

# TYPES TCS, TCS(E), TCS(E) 12 V AND TCS(F)

TCS

## SUMMARY OF DATA

### PURPOSE

A low power HF transmitter-receiver fitted in all classes of ships. In certain ships the receiver is not fitted.

### TYPE OF TRANSMISSION

CW and Voice.

### TYPE OF RECEPTION

CW, MCW and Voice.

### FREQUENCY RANGE

1.5 to 12 MHz in three ranges.

### BRIEF TECHNICAL DESCRIPTION

#### Transmitter

Frequency	1.5 to 12 MHz
Frequency Control	Master Oscillator or Crystal Oscillator
Output	40 watts cw. 20 watts voice

The circuit consists of an oscillator stage, buffer stage and power amplifier. When voice is used, the anode and screen grid of the power amplifier valve are modulated by a push pull modulator circuit. The oscillator stage is duplicated, one being a master oscillator, which provides continuous coverage over the whole frequency range, the other is a crystal oscillator which may be used with any one of four crystals. The buffer stage may be operated as a straight amplifier or as a frequency multiplying stage.

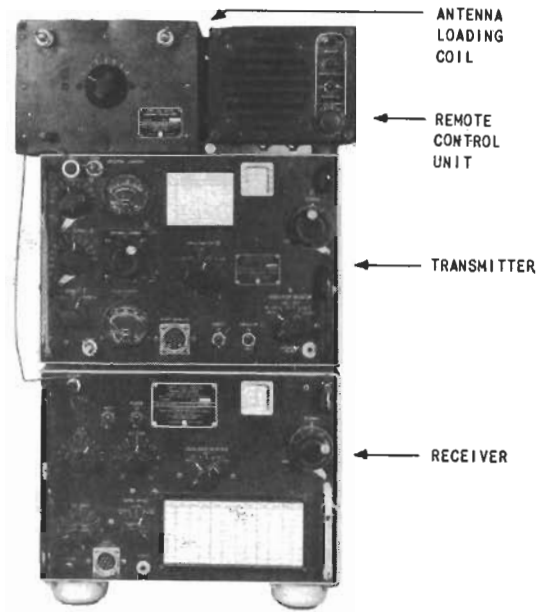
#### Receiver

Frequency	1.5 to 12 MHz
Intermediate Frequency	455 kHz
Sensitivity	15 mW output with 15 $\mu$ V input
Output	2.5 watts with a 600 ohms headphone or speaker in remote control unit

The set consists of a superheterodyne circuit and is either crystal controlled or a separate oscillator circuit may be introduced which is tunable over the whole frequency range. The bandwidth is 6 kHz at 6 dB down.

### MAJOR UNITS

Type TCS is an American set.



TYPE TCS - FRONT VIEW

U.S. Navy Ref. No.	Description	Physical Data			
		Height	Width	Depth	Weight lb
COL52245	Transmitter Unit	11 $\frac{3}{4}$ in.	13 $\frac{3}{4}$ in.	11 $\frac{7}{8}$ in.	41 $\frac{1}{2}$
COL46159	Receiver Unit	11 $\frac{3}{4}$ in.	13 $\frac{3}{4}$ in.	11 $\frac{7}{8}$ in.	36 $\frac{1}{2}$
COL23270	Remote Control Unit	5 $\frac{1}{2}$ in.	7 $\frac{3}{8}$ in.	3 $\frac{1}{2}$ in.	6
COL47205	Antenna Loading Coil	6 $\frac{5}{8}$ in.	9 $\frac{1}{2}$ in.	6 $\frac{1}{2}$ in.	3 $\frac{1}{2}$
COL21770	Dynamotor Power Supply	6 in.	13 in.	8 in.	28 $\frac{1}{2}$
COL21881	Dynamotor Power Supply	7 $\frac{1}{2}$ in.	12 $\frac{1}{2}$ in.	7 $\frac{3}{8}$ in.	27
COL211035	Power Unit 12/24 volts	9 $\frac{5}{8}$ in.	12 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ in.	35
COL21826	Motor Generator 24 volts	11 $\frac{1}{2}$ in.	23 in.	17 $\frac{1}{2}$ in.	115
COL21776	Motor Generator 115 volts d.c.	11 $\frac{1}{2}$ in.	23 in.	17 $\frac{1}{2}$ in.	115
COL21827	Motor Generator 230 volts d.c.	11 $\frac{1}{2}$ in.	23 in.	17 $\frac{1}{2}$ in.	115
COL20242	Power Supply Unit 230 volts a.c.	10 $\frac{1}{4}$ in.	18 in.	18 in.	115
211330A	Power Unit 12/24 volts	9 in.	12 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ in.	30

Type TCS has 110 or 220 volts d.c. supply and requires U.S. Ref. COL21776 (115 volts)  
or U.S. Ref. COL21827 (220 volts)

Type TSC(E) has 24 volts d.c. supply and requires U.S. Ref. COL21826

Type TCS(E) has 12 volts d.c. supply and requires U.S. Ref. COL21779, COL21881 or COL211035

Type TCS(F) has 230 volts 50/60 Hz a.c. supply and requires U.S. Ref. COL20242

## CONTROL CIRCUITS

The Remote Control Unit which may be mounted up to 20 feet away contains a loudspeaker, transmitter on/off switch, jack for microphone or morse key, phone jack, receiver on/off switch, speaker/phones switch and volume control for phones or loudspeaker. Type TCS may be fitted without the Remote Control Unit in which case it is modified for use with Control Outfits KHA or KCH series.

## POWER REQUIREMENTS AND CONSUMPTION

Type	Voltage	With Receiver Watts	Without Receiver Watts
TCS	110 V d.c.	397	253
TCS	220 V d.c.	385	245
TCS(E)	24 V d.c.	445	270
TCS(E)12V	12 V d.c.	205	150
TCS(F)	230 V a.c.	243	160

Types TCS(E), TCS(E)12V derives their supply either from ships 24 V supply system or a suitable Battery Outfit.

## AERIAL SYSTEM

Four inch Trunk Outfit TF or eight inch Trunk Outfit TA with wire aerial.

## REMARKS

A crystal adaptor (Pat. 53246) is necessary if standard 'A' naval type crystals are used.

## HANDBOOK

U.S. Navy

## ESTABLISHMENT LIST

AE2

## INSTALLATION SPECIFICATION

B224 (TCS/E/E(12V)/F in surface ships)  
B732 (TCS/E/E(12V)/F with KHA-KHZ)  
B603 (TCS fitted in submarines)