

120 CHANNEL TRANSCEIVER **SUPER STAR 120**



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OWNER'S MANUAL

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INTRODUCTION

The SUPER STAR 120 transceiver represents most advanced two-way radio ever designed for mobile communications. This unit features advanced Phase Locked Loop circuitry which allows transmission and reception on all 120 channels without the purchase of any additional crystals. The SUPER STAR 120 is completely factory aligned and quality assurance tested.

To obtain the maximum benefit and pleasure from your radio, please read the contents of this manual before attempting to install or operate the transceiver.

FEATURES

- **ALL SOLID STATE:** Transistorized construction with low current drain for a long, trouble-free life.
- **ALL 120 CHANNEL OPERATION:** PLL frequency synthesizer circuitry allows transmission and reception on all 120 channels on AM, without the purchase of any additional crystals.
- **LARGE LED CHANNEL DISPLAY:** Channel number is displayed by use of LED (Light Emitting Diode) display for ease of channel selection.
- **CLEAN SIGNAL:** Transmitter audio processing circuitry produces a clean signal with maximum legal modulation, for best range.
- **QUIET RECEPTION:** Effective Squelch and Automatic Noise Limiter and an RF Noise Blanker for superior quieting.
- **EFFECTIVE AGC:** Receiver amplified Automatic Gain Control (AGC) reduces the effect of differences in received signal strengths. No distracting "blasting" and "fading" of signals.
- **AN EFFICIENT TRANSMITTER:** Provides 7 watt maximum power on AM mode to the antenna.
- **BUILT-IN SWR CIRCUIT:** Enables you to check your Antenna System.

SPECIFICATIONS

GENERAL

Channels	120
Frequency Range	26.965 to 28.940 MHz
Frequency Control	Phase Locked Loop(PLL) synthesized circuitry.
Frequency Tolerance	0.005%
Frequency Stability	0.001%
Operating Temperature Range	-20°C to +50°C
Microphone	Plug-in type; dynamic with push-to-talk switch and coiled cord.
Input Voltage	13.8V DC nominal, 15.9V max., 11.7V min. (positive or negative ground).
Current Drain	Transmit: full mod., 3A maximum. Receiver: squelched; 0.5A, maximum audio output 1.5A.
Cabinet Dimensions (WxHxD)	7-3/8" x 2-1/4" x 8-3/4"
Weight	4.2 pounds
Antenna Connector	UHF, SO-239
Meter	Illuminated; indicates relative RF power output and SWR on Transmit, received signal strength.
Indicators	LED display; channel, RX and TX.
Accessories	DC Power Cable, Microphone Hanger Microphone, Mounting bracket.

TRANSMITTER

Power Output	7 watts.
Modulation	Amplitude Modulation.
Frequency Response	350 to 2500 Hz.
Output Impedance	52 ohms, unbalanced.

RECEIVER

Sensitivity	Less than 1.0 μV for 10 dB (S+N)/N at greater than $\frac{1}{2}$ watt of audio output.
Hum and Noise Ratio at 1mV input Level.	40 dB.
Image Rejection	More than 50 dB.
I.F. Frequency	1st: 10.695 MHz, 2nd: 455 kHz.
RF Gain Control	Adjustable for optimum signal reception.
Automatic Gain Control	(AGC): Less than 10 dB change in audio output for inputs from 10 to 500,000 μV .
Squelch	Adjustable; threshold less than 0.5 μV .
Noise Blanker	RF type.
Audio Output Power	5 watts minimum into 8 ohms.
Frequency Response	350 to 2500 Hz.
Distortion	Less than 10% at 2.5 watts output.
Built-in Speaker	16 ohms, round.
External Speaker (Not Supplied)	8 ohms; disables internal speaker when connected.

INSTALLATION

Location

Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passenger in the vehicle. In automobiles, the transceiver is usually mounted to the dash panel with the microphone bracket beside it.

Mounting and Connection

This radio is supplied with a universal mounting bracket. The transceiver is held in the bracket by the two thumb screws supplied, permitting adjustment to the most convenient angle. The bracket must be mounted with the screws supplied. The mounting surface must be mechanically strong. Proceed as follows to mount the transceiver:

1. After you have determined the most convenient location in your vehicle, hold the radio with mounting bracket in the exact location desired. If nothing interferes with mounting it in the desired position, remove the mounting bracket thumb screws and mark the mounting holes using the bracket as a template. Before drilling the holes, make sure nothing will interfere with the installation of the mounting screws. Drill the holes and mount the bracket and then install the radio.
2. Connect the antenna cable plug to the standard receptacle on the rear panel. Most 27 to 29 MHz antennas are terminated with a type PL-259 plug which mates with the receptacle on the rear panel.
3. Connect the DC power input wire with the fuse (red) to +12V DC. This wire extends from a plug which connects to the rear panel. In automobile installations, +12V DC is usually obtained from the accessory contact on the ignition switch. This prevents the set being left on accidentally when the driver leaves the car and also permits operating the radio without the engine running. You can locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car.
4. Connect the black wire to ground. This is usually the chassis of the car. Any convenient location with good electrical contact may be used. (remove paint.)

NOTE: See ground connection under INFORMATION for more detail.

5. Mount the microphone hanger on the side of the unit or near the unit, using the screws supplied.

INFORMATION

GROUND CONNECTION

This radio may be installed and used in any 12V DC negative or positive ground system vehicle. Most new cars or small trucks use a negative ground system while some older cars and some newer large trucks may use a positive ground system.

1. Negative ground system: Connect the Red power lead from the radio to the positive or (+)battery terminal or other convenient point, and connect the Black power lead to the chassis or vehicle frame or (-)battery terminal.
2. Positive ground system: In the case of positive ground system, connect the Black power lead from the radio to the negative or (-)battery terminal or other convenient point, and connect the Red power lead to the chassis or vehicle frame or (+)battery terminal.

ANTENNA

This radio is designed to operate into a 50 ohm 27 to 29 MHz antenna. Best results will be obtained from your transceiver if you use a good antenna and properly install your antenna. (Refer to the antenna installation instructions included with your antenna.)

A vertically polarized quarter-wavelength whip antenna provides the most reliable operation and greater range. The shorter loaded-type whip antennas are more attractive, compact and adequate for applications where the maximum possible distance is not required. Also, the loaded whip antennas do not present the problems of height imposed by the full quarter-wavelength whip.

When installed in a boat, the transceiver will operate most efficiently when the antenna used has been especially designed for marine applications.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted on a corner of the vehicle, they are slightly directional, in the direction of the body of the vehicle. For all practical purposes, however, the radiation pattern is non-directional. A slight directional characteristic will be observed only at extreme distances. A standard antenna connector (Type SO-239) is provided on the transceiver for easy connection to a standard PL-259 cable termination.

Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

BASE STATION OPERATION

To operate the transceiver from your home or office, using regular house current as the power source, you will require a separate power supply capable of supplying 3 amps at a 13.8V DC output.

Simply connect the red (+) and black (-) leads of the transceiver to the corresponding DC terminals of the power supply.

NOTE: Do not attempt to operate this transceiver by connecting directly to AC power source. When an AC power supply is used with the transceiver for base station operation any beam, dipole, ground plane or vertical antenna may be used. A ground plane vertical antenna will provide the most uniform horizontal coverage.

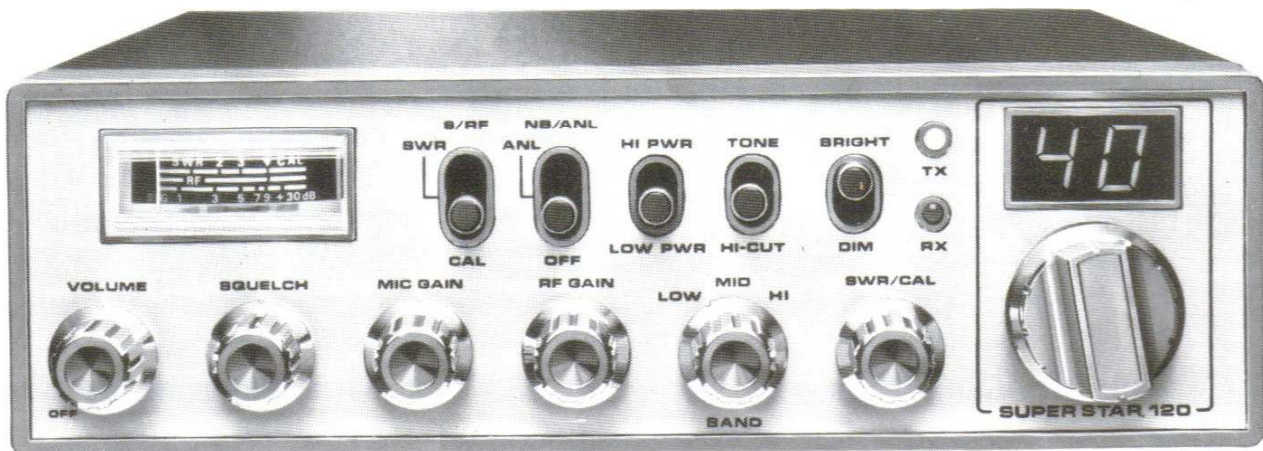
CHANNEL VS FREQUENCY

CH	FREQUENCY IN MHZ			CH	FREQUENCY IN MHZ		
	HI	MID	LOW		HI	MID	LOW
1	28.500	27.415	26.965	21	28.750	27.665	27.215
2	28.510	27.425	26.975	22	28.760	27.675	27.225
3	28.520	27.435	26.985	23	28.790	27.705	27.255
4	28.540	27.455	27.005	24	28.770	27.685	27.235
5	28.550	27.465	27.015	25	28.780	27.695	27.245
6	28.560	27.475	27.025	26	28.800	27.715	27.265
7	28.570	27.485	27.035	27	28.810	27.725	27.275
8	28.590	27.505	27.055	28	28.820	27.735	27.285
9	28.600	27.515	27.065	29	28.830	27.745	27.295
10	28.610	27.525	27.075	30	28.840	27.755	27.305
11	28.620	27.535	27.085	31	28.850	27.765	27.315
12	28.640	27.555	27.105	32	28.860	27.775	27.325
13	28.650	27.565	27.115	33	28.870	27.785	27.335
14	28.660	27.575	27.125	34	28.880	27.795	27.345
15	28.670	27.585	27.135	35	28.890	27.805	27.355
16	28.690	27.605	27.155	36	28.900	27.815	27.365
17	28.700	27.615	27.165	37	28.910	27.825	27.375
18	28.710	27.625	27.175	38	28.920	27.835	27.385
19	28.720	27.635	27.185	39	28.930	27.845	27.395
20	28.740	27.655	27.205	40	28.940	27.855	27.405

CORRECTION

CHANNEL	LOW BAND	MID BAND	HI BAND	CHANNEL	LOW BAND	MID BAND	HI BAND
1	26.515	26.965	27.415	21	26.765	27.215	27.665
2	.525	.975	.425	22	.775	.225	.675
3	.535	.985	.435	23	.805	.255	.705
4	.555	27.005	.455	24	.785	.235	.685
5	.565	.015	.465	25	.795	.245	.695
6	.575	.025	.475	26	.815	.265	.715
7	.585	.035	.485	27	.825	.275	.725
8	.605	.055	.505	28	.835	.285	.735
9	.615	.065	.515	29	.845	.295	.745
10	.625	.075	.525	30	.855	.305	.755
11	.635	.085	.535	31	.865	.315	.765
12	.655	.105	.555	32	.875	.325	.775
13	.665	.115	.565	33	.885	.335	.785
14	.675	.125	.575	34	.895	.345	.795
15	.685	.135	.585	35	.905	.355	.805
16	.705	.155	.605	36	.915	.365	.815
17	.715	.165	.615	37	.925	.375	.825
18	.725	.175	.625	38	.935	.385	.835
19	.735	.185	.635	39	.945	.395	.845
20	.755	.205	.655	40	.955	.405	.855

OPERATING INSTRUCTIONS



FRONT PANEL

1. **OFF/VOLUME:** To turn the transceiver on, rotate this control clockwise past click. Rotate the control clockwise for a comfortable audio level.
2. **SQUELCH:** This control is normally set to a position where undesired background noise is eliminated with no signal present; Rotate the squelch control clockwise to the point where the sound from the speaker is cut off. In this position, there will be no sound from the speaker until a signal is received. In order to hear weak signals, it may be necessary to rotate the squelch control counterclockwise, allowing some background noise to be heard.
3. **MIC GAIN:** This control is used to adjust, as required, microphone input sensitivity for optimum amount of modulation in transmit.
4. **RF GAIN:** This control is used to optimize reception in strong signal areas. Gain is reduced by counterclockwise rotation of the control.
5. **LOW/MID/HI-BAND:** This control is used to select the desired operating band. For specific channel frequency, refer to the channel list on page 6.
6. **SWR CAL:** This control is used to calibrating the SWR meter in conjunction with SWR/CAL switch. See item 15 for operation.
7. **CHANNEL SELECTOR:** This switch is used to select any one of the 120 channels, incorporated with LOW/MID/HI-Band switch.
8. **LED CHANNEL INDICATOR:** Light Emitting Diode(LED) indicates the channel number.
9. **RX INDICATOR:** Light Emitting Diode(LED) which indicates the mode of operating. It lights green during receive.

10. **TX INDICATOR:** Light Emitting Diode(LED) which indicates the mode of operating. It lights red during transmit.
11. **BRIGHT/DIMMER:** This control is used to eliminate the brightness of meter and channel display for nighttime operation.
12. **TONE/HI CUT:** This switch is used to select audio tone to the operator's preference. In the HI CUT position, high pitched audio tone is eliminated.
13. **HI PWR/LOW PWR:** This switch is used to select transmitting power. In the HI PWR position, the transceiver operates in 7 watts RF output power. In the LOW PWR position, the transceiver operates in 4 watts RF output power.
14. **NB/ANL-ANL-OFF:** This transceiver has Noise Blanker and Automatic Noise Limiter circuits. In the ANL position, ANL is activated. In the NB/ANL position, both NB and ANL are activated. The NB reduces repetitive noise such as ignition interference, and ANL eliminates has type noise.
15. **S/RF-SWR-CAL:** This switch selects the meter operating mode. In the S/RF position, the meter indicates received signal strength and transmitter RF output power level. In the SWR position, meter indicates SWR level. CAL position is used to calibrate the meter prior to read the SWR level; to read the SWR of your transceiver's antenna system, set the S/RF-SWR-CAL switch to CAL position. Push and hold the microphone Press-To-Talk button(Do not speak), rotate SWR CAL control until meter pointer reaches the CAL position. The meter is now calibrated to read correct SWR level. Place S/RF-SWR-CAL switch to SWR position, read SWR level on the meter; it should be approximately less than 1.5.
16. **METER:** This meter indicates received signal strength, transmitter RF output power and SWR level.



REAR PANEL

17. **POWER:** Accepts 13.8V DC power cable with built-in fuse (3 amp.) to be connected.
18. **EXT SP:** Accepts 4 to 8 ohm, 5 watt external speaker to be connected. When external speaker is connected to this jack, the built-in speaker is automatically disconnected.
19. **ANTENNA:** Accepts 50 ohm coaxial cable with a type PL-259 plug to be connected.

PRESS-TO-TALK MICROPHONE

The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press the switch and the transmitter is activated. Release the switch to receive. When transmitting, hold the microphone about three inches from your mouth and speak at a normal voice level.

RECEIVE OPERATING PROCEDURE

1. Turn the set on by rotating the **VOLUME** control clockwise, past click.
NOTE: Microphone must be plugged in for receiver to operate.
2. Set the **RF GAIN** control to the max. clockwise position for max. sensitivity and accurate "S" meter indication.
3. Set the **VOLUME** control to a comfortable listening level.
4. Set the **Band** switch and channel selector to desired position.

5. Listen to the background noise from the speaker. Turn the SQUELCH control slowly clockwise, until the noise just disappears. The receiver will remain quiet until a signal is received. Do not advance the control too far, or some of the weaker signals will not be heard.

TRANSMIT OPERATING PROCEDURE

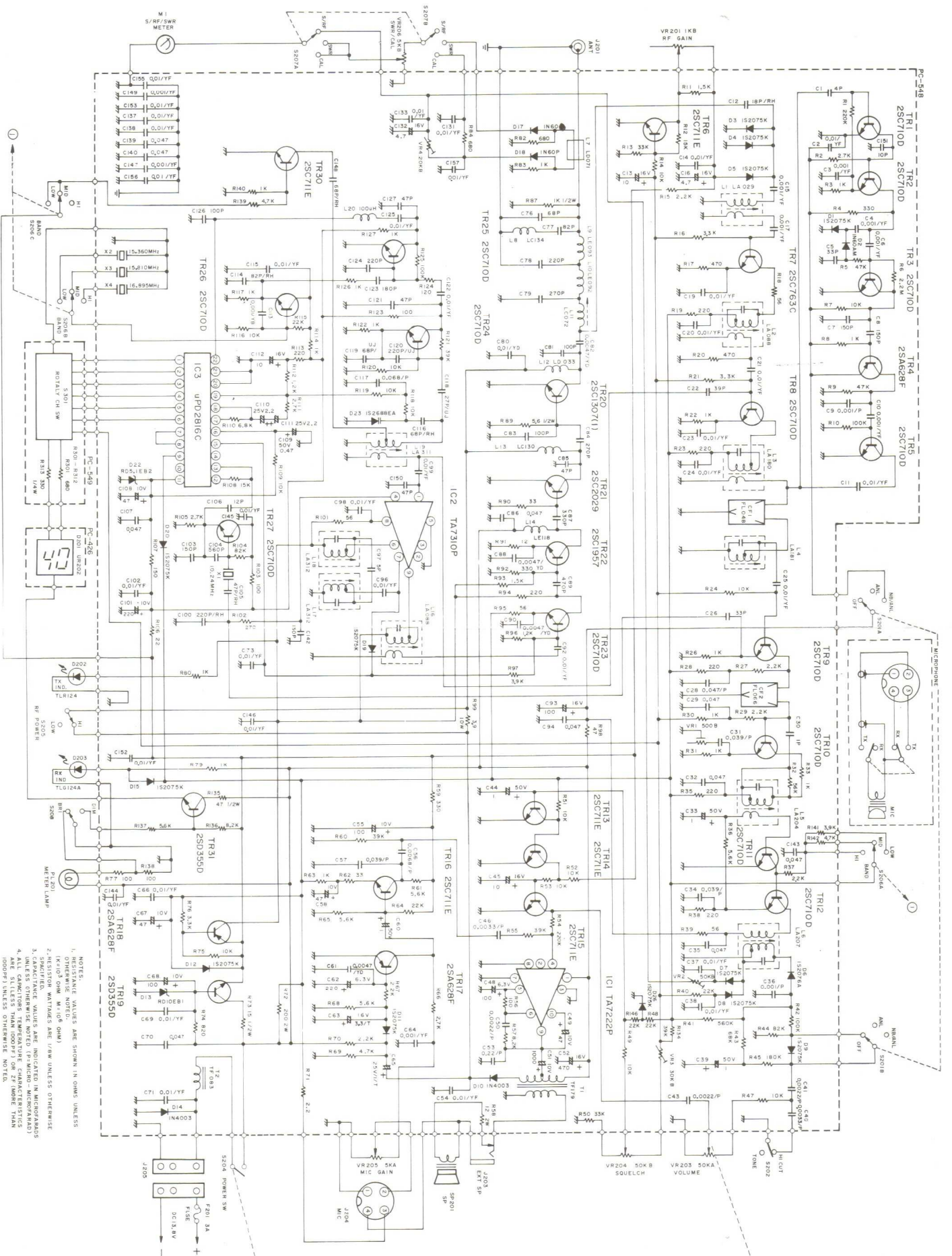
1. Check to see the Standing Wave Ratio of the antenna system with built-in SWR meter. See item 6 and 15 in operating procedure.
High SWR (over 2) can cause damage to the transceiver.
2. Select the desired channel.
3. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.
4. Adjust MIC GAIN control if required.

PREVENTIVE MAINTENANCE

As six to twelve month intervals, the following system checks should be made:

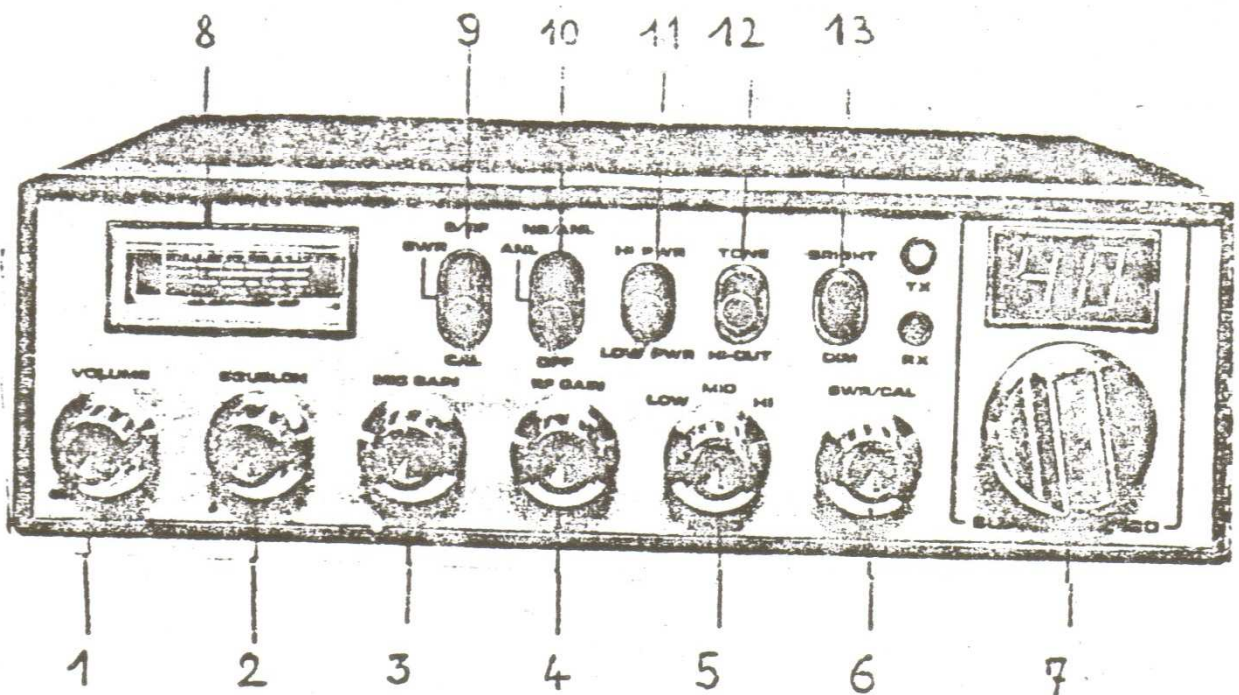
1. Check Standing Wave Ratio (SWR).
2. Inspect all electrical connections to ensure that they are tight.
3. Inspect antenna coaxial cable for wear or breaks on shielding.
4. Inspect all screws and other mounting hardware for tightness.

SCHEMATIC DIAGRAM



- NOTES:
1. RESISTOR VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=1000 OHM, M=10,000 OHM)
 2. RESISTOR VALUES ARE /W/ UNLESS OTHERWISE SPECIFIED.
 3. CAPACITOR VALUES ARE IN MICROFARADS UNLESS OTHERWISE NOTED. (P=PICTO, MICROFARAD)
 4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS (COEFFICIENT) UNLESS OTHERWISE NOTED.

SUPER STAR 120



HOMOLOGUE P T T N° 83/127 CB

CARACTERISTIQUES TECHNIQUES :

CANAUX	:	40
IMPEDANCE	:	52 Ohms
ALIMENTATION	:	13,8 volts
<u>EMISSION :</u>		
PUISSANCE	:	4 WATTS CRETE
TYPE	:	6A3 ou 6F3
DEVIATION	:	0,003 %
MODULATION	:	100 %
<u>RECEPTION :</u>		
SENSIBILITE	:	0,5 uV pour 10 db
SELECTIVITE	:	60 db
PUISSANCE BF	:	4 WATTS Maxi
IMPEDANCE HP	:	8 Ohms

- 1 - Volume- M/A: tourner le potentiometre dans le sens des aiguilles d'une montre pour ajuster le volume
- 2 - SQUELCH : ce potentiometre sert à éliminer le scuff: en l'absence de signal de modulation .Le réglage s'effectue en tournant vers la droite le bouton jusqu'à disparition du bruit de fond, dès qu'une émission arrive à l'antenne, le squelch laisse passer ce signal et vous pouvez entendre votre correspondant.
- 3- GAIN MICRO: le gain est maximal quand le bouton est tourné au maximum vers la droite
- 4 -RF GAIN : Idem.
- 5- selecteur de bande MID de 26.965 à 27.405 MHz
- 6- SWR CAL: Vous sert a calibrer le TOS de votre appareil
- 7- SÉLECTEUR DE CANAUX.
- 8 - VU- METRE:
 - S/METRE lecture du niveau de signal reçu
 - RF METRE lecture du niveau du signal d'émission
 - le commutateur 9 doit se trouver en position S/RF
 - SWR tosmetre permet de mesurer le retour HF apres calibration du bouton 6 sur l'index CAL
- 9- Pour regler votre TOS, commuter en position CAL et calibrer avec le N. 3 - Lisez ensuite votre TOS en position SWR - La position de lecture normale est S-RF
- 10- NB+ANL : Limitateur des parasites atmosphériques.
- 11- Réglage de la puissance d'émission HF
- 12- TONE : Réglage audio de tonalité
- 13- Commande éclairage

VOTRE SUPERSTAR 120 FM EST UN PRODUIT : U N I D E N
 IMPORTE ET DISTRIBUE EN EXCLUSIVITE PAR :

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