View	7-2
7-4	312A-2 Control/Speaker Unit, Relay Power Supply Chassis, Top View	7-2
7-5	312A-2 Control/Speaker Unit, Relay Power Supply Chassis, Bottom View.	7-3
7-6	312A-2 Control/Speaker Unit, Phone-Patch Chassis, Top View	7-3
7-7	312A-2 Control/Speaker Unit, Phone-Patch Chassis, Bottom View.	7-4
7-8	534A-1 Cable Harness and Wiring Duct, Duct Back Plate Removed.	7-4
7-9	68Y-1 Antenna Selector Unit, Front Cover, Rear View	7-5
7-10	302C-2 Coupler, Shield Removed.	7-5
7-11	SC-101 Station Control, Complete Schematic Diagram	7-7/7-8
8-1	Installation and Wiring of Additional Relays in 68Y-1 Antenna Selector Unit.	8-3/8-4

LIST OF TABLES

Table		Page
1-1	Items Required But Not Supplied, General.	1-5
1-2	Additional Items Required When More Than Three Antennas are Used	1-6
2-1	Connections to K902 and K903 With Three-Antenna Systems.	2-5/2-6
4-1	Controls and Functions	4-1