



The Wireless

July 2025

The Garden City

Amateur Radio Club

PO Box 482 • Garden City, MI 48135-9998



Next Meeting:

Tuesday, September 16, 2025
7:00pm
Garden City Presbyterian Church
1841 Middlebelt Road
Garden City, MI 48135

Remember,
There is no meeting this month.
Our next meeting is in September.

Far Side



Fortunately, even the Boy Scouts who fail knot-tying get to go camping.

Join us for Breakfast!

Saturday mornings at 9:00 am
At the Big Boy Restaurant
28340 Ford Road, at Harrison
Garden City
Everyone is welcome!

Yes, we will still meet for breakfast during July and August.

Be sure to visit and use our repeater:

KK8GC
146.860 MHz
-600Hz offset (input on 146.260)

IMPEDANCE MATCHING SPRAY PAINT™

RATTLE CAN EDITION - TUNE YOUR TOWER IN SECONDS!

"Don't fix your transmission line. Paint over the problem!"

FEATURES:

- Realigns coaxial chakras
- Reduces VSWR* by up to 112%
- Adds +3 dB of confidence
- Works on Yagi, dipole, or that bent coat hanger-you call an atena
- Now with *Nano-Ferrite Polymerics™* for directional RF laminar flow!

INSTRUCTIONS FOR USE:

1. Shake can vigorously (to excite RF harmonics)
2. Spray liberally over mismatched surfaces
3. Chant "50 ohms... 50 ohms..." while grounding yourself
4. Enjoy crisp modulation and smug superiority



Willbey R. Pistor, KA8OWB/SK

Willbey Robert Pistor was a proud resident of Garden City, Michigan from 1948 until his passing on Friday, July 4, 2025. He was born at home in Detroit to an Italian family, all originally from the same small town of Valvasone, Italy. Willbey served with the Wayne County Sheriff's Department from 1963 to 1995 and deeply loved his work. In his free time, he enjoyed tinkering in his garage and relaxing on his porch with a glass of wine. For many years, he made his own wine in his basement winery. He was also a dedicated volunteer with the Garden City Planning Commission.



He is survived by his beloved wife, Linda, his loving children, Vina (Robert) Ashburn, Hope (Bryan) Pistor-Schwab, and Larry, and his cherished grandchildren, Chandler (Joran Teijema) Ashburn, Emily Ashburn, and Willbey Schwab. He is also lovingly remembered by many nieces and nephews, along with many Italian cousins.

Willbey was preceded in death by his parents, Luigi and Vina, his stepmother, Angela, his sister, Edala Biasutto, and his brother, Roy.

He will be remembered for his kindness, laughter, and the special way he made everyone feel welcome.

Funeral services were Wednesday, July 9, 2025 at the John N. Santieu and Son Funeral Home on Inkster Road in Garden City, MI.



Radio coach 6ZZ left King's Cross station on July 5, 1924, attached to the 7.38 p.m. Scottish express of the (then) London and North Eastern Railway. The occasion was an experiment carried out by members of the Radio Society of Great Britain to test the practicability of maintaining radio communication between a train travelling at high speed and fixed stations along the route using amateur equipment. In this picture Maurice Child is at the key and Leslie McMichael is adjusting the transmitter which operated on 182.5 metres. Two-way contact was established with 2WD (Bedford), 5DR (Sheffield), 2DR (Shipley) and 5MO (Newcastle-on-Tyne).



Mat-Matics #120: Astron RS-35M Repair and Modifications

-Mat Breton, N8TW

At the 2025 Dayton show I purchased a “tech special” Astron linear power supply model RS-35M. The unit had one missing “foot” and the owner verified that the voltage meter was not functional (although this was obvious just by looking at it). The price was \$50 which is significantly less expensive than the \$440 (HRO Price) that this unit commands when new. I wanted this supply to replace my existing linear supply which uses a fan to keep cool (and this creates annoying shack noise). A review of various schematics showed this supply was likely made between 1991 and 1995, and a marking on the PCB indicated 1994/95 was likely. The factory sticker on the bottom was missing.

About Astron: Astron is a family-owned US company founded in 1976 and operating out of Irvine, California. Manufactured in the USA. The Linear Power Supplies have reliably served Commercial and Ham operators alike for almost fifty years. In 1996, Astron added a new line of Switching Power Supplies.

About the RS-35M: The RS-35 arrived around 1977 (making it one of the company’s first products) and the design has changed very little over the years. The RS-35A is the base model with the RS-35M adding current/voltage meters to the front panel. The VS-35M adds a voltage variable knob and variable current limit.



RS-25A, RS-35M, VS-35M

Advertised as capable of 35Amps in ICS (Intermittent Communication Service ,which is defined as 50% duty cycle), the continuous current specification is actually 25Amps. This is significantly more than my FDX-10 required (which is 6923Amps ICS, 14Amps Continuous).

Theory and Operation: The basic design is based on the Fairchild UA723 regulator chip which came out in the 1970’s. The Astron design is very close to the set of Fairchild reference designs shown for a positive floating supply with overvoltage protection (OVP) and overcurrent protection (OCP).

To save money they current sampling is only done across one ballast resistor. Since there will be differences in tolerance and balance between the four parallel transistors/ballast-resistors this will limit the accuracy of the meter display to some degree. This, input filtering strategy, and the potential for exposed voltage on the bottom of the chassis (from transistors, diodes, and an SCR) are my only design critiques.

Repairs: the unit required several repairs to return it to running service:

1. Feet: One of the feet was missing. This is of particular importance on these models because there are lots of screws and nuts on the bottom ... and in a few cases they are “hot” at 25-29Vdc potential. If a ground wire or other conductive material slides under ... puff.
2. Meter: The voltage meter was non-functional (stuck in one position). The current meter was fine. Astron sells new meters on their website for \$22, but oftentimes meters are repairable. In this meter the coil still read properly (125 Ohms), so the issue was mechanical in nature. Fortunately, I have a friend who can take any meter apart and fix it in most cases. He adjusted the tension on the jewel bearings, and the meter was back to 100% functionality.
3. Pass Transistor Thermal Interface: There are four TO-3 package transistors mounted to the rear heatsink. These run very hot so the thermal interface to the heatsink is critical. Thermal paste can dry out and become less thermally conductive over time, and I was also wondering if someone had replaced these transistors earlier from the very sloppy thermal past application appearance. The transistors in the unit were labeled ECG181 which is compatible with the 2N3771 transistors shown in Astron schematics (and also to NTE181). If I had to guess ... someone replaced the 2N3771’s at some point. I cleaned, re-applied thermal paste, and re-assembled.
4. The caps covering the exposed diode studs on the bottom of the chassis were missing (as they usually are with these products). Instead of just covering them again I modified their mounting location, so the original issue is gone.

Modifications:

1. Binding Posts: The stock binding posts were quite primitive ... simple bolts with insulators to prevent shorting to chassis. I replaced them with some “pro” level binding posts.
2. Bulkhead-mounted Diodes, transistor, and SCR: Four components are mounted directly to the bottom of the chassis where they expose various voltages. The driver transistor showed evidence of sinking significant heat to the chassis (as evidenced by the chassis paint discoloration). I installed an aluminum right-angle bracket that solves all the issues. The driver transistor was isolated from the sink.
3. Grounding Terminals: There are two ground points to chassis, both over painted metal. They measured as good, but to make sure I removed some paint around the holes and added star washers.
4. Inrush Limiter: The supply uses a very large smoothing capacitor (64mF) after the transformer. When the unit is switched on this capacitor looks like a short circuit until it is charged: this potentially stresses components with the large inrush current and can actually dim the lights. Additionally, depending on where in the 60Hz cycle it is turned on ... there can be a disconcerting “thump” sound from the transformer. Similarly to what I did with the Henry linear amplifier, I added an NTC thermistor inline with the primary side circuit to limit the inrush current. This mod was documented by WA1MIK/SK.
5. Bleeder resistor: I added a bleeder resistor for the 64mF capacitor. Previously I was still measuring voltage days after shutdown and now it will bleed down in < 15 minutes. The impact on efficiency is minimal. This mod is discussed by NZ2S & WA6ILQ.
6. Input Filter: The unit arrived with a single (asymmetric) filter capacitor between the 120Vac hot and Ground. I could not verify if this capacitor was Class-Y (required for this application). I added a monolithic single-stage input filter containing both X and symmetric Y-capacitors as well as a common mode choke. Although input filtering is not as critical as with switching supplies this filter will offer some isolation for conducted emissions from the monitor which is on the same supply. I installed on the far-side of the on/off switch so it does not “leak” power when switched off.



Modifications not done: The following mods are documented on the web, but I did not implement.

1. Lighted Meters: I see no need at the present time. A kit is available from Astron.
2. Fan: Several people on the web described putting fans on their unit. Testing showed I did not need this for the FTDX-10 power and would have undercut one of the main reasons I am switching to this supply (fan noise).
3. Updated Regulator board: The existing regulator appears adequate. I don’t see the need to purchase a new regulator from Astron, nor to design a replacement board as several people have done. Between my unit’s regulator board and the latest schematic two protection diodes were upgraded from 100V PIV to 200V. The changes do not appear critical (voltages are well below this).

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RADIO CONNECTS



FD 25

JUNE 28-29

