GRAY RESEARCH & DEVELOPMENT CO., INC. MANCHESTER, CONNECTICUT

108 VISCOUS DAMPED TRANSCRIPTION ARMS

INSTRUCTIONS FOR TYPE 108 VISCOUS-DAMPED TRANSCRIPTION ARMS

SPECIFICATIONS

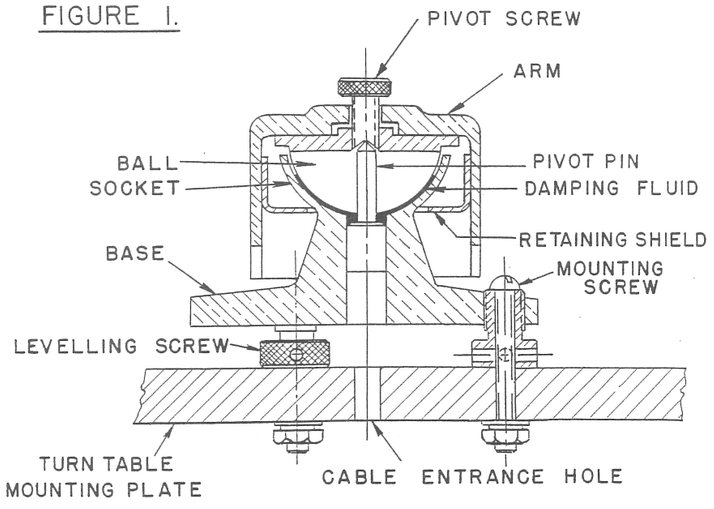
Tracking Force	
See Figure 2 for cartridge used.	3 to 15 grams
Dimensions	
Length overall	14-5/8 inches
Pivot-to-spindle maximum distance	10-5/8 inches
Maximum distance from spindle	14-1/4 inches

DESCRIPTION

The Gray 108 transcription arms incorporate a radical advance in suspension principle. Referring to Figure 1, a silicone damping fluid is placed at the interface between a ball and socket. An adjustable cone-point pivot screw allows the degree of damping to be readily controlled, and at the same time provides practical freedom from static friction with arm movement. Damping virtually eliminates troublesome low-frequency resonance which frequently causes groove-hopping and distortion on loud passages. With low vertical stylus forces, accidental jarring or bumping of the turntable seldom causes groove-jumping. Vertical damping also prevents damage to record and stylus due to accidental dropping of the arm and improves the tracking of warped records.

All groove widths, all record diameters up to 16", and all normally-used stylus forces are accommodated by one arm. Utilizing quick-change slides, cartridge interchange is no problem. Each slide and cartridge assembly is preset to proper stylus force, reducing to a minimum the danger of unauthorized tampering. The slide and contact arrangement accommodates most commonly used cartridges, as shown in Figure 2.

FIGURE 1.



INSTALLATION

Minimum "tracking error" is obtained by mounting the arm pivot in such a position that the cartridge stylus swings (following groove modulation) as nearly as possible to perpendicular to a tangent to the groove. Since the arm itself swings on an arc, the optimum pivot position depends upon record sizes to be used.

The template (Drawing AR-5900) is drawn for a typical installation with a 12" turntable. The optimum "overhang" (of stylus tip beyond turntable spindle) and other dimensions should be:

Record Sizes Normally Used	Overhang X	Y	Z
12" and smaller, or up to 16" occasionally	3/8"	10-5/8"	14-1/4"
16" frequently, and smaller	1/2"	10-1/2"	14-1/8"
16" exclusively	1"	10"	13-5/8"

Pivot Location

1. Locate the desired pivot position P on the turntable mounting plate to conform with X in the above table. So long as correct radius Y is maintained, the pivot may be otherwise spotted for maximum convenience on the mounting plate. Also refer to turntable manufacturer's instructions regarding location to minimize hum and noise level.

Arm Rest Mounting

2. Locate the arm rest center position R as shown. If there is conflict with the cabinet sides, it may be advisable to choose another pivot P location still in conformity with step 1. Drill the three arm rest mounting holes (there is no preferred circumferential hole position) and mount the rest in position.
3. Drill the three mounting holes and one cable hole at P. There is no preferred circumferential hole location around P, as the base is symmetrical.

Fluid Insertion

4. Damping fluid is contained in a separate tube packed with the arm.
5. Remove the pivot screw from the top of the arm. Place the arm on a flat surface, such as a table-top, with the base hanging down over the edge. Place a book or other object on the arm to hold it in place.
6. Remove the fluid tube cap and pierce a hole in the blind top. Insert the tube into the pivot screw hole in the arm, and slowly squeeze. The fluid being quite viscous, it should take several minutes to get 75% of it into the hole. Leave about 25% in the tube. The exact amount is not critical. Allow the arm to remain in this position for at least 10 minutes for fluid dispersal. Then replace the pivot adjusting screw, screwing it in only about 3 turns, using extreme care not to cross the very fine threads.

Base Mounting

7. Place the arm and base in position at P on the mounting plate, and adjust the three levelling screws so that the bottom edge of the arm will be about 7/16" above the turntable surface when the cartridge end is held so that the bottom edge is parallel to the turntable surface. Mount the base with the 8-32 hardware supplied, but do not finally tighten.

Cartridge Assembly

8. Referring to Figure 2, place the weight (if called for) on the slide, and then mount the cartridge in place. Be sure that the slide and weight markings correspond to the cartridge to be used. In all cases, the stylus belongs nearest the front or lip end of the slide. Proper force for each cartridge is automatically fixed by the small weight associated with each slide.

Leveling Adjustment

9. Temporarily insert the cartridge slide into the end of the arm, making sure that the contacts properly engage, and gently rest it on a record on the turntable. Then finally adjust the base levelling screws so that the bottom edge of the arm is parallel to the surface of the record, which should be level. Base levelling is not critical; use a scale to get approximately equal height at each screw. Then remove the cartridge slide and record, and tighten the base mounting screws.

Wiring

10. Place the twisted cable through the mounting plate hole and dress so that arm movement is not restricted in any way. This cable may be connected to a shielded cable at a 3-terminal grounded lug board (not supplied) as shown in Figure 3. Use a low-capacity shielded cable, as short as possible, to avoid high-frequency resonances with the cartridge inductance (if inductive). The yellow ground lead must be grounded to the base screw (and to the mounting plate, if metal) and the system ground as shown, as the fluid would otherwise insulate the arm from ground.

Damping Adjustment

Hold the arm level and press firmly down on it around the pivot point, then slowly turn the adjustment screw clockwise until it is felt to contact the cone point of the pivot, referring to Figure 1; then turn the screw an additional one-half turn (180 degrees) clockwise. Since the adjusting screw has 56 threads per inch, this separates the ball and socket by approximately .009 inches, thus insuring that the ball and socket are not mated and that the arm is riding freely on the pivot point. The thin film of silicone fluid between the ball and socket provide maximum damping at this point. Turning the adjusting screw further clockwise from this point decreases the effective damping by increasing the separation between the ball and socket (see Fig. 1). NOTE: Check damping adjustment 24 hrs. after installation.

Warning: Under no conditions should any attempt be made to increase the damping beyond the maximum condition by turning the adjusting screw counterclockwise from the one-half turn (180 degrees) point described above. This would bring the ball and socket dangerously close together, thus possibly causing a rubbing condition between these two parts which could result in erratic tracking and generally unreliable operation. Maximum damping setting as indicated above will result in an arm drop time of approximately one inch per second using a cartridge and slide assembly tracking at 7 grams.

OPERATION

Start the turntable at proper speed, with a record in place. With the proper cartridge in place, use the "finger lift" to lower the arm gently onto the starting (generally outside) groove of the record. Adjust volume, and enjoy the very best in arm and cartridge performance.

Do not tip the turntable or arm excessively, or for more than 1 minute, as the fluid would run over the edges of the socket. If this is done inadvertently, the fluid should be replaced, taking care not to overfill. Keep the turntable strictly level. The fluid is chemically inert and does not evaporate or oxidize. The fluid should not require replacement unless some has been spilled by prolonged tipping of the turntable.

Manufactured under license from Columbia Broadcasting System Inc. U.S. Patent #2676806.

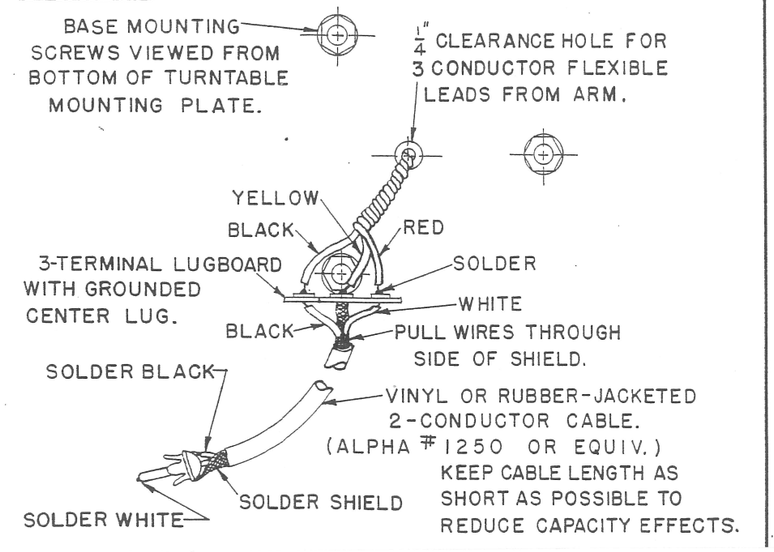
FIGURE 2.

Cartridge accessories furnished	G. E. Microgroove RPX—145 RPX—146	Fairchild Microgroove or G. E. Turnaround RPX-147 or 150	Pickering Microgroove =240
1—8P2 Slide 2—3-48 × ½ Screws 2—3-48 × ⅛ Screws 1—G-1 wgt. 1—P-3 wgt. } use for	1—8P2 Slide 2—3-48 × ½ Screws 1—G-1 wgt. Stylus Pressure 7 grams	1—8P2 Slide 2—3-48 × ½ Screws 1—P-3 wgt. Stylus Pressure G. E.—10 grams, Fair.—6 grams	1—8P2 Slide 2—3-48 × ⅛ Screws 1—P-3 wgt. Stylus Pressure 7 grams

— SLIDES AND WEIGHTS AVAILABLE FOR —

ALL GE CARTRIDGES
ALL FAIRCHILD CARTRIDGES
ALL PICKERING CARTRIDGES INCLUDING NEW FLUX VALUE
ELECTROSONIC CONCERT SERIES
RECOTON GOLD RING "500"
SONOTONE SERIES 3
FENTON B. & O. SPECIAL

FIGURE 3.



AR-7900-B 1-25-55 G.E.H.