



**ORDER NO.
423**

INSTALLATION & OPERATION INSTRUCTIONS

SPEECH PROCESSOR

HY-GAIN ELECTRONICS CORPORATION
Rural Route 3 Lincoln, Nebraska 68505

SECTION I

DESCRIPTION

1.1 General

The Hy-Gain model 423 Speech Processor is a two channel unit, each channel having individual gain controls for optimum voice performance. It is designed to allow either or both channels to be operated. It will operate in conjunction with any CB transceiver. The unit is fully solid state throughout using silicon transistors to give the best performance.

When in use the Speech Processor will boost the average output power of the transceiver, thus giving greater range to the radio. It can be used in either a Base or Mobile station, for mobile use a mounting bracket, model 424 is available for under the dash mounting.

1.2 Specifications

Height.....	3"
Width.....	7 1/4"
Depth.....	5 1/2"
Weight.....	3 lbs.
Power Requirements.....	115v AC or +12v DC
Fuse.....	Internal 0.5 amps

SECTION II

UNPACKING

2.1 Removing from Carton

Carefully remove the Speech Processor from the packing carton. Examine it closely for signs of shipping damage. This equipment has been carefully packed for safe arrival IF PROPERLY HANDLED EN ROUTE.

Under no circumstances should you return merchandise to your dealer before instigating the necessary forms. To do so can jeopardize your investment and the costs of necessary repairs may be a burden you will have to assume.

2.3 Warranty Registration

Fill out the enclosed Warranty Registration Card and mail to insure your warranty will be on file.

2.2 In Case of Damage

The responsibility for safe delivery rests with the carrier. The responsibility in obtaining reimbursement for damage rests with YOU. Prompt action on your part will speed adjustments. Our warranty in no way covers malfunction or damage which is a result of improper handling by a carrier.

2.4 Shipping Carton

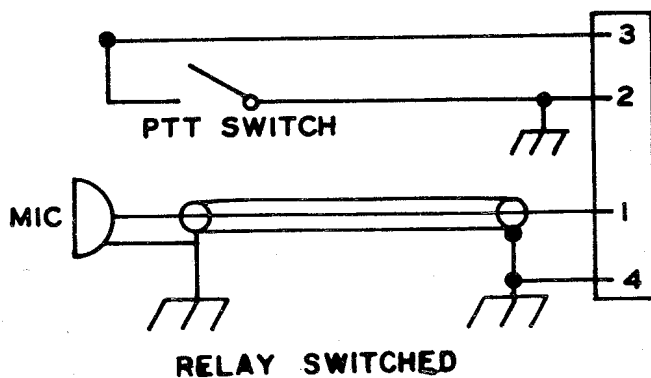
Save the carton and packing material. You may need it at a later date for storage or shipment.

SECTION III

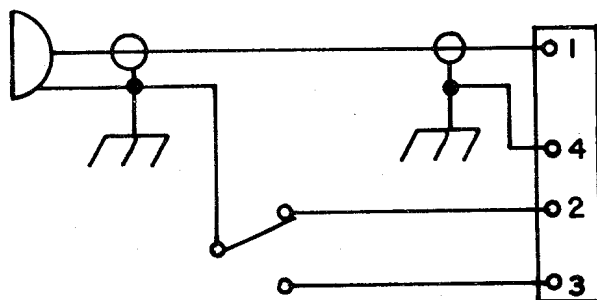
INSTALLATION

The 423 Speech Processor may be used in conjunction with either a Base or Mobile station. The installation instructions apply equally except that a mobile mounting bracket, Hy-Gain Model 424, is available for mobile use. The Speech Processor has provision for two microphones which may be used individually or both together. Two four pin microphone plugs are supplied with the unit.

These plugs should be wired to the station microphones. (The Speech Processor works better if two similar microphones are used when dual operation is used with the unit.) The microphone plug should be wired up as shown in Figure 1. It may be necessary to open up the microphone to find the necessary wires.



**ELECTRONIC SWITCHING MICROPHONE
CIRCUIT WIRING FOR 423**
FIGURE 1



A four-wire cable on the rear of the Speech Processor marked XCVR MIKE connects the unit to the CB transceiver. Please refer to your transceiver instruction manual for proper attachment of this four conductor cable, shown in Figure 2.

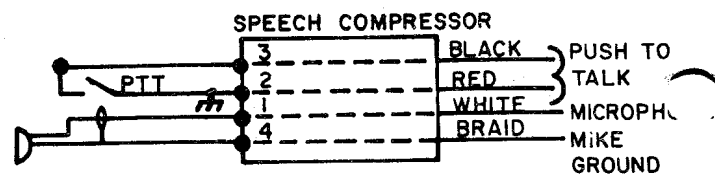


FIGURE 2

If you have difficulty with the microphone and push-to-talk circuits, such as not keying or feedback howls, consult a qualified service technician.

To make the Speech Processor more readily adaptable to any CB transceiver a switch on the rear panel is provided to allow for either Relay or Electronic switching of the transceiver. Refer to your transceiver manual to determine whether your transceiver uses relay or electronic switching. If your manual does not tell you, it is possible to determine it from the microphone cable. Most microphones cables are similar to the one shown in Figure 1. Connect an ohm meter across the Push-to-Talk wires, press the microphone button, the meter will now show a short circuit if the unit is wired for relay switching. If a short circuit is not shown then the unit is wired for electronic switching. A double check on this can be done as follows:

Connect the ohm meter between the braid (microphone shield) and either of the Push-to-Talk wires, one should show a short circuit and one an open circuit. When the microphone button pressed they should reverse.

For Base Station use plug the line cord into an AC out

For Mobile use connect +12v DC and a ground to the +12v DC and -12v DC terminals respectively on the rear panel. This completes the installation.

SECTION IV OPERATION

After the installation is complete, switch the POWER switch to ON. Set the MIKE gain and the MODULATION controls counter-clockwise. Set the COMPRESSION control fully clockwise. Connect a microphone to MIKE A socket and switch the microphone selector switch to A.

Switch on your CB transceiver. If everything is wired correctly, the transceiver should be receiving normally. Key-up the transceiver using the Push-to-Talk button on the microphone. If the transceiver does not go to transmit, check the wiring of the microphone plug and the XCVR microphone cable.

To set up the Speech Processor, switch the COMPRESSOR switch to IN. Advance the MIKE A gain control clockwise until it is half way open. Talk into the microphone and advance the COMPRESSION control counter-clockwise until the LEVEL meter starts reading about 4 on the scale. (The MIKE A gain control may have to be advanced further clockwise to achieve this.)

The COMPRESSION control can be adjusted for different amounts of compression. More compression (a higher reading on the LEVEL meter) gives more punch to a signal

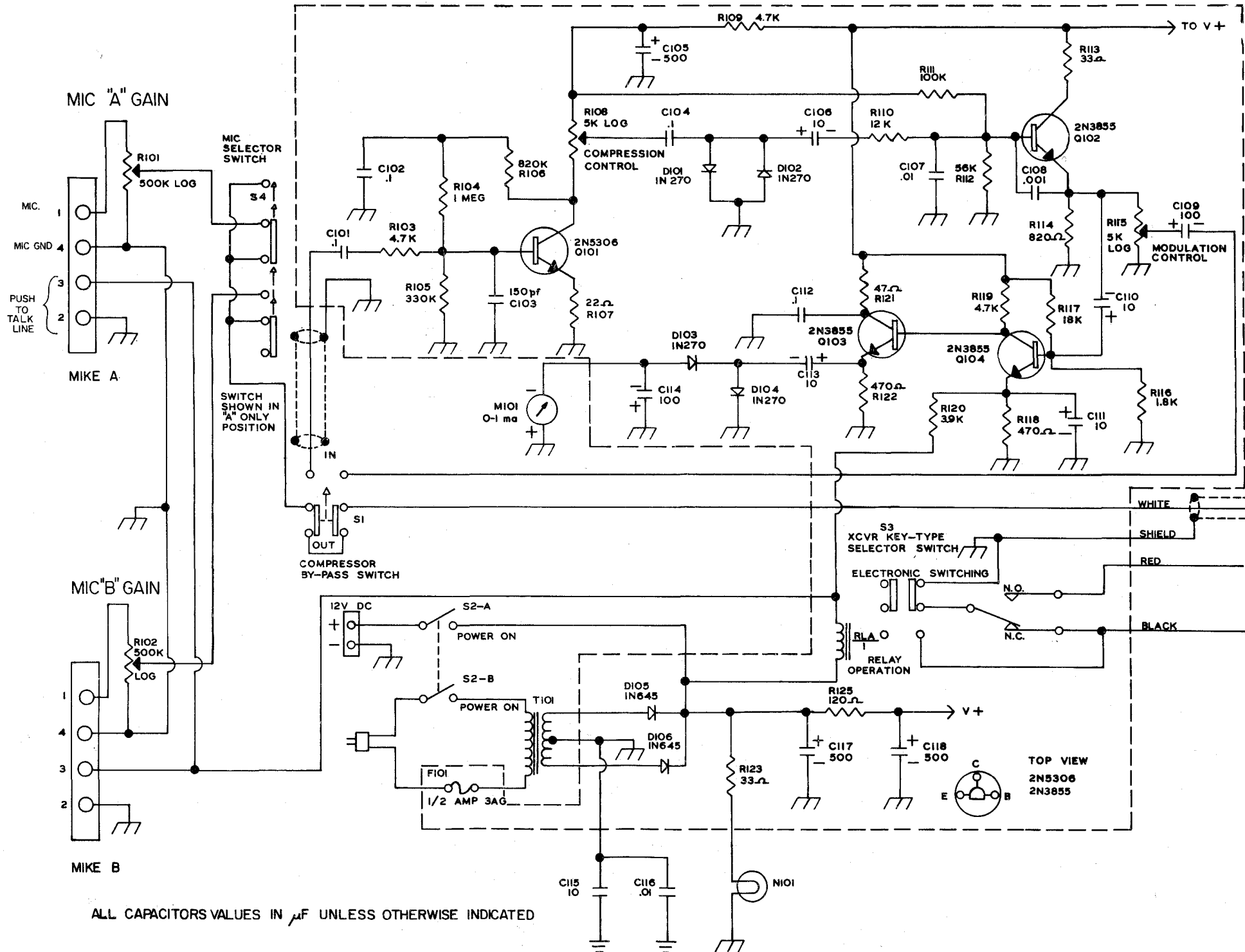
but also increases distortion. A level must be chosen for your own preference.

Once the COMPRESSION is set, advance the MODULATION control clockwise. This will allow the processed audio to modulate your transceiver. This control is best set using a modulation meter such as is in the Hy-Gain model 421 Power Meter. In the absence of a modulation meter the control can be set using a series of on-the-air tests.

Once the amount of COMPRESSION and MODULATION is set using your microphone in position A an additional microphone can be plugged into MIKE B and its gain control set to give the same performance without further adjustment of either of the COMPRESSION or MODULATION control.

With the microphone selector switch set in the center position (A & B) it is possible for two people to talk at once with either one controlling the Push-to-Talk function.

As stated earlier the amounts of COMPRESSION and MODULATION is one of personal preference and should be set accordingly. More compression will cause a higher level on the audio LEVEL meter.



ALL CAPACITORS VALUES IN μ F UNLESS OTHERWISE INDICATED

TOP VIEW
2N5306
2N3855

PARTS LIST

<u>Symbol</u>	<u>Description</u>	<u>Part No.</u>	<u>Symbol</u>	<u>Description</u>	<u>Part No.</u>
C101	.1 Film	721574	R110	12K \sim 1/2w	725638
C102	.1 Film	721574	R111	100K 1/2w 10%	721309
C103	150pf Disc	727980	R112	56K 1/2w 10%	721322
C104	.1 Film	721574	R113	33 \sim 1/4w 10%	721103
C105	500 mfd 15v Electrolytic	721120	R114	820 \sim 1/2w 10%	721334
C106	10 mfd 25v Electrolytic	721121	R115	5K Log Pot	705641
C107	.01 Disc	721550	R116	1.8K 1/2w 10%	721295
C108	.001 Disc	721158	R117	18K 1/2w 10%	721339
C109	100 mfd 25v Electrolytic	725698	R118	470 \sim 1/2w 10%	721316
C110	10 mfd 25v Electrolytic	721121	R119	4.7K 1/2w 10%	721311
C111	10 mfd 25v Electrolytic	721121	R120	3.9K 1/2w 10%	721294
C112	.1 Film	721574	R121	47 \sim 1/2w 10%	720007
C113	10 mfd 25v Electrolytic	721121	R122	470 \sim 1/2w 10%	721316
C114	100 mfd 25v Electrolytic	725698	R123	33 \sim 1/4w 10%	721103
C115	10 mfd 25v Electrolytic	721121			
C116	.01 Disc	721550	R125	120 \sim 1/2w 10%	721336
C117	500 mfd 15v Electrolytic	721120			
C118	500 mfd 15v Electrolytic	721120	RLA 1	SPDT 12v Relay	730011
D101	1N270	765722	Q101	2N5306	760012
D102	1N270	765722	Q102	2N3855	760249
D103	1N270	765722	Q103	2N3855	760249
D104	1N270	765722	Q104	2N3855	760249
D105	1N645	761113			
D106	1N645	761113	M101	0-1ma Meter	795680
R101	500K Log Pot	705640	S1	DPDT Rocker Switch	700010
R102	500K Log Pot	705640	S2	DPDT Rocker Switch	700010
R103	4.7K 1/2w 10%	721311	S3	DPDT Slide Switch	705629
R104	1 Meg 1/2w 10%	721288	S4	DPDT Rocker Switch	700010
R105	330K 1/2w 10%	720001			
R106	820K 1/2w 10%	721323	N101	12v Lamp	710007
R107	22 \sim 1/2w 10%	725639			
R108	5K Log Pot	705641	T101	Power Transformer	730221
R109	4.7K 1/2w 10%	721311	F101	1/2 Amp 3AG Fuse	710231

SECTION V
SERVICE INFORMATION

5.1 Returning Equipment for Service

DO NOT ship equipment to the Manufacturer without prior authorization. We prefer to send special shipping labels which will avoid the delay of unexpected shipment.

If time is extremely important, wire or call for approval and we will rush labels to you. When a shipment is expected, even the time of sending the labels is less than that lost when an unexpected shipment is received.

It is VERY IMPORTANT that the shipment be well packed and fully insured. Damage claims must be settled between you and the carrier and will greatly delay any returns. Proper packing normally avoids this trouble.

ALL SHIPMENTS MUST BE SENT TO US PREPAID. We do not accept collect shipments. All returns should be made in our standard cartons only - so save your carton when unpacking the unit. When a shipment is returned it will be handled in one of three ways . . .

1 - Where all service is in warranty the shipment will be returned prepaid by a carrier of our choice.

2 - If there are any charges not covered by warranty we will hold the shipment and advise you of costs, which you can then send.

3 - Or, upon your written authorization, we will ship COD for any charges not covered by warranty, then the carrier will collect these charges and the transportation costs on arrival. Unclaimed or refused COD shipments will not be reshipped until payment of service and transportation

charges is received. Shipment will then be made collect for reshipment transportation charges. Unclaimed equipment automatically becomes the property of the Manufacturer 60 days after date of refusal or return and will be disposed of for payment of charges due.

NOTE

We WILL NOT ship by means of a carrier that will not fully insure the shipment. Some carriers have a \$200 limit. The exception to this is when there is no other means (APO FPO, etc.) of shipment than parcel post, and then we will ship by this means with your written agreement that you assume any loss over that which the carrier will insure. COD shipments cannot be made to APO-FPO addresses.

5.2 Replacement Parts Ordering

All replacement parts orders must be prepaid or COD only.

Replacement part price quotes will be furnished on request for those who desire prepaid shipment or cannot accept COD shipments.

5.3 Shipping Address

All requests, inquiries, warranty claims or equipment returns should be made to:

Hy-Gain Electronics Corporation
Rural Route 3
Lincoln, Nebraska 68505

Attn: Customer Service Department

SECTION VI

WARRANTY

Hy-Gain Electronics Corporation warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect, or to furnish a new part, in exchange for any part of any unit which under normal installation, use and service discloses such defect within ninety days from the date of purchase by original owner. The unit serial number must be registered by the original owner at the time of purchase to validate the warranty.

This warranty does not extend to any of our products which have been subjected to mis-use, neglect, accident, incorrect wiring not our own, improper installation or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory nor to accessories used therewith not of our own manufacture, nor to any cases where the serial number has been removed, defaced, or changed.

Hy-Gain Electronics Corporation reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation or installation costs that may be incurred. Hy-Gain Electronics Corporation's sole liability is the remedy of any defect for ninety days. Hy-Gain Electronics is not responsible for personal injury or property damage resulting from improper or careless installation not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.