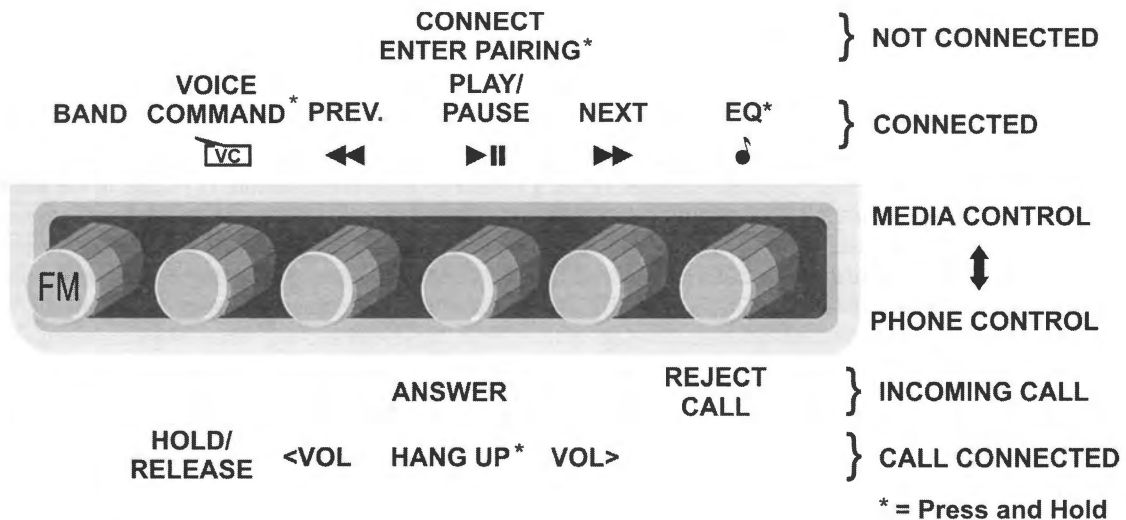


Release Date  
March 2018

**12 Volt Negative Ground**  
**1955 THUNDERBIRD**  
**AM/FM/BLUETOOTH®**  
RADIO INSTALLATION  
AND  
OPERATING INSTRUCTIONS  
AM/FM10.0



**Model 303401BT**



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**CONGRATULATIONS!** You have one of the most unique and sophisticated radios ever built! It is designed to preserve the original fit, functions and appearance of your radio while providing the best of the latest digital technology. The modern features that were not available when your vehicle was new are cleverly disguised so that they are functional and easily accessible, but are not visible. The face, knobs and pushbuttons are designed and manufactured to look and feel just like the original. The dial scale looks like the original. The FM dial scale is added in the background. There is a tiny indicator in the center of the dial. It is Red when in the AM band, Green in the FM band, and orange when locked on a stereo signal. In the Bluetooth® mode this indicator has multiple uses. Please take a few minutes to read this manual and familiarize yourself with all of the features of this radio. Although this radio is considerably smaller than the original, it will fit in the dash without any alterations. The radio is designed to work well with the original antenna. **Do not use the original speakers.** They will not handle the power or the frequency range of this radio.

**Before you begin installation:** Be Safe! Disconnect one battery terminal and leave it disconnected until installation is complete. Make sure you are familiar with the options and features programmed into this radio. Locate the antenna jack, the auxiliary input, line outputs and other options you may need before you mount the radio. If you want to “bench test” the radio use a fully charged battery. **DO NOT** operate this radio directly from a battery charger. Serious damage may result! This radio has several protection circuits to help prevent serious damage from wiring errors and power faults in the vehicle electrical system. Never use a fuse rated for more than 10 Amps!

**Speakers:** See our new line of Dual Voice Coil speakers designed specifically for this radio. Use only 4 ohm speakers. A quality full range speaker with 30 or 40 watt RMS ratings should be sufficient. The higher the SPL rating of the speaker, the better it sounds. Look for an SPL of 88 or better. A good full range speaker should have a frequency range from less than 40 Hz to at least 18 kHz. Pay attention to polarity! Speaker terminals will be marked with a + and - , or a red dot on the + terminal. If all speakers are connected to the proper polarity, they will operate in harmony. If they are not properly phased, you will not hear the full fidelity of the radio. This is especially important when using dual voice coil speakers. Note: - does not mean ground! This is a high power radio in which both speaker lines are driven with high currents! **Never** allow any speaker lead to become grounded when the radio is on!

### Operating Your Radio

**Band selection:** The leftmost pushbutton was the On/Off button on original radios. It is now marked FM. Each time you push the FM button the radio will toggle between AM and FM. The radio will be on the last station you were listening to when power was turned off.

**Tuning:** The dial scale is made to look like the original. It is illuminated when the dash lights are on. Turning the tuning knob will move the dial pointer up or down the dial scale. The radio is digitally tuned for stability, but has the look and feel of an analog radio. The dial pointer is positioned with a stepper motor. **Note: the dial pointer and pushbuttons will only function when the radio is turned on.**

**Tone:** The tone control (behind the volume control) provides full bass and treble near the center position. Turning the control clockwise reduces treble, and counter-clockwise reduces bass. When streaming music in Bluetooth mode an equalizer is also available.

**Balance:** Your radio has a balance control behind the tuning control. Turning the balance knob will shift the audio between the left speaker(s) and the right speaker(s). In a stereo system, the audio information sent to the right channel is often different than the left channel. When you set the balance to the extreme left or right, the radio will automatically switch out of the stereo mode and all of the information for both channels will be present in the speaker that is selected (Mono mode). **Note: The balance control is not operational in a 1 speaker setup.**

**Fader:** In order to allow adjusting the front/rear speakers without adding visible controls, your radio has a software control that is shared with the balance control. To access the fader, tune to an FM station and set the balance control for the best sound. After you've listened for a few seconds, tune to the top of the dial. The last station you were listening to will start playing again. Use the **balance** control to adjust the front/rear fader. When you tune away from the top of the dial, the radio will resume normal operation, and the balance control will no longer affect the fader function. Once you readjust the balance control, the fader settings are permanently stored (until you change them). Every time you turn on the radio, the fader values you last set will be re-loaded. **Note: The fader is only operational in a 3 or 4 speaker setup.**

**Setting pushbuttons:** Your radio has 5 presets for FM, and 5 presets for AM. A major difference between the original radio and this one is the way the pushbuttons are set. **Never** attempt to pull out on the buttons! When you push a button, the radio will start playing the selected station, and the dial pointer will move to the selected location. To set a button to a different station: (1) Tune in the desired station. (2) Press and hold the button you want to set. The tuner will move to the previous setting. (3) After about 2 seconds, the radio will begin playing the newly selected station. The dial pointer may cycle to locate the correct position. This is normal. The dial pointer will stop at the new station. (4) Release the button. Be aware it takes a couple of seconds to write the new pushbutton data to permanent memory. You can continue to set other buttons or tune other stations, but if the radio is turned off before the write cycle is completed, the new stations may not be saved. In the Bluetooth® mode the pushbuttons have several different functions and will not change the dial pointer position.

**Bluetooth®:** To connect your phone, it must first be “paired” to this radio. Make sure Bluetooth is enabled on your phone. Search for available devices. Turn your radio on. “AARInc.BTvx.x” should be visible for a few minutes after the radio is turned on. Select it to pair. You can pair up to 4 devices with this radio. The radio will attempt to connect with the last paired device every time the radio is turned on. To activate Bluetooth®, tune to the low end of the dial in any band (we suggest you set the leftmost pushbutton to this position). If your phone is paired, it will connect automatically. The stereo indicator in the dial will turn bright blue. To exit Bluetooth® mode manually tune the radio away from the low end of the dial. When listening to the radio (AM or FM band) an incoming call will switch the radio into Bluetooth® mode to allow you to answer by briefly pressing the center button. To reject the call press the rightmost button. See the illustration on the cover for all of the alternate button functions. To end the call, press and hold the center button. If the radio was not in Bluetooth® mode when the call began, the radio will return to the station you were listening to when the call is ended. If another call comes in during an active call, you may put the current caller on hold and answer the 2<sup>nd</sup> one, or reject it. During an active call you can raise or lower the caller's volume by pressing the <VOL or VOL> buttons. When the call is ended, the volume will return to the normal setting. For detailed Bluetooth® instructions go to [www.radiosforoldcars.com/bluetooth](http://www.radiosforoldcars.com/bluetooth).

Your radio has a 12 pin connector for the speakers, power, and options. See illustration below for more details. There is one **red** (fused) wire. This is the main power input. It should be connected to the 12 volt Accessory circuit. There is a **green** wire that is used for the dial light. It should be wired to the dash light circuit ahead of the dimmer rheostat so that the radio lights come on when the other gauge lights are turned on. The wiring for the front speakers includes a **blue(+)** and **violet(-)** pair for the left front speaker, and a **gray(+)** and **white(-)** pair for the right front speaker. Each **front** pair will have a **yellow** band around it. The rear speaker wiring also has a **blue(+)** and **violet(-)** pair for the left rear speaker and a **gray(+)** and **white(-)** pair for the right rear speaker. Each **rear** pair will have a **green** band around it. Your system may not use all of the speaker connections. Be careful to tape up any unused wires where they can not touch anything. The **orange** wire is a switched 12 volt output used to provide power for options like remote turn-on for power amplifiers, power antennas, etc. Do not use it to power loads greater than 4 amps. The **black** wire is the system ground. This wire should be connected to a solid chassis ground. The Bluetooth® microphone is built in. No external wiring is required.



The ANTENNA jack is located beneath the wiring harness exit. It will accept your original antenna plug.

The AUX. INPUT jack in the upper right is a standard 3.5 mm stereo jack. It is provided to allow accessories like MP3 players to be active when not using Bluetooth®. To switch to the auxiliary input mode, tune the radio to the extreme low end of the dial in either band. (Hint: Set a pushbutton at this point to allow rapid switching). The radio will resume playing when you tune towards the middle of the dial. The volume, tone, and balance controls will be functional in the AUX mode, but the alternate fader control will not be accessible. The AUX Input is shared with Bluetooth® connected devices. Bluetooth® always has priority and will override any Aux input. If an accessory is powered by the orange wire the accessory will turn off when the radio is turned off. You should adjust the accessory audio level to match the level of the radio. Check the option instruction manual for how to set the audio level.

When you receive your radio it is setup for North American channel spacing. You can change the frequency by holding down the middle pushbutton while the power is off and while continuing to hold down the middle pushbutton turn the radio on. You will notice a green light in the center of the dial. The radio will scan through the local stations and determine which frequency to use for AM and FM. These changes will be permanently stored until they are changed again by repeating the steps above. The AM broadcast band in the Americas is 530 to 1710 kHz in 10 kHz steps, and for all of Europe, the UK and Japan it is 531 to 1629 kHz in 9 kHz steps. The FM broadcast band in the Americas is 87.5 to 107.9 MHz in 200 kHz steps, and for western Europe and the UK it is 87.5 to 108.0 MHz in 100 kHz steps. Japan and Eastern Europe FM frequencies are not compatible with this receiver.

Each time the radio is powered on it will perform speaker diagnostics to determine the number of speakers that are connected. In a 3 or 4 speaker set up the balance and fader controls work as described. In the 2 speaker position the 2 front or 2 rear speakers will work with the balance control but there is no fader. In the 1 speaker position neither the balance or fader controls have any effect. In this setting the receiver and the aux inputs operate in mono mode so that the information from both the right and left channels will be heard in the single speaker. The stereo indicator will not function.

Below the auxiliary jack are 5 color-coded RCA jacks. These are line outputs for an external power amplifier. The Left (white) and Right (red) jacks are stereo line outs, and the black one is for a sub-woofer amp input. To add an amplifier to your setup: With the radio turned off hold down the center pushbutton. Turn the radio on and release the pushbutton. You will notice a green light in the middle of the dial, after 7 seconds it will turn red. Once it begins to blink red if you would like to add an amplifier press the second pushbutton. The light will flash green to show an amp has been added. To deselect an amplifier from the setup press the 4<sup>th</sup> pushbutton and the light will flash red. Once you have made your selection press the first pushbutton to return to the radio. You must make a selection within a few seconds or these setting will not be saved.

**Note: If you program the radio to have an amplifier the fade and balance controls will be active.**

### Specifications

11-16 Volts DC Negative ground only  
 Output: 180 W. RMS (45 W x 4 speakers @ 4Ω 14.4 V, 1kHz)  
 10 Presets (5 AM, 5 FM) Digitally tuned w/analog display  
 Dimensions: 8.75" W x 2.55" H x 2.75" D (behind dash)

3.5mm stereo input jack, Standard (Motorola) antenna jack  
 Left, right and sub woofer outputs use standard RCA jacks  
 Bluetooth® 3.0+EDR, Built in microphone for HFP, HSP, A2DP  
 Memory retention (presets and user settings) more than 40 years

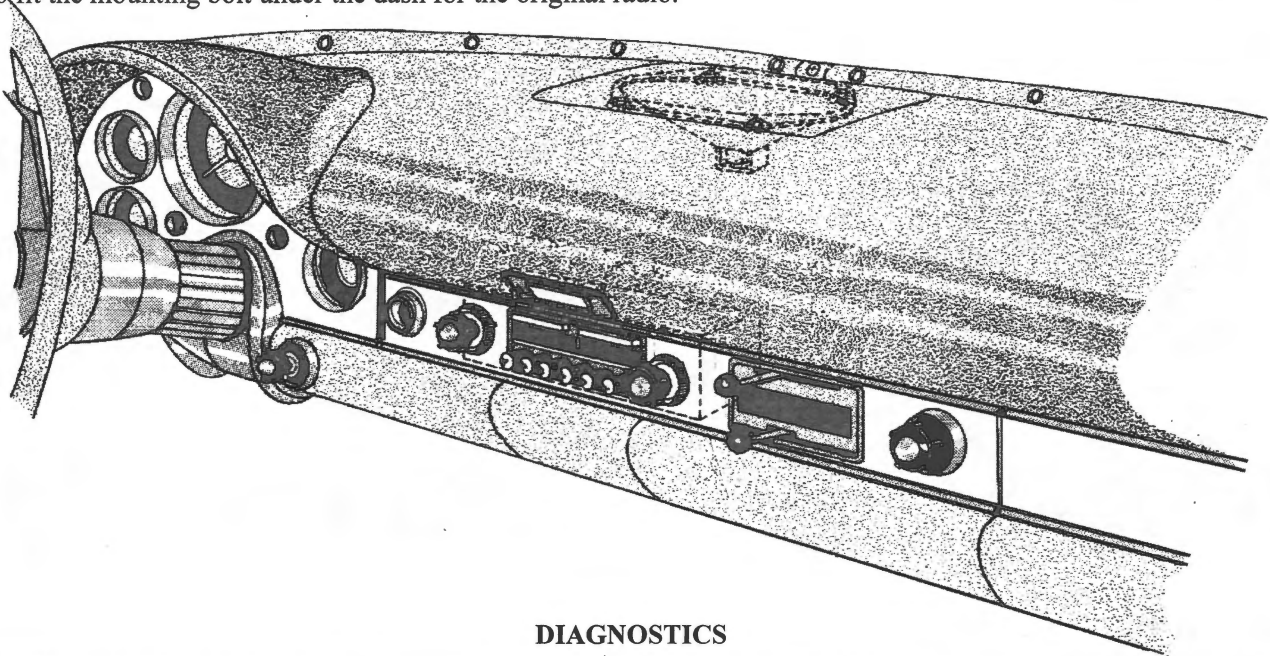
Visit [www.radiosforoldcars.com/bluetooth](http://www.radiosforoldcars.com/bluetooth) for more information on how to use all of the Bluetooth® options in this radio or click on the QR code. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Antique Automobile Radio, Inc is under license. Other trademarks and trade names are those of their respective owners.





## INSTALLATION

Mount the radio in the dash using the two 1/2" shaft nuts. Take care not to cross-thread or over-tighten them. Finger tight plus 1/2 turn is enough. The radio should also be supported with the 9" backstrap supplied. The strap will support the radio while taking some of the stress off of the control shafts. It should bolt to the 1/4 20 stud on the back of the radio and can be bent to fit the mounting bolt under the dash for the original radio.



## DIAGNOSTICS

**No Sound:** Check for a good fuse with proper rating. When the radio is turned on, the orange wire should have 12 volts present. Every speaker lead should measure about 6 volts to ground with the radio on and volume low. During start up diagnostics if the radio detects a shorted speaker wire the radio will shut off that speaker lead until the issue is resolved. Radio will mute when no station is received. Make sure antenna is plugged into the proper jack. If an accessory is not connected there will be no audio in auxiliary mode.

**Weak or No Reception:** Check continuity between the center pin of the antenna plug and the antenna mast. It should read 0 ohms (like a short) Next, check continuity between the center pin of the antenna plug and the car body. It should not read (like an open circuit). If you're in a metal building, reception may be limited. Try it outside.

**Ignition Noise:** Usually caused by an ungrounded antenna shield. The base of the antenna must make good contact with the car body. This problem often shows up after a good paint job! Make sure the engine grounding straps are in place, clean and tightly bonded to the frame.

**Distortion:** Check to see if your speakers can handle at least 45 watts RMS. Small speakers that can only reproduce high frequency will distort on bass notes. Make sure speakers are properly installed. Make sure that no speaker is grounded. Every speaker lead should measure about 6 volts to ground with the radio on and volume low. Resistance in the DC power input wiring can cause the amplifiers to "starve". If distortion seems to increase with volume, measure the voltage on the orange wire. If the voltage drops when the volume is raised, it is an indication of resistance between the battery and the radio – usually at the fuse block, but sometimes in the ignition switch. If the backstrap is not bolted to a clean metal ground, try running a heavy ground wire from the ground lug on the radio directly to the firewall.

**Radio shuts off after a few minutes:** The radio has thermal protection built in to prevent damage from excessive heat. Possible causes are shorted or grounded speaker wires. See if any unused wires can touch anything. Make sure the heater or defroster duct isn't blowing directly on the radio.

**Dial pointer issues:** If the dial pointer gets stuck at one end or if it is misaligned, hold down one of the preset buttons for 5-10 seconds to realign or free dial pointer. If the dial pointer is stuck at one end of the dial, turn the tuning knob. The dial pointer should try to move while you're turning the knob. Continue to turn the tuning knob until the pointer resets itself.

**BE SAFE:** Make sure you are familiar with the way this radio works before you go out on the road. Driving demands your full attention. Texting while driving is dangerous and it is illegal in many states. Remember: not all drivers have hands free phones, so the guy next to you may be driving while distracted.

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