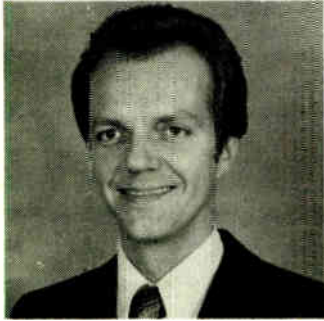


# OUR BEST FOR THE SEASON!



Michael Gerth, Pres.  
Electronic Industries

1980 marks the 29th year for Electronic Industries. It has been a large year for us, and a large year for broadcasting. A troubled economy has caused noticeable bruises, but an overall bounce has appeared in the marketplace reflecting an enthusiasm that is still growing.

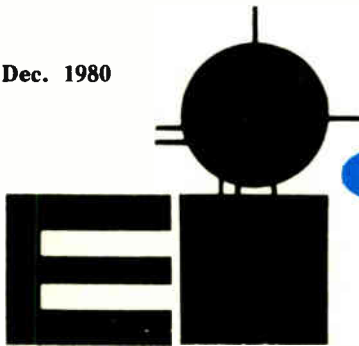
The 'Common Point Monthly' has grown steadily through the year, with the new "Talkback" column opening a door for your involvement much greater than we had anticipated.

We hope you will continue to consider Common Point as a supporting voice to all radio broadcasters.

In the meantime, our very best wishes from all of us here, and every success in the years ahead.



Dec. 1980



## COMMON POINT®

THE MONTHLY NEWSLETTER FOR BROADCASTERS

Distributed by Electronic Industries, Inc., 19 E. Irving Ave., Oshkosh, WI. 54901 414-235-8930

## S.B.E. vs FCC ON FIRST TICKET SNAFU?

With morale reaching an all time low in the FCC First Ticket SNAFU, not unlike the minute men of revolutionary days, the Society of Broadcast Engineers



Robert Jones, President  
Society of Broadcast Engineers

is ready to step into the gap to bring order out of possible chaos. Unconfirmed reports of private conversations, taking place over the past few weeks, if approved, would in effect identify the FCC as a non-professional group, and place the Society of Broadcast Engineers in the position of official "watchdog" on all technical aspects of Broadcasting.

The ramifications of such a move would have to be considered closely both by broadcast personnel presently identified as engineers, and groups or individuals holding station licenses who have a major capital investment in the industry. Assuming the S.B.E. would take the reins, it was suggested in our conversations that initially, first class licenses currently in effect could be "grandfathered" for a period of five years to provide time for licensees to requalify through S.B.E. sponsored examinations. Those not wishing to travel to

a central point within a state to take examinations due to local responsibility or financial reasons, could request to write examinations at their location under supervision of a "proctor" appointed by the society.

**Technical Schools** would not be required to teach approved courses, however, only S.B.E. approved courses, supported by an apprenticeship of one or two years, as has been suggested, would qualify future engineers.

**Station Owners**, some of whom already require their personnel to qualify through S.B.E. examinations, would be encouraged to continue this support, although not required to do so. The major reason for owners support would be their knowing their engineer knows his job. There are just too many rules, with too many people to break those rules for a station owner to personally play watchdog.

**Equipment Warrantees**, without a strong engineering establishment may soon be conditional on installation and service by an engineer who's qualifications are acceptable to the manufacturer.

Another point, and one many engineers have discussed, is the abuse of equipment by those, who in an effort to dominate a market, literally throw away the rule book through over modulation, etc. Under the present situation, the FCC Field Office is very busy

(cont. on page 3)

# ..... HAVE YOU HEARD? .....

COMMON POINT is a publication of the Broadcast Division of Electronic Industries Inc., an independent distributor. Michael Gerth, owner and publisher; W. P. Tedlie, editor.

## Editor's Notebook

### BROADCAST LINE CARD

#### ANTENNAS

AM Antennas  
PI-Rod  
LBA (Folded Uni-Pole)  
Ports-Towers  
FM Antennas  
Phelps-Dodge  
Antenna Tuners  
Wilkinson

#### TRANSMISSION LINE & CABLE

Belden  
Cablewave

#### AM TRANSMITTERS

CCA  
Wilkinson

#### FM TRANSMITTERS

Broadcast Electronics  
CCA  
LPB  
QE1  
Wilkinson

#### FM EXCITERS - STEREO GENERATORS

Broadcast Electronics  
CCA  
Optimod  
QE1  
Wilkinson

#### MONITORS

Belar  
McMartin  
Potomac Instruments  
QE1

#### AUDIO PROCESSORS

Broadcast Electronics  
Dorrough  
Inovonics  
Marti  
Orban

#### AUDIO CONSOLES

Autogram  
Broadcast Electronics  
LPB  
McMartin  
Micro-Trak  
Pro-Tech  
Russco  
Shure

#### TURNABLES

QRK  
Russco  
Technics

#### TONE ARMS

Micro-Trak  
QRK  
Shure

#### TURNABLE PREAMPS

Broadcast Electronics  
Micro-Trak  
Russco  
Shure  
Stanton

#### STUDIO TRANSMITTER LINK

Marti  
Moseley  
Micro-Control  
Vega

#### REMOTE CONTROL

Marti  
Moseley  
Micro-Control

#### MICROPHONES

AKG  
Electro-Voice  
Shure

#### MICROPHONE STANDS & ARMS

AKG  
Astatic  
Electro-Voice  
Luxo  
Shure

#### TAPE CARTRIDGE MACHINES

Broadcast Electronics  
DB Electronics  
Telex

#### TAPE RECORDERS

Ampex  
JVC  
Pioneer  
Revox  
Technics

#### RECORDING TAPE

Ampex  
Audiopak  
Fidelipac  
Maxell  
TDK

#### EQUIPMENT RACKS

BUD  
Soundolier

#### JACK PANELS & PATCHCORDS

ADC  
Switchcraft

#### TAPE HEADS

Nortronic

#### TUBES & TRANSISTORS

Amperex  
Elmac  
General Electric  
National  
RCA

#### CLOCKS & TIMERS

ESE

#### TEST EQUIPMENT

B & K  
NLS  
Sencore

#### RELAYS

Potter & Brumfield



YE OLDE EDITOR

It's amazing! Things are always happening in the broadcast industry, but nothing has ever caused such a stir as the FCC proposal to discontinue the first ticket. We would have to add at least eight more pages to handle our "Talkback" column if we were to print all

the replies. We have even been sent copies of full blown letters to the FCC. Some replies just tell how wrong it would be, but most of the replies really are angry. We have written to the FCC reporting the response. I hope you all have written too. Don't wait for someone else to write. Do it yourself.

**Common Point Winner.** This month, our winner is KLCB Radio station located in Libby, Montana. We had considered dropping the monthly winner idea, but it seems to be popular still. Remember, there is nothing

to buy. All you have to do is return your card which tells us you have received the latest issue of Common Point.

**Questions & Answers...**Noise was the subject...The questions and answers both showed upon "Talkback". The question was noise on carts that sounded like a "windstorm" in the background. The answer was a possible "underbias" condition which accentuates high frequency hiss. Run 1 Khz tone through and adjust bias to peak. Might also try 10 Khz too. The answer for "Oregon" and the network line whistle came from Missouri and Michigan. Missouri said to just use a 4 Khz notch filter. Michigan answer man was Jack Vobbe, C.E. at WLEW at Bad Axe. Just give him a call. Jack went on regarding New Mexico's question on updating facilities. He's been doing it over the past eight years. Again, give him a call. The numbers in the Book.

**Rebuilding...**Has been a recurring topic this past year, so we turned to one of the experts, and he promised us an article this coming year. "Rebuilding The Old Station", By Jim Lies, C.E. at WRBR.

**It's New...And It's a Beauty...**It's the new Telex...Magnecord...3000 Series reel to reel. Built to take a beating, and a lot of terrific features that can all be used. See page 4 of this issue.

**Question of the month...**The Federal Communications Commission is an appointed body. Should..

(1) Future members be selected from a list of men or women in broadcasting?

(2) A majority from broadcasters?

(3) One or more broadcast engineers?

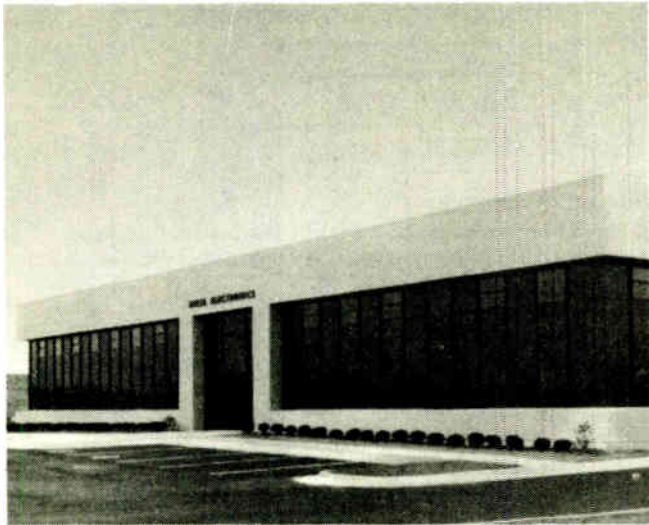
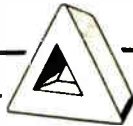
Let's hear from you!

\*\*\*\*\*

CALL SPOKESHAVEN - PERSON TO PERSON - COLLECT AT  
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19 E. Irving, Oshkosh, Wis. 54901  
**414-235-8930**

Feature Line for December -

DELTA ELECTRONICS



Delta Electronics, Inc., Corporate Headquarters

Delta Electronics, located just a few miles from Washington, D.C. in Alexandria, Virginia was initially formed by five partners of the A. D. Ring and Associates Consulting Engineering firm in the Spring of 1962. The founding goals of Delta Electronics were to develop, manufacture, and market professional quality proprietary products to meet the requirements of the communications, broadcast, and allied industries. In November 1962, Stephen W. Kershner and Charles S. Wright withdrew as partners of A. D. Ring, and arranged for Delta to purchase stock held by the remaining A. D. Ring partners. At the same time, the consulting firm of Kershner and Wright was established.

(cont. on page 14)

PART II

DESIGN CHOICES AND CARTRIDGE TRANSPORT PERFORMANCE

by Carl L. Martin, Audi-Cord Corporation



Tape Pull vs Roller Height:

A very basic physics will relate simply that the larger the surface between the pressure roller and the capstan the larger the pull.

Several factors more subtle are related to the amount of pull that is realized. Among these, although not as significant to the end result, are shaft diameter, deflection, surface roughness and the roller wear pattern.

Attached is a graph showing the effects of pressure roller force and the resultant pull for the two common heights of pressure roller when they are new and worn out. The shaft roughness was typical and both worn out rollers were 0.012" under size from wear.

This graph clearly shows that the 0.375" roller has and continues to have about 33% more tape pull than the 0.312" roller. It should have because it has twice the clean roller area in engagement with the shaft.

The application of a second basic physical nature will prove that the tape pull realized in the pressure roller to capstan mechanism is by differentiation, that is, the capstan drives the roller and the roller, because of its' larger surface contact area, drives the tape. Therefore, the size and surface roughness of the capstan, though useful, are not critical to good tape pull.

Cartridge Design Differences:

Many new designs of NAB cartridges are becoming available in the industry. Most of these are fiercely competitive in the theme of better guidance for stereo needs and high reliability. Some of these probably are the result of experiments conducted upon transports which were misunderstood or erroneously assumed to be of the largest need to the broadcaster. Perhaps some of these designs carried back tension a bit far.

A careful study of Figures 1 and 2 (Nov. Common Point) will relate that the degree of skew caused by the 0.375" roller height and by improper pressures or vertical alignment can be decreased by the addition of back tension is improvement of head wrap and the

(cont. on page 11)

FIRST TICKET SNAFU?

(cont. from page 1)

and too understaffed in order to handle commercial broadcast problems as well as complaints about some guy on citizens band with too much power and the wrong language. A strong state or regional S.B.E., if given the authority, could move quickly in problem areas. And too, a strong state or regional S.B.E. could be a "port in the storm" when they feel they are being harrassed by unfriendlies, that we have occasionally discovered looking for the fast route up in government employment.

It appears now the general concensus among most engineers we have have talked to, is that it would not be practical for engineers to have but one license. Instead, a basic license that could be renewed periodically on payment of a fee. Then there would be several endorsement which would pinpoint that engineers training, i.e. AM or AM/FM radio . . . directional systems . . . automation systems . . . television . . . general field service, etc. There are many things to be faced, many things to be decided in the time ahead. It is important these decisions be ones broadcast engineers make.



..... IS TAKING THE MARKET .....

# TELEX MAGNECORD

## 3000 SERIES RECORDER- REPRODUCER

### Model 3000 Tape Transport

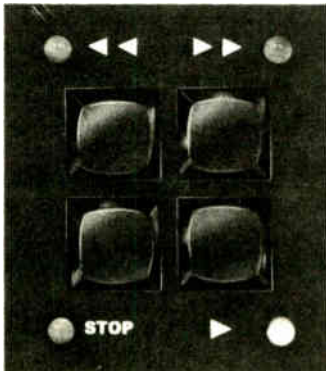
The 3000 series Telex-Magnecord tape transport combines current technology with the traditional reliability of professional Magnecord broadcast equipment. The three-motor unit accepts reels up to 10½" (267 mm) with NAB type A or type B hubs and fits standard equipment racks. The 3000 series transport and RP85 record/play preamplifiers and accessories may be ordered as separate items, or as a complete package. One and two channel systems are available and include the transport, amplifier(s), cables and rack mount adaptor.

### Tape Drive Mechanism

The two-speed transport is available for 3¾ - 7½ ips (9.5-19 cm/s) or 7½ - 15 ips (19-38 cm/s) operation. A hysteresis synchronous drive motor maintains even tape speed regardless of line voltage fluctuations. Capstan and drive motor are mounted on a heavy-gauge steel plate as a single assembly so that flutter inducing vibrations are virtually eliminated. A polyurethane drive belt and pressure roller provide exceptionally long life. High efficiency torque motors provide spooling power for large metal reels and heavy tape packs. Torque for various reel sizes is selected by a front panel switch. Electronic-mechanical brakes provide fail-safe differential braking without danger of tape stretching even in the event of power failure. Primary taps on the power transformer render the transport suitable for a wide range of 120/240 line voltages. A switched, 250 watt power outlet is provided on the rear panel for the associated amplifiers.

### Tape Motion Controls

Transformer isolated CMOS logic controls all tape motion smoothly and positively. Computer grade push buttons with adjacent LED's indicate the operating mode of the transport at any given moment. Tape motion can also be remote controlled. Spring dampened arms and idler wheels maintain constant tape tension even during mode switching and assure smooth tape travel at fast wind and record/reproduce speeds. An optical sensing circuit, consisting of an infrared LED and transmitting filter, provides reliable end-of-tape sensing in high ambient light and even with low density oxide-coated tape.

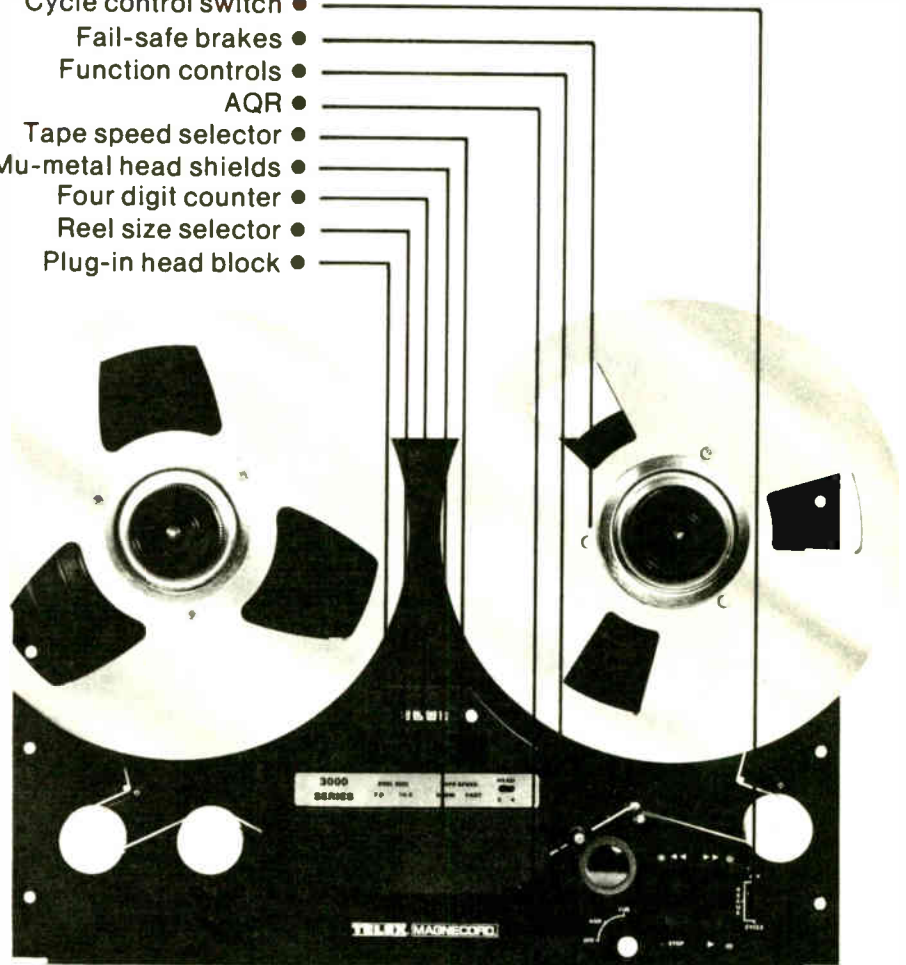


(cont. on page 6)

## ..... IT'S AMERICAN

### 3000 TRANSPORT

- Cycle control switch
- Fail-safe brakes
- Function controls
- AQR
- Tape speed selector
- Mu-metal head shields
- Four digit counter
- Reel size selector
- Plug-in head block



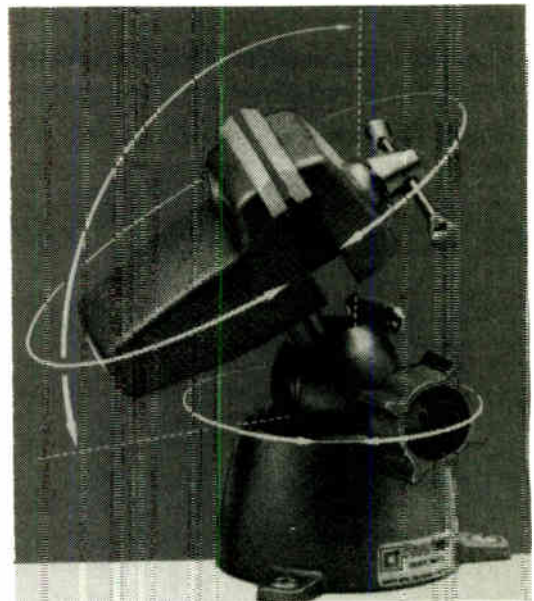
### RP 85 PREAMPLIFIER



- Headphone jack
- Power
- Play volume
- Equalization
- Output select
- VU Meter
- Record-volume (line)
- Record/Safety switch
- Record volume (microphone)
- Record enable

..... BY STORM ALONG WITH THE .....

# A GREAT CHRISTMAS PRESENT FOR EVERY ENGINEER

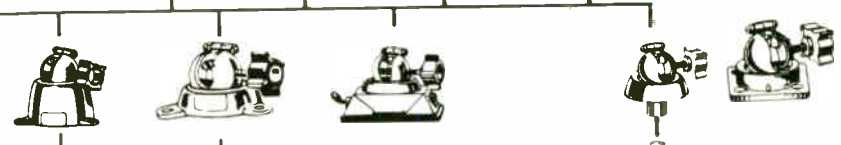


PANAVISE tilts, turns and rotates. One quick turn of the control knob and you securely position your work exactly where you want it. There is a PANAVISE to fit your exact needs. Use the Chart below to select the most suitable combination of the interchangeable heads, bases, and base mounts. You will find this robust little vise to be one of the most used and useful tools on your bench.

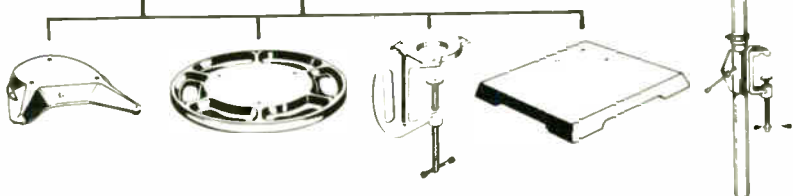
## PHASE 1 SELECTION OF HEAD



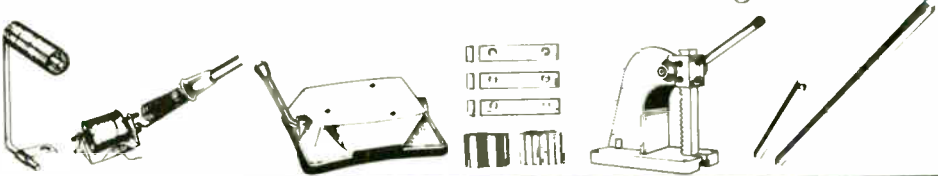
## PHASE 2 SELECTION OF BASE



## PHASE 3 SELECTION OF BASE MOUNT



## PHASE 4 SELECTION OF ACCESSORIES



**THESE THREE POPULAR COMBINATIONS ARE PACKED AS A SINGLE UNIT**

**STANDARD PANAVISE**

**301**  
Combination of Standard Head and Standard Base

**\$29.95**

**WIDE OPENING PANAVISE**

**396**  
Combination of Wide Opening Head and Standard Base

**\$28.95**

**VACUUM BASE PANAVISE**

**381**  
Combination of Standard Head and Vacuum Base

**\$35.95**

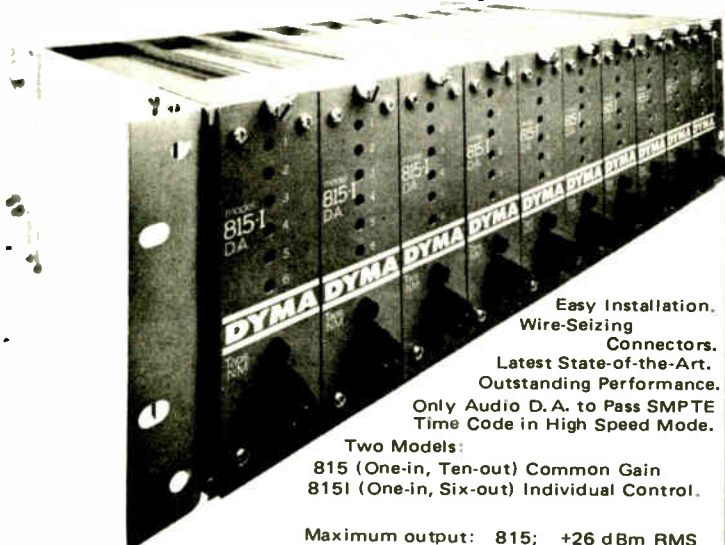
YEAR END SPECIAL.....  
.....SAVE 15%

JUST CALL ELECTRONIC INDUSTRIES AT 414-235-8930  
JOIN THE VISE SQUAD WITH PANAVISE



# ALL NEW 30KW TRANSMITTER . . . . .

## Dyma Distribution Amplifiers... Highest Headroom in the Industry.



### specifications;

Input; Bridging, balanced or unbalanced (electronic)

Output; 10 for model 815  
6 for model 8151

Electronically balanced - 600 ohm source terminated  
Isolation; 60 dB

Gain; 0-30 dB Individually adjusted on  
8151

Power supply; 120vac (240vac option)  
50/60 Hz  
15va primary fused.

Module Price \$289.00

Rack Price \$165.00

**YEAR END ORDERS  
SAVE 15%**

# DYMA

FROM

## ELECTRONIC INDUSTRIES INC.

414-235-8930

Easy Installation.  
Wire-Seizing  
Connectors.  
Latest State-of-the-Art.  
Outstanding Performance.  
Only Audio D. A. to Pass SMPTE  
Time Code in High Speed Mode.

Two Models:

815 (One-in, Ten-out) Common Gain  
8151 (One-in, Six-out) Individual Control.

Maximum output: 815; +26 dBm RMS  
8151; +21 dBm RMS



TELEX-MAGNECORD

(cont. from page 4)

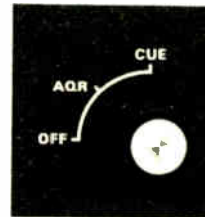
### FOR 'LIVE ASSIST' OR AUTOMATION

An automatic cycling feature makes the 3000 series transport suitable for various automation operations. Cycling is controlled with the infrared optical sensing circuit and requires 30 feet (9.1 m) of clear leader at each end of the tape. The desired cycling is selected by a three-position switch. In the OFF position, the transport operates in a conventional manner. In the RECUE position, the tape runs to the end of the program, then automatically rewinds to the beginning and stops, ready to play again. Finally, in the CYCLE position, the tape cycles continuously until stopped.



### AQR . . . BUILT FOR PRODUCTION WORK

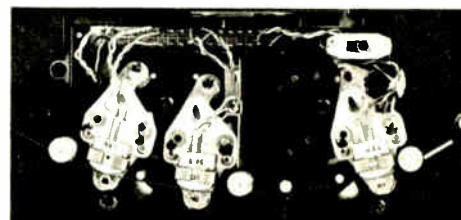
The Automatic Cue Release (AQR) is a three-position switch controlling the tape lifters to assist in cueing and in more efficient editing. In the CUE position, the lifters are retracted and the tape is in contact with the heads regardless of the operating mode. In the AQR position, the tape maintains contact with the heads while in motion, but the lifters become functional when the transport is stopped. The AQR switch then automatically returns to the OFF position. Thus, the operator does not have to remember to release the lifters after cueing or editing. The head cover snaps off to further facilitate editing.



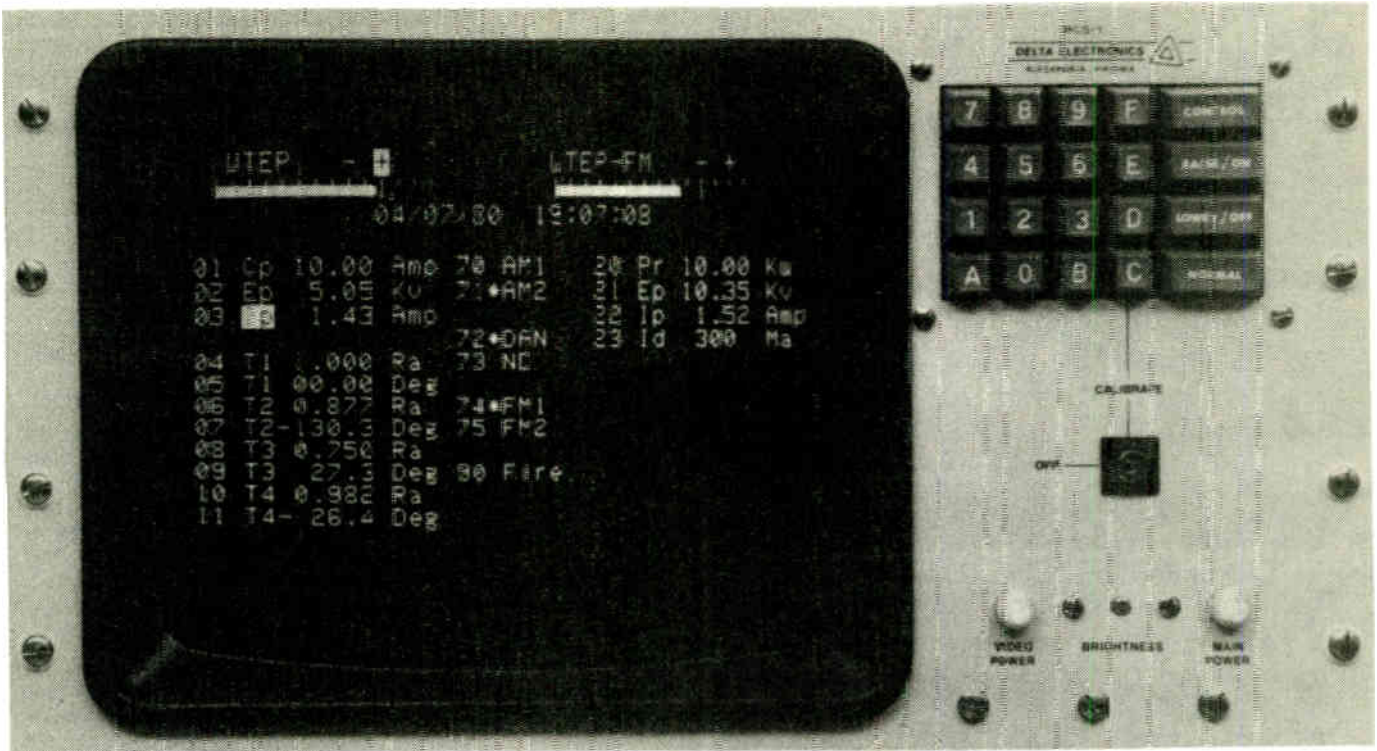
### PICK THE HEAD CONFIGURATION BEST FOR YOU

#### Interchangeable Head Blocks

The 3000 series transport is available in a variety of head configurations (see ordering information). The snap-on head cover contains a mu-metal shield to isolate the heads from external electromagnetic or RF fields. Heads are mounted on a heavy-gauge assembly plate which accommodates up to four heads and also contains the tape guides, a head selector switch, and the optical infrared sensor. All heads, switch and sensor leads are terminated in a connector block. Only four screws secure the entire head block assembly so it can be readily exchanged with another track and channel configuration. Thus, a single transport with several matched head blocks can serve multiple applications. Tape head input/output jacks for the associated record/reproduce amplifier are on the back panel of the transport.



(cont. on page 12)



## RCS-1 Remote Control - ATS System

The RCS-1 Remote Control/ATS System has been designed to provide engineers with an affordable, yet reliable, state-of-the-art microprocessor-based system. The modular approach of the RCS-1 does not restrict the engineer to a set number of channels. Separate 8-Channel Input and Control Boards may be added to an RCS-1 System as requirements change.

The RCS-1 has been designed with the non-technical operator in mind. All operating parameters are displayed on an integral video display. Alarm and out-of-tolerance "Flags" serve to alert the operator of problems. Best of all, the operator need not touch the RCS-1 to obtain logging data; however, an easy-to-read keyboard provides control access for transmitter operation or pattern change, when required. A front panel key-lock switch prevents unauthorized entry into calibration or format modes.

The RCS-1 can be provided with several options:

The Automatic Logging Option can be connected to a serial printer, and will generate transmitter logs on command, or on a pre-selected basis. The Modulation Bargraph Option (patent

pending) provides real-time modulation indications in bargraph form, complete with peak flashers. Modulation information is encoded at the transmitter site from a modulation monitor at that location. Perhaps the most unique option on the RCS-1 is the Telephone Access. Utilizing a speech synthesizer, it is possible for the RCS-1 to relate parameter information to the engineer over a touchtone telephone *in the English language*. The RCS-1 actually talks to the engineer; and can generate telephone calls to the engineer in the event of equipment failure, as well as place calls to the Police or Fire Department if intrusion or fire alarms are triggered.

Optional software permits the RCS-1 to be used as a combination remote control/automatic transmission system (ATS). Operation in this manner would permit the station to revert back to remote control operation if an impending ATS shutdown were to occur.

The RCS-1 can be supplied in either of two basic configurations, and each version provides a BNC jack for additional CRT monitors. The RCS-1 provides the answer for complete parameter control and monitoring. A detailed technical brochure is available on request.

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## DELTA ELECTRONICS

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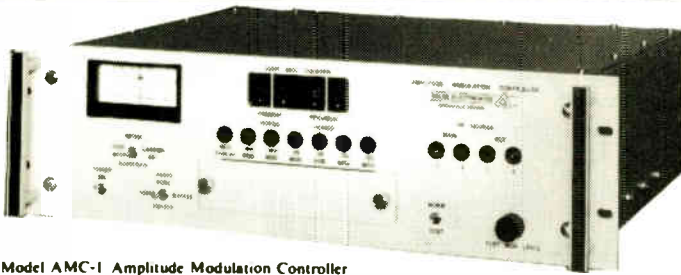


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Model AMC-1 Amplitude Modulation Controller

## AMC-1

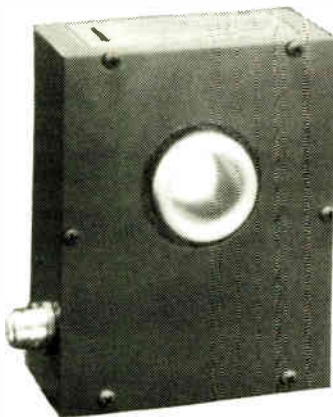
The patented closed-loop concept of the AMC-1 Amplitude Modulation Controller assures precise audio level adjustment, based on a digital analysis of the actual transmitter modulation levels. In addition to keeping a digitally displayed count of F.C.C. defined overmodulation peaks, the AMC-1 constantly monitors and adjusts the audio level to compensate for program source variations as well as changes within the transmitter which are beyond the control of conventional limiting and compressing equipment.



Model APC-1 Automatic Power Controller

## APC-1

The Automatic Power Controller (APC-1) is your insurance against citations for over- or under-power operation. The APC-1 senses a DC sample of the transmitter power, and provides relay contact closure to adjust the power control on the transmitter. The APC-1 works in both AM and FM applications, and will interface to any transmitter that provides a motorized means of power adjustment.



## TCT

The Toroidal Current Transformer has been designed primarily for obtaining sampling voltages for driving directional antenna monitors, and are available in three sensitivities (TCT-1 1/2-volt per ampere, TCT-2 1/4-volt per ampere, TCT-3 1-volt per ampere). Because of their size, the TCT can be easily mounted *inside* the coupling unit at the base of each tower; and is therefore protected from the elements. This feature, coupled with a greater than 100 dB electric field rejection are just two of the numerous advantages of the TCT over the conventional sampling loop.

Model TCT Toroidal Current Transformer

## DAM-1

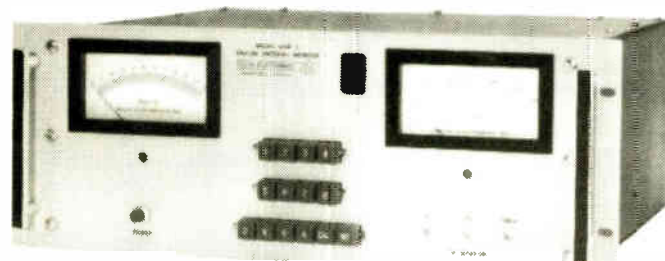
The Digital Antenna Monitor (DAM-1) couples push-button ease of operation with digital accuracy. The DAM-1 is a true digital monitor, which provides antenna ratios despite fluctuations in the amplitude of the reference tower. The result is a simplified means of operation for non-technical operators. The DAM-1 can monitor up to 12 towers, and provides a BCD remote output which eliminates remote control calibration.



Model DAM-1 Digital Antenna Monitor

## AAM-1

The Analog Antenna Monitor (AAM-1) meets the needs of both the engineer and the non-technical operator. All functions are easily selected by the front-panel lighted pushbuttons. This monitor is a true ratio monitor, providing antenna ratios despite changes in reference tower amplitudes. This feature eliminates the need for operators to adjust the reference tower to 1.000 before reading tower ratios. In addition, phase sign data is continuously displayed, which eliminates additional operations as required on other types of antenna monitors.



Model AAM-1 Analog Antenna Monitor

**DELTA ELECTRONICS**



Distrib

**ELECTRONIC INDUST**

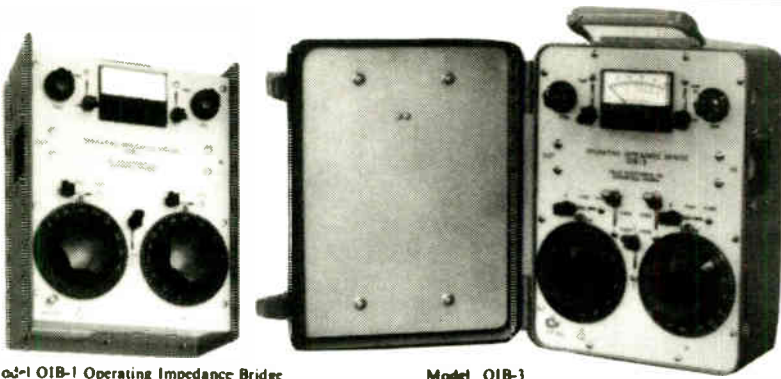
**414-235-8930**



# COMMON POINT CATALOG

## OIB-1 / OIB-3

The Operating Impedance Bridge measures the impedance of networks, radiators, and the like while they operate under full power. The OIB-1 measures complex impedances of up to  $400 \pm j 300$  ohms. The OIB-3 provides extended measuring capability, allowing measurements up to  $1000 \pm j 900$  ohms. Increased sensitivity is provided by an internal RF Amplifier, and the OIB-3 is built-in to an aluminum carrying case. Either bridge can also be used in conjunction with the RG-3 Receiver-Generator or similar generator-detector to provide antenna impedance measurements as required by the F.C.C.



Model OIB-1 Operating Impedance Bridge

Model OIB-3 Operating Impedance Bridge

## CPB-1

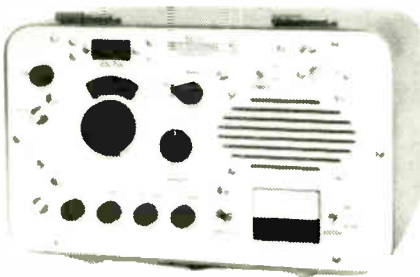
Similar in operation to the OIB series of bridges, the Common Point Impedance Bridge is designed for permanent installation. The CPB-1 permits continuous monitoring of a station's common point impedance; thereby facilitating network adjustment and providing the engineer with an invaluable maintenance tool. Both the CPB-1 and CPB-1A (50 kW version) can be supplied with one of Delta's TCA RF Ammeters mounted in the front panel. The Common Point Impedance Bridge measures from 30 to 100 ohms of resistance and  $\pm j 50$  ohms of reactance.



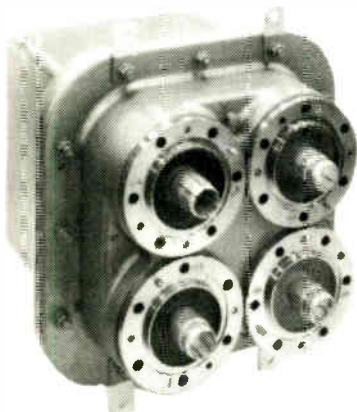
Model CPB-1 Common Point Impedance Bridge, w/TCA-20-EX RF Ammeter System

## RG-3

The Receiver/Generator combines a two-watt RF output with a correlation detector circuit that virtually eliminates interference problems while making impedance measurements. Receiver and generator frequency selection is accomplished using a single tuning control, and the generator frequency is displayed on a front panel LED readout. The RG-3 can be operated using AC line current or rechargeable Ni-Cad batteries. The RG-3 can be used with any of the OIB / CPB series of impedance bridges, as well as conventional bridges, to provide impedance measurement data.



Model RG-3 Receiver Generator



Model 6730E Coaxial Transfer Switch



Model 33630A Transfer Switch Control Panel

## 6730E / 6740B

The Coaxial Transfer Switch (Model 6730E or 6740B) is a four-port switch that may be operated manually or by remote control. The 6730E interfaces to 1-5/8 inch standard EIA flanges; the 6740B is designed to accept a standard 3-1/8 inch EIA flange. Both models are fully interlocked and provide the means to switch two transmitters between an antenna and a dummy load. An optional control panel provides remote switching as well as lighted indication of transmission paths.



Model 6740B Coaxial Transfer Switch

**DELTA ELECTRONICS**

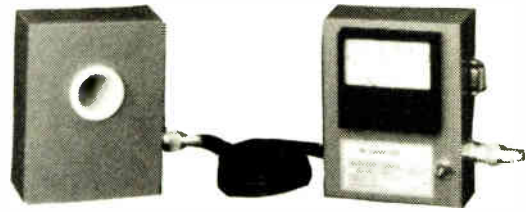


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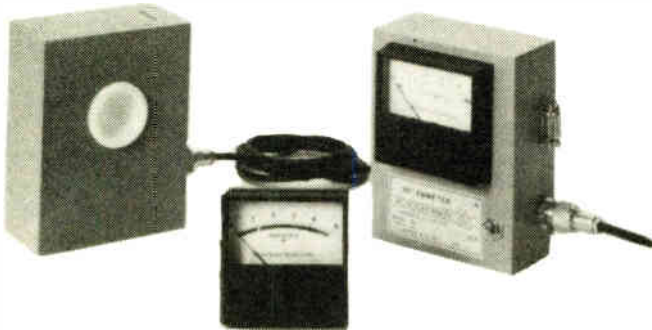
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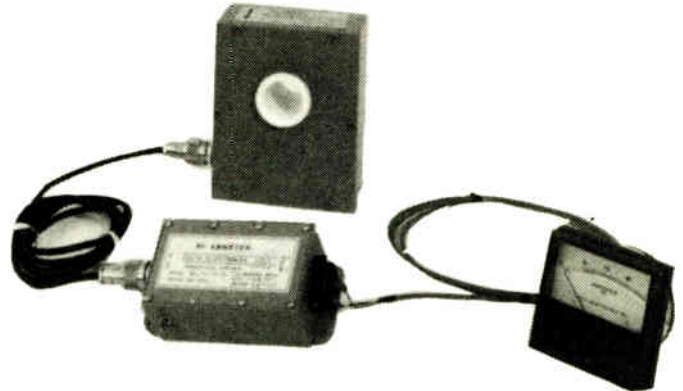
Model DPM-I Digital Panel Meter.



Model TCA-10-20 EXR Dual Scale- RF Ammeter System.



Model TCA-5 EXR RF Ammeter with 3-inch Remote Meter.



Model TCA-20-XM3 20 AMP Toroidal Coupled RF Ammeter.

## TOROIDAL COUPLED RF AMMETERS

Accurate, temperature independent RF current indications are now possible through use of the TCA R.F. Ammeter. Utilizing a patented rectifier circuit, the TCA provides a stable current indication that does not respond to modulation—only to carrier level changes. This rectified voltage is displayed on a mirror scale taut band indicating instrument. A sample of this DC voltage is also provided as a remote output for remote control or metering purposes. Since the same rectifier is used for both main and remote indications, greatly improved tracking accuracies are available.

The TCA utilizes a linear-scale meter. This allows readings to be made from 20 to 100% of full scale, and still be well within the FCC 2% accuracy specification. Therefore, unlike the thermocouple, the TCA System does not have to read in the upper two-thirds of the scale. In many cases, this expanded reading capability means that one TCA meter will perform the job of two thermocouples, as both currents can be read on one TCA scale.

In cases where a wider range of current measurement is required, the TCA Ammeter can be provided with two adjacent scales which are combined to form a dual-scale system. Any two

adjacent scales displayed in the table shown may be used in a dual scale system.

FULL SCALE VALUE	READABLE RANGE
5 Amperes	1 to 5 Amperes
10 Amperes	2 to 10 Amperes
20 Amperes	4 to 20 Amperes
40 Amperes	8 to 40 Amperes
80 Amperes	16 to 80 Amperes

Delta also supplies remote meters, meter panels, buffer amplifiers, and the Digital Panel Meter. The Digital Panel Meter displays absolute current readings on a 3-½ digit LED display. Sixteen channels of information can be selected from the front panel pushbutton controls. The DPM is not limited to accepting samples from the TCA Ammeter, but will accept other analog data as well (such as transmitter plate current and voltage remote samples). The DPM provides both analog as well as digital BCD outputs as well as remote select capability. Digital control is also available using an 8-bit address bus.

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..... LOOK FOR MORE PRODUCTS .....

# SUPERSCOPE C-207LP

## MOST FOR THE MONEY AND MORE POPULAR EVERY DAY!

The Superscope C-207LP three-head portable recorder is your personal information-processing tool. Combine its compact size and sophistication in features with its two-speed capability and you have the ideal recorder for broadcast journalists and others who demand outstanding sound reproduction and dependable performance of true broadcast quality.

The C-207LP's two-speed function lets you record at 1 7/8 ips, or for twice the recording time on your cassettes use 15/16 ips mode, cutting cassette expenditures in half.

The C-207LP has separate record and playback heads so you always hear exactly what's going on the tape as you record — there's no guesswork, and you can instantly check recording progress any time. Three-head design also means each head is designed specifically for its function — record, playback/monitoring or erase — without sacrificing any performance for sake of compromise.

That's just for starters... check out all the other features that make the C-207LP the choice of so many people who demand professional quality and performance...

- Super-hard permalloy record and playback heads ensure a wide frequency response, low phase distortion and up to ten times longer life than ordinary heads.
- Memory Rewind/Replay works in conjunction with the 3-digit tape counter to replay any selection on the tape — automatically. Just reset the counter to "000" at any point on the tape. Later, simply hit rewind. The tape will rewind to "000" and immediately start.
- One-touch record allows instant recording with one-button ease, and lets you go directly from play into record mode.
- Cue and review helps you find any point of sound on a cassette by enabling you to hear the tape while it's being advanced in fast-forward, or in rewind.
- Automatic-manual-limiter record level switch provides the option of setting record levels manually, or using the built-in automatic record level (ARL) circuitry. The limiter automatically protects against high input signals, so sudden volume increases won't cause distortion or tape saturation.



Reg. \$250.00

YOURS FOR JUST —

**\$189<sup>95</sup>**

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BY ELECTRONIC INDUSTRIES INC.

Portables that go beyond

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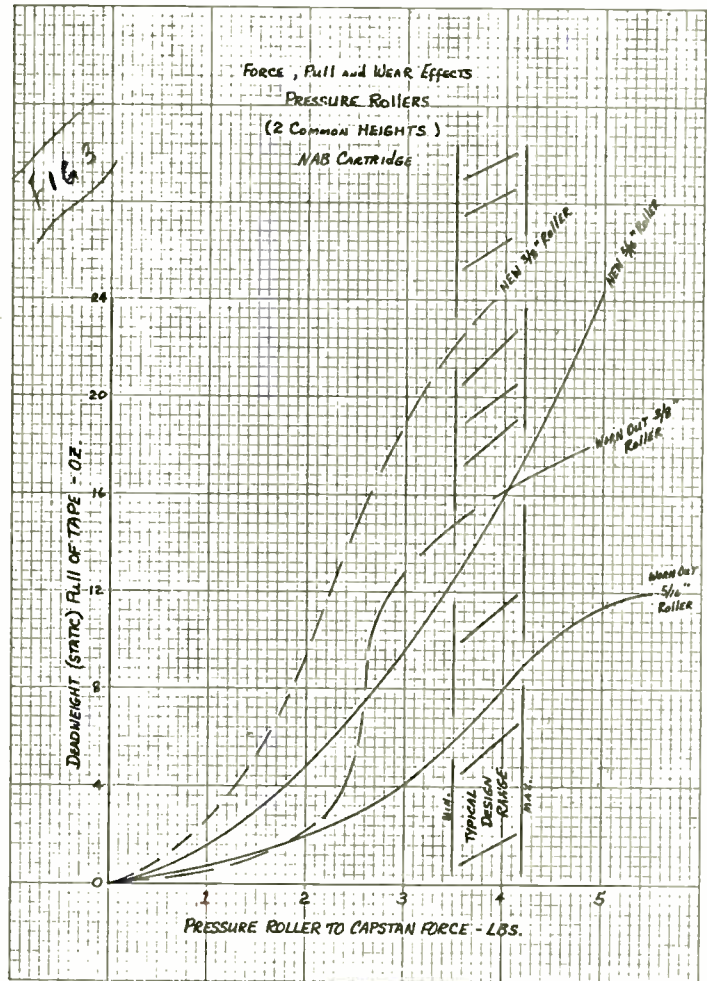
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### DESIGN CHOICES

(cont. from page 3)

effects of pressure pads that are mis-aligned or inadequate of size. But, how much back tension can be tolerated? Obviously, excessive design tensions or improper tape pulling forces for whatever reason will preclude that the 0.312" pressure roller can not be successfully used.



Of course the solution to these problems is simple. Any user who wishes can readily change the 0.312" pressure roller to one of 0.375" height. They are all interchangeable but, is this really a solution?

The committee who formulated the needs for the 1976 NAB Cartridge Standards chose to remove the earlier requirements of the 1964 standard which stated the 24 oz. (torque) pulling requirement for cartridge transports and replaced it with a maximum tape pull requirement for the tape and cartridge of 3 oz. Unfortunately this standard does not clarify this tension as that of new cartridge and tape or over a useful life.

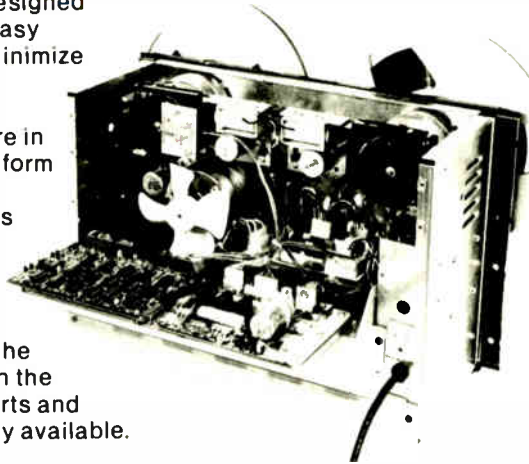
It is logical to assume that this study was based upon the needs of long tape wear life, head wear and other important considerations for the use of this type of machine in broadcast applications. This author for one finds a serious inconsistency between the important demands of stereo phase stability in cartridge transport designs and the designs of some of these new cartridges. Only the user can properly determine the end results, by his needs to purchase, by his demands

(cont. on page 13)

TELEX-MAGNECORD  
(cont. from page 6)

### Serviceing Convenience

The 3000 series transport is designed for efficient, easy servicing to minimize down time. All mechanical assemblies are in subassembly form. A hinged rear panel provides quick access to plug-in PC boards and plug-in connectors. The unit is made in the U.S.A. with parts and service readily available.



### RP85 Record/Reproduce Preamplifier

The RP85 record/reproduce preamplifier provides excellent performance and almost unlimited flexibility. One RP85 is required for each channel. Optional rack-mount panels for a single RP85 or for two RP85's, side by side, are available.

Programmable tape head connections can accommodate all standard track and channel configurations offered in the 3000 tape transport series. NAB equalization is switchable to match the tape speed of the transport.

Separate controls provide mixing of MIC and LINE inputs. Separate inputs are available for balanced low impedance or unbalanced high impedance microphones. The universal bridging line input accepts balanced or unbalanced lines with up to 120 dB dynamic range without overloading. The line input is transformerless, providing a constant high impedance without response or level limitations. To assure a clean signal, the input frequency response cuts off sharply above 20 kHz for full rejection of FM sub-carriers, RFI or bias leakage.

The independent line and cue amplifiers permit monitoring without loading the program line. The monitor outputs of two or more amplifiers may be paralleled for multi-channel common monitoring. The transformerless line output is compatible with balanced or unbalanced loads. The RP85 features silent FET switching, 60 dB bias rejection and full immunity to electromagnetic or radio frequency interference. Two isolated dc outputs facilitate remote functions. The regulated power supply is internally fused and immune to line transients. Control circuits are transient free solid state logic without relays. Layout design and PC boards allow easy troubleshooting and service.

*For complete information, call*

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## TALKBACK

To lead off, Talkback for December, as stated in the editor's notebook, we would need at least eight more pages to cover the response we have received regarding discontinuing the first class license. To date, 94% were against it, 4% said it wasn't worth the paper it was written on because of the way the FCC had allowed it to be compromised, and 2% said to get rid of it, it was just one more piece of government paper to bother with. Here are just a few examples...

**Kansas...**I have had a first phone for 40 years and I'm the licensee of a station...responsible for technical...other aspects of the station. Most of the first phone license holders I've known during the past 20 years cannot even read a schematic, much less keep a station on the air.

**Iowa...**About two years ago the FCC proposed to replace first phone with specialized licenses...Then current idea of throwing in the towel like commission did with C.B....If you can't regulate effectively...Give up.

**Missouri...**The solution is not to cancel but make it harder. It's bad enough now, don't make it worse.

**Ohio...**Shades of the C.B. mess. I'm opposed to dropping first...Update the test. Use endorsements.

**Oklahoma...**Sounds like FCC looking for more enemies...dropping second would make more sense.

**Texas...**All engineers opposed to elimination of first phone. Some sort of licensing procedure/requirement must be maintained.

**Indiana...**Keep the first class ticket...Have always been proud of my "first" on the transmitter room wall...Hope it will stay there.

**North Dakota...**Doing away with the "First" is a mistake...even jiffy course have some exposure. People like myself who got commercial and ham tickets thru years of study and experience are going to suffer a great loss.

**Michigan...**Should continue to renew existing (First) ...Create second with AM/FM or TV endorsements... Sad when other stations come here to get headphone plug replaced.

**Wisconsin...**Get rid of the First? Why not move entire band to 27 Mhz and let everyone have a station. 10 - 4 good Buddy!!!

**Illinois...**First phone is comparable to a drivers license...As you may note we have many bad ones on the road. Believe the SBE certification will replace FCC test. The test was not relevant to work required by licensee...Efforts of 12 week "cram courses" prove this out. In effect these "broadcast" schools were using FCC exam as a final test for their courses and in effect teaching obsolete information and "ripping" the student off.

\*\*\*\*\*



# Stanton Model 310 Professional Phono Preamplifier/Equalizer



Front



Rear

Reg. \$240.00

STILL **\$195<sup>00</sup>**

Stanton Magnetics introduces its latest Model 310 Stereo Phono Preamplifier, designed to correctly interface all Stanton and selected magnetic phonograph cartridges for optimum playback of disc records and calibration of audio systems. The Stanton 310 Preamp features universal mounting by special brackets, instant selection of flat or NAB postemphasis curves, switchable effective rumble filter, individual adjustment of gains and high frequency responses, trimming of the capacitive cartridge loading at the input, provision for setting the power transformer for either 117 or 230V operation at 50 or 60 Hz and immunity to external magnetic AC fields.

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## DESIGN CHOICES (cont. from page 11)

for technical performance in operating systems and the degree of maintenance which is required.

### Conclusions:

Several important and factual conclusions can be drawn from a careful study of the cartridge transport system. Some of these are as follows:

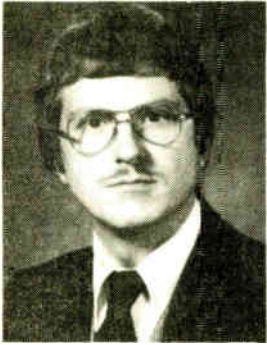
1. A pressure roller of 0.375" height results in: a. More tape pull, whether new or badly worn. (Good!) b. Longer replacement life. (Good!) c. Critical maintenance adjustment to maintain vertical relationship to the capstan. (Bad!) d. The need for more tape back tension to control the skew at the capstan. (Bad!)
2. A pressure roller of 0.312" height results in: a. Less tape pull (Bad!) b. Earlier replacement due to wear. (Bad!) c. Better natural vertical compliance with the capstan. (Good!) d. Inherrently less tape skew at the capstan. (Good!) e. Better long term stability of tape path because of solenoid pull change and tape tension changes. (Good!)

It is not feasible at present to produce a cartridge tape drive system which can adequately accomodate the wide variation of cartridge design, tape loads, lack of maintenance and range of applications which are encountered. It therefore must be the responsibility of the engineering and operating personnel to decide which applications require the use of certain cartridge designs and tape loads, then change the pressure roller to accomodate these applications. I suggest the following:

1. In low technical performance areas such as the newsroom or other monophonic utility needs use a roller of 0.375" height to take advantage of longer life due to tape tensions encountered.

2. In music applications, especially stereo FM operations use a roller of 0.312" height along with careful maintenance and the following basic rules of the application. a. Do not mix cartridge types, not even the type of tape and the length of load. b. Select the cartridges for initial condition and maintain these very carefully. c. If possible record a pink noise or high frequency azimuth section just after the program material and before the cue to observe phase life of the recorded material d. Do not be misled by closed loop demonstrations and claims of performance (all is not what the eye beholds), determine the results by trial in your operating system. e. Maintain the pressure roller frequently. Do not clean the pressure roller with head cleaners which contain petroleum distillates, Xylene, Toluene or other harsh solvents which reduce the rubber. Denatured alcohol is slower but safer.

If the information presented in this paper in an honest and factual manner serves to assist the reader in sorting out the facts which are encountered daily in cartridge transport behavior, it will have served its' purpose. No manufacturer can provide miracles in the cartridge machine or in the cartridge. It is a system which requires a perfect harmony between the efforts of two separate industries and a lot of experience and understanding. It is inherrent that collision of effort will occasionally occur as a largely meaningful group of engineers continue in their efforts to improve the system. The purchaser and user will have frequent occasion to wonder but, great progress has been made in years past. Hopefully this progress will continue.



## PERSONS' POST SCRIPTS

by Mark Persons

### HAROLD ALLEN

Broadcasters in the Mid-West, served by the St. Paul Regional Office of the FCC, lost a real friend on September 23, 1980, with the passing of Harold Allen. Harold died of a heart ailment and will be much missed. He was Engineer in Charge of the St. Paul Office and was a really great guy. He knew the problems that station engineers face because he was an engineer before joining the FCC. Harold's career in Radio started when he served with the U.S. Army Signal Corps in WWII. In 1947, he became chief engineer of KGDE Radio in Fergus Falls, Minnesota. Six years later, he moved to Wadena, Minnesota where he was chief engineer of KWAD. Harold also worked as a consulting engineer in Minnesota, North Dakota, South Dakota and traveled as far as Montana to unravel engineering problems. He took a job with the FCC in 1964 and became Engineer in Charge of the St. Paul Regional Office in 1971.

I'll always remember Harold Allen as a radio inspector who was not anxious to pass out citations, but a man who understood broadcast problems and would let one know how it was to be done right. Then he'd tell a story about how it was done years ago.

On the lighter side, I'm sure Harold would enjoy the story about the station engineer who decided he'd like to play a trick on the early morning announcer. The engineer knew the announcer would be up partying rather than sleeping all New Year's Eve and would sign on New Years Day morning. He also knew that this announcer enjoyed his alcoholic beverages and would have a hangover at sign-on. The engineer rewired the turntable motors to make them rub backwards. He also connected a switch underneath the turntables to restore normal operation when the time was right. Well, as you can imagine, the announcer thought he was going crazy when he tried to play records and the turntables went backwards. It must have really been something to hear that poor devil trying to do his air shift with a hangover and turntable that ran backwards. He was probably heard to say "stay stewed for the news."

DELTA ELECTRONICS  
(cont. from page 3)



Stephen W. Kershner  
President, Delta Electronics, Inc.

For most engineers, the name Delta Electronics is synonymous with the "OIB" or Operating Impedance Bridge. Indeed, this was our first broadcast product—a measuring instrument that has radically changed the ability to tune and adjust AM directional arrays and networks. Over 1600 of the model OIB-1 and the expanded range OIB-3 are presently in the field. The success of the Operating Impedance Bridge paved the way for the development of other broadcast test and monitoring equipment. The company presently offers over twenty different broadcast products, many of which are described in the center pages of this newsletter. For many years Delta's products catered solely to the AM broadcasters. In recent years, our products have expanded to include both FM and television applications.

In addition to the broadcast product line, Delta Electronics also manufactures a full line of High Frequency Communications Products. Delta is the leading manufacturer of high power coaxial switching matrices which are in use at HF Communications stations world-wide. We will be celebrating our 19th anniversary this year; and although the company has seen it's share of successes, two floods—which placed the entire offices and manufacturing facilities under 6 feet of water—came very close to writing a final chapter on the company's story. The strong determination that has brought answers to so many problem areas in the communication industries served to pull the company through both disasters.

Today, Delta Electronics occupies a new 28,000 square foot building—on dryer ground—which houses all manufacturing, development and administrative offices. Over 65 employees provide the Delta Difference as we serve the expanding needs of today's broadcast engineer.



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Jan.'77 - KGMT, Fairbury, Neb.  
 Feb.'77 - WRWR, Port Clinton, Ohio  
 Mar.'77 - WKAU, Kaukauna, Wis.  
 Apr.'77 - KCUE, Red Wing, Minn.  
 May'77 - WCRF, Cleveland, Ohio  
 Jun.'77 - KCBC, Des Moines, Iowa  
 Jul.'77 - KFJM, Grand Forks, N.D.  
 Aug.'77 - KMTW, Twin Falls, Idaho  
 Sep.'77 - KJSK, Columbus, Ohio  
 Oct.'77 - WOCH, North Vernon, Ind.  
 Nov.'77 - WCCN, Neillsville, Wis.  
 Dec.'77 - KBRX, O'Neill, Neb.

Jan.'78 - KICX, McCook, Neb.  
 Feb.'78 - KMBI, Spokane, Wash.  
 Mar.'78 - WSDP, Plymouth, Mich.  
 Apr.'78 - WHOW, Clinton, Ill.  
 May'78 - KXCV, Maryville, Mo.  
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 Jul.'78 - WOBL, Oberlin, Ohio  
 Aug.'78 - WVUB, Vincennes, Ind.  
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 Oct.'78 - WTTS, Bloomington, Ind.  
 Nov.'78 - KCLD, St. Cloud, Minn.  
 Dec.'78 - WSGW, Saginaw, Mich.

Jan.'79 - WETN, Wheaton, Ill.  
 Feb.'79 - WVHI, Evansville, Ind.  
 Mar.'79 - WSHS, Sheboygan, Wis.  
 Apr.'79 - WUBC, Montrose, Co.  
 May'79 - WJBX, Bloomington, Ill.  
 Jun.'79 - KHOW, Denver, Co.  
 Jul.'79 - WATZ, Alpena, Mich.  
 Aug.'79 - KORT, Grangeville, Idaho  
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