

# Cross Bar Antenna Mount

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The hatch on my 2023 Volvo XC90 was completely glass from edge to edge. The roof was almost completely glass. Through the glass mounts have too much signal loss. Drilling a hole in the car body was not an option. So, I decided to use cross bars and attach an antenna mount to the one of the cross bars. The RG316 thin cable can be fed through the door opening, which is ok for lower power HT;s. The RG8X thicker, lower loss cable usually needs to be fed through an open window unless another option in the frame is available, which is adequate for higher power transceivers. A right angle male UHF PL-259 to female SO-239 connector is used for easy access to the connector without sharply bending the cable. If a cable or antenna is not installed, use the connector covers to prevent water damage. The antenna mount was positioned to one side of the rail instead of the middle for easy access to it. It shouldn't adversely affect SWR. An antenna with a 3/8-24 mount, such as hamsticks can be used with a UHF PL-259 to 3/8-24 adapter (Comet AD-35M).

Attenuation of RG8X for 3 meters at 144 MHz = 0.37 db

Attenuation of RG8X for 3 meters at 440 MHz = 0.69 db

Attenuation of RG316 for 3 meters at 144 MHz = 0.99 db

Attenuation of RG316 for 3 meters at 440 MHz = 01.8 db

<https://owenduffy.net/calc/tl/tllc.php>



## Parts List

### **Tram Stainless Steel So-239 to So-239 Antenna Mirror Mount (3270)**

\$20 Amazon, \$21 at Walmart

[https://www.amazon.com/Tram-Stainless-So-239-Antenna-Mirror/dp/B01EXIFYCI/ref=sr\\_1\\_4?crid=2HTA2Z640BIZQ&dib=eyJ2ljojMSJ9.6-UxNVCS6laZQkfhfwh5Rlut\\_Xk6hQezOqsrNybnEOHStDmh07iQlljMR-bkBBzofviTM4uo0e8\\_nVuEVKgjNLNALGxZ\\_kBIFfVqRM5iUkHShpgsgRznHrlrbv1vjHsXimrGtKu3VgcLKBukyqrq3isNGQ8VbKe2RValbPV2i8YWk7KgsI4E41QwN-FCI-vN7opv0hR9MQ4zAraji9WAvRVoH83Jd6kTIJdlSJCXhD6c.FURp7fssrSBAsKOvv0BderjYcg\\_s8QWpAdGh2JN8NLs&dib\\_tag=se&keywords=antenna+mirror+mount+with+so239&qid=1710698635&srefix=antenna+mirror+.aps.93&sr=8-4](https://www.amazon.com/Tram-Stainless-So-239-Antenna-Mirror/dp/B01EXIFYCI/ref=sr_1_4?crid=2HTA2Z640BIZQ&dib=eyJ2ljojMSJ9.6-UxNVCS6laZQkfhfwh5Rlut_Xk6hQezOqsrNybnEOHStDmh07iQlljMR-bkBBzofviTM4uo0e8_nVuEVKgjNLNALGxZ_kBIFfVqRM5iUkHShpgsgRznHrlrbv1vjHsXimrGtKu3VgcLKBukyqrq3isNGQ8VbKe2RValbPV2i8YWk7KgsI4E41QwN-FCI-vN7opv0hR9MQ4zAraji9WAvRVoH83Jd6kTIJdlSJCXhD6c.FURp7fssrSBAsKOvv0BderjYcg_s8QWpAdGh2JN8NLs&dib_tag=se&keywords=antenna+mirror+mount+with+so239&qid=1710698635&srefix=antenna+mirror+.aps.93&sr=8-4)

### **1/4-20 x 3-1/2" (10PCS) Hex Head Screw Bolt, Fully Threaded, Stainless Steel 18-8 (304) , Bright Finish Hexagon Bolt,Coarse Thread UNC by KATUNA**

\$9 Amazon

[https://www.amazon.com/dp/B0BY1P7S1H?ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details&th=1](https://www.amazon.com/dp/B0BY1P7S1H?ref=ppx_yo2ov_dt_b_product_details&th=1)

### **Anina UHF Male PL259 to SO239 UHF Female Coax Connector Right Angle L Shape Low Loss Antenna Adapter for Coaxial Cable RF CB Ham Radio Antenna 2-Pack**

\$11 at Amazon

[https://www.amazon.com/dp/B0BML9VP13?ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details&th=1](https://www.amazon.com/dp/B0BML9VP13?ref=ppx_yo2ov_dt_b_product_details&th=1)

### **Bingfu Mobile Ham Radio High Gain Antenna Dual Band VHF UHF 144 430MHz Anti-Rust 62inch Antennae PL259 Male Vehicle Car Truck Amateur Radio Two Way Radio Antennas**

\$44 Amazon

[https://www.amazon.com/Antenna-Anti-Rust-Antennae-Vehicle-Antennas/dp/B0BY2F5WPY/ref=sr\\_1\\_3?dib=eyJ2ljojMSJ9.RSAVBaaRgn0cnbbCNx4K3mGz1AMruOa6ZMaorjGlwH7dTGNkb0k16jZwnd\\_BTTdIWFAk1uNqC1GZeekY-Hp8iLrGNZY7ydpVdtTxLQHy7mUQovncgdz8M5Gt7n211AtSIhKOP3ZvDd9Lzw8zYilhgBn7770TRCpQ8hnNipRxl29zdarl9vH1TmTcmSvNyyNolwltZPCMwlNvBcWUqg42wzMr3ChN2RGy\\_ws oXR75pf7QrW1aYM0Xwsw5KZV1MmutOoLCHnvnQ6mzi0ICe\\_wPh5tBH\\_KtyCiVtxCnN7SXJL-1XThEn8RhxdjBmO9zTWL4QElePAQslsX\\_pnEupLow&dib\\_tag=se&keywords=high+gain+u hf+vhf+antenna&qid=1710780171&s=electronics&sr=1-3](https://www.amazon.com/Antenna-Anti-Rust-Antennae-Vehicle-Antennas/dp/B0BY2F5WPY/ref=sr_1_3?dib=eyJ2ljojMSJ9.RSAVBaaRgn0cnbbCNx4K3mGz1AMruOa6ZMaorjGlwH7dTGNkb0k16jZwnd_BTTdIWFAk1uNqC1GZeekY-Hp8iLrGNZY7ydpVdtTxLQHy7mUQovncgdz8M5Gt7n211AtSIhKOP3ZvDd9Lzw8zYilhgBn7770TRCpQ8hnNipRxl29zdarl9vH1TmTcmSvNyyNolwltZPCMwlNvBcWUqg42wzMr3ChN2RGy_ws oXR75pf7QrW1aYM0Xwsw5KZV1MmutOoLCHnvnQ6mzi0ICe_wPh5tBH_KtyCiVtxCnN7SXJL-1XThEn8RhxdjBmO9zTWL4QElePAQslsX_pnEupLow&dib_tag=se&keywords=high+gain+u hf+vhf+antenna&qid=1710780171&s=electronics&sr=1-3)

### **TUOLNK 5 Pack Waterproof Dustproof Coax Connector Cover for N Female/UHF SO239 Adapter**

\$10 at Amazon

[https://www.amazon.com/dp/B094C12RQG?psc=1&ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details](https://www.amazon.com/dp/B094C12RQG?psc=1&ref=ppx_yo2ov_dt_b_product_details)

### **MOOKEERF CB Coax Cable 10ft,UHF PL259 Male to Male CB Antenna Cable RG316 PL-259 Jumper Cable 50 Ohm for HAM CB Radio,Antenna Analyzer,Dummy Load,SWR Meter etc.**

\$11 at Amazon

[https://www.amazon.com/dp/B0CS32DTXX?ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details&th=1](https://www.amazon.com/dp/B0CS32DTXX?ref=ppx_yo2ov_dt_b_product_details&th=1)