

Nortronics
COMPANY, INC.
 8101 TENTH AVENUE NORTH
 MINNEAPOLIS, MINNESOTA 55427



YOUR LOCAL DEALER

MAGNETIC TAPE HEADS

1. INTRODUCTION.

1-1. The following instructions will tell you how to correctly install and adjust your new NORTRONICS RECORD/PLAY (R/P) or RECORD ONLY tape head. If the instructions are followed, there should be no problem in making an installation which is capable of equalling or exceeding the original performance of the recorder.

2. EXAMINING ORIGINAL R/P HEAD.

2-1. If the new head is to replace an existing R/P head, do not remove the original head until a preliminary examination has been made. After removing head cover plates and whatever else might be necessary to completely expose the heads, carefully study the original arrangement before attempting to remove the head or any wires. If there is any doubt as to

which is the erase head and which is the R/P head, thread a reel of tape on the recorder and put the machine in the PLAY mode. The first head the tape passes over after leaving the supply reel is the erase head. The second head the tape passes over is the R/P head. If the recorder uses three or more heads, consult the instruction manual or other information pertaining to the recorder to determine the function of the various heads. In the usual 3-head arrangement, the first head the tape passes over is the erase head, the second is the record head, and the third is the playback head.

2-2. If the new head is a replacement for a 2-track monophonic or 4-track stereophonic R/P head, place the recorder so the transport is in a HORIZONTAL position. This will serve as a reference point. Looking squarely at the FACE of the heads, observe whether the erase head is on the right or left side of the R/P head. Jot down this information. The reason for this is to determine which portion of the tape should cover the pole piece(s) of the R/P head. This procedure is not necessary for 2-track stereo or Full Track R/P heads as they both cover the full width of the tape.

2-3. Erase Head on RIGHT Side of R/P Head. If the R/P head is a 2-track mono type then the pole piece should be even with the bottom edge of the tape. If the R/P head is a 4-track stereo type then the pole piece closest to the transport plate should be even with the bottom edge of the tape.

2-4. Erase Head on LEFT Side of R/P Head. If the R/P head is a 2-track mono type then the pole piece should be even with the top edge of the tape. If the R/P head is a 4-track stereo type then the pole piece furthest from the transport plate should be even with the top edge of the tape.

3. CHECKING WIRING OF ORIGINAL R/P HEAD.

3-1. No Mount Monophonic Heads. A mono head will have only two wires: a ground wire and a "hot" wire. It is not necessary to determine which is which since there is no polarity to the NORTRONICS monophonic heads.

3-2. No Mount Stereophonic Heads. A stereo head will have four wires: a ground wire and a "hot" wire for each of the two channels. In this case, the function of the wires must be known before they are disconnected from the original head to assure proper phasing of the two channels and to make certain the wires for each channel are connected properly when the new head is installed. It would be a good idea to make a sketch of the original wiring arrangement that shows (1) the color of each wire, (2) which wires are for the upper and lower channels of the head, (3) the location of the wires on the pins of the original head, and (4) which are the ground wires for each channel. Follow each wire to determine if it is grounded or not. Those not grounded are the "hot" wires. In most cases the wires for each channel will be paired; that is, the ground and "hot" wires will be either twisted together or in the form of a shielded cable. If the wires are not paired in any manner and it is impossible to tell which "hot" wire is paired with which ground wire, a VOM, Ohmmeter, or VTVM with resistance ranges may be used to identify the ground wire for each channel. Proceed as follows: Be certain the line cord supplying power to the recorder is NOT plugged in. Put the machine in the RECORD mode. If there is a Mono 1, Mono 2, Stereo Record selector switch, set it for Stereo Record. The VOM, Ohmmeter, or VTVM should be set to read "ohms" on the X1 scale. Fasten a lead from the meter to one of the wires on the rear of the R/P head and touch the other meter lead to a bare metal spot on the transport of the recorder. Note the meter reading for that particular wire on your sketch. Repeat this procedure with the three remaining wires on the rear of the R/P head, noting on your sketch each time the resistance reading obtained. The two lowest resistance readings are the ground wires for the stereo R/P head. In most cases, the ground wires will give a zero reading, indicating no resistance between the ground wire and the transport of the recorder.

3-3. Rear Mount Heads. The instructions given above for checking the original wiring on No Mount R/P heads can be used for Rear Mount heads with this exception: Since the wires come from inside the head and it is not possible to see which wire is connected to which pin on the head, trace

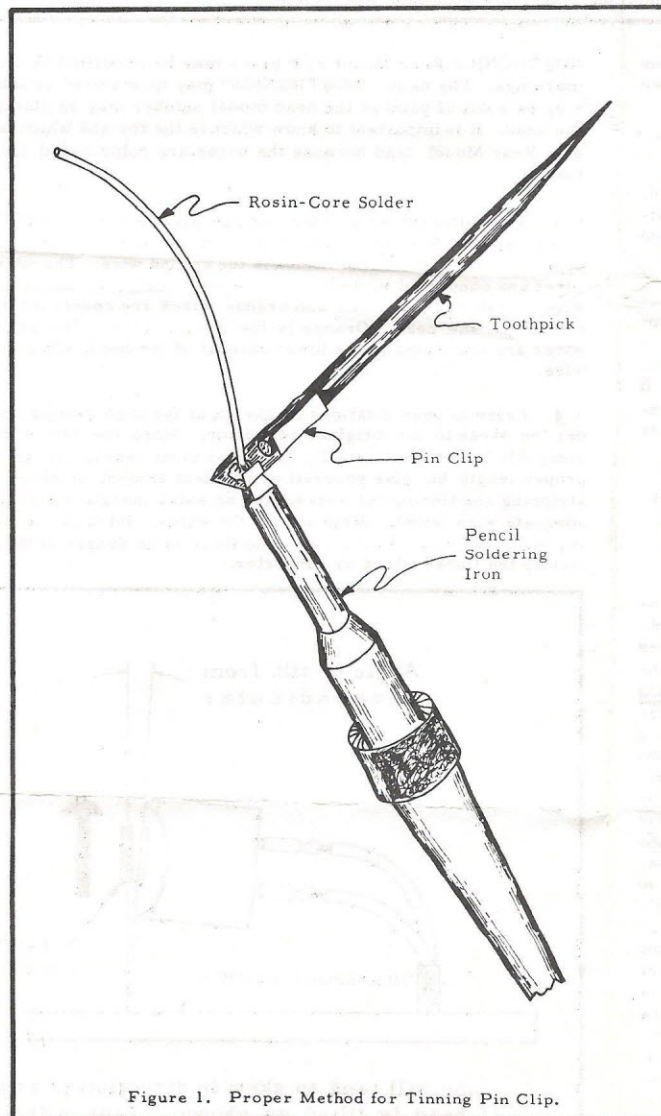


Figure 1. Proper Method for Tinning Pin Clip.

(over)

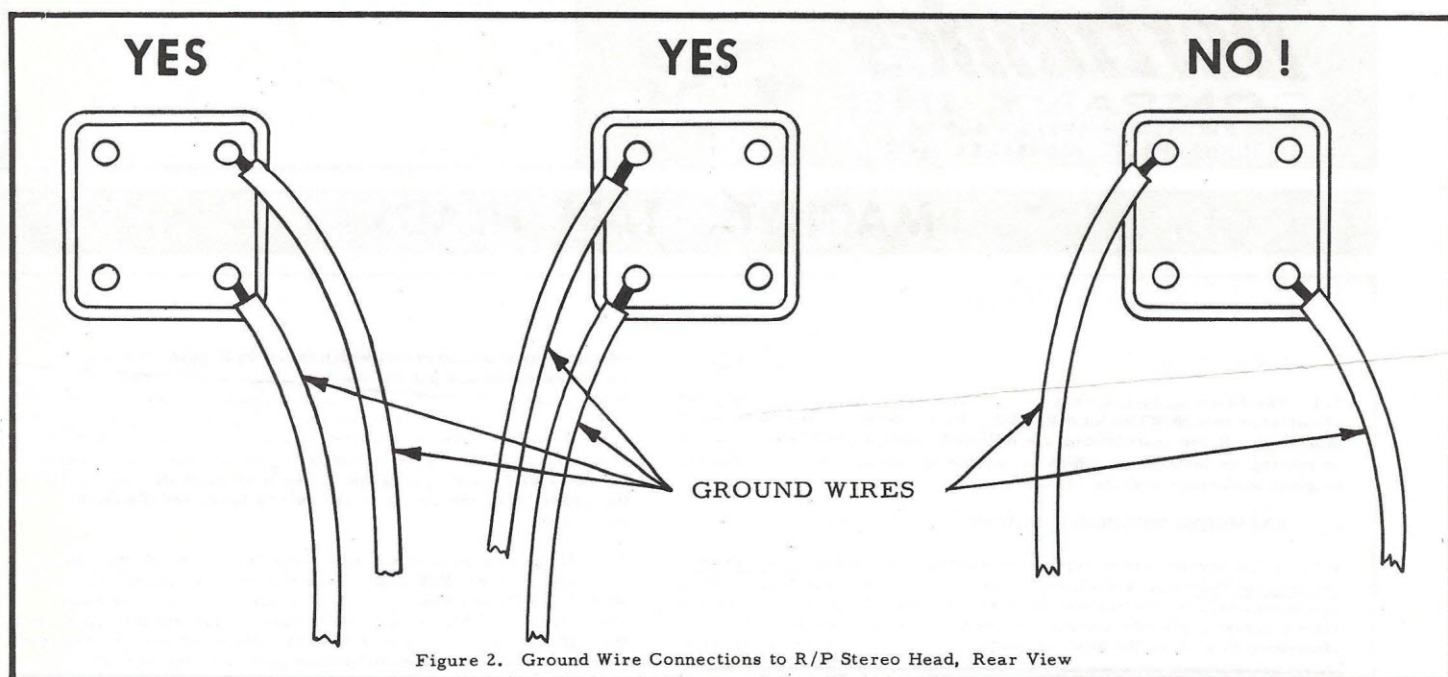


Figure 2. Ground Wire Connections to R/P Stereo Head, Rear View

these wires to the terminal strip, plug, or whatever type of connector the wires are soldered to and make your sketch. Do not overlook jotting down the color of each wire.

4. REMOVING ORIGINAL R/P HEAD.

4-1. After making the above notations, the R/P head can be removed. The wires originally connected to a No Mount head may be re-used if sufficient length exists to solder pin clips to them and slide the pin clips onto the terminal pins of the new head. Otherwise, the wires supplied with your new NORTRONICS head should be used. If the original wires are soldered to clips which are then pressed onto the pins of the head, carefully slide the clips from the pins with long-nose pliers. If these clips have also been soldered to the pins of the head, cut the wires from the clips if they are long enough for re-use. Handle these wires with care, as they are usually quite fine and cannot stand much flexing or strain. If the original head is a Rear Mount type, unsolder the wires from the connector they are soldered to as the wires coming from inside the new Rear Mount head must be soldered in their place.

4-2. Remove the old No Mount or Rear Mount R/P head from the recorder and install the new head in its place.

5. CONNECTING WIRES TO NEW R/P HEAD.

5-1. No Mount Heads. If new wires are required due to the original wires being too short for re-use, these wires should be installed at this point. Regardless of whether the original wires are being re-used or new wires have been installed, you must use pin clips to connect the wires to the terminal pins of the head. **DO NOT SOLDER THE WIRES DIRECTLY TO THE HEAD TERMINAL PINS!** A certain amount of care is required when soldering wires to the pin clips to prevent flux and solder from flowing into the portion of the pin clip that grips the head terminal pin. One method that works quite well is to slide the pin clip over the end of a toothpick. Tilt the toothpick down to prevent flux and solder from flowing into the gripping portion of the clip. Tin the end of the clip (see Figure 1), then tin the end of the wire to be connected to it. Lay the tinned wire over the tinned end of the clip and touch the iron to the bottom of the clip end. Leave the iron in contact with the clip just long enough for the solder to melt and flow around the end of the wire, making a good joint. The pin clips are connected to the head by sliding them onto the head terminal pins with long-nose pliers. On all NORTRONICS stereo heads, the top two pins of the head are for the upper channel and the bottom two pins are for the lower channel. Refer to your notations or sketch of the wire designations and connect the pin clips to the correct terminals on the head. Make certain before actually connecting the pin clips that you have the ground wires for both channels on the **SAME SIDE** of the head. Refer to Figure 2. If this connection is not made properly, the two channels will be out of phase with each other.

5-2. Rear Mount Heads. The wires coming from inside the new Rear Mount head must be soldered to the same connector used by the original wires. No pin clips are required. Before soldering these wires it is necessary to identify the **TOP** of the Rear Mount head. The top of all

NORTRONICS Rear Mount R/P heads may be identified by one of several markings. The name "NORTRONICS" may be stamped or labeled, there may be a dot of paint or the head model number may be stamped on top of the head. It is important to know which is the top and which is the bottom of a Rear Mount head because the wires are color coded for identification.

5-3. Two different wire color codings are used on NORTRONICS Rear Mount heads. System 1: The red and black wires are connected to the upper channel of the head. Black is the ground wire. The white and black wires are connected to the lower channel of the head. Black is the ground wire. System 2: The red and orange wires are connected to the upper channel of the head. Orange is the ground wire. The yellow and blue wires are connected to the lower channel of the head. Blue is the ground wire.

5-4. Refer to your notations or sketch of the wire designations and solder the wires to the original connector. Since the new wires are considerably longer than actually needed in most cases, cut the wires to the proper length but give yourself a sufficient amount of slack to allow for stripping and tinning the wires, plus an extra margin for safety to insure adequate wire length. Strip and tin the wires. Push up the shield covering the wires about 1 or 2 inches so there is no danger of the shield contacting the tinned wires or connector.

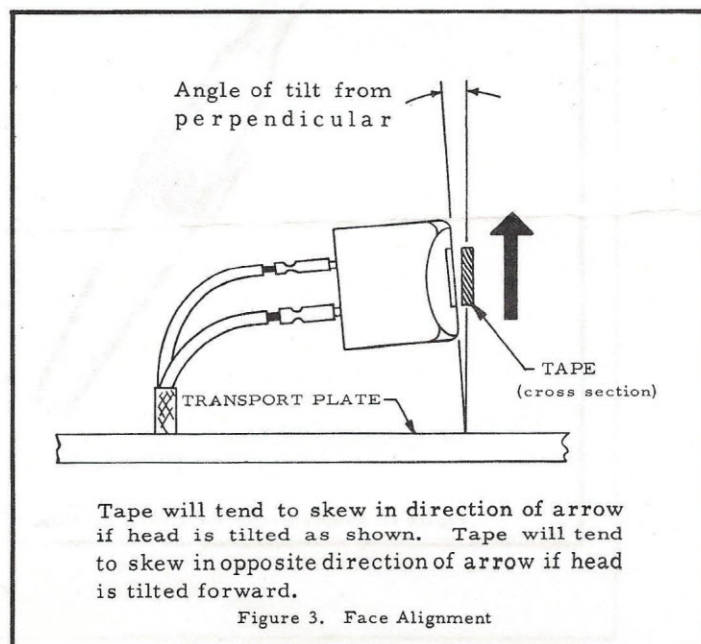
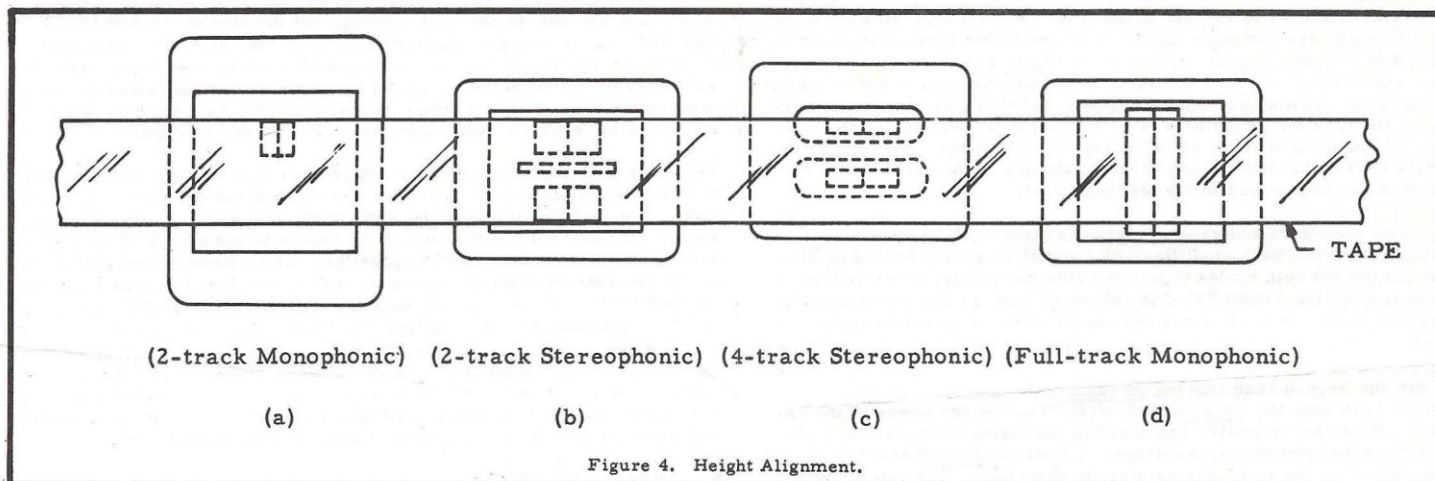


Figure 3. Face Alignment



6. HEAD ADJUSTMENTS.

6-1. There are three adjustments which must be made to the new head in order for it to operate properly once it is installed on the recorder. These adjustment instructions apply to BOTH No Mount and Rear Mount R/P heads.

6-2. **Face Alignment.** The face of the head should not be tilted forward or backward. If the head is tilted, the tape will tend to ride up or down on the head face in operation, depending on the angle of tilt. Refer to Figure 3. Check the FACE alignment by threading a reel of tape on the recorder and putting the machine in the PLAY mode. Observe the action of the tape. It should move in a straight line across the face of the heads with no tendency to wander up or down. If it does wander, the FACE alignment must be adjusted so the tape travels in a straight path across the face of the head. Since there are numerous ways in which this adjustment can be made, refer to the recorder literature and adjust the FACE alignment of the head by whatever means the machine provides. In some older machines there is no provision for making this adjustment. Leave the tape on the recorder.

6-3. **Height Alignment.** The height of the head must be adjusted so the pole piece(s) are covered by the proper portion of the tape. If this is not done, a weak signal and cross-talk from other tracks may result. This is particularly critical in the 4-track stereo R/P heads.

6-4. ALL NORTONICS R/P HEADS EXCEPT THE FULL TRACK TYPE should be aligned for HEIGHT so the top edge of the tape is even with the top edge of the pole piece. Refer to Figure 4. Obviously, if your head installation is the type where the pole piece is covered by the bottom part of the tape, then the pole piece edge should be even with the bottom edge of the tape. Make this adjustment visually, using whatever means the recorder provides. Be very careful to avoid changing the FACE alignment made previously. Check your adjustment by putting the recorder in the PLAY mode and observing the action of the tape. Check first to make certain the FACE alignment has not been disturbed. If the recorder has a pressure pad to hold the tape against the face of the head, it may be necessary to hold it back to see if the pole piece is even with the proper edge of the tape. If so, the HEIGHT alignment is correct.

6-5. IN THE CASE OF THE FULL TRACK R/P HEAD, the pole piece is wider than the tape. This head should be aligned for HEIGHT so the pole piece extends an equal amount beyond the top and bottom edges of the tape. Remove the tape from the recorder.

6-6. **Azimuth Alignment.** Refer to Figure 5. The pole piece gap of the R/P head must be at right angles to the edge of the tape for maximum high frequency response from pre-recorded tapes and to assure compatibility between tapes made on one recorder and played on another. For professional AZIMUTH alignment, the NORTONICS AT-100 Alignment Tape or other high quality tape specifically made for AZIMUTH alignment is required.

6-7. Before attempting AZIMUTH alignment, check to see what method is provided by the recorder for accomplishing this. There may be an off-set screw or nut which is tightened or loosened to permit the head to be rocked from side-to-side, thus providing a wide latitude of adjustment for the gap of the head. In the case of Rear Mount heads, AZIMUTH alignment is usually accomplished by slightly loosening the nut holding the mounting stud of the head to its bracket and rotating the head with your fingers. Make certain when doing this that the HEIGHT alignment made previously is not changed.

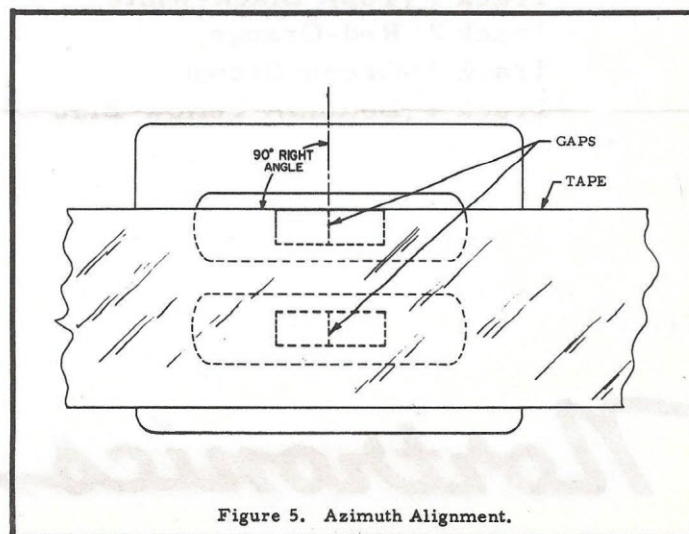
6-8. After determining the method used to accomplish AZIMUTH align-

ment, thread the alignment tape on the recorder and set the tone control (if any) to maximum treble. If an oscilloscope, VOM, VTVM, or other voltmeter with AC ranges is not available, the head must be azimuthed by playing the tape and listening to it carefully while slowly rocking the head from side-to-side, using whatever means the recorder provides for doing this. The head is properly azimuthed when the constant-tone high frequency signals (7500 cps or 10,000 cps) recorded on the alignment tape sound the loudest and most brilliant. Because of the limited sensitivity of the human ear at high frequencies, the azimuth alignment tape and voltmeter method is the preferred professional approach. Should the recorder be equipped with a VU meter that can be switched to monitor the playback output, it may be used instead of the voltmeter. In this case, adjust the playback gain control until the VU meter reads approximately half scale while playing the alignment tape. Adjust the head until a maximum reading is indicated on the meter.

6-9. If a voltmeter is available, connect it across the playback amplifier output of the recorder. Play the alignment tape. Set the voltmeter on a range scale that will permit you to adjust the playback gain control until the voltmeter reads approximately half scale. Adjust the head until a maximum reading is indicated on the voltmeter. If necessary, either reduce the playback gain control as the voltmeter approaches full scale or switch the voltmeter to the next highest range.

6-10. If the recorder has separate heads for recording and playing back, it will be necessary to align AZIMUTH on both heads, regardless of which one is replaced. Since these recorders are generally of the professional or semi-professional type, only the azimuth alignment tape and voltmeter method will be discussed. Most recorders of this type also have separate record and playback amplifiers which allow the tape to be played back while being recorded. For this type of recorder, thread the azimuth alignment tape on the machine and connect the voltmeter to the playback amplifier output. Play the alignment tape. Adjust the playback gain control until the voltmeter reads approximately half scale, then adjust the playback head until a maximum reading is indicated on the voltmeter.

6-11. Remove the azimuth alignment tape from the recorder and replace it with a reel of blank tape. Connect an audio sine-wave signal generator to the recorder input and set the generator to 7500 cps. Make certain the



recorder is set for the 7.5 ips speed and that the machine is in the RECORD mode. Adjust the record level control to produce a low level record signal (about -7 to -10 VU if the level indicator is a VU meter, or with the magic eye indicator about 1/3 closed if this type of indicator is used). While monitoring the output of the playback amplifier with the voltmeter, adjust the RECORD head until a maximum reading is indicated on the voltmeter. Remember when doing this that there will be a slight delay from the time the adjustment is made until it is indicated on the voltmeter because of the time lag while the tape travels from the record to the playback head. This procedure will line up the gap of the record head with the previously aligned gap of the playback head.

6-12. Some recorders with separate record and playback heads use a combination record/playback amplifier with a switch to select Record or Play but do not permit both modes to be used simultaneously. For this type of recorder, align the AZIMUTH of the playback head as described above in Paragraph 6-10. When this has been done, turn off all power to the recorder. Remove the plugs connecting the record and playback heads to the electronics of the recorder and transpose them; that is, insert the plug for the record head into the playback head jack and the plug for the playback head into the record head jack. Turn on the power to the recorder. With the voltmeter connected to the output of the playback amplifier, play the azimuth alignment tape. Adjust the record head for maximum output on the voltmeter as already described. The gap of the record head is now lined up with the gap of the previously aligned playback head. Turn off the power to the recorder and re-connect the plugs for the record and playback heads as they were originally.

7. PRESSURE PAD INFORMATION.

7-1. If the recorder uses a pressure pad, it should be inspected periodically.

When a tape head is replaced on a recorder, the pressure pad usually needs replacement as well. Examine it carefully. Excess wear will cause the pad to bear unevenly against the face of the new head and this will reduce optimum performance from the recorder. In addition, even though the old pad may not be excessively worn, tape squeal will result if the felt is hardened or glazed by particles of oxide which have become embedded in it. If either of these conditions exist or the pad is otherwise in generally poor condition, it should be replaced.

7-2. The primary function of a pressure pad is to provide intimate contact between the gap in the head pole piece(s) and the oxide coating on the tape. The pad should cover the width of the tape from top to bottom and should rest squarely on the face of the head with the center of the pad as near to the center of the head as possible. The amount of tension exerted by the arm on which the pressure pad is mounted should be such that the pad holds the tape firmly but gently against the face of the head. It should not smash the tape against the head! If it does, excessive head wear, tape squeal and wow or flutter will result. Many complaints of low or no output, improper balance between channels of a stereo tape head, excessive wow and flutter, tape squeal, and rapid head wear are directly traceable to pressure pads which are worn, hardened or glazed, and improperly installed (location of pad, tension applied, etc.).

8. FINAL TESTING.

8-1. Make a final, over-all check of the installation by trying the machine in both the RECORD and PLAY modes. Replace the head cover plate and whatever else might have been removed from the recorder in the reverse order of their removal. This completes the installation of your new NORTRONICS R/P head.

ADDENDUM TO PARAGRAPH 5-3

Head No. 5752

Top Track: Black-White

Center Track: Black-Red

Bottom Track: Blue-Yellow

All other 3 channel heads in 5700 series

Top Track: Red-Orange

Center Track: Yellow-Blue

Bottom Track: White-Black

4 channel 5600 series heads

Track 1 (Top): Black-White

Track 2: Red-Orange

Track 3: Green-Brown

Track 4:(Bottom): Yellow-Blue

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MAGNETIC TAPE HEADS

DESCRIPTION.

NORTRONICS magnetic tape heads are designed to offer highest quality performance and long dependable service. As the chief exponent and largest manufacturer of laminated core heads, NORTRONICS now offers a completely new line, with heads available in either PREMIUM or STANDARD laminated versions. NORTRONICS is also including the new "COMBO" heads which combine Record/Play/Erase into one head.

The STANDARD versions offer improved high frequency performance over that of the conventional solid-core heads, plus the added features of hyperbolic all-metal face and precision deposited quartz gaps.

The PREMIUM series is a fully professional line of tape heads giving unsurpassed performance for broadcast, studio and exacting semi-professional applications. Long life and extended high frequency response at slower tape speeds are among the benefits of the features listed below:

- Fine laminated, precision-lapped, low loss core structures.
- Deposited quartz gaps, resulting in exceptionally clean sharp gap edges.
- Hyperbolic face contour gives intimate tape-to-gap contact without need for pressure pads, but is designed to allow use with pressure pads as well.
- Highly polished all-metal faces, greatly reduce oxide build-up and the need for frequent head cleaning.
- Compatible mechanically and electrically with older model NORTRONICS heads.
- Superbly shielded against external magnetic fields.

The "Combo" series heads combine all of the features of the Premium series above, except the hyperbolic face contour. This series has a Record/Play Head and an Erase Head in one case.

MOUNTING STYLES.

The wide variety of available mounting styles, track types and impedances make it possible to find a NORTRONICS head to suit almost any audio application. Your new NORTRONICS head is supplied in two basic mounting styles, NO MOUNT and REAR MOUNT. REAR MOUNT heads have a rear mounting stud with 12-inch shielded wires. NO MOUNT heads have no brackets, screws or wires attached to them and are used directly in several popular brands of tape recorders. When required, NO MOUNT heads may be quickly adapted to SIDE MOUNT and BASE MOUNT styles by using the proper NORTRONICS Quik-Kit which is available where you purchased your NORTRONICS tapehead. Complete, detailed instructions are included with each Quik-Kit. The six basic Quik-Kits used for adapting NO MOUNT heads are:

- | | |
|-------|---|
| QK-18 | Adapts all standard No Mount Erase Heads to Side Mount. |
| QK-19 | Adapts all standard No Mount Erase Heads to Base Mount. |
| QK-20 | Adapts 3000 thru 3049, 3100 thru 3149, and 3200 thru 3249 No Mount R/P Heads and Record Only Heads to Side Mount. |
| QK-21 | Adapts 3000 thru 3049, 3100 thru 3149, and 3200 thru 3249 No Mount R/P Heads and Record Only Heads to Base Mount. |
| QK-38 | Adapts all other No Mount R/P Heads, Record Only Heads, and Combo Heads to Side Mount. |
| QK-66 | Adapts all other No Mount R/P Heads, Record Only Heads, and Combo Heads to Base Mount. |

REPLACEMENT OR CONVERSION.

NORTRONICS heads are the ideal selection for replacement of existing heads, converting to 2 or 4-track stereophonic sound and for installation on new tape equipment. In the majority of cases, replacements will be made on a direct basis. For exam-

ple, a 2-track stereo head will be used to replace a worn 2-track stereo head. It is often possible to interchange head types to modernize equipment or for special applications. An example of this would be substituting a 4-track stereo head for a 2-track stereo head to bring the recorder up to date, or substituting a Full track monophonic head for a 2-track monophonic head to make a recorder suitable for broadcast purposes. In such interchanges, it is important to bear in mind that mechanical and electrical compatibility is required between head types to avoid operating difficulties.

LAMINATED vs. SOLID CORE HEADS.

Heads for magnetic tape recorders are generally manufactured with either laminated or solid metal cores. Excellent heads can be made in either type and NORTRONICS produces both but specializes in laminated heads because the unexcelled quality and superior performance of this type head is demanded in ever increasing numbers by knowledgeable audiophiles, serious tape enthusiasts, and original equipment manufacturers for use in their best recorders. The NORTRONICS heads featuring professional type laminated core structures with ultra-fine gaps result in magnificent playback frequency response. At a tape speed of 7.5 ips, a flat response from 50 to 15,000 cps is readily attainable, with useful output down to 30 cps and up to 20,000 cps. At a speed of 3.75 ips, the response is flat from 50 to 10,000 cps with useful output down to 30 cps and up to 15,000 cps.

Laminated heads are more expensive to construct because permissible tolerances are considerably tighter, materials used are costlier and rigid tests must be made at each production level. The grinding, lapping and polishing operations require a high degree of skill and equipment of specialized design. After the head is completely finished, it must go through a further series of final checks and tests before it is approved for release. Any head which fails to pass through the stringent checks of Final Testing is automatically rejected. The end result is a laminated head of superior design . . . a superlative product of such exacting quality, it is literally capable of bringing out the best possible performance of any tape recorder with which it is used.

Laminated heads have clearly demonstrable advantages over solid core types which more than justify the extra care and expense required to manufacture them. As stated before, excellent heads can be made in either type and NORTRONICS produces BOTH. The major advantages of laminated design are lower eddy current and hysteresis losses in the core at high audio frequencies during playback. Drop-off in high frequencies is actually due to both the gap effect and core losses. As a result of the reduced core losses in laminated heads, the output at high frequencies is correspondingly greater than that obtained from an equivalent solid core head with the same size gap. Consequently, with the tape speeds in current popular use (7.5 and 3.75 ips), laminated heads can use a wider gap for improved recording characteristics while attaining essentially the same playback frequency response as solid core heads. In addition, because of the improved efficiency and sensitivity of laminated heads, a greater depth of metal can be left on the pole faces of the head. This insures longer operating life before wear makes replacement necessary. Despite anything you might have heard to the contrary, TAPE HEADS DO WEAR OUT!

At the present stage of the tape recording art, the finest heads available are of laminated design. NORTRONICS is continuously engaged in an extensive research program covering a wide area of interest to constantly improve the performance and quality of its products while still maintaining a sensible price structure. Several design concepts utilizing a new approach to materials not presently being used in the production of magnetic tape heads are currently undergoing evaluation. These materials require novel processing techniques and some of them hold great promise for the future. You may be sure that when any improvements either in head design or the materials used in those designs are ready to be moved from Research to Production, NORTRONICS will produce them.

● MAGNETIC TAPE HEAD SPECIFICATIONS

● See form 7222 for the 8000 series (professional) head specifications.

● Record/Play, Playback Only, and Record Only Heads See next page for photographs and dimensions.

Head Description	No-Mount Model Number	Rear-Mount Model Number	Head Function	Application (see notes)	Average 7.5 IPS Constant-Current R/P characteristics, using 3M190 tape, peak biased at 1 KHz and recorded 12 db below tape saturation.												
					1 KHz Inductance MHY	1 KHz Impedance OHMS	Maximum Bias Frequency KHz	DC Resistance OHMS	Gap Spacer MILS	Track Width INCH	Track Spacing center-to-center INCH	1 KHz Crosstalk Rejection DB	60 KHz Peak Bias MA	Bias Voltage RMS 60 KHz VOLT	Record Current UA	1 KHz Output MV	10KHz/1KHz Ratio DB
Standard 4-Track Stereo Hyperbolic Metal Face Laminated Cores	1000	1050	Record/Play	1	800	5000	80	700	0.1	.043	.136	55	0.30	45	25	2.4	-3
	1001	1051	Record/Play	3	400	2500	100	390	0.1	.043	.136	55	0.42	35	35	1.6	-3
	1002	1052	Record/Play	6	100	650	140	90	0.1	.043	.136	55	1.1	20	70	0.8	-4
	1003	1053	Record Only	8	50	400	250	90	0.5	.043	.136	55	0.65	7.5	60	--	--
	1005	1055	Record Only	4	200	1300	120	390	0.5	.043	.136	55	0.26	20	38	--	--
	1007	1057	Record/Play	5	200	1300	120	200	0.1	.043	.136	55	0.40	25	50	1.3	+1
	1008	--	Record/Play	6	110	700	100	210	0.2	.043	.136	55	0.5	12	50	1.2	-3
Premium 4-Track Stereo Hyperbolic Metal Face Laminated Cores	1009	--	Record/Play	3	500	3300	100	700	0.2	.043	.136	55	0.15	25	23	3.0	-3
	1200	1250	Record/Play	1	800	5000	80	700	0.1	.043	.136	55	0.16	45	25	2.6	+1
	1201	1251	Record/Play	3	400	2500	100	390	0.1	.043	.136	55	0.25	35	35	1.8	+1
	1202	1252	Record/Play	6	100	650	140	90	0.1	.043	.136	55	0.70	18	70	0.9	0
	1203	1253	Record Only	8	50	400	250	90	0.5	.043	.136	55	0.65	7.5	60	--	--
	1205	1255	Record Only	4	200	1300	120	390	0.5	.043	.136	55	0.26	20	38	--	--
	1207	1257	Record/Play	5	200	1300	120	200	0.1	.043	.136	55	0.40	25	50	1.3	+1
Standard 2-Track Stereo Hyperbolic Metal Face Laminated Cores	1210	--	Record Only	7	10	70	500	32	0.5	.043	.136	55	1.3	3.0	140	--	--
	1221	--	Play Only	2	500	3300	100	390	0.05	.043	.136	55	0.25	50	--	1.8	+2
	1800	1850	Record/Play	1	800	5000	60	720	0.1	.080	.160	55	0.4	65	30	3.4	-3
	1801	1851	Record/Play	3	400	2500	100	410	0.1	.080	.160	55	0.6	45	40	2.2	-3
	1802	1852	Record/Play	6	100	650	150	130	0.1	.080	.160	55	1.1	20	80	1.1	-4
	2000	2050	Record/Play	1	800	5000	60	720	0.1	.080	.160	55	0.25	55	30	3.6	-1
	2001	2051	Record/Play	3	400	2500	100	410	0.1	.080	.160	55	0.33	40	40	2.4	+1
Premium 2-Track Stereo Hyperbolic Metal Face Laminated Cores	2002	2052	Record/Play	6	100	650	150	130	0.1	.080	.160	55	0.80	20	80	1.2	0
	2003	2053	Record Only	8	50	320	200	130	0.5	.080	.160	55	0.70	9	75	--	--
	2005	2055	Record Only	4	200	1300	150	370	0.5	.080	.160	55	0.30	22	40	--	--
	2007	2057	Record/Play	5	200	1300	100	245	0.1	.080	.160	55	0.40	30	60	1.8	+1
	2010	2060	Record Only	7	10	72	500	27	0.5	.080	.160	55	1.7	3.3	200	--	--
	2021	--	Play Only	2	450	3300	80	410	0.05	.080	.160	55	0.46	55	--	2.2	+2
	2047	--	R/P Dual Impedance	6	100	650	150	130	0.1	.080	.160	55	0.80	20	80	1.2	0
Premium 2-Track Mono Hyperbolic Metal Face Laminated Cores Track .040 Off Center	2600	--	Record/Play	1	800	5000	60	400	0.1	.080	--	--	0.25	55	30	3.6	+1
	2601	--	Record/Play	3	400	2500	100	165	0.1	.080	--	--	0.33	40	40	2.4	+1
	2602	--	Record/Play	6	100	650	150	70	0.1	.080	--	--	0.80	20	80	1.2	0
	2603	--	Record Only	8	50	320	200	70	0.5	.080	--	--	0.70	9	75	--	--
Hyperbolic Metal Face Laminated Cores	3000	3050	Record/Play	1	800	5000	60	400	0.1	.080	--	--	0.4	65	30	3.4	-3
	3001	3051	Record/Play	3	400	2500	100	165	0.1	.080	--	--	0.6	45	40	2.2	-3
	3002	3052	Record/Play	6	100	650	150	70	0.1	.080	--	--	1.1	20	80	1.1	-4
2-Track Mono (center track) Cyl. Metal Face Solid Cores	3100	--	Record/Play	1	1000	6300	60	625	0.16	.090	--	--	0.65	60	22	5.0	-9
	3101	--	Record/Play	3	400	2500	80	350	0.16	.090	--	--	0.8	25	30	3.0	-9
Premium 2-Track Mono Hyperbolic Metal Face Laminated Cores	3200	3250	Record/Play	1	800	5000	60	400	0.1	.080	--	--	0.25	55	30	3.6	+1
	3201	3251	Record/Play	3	400	2500	100	165	0.1	.080	--	--	0.33	40	40	2.4	+1
	3202	3252	Record/Play	6	100	650	150	70	0.1	.080	--	--	0.80	20	80	1.2	0
	3203	3253	Record Only	8	50	320	200	70	0.5	.080	--	--	0.70	9	75	--	--
Premium Full-Track Hyperbolic Face Laminated Cores	3205	3255	Record Only	4	200	1300	150	370	0.5	.080	--	--	0.30	22	40	--	--
	4100	4150	Record/Play	3	250	1500	80	200	0.16	.260	--	--	1.2	40	90	4.0	0
	4101	4151	Record Only	8	55	330	250	125	0.5	.260	--	--	0.8	24	100	--	--
	4102	4152	Record/Play	6	100	600	100	125	0.16	.260	--	--	1.5	30	120	2.5	0
4103	--	Record Only	7	10	60	500	6	0.5	.260	--	--	4.0	9	320	--	--	
Miniature	--	4950	Record/Play	6	40	250	150	125	0.16	.024	--	--	0.65	8	50	0.45	0
Premium 4-Channel Hyperbolic Metal Face Laminated Cores	5601	5651	Record Only	8	50	320	150	220	0.5	.037	.071	50	0.6	7	60	--	--
	5602	5652	Record/Play	6	90	600	100	220	0.1	.037	.071	50	0.7	15	60	0.7	0
	5603	5653	Record/Play	3	370	2200	80	690	0.1	.037	.071	50	0.3	30	34	1.4	0
	5604	--	Record Only	7	12	75	500	55	0.5	.037	.071	50	2.0	4	110	--	--
Premium 3-Channel Hyperbolic Metal Face Laminated Cores	5701	5751	Record/Play	3	340	2000	100	800	0.1	.043	.100	55	0.25	35	35	1.8	+1
	5702	5752	Record/Play	6	100	650	140	260	0.1	.043	.100	55	0.70	18	60	0.9	0
	5703	5753	Record Only	8	50	400	250	260	0.5	.043	.100	55	0.65	7.5	60	--	--
	5707	5757	Record/Play	5	200	1300	120	450	0.1	.043	.100	55	0.40	20	50	1.3	+1
	5710	--	Record Only	7	10	70	500	100	0.5	.043	.100	55	1.7	3.3	200	--	--
8-Track Stereo Hyperbolic Metal Face Laminated Cores	5800	--	Record/Play	3	400	2500	100	700	0.1	.020	.127	55	0.44	27	20	0.9	-4
	5810	--	Record Only	7	10	75	750	42	0.5	.022	.127	55	1.1	2.6	88	--	--
	5813	--	Record Only	8	50	400	250	220	0.5	.022	.127	55	0.5	8	40	--	--
8-Track, 4-Channel Hyperbolic Metal Face Laminated Cores	5832	5882	Record/Play	3	200	1400	150	500	0.1	.021	.0635	52	0.35	25	3.5	0.7	0
	5833	5883	Record/Play	6	100	700	150	250	0.1	.021	.0635	52	0.55*	25*	5	0.5	0
	5834	5884	Record Only	8	50	300	300	250	0.5	.021	.0635	52	0.6*	24*	5	--	--
	5835	5885	Record Only	7	10	65	500	60	0.5	.021	.0635	52	2.5*	10*	15	--	--
	5836	5886	Record Only	7	2.5	20	800	16	0.5	.021	.0635	52	4*	4.5*	30	--	--

*@ 100 KHz

APPLICATION NOTES:

1. High-impedance general purpose R/P or Play Only for vacuum tube circuits.
2. Playback Only for vacuum tube circuits.
3. Medium-impedance R/P for vacuum tube or transistor circuits.
4. Medium-impedance Record Only for vacuum tube circuits.

5. Medium-low-impedance R/P for transistor circuits.
6. Low-impedance R/P for transistor circuits.
7. Special low-impedance Record Only for vacuum tube or transistor circuits in duplicators and professional recorders.
8. Low-impedance Record Only for vacuum tube or transistor circuits.

● Erase Heads

Head Description	Std. No-Mt. Model No.	Std. Rear-Mt. Model No.	Optional Large Case	Impedance Description	1 KHz Inductance MHY	60 KHz Impedance OHMS	Operating Erase Current* MA	DC Resistance OHMS	60 KHz Operating Voltage VOLT
4-Track Stereo Erase Full Metal Face	1400	1450	1400L	Hi	80	30000	3-5	270	90-150
	1401	1451	1401L	Med.	10	2800	10-15	40	28-42
	1402	1452	---	Lo	0.13	40	80-140	2	3-6
	1404	---	---	Hi	55	17000	4-8	200	70-120
	1407	---	---	Hi	30	8000	7-11	72	50-85
2-Track Stereo Erase Full Metal Face	2200	2250	2200L	Hi	80	25000	4.5-7.0	205	100-150
	2201	2251	---	Med.	8	2000	16-24	35	32-48
	2202	---	---	Lo	0.20	50	100-150	2	5-8
	2203	---	---	Med.	4	800	20-25	17	20-30
2-Track Mono Erase Full Metal Face	3600	3650	3600L	Hi	80	25000	4.5-7.0	205	100-150
	3601	3651	---	Med.	8	2000	16-24	35	32-48
	3602	---	---	Lo	0.20	50	100-150	2	5-8
	3603	---	---	Lo	0.7	250	40-70	3.6	10-20
	3604	---	---	Med.	4	800	20-25	17	20-30
	3605	---	---	Lo	2.2	500	32-48	6.2	16-24
Full-Track Erase Full Metal Face	4400	4450	4400L	Hi	40	12000	10-15	88	100-150
	4401	4451	---	Med.	3.6	1000	32-48	25	32-48
	4402	---	---	Lo	2.6	600	50	20	30
	4403	---	---	Lo	0.085	24	250-350	1.3	6-9
	4406	---	---	Med.	6	1800	35	30	60
Miniature	---	5350	---	Med.	5	1200	28-42	38	32-48

*For 60 db erasure of saturated tape.

● "Combo" Heads

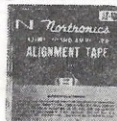
Head Description	Model No.	Head Function	Equivalent Head Specification Reference			
4-Track Stereo 'Combo' Metal Face	6000	Record/Play/Erase	Record/Play	1201	Erase	1400
	6001	Record Only/Erase	Record Only	1203	Erase	1400
	6002	Record/Play/Erase	Record/Play	1201	Erase	1401
	6003	Record/Play/Erase	Record/Play	1000	Erase	1402
	6004	Record Only/Erase	Record Only	1203	Erase	1401
	6005	Record/Play/Erase	Record/Play	1207	Erase	1401
	6006	Record/Play/Erase	Record/Play	1210	Erase	1401
	6009	Record/Play/Erase	Record/Play	1009	Erase	1401
	6025	Record/Play/Erase	Record/Play	1000	Erase	1402
4-Track Mono 'Combo' Metal Face; Center Track	6026	Record/Play/Erase	Record/Play	1001	Erase	1401
2-Track Stereo 'Combo' Metal Face	6100	Record/Play/Erase	Record/Play	2001	Erase	2201
	6101	Record Only/Erase	Record Only	2003	Erase	2201
	6125	Record/Play/Erase	Record/Play	3000	Erase	3600
2-Track Mono 'Combo' Metal Face; Center Track	6126	Record/Play/Erase	Record/Play	3203	Erase	3601
	6127	Record/Play/Erase	Record/Play	2601	Erase	3601
	6128	Record/Play/Erase	Record/Play	2007	Erase	3601
	6129	Record/Play/Erase	Record/Play	3205	Erase	3601

● Special Heads

Head Description	Nortronics Model No.	RECORD/PLAYBACK														ERASE					
		Function	1 KHz Inductance MHY	1 KHz Impedance OHMS	Maximum Bias Frequency KHZ	DC Resistance OHMS	Gap Spacer MILS	Track Width INCH	Track Spacing center-to-center INCH	1 KHz Crosstalk Rejection DB	Avg. 7.5 IPS constant-current R/P characteristics, using 3M190 tape, peak biased at 1 KHz and recorded 12 db below tape saturation.					Impedance Description	1 KHz Inductance MHY	60 KHz Impedance OHMS	Operating Erase Current* MA	DC Resistance OHMS	60 KHz Operating Voltage VOLT
											60 KHz Peak Bias MA	Bias Voltage RMS 60 KHz VOLT	Record Current UA	1 KHz Output MV	10KHZ/1 KHZ Ratio DB						
2-Tr. Stereo Rear-Mount	7250	R/P	800	5000	60	720	0.1	.080	.160	55	0.4	65	30	3.4	-1	--	--	--	--	--	--
2-Tr. Mono Base-Mount	7401	R/P	400	2500	80	350	0.16	.090	--	--	0.8	25	30	3.0	-9	--	--	--	--	--	--
2-Tr. Mono No-Mount	7403	R/P	1000	5000	60	780	0.1	.080	--	--	1.8	65	30	5	-1	--	--	--	--	--	--
2-Tr. Mono Base-Mount	7405	R/P	400	2500	100	165	0.1	.080	--	--	0.6	45	40	2.2	-3	--	--	--	--	--	--
2-Tr. Mono Rear-Mount	7450	R/P	800	5000	60	720	0.1	.080	.160	55	0.4	65	30	3.4	-1	--	--	--	--	--	--
2-Tr. Mono Rear-Mount	7456	R/P	800	5000	60	400	0.1	.080	--	--	0.4	65	30	3.4	-3	--	--	--	--	--	--
2-Tr. Mono Combo Rear Mt.	7457	R/P/E	200	1300	150	370	0.5	.080	--	--	0.30	22	40	--	--	Med.	8	2000	16-24	35	32-48
2-Tr. Mono Base-Mount	7500	Erase	--	--	--	--	--	--	--	--	--	--	--	--	--	Lo	.85	170	100	2.9	17
4-Tr. Stereo No-Mount	7600	R/P	800	5000	80	700	0.1	.043	.136	55	0.3	45	25	2.4	-2	--	--	--	--	--	--
4-Tr. Stereo Base-Mount	7601	R/P	400	2500	100	390	0.1	.043	.136	55	0.25	35	35	1.8	+1	--	--	--	--	--	--
4-Tr. Mono No-Mount	7610	Play	200	1400	--	135	0.05	.043	.136	--	--	--	--	1.2	+1	--	--	--	--	--	--
4-Tr. Stereo No-Mount	7620	R/P	650	5000	50	600	0.02	.043	.136	55	0.03	45	20	2.5	-3	--	--	--	--	--	--
2-Tr. Stereo Base-Mount	7708	Erase	--	--	--	--	--	--	--	--	--	--	--	--	--	Med.	19	4400	11-17	45	40-65
4-Tr. Mono Base-Mount	7720	Erase	--	--	--	--	--	--	--	--	--	--	--	--	--	Med.	10	3000	10-15	38	28-42

*For 60 db erasure of saturated tape.

AT-100 AZIMUTH AND AMPLIFIER ALIGNMENT TAPE



A 7.5 IPS Full-Track master professional tape. It contains frequencies from 40 to 10,000 cycles for checking azimuth and equalization. Full instructions are recorded on the tape.

NEW HYPERBOLIC FACE



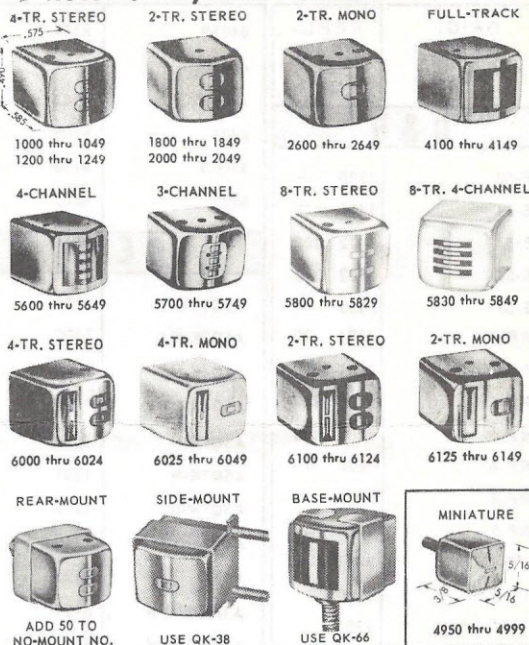
Available on most R/P heads. Gives improved tape to gap contact on recorders not requiring pressure pads, but can be used with pressure pads as well.

The new standard of the industry:
Hz = cycles/sec. & KHz = kc/sec.

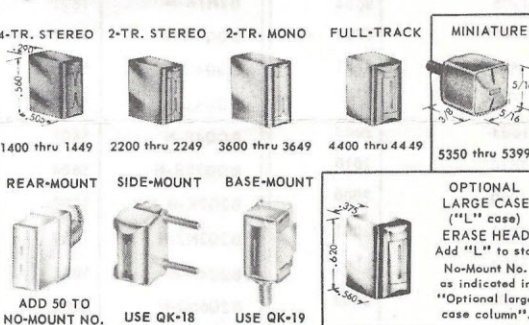
Specifications subject to change without notice.

● Dimensions and Mounting Styles

● Record/Play and "Combo" Heads



● Erase Heads



CROSS REFERENCE TABLE FOR NORTRONICS HEADS

ORIG. PART NO.	REPL. HEAD & QK									
D & D										
E-50	7720 --	4401B	8104	KMH3L-N	3201	P-B3Q8R-N	5710	SLFH3L-N	4100	
E-51	1402 18	4402B	8109	KMH4L-N	3202	P-G1H2K-N	3200	SLF3L-N	4100	
E-53	1402 305	4403B	8102	L24R8L-R	4950 --	P-G1H4K-N	3202	SLF4R-N	4101	
E-54	3602 305	4405	8105	L42E6U-R	5350 --	P-G1H4R-N	3203	SLFH4R-N	4101	
E-58	7500 --	4406B	8106	MEF1-N9	4400	P-G1H7K-N	3201	SLF4L-N	4102	
RP-1	3101 20	5600	5602	MEF1-N	4400L	P-G1H7R-N	3205	SLFH4L-N	4102	
RP-2	7601 --	O E M			MEF2-N9	4403	P-R2Q7K7-B6X2	7601 --	SLFH7R-N	4103
RP-4	3100 118	ASQ1K-N	1200	MEF4-N9	4401	SCS1L-N	3100	SLFW16R16-N	4130	
RP-5	7403 118	ASQ2K-N	1200	MEF6-N9	4406	SCS2L-N	3100	SLS1L-N	3000	
RP-6	7620 --	ASQ4K-N	1202	MEF9-N9	4402	SCS2L-N2X2	7402	SLS2L-N	3000	
RP-8	7250 --	ASQ4R-N	1203	MEH1-N9	3600	SCS9N4-N2X2-3U5	7403	TLAH3L-N	2000	
RP-9	7450 --	ASQ6K-N	1207	MEH1-N	3600L	SCS3L-N	3101	TLA4L-N	1801	
RP-10	7401 --	ASQ7K-N	1201	MEH2-N9	3602	SEC2-B2-N	7708 --	TLAH4L-N	2001	
1100	1200	ASQ7R-N	1205	MEH4-N9	3601	SEH1-N9	2200	TLA5L-N	1802	
1101	1201	ASQ23R-N	1210	MEH4-N	3601L	SEH1-N2	2200L	TLA3L-R6X2-125	7250 --	
1102	1202	A1HC11K-N	6125	MEH5-N9	3605	SEH2-N9	2202	SLS3L-N	3001	
1103	1203	A1HC47R-N	6129	MEH6-N9	3603	SEH4-N2	2201L	SLS4L-N	3002	
1104	1204	A1QC22K-N	6025	MEH9-N9	3604	SEH9-N9	2203	TLAH2R-N	2010	
1105	1205	A1QC47K-N	6026	P-A1H4R-N	6126	SEQ1-N9	1400	TLA3L-N	1800	
1106	1210	A2Q22K-N	6003	P-A1HC47K-N	6127	SEQ1-N2	1400L	TLB1-N	1000	
1107	1207	A2Q42N2-N	6009	P-A1H44R-N	6101	SEQ2-N9	1402	TLB1K-N	1000	
1206	8604	A2Q42N2-N	6009	P-A2H47K-N	6100	SEQ2-N2	1402L	TLB2-N	1200	
1400B	8704	B2H2K-N	1800	P-A2Q14R-N	6001	SEQ3-N9	1404	TLB4-N	1202	
1401B	8701	B2H4K-N	1802	P-A2Q17K-N	6000	SEQ4-N	1401	TLB4K-N	1002	
1402B	8702	B2H7K-N	1801	P-A2Q44R-N	6004	SEQ4-N2	1401L	TLB4R-N	1203	
1803	2003	BQ4K-N	5603	P-A2Q47K-N	6002	SEQ7-N	1407	TLB7-N	1201	
1810	2010	BQ4K-N	5602	P-A2Q48R-N	6006	SE50-1	1400	TLB7K-N	1201	
1900	2000	BQ4L-N	5602	P-B1HY2K-N	2600	SE50-2	1402	TLB7R-N	1205	
1901	2001	BQ4R-N	5601	P-B1HY4K-N	2602	SE50-4	1401	TLDLH3-N	1800	
1902	2002	BQ23R-N	5604	P-B1HY4R-N	2603	SLAH2R-N	2610	TLD53-N	1800	
1903	2003	B2Q2K-N	1000	P-B1HY7K-N	2601	SLAH3L-N	2600	TLD-L1-N	1000	
1904	2010	B2Q2N2-N	1009	P-B1H8R-N	2630	SLA3L-N	2600	ALL MODELS: Unless otherwise indicated all head numbers are no.mount style. See table below for nomenclature definition and types of mounting brackets.		
2200B	8301	B2Q4K-N	1002	P-B1QY6F2-N	7610 --	SLA3L-R6X2-125	7450 --			
2201	8304	B2Q6N2-N	1008	P-B2H2K-N	2000	SLAH4L-N	2601			
2201B	8304	B2Q7K-N	1001	P-B2H4K-N	2002	SLA4L-N	2601			
2202B	8302	CSQ1K-N	1000	P-B2H4R-N	2003	SLAH4R-N	3205			
2206	8306	CSQ2K-N	1000	P-B2H6K-N	2007	SLAH5L-N	2602			
2610	8401	CSQ4K-N	1002	P-B2H7F-N	2021	SLA5L-N	2602			
2630	8401	CSQ4R-N	1203	P-B2H7K-N	2001	SLA5R-N	2603			
2700	2600	CSQ6K-N	1207	P-B2H7R-N	2005	SLAH5R-N	2603			
2701	2601	CSQ7R-N	1205	P-B2H8R-N	2010					
2702	2602	CSQ7K-N	1001	P-B2H47K-N	2047	OEM HEAD NUMBERS D&D HEAD NUMBERS				
2703	2603	CSQ9N4-NX2-3U5	7620	P-B2L4R-N	5813	NO MOUNT HEADS				
2704	2610	CU-B2L7K-N	5800	P-B2L8R11-N	5810	"-N" suffix designates		Third digit is 4 or under		
3600B	8501	GMH1L-N	3100	P-B2Q2K-N	1200	No Mount i.e. B2Q2K-N		i.e. 1000, 2047		
3601B	8504	GMH3L-N	3101	P-B2Q4K-N	1202	REAR MOUNT HEADS				
4000	4100	GMH3L-B3	7401	P-B2Q4R-N	1203	"-R" suffix designates		Third digit is 5 or over		
4001	4101	GMH4L-N	3202	P-B2Q6K-N	1207	Rear Mount i.e. SEQ4-R		(add 50 to No Mount no.)		
4002	4102	G1H2K-N	3000	P-B2Q7F-N	1221			i.e. 1050, 2047		
4104	8005	G1H4K-N	3002	P-B2Q7K-N	1201	SIDE MOUNT HEADS				
4400B	8101	G1H7K-N	3001	P-B2Q7R-N	1205	"-S" suffix designates		Use QK-18, 20, or 38		
		G1HY2K-N	3100	P-B2Q8R-N	1210	Side Mount i.e. B2H7K-S		See table on page three		
		G1HY7K-N	3101	P-B3Q4K-N	5702	BASE MOUNT HEADS				
		G2Q2K-N	7600 --	P-B3Q4R-N	5703	"-B" suffix designates		Use QK-19, 21, or 66		
		KMH1L	3200	P-B3Q6K-N	5707	Base Mount i.e. SEH1-B		See table on page three		
				P-B3Q7K-N	5701					

Nortronics
 COMPANY, INC.
 8101 TENTH AVENUE NORTH
 MINNEAPOLIS, MINNESOTA 55427

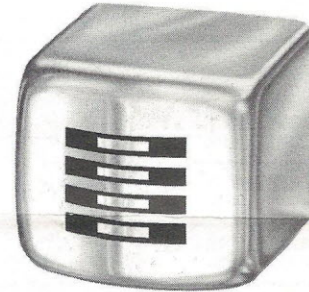


YOUR LOCAL DEALER

8-TRACK, 4-CHANNEL MAGNETIC TAPE HEADS

PREMIUM QUALITY RECORD-ONLY OR RECORD/PLAYBACK 4-CHANNEL, 8-TRACK MAGNETIC HEADS FOR 1/4-INCH TAPE.

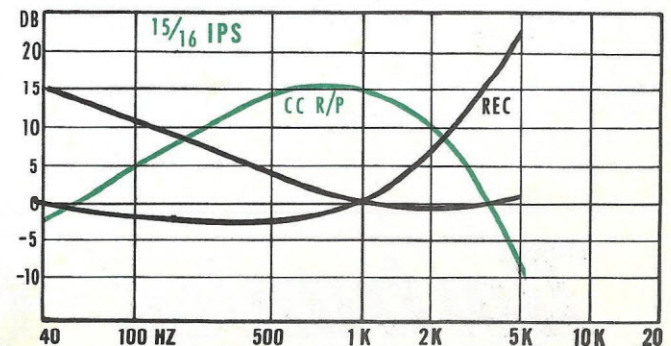
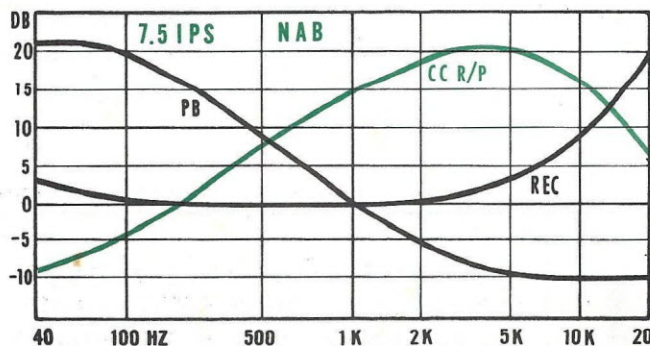
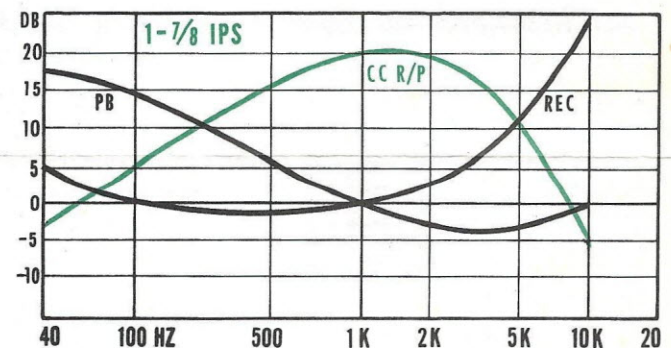
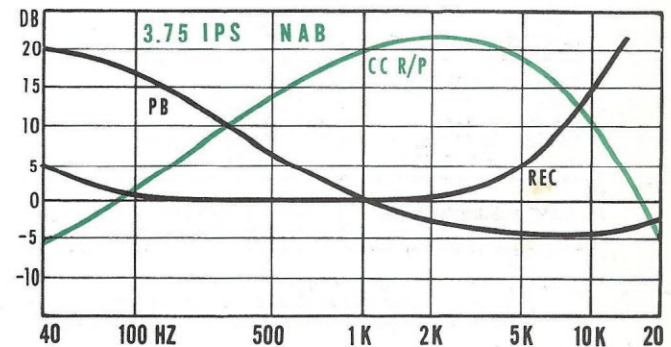
SUITABLE FOR HIGH SPEED DUPLICATORS,
 LOW SPEED LOGGING APPLICATIONS, AND GENERAL
 PURPOSE RECORDING AND PLAYBACK.



- EIGHT CHANNELS INTERLACED ON 1/4-IN. TAPE
- "STEREO-8" 8-TRACK SYSTEM COMPATIBLE
- FINE-LAMINATED PRECISION-LAPPED LOW LOSS CORES
- DEPOSITED-QUARTZ GAPS FOR SHARP, CLEAN EDGES
- EXTRA-DEEP GAPS FOR LONGER LIFE
- POLISHED HYPERBOLIC FACE FOR BETTER TAPE CONTACT
- "B" SIZE CASE FITS STANDARD NORTRONICS MOUNTS

The NORTRONICS P-BQL four-channel magnetic tape head utilizes the most advanced design and manufacturing techniques. Fine-laminated cores and precision-deposited gaps give the following extended frequency response capability: 25 KHz @ 7.5 IPS, 15 KHz @ 3.75 IPS, 10 KHz @ 1.875 IPS, and 5 KHz @ 15/16 IPS. Ideal as high speed slave heads for duplication of 8-track stereo at speeds up to 8X or 16X, with bias frequencies up to 750 KHz.

Shown below are typical response curves for various tape speeds. Curve "CC" is the unequalized head playback output from a constant-current recording. Curve "PB" is the equalized response of the playback amplifier to a constant-voltage input. Curve "REC" is the record amplifier response (or head current) vs. a constant-voltage input. The summation of "PB" and "REC" gives the inverse of "CC". Addition of all three curves results in a flat record/playback response.



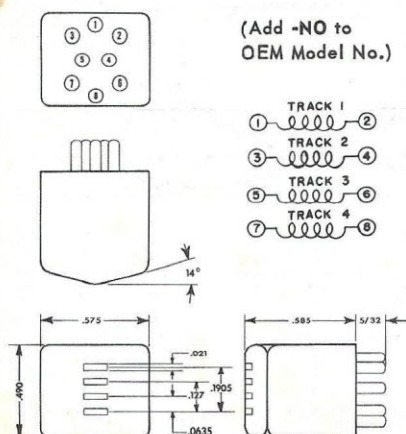
P-BQL ENGINEERING DATA

TYPICAL SPECIFICATIONS

OEM MODEL NUMBER	P-BQL14R	P-BQL8R	P-BQL4R	P-BQL4K	P-BQL6K
DISTR. MODEL NO.	5836	5835	5834	5833	5832
APPLICATION	DUPLICATING RECORD ONLY	DUPLICATING RECORD ONLY	RECORD ONLY	RECORD/ PLAYBACK	RECORD/ PLAYBACK
INDUCTANCE 1 KHz @ 100 MV.	2 MHY.	10 MHY.	50 MHY.	100 MHY.	200 MHY.
SELF-RESONANT ¹ FREQUENCY	700 KHz	280 KHz	100 KHz	85 KHz	60 KHz
RESISTANCE, D.C.	16 OHMS	60 OHMS	250 OHMS	250 OHMS	500 OHMS
GAP SPACER (Deposited Quartz)	500 U-IN.	500 U-IN.	500 U-IN.	100 U-IN.	100 U-IN.
GAP DEPTH	15 MILS	15 MILS	15 MILS	10 MILS	10 MILS
PEAK BIAS CURRENT ² 100 KHz @ 7.5 IPS	4 MA.	2.5 MA.	0.6 MA.	0.55 MA.	0.35 MA. (60 KHz)
BIAS VOLTS, RMS. 100 KHz @ 7.5 IPS	4.5 Volts	10 Volts	24 Volts	25 Volts	25 Volts (60 KHz)
PEAK BIAS CURRENT ² 500 KHz @ 30 IPS	16 MA.	12 MA.	—	—	—
BIAS VOLTS, RMS. 500 KHz @ 30 IPS	25 Volts	60 Volts	—	—	—
AUDIO RECORD CURRENT ³	0.3 MA.	0.15 MA.	0.05 MA.	0.05 MA.	0.035 MA.
1 KHz PLAYBACK RMS. @ 7.5 IPS	—	—	—	0.5 MV.	0.7 MV.
10 KHz PLAYBACK Vs. 1 KHz LEVEL	—	—	—	0 DB.	0 DB.
TRACK DIMENSIONS	TRACK WIDTH: 0.021 TRACK SPACING: 0.0635 ON CENTERS, 0.03175 INTERLACED FOR 8 TRACKS				

NOTES: 1. Self-resonance measured with coil shunted with 50 pf. capacitor to simulate cable capacitance.
2. Bias adjusted for peak playback output of 1 KHz signal on 3M150 tape.
3. For recorded level of 12 db. below tape saturation.

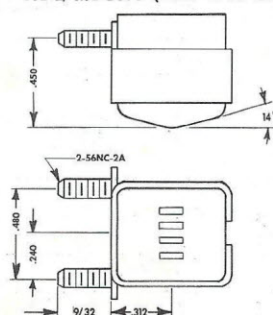
OUTLINE DRAWING—NO MOUNT



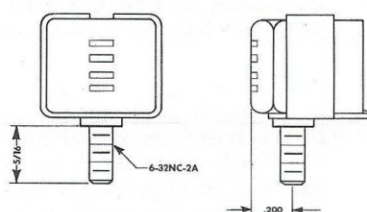
TYPICAL MOUNTING DATA—STANDARD MOUNTS

Variations of these mounts can be furnished — See mounting hardware and assemblies literature or write for details.

SIDE MOUNT (Add -S to OEM Model No.)

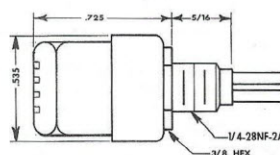


BASE MOUNT (Add -B to OEM Model No.)



REAR MOUNT (Add -R-12U to OEM Model No.)

(12-inch unshielded leads standard)



Lead Color Code

Track 1 . . . Black/Red
Track 2 . . . Brown/Orange
Track 3 . . . Green/Yellow
Track 4 . . . White/Blue

Specifications subject to change without notice.

Nortronics
COMPANY, INC.



8101 TENTH AVENUE NORTH
MINNEAPOLIS, MINNESOTA 55427
TELEPHONE: 612 + 545-0401

MAGNETIC TAPE HEADS

Complete range of mechanical configurations and electrical specifications

The following pages indicate the enormous variety of head styles and types available from Nortronics.

Heads for Every Audio and Instrumentation Application

Our experienced staff of sales engineers will assist you in determining the head best suited to your application.

Value Analysis Considerations

It is easy to over-specify, particularly on tape heads for many instrumentation applications. We can frequently demonstrate how a slight modification in the circuitry will permit enormous reductions in the cost of the tape heads.

Innovative Leadership Since 1957

Many Nortronics innovations have become standards of the industry: the "B" case, hyperbolic tape head face to eliminate pressure pads; laminated cores, and quartz-deposited gaps for popular priced tape heads; all-metal-face heads; 8-track stereo tape heads for automobiles; "no-mount" snap-in heads; quick-kit mounting adapters; terminal plugs with standard pin spacing and centering; and "Z combo" stereo record-play-erase heads in a single case.

THE WORLD'S LARGEST
MANUFACTURER OF
TAPE HEADS

RECORD
RECORD/PLAYBACK
RECORD/PLAYBACK/ERASE
ERASE

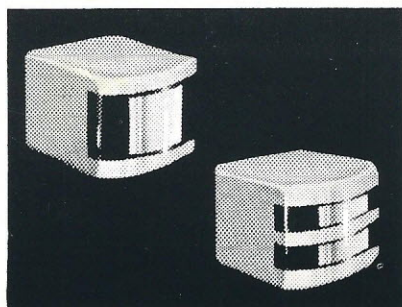
*"The Future
of
Magnetic Tape
Recording...
and
Magnetic
Heads...
depends not
so much on
What We
Can do, as on
What we
Can Think
of Doing."*

Quality Control at Nortronics

Between incoming inspection and use tests just before packaging, each head undergoes an average of 30 inspections, and is subjected to an average of seven different microscopic, visual, and electrical tests. Mechanically, the two half sections of a Nortronics head must be precision lapped to flatness tolerances of one-quarter wave length of monochromatic helium light. Electrically, completed heads are checked for inductance, impedance, DC resistance, long and short wave length response, record and biasing parameters, interchannel and adjacent channel cross talk, shorts, opens and proper grounding.

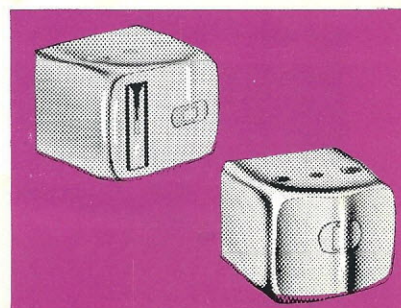
Unequalled Research and Manufacturing Facilities

The new 40,000 square foot Nortronics building was designed to provide control of dust, noise, humidity and temperature. Equipment, from the research laboratory's binocular Unitron metallurgical microscope with Xenon light source, to the production line's 10⁻⁷ Torr vacuum quartz gap depositors, is the best available, much of it designed and built at Nortronics, to accommodate new departures in product design requiring equally dramatic departures in manufacturing technique. Your visit to inspect our facilities is welcome at any time.



Nortronics
COMPANY, INC.

8107 Tenth Avenue North
Minneapolis, Minnesota 55427
Phone: (612) 545-0401



PROFESSIONAL SERIES for QUARTER INCH TAPE

Nortronics
COMPANY, INC.



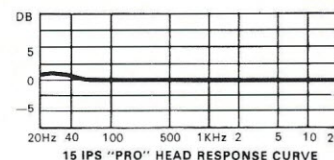
8107 Tenth Avenue North, Minneapolis, Minnesota 55427



PR-B2H
(No Mount)



PR-B1F
(No Mount)



UNEXCELLED RESPONSE FROM 20 HZ to 20 KHZ

- Full Track: PR-B1F
- Two Track Stereo: PR-B2H
- Four Track Stereo: PR-B2Q
- Hyperbolic Face Contour
- Precision-Lapped Fine Laminated Core
- Extra Deep Deposited Quartz Gap

New "PR" PROFESSIONAL series sets a new standard for high performance magnetic heads. Designed especially for long wavelength response with wide pick-up poles, smooth response characteristics (within one db) can be obtained to below 20 hz. Fine precision-lapped laminated core stacks and deposited quartz gaps extend short wavelength response.

TRACK SYSTEM	FULL TRACK	PR-B1F	TWO TRACK	PR-B2H
Electrical Code	4R	7K	4R	7K
Function	RECORD ONLY	PLAYBACK	RECORD ONLY	PLAYBACK
Inductance	50 MHY	400 MHY	50 MHY	400 MHY
Resistance, D.C.	125Ω	200Ω	100Ω	410Ω
Gap Spacer	0.5 MIL	0.1 MIL	0.5 MIL	0.1 MIL

Average 7.5 IPS constant current Record/Playback characteristics using 3M190 tape peak biased at 1 KC and recorded 12 DB below tapes

Peak Bias Current, 100 KHZ	1.0 MA	—	0.9 MA	—
Bias Voltage, RMS, 100 KHZ	35 V.	—	18 V.	—
Record Current	100 UA	—	80 UA	—
1 KHZ Output	—	4.5 MV	—	2.4 MV
10 KHZ/1 KHZ Ratio	—	+ 1 DB	—	+ 1 DB

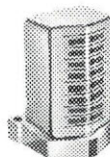
STUDIO SERIES FOR ONE HALF OR ONE INCH TAPE



4-Channel
R/P
STR-4B
For 1/2" Tape



8-Channel
R/P
STR-8B
For 1" Tape



8-Channel
Erase
STE-8B
For 1" Tape



Half-Inch
STE-1E
Erase



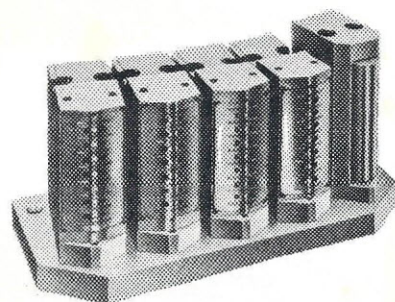
Designed especially for professional audio recorders using one half or one inch tape. Uncompromised quality dictates the finest in design, materials and technology. Custom built to your electrical specifications and mechanical mounting requirements, the studio series is available in three standard SMPTE track formats; 3 channels on one half inch tape, 4 channels on one half inch tape or eight channels on one inch tape.

Record & Playback heads feature ultra thin HY MU 800

laminated precision-lapped cores for minimum eddy current loss, deposited silicon monoxide gaps for maximum frequency definition and hyperbolic face contour for uniform intimate tape contact.

Compatible companion erase heads are available with selective (independent) channels or full width. Ferrite core structures reduce ultra high frequency bias losses while providing erasure to virgin tape level.

SEE LAST PAGE FOR ORDERING INFORMATION



NORTRONICS INSTRUMENTATION HEADS

- Custom built to your specifications, to IRIG track configurations
- Available with adjustable mount to minimize cost without sacrificing performance
- Available with fixed precision ground base
- Read, write and erase heads
- Available as complete assemblies

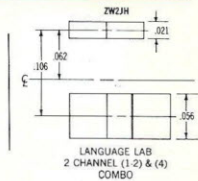
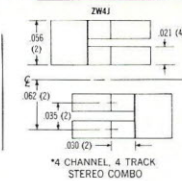
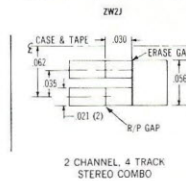
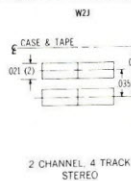
Head assembly pictured illustrates two seven channel read heads and two seven channel write heads which interlace to provide fourteen channels on one inch tape. Full track ferrite core erase head completes the head configuration precision aligned on machined base plate.

CASSETTE HEADS

Nortronics
COMPANY, INC.



8107 Tenth Avenue North, Minneapolis, Minnesota 55427



Designed for use with the "Norelco" type cassette cartridge.

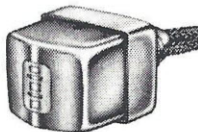
Unique engineering technology offers up to 6 functions in one miniature head!

Advanced Z Combo technology creates model Z-W4J, a 4 channel record/playback head with 2 companion erase sections for stereo reversible cassette operation without flipping the cartridge.

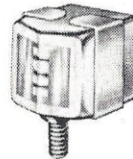
Truly, an engineering in depth challenge, the Z-W4J is an example of the cassette series of magnetic heads introduced by Nortronics in 1968. Other Z Combo models include: Z-W2J (stereo erase-R/P), Z-W1R (mono erase-R/P), and Z-W2JH (special stereo erase-R/P suitable for educational lab applications). Conventional models are W2J (stereo-R/P) and W1R (mono R/P). Consult Nortronics Sales Engineering for the Nortronics Cassette Series Head Suited to your application.

THREE AND FOUR CHANNEL IN-LINE HEADS 3, 4, AND 8 TRACK

3-TRACK
3-CHANNEL
P-B3Q-R
(Rear Mount)



4-TRACK
4-CHANNEL
BQO-B
(Base Mount)



8-TRACK
4-CHANNEL
P-BQL-N
(No Mount)



TRACK SYSTEM	3-TRACK (.043 IN. WIDTH)			4-TRACK (.037 IN. WIDTH)				8-TRACK (.021 IN. WIDTH)			
BASIC MODEL NUMBER	P-B3Q 3 CHANNELS FOR 1/4" TAPE			BQO 4 CHANNELS FOR 1/4" TAPE				P-BQL 2 HEADS INTERLACE FOR 8 TRACKS ON 1/4" TAPE			
Electrical Code	4 R	6 K	7 K	23 R	4 R	4 K	3 K	8 R	4 R	4 K	6 K
Head Function	Record Only	Record/Playback	Record/Playback	Duplicating Record	Record Only	Record/Playback	Record/Playback	Duplicating Record	Record Only	Record/Playback	Record/Playback
Type of Circuit	Tubes/Transistors	Transistors	Transistors	Tubes/Transistors	Tubes/Transistors	Transistors	Transistors	Tubes/Transistors	Tubes/Transistors	Transistors	Tubes/Transistors
Inductance, 1 KC	50 MHY	200 MHY	340 MHY	12 MHY	50 MHY	90 MHY	370 MHY	10 MHY	50 MHY	100 MHY	200 MHY
Impedance, 1 KC	400 Ω	1.3 K	2.0 K	75 Ω	320 Ω	600 Ω	2.2 K	65 Ω	300 Ω	650 Ω	1.5 K
Maximum Bias Frequency	250 KC	120 KC	100 KC	500 KC	150 KC	100 KC	80 KC	500 KC	200 KC	100 KC	100 KC
Resistance, D.C.	260 Ω	450 Ω	800 Ω	55 Ω	220 Ω	220 Ω	690 Ω	60 Ω	250 Ω	250 Ω	500 Ω
Gap Spacer	0.5-MIL	0.1-MIL	0.1-MIL	0.5-MIL	0.5-MIL	0.1-MIL	0.1-MIL	0.5-MIL	0.5-MIL	0.1-MIL	0.1-MIL
Track Spacing	.100-IN.	.100-IN.	.100-IN.	.071-IN.	.071-IN.	.071-IN.	.071-IN.	.0635-IN.	.0635-IN.	.0635-IN.	.0635-IN.
1 KC Crosstalk Rej.	55 DB	55 DB	55 DB	50 DB	50 DB	50 DB	50 DB	50 DB	50 DB	50 DB	50 DB
FOR PREMIUM HEADS—AVERAGE 7.5 IPS. CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION											
Peak Bias Current, 60 KC	0.65 MA	0.40 MA	0.25 MA	2.0 MA	0.60 MA	0.70 MA	0.30 MA	1.8 MA	0.7 MA	0.55 MA	0.35 MA
Bias Voltage RMS, 60 KC	7.5 V.	20 V.	35 V.	4 V.	7 V.	15 V.	30 V.	5 V.	15 V.	15 V.	22 V.
Record Current	60 UA.	50 UA.	35 UA.	110 UA.	60 UA.	60 UA.	34 UA.	140 UA.	55 UA.	45 UA.	35 UA.
1 KC Output	—	1.3 MV	1.8 MV	—	—	0.7 MV.	1.4 MV.	—	—	0.6 MV.	0.8 MV.
10 KC/1 KC Ratio	—	+1 DB	+1 DB	—	—	0 DB	0 DB	—	—	0 DB	0 DB
FOR PREMIUM HEADS—AVERAGE 3.75 IPS. CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION											
Peak Bias Current, 60 KC	0.50 MA	0.32 MA	0.20 MA	1.6 MA	0.50 MA	0.50 MA	0.22 MA	1.5 MA.	0.6 MA.	0.50 MA.	0.30 MA.
Bias Voltage RMS, 60 KC	7.0 V.	15 V.	25 V.	3 V.	6 V.	10 V.	25 V.	4.5 V.	10 V.	13 V.	20 V.
Record Current	60 UA.	44 UA.	30 UA.	90 UA.	50 UA.	50 UA.	30 UA.	120 UA.	45 UA.	40 UA.	32 UA.
1 KC Output	—	1.0 MV	1.4 MV	—	—	0.5 MV.	1.1 MV.	—	—	0.5 MV.	0.6 MV.
10 KC/1 KC Ratio	—	-9 DB	-9 DB	—	—	-10 DB	-9 DB	—	—	-12 DB	-12 DB
NOT AVAILABLE IN STANDARD VERSION											

THESE POPULAR MODELS—Immediately Available from Stock:

3-TR, 3 CH. R/P—P-B3Q4R, P-B3Q7K

4-TR, 4 CH. R/P—BQO4R, BQO3K

8-TR, 4 CH. R/P—P-BQL4R, P-BQL6K

ACCESSORIES

CONTACTOR HEAD

Use with metal-foil cueing to operate relay. Has two isolated contactor shoes. Model CH3-R-4U has rear mount and 4" leads. Model CH3-N9 is no-mount small-case size. CH3-B3 is base mount.



MODEL CH3



MODEL 173-13

TAPE GUIDE POST

A universal precision-made guide post for 1/4" tape—may readily be mounted to control the path of tape travel. Chrome plated brass insures long life and friction-free operation. Height is readily adjustable by loosening the locking set screw and rotating the threaded post.

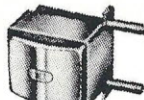
4-TRACK AND 8-TRACK HEADS

Nortronics
COMPANY, INC.

8107 Tenth Avenue North, Minneapolis, Minnesota 55427



4-Tr. Stereo
B2Q-N
(No Mount)



4-Tr. Mono
B1QC-S
(Side Mount)



4-Tr. Stereo
WP-B2Q
(No Mount)



4-Tr. Stereo Combo
A2Q-BL
(Base Mount)



4-Tr. Mono Combo
A1QC-N
(No Mount)



8-Tr. Stereo
B2L-N
(No Mount)

TRACK SYSTEM		4-TRACK (.043 IN. TRACK WIDTH)								8-TR. (.020 IN. TRACK WIDTH)		
BASIC MODEL NUMBER		MONO: B1QY, B1QC, A1QC STEREO: B2Q, C2Q, G2Q, A2Q								STEREO B2L		
Electrical Code		8R	4R	8K	4K	6K	7K	7F2	2K	8R	4R	7K
Head Function		Duplicating Record	Record Only	Record/Playback	Record/Playback	Record/Playback	Record/Playback	Playback Only	Record/Playback	Duplicating Record	Record Only	Record/Playback
Type of Circuit		Tubes/Transistors	Tubes/Transistors	Transistors	Transistors	Transistors	Tubes/Transistors	Tubes/Transistors	Tubes	Tubes/Transistors	Tubes/Transistors	Tubes/Transistors
Inductance, 1 KC		10 MHY	50 MHY	20 MHY	100 MHY	200 MHY	400 MHY	500 MHY	800 MHY	10 MHY	50 MHY	400 MHY
Impedance, 1 KC		70 Ω	400 Ω	150 Ω	650 Ω	1.3 K	2.5 K	3.3 K	5 K	75 Ω	400 Ω	2.5 K
Maximum Bias Frequency		500 KC	250 KC	250 KC	140 KC	120 KC	100 KC	100 KC	80 KC	750 KC	250 KC	100 KC
*Resistance, D.C.		22 Ω	90 Ω	22 Ω	90 Ω	110 Ω	210 Ω	210 Ω	520 Ω	29 Ω	100 Ω	520 Ω
**Resistance, D.C.		32 Ω	90 Ω	32 Ω	90 Ω	200 Ω	390 Ω	390 Ω	700 Ω	42 Ω	220 Ω	700 Ω
Gap Spacer		0.5-MIL	0.5-MIL	0.1-MIL	0.1-MIL	0.1-MIL	0.1-MIL	0.05-MIL	0.1-MIL	0.5 MIL	0.5 MIL	0.1 MIL
**Track Spacing		.136-IN.	.136-IN.	.136-IN.	.136-IN.	.136-IN.	.136-IN.	.136-IN.	.136-IN.	.127-IN.	.127-IN.	.127-IN.
1 KC Crosstalk Rej.		55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB
FOR "WP" AND PREMIUM—AVERAGE 7.5 IPS CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION.												
Peak Bias Current, 60 KC	1.3 MA	0.65 MA	1.6 MA	0.70 MA	0.40 MA	0.25 MA	0.25 MA	0.16 MA	1.1 MA	0.5 MA	0.15 MA	
Bias Voltage RMS, 60 KC	3 V.	7.5 V.	6 V.	18 V.	25 V.	35 V.	50 V.	45 V.	2.6 V.	8 V.	21 V.	
Record Current	140 UA	60 UA	150 UA	70 UA	50 UA	35 UA	30 UA	25 UA	88 UA	40 UA	19 UA	
1 KC Output	—	—	0.5 MV	0.9 MV	1.3 MV	1.8 MV	1.8 MV	2.6 MV	—	—	1.0 MV	
10 KC/1 KC Ratio	—	—	0 DB	0 DB	+1 DB	+1 DB	+2 DB	+1 DB	—	—	0 DB	
FOR "WP" AND PREMIUM—AVERAGE 3.75 IPS CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION.												
Peak Bias Current, 60 KC	1.2 MA	0.50 MA	1.25 MA	0.50 MA	0.32 MA	0.20 MA	0.20 MA	0.12 MA	1.0 MA	0.4 MA	0.12 MA	
Bias Voltage RMS, 60 KC	2.5 V.	7.0 V.	5 V.	13 V.	20 V.	25 V.	35 V.	35 V.	2.3 V.	7 V.	18 V.	
Record Current	130 UA	50 UA	130 UA	50 UA	44 UA	30 UA	25 UA	22 UA	86 UA	35 UA	18 UA	
1 KC Output	—	—	0.4 MV	0.7 MV	1.0 MV	1.4 MV	1.4 MV	2.1 MV	—	—	0.8 MV	
10 KC/1 KC Ratio	—	—	-10 DB	-10 DB	-9 DB	-9 DB	-7 DB	-9 DB	—	—	-9 DB	
FOR STANDARD HEADS—AVERAGE 7.5 IPS CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION.												
Peak Bias Current, 60 KC	—	—	—	1.1 MA	0.70 MA	0.42 MA	—	0.30 MA	—	—	.55 MA	
Bias Voltage RMS, 60 KC	—	—	—	20 V.	25 V.	35 V.	—	45 V.	—	—	32 V.	
Record Current	—	—	—	70 UA	50 UA	35 UA	—	25 UA	—	—	30 UA	
1 KC Output	—	—	—	0.8 MV	1.2 MV	1.6 MV	—	2.4 MV	—	—	0.9 MV	
10 KC/1 KC Ratio	—	—	—	-4 DB	-3 DB	-3 DB	—	-3 DB	—	—	-4 DB	

*Mono **Stereo

Specifications subject to change without notice

PREFERRED MODELS; MOST POPULAR MODELS—Immediate Availability from Stock.

4-TR. STEREO COMBO

P-A2Q44R
P-A2Q47K
A2Q47K

4-TR. MONO COMBO

P-A1QC44R
P-A1QC47K
A1QC47K

4-TR. STEREO R/P

P-B2Q4R P-B2Q7F2
WP-B2Q7K B2Q7K
P-B2Q7K

8-TR. STEREO R/P

P-B2L7K
B2L7K

ACCESSORIES

CONNECTOR PLUG—4-Pin Black Phenolic Plugs permit instant connection to all 4 pins of Stereo Heads and 2 pins of Mono Heads. 105-20 plug is for all Nortronics heads except BQQ, P-B3Q and P-BQL.



MODEL 105-20

PLUG AND CABLE ASSEMBLY—Assemblies ready to plug onto Head Terminal Pins. Consist of proper plug and two shielded cables (nominal length 18" each). 139-70 is used with all Nortronics stereo heads, with cable pairs connected to the upper pair of pins and lower pair of pins. 139-77 is used with Nortronics mono-combo heads, with cable pairs connected to the right pair of pins and left pair of pins.



MODELS 139-70

PIN CLIPS—the 109-54 is a gold plated beryllium copper push-on clip formed to fit the terminal pins of all Nortronics heads. Lead wires may be soldered easily to the small end of the clip, leaving the larger end open to push on to the terminal pins. Pin clips permit ready attachment or removal of leads to terminals of heads, and also eliminate damage to head caused by soldering leads directly to pins.



MODEL 109-54

PIN CLIP AND CABLE ASSEMBLIES

139 SERIES



Provided to make neat and simple electrical connections to the terminal pins of Nortronics heads. No. 26 insulated wire covered with shield braid, with 109-54 pin clips. Available in Red-Orange; Yellow-Blue; White-Black; Red-Black wire in 9" or 24" lengths. (See Nortronics Form 7154).

2-TRACK HEADS

STEREO Z COMBO ERASE-RECORD/PLAY HEADS

Nortronics
COMPANY, INC.



8107 Tenth Avenue North, Minneapolis, Minnesota 55427



2-Tr. Stereo
B2H-B
(Base Mount)



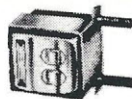
2-Tr. Mono
B1HY-N
(No Mount)



2-Tr. Mono
G1H-R
(Rear Mount)



2-Tr. Mono
G1HY-B3
(Base Mount)



2-Tr. Stereo Combo
A2H-SR
(Side Mount)



2-Tr. Mono Combo
A1HC-R
(Rear Mount)

NEW
FROM



8-Tr. Stereo Z-Combo
ZJ2L
(No Mount)

TRACK SYSTEM	2-TRACK (.080 IN. TRACK WIDTH)							
BASIC MODEL NUMBER	MONO: B1HY, G1H, G1HY, A1HC STEREO: B2H, A2H							
Electrical Code	8R	4R	8K	4K	6K	7K	7F2	2K
Head Function	Duplicating/Record	Record Only	Record/Playback	Record/Playback	Record/Playback	Record/Playback	Record/Playback	Record/Playback
Type of Circuit	Tubes/Transistors	Tubes/Transistors	Transistors	Transistors	Transistors	Tubes/Transistors	Tubes/Transistors	Tubes
Inductance, 1 KC	10 MHY	50 MHY	20 MHY	100 MHY	200 MHY	400 MHY	450 MHY	800 MHY
Impedance, 1 KC	72 Ω	320 Ω	150 Ω	650 Ω	1.3 KC	2.5 K	3.3 K	5 K
Maximum Bias Frequency	500 KC	200 KC	250 KC	150 KC	100-KC	100 KC	80 KC	60 KC
*Resistance, D.C.	14 Ω	70 Ω	14 Ω	70 Ω	110 Ω	165 Ω	165 Ω	400 Ω
**Resistance, D.C.	27 Ω	130 Ω	27 Ω	130 Ω	245 Ω	410 Ω	410 Ω	720 Ω
Gap Spacer	0.5-MIL	0.5-MIL	0.1-MIL	0.1-MIL	0.1-MIL	0.1-MIL	0.05-MIL	0.1-MIL
**Track Spacing	.160-IN.	.160-IN.	.160-IN.	.160-IN.	.160-IN.	.160-IN.	.160-IN.	.160-IN.
1 KC Crosstalk Rej.	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB	55 DB

FOR "WP" AND PREMIUM—AVERAGE 3.75 IPS CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION.

Peak Bias Current, 60 KC	1.7 MA	0.70 MA	2.0 MA	0.80 MA	0.40 MA	0.33 MA	0.46 MA	0.25 MA
Bias Voltage RMS, 60 KC	3.3 V.	9 V.	7.5 V.	20 V.	30 V.	40 V.	55 V.	55 V.
Record Current	200 UA	75 UA	220 UA	80 UA	60 UA	40 UA	46 UA	30 UA
1 KC Output	—	—	0.7 MV	1.2 MV	1.8 MV	2.4 MV	2.2 MV	3.6 MV
10 KC/1 KC Ratio	—	—	0 DB	0 DB	+1 DB	+1 DB	+2 DB	+1 DB

*30 MA	*20 MA	*15 MA
*40 V.	*45 V.	*45 V.
40 UA	35 UA	30 UA
2.2 MV	1.8 MV	0.9 MV
—3 DB	—3 DB	—3 DB

FOR "WP" AND PREMIUM—AVERAGE 7.5 IPS CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION.

Peak Bias Current, 60 KC	1.5 MA	0.60 MA	1.8 MA	0.70 MA	0.30 MA	0.22 MA	0.37 MA	0.20 MA
Bias Voltage RMS, 60 KC	2.8 V.	8 V.	6.5 V.	15 V.	25 V.	30 V.	45 V.	40 V.
Record Current	180 UA	65 UA	200 UA	66 UA	45 UA	30 UA	37 UA	22 UA
1 KC Output	—	—	0.6 MV	0.9 MV	1.2 MV	1.8 MV	1.5 MV	2.4 MV
10 KC/1 KC Ratio	—	—	—10 DB	—10 DB	—9 DB	—9 DB	—7 DB	—9 DB

*25 MA	*15 MA	*10 MA
*35 V.	*40 V.	*40 V.
30 UA	25 UA	20 UA
1.8 MV	1.4 MV	0.8 MV
—12 DB	—12 DB	—12 DB

FOR STANDARD HEADS—AVERAGE 7.5 IPS CONSTANT CURRENT RECORD/PLAYBACK CHARACTERISTICS USING 3M190 TAPE (3M111 WITHIN 5%) PEAK BIASED AT 1 KC AND RECORDED 12 DB BELOW TAPE SATURATION.

Peak Bias Current, 60 KC	—	—	—	1.1 MA	0.80 MA	0.6 MA	—	0.4 MA
Bias Voltage RMS, 60 KC	—	—	—	20 V.	30 V.	45 V.	—	65 V.
Record Current	—	—	—	80 UA	60 UA	40 UA	—	30 UA
1 KC Output	—	—	—	1.1 MV	1.7 MV	2.2 MV	—	3.4 MV
10 KC/1 KC Ratio	—	—	—	—4 DB	—3 DB	—3 DB	—	—3 DB

ERASE SECTION DATA

INDUCTANCE @ 1 KC	4 MHY	6 MHY	12 MHY
ERASURE @ 60 KC	50 DB	50 DB	50 DB

*Mono **Stereo

Specifications subject to change without notice.

PREFERRED MODELS; MOST POPULAR MODELS—Immediate Availability From Stock

2-TR. STEREO COMBO	2-TR. MONO COMBO	2-TR. STEREO R/P	2-TR. MONO R/P (G CASE)
P-A2H44R	P-A1HC44R	P-B2H4R	P-G1H4R
P-A2H47K	P-A1HC47K	WP-B2H7K	P-G1H7K
A2H47K	A1HC47K	P-B2H7K	G1H7K
		B2H7K	

SEE LAST PAGE FOR ORDERING INFORMATION

SPECIAL Z COMBO HEADS

AUDIO & SYNC FOR VIDEO RECORDERS



Custom built to your specifications, this series of special Z combo & R/P heads is designed specifically for video recorders. Two or three channels of sound and/or sync information can be recorded along the edges of one-half or one-inch tape.

Features include:

- Special wide cases give full-width tape support
- In-line gaps permit precise timing accuracy
- Z combo close-spaced erase gap controls editing and alignment
- Provides maximum center tape area for video information

Check with Nortronics for your special-purpose head requirements.

MONO Z COMBO ERASE-RECORD/PLAY HEADS

MONO RECORD/PLAY HEADS

Nortronics
COMPANY, INC.
8107 Tenth Avenue North, Minneapolis, Minnesota 55427

Extended tip or flush face—Mu Metal or Alfenol Cores

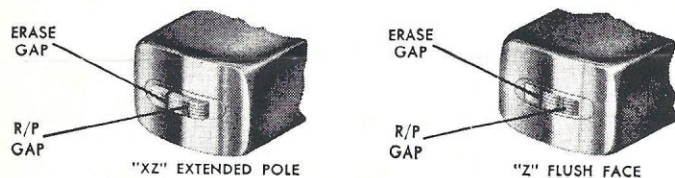
Standard track widths: .0135 inches, .020 inches, .080 inches

***Z Combo—Type Z**—Combination erase and R/P head places all three functions within a single head. Ideal for dictation machines, card readers and film stripe applications. "Close-coupled" gap provides internal bias coupling that simplifies required circuitry and permits accurate editing.

Type XZ offers additional advantage of extended pole tip (.010-.020 inches) for gap to oxide contact on hard or non-compliant surfaces.

***R/P Heads—Type X**—Extended pole tip R/P heads feature high sensitivity mu-metal cores.

Type XA—Extended pole tip R/P heads feature long wearing alfenol cores.



BASIC MODEL NUMBER	ZRINC	ZRILC	RILC	ZRIHC
Track Width (Inches)	.0135	.020	.020	.080
Electrical Code	47K	96K	7K	47K
Head Function	Erase—R/P	Erase—R/P	R/P	Erase—R/P
R/P Inductance	400 MHY	200 MHY	400 MHY	400 MHY
R/P Gap Spacer	0.1 MIL	0.1 MIL	0.1 MIL	0.1 MIL
Erase Inductance	10 MHY	8 MHY	—	4 MHY

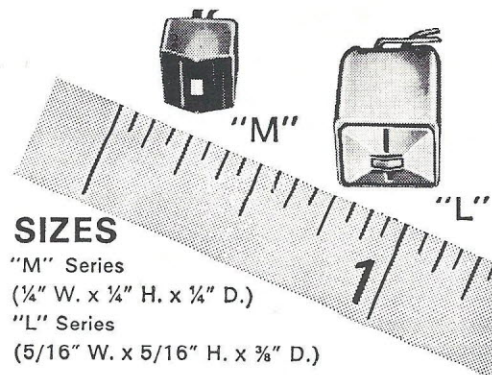
Typical 7.5 IPS constant current R/P characteristic using 3M190 tape. Peak biased at 60 KHZ at 1 KC and recorded 12 DB below tape saturation.

Erase Current (Bias)	30 MA	35 MA	—	30 MA
Erase Voltage (Bias)	45 V.	50 V.	—	40 V.
Record Current	23 UA	30 UA	—	40 UA
1 KHZ Output	0.65 MV	0.6 MV	0.9 MV	2.2 MV
10 KHZ/KHZ Ratio	—3 DB	—3 DB	—3 DB	—3 DB

MINIATURE SERIES TAPE HEADS

"L" SERIES—Incorporates laminated cores, deposited quartz gaps and either a flush face for use with tape or a relieved face (as illustrated) for use in drum, disc or film stripe applications. The flush face contour is hyperbolic, while the pole-tip projection is .010 to .020 inch on relieved heads. To specify a relieved face add the number "5" to part number shown below. Available as no mount or base or rear mount (No. 2-56 stud). Special track widths or specifications on custom order basis. Six-inch leads std.

"M" SERIES—Features small size—1/4 inch cubed. R/P track widths are .045 or .070 with compatible erase track widths of .055 or .090 inch. Face contour is either flush (as illustrated) or relieved. Standard relief for 16 mm stripe is .050 inch notch across top of face from case to core. To specify a relieved face add the number "3" to part number shown below. Available as no mount or base, side or rear mount (No. 2-56 stud).



PARTIAL LISTING OF MINIATURE RECORD/PLAY HEADS

MODEL NUMBER	L42R8L	L24R2K	L24R8L	L12R8K	M70R4L
TYPE OF HEAD	Record/Playback	Record/Playback	Record/Playback	Record/Playback	Record/Playback
Inductance, 1 KC	80 MHY	200 MHY	40 MHY	30 MHY	20 MHY
Impedance, 1 KC	500 Ω	1.2 K	250 Ω	200 Ω	130 Ω
Resistance, D.C.	128 Ω	400 Ω	125 Ω	125 Ω	80 Ω
Gap Spacer	0.16-MIL	0.10-MIL	0.16-MIL	0.10-MIL	0.16-MIL
Track Width	.042-INCH	.024-INCH	.024-INCH	.012-INCH	.070-INCH

Average 7.5 IPS constant current Record/Playback characteristics using 3M190 tape at 1 KC and recorded 12 DB below tape saturation at 1 KC.

Peak Bias, 60 KC	0.70 MA	0.33 MA	0.65 MA	0.75 MA	2.0 MA
Record Current	60 UA	30 UA	50 UA	60 UA	100 UA
1 KC Output	1.0 MV	1.0 MV	0.45 MV	0.25 MV	0.6 MV
10 KC/1 KC Ratio	0 DB	+2 DB	0 DB	0 DB	—8 DB

Specifications subject to change without notice.

PARTIAL LISTING OF MINIATURE ERASE HEADS

NORTRONICS MODEL NUMBER	L42E6U	M90E3U
Track Width.	.042-INCH	.090-INCH
Inductance, 1 KC	5 MHY	16 MHY
Resistance, D. C.	38 Ω	315 Ω
†Erase Current Oper.	28-42 MA	12 MA
Impedance, 60 KC	1.2 K	4 K
Voltage, 60 KC RMS	32-48 V.	50 V.

†For 56 DB erasure of Saturated Tape

PREFERRED MODELS; MOST POPULAR MODELS	Immediate Availability From Stock
R/P	ERASE
L24R8L	L42E6U
L42R8L	

ACCESSORIES

UNIVERSAL MOUNTING BRACKETS

Designed for simplified mounting plus ease in adjustments.

These universal head mounting brackets provide for convenient adjustment of head azimuth height and tilt. Heads are easily snapped in and out of brackets, which are



MODEL 810-024

accurately positioned by means of "Micrometer" adjustment screws. Brackets are made of cadmium-plated steel and are supplied with mounting screws and spring—and can be combined with other Nortronics accessories to make various mounting assemblies.

#810-024 Head Nest. Includes bracket, guide posts and mounting plate for "A" and "B" Heads.

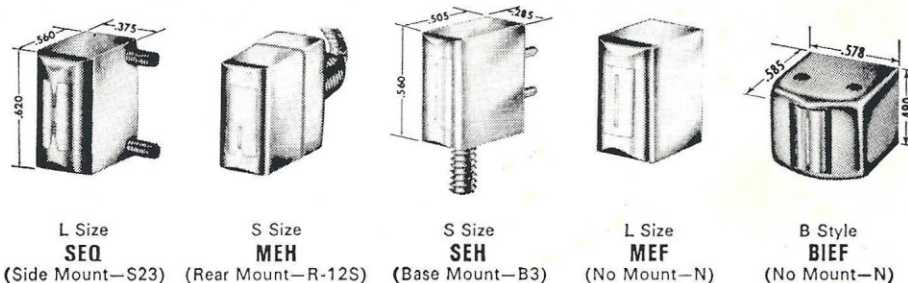
#810-027 Bracket. For "A", "B", and "E" style no-mount heads.

#810-028 Bracket. For "G" size heads.

#810-041 Bracket. For small-case no-mount erase heads.



ERASE HEADS



All Nortronics erase heads have efficient double-gap construction plus metal faces and cases for superior heat transfer. They will operate effectively at erase frequencies up thru 100 kc. and also on d.c. Two low-cost standard case sizes, "L" and "S", in the various mounting styles as illustrated to the right and indicated below. All erase models are also available in the B-case style to match the r/p heads; example, B2EQ4-N which is identical electrically to the SEQ4.

Erase heads are shown with various mounts, but all are available in your choice of *base, side, rear or no mount*.

TO DETERMINE ERASE MODEL NUMBER, select a basic model number, add the erase electrical code, add a dash (-) and add mounting designator (below). Following are typical examples:

MEH1-S23U, 2-track (half track) mono erase head, No. 1 erase electrical code, "L case, side mount, track up (studs are to left).

SEQ4-R-12S, 4-track (quarter track) stereo erase head, No. 4 erase electrical code, "S" case, rear mount, 12 inch shielded leads.

Erase Mounting Designator follows model number in this fashion:

"SEH2-N9", no mount (S Size)
 "-N", no mount (L-Size)
 "-B3", standard base mount (Supplied S Size only). For mono heads, add a U for up or D for down after the B3 to denote track up or track down.

"-S23", standard side mount (Supplied L Size only). For mono heads, add a U for up or a D for down after S23 to denote track up or track down.

"-R-12S", standard rear mount and 12 inch shielded leads (Supplied S Size only).

"-R-4U", standard rear mount and 4 inch unshielded leads (Supplied S Size only)

For 'B' style erase heads, mounts are the same as for R/P heads.

TRACK SYSTEM	4-TRACK			2-TRACK			FULL TRACK	
NORTONICS BASIC MODEL NUMBER	MONO: MEQ STEREO: SEQ; B2EQ			MONO: MEH STEREO: SEH; B2EH			MEF B1EF	
Electrical Code	1	2	4	1	2	4	1	4
Inductance, 1 KC	80 MHY	0.13 MHY	10 MHY	50 MHY	0.20 MHY	8 MHY	40 MHY	3.6 MHY
Resistance, D.C.	240 Ω	1.8 Ω	38 Ω	160 Ω	1.8 Ω	30 Ω	88 Ω	25 Ω
†Erase Current Oper.	5 MA	120 MA	13 MA	6 MA	120 MA	20 MA	13 MA	40 MA
Impedance, 60 KC	30 K	40 Ω	3 K	20 K	50 Ω	2 K	12 K	1 K
Voltage, 60 KC RMS	120 V.	5 V.	40 V.	120 V.	6 V.	40 V.	120 V.	40 V.

†For 56 DB erasure of Saturated Tape

Specifications subject to change without notice.

PREFERRED MODELS; MOST POPULAR MODELS—Immediate Availability From Stock.

4-Tr. Stereo
SEQ4

2-Tr. Mono
MEH4

2-Tr. Stereo
SEH4

Full Track
MEF4

Both S and L cases are Preferred Models

BIAS OSCILLATOR TRANSFORMERS



T-70 SERIES



T-60 SERIES

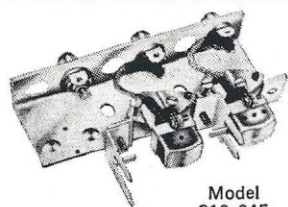
Nortronics bias oscillator transformers provide a bias voltage source from transistor or vacuum tube electronics to drive erase and record heads. The performance characteristics insure low tape noise on erasure and low distortion on recording. They feature ferrite E-core construction for high "Q" excellent voltage regulation and purity of waveform. Secondary taps are compatible with Nortronics heads.

T70 SERIES—T70 series represents a new "standard" in oscillator transformers. Designed specifically for mounting on a printed circuit board it has plug-in, dip solder terminals and nylon case measuring 1 1/4 inch wide x 1 1/2 inch long x 1 1/8 inch high.

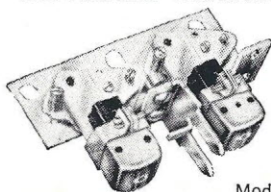
T60 SERIES—T60 series, designed for chassis mounting, has color coded leads and anodized aluminum can (1 1/8 inch diameter x 1 3/8 inch high) with two 6-32 x 3/8 inch spade lugs.

MODEL NO.	CIRCUIT TYPE & MOUNT	TYPICAL OPERATING FREQUENCY	SECONDARY VOLTAGE (RMS)	COMPATIBLE NORTONICS HEADS
T70-T2	Transistor, PC Board	60-110 KHZ	40, 80 & 120 V.	No. 4 & No. 1 Erase
T60-T2	Transistor, Can & Lug	60-110 KHZ	40, 80 & 120 V.	No. 4 & No. 1 Erase
T70-T6	Transistor, PC Board	250-500 KHZ Duplicator	70 V.	Drives 10 No. 8R Record
T60-T6	Transistor, Can & Lug	250-500 KHZ Duplicator	70 V.	Drives 10 No. 8R Record
T60-E	Vacuum Tube, Can & Lug	40-70 KHZ	7 & 120 V.	No. 2 & No. 1 Erase
T60-F	Vacuum Tube, Can & Lug	60-100 KHZ	60 & 150 V.	No. 4 & No. 1 Erase

ACCESSORIES CARTRIDGE MOUNTING BRACKETS



Model 810-045



Model 810-056

Unique head mounting assembly for endless loop cartridge tape handlers (Fidelipac and Viking types). Eliminates awkward mounting and adjustment problems of rear-mount style heads. Offers "Micrometer" adjustments of head height, azimuth, and face perpendicularity. Lock screw on each head bracket "freezes" adjustments.

Heads fastened to bracket with quick-release screw clamp. Replacement time is a matter of seconds when heads are connected with plug and cable assemblies provided with kits.

#810-045 "B" Cartridge-Mount Kit. Up to three heads may be mounted on this assembly, using two no-mount R/P heads of the "A" or "B" size. A small case erase head may be added in the third position on the channel base by means of a #810-044 head bracket. Kit supplied unassembled, includes base channel, four jacks, two #810-042 brackets for the R/P or Combo heads, one #173-16 tape guide fork, and two plug and cable assemblies.

#810-046 "G" Cartridge-Mount Kit. As above, but with two #810-043 brackets for "G" or "T" size mono R/P heads.

#810-055 "B" Two Head Cartridge-Mount Kit. Accommodating two no-mount R/P heads of "A" or "B" size. Vertical back rail and jacks have been eliminated. Connection to the heads may be made by use of the 18" shielded plug and cable assemblies (provided).

#810-056 "G" Two Head Cartridge-Mount Kit. As above, but with #810-043 brackets "G" or "T" size mono R/P heads.

#173-17 Brake-Release Guide—for larger Viking metal cartridges.

HOW TO DETERMINE YOUR MODEL NUMBER

Because of the many combinations of mechanical configurations and electrical specifications available, a guide to the nomenclature of NORTRONICS heads is shown below. Also listed on the preceding pages are *preferred* or most commonly used models. In addition NORTRONICS maintains a staff of experienced sales engineers who stand ready to assist you and determine the head best suited to your individual application.

PERFORMANCE

STANDARD

STANDARD series heads offer improved frequency response over conventional solid core heads. The hyperbolic all metal face and precision deposited quartz gap are value features normally not found in this category. This series is particularly recommended for applications where cost is of primary importance.

PREMIUM

PREMIUM series heads give outstanding performance for broadcast, industrial, recording studio, and other exacting applications. Long life and extended high frequency response, particularly at the slower tape speeds, are major benefits in addition to the features listed below:

- Fine laminated, precision-lapped, low loss core structures.
- Deposited quartz gaps result in exceptionally clean, sharp gap edges for optimum high frequency resolution. Gaps are from 50 to 500 micro-inches in length; shorter gaps down to 20 micro-inches available on special order.
- Hyperbolic face contour gives intimate tape-to-gap contact without need for pressure pads, but is designed to allow use with pressure pads as well.
- Highly polished all-metal faces, greatly reduce oxide buildup and need for frequent head cleaning.
- Compatible mechanically and electrically with older model Nortronics heads.
- Superbly shielded against external magnetic fields.

PROFESSIONAL

New "PR" PROFESSIONAL series sets a new standard for high performance magnetic heads. Designed especially for long wavelength response with wide pick-up poles, smooth response characteristics (within one db) can be obtained to below 20 hz. Fine precision-lapped laminated core stacks and deposited quartz gaps extend short wavelength response. Offered in full track, 2 track stereo and 4 track stereo. Supplied with hyperbolic face in B style case, compatible with standard mounting and terminations. See page 2 for data.

"WP" series of professional heads offer response from 20 hz to 20 KHZ. Available in 2 track stereo and mono and 4 track stereo in B style case.

BASIC MODEL NUMBER

describes Mechanical Characteristics of the head as follows:

- A** Letter denotes case outline style. See diagrams below
- 1** Denotes number of channels:
1—Mono 2—Stereo 3—3-channel Q—4-channel
- Q** Denotes track system:
H—2-track (Half Track) Q—4-track (Quarter Track) L—8-track
- C** Track Location Designator (Mono Heads Only):
NONE—Standard Stereo Offset Y—.020 off center (G1HY)
C—Centered track .040 off center (B1HY)

P-A1QC46K-SL

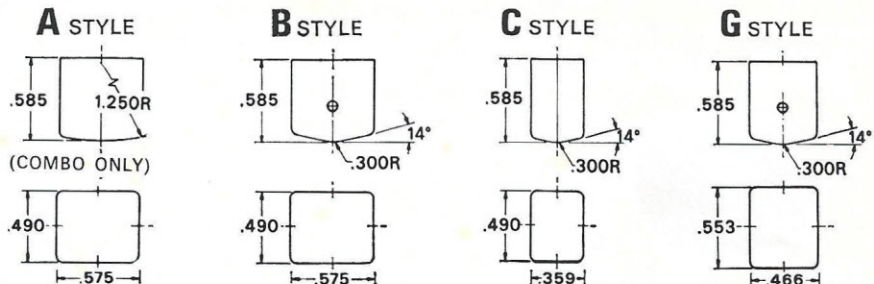
- 4** Erase Electrical Code—Combo Heads Only
- 6K** R/P Electrical Code
- SL** Mounting Designator. See diagrams below

P—Denotes Premium Head PR or WP—Denotes Professional Head
XP—Denotes Extended Tip Premium Head (Standard has no prefix)
See performance data at left

EXAMPLES:

1. The part number shown above describes a Premium, "A" case, 4 track mono combination erase—R/P head with centered track, No. 4 erase electrical code, No. 6KR/P electrical code, side mount with erase section to the left.
2. B2H4R-R-12S describes a Standard, "B" case, stereo two track, No. 4R electrical code, rear mount with 12 inch shielded leads.

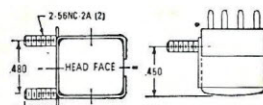
CASE OUTLINE STYLES



SPECIAL CASE STYLES AVAILABLE—CONSULT NORTRONICS

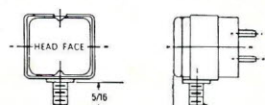
MOUNT

SIDE MOUNT (—S)



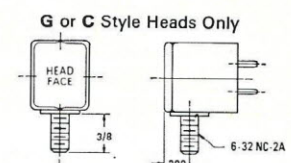
L or R Combo erase on left or right side
U or D Mono track up or down

BASE MOUNT (—B)



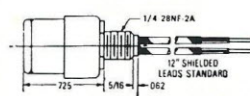
L or R Combo erase on left or right side
U or D Mono track up or down

BASE MOUNT (—B3)

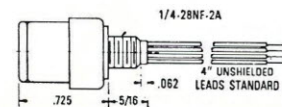


U or D Mono track up or down

REAR MOUNT (—R—12S)



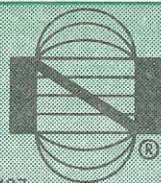
REAR MOUNT (—R—4U)



Nortronics

NORTRONICS COMPANY, INC.

8107 Tenth Ave. No. • Minneapolis, Minnesota 55427
Phone: (612) 545-0401



8-TRACK STEREO MAGNETIC TAPE HEADS

- * 8-TRACK STEREO FORMAT — TWO .020 TRACKS SPACED .127 ON CENTERS.
- * LAMINATED CORES FOR HIGH FREQUENCY PERFORMANCE.
- * DEPOSITED-QUARTZ GAP SPACERS FOR BETTER GAP DEFINITION.
- * POLISHED HYPERBOLIC HEAD FACE.
- * HI-MU SHIELD CASE FOR REJECTION OF EXTERNAL MAGNETIC NOISE.
- * Z-COMBO PATENTED CONSTRUCTION GIVES PRECISE ALIGNMENT BETWEEN ERASE AND RECORD GAPS.
- * STANDARD B-SIZE CASE FITS CONVENTIONAL MOUNTINGS.

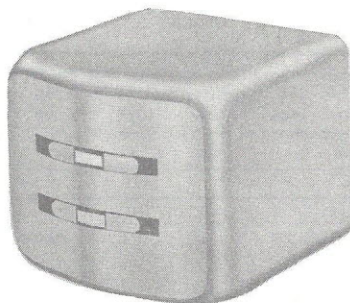
NORTRONICS, World's foremost manufacturer of magnetic recording heads, presents a series of stereo heads for the 8-track stereo system on 1/4 inch tape. The same exacting standards used during the production of the NORTRONICS Professional line of magnetic heads are employed to insure fine quality in

the heads for the high volume home entertainment field.

Two basic head models cover almost every requirement. Model B2L is used for playback or recording. Model ZJ2L incorporates the erase in addition to the record and playback functions.

RECORD/PLAYBACK

MODEL B2L



Model B2L7K-NO Standard playback-only or record/playback head for automobile or home type Stereo-8 tape cartridge players. Response thru 12 KHz at 3.75 ips tape speed. Inductance 400 mhy., 1 KHz output 0.7 mv. rms.

Distributor # 5800

Model P-B2L7K-NO Premium version of above head with extra-fine laminated cores for improved high frequency response to 15 KHz at 3.75 ips tape speed. Recommended where wide-range response is an important consideration.

Distributor # 5811

Model P-B2L8R-NO Premium record-only head for recording and high speed duplicating at bias frequencies up to 500 KHz. Inductance 10 mhy., gap 500 micro-inches.

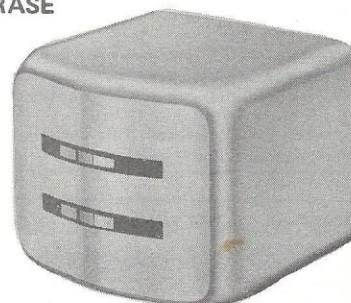
Distributor # 5810

Model AP-B2L14R-NO Alfenol Premium record-only head especially recommended for heavy-duty high speed duplicating applications. Special long-wearing Alfenol cores with extra-deep poles, plus hardened head face gives five times the life of a normal head. Inductance 2 mhy., 500 micro-inch gap, for bias frequencies up to 800 KHz.

Distributor # 5820

RECORD/PLAYBACK ERASE

Z-COMBO MODEL ZJ2L



The type **ZJ2L** offers combination erase and record/playback functions in one head for 8-track stereo applications. Its patented unique "Z-Combo" construction places the erase and r/p gaps only .030 apart in the same pole structure, resulting in extremely accurate height alignment and tracking. Recording and erasing for the 8-track stereo system thereby become fully practicable. Standard B-size case fits most mountings.

Model ZJ2L47K-NO Standard Stereo-8 Z-Combo head. Inductance of R/P section 400 mhy., gap 100 micro-inches. Playback output 0.7 mv. rms at 1 KHz. Response to 12 KHz. at 3.75 ips tape speed. Erase section requires 40 v. rms. at 60 KHz. and automatically supplies record bias by internal coupling to the record head.

Distributor # 6800

Model P-ZJ2L47K-NO Premium fine-laminated version of above Z-Combo Stereo-8 head, with same electrical characteristics. For exacting applications requiring maximum frequency range. Response to 15 KHz at 3.75 ips tape speed.

Distributor # 6811

ENGINEERING DATA

TYPICAL SPECIFICATIONS

B2L-ZJ2L

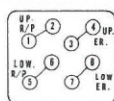
OEM MODEL	B2L7K	P-B2L7K	P-B2L8R	AP-B2L14R	ZJ2L47K	P-ZJ2L47K
DISTR. MODEL	5800	5811	5810	5820	6800	6811
APPLICATION	RECORD/ PLAYBACK	RECORD/ PLAYBACK	RECORD ONLY	RECORD ONLY	RECORD/PLAY/ ERASE	RECORD/PLAY/ ERASE
INDUCTANCE 1KHZ @ 100MV	400 MHY	400 MHY	10 MHY	2 MHY	400 MHY	400 MHY
RESISTANCE, DC	625 OHMS	700 OHMS	40 OHMS	10 OHMS	680 OHMS	680 OHMS
GAP SPACER (DEP. QUARTZ)	100 U-IN.	100 U-IN.	500 U-IN.	500 U-IN.	100 U-IN.	100 U-IN.
PEAK BIAS CUR. 60KHZ@3.75 IPS	1 0.3 MA.	0.2 MA.	2 MA.	6 MA.	15 MA. ⁴	10 MA. ⁴
BIAS VOLTS, RMS 60 KHZ@3.75 IPS	1 22V.	22V.	8 V.	3 V.	40 V. ⁴	40 V. ⁴
PEAK BIAS CUR. 500 KHZ@30 IPS	1 —	—	12 MA.	40 MA.	—	—
BIAS VOLTS, RMS 500 KHZ@30 IPS	1 —	—	60 V.	30 V.	—	—
AUDIO RECORD CURRENT	2 0.02 MA.	0.02 MA.	0.15 MA.	0.3 MA.	.025 MA.	.025 MA.
1 KHZ PLAYBACK RMS @ 3.75 IPS	2 0.7 MV.	0.7 MV.	—	—	0.7 MV.	0.8 MV.
10 KHZ PLAYBACK VS 1KHZ LEVEL	3 -12 DB.	-9 DB.	—	—	-12 DB.	-9 DB.
Z-COMBO ERASE INDUCTANCE	—	—	—	—	12 MHY	12 MHY
Z- COMBO ERASE RES. DC	—	—	—	—	45 OHMS	45 OHMS

- 1 Bias adjusted for peak output of 1 KHZ on 3M 190 tape.
- 2 For recorded level at 12 db below tape saturation at 1 KHZ, and 3.75 ips tape speed.
- 3 Unequalized response from constant-current recording made under peak-biased conditions.

- 4 Z-Combo erase current and voltage to produce peak bias (thru internal coupling) and 50 db erasure of 400 HZ on saturated 3M 190 tape. Erase voltage may be varied to achieve peak bias.
- 5 Interchannel crosstalk rejection 50 db at 1 KHZ.

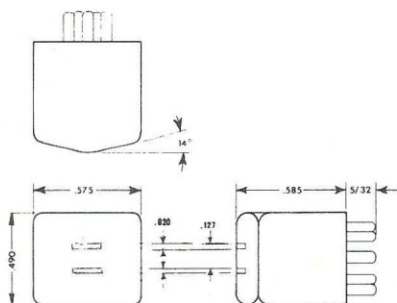
TYPICAL MOUNTING DATA STANDARD MOUNTS

Specifications subject to change without notice

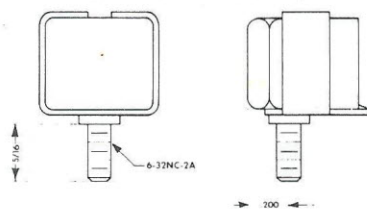


ZJ2L
Pin Connections

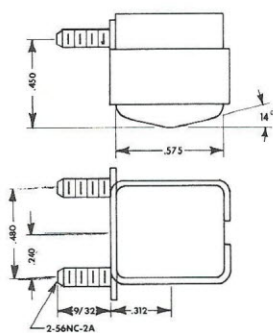
NO MOUNT (add -NO, i.e. B2L7K-NO)



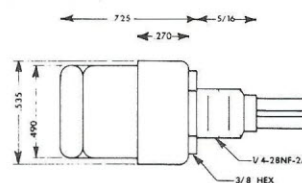
BASE MOUNT (add -B, i.e. B2L7K-B)



SIDE MOUNT (add -S, i.e. B2L7K-S)



REAR MOUNT (includes H-6 nut and washer)



ZJ2L47K-R-12U 12 inch unshielded
ZJ2L47K-R-4U 4 inch unshielded

B2L7K-R-12S 12 inch shielded
B2L7K-R-4U 4 inch unshielded
(Add 50 to distributor No. for Rear Mount
i.e. 5850 or 5861)

ZJ2L LEAD COLOR CODE

PINS	TRACK	COLOR
1-2	Upper R/P	Red-Orange
3-4	Upper Erase	White-Black
5-6	Lower R/P	Yellow-Blue
7-8	Lower Erase	Green-Brown

B2L LEAD COLOR CODE

1-2	Upper R/P	Red-Orange
3-4	Lower R/P	Yellow-Blue

Nortronics
COMPANY, INC.



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