



# playback

VOLUME 2, NUMBER 2

TECHNICAL INFORMATION

NEWS and DEVELOPMENTS

NEW PRODUCTS and PROCEDURES

PLEASE ROUTE

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### CLEANING SOLVENTS...GOOD AND BAD FOR TAPE

All cleaning solvents are volatile and when using solvents caution is the byword. A solvent with the least detrimental effect on video magnetic tape is Freon TF. It is one of the fluorinated hydrocarbon solvents that is non-flammable, non-explosive, relatively non-toxic and stable in use. It is a selective solvent good for oils, greases and many other organic compounds, yet it has little effect on elastomers, plastics and metals.

Typical applications include the cleaning and degreasing of electrical controls without adversely affecting contact points. It has virtually no effect on acetate or polyester tape bases or magnetic oxide coatings. Because of this it is an ideal cleaner for carbonyl iron\* powder and potential con-

(Continued on Page 2)



\*Incidentally, Freon TF serves as an excellent vehicle for the carbonyl iron powder used in developing frame pulses for editing.

Dir. of Eng.

Chief Eng.

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Return to:

## Cleaning Solvents

(Continued from Page 1)

taminants. (See Table A for a comparison of Freon TF with other cleaning solvents.)

The inevitable result of using cleaners other than Freon TF to clean recorder heads while operating will be oxide/binder deterioration. If during playback it becomes necessary to clean a clogged head, Freon will result in the least amount of damage to the tape binder system. Freon is a DuPont registered trade name for fluorocarbon solvents and is available from the DuPont Company, Wilmington 98, Delaware, or their distributors. The approximate cost per gallon is \$8.00. For smaller quantities contact the John B. Moore Corporation, Peerless Building, P.O. Box 3, Nutley, New Jersey.

Table A

CLEANING SOLVENTS	Effect on Video Magnetic Tape	Flammable	Toxicity (1)	Effect on Natural Rubber	Flash Point (2) Temp. ° F.
Freon TF	None or Negligible	No	1000	None or Negligible	None
Naphtha (Flammable Cleaning Fluid)	Softens	Yes-Red Label	500	Swells	20
Heptane	Softens	Yes-Red Label	500	Swells	25
Ethyl Alcohol	Negligible	Yes-Red Label	1000	None or Slight	55
Methyl Alcohol	Negligible	Yes-Red Label	200	None or Slight	54
Trichloroethylene	Soluble	---	100	Slight	--
Xylol or Xylene	Soluble	Yes-Red Label	200	Swells	63
Ampex Head Cleaner (3) 087-007(91% Xylene, 2% Carbon Tet., Etc.)	Soluble	Yes-Red Label	Less Than 200	Swells	Approx. 925
Toluene	Soluble	Yes-Red Label	200	Swells	40
Acetone	Soluble	Yes-Red Label	1000	None or Slight	0
MEK (Methyl Ethyl Ketone)	Soluble	Yes-Red Label	200	None or Slight	30
Carbon Tetrachloride	Negligible	---	25	Slight	--
Chlorothene (Non-Flammable Cleaner)	Soluble	---	500	Slight	--

(1) Parts of vapor or gas per million parts of air by volume at 25° C and 760 mm. Hg. pressure. These values should be used as a guide in control of health hazards. They represent conditions that most workers may be repeatedly exposed to for a normal work day, day after day, without adverse effect.

(2) The lowest temperature at which enough vapors are given off to form a flammable or ignitable mixture.

(3) Ampex head cleaner is an excellent cleaning solvent for the video heads and tape transport. However, extreme caution should be taken to avoid its contact with magnetic tape as it will react with the oxide-binder system -- reducing tape wear capabilities and causing clogged heads.

## ASA STANDARD C98.5

**EDITORIAL:** Due to the high weight per unit length of 2" video tape compared to the familiar 1/4" sound recording tape, a rugged precision reel is required to protect the tape during handling, shipping and storage, and to insure trouble-free recording/reproducing. In short, the video tape reel must be equal to the demands of the tape it holds.

Looking first at the hub as the "foundation block" in reel construction, inside and outside diameters must be closely concentric to assure smooth, even rotation and interchangeability. Precision overall hub width is also important to further insure that the hub will sit properly on a pedestal and guide correctly.

Proposed American Standard Dimensions of

2-In. Video Magnetic Tape Reels

C98.5

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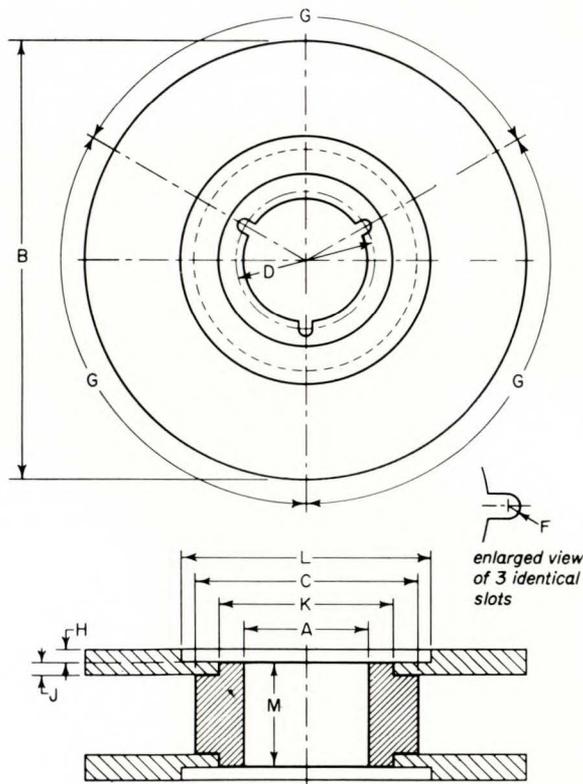
### 1. Scope

This standard specifies the dimensions of reels in maximum capacities of 750, 1650, 3600, 5540, and 7230 ft designed to accommodate the maximum thickness of 2-in. wide magnetic tape for television recording, as speci-

fied in Proposed American Standard Dimensions of 2-In. Video Magnetic Tape, C98.1.

### 2. Reel Dimensions

2.1 The dimensions of the reels shall be as specified in the figure and tables.



The narrowly spaced flanges must guide tape into a smooth even track by providing proper tape clearance, yet maintain close tolerance sufficient to prevent excessive lateral displacement of tape as it is wound. Too wide a channel is likely to cause uneven winding or turn scattering resulting in damage to tape edges when reels are handled, due in turn to deformation of the flanges. (See "Playback" Bulletin Vol. 1, No. 1.)

"SCOTCH" Brand Heavy Duty Video Reels meet or exceed all specifications proposed as ASA Standards. Each reel is assembled by hand and individually tested to make sure it meets the dimensions demanded. Further, these reels are made of aluminum combining maximum strength with minimum weight. Hubs and flanges are anodized to provide a hard surface and to protect against cor-



Production worker checks Heavy Duty Video Reel for lateral runout. This check is performed on each reel.

2.2 Flange-fastening members shall be flush (0.05mm) and shall have a maximum taper of 0.0002 in. (0.005mm) per inch of width.

2.3 The outside cylindrical surface of the hub (C diameter) shall be concentric with the center bore (A diameter) within 0.002 in. (0.5mm).

Table 1. Reel Dimensions.

Dimensions	Inches	Millimeters	Degrees
A	3.000 + 0.004 — 0.000	76.20 + 0.10 — 0.00	
B	See Table 2	See Table 2	
C	4.500 ± 0.100	114.30 ± 2.54	
D	3.250 ± 0.002	82.55 ± 0.05	
F	0.109 + 0.003 — 0.000	2.77 + 0.08 — 0.00	
G			120 ± 0.1
H	0.025 max†	0.64 max†	
J	0.099 max†	2.51 max†	
K	3.600 min‡	91.44 min‡	
L	6.000 min‡	152.40 min‡	
M*	2.212 ± 0.003	56.18 ± 0.08	

\* The hub surfaces defined by M shall be parallel within 0.0002 in. (0.005mm) per inch and square with the hub outside diameter C within 0.001 in. (0.03mm) at maximum diameter.  
 † The surface of the flanges from B to L shall lie between the planes defined by H and J.  
 ‡ Outside surfaces of reel flanges between diameters K and L shall not extend beyond the surfaces defined by Dimension M.

Table 2. Reel Capacities.

Maximum Capacity,* Feet      Meters	Maximum Playing Time in Min at		Dimen- sions	Inches	Millimeters
	7.5 In. (19.05 Cm)	15 In. (38.1 Cm)			
	Per Second				
750      228	20	10	B	6.50 ± 0.010	165.1 ± 0.25
1650    503	44	22	B	8.00 ± 0.010	203.2 ± 0.25
3600    1097	96	48	B	10.50 ± 0.010	266.7 ± 0.25
5540    1689	148	74	B	12.50 ± 0.010	317.5 ± 0.25
7230    2203	192	96	B	14.00 ± 0.010	355.6 ± 0.25

\* Maximum capacity is based on a minimum distance of 0.2 in. (5mm) from the reel periphery to the tape stack, utilizing maximum thickness tape.

Appendix

(This Appendix is not a part of Proposed American Standard Dimensions of 2-in. Video Magnetic Tape Reels, C98.5, but is included to facilitate its use.)

The outside diameters of the flanges, B, will give reels the capacities suggested in Table 2. These capacities should be regarded as maximum.

It is recommended that both flanges have air escape holes. If provided, these holes should extend to the hub periphery and be of such size at this point as to facilitate easy threading.

rosion - made to stand up under the rigorous salt spray test of MIL I983-B.

Flanges on "SCOTCH" reels are a rugged 90 mils thick with rigid mounting to minimize flange runout and protect against crushing damage. Close tolerance precision keeps tape edges closely aligned to guard against scattering of turns.

A precision ground neoprene friction ring is another feature of "SCOTCH" reels designed to facilitate easy thread-up, and to act as a cushion for the innermost tape layers. This resilient ring guards against distortion from winding pressure and expansion / contraction stresses.

For specifications on "SCOTCH" Heavy Duty Video Reels return the coupon on P. 8.

NEW CONVENIENCE, PROTECTION  
FOR TAPED SPOTS



The new VR 6-1/2" "SCOTCH" Brand Spot Commercial and Short Program Length Video Tape reel (10 minute capacity at 15 ips) boasts new operational convenience as well as greater protection in storage and shipment by virtue of both a new reel design and new light weight shipping/storage carton.

The 6-1/2" reel, of high-impact styrene, was developed to industry specifications and assures an unmatched toughness against the physical shock and warping that video reels are normally exposed to. One big change over previous plastic reels is the smooth inside hub diameter, permitting use of the new reel on recorders with expanding friction-grip spindles.

Absolute flange-width tolerance, closer than ever before in plastic reels, as well as a uniform, unwavering tape-path are possible by the unique molding process which permits casting both flanges and winding surface into one mold. This eliminates flange width inconsistencies resulting from hand-assembling of flange pieces from two different molds, and adds notably to the new reel's strength. Another industry exclusive for this type of reel is a rubber thread-up friction ring to facilitate quick thread-up and prevent poor wind.

Ear-marked for durable utility, the new carton design provides write-in space for both recording data and playback information (including "logging" of playback passes). The carton, contrasting in design and color at opposing end-panels, tells you at a glance which tapes on a shelf have been recorded.

Featuring a spacious mailing label area on the front, the rugged carton is safely mailable, requiring only a four-inch length of heavy duty packing tape (such as "SCOTCH" Brand Filament Tape) to ready



it for shipment. In special mailing tests, the durable corrugated carton underwent 200 "drops" with absolutely no damage beyond slightly scuffed outside corners. And, because of the built-in metal hub support, reel flanges don't touch the panel edges, providing added protection to tape and reel.

The new reel-in-box package is designed to offer new service to customers: its lighter weight means it costs less to mail; record and playback information provide for greater uniformity in tape handling for optimum results.

Cost of the reels and boxes together is \$2.30 in quantities of 48 (minimum order 12) with empty boxes or reels alone \$.55 and \$1.75 respectively (minimum order 48). For additional details on quantity discounts available, plus assorting privileges, contact your 3M representative or check the return coupon on page 8.

playback

SPECIAL BONUS OFFER



9-3/8" High, 25" Wide, 8" Deep

This new "Storette" tape storage file is being offered for only \$6.95 (\$12.95 value) with the purchase of 12 VRB 6-1/2" Reels in Boxes - holds up to ten of the new spot length reels.

Here is a unit specifically designed for storing tape. It has a "follow block" for easy dividing, sits on counter or shelf book-case style, lays on back or hangs on wall. Units also interlock for stacking up to seven high. Other features include all-welded construction with smooth corners and edges, a durable two coat baked enamel finish. Comes completely assembled.

Take advantage of this new offer by including the "Storette" on your next order!

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published by  
Magnetic Products Division 3M COMPANY

Deviation?

TIP PROJECTION?

PENETRATION?

video pre-emphasis ?

S/N RATIO?

The IEEE Subcommittee on Television Magnetic Recording was formed to consider video tape recording definitions, and standardization of measurement methods of VTR recording. Current membership includes:

- A. C. Luther, Chairman (RCA)
- C. E. Anderson (Ampex)
- G. W. Bartlett (NAB)
- E. K. Dahlin (CBS)
- F. Himelfarb (NBC)
- J. Landsburg (CBC)
- H. Sombor (GE)
- F. J. Watson (3M)

Your comments and suggestions are invited concerning the work of this committee. Contact your IEEE representative.

playback



Assembled in the 3M "Hall of Products" are (l. to r.): William H. Madden, 3M; Reid Ray, SMPTE Pres.; Dr. Wetzel, 3M (Past Gov.); Harold Kinzle, Wilding Prod.; Ken Mason, Eastman Kodak (Gov.); William Hedden, Calvin Co. (Gov.); Jim Wassell, Bell & Howell, (Gov.).

### 3M HOSTS SMPTE MEETING

On Friday and Saturday, June 28 and 29, eighty-five SMPTE members met in St. Paul for the Central and Detroit Section Meeting. President Reid Ray presided over the meeting which began with all conferees registering at the 3M Administration Building.

Papers presented on Friday included: "Compensation for Dropouts in Television Magnetic Tape Recording, A New Magnetic Tape with Increased Signal-to-Noise Ratio, Color Key for Television and Slide Presentation, The Revere Model P-435 Sound-Slide Projector, Conversion of Black and White Motion Picture Processing Machines to Viscous Layer Development, Underwater Photography, and 8mm Today and ?."

On Saturday the group met at WCCO-TV (CBS) and the University of Minnesota (Minneapolis) where additional papers were presented on: "Use of TV in Public Relations for the Army, Photographic Data Recording by Direct Exposure with Electrons, New Developments in Video Tape Utilization, Transmitting Color Television by the Numbers, and Molecular Spectroscopy."



### NEW "ADVERTISING WITH VIDEO TAPE" BOOK SPOTLIGHTS SPOTS



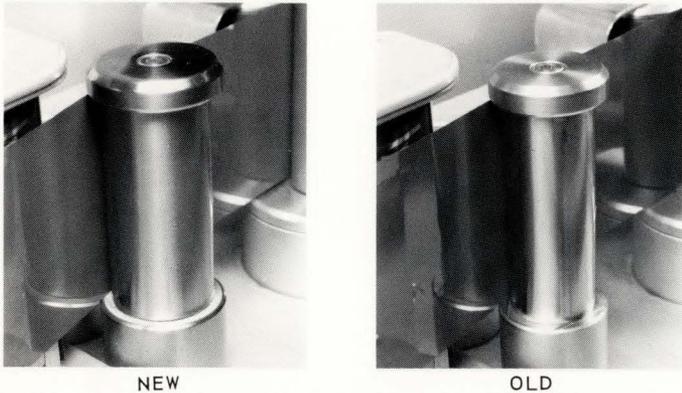
A report on thirteen of the nation's recent top video tape commercials, this newest book from 3M details the various cost, technical and dramatic considerations encountered by agency and station producers during production. The fourth in the fully illustrated series of Video Concepts books, "Advertising With Video Tape" includes award-winning (some budget-pleasing) case histories involving unique applications of video tape and its auxiliary equipment, new applications with standard studio gear, and production ideas your station might use.

Released in September, "Advertising With Video Tape" was mailed to, among others, every station in the country. For additional copies, contact the Advertising Department, Magnetic Products Division, 3M Company, St. Paul, Minnesota (see coupon, page 8).



## IMPROVED VTR AUDIO RESPONSE

Along with the Dual Speed Conversion Kit (Catalog No. 59213) for 7-1/2 ips operation of Ampex's professional video tape recorder, Ampex has provided a Guide Post Assembly (Part No. B55660-01). This unit replaces the present guide post located between the audio stack and the capstan drive. The new guide post has a larger diameter and mounts in the same hole vacated by the old one. The diameter of the new post is 0.150 in. greater than that of the original, which improves the audio head to tape contact and potential audio response.



Although the increased diameter of the guide post is very slight--its effect in increasing the tape wrap is important (note relative distances between posts and audio stacks).

Some thought and consideration, however, should be given regarding this change. For example, if the sound portion of a program is recorded with the new assembly and reproduction is satisfactory, the same program played back on a recorder without the new assembly may not provide satisfactory sound repro-

duction, due to less wrap over the audio assembly. In this example, the decreased diameter reduced effective head to tape contact.

Naturally, the reverse condition from that described above presents no problem. A recorded program made with the old guide post will play back very satisfactorily with the new assembly.

Audio head alignment is also necessary if the increased diameter post is installed. The audio gap is no longer perpendicular to the tape due to the increased wrap. Perpendicularity can be achieved by loosening the head holding screw and relocating to the proper position. The adjustment may be more easily accomplished by applying a light coat of Dykem on the head (mechanics blue - obtainable at any auto parts store).

Allow the Dykem to dry; run the tape through the transport, and by noting the worn area of Dykem proper positioning of the head can be made. The cue heads should be realigned using the same technique.

It is very important to remember that the same screw that adjusts head azimuth position adjusts head protrusion. These two positions have to be adjusted simultaneously, bearing in mind, head protrusion should be at least two mils.

The up-dated Guide Post Assembly is available without complete purchase of the Dual Speed Conversion Kit if desired. This can be ordered by merely contacting your regional Ampex office and requesting Part No. B 55660-01.

PLAYBACK  
Magnetic Products Division  
3M Company  
2501 Hudson Road  
St. Paul 19, Minnesota

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Send additional information checked below:

- |  |  |
|--|--|
| <input type="checkbox"/> Specifications of "SCOTCH" Brand Heavy Duty Video Tape Reel | <input type="checkbox"/> "Playback" Bulletins Nos. 1, 2 & 3                            |
| <input type="checkbox"/> New VRB 6-1/2" Spot Length Reel and Box                     | <input type="checkbox"/> "SCOTCH" Brand Video Tapes Physical & Magnetic Specifications |
|  | <input type="checkbox"/> New booklet, "Advertising With Video Tape"                    |