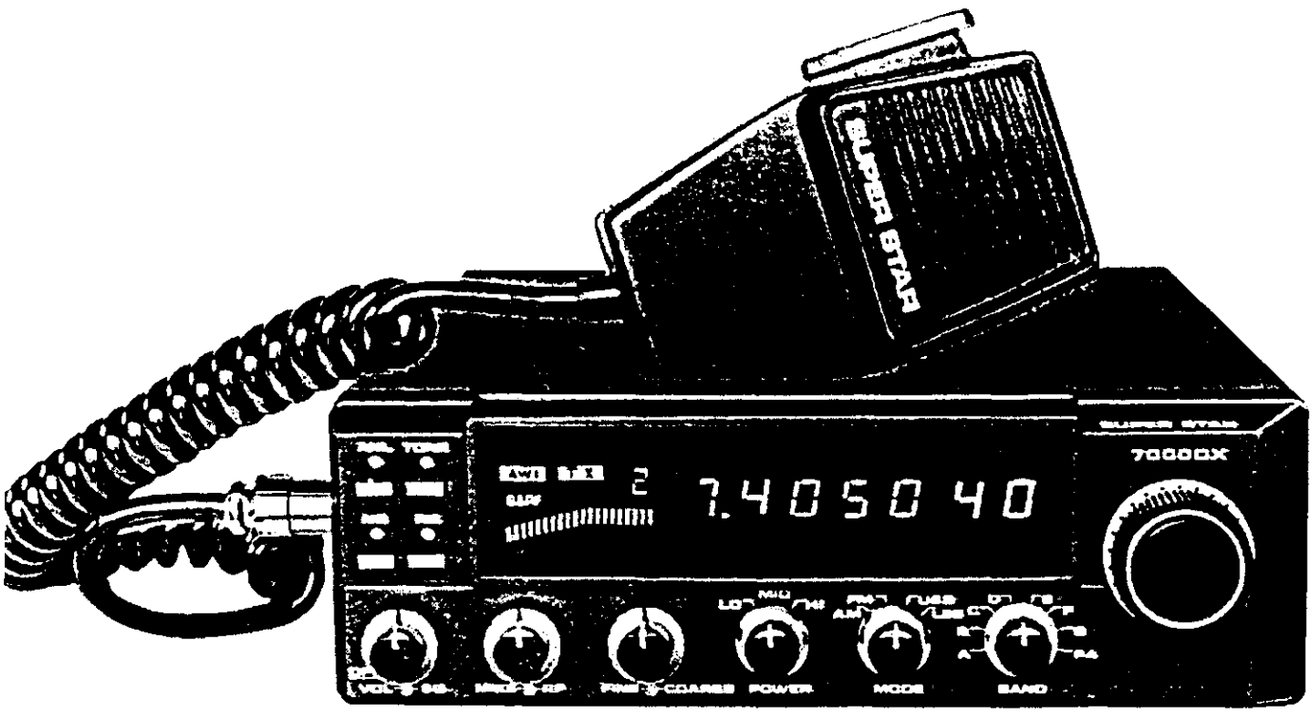
SUPER STAR



7QOODX

OWNER'S MANUAL

3360 Channels All-Mode AM/FM/USB/LSB Built in Frequency Counter Mobile Transceiver with Roger Beep

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Specifications

GENERAL

Frequency range	A - 25.615 to 26.055 MHz B - 26.065 to 26.505 MHz C - 26.515 to 26.955 MHz D - 26.965 to 27.405 MHz E - 27.415 to 27.855 MHz F - 27.865 to 28.305 MHz G - 28.315 to 28.755 MHz
Channels.	Total 3360 : 280X4 MODE 280 (+ 10kHz) X4 MODE 280 (-10kHz) X4 MODE
Frequency Control	Phase Lock Loop (PLL) synthesizer.
Frequency space	10 kHz
Emission	AM/FM/USB/LSB
Microphone	Plug-in dynamic; with push-to-talk switch and coiled cord.
Input Voltage	13.8V DC nominal, 15.9V max., 11.7V min. (negative ground). *Transmit:* AM full mod., 10A. SSB 150 watts PEP output, 20A. *Receiver:* Squelched, 0.5 A. Maximum audio output, 1.2A.
Size	62X200X309 mm
Weight	approx, 2.6kg
Antenna Connector	UHF, S0239.

TRANSMITTER

Power Output

	HI	MID	LO
AM	50	25	5
FM	50	25	5
SSB	150	75	15

Modulation	low-level Class B, Amplitude Modulation: AM. Variable capacitance Frequency Modulation: FM.
Intermodulation Distortion	SSB: 3rd order, more than —25 dB. 5th order, more than —35 dB.
SSB Carrier Suppression	50 dB
Unwanted Sideband	50 dB
Frequency Response	AM and FM: 450 to 2500 Hz.
Output Impedance	50 ohms, unbalanced.

RECEIVER

Sensitivity	SSB : 0.3 ***tiV*** for 10 dB (S+ N)/N at greater than *V*>-watt of audio output. AM: 1 *juV* for 10 dB (S + N)/N at greater than *V*>-watt of audio output. FM: 1.0 *MV* for 20 dB (S + N)/N at greater than *Y*>-watt of audio output.
Selectivity	AM/FM: 6 dB <§ 3 KHz, 50 dB @ 9 KHz. SSB: 6 dB @ 2.1 KHz, 60 dB @ 3.3 KHz.
Image Rejection	More than 45 dB.
IF Frequency	10.695 MHz 1st IF, 455 KHz 2nd IF.
Adjacent-Channel Rejection	60 dB
RF Gain Control	30 dB adjustable for optimum signal reception.
Automatic Gain Control (AGO	Less than 10 dB change in audio output for inputs from 10 to 10.000 microvolts.
Squelch	Adjustable: threshold less than 0.5 ***uV.***
ANL	Switchable.
Noise Blanker	RF type, effective on AM/FM and SSB
Clarifier Range	Coarse (TX/RX) more than ±10 KHz Fine (RX) more than ±1 KHz
Audio Output Power	4 watts into 8 ohms.
Frequency Response	300 to 2800 Hz.
Built-in Speaker	8 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 passengers in the vehicle. In automobiles, the transceiver is usually mounted below the dash panel, with the microphone bracket **beside.it**.

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MOUNTING THE CONNECTION

The SS—7000 DXis supplied with a universal mounting bracket. When mounting the bracket and radio to your car, make sure it is mechanically strong. Also provide a good electrical connection to the chassis of the vehicle. Proceed as follows to mount the transceiver:

1. After you have determined the most convenient location in your vehicle, hold the SS—7000 DX with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the mounting bolts. Before drilling the holes, make sure nothing will interfere with the installation of the mounting bolts.
2. Connect the antenna cable plug to the standard receptacle on the rear panel. Most CB antennas are terminated with a type PL-259 plug and mate with the receptacle.
3. Connect the red DC power input wire (with the fuse) to + 13.8V DC. This wire extends from the rear panel. In automobile installation, + 13.8V 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 unit without the engine running. Locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car. Connect the black DC power input wire to ground earth. This is usually the chassis of the car.
4. Mount the microphone bracket on the right side of the transceiver or near the transceiver, using two screws supplied. When mounting in an automobile, place the bracket under the dash so the microphone is readily accessible.

IGNITION NOISE INTERFERENCE

Use of a mobile receiver at low signal levels is normally limited by the presence of electrical noise. The primary source of noise in automobile installations is from the generator and ignition system in the vehicle. Under most operating conditions, when signal level is adequate, the background noise does not present a serious problem. Also, when extremely low level signals are being received, the transceiver may be operated with vehicle engine turned off. The unit requires very little current and therefore will not significantly discharge the vehicle battery.

Even though the SS —7000 DX has ANL and NB controls, in some installations ignition interference may be high enough to make good communications impossible. The electrical noise may come from several sources. Many possibilities exist and variations between vehicles require different solutions to reduce the noise.

ANTENNA

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

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted at a corner of the vehicle they are slightly directional, in the direction of the body of the vehicle. For all practical purpose, however, the radiation pattern is nondirectional. The 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.

If the transceiver is not mounted on a metal surface, it is necessary to run a separate ground wire from the unit to a good metal electrical ground in the vehicle. When installed in a boat,, the transceiver will not operate at maximum efficiency without a ground plate, unless the vessel has a steel hull.

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.

TUNING THE ANTENNA FOR OPTIMUM SWR

Since there is such a wide variety of base and mobile antennas, this section will strictly concern itself to the various types of mobile adjustable antennas.

Because the antenna length is directly related to the channel frequency, it must be tuned to resonate optimally all 480 channels of the transceiver. Channel 1 requires a longer antenna than Channel 480 because it is lower in frequency.

Due to the various methods of adjusting antennas for proper SWR we have chosen what we think is the optimum method:

A. Antennas with adjustment screws (set screws).

1. Start with the antenna extended and tighten the set screw lightly enough so that the antenna can Be lightly tapped with your finger for easy adjustment.
2. Set your SS-7000 DX to Channel 21. <s B band or D band or F band. Press the PTT (push-to-talk) switch, and tap the antenna (making it shorter). The SWR meter will show a lower reading each time the antenna is tapped. By continuing to shorten the antenna you will notice the SWR reading will reach a low point and then start rising again. This means that you have passed the optimum point for Channel 21. Extend the antenna a short distance and again follow the procedure above.

   When the lowest point has been reached, switch to Channel 1 @ A band or C band or E band and then to Channel 40 <s C band or E band or G band and compare SWR readings. They sould be almost equal.

B. Antennas which must be cut to proper length.

1. Follow the same procedure as above, but adjust the length by cutting in 1/8" increments until a good match is obtained.
2. *Be very careful not to cut too much at one time, as one it is cut, it can no longer be lengthed.*
3. The whip is easily cut by filing a notch all the way around and breaking the piece off with pliers.

NOTE

THE PROPER SETTING IS ACHIEVED WHEN THE SWR IS 1.5 OR BELOW, AND WHEN IT HAS THE SAME READING FOR A BAND CHANNEL 1 and G BAND CHANNEL 40.

If you are having difficulties in adjusting your antenna, check the following:

A. All doors must be closed when adjusting the antenna.
B. Make sure the antenna base is grounded.
C. Check your coaxial cable routing (it may be pinched when routed into the car).

D. Try a different location on your car (keeping in mind the radiation pattern you wish).
E. Is the antenna perfectly vertical ?
F. Try a different location in your neighborhood. Stay away from large metal objects when adjusting (metal telephone or light posts, fences, etc.)

NOTE

The SS−7000 DX will operate into an SWR of 2 to 1 indefinitely and sustain an SWR of 20 : 1 for a maximum of 5 minutes at rated operating conditions.

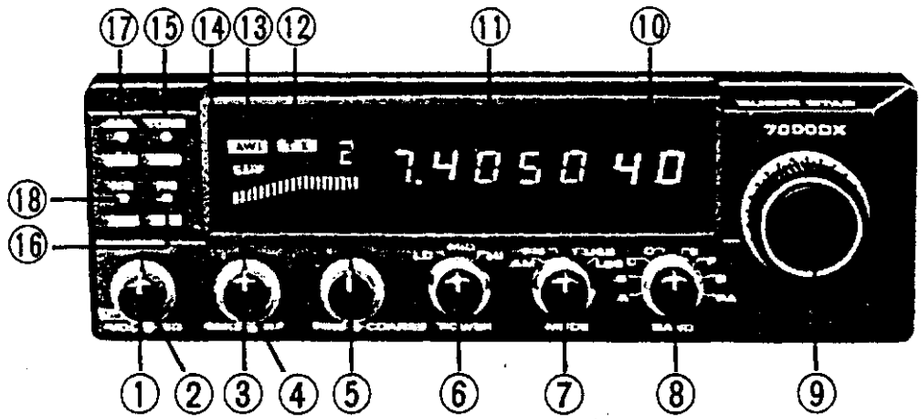
External Speaker

The external speaker jack (EXT. SP) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 4 watts. When the external speaker is plugged in, the internal speaker is disconnected.

Operation

CONTROL FUNCTIONS

There are Thirteen controls and five indicators on the front panel of your SS-7000 DX.



FRONT PANEL

1. **OFF/ON/VOLUME** (inner dual concentric). Turn clockwise to apply power to the unit and to set the desired listening level. During normal CB operation, the VOLUME control is used to adjust the output level obtained either at the transceiver speaker or the external speaker, if used.
2. **SQUELCH** (outer dual concentric). This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensifivity it is desired that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated. Turn fully counterclockwise then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.
3. **MIC GAIN** (inner dual concentric). Adjusts the microphone gain in the transmit and PA modes. This controls the gain to the extent that full talk power is available several inches away from the microphone.
4. **RF GAIN CONTROL** (outer dual concentric). Use to reduce the gain of the RF amplifier under strong signal conditions.
5. **CLARIFIER**. Allows variation of the receiver operating frequencies above and below the assigned frequency. Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM/FM signals as described in the Operating Procedure paragraphs. Coarse operates both TX/RX but Fine only in RX.

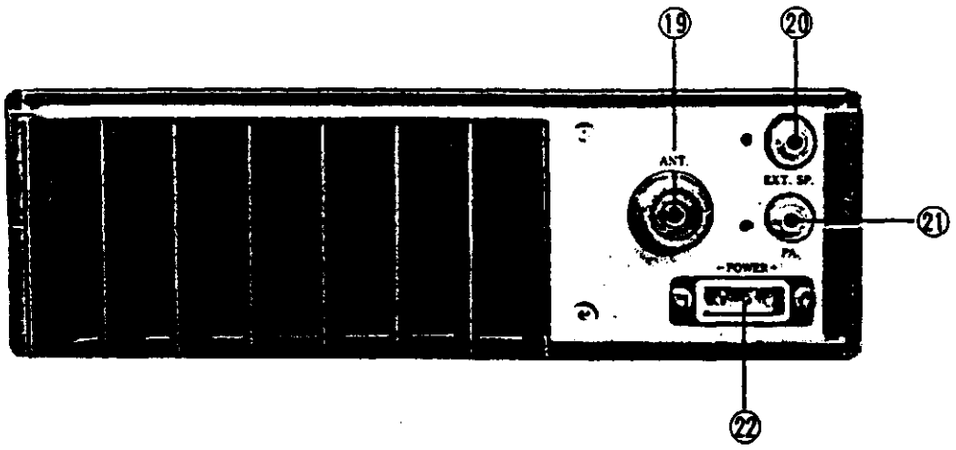
6. I'OW KR SELECTOR. This switch selects the desired RF power output.

	HI	MID	LO
AM	50 watts	25 watts	5 watts
FM	50	25 "	5 "
SSB	150	75 "	15 "

6. MODE (AM/FM/USB/LSB) SWITCH. This switch is used to select AM, FM, USB or LSB mode of operation. Unless the station with which communication is desired is equipped with SSB, the AM or FM mode is normally used. The mode selector switch changes the mode of operation of both transmitter and receiver simultaneously. Turn to "Receiving SSB signals" for a further explanation of single sideband.
7. **BAND SELECTOR**. This switch selects A, B, C, D, E, F or G band of operation and PA.
8. **CHANNEL SELECTOR.** This switch selects any one of the forty Citizens Band channels desired. The selected channel appears on the LED readout directly left side the Channel Selector knob.

10. **CHANNEL INDICATOR**. Numbered LED indicates the selected channel you wish to operate on.
11. **FREQUENCY COUNTER**. The frequency counter indicates the selected channel you wish to operate on.
12. **TX INDICATOR**. Lights up when transmitting.
13. **AWI INDICATOR**. The ANTENNA WARNING INDICATOR provided to indicate someting unusual conditions of the antenna portion such as shorted, opened or miss mataching, etc. When the ANTENNA WARINING INDICATOR Lighted up, please cut the power switch OFF and check the antenna portion.
14. **S & RF INDICATOR**. This indicator indicates received signal strength and transmitter RF output power.
15. **TONE SWITCH.** This switch is used to shape the audio response to the operator's prefence. Bass is increased in the on position (LED Light up) and treble is increased in the off position.
16. **ROGER BEEP SWITCH**. When this switch is placed in the ROGER BEEP position (LED light up), your radio automatically transmits the audio sign at the end of your transmission. The listener can note easily your transmission is over through the sign.
17. **ANL SWITCH.** When this switch is placed in the ANL position (LED Light up), the automatic noise limiter in the audio is activated. The ANL may be used when noises generated from such sources as atmospheric discharge, electronic machinery etc., are present.

18. **NB SWITCH**. This switch activates the noise blanker circuit when placed in NB position (LED Light up). The noise blanker is very effective for repetitive impulse noise such as ignition interference.



REAR PANEL

19. **ANTENNA**. Accepts 50 ohm coaxial cable with a type PL-259 plug to be connected.
20. **EXT SP.** Accepts 8 ohm, 4 watt external speaker to be connected. When external speaker is connected to this jack, the built-in speaker is automatically disconnected.
21. **PA SP.** Used to connect a PA speaker (8 ohm 4W) for PA operation. Before operating PA you must first connect a PA speaker to this jack.
22. **POWER.** Accepts 13.8V DC power cable with built-in fuse (20 amp.) 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 switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal "voice". The radios come complete with low-impedance (600 ohm) dynamic microphone.

OPERATING PROCEDURE TO RECEIVE

1. Be sure that power source, microphone and antenna are connected to the proper connectors before going to the next step.
2. Turn unit on by tuning VOLUME control clockwise on SS-7000 DX
3. Set the VOLUME for a comfortable listening level.
4. Set the MODE switch to the desire mode.
5. Listen to the background noise from the speaker. Turn the SQUELCH control slowly clockwise until the noise JUST disappears (no signal should be present). Leave the control at this setting. The SQUELCH is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or some of the weaker signals will not be heard.
6. Set the CHANNEL selector switch to the desired channel.
7. Set the RF gain control fully clockwise for maximum RF gain.
8. Adjust the CLARIFIER control to clarify the SSB signals or to optimize AM/FM signals.

OPERATING PROCEDURE TO TRANSMIT

1. Select the desired channel of transmission.
2. Set the MIC GAIN control fully clockwise.
3. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice..

RECEIVING SSB SIGNALS

There are four types of signals presently used for communications in the Citizens Band: AM, FM, USB, and LSB. When the MODE switch on your unit is placed in the AM position, only standard double-sideband and in FM position, only frequency deviation, full carrier signals will be detected. An SSB signal may be recognized while in the AM or FM mode by its characteristic "Donald Duck" sound and the inability of the AM or FM detector to produce an intelligible output. The USB and LSB modes will detect upper sideband and lower sideband respectively, and standard AM signals.

SSB reception differs from standard AM reception in that SSB receiver does not require a carrier or opposite sideband to produce an intelligible signal. A single-sideband transmitted signal consists only of the upper or the lower sideband and no carrier is transmitted. The elimination of the carrier from the AM signal helps to eliminate the biggest cause of whistles and tones heard on channels which make even moderately strong AM signals unreadable. Also; SSB takes only half of an AM channel, therefore two SSB conversations will fit into each channel, expanding the 280 AM channels to 560 SSB channels. The reduction in channel space required also helps in the receiver because only ***half*** of the noise and interference can be received with 100% of the SSB signal.

An SSB signal may be received only when the listening receiver is functioning in the same mode. In other words, an upper sideband signal (USB) may be made intelligible ***only*** if the receiver is functioning in the USB position.

If a lower sideband (LSB) signal is heard when the receiver is in the USB mode, no amount of tuning will make the signal intelligible. The reason for this may be understood if you consider that when modulation is applied tc the transmitter's microphone in the USB mode, the transmitter's output frequency is increased whereas in the LSB mode the transmitter's output frequency is decreased. The result in listening to the receiver is that when the MODE switch is in the proper position (either USB or LSB), a true reproduction of single tone of modulation will result, and if the tone is increased in frequency (such as a low-pitched whistle a high-pitched whistle) you will hear the increase in the output tone of the receiver. If the incorrect mode is selected, an increase in tone of a whistle applied to the transmitter will cause a decrease in the resultant tone from the receiver.

Thus when a voice is used in place of a whistle or tone, in the proper listening mode the voice will be received correctly whereas in the incorrect mode, the voice will be translated backwards and cannot be made intelligible by the voice lock control. When listening to an AM transmission, a correct sideband is heard in either mode since both upper and lower sideband are received.

Once the desired SSB mode has been selected, frequency adjustment may be necessary in order to make the incoming signal intelligible, the CLARIFIER control allows the operator to vary frequency above and below the exact-center frequency of the received signal. If the sound of the incoming signal is high or low pitched, adjust the operation of the CLARIFIER. Consider it as performing the same function as a phonograph speed control. When the speed is set to high, voices will be high-pitched and if set too low, voices will be low-pitched. Also, there is only ***one*** correct speed that will make a particular record produce the same sound that was recorded. If the record is played on a turntable that rotated in the wrong direction (opposite sideband) no amount of speed control (CLARIFIER) will produce an intelligible sound.

An AM signal received while listening in one of the SSB modes will produce a steady tone (carrier) in addition to the intelligence, unless the SSB receiver is tuned to exactly the same frequency by the CLARIFIER control. For simplicity it is recommended that the AM modes be used to listen to AM signals.

Frequency/Channel Chart

A-Band		B-Band		C-Band		D-Band		E-Band		F-Band		G-Band	
Chan-nel	MHz Frequency	Chan-nel	MHz Frequency	Chan-nel	MHz Frequency	Chan-nel	MHz Frequency	Chan-nel	MHz Frequency	Chan-nel	MHz Frequency	Chan-nel	MHz Frequency
1	25,615	1	26,065	1	26,515	1	26,965	1	27,415	1	27,865	1	28,315
2	25,625	2	26,075	2	26,525	2	26,975	2	27,425	2	27,875	2	28,325
3	25,635	3	26,085	3	26,535	3	26,985	3	27,435	3	27,885	3	28,335
4	25,655	4	26,105	4	26,555	4	27,005	4	27,455	4	27,905	4	28,355
5	25,665	5	26,115	5	26,565	5	27,015	5	27,465	5	27,915	5	28,365
6	25,675	6	26,125	6	26,575	6	27,025	6	27,475	6	27,925	6	28,375
7	25,685	7	26,135	7	26,585	7	27,035	7	27,485	7	27,935	7	28,385
8	25,705	8	26,155	8	26,605	8	27,055	8	27,505	8	27,955	8	28,405
9	25,715	9	26,165	9	26,615	9	27,065	9	27,515	9	27,965	9	28,415
10	25,725	10	26,175	10	26,625	10	27,075	10	27,525	10	27,975	10	28,425
11	25,735	11	26,185	11	26,635	11	27,085	11	27,535	11	27,985	11	28,435
12	25,755	12	26,205	12	26,655	12	27,105	12	27,555	12	28,005	12	28,455
13	25,765	13	26,215	13	26,665	13	27,115	13	27,565	13	28,015	13	28,465
14	25,775	14	26,225	14	26,675	14	27,125	14	27,575	14	28,025	14	28,475
15	25,785	15	26,235	15	26,685	15	27,135	15	27,585	15	28,035	15	28,485
16	25,805	16	26,255	16	26,705	16	27,155	16	27,605	16	28,055	16	28,505
17	25,815	17	26,265	17	26,715	17	27,165	17	27,615	17	28,065	17	28,515
18	25,825	18	26,275	18	26,725	18	27,175	18	27,625	18	28,075	18	28,525
19	25,835	19	26,285	19	26,735	19	27,185	19	27,635	19	28,085	19	28,535
20	25,855	20	26,305	20	26,755	20	27,205	20	27,655	20	28,105	20	28,555
21	25,865	21	26,315	21	26,765	21	27,215	21	27,665	21	28,115	21	28,565
22	25,875	22	26,325	22	26,775	22	27,225	22	27,675	22	28,125	22	28,575
23	25,905	23	26,355	23	26,805	23	27,255	23	27,705	23	28,155	23	28,605
24	25,885	24	26,335	24	26,785	24	27,235	24	27,685	24	28,135	24	28,585
25	25,895	25	26,345	25	26,795	25	27,245	25	27,695	25	28,145	25	28,595
26	25,915	26	26,365	26	26,815	26	27,265	26	27,715	26	28,165	26	28,615
27	25,925	27	26,375	27	26,825	27	27,275	27	27,725	27	28,175	27	28,625
28	25,935	28	26,385	28	26,835	28	27,285	28	27,735	28	28,185	28	28,635
29	25,945	29	26,395	29	26,845	29	27,295	29	27,745	29	28,195	29	28,645
30	25,955	30	26,405	30	26,855	30	27,305	30	27,755	30	28,205	30	28,655
31	25,965	31	26,415	31	26,865	31	27,315	31	27,765	31	28,215	31	28,665
32	25,975	32	26,425	32	26,875	32	27,325	32	27,775	32	28,225	32	28,675
33	25,985	33	26,435	33	26,885	33	27,335	33	27,785	33	28,235	33	28,685
34	25,995	34	26,445	34	26,895	34	27,345	34	27,795	34	28,245	34	28,695
35	26,005	35	26,455	35	26,905	35	27,355	35	27,805	35	28,255	35	28,705
36	26,015	36	26,465	36	26,915	36	27,365	36	27,815	36	28,265	36	28,715
37	26,025	37	26,475	37	26,925	37	27,375	37	27,825	37	28,275	37	28,725
38	26,035	38	26,485	38	26,935	38	27,385	38	27,835	38	28,285	38	28,735
39	26,045	39	26,495	39	26,945	39	27,395	39	27,845	39	28,295	39	28,745
40	26,055	40	26,505	40	26,955	40	27,405	40	27,855	40	28,305	40	28,755